



City of Arvada

City Council Agenda

OCTOBER 7, 2025

Councilmembers:

Lauren Simpson, Mayor
Randy Moorman, Mayor Pro-Tem
Shawna Ambrose, District 2
Sharon Davis, At large
Bob Fifer, District 4
John Marriott, District 3
Brad Rupert, At large

Staff Members Usually Present:

Don Wick, City Manager
Linda Haley, Deputy City Manager
Allison Scheck, Deputy City Manager
Rachel Morris, City Attorney
Jacqueline Rhoades, Director of Infrastructure
Jessica Garner, Director of Community & Econ. Dev.
Bryan Archer, Chief Financial Officer
Gabriella Bommer, Director of Human Resources
Ryan Stevenson, Director of Vibrant Community & Neighborhoods
Rachael Kuroiwa, Director of Communications & Engagement
Ed Brady, Chief of Police
Kristen Rush, City Clerk

Info: 720-898-7550

THIRD FLOOR CONFERENCE ROOM
EXECUTIVE SESSION
5:00 P.M.

Legal Advice, Pursuant to CRS 24-6-402(4)(b) Relating to Allendale Elementary School Development Application

ARVADA HOUSING AUTHORITY
CITY COUNCIL CHAMBERS
6:00 P.M.

REGULAR MEETING
CITY COUNCIL CHAMBERS
6:10 P.M.

1. Call to Order - 6:10 PM
2. Moment of Reflection and Pledge of Allegiance - Councilmember Fifer
3. Roll Call of Councilmembers
4. Approval of Minutes
 - A. September 16, 2025, City Council Meeting
5. Recognitions and Communications
 - A. Proclamation for National Manufacturing Month - Presented by Councilmember Ambrose
 - B. Recognition of Archwell Health - Snow Buddies Program - Presented by Councilmember Marriott
 - C. Proclamation for National Hispanic Heritage Month - Presented by Mayor Pro Tem Moorman
 - D. Proclamation for Disability Awareness Month - Presented by Councilmember Davis
6. Presentations - None

7. Public Comment on Issues not Scheduled on Agenda - Three Minute Limit
8. New Business
 - A. Consent Agenda
 1. R25-084, A Resolution Authorizing a Memorandum of Understanding Between the City of Arvada and the City and County of Broomfield for Laboratory Water Analysis Services in An Amount Not to Exceed \$25,000.00 A Year
 2. R25-085, A Resolution Authorizing Amendment No. 1 to a Construction Management/General Contractor (CM/GC) Agreement by and Between the City of Arvada and BT Construction, Inc. for the 2021 Waterline Improvements Project To Award Phase II General Contractor Services in an Amount not to Exceed \$928,296.82, thereby Increasing the Total Contract Amount to an Amount not to Exceed \$956,996.82
 3. R25-087, A Resolution Approving Administrative Rules Governing the Designated Drinking Areas in Olde Town Arvada
 4. R25-088, A Resolution Repealing The Programming And Use Of Arvada's Government Access Cable Channel Policy
 5. R25-089, A Resolution Granting A Non-Exclusive Public Utility Easement To The Public Service Company of Colorado (Xcel Energy) To Construct, Operate, Maintain, Repair, And Replace Utility Lines At Indiana Shops
 6. R25-090, A Resolution Granting A Non-Exclusive Public Utility Easement To The Public Service Company of Colorado (Xcel Energy) To Construct, Operate, Maintain, Repair, and Replace Utility Lines At The Parks and Vehicle Maintenance Facility
 7. R25-091, A Resolution Granting Non-Exclusive Public Utility Easements To The Public Service Company Of Colorado (Xcel Energy) To Construct, Operate, Maintain, Repair, And Replace Utility Lines At City Hall
 - B. Resolutions
 1. R25-092, A Resolution Approving the Submission of the First Substantial Amendment to the 2024 Annual Action Plan for the Community Development Block Grant ("CDBG") Program to Reprogram Allocated CDBG Funds
 - C. Ordinances (First Reading)
 1. CB25-021, An Ordinance Amending Various Sections of Chapter 102, Utilities, of the Arvada City Code Pertaining to Water Users Rates and Bimonthly Service Charges (Public Hearing to be set for October 21, 2025 at 6:15 p.m.)
 2. CB25-022, An Ordinance Amending Section 102-206 of Chapter 102, Utilities, of the Arvada City Code Pertaining to Wastewater Users Rates and Bimonthly Service Charges, and Section 102-355 of Chapter 102, Utilities, of the Arvada City Code Pertaining to Stormwater User Rates (Public Hearing to be set for October 21, 2025 at 6:15 p.m.)
 3. CB25-023, An Ordinance Prohibiting the Installation of Graywater Treatment Works and the Use of Graywater Within the City of Arvada (Public Hearing to be set for October 21, 2025 at 6:15 p.m.)
 4. CB25-024, An Ordinance Appropriating Funds for Fiscal year 2026 (Public Hearing to be set for October 21, 2025 at 6:15 p.m.)
 5. CB25-025, An Ordinance Certifying the City of Arvada Mill Levy for 2025 for the Board of County Commissioners for Jefferson and Adams Counties (Public Hearing to be set for October 21, 2025 at 6:15 p.m.)
 6. CB25-026, An Ordinance Repealing and Reenacting Article XI (Micromobility Program) of Chapter 54, Motor Vehicles and Traffic, of the Arvada City Code (Public Hearing to be set for October 21, 2025 at 6:15 p.m.)
9. Other

10. Public Hearings - 6:15 PM
 - A. Major Comprehensive Plan Amendment and Rezoning for Allendale Elementary School, 9.66 acres parcel of land generally located at 5900 Oak St. (Rob Smetana, Manager of Planning & Development)
 1. R25-093, A Resolution by the Arvada City Council for the City of Arvada, Colorado to Amend the 2014 Arvada Comprehensive Plan Land Use Designation Pertaining to the Former Allendale Elementary School from City of Arvada Public/Quasi-Public to City of Arvada Suburban Residential, a Parcel of Land Located at 5900 Oak Street (Presenter: Rob Smetana, Manager of City Planning & Development)
 2. CB25-020 An Ordinance Rezoning Certain Land within the City of Arvada, the former Allendale Elementary School from City of Arvada RN-7.5 (Residential Neighborhood) to City of Arvada R-6 (Residential, 6). and Amending the Official Zoning Maps of the City of Arvada, Colorado, 5900 Oak Street (Ordinance No. 4906) (Presenter: Rob Smetana, Manager of City Planning & Development)
11. Public Comment - Five Minute Limit
12. Reports from City Council
 - A. Council Committee Reports
13. Reports from City Manager
 - A. Review of Future Workshops and Presentations
14. Reports from City Attorney
15. Adjournment



SUMMARY OF MINUTES OF THE MEETING OF THE ARVADA CITY COUNCIL HELD SEPTEMBER 16, 2025

1. Call to Order - 6:00 p.m.
2. Moment of Reflection and Pledge of Allegiance
3. Roll Call of Councilmembers

Those Present: Mayor Lauren Simpson, Mayor Pro Tem Randy Moorman, Councilmember Sharon Davis, Councilmember John Marriott, Councilmember Brad Rupert

Councilmember Fifer moved to excuse Councilmember Rupert from the meeting.

The following votes were cast on the Motion:

Those voting Yes: Simpson, Moorman, Ambrose, Davis, Fifer, Marriott

Those Absent: Rupert

The Motion was Approved

Also Present: Don Wick, City Manager, Rachel Morris, City Attorney, Linda Haley, Deputy City Manager, Bryan Archer, Chief Financial Officer, Jacqueline Rhoades, Director of Infrastructure, Jessica Garner, Director of Community and Economic Development, Jessie Bauters, Communications Manager, Department of Community and Economic Development and Kristen Rush, City Clerk.

4. Approval of Minutes – August 19, 2025 and September 2, 2025 City Council Meetings

The minutes stand approved.

5. Recognition and Communication –
 - A. Proclamation for Constitution Week -

Councilmember Fifer read the proclamation and said City Council proclaim the week of September 17-23, 2025 as Constitution Week.

Kristin Husby, Chapter Regent of the Doctor Susan Anderson Chapter, National Society Daughters of the American Revolution, was present to accept the proclamation.

6. Presentations - None
7. Public Comment –
 - A. Anne Laffoon, representing the Arvada Historical Society, invited everyone to the 2025 Cemetery Tour on October 18
 - B. Carol Napier, Arvada resident, addressed council regarding the use of taxpayer dollars and investments.

- C. Nicholas Miller, Arvada resident, addressed council regarding the use of taxpayer dollars and investments.
- D. Karen Gerbasch, Arvada resident, addressed council regarding 6800 Kilmer Street.
- E. Sharon McCarthy, Arvada resident, addressed council regarding 6800 Kilmer Street.
- F. Elaine Fitzgerald, Arvada resident, addressed council regarding 6800 Kilmer Street.
- G. Shawn Adams, Arvada resident, addressed council regarding the Peck Elementary site and streets in Arvada.
- H. Pat Malone, Arvada resident, addressed council regarding immigration.
- I. Ed Tomlinson, Arvada resident, addressed council regarding crime in Arvada.
- J. Derek Hammer, Arvada resident, addressed council regarding Zoning, Rent and Housing.

8. New Business

A. Consent Agenda –

- 1. R25-078 A Resolution Authorizing Designated City Officials to Act for and on Behalf of the City of Arvada Relating to Financial Transactions and Further Authorizing the Use of Facsimile Signatures for Certain Financial Transactions
- 2. R25-079 A Resolution Authorizing a First Amendment to an Agreement Between the City of Arvada and CDM Smith Inc. for Professional Design and Construction Phase Services Relating to the North Trunk Sewer Improvements at W. 86th Pkwy., Beech St. to Moore St., in an Amount not to Exceed \$416,020.00, Thereby Increasing the Total Contract Amount to an Amount not to Exceed \$912,162.00
- 3. R25-080 A Resolution Authorizing an Agreement By and Between the City of Arvada and Miller Pipeline, LLC for the North Trunk Sewer, 86th Parkway, Beech to Moore Street (NTL2/3/Alkire FM) Project, Project No. 24-SR-04, in an Amount Not to Exceed \$8,593,185.00
- 4. R25-081 A Resolution Authorizing An Agreement By and Between the City of Arvada and Mid City Corporation for the 2024 Sanitary Sewer Open Cut Project, Project No. 24-SR-01, in an Amount Not to Exceed \$1,677,411.56
- 5. R25-082 A Resolution Authorizing an Intergovernmental Agreement Between the City of Arvada and the Church Ditch Water Authority for a License Agreement in an Amount Not to Exceed \$14,000.00

Councilmember Ambrose moved that R25-078, A Resolution Authorizing Designated City Officials to Act for and on Behalf of the City of Arvada Relating to Financial Transactions and Further Authorizing the Use of Facsimile Signatures for Certain Financial Transactions; R25-079, A Resolution Authorizing a First Amendment to an Agreement Between the City of Arvada and CDM Smith Inc. for Professional Design and Construction Phase Services Relating to the North Trunk Sewer Improvements at W. 86th Pkwy., Beech St. to Moore St., in an Amount not to Exceed \$416,020.00, Thereby Increasing the Total Contract Amount to an Amount not to Exceed \$912,162.00; R25-080, A Resolution Authorizing an Agreement By and Between the City of Arvada and Miller Pipeline, LLC for the North Trunk Sewer, 86th Parkway, Beech to Moore Street (NTL2/3/Alkire FM) Project, Project No. 24-SR-04, in an Amount Not to Exceed \$8,593,185.00; R25-081, A Resolution Authorizing An Agreement By and Between the City of Arvada and Mid City Corporation for the 2024 Sanitary Sewer Open Cut Project, Project No. 24-

SR-01, in an Amount Not to Exceed \$1,677,411.56; R25-082, A Resolution Authorizing an Intergovernmental Agreement Between the City of Arvada and the Church Ditch Water Authority for a License Agreement in an Amount Not to Exceed \$14,000.00, be approved.

The following votes were cast on the Motion:

Those voting Yes: Simpson, Moorman, Ambrose, Davis, Fifer, Marriott,

Those Absent: Rupert

The Motion was Approved

B. Resolutions –

1. R25-083 A Resolution Authorizing an Intergovernmental Agreement Concerning Regional Cold Weather Response for those Experiencing Homelessness

Don Wick, City Manager, reviewed this resolution with council.

Councilmember Ambrose moved that R25-083, A Resolution Authorizing an Intergovernmental Agreement Concerning Regional Cold Weather Response for those Experiencing Homelessness, be approved.

The following votes were cast on the Motion:

Those voting Yes: Simpson, Moorman, Ambrose, Davis, Fifer

Those voting No: Marriott

Those Absent: Rupert

The Motion was Approved

2. R25-076 A Resolution Authorizing a Contract to Buy and Sell Real Estate by and between the City of Arvada and the Keller Family Limited Partnership, LLLP, for the Purchase of Real Property located at 6809 State Highway 93, Golden, CO 80403

Jacqueline Rhoades, Director of Infrastructure, reviewed this resolution with council.

Councilmember Fifer moved that R25-076, A Resolution Authorizing a Contract to Buy and Sell Real Estate by and between the City of Arvada and the Keller Family Limited Partnership, LLLP, for the Purchase of Real Property located at 6809 State Highway 93, Golden, CO 80403, be approved.

The following votes were cast on the Motion:

Those voting Yes: Simpson, Moorman, Ambrose, Davis, Fifer, Marriott,

Those Absent: Rupert

The Motion was Approved

3. R25-077 A Resolution Authorizing an Employment Agreement Between the City of Arvada and Aly Harmon Appointing Her as a Municipal Court Relief Judge for 2025

Padraic Emerine, Senior Assistant City Attorney, reviewed this resolution with council.

Councilmember Davis moved that R25-077, A Resolution Authorizing an Employment Agreement Between the City of Arvada and Aly Harmon Appointing Her as a Municipal Court Relief Judge for 2025, be approved.

The following votes were cast on the Motion:

Those voting Yes: Simpson, Moorman, Ambrose, Davis, Fifer, Marriott,

Those Absent: Rupert

The Motion was Approved

Following the adoption of the resolution, Judge Kurtz swore in Aly Harmon as a relief judge.

C. Ordinances (First Reading) - None –

10. Other - None

11. Public Hearings – None

12. Public Comment - Five Minute Limit –

A. Mindy Mohr, Arvada resident, addressed council regarding the IGA adopted tonight.

13. City Council Reports –

A. Mayor Pro Tem Moorman announced that the Community Table will hold a community food drive at 12995 West 72nd Avenue on Saturday, September 20 from 10 a.m to 2 p.m.

B. Mayor Pro Tem Moorman the Church of Latter Day Saints, is hosting a service project from 8 a.m. to noon and a BBQ from noon to 2 p.m., on Saturday, September 20. The church is located across the street from the Apex Center.

C. Mayor Pro Tem Moorman said that on Friday, September 26 there will be a fourth Friday celebration in Olde Town.

D. Councilmember Davis reported that she attended the September Memorial Climb with Arvada PD and Arvada FD and said that this was the 3rd anniversary of Officer Dillon Vakoff's passing

E. Mayor Simpson said that she attended the Arvada Vitality Alliance Softball Tournament.

14. City Manager Reports –

A. Don Wick, City Manager, reviewed the upcoming workshop schedule with council.

B. Mr. Wick discussed an Innovation Session held with Leyden Rock to talk about Emergency Preparedness

15. City Attorney Reports – None

16. Adjournment at 6:45 p.m.

Lauren Simpson, Mayor

SEAL:

Kristen R. Rush, City Clerk



REPORT TO CITY COUNCIL

AGENDA ITEM
5.A.

TO: THE HONORABLE CITY COUNCIL

DATE: October 7, 2025

SUBJECT: Proclamation for National Manufacturing Month - Presented by Councilmember Ambrose

Report in Brief

City Council will designate October 2025 as National Manufacturing Month.

AEDA staff members, along with their external partners, will be present to accept the proclamation.

Prepared by:
Chris Koch, CCO Admin

Reviewed by:
Toni Riebschlager, Law Office Administrator 09/15/2025
Megan McCall, Assistant City Attorney II 09/16/2025

Approved by:

Rachel Morris, City Attorney 09/18/2025
Linda Haley, Deputy City Manager 09/18/2025
Don Wick, City Manager 09/19/2025

Enclosure, exhibits & attachments required to support the report

WHEREAS, October is recognized as National Manufacturing Month, recognizing the importance of manufacturing innovation in providing jobs and high quality of life for our community; and

WHEREAS, the manufacturing industry in Arvada supports a broad array of sectors, including aerospace, technology, food production, renewable energy and advanced materials; and

WHEREAS, Arvada is home to 100 manufacturing firms, which provide 2,841 highly skilled, well-paying jobs, which significantly contribute to Arvada’s economic vitality; and

WHEREAS, hosting manufacturers in Arvada contributes to the City's tax base and helps fund and sustain the community improvement projects that make our city a great place to live; and

WHEREAS, during National Manufacturing Month, we celebrate the achievements of manufacturers in our city and honor their contributions.

NOW, THEREFORE, BE IT PROCLAIMED by the Mayor and City Council of the City of Arvada, Colorado, that the month of October 2025, be designated as National Manufacturing Month and we encourage all Arvada community members to recognize the importance of manufacturing in our local economy and support our local manufacturers.

Dated this 7th day of October 2025.

Lauren Simpson, Mayor

Randy Moorman, Mayor Pro Tem

Shawna Ambrose, Councilmember

Sharon Davis, Councilmember

Bob Fifer, Councilmember

John Marriott, Councilmember

Brad Rupert, Councilmember



REPORT TO CITY COUNCIL

AGENDA ITEM
5.B.

TO: THE HONORABLE CITY COUNCIL

DATE: October 7, 2025

SUBJECT: Recognition of Archwell Health - Snow Buddies Program - Presented by Councilmember Marriott

Report in Brief

The City's Snow Buddies Program works each Winter to connect caring volunteers with neighbors who are physically unable to remove snow from their walkways. This year, Archwell Health opened a new clinic on 64th and Sheridan and their team was eager to learn about our Neighborhood Programs. They graciously donated to cover the cost of our annual end-of-season Snow Buddies Ice Cream Social this past Spring. Archwell Health also donated new snow shovels to send some of our volunteers into this upcoming Winter with a brand-new shovel. We at the City would like to thank Archwell Health for their generosity and commitment to supporting our Snow Buddies Program.

Shari Haidvogl and Claudio Ordenes, and possibly other Archwell team members, will be present to accept the recognition.

Prepared by:
Chris Koch, CCO Admin

Reviewed by:
Toni Riebschlager, Law Office Administrator 09/15/2025
Megan McCall, Assistant City Attorney II 09/16/2025

Approved by:

Rachel Morris, City Attorney 09/18/2025
Linda Haley, Deputy City Manager 09/18/2025
Don Wick, City Manager 09/23/2025

Enclosure, exhibits & attachments required to support the report

presented to

***ARCHWELL HEALTH IN
RECOGNITION OF THEIR
SUPPORT FOR ARVADA'S
SNOW BUDDIES PROGRAM***

Presented this 7th day of October 2025

Lauren Simpson, Mayor

Randy Moorman, Mayor Pro Tem

Shawna Ambrose, Councilmember

Sharon Davis, Councilmember

Bob Fifer, Councilmember

John Marriott, Councilmember

Brad Rupert, Councilmember



REPORT TO CITY COUNCIL

AGENDA ITEM
5.C.

TO: THE HONORABLE CITY COUNCIL

DATE: October 7, 2025

SUBJECT: Proclamation for National Hispanic Heritage Month - Presented by Mayor Pro Tem Moorman

Report in Brief

City Council will designate September 15–October 15, 2025, as National Hispanic Heritage Month.

Rudy Gonzales, President and CEO, Servicios de la Raza, will be present to accept the proclamation.

Prepared by:
Chris Koch, CCO Admin

Reviewed by:
Toni Riebschlager, Law Office Administrator 09/15/2025
Megan McCall, Assistant City Attorney II 09/16/2025

Approved by:

Rachel Morris, City Attorney 09/18/2025
Alli Scheck, Deputy City Manager 09/24/2025
Linda Haley, Deputy City Manager 09/25/2025
Don Wick, City Manager 09/25/2025

Enclosure, exhibits & attachments required to support the report

WHEREAS, National Hispanic Heritage Month is celebrated from September 15th through October 15th each year. The observation started in 1968 as Hispanic Heritage Week and was expanded by President Ronald Reagan in 1988, to cover the month at which it is celebrated today. We recognize that September 15 is significant because it is the anniversary of independence for Latin American countries Costa Rica, El Salvador, Guatemala, Honduras and Nicaragua. In addition, Mexico and Chile celebrate their independence days on September 16 and 18, respectively; and

WHEREAS, the City of Arvada looks forward to, with the greater community, highlighting the rich heritage, arts, histories, food, music and traditions of all 26+ Latin-American nations. While recognizing that these nations are not homogeneous and this month celebrates, honors and pays tribute to all for their contributions to our city and our society; and

WHEREAS, Servicios de la Raza was founded with the mission to provide and advocate culturally responsive, essential human services and opportunities to ensure support reaches those who need it most. Servicios has served as a statewide leader and a provider of culturally responsive services since 1972, and has provided these services to thousands of residents in Jefferson County, including Arvada; and

WHEREAS, the City of Arvada is committed to recognizing Latino (Hispanic and Latinx) culture and heritage as an important part of the city and its strong, inclusive community.

NOW, THEREFORE, BE IT PROCLAIMED by the Mayor and City Council of the City of Arvada, Colorado, that September 15th – October 15th 2025 be designated as National Hispanic Heritage Month and call its observance to all Arvada residents.

Dated this 7th day of October 2025.

Lauren Simpson, Mayor

Randy Moorman, Mayor Pro Tem

Shawna Ambrose, Councilmember

Sharon Davis, Councilmember

Bob Fifer, Councilmember

John Marriott, Councilmember

Brad Rupert, Councilmember

CONSIDERANDO QUE, el Mes Nacional de la Herencia Hispana se celebra del 15 de septiembre al 15 de octubre de cada año. La conmemoración comenzó en 1968 como la Semana de la Herencia Hispana, y el presidente Ronald Reagan la extendió en 1988 para cubrir el mes en el que se celebra hoy en día. Reconocemos que el 15 de septiembre es importante porque es el aniversario de la independencia de estos países latinoamericanos: Costa Rica, El Salvador, Guatemala, Honduras y Nicaragua. Además, México y Chile celebran sus días de la independencia el 16 y 18 de septiembre, respectivamente; y

CONSIDERANDO QUE, la Ciudad de Arvada desea, junto con toda la comunidad, destacar el valioso legado, el arte, las historias, las comidas, la música y las tradiciones de todas las naciones latinoamericanas. Mientras se reconoce que estas naciones no son homogéneas, durante este mes, se celebra, honra y rinde homenaje a todas ellas por sus contribuciones a nuestra ciudad y sociedad; y

CONSIDERANDO QUE Servicios de la Raza se fundó con la misión de proporcionar y promover servicios humanos esenciales y oportunidades con conciencia cultural para garantizar que el apoyo llegue a quienes más lo necesitan. Servicios ha sido un líder a nivel estatal y un proveedor de servicios con conciencia cultural desde 1972, y ha prestado estos servicios a miles de residentes del Condado de Jefferson, incluida Arvada; y

CONSIDERANDO QUE, la Ciudad de Arvada se compromete a reconocer la cultura y la herencia latinas (hispanas y latinx) como una parte importante de la ciudad y de su comunidad fuerte e inclusiva; y

EN VIRTUD DE LO CUAL, en nombre del Alcalde y del Concejo Municipal, por la presente proclamo el período del 15 de septiembre al 15 de octubre como el Mes Nacional de la Herencia Hispana y exhorto a todos los residentes de Arvada para que lo celebren.

Fechado el 7 de octubre de 2025

Lauren Simpson, Mayor

Randy Moorman, Mayor Pro Tem

Shawna Ambrose, Councilmember

Sharon Davis, Councilmember

Bob Fifer, Councilmember

John Marriott, Councilmember

Brad Rupert, Councilmember



REPORT TO CITY COUNCIL

AGENDA ITEM
5.D.

TO: THE HONORABLE CITY COUNCIL

DATE: October 7, 2025

SUBJECT: Proclamation for Disability Awareness Month - Presented by Councilmember Davis

Report in Brief

City Council will designate October 2025 as Disability Awareness Month.

Teachers Sarah Millus and Alex Ujvari from Arvada High School will be present to accept the proclamation.

Prepared by:
Chris Koch, CCO Admin

Reviewed by:
Toni Riebschlager, Law Office Administrator 09/15/2025
Megan McCall, Assistant City Attorney II 09/16/2025

Approved by:

Rachel Morris, City Attorney 09/18/2025
Alli Scheck, Deputy City Manager 09/24/2025
Linda Haley, Deputy City Manager 09/25/2025
Don Wick, City Manager 09/25/2025

Enclosure, exhibits & attachments required to support the report

WHEREAS, Disability Awareness Month, celebrated throughout the month of October, provides an opportunity to increase public understanding and celebrate the many achievements of people with disabilities and people who are neurodivergent; and

WHEREAS, the City of Arvada recognizes that these individuals add great value to our community, demonstrate leadership, and are no longer defined by outdated notions of limitation, but instead celebrated for their strengths, perspectives, and contributions; and

WHEREAS, Arvada High School has demonstrated leadership in fostering and strengthening a culture of accessibility and inclusion, while serving as an example of inclusion in action.

NOW, THEREFORE, BE IT PROCLAIMED by the Mayor and City Council of the City of Arvada, Colorado, that the month of October 2025 be designated as Disability Awareness Month and call its observance to all Arvada residents.

Dated this 7th day of October 2025.

Lauren Simpson, Mayor

Randy Moorman, Mayor Pro Tem

Shawna Ambrose, Councilmember

Sharon Davis, Councilmember

Bob Fifer, Councilmember

John Marriott, Councilmember

Brad Rupert, Councilmember



REPORT TO CITY COUNCIL

AGENDA ITEM
8.A.

TO: THE HONORABLE CITY COUNCIL

DATE: October 7, 2025

SUBJECT: Consent Agenda

Report in Brief

1. R25-084, A Resolution Authorizing a Memorandum of Understanding Between the City of Arvada and the City and County of Broomfield for Laboratory Water Analysis Services in An Amount Not to Exceed \$25,000.00 A Year

2. R25-085, A Resolution Authorizing Amendment No. 1 to a Construction Management/General Contractor (CM/GC) Agreement by and Between the City of Arvada and BT Construction, Inc. for the 2021 Waterline Improvements Project To Award Phase II General Contractor Services in an Amount not to Exceed \$928,296.82, thereby Increasing the Total Contract Amount to an Amount not to Exceed \$956,996.82

3. R25-087, A Resolution Approving Administrative Rules Governing the Designated Drinking Areas in Olde Town Arvada

4. R25-088, A Resolution Repealing The Programming And Use Of Arvada's Government Access Cable Channel Policy

5. R25-089, A Resolution Granting A Non-Exclusive Public Utility Easement To The Public Service Company of Colorado (Xcel Energy) To Construct, Operate, Maintain, Repair, And Replace Utility Lines At Indiana Shops

6. R25-090, A Resolution Granting A Non-Exclusive Public Utility Easement To The Public Service Company of Colorado (Xcel Energy) To Construct, Operate, Maintain, Repair, and Replace Utility Lines At The Parks and Vehicle Maintenance Facility

7. R25-091, A Resolution Granting Non-Exclusive Public Utility Easements To The Public Service Company Of Colorado (Xcel Energy) To Construct, Operate, Maintain, Repair, And Replace Utility Lines At City Hall

Suggested Motion: Moved by: _____ I move that the Consent Item(s),
Number(s) _____

be
(Removed from the Consent Agenda and Heard Upon Item _____) (Referred to a Workshop) (Postponed Indefinitely).

YES _____ NO _____ ABSENT _____

That All/Remaining Consent Items be (Approved) (Rejected).

YES _____ NO _____ ABSENT _____

Prepared by:
Chris Koch, CCO Admin

Reviewed by:
Toni Riebschlager, Law Office Administrator 09/29/2025

Approved by:

Enclosure, exhibits & attachments required to support the report



REPORT TO CITY COUNCIL RESOLUTION

AGENDA ITEM
8.A.1.

TO: THE HONORABLE CITY COUNCIL

DATE: October 7, 2025

SUBJECT: R25-084, A Resolution Authorizing a Memorandum of Understanding Between the City of Arvada and the City and County of Broomfield for Laboratory Water Analysis Services in An Amount Not to Exceed \$25,000.00 A Year

Report in Brief

PRESENTER: Evelyn Rhodes

Resolution No. R25-084 Authorizes a Memorandum of Understanding (MOU) Between the City of Arvada and the City and County of Broomfield (Broomfield) for Laboratory Water Analysis Services. Broomfield has been providing laboratory services through a sole source contract for many years, and this MOU solidifies the service agreement. Since Broomfield is not a contract laboratory, they are not supportive of a typical service contract with the city, and this MOU was a cooperative solution for both parties.

Financial Impact

The City currently spends up to approximately \$10,000 per year for laboratory services from Broomfield. The annual not to exceed amount in this MOU provides capacity for increased analytical needs or costs over the next five years.

Background

Arvada obtains its untreated drinking water from Denver Water's North System and from Clear Creek. These waters are then stored at the Ralston Reservoir or the Arvada Reservoir, until they are treated at one of Arvada's water treatment plants to Federal and State drinking water standards. Methyl-isoborneol ("MIB") and Geosmin are byproducts of certain algae which may create undesirable taste and odor issues in drinking water. Such algae byproducts can be present in Arvada's storage reservoirs, particularly in the Arvada Reservoir. Arvada seeks to obtain MIB and Geosmin data from their storage reservoirs and treatment plants. Broomfield's Environmental Laboratory performs in-house analytics for MIB and Geosmin.

Discussion

Broomfield's Environmental Laboratory is not a contract laboratory, and therefore prefers not to enter legally binding contracts with other utilities to perform lab work for them. However, when lab work is performed for external entities, Broomfield recovers some of the costs of performing the lab work. In past years, Broomfield has provided MIB and Geosmin analysis of Arvada's water at Arvada's request, and at an agreed upon cost. Broomfield performs its water analysis locally and has historically provided water analysis results with expeditious turnaround times. Arvada appreciates the high-quality data received from Broomfield as well as the quick turnaround times in order to make effective treatment changes, and thus desires to maintain this working relationship with Broomfield.

Public Contact

Posting of the City Council agenda.

Commission Recommendation

n/a

Strategic Alignment

This action supports the Infrastructure Work System Priority Area and Work System Services in the City Council Strategic Plan including: INF1: Provides the community with a safe, resilient, high-quality water supply, drainage system, wastewater disposal, and solid waste management services for full city build-out, as defined by the Comprehensive Plan. This includes maintaining utility rates at lowest practical levels with accurate billing that supports robust and reliable infrastructure and INF7: Ensures compliance with federal and state regulations.

Alternative Courses of Action

n/a

Recommendation for Action

City staff recommends that City Council approve Resolution R25-084, A Resolution Authorizing a Memorandum of Understanding Between the City of Arvada and the City and County of Broomfield for Laboratory Water Analysis Services in An Amount Not to Exceed \$25,000.00 A Year.

Suggested Motion:

I move that R25-084, A Resolution Authorizing a Memorandum of Understanding Between the City of Arvada and the City and County of Broomfield for Laboratory Water Analysis Services in An Amount Not to Exceed \$25,000.00 A Year, be (approved) (rejected).

Prepared by:
Chris Koch, CCO Admin

Reviewed by:

Approved by:

Evelyn Rhodes, Water Quality Administrator	09/10/2025
Jacqueline Rhoades, Director of Infrastructure	09/17/2025
Bryan Archer, Chief Financial Officer	09/17/2025
Tammy Hedlund, Legal Specialist	09/17/2025
Jessica Morales, Deputy City Attorney	09/18/2025
Rachel Morris, City Attorney	09/18/2025
Alli Scheck, Deputy City Manager	09/24/2025
Don Wick, City Manager	09/25/2025

Enclosure, exhibits & attachments required to support the report

RESOLUTION NO. R25-084

A RESOLUTION AUTHORIZING A MEMORANDUM OF UNDERSTANDING BETWEEN
THE CITY OF ARVADA AND THE CITY AND COUNTY OF BROOMFIELD FOR
LABORATORY WATER ANALYSIS SERVICES IN AN AMOUNT NOT TO EXCEED
\$25,000.00 A YEAR

BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF ARVADA, COLORADO:

Section 1. The Mayor or Mayor Pro Tem is authorized to sign and the City Clerk to attest, in form approved by the City Attorney, a Memorandum of Understanding Between the City of Arvada and the City and County of Broomfield for Laboratory Water Analysis Services, that is in substantially the same form as that attached hereto.

Section 2. This resolution shall be effective upon its approval by the City Council.

APPROVED AND ADOPTED this 7th day of October, 2025.

Lauren Simpson, Mayor

ATTEST:

City Clerk

APPROVED AS TO FORM:
Rachel A. Morris, City Attorney

By: _____

**A MEMORANDUM OF UNDERSTANDING
BETWEEN THE CITY OF ARVADA AND THE CITY AND
COUNTY OF BROOMFIELD FOR LABORATORY WATER
ANALYSIS SERVICES IN AN AMOUNT NOT TO EXCEED
\$25,000.00 A YEAR**

- 1. PARTIES.** The Parties to this Memorandum of Understanding (“MOU”) are the City of Arvada, a Colorado home rule municipal corporation, whose mailing address is 8101 Ralston Road, Arvada, CO 80002 (“Arvada”) and the City and County of Broomfield, a consolidated city and county home-rule municipal corporation organized pursuant to COLO. CONST. ART XX, whose mailing address is One DesCombes Drive, Broomfield, CO 80020 (“Broomfield”). The Parties may be referred to individually as a “Party” and collectively as the “Parties.”
- 2. RECITALS AND PURPOSE.**
 - 2.1. Arvada obtains its untreated drinking water from Denver Water’s North System and from Clear Creek. These waters are then stored at the Ralston Reservoir or the Arvada Reservoir, until they are treated at one of Arvada’s water treatment plants to Federal and State drinking water standards.
 - 2.2. Methyl-isoborneol (“MIB”) and Geosmin are byproducts of certain algae which may create undesirable taste and odor issues in drinking water. Such algae byproducts can be present in Arvada’s storage reservoirs, particularly in the Arvada Reservoir.
 - 2.3. Arvada seeks to obtain MIB and Geosmin data from their storage reservoirs and treatment plants.
 - 2.4. Broomfield’s Environmental Laboratory performs in-house analytics for a variety of parameters for water and wastewater, including analyses of MIB and Geosmin by method SM6040-D via Gas Chromatography Mass Spectrometry (or other approved method).
 - 2.5. Broomfield’s Environmental Laboratory is not a contract lab and therefore prefers not to enter legally binding contracts with other utilities to perform lab work for them. However, when lab work is performed for external entities, Broomfield recovers some of the costs of performing the lab work.
 - 2.6. In past years, Broomfield has provided MIB and Geosmin analysis (“water analysis”) of Arvada’s water at Arvada’s request, and at an agreed upon cost. Broomfield performs its water analysis locally and has historically provided water analysis with expeditious turnaround times. Arvada appreciates the high-quality

data received from Broomfield as well as the quick turnaround times in order to make effective treatment changes, and thus desires to maintain this working relationship with Broomfield.

2.7. The Parties' intent in establishing this MOU is to establish a more formal, but nonbinding, arrangement between Arvada and Broomfield, wherein Broomfield will perform water analysis of Arvada's water. Such water analysis may occur throughout the year as Broomfield has the resources to perform the analysis, and at an agreed upon cost, payable by Arvada to Broomfield. Arvada will not use Broomfield's lab services in excess of \$25,000.00 each year.

2.8. The Parties agree that while Arvada intends to use Broomfield for this water analysis, Arvada may, at its sole discretion, use other entities to perform same or similar professional services, and that this MOU in no way limits Arvada from hiring other entities or constitutes an agreement for exclusive services from Broomfield.

3. EXHIBITS. None

4. RESPONSIBILITIES.

4.1. This MOU is non-bonding on the Parties. Nothing herein creates a binding relationship between the Parties. Nonetheless, the Parties agree to abide by the following:

4.1.1. Arvada will notify Broomfield as to the timing and number of samples being delivered prior to delivery, at least 24 hours or more in advance, especially when there are an increased number of samples, frequency, or duration than normal.

4.1.2. Arvada will collect samples in appropriate bottles as Broomfield requests or provides.

4.1.3. Arvada will not hold Broomfield liable for any unintentionally mistaken data, nor the inability to perform said analysis.

4.1.4. Arvada will only request quality control data pertaining to analytical runs associated with Arvada samples.

4.1.5. Broomfield will provide timely reports of water analysis to Arvada.

4.1.6. Broomfield will inform Arvada in a timely manner if they are not able to provide accurate sample analysis and reporting.

4.1.7. Broomfield will inform Arvada at the time of delivery notification if they are unable to perform the analysis.

- 4.1.8. The Parties agree to communicate regularly and openly about associated aspects of this MOU.

5. PROJECT OWNERS. Arvada designates Evelyn Rhodes as Arvada's Project Owner. Evelyn Rhodes (erhodes@arvada.org) is Arvada's Water Quality Administrator and will be Arvada's primary contact person during the course of this MOU. Arvada reserves the right to change the Project Owner(s) at its discretion and will promptly notify Broomfield of any such change in writing. Broomfield designates Laura Hubbard as Broomfield's Project Owner. Laura Hubbard (lhubbard@broomfield.org) will be Broomfield's primary contact person during the course of this MOU. Broomfield reserves the right to change the Project Owner(s) at its discretion and will promptly notify Arvada of any such change in writing.

6. COST AND COMPENSATION.

6.1. Arvada will not use Broomfield's lab services in excess of \$25,000.00 each year.

6.2. Broomfield will set a standard price per analysis and will notify Arvada in writing of its standard pricing by January 1st of each year.

6.2.1. Broomfield will notify Arvada of any changes to its pricing at least 30 days prior to the change.

6.3. Arvada will pay Broomfield for the water analysis requested by Arvada and rendered by Broomfield under this MOU.

6.3.1. Broomfield will submit itemized invoices to Arvada for water analysis requested by and performed for Arvada. Payment by Arvada will be due NET 30 days from receipt of invoice.

7. TERM. The Term of this MOU is from the date of execution by all Parties (the "Effective Date"). This MOU will remain in effect for **5 years**, unless terminated earlier by a Party as set forth in Section 8 below.

8. TERMINATION. This MOU may be terminated by either Party at any time by providing 30 calendar days written notice to the other Party prior to termination. Within 15 days of any such termination, Broomfield will send any outstanding invoices to Arvada for payment. Arvada will have 30 days from receipt of an invoice to pay Broomfield.

9. NOTICES. Any notice required or permitted by this MOU shall be in writing and shall be deemed to have been sufficiently given for all purposes if sent by certified mail or registered mail, postage and fees prepaid, addressed to the Party to whom such notice is to be given at the address set forth on the signature page below, or at such other address as has been previously furnished in writing, to the other Party. Such notice shall be deemed to have been given when deposited in the United States mail.

10. **INSURANCE.** The Parties will, at their own expense, keep in full force and effect during the term of this MOU, and during the term of any extension or amendment of this MOU, insurance or adequate self-insurance funds reasonably sufficient to insure against the liability assumed by the Parties pursuant to the provisions of this MOU. Where applicable, the type and amount of such insurance will be that which is customarily obtained for similar projects by other professionals engaged in the same field and type of work as the Parties and in accordance with generally accepted professional practices. The Parties will not be relieved of any liability assumed pursuant to the foregoing paragraph by reason of their failure to secure insurance or adequate self-insurance as required by this MOU, or by reason of their failure to secure insurance or adequate self-insurance in sufficient amounts, sufficient durations, or sufficient types to cover such liability. Each Party will, to the extent required by law, be responsible for the acts and omissions of its own officials and employees and will not be responsible for the acts or omissions of the officials or employees of the other Party. The Parties will also, at their own expense, keep in full force and effect during the term of this MOU, statutory Workers' Compensation insurance.
11. **RELATIONSHIP OF THE PARTIES.** This MOU does not create a relationship between the Parties of agency, joint venture, partnership, or employment. Each Party acknowledges that the performance of its obligations under this MOU will not result in any change in the employment status of such Party's respective employees, and such Party's employees will remain solely employees of such Party. Further, the employees and agents of a Party will only be entitled to salary, employment/unemployment benefits, or other compensation from the Party by which they are employed or acting on behalf of.
12. **ASSIGNMENT.** This MOU shall not be assigned by any Party without the prior written consent of all Parties.
13. **PARAGRAPH CAPTIONS.** The captions of the paragraphs are set forth only for the convenience and reference of the Parties and are not intended in any way to define, limit or describe the scope or intent of this MOU.
14. **INTEGRATION AND AMENDMENT.** This MOU represents the entire MOU between the Parties and there are no oral or collateral MOUs. This MOU may be amended only by an instrument in writing signed by the Parties. If any provision of this MOU is held invalid or unenforceable, no other provision shall be affected by such holding, and all of the remaining provisions of this MOU shall continue in full force and effect.
15. **GOVERNING LAW.** This MOU shall be governed by the laws of the State of Colorado, and venue shall be in the County of Jefferson.
16. **NO THIRD-PARTY BENEFICIARIES.** It is expressly understood and agreed that enforcement of the terms and conditions of this MOU, and all rights of action relating to such enforcement, shall be strictly reserved to the Parties and nothing contained in this MOU shall give or allow any such claim or right of action by any other third party on such MOU. It is the express intention of the Parties that any person other than the Parties

receiving services or benefits under this MOU shall be deemed to be an incidental beneficiary only.

17. **NON-APPROPRIATION.** Should any financial obligation be implied from the MOU, any financial obligation of Arvada contained in this MOU will not be deemed to be a multi-year financial obligation pursuant to Article X, Section 20 of the Colorado Constitution and will be subject to annual appropriations by the Arvada City Council.
18. **BINDING EFFECT.** This MOU will inure to the benefit of, and be binding upon, the Parties, and their respective legal representatives and successors.
19. **SURVIVAL.** All provisions of this MOU which by their nature should reasonably survive will survive termination of this MOU for any reason.
20. **WAIVER.** This MOU or any of its provisions may not be waived except in writing. The failure of any Party to enforce any right arising under this MOU on one or more occasions will not operate as a waiver of that or any other right on that or any other occasion.
21. **SEVERABILITY.** If any provision of this MOU is declared by a court of competent jurisdiction to be invalid, void or unenforceable, such provision will be deemed to be severable, and all other provisions of this MOU will remain fully enforceable, and this MOU will be interpreted in all respects as if such provision were omitted.
22. **NO WAIVER OF GOVERNMENTAL IMMUNITY.** The Parties agree that this MOU shall not be construed as a contractual waiver of any immunities or defenses either Party may have under the Colorado Governmental Immunities Act, §24-10-101, C.R.S. et. seq.
23. **NO INDEMNIFICATION.** Arvada and Broomfield are prohibited under Article XI, Section 1 of the Colorado Constitution from indemnifying anyone. Despite any provision in this MOU or any other documents the Parties may execute to the contrary, Arvada and Broomfield do not indemnify anyone under this MOU.
24. **COUNTERPARTS.** This MOU may be executed in counterparts, each of which will be deemed an original.
25. **EFFECTIVE DATE.** This Agreement shall be effective on the date of execution, below.

(Signatures on next page)

DATED this _____ day of _____, 2025.

CITY OF ARVADA, a Colorado home
rule municipal corporation

Lauren Simpson
Mayor
8101 Ralston Road
Arvada, CO 80002

ATTEST:

Arvada City Clerk

APPROVED AS TO FORM:
Rachel A. Morris, Arvada City Attorney

By: _____

**CITY AND COUNTY OF
BROOMFIELD**, a consolidated city and
county home-rule municipal corporation

Kenneth D. Rutt
Director of Public Works
3951 W 144th Ave
Broomfield, CO 80023
krutt@broomfield.org

APPROVED AS TO FORM:
City and County Attorney Office
Broomfield

By: _____



REPORT TO CITY COUNCIL RESOLUTION

AGENDA ITEM
8.A.2.

TO: THE HONORABLE CITY COUNCIL

DATE: October 7, 2025

SUBJECT: R25-085, A Resolution Authorizing Amendment No. 1 to a Construction Management/General Contractor (CM/GC) Agreement by and Between the City of Arvada and BT Construction, Inc. for the 2021 Waterline Improvements Project To Award Phase II General Contractor Services in an Amount not to Exceed \$928,296.82, thereby Increasing the Total Contract Amount to an Amount not to Exceed \$956,996.82

Report in Brief

Amendment No 1 to the existing Phase I design phase services contract between the City of Arvada and BT Construction, Inc. for the 2021 Waterline Improvements Project, Project No 21-WA-02 will increase the existing contract amount by \$928,296.82 for a new contract total of \$956,996.82. The Guaranteed Maximum Price (GMP) as seen in Exhibit 1 includes all time and material costs for the construction phase and will initiate Phase II of the contract. The Arvada team recommends that the City Council approve R25-085, A Resolution Authorizing Amendment No. 1 to a Construction Management/General Contractor (CM/GC) Agreement by and Between the City of Arvada and BT Construction, Inc. for the 2021 Waterline Improvements Project To Award Phase II General Contractor Services in an Amount not to Exceed \$928,296.82, thereby Increasing the Total Contract Amount to an Amount not to Exceed \$956,996.82.

Financial Impact

CIP Project: 21-WA-02, 2021 Water Main Improvements

Financial Impact: \$928,296.82

This is a one-time request for project construction service costs.

Funding Source: UT Drinking Water Distribution

Workday Account: PRJ21097001

Background

The 2021 Waterline Replacement Project was developed to target replacement of aging waterlines throughout the city that present a risk for future water main breaks. A majority of the project has been successfully constructed, with a portion adjacent to Wadsworth Blvd and 52nd Avenue still remaining. Trenchless construction under Wadsworth Blvd is required for this area. BT Construction, Inc. who has a strong background in trenchless construction, was selected for the remaining work via a CM/GC contract. Completion of the work will allow abandonment of aging water main that is at the end of its useful life and is directly beneath Wadsworth Blvd, reducing the risk of future breaks, disruption of a state highway, including the on-ramp to I-70, and disruption of service to major customers in the area.

Discussion

A Construction Management/General Contractor (CM/GC) alternative delivery method was selected for the project to mitigate construction risks, including working within and below heavily trafficked Wadsworth Blvd, the criticality of the existing water main, and the trenchless construction method required for completion of the work. BT Construction, Inc. was originally contracted for an amount of \$28,700 for design phase services, following City procurement rules. GMP 1 would increase the

SUBJECT: R25-085, A Resolution Authorizing Amendment No. 1 to a Construction Management/General Contractor (CM/GC) Agreement by and Between the City of Arvada and BT Construction, Inc. for the 2021 Waterline Improvements Project To Award Phase II General Contractor Services in an Amount not to Exceed \$928,296.82, thereby Increasing the Total Contract Amount to an Amount not to Exceed \$956,996.82

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ITEM: 8.A.2.

total contract value to \$956,996.82 and includes all construction time and materials costs for the project.

The Arvada team recommends that the City Council approve R25-085, A Resolution Authorizing Amendment No. 1 to a Construction/General Contractor (CM/GC) Agreement by and Between the City of Arvada and BT Construction, Inc. for the 2021 Waterline Improvements Project To Award Phase II General Contractor Services in an Amount not to Exceed \$928,296.82, thereby Increasing the Total Contract Amount to an Amount not to Exceed \$956,996.82.

Public Contact

Posting of the City Council agenda.

Commission Recommendation

Strategic Alignment

The recommended action aligns with the Infrastructure Work System Services within the City Council Strategic Plan. Specifically, the recommended action is consistent with the following work system service included in the Infrastructure Priority Area:

Provides the community with a safe, reliable high quality water supply, drainage system, and wastewater disposal services for full city build-out, as defined in the Comprehensive Plan. This includes maintaining utility rates at the lowest practical levels with accurate billing that supports replacement of aging infrastructure in order to maintain robust utility systems.

Alternative Courses of Action

Recommendation for Action

The Arvada team recommends that the City Council approve R25-085, A Resolution Authorizing Amendment No. 1 to a Construction Management/General Contractor (CM/GC) Agreement by and Between the City of Arvada and BT Construction, Inc. for the 2021 Waterline Improvements Project To Award Phase II General Contractor Services in an Amount not to Exceed \$928,296.82, thereby Increasing the Total Contract Amount to an Amount not to Exceed \$956,996.82.

Suggested Motion:

I move that R25-085, A Resolution Authorizing Amendment No. 1 to a Construction Management/General Contractor (CM/GC) Agreement by and Between the City of Arvada and BT Construction, Inc. for the 2021 Waterline Improvements Project To Award Phase II General Contractor Services in an Amount not to Exceed \$928,296.82, thereby Increasing the Total Contract Amount to an Amount not to Exceed \$956,996.82, be (approved) (rejected).

Prepared by:
Christopher McFee, Civil Engineer IV

Reviewed by:

Approved by:

SUBJECT: R25-085, A Resolution Authorizing Amendment No. 1 to a Construction Management/General Contractor (CM/GC) Agreement by and Between the City of Arvada and BT Construction, Inc. for the 2021 Waterline Improvements Project To Award Phase II General Contractor Services in an Amount not to Exceed \$928,296.82, thereby Increasing the Total Contract Amount to an Amount not to Exceed \$956,996.82

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Mary Stahl, Senior Civil Engineer	09/15/2025
Claudia Vaughan, City Engineer	09/15/2025
Jacqueline Rhoades, Director of Infrastructure	09/16/2025
Bryan Archer, Chief Financial Officer	09/16/2025
Tammy Hedlund, Legal Specialist	09/17/2025
Kelsy Sargent, Assistant City Attorney	09/17/2025
Megan McCall, Assistant City Attorney II	09/18/2025
Rachel Morris, City Attorney	09/18/2025
Alli Scheck, Deputy City Manager	09/24/2025
Don Wick, City Manager	09/25/2025

Enclosure, exhibits & attachments required to support the report

RESOLUTION NO. R25-085

A RESOLUTION AUTHORIZING AMENDMENT NO. 1 TO A CONSTRUCTION MANAGEMENT/GENERAL CONTRACTOR (CM/GC) AGREEMENT BY AND BETWEEN THE CITY OF ARVADA AND BT CONSTRUCTION, INC. FOR THE 2021 WATERLINE IMPROVEMENTS PROJECT TO AWARD PHASE II GENERAL CONTRACTOR SERVICES IN AN AMOUNT NOT TO EXCEED \$928,296.82, THEREBY INCREASING THE TOTAL CONTRACT AMOUNT TO AN AMOUNT NOT TO EXCEED \$956,996.82

WHEREAS, the City of Arvada and BT Construction, Inc. previously entered into a Construction Management / General Contractor (CM/GC) Agreement for the 2021 Waterline Improvements Project for Phase I services only in an amount not to exceed \$28,700.00 (the “Original Agreement”); and

WHEREAS, the City of Arvada and BT Construction, Inc. seek to amend the Original Agreement to award BT Construction, Inc. the Phase II general contractor portion of the project and increase the contract amount by \$928,296.82 for a revised overall contract amount not to exceed \$956,996.82.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF ARVADA, COLORADO:

Section 1. The Mayor or Mayor Pro Tem is authorized to sign and the City Clerk to attest, in form approved by the City Attorney, an Amendment to the Original Agreement that is in substantially the same form as that attached hereto.

Section 2. This resolution shall be effective upon its approval by the City Council.

APPROVED AND ADOPTED this 7th day of October, 2025.

Lauren Simpson, Mayor

ATTEST:

City Clerk

APPROVED AS TO FORM:
Rachel A. Morris, City Attorney

By: _____

AMENDMENT NO. 1
TO “A CONSTRUCTION MANAGEMENT/GENERAL CONTRACTOR (CM/GC)
AGREEMENT BY AND BETWEEN THE CITY OF ARVADA AND BT
CONSTRUCTION, INC. FOR THE 2021 WATERLINE IMPROVEMENTS PROJECT,
AWARDING PHASE I SERVICES ONLY, IN AN AMOUNT NOT TO EXCEED
\$28,700.00” FOR PURPOSES OF AWARDING CONTRACTOR PHASE II WITH A
GUARANTEED MAXIMUM PRICE OF \$928,296.82, THEREBY INCREASING THE
TOTAL CONTRACT AMOUNT TO AN AMOUNT NOT TO EXCEED \$956,996.82

1. **PARTIES.** The parties to this Amendment No. 1 are the City of Arvada, a Colorado home rule municipal corporation, whose mailing address is 8101 Ralston Road, Arvada, CO 80002 (“**Arvada**”) and BT Construction, Inc., a Colorado corporation whose place of business is located at 9885 Emporia St., Henderson, CO 80640 (“**Contractor**”), collectively referred to as the “**Parties**”.
2. **RECITALS AND PURPOSE.**
 - 2.1. Upon Contractor acceptance and City approval, the Work and Contract Documents for the City of Arvada project entitled CM/GC Services for Completing Project No. 21-WA-02, 2021 Waterline Improvements Project, RFP #25-UTS-032, shall be adjusted as provided herein.
 - 2.2. On or about June 18, 2025, the Parties entered into an agreement wherein Contractor would provide preconstruction phase (“**Phase I**”) Construction Management (“**CM**”) services, including but not limited to cost estimating, constructability reviews, value engineering, development of a Guaranteed Maximum Price, and risk management (the “**Original Agreement**”). Pursuant to the Original Agreement, the cost of Phase I would not exceed \$28,700.00.
 - 2.3. For the convenience of the Parties, due to the voluminous nature of the Original Agreement, the Original Agreement is not attached hereto but is incorporated herein by reference.
 - 2.4. Pursuant to the Original Agreement, Contractor has the opportunity to be the General Contractor (“**GC**”) during the construction phase (“**Phase II**”); however, the construction phase contract is not guaranteed, and is dependent on successful Guaranteed Maximum Price negotiations for all the Work necessary to complete the Project.
 - 2.5. This Amendment No. 1 to the Original Agreement (“**Amendment No. 1**”) awards Contractor Phase II and establishes the Guaranteed Maximum Price for Phase II in an amount not to exceed **\$928,296.82** (“**GMP**”). The addition of Phase II increases the total contract amount to an amount not to exceed **\$956,996.82**.
3. **CONTRACT DOCUMENTS AND EXHIBITS.** The Contract Documents set forth in the Original Agreement shall additionally include this Amendment No. 1, together with the

following:

Exhibit 1: GMP for Phase II Services;

Exhibit 2: Technical Specifications for Phase II; and

Exhibit 3: Phase II Construction Plans.

All exhibits referred to in this Amendment No. 1 are attached hereto and are, by reference, incorporated herein for all purposes. In the event any matter, term, provision, or condition that is the subject of the Original Agreement or this Amendment No. 1 requires clarification or is in dispute, or is the subject of a difference of opinion, the purpose and intent of the Original Agreement or this Amendment No. 1 shall be first ascertained by reference to the Contract Documents in their entirety. In the event of any dispute or differences between the respective documents that constitute the Contract Documents, then Contractor shall secure the written instructions from Arvada before proceeding with the performance of the services affected by such conflicts, omissions, or discrepancies.

4. **ACCEPTANCE OF GMP PROPOSAL.** Pursuant to Section 2.4 of the Original Agreement, Owner hereby accepts Contractor's GMP proposal and awards Contractor Phase II, as shown in **Exhibits 1, 2, and 3**. GMP shall not exceed **\$928,296.82**. The total contract amount following execution of this Amendment No. 1 shall not exceed **\$956,996.82**.
5. **DEFINED TERMS.** Terms defined in the Original Agreement are incorporated herein.
6. **FULL FORCE AND EFFECT.** All other terms and conditions shall be as set forth in the Original Agreement.
7. **SEVERABILITY.** If any other provision of this First Amendment is held invalid or unenforceable, no other provision shall be affected by such holding, and all of the remaining provisions of this First Amendment shall continue in full force and effect.
8. **BINDING AUTHORITY.** Contractor represents and affirms that the signature page hereof accurately states the full legal name of Contractor (whether as a corporation, partnership, limited liability company, sole proprietorship, or other), contains all requisite signature(s) on behalf of Contractor, in accordance with all applicable statutes, regulations, resolutions, rules, bylaws, agreements, or similar sources of authority or limitation. This First Amendment may be executed in counterpart(s), each of which shall be deemed to be an original, and all of which, taken together, shall constitute one instrument.

[Signature page follows.]

DATED this _____ day of _____, 2025.

CITY OF ARVADA, a Colorado home
rule municipal corporation

Lauren Simpson
Mayor
8101 Ralston Road
Arvada, CO 80002
lsimpson@arvada.org

ATTEST/WITNESS:

City Clerk

APPROVED AS TO FORM:
For Rachel A. Morris, City Attorney

By: _____

BT CONSTRUCTION, INC., a Colorado
corporation

Josh Livermore
Vice President
9885 Emporia St.
Henderson, CO 80640
Josh.livermore@btconstruction.com

Exhibit 1

GMP for Phase II Services

AMENDMENT NO. 1

TO “A CONSTRUCTION MANAGEMENT/GENERAL CONTRACTOR (CM/GC) AGREEMENT BY AND BETWEEN THE CITY OF ARVADA AND BT CONSTRUCTION, INC. FOR THE 2021 WATERLINE IMPROVEMENTS PROJECT, AWARDED PHASE I SERVICES ONLY, IN AN AMOUNT NOT TO EXCEED \$28,700.00” FOR PURPOSES OF AWARDED CONTRACTOR PHASE II WITH A GUARANTEED MAXIMUM PRICE OF \$928,296.82, THEREBY INCREASING THE TOTAL CONTRACT AMOUNT TO AN AMOUNT NOT TO EXCEED \$956,996.82



Colorado Office
9885 Emporia St.
Henderson, CO 80640

Utah Office
5621 West Wells Park Rd
West Jordan, UT 84081

www.BTConstruction.com

Cost Detail

Project Name:	Arvada 2021 Water Improvements CM/GC	Customer:	City of Arvada
Job Number:	Bid Number: 25-240	Billing Address:	8101 Ralston Rd.
Bid As:	General Contractor		Arvada, CO 80002
Estimator:	Matt Reese	Phone:	421-2550
Project Address:		Contact:	
Completion Date:			

Pay Items

Description	Quantity	UM	Unit Direct Cost	Total Direct Cost
01 - Mobilization	1.00	LS	\$43,620.00	\$43,620.00
Mobilization (Equipment Haul)	6.00	DY	\$3,020.00	\$18,120.00
Mobilization Hauling Crew (1.00 DY/DY, 6.00 DY)	6.00	DY	\$3,020.00	\$18,120.00
Driver	60.00	HR	\$107.00	\$6,420.00
Truck, Low Boy (Extra Large)	60.00	HR	\$95.00	\$5,700.00
Truck, Semi Tractor	60.00	HR	\$100.00	\$6,000.00
Yard Loadout	2.00	DY	\$3,020.00	\$6,040.00
Yard Load Out Crew (1.00 DY/DY, 2.00 DY)	2.00	DY	\$3,020.00	\$6,040.00
Foreman	20.00	HR	\$152.00	\$3,040.00
Loader, 950	20.00	HR	\$150.00	\$3,000.00
Mobilization (Crew Day)	1.00	DY	\$9,610.00	\$9,610.00
330 - Crew, 6-15' Excavation, General Site Work (1.00 DY/DY, 1.00 DY)	1.00	DY	\$9,610.00	\$9,610.00
Excavator, 330/336 [0]	10.00	HR	\$250.00	\$0.00
Excavator, 325 [0]	10.00	HR	\$240.00	\$0.00
Loader, 930/938 [0]	10.00	HR	\$125.00	\$0.00
Generator & Pump [0]	10.00	HR	\$50.00	\$0.00
Small Tools/Container	10.00	HR	\$31.00	\$310.00
Trench Boxes, Per Each [0]	10.00	HR	\$21.50	\$0.00
Truck, Foreman Pickup	10.00	HR	\$36.00	\$360.00
Truck, Water Truck (2,000 Gal) [0]	10.00	HR	\$100.00	\$0.00
Truck, Superintendent Pickup [0.5]	10.00	HR	\$36.00	\$180.00
Superintendent [0.5]	10.00	HR	\$180.00	\$900.00
Foreman	10.00	HR	\$152.00	\$1,520.00
Laborer [3]	10.00	HR	\$74.00	\$2,220.00
Operator [3]	10.00	HR	\$107.00	\$3,210.00
Pipe Layer	10.00	HR	\$91.00	\$910.00
Standard Indirect Costs	2.00	MO	\$2,800.00	\$5,600.00
Safety Allowance	2.00	MO	\$500.00	\$1,000.00
Safety Allowance (\$500 / Mo)	2.00	MO	\$500.00	\$1,000.00

Description	Quantity	UM	Unit Direct Cost	Total Direct Cost
(Item 01 - Mobilization continued)				
 Port-O-Let	2.00	MO	\$750.00	\$1,500.00
 Dumpster	2.00	MO	\$800.00	\$1,600.00
 Preconstruction Photos	1.00	LS	\$300.00	\$300.00
 Security Fence	2.00	MO	\$600.00	\$1,200.00
 Permits	1.00	LS	\$2,000.00	\$2,000.00
 Asphalt Mobilization	1.00	LS	\$2,250.00	\$2,250.00
 02 - Construction Surveying	1.00	LS	\$8,360.00	\$8,360.00
 03 - Materials Testing	1.00	LS	\$5,220.00	\$5,220.00
 04 - Third Party Inspections	1.00	LS	\$30,052.50	\$30,052.50
 Third Party Inspection-Original Pothole	1.00	LS	\$5,008.75	\$5,008.75
 Third Party Inspections	5.00	WK	\$5,008.75	\$25,043.75
 05 - Erosion Control (G-3)	1.00	LS	\$12,319.00	\$12,319.00
 BI: Erosion Control	1.00	LS	\$7,469.00	\$7,469.00
 Inlet Protection	1.00	EACH	\$150.00	\$150.00
 Construction Fence	285.00	LF	\$6.00	\$1,710.00
 Curb Socks	10.00	EACH	\$40.00	\$400.00
 Stabilized Staging Area	46.00	SY	\$9.00	\$414.00
 Vehicle Tracking Control	1.00	EACH	\$2,500.00	\$2,500.00
 Stockpile Protection	1.00	LS	\$1,000.00	\$1,000.00
 Waddles	185.00	LF	\$7.00	\$1,295.00
 Tree Protection	8.00	EACH	\$606.25	\$4,850.00
 Labor Maintenance Crew (1.00 EACH/PH, 0.80 DY)	8.00	EACH	\$475.00	\$3,800.00
 Truck, Foreman Pickup	8.00	HR	\$36.00	\$288.00
 Small Tools/Container	8.00	HR	\$31.00	\$248.00
 Foreman	8.00	HR	\$152.00	\$1,216.00
 Laborer [2]	8.00	HR	\$74.00	\$1,184.00
 Truck, Superintendent Pickup [0.5]	8.00	HR	\$36.00	\$144.00
 Superintendent [0.5]	8.00	HR	\$180.00	\$720.00
 Tree Protection Fencing	300.00	LF	\$3.50	\$1,050.00
 06 - Traffic Control (G-3)	1.00	LS	\$18,594.05	\$18,594.05
 Traffic Control (Subcontracted)	5.00	DY	\$2,758.81	\$13,794.05
 Sub Traffic Control TCS	3.00	DY	\$1,600.00	\$4,800.00
 07 - Asphalt R&R (G-3)	57.00	SY	\$207.26	\$11,813.59
 Sawcutting Per LF	75.00	LF	\$6.00	\$450.00
 Remove Asphalt	57.00	SY	\$40.86	\$2,329.00
 330 Crew (57.00 SY/PH, 0.10 DY)	57.00	SY	\$21.56	\$1,229.00
 Excavator, 330/336	1.00	HR	\$250.00	\$250.00
 Excavator, 320 [0]	1.00	HR	\$195.00	\$0.00
 Loader, 930/938	1.00	HR	\$125.00	\$125.00
 Trench Boxes, Per Each [0]	1.00	HR	\$21.50	\$0.00
 Generator & Pump [0]	1.00	HR	\$50.00	\$0.00
 Small Tools/Container	1.00	HR	\$31.00	\$31.00
 Truck, Foreman Pickup	1.00	HR	\$36.00	\$36.00
 Truck, Water Truck (2,000 Gal) [0]	1.00	HR	\$100.00	\$0.00
 Truck, Superintendent Pickup [0.5]	1.00	HR	\$36.00	\$18.00

Description		Quantity	UM	Unit Direct Cost	Total Direct Cost
(Item 07 - Asphalt R&R (G-3) continued)					
 Superintendent [0.5]		1.00	HR	\$180.00	\$90.00
 Foreman		1.00	HR	\$152.00	\$152.00
 Laborer [3]		1.00	HR	\$74.00	\$222.00
 Operator [2]		1.00	HR	\$107.00	\$214.00
 Pipe Layer		1.00	HR	\$91.00	\$91.00
 Haul Off And Disposal - Concrete & Asphalt		2.00	LOAD	\$550.00	\$1,100.00
 Haul Off		2.00	LOAD	\$400.00	\$800.00
 Concrete & Asphalt Disposal		2.00	EACH	\$150.00	\$300.00
 Base Course		57.00	SY	\$46.63	\$2,658.00
 330 Crew (28.50 SY/PH, 0.20 DY)		57.00	SY	\$46.63	\$2,658.00
 Excavator, 330/336		2.00	HR	\$250.00	\$500.00
 Excavator, 320 [0]		2.00	HR	\$195.00	\$0.00
 Loader, 930/938		2.00	HR	\$125.00	\$250.00
 Trench Boxes, Per Each [0]		2.00	HR	\$21.50	\$0.00
 Generator & Pump [0]		2.00	HR	\$50.00	\$0.00
 Small Tools/Container		2.00	HR	\$31.00	\$62.00
 Truck, Foreman Pickup		2.00	HR	\$36.00	\$72.00
 Truck, Water Truck (2,000 Gal)		2.00	HR	\$100.00	\$200.00
 Truck, Superintendent Pickup [0.5]		2.00	HR	\$36.00	\$36.00
 Superintendent [0.5]		2.00	HR	\$180.00	\$180.00
 Foreman		2.00	HR	\$152.00	\$304.00
 Laborer [3]		2.00	HR	\$74.00	\$444.00
 Operator [2]		2.00	HR	\$107.00	\$428.00
 Pipe Layer		2.00	HR	\$91.00	\$182.00
 Aggregate - Class 6 Roadbase		19.80	TON	\$0.00	\$0.00
 Asphalt Patch Back		57.00	SY	\$111.87	\$6,376.59
 08 - Curb & Gutter R&R (G-3)		20.00	LF	\$137.34	\$2,746.70
 Sawcutting Minimum Charge		1.00	EACH	\$300.00	\$300.00
 Remove Curb & Gutter		20.00	LF	\$18.62	\$372.30
 330 Crew (100.00 LF/PH, 0.02 DY)		20.00	LF	\$11.74	\$234.80
 Excavator, 330/336 [0]		0.20	HR	\$250.00	\$0.00
 Excavator, 320		0.20	HR	\$195.00	\$39.00
 Loader, 930/938		0.20	HR	\$125.00	\$25.00
 Trench Boxes, Per Each [0]		0.20	HR	\$21.50	\$0.00
 Generator & Pump [0]		0.20	HR	\$50.00	\$0.00
 Small Tools/Container		0.20	HR	\$31.00	\$6.20
 Truck, Foreman Pickup		0.20	HR	\$36.00	\$7.20
 Truck, Water Truck (2,000 Gal) [0]		0.20	HR	\$100.00	\$0.00
 Truck, Superintendent Pickup [0.5]		0.20	HR	\$36.00	\$3.60
 Superintendent [0.5]		0.20	HR	\$180.00	\$18.00
 Foreman		0.20	HR	\$152.00	\$30.40
 Laborer [3]		0.20	HR	\$74.00	\$44.40
 Operator [2]		0.20	HR	\$107.00	\$42.80
 Pipe Layer		0.20	HR	\$91.00	\$18.20
 Haul Off And Disposal - Concrete & Asphalt		0.25	LOAD	\$550.00	\$137.50
 Haul Off		0.25	LOAD	\$400.00	\$100.00

Description		Quantity	UM	Unit Direct Cost	Total Direct Cost
(Item 08 - Curb & Gutter R&R (G-3) continued)					
	Concrete & Asphalt Disposal	0.25	EACH	\$150.00	\$37.50
	Grade Prep	20.00	LF	\$12.74	\$254.80
	330 Crew (100.00 LF/PH, 0.02 DY)	20.00	LF	\$12.74	\$254.80
	Excavator, 330/336 [0]	0.20	HR	\$250.00	\$0.00
	Excavator, 320	0.20	HR	\$195.00	\$39.00
	Loader, 930/938	0.20	HR	\$125.00	\$25.00
	Trench Boxes, Per Each [0]	0.20	HR	\$21.50	\$0.00
	Generator & Pump [0]	0.20	HR	\$50.00	\$0.00
	Small Tools/Container	0.20	HR	\$31.00	\$6.20
	Truck, Foreman Pickup	0.20	HR	\$36.00	\$7.20
	Truck, Water Truck (2,000 Gal)	0.20	HR	\$100.00	\$20.00
	Truck, Superintendent Pickup [0.5]	0.20	HR	\$36.00	\$3.60
	Superintendent [0.5]	0.20	HR	\$180.00	\$18.00
	Foreman	0.20	HR	\$152.00	\$30.40
	Laborer [3]	0.20	HR	\$74.00	\$44.40
	Operator [2]	0.20	HR	\$107.00	\$42.80
	Pipe Layer	0.20	HR	\$91.00	\$18.20
	Pour Curb & Gutter	20.00	LF	\$90.98	\$1,819.60
	09 - Sidewalk R&R (G-3)	13.00	SY	\$192.72	\$2,505.41
	Sawcutting Minimum Charge	1.00	EACH	\$300.00	\$300.00
	Remove Sidewalk	13.00	SY	\$34.06	\$442.74
	330 Crew (50.00 SY/PH, 0.03 DY)	13.00	SY	\$23.48	\$305.24
	Excavator, 330/336 [0]	0.26	HR	\$250.00	\$0.00
	Excavator, 320	0.26	HR	\$195.00	\$50.70
	Loader, 930/938	0.26	HR	\$125.00	\$32.50
	Trench Boxes, Per Each [0]	0.26	HR	\$21.50	\$0.00
	Generator & Pump [0]	0.26	HR	\$50.00	\$0.00
	Small Tools/Container	0.26	HR	\$31.00	\$8.06
	Truck, Foreman Pickup	0.26	HR	\$36.00	\$9.36
	Truck, Water Truck (2,000 Gal) [0]	0.26	HR	\$100.00	\$0.00
	Truck, Superintendent Pickup [0.5]	0.26	HR	\$36.00	\$4.68
	Superintendent [0.5]	0.26	HR	\$180.00	\$23.40
	Foreman	0.26	HR	\$152.00	\$39.52
	Laborer [3]	0.26	HR	\$74.00	\$57.72
	Operator [2]	0.26	HR	\$107.00	\$55.64
	Pipe Layer	0.26	HR	\$91.00	\$23.66
	Haul Off And Disposal - Concrete & Asphalt	0.25	LOAD	\$550.00	\$137.50
	Haul Off	0.25	LOAD	\$400.00	\$100.00
	Concrete & Asphalt Disposal	0.25	EACH	\$150.00	\$37.50
	Grade Prep	13.00	SY	\$12.74	\$165.62
	330 Crew (100.00 SY/PH, 0.01 DY)	13.00	SY	\$12.74	\$165.62
	Excavator, 330/336 [0]	0.13	HR	\$250.00	\$0.00
	Excavator, 320	0.13	HR	\$195.00	\$25.35
	Loader, 930/938	0.13	HR	\$125.00	\$16.25
	Trench Boxes, Per Each [0]	0.13	HR	\$21.50	\$0.00
	Generator & Pump [0]	0.13	HR	\$50.00	\$0.00

Description		Quantity	UM	Unit Direct Cost	Total Direct Cost
(Item 09 - Sidewalk R&R (G-3) continued)					
 Small Tools/Container		0.13	HR	\$31.00	\$4.03
 Truck, Foreman Pickup		0.13	HR	\$36.00	\$4.68
 Truck, Water Truck (2,000 Gal)		0.13	HR	\$100.00	\$13.00
 Truck, Superintendent Pickup [0.5]		0.13	HR	\$36.00	\$2.34
 Superintendent [0.5]		0.13	HR	\$180.00	\$11.70
 Foreman		0.13	HR	\$152.00	\$19.76
 Laborer [3]		0.13	HR	\$74.00	\$28.86
 Operator [2]		0.13	HR	\$107.00	\$27.82
 Pipe Layer		0.13	HR	\$91.00	\$11.83
 Pour Sidewalk		13.00	SY	\$122.85	\$1,597.05
 10 - Landscape/Sod Removal & Replacement (G-3)		1.00	LS	\$32,258.00	\$32,258.00
 Sod R&R		1,500.00	SF	\$8.54	\$12,802.50
 Remove Sod		1,500.00	SF	\$3.54	\$5,302.50
 Labor Maintenance Crew (2,000.00 SF/DY, 0.75 DY)		1,500.00	SF	\$3.54	\$5,302.50
 Truck, Foreman Pickup		7.50	HR	\$36.00	\$270.00
 Small Tools/Container		7.50	HR	\$31.00	\$232.50
 Foreman		7.50	HR	\$152.00	\$1,140.00
 Laborer [2]		7.50	HR	\$74.00	\$1,110.00
 Superintendent [0.5]		7.50	HR	\$180.00	\$675.00
 Truck, Superintendent Pickup [0.5]		7.50	HR	\$36.00	\$135.00
 Loader, 930/938		7.50	HR	\$125.00	\$937.50
 Operator		7.50	HR	\$107.00	\$802.50
 Install Sod		1,500.00	SF	\$5.00	\$7,500.00
 River Rock R&R		491.00	SF	\$11.92	\$5,852.50
 Remove River Rock		491.00	SF	\$3.60	\$1,767.50
 Labor Maintenance Crew (1,964.00 SF/DY, 0.25 DY)		491.00	SF	\$3.60	\$1,767.50
 Truck, Foreman Pickup		2.50	HR	\$36.00	\$90.00
 Small Tools/Container		2.50	HR	\$31.00	\$77.50
 Foreman		2.50	HR	\$152.00	\$380.00
 Laborer [2]		2.50	HR	\$74.00	\$370.00
 Superintendent [0.5]		2.50	HR	\$180.00	\$225.00
 Truck, Superintendent Pickup [0.5]		2.50	HR	\$36.00	\$45.00
 Loader, 930/938		2.50	HR	\$125.00	\$312.50
 Operator		2.50	HR	\$107.00	\$267.50
 Install River Rock		491.00	SF	\$8.32	\$4,085.00
 Labor Maintenance Crew (982.00 SF/DY, 0.50 DY)		491.00	SF	\$7.20	\$3,535.00
 Truck, Foreman Pickup		5.00	HR	\$36.00	\$180.00
 Small Tools/Container		5.00	HR	\$31.00	\$155.00
 Foreman		5.00	HR	\$152.00	\$760.00
 Laborer [2]		5.00	HR	\$74.00	\$740.00
 Superintendent [0.5]		5.00	HR	\$180.00	\$450.00
 Truck, Superintendent Pickup [0.5]		5.00	HR	\$36.00	\$90.00
 Loader, 930/938		5.00	HR	\$125.00	\$625.00
 Operator		5.00	HR	\$107.00	\$535.00
 Geotextile Fabric, 140N		1.00	ROLL	\$550.00	\$550.00
 Irrigation Repair		1,991.00	SF	\$6.00	\$11,946.00

Description		Quantity	UM	Unit Direct Cost	Total Direct Cost
(Item 10 - Landscape/Sod Removal & Replacement (G-3) continued)					
 Tree R&R		1.00	EACH	\$1,657.00	\$1,657.00
 Remove Tree		1.00	EACH	\$707.00	\$707.00
 Labor Maintenance Crew (10.00 EACH/DY, 0.10 DY)		1.00	EACH	\$707.00	\$707.00
 Truck, Foreman Pickup		1.00	HR	\$36.00	\$36.00
 Small Tools/Container		1.00	HR	\$31.00	\$31.00
 Foreman		1.00	HR	\$152.00	\$152.00
 Laborer [2]		1.00	HR	\$74.00	\$148.00
 Superintendent [0.5]		1.00	HR	\$180.00	\$90.00
 Truck, Superintendent Pickup [0.5]		1.00	HR	\$36.00	\$18.00
 Loader, 930/938		1.00	HR	\$125.00	\$125.00
 Operator		1.00	HR	\$107.00	\$107.00
 Install Tree		1.00	EACH	\$950.00	\$950.00
 11 - Connect To Existing Waterline (G-3)		2.00	EACH	\$12,320.00	\$24,640.00
 330 - Crew, 6-15' Excavation, General Site Work (5.00 PH/EACH, 1.00 DY)		2.00	EACH	\$8,810.00	\$17,620.00
 Excavator, 330/336		10.00	HR	\$250.00	\$2,500.00
 Excavator, 325		10.00	HR	\$240.00	\$2,400.00
 Loader, 930/938		10.00	HR	\$125.00	\$1,250.00
 Generator & Pump		10.00	HR	\$50.00	\$500.00
 Small Tools/Container		10.00	HR	\$31.00	\$310.00
 Trench Boxes, Per Each [4]		10.00	HR	\$21.50	\$860.00
 Truck, Foreman Pickup		10.00	HR	\$36.00	\$360.00
 Truck, Water Truck (2,000 Gal) [0.5]		10.00	HR	\$100.00	\$500.00
 Truck, Superintendent Pickup [0.5]		10.00	HR	\$36.00	\$180.00
 Superintendent [0.5]		10.00	HR	\$180.00	\$900.00
 Foreman		10.00	HR	\$152.00	\$1,520.00
 Laborer [3]		10.00	HR	\$74.00	\$2,220.00
 Operator [3]		10.00	HR	\$107.00	\$3,210.00
 Pipe Layer		10.00	HR	\$91.00	\$910.00
 Misc. Tie In Materials		2.00	EACH	\$3,510.00	\$7,020.00
 12 - Remove Fire Hydrant (G-3)		1.00	EACH	\$6,243.33	\$6,243.33
 330 - Crew, 6-15' Excavation, General Site Work (3.00 EACH/DY, 0.33 DY)		1.00	EACH	\$5,873.33	\$5,873.33
 Excavator, 330/336		3.33	HR	\$250.00	\$833.33
 Excavator, 325		3.33	HR	\$240.00	\$800.00
 Loader, 930/938		3.33	HR	\$125.00	\$416.67
 Generator & Pump		3.33	HR	\$50.00	\$166.67
 Small Tools/Container		3.33	HR	\$31.00	\$103.33
 Trench Boxes, Per Each [4]		3.33	HR	\$21.50	\$286.67
 Truck, Foreman Pickup		3.33	HR	\$36.00	\$120.00
 Truck, Water Truck (2,000 Gal) [0.5]		3.33	HR	\$100.00	\$166.67
 Truck, Superintendent Pickup [0.5]		3.33	HR	\$36.00	\$60.00
 Superintendent [0.5]		3.33	HR	\$180.00	\$300.00
 Foreman		3.33	HR	\$152.00	\$506.67
 Laborer [3]		3.33	HR	\$74.00	\$740.00
 Operator [3]		3.33	HR	\$107.00	\$1,070.00
 Pipe Layer		3.33	HR	\$91.00	\$303.33

Description		Quantity	UM	Unit Direct Cost	Total Direct Cost
(Item 12 - Remove Fire Hydrant (G-3))					
	Concrete Readymix	2.00	CY	\$185.00	\$370.00
	13 - Cap 8" Water Main (G-3)	1.00	EACH	\$4,694.00	\$4,694.00
	330 - Crew, 6-15' Excavation, General Site Work (2.00 PH/EACH, 0.25 DY)	1.00	EACH	\$3,524.00	\$3,524.00
	Excavator, 330/336	2.00	HR	\$250.00	\$500.00
	Excavator, 325	2.00	HR	\$240.00	\$480.00
	Loader, 930/938	2.00	HR	\$125.00	\$250.00
	Generator & Pump	2.00	HR	\$50.00	\$100.00
	Small Tools/Container	2.00	HR	\$31.00	\$62.00
	Trench Boxes, Per Each [4]	2.00	HR	\$21.50	\$172.00
	Truck, Foreman Pickup	2.00	HR	\$36.00	\$72.00
	Truck, Water Truck (2,000 Gal) [0.5]	2.00	HR	\$100.00	\$100.00
	Truck, Superintendent Pickup [0.5]	2.00	HR	\$36.00	\$36.00
	Superintendent [0.5]	2.00	HR	\$180.00	\$180.00
	Foreman	2.00	HR	\$152.00	\$304.00
	Laborer [3]	2.00	HR	\$74.00	\$444.00
	Operator [3]	2.00	HR	\$107.00	\$642.00
	Pipe Layer	2.00	HR	\$91.00	\$182.00
	Cap, 8"	1.00	EACH	\$800.00	\$800.00
	Concrete Readymix	2.00	CY	\$185.00	\$370.00
	14 - 8" PVC Water Line (G-3)	146.00	LF	\$702.37	\$102,546.60
	BI: Waterline, 6'-15' Depth, <24" Diameter	146.00	LF	\$571.37	\$83,420.60
	Main Pipe Installation	146.00	LF	\$289.64	\$42,288.00
	330 - Crew, 6-15' Excavation, General Site Work (48.67 LF/DY, 3.00 DY)	146.00	LF	\$289.64	\$42,288.00
	Excavator, 330/336	24.00	HR	\$250.00	\$6,000.00
	Excavator, 325	24.00	HR	\$240.00	\$5,760.00
	Loader, 930/938	24.00	HR	\$125.00	\$3,000.00
	Generator & Pump	24.00	HR	\$50.00	\$1,200.00
	Small Tools/Container	24.00	HR	\$31.00	\$744.00
	Trench Boxes, Per Each [4]	24.00	HR	\$21.50	\$2,064.00
	Truck, Foreman Pickup	24.00	HR	\$36.00	\$864.00
	Truck, Water Truck (2,000 Gal) [0.5]	24.00	HR	\$100.00	\$1,200.00
	Truck, Superintendent Pickup [0.5]	24.00	HR	\$36.00	\$432.00
	Superintendent [0.5]	24.00	HR	\$180.00	\$2,160.00
	Foreman	24.00	HR	\$152.00	\$3,648.00
	Laborer [3]	24.00	HR	\$74.00	\$5,328.00
	Operator [3]	24.00	HR	\$107.00	\$7,704.00
	Pipe Layer	24.00	HR	\$91.00	\$2,184.00
	Added Install Time:	146.00	LF	\$72.67	\$10,609.50
	Added Time: Utility Crossings	7.00	EACH	\$440.50	\$3,083.50
	330 - Crew, 6-15' Excavation, General Site Work (0.25 PH/EACH, 0.22 DY)	7.00	EACH	\$440.50	\$3,083.50
	Excavator, 330/336	1.75	HR	\$250.00	\$437.50
	Excavator, 325	1.75	HR	\$240.00	\$420.00
	Loader, 930/938	1.75	HR	\$125.00	\$218.75
	Generator & Pump	1.75	HR	\$50.00	\$87.50

Description		Quantity	UM	Unit Direct Cost	Total Direct Cost
(Item 14 - 8" PVC Water Line (G-3) continued)					
 Small Tools/Container		1.75	HR	\$31.00	\$54.25
 Trench Boxes, Per Each [4]		1.75	HR	\$21.50	\$150.50
 Truck, Foreman Pickup		1.75	HR	\$36.00	\$63.00
 Truck, Water Truck (2,000 Gal) [0.5]		1.75	HR	\$100.00	\$87.50
 Truck, Superintendent Pickup [0.5]		1.75	HR	\$36.00	\$31.50
 Superintendent [0.5]		1.75	HR	\$180.00	\$157.50
 Foreman		1.75	HR	\$152.00	\$266.00
 Laborer [3]		1.75	HR	\$74.00	\$388.50
 Operator [3]		1.75	HR	\$107.00	\$561.75
 Pipe Layer		1.75	HR	\$91.00	\$159.25
 Added Time: Bends, Valves, & Fittings		8.00	EACH	\$940.75	\$7,526.00
 330 - Crew, 6-15' Excavation, General Site Work (0.25 PH/EACH, 0.25 DY)		8.00	EACH	\$495.25	\$3,962.00
 Excavator, 330/336		2.00	HR	\$250.00	\$500.00
 Excavator, 325		2.00	HR	\$240.00	\$480.00
 Loader, 930/938		2.00	HR	\$125.00	\$250.00
 Generator & Pump		2.00	HR	\$50.00	\$100.00
 Small Tools/Container		2.00	HR	\$31.00	\$62.00
 Trench Boxes, Per Each [4]		2.00	HR	\$21.50	\$172.00
 Truck, Foreman Pickup		2.00	HR	\$36.00	\$72.00
 Truck, Water Truck (2,000 Gal) [0.5]		2.00	HR	\$100.00	\$100.00
 Truck, Superintendent Pickup [0.5]		2.00	HR	\$36.00	\$36.00
 Superintendent [0.5]		2.50	HR	\$180.00	\$225.00
 Foreman		2.50	HR	\$152.00	\$380.00
 Laborer [3]		2.50	HR	\$74.00	\$555.00
 Operator [3]		2.50	HR	\$107.00	\$802.50
 Pipe Layer		2.50	HR	\$91.00	\$227.50
 Concrete Readymix		18.00	CY	\$198.00	\$3,564.00
 Pipe Testing		146.00	LF	\$13.07	\$1,908.40
 Labor Maintenance Crew (224.62 LF/DY, 0.65 DY)		146.00	LF	\$13.07	\$1,908.40
 Truck, Foreman Pickup		5.20	HR	\$36.00	\$187.20
 Small Tools/Container		5.20	HR	\$31.00	\$161.20
 Foreman		5.20	HR	\$152.00	\$790.40
 Laborer [2]		5.20	HR	\$74.00	\$769.60
 Pipe Materials		146.00	LF	\$104.00	\$15,184.00
 PVC (C900/905) 08"		146.00	LF	\$104.00	\$15,184.00
 Bedding And Haul Off		146.00	LF	\$91.99	\$13,430.70
 Haul Off And Disposal - Spoils		9.00	LOAD	\$900.00	\$8,100.00
 Haul Off		9.00	LOAD	\$400.00	\$3,600.00
 Trench Spoils - Semi Trailer		9.00	EACH	\$500.00	\$4,500.00
 Flashfill		34.10	CY	\$127.00	\$4,330.70
 Flashfill Truck Surcharge		2.00	LOAD	\$500.00	\$1,000.00
 Potholing		3.00	DY	\$5,892.00	\$17,676.00
 Potholing (Colorado Subcontractor)		3.00	DY	\$2,100.00	\$6,300.00
 Labor Maintenance Crew (1.00 DY/DY, 3.00 DY)		3.00	DY	\$3,792.00	\$11,376.00
 Truck, Foreman Pickup		24.00	HR	\$36.00	\$864.00
 Small Tools/Container		24.00	HR	\$31.00	\$744.00

Description		Quantity	UM	Unit Direct Cost	Total Direct Cost
(Item 14 - 8" PVC Water Line (G-3) continued)					
	Foreman	24.00	HR	\$152.00	\$3,648.00
	Laborer [2]	24.00	HR	\$74.00	\$3,552.00
	Operator	24.00	HR	\$107.00	\$2,568.00
	Street Plates	2.00	WK	\$725.00	\$1,450.00
	15 - Fire Hydrant Assembly (G-3)	1.00	EACH	\$17,616.00	\$17,616.00
	330 - Crew, 6-15' Excavation, General Site Work (1.60 EACH/DY, 0.63 DY)	1.00	EACH	\$8,810.00	\$8,810.00
	Excavator, 330/336	5.00	HR	\$250.00	\$1,250.00
	Excavator, 325	5.00	HR	\$240.00	\$1,200.00
	Loader, 930/938	5.00	HR	\$125.00	\$625.00
	Generator & Pump	5.00	HR	\$50.00	\$250.00
	Small Tools/Container	5.00	HR	\$31.00	\$155.00
	Trench Boxes, Per Each [4]	5.00	HR	\$21.50	\$430.00
	Truck, Foreman Pickup	5.00	HR	\$36.00	\$180.00
	Truck, Water Truck (2,000 Gal) [0.5]	5.00	HR	\$100.00	\$250.00
	Truck, Superintendent Pickup [0.5]	5.00	HR	\$36.00	\$90.00
	Superintendent [0.5]	5.00	HR	\$180.00	\$450.00
	Foreman	5.00	HR	\$152.00	\$760.00
	Laborer [3]	5.00	HR	\$74.00	\$1,110.00
	Operator [3]	5.00	HR	\$107.00	\$1,605.00
	Pipe Layer	5.00	HR	\$91.00	\$455.00
	Fire Hydrant Assembly	1.00	EACH	\$8,057.00	\$8,057.00
	Concrete Readymix	3.00	CY	\$185.00	\$555.00
	# 57/#67 Stone	1.00	TON	\$44.00	\$44.00
	Aggregate - Squeegee	5.00	TON	\$30.00	\$150.00
	16 - Erosion Control (G-4A)	1.00	LS	\$7,739.00	\$7,739.00
	BI: Erosion Control	1.00	LS	\$5,789.00	\$5,789.00
	Inlet Protection	1.00	EACH	\$150.00	\$150.00
	Construction Fence	125.00	LF	\$6.00	\$750.00
	Curb Socks	3.00	EACH	\$40.00	\$120.00
	Stablized Staging Area	29.00	SY	\$9.00	\$261.00
	Vehicle Tracking Control	1.00	EACH	\$2,500.00	\$2,500.00
	Stockpile Protection	1.00	LS	\$1,000.00	\$1,000.00
	Waddles	144.00	LF	\$7.00	\$1,008.00
	Tree Protection	3.00	EACH	\$650.00	\$1,950.00
	Labor Maintenance Crew (1.00 EACH/PH, 0.30 DY)	3.00	EACH	\$475.00	\$1,425.00
	Truck, Foreman Pickup	3.00	HR	\$36.00	\$108.00
	Small Tools/Container	3.00	HR	\$31.00	\$93.00
	Foreman	3.00	HR	\$152.00	\$456.00
	Laborer [2]	3.00	HR	\$74.00	\$444.00
	Truck, Superintendent Pickup [0.5]	3.00	HR	\$36.00	\$54.00
	Superintendent [0.5]	3.00	HR	\$180.00	\$270.00
	Tree Protection Fencing	150.00	LF	\$3.50	\$525.00
	17 - Traffic Control (G-4A)	1.00	LS	\$22,860.93	\$22,860.93
	Traffic Control (Subcontracted)	3.00	DY	\$6,020.31	\$18,060.93
	Sub Traffic Control TCS	3.00	DY	\$1,600.00	\$4,800.00

Description		Quantity	UM	Unit Direct Cost	Total Direct Cost
D	18 - Curb & Gutter R&R (G-4A)	20.00	LF	\$133.42	\$2,668.43
S	Sawcutting Minimum Charge	1.00	EACH	\$300.00	\$300.00
D	Remove Curb & Gutter	20.00	LF	\$14.70	\$294.03
	330 Crew (150.00 LF/PH, 0.01 DY)	20.00	LF	\$7.83	\$156.53
	Excavator, 330/336 [0]	0.13	HR	\$250.00	\$0.00
	Excavator, 320	0.13	HR	\$195.00	\$26.00
	Loader, 930/938	0.13	HR	\$125.00	\$16.67
	Trench Boxes, Per Each [0]	0.13	HR	\$21.50	\$0.00
	Generator & Pump [0]	0.13	HR	\$50.00	\$0.00
	Small Tools/Container	0.13	HR	\$31.00	\$4.13
	Truck, Foreman Pickup	0.13	HR	\$36.00	\$4.80
	Truck, Water Truck (2,000 Gal) [0]	0.13	HR	\$100.00	\$0.00
	Truck, Superintendent Pickup [0.5]	0.13	HR	\$36.00	\$2.40
	Superintendent [0.5]	0.13	HR	\$180.00	\$12.00
	Foreman	0.13	HR	\$152.00	\$20.27
	Laborer [3]	0.13	HR	\$74.00	\$29.60
	Operator [2]	0.13	HR	\$107.00	\$28.53
	Pipe Layer	0.13	HR	\$91.00	\$12.13
D	Haul Off And Disposal - Concrete & Asphalt	0.25	LOAD	\$550.00	\$137.50
S	Haul Off	0.25	LOAD	\$400.00	\$100.00
	Concrete & Asphalt Disposal	0.25	EACH	\$150.00	\$37.50
D	Grade Prep	20.00	LF	\$12.74	\$254.80
	330 Crew (100.00 LF/PH, 0.02 DY)	20.00	LF	\$12.74	\$254.80
	Excavator, 330/336 [0]	0.20	HR	\$250.00	\$0.00
	Excavator, 320	0.20	HR	\$195.00	\$39.00
	Loader, 930/938	0.20	HR	\$125.00	\$25.00
	Trench Boxes, Per Each [0]	0.20	HR	\$21.50	\$0.00
	Generator & Pump [0]	0.20	HR	\$50.00	\$0.00
	Small Tools/Container	0.20	HR	\$31.00	\$6.20
	Truck, Foreman Pickup	0.20	HR	\$36.00	\$7.20
	Truck, Water Truck (2,000 Gal)	0.20	HR	\$100.00	\$20.00
	Truck, Superintendent Pickup [0.5]	0.20	HR	\$36.00	\$3.60
	Superintendent [0.5]	0.20	HR	\$180.00	\$18.00
	Foreman	0.20	HR	\$152.00	\$30.40
	Laborer [3]	0.20	HR	\$74.00	\$44.40
	Operator [2]	0.20	HR	\$107.00	\$42.80
	Pipe Layer	0.20	HR	\$91.00	\$18.20
S	Pour Curb & Gutter	20.00	LF	\$90.98	\$1,819.60
D	19 - Sidewalk R&R (G-4A)	26.00	SY	\$168.07	\$4,369.83
S	Sawcutting Minimum Charge	1.00	EACH	\$300.00	\$300.00
D	Remove Sidewalk	26.00	SY	\$20.94	\$544.49
	330 Crew (75.00 SY/PH, 0.03 DY)	26.00	SY	\$15.65	\$406.99
	Excavator, 330/336 [0]	0.35	HR	\$250.00	\$0.00
	Excavator, 320	0.35	HR	\$195.00	\$67.60
	Loader, 930/938	0.35	HR	\$125.00	\$43.33
	Trench Boxes, Per Each [0]	0.35	HR	\$21.50	\$0.00
	Generator & Pump [0]	0.35	HR	\$50.00	\$0.00

Description		Quantity	UM	Unit Direct Cost	Total Direct Cost
(Item 19 - Sidewalk R&R (G-4A) continued)					
 Small Tools/Container		0.35	HR	\$31.00	\$10.75
 Truck, Foreman Pickup		0.35	HR	\$36.00	\$12.48
 Truck, Water Truck (2,000 Gal) [0]		0.35	HR	\$100.00	\$0.00
 Truck, Superintendent Pickup [0.5]		0.35	HR	\$36.00	\$6.24
 Superintendent [0.5]		0.35	HR	\$180.00	\$31.20
 Foreman		0.35	HR	\$152.00	\$52.69
 Laborer [3]		0.35	HR	\$74.00	\$76.96
 Operator [2]		0.35	HR	\$107.00	\$74.19
 Pipe Layer		0.35	HR	\$91.00	\$31.55
 Haul Off And Disposal - Concrete & Asphalt		0.25	LOAD	\$550.00	\$137.50
 Haul Off		0.25	LOAD	\$400.00	\$100.00
 Concrete & Asphalt Disposal		0.25	EACH	\$150.00	\$37.50
 Grade Prep		26.00	SY	\$12.74	\$331.24
 330 Crew (100.00 SY/PH, 0.03 DY)		26.00	SY	\$12.74	\$331.24
 Excavator, 330/336 [0]		0.26	HR	\$250.00	\$0.00
 Excavator, 320		0.26	HR	\$195.00	\$50.70
 Loader, 930/938		0.26	HR	\$125.00	\$32.50
 Trench Boxes, Per Each [0]		0.26	HR	\$21.50	\$0.00
 Generator & Pump [0]		0.26	HR	\$50.00	\$0.00
 Small Tools/Container		0.26	HR	\$31.00	\$8.06
 Truck, Foreman Pickup		0.26	HR	\$36.00	\$9.36
 Truck, Water Truck (2,000 Gal)		0.26	HR	\$100.00	\$26.00
 Truck, Superintendent Pickup [0.5]		0.26	HR	\$36.00	\$4.68
 Superintendent [0.5]		0.26	HR	\$180.00	\$23.40
 Foreman		0.26	HR	\$152.00	\$39.52
 Laborer [3]		0.26	HR	\$74.00	\$57.72
 Operator [2]		0.26	HR	\$107.00	\$55.64
 Pipe Layer		0.26	HR	\$91.00	\$23.66
 Pour Sidewalk		26.00	SY	\$122.85	\$3,194.10
 20 - Landscape/Sod Removal & Replacement (G-4A)		1.00	LS	\$21,362.03	\$21,362.03
 Sod R&R		713.00	SF	\$8.54	\$6,085.46
 Remove Sod		713.00	SF	\$3.54	\$2,520.46
 Labor Maintenance Crew (2,000.00 SF/DY, 0.36 DY)		713.00	SF	\$3.54	\$2,520.46
 Truck, Foreman Pickup		3.57	HR	\$36.00	\$128.34
 Small Tools/Container		3.57	HR	\$31.00	\$110.52
 Foreman		3.57	HR	\$152.00	\$541.88
 Laborer [2]		3.57	HR	\$74.00	\$527.62
 Superintendent [0.5]		3.57	HR	\$180.00	\$320.85
 Truck, Superintendent Pickup [0.5]		3.57	HR	\$36.00	\$64.17
 Loader, 930/938		3.57	HR	\$125.00	\$445.63
 Operator		3.57	HR	\$107.00	\$381.46
 Install Sod		713.00	SF	\$5.00	\$3,565.00
 River Rock R&R		374.00	SF	\$12.27	\$4,588.97
 Remove River Rock		374.00	SF	\$3.60	\$1,346.32
 Labor Maintenance Crew (1,964.00 SF/DY, 0.19 DY)		374.00	SF	\$3.60	\$1,346.32
 Truck, Foreman Pickup		1.90	HR	\$36.00	\$68.55

Description		Quantity	UM	Unit Direct Cost	Total Direct Cost
(Item 20 - Landscape/Sod Removal & Replacement (G-4A) continued)					
 Small Tools/Container		1.90	HR	\$31.00	\$59.03
 Foreman		1.90	HR	\$152.00	\$289.45
 Laborer [2]		1.90	HR	\$74.00	\$281.83
 Superintendent [0.5]		1.90	HR	\$180.00	\$171.38
 Truck, Superintendent Pickup [0.5]		1.90	HR	\$36.00	\$34.28
 Loader, 930/938		1.90	HR	\$125.00	\$238.03
 Operator		1.90	HR	\$107.00	\$203.76
 Install River Rock		374.00	SF	\$8.67	\$3,242.65
 Labor Maintenance Crew (982.00 SF/DY, 0.38 DY)		374.00	SF	\$7.20	\$2,692.65
 Truck, Foreman Pickup		3.81	HR	\$36.00	\$137.11
 Small Tools/Container		3.81	HR	\$31.00	\$118.07
 Foreman		3.81	HR	\$152.00	\$578.90
 Laborer [2]		3.81	HR	\$74.00	\$563.67
 Superintendent [0.5]		3.81	HR	\$180.00	\$342.77
 Truck, Superintendent Pickup [0.5]		3.81	HR	\$36.00	\$68.55
 Loader, 930/938		3.81	HR	\$125.00	\$476.07
 Operator		3.81	HR	\$107.00	\$407.52
 Geotextile Fabric, 140N		1.00	ROLL	\$550.00	\$550.00
 Shrubs/Plantings R&R		8.00	EACH	\$520.70	\$4,165.60
 Remove Shrubs		8.00	EACH	\$70.70	\$565.60
 Labor Maintenance Crew (10.00 EACH/PH, 0.08 DY)		8.00	EACH	\$70.70	\$565.60
 Truck, Foreman Pickup		0.80	HR	\$36.00	\$28.80
 Small Tools/Container		0.80	HR	\$31.00	\$24.80
 Foreman		0.80	HR	\$152.00	\$121.60
 Laborer [2]		0.80	HR	\$74.00	\$118.40
 Superintendent [0.5]		0.80	HR	\$180.00	\$72.00
 Truck, Superintendent Pickup [0.5]		0.80	HR	\$36.00	\$14.40
 Loader, 930/938		0.80	HR	\$125.00	\$100.00
 Operator		0.80	HR	\$107.00	\$85.60
 Install Shrubs		8.00	EACH	\$450.00	\$3,600.00
 Irrigation Repair		1,087.00	SF	\$6.00	\$6,522.00
 21 - 2" HDPE W/Tie-Ins (G-4A)		49.00	LF	\$636.43	\$31,184.96
 BI: Waterline, 6'-15' Depth, <24" Diameter		49.00	LF	\$616.02	\$30,184.96
 Main Pipe Installation		49.00	LF	\$359.59	\$17,620.00
 330 - Crew, 6-15' Excavation, General Site Work (39.20 LF/DY, 1.25 DY)		49.00	LF	\$359.59	\$17,620.00
 Excavator, 330/336		10.00	HR	\$250.00	\$2,500.00
 Excavator, 325		10.00	HR	\$240.00	\$2,400.00
 Loader, 930/938		10.00	HR	\$125.00	\$1,250.00
 Generator & Pump		10.00	HR	\$50.00	\$500.00
 Small Tools/Container		10.00	HR	\$31.00	\$310.00
 Trench Boxes, Per Each [4]		10.00	HR	\$21.50	\$860.00
 Truck, Foreman Pickup		10.00	HR	\$36.00	\$360.00
 Truck, Water Truck (2,000 Gal) [0.5]		10.00	HR	\$100.00	\$500.00
 Truck, Superintendent Pickup [0.5]		10.00	HR	\$36.00	\$180.00
 Superintendent [0.5]		10.00	HR	\$180.00	\$900.00
 Foreman		10.00	HR	\$152.00	\$1,520.00

Description		Quantity	UM	Unit Direct Cost	Total Direct Cost
(Item 21 - 2" HDPE W/Tie-Ins (G-4A) continued)					
 Laborer [3]		10.00	HR	\$74.00	\$2,220.00
 Operator [3]		10.00	HR	\$107.00	\$3,210.00
 Pipe Layer		10.00	HR	\$91.00	\$910.00
 Added Install Time:		49.00	LF	\$105.00	\$5,145.00
 Added Time: Utility Crossings		1.00	EACH	\$881.00	\$881.00
 330 - Crew, 6-15' Excavation, General Site Work (0.50 PH/EACH, 0.05 DY)		1.00	EACH	\$881.00	\$881.00
 Excavator, 330/336		0.50	HR	\$250.00	\$125.00
 Excavator, 325		0.50	HR	\$240.00	\$120.00
 Loader, 930/938		0.50	HR	\$125.00	\$62.50
 Generator & Pump		0.50	HR	\$50.00	\$25.00
 Small Tools/Container		0.50	HR	\$31.00	\$15.50
 Trench Boxes, Per Each [4]		0.50	HR	\$21.50	\$43.00
 Truck, Foreman Pickup		0.50	HR	\$36.00	\$18.00
 Truck, Water Truck (2,000 Gal) [0.5]		0.50	HR	\$100.00	\$25.00
 Truck, Superintendent Pickup [0.5]		0.50	HR	\$36.00	\$9.00
 Superintendent [0.5]		0.50	HR	\$180.00	\$45.00
 Foreman		0.50	HR	\$152.00	\$76.00
 Laborer [3]		0.50	HR	\$74.00	\$111.00
 Operator [3]		0.50	HR	\$107.00	\$160.50
 Pipe Layer		0.50	HR	\$91.00	\$45.50
 Added Time: Bends, Valves, & Fittings		8.00	EACH	\$533.00	\$4,264.00
 330 - Crew, 6-15' Excavation, General Site Work (40.00 EACH/DY, 0.20 DY)		8.00	EACH	\$440.50	\$3,524.00
 Excavator, 330/336		2.00	HR	\$250.00	\$500.00
 Excavator, 325		2.00	HR	\$240.00	\$480.00
 Loader, 930/938		2.00	HR	\$125.00	\$250.00
 Generator & Pump		2.00	HR	\$50.00	\$100.00
 Small Tools/Container		2.00	HR	\$31.00	\$62.00
 Trench Boxes, Per Each [4]		2.00	HR	\$21.50	\$172.00
 Truck, Foreman Pickup		2.00	HR	\$36.00	\$72.00
 Truck, Water Truck (2,000 Gal) [0.5]		2.00	HR	\$100.00	\$100.00
 Truck, Superintendent Pickup [0.5]		2.00	HR	\$36.00	\$36.00
 Superintendent [0.5]		2.00	HR	\$180.00	\$180.00
 Foreman		2.00	HR	\$152.00	\$304.00
 Laborer [3]		2.00	HR	\$74.00	\$444.00
 Operator [3]		2.00	HR	\$107.00	\$642.00
 Pipe Layer		2.00	HR	\$91.00	\$182.00
 Concrete Readymix		4.00	CY	\$185.00	\$740.00
 Pipe Testing		49.00	LF	\$35.24	\$1,726.76
 330 - Crew, 6-15' Excavation, General Site Work (500.00 LF/DY, 0.10 DY)		49.00	LF	\$35.24	\$1,726.76
 Excavator, 330/336		0.98	HR	\$250.00	\$245.00
 Excavator, 325		0.98	HR	\$240.00	\$235.20
 Loader, 930/938		0.98	HR	\$125.00	\$122.50
 Generator & Pump		0.98	HR	\$50.00	\$49.00
 Small Tools/Container		0.98	HR	\$31.00	\$30.38

Description		Quantity	UM	Unit Direct Cost	Total Direct Cost
(Item 21 - 2" HDPE W/Tie-Ins (G-4A) continued)					
 Trench Boxes, Per Each [4]		0.98	HR	\$21.50	\$84.28
 Truck, Foreman Pickup		0.98	HR	\$36.00	\$35.28
 Truck, Water Truck (2,000 Gal) [0.5]		0.98	HR	\$100.00	\$49.00
 Truck, Superintendent Pickup [0.5]		0.98	HR	\$36.00	\$17.64
 Superintendent [0.5]		0.98	HR	\$180.00	\$88.20
 Foreman		0.98	HR	\$152.00	\$148.96
 Laborer [3]		0.98	HR	\$74.00	\$217.56
 Operator [3]		0.98	HR	\$107.00	\$314.58
 Pipe Layer		0.98	HR	\$91.00	\$89.18
 Pipe Materials		49.00	LF	\$86.80	\$4,253.20
 HDPE 02"		49.00	LF	\$86.80	\$4,253.20
 Bedding And Haul Off		49.00	LF	\$29.39	\$1,440.00
 Aggregate - Squeegee		18.00	TON	\$30.00	\$540.00
 Haul Off And Disposal - Spoils		1.00	LOAD	\$900.00	\$900.00
 Haul Off		1.00	LOAD	\$400.00	\$400.00
 Trench Spoils - Semi Trailer		1.00	EACH	\$500.00	\$500.00
 Tap Fee		1.00	EACH	\$1,000.00	\$1,000.00
 22 - HDD Installation (G-4A)		1.00	LS	\$32,163.95	\$32,163.95
 Pit Excavation		1.00	EACH	\$7,048.00	\$7,048.00
 330 - Crew, 6-15' Excavation, General Site Work (2.50 EACH/DY, 0.40 DY)		1.00	EACH	\$7,048.00	\$7,048.00
 Excavator, 330/336		4.00	HR	\$250.00	\$1,000.00
 Excavator, 325		4.00	HR	\$240.00	\$960.00
 Loader, 930/938		4.00	HR	\$125.00	\$500.00
 Generator & Pump		4.00	HR	\$50.00	\$200.00
 Small Tools/Container		4.00	HR	\$31.00	\$124.00
 Trench Boxes, Per Each [4]		4.00	HR	\$21.50	\$344.00
 Truck, Foreman Pickup		4.00	HR	\$36.00	\$144.00
 Truck, Water Truck (2,000 Gal) [0.5]		4.00	HR	\$100.00	\$200.00
 Truck, Superintendent Pickup [0.5]		4.00	HR	\$36.00	\$72.00
 Superintendent [0.5]		4.00	HR	\$180.00	\$360.00
 Foreman		4.00	HR	\$152.00	\$608.00
 Laborer [3]		4.00	HR	\$74.00	\$888.00
 Operator [3]		4.00	HR	\$107.00	\$1,284.00
 Pipe Layer		4.00	HR	\$91.00	\$364.00
 Median Excavation		1.00	EACH	\$2,100.00	\$2,100.00
 Potholing (Colorado Subcontractor)		1.00	DY	\$2,100.00	\$2,100.00
 100 LF 4" HDD Shot		100.00	LF	\$230.16	\$23,015.95
 Standard HDD Material List		100.00	LF	\$48.56	\$4,856.25
 Pipe Mobilization .5		1.00	EACH	\$1,375.00	\$1,375.00
 4" Casing Pipe		300.00	LF	\$6.10	\$1,830.00
 4" HDD Pipe On A Roll		300.00	LF	\$6.10	\$1,830.00
 2" Carrier Casing Pipe		200.00	LF	\$1.70	\$340.00
 2" HDPE On Roll		200.00	LF	\$1.70	\$340.00
 Bentonite / Drill Mud		100.00	LF	\$3.11	\$311.25
 Bentonite / Drill Mud (\$3 - \$5 / LF)		100.00	LF	\$3.11	\$311.25
 Miscellaneous Bore Material		1.00	EACH	\$1,000.00	\$1,000.00

Description		Quantity	UM	Unit Direct Cost	Total Direct Cost
(Item 22 - HDD Installation (G-4A) continued)					
 Miscellaneous Bore Materials		1.00	EACH	\$1,000.00	\$1,000.00
 4" Pull Head		0.00	EACH	\$402.00	\$0.00
 Drill Out / Pre-ream / Pull Back (Medium 36/50, 40/55 Machine)		1.00	DY	\$10,054.60	\$10,054.60
 HDD Day Crews (1.00 DY/DY, 1.00 DY)		1.00	DY	\$10,054.60	\$10,054.60
 Vac Truck, Trailer		1.00	DY	\$2,600.00	\$2,600.00
 HDD Machine, Medium (36/50, 40/55)		1.00	DY	\$1,900.00	\$1,900.00
 Truck, Mud System		1.00	DY	\$500.00	\$500.00
 Truck, Utility Trailer		10.00	HR	\$42.00	\$420.00
 Truck, Foreman Pickup		10.00	HR	\$27.50	\$275.00
 Foreman		10.00	HR	\$177.24	\$1,772.40
 Operator		10.00	HR	\$149.52	\$1,495.20
 Laborer		10.00	HR	\$109.20	\$1,092.00
 Supervision (Enter Total Project Days - Set To 5HRs / Day)		1.00	DY	\$1,397.50	\$1,397.50
 Superintendent (Default 5 HR / DY) (5.00 MH/DY, 0.50 DY)		1.00	DY	\$1,397.50	\$1,397.50
 Truck, Superintendent Pickup		5.00	HR	\$27.50	\$137.50
 Superintendent		5.00	HR	\$252.00	\$1,260.00
 Standard HDD Subcontracts & Miscellaneous		1.00	LS	\$6,707.60	\$6,707.60
 Safety Allowance		1.00	MO	\$500.00	\$500.00
 Safety Allowance (\$500 / Mo)		1.00	MO	\$500.00	\$500.00
 Haul Off And Disposal - Spoils		1.00	LOAD	\$300.00	\$300.00
 HDD Haul Off		1.00	LOAD	\$300.00	\$300.00
 Hauloff And Disposal - Badger Rates 10 Hrs Of Night Work 345 Per Load \$35 Per Hour For Fuell		0.00	DY	\$4,100.00	\$0.00
 (UTAH TEAM) Subsistence (Enter # Of Workers X Days On Site)		4.00	CALC	\$260.00	\$1,040.00
 Hotel Room (# Of Rooms)		4.00	ROOM	\$175.00	\$700.00
 Subsistence (# Of Workers)		4.00	EACH	\$85.00	\$340.00
 Drive Time 1 Day		1.00	DY	\$3,667.60	\$3,667.60
 HDD Medium Crew (36/50 40/55 Machine) (1.00 DY/DY, 1.00 DY)		1.00	DY	\$3,667.60	\$3,667.60
 Small Tools/Container		10.00	HR	\$12.50	\$125.00
 Truck, Foreman Pickup		10.00	HR	\$27.50	\$275.00
 Foreman		10.00	HR	\$177.24	\$1,772.40
 Operator		10.00	HR	\$149.52	\$1,495.20
 Light Plant Budget		2.00	LS	\$600.00	\$1,200.00
 Fusion Of Pipe		0.00	DY	\$0.00	\$0.00
 HDD Medium Crew (36/50 40/55 Machine) (1.00 DY/DY, 0.00 DY)		0.00	DY	\$0.00	\$0.00
 Small Tools/Container		0.00	HR	\$12.50	\$0.00
 Truck, Foreman Pickup		0.00	HR	\$27.50	\$0.00
 Foreman		0.00	HR	\$0.00	\$0.00
 Operator		0.00	HR	\$0.00	\$0.00
 Pipe Fuser, 6"-8"		0.00	HR	\$148.00	\$0.00
 Laborer		0.00	HR	\$0.00	\$0.00
 23 - Pothole Repair		1.00	LS	\$21,785.00	\$21,785.00

Description		Quantity	UM	Unit Direct Cost	Total Direct Cost
(Item 23 - Pothole Repair continued)					
 Labor Maintenance Crew (0.50 LS/DY, 2.00 DY)		1.00	LS	\$9,500.00	\$9,500.00
 Truck, Foreman Pickup		20.00	HR	\$36.00	\$720.00
 Small Tools/Container		20.00	HR	\$31.00	\$620.00
 Foreman		20.00	HR	\$152.00	\$3,040.00
 Laborer [2]		20.00	HR	\$74.00	\$2,960.00
 Truck, Superintendent Pickup [0.5]		20.00	HR	\$36.00	\$360.00
 Superintendent [0.5]		20.00	HR	\$180.00	\$1,800.00
 Potholing (Colorado Subcontractor)		2.00	DY	\$2,100.00	\$4,200.00
 On Demand Concrete		2.00	DY	\$3,942.50	\$7,885.00
 Nightly Charge		2.00	DY	\$3,200.00	\$6,400.00
 Concrete		9.00	CY	\$165.00	\$1,485.00
 Asphalt Pavement - Major Arterial		1.00	SY	\$200.00	\$200.00
 24 - Erosion Control (G-4B)		1.00	LS	\$10,121.00	\$10,121.00
 BI: Erosion Control		1.00	LS	\$8,171.00	\$8,171.00
 Inlet Protection		1.00	EACH	\$150.00	\$150.00
 Construction Fence		350.00	LF	\$6.00	\$2,100.00
 Curb Socks		5.00	EACH	\$40.00	\$200.00
 Stabilized Staging Area		29.00	SY	\$9.00	\$261.00
 Vehicle Tracking Control		1.00	EACH	\$2,500.00	\$2,500.00
 Stockpile Protection		1.00	LS	\$1,000.00	\$1,000.00
 Waddles		280.00	LF	\$7.00	\$1,960.00
 Tree Protection		3.00	EACH	\$650.00	\$1,950.00
 Labor Maintenance Crew (1.00 EACH/PH, 0.30 DY)		3.00	EACH	\$475.00	\$1,425.00
 Truck, Foreman Pickup		3.00	HR	\$36.00	\$108.00
 Small Tools/Container		3.00	HR	\$31.00	\$93.00
 Foreman		3.00	HR	\$152.00	\$456.00
 Laborer [2]		3.00	HR	\$74.00	\$444.00
 Truck, Superintendent Pickup [0.5]		3.00	HR	\$36.00	\$54.00
 Superintendent [0.5]		3.00	HR	\$180.00	\$270.00
 Tree Protection Fencing		150.00	LF	\$3.50	\$525.00
 25 - Traffic Control (G-4B)		1.00	LS	\$16,723.47	\$16,723.47
 Traffic Control (Subcontracted)		3.00	DY	\$3,974.49	\$11,923.47
 Sub Traffic Control TCS		3.00	DY	\$1,600.00	\$4,800.00
 26 - Asphalt R&R (G-4B)		11.00	SY	\$245.97	\$2,705.69
 Sawcutting Per LF		75.00	LF	\$6.00	\$450.00
 Remove Asphalt		11.00	SY	\$46.56	\$512.18
 330 Crew (57.00 SY/PH, 0.02 DY)		11.00	SY	\$21.56	\$237.18
 Excavator, 330/336		0.19	HR	\$250.00	\$48.25
 Excavator, 320 [0]		0.19	HR	\$195.00	\$0.00
 Loader, 930/938		0.19	HR	\$125.00	\$24.12
 Trench Boxes, Per Each [0]		0.19	HR	\$21.50	\$0.00
 Generator & Pump [0]		0.19	HR	\$50.00	\$0.00
 Small Tools/Container		0.19	HR	\$31.00	\$5.98
 Truck, Foreman Pickup		0.19	HR	\$36.00	\$6.95
 Truck, Water Truck (2,000 Gal) [0]		0.19	HR	\$100.00	\$0.00
 Truck, Superintendent Pickup [0.5]		0.19	HR	\$36.00	\$3.47

Description		Quantity	UM	Unit Direct Cost	Total Direct Cost
(Item 26 - Asphalt R&R (G-4B) continued)					
 Superintendent [0.5]		0.19	HR	\$180.00	\$17.37
 Foreman		0.19	HR	\$152.00	\$29.33
 Laborer [3]		0.19	HR	\$74.00	\$42.84
 Operator [2]		0.19	HR	\$107.00	\$41.30
 Pipe Layer		0.19	HR	\$91.00	\$17.56
 Haul Off And Disposal - Concrete & Asphalt		0.50	LOAD	\$550.00	\$275.00
 Haul Off		0.50	LOAD	\$400.00	\$200.00
 Concrete & Asphalt Disposal		0.50	EACH	\$150.00	\$75.00
 Base Course		11.00	SY	\$46.63	\$512.95
 330 Crew (28.50 SY/PH, 0.04 DY)		11.00	SY	\$46.63	\$512.95
 Excavator, 330/336		0.39	HR	\$250.00	\$96.49
 Excavator, 320 [0]		0.39	HR	\$195.00	\$0.00
 Loader, 930/938		0.39	HR	\$125.00	\$48.25
 Trench Boxes, Per Each [0]		0.39	HR	\$21.50	\$0.00
 Generator & Pump [0]		0.39	HR	\$50.00	\$0.00
 Small Tools/Container		0.39	HR	\$31.00	\$11.96
 Truck, Foreman Pickup		0.39	HR	\$36.00	\$13.89
 Truck, Water Truck (2,000 Gal)		0.39	HR	\$100.00	\$38.60
 Truck, Superintendent Pickup [0.5]		0.39	HR	\$36.00	\$6.95
 Superintendent [0.5]		0.39	HR	\$180.00	\$34.74
 Foreman		0.39	HR	\$152.00	\$58.67
 Laborer [3]		0.39	HR	\$74.00	\$85.68
 Operator [2]		0.39	HR	\$107.00	\$82.60
 Pipe Layer		0.39	HR	\$91.00	\$35.12
 Aggregate - Class 6 Roadbase		19.80	TON	\$0.00	\$0.00
 Asphalt Patch Back		11.00	SY	\$111.87	\$1,230.57
 27 - Curb & Gutter R&R (G-4B)		58.00	LF	\$119.09	\$6,907.21
 Sawcutting Minimum Charge		1.00	EACH	\$300.00	\$300.00
 Remove Curb & Gutter		58.00	LF	\$10.20	\$591.45
 330 Crew (150.00 LF/PH, 0.04 DY)		58.00	LF	\$7.83	\$453.95
 Excavator, 330/336 [0]		0.39	HR	\$250.00	\$0.00
 Excavator, 320		0.39	HR	\$195.00	\$75.40
 Loader, 930/938		0.39	HR	\$125.00	\$48.33
 Trench Boxes, Per Each [0]		0.39	HR	\$21.50	\$0.00
 Generator & Pump [0]		0.39	HR	\$50.00	\$0.00
 Small Tools/Container		0.39	HR	\$31.00	\$11.99
 Truck, Foreman Pickup		0.39	HR	\$36.00	\$13.92
 Truck, Water Truck (2,000 Gal) [0]		0.39	HR	\$100.00	\$0.00
 Truck, Superintendent Pickup [0.5]		0.39	HR	\$36.00	\$6.96
 Superintendent [0.5]		0.39	HR	\$180.00	\$34.80
 Foreman		0.39	HR	\$152.00	\$58.77
 Laborer [3]		0.39	HR	\$74.00	\$85.84
 Operator [2]		0.39	HR	\$107.00	\$82.75
 Pipe Layer		0.39	HR	\$91.00	\$35.19
 Haul Off And Disposal - Concrete & Asphalt		0.25	LOAD	\$550.00	\$137.50
 Haul Off		0.25	LOAD	\$400.00	\$100.00

Description		Quantity	UM	Unit Direct Cost	Total Direct Cost
(Item 27 - Curb & Gutter R&R (G-4B) continued)					
	Concrete & Asphalt Disposal	0.25	EACH	\$150.00	\$37.50
	Grade Prep	58.00	LF	\$12.74	\$738.92
	330 Crew (100.00 LF/PH, 0.06 DY)	58.00	LF	\$12.74	\$738.92
	Excavator, 330/336 [0]	0.58	HR	\$250.00	\$0.00
	Excavator, 320	0.58	HR	\$195.00	\$113.10
	Loader, 930/938	0.58	HR	\$125.00	\$72.50
	Trench Boxes, Per Each [0]	0.58	HR	\$21.50	\$0.00
	Generator & Pump [0]	0.58	HR	\$50.00	\$0.00
	Small Tools/Container	0.58	HR	\$31.00	\$17.98
	Truck, Foreman Pickup	0.58	HR	\$36.00	\$20.88
	Truck, Water Truck (2,000 Gal)	0.58	HR	\$100.00	\$58.00
	Truck, Superintendent Pickup [0.5]	0.58	HR	\$36.00	\$10.44
	Superintendent [0.5]	0.58	HR	\$180.00	\$52.20
	Foreman	0.58	HR	\$152.00	\$88.16
	Laborer [3]	0.58	HR	\$74.00	\$128.76
	Operator [2]	0.58	HR	\$107.00	\$124.12
	Pipe Layer	0.58	HR	\$91.00	\$52.78
	Pour Curb & Gutter	58.00	LF	\$90.98	\$5,276.84
	28 - Sidewalk R&R (G-4B)	89.00	SY	\$156.16	\$13,898.16
	Sawcutting Minimum Charge	1.00	EACH	\$300.00	\$300.00
	Remove Sidewalk	89.00	SY	\$17.20	\$1,530.65
	330 Crew (75.00 SY/PH, 0.12 DY)	89.00	SY	\$15.65	\$1,393.15
	Excavator, 330/336 [0]	1.19	HR	\$250.00	\$0.00
	Excavator, 320	1.19	HR	\$195.00	\$231.40
	Loader, 930/938	1.19	HR	\$125.00	\$148.33
	Trench Boxes, Per Each [0]	1.19	HR	\$21.50	\$0.00
	Generator & Pump [0]	1.19	HR	\$50.00	\$0.00
	Small Tools/Container	1.19	HR	\$31.00	\$36.79
	Truck, Foreman Pickup	1.19	HR	\$36.00	\$42.72
	Truck, Water Truck (2,000 Gal) [0]	1.19	HR	\$100.00	\$0.00
	Truck, Superintendent Pickup [0.5]	1.19	HR	\$36.00	\$21.36
	Superintendent [0.5]	1.19	HR	\$180.00	\$106.80
	Foreman	1.19	HR	\$152.00	\$180.37
	Laborer [3]	1.19	HR	\$74.00	\$263.44
	Operator [2]	1.19	HR	\$107.00	\$253.95
	Pipe Layer	1.19	HR	\$91.00	\$107.99
	Haul Off And Disposal - Concrete & Asphalt	0.25	LOAD	\$550.00	\$137.50
	Haul Off	0.25	LOAD	\$400.00	\$100.00
	Concrete & Asphalt Disposal	0.25	EACH	\$150.00	\$37.50
	Grade Prep	89.00	SY	\$12.74	\$1,133.86
	330 Crew (100.00 SY/PH, 0.09 DY)	89.00	SY	\$12.74	\$1,133.86
	Excavator, 330/336 [0]	0.89	HR	\$250.00	\$0.00
	Excavator, 320	0.89	HR	\$195.00	\$173.55
	Loader, 930/938	0.89	HR	\$125.00	\$111.25
	Trench Boxes, Per Each [0]	0.89	HR	\$21.50	\$0.00
	Generator & Pump [0]	0.89	HR	\$50.00	\$0.00

Description		Quantity	UM	Unit Direct Cost	Total Direct Cost
(Item 28 - Sidewalk R&R (G-4B) continued)					
 Small Tools/Container		0.89	HR	\$31.00	\$27.59
 Truck, Foreman Pickup		0.89	HR	\$36.00	\$32.04
 Truck, Water Truck (2,000 Gal)		0.89	HR	\$100.00	\$89.00
 Truck, Superintendent Pickup [0.5]		0.89	HR	\$36.00	\$16.02
 Superintendent [0.5]		0.89	HR	\$180.00	\$80.10
 Foreman		0.89	HR	\$152.00	\$135.28
 Laborer [3]		0.89	HR	\$74.00	\$197.58
 Operator [2]		0.89	HR	\$107.00	\$190.46
 Pipe Layer		0.89	HR	\$91.00	\$80.99
 Pour Sidewalk		89.00	SY	\$122.85	\$10,933.65
 29 - Landscape/Sod Removal & Replacement (G-4B)					
 Sod R&R		1,150.00	SF	\$8.54	\$9,815.25
 Remove Sod		1,150.00	SF	\$3.54	\$4,065.25
 Labor Maintenance Crew (2,000.00 SF/DY, 0.58 DY)		1,150.00	SF	\$3.54	\$4,065.25
 Truck, Foreman Pickup		5.75	HR	\$36.00	\$207.00
 Small Tools/Container		5.75	HR	\$31.00	\$178.25
 Foreman		5.75	HR	\$152.00	\$874.00
 Laborer [2]		5.75	HR	\$74.00	\$851.00
 Superintendent [0.5]		5.75	HR	\$180.00	\$517.50
 Truck, Superintendent Pickup [0.5]		5.75	HR	\$36.00	\$103.50
 Loader, 930/938		5.75	HR	\$125.00	\$718.75
 Operator		5.75	HR	\$107.00	\$615.25
 Install Sod		1,150.00	SF	\$5.00	\$5,750.00
 Rock Mulch R&R		258.00	SF	\$12.93	\$3,336.24
 Remove River Rock		258.00	SF	\$3.60	\$928.75
 Labor Maintenance Crew (1,964.00 SF/DY, 0.13 DY)		258.00	SF	\$3.60	\$928.75
 Truck, Foreman Pickup		1.31	HR	\$36.00	\$47.29
 Small Tools/Container		1.31	HR	\$31.00	\$40.72
 Foreman		1.31	HR	\$152.00	\$199.67
 Laborer [2]		1.31	HR	\$74.00	\$194.42
 Superintendent [0.5]		1.31	HR	\$180.00	\$118.23
 Truck, Superintendent Pickup [0.5]		1.31	HR	\$36.00	\$23.65
 Loader, 930/938		1.31	HR	\$125.00	\$164.21
 Operator		1.31	HR	\$107.00	\$140.56
 Install River Rock		258.00	SF	\$9.33	\$2,407.49
 Labor Maintenance Crew (982.00 SF/DY, 0.26 DY)		258.00	SF	\$7.20	\$1,857.49
 Truck, Foreman Pickup		2.63	HR	\$36.00	\$94.58
 Small Tools/Container		2.63	HR	\$31.00	\$81.45
 Foreman		2.63	HR	\$152.00	\$399.35
 Laborer [2]		2.63	HR	\$74.00	\$388.84
 Superintendent [0.5]		2.63	HR	\$180.00	\$236.46
 Truck, Superintendent Pickup [0.5]		2.63	HR	\$36.00	\$47.29
 Loader, 930/938		2.63	HR	\$125.00	\$328.41
 Operator		2.63	HR	\$107.00	\$281.12
 Geotextile Fabric, 140N		1.00	ROLL	\$550.00	\$550.00
 Shrubs/Plantings R&R		12.00	EACH	\$520.70	\$6,248.40

Description		Quantity	UM	Unit Direct Cost	Total Direct Cost
(Item 29 - Landscape/Sod Removal & Replacement (G-4B) continued)					
 Remove Shrubs		12.00	EACH	\$70.70	\$848.40
 Labor Maintenance Crew (10.00 EACH/PH, 0.12 DY)		12.00	EACH	\$70.70	\$848.40
 Truck, Foreman Pickup		1.20	HR	\$36.00	\$43.20
 Small Tools/Container		1.20	HR	\$31.00	\$37.20
 Foreman		1.20	HR	\$152.00	\$182.40
 Laborer [2]		1.20	HR	\$74.00	\$177.60
 Superintendent [0.5]		1.20	HR	\$180.00	\$108.00
 Truck, Superintendent Pickup [0.5]		1.20	HR	\$36.00	\$21.60
 Loader, 930/938		1.20	HR	\$125.00	\$150.00
 Operator		1.20	HR	\$107.00	\$128.40
 Install Shrubs		12.00	EACH	\$450.00	\$5,400.00
 Irrigation Repair		1,408.00	SF	\$6.00	\$8,448.00
 30 - R&R Fire Hydrant (G-4B)		1.00	EACH	\$17,620.00	\$17,620.00
 330 - Crew, 6-15' Excavation, General Site Work (1.00 EACH/DY, 1.00 DY)		1.00	EACH	\$17,620.00	\$17,620.00
 Excavator, 330/336		10.00	HR	\$250.00	\$2,500.00
 Excavator, 325		10.00	HR	\$240.00	\$2,400.00
 Loader, 930/938		10.00	HR	\$125.00	\$1,250.00
 Generator & Pump		10.00	HR	\$50.00	\$500.00
 Small Tools/Container		10.00	HR	\$31.00	\$310.00
 Trench Boxes, Per Each [4]		10.00	HR	\$21.50	\$860.00
 Truck, Foreman Pickup		10.00	HR	\$36.00	\$360.00
 Truck, Water Truck (2,000 Gal) [0.5]		10.00	HR	\$100.00	\$500.00
 Truck, Superintendent Pickup [0.5]		10.00	HR	\$36.00	\$180.00
 Superintendent [0.5]		10.00	HR	\$180.00	\$900.00
 Foreman		10.00	HR	\$152.00	\$1,520.00
 Laborer [3]		10.00	HR	\$74.00	\$2,220.00
 Operator [3]		10.00	HR	\$107.00	\$3,210.00
 Pipe Layer		10.00	HR	\$91.00	\$910.00
 31 - 3" HDPE W/Tie-Ins (G-4B)		130.00	LF	\$472.20	\$61,385.80
 BI: Waterline, 6'-15' Depth, <24" Diameter		130.00	LF	\$464.51	\$60,385.80
 Main Pipe Installation		130.00	LF	\$325.29	\$42,288.00
 330 - Crew, 6-15' Excavation, General Site Work (43.33 LF/DY, 3.00 DY)		130.00	LF	\$325.29	\$42,288.00
 Excavator, 330/336		24.00	HR	\$250.00	\$6,000.00
 Excavator, 325		24.00	HR	\$240.00	\$5,760.00
 Loader, 930/938		24.00	HR	\$125.00	\$3,000.00
 Generator & Pump		24.00	HR	\$50.00	\$1,200.00
 Small Tools/Container		24.00	HR	\$31.00	\$744.00
 Trench Boxes, Per Each [4]		24.00	HR	\$21.50	\$2,064.00
 Truck, Foreman Pickup		24.00	HR	\$36.00	\$864.00
 Truck, Water Truck (2,000 Gal) [0.5]		24.00	HR	\$100.00	\$1,200.00
 Truck, Superintendent Pickup [0.5]		24.00	HR	\$36.00	\$432.00
 Superintendent [0.5]		24.00	HR	\$180.00	\$2,160.00
 Foreman		24.00	HR	\$152.00	\$3,648.00
 Laborer [3]		24.00	HR	\$74.00	\$5,328.00
 Operator [3]		24.00	HR	\$107.00	\$7,704.00

Description		Quantity	UM	Unit Direct Cost	Total Direct Cost
(Item 31 - 3" HDPE W/Tie-Ins (G-4B) continued)					
 Pipe Layer		24.00	HR	\$91.00	\$2,184.00
 Added Install Time:		130.00	LF	\$39.58	\$5,145.00
 Added Time: Utility Crossings		1.00	EACH	\$881.00	\$881.00
 330 - Crew, 6-15' Excavation, General Site Work (0.50 PH/EACH, 0.05 DY)		1.00	EACH	\$881.00	\$881.00
 Excavator, 330/336		0.50	HR	\$250.00	\$125.00
 Excavator, 325		0.50	HR	\$240.00	\$120.00
 Loader, 930/938		0.50	HR	\$125.00	\$62.50
 Generator & Pump		0.50	HR	\$50.00	\$25.00
 Small Tools/Container		0.50	HR	\$31.00	\$15.50
 Trench Boxes, Per Each [4]		0.50	HR	\$21.50	\$43.00
 Truck, Foreman Pickup		0.50	HR	\$36.00	\$18.00
 Truck, Water Truck (2,000 Gal) [0.5]		0.50	HR	\$100.00	\$25.00
 Truck, Superintendent Pickup [0.5]		0.50	HR	\$36.00	\$9.00
 Superintendent [0.5]		0.50	HR	\$180.00	\$45.00
 Foreman		0.50	HR	\$152.00	\$76.00
 Laborer [3]		0.50	HR	\$74.00	\$111.00
 Operator [3]		0.50	HR	\$107.00	\$160.50
 Pipe Layer		0.50	HR	\$91.00	\$45.50
 Added Time: Bends, Valves, & Fittings		8.00	EACH	\$533.00	\$4,264.00
 330 - Crew, 6-15' Excavation, General Site Work (40.00 EACH/DY, 0.20 DY)		8.00	EACH	\$440.50	\$3,524.00
 Excavator, 330/336		2.00	HR	\$250.00	\$500.00
 Excavator, 325		2.00	HR	\$240.00	\$480.00
 Loader, 930/938		2.00	HR	\$125.00	\$250.00
 Generator & Pump		2.00	HR	\$50.00	\$100.00
 Small Tools/Container		2.00	HR	\$31.00	\$62.00
 Trench Boxes, Per Each [4]		2.00	HR	\$21.50	\$172.00
 Truck, Foreman Pickup		2.00	HR	\$36.00	\$72.00
 Truck, Water Truck (2,000 Gal) [0.5]		2.00	HR	\$100.00	\$100.00
 Truck, Superintendent Pickup [0.5]		2.00	HR	\$36.00	\$36.00
 Superintendent [0.5]		2.00	HR	\$180.00	\$180.00
 Foreman		2.00	HR	\$152.00	\$304.00
 Laborer [3]		2.00	HR	\$74.00	\$444.00
 Operator [3]		2.00	HR	\$107.00	\$642.00
 Pipe Layer		2.00	HR	\$91.00	\$182.00
 Concrete Readymix		4.00	CY	\$185.00	\$740.00
 Pipe Testing		130.00	LF	\$35.24	\$4,581.20
 330 - Crew, 6-15' Excavation, General Site Work (500.00 LF/DY, 0.26 DY)		130.00	LF	\$35.24	\$4,581.20
 Excavator, 330/336		2.60	HR	\$250.00	\$650.00
 Excavator, 325		2.60	HR	\$240.00	\$624.00
 Loader, 930/938		2.60	HR	\$125.00	\$325.00
 Generator & Pump		2.60	HR	\$50.00	\$130.00
 Small Tools/Container		2.60	HR	\$31.00	\$80.60
 Trench Boxes, Per Each [4]		2.60	HR	\$21.50	\$223.60
 Truck, Foreman Pickup		2.60	HR	\$36.00	\$93.60

Description		Quantity	UM	Unit Direct Cost	Total Direct Cost
(Item 31 - 3" HDPE W/Tie-Ins (G-4B) continued)					
 Truck, Water Truck (2,000 Gal) [0.5]		2.60	HR	\$100.00	\$130.00
 Truck, Superintendent Pickup [0.5]		2.60	HR	\$36.00	\$46.80
 Superintendent [0.5]		2.60	HR	\$180.00	\$234.00
 Foreman		2.60	HR	\$152.00	\$395.20
 Laborer [3]		2.60	HR	\$74.00	\$577.20
 Operator [3]		2.60	HR	\$107.00	\$834.60
 Pipe Layer		2.60	HR	\$91.00	\$236.60
 Pipe Materials		130.00	LF	\$53.32	\$6,931.60
 HDPE 02"		130.00	LF	\$53.32	\$6,931.60
 Bedding And Haul Off		130.00	LF	\$11.08	\$1,440.00
 Aggregate - Squeegee		18.00	TON	\$30.00	\$540.00
 Haul Off And Disposal - Spoils		1.00	LOAD	\$900.00	\$900.00
 Haul Off		1.00	LOAD	\$400.00	\$400.00
 Trench Spoils - Semi Trailer		1.00	EACH	\$500.00	\$500.00
 Tap Fee		1.00	EACH	\$1,000.00	\$1,000.00
 32 - HDD Installation (G-4B)		1.00	LS	\$40,001.61	\$40,001.61
 Pit Excavation		1.00	EACH	\$7,048.00	\$7,048.00
 330 - Crew, 6-15' Excavation, General Site Work (2.50 EACH/DY, 0.40 DY)		1.00	EACH	\$7,048.00	\$7,048.00
 Excavator, 330/336		4.00	HR	\$250.00	\$1,000.00
 Excavator, 325		4.00	HR	\$240.00	\$960.00
 Loader, 930/938		4.00	HR	\$125.00	\$500.00
 Generator & Pump		4.00	HR	\$50.00	\$200.00
 Small Tools/Container		4.00	HR	\$31.00	\$124.00
 Trench Boxes, Per Each [4]		4.00	HR	\$21.50	\$344.00
 Truck, Foreman Pickup		4.00	HR	\$36.00	\$144.00
 Truck, Water Truck (2,000 Gal) [0.5]		4.00	HR	\$100.00	\$200.00
 Truck, Superintendent Pickup [0.5]		4.00	HR	\$36.00	\$72.00
 Superintendent [0.5]		4.00	HR	\$180.00	\$360.00
 Foreman		4.00	HR	\$152.00	\$608.00
 Laborer [3]		4.00	HR	\$74.00	\$888.00
 Operator [3]		4.00	HR	\$107.00	\$1,284.00
 Pipe Layer		4.00	HR	\$91.00	\$364.00
 200 LF 6" HDD Shot		200.00	LF	\$164.77	\$32,953.61
 Standard HDD Material List		225.00	LF	\$38.02	\$8,554.31
 Pipe Mobilization .5		1.00	EACH	\$1,375.00	\$1,375.00
 6" Casing Pipe Revise Pricing For Fused Change Quantity		280.00	LF	\$11.10	\$3,108.00
 6" HDD Pipe On A Roll		280.00	LF	\$11.10	\$3,108.00
 3" Carrier Casing Pipe		500.00	LF	\$3.20	\$1,600.00
 3" HDPE On Roll		500.00	LF	\$3.20	\$1,600.00
 Bentonite / Drill Mud		225.00	LF	\$3.11	\$700.31
 Bentonite / Drill Mud (\$3 - \$5 / LF)		225.00	LF	\$3.11	\$700.31
 Miscellaneous Bore Material		1.00	EACH	\$1,000.00	\$1,000.00
 Miscellaneous Bore Materials		1.00	EACH	\$1,000.00	\$1,000.00
 6" Pull Head		1.00	EACH	\$771.00	\$771.00
 Drill Out / Pre-Rearm / Pull Back (Medium 36/50, 40/55 Machine)		1.00	DY	\$10,054.60	\$10,054.60

Description		Quantity	UM	Unit Direct Cost	Total Direct Cost
(Item 32 - HDD Installation (G-4B) continued)					
 HDD Day Crews (1.00 DY/DY, 1.00 DY)		1.00	DY	\$10,054.60	\$10,054.60
 Vac Truck, Trailer		1.00	DY	\$2,600.00	\$2,600.00
 HDD Machine, Medium (36/50, 40/55)		1.00	DY	\$1,900.00	\$1,900.00
 Truck, Mud System		1.00	DY	\$500.00	\$500.00
 Truck, Utility Trailer		10.00	HR	\$42.00	\$420.00
 Truck, Foreman Pickup		10.00	HR	\$27.50	\$275.00
 Foreman		10.00	HR	\$177.24	\$1,772.40
 Operator		10.00	HR	\$149.52	\$1,495.20
 Laborer		10.00	HR	\$109.20	\$1,092.00
 Supervision (Enter Total Project Days - Set To 5HRs / Day)		1.00	DY	\$1,397.50	\$1,397.50
 Superintendent (Default 5 HR / DY) (5.00 MH/DY, 0.50 DY)		1.00	DY	\$1,397.50	\$1,397.50
 Truck, Superintendent Pickup		5.00	HR	\$27.50	\$137.50
 Superintendent		5.00	HR	\$252.00	\$1,260.00
 Standard HDD Subcontracts & Miscellaneous		1.00	LS	\$12,947.20	\$12,947.20
 Safety Allowance		1.00	MO	\$500.00	\$500.00
 Safety Allowance (\$500 / Mo)		1.00	MO	\$500.00	\$500.00
 Haul Off And Disposal - Spoils		2.00	LOAD	\$150.00	\$300.00
 HDD Haul Off		1.00	LOAD	\$300.00	\$300.00
 Hauloff And Disposal - Badger Rates		0.00	DY	\$4,100.00	\$0.00
 (UTAH TEAM) Subsistence (Enter # Of Workers X Days On Site)		4.00	CALC	\$260.00	\$1,040.00
 Hotel Room (# Of Rooms)		4.00	ROOM	\$175.00	\$700.00
 Subsistence (# Of Workers)		4.00	EACH	\$85.00	\$340.00
 Drive Time 1 Day		1.00	DY	\$3,667.60	\$3,667.60
 HDD Medium Crew (36/50 40/55 Machine) (1.00 DY/DY, 1.00 DY)		1.00	DY	\$3,667.60	\$3,667.60
 Small Tools/Container		10.00	HR	\$12.50	\$125.00
 Truck, Foreman Pickup		10.00	HR	\$27.50	\$275.00
 Foreman		10.00	HR	\$177.24	\$1,772.40
 Operator		10.00	HR	\$149.52	\$1,495.20
 Light Plant Budget		2.00	LS	\$600.00	\$1,200.00
 Fusion Of Pipe		1.00	DY	\$6,239.60	\$6,239.60
 HDD Medium Crew (36/50 40/55 Machine) (1.00 DY/DY, 1.00 DY)		1.00	DY	\$6,239.60	\$6,239.60
 Small Tools/Container		10.00	HR	\$12.50	\$125.00
 Truck, Foreman Pickup		10.00	HR	\$27.50	\$275.00
 Foreman		10.00	HR	\$177.24	\$1,772.40
 Operator		10.00	HR	\$149.52	\$1,495.20
 Pipe Fuser, 6"-8"		10.00	HR	\$148.00	\$1,480.00
 Laborer		10.00	HR	\$109.20	\$1,092.00
 33 - Pothole Repair		1.00	LS	\$21,785.00	\$21,785.00
 Labor Maintenance Crew (0.50 LS/DY, 2.00 DY)		1.00	LS	\$9,500.00	\$9,500.00
 Truck, Foreman Pickup		20.00	HR	\$36.00	\$720.00
 Small Tools/Container		20.00	HR	\$31.00	\$620.00
 Foreman		20.00	HR	\$152.00	\$3,040.00
 Laborer [2]		20.00	HR	\$74.00	\$2,960.00
 Truck, Superintendent Pickup [0.5]		20.00	HR	\$36.00	\$360.00

Description		Quantity	UM	Unit Direct Cost	Total Direct Cost
(Item 33 - Pothole Repair continued)					
 Superintendent [0.5]		20.00	HR	\$180.00	\$1,800.00
 Potholing (Colorado Subcontractor)		2.00	DY	\$2,100.00	\$4,200.00
 On Demand Concrete		2.00	DY	\$3,942.50	\$7,885.00
 Nightly Charge		2.00	DY	\$3,200.00	\$6,400.00
 Concrete		9.00	CY	\$165.00	\$1,485.00
 Asphalt Pavement - Major Arterial		1.00	SY	\$200.00	\$200.00
 34 - Erosion Control (G-5)		1.00	LS	\$6,710.00	\$6,710.00
 BI: Erosion Control		1.00	LS	\$6,710.00	\$6,710.00
 Inlet Protection		1.00	EACH	\$150.00	\$150.00
 Construction Fence		150.00	LF	\$6.00	\$900.00
 Curb Socks		5.00	EACH	\$40.00	\$200.00
 Vehicle Tracking Control		1.00	EACH	\$2,500.00	\$2,500.00
 Stockpile Protection		1.00	LS	\$1,000.00	\$1,000.00
 Waddles		280.00	LF	\$7.00	\$1,960.00
 35 - Traffic Control (G-5)		1.00	LS	\$7,156.68	\$7,156.68
 Traffic Control (Subcontracted)		2.00	DY	\$1,978.34	\$3,956.68
 Sub Traffic Control TCS		2.00	DY	\$1,600.00	\$3,200.00
 36 - Landscape/Sod Removal & Replacement (G-5)		1.00	LS	\$17,174.52	\$17,174.52
 Sod R&R		693.00	SF	\$8.54	\$5,914.76
 Remove Sod		693.00	SF	\$3.54	\$2,449.76
 Labor Maintenance Crew (2,000.00 SF/DY, 0.35 DY)		693.00	SF	\$3.54	\$2,449.76
 Truck, Foreman Pickup		3.47	HR	\$36.00	\$124.74
 Small Tools/Container		3.47	HR	\$31.00	\$107.42
 Foreman		3.47	HR	\$152.00	\$526.68
 Laborer [2]		3.47	HR	\$74.00	\$512.82
 Superintendent [0.5]		3.47	HR	\$180.00	\$311.85
 Truck, Superintendent Pickup [0.5]		3.47	HR	\$36.00	\$62.37
 Loader, 930/938		3.47	HR	\$125.00	\$433.13
 Operator		3.47	HR	\$107.00	\$370.76
 Install Sod		693.00	SF	\$5.00	\$3,465.00
 River Rock R&R		390.00	SF	\$12.21	\$4,761.76
 Remove River Rock		390.00	SF	\$3.60	\$1,403.92
 Labor Maintenance Crew (1,964.00 SF/DY, 0.20 DY)		390.00	SF	\$3.60	\$1,403.92
 Truck, Foreman Pickup		1.99	HR	\$36.00	\$71.49
 Small Tools/Container		1.99	HR	\$31.00	\$61.56
 Foreman		1.99	HR	\$152.00	\$301.83
 Laborer [2]		1.99	HR	\$74.00	\$293.89
 Superintendent [0.5]		1.99	HR	\$180.00	\$178.72
 Truck, Superintendent Pickup [0.5]		1.99	HR	\$36.00	\$35.74
 Loader, 930/938		1.99	HR	\$125.00	\$248.22
 Operator		1.99	HR	\$107.00	\$212.47
 Install River Rock		390.00	SF	\$8.61	\$3,357.84
 Labor Maintenance Crew (982.00 SF/DY, 0.40 DY)		390.00	SF	\$7.20	\$2,807.84
 Truck, Foreman Pickup		3.97	HR	\$36.00	\$142.97
 Small Tools/Container		3.97	HR	\$31.00	\$123.12
 Foreman		3.97	HR	\$152.00	\$603.67

Description		Quantity	UM	Unit Direct Cost	Total Direct Cost
(Item 36 - Landscape/Sod Removal & Replacement (G-5) continued)					
 Laborer [2]		3.97	HR	\$74.00	\$587.78
 Superintendent [0.5]		3.97	HR	\$180.00	\$357.43
 Truck, Superintendent Pickup [0.5]		3.97	HR	\$36.00	\$71.49
 Loader, 930/938		3.97	HR	\$125.00	\$496.44
 Operator		3.97	HR	\$107.00	\$424.95
 Geotextile Fabric, 140N		1.00	ROLL	\$550.00	\$550.00
 Irrigation Repair		1,083.00	SF	\$6.00	\$6,498.00
 37 - Chain Link Fence R&R (G-5)		31.00	LF	\$96.94	\$3,005.00
 Removal		31.00	LF	\$30.65	\$950.00
 Labor Maintenance Crew (15.50 LF/PH, 0.20 DY)		31.00	LF	\$30.65	\$950.00
 Truck, Foreman Pickup		2.00	HR	\$36.00	\$72.00
 Small Tools/Container		2.00	HR	\$31.00	\$62.00
 Foreman		2.00	HR	\$152.00	\$304.00
 Laborer [2]		2.00	HR	\$74.00	\$296.00
 Truck, Superintendent Pickup [0.5]		2.00	HR	\$36.00	\$36.00
 Superintendent [0.5]		2.00	HR	\$180.00	\$180.00
 Install Chain Link		31.00	LF	\$66.29	\$2,055.00
 Labor Maintenance Crew (7.75 LF/PH, 0.40 DY)		31.00	LF	\$61.29	\$1,900.00
 Truck, Foreman Pickup		4.00	HR	\$36.00	\$144.00
 Small Tools/Container		4.00	HR	\$31.00	\$124.00
 Foreman		4.00	HR	\$152.00	\$608.00
 Laborer [2]		4.00	HR	\$74.00	\$592.00
 Truck, Superintendent Pickup [0.5]		4.00	HR	\$36.00	\$72.00
 Superintendent [0.5]		4.00	HR	\$180.00	\$360.00
 ST&S		31.00	LF	\$5.00	\$155.00
 38 - 8" PVC Waterline R&R (G-5)		57.00	LF	\$510.07	\$29,073.80
 Remove AC Pipe		1.00	DY	\$2,700.00	\$2,700.00
 BI: Waterline, 6'-15' Depth, <24" Diameter		57.00	LF	\$462.70	\$26,373.80
 Main Pipe Installation		57.00	LF	\$309.12	\$17,620.00
 330 - Crew, 6-15' Excavation, General Site Work (45.60 LF/DY, 1.25 DY)		57.00	LF	\$309.12	\$17,620.00
 Excavator, 330/336		10.00	HR	\$250.00	\$2,500.00
 Excavator, 325		10.00	HR	\$240.00	\$2,400.00
 Loader, 930/938		10.00	HR	\$125.00	\$1,250.00
 Generator & Pump		10.00	HR	\$50.00	\$500.00
 Small Tools/Container		10.00	HR	\$31.00	\$310.00
 Trench Boxes, Per Each [4]		10.00	HR	\$21.50	\$860.00
 Truck, Foreman Pickup		10.00	HR	\$36.00	\$360.00
 Truck, Water Truck (2,000 Gal) [0.5]		10.00	HR	\$100.00	\$500.00
 Truck, Superintendent Pickup [0.5]		10.00	HR	\$36.00	\$180.00
 Superintendent [0.5]		10.00	HR	\$180.00	\$900.00
 Foreman		10.00	HR	\$152.00	\$1,520.00
 Laborer [3]		10.00	HR	\$74.00	\$2,220.00
 Operator [3]		10.00	HR	\$107.00	\$3,210.00
 Pipe Layer		10.00	HR	\$91.00	\$910.00
 Added Install Time:		57.00	LF	\$18.15	\$1,034.50

Description	Quantity	UM	Unit Direct Cost	Total Direct Cost
(Item 38 - 8" PVC Waterline R&R (G-5) continued)				
 Added Time: Bends, Valves, & Fittings	1.00	EACH	\$1,034.50	\$1,034.50
 330 - Crew, 6-15' Excavation, General Site Work (0.25 PH/EACH, 0.03 DY)	1.00	EACH	\$440.50	\$440.50
 Excavator, 330/336	0.25	HR	\$250.00	\$62.50
 Excavator, 325	0.25	HR	\$240.00	\$60.00
 Loader, 930/938	0.25	HR	\$125.00	\$31.25
 Generator & Pump	0.25	HR	\$50.00	\$12.50
 Small Tools/Container	0.25	HR	\$31.00	\$7.75
 Trench Boxes, Per Each [4]	0.25	HR	\$21.50	\$21.50
 Truck, Foreman Pickup	0.25	HR	\$36.00	\$9.00
 Truck, Water Truck (2,000 Gal) [0.5]	0.25	HR	\$100.00	\$12.50
 Truck, Superintendent Pickup [0.5]	0.25	HR	\$36.00	\$4.50
 Superintendent [0.5]	0.25	HR	\$180.00	\$22.50
 Foreman	0.25	HR	\$152.00	\$38.00
 Laborer [3]	0.25	HR	\$74.00	\$55.50
 Operator [3]	0.25	HR	\$107.00	\$80.25
 Pipe Layer	0.25	HR	\$91.00	\$22.75
 Concrete Readymix	3.00	CY	\$198.00	\$594.00
 Pipe Testing	57.00	LF	\$12.57	\$716.40
 Labor Maintenance Crew (292.00 LF/DY, 0.20 DY)	57.00	LF	\$12.57	\$716.40
 Truck, Foreman Pickup	1.95	HR	\$36.00	\$70.27
 Small Tools/Container	1.95	HR	\$31.00	\$60.51
 Foreman	1.95	HR	\$152.00	\$296.71
 Laborer [2]	1.95	HR	\$74.00	\$288.90
 Pipe Materials	57.00	LF	\$59.70	\$3,402.90
 PVC (C900/905) 08"	57.00	LF	\$59.70	\$3,402.90
 Bedding And Haul Off	57.00	LF	\$63.16	\$3,600.00
 Aggregate - Squeegee	60.00	TON	\$30.00	\$1,800.00
 Haul Off And Disposal - Spoils	2.00	LOAD	\$900.00	\$1,800.00
 Haul Off	2.00	LOAD	\$400.00	\$800.00
 Trench Spoils - Semi Trailer	2.00	EACH	\$500.00	\$1,000.00
 39 - Traffic Control (G-2)	1.00	LS	\$2,380.47	\$2,380.47
 Traffic Control (Subcontracted)	1.00	DY	\$780.47	\$780.47
 Sub Traffic Control TCS	1.00	DY	\$1,600.00	\$1,600.00
 40 - Sod Removal & Replacement/Erosion Control (G-2)	1.00	LS	\$2,433.50	\$2,433.50
 Sod R&R	100.00	SF	\$8.54	\$853.50
 Remove Sod	100.00	SF	\$3.54	\$353.50
 Labor Maintenance Crew (2,000.00 SF/DY, 0.05 DY)	100.00	SF	\$3.54	\$353.50
 Truck, Foreman Pickup	0.50	HR	\$36.00	\$18.00
 Small Tools/Container	0.50	HR	\$31.00	\$15.50
 Foreman	0.50	HR	\$152.00	\$76.00
 Laborer [2]	0.50	HR	\$74.00	\$74.00
 Superintendent [0.5]	0.50	HR	\$180.00	\$45.00
 Truck, Superintendent Pickup [0.5]	0.50	HR	\$36.00	\$9.00
 Loader, 930/938	0.50	HR	\$125.00	\$62.50
 Operator	0.50	HR	\$107.00	\$53.50

Description		Quantity	UM	Unit Direct Cost	Total Direct Cost
(Item 40 - Sod Removal & Replacement/Erosion Control (G-2) continued)					
	Install Sod	100.00	SF	\$5.00	\$500.00
	Curb Socks	2.00	EACH	\$40.00	\$80.00
	Concrete Washout	1.00	EACH	\$1,500.00	\$1,500.00
	41 - Curb & Gutter R&R (G-2)	30.00	LF	\$126.13	\$3,783.90
	Sawcutting Minimum Charge	1.00	EACH	\$300.00	\$300.00
	Remove Curb & Gutter	30.00	LF	\$12.41	\$372.30
	330 Crew (150.00 LF/PH, 0.02 DY)	30.00	LF	\$7.83	\$234.80
	Excavator, 330/336 [0]	0.20	HR	\$250.00	\$0.00
	Excavator, 320	0.20	HR	\$195.00	\$39.00
	Loader, 930/938	0.20	HR	\$125.00	\$25.00
	Trench Boxes, Per Each [0]	0.20	HR	\$21.50	\$0.00
	Generator & Pump [0]	0.20	HR	\$50.00	\$0.00
	Small Tools/Container	0.20	HR	\$31.00	\$6.20
	Truck, Foreman Pickup	0.20	HR	\$36.00	\$7.20
	Truck, Water Truck (2,000 Gal) [0]	0.20	HR	\$100.00	\$0.00
	Truck, Superintendent Pickup [0.5]	0.20	HR	\$36.00	\$3.60
	Superintendent [0.5]	0.20	HR	\$180.00	\$18.00
	Foreman	0.20	HR	\$152.00	\$30.40
	Laborer [3]	0.20	HR	\$74.00	\$44.40
	Operator [2]	0.20	HR	\$107.00	\$42.80
	Pipe Layer	0.20	HR	\$91.00	\$18.20
	Haul Off And Disposal - Concrete & Asphalt	0.25	LOAD	\$550.00	\$137.50
	Haul Off	0.25	LOAD	\$400.00	\$100.00
	Concrete & Asphalt Disposal	0.25	EACH	\$150.00	\$37.50
	Grade Prep	30.00	LF	\$12.74	\$382.20
	330 Crew (100.00 LF/PH, 0.03 DY)	30.00	LF	\$12.74	\$382.20
	Excavator, 330/336 [0]	0.30	HR	\$250.00	\$0.00
	Excavator, 320	0.30	HR	\$195.00	\$58.50
	Loader, 930/938	0.30	HR	\$125.00	\$37.50
	Trench Boxes, Per Each [0]	0.30	HR	\$21.50	\$0.00
	Generator & Pump [0]	0.30	HR	\$50.00	\$0.00
	Small Tools/Container	0.30	HR	\$31.00	\$9.30
	Truck, Foreman Pickup	0.30	HR	\$36.00	\$10.80
	Truck, Water Truck (2,000 Gal)	0.30	HR	\$100.00	\$30.00
	Truck, Superintendent Pickup [0.5]	0.30	HR	\$36.00	\$5.40
	Superintendent [0.5]	0.30	HR	\$180.00	\$27.00
	Foreman	0.30	HR	\$152.00	\$45.60
	Laborer [3]	0.30	HR	\$74.00	\$66.60
	Operator [2]	0.30	HR	\$107.00	\$64.20
	Pipe Layer	0.30	HR	\$91.00	\$27.30
	Pour Curb & Gutter	30.00	LF	\$90.98	\$2,729.40
	42 - Concrete Pavement R&R (G-2)	200.00	SF	\$43.19	\$8,638.15
	Sawcutting Minimum Charge	1.00	EACH	\$300.00	\$300.00
	Remove Concrete	22.00	SY	\$21.90	\$481.87
	330 Crew (75.00 SY/PH, 0.03 DY)	22.00	SY	\$15.65	\$344.37
	Excavator, 330/336 [0]	0.29	HR	\$250.00	\$0.00

Description		Quantity	UM	Unit Direct Cost	Total Direct Cost
(Item 42 - Concrete Pavement R&R (G-2) continued)					
 Excavator, 320		0.29	HR	\$195.00	\$57.20
 Loader, 930/938		0.29	HR	\$125.00	\$36.67
 Trench Boxes, Per Each [0]		0.29	HR	\$21.50	\$0.00
 Generator & Pump [0]		0.29	HR	\$50.00	\$0.00
 Small Tools/Container		0.29	HR	\$31.00	\$9.09
 Truck, Foreman Pickup		0.29	HR	\$36.00	\$10.56
 Truck, Water Truck (2,000 Gal) [0]		0.29	HR	\$100.00	\$0.00
 Truck, Superintendent Pickup [0.5]		0.29	HR	\$36.00	\$5.28
 Superintendent [0.5]		0.29	HR	\$180.00	\$26.40
 Foreman		0.29	HR	\$152.00	\$44.59
 Laborer [3]		0.29	HR	\$74.00	\$65.12
 Operator [2]		0.29	HR	\$107.00	\$62.77
 Pipe Layer		0.29	HR	\$91.00	\$26.69
 Haul Off And Disposal - Concrete & Asphalt		0.25	LOAD	\$550.00	\$137.50
 Haul Off		0.25	LOAD	\$400.00	\$100.00
 Concrete & Asphalt Disposal		0.25	EACH	\$150.00	\$37.50
 Grade Prep		22.00	SY	\$12.74	\$280.28
 330 Crew (100.00 SY/PH, 0.02 DY)		22.00	SY	\$12.74	\$280.28
 Excavator, 330/336 [0]		0.22	HR	\$250.00	\$0.00
 Excavator, 320		0.22	HR	\$195.00	\$42.90
 Loader, 930/938		0.22	HR	\$125.00	\$27.50
 Trench Boxes, Per Each [0]		0.22	HR	\$21.50	\$0.00
 Generator & Pump [0]		0.22	HR	\$50.00	\$0.00
 Small Tools/Container		0.22	HR	\$31.00	\$6.82
 Truck, Foreman Pickup		0.22	HR	\$36.00	\$7.92
 Truck, Water Truck (2,000 Gal)		0.22	HR	\$100.00	\$22.00
 Truck, Superintendent Pickup [0.5]		0.22	HR	\$36.00	\$3.96
 Superintendent [0.5]		0.22	HR	\$180.00	\$19.80
 Foreman		0.22	HR	\$152.00	\$33.44
 Laborer [3]		0.22	HR	\$74.00	\$48.84
 Operator [2]		0.22	HR	\$107.00	\$47.08
 Pipe Layer		0.22	HR	\$91.00	\$20.02
 Pour Concrete Pavement		200.00	SF	\$34.13	\$6,826.00
 Sub Mobilization		1.00	LS	\$750.00	\$750.00
 43 - Remove Hydrant & Flowfill/Concrete Existing Valve (G-2)		1.00	EACH	\$6,865.58	\$6,865.58
 330 - Crew, 6-15' Excavation, General Site Work (3.33 PH/EACH, 0.33 DY)		1.00	EACH	\$5,867.46	\$5,867.46
 Excavator, 330/336		3.33	HR	\$250.00	\$832.50
 Excavator, 325		3.33	HR	\$240.00	\$799.20
 Loader, 930/938		3.33	HR	\$125.00	\$416.25
 Generator & Pump		3.33	HR	\$50.00	\$166.50
 Small Tools/Container		3.33	HR	\$31.00	\$103.23
 Trench Boxes, Per Each [4]		3.33	HR	\$21.50	\$286.38
 Truck, Foreman Pickup		3.33	HR	\$36.00	\$119.88
 Truck, Water Truck (2,000 Gal) [0.5]		3.33	HR	\$100.00	\$166.50
 Truck, Superintendent Pickup [0.5]		3.33	HR	\$36.00	\$59.94

Description		Quantity	UM	Unit Direct Cost	Total Direct Cost
<i>(Item 43 - Remove Hydrant & Flowfill/Concrete Existing Valve (G-2) continued)</i>					
 Superintendent [0.5]		3.33	HR	\$180.00	\$299.70
 Foreman		3.33	HR	\$152.00	\$506.16
 Laborer [3]		3.33	HR	\$74.00	\$739.26
 Operator [3]		3.33	HR	\$107.00	\$1,068.93
 Pipe Layer		3.33	HR	\$91.00	\$303.03
 Concrete Readymix		2.00	CY	\$185.00	\$370.00
 Cap, 6"		1.00	EACH	\$628.12	\$628.12

Direct Cost Totals

	Amount	Percent of Direct Cost
Labor:	\$213,697.76	27.62%
Equipment Owned:	\$159,743.40	20.65%
Equipment Rented:	\$0.00	0.00%
Materials Owned:	\$0.00	0.00%
Materials Purchased:	\$73,474.08	9.50%
Subcontracted:	\$302,705.50	39.13%
Trucking Owned:	\$0.00	0.00%
Trucking Hired:	\$0.00	0.00%
Miscellaneous:	\$19,560.00	2.53%
Plug:	\$4,400.00	0.57%
Direct Cost:	<u>\$773,580.74</u>	

Pay Item Summary

	Amount	Percent of Bid Price
Total Direct Cost:	\$773,580.74	100.00%
Total DC Adds/Cuts:	\$0.00	0.00%
Total Indirect Cost:	\$0.00	0.00%
Total Bond:	\$0.00	0.00%
Total Overall Cost:	\$773,580.74	100.00%
Total Overhead:	\$0.00	0.00%
Total Profit:	(\$0.07)	-0.00%
Total Margin:	(\$0.07)	-0.00%
Total Bid Price:	<u>\$773,580.67</u>	

BT CONSTRUCTION, INC.
Arvada - CMGC 2021 Water Main Improvements
August 27, 2025

<u>Code</u>	<u>Description</u>	<u>Quantity</u>	<u>UM</u>	<u>Unit Cost</u>	<u>Total Cost</u>	<u>Notes</u>
01	Mobilization	1.00	LS	\$43,620.03	\$43,620.03	Includes Toilets, Safety, Fencing, Permits, Equip Mobilization and Subcontractor Mobilization
02	Construction Surveying	1.00	LS	\$8,360.00	\$8,360.00	
03	Materials Testing	1.00	LS	\$5,220.00	\$5,220.00	
04	Third Party Inspections	1.00	LS	\$30,052.49	\$30,052.49	Includes cost for Third Party Inspector (CDOT)
Subtotal:				\$87,252.52		
05	Erosion Control (G-3)	1.00	LS	\$12,318.99	\$12,318.99	Erosion Control Per Sheet EC-8 of Plans
06	Traffic Control (G-3)	1.00	LS	\$18,594.04	\$18,594.04	
07	Asphalt Remove & Replace (G-3)	57.00	SY	\$207.26	\$11,813.82	Includes Asphalt Replacement with Brannan Mix 4000725C & 4021125C
08	Curb & Gutter Remove & Replace (G-3)	20.00	LF	\$137.33	\$2,746.60	
09	Sidewalk Remove & Replace (G-3)	13.00	SY	\$192.72	\$2,505.36	
10	Landscape/Sod Remove & Replace (G-3)	1.00	LS	\$32,257.98	\$32,257.98	Includes Removal & Replacement of Sod, River Rock and Irrigation Repair
11	Connect to Existing Waterline (G-3)	2.00	EA	\$12,319.99	\$24,639.98	Connection to Existing Main in 52nd Ave and at Costco
12	Remove Fire Hydrant (G-3)	1.00	EA	\$6,243.33	\$6,243.33	Includes Removal and Disposal of Existing Hydrant Assembly
13	Cap 8" Water Main (G-3)	1.00	EA	\$4,694.00	\$4,694.00	Cap Existing Main at Corner of 52nd Ave And Wadsworth. Does Not Include Filling the Pipe with Concret or Flow-Fill
14	8" PVC Water Line (G-3)	146.00	LF	\$702.37	\$102,546.02	Install proposed 8- Inch Waterline, Bedding and backfill with Flashfill
15	Fire Hydrant Assembly (G-3)	1.00	EA	\$17,615.99	\$17,615.99	Install New Fire Hydrant Assembly
Subtotal:				\$235,976.11		
16	Erosion Control (G-4A)	1.00	;S	\$7,739.00	\$7,739.00	Erosion Control Per Sheet EC-9 of Plans
17	Traffic Control (G-4A)	1.00	LS	\$22,860.92	\$22,860.92	
18	Curb & Gutter Remove & Replace (G-4A)	20.00	LF	\$133.42	\$2,668.40	
19	Sidewalk Remove & Replace (G-4A)	26.00	SY	\$168.07	\$4,369.82	
20	Landscape/Sod Remove & Replace (G-4A)	1.00	LS	\$21,362.02	\$21,362.02	Includes Removal & Replacement of Sod, River Rock, Shrubs and Irrigation Repair
21	2"HDPE W/Tie-Ins (G-4A)	49.00	LF	\$636.43	\$31,185.07	Includes Open Cut Pipe Sections & Tie-Ins to Irrigation in Median and 8" Water Main on East Side
22	HDD Installation (G-4A)	1.00	LS	\$32,163.93	\$32,163.93	
23	Pothole Repair (G-4A)	1.00	LS	\$21,784.99	\$21,784.99	
Subtotal:				\$144,134.15		
24	Erosion Control (G-4B)	1.00	LS	\$10,121.00	\$10,121.00	Erosion Control Per Sheet EC-9 of Plans
25	Traffic Control (G-4B)	1.00	LS	\$16,723.46	\$16,723.46	
26	Asphalt Remove & Replace (G-4B)	11.00	SY	\$245.97	\$2,705.67	

27	Curb & Gutter Remove & Replace (G-4B)	58.00	LF	\$119.09	\$6,907.22	
28	Sidewalk Remove & Replace (G-4B)	89.00	SY	\$156.16	\$13,898.24	
29	Landscape/Sod Remove & Replace (G-4B)	1.00	LS	\$27,847.88	\$27,847.88	Includes Removal & Replacement of Sod, River Rock, Shrubs and Irrigation Repair
30	Remove & Replace Fire Hydrant (G-4B)	1.00	EA	\$17,619.99	\$17,619.99	Includes Removal and Replacement of Existing Fire Hydrant, No New Material
31	3" HDPE W/Tie-Ins (G-4B)	130.00	LF	\$472.20	\$61,386.00	Includes Open Cut Pipe Sections & Tie-Ins to Costco Meter and 8" Water Main on East Side
32	HDD Installation (G-4B)	1.00	LS	\$40,001.59	\$40,001.59	
33	Pothole Repair (G-4B)	1.00	LS	\$21,784.99	\$21,784.99	
				Subtotal:	\$218,996.04	
34	Erosion Control (G-5)	1.00	LS	\$6,710.00	\$6,710.00	
35	Traffic Control (G-5)	1.00	LS	\$7,156.68	\$7,156.68	
36	Landscape/Sod Remove & replace (G-5)	1.00	LS	\$17,174.51	\$17,174.51	Includes Removal & Replacement of Sod, River Rock and Irrigation Repair
37	Chain Link Fence Remove & Replace (G-5)	31.00	LF	\$96.94	\$3,005.14	
38	8" PVC Watterline Remove & Replace (G-5)	57.00	LF	\$510.07	\$29,073.99	Includes Installation of New 8" Waterline and Removal of Existing AC Line
				Subtotal:	\$63,120.32	
39	Traffic Control (G-2)	1	LS	\$2,380.49	\$2,380.49	
40	Sod Removal & Replacement (G-2)	1	LS	\$2,433.52	\$2,433.52	
41	Curb & Gutter Remove & Replace (G-2)	30	LF	\$126.13	\$3,783.90	
42	Concrete Pavement Remove & Replace (G-2)	200	SF	\$43.19	\$8,638.00	
43	Remove Hydrant & Concrete/Flowfill Valve Top (G-2)	1	EA	\$6,865.63	\$6,865.63	
				Subtotal:	\$24,101.54	
				Total:	\$773,580.68	
				General Conditions (4%)	\$30,943.23	
				Insurance & Bonds (2%)	\$15,471.61	
				Overhead (9%)	\$69,622.26	
				Profit (5%)	\$38,679.03	
				TOTAL:	\$928,296.82	

Excludes all taxes

Exhibit 2

Technical Specifications for Phase II

AMENDMENT NO. 1

TO “A CONSTRUCTION MANAGEMENT/GENERAL CONTRACTOR (CM/GC) AGREEMENT BY AND BETWEEN THE CITY OF ARVADA AND BT CONSTRUCTION, INC. FOR THE 2021 WATERLINE IMPROVEMENTS PROJECT, AWARDED PHASE I SERVICES ONLY, IN AN AMOUNT NOT TO EXCEED \$28,700.00” FOR PURPOSES OF AWARDED CONTRACTOR PHASE II WITH A GUARANTEED MAXIMUM PRICE OF \$928,296.82, THEREBY INCREASING THE TOTAL CONTRACT AMOUNT TO AN AMOUNT NOT TO EXCEED \$956,996.82

Bid Set

**CITY OF ARVADA, CO
2021 Water Main Improvements Project**

**Contract Documents and
Technical Specifications**



Prepared for:
City of Arvada

Issue Date:
October 2023

**CDM
Smith**

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SPECIFICATIONS GROUP

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DIVISION 00 – ARVADA FRONT ENDS

DIVISION 01 - GENERAL REQUIREMENTS

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013200	Construction Progress Documentation
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Appendix A – Geotechnical Investigation Report

Appendix B – SWMP 2021 Water Main Improvements

Appendix C – FRICO Approval Letter and Contractor Requirements

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SECTION 011000 – SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. These specifications are intended to be supplemental to the City of Arvada Engineering Code of Standards and Specifications. All sections and information not addressed directly by these specifications shall be covered by the City of Arvada Engineering Code of Standards and Specifications. In cases of conflict Project Specifications, Project Drawings, City of Arvada Engineering Code of Standards and Specifications, Project Special provisions shall rule.
- B. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Project information.
 - 2. Work covered by Contract Documents.
 - 3. Contractor's use of site and premises.
 - 4. Coordination with occupants.
 - 5. Work restrictions.
 - 6. Specification and Drawing conventions.
 - 7. Miscellaneous provisions.

1.3 PROJECT INFORMATION

- A. Project Identification: Project No. 21-WA-02.
 - 1. Project Location:
 - a. Segment C – Carr Street and 74th Ave
 - b. Segment D – Jellison Street and 74th Ave
 - c. Segment E – W 72nd Ave west of Indiana Street
 - d. Segment F – W 72nd Ave between Kipling and Wadsworth
 - e. Segment G – Wadsworth at W 52nd Ave

1.4 WORK COVERED BY CONTRACT DOCUMENTS

- A. The Work of Project is defined by the Contract Documents and includes, but is not limited to, the following:
 - 1. Removal and replacement of existing water main.
 - 2. Installation of new water main including stub outs for future connections.

3. Connection to existing water main, including connections to existing asbestos cement pipe.
4. Slip-lining of existing water main.
5. Horizontal directional drilling new water main.
6. Open cutting across Farmers Highline and Croke canal.
7. Installation of water main, casing pipe, and cut-off walls within Farmers Highline and Croke canal.
8. Demolition of existing aerial creek crossings and associated concrete structures.
9. Demolition of existing vault.
10. Installation of air release valves and vaults.
11. Installation and removal of fire hydrants.
12. Replacement of valves and piping within existing vault.
13. Removal and replacement of asphalt pavement.
14. Removal and replacement of sidewalk and curb and gutter.
15. Reinstallation of street signage and pavement striping and marking.
16. Coordination with property owners, general public, and residents.
17. Sodding and landscaping restoration.
18. Maintenance of traffic.
19. Erosion and sedimentation control.
20. Coordination with utility owners, utility protection, and minor utility adjustment as required for completion of the work.
21. Coordination with City of Arvada survey crews. City of Arvada will be the lead survey crew for this project. The contractor will be responsible for all coordination between the City survey crews and the contractor's personnel to ensure that all survey requirements are met in a smooth and efficient manner.
22. Preparation of as-builts.

B. Type of Contract:

1. Project will be constructed under a single prime contract.

1.5 CONTRACTOR'S USE OF SITE AND PREMISES

- A. Unrestricted Use of Site: Contractor shall have full use of Project site for construction operations during construction period. Contractor's use of Project site is limited only by Owner's right to perform work or to retain other contractors on portions of Project.
- B. Condition of Existing Grounds: Maintain portions of existing grounds, landscaping, and hardscaping affected by construction operations throughout construction period. Repair damage caused by construction operations.

1.6 WORK RESTRICTIONS

- A. Comply with restrictions on construction operations.
 1. Comply with limitations on use of public streets, work on public streets, rights of way, and other requirements of authorities having jurisdiction.

- B. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging for temporary utility services according to requirements indicated:
 - 1. Notify Owner not less than two days in advance of proposed utility interruptions.
 - 2. Obtain Owner's written permission before proceeding with utility interruptions.
 - 3. Ensure temporary water services have been cleaned/tested and are prepared for operation in advance of proposed utility interruptions.
- C. Noise, Vibration, Dust, and Odors: Coordinate operations that may result in high levels of noise and vibration, dust, odors, or other disruption to Owner occupancy with Owner.
 - 1. Notify Owner not less than two days in advance of proposed disruptive operations.
 - 2. Obtain Owner's written permission before proceeding with disruptive operations.

1.7 SPECIFICATION AND DRAWING CONVENTIONS

- A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
 - 1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
 - 2. Text Color: Text used in the Specifications, including units of measure, manufacturer and product names, and other text may appear in multiple colors or underlined as part of a hyperlink; no emphasis is implied by text with these characteristics.
 - 3. Hypertext: Text used in the Specifications may contain hyperlinks. Hyperlinks may allow for access to linked information that is not residing in the Specifications. Unless otherwise indicated, linked information is not part of the Contract Documents.
 - 4. Specification requirements are to be performed by Contractor unless specifically stated otherwise.
- B. Division 00 Contracting Requirements: General provisions of the Contract, including General and Supplementary Conditions, apply to all Sections of the Specifications.
- C. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.
- D. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:
 - 1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
 - 2. Abbreviations: Materials and products are identified by abbreviations scheduled on Drawings and published as part of the U.S. National CAD Standard.
 - 3. Keynoting: Materials and products are identified by reference keynotes referencing Specification Section numbers found in this Project Manual.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 011000

SECTION 012200 – MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.
- B. City of Arvada Engineering Code of Standards and Specifications, Section 1100.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 MEASUREMENT AND PAYMENT TABLE

Item No.	Item	Description	Measurement and Payment
1	Mobilization (LS)	City of Arvada item 1124.00	See City of Arvada Standards item 1124.00
2	Traffic Control (LS)	City of Arvada item 1181.00	See City of Arvada Standards item 1181.00
3	Erosion Control (LS)	City of Arvada item 1136.00	See City of Arvada Standards item 1136.00
4, 5, 6, 7, 8	Connections to Existing Facilities 8", 10", 12", 18", 24" (EA)	City of Arvada item 1146.02	See City of Arvada Standards item 1146.02
9, 10, 11, 12, 13	Water Main with Fittings and Restrained Joints (8", 10", 12", 18", 24") (LF)	City of Arvada item 1146.00.	See City of Arvada Standards item 1146.00 However, please note that dewatering is covered in pay items 59-63 and will not be included in the cost of pipe installation.

Item No.	Item	Description	Measurement and Payment
14	Directional Drill HDPE Water Main and Casing Pipe, Associated Connections and Restoration - Sheet G-4A (LS)	Installation of HDPE water main and casing pipe via directional drill, connections to existing piping, and all surface restoration and work shown on sheet G-4A.	Directional Drill HDPE Water Main and Associated Connections and Restoration. Sheet G-4A shall be lump sum. Payment will be made at the contract lump sum unit price as stated in the proposal for Directional Drill HDPE Water Main and Associated Connections and Restoration - Sheet G-4A and shall include all labor, materials, and equipment necessary for a complete directional drill pipe installation and testing including protection of existing utilities, pipe, fittings, valves, pipe connection assemblies and appurtenances, mechanical restraint, metallic tracer wire, drilling mud, sodding, testing, disinfection, restoration, and clean-up. This pay item shall also include all maintenance of traffic, coordination with existing property owners, surface restoration, connections to existing utilities, and all other work required to complete the work shown on sheet G-4A.
15	Directional Drill HDPE Water Main and Casing Pipe, Associated Connections and Restoration - Sheet G-4B (LS)	Installation of HDPE water main and casing pipe via directional drill and open cut, connections to existing piping, and all surface restoration and work shown on sheet G-4B.	Directional Drill HDPE Water Main and Associated Connections and Restoration. Sheet G-4B shall be lump sum. Payment will be made at the contract lump sum unit price as stated in the proposal for Directional Drill HDPE Water Main and Associated Connections and Restoration - Sheet G-4B and shall include all labor, materials, and equipment necessary for a complete directional drill pipe installation and open cut pipe installation and testing including protection of existing utilities, pipe, fittings, valves, pipe connection assemblies and appurtenances, mechanical restraint, metallic tracer wire, drilling mud, sodding, testing, disinfection, restoration, and clean-up. This pay item shall also include all maintenance of traffic, coordination with existing property owners, surface restoration, fire hydrant removal, connections to existing utilities, and all other work required to complete the work shown on sheet G-4B.

Item No.	Item	Description	Measurement and Payment
16	Fusible PVC Water Main (18") (LF)	City of Arvada item 1146.07	See City of Arvada Standards item 1146.07
17	Slip Lining Access Pits (EA)	City of Arvada item 1146.07	See City of Arvada Standards item 1146.07
18	Slip Lining Service Reconnections (EA)	City of Arvada item 1146.07	See City of Arvada Standards item 1146.07
19, 20	Steel Casing Pipe (24", 36") (LF)	City of Arvada item 1145.00	See City of Arvada Standards item 1145.00
21	Removal of Existing Aerial Crossing (Segment C) (LS)	City of Arvada item 1134.00	See City of Arvada Standards item 1134.00
22	Jellison Street Vault Modifications (LS)	Replacement of existing piping, pressure release valve, and appearances within the existing vault, as shown on Detail D on Sheet CD-7.	Measurement for this pay item is lump sum. Payment of the applicable Contract unit price shall be full compensation for furnishing all labor, materials, and equipment necessary to remove existing pipe, pressure release valve, and appurtenances, and replace with new steel pipe. Payment for this item shall include pipe supports, excavation, sheeting, shoring, bracing, dewatering, backfill, compaction, grading, restoration and all other items required for a complete, acceptable and operable installation.
23, 24, 25	8", 10", 12" Gate Valve with Box (EA)	City of Arvada item 1142.00	See City of Arvada Standards item 1142.00
26, 27	18", 24" Butterfly Valve with Box (EA)	City of Arvada item 1142.00	See City of Arvada Standards item 1142.00

Item No.	Item	Description	Measurement and Payment
28	Single Air Release Valve Assembly with Vault (EA)	Installation of single air release valve and 60-inch vault and connection to proposed pipeline, as shown on Detail E on Sheet CD-2	Measurement for Air Release Valve Assembly and Vault shall be made per actual number of air release valves with vaults satisfactorily furnished and installed to provide a complete and functional unit. Payment for the Air Release Valve Assembly and Vault shall be made based on the authorized quantity at the unit price indicated in the Bid. Payment of the applicable Contract unit price shall be full compensation for furnishing all labor, materials and equipment necessary to install the valve including saddle, fittings, pipe, concrete pad, pre-cast vault or enclosure, excavation, sheeting, shoring, bracing, dewatering, backfill, compaction, grading, restoration and all other items required for a complete, acceptable and operable installation.
29	Dual Air Release Valve Assembly with Vault (EA)	Installation of dual air release valves and 72-inch vault and connection to proposed pipeline, as shown on Detail D on Sheet CD-2	Measurement for Air Release Valve Assembly and Vault shall be made per actual number of air release valves with vaults satisfactorily furnished and installed to provide a complete and functional unit. Payment for the Air Release Valve Assembly and Vault shall be made based on the authorized quantity at the unit price indicated in the Bid. Payment of the applicable Contract unit price shall be full compensation for furnishing all labor, materials and equipment necessary to install the valve including saddle, fittings, pipe, concrete pad, pre-cast vault or enclosure, excavation, sheeting, shoring, bracing, dewatering, backfill, compaction, grading, restoration and all other items required for a complete, acceptable and operable installation.

Item No.	Item	Description	Measurement and Payment
30	W. 74 th Ave at Carr Street Vault Piping Replacement (LS)	Replacement of existing piping, tap, and appearances within the existing vault, as shown on Detail F on Sheet CD-7.	Measurement for this pay item is lump sum. Payment of the applicable Contract unit price shall be full compensation for furnishing all labor, materials and equipment necessary to install the piping, fittings, link seals, and valves including, tap, pipe supports, excavation, sheeting, shoring, bracing, dewatering, backfill, compaction, grading, restoration and all other items required for a complete, acceptable and operable installation.
31	Carr Street Drain Manhole Piping Replacement (LS)	Replacement of existing drain piping up to and within existing vault as shown on Detail G on Sheet CD-7.	Measurement for this pay item is lump sum. Payment of the applicable Contract unit price shall be full compensation for furnishing all labor, materials and equipment necessary to install the piping, fittings, link seals, and valves including, pipe supports, excavation, sheeting, shoring, bracing, dewatering, backfill, compaction, grading, restoration and all other items required for a complete, acceptable and operable installation. This pay item shall also include disposal of hazardous material in accordance with City and State standards.

Item No.	Item	Description	Measurement and Payment
32, 33	Concrete Cut-Off Walls (Segment C, E) (EA)	Installation of concrete cut-off walls to meet the Canal standards.	Measurement for Concrete Cut-Off Walls shall be made per actual number of concrete cut-off walls satisfactorily furnished and installed to provide a complete and functional unit. Payment for the Concrete Cut-Off Walls shall be made based on the authorized quantity at the unit price indicated in the Bid. Payment of the applicable Contract unit price shall be full compensation for furnishing all labor, materials and equipment necessary to install the cut-off walls including concrete, rebar, forms, excavation, sheeting, shoring, bracing, dewatering, backfill, compaction, grading, restoration and all other items required for a complete, acceptable and operable installation.
34	Asphalt Roadway Open Cut, Removal and Replacement (SY)	City of Arvada item 1171.00	See City of Arvada Standards item 1171.00
35	Concrete Sidewalk Removal and Replacement (SY)	City of Arvada item 1151.00	See City of Arvada Standards item 1151.00
36	Curb and Gutter Removal and Replacement (LF)	City of Arvada item 1151.00	See City of Arvada Standards item 1151.00
37	Sod Replacement (SY)	City of Arvada item 1194.00	See City of Arvada Standards item 1194.00
38	Seeding/Landscaping (SY)	City of Arvada item 1194.00	See City of Arvada Standards item 1194.00

Item No.	Item	Description	Measurement and Payment
39	Bedrock Excavation (CY)	Removal and disposal of bedrock encountered within limits of work.	Bedrock removal shall be measured in actual cubic yards of rock removed and disposed of for all areas as specified on the drawings. Payment will be made at the contract unit price bid per cubic yard as stated in the proposal for Redrock Removal and shall include all labor, materials, and equipment necessary to remove and dispose of existing rock. Work exceeding the quantity in the bid form will be compensated on an identical and scaled unit cost (\$/cy). Maximum volume measurement will be based on City standard for trench width and depth as shown on the drawings.
40	Fire Hydrant Assembly (EA)	City of Arvada item 1143.00	See City of Arvada Standards item 1143.00
41	Disconnect Existing Meter (Sheet F-5) (LS)	Disconnection of existing meter and all associated work shown on sheet F-5.	Disconnecting existing meter shall be lump sum. Payment will be made at the contract lump sum unit price as stated in the proposal for Disconnection of existing meter and shall include all labor, materials, and equipment necessary for a complete meter disconnection, including testing, protection of existing utilities, pipe, fittings, valves, pipe connection assemblies and appurtenances, mechanical restraint, metallic tracer wire, drilling mud, sodding, testing, disinfection, restoration, and clean-up. This pay item shall also include all maintenance of traffic, coordination with existing property owners, surface restoration, connections to existing utilities, and all other work required to complete the work shown on sheet F-5.

Item No.	Item	Description	Measurement and Payment
42	Cap Existing Water Main and Abandon in Place (EA)	Cap and abandonment of existing water mains as noted on the plans using City of Arvada Standard abandonment approach described in Section 420.03.01 of the City Standards.	Abandon-in-Place Pipe shall be measured in actual quantity of existing water main ends capped and abandoned in place, regardless of pipe size or material. Payment for the cap and abandonment shall be based on the authorized quantity at the unit price indicated in the Bid and shall include all labor, materials, and equipment to excavate, backfill and compact; sheet, shore, and brace; dewater; completely drain and properly dispose of pipe contents and hazardous material; grout fill, and plug or cap existing pipes of all services and sizes designated "to be abandoned" on the Drawings. This pay item shall also include disposal of hazardous material in accordance with City and State standards.
43, 44	Abandon in Place Existing 12", 24" Water Main (LF)	Cap and abandonment of existing water mains as noted on the plans using City of Arvada Standard abandonment approach described in Section 332 of the City Standards.	Abandon-in-Place Pipe shall be measured in linear feet of existing 24" water main abandoned in place, regardless of pipe material. Payment for the abandonment shall be based on the authorized quantity at the unit price indicated in the Bid and shall include all labor, materials, and equipment to excavate, backfill and compact; sheet, shore, and brace; dewater; completely drain and properly dispose of pipe contents and hazardous material; grout fill, and plug or cap existing pipes of all services and sizes designated "to be abandoned" on the Drawings. This pay item shall also include disposal of hazardous material in accordance with City and State standards.

Item No.	Item	Description	Measurement and Payment
45, 46	Croke Canal/Farmers Highline Canal Bypass (LS)	Provide provisions for bypassing flow in Croke/Farmers Highline Canal (if necessary) during open cut pipe installation on Sheet C-1, Sheet D-1, and Sheet E-1.	Bypass activities for Croke/Farmers Highline Canal crossings on Sheets C-1, D-1, and E-1 shall be lump sum. Payment will be made at the contract lump sum unit price as stated in the proposal for Croke/Farmers Highline Canal Bypass and shall include all labor, materials, and equipment necessary for a complete canal bypass, including canal dam, testing, protection of existing utilities, pumps, pipe, fittings, valves, pipe connection assemblies and appurtenances, drilling mud, earthwork, sodding, testing, restoration, and clean-up. This pay item shall also include all coordination with FRICO/Farmers Highline, coordination with private property owner, surface restoration, and all other work required to complete the work shown on Sheet C-1, Sheet D-1, and Sheet E-1.
47	8" Line Stop (Sheet G-2)	Provide temporary 8" line stop in existing 8" AC watermain and associated pipe appurtenances in accordance with Note 1 on Sheet G-2	8" line stop as shown on Sheet G-2 shall be lump sum. Payment will be made at the contract lump sum unit price for 8" line stop. This shall include all labor, materials, and equipment necessary to install and later remove the temporary 8" line stop shown on Sheet G-2. This pay item shall also include all maintenance of traffic, coordination with existing property owners, surface restoration, connections to existing utilities, and disposal of hazardous material in accordance with City and State standards.

Item No.	Item	Description	Measurement and Payment
48	River Rock and Landscape Replacement (Sheet G-3) (LS)	Removal and replacement of river rock, shrubs, and other landscape features, including irrigation repair and coordination with Costco for final restoration.	Removal and replacement of river rock and landscaping as shown on Sheet G-3 shall be lump sum. Payment will be made at the contract lump sum unit price for river rock and landscape replacement. This shall include all labor, materials, and equipment necessary for removal and replacement of decorative rock, shrubs, and landscaping, including irrigation system repair and coordination with Costco for final restoration. This pay item shall not include items measured elsewhere in the bid such as asphalt, sod, and sidewalk restoration.
49	Costco AC Pipe Removal (Sheet G-5) (LS)	Replacement and abandonment of existing AC pipe and all other work noted on Sheet G-5, including restoration.	Costco AC pipe replacement and abandonment; valve removal, and restoration and shown on Sheet G-5 shall be lump sum. Payment will be made at the contract lump sum unit price as stated in the proposal for removal of existing AC Pipe, installation of new PVC water main, valve removal, pipe abandonment, and all restoration required to return site to preconstruction conditions. This shall include all labor, materials, and equipment necessary for a complete pipe installation and testing including protection of existing utilities, pipe, fittings, valves, pipe connection assemblies and appurtenances, mechanical restraint, metallic tracer wire, drilling mud, sodding, testing, disinfection, restoration, and clean-up. This pay item shall also include all maintenance of traffic, coordination with existing property owners, surface restoration, connections to existing utilities, disposal of hazardous material in accordance with City and State standards, and all other work required to complete the work shown on sheet G-5.

Item No.	Item	Description	Measurement and Payment
50	Home Depot Surface and Landscape Restoration (Detail B, Sheet CD-8) (LS)	Removal and replacement of curb and gutter, landscaping, decorative rock, and tree as shown on Detail B, Sheet CD-8.	Home Depot surface restoration, as shown in Detail B on Sheet CD-8 shall be lump sum. Payment will be made at the contract lump sum unit price as stated in the proposal for Home Depot Surface and Landscape Restoration. This shall include all labor, materials, and equipment necessary for removal and replacement of curb and gutter, decorative rock, landscaping, trees, bollards, and signs. This pay item shall also include all maintenance of traffic and coordination with the property owner, as required, to complete work as shown in Detail B on Sheet CD-8. Asphalt removal and replacement shall not be included in this bid item.
51	Croke Canal and Farmers Highline Canal Bed Restoration	Removal and replacement of canal bed material and landscaping.	Payment will be made at the contract lump sum unit price as stated in the proposal for Croke Canal and Farmers Highline Canal Bed Restoration and shall include all labor, materials, and equipment necessary for a complete canal restoration, clay replacement, seeding, sodding, compaction, and testing. This pay item shall also include all coordination with FRICO/Farmers Highline, coordination with private property owner, and all other work required to complete the canal property restoration work shown on sheet C-1, Sheet D-1, and Sheet E-1.

Item No.	Item	Description	Measurement and Payment
52	Test Holing (LS)	The Contractor shall be required to locate all utility crossings to Subsurface Quality Engineering (SUE) Quality Level A (QL-A) in accordance with ASCE C-I-38-02, Standard Guidelines for the Collection and Depiction of Existing Subsurface Utility Data, along proposed construction areas to determine exact size, type, location and depth prior to installation of the improvements. Contractor shall visualize all existing water mains that will be connected to the new water main via test holing prior to the planned tie-in date, and with enough advanced notice for Contractor to plan for tie-in, including procurement of specialty parts, if needed.	Payment will be made at the contract lump sum unit price as stated in the proposal for Test Holing and shall include all permitting, labor, materials, and equipment necessary to complete Test Holing as noted in the document.
53, 54, 55, 56	Dewatering – C Sheets, E Sheets, F Sheets, G Sheets	Removal of groundwater to allow for pipe installation.	Payment will be made at the contract lump sum unit price as stated in the proposal for Dewatering by location and shall include all permitting, labor, materials, and equipment necessary to complete dewatering as noted in the City of Arvada Standards. Note that nuisance flows will not be considered dewatering and their removal will be included in the pay item for installation of pipe.
57	Citizen Notification	Citizen notification, as required, for commencement of work as shown in the contract documents.	Payment will be made at the contract lump sum unit price as stated in the proposal for Citizen Notification and shall include all items for notification including coordination, printing, delivery, labor, and materials.

Measurement and Payment

Item No.	Item	Description	Measurement and Payment
58	Cathodic Protection	Cathodic protection of metallic pipe at all segments where noted in the contract documents.	Payment will be made at the contract lump sum unit price as stated in the proposal for cathodic protection and shall include all labor, materials, and equipment necessary to install cathodic protection systems as shown in the contract documents and required in the City of Arvada Standards, item 420.19.

END OF SECTION 012200

SECTION 013100 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative provisions for coordinating construction operations on Project, including, but not limited to, the following:
 - 1. General coordination procedures.
 - 2. RFIs.
 - 3. Digital project management procedures.
 - 4. Web-based Project management software package.
 - 5. Project meetings.
- B. Each contractor shall participate in coordination requirements. Certain areas of responsibility are assigned to a specific contractor.
- C. Related Requirements:
 - 1. Section 013200 "Construction Progress Documentation" for preparing and submitting Contractor's construction schedule.
 - 2. Section 017300 "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.

1.3 DEFINITIONS

- A. RFI: Request for Information. Request from Owner, Construction Manager, Engineer, or Contractor seeking information required by or clarifications of the Contract Documents.

1.4 INFORMATIONAL SUBMITTALS

- A. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:
 - 1. Name, address, telephone number, and email address of entity performing subcontract or supplying products.
 - 2. Number and title of related Specification Section(s) covered by subcontract.
 - 3. Drawing number and detail references, as appropriate, covered by subcontract.

- B. Key Personnel Names: Within 15 days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities, list addresses, cellular telephone numbers, and e-mail addresses. Provide names, addresses, and telephone numbers of individuals assigned as alternates in the absence of individuals assigned to Project.

1.5 GENERAL COORDINATION PROCEDURES

- A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations included in different Sections that depend on each other for proper installation, connection, and operation.
 - 1. Schedule construction operations in sequence required to obtain the best results, where installation of one part of the Work depends on installation of other components, before or after its own installation.
 - 2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
 - 3. Make adequate provisions to accommodate items scheduled for later installation.
- B. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and scheduled activities of other contractors and direction of Project coordinator to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
 - 1. Preparation of Contractor's construction schedule.
 - 2. Preparation of the schedule of values.
 - 3. Installation and removal of temporary facilities and controls.
 - 4. Delivery and processing of submittals.
 - 5. Progress meetings.
 - 6. Preinstallation conferences.
 - 7. Project closeout activities.
 - 8. Startup and adjustment of systems.

1.6 REQUEST FOR INFORMATION (RFI)

- A. General: Immediately on discovery of the need for additional information, clarification, or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.
 - 1. Project Engineer will return without response those RFIs submitted to Engineer by other entities controlled by Contractor.
 - 2. Coordinate and submit RFIs in a prompt manner to avoid delays in Contractor's work or work of subcontractors.
- B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:

1. Project name.
 2. Owner name.
 3. Owner's Project number.
 4. Name of Engineer and Construction Manager.
 5. Engineer's Project number.
 6. Date.
 7. Name of Contractor.
 8. RFI number, numbered sequentially.
 9. RFI subject.
 10. Specification Section number and title and related paragraphs, as appropriate.
 11. Drawing number and detail references, as appropriate.
 12. Field dimensions and conditions, as appropriate.
 13. Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
 14. Contractor's signature.
 15. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.
 - a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.
- C. RFI Forms: AIA Document G716.
1. Attachments shall be electronic files in PDF format.
- D. Project Engineer's Action: Project Engineer will review each RFI, determine action required, and respond. Allow seven days for Project Engineer's response for each RFI. RFIs received by Project Engineer after 1:00 p.m. will be considered as received the following working day.
1. The following Contractor-generated RFIs will be returned without action:
 - a. Requests for approval of submittals.
 - b. Requests for approval of substitutions.
 - c. Requests for approval of Contractor's means and methods.
 - d. Requests for coordination information already indicated in the Contract Documents.
 - e. Requests for adjustments in the Contract Time or the Contract Sum.
 - f. Requests for interpretation of Engineer's actions on submittals.
 - g. Incomplete RFIs or inaccurately prepared RFIs.
 2. Project Engineer's action may include a request for additional information, in which case Project Engineer's time for response will date from time of receipt by Project Engineer of additional information.
 3. Project Engineer's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Section 012600 "Contract Modification Procedures."
 - a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Engineer in writing within 5 days of receipt of the RFI response.

- E. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log weekly. Include the following:
 - 1. Project name.
 - 2. Name and address of Contractor.
 - 3. Name and address of Project Engineer.
 - 4. RFI description.
 - 5. Date the RFI was submitted.
 - 6. Date Project Engineer's response was received.
 - 7. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.
 - 8. Identification of related Field Order, Work Change Directive, and Proposal Request, as appropriate.
- F. On receipt of Project Engineer's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Engineer within seven days if Contractor disagrees with response.

1.7 DIGITAL PROJECT MANAGEMENT PROCEDURES

- A. Use of Design Engineer's Digital Data Files: Digital data files of Design Engineer's CAD drawings will be provided by Design Engineer for Contractor's use during construction.
 - 1. Digital data files may be used by Contractor in preparing coordination drawings, Shop Drawings, and Project Record Drawings.
 - 2. Design Engineer makes no representations as to the accuracy or completeness of digital data files as they relate to Contract Drawings.
 - 3. Digital Drawing Software Program: Contract Drawings are available in AutoCAD.
- B. PDF Document Preparation: Where PDFs are required to be submitted to Engineer, prepare as follows:
 - 1. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
 - 2. Name file with submittal number or other unique identifier, including revision identifier.
 - 3. Certifications: Where digitally submitted certificates and certifications are required, provide a digital signature with digital certificate on where indicated.

1.8 PROJECT MEETINGS

- A. General: Schedule and conduct meetings and conferences at Project site unless otherwise indicated.
 - 1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Project Engineer of scheduled meeting dates and times a minimum of 10 working days prior to meeting.

2. Agenda: City or City's representative to prepare the meeting agenda. Distribute the agenda to all invited attendees.
 3. Minutes: City or City's representative will record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Engineer, within three days of the meeting.
- B. Preconstruction Conference: Per City of Arvada Standards 1121.03, a meeting of City project personnel, Contractor project personnel and other stakeholders will be held prior to the beginning of construction of all projects, at which topics pertinent to the successful prosecution of the work will be discussed.
1. Attendees: Authorized representatives of Owner Engineer, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 2. Agenda: Discuss items of significance that could affect progress, including the following:
 - a. Responsibilities and personnel assignments.
 - b. Tentative construction schedule.
 - c. Phasing.
 - d. Critical work sequencing and long lead items.
 - e. Designation of key personnel and their duties.
 - f. Lines of communications.
 - g. Use of web-based Project software.
 - h. Procedures for processing field decisions and Change Orders.
 - i. Procedures for RFIs.
 - j. Procedures for testing and inspecting.
 - k. Procedures for processing Applications for Payment.
 - l. Distribution of the Contract Documents.
 - m. Submittal procedures.
 - n. Sustainable design requirements.
 - o. Preparation of Record Documents.
 - p. Use of the premises.
 - q. Work restrictions.
 - r. Working hours.
 - s. Owner's occupancy requirements.
 - t. Responsibility for temporary facilities and controls.
 - u. Procedures for moisture and mold control.
 - v. Procedures for disruptions and shutdowns.
 - w. Construction waste management and recycling.
 - x. Parking availability.
 - y. Office, work, and storage areas.
 - z. Equipment deliveries and priorities.
 - aa. First aid.
 - bb. Security.
 - cc. Progress cleaning.
 - dd. List of major subcontractors and suppliers.
 3. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.

- C. Preinstallation Conferences: Prior to commencement of construction activity in each area, conduct a preinstallation conference at Project site.
1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Project Engineer of scheduled meeting dates.
 2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
 - a. Contract Documents.
 - b. Options.
 - c. Related RFIs.
 - d. Related Change Orders.
 - e. Purchases.
 - f. Deliveries.
 - g. Submittals.
 - h. Sustainable design requirements.
 - i. Review of mockups.
 - j. Possible conflicts.
 - k. Compatibility requirements.
 - l. Time schedules.
 - m. Weather limitations.
 - n. Manufacturer's written instructions.
 - o. Warranty requirements.
 - p. Compatibility of materials.
 - q. Acceptability of substrates.
 - r. Temporary facilities and controls.
 - s. Space and access limitations.
 - t. Regulations of authorities having jurisdiction.
 - u. Testing and inspecting requirements.
 - v. Installation procedures.
 - w. Coordination with other work.
 - x. Required performance results.
 - y. Protection of adjacent work.
 - z. Protection of construction and personnel.
 3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
 4. Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.
 5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.
- D. Project Closeout Conference: Schedule and conduct a project closeout conference, at a time convenient to Owner and Project Engineer, but no later than 90 days prior to the scheduled date of Substantial Completion.
1. Conduct the conference to review requirements and responsibilities related to Project closeout.

2. Attendees: Authorized representatives of Owner, Engineer, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
 3. Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:
 - a. Preparation of Record Documents.
 - b. Procedures required prior to inspection for Substantial Completion and for final inspection for acceptance.
 - c. Procedures for completing and archiving web-based Project software site data files.
 - d. Submittal of written warranties.
 - e. Requirements for completing sustainable design documentation.
 - f. Requirements for preparing operations and maintenance data.
 - g. Requirements for delivery of material samples, attic stock, and spare parts.
 - h. Requirements for demonstration and training.
 - i. Preparation of Contractor's punch list.
 - j. Procedures for processing Applications for Payment at Substantial Completion and for final payment including final change order.
 - k. Submittal procedures.
 - l. Coordination of separate contracts.
 - m. Owner's partial occupancy requirements including certificate of occupancy and closeout of permits.
 - n. Installation of Owner's furniture, fixtures, and equipment.
 - o. Responsibility for removing temporary facilities and controls.
 - p. Final cleaning.
 4. Minutes: Entity conducting meeting will record and distribute meeting minutes.
- E. Progress Meetings: Conduct progress meetings at weekly intervals.
1. Coordinate dates of meetings with preparation of payment requests.
 2. Attendees: In addition to representatives of Owner and Project Engineer, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
 3. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
 - a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
 - 1) Review schedule for next period.

- b. Review present and future needs of each entity present, including the following:
 - 1) Interface requirements.
 - 2) Sequence of operations.
 - 3) Resolution of BIM component conflicts.
 - 4) Status of submittals.
 - 5) Status of sustainable design documentation.
 - 6) Deliveries.
 - 7) Off-site fabrication.
 - 8) Access.
 - 9) Site use.
 - 10) Temporary facilities and controls.
 - 11) Progress cleaning.
 - 12) Quality and work standards.
 - 13) Status of correction of deficient items.
 - 14) Field observations.
 - 15) Status of RFIs.
 - 16) Status of Proposal Requests.
 - 17) Pending changes.
 - 18) Status of Change Orders.
 - 19) Pending claims and disputes.
 - 20) Documentation of information for payment requests.
- 4. Minutes: Entity responsible for conducting the meeting will record and distribute the meeting minutes to each party present and to parties requiring information.
 - a. Schedule Updating: Revise Contractor's construction schedule after each progress meeting, where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 013100

SECTION 013200 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
 - 1. Startup construction schedule.
 - 2. Contractor's Construction Schedule.
 - 3. Construction schedule updating reports.
 - 4. Daily construction reports.
 - 5. Material location reports.
 - 6. Site condition reports.
 - 7. Unusual event reports.

1.3 DEFINITIONS

- A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction Project. Activities included in a construction schedule consume time and resources.
 - 1. Critical Activity: An activity on the critical path that must start and finish on the planned early start and finish times.
 - 2. Predecessor Activity: An activity that precedes another activity in the network.
 - 3. Successor Activity: An activity that follows another activity in the network.
- B. Cost Loading: The allocation of the schedule of values for completing an activity as scheduled. The sum of costs for all activities must equal the total Contract Sum.
- C. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine the critical path of Project and when activities can be performed.
- D. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.
- E. Event: The starting or ending point of an activity.
- F. Float: The measure of leeway in starting and completing an activity.

1. Float time is not for the exclusive use or benefit of either Owner or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.
 2. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the successor activity.
 3. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.
- G. Resource Loading: The allocation of manpower and equipment necessary for completing an activity as scheduled.

1.4 INFORMATIONAL SUBMITTALS

- A. Format for Submittals: Submit required submittals in the following format:
1. Working electronic copy of schedule file.
 2. PDF file.
- B. Startup construction schedule.
1. Submittal of cost-loaded, startup construction schedule will not constitute approval of schedule of values for cost-loaded activities.
- C. Startup Network Diagram: Of size required to display entire network for entire construction period. Show logic ties for activities.
- D. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.
1. Submit a working digital copy of schedule, using software indicated, and labeled to comply with requirements for submittals.
- E. CPM Reports: Concurrent with CPM schedule, submit each of the following reports. Format for each activity in reports shall contain activity number, activity description, cost and resource loading, original duration, remaining duration, early start date, early finish date, latest allowable start date, latest allowable finish date, status (where critical) and total float and free float in calendar days.
1. Activity Report: List of activities sorted by activity number and then early start date, or actual start date if known.
 2. Logic Report: List of preceding and succeeding activities for each activity, sorted in ascending order by activity number and then by early start date, or actual start date if known.
 3. Total Float Report: List of activities sorted in ascending order of total float.
 4. Earnings Report: Compilation of Contractor's total earnings from the Notice to Proceed until most recent Application for Payment.
- F. Construction Schedule Updating Reports: Submit with Applications for Payment.
- G. Daily Construction Reports: Submit at weekly intervals.

- H. Material Location Reports: Submit at weekly intervals.
- I. Site Condition Reports: Submit at time of discovery of differing conditions.
- J. Unusual Event Reports: Submit at time of unusual event.
- K. Qualification Data: For scheduling consultant.

1.5 QUALITY ASSURANCE

- A. Scheduling Consultant Qualifications: An experienced specialist in CPM scheduling and reporting, with capability of producing CPM reports and diagrams within 24 hours of Engineer's request.
- B. Prescheduling Conference: Conduct conference at Project site to comply with requirements in Section 013100 "Project Management and Coordination." Review methods and procedures related to the preliminary construction schedule and Contractor's Construction Schedule, including, but not limited to, the following:
 - 1. Review software limitations and content and format for reports.
 - 2. Verify availability of qualified personnel needed to develop and update schedule.
 - 3. Discuss constraints, including phasing work stages area separations interim milestones and partial Owner occupancy.
 - 4. Review delivery dates for Owner-furnished products.
 - 5. Review schedule for work of Owner's separate contracts.
 - 6. Review submittal requirements and procedures.
 - 7. Review time required for review of submittals and resubmittals.
 - 8. Review requirements for tests and inspections by independent testing and inspecting agencies.
 - 9. Review time required for Project closeout and Owner startup procedures, including commissioning activities.
 - 10. Review and finalize list of construction activities to be included in schedule.
 - 11. Review procedures for updating schedule.
 - 12. Submit at this conference a preliminary network defining the planned operation during the first 60 calendar days after the Notice to Proceed.

1.6 COORDINATION

- A. Coordinate Contractor's Construction Schedule with the schedule of values, submittal schedule, progress reports, payment requests, and other required schedules and reports.
 - 1. Secure time commitments for performing critical elements of the Work from entities involved.
 - 2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

1.7 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Program Description

1. A Critical Path Method (CPM) construction schedule shall be used to control the Work and to provide a basis for determining job progress. The construction schedule shall be prepared and maintained by the Contractor. All work shall be done in accordance with the established CPM schedule. The Contractor and all subcontractors shall cooperate fully in developing the construction schedule and in executing the work in accordance with the CPM schedule.
2. The construction schedule shall consist of a computerized CPM network (diagram of activities) presented in a time-scaled graphic (print-out) with reports, as specified herein.

B. Computer Scheduling Software: Prepare schedules using current version of a program that has been developed specifically to manage construction schedules.

1. Use Microsoft Project for current Windows operating system.

C. Qualifications:

1. The Contractor shall have the capability of preparing and utilizing the specified CPM schedule or engage the services of a specialized scheduling professional to do so. Within seven days of the award of contract, provide a résumé or qualifications statement for the individual within the Contractor's organization, or the outside consultant, who is being proposed as the responsible party for development and maintenance of the CPM schedule. The résumé or qualifications statement shall demonstrate that the proposed responsible party has successfully developed and maintained CPM schedules for at least three construction projects of the same size or greater than this project. The proposed responsible party for the CPM schedule is subject to approval by the Engineer and Owner. If the proposed responsible party for the CPM schedule is not approved by the Engineer and/or Owner, Contractor shall resubmit a more-appropriate candidate for approval.

D. Time Frame: Extend schedule from date established for the Notice to Proceed to date of Final Completion.

E. Activities: Treat each floor or separate area as a separate numbered activity for each main element of the Work. Comply with the following:

1. Activity Duration: Define activities so no activity is longer than 20 days, unless specifically allowed by Engineer.
2. Activities to facilitate the Work: Indicate start and completion dates for the following as applicable:
 - a. Securing of approvals and permits required for performance of the Work.
 - b. Temporary facilities.
 - c. Construction of mock-ups, prototypes and samples.
 - d. Owner interfaces and furnishing of items.
 - e. Interfaces with Separate Contracts.
 - f. Regulatory agency approvals.
 - g. Punch list.

3. Procurement Activities: Include procurement process activities for the following long lead-time items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
 4. Submittal Review Time: Include review and resubmittal times indicated in Section 013300 "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's Construction Schedule with submittal schedule.
 5. Startup and Testing Time: Include no fewer than 15 days for startup and testing.
 6. Commissioning Time: Include no fewer than 15 days for commissioning.
 7. Substantial Completion: Indicate completion in advance of date established for Substantial Completion and allow time for Engineer's administrative procedures necessary for certification of Substantial Completion.
 8. Punch List and Final Completion: Include not more than 30 days for completion of punch list items and Final Completion.
- F. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.
1. Phasing: Arrange list of activities on schedule by phase.
 2. Work under More Than One Contract: Include a separate activity for each contract.
 3. Work by Owner: Include a separate activity for each portion of the Work performed by Owner.
 4. Products Ordered in Advance: Include a separate activity for each product. Include delivery date indicated in Section 011000 "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
 5. Owner-Furnished Products: Include a separate activity for each product. Include delivery date indicated in Section 011000 "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
 6. Work Restrictions: Show the effect of the following items on the schedule:
 - a. Coordination with existing construction.
 - b. Limitations of continued occupancies.
 - c. Uninterruptible services.
 - d. Partial occupancy before Substantial Completion.
 - e. Use-of-premises restrictions.
 - f. Provisions for future construction.
 - g. Seasonal variations.
 - h. Environmental control.
 7. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:
 - a. Subcontract awards.
 - b. Submittals.
 - c. Purchases.
 - d. Mockups.
 - e. Fabrication.
 - f. Sample testing.
 - g. Deliveries.
 - h. Installation.
 - i. Tests and inspections.

- j. Adjusting.
 - k. Curing.
 - l. Building flush-out.
 - m. Startup and placement into final use and operation.
 - n. Commissioning.
8. Construction Areas: Identify each major area of construction for each major portion of the Work. Indicate where each construction activity within a major area must be sequenced or integrated with other construction activities to provide for the following:
- a. Structural completion.
 - b. Temporary enclosure and space conditioning.
 - c. Permanent space enclosure.
 - d. Completion of mechanical installation.
 - e. Completion of electrical installation.
 - f. Substantial Completion.
- G. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and Final Completion.
- H. Cost Correlation: Superimpose a cost correlation timeline, indicating planned and actual costs. On the line, show planned and actual dollar volume of the Work performed as of planned and actual dates used for preparation of payment requests.
- I. Upcoming Work Summary: Prepare summary report indicating activities scheduled to occur or commence prior to submittal of next schedule update. Summarize the following issues:
- 1. Unresolved issues.
 - 2. Unanswered Requests for Information.
 - 3. Rejected or unreturned submittals.
 - 4. Notations on returned submittals.
 - 5. Pending modifications affecting the Work and the Contract Time.
- J. Acceptability
- 1. Submit the CPM schedule submittals, as specified, and resubmit as needed, until they are in compliance with Contract requirements.
 - 2. The Project Engineer's review of the Contractor's construction schedule submittals will only be for conformance with the Contract requirements – including but not limited to contract time and work sequences specified in the contract documents. The Project Engineer's review of the schedule shall not include the Contractor's means and methods of construction or safety. The Project Engineer's concurrence, acceptance, or approval of the Contractor's schedule submittals will not relieve the Contractor from responsibility for complying with the Contract Scope, Contract Time or any other contract requirement. Any indication of concurrence, acceptance, or approval of the Contractor's schedule will only indicate a general conformance with the Contract Requirements.
 - 3. Project Engineer's review of the Contractor's construction schedule submittals shall not relieve the Contractor from responsibility for any deviations from the Contract Documents unless the Contractor has in writing called Project Engineer's attention to such deviations at the time of submission and Project Engineer has given written concurrence to the specific deviations, nor shall any concurrence by the Project Engineer

- relieve Contractor from responsibility for errors and omissions in the submittals. Concurrence of the CPM Activity Network by the Engineer is advisory only and shall not relieve the Contractor of responsibility for accomplishing the Work within the Contract completion date(s).
4. Concurrence, acceptance, or approval of the Contractor's CPM schedule by the Project Engineer in no way makes the Project Engineer an insurer of the CPM schedule's success, nor liable for time or cost overruns resulting therefrom.
 5. Failure to include any element of work required for the performance of this Contract will not excuse the Contractor from completing all Work required within the Contract completion date(s), notwithstanding the review of the network by the Project Engineer.
 6. CPM schedules that contain activities with negative float, or which extend beyond the contract completion date, will not be acceptable.
 7. Except where earlier completions are specified, CPM schedules which show completion of all work prior to the contract completion date may be indicated; however, in no event shall they constitute a basis for claim for delay by the Contractor.
- K. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.
1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
 2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
 3. As the Work progresses, indicate Final Completion percentage for each activity. Activities shall not be considered to be complete until they are in fact 100 percent complete.
 4. Submit a narrative report based on the CPM schedule evaluation, in a format agreed upon by the Contractor and the Project Engineer. The report shall include a description of the progress during the previous period in terms of completed activities, an explanation of each activity which is showing a delay, a description of problem areas, current and anticipated delaying factors and their estimated impact on performance of other activities and completion dates and an explanation of corrective action taken or proposed.
- L. Recovery Schedule: When periodic update indicates the Work is 14 or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, equipment required to achieve compliance, and date by which recovery will be accomplished.
- M. The contract completion time will be adjusted only for causes specified in this Contract. In the event the Contractor requests an extension of any contract completion date, the Contractor shall furnish such justification and supporting evidence as the Project Engineer may deem necessary to determine whether the Contractor is entitled to an extension of time under the provisions of this Contract. The Project Engineer will, after receipt of such justification and supporting evidence, make findings of fact and will advise the Contractor in writing thereof. If the Project Engineer finds that the Contractor is entitled to any extension of any contract completion date, the Project Engineer's determination as to the total number of days extension shall be based upon the currently approved CPM schedule and on all data relevant to the extension. Such data shall be included in the next updating of the schedule. Actual delays in activities which,

according to the CPM schedule, do not affect any contract completion date shown by the critical path in the network will not be the basis for a change therein.

- N. Distribution: Distribute copies of approved schedule to Project Engineer and Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.
 - 1. Post copies in Project meeting rooms and temporary field offices.
 - 2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

1.8 STARTUP CONSTRUCTION SCHEDULE

- A. Gantt-Chart Schedule: Submit startup, horizontal, Gantt-chart-type construction schedule within seven days of date established for the Notice to Proceed.
- B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line. Outline significant construction activities for first 90 days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.

1.9 GANTT-CHART SCHEDULE REQUIREMENTS

- A. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal, Gantt-chart-type, Contractor's Construction Schedule within 30 days of date established for the Notice to Proceed.
 - 1. Base schedule on the startup construction schedule and additional information received since the start of Project.
- B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.
 - 1. For construction activities that require three months or longer to complete, indicate an estimated completion percentage in 10 percent increments within time bar.

1.10 CPM SCHEDULE REQUIREMENTS

- A. Prepare network diagrams using AON (activity-on-node) format.
- B. Startup Network Diagram: Submit diagram within 14 days of date established for the Notice to Proceed. Outline significant construction activities for the first 90 days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.
- C. CPM Schedule: Prepare Contractor's Construction Schedule using a cost- and resource-loaded, time-scaled CPM network analysis diagram for the Work.

1. Develop network diagram in sufficient time to submit CPM schedule, so it can be accepted for use no later than 60 days after date established for the Notice to Proceed.
 - a. Failure to include any work item required for performance of this Contract shall not excuse Contractor from completing all work within applicable completion dates.
 2. Conduct educational workshops to train and inform key Project personnel, including subcontractors' personnel, in proper methods of providing data and using CPM schedule information.
 3. Establish procedures for monitoring and updating CPM schedule and for reporting progress. Coordinate procedures with progress meeting and payment request dates.
 4. Use "one workday" as the unit of time for individual activities. Indicate nonworking days and holidays incorporated into the schedule to coordinate with the Contract Time.
- D. CPM Schedule Preparation: Prepare a list of all activities required to complete the Work. Using the startup network diagram, prepare a skeleton network to identify probable critical paths.
1. Activities: Indicate the estimated time duration, sequence requirements, and relationship of each activity in relation to other activities. Include estimated time frames for the following activities:
 - a. Preparation and processing of submittals.
 - b. Mobilization and demobilization.
 - c. Purchase of materials.
 - d. Delivery.
 - e. Fabrication.
 - f. Utility interruptions.
 - g. Installation.
 - h. Work by Owner that may affect or be affected by Contractor's activities.
 - i. Testing and inspection.
 - j. Commissioning.
 - k. Punch list and Final Completion.
 - l. Activities occurring following Final Completion.
 - m. Maintenance of existing facilities.
 - n. Contract milestones.
 2. Critical Path Activities: Identify critical path activities, including those for interim completion dates. Scheduled start and completion dates shall be consistent with Contract milestone dates.
 3. Processing: Process data to produce output data on a computer-drawn, time-scaled network. Revise data, reorganize activity sequences, and reproduce as often as necessary to produce the CPM schedule within the limitations of the Contract Time.
 4. Format: Mark the critical path. Locate the critical path near center of network; locate paths with most float near the edges.
 - a. Subnetworks on separate sheets are permissible for activities clearly off the critical path.
 5. Cost- and Resource-Loading of CPM Schedule: Assign cost to construction activities on the CPM schedule. Do not assign costs to submittal activities. Obtain Project Engineer's

approval prior to assigning costs to fabrication and delivery activities. Assign costs under main subcontracts for testing and commissioning activities, operation and maintenance manuals, punch list activities, Project record documents and demonstration and training (if applicable), in the amount of 5 percent of the Contract Sum.

- a. Each activity cost shall reflect an appropriate value subject to approval by Engineer.
 - b. Total cost assigned to activities shall equal the total Contract Sum.
- E. Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis using a network fragment to demonstrate the effect of the proposed change on the overall Project schedule.
- F. Initial Issue of Schedule: Prepare initial network diagram from a sorted activity list indicating straight "early start-total float." Identify critical activities. Prepare tabulated reports showing the following:
 1. Contractor or subcontractor and the Work or activity.
 2. Description of activity.
 3. Main events of activity.
 4. Immediate preceding and succeeding activities.
 5. Early and late start dates.
 6. Early and late finish dates.
 7. Activity duration in workdays.
 8. Total float or slack time.
 9. Average size of workforce.
 10. Dollar value of activity (coordinated with the schedule of values).
- G. Schedule Updating: Concurrent with making revisions to schedule, prepare tabulated reports showing the following:
 1. Identification of activities that have changed.
 2. Changes in early and late start dates.
 3. Changes in early and late finish dates.
 4. Changes in activity durations in workdays.
 5. Changes in the critical path.
 6. Changes in total float or slack time.
 7. Changes in the Contract Time.
- H. Value Summaries: Prepare two cumulative value lists, sorted by finish dates.
 1. In first list, tabulate activity number, early finish date, dollar value, and cumulative dollar value.
 2. In second list, tabulate activity number, late finish date, dollar value, and cumulative dollar value.
 3. In subsequent issues of both lists, substitute actual finish dates for activities completed as of list date.
 4. Prepare list for ease of comparison with payment requests; coordinate timing with progress meetings.

- a. In both value summary lists, tabulate "actual percent complete" and "cumulative value completed" with total at bottom.
- b. Submit value summary printouts one week before each regularly scheduled progress meeting.

1.11 REPORTS

- A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:
 1. List of subcontractors at Project site.
 2. List of separate contractors at Project site.
 3. Approximate count of personnel at Project site.
 4. Equipment at Project site.
 5. Material deliveries.
 6. High and low temperatures and general weather conditions, including presence of rain or snow.
 7. Testing and inspection.
 8. Accidents.
 9. Meetings and significant decisions.
 10. Unusual events.
 11. Stoppages, delays, shortages, and losses.
 12. Meter readings and similar recordings.
 13. Emergency procedures.
 14. Orders and requests of authorities having jurisdiction.
 15. Change Orders received and implemented.
 16. Work Change Directives received and implemented.
 17. Services connected and disconnected.
 18. Equipment or system tests and startups.
 19. Partial completions and occupancies.
 20. Substantial Completions authorized.
- B. Material Location Reports: At weekly intervals, prepare and submit a comprehensive list of materials delivered to and stored at Project site. List shall be cumulative, showing materials previously reported plus items recently delivered. Include with list a statement of progress on and delivery dates for materials or items of equipment fabricated or stored away from Project site. Indicate the following categories for stored materials:
 1. Material stored prior to previous report and remaining in storage.
 2. Material stored prior to previous report and since removed from storage and installed.
 3. Material stored following previous report and remaining in storage.
- C. Site Condition Reports: Immediately on discovery of a difference between site conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.
- D. Unusual Event Reports: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, responses by Contractor's personnel, evaluation of results or

effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.

1. Submit unusual event reports directly to Owner within one day(s) of an occurrence. Distribute copies of report to parties affected by the occurrence.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 013200

SECTION 013233 - PHOTOGRAPHIC DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for the following:

1. Aerial and preconstruction photographs.
2. Concealed Work photographs.
3. Periodic construction photographs.
4. Final Completion construction photographs.
5. Preconstruction video recordings.
6. Periodic construction video recordings.
7. Construction webcam.

1.3 INFORMATIONAL SUBMITTALS

- A. Digital Photographs: Submit image files weekly.

1. Submit photos digitally or on thumb-drive. Include copy of key plan indicating each photograph's location and direction.
2. Identification: Provide the following information with each image description in file metadata tag:
 - a. Name of Project.
 - b. Name and contact information for photographer.
 - c. Name of Engineer.
 - d. Name of Contractor.
 - e. Date photograph was taken.
 - f. Description of location, vantage point, and direction.
 - g. Unique sequential identifier keyed to accompanying key plan.

- B. Video Recordings: Submit video recordings within seven days of recording.

1. Submit video recordings digitally or on thumb drive. Include copy of key plan indicating each video's location and direction.
2. Identification: With each submittal, provide the following information in file metadata tag:
 - a. Name of Project.
 - b. Name and address of photographer.

- c. Name of Engineer.
- d. Name of Contractor.
- e. Date video recording was recorded.
- f. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.

1.4 FORMATS AND MEDIA

- A. Digital Photographs: Provide color images in JPG format, produced by a digital camera with minimum sensor size of 12 megapixels, and at an image resolution of not less than 3200 by 2400 pixels. Use flash in low light levels or backlit conditions.
- B. Digital Video Recordings: Provide high-resolution, digital video in MPEG format, produced by a digital camera with minimum sensor resolution of 12 megapixels and capable of recording in full high-definition mode. Provide supplemental lighting in low light levels or backlit conditions.
- C. Digital Images: Submit digital media as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.
- D. Metadata: Record accurate date and time and GPS location data from camera.
- E. File Names: Name media files with date Project area and sequential numbering suffix.
- F. Usage Rights
 - 1. Obtain and transfer copyright usage rights from photographer and videographer to Owner for unlimited reproduction of photographic and videographic documentation.

1.5 CONSTRUCTION PHOTOGRAPHS

- A. General: Take photographs with maximum depth of field and in focus.
 - 1. Maintain key plan with each set of construction photographs that identifies each photographic location.
- B. Preconstruction Photographs: Before commencement of the Work take photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points, as directed by Engineer.
 - 1. Flag excavation areas before taking construction photographs.
 - 2. Take 20 or more photographs to show existing conditions adjacent to property before starting the Work.
 - 3. Take 20 or more photographs of existing buildings either on or adjoining property to accurately record physical conditions at start of construction.
 - 4. Take additional photographs as required to record settlement or cracking of adjacent structures, pavements, and improvements.
- C. Concealed Work Photographs: Before proceeding with installing work that will conceal other work, have an inspection by Owner or Project Engineer completed, then take photographs

sufficient in number, with annotated descriptions, to record nature and location of concealed Work, including, but not limited to, the following:

1. Underground utilities.
 2. Underslab services.
 3. Piping.
 4. Electrical conduit.
 5. Waterproofing and weather-resistant barriers.
- D. Periodic Construction Photographs: Take 20 or more photographs per project area weekly coinciding with the cutoff date associated with each Application for Payment. Select vantage points to show status of construction and progress since last photographs were taken.
- E. Final Completion Construction Photographs: Take 20 or more photographs per project area after date of Substantial Completion for submission as Project Record Documents. Project Engineer will inform photographer of desired vantage points.
- F. Additional Photographs: Project Engineer or Construction Manager may request photographs in addition to periodic photographs specified. Additional photographs will be paid for by Change Order and are not included in the Contract Sum or in the allowance for construction photographs.
1. Three days' notice will be given, where feasible.
 2. In emergency situations, take additional photographs within 24 hours of request.
 3. Circumstances that could require additional photographs include, but are not limited to, the following:
 - a. Special events planned at Project site.
 - b. Immediate follow-up when on-site events result in construction damage or losses.
 - c. Photographs shall be taken at fabrication locations away from Project site. These photographs are not subject to unit prices or unit-cost allowances.
 - d. Substantial Completion of a major phase or component of the Work.
 - e. Extra record photographs at time of final acceptance.
 - f. Owner's request for special publicity photographs.
 4. Owner may send their representative to take their own photographs at any time for no additional cost.

1.6 CONSTRUCTION VIDEO RECORDINGS

- A. Narration: Describe scenes on video recording by audio narration by microphone while or dubbing audio narration off-site after video recording is recorded. Include description of items being viewed, recent events, and planned activities. At each change in location, describe vantage point, location, direction (by compass point), and elevation or story of construction.
1. Confirm date and time at beginning and end of recording.
 2. Begin each video recording with name of Project, Contractor's name, videographer's name, and Project location.

- B. Transcript: Provide a typewritten transcript of the narration. Display images and running time captured from video recording opposite the corresponding narration segment.
- C. Periodic Construction Video Recordings: Record video recording monthly coinciding with the cutoff date associated with each Application for Payment. Select vantage points to show status of construction and progress since last video recordings were recorded. Minimum recording time shall be 30 minutes(s).

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 013233

SECTION 013300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Submittal schedule requirements.
 - 2. Administrative and procedural requirements for submittals.

- B. Related Requirements:

- 1. Section 013100 "Project Management and Coordination" for submitting coordination drawings and subcontract list and for requirements for web-based Project software.
 - 2. Section 013200 "Construction Progress Documentation" for submitting schedules and reports, including Contractor's construction schedule.
 - 3. Section 013233 "Photographic Documentation" for submitting preconstruction photographs, periodic construction photographs, and Final Completion construction photographs.

1.3 DEFINITIONS

- A. Action Submittals: Written and graphic information and physical samples that require Project Engineer's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."
- B. Informational Submittals: Written and graphic information and physical samples that do not require Project Engineer's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."
- C. Mass Submittals: Six or more submittals or items in one day or 20 or more submittals or items in one week.

1.4 SUBMITTAL SCHEDULE

- A. Submittal Schedule: Submit, as an action submittal, a list of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required

for making corrections or revisions to submittals noted by Project Engineer and additional time for handling and reviewing submittals required by those corrections.

1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.
2. Initial Submittal Schedule: Submit concurrently with startup construction schedule. Include submittals required during the first 60 days of construction. List those submittals required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.
3. Final Submittal Schedule: Submit concurrently with the first complete submittal of Contractor's construction schedule.
 - a. Submit revised submittal schedule as required to reflect changes in current status and timing for submittals.
4. Format: Arrange the following information in a tabular format:
 - a. Scheduled date for first submittal.
 - b. Specification Section number and title.
 - c. Submittal Category: Action; informational.
 - d. Name of subcontractor.
 - e. Description of the Work covered.
 - f. Scheduled date for Project Engineer's final release or approval.

1.5 SUBMITTAL FORMATS

- A. Numbering System: Utilize the following example submittal identification numbering system to identify submittals and as file names for PDF submissions:

1. First Identifier - Alphabet Character: D, S, M or I which represents Shop Drawing (including working drawings and product data), Sample, Manual (Operating & Maintenance) or Informational, respectively.
2. Second Identifier - Next 6 or 8 Digits: Applicable Specification Section Number. Do not mix submittals from different specification sections into a single submittal.
3. Third Identifier - Next Three Digits: Sequential number of each separate item or drawing submitted under each Specification Section, in chronological order submitted, starting at 001.
4. Fourth Identifier - Last Alphabet Character: A to Z, indicating the submission (or resubmission) of the same submittal, i.e., "A" = 1st submission, "B" = 2nd submission, "C" = 3rd submission, etc.
5. EXAMPLE: D-033000.13-008-B.
 - a. D = Shop Drawing.
 - b. 03 30 00.13 = Section; use only 6 digits for sections that do not include 8 digits.
 - c. 008 = the eighth different submittal under this Section.
 - d. B = the second submission (first resubmission) of that particular shop drawing.

- B. Submittal Information: Include the following information in each submittal:

1. Project name.
2. Date.
3. Name of Project Engineer.
4. Name of Construction Manager.
5. Name of Contractor.
6. Name of firm or entity that prepared submittal.
7. Names of subcontractor, manufacturer, and supplier.
8. Unique submittal number, including revision identifier. Include Specification Section number with sequential alphanumeric identifier and alphanumeric suffix for resubmittals.
9. Category and type of submittal.
10. Submittal purpose and description.
11. Number and title of Specification Section, with paragraph number and generic name for each of multiple items.
12. Drawing number and detail references, as appropriate.
13. Indication of full or partial submittal.
14. Location(s) where product is to be installed, as appropriate.
15. Other necessary identification.
16. Remarks.
17. Signature of transmitter.

- C. Options: Identify options requiring selection by Project Engineer.
- D. Deviations and Additional Information: On each submittal, clearly indicate deviations from requirements in the Contract Documents, including minor variations and limitations; include relevant additional information and revisions, other than those requested by Project Engineer on previous submittals. Indicate by highlighting on each submittal or noting on attached separate sheet.
- E. Electronic Submittals: Prepare submittals as PDF package, incorporating complete information into each PDF file. Name PDF file with submittal number.

1.6 SUBMITTAL PROCEDURES

- A. Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.
1. Email: Prepare submittals as PDF package and transmit to Project Engineer by sending via email. Include PDF transmittal form. Include information in email subject line as requested by Project Engineer.
 - a. Project Engineer will return annotated file. Annotate and retain one copy of file as a digital Project Record Document file.
 2. Document Management System – Submittals may be submitted through a Contractor owned or managed Document Management System in addition to email alerts/coordination. Owner/Contractor/Project Engineer to agree on submittal management process before beginning use of a Document Management System.

- B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
 2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
 3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
 4. Coordinate transmittal of submittals for related parts of the Work specified in different Sections, so processing will not be delayed because of need to review submittals concurrently for coordination.
 - a. Project Engineer reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Project Engineer's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
1. Initial Review: Allow 20 days for initial review of each submittal (and 45 days for multi-discipline reviews). Allow additional time if coordination with subsequent submittals is required. Project Engineer will advise Contractor when a submittal being processed must be delayed for coordination.
 2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
 3. Resubmittal Review: Allow 15 days for review of each resubmittal.
 4. Sequential Review: Where sequential review of submittals by Project Engineer's consultants, Owner, or other parties is indicated, allow 21 days for initial review of each submittal.
 5. Concurrent Consultant Review: Where the Contract Documents indicate that submittals may be transmitted simultaneously to Project Engineer and to Project Engineer's consultants, allow 30 days for review of each submittal. Submittal will be returned to Project Engineer before being returned to Contractor.
 - a. Submit one copy of submittal to concurrent reviewer in addition to specified number of copies to Project Engineer.
- D. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
1. Note date and content of previous submittal.
 2. Note date and content of revision in label or title block and clearly indicate extent of revision.
 3. Resubmit submittals until they are marked with approval notation from Project Engineer's action stamp.
 4. Repetitive Reviews: Shop drawings, O&M manuals, and other submittals will be reviewed no more than twice at the Owner's expense. All subsequent reviews will be performed at

the Contractor's expense. Reimburse the Owner for all costs invoiced by Project Engineer for the third and subsequent reviews.

- E. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.
- F. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Project Engineer's action stamp.

1.7 SUBMITTAL REQUIREMENTS

- A. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
 - 1. If information must be specially prepared for submittal because standard published data are unsuitable for use, submit as Shop Drawings, not as Product Data.
 - 2. Mark each copy of each submittal to show which products and options are applicable.
 - 3. Include the following information, as applicable:
 - a. Manufacturer's catalog cuts.
 - b. Manufacturer's product specifications.
 - c. Standard color charts.
 - d. Statement of compliance with specified referenced standards.
 - e. Testing by recognized testing agency.
 - f. Application of testing agency labels and seals.
 - g. Notation of coordination requirements.
 - h. Availability and delivery time information.
 - 4. For equipment, include the following in addition to the above, as applicable:
 - a. Wiring diagrams that show factory-installed wiring.
 - b. Printed performance curves.
 - c. Operational range diagrams.
 - d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.
 - 5. Submit Product Data before Shop Drawings, and before or concurrently with Samples.
- B. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.
 - 1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
 - a. Identification of products.
 - b. Schedules.
 - c. Compliance with specified standards.
 - d. Notation of coordination requirements.
 - e. Notation of dimensions established by field measurement.

- f. Relationship and attachment to adjoining construction clearly indicated.
 - g. Seal and signature of professional engineer if specified.
- C. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:
 - 1. Type of product. Include unique identifier for each product indicated in the Contract Documents or assigned by Contractor if none is indicated.
 - 2. Manufacturer and product name, and model number if applicable.
 - 3. Number and name of room or space.
 - 4. Location within room or space.
- D. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.
- E. Design Data: Prepare and submit written and graphic information indicating compliance with indicated performance and design criteria in individual Specification Sections. Include list of assumptions and summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Number each page of submittal.
- F. Certificates:
 - 1. Certificates and Certifications Submittals: Submit a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity. Provide a notarized signature where indicated.
 - 2. Contractor's Certification: Each shop drawing, working drawing, product data, and sample shall have affixed to it the following Certification Statement:
 - a. "Certification Statement: by this submittal, I hereby represent that I have determined and verified all field measurements, field construction criteria, materials, dimensions, catalog numbers and similar data and I have checked and coordinated each item with other applicable approved shop drawings and all Contract requirements. "
 - 3. Installer Certificates: Submit written statements on manufacturer's letterhead, certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
 - 4. Manufacturer Certificates: Submit written statements on manufacturer's letterhead, certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
 - 5. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
 - 6. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
 - 7. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of AWS B2.1/B2.1M on AWS forms. Include names of firms and personnel certified.

G. Test and Research Reports:

1. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for substrate preparation and primers required.
2. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
3. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
4. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
5. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
6. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:
 - a. Name of evaluation organization.
 - b. Date of evaluation.
 - c. Time period when report is in effect.
 - d. Product and manufacturers' names.
 - e. Description of product.
 - f. Test procedures and results.
 - g. Limitations of use.

1.8 PROPOSED PRODUCT LIST

- A. Within 15 days after date of Notice to Proceed, submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.
- B. For products specified only by reference standards, indicate manufacturer, trade name, model or catalog designation, and reference standards.

1.9 CONTRACTOR'S REVIEW

- A. Action Submittals and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Project Engineer.
- B. Contractor Responsible for:

1. Determination and verification of materials including manufacturer's catalog numbers.
 2. Determination and verification of field measurements and field construction criteria.
 3. Checking and coordinating information in submittal with requirements of Work and of Contract Documents.
 4. Determination of accuracy and completeness of dimensions and quantities.
 5. Confirmation and coordination of dimensions and field conditions at Site.
 6. Construction means, techniques, sequences, and procedures.
 7. Safety precautions.
 8. Coordination and performance of Work of all trades.
 9. Other requirements enumerated in Contract Documents.
- C. Contractor's Approval: Indicate Contractor's approval for each submittal with a uniform approval stamp. Include name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.
1. Project Engineer will not review submittals received from Contractor that do not have Contractor's review and approval.

1.10 PROJECT ENGINEER'S REVIEW

- A. Do not make mass submittals (grouped submittals of large numbers of unrelated shop drawings) to Project Engineer. If mass submittals are received, Project Engineer's review time stated above will be extended as necessary to perform proper review. Project Engineer will review mass submittals based on priority determined by Project Engineer after consultation with Owner and Contractor.
- B. Action Submittals: Project Engineer will review each submittal, indicate corrections or revisions required, and return.
1. PDF Submittals: Project Engineer will indicate, via markup on each submittal, the appropriate action.
- C. Informational Submittals: Project Engineer will review each submittal and will not return it, or will return it if it does not comply with requirements. Project Engineer will forward each submittal to appropriate party.
- D. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Project Engineer.
- E. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.
- F. Project Engineer will discard submittals received from sources other than Contractor.
- G. Submittals not required by the Contract Documents will be returned by Project Engineer without action.
- H. Shop drawings will be returned to the Contractor with one of the following codes.

1. "APPROVED" - This code is assigned when there are no notations or comments on the submittal. When returned under this code the Contractor may release the equipment and/or material for manufacture.
2. "APPROVED AS NOTED" - This code is assigned when a confirmation of the notations and comments IS NOT required by the Contractor. The Contractor may release the equipment or material for manufacture; however, all notations and comments must be incorporated into the final product.
3. "APPROVED AS NOTED/RESUBMIT" - This combination of codes is assigned when notations and comments are extensive enough to require a resubmittal of the package. The Contractor may release the equipment or material for manufacture; however, all notations and comments must be incorporated into the final product. The resubmittal is to address all comments, omissions and non-conforming items that were noted. An additional box is checked to indicate whether the resubmission is for the complete package, or for parts of the package. If no box is checked, a complete resubmittal shall be provided. Review code may designate if a partial or full submittal is required. If full submittal is required, a complete resubmittal package addressing all comments shall be provided. If a partial submittal is designated, resubmittal shall only include information pertaining to those items noted in review comments requiring clarification and any portions of submittal impacted as a result of the response. Resubmittal is to be received by the Project Engineer within 30 calendar days of the date of the Project Engineer's transmittal requiring the resubmittal.
4. "REJECTED" - This code is assigned when the submittal does not meet the intent of the Contract Documents. The Contractor must resubmit the entire package revised to bring the submittal into conformance. It may be necessary to resubmit using a different manufacturer/vendor to meet the requirements of the Contract Documents.
5. "RECEIPT ACKNOWLEDGED (Not subject to Project Engineer's Approval)" - This code is assigned to acknowledge receipt of a submittal that is not subject to the Project Engineer's approval. This code is generally used with submittals involving the Contractor's means and methods of construction work plans, and health and safety plans.

1.11 ELECTRONIC CAD FILES OF PROJECT DRAWINGS

- A. Electronic CAD Files of Project Drawings: May only be used to expedite production of Shop Drawings for the Project. Use for other Projects or purposes is not allowed.
- B. Electronic CAD Files of Project Drawings: Distributed only under the following conditions:
 1. Use of files is solely at receiver's risk. Project Engineer does not warrant accuracy of files. Receiving files in electronic form does not relieve receiver of responsibilities for measurements, dimensions, and quantities set forth in Contract Documents. In the event of ambiguity, discrepancy, or conflict between information on electronic media and that in Contract Documents, notify Project Engineer of discrepancy and use information in hard-copy Drawings and Specifications.
 2. CAD files do not necessarily represent the latest Contract Documents, existing conditions, and as-built conditions. Receiver is responsible for determining and complying with these conditions and for incorporating addenda and modifications.
 3. User is responsible for removing information not normally provided on Shop Drawings and removing references to Contract Documents. Shop Drawings submitted with information associated with other trades or with references to Contract Documents will not be reviewed and will be immediately returned.

4. Receiver shall not hold Project Engineer responsible for data or file clean-up required to make files usable, nor for error or malfunction in translation, interpretation, or use of this electronic information.
5. Receiver shall understand that even though Project Engineer has computer virus scanning software to detect presence of computer viruses, there is no guarantee that computer viruses are not present in files or in electronic media.
6. Receiver shall not hold Project Engineer responsible for such viruses or their consequences and shall hold Project Engineer harmless against costs, losses, or damage caused by presence of computer virus in files or media.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 013300

SECTION 013526 - GOVERNMENTAL SAFETY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes:

- 1. Preparing and implementing a Health and Safety (H&S) Plan to establish in detail the protocols necessary for protecting workers from potential hazards during the work specified in the Contract Documents.

- B. Related Requirements:

- 1. Potential chemical hazards include asbestos, lead-based paint, PCBs, mercury, oils, and incinerator ash. Potential biological hazard includes pigeon guano (avian excrement).
 - 2. Laboratory analysis of previously landfilled ash indicates the presence of PAHs, arsenic, lead and dioxin above MCP Method 1 standards.

1.3 DEFINITIONS

- A. CIH is a Certified Industrial Hygienist.

- B. SSHO is the site safety & health officer. The Contractor shall provide a responsible individual, competent through experience and training, to be able to identify hazards associated with the Contractor's Work and has overall responsibility for the safety and health performance of contractor's activities, including lower tier subcontractors. The person shall be present on-site during all contractor activities and shall ensure that the requirements of the Project Specific Safety and Health Plan are fully implemented. This person shall also:

- 1. Attend pre-work conferences and site safety and health orientations and briefings. The Contractor is expected to supplement the site orientation with information related to the Contractor's scope of work.
 - 2. Document weekly tool box safety meetings for the Contractor's employees onsite.
 - 3. Submit weekly safety and health inspection reports of the construction site as it relates to the Contractor's scope of work. Record hazards identified, and corrective actions taken. The weekly inspection report shall be provided to the Site Manager.
 - 4. Report all job-related accidents/illness related to the Contractor's employees and lower tier subcontractors as soon as practical to the Site Manager and perform site accident and incident investigations associated with the Contractor's scope of work and fully cooperate with any other accident or incident investigations which may be required.

5. Maintain safety and health statistical information and provide monthly reports to the Site Manager. Reports shall include, employee hours worked, the number of first aid cases, the number of medical treatment cases, the number of restricted and lost workday cases as defined by the US Occupational Health and Safety Administration. These reports shall include statistical information related to all of the Contractor's activities and the activities of lower tier subcontractors.
6. Provide Site Manager with the immediate notification of any regulatory inspection and a copy of all resulting citations or notice of deficiencies.

1.4 ACTION SUBMITTALS

- A. Qualifications of the CIH and the SSHO.
- B. Prior to commencing work at the jobsite, Contractor must file with the Project Engineer all required documents, such as: A copy of the **Contractor's Project Specific Safety and Health Plan** and copies of employee training certificates, insurance certificates, construction permits, blasting permits, crane certifications and operator licenses, Steam Boiler Certifications, Elevator Certifications and any approved "OSHA Variances," or other approvals as required to safely and legally perform the Contractor's Scope of Work. The **Contractor's Project Specific Safety and Health Plan** shall as a minimum include the following:
 1. Letter of corporate commitment to Safety and Health signed by CEO or President of the contractor's organization.
 2. Brief description of the contractor's scope of work.
 3. Project safety and health organization, responsibilities and accountability procedures.
 4. Project safety and health goals and objectives.
 5. Project hazard communication and safety training. (This section shall include a minimum requirement for a site hazard communication program and weekly safety meetings.)
 6. Activity hazard analyses covering activities within the contractor's scope of work describing the steps of each principle activity, the hazards associated with each activity and procedures to be used to eliminate or control the hazards.
 7. Personal protective equipment. (Note: Minimum site PPE requirements shall include hard hats, safety glasses with side shields and sturdy work boots.)
 8. Specialized medical surveillance and/or air monitoring procedures, if required.
 9. Safe work procedures. These may be incorporated by reference to the Contractor's Corporate Safety and Health Program.
 10. Safety inspections and audits.
 11. Project emergency response and preparedness procedures including provisions for providing first aid and notification of emergency services.
 12. The Contractor (and any of its subcontractors), must submit, a Hazardous Waste Management Plan that addresses the handling, labeling, transpiration and disposal of hazardous waste. The Contractor shall be held solely responsible for compliance with the provisions of all applicable regulations associated with hazardous waste generated as a consequence of the Contractor's activities.

1.5 INFORMATIONAL SUBMITTALS

- A. Listed below are general conditions related to Safety and Health which the Contractor is required to comply with.

1. Should a specific interpretation be required concerning special and/or unusual safety, fire protection, or environmental concerns not covered by, the National Fire Protection Association Codes, and current OSHA/EPA or other local regulations the contractor shall contact the Site Manager's Safety and Health Representative or Corporate Safety and Health Office for guidance.
2. The practices, procedures, and requirements set forth in this Appendix shall apply equally to all Contractors, and it is mandatory that each Contractor inform and enforce the provisions of this Appendix in all contracts with its Subcontractors.
3. The Site Manager shall have the right to direct the removal from the jobsite any Contractor or Contractor personnel for violation of safety, health, fire protection, or environmental rules and regulations.
4. Fighting or horseplay is strictly prohibited and shall be considered grounds for removal from the project.
5. The illegal use, possession, purchase, sale or diversion of a drug or controlled substance is prohibited. The use or possession of alcoholic beverages at the jobsite is prohibited.
6. The Site Manager shall have the right to direct the removal from the jobsite any defective tools and equipment, the use of which may create a hazardous situation.
7. The Site Manager reserves the right to delete, modify, or supplement these procedures at any time without prior notice, but in such event, will notify all contractors affected by such change in procedures.
8. The Site Manager reserves the right to evaluate the Contractor's, and any of its subcontractor's, overall safety performance, compliance with these procedures, and any established supplements, at intervals the Site Manager deems appropriate.
9. Prior to starting work in any jobsite area, each Contractor must first obtain permission and instructions from the Site Manager, or designee.

1.6 TRAINING

- A. Certify that all Contractor personnel assigned for the purpose of performing or supervising work in accordance with the provisions of the H&S plan have received appropriate safety training in accordance with 29 CFR 1926.65. Training shall consist of a minimum of 40 hours of health and safety training and 8 hours refresher training annually. In addition, Contractor's supervisory personnel shall have a minimum of 8 hours additional specialized training for managing hazardous waste operations.
- B. Additionally, the Contractor shall be responsible for, and shall guarantee that, only personnel successfully completing the required training are permitted to enter designated areas of the site where worker protection is required.

1.7 MEDICAL SURVEILLANCE

- A. Certify that the services of an occupational physician will be provided and utilized to provide the minimum medical examinations and surveillance specified herein for all workers performing or supervising work in accordance with the provisions of the H&S plan.
- B. The entire medical surveillance program shall meet the requirements of OSHA standard 29 CFR 1926.65(f) including the provision requiring the Contractor to obtain a physician's written medical opinion based on site specific information furnished by the Contractor.

- C. Maintain all medical surveillance records in accordance with 29 CFR 1926.65 and make these records available to the Engineer or other regulatory agencies as required.

1.8 DESCRIPTION OF REQUIREMENTS

- A. This Section describes the minimum health and safety requirements for this project. Develop a detailed H&S Plan using this Section as a basis and delineating additional details and requirements as deemed necessary. The H&S plan shall establish in detail the protocols necessary for protecting workers from potential hazards encountered during demolition activities.
- B. Utilize the services of a certified industrial hygienist (CIH) by the American Board of Industrial Hygienists (ABIH) to develop and implement the H&S plan, including any on-site air monitoring program, conducting initial site-specific training and provide continued support for all health and safety activities as needed, including the upgrading or downgrading of the level of personnel protection.
- C. In addition, a Site Safety and Health Officer (SSHO) shall assist and represent the CIH in the continued implementation and enforcement of the H&S Plan. The SSHO shall be assigned to the site on a full-time basis during performance of activities covered by the H&S plan and shall be either the Contractor's employee or a subcontractor who reports to the Contractor and the CIH in matters pertaining to site safety and health.
- D. The H&S Plan shall include but not necessarily be limited to, the following components as required by OSHA 29 CFR 1926.65(b)(4) and 1926.65(p)(1)(2):
 - 1. Site Description and Evaluation.
 - 2. Names of key personnel and alternate responsible for site safety and health (responsibilities and chain of command).
 - 3. Safety and health hazard assessment and risk analysis for each site task and operator (Accident Prevention Plan).
 - 4. Education and Training.
 - 5. Personnel Protective Equipment.
 - 6. Medical Surveillance.
 - 7. Air Monitoring (Environmental).
 - 8. Standard Operating Procedures, Engineering Controls and Work Practices.
 - 9. Site Control Measures (Work Zones, Communications and Security).
 - 10. Personnel Hygiene and Decontamination.
 - 11. Equipment Decontamination.
 - 12. Logs, Reports and Record Keeping.
 - 13. Heat/Cold Stress Monitoring.
 - 14. Pre-emergency planning.
 - 15. Personnel roles, lines of authority, training and communication.
 - 16. Emergency recognition and prevention.
 - 17. Safe distances and places of refuge.
 - 18. Site security and control.
 - 19. Evacuation routes and procedures.
 - 20. Decontamination.
 - 21. Emergency Medical treatment and first aid.
 - 22. Emergency alerting and response procedures.

23. Critique of response and follow-up.
24. Personnel Protection Equipment and emergency equipment.

1.9 REGULATORY REQUIREMENTS

- A. The Contractor is responsible for awareness, knowledge and full compliance with all applicable rules, regulations, laws and practices applicable to the Contractor's Scope of Work, including lower tier subcontractors, prescribed by the site owner, and any other government or agency governing the safety and health of employees, other site personnel, the general public and protection of the environment. Within the United States and its Territories these include, but are not limited to regulations promulgated by the following:
 1. Occupational Safety and Health Administration (OSHA)
 2. Environmental Protection Agency (EPA)
 3. Department of Transportation (DOT)
 4. Department of Energy, Nuclear Regulatory Commission (NRC)
 5. Mine Safety and Health Administration (MSHA)
- B. Additional rules required by the Site Manager include:
 1. Each Contractor has the responsibility for instructing its employees in safe practices for the operation of tools and equipment and for the maintenance of safe conditions.
 2. Contractors shall furnish for their employees' personal safety equipment such as, ANSI Z89.1 approved hard hats, ANSI Z87.1 approved eye protection with fixed side shields, ear protection, foot protection, NIOSH approved respiratory protection, fall protection and other equipment as required for safe performance of their particular work assignment. All personnel on the job site shall be required at a minimum to wear hard hats, safety glasses with side shields and proper and sturdy footwear.
 3. Danger tags and locks shall be utilized to prevent personal injury and equipment damage in accordance with project electrical and mechanical tagging procedures.
 4. Scaffolding and other structures utilized for elevated work platforms shall have the required decking, handrails, mid-rails, toe boards, proper access, and nets or screens.
 5. Catwalks shall conform to a two-plank width minimum and, if elevated, shall have handrails and toe boards.
 6. Areas in which "overhead" work is to be performed shall be blocked, decked, barricaded, netted, posted, or evacuated as instructed by project supervision.
 7. Pits, trenches, and other excavations shall be shored/shielded or sloped to the proper angle of repose, barricaded, and provided with proper access.
 8. When not in use, blades of bulldozers and buckets of front-end loaders shall be lowered to the ground. Also, beds of dump trucks shall be lowered when traveling or not in use. Project parking and traffic regulations shall be complied with.
 9. Crane booms shall be lowered at the end of single shifts or secured against movement by attaching the hoist line to a fixed structure.
 10. Specific air sampling shall be performed to determine the presence of toxic materials or dusts, flammable atmosphere and adequate oxygen content, in accordance with project procedures. Respirators, safety harnesses, lifelines, standby personnel, and permits shall be used when appropriate.
 11. Personnel involved in activities which require the use of an Air Purifying Respirator (APR) shall not have facial hair which interferes with the respirator's face seal.

12. The Contractor shall provide to the Site Manager a copy of MSDSs for all hazardous materials prior to their use at the site.
13. Back-up alarms shall be provided on all construction vehicles and equipment and shall alarm continuously while the vehicle or equipment is in reverse motion. For equipment not equipped with a back-up alarm, a spotter shall be used.
14. All portable generators shall have frames externally grounded or other means to ensure there is no potential for circuit to frame conductivity.
15. All electrical services used in conjunction with field activities shall be equipped with Ground Fault Circuit Interrupters (GFCI).
16. Compliance with the following fire prevention measures is mandatory:
 - a. Smoking is permitted only in specific areas as designated in project rules and procedures.
 - b. Open fires are prohibited. Temporary gas-fired heaters shall not be used in enclosed areas. Only UL and NFPA approved petroleum and/or electrically fired heating devices will be authorized for use.
 - c. Hot work permits shall be required for all flame and spark producing work tasks.
 - d. Debris, scrap, and refuse shall be segregated and controlled in metal containers and removed at appropriate intervals. Any potential fire hazard shall be controlled.
 - e. Each Contractor is responsible for maintaining and cleaning their work area. All walkways shall be kept clean and free of obstructions. Broken/spilled, scrap or other waste materials shall be placed in appropriate containers or waste areas as soon as practical after they are generated.
 - f. Flammable liquids shall be kept in UL approved safety containers and properly labeled as to contents.
 - g. Flammable and combustible materials shall be stored in designated locations that meet Federal, State and local regulations.
 - h. All equipment such as cranes, trucks, bulldozers, graders, loaders and backhoes shall be equipped with proper fire extinguishers.
 - i. The use of heavy equipment with internal combustion engines is prohibited within enclosed areas.
17. Only the number of persons provided with proper seats shall ride in a vehicle. No one shall ride on running boards, stand on moving equipment or ride on a vehicle other than in a proper seated position.
18. The swing radius of all heavy equipment such as cranes, back hoes, etc. shall be clearly barricaded.
19. The contractor shall provide 100% fall protection for fall exposures greater than 6 ft in accordance with project procedures.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 CERTIFICATION OF COMPLIANCE WITH OSHA SEC. 1926.62 LEAD

- A. Execute the following form as required by this Specification.

CERTIFICATION OF COMPLIANCE WITH OSHA SEC. 1926.62 LEAD

The undersigned hereby certifies that he/she is certified as an industrial hygienist (CIH) by the American Board of Industrial Hygiene and that he/she has been employed by (Name of Contractor) _____ to perform an exposure assessment and develop a compliance program in accordance with OSHA Sec. 1926.62 Lead for the (Name of Project) _____.

The undersigned further certifies that he/she has performed the exposure assessment and developed and implemented the compliance program in strict accordance with OSHA Sec. 1926.62 and in conformance with all applicable local, state and federal codes, rules and regulations and that his/her signature has been affixed to all documents required.

The undersigned hereby agrees to make available all originals of the exposure assessment, compliance program including but not limited to training documentation, lead removal work plan and any other records/documents required to comply with OSHA Sec. 1926.62 to the (Insert Name of Owner) _____ or Owner's representative within seven (7) days following written request therefor by the Owner.

Certified Industrial Hygienist

Signature

Address

Contractor's Name

Signature

Title

Address

END OF SECTION 013526

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SECTION 014200 – REFERENCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 DEFINITIONS

- A. General: Basic Contract definitions are included in the Conditions of the Contract.
- B. "Approved": When used to convey Engineer's action on Contractor's submittals, applications, and requests, "approved" is limited to Engineer's duties and responsibilities as stated in the Conditions of the Contract.
- C. "Directed": A command or instruction by Engineer. Other terms including "requested," "authorized," "selected," "required," and "permitted" have the same meaning as "directed."
- D. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."
- E. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.
- F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.
- G. "Install": Unload, temporarily store, unpack, assemble, erect, place, anchor, apply, work to dimension, finish, cure, protect, clean, and similar operations at Project site.
- H. "Provide": Furnish and install, complete and ready for the intended use.
- I. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

1.3 INDUSTRY STANDARDS

- A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

- B. Publication Dates: Comply with standards in effect as of date of the Contract Documents unless otherwise indicated.
- C. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.
 - 1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.

1.4 ABBREVIATIONS AND ACRONYMS

- A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities indicated in Gale's "Encyclopedia of Associations: National Organizations of the U.S." or in Columbia Books' "National Trade & Professional Associations of the United States."
- B. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. The information in this list is subject to change and is believed to be accurate as of the date of the Contract Documents.
 - 1. AABC - Associated Air Balance Council; www.aabc.com.
 - 2. AAMA - American Architectural Manufacturers Association; www.aamanet.org.
 - 3. AAPFCO - Association of American Plant Food Control Officials; www.aapfco.org.
 - 4. AASHTO - American Association of State Highway and Transportation Officials; www.transportation.org.
 - 5. AATCC - American Association of Textile Chemists and Colorists; www.aatcc.org.
 - 6. ABMA - American Bearing Manufacturers Association; www.americanbearings.org.
 - 7. ABMA - American Boiler Manufacturers Association; www.abma.com.
 - 8. ACI - American Concrete Institute; (Formerly: ACI International); www.concrete.org
 - 9. ACPA - American Concrete Pipe Association; www.concrete-pipe.org.
 - 10. AEIC - Association of Edison Illuminating Companies, Inc. (The); www.aeic.org.
 - 11. AF&PA - American Forest & Paper Association; www.afandpa.org.
 - 12. AGA - American Gas Association; www.aga.org.
 - 13. AHAM - Association of Home Appliance Manufacturers; www.aham.org.
 - 14. AHRI - Air-Conditioning, Heating, and Refrigeration Institute (The); www.ahrinet.org.
 - 15. AI - Asphalt Institute; www.asphaltinstitute.org.
 - 16. AIA - American Institute of Architects (The); www.aia.org.
 - 17. AISC - American Institute of Steel Construction; www.aisc.org.
 - 18. AISI - American Iron and Steel Institute; www.steel.org.
 - 19. AITC - American Institute of Timber Construction; www.aitc-glulam.org.
 - 20. AMCA - Air Movement and Control Association International, Inc.; www.amca.org.
 - 21. ANSI - American National Standards Institute; www.ansi.org.
 - 22. AOSA - Association of Official Seed Analysts, Inc.; www.aosaseed.com.
 - 23. APA - APA - The Engineered Wood Association; www.apawood.org.
 - 24. APA - Architectural Precast Association; www.archprecast.org.
 - 25. API - American Petroleum Institute; www.api.org.
 - 26. ARI - Air-Conditioning & Refrigeration Institute; (See AHRI).
 - 27. ARI - American Refrigeration Institute; (See AHRI).

28. ARMA - Asphalt Roofing Manufacturers Association; www.asphaltroofing.org.
29. ASCE - American Society of Civil Engineers; www.asce.org.
30. ASCE/SEI - American Society of Civil Engineers/Structural Engineering Institute; (See ASCE).
31. ASHRAE - American Society of Heating, Refrigerating and Air-Conditioning Engineers; www.ashrae.org.
32. ASME - ASME International; (American Society of Mechanical Engineers); www.asme.org.
33. ASSE - American Society of Safety Engineers (The); www.asse.org.
34. ASSE - American Society of Sanitary Engineering; www.asse-plumbing.org.
35. ASTM - ASTM International; www.astm.org.
36. ATIS - Alliance for Telecommunications Industry Solutions; www.atis.org.
37. AWEA - American Wind Energy Association; www.awea.org.
38. AWI - Architectural Woodwork Institute; www.awinet.org.
39. AWMAC - Architectural Woodwork Manufacturers Association of Canada; www.awmac.com.
40. AWPAA - American Wood Protection Association; www.awpa.com.
41. AWS - American Welding Society; www.aws.org.
42. AWWA - American Water Works Association; www.awwa.org.
43. BHMA - Builders Hardware Manufacturers Association; www.buildershardware.com.
44. BIA - Brick Industry Association (The); www.gobrick.com.
45. BICSI - BICSI, Inc.; www.bicsi.org.
46. BIFMA - BIFMA International; (Business and Institutional Furniture Manufacturer's Association); www.bifma.org.
47. BISSC - Baking Industry Sanitation Standards Committee; www.bissc.org.
48. BWF - Badminton World Federation; (Formerly: International Badminton Federation); www.bissc.org.
49. CDA - Copper Development Association; www.copper.org.
50. CE - Conformite Europeenne; <http://ec.europa.eu/growth/single-market/ce-marking/>
51. CEA - Canadian Electricity Association; www.electricity.ca.
52. CEA - Consumer Electronics Association; www.ce.org.
53. CFFA - Chemical Fabrics and Film Association, Inc.; www.chemicalfabricsandfilm.com.
54. CFSEI - Cold-Formed Steel Engineers Institute; www.cfsei.org.
55. CGA - Compressed Gas Association; www.cganet.com.
56. CIMA - Cellulose Insulation Manufacturers Association; www.cellulose.org.
57. CISCA - Ceilings & Interior Systems Construction Association; www.cisca.org.
58. CISPI - Cast Iron Soil Pipe Institute; www.cispi.org.
59. CLFMI - Chain Link Fence Manufacturers Institute; www.chainlinkinfo.org.
60. CPA - Composite Panel Association; www.pbmdf.com.
61. CRI - Carpet and Rug Institute (The); www.carpet-rug.org.
62. CRRC - Cool Roof Rating Council; www.coolroofs.org.
63. CRSI - Concrete Reinforcing Steel Institute; www.crsi.org.
64. CSA - CSA Group; www.csagroup.com.
65. CSA - CSA International; www.csa-international.org.
66. CSI - Construction Specifications Institute (The); www.csinet.org.
67. CSSB - Cedar Shake & Shingle Bureau; www.cedarbureau.org.
68. CTI - Cooling Technology Institute; (Formerly: Cooling Tower Institute); www.cti.org.
69. CWC - Composite Wood Council; (See CPA).
70. DASMA - Door and Access Systems Manufacturers Association; www.dasma.com.
71. DHI - Door and Hardware Institute; www.dhi.org.
72. ECA - Electronic Components Association; (See ECIA).

73. ECAMA - Electronic Components Assemblies & Materials Association; (See ECIA).
74. ECIA - Electronic Components Industry Association; www.eciaonline.org.
75. EIA - Electronic Industries Alliance; (See TIA).
76. EIMA - EIFS Industry Members Association; www.eima.com.
77. EJMA - Expansion Joint Manufacturers Association, Inc.; www.ejma.org.
78. ESD - ESD Association; (Electrostatic Discharge Association); www.esda.org.
79. ESTA - Entertainment Services and Technology Association; (See PLASA).
80. ETL - Intertek (See Intertek); www.intertek.com.
81. EVO - Efficiency Valuation Organization; www.evo-world.org.
82. FCI - Fluid Controls Institute; www.fluidcontrolsintstitute.org.
83. FIBA - Federation Internationale de Basketball; (The International Basketball Federation); www.fiba.com.
84. FIVB - Federation Internationale de Volleyball; (The International Volleyball Federation); www.fivb.org.
85. FM Approvals - FM Approvals LLC; www.fmglobal.com.
86. FM Global - FM Global; (Formerly: FMG - FM Global); www.fmglobal.com.
87. FRSA - Florida Roofing, Sheet Metal & Air Conditioning Contractors Association, Inc.; www.floridarroof.com.
88. FSA - Fluid Sealing Association; www.fluidsealing.com.
89. FSC - Forest Stewardship Council U.S.; www.fscus.org.
90. GA - Gypsum Association; www.gypsum.org.
91. GANA - Glass Association of North America; www.glasswebsite.com.
92. GS - Green Seal; www.greenseal.org.
93. HI - Hydraulic Institute; www.pumps.org.
94. HI/GAMA - Hydronics Institute/Gas Appliance Manufacturers Association; (See AHRI).
95. HMMA - Hollow Metal Manufacturers Association; (See NAAMM).
96. HPVA - Hardwood Plywood & Veneer Association; www.hpva.org.
97. HPW - H. P. White Laboratory, Inc.; www.hpwhite.com.
98. IAPSC - International Association of Professional Security Consultants; www.iapsc.org.
99. IAS - International Accreditation Service; www.iasonline.org.
100. ICBO - International Conference of Building Officials; (See ICC).
101. ICC - International Code Council; www.iccsafe.org.
102. ICEA - Insulated Cable Engineers Association, Inc.; www.icea.net.
103. ICPA - International Cast Polymer Alliance; www.icpa-hq.org.
104. ICRI - International Concrete Repair Institute, Inc.; www.icri.org.
105. IEC - International Electrotechnical Commission; www.iec.ch.
106. IEEE - Institute of Electrical and Electronics Engineers, Inc. (The); www.ieee.org.
107. IES - Illuminating Engineering Society; (Formerly: Illuminating Engineering Society of North America); www.ies.org.
108. IESNA - Illuminating Engineering Society of North America; (See IES).
109. IEST - Institute of Environmental Sciences and Technology; www.iest.org.
110. IGMA - Insulating Glass Manufacturers Alliance; www.igmaonline.org.
111. IGSHPA - International Ground Source Heat Pump Association; www.igshpa.okstate.edu.
112. ILI - Indiana Limestone Institute of America, Inc.; www.iliai.com.
113. Intertek - Intertek Group; (Formerly: ETL SEMCO; Intertek Testing Service NA); www.intertek.com.
114. ISA - International Society of Automation (The); (Formerly: Instrumentation, Systems, and Automation Society); www.isa.org.
115. ISAS - Instrumentation, Systems, and Automation Society (The); (See ISA).

116. ISFA - International Surface Fabricators Association; (Formerly: International Solid Surface Fabricators Association); www.isfanow.org.
117. ISO - International Organization for Standardization; www.iso.org.
118. ISSFA - International Solid Surface Fabricators Association; (See ISFA).
119. ITU - International Telecommunication Union; www.itu.int/home.
120. KCMA - Kitchen Cabinet Manufacturers Association; www.kcma.org.
121. LMA - Laminating Materials Association; (See CPA).
122. LPI - Lightning Protection Institute; www.lightning.org.
123. MBMA - Metal Building Manufacturers Association; www.mbma.com.
124. MCA - Metal Construction Association; www.metalconstruction.org.
125. MFMA - Maple Flooring Manufacturers Association, Inc.; www.maplefloor.org.
126. MFMA - Metal Framing Manufacturers Association, Inc.; www.metalframingmfg.org.
127. MHIA - Material Handling Industry of America; www.mhia.org.
128. MIA - Marble Institute of America; www.marble-institute.com.
129. MMPA - Moulding & Millwork Producers Association; www.wmmpa.com.
130. MPI - Master Painters Institute; www.paintinfo.com.
131. MSS - Manufacturers Standardization Society of The Valve and Fittings Industry Inc.; www.mss-hq.org.
132. NAAMM - National Association of Architectural Metal Manufacturers; www.naamm.org.
133. NACE - NACE International; (National Association of Corrosion Engineers International); www.nace.org.
134. NADCA - National Air Duct Cleaners Association; www.nadca.com.
135. NAIMA - North American Insulation Manufacturers Association; www.naima.org.
136. NBGQA - National Building Granite Quarries Association, Inc.; www.nbgqa.com.
137. NBI - New Buildings Institute; www.newbuildings.org.
138. NCAA - National Collegiate Athletic Association (The); www.ncaa.org.
139. NCMA - National Concrete Masonry Association; www.ncma.org.
140. NEBB - National Environmental Balancing Bureau; www.nebb.org.
141. NECA - National Electrical Contractors Association; www.necanet.org.
142. NeLMA - Northeastern Lumber Manufacturers Association; www.nelma.org.
143. NEMA - National Electrical Manufacturers Association; www.nema.org.
144. NETA - InterNational Electrical Testing Association; www.netaworld.org.
145. NFHS - National Federation of State High School Associations; www.nfhs.org.
146. NFPA - National Fire Protection Association; www.nfpa.org.
147. NFPA - NFPA International; (See NFPA).
148. NFRC - National Fenestration Rating Council; www.nfrc.org.
149. NHLA - National Hardwood Lumber Association; www.nhla.com.
150. NLGA - National Lumber Grades Authority; www.nlga.org.
151. NOFMA - National Oak Flooring Manufacturers Association; (See NWFA).
152. NOMMA - National Ornamental & Miscellaneous Metals Association; www.nomma.org.
153. NRCA - National Roofing Contractors Association; www.nrca.net.
154. NRMCA - National Ready Mixed Concrete Association; www.nrmca.org.
155. NSF - NSF International; www.nsf.org.
156. NSPE - National Society of Professional Engineers; www.nspe.org.
157. NSSGA - National Stone, Sand & Gravel Association; www.nssga.org.
158. NTMA - National Terrazzo & Mosaic Association, Inc. (The); www.ntma.com.
159. NWFA - National Wood Flooring Association; www.nwfa.org.
160. PCI - Precast/Prestressed Concrete Institute; www.pci.org.
161. PDI - Plumbing & Drainage Institute; www.pdionline.org.

162. PLASA - PLASA; (Formerly: ESTA - Entertainment Services and Technology Association); www.plasa.org.
163. RCSC - Research Council on Structural Connections; www.boltcouncil.org.
164. RFCI - Resilient Floor Covering Institute; www.rfci.com.
165. RIS - Redwood Inspection Service; www.redwoodinspection.com.
166. SAE - SAE International; www.sae.org.
167. SCTE - Society of Cable Telecommunications Engineers; www.scte.org.
168. SDI - Steel Deck Institute; www.sdi.org.
169. SDI - Steel Door Institute; www.steeldoor.org.
170. SEFA - Scientific Equipment and Furniture Association (The); www.sefalabs.com.
171. SEI/ASCE - Structural Engineering Institute/American Society of Civil Engineers; (See ASCE).
172. SIA - Security Industry Association; www.siaonline.org.
173. SJI - Steel Joist Institute; www.steeljoist.org.
174. SMA - Screen Manufacturers Association; www.smainfo.org.
175. SMACNA - Sheet Metal and Air Conditioning Contractors' National Association; www.smacna.org.
176. SMPTE - Society of Motion Picture and Television Engineers; www.smpte.org.
177. SPFA - Spray Polyurethane Foam Alliance; www.sprayfoam.org.
178. SPIB - Southern Pine Inspection Bureau; www.spib.org.
179. SPRI - Single Ply Roofing Industry; www.spri.org.
180. SRCC - Solar Rating & Certification Corporation; www.solar-rating.org.
181. SSINA - Specialty Steel Industry of North America; www.ssina.com.
182. SSPC - SSPC: The Society for Protective Coatings; www.sspc.org.
183. STI - Steel Tank Institute; www.steeltank.com.
184. SWI - Steel Window Institute; www.steelwindows.com.
185. SWPA - Submersible Wastewater Pump Association; www.swpa.org.
186. TCA - Tilt-Up Concrete Association; www.tilt-up.org.
187. TCNA - Tile Council of North America, Inc.; www.tileusa.com.
188. TEMA - Tubular Exchanger Manufacturers Association, Inc.; www.tema.org.
189. TIA - Telecommunications Industry Association (The); (Formerly: TIA/EIA - Telecommunications Industry Association/Electronic Industries Alliance); www.tiaonline.org.
190. TIA/EIA - Telecommunications Industry Association/Electronic Industries Alliance; (See TIA).
191. TMS - The Masonry Society; www.masonrysociety.org.
192. TPI - Truss Plate Institute; www.tpinst.org.
193. TPI - Turfgrass Producers International; www.turfgrasssod.org.
194. TRI - Tile Roofing Institute; www.tilerroofing.org.
195. UL - Underwriters Laboratories Inc.; <http://www.ul.com>.
196. UNI - Uni-Bell PVC Pipe Association; www.uni-bell.org.
197. USAV - USA Volleyball; www.usavolleyball.org.
198. USGBC - U.S. Green Building Council; www.usgbc.org.
199. USITT - United States Institute for Theatre Technology, Inc.; www.usitt.org.
200. WA - Wallcoverings Association; www.wallcoverings.org.
201. WASTEC - Waste Equipment Technology Association; www.wastec.org.
202. WCLIB - West Coast Lumber Inspection Bureau; www.wclib.org.
203. WCMA - Window Covering Manufacturers Association; www.wcmanet.org.
204. WDMA - Window & Door Manufacturers Association; www.wdma.com.
205. WI - Woodwork Institute; www.wicnet.org.

206. WSRCA - Western States Roofing Contractors Association; www.wsrca.com.
 207. WWPA - Western Wood Products Association; www.wwpa.org.
- C. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. This information is believed to be accurate as of the date of the Contract Documents.
1. DIN - Deutsches Institut für Normung e.V.; www.din.de.
 2. IAPMO - International Association of Plumbing and Mechanical Officials; www.iapmo.org.
 3. ICC - International Code Council; www.iccsafe.org.
 4. ICC-ES - ICC Evaluation Service, LLC; www.icc-es.org.
- D. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Information is subject to change and is up to date as of the date of the Contract Documents.
1. COE - Army Corps of Engineers; www.usace.army.mil.
 2. CPSC - Consumer Product Safety Commission; www.cpsc.gov.
 3. DOC - Department of Commerce; National Institute of Standards and Technology; www.nist.gov.
 4. DOD - Department of Defense; www.quicksearch.dla.mil.
 5. DOE - Department of Energy; www.energy.gov.
 6. EPA - Environmental Protection Agency; www.epa.gov.
 7. FAA - Federal Aviation Administration; www.faa.gov.
 8. FG - Federal Government Publications; www.gpo.gov/fdsys.
 9. GSA - General Services Administration; www.gsa.gov.
 10. HUD - Department of Housing and Urban Development; www.hud.gov.
 11. LBL - Lawrence Berkeley National Laboratory; Environmental Energy Technologies Division; www.eetd.lbl.gov.
 12. OSHA - Occupational Safety & Health Administration; www.osha.gov.
 13. SD - Department of State; www.state.gov.
 14. TRB - Transportation Research Board; National Cooperative Highway Research Program; The National Academies; www.trb.org.
 15. USDA - Department of Agriculture; Agriculture Research Service; U.S. Salinity Laboratory; www.ars.usda.gov.
 16. USDA - Department of Agriculture; Rural Utilities Service; www.usda.gov.
 17. USDOJ - Department of Justice; Office of Justice Programs; National Institute of Justice; www.ojp.usdoj.gov.
 18. USP - U.S. Pharmacopeial Convention; www.usp.org.
 19. USPS - United States Postal Service; www.usps.com.
- E. Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the standards and regulations in the following list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.
1. CFR - Code of Federal Regulations; Available from Government Printing Office; www.gpo.gov/fdsys.
 2. DOD - Department of Defense; Military Specifications and Standards; Available from DLA Document Services; www.quicksearch.dla.mil.

3. DSCC - Defense Supply Center Columbus; (See FS).
 4. FED-STD - Federal Standard; (See FS).
 5. FS - Federal Specification; Available from DLA Document Services;
www.quicksearch.dla.mil.
 - a. Available from Defense Standardization Program; www.dsp.dla.mil.
 - b. Available from General Services Administration; www.gsa.gov.
 - c. Available from National Institute of Building Sciences/Whole Building Design Guide; www.wbdg.org.
 6. MILSPEC - Military Specification and Standards; (See DOD).
 7. USAB - United States Access Board; www.access-board.gov.
 8. USATBCB - U.S. Architectural & Transportation Barriers Compliance Board; (See USAB).
- F. State Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.
1. CBHF; State of California; Department of Consumer Affairs; Bureau of Electronic and Appliance Repair, Home Furnishings and Thermal Insulation; www.bearhfti.ca.gov.
 2. CCR; California Code of Regulations; Office of Administrative Law; California Title 24 Energy Code; www.calregs.com.
 3. CDHS; California Department of Health Services; (See CDPH).
 4. CDPH; California Department of Public Health; Indoor Air Quality Program; www.cal-iaq.org.
 5. CPUC; California Public Utilities Commission; www.cpuc.ca.gov.
 6. SCAQMD; South Coast Air Quality Management District; www.aqmd.gov.
 7. TFS; Texas A&M Forest Service; Sustainable Forestry and Economic Development; www.txforestservation.tamu.edu.
 8. CDPHE; Colorado Department of Public Health & Environment
<https://cdphe.colorado.gov/>

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 014200

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.
- B. Related Requirements:
 - 1. Section 011000 "Summary" and City of Arvada Standards for work restrictions and limitations on utility interruptions.

1.3 USE CHARGES

- A. Installation, removal, and use charges for temporary facilities shall be included in the Contract Sum unless otherwise indicated. Allow other entities engaged in the Project to use temporary services and facilities without cost, including, but not limited to, Owner's construction forces, Project Engineer, testing agencies, and authorities having jurisdiction.
- B. Sewer Service: Pay sewer-service use charges for sewer usage by all entities for construction operations.
- C. Water Service: Pay water-service use charges for water used by all entities for construction operations.
- D. Electric Power Service: Pay electric-power-service use charges for electricity used by all entities for construction operations.
- E. Water and Sewer Service from Existing System: Water from Owner's existing water system is available for use with metering. Provide connections and extensions of services and metering as required for construction operations.
- F. Electric Power Service from Existing System: Electric power from Owner's existing system is available for use with metering. Provide connections and extensions of services and metering as required for construction operations.

1.4 INFORMATIONAL SUBMITTALS

- A. Site Utilization Plan: Show temporary facilities, temporary utility lines and connections, staging areas, construction site entrances, vehicle circulation, and parking areas for construction personnel.
- B. Implementation and Termination Schedule: Within 15 days of date established for commencement of the Work, submit schedule indicating implementation and termination dates of each temporary utility.
- C. Project Identification and Temporary Signs: Show fabrication and installation details, including plans, elevations, details, layouts, typestyles, graphic elements, and message content.
- D. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire-prevention program.
- E. Moisture- and Mold-Protection Plan: Describe procedures and controls for protecting materials and construction from water absorption and damage and mold. Describe delivery, handling, storage, installation, and protection provisions for materials subject to water absorption or water damage.
 - 1. Indicate procedures for discarding water-damaged materials, protocols for mitigating water intrusion into completed Work, and requirements for replacing water-damaged Work.
 - 2. Indicate sequencing of work that requires water, such as sprayed fire-resistive materials, plastering, and terrazzo grinding, and describe plans for dealing with water from these operations. Show procedures for verifying that wet construction has dried sufficiently to permit installation of finish materials.
 - 3. Indicate methods to be used to avoid trapping water in finished work.
- F. Noise and Vibration Control Plan: Identify construction activities that may impact the occupancy and use of existing spaces within the building or adjacent existing buildings, whether occupied by others, or occupied by the Owner. Include the following:
 - 1. Methods used to meet the goals and requirements of the Owner.
 - 2. Concrete cutting method(s) to be used.
 - 3. Location of construction devices on the site.
 - 4. Show compliance with the use and maintenance of quieted construction devices for the duration of the Project.
 - 5. Indicate activities that may disturb building occupants and that are planned to be performed during non-standard working hours as coordinated with the Owner.
 - 6. Indicate locations of sensitive areas or other areas requiring special attention as identified by Owner. Indicate means for complying with Owner's requirements.
- G. Protection Plan: per Note 14 on Sheet C-1, contractor shall submit conceptual plan for protecting pedestrian bridge during construction. Work shown on Sheet C-1 shall not commence until approval of conceptual bridge protection plan.

1.5 QUALITY ASSURANCE

- A. Temporary facilities shall comply with all applicable state and local ordinances, codes and regulations.
- B. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.
- C. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.
- D. Accessible Temporary Egress: Comply with applicable provisions in the United States Access Board's ADA-ABA Accessibility Guidelines and ICC/ANSI A117.1.

1.6 PROJECT CONDITIONS

- A. Temporary Use of Permanent Facilities: Engage Installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Chain-Link Fencing: Minimum 2-inch (50-mm), 0.148-inch- (3.8-mm-) thick, galvanized-steel, chain-link fabric fencing; minimum 6 feet (1.8 m) high with galvanized-steel pipe posts; minimum 2-3/8-inch- (60-mm-) OD line posts and 2-7/8-inch- (73-mm-) OD corner and pull posts.
- B. Portable Chain-Link Fencing: Minimum 2-inch (50-mm), 0.148-inch- (3.8-mm-) thick, galvanized-steel, chain-link fabric fencing; minimum 6 feet (1.8 m) high with galvanized-steel pipe posts; minimum 2-3/8-inch- (60-mm-) OD line posts and 2-7/8-inch- (73-mm-) OD corner and pull posts, with 1-5/8-inch- (42-mm-) OD top and bottom rails. Provide concrete bases for supporting posts.
- C. Fencing Windscreen Privacy Screen: Polyester fabric scrim with grommets for attachment to chain-link fence, sized to height of fence, in color selected by Engineer from manufacturer's standard colors.
- D. Wood Enclosure Fence: Plywood, 6 feet (1.8 m) high, framed with four 2-by-4-inch (50-by-100-mm) rails, with preservative-treated wood posts spaced not more than 8 feet (2.4 m) apart.
- E. Polyethylene Sheet: Reinforced, fire-resistive sheet, 10-mil (0.25-mm) minimum thickness, with flame-spread rating of 15 or less in accordance with ASTM E84 and passing NFPA 701 Test Method 2.
- F. Dust-Control Adhesive-Surface Walk-Off Mats: Provide mats, minimum 36 by 60 inches (914 by 1524 mm).

- G. Insulation: Unfaced mineral-fiber blanket, manufactured from glass, slag wool, or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively.

PART 3 - EXECUTION

3.1 TEMPORARY FACILITIES, GENERAL

- A. Conservation: Coordinate construction and use of temporary facilities with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.
 - 1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. See City of Arvada Standards for disposition of salvaged materials that are designated as Owner's property.

3.2 TEMPORARY UTILITY INSTALLATION

- A. General: Install temporary service or connect to existing service, if approved by Owner.
 - 1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.
- B. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully.
 - 1. Connect temporary sewers to municipal system as directed by authorities having jurisdiction.
- C. Water Service: Install water service and distribution piping in sizes and pressures adequate for construction.
- D. Water Service: If approved, connect to Owner's existing water service facilities. Clean and maintain water service facilities in a condition acceptable to Owner. At Final Completion, restore these facilities to condition existing before initial use.
- E. Sanitary Facilities: Provide temporary toilets and drinking water for use of construction personnel.

3.3 SUPPORT FACILITIES INSTALLATION

- A. Temporary Roads and Paved Areas: Construct and maintain temporary roads and paved areas adequate for construction operations. Locate temporary roads and paved areas as indicated on Drawings.
 - 1. Provide dust-control treatment that is nonpolluting and nontracking. Reapply treatment as required to minimize dust.
- B. Temporary Use of Planned Permanent Roads and Paved Areas: Locate temporary roads and paved areas in same location as permanent roads and paved areas. Construct and maintain

temporary roads and paved areas adequate for construction operations. Extend temporary roads and paved areas, within construction limits indicated, as necessary for construction operations.

1. Coordinate elevations of temporary roads and paved areas with permanent roads and paved areas.
2. Prepare subgrade and install subbase and base for temporary roads and paved areas accordance with City of Arvada Standards.
3. Recondition base after temporary use, including removing contaminated material, regrading, proofrolling, compacting, and testing.
4. Delay installation of final course of permanent hot-mix asphalt pavement until immediately before Substantial Completion. Repair hot-mix asphalt base-course pavement before installation of final course in accordance with City of Arvada Standards.

C. Traffic Controls: Comply with requirements of authorities having jurisdiction.

1. Protect existing site improvements to remain including curbs, pavement, and utilities.
2. Maintain access for fire-fighting equipment and access to fire hydrants.

D. Parking: Provide temporary offsite parking areas for construction personnel.

E. Storage and Staging: Provide temporary offsite area for storage and staging needs.

F. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.

1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties or endanger permanent Work or temporary facilities.
2. Remove snow and ice as required to minimize accumulations.

G. Project Signs: Provide Project signs as indicated. Unauthorized signs are not permitted.

1. Identification Signs: Provide Project identification signs as indicated on Drawings. Signs shall be constructed of A-A Ext – APA grade plywood, 1-in thick. Posts and braces shall be of pressure treated lumber.
2. Temporary Signs: Provide other signs as indicated and as required to inform public and individuals seeking entrance to Project.
 - a. Provide temporary, directional signs for construction personnel and visitors.
3. Maintain and touch up signs, so they are legible at all times.

H. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction.

I. Retain "Lifts and Hoists" Paragraph below for construction of more than two stories.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.

1. Where access to adjacent properties is required in order to affect protection of existing facilities, obtain written permission from adjacent property owner to access property for that purpose.
- B. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
 1. Comply with work restrictions specified in Section 011000 "Summary."
- C. Temporary Erosion and Sedimentation Control: Comply with requirements of EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent and requirements specified City of Arvada Standards.
- D. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to undisturbed areas and to adjacent properties and walkways, according to requirements of EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent.
 1. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross tree- or plant-protection zones.
 2. Inspect, repair, and maintain erosion- and sedimentation-control measures during construction until permanent vegetation has been established.
 3. Clean, repair, and restore adjoining properties and roads affected by erosion and sedimentation from Project site during the course of Project.
 4. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.
- E. Stormwater Control: Comply with requirements of authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.
- F. Tree and Plant Protection: Comply with requirements specified in Section 015639 "Temporary Tree and Plant Protection."
- G. Tree and Plant Protection: Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion.
- H. Site Enclosure Fence: Before construction operations begin, furnish and install site enclosure fence in a manner that will prevent people from easily entering site except by entrance gates.
 1. Extent of Fence: As required to enclose entire Project site or portion determined sufficient to accommodate construction operations.
 2. Maintain security by limiting number of keys and restricting distribution to authorized personnel. Furnish one set of keys to Owner.
- I. Security Enclosure and Lockup: Install temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security. Lock entrances at end of each workday.

- J. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.
- K. Temporary Egress: Provide temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction. Provide, install and maintain signage directing occupants to temporary egress.

3.5 OPERATION, TERMINATION, AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.
- B. Maintenance: Maintain facilities in good operating condition until removal.
 - 1. Clear snow and ice from all drives, walks and stairs to maintain safe vehicle and pedestrian access to the site and facilities as directed by the Project Engineer.
- C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Final Completion.
- D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Final Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
 - 1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
 - 2. Remove temporary roads and paved areas not intended for or acceptable for integration into permanent construction. Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at temporary entrances, as required by authorities having jurisdiction.
 - 3. Just prior to Final Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in City of Arvada Standards.

END OF SECTION 015000

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SECTION 015639 - TEMPORARY TREE AND PLANT PROTECTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes general protection and pruning of existing trees and plants that are affected by execution of the Work, whether temporary or permanent construction.
- B. Related Requirements:
 - 1. Section 015000 "Temporary Facilities and Controls" for temporary site fencing.

1.3 DEFINITIONS

- A. Caliper: Diameter of a trunk measured by a diameter tape or the average of the smallest and largest diameters at a height 6 inches (150 mm) above the ground for trees up to and including 4-inch (100-mm) size at this height and as measured at a height of 12 inches (300 mm) above the ground for trees larger than 4-inch (100-mm) size.
- B. Caliper (DBH): Diameter breast height; diameter of a trunk as measured by a diameter tape or the average of the smallest and largest diameters at a height 54 inches (1372 mm) above the ground line for trees with caliper of 8 inches (200 mm) or greater as measured at a height of 12 inches (300 mm) above the ground.
- C. Plant-Protection Zone: Area surrounding individual trees, groups of trees, shrubs, or other vegetation to be protected during construction and indicated on Drawings.
- D. Tree-Protection Zone: Area surrounding individual trees or groups of trees to be protected during construction and defined by a circle concentric with each tree with a radius 1.5 times the diameter of the drip line unless otherwise indicated.
- E. Vegetation: Trees, shrubs, groundcovers, grass, and other plants.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Review methods and procedures related to temporary tree and plant protection including, but not limited to, the following:

- a. Tree-service firm's personnel, and equipment needed to make progress and avoid delays.
- b. Arborist's responsibilities.
- c. Quality-control program.
- d. Coordination of Work and equipment movement with the locations of protection zones.
- e. Trenching by hand or with air spade within protection zones.
- f. Field quality control.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings:
 1. Include plans, elevations, sections, and locations of protection-zone fencing and signage, showing relation of equipment-movement routes and material storage locations with protection zones.
 2. Detail fabrication and assembly of protection-zone fencing and signage.
 3. Indicate extent of trenching by hand or with air spade within protection zones.
- C. Tree Pruning Schedule: Written schedule detailing scope and extent of pruning of trees to remain that interfere with or are affected by construction.
 1. Species and size of tree.
 2. Location on site plan. Include unique identifier for each.
 3. Reason for pruning.
 4. Description of pruning to be performed.
 5. Description of maintenance following pruning.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For arborist and tree service firm.
- B. Certification: From arborist, certifying that trees indicated to remain have been protected during construction according to recognized standards and that trees were promptly and properly treated and repaired when damaged.
- C. Maintenance Recommendations: From arborist, for care and protection of trees affected by construction during and after completing the Work.
- D. Existing Conditions: Documentation of existing trees and plantings indicated to remain, which establishes preconstruction conditions that might be misconstrued as damage caused by construction activities.
 1. Use sufficiently detailed photographs or video recordings.
 2. Include plans and notations to indicate specific wounds and damage conditions of each tree or other plants designated to remain.

- E. Quality-control program.

1.7 QUALITY ASSURANCE

- A. Arborist Qualifications: Certified Arborist as certified by ISA.
- B. Tree Service Firm Qualifications: An experienced tree service firm that has successfully completed temporary tree and plant protection work similar to that required for this Project and that will assign an experienced, qualified arborist to Project site during execution of the Work.
- C. Quality-Control Program: Prepare a written program to systematically demonstrate the ability of personnel to properly follow procedures and handle materials and equipment during the Work without damaging trees and plantings. Include dimensioned diagrams for placement of protection zone fencing and signage, the arborist and tree-service firm's responsibilities, instructions given to workers on the use and care of protection zones, and enforcement of requirements for protection zones.

1.8 FIELD CONDITIONS

- A. The following practices are prohibited within protection zones:
 - 1. Storage of construction materials, debris, or excavated material.
 - 2. Moving or parking vehicles or equipment.
 - 3. Foot traffic.
 - 4. Erection of sheds or structures.
 - 5. Impoundment of water.
 - 6. Excavation or other digging unless otherwise indicated.
 - 7. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.
- B. Do not direct vehicle or equipment exhaust toward protection zones.
- C. Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones and organic mulch.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Backfill Soil: Stockpiled soil mixed with planting soil of suitable moisture content and granular texture for placing around tree; free of stones, roots, plants, sod, clods, clay lumps, pockets of coarse sand, concrete slurry, concrete layers or chunks, cement, plaster, building debris, and other extraneous materials harmful to plant growth.
 - 1. Mixture: Well-blended mix of two parts stockpiled soil to one part planting soil.
- B. Organic Mulch: Free from deleterious materials and suitable as a top dressing for trees and shrubs, consisting of one of the following:

1. Type: Shredded hardwood.
 2. Size Range: 3 inches (76 mm) maximum, 1/2 inch (13 mm) minimum.
 3. Color: Natural.
- C. Protection-Zone Fencing: Fencing fixed in position and meeting one of the following requirements:
1. Chain-Link Protection-Zone Fencing: Galvanized-steel fencing fabricated from minimum 2-inch (50-mm) opening, 0.148-inch- (3.76-mm-) diameter wire chain-link fabric; with pipe posts, minimum 2-3/8-inch- (60-mm-) OD line posts, and 2-7/8-inch- (73-mm-) OD corner and pull posts and 0.177-inch- (4.5-mm-) diameter bottom tension wire; with tie wires, hog ring ties, and other accessories for a complete fence system.
 - a. Height: 72 inches
- D. Protection-Zone Signage: Shop-fabricated, rigid plastic or metal sheet with attachment holes prepunched and reinforced; legibly printed with nonfading lettering and as follows:
1. Lettering: 3-inch- (75-mm-) high minimum, black characters on white background noting the fenced area to be a tree protection zone.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Erosion and Sedimentation Control: Examine the site to verify that temporary erosion- and sedimentation-control measures are in place. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross protection zones.
- B. Prepare written report, endorsed by arborist, listing conditions detrimental to tree and plant protection.

3.2 PREPARATION

- A. Locate and clearly identify trees, shrubs, and other vegetation to remain or to be relocated. Flag each tree trunk at 54 inches (1372 mm) above the ground.
- B. Protect tree root systems from damage caused by runoff or spillage of noxious materials while mixing, placing, or storing construction materials. Protect root systems from ponding, eroding, or excessive wetting caused by dewatering operations.
- C. Tree-Protection Zones: Mulch areas inside tree-protection zones and other areas indicated. Do not exceed indicated thickness of mulch.
 1. Apply 2-inch (50-mm) uniform thickness of organic mulch unless otherwise indicated. Do not place mulch within 6 inches (150 mm) of tree trunks.

3.3 PROTECTION ZONES

- A. Protection-Zone Fencing: Install protection-zone fencing along edges of protection zones before materials or equipment are brought on the site and construction operations begin in a manner that will prevent people and animals from easily entering protected areas except by entrance gates. Construct fencing so as not to obstruct safe passage or visibility at vehicle intersections where fencing is located adjacent to pedestrian walkways or in close proximity to street intersections, drives, or other vehicular circulation.
 - 1. Chain-Link Fencing: Install to comply with ASTM F 567 and with manufacturer's written instructions.
 - 2. Posts: Set or drive posts into ground one-third the total height of the fence without concrete footings. Where a post is located on existing paving or concrete to remain, provide appropriate means of post support acceptable to Engineer.
 - 3. Access Gates: Install; adjust to operate smoothly, easily, and quietly; free of binding, warp, excessive deflection, distortion, nonalignment, misplacement, disruption, or malfunction throughout entire operational range. Confirm that latches and locks engage accurately and securely without forcing or binding.
- B. Protection-Zone Signage: Install protection-zone signage in visibly prominent locations in a manner approved by Engineer. Install one sign spaced approximately every 50 feet (15 m) on protection-zone fencing, but no fewer than four signs with each facing a different direction.
- C. Maintain protection zones free of weeds and trash.
- D. Maintain protection-zone fencing and signage in good condition as acceptable to Engineer and remove when construction operations are complete, and equipment has been removed from the site.
 - 1. Do not remove protection-zone fencing, even temporarily, to allow deliveries or equipment access through the protection zone.
 - 2. Temporary access is permitted subject to preapproval in writing by arborist if a root buffer effective against soil compaction is constructed as directed by arborist. Maintain root buffer so long as access is permitted.

3.4 EXCAVATION

- A. General: Excavate at edge of protection zones and for trenches indicated within protection zones according to requirements in Section 312000 "Earthwork" unless otherwise indicated.
- B. Trenching within Protection Zones: Where utility trenches are required within protection zones, excavate under or around tree roots by hand or with air spade, or tunnel under the roots by drilling, auger boring, or pipe jacking. Do not cut main lateral tree roots or taproots; cut only smaller roots that interfere with installation of utilities. Cut roots as required for root pruning. If excavating by hand, use narrow-tine spading forks to comb soil and expose roots.
- C. Redirect roots in backfill areas where possible. If encountering large, main lateral roots, expose roots beyond excavation limits as required to bend and redirect them without breaking. If encountered immediately adjacent to location of new construction and redirection is not

practical, cut roots approximately 3 inches (75 mm) back from new construction and as required for root pruning.

- D. Do not allow exposed roots to dry out before placing permanent backfill. Provide temporary earth cover or pack with peat moss and wrap with burlap. Water and maintain in a moist condition. Temporarily support and protect roots from damage until they are permanently relocated and covered with soil.

3.5 ROOT PRUNING

- A. Prune tree roots that are affected by temporary and permanent construction. Prune roots as follows:
 - 1. Cut roots manually by digging a trench and cutting exposed roots with sharp pruning instruments; do not break, tear, chop, or slant the cuts. Do not use a backhoe or other equipment that rips, tears, or pulls roots.
 - 2. Cut Ends: Do not paint cut root ends.
 - 3. Temporarily support and protect roots from damage until they are permanently redirected and covered with soil.
 - 4. Cover exposed roots with burlap and water regularly.
 - 5. Backfill as soon as possible according to requirements in Section 312000 "Earthwork."
- B. Root Pruning at Edge of Protection Zone: Prune tree roots 12 inches (300 mm) outside of the protection zone by cleanly cutting all roots to the depth of the required excavation.
- C. Root Pruning within Protection Zone: Clear and excavate by hand or with air spade to the depth of the required excavation to minimize damage to tree root systems. If excavating by hand, use narrow-tine spading forks to comb soil to expose roots. Cleanly cut roots as close to excavation as possible.

3.6 REGRADING

- A. Lowering Grade: Where new finish grade is indicated below existing grade around trees, slope grade beyond the protection zone. Maintain existing grades within the protection zone.
- B. Lowering Grade within Protection Zone: Where new finish grade is indicated below existing grade around trees, slope grade away from trees as recommended by arborist unless otherwise indicated.
 - 1. Root Pruning: Prune tree roots exposed by lowering the grade. Do not cut main lateral roots or taproots; cut only smaller roots. Cut roots as required for root pruning.
- C. Raising Grade: Where new finish grade is indicated above existing grade around trees, slope grade beyond the protection zone. Maintain existing grades within the protection zone.
- D. Minor Fill within Protection Zone: Where existing grade is 2 inches (50 mm) or less below elevation of finish grade, fill with backfill soil. Place backfill soil in a single uncompacted layer and hand grade to required finish elevations.

3.7 FIELD QUALITY CONTROL

- A. Inspections: Engage a qualified arborist to direct plant-protection measures in the vicinity of trees, shrubs, and other vegetation indicated to remain and to prepare inspection reports.

3.8 REPAIR AND REPLACEMENT

- A. General: Repair or replace trees, shrubs, and other vegetation indicated to remain or to be relocated that are damaged by construction operations, in a manner approved by Project Engineer.
 - 1. Submit details of proposed pruning and repairs.
 - 2. Perform repairs of damaged trunks, branches, and roots within 24 hours according to arborist's written instructions.
 - 3. Replace trees and other plants that cannot be repaired and restored to full-growth status, as determined by Arvada Land Development Code Division 4-6-2 Tree Preservation and Replacement and coordinate with Project Engineer.
- B. Excess Mulch: Rake mulched area within protection zones, being careful not to injure roots. Rake to loosen and remove mulch that exceeds a 2-inch (50-mm) uniform thickness to remain.

3.9 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Disposal: Remove excess excavated material, displaced trees, trash, and debris and legally dispose of them off Owner's property.

END OF SECTION 015639

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SECTION 016000 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.
- B. Related Requirements:
 - 1. Section 011000 "Summary" for Contractor requirements related to Owner-furnished products.
 - 2. Section 014200 "References" for applicable industry standards for products specified.

1.3 DEFINITIONS

- A. City of Arvada Approved Materials List: List of materials and manufacturers approved by the City of Arvada. Any reference to this list shall reference the latest version available.
- B. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
 - 1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature that is current as of date of the Contract Documents.
 - 2. New Products: Items that have not previously been incorporated into another project or facility. Salvaged items or items reused from other projects are not considered new products. Items that are manufactured or fabricated to include recycle contract materials are considered new products, unless indicated otherwise.
 - 3. Comparable Product: Product by named manufacturer that is demonstrated and approved through the comparable product submittal process described in PART 2 "Comparable Products" Article, to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.
- C. Basis-of-Design Product Specification: A specification in which a single manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation. Published attributes and characteristics of basis-of-design product establish salient characteristics of products.

1. Evaluation of Comparable Products: In addition to the basis-of-design product description, product attributes and characteristics may be listed to establish the significant qualities related to type, function, in-service performance and physical properties, weight, dimension, durability, visual characteristics, and other special features and requirements for purposes of evaluating comparable products of additional manufacturers named in the specification. Manufacturer's published attributes and characteristics of basis-of-design product also establish salient characteristics of products for purposes of evaluating comparable products.
- D. Subject to Compliance with Requirements: Where the phrase "Subject to compliance with requirements" introduces a product selection procedure in an individual Specification Section, provide products qualified under the specified product procedure. In the event that a named product or product by a named manufacturer does not meet the other requirements of the specifications, select another named product or product from another named manufacturer that does meet the requirements of the specifications; submit a comparable product request or substitution request, if applicable.
- E. Comparable Product Request Submittal: An action submittal requesting consideration of a comparable product, including the following information:
 1. Identification of basis-of-design product or fabrication or installation method to be replaced, including Specification Section number and title and Drawing numbers and titles.
 2. Data indicating compliance with the requirements specified in PART 2 "Comparable Products" Article.
- F. Basis-of-Design Product Specification Submittal: An action submittal complying with requirements in Section 013300 "Submittal Procedures."
- G. Substitution: Refer to City of Arvada Standards for definition and limitations on substitutions.

1.4 QUALITY ASSURANCE

- A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.
 1. Resolution of Compatibility Disputes between Multiple Contractors:
 - a. Contractors are responsible for providing products and construction methods compatible with products and construction methods of other contractors.
 - b. If a dispute arises between the multiple contractors over concurrently selectable but incompatible products, Engineer will determine which products shall be used.
- B. Identification of Products: Except for required labels and operating data, do not attach or imprint manufacturer or product names or trademarks on exposed surfaces of products or equipment that will be exposed to view in occupied spaces or on the exterior.

1. Labels: Locate required product labels and stamps on a concealed surface, or, where required for observation following installation, on a visually accessible surface that is not conspicuous.
2. Equipment Nameplates: Provide a permanent nameplate on each item of service- or power-operated equipment. Locate on a visually accessible but inconspicuous surface. Include information essential for operation, including the following:
 - a. Name of product and manufacturer.
 - b. Model and serial number.
 - c. Capacity.
 - d. Speed.
 - e. Ratings.

1.5 COORDINATION

- A. Modify or adjust affected work as necessary to integrate work of approved comparable products and approved substitutions.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products, using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.
- B. Delivery and Handling:
 1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
 2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
 3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
 4. Inspect products on delivery to determine compliance with the Contract Documents and that products are undamaged and properly protected.
- C. Storage:
 1. Provide a secure location and enclosure at Project site for storage of materials and equipment.
 2. For pipe storage, refer to City of Arvada Standards Section 421.05.1.
 3. Store products to allow for inspection and measurement of quantity or counting of units.
 4. Store materials in a manner that will not endanger Project structure.
 5. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation and with adequate protection for wind.
 6. Protect foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.

7. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
8. Protect stored products from damage and liquids from freezing.
9. Provide a secure location and enclosure at Project site for storage of materials and equipment by Owner's construction forces. Coordinate location with Owner.

1.7 PRODUCT WARRANTIES

- A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
 1. Manufacturer's Warranty: Written standard warranty form furnished by individual manufacturer for a particular product and issued in the name of the Owner or endorsed by manufacturer to Owner.
 2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner and issued in the name of the Owner or endorsed by manufacturer to Owner.
- B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.
 1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
 2. Specified Form: When specified forms are included in the Project Manual, prepare a written document, using indicated form properly executed.
 3. See other Sections for specific content requirements and particular requirements for submitting special warranties.

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

- A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.
 1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
 2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
 3. Owner reserves the right to limit selection to products with warranties meeting requirements of the Contract Documents.
 4. Where products are accompanied by the term "as selected," Project Engineer will make selection.
 5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.

6. Or Equal: For products specified by name and accompanied by the term "or equal," "or approved equal," or "or approved," comply with requirements in "Comparable Products" Article to obtain approval for use of an unnamed product.
 - a. Submit additional documentation required by Engineer in order to establish equivalency of proposed products. Unless otherwise indicated, evaluation of "or equal" product status is by the Engineer, whose determination is final.

2.2 COMPARABLE PRODUCTS

- A. Conditions for Consideration of Comparable Products: Project Engineer will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Project Engineer may return requests without action, except to record noncompliance the following requirements:
 1. Evidence that proposed product does not require revisions to the Contract Documents, is consistent with the Contract Documents, will produce the indicated results, and is compatible with other portions of the Work.
 2. Detailed comparison of significant qualities of proposed product with those of the named basis-of-design product. Significant product qualities include attributes, such as type, function, in-service performance and physical properties, weight, dimension, durability, visual characteristics, and other specific features and requirements.
 3. Evidence that proposed product provides specified warranty.
 4. List of similar installations for completed projects, with project names and addresses and names and addresses of Project Engineers and owners, if requested.
 5. Samples, if requested.

PART 3 - EXECUTION (NOT USED)

END OF SECTION 016000

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SECTION 017300 – EXECUTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes general administrative and procedural requirements governing execution of the Work, including, but not limited to, the following:
 - 1. Construction layout.
 - 2. Field engineering and surveying.
 - 3. Installation of the Work.
 - 4. Cutting and patching.
 - 5. Progress cleaning.
 - 6. Starting and adjusting.
 - 7. Protection of installed construction.
- B. Related Requirements:
 - 1. Section 011000 "Summary" for coordination and limits on use of Project site.

1.3 DEFINITIONS

- A. Cutting: Removal of in-place construction necessary to permit installation or performance of subsequent work.
- B. Patching: Fitting and repair work required to restore construction to original conditions after installation of subsequent work.

1.4 PREINSTALLATION MEETINGS

- A. Cutting and Patching Conference: Conduct conference at Project site.
 - 1. Prior to commencing work requiring cutting and patching, review extent of cutting and patching anticipated and examine procedures for ensuring satisfactory result from cutting and patching work. Inform Project Engineer of scheduled meeting. Require representatives of each entity directly concerned with cutting and patching to attend, including the following:
 - a. Contractor's superintendent.
 - b. Trade supervisor responsible for cutting operations.

- c. Trade supervisor(s) responsible for patching of each type of substrate.
 - d. Mechanical, electrical, and utilities subcontractors' supervisors, to the extent each trade is affected by cutting and patching operations.
2. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

1.5 INFORMATIONAL SUBMITTALS

- A. Cutting and Patching Plan: Submit plan describing procedures at least 10 days prior to the time cutting and patching will be performed. Include the following information:
 1. Extent: Describe reason for and extent of each occurrence of cutting and patching.
 2. Changes to In-Place Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building appearance and other significant visual elements.
 3. Products: List products to be used for patching and firms or entities that will perform patching work.
 4. Dates: Indicate when cutting and patching will be performed.
 5. Utilities and Mechanical and Electrical Systems: List services and systems that cutting and patching procedures will disturb or affect. List services and systems that will be relocated and those that will be temporarily out of service. Indicate length of time permanent services and systems will be disrupted.
 - a. Include description of provisions for temporary services and systems during interruption of permanent services and systems.
- B. Landfill Receipts: Submit copy of receipts issued by a landfill facility, licensed to accept hazardous materials, for hazardous waste disposal.
- C. Certified Surveys: Coordinate certified surveys with the City of Arvada survey crews.

1.6 CLOSEOUT SUBMITTALS

- A. Final Property Survey: Submit 5 copies showing the Work performed and record survey data, coordinating the submittal with the City of Arvada's survey crews who will be the primary surveyors for the project.

1.7 QUALITY ASSURANCE

- A. Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing land-surveying services of the kind indicated.
- B. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.
 1. Structural Elements: When cutting and patching structural elements, or when encountering the need for cutting and patching of elements, whose structural function is

- not known, notify Project Engineer of locations and details of cutting and await directions from Project Engineer before proceeding. Shore, brace, and support structural elements during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection.
2. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety. Operational elements include the following:
 - a. Primary operational systems and equipment.
 - b. Fire separation assemblies.
 - c. Air or smoke barriers.
 - d. Fire-suppression systems.
 - e. Plumbing piping systems.
 - f. Mechanical systems piping and ducts.
 - g. Control systems.
 - h. Communication systems.
 - i. Fire-detection and -alarm systems.
 - j. Conveying systems.
 - k. Electrical wiring systems.
 - l. Operating systems of special construction.
 3. Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety. Other construction elements include but are not limited to the following:
 - a. Water, moisture, or vapor barriers.
 - b. Membranes and flashings.
 - c. Exterior curtain-wall construction.
 - d. Sprayed fire-resistive material.
 - e. Equipment supports.
 - f. Piping, ductwork, vessels, and equipment.
 - g. Noise- and vibration-control elements and systems.
 4. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Engineer's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.
- C. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of specified products and equipment.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.
 - 1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Project Engineer for the visual and functional performance of in-place materials. Use materials that are not considered hazardous.
- B. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.
 - 1. Use cleaning products that comply with Green Seal's GS-37, or if GS-37 is not applicable, use products that comply with the California Code of Regulations maximum allowable VOC levels.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities, mechanical and electrical systems, and other construction affecting the Work.
 - 1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, gas service piping, and water-service piping; underground electrical services; and other utilities.
 - 2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.
- B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
 - 1. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
 - 2. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
 - 3. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.

- C. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:
 - 1. Description of the Work, including Specification Section number and paragraphs, and Drawing sheet number and detail, where applicable.
 - 2. List of detrimental conditions, including substrates.
 - 3. List of unacceptable installation tolerances.
 - 4. Recommended corrections.
- D. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Existing Utility Information: Furnish information to Owner that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.
- B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Project Engineer in accordance to requirements in Section 013100 "Project Management and Coordination."

3.3 CONSTRUCTION LAYOUT

- A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks and existing conditions. If discrepancies are discovered, notify Engineer promptly.
- B. Engage the City of Arvada's land surveyor experienced in laying out the Work, using the following accepted surveying practices.
 - 1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
 - 2. Establish limits on use of Project site.
 - 3. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
 - 4. Inform installers of lines and levels to which they must comply.
 - 5. Check the location, level and plumb, of every major element as the Work progresses.
 - 6. Notify Project Engineer when deviations from required lines and levels exceed allowable tolerances.

7. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.
- C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and rim and invert elevations.
- D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.
- E. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Engineer.

3.4 FIELD ENGINEERING

- A. Identification: Owner will identify existing benchmarks, control points, and property corners.
- B. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.
 1. Do not change or relocate existing benchmarks or control points without prior written approval of Engineer. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to Project Engineer before proceeding.
 2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.
- C. Benchmarks: Establish and maintain a minimum of two permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.
 1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
 2. Where the actual location or elevation of layout points cannot be marked, provide temporary reference points sufficient to locate the Work.
 3. Remove temporary reference points when no longer needed. Restore marked construction to its original condition.
- D. Certified Survey: On completion of foundation walls, major site improvements, and other work requiring field-engineering services, coordinate with City of Arvada to prepare a certified survey showing dimensions, locations, angles, and elevations of construction and sitework.
- E. Final Property Survey: Coordinate with City of Arvada land surveyor to prepare a final property survey showing significant features (real property) for Project. Include on the survey a certification, signed by land surveyor, that principal metes, bounds, lines, and levels of Project are accurately positioned as shown on the survey.

1. Show boundary lines, monuments, streets, site improvements and utilities, existing improvements and significant vegetation, adjoining properties, acreage, grade contours, and the distance and bearing from a site corner to a legal point.
2. Recording: At Substantial Completion, have the final property survey recorded by or with authorities having jurisdiction as the official "property survey."

3.5 INSTALLATION

- A. Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
 1. Make vertical work plumb and make horizontal work level.
 2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
 3. Conceal pipes, ducts, and wiring in finished areas unless otherwise indicated.
- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- C. Install products at the time and under conditions that will ensure satisfactory results as judged by Project Engineer. Maintain conditions required for product performance until Substantial Completion.
- D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy of type expected for Project.
- E. Sequence the Work and allow adequate clearances to accommodate movement of construction items onsite and placement in permanent locations.
- F. Tools and Equipment: Select tools or equipment that minimize production of excessive noise levels.
- G. Templates: Obtain and distribute to the parties involved templates for Work specified to be factory prepared and field installed. Check Shop Drawings of other portions of the Work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.
- H. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions with manufacturer.
 1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Engineer.
 2. Allow for building movement, including thermal expansion and contraction.
 3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

- I. Joints: Make joints of uniform width. Where joint locations in exposed Work are not indicated, arrange joints for the best visual effect, as judged by Engineer. Fit exposed connections together to form hairline joints.
- J. Repair or remove and replace damaged, defective, or nonconforming Work.

3.6 CUTTING AND PATCHING

- A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
 - 1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
- B. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.
- C. Temporary Support: Provide temporary support of Work to be cut.
- D. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- E. Adjacent Occupied Areas: Where interference with use of adjoining areas or interruption of free passage to adjoining areas is unavoidable, coordinate cutting and patching in accordance with requirements in City of Arvada Standards.
- F. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to minimize interruption to occupied areas.
- G. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
 - 1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 - 2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
 - 3. Concrete: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
 - 4. Excavating and Backfilling: Comply with requirements in applicable Sections where required by cutting and patching operations.
 - 5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
 - 6. Proceed with patching after construction operations requiring cutting are complete.

- H. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as practicable, as judged by Project Engineer. Provide materials and comply with installation requirements specified in other Sections, where applicable.
1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
 2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
 - a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
 - b. Restore damaged pipe covering to its original condition.
 3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
 - a. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch, corner to corner of wall and edge to edge of ceiling. Provide additional coats until patch blends with adjacent surfaces.
 4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
 5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition and ensures thermal and moisture integrity of building enclosure.
- I. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

3.7 PROGRESS CLEANING

- A. Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.
1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
 2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F (27 deg C).
 3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
 - a. Use containers intended for holding waste materials of type to be stored.

4. Coordinate progress cleaning for joint-use areas where Contractor and other contractors are working concurrently.
 - B. Site: Maintain Project site free of waste materials and debris.
 - C. Work Areas: Clean areas where Work is in progress to the level of cleanliness necessary for proper execution of the Work.
 1. Remove liquid spills promptly.
 2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
 - D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
 - E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
 - F. Exposed Surfaces: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
 - G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways. Three paragraphs below reduce or eliminate the need for similar provisions in other Sections. Insert other provisions needed because of unusual Project conditions. Specify unusual provisions for specific work in the individual Section.
 - H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
 - I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
 - J. Limiting Exposures: Supervise construction operations to ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.
- 3.8 STARTING AND ADJUSTING
- A. Coordinate startup and adjusting of equipment and operating components with requirements in City of Arvada Engineering Standards and Specifications.
 - B. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
 - C. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.

- D. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- E. Manufacturer's Field Service: Comply with qualification requirements in City of Arvada Standards.

3.9 PROTECTION AND REPAIR OF INSTALLED CONSTRUCTION

- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
- B. Repair Work previously completed and subsequently damaged during construction period
Repair to like-new condition.
- C. Protection of Existing Items: Provide protection and ensure that existing items to remain undisturbed by construction are maintained in condition that existed at commencement of the Work.
- D. Comply with manufacturer's written instructions for temperature and relative humidity.

END OF SECTION 017300

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SECTION 033010 – MISCELLANEOUS CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, joint materials, and finishes.
- B. This section is applicable to cast-in-place cut off walls, collars, or vaults. All other flatwork shall be governed by the City of Arvada Standards.

1.3 DEFINITIONS

- A. Cementitious Materials: Portland cement alone or in combination with fly ash or ground granulated blast furnace slag; materials subject to compliance with requirements.
- B. W/C Ratio: The ratio by weight of water to cementitious materials.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Before submitting design mixtures, review concrete design mixture and examine procedures for ensuring quality of concrete materials. Require representatives of each entity directly concerned with cast-in-place concrete to attend, including the following:
 - a. Contractor's superintendent.
 - b. Independent testing agency responsible for concrete design mixtures.
 - c. Ready-mix concrete manufacturer.
 - d. Concrete Subcontractor.
 - 2. Review construction, joints; forms and form removal limitations; cold- and hot-weather concreting procedures; curing procedures; concrete finishes and finishing; concrete repair procedures, and concrete protection.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Concrete Design Mixtures: Design Mixtures: For each formulation of concrete proposed for use, submit constituent quantities per cubic yard (cubic meter), water cementitious ratio, air content, concrete slump, type and manufacturer of cement and type and manufacturer of fly ash or ground granulated blast furnace slag. Provide either:
 - 1. Standard deviation data for each proposed concrete mix based on statistical records.
 - 2. Water cementitious ratio curve for concrete mixes based on laboratory tests.
- C. Steel Reinforcement Shop Drawings: Placing Drawings that detail fabrication, bending, and placement. Include bar sizes, spacing, lengths, material, grade, bar schedules, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, and supports for concrete reinforcement. Reference bars to be the same identification marks shown on the bar bending details.
- D. Material Certificates: For each of the following:
 - 1. Cementitious materials.
 - 2. Admixtures.
 - 3. Form materials and form-release agents.
 - 4. Steel reinforcement and accessories.
 - 5. Curing compounds.
 - 6. Bonding agents.
- E. Material Test Reports: For the following, from a qualified testing agency:
 - 1. Aggregates: Conformance to ASTM standards, including sieve analysis, mechanical properties, deleterious substance content, mortar bar expansion test results, and proof that the aggregate non-reactive.
 - 2. Mill Test Reports: Conformance to ASTM standards, including chemical analysis and physical tests.
 - a. Cementitious materials.
 - b. Steel Reinforcing.
- F. Special Waterstops: Product data including location of use, sample, catalogue cut, technical data, storage requirements, splicing methods, installation instructions, and conformity to CRD, ASTM or FS standards, as applicable.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For independent testing agency responsible for concrete design mixtures.
- B. Certifications:
 - 1. Certify that admixtures used in the same concrete mix are compatible with each other and the aggregates.

- 2. Certificate of conformance for concrete production facilities from the NRMCA.
- C. Field quality-control reports.
- D. Minutes of preinstallation conference.

1.7 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.
 - 1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."
- B. Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified according to ASTM C1077 and ASTM E329 for testing indicated.
 - 1. Personnel conducting field tests shall be qualified as ACI Concrete Field-Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.
 - 2. Personnel performing laboratory tests shall be ACI-certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician, Grade I. Testing agency laboratory supervisor shall be an ACI-certified Concrete Laboratory Testing Technician, Grade II.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Steel Reinforcement: Provide reinforcement free from mill scale, rust, mud, dirt, grease, oil, ice, or other foreign matter that will reduce or destroy bond. Deliver, store, and handle steel reinforcement to prevent bending and damage. Store reinforcement off the ground, protect from moisture, and keep out of standing water, and free from rust, mud, dirt, grease, oil, ice, or other contaminants and deleterious matter that will reduce or destroy bond.
- B. Inspection: Accept materials on Site in manufacturer's original packaging and inspect for damage.
- C. Store materials according to manufacturer instructions. Limit total storage time from date of manufacture to date of installation to six months or the manufacturer's recommended storage time, whichever is less.
- D. Remove immediately from the site material which becomes damp, contains lumps, or is hardened and replace with acceptable material.
- E. Protection:
 - 1. Protect materials from moisture and dust by storing in clean, dry location.
 - 2. Provide additional protection according to manufacturer instructions.

1.9 FIELD CONDITIONS

- A. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
 - 1. When average of the highest and lowest temperature from midnight to midnight is expected to fall below 40 deg F for three successive days, maintain delivered concrete temperature within the temperature range required by ACI 301.
 - 2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
 - 3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators.
- B. Hot-Weather Placement: Comply with ACI 301 and ACI 305.1, and as follows:
 - 1. Maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
 - 2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENT

- A. Product Experience: Provide expansive waterstops products specifically manufactured for intended purpose and have five years' successfully experience in similar applications.

2.2 MATERIALS - SPECIAL WATERSTOPS

- A. Preformed Expansion Type Hydrophilic Rubber Strips:
 - 1. Installation Adhesives: Use with expansive waterstops as recommended by waterstop manufacturer.
 - 2. Acceptable Manufacturers: Provide products manufactured by one of the following or equal:
 - a. Adeka: Adeka Ultraseal MC-2010MN.
 - b. GCP Applied Technologies Inc: ADCOR 500S.

2.3 CONCRETE, GENERAL

- A. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:
 - 1. ACI 301.
 - 2. ACI 117.

2.4 FORM-FACING MATERIALS

- A. Surface Finish 2.0 Concrete: Form-facing panels that provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.
 - 1. Plywood, metal, or other approved panel materials.
 - 2. Exterior-grade plywood panels, suitable for concrete forms, complying with DOC PS 1, and as follows:
 - a. High-density overlay, Class 1 or better.
- B. Chamfer Strips: Wood, metal, PVC, or rubber strips, 3/4 by 3/4 inch, minimum.
- C. Form-Release Agent: Commercially formulated form-release agent that does not bond with, stain, or adversely affect concrete surfaces and does not impair subsequent treatments of concrete surfaces. Form-release agent to comply with Federal, State and local VOC limitations.
 - 1. Formulate form-release agent with rust inhibitor for steel form-facing materials.
- D. Form Ties: Factory-fabricated, removable or snap-off glass-fiber-reinforced plastic or metal form ties designed to resist lateral pressure of fresh concrete, heavy high frequency vibration of the concrete on forms and to prevent spalling of concrete on removal.
 - 1. Furnish units that leave no corrodible metal closer than 1 inch to the plane of exposed concrete surface.
 - 2. Furnish ties that, when removed, leave holes no larger than 1 inch in diameter in concrete surface.
 - 3. Furnish ties with integral water-barrier plates to retaining walls.

2.5 STEEL REINFORCEMENT

- A. Reinforcing Bars: ASTM A615/A615M, Grade 60, new deformed bars.
- B. Steel Bar Mats: ASTM A184/A184M, fabricated from ASTM A615/A615M, Grade 60, deformed bars, assembled with clips.

2.6 REINFORCEMENT ACCESSORIES

- A. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded-wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete of greater compressive strength than the specified concrete strength, according to CRSI's "Manual of Standard Practice," and as follows:
 - 1. For concrete surfaces exposed to view, where legs of wire bar supports contact forms, use CRSI Class 1 plastic-protected steel wire or CRSI Class 2 stainless-steel bar supports.
- B. Tie wires for reinforcement: 16 gauge or heavier black annealed wire to tie uncoated reinforcing.

2.7 CONCRETE MATERIALS

- A. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from single source, and obtain admixtures from single source from single manufacturer.
- B. Cementitious Materials:
 - 1. Portland Cement: ASTM C150/C150M, Type II. Total equivalent alkali content of the cement used not to exceed 0.60 percent as provided in the Optional Chemical Requirements of ASTM C150.
 - 2. Fly Ash: ASTM C618, Class F.
 - 3. Ground Granulated Blast Furnace Slag: ASTM C989/C989M, Grade 100 or 120.
- C. Normal-Weight Aggregates: ASTM C33/C33M, Class 3S coarse aggregate or better, graded. Provide aggregates from a single source.
 - 1. Maximum Coarse-Aggregate Size: As indicated by concrete mixtures specified herein.
 - 2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.
- D. ASTM C260/C260M.
- E. Chemical Admixtures: Certified by manufacturer to be compatible with other admixtures and that do not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.
 - 1. Water-Reducing Admixture: ASTM C494/C494M, Type A.
- F. Water: ASTM C94/C94M and potable.

2.8 CURING MATERIALS

- A. Absorptive Cover: AASHTO M182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. when dry.
- B. Moisture-Retaining Cover: ASTM C171, polyethylene film or white burlap-polyethylene sheet.
- C. Water: Potable.
- D. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C309, Type 1-D, Class B, dissipating.

2.9 RELATED MATERIALS

- A. Epoxy Bonding Adhesive: ASTM C881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class suitable for application temperature and of grade to suit requirements, and as follows:
 - 1. Types V, load bearing, for bonding freshly mixed concrete to hardened concrete.

2.10 CONCRETE MIXTURES, GENERAL

- A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.
 - 1. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.
- B. Cementitious Materials: limit percentage, by weight, of cementitious materials (Portland cement alone or in combination with fly ash or Ground Granulated Blast Furnace Slag) in concrete as follows:
 - 1. Fly Ash: 25 percent.
 - 2. Ground Granulated Blast Furnace Slag: 50 percent.
- C. Admixtures: Use admixtures according to manufacturer's written instructions.
 - 1. Use water-reducing admixture in concrete, for placement and workability.

2.11 CONCRETE MIXTURES

- A. Structural Concrete 10-in or greater in thickness:
 - 1. Minimum Compressive Strength: 4500 psi at 28 days.
 - 2. Maximum W/C Ratio: 0.42.
 - 3. Slump Limit: 4 inches, plus or minus 1 inch.
 - 4. Air Content: 4 percent, plus or minus 1.5 percent at point of delivery.
 - 5. Coarse Aggregate: ASTM C33, size 57.

2.12 FABRICATING REINFORCEMENT

- A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.13 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C94/C94M, and furnish batch ticket information.
 - 1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 FORMWORK INSTALLATION

- A. Erect, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.
- B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.
- C. Use form-facing materials as required to meet the surface finishes (SF) requirements of ACI 301, unless otherwise specified provide as-cast form finishes per ACI 301 as follows.
 - 1. Surface Finish (SF-2.0)
- D. Construct forms tight to prevent loss of concrete mortar.
- E. Construct forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast-concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.
 - 1. Install recesses, and the like, for easy removal.
 - 2. Do not use rust-stained steel form-facing material.
- F. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.
- G. Provide temporary openings for cleanouts and inspection ports where necessary. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.
- H. Chamfer exterior corners and edges of permanently exposed concrete.
- I. Form openings, chases, offsets, sinkages, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.
- J. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, ice, snow and other debris just before placing concrete.
- K. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.
- L. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

3.2 EMBEDDED ITEM INSTALLATION

- A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 - 1. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC 303.

3.3 REMOVING AND REUSING FORMS

- A. General: Formwork for parts of the Work that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F for 24 hours after placing concrete. Concrete has to be hard enough to not be damaged by form-removal operations, and curing and protection operations must be maintained.
 - 1. Leave formwork for structural elements that support weight of concrete in place until concrete has achieved at least 70 percent of its 28-day design compressive strength.
- B. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing materials are not acceptable for exposed surfaces. Re-apply new form-release agent.
- C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by Project Engineer.

3.4 STEEL REINFORCEMENT INSTALLATION

- A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.
- B. Clean reinforcement of loose mill scale, rust, mud, dirt, grease, oil, ice, and other foreign materials that reduce or destroy the bond to concrete.
- C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum clear concrete cover. Do not tack weld crossing reinforcing bars.
- D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.
- E. Splicing:
 - 1. Lengths and locations of splices as indicated on the Drawings.
 - 2. If not indicated on Drawings, locate reinforcement splices at point of minimum stress.

3.5 CONCRETE PLACEMENT

- A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections are completed.
- B. Do not add water to concrete during delivery, at Project site, or during placement unless approved by Project Engineer.
- C. Identify water to be withheld at concrete batch plant to be added at Project site with high-range water-reducing admixtures. Constant quantity of water to be withheld from each batch of concrete. A maximum of 10 gallons of water may be withheld from each batch of concrete.
- D. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete is placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.
 - 1. Deposit concrete in horizontal layers of depth not to exceed formwork design pressures and in a manner to avoid “cold” joints.
 - 2. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
 - 3. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.
 - 4. Consolidate concrete during placement operations, so concrete is thoroughly worked around reinforcement and other embedded items and into corners.

3.6 INSTALLATION SPECIAL WATERSTOPS

- A. Install special waterstops at joints only where specifically indicated on Drawings. Provide waterstops continuous around corners and intersections to provide a continuous seal.
- B. Use waterstops of maximum practicable length to provide a minimum number of joints, connections, or splices. Make joints, connections, and splices conforming to manufacturer's recommendations.
- C. Terminate waterstops 2 inches below exposed top of walls.
- D. Expansive Type Waterstops:
 - 1. Clean and prepare joint surfaces, install primers or adhesives, and install expansive waterstops on dry surfaces in accordance with manufacturer's instructions, including concrete cure, temperature conditions, and splices.
 - 2. Use adhesive or tape to secure, expansive waterstops to previously placed vertical and overhead concrete surfaces and other locations, as recommended by manufacturer. Protect installed waterstops from moisture and keep dry until subsequent placement of concrete.

3.7 FINISHING SURFACES

- A. Finish concrete surfaces according to ACI 318.
- B. Surface Finish 2.0: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
 - 1. Apply to concrete surfaces exposed to view.
- C. Float Finish: Apply float finish per ACI 301 prior to broom finish or trowel finish.
- D. Broom Finish: After concrete has received a float finish, apply to smooth-formed-finished as-cast concrete surfaces subject to pedestrian traffic. Provide broom finish perpendicular to direction of pedestrian traffic.
- E. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

3.8 MISCELLANEOUS CONCRETE ITEM INSTALLATION

- A. Filling In: Fill in holes and openings left in concrete structures after work of other trades is in place unless otherwise indicated. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete the Work.
- B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and chamfers.

3.9 CONCRETE PROTECTION AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 305.1 for hot-weather protection during curing.
- B. Formed Surfaces: Cure formed concrete surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for remainder of curing period.
- C. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces.
- D. Cure concrete according to ACI 308.1, by one or a combination of the following methods:
 - 1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:

- a. Water.
 - b. Continuous water-fog spray.
 - c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.
2. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.
 - a. Removal: After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer.

3.10 FIELD QUALITY CONTROL

- A. Owner will engage a qualified testing and inspection agency to perform field tests and inspections and prepare test reports.
- B. Notify the Owner when the reinforcing is complete and ready for inspection, at least six working hours prior to the proposed concrete placement. Do not cover reinforcing steel with concrete until the installation of the reinforcement, including the size, spacing and position of the reinforcement has been inspected by the Owner's inspection agency and the Owner's inspection agency release to proceed with the concreting has been obtained. Keep forms open until the Owner's inspection agency has completed inspection of the reinforcement.
- C. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C172/C172M shall be performed according to the following requirements by the Owner's testing agency:
 1. Testing Frequency: One composite sample for each day's placement of each concrete mixture exceeding 5 cu. yd., but less than 25 cu. yd., plus one set for each additional 50 cu. yd. or fraction thereof.
 2. Slump: ASTM C143/C143M; one test at point of discharge for each composite sample, but not less than one test for each day's placement of each concrete mixture. Additional tests will be performed when concrete consistency appears to change.
 3. Air Content: ASTM C231/C231M, pressure method, for concrete; one test for each composite sample at the point of placement, but not less than one test for each day's placement of each concrete mixture.
 4. Concrete Temperature: ASTM C1064/C1064M; one test hourly when air temperature is 40 deg F and below or 80 deg F and above, and one test for each composite sample.
 5. Compression Test Specimens: ASTM C31/C31M.
 - a. Cast and cure one set of five 6 inch x 12 inch long standard cylinder specimens for each composite sample.
 6. Compressive-Strength Tests: ASTM C39/C39M; test one specimen at 7 days, test one specimen at 14 days, test two specimens at 28 days. The fifth may be used to verify strength after 28 days if the 28-day test results are low.

7. Strength of each concrete mixture will be satisfactory if every average of any three-consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
8. Test results shall be reported in writing to Project Engineer, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break.
9. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Project Engineer. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C42/C42M or by other methods as directed by Project Engineer.
10. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
11. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.

END OF SECTION 033010

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SECTION 312323.33 - FLOWABLE FILL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Flowable fill for:
 - a. Structure backfill.
 - b. Utility bedding.
 - c. Utility backfill.
 - d. Filling abandoned utilities.
 - e. Filling annular space for slip-lining.

1.3 DEFINITIONS

- A. Utility: Any buried pipe, duct, conduit, manhole, tank, or cable.
- B. Excavatable Flowable Fill: Lean cement concrete fill used where future excavation may be required, such as fill for utility trenches, bridge abutments, and culverts.
- C. Non-excavatable Flowable Fill: Lean cement concrete fill used where future excavation is not anticipated, such as fill below structure foundations and filling abandoned utilities.

1.4 INFORMATIONAL SUBMITTALS

- A. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- B. Field Quality-Control Submittals:
 - 1. Mix Design:
 - a. Furnish flowable fill mix design for each specified strength.
 - b. Furnish separate mix designs when admixtures are required for the following:
 - 1) Flowable fill Work during hot and cold weather.
 - 2) Air entrained flowable fill Work.

- c. Identify design mix ingredients, proportions, properties, admixtures, and tests.
 - d. Sieve analysis of aggregate.
- 2. Furnish test results to certify flowable fill mix design properties meet or exceed specified requirements.
- C. Delivery Tickets:
 - 1. Furnish duplicate delivery tickets indicating actual materials delivered to Project Site.
- D. Qualifications Statements:
 - 1. Submit qualifications for supplier.

1.5 QUALITY ASSURANCE

- A. Perform Work according to CDOT and City of Arvada standards.
- B. All testing and inspection services required, unless otherwise specified, are paid for by the Contractor. Testing necessary to establish the mix shall be performed by and at the expense of the Contractor. Methods of testing shall comply with the latest applicable ASTM Methods except as specified herein.

1.6 QUALIFICATIONS

- A. Supplier:
 - 1. Company specializing in supplying products specified in this Section with minimum three years' experience.

1.7 ENVIRONMENTAL REQUIREMENTS

- A. Store or stockpile fly ash, aggregate and cement in conformity with the recommendations of ACI 301.
- B. Minimum Conditions: Do not install flowable fill during inclement weather or when ambient temperature is less than 40 degrees F.

1.8 FIELD MEASUREMENTS

- A. Verify field measurements before installing flowable fill to establish quantities required to complete the Work.

PART 2 - PRODUCTS

2.1 FLOWABLE FILL

- A. Furnish materials according to CDOT and City of Arvada standards.
- B. Flowable fill mix designs shall be from the City and County of Denver Approved CLSM list and submitted to the Project Engineer prior to placement.
- C. Flowable fill comprehensive strength shall not exceed 150 psi to allow for excavation without pneumatic equipment.
- D. Cellular grout is acceptable for use filling annular space in slip-lining applications. Cellular grout shall have a minimum strength of 100 psi.

2.2 MIXES

- A. Mix and deliver flowable fill according to ASTM C94/C94M, Option C.
- B.
- B. Provide water content in design mix to produce self-leveling, flowable fill material at time of placement.
- C. Design mix air entrainment and unit mass are for laboratory design mix and source quality control only.

2.3 SOURCE QUALITY CONTROL

- A. Test and analyze properties of flowable fill design mix and certify results for the following:
 - 1. Design mix proportions by weight of each material.
 - 2. Aggregate: ASTM C33 for material properties and gradation.
 - 3. Properties of plastic flowable fill design mix including:
 - a. Temperature.
 - b. Slump.
 - c. Air entrainment.
 - d. Wet unit mass.
 - e. Yield.
 - f. Cement factor.
 - 4. Properties of hardened flowable fill design mix including:
 - a. Compressive strength at 1 day, 7 days, and 28 days. Report compressive strength of each specimen and average specimen compressive strength.
 - b. Unit mass for each specimen and average specimen unit mass at time of compressive strength testing.

B. Prepare delivery tickets containing the following information:

1. Project designation.
2. Date.
3. Time.
4. Class and quantity of flowable fill.
5. Actual batch proportions.
6. Free moisture content of aggregate.
7. Quantity of water withheld.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify utility installation is complete and tested before placing flowable fill.
- B. Verify excavation is dry and dewatering system is operating.

3.2 PREPARATION

- A. Support and restrain utilities to prevent movement and flotation during installation of flowable fill.
- B. Protect structures and utilities from damage caused by hydraulic pressure of flowable fill before fill hardens.
- C. Protect utilities to prevent intrusion of flowable fill.

3.3 INSTALLATION - FILL, BEDDING, AND BACKFILL

- A. Project Engineer approval required for the condition of subgrade and method of placement.
- B. Remove all debris and foreign matter from the excavation before depositing flowable fill.
- C. Do not place flowable fill in water or submerge within 24 hours after placing.

3.4 INSTALLATION - FILLING ABANDONED UTILITIES

- A. Verify pipes and conduits are not clogged and are sufficiently empty to permit gravity installation of flowable fill for entire length indicated to be filled.
- B. Seal lower end of pipes and conduits by method to contain flowable fill and to vent trapped air caused by filling operations.

- C. Place flowable fill using method to ensure there are no voids.
 - 1. Fill pipes and conduits from high end.
 - 2. Fill manholes, tanks, and other structures from grade level access points.
- D. After filling pipes and conduits seal both ends.

3.5 FIELD QUALITY CONTROL

- A. Perform inspection and testing according to ASTM C94/C94M.
 - 1. Take samples for tests for every 150 cu yd of flowable fill, or fraction thereof, installed each day.
 - 2. Sample, prepare and test four compressive strength test cylinders per ASTM D4832. Test one specimen at 3 days, one at 7 days, and two at 28 days.
 - 3. Measure temperature at point of delivery when samples are prepared.
- B. Perform in place penetration (density) tests using hand held penetrometer to measure penetration resistance of hardened flowable fill according to ASTM C403.
- C. Defective Flowable Fill: Fill failing to meet the following test requirements or fill delivered without the following documentation.
 - 1. Test Requirements:
 - a. Minimum temperature at point of delivery.
 - b. Compressive strength requirements for each type of fill.
 - 2. Documentation: Duplicate delivery tickets.

3.6 CLEANING

- A. Remove spilled and excess flowable fill from Project Site.
- B. Restore facilities and Site areas damaged or contaminated by flowable fill installation to existing condition before installation.

END OF SECTION 312323.33

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SECTION 330509.33 - THRUST RESTRAINT FOR UTILITY PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Tied joint restraint system.

1.3 PREINSTALLATION MEETINGS

- A. See Section 013100 "Project Management and Coordination" for preinstallation meeting.
- B. Convene minimum one week prior to commencing Work of this Section.

1.4 ACTION SUBMITTALS

- A. Product Data: Submit manufacturer catalog information for restrained joint details and installation instructions.
- B. Shop Drawings:
 - 1. Restrained joint details and materials being used.
 - 2. Layout drawings showing piece numbers and locations.
 - 3. Restrained joint locations.

1.5 INFORMATIONAL SUBMITTALS

- A. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- B. Manufacturer Instructions: Detailed instructions on installation requirements, including storage and handling procedures.
- C. Qualifications Statement: Qualifications for manufacturer, fabricator, and licensed professional.

1.6 CLOSEOUT SUBMITTALS

- A. Project Record Documents: Record actual locations of joint restraints.

1.7 QUALITY ASSURANCE

- A. Perform Work according to AWWA, City of Arvada and CDPHE standards.

1.8 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum three years' experience.
- B. Fabricator: Company specializing in fabricating products specified in this Section with minimum three years' experience.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Inspection: Accept materials on Site in manufacturer's original packaging and inspect for damage.
- B. Store materials according to manufacturer instructions.
- C. Protection:
 - 1. Protect materials from moisture and dust by storing in clean, dry location remote from construction operations areas.
 - 2. Provide additional protection according to manufacturer instructions.

1.10 FIELD CONDITIONS

- A. Field Measurements:
 - 1. Verify field measurements prior to fabrication.
 - 2. Indicate field measurements on Shop Drawings.

PART 2 - PRODUCTS

2.1 APPROVED PRODUCTS

- A. Refer to City of Arvada list of Approved Products, latest edition for approved restraint systems.

2.2 PERFORMANCE AND DESIGN CRITERIA

- A. Provide pressure pipeline with restrained joints at each bend, tee, line valve and change in direction.

2.3 TIED JOINT RESTRAINT SYSTEMS

A. Tie Bolts:

1. Mechanical Joints on 2 and 3 inch Pipe:
 - a. Size: 5/8 inch.
 - b. Comply with ASTM A588/A588M, Grade B.
 - c. Comply with ASTM A325, Type 3, except increase tensile strength of full body threaded section to 40,000 lb. minimum for 5/8 inch and 60,000 lb. minimum for 3/4 inch by heat-treating (quenching and tempering) to manufacturer's reheat and hardness specifications.
2. Mechanical and Flanged Joints on 4 to 12 inch Pipe:
 - a. Size: 3/4 inch.
 - b. Comply with ASTM A588/A588M, Grade B.
 - c. Comply with ASTM A325, Type 3, except increase tensile strength of full body threaded section to 40,000 lb. minimum for 5/8 inch and 60,000 lb. minimum for 3/4 inch by heat-treating (quenching and tempering) to manufacturer's reheat and hardness specifications.
3. Mechanical Joints on 14 to 24 inch Pipe:
 - a. Size: 3/4 inch.
 - b. Comply with ASTM A588/A588M, Grade B and ASTM A325, Type 3.
4. Mechanical and Flanged Joints on 30 inch and Larger Pipe:
 - a. Size: 1 inch.
 - b. Comply with ASTM A588/A588M, Grade B.
 - c. Comply with ASTM A325, Type 3, except increase tensile strength of full body threaded section to 100,000 lb minimum by heat-treating (quenching and tempering) to manufacturer's reheat and hardness specifications.

B. Tie Nut:

1. Description: Hex nut for each tie bolt and tie rods.
2. Comply with ASTM A563, Grade C3.

C. Tiepin:

1. Bends and Hydrants: 3/4 inch round bar stock.
2. Size and Shape: 6 inch hairpin.
3. Comply with ASME B1.1 and ASTM A588/A588M.

D. Tie Coupling:

1. Description: Extension of continuous-threaded rods.
2. Provide with center stop to aid installation.
3. Comply with ASTM A588/A588M.

E. Tie Clamp:

1. Description: Retainer clamp for ductile iron, asbestos-cement, and PVC push-on pipe.
2. Location: In front of bell.
3. Comply with ASTM A36/A36M, ASTM A307, Grade A, and ASTM A563, Grade A.

F. Tie Rod:

1. Description: Continuous-threaded rod for cutting to desired lengths.
2. Comply with ASTM A588/A588M, Grade B, ASTM A325, Type 3, and ASME B1.1.

G. Tie Bar:

1. Description: Steel bar used to restrain push-in plugs.
2. Comply with ASTM A36/A36M.

H. Tie Washer:

1. Description: Round flat washers.
2. ASTM A588/A588M, ASTM F436, Type 1.

2.4 MATERIALS

A. Steel:

1. High-Strength Low-Alloy Steel: Comply with ASTM A588/A588M.
2. Carbon Steel: Comply with ASTM A36/A36M.

2.5 FINISHES

- A. Zinc Plating: Factory applied. Comply with ASTM B633.
- B. Galvanizing: Factory applied. Comply with ASTM A153/A153M.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. See Section 017300 "Execution" for installation examination.
- B. Verify that pipe and fittings are ready to receive Work.
- C. Field measure and verify conditions for installation of Work.

3.2 PREPARATION

- A. See Section 017300 “Execution” for installation preparation.
- B. Clean surfaces of pipe and fittings that are to receive tied joint restraint systems.

3.3 INSTALLATION

- A. Install joint restraint system according to AWWA C600 such that joints are mechanically locked together to prevent joint separation and State of Colorado Department of Transportation standards and Municipality of Arvada Department of Public Works standards and standards set by authorities having jurisdiction.

3.4 TOLERANCES

- A. See City of Arvada Standards for tolerances.
- B. Torque 5/8 inch nuts on mating threaded fasteners from 45 to 60 ft lbf as recommended by the joint restraint manufacturer.
- C. Torque 3/4 inch nuts on mating threaded fasteners from 75 to 90 ft lbf as recommended by the joint restraint manufacturer.
- D. Torque 1 inch nuts on mating threaded fasteners from 100 to 120 ft lbf as recommended by the joint restraint manufacturer.

END OF SECTION 330509.33

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SECTION 330513 - MANHOLES AND STRUCTURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Modular precast concrete manhole and structures with tongue-and-groove joints covers, anchorage, and accessories.
 - 2. Bedding and cover materials.

1.3 ACTION SUBMITTALS

- A. Section 013300 "Submittal Procedures" for submittals requirements.
- B. Product Data: Submit cover and frame construction, features, configuration, and dimensions.
- C. Shop Drawings: Indicate manhole locations, elevations, piping, sizes and elevations of penetrations.

1.4 INFORMATIONAL SUBMITTALS

- A. Manufacturer's Certificate: Products meet or exceed specified requirements.
- B. Manufacturer Instructions: Detailed instructions on installation requirements, including storage and handling procedures.
- C. Field Quality-Control Submittals: Results of Contractor-furnished tests and inspections.
- D. Qualifications Statements: Qualifications for manufacturer.

1.5 QUALITY ASSURANCE

- A. Perform Work according to City of Arvada Standards.

1.6 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum three years' experience.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Unload, store, and handle precast manholes according to manufacturer instructions.
- B. Storage: Store precast concrete manholes as to prevent damage to Owner's property or other public or private property.
 - 1. Repair property damaged from materials storage.

1.8 AMBIENT CONDITIONS

- A. Subsequent Conditions: Maintain materials and surrounding air temperature at minimum 50 degrees F prior to, during, and 48 hours after completion of masonry Work.

PART 2 - PRODUCTS

2.1 PERFORMANCE AND DESIGN CRITERIA

- A. Equivalent strength: Based on structural design of reinforced concrete as outlined in ACI 318 (318M).
- B. Design of Lifting Devices for Precast Components: According to ASTM C913.
- C. Design of Joints for Precast Components:
 - 1. According to ASTM C913.
 - 2. Maximum Leakage: 0.025 gal. per hour per foot of joint at 3 feet of head.
- D. Shaft Construction: Concentric with eccentric cone top section; lipped male/female joints; sleeved to receive pipe sections.
- E. Shape: Cylindrical.
- F. Clear Inside Dimensions: As indicated on Drawings.
- G. Design Depth: As indicated on Drawings.
- H. Clear Cover Opening: As indicated on Drawings.
- I. Pipe and Conduit Entry: Furnish openings as indicated on Drawings.

2.2 MANHOLES AND STRUCTURES

A. Manhole and Structure Sections: Reinforced precast concrete according to ASTM C478

1. Gaskets: According to ASTM C923.

2.3 FRAMES AND COVERS

A. Manufacturers (24"):

1. Deeter 1258
2. Neenah R-1706
3. Nennah R-1741
4. East Jordan Iron Works 2420
5. East Jordan Iron Works 2405-C with 2420 Z1 ring
6. East Jordan Iron Works 3624 Castings, Inc. 550-31 aluminum only

B. See City of Arvada Approved Product List for Additional Details

2.4 MATERIALS

A. Bedding and Cover:

1. Bedding: See City of Arvada Standards.
2. Cover: See City of Arvada Standards.

2.5 ACCESSORIES

A. Manhole and Structure Steps: Per City of Arvada Standard Details.

B. Base Pad: Leveled top surface..

C. Strap Anchors: Bent galvanized unfinished steel shape.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 017300 "Execution" for installation examination requirements.

B. Verify that items provided by other Sections of Work are properly sized and located.

C. Verify that built-in items are in proper location and ready for roughing into Work.

D. Verify correct size of manhole and structure excavation.

3.2 PREPARATION

- A. Section 017300 “Execution” for installation preparation requirements.
- B. Mark each precast structure by indentation or waterproof paint showing date of manufacture, manufacturer, and identifying symbols and numbers as indicated on Drawings to indicate its intended use.
- C. Coordinate placement of inlet and outlet pipe or duct sleeves required by other Sections.
- D. Do not install structures where Site conditions induce loads exceeding structural capacity of structures.
- E. Inspect precast concrete structures immediately prior to placement in excavation to verify structures are internally clean and free from damage; remove and replace damaged units.

3.3 INSTALLATION

- A. Excavation and Backfill:
 - 1. Provide clearance around sidewalls of structure for construction operations.
 - 2. When groundwater is encountered, prevent accumulation of water in excavations; place manholes and structures in dry trench.
 - 3. Where possibility exists of watertight structure becoming buoyant in flooded excavation, anchor structure to avoid flotation as approved by Project Engineer.
- B. Base Pad:
 - 1. Place base pad.
 - 2. Trowel top surface level.
- C. Place manhole and structure sections plumb and level, trim to correct elevations, and anchor to base pad.
- D. Backfill excavations for manholes and structures as specified by City of Arvada standards.
- E. Form and place manhole and structures cylinder plumb and level and to correct dimensions and elevations.
- F. Cut and fit for pipe.
- G. Grout base of shaft sections to achieve slope to exit piping, trowel smooth, and contour as indicated on Drawings.
- H. Set cover frames and covers level without tipping and to correct elevations.
- I. Coordinate with other Sections of Work to provide correct size, shape, and location.

J. Precast Concrete Manholes and Structures:

1. Lift precast components at lifting points designated by manufacturer.
2. When lowering manholes and structures into excavations and joining pipe to units, take precautions to ensure that interior of pipeline and structure remains clean.
3. Set precast structures bearing firmly and fully on crushed stone bedding, compacted as specified in City of Arvada Standards or on other support system as indicated on Drawings.
4. Assemble multi-section structures by lowering each section into excavation; set level and firmly position base section before placing additional sections.
5. Remove foreign materials from joint surfaces and verify sealing materials are placed properly.
6. Maintain alignment between sections by using guide devices affixed to lower section.
7. Joint sealing materials may be installed on Site or at manufacturer's plant.
8. Verify that installed manholes and structures meet required alignment and grade.
9. Remove knockouts or cut structure to receive piping without creating openings larger than required to receive pipe; fill annular spaces with mortar.
10. Cut pipe flush with interior of structure.
11. Shape inverts through manhole and structures as indicated on Drawings.

3.4 FIELD QUALITY CONTROL

A. Test concrete manhole and structure sections according to ASTM C497.

B. Test cast-in-place concrete as specified in Section 033000 "Cast-in-Place Concrete."

C. Vertical Adjustment of Existing Manholes and Structures:

1. If required, adjust top elevation of existing manholes and structures to finished grades as indicated on Drawings.
2. Reset existing frames, grates, and covers that were carefully removed and cleaned of mortar fragments to required elevation according to requirements specified for installation of castings.
3. When removal of existing concrete wall is required, remove concrete without damaging existing vertical reinforcing bars, clean concrete from vertical bars, and bend into new concrete top slab or splice to required vertical reinforcement as indicated on Drawings.
4. Clean and apply sand-cement bonding compound on existing concrete surfaces to receive cast-in-place concrete as specified in Section 033000 – Cast-in-Place Concrete.

D. Leakage Tests:

1. Performed on every manhole with Project Engineer observing.
2. Preparation:
 - a. Prior to placing the shelf and invert, and pointing the horizontal joints, fill all lifting holes within 6 feet of ground surface with approved non-shrinking mortar.
 - b. Lower groundwater table as required.
 - c. Plug all pipes and other openings into manhole.

3. Test:
 - a. Fill water to top of cone section.
 - b. Observe for visible water in the excavated area.
 - c. If area around manhole is backfilled or the test is unsatisfactory, repeat the test allowing for suitable time for absorption of water in the excavated area.
 - d. At the end of the absorption period, refill manhole and wait 8 hours.
 - e. Refill the cone at the end of 8 hours, measuring the amount required to refill.
 - f. Extrapolate to determine 24-rate of leakage. Do not allow leakage to exceed 1 gallon per vertical foot in a 24-hour period.
 - g. Project Engineer will perform visual inspection along with the Contractor.
4. Repair:
 - a. If leakage is less than 3 gallons per vertical foot per 24 hours, make approved repairs to the manhole and retest, if it is determined the leakage is due to defects in the joints or sections.
 - b. If leakage is 3 gallons or more, then replace the entire manhole, including all joints and sections at the Contractor's expense. Retest the new manhole as described above.

E. A vacuum test may be substituted for a leakage test as follows:

1. The filling and pointing of exterior joints are not required where the excavation has not been backfilled.
2. Inflate to affect a seal between the vacuum base and the top of the manhole.
3. Connect the vacuum pump to the outlet port with the valve open and a vacuum of 10" Hg (20" of Hg absolute) drawn.
4. Close the valve.
5. The following test criteria shall apply to 4-ft and 5-ft diameter manholes:
 - a. Allowable drops in pressure:
 - 1) Manholes 0 – 10 ft. deep:
 - a) Drop of 1" Hg over 2 minutes.
 - 2) Manholes 10 -15 ft. deep:
 - a) Drop of 1" Hg over 2-1/2 minutes.
 - 3) Manholes 15 - 30 feet:
 - a) Drop of 1" Hg over 3 minutes.
6. If the pressure drop exceeds the acceptable limits, make necessary repairs as approved by the Project Engineer, and:

- a. Re-test the manhole.
 - b. If the manhole fails to meet the minimum requirements of the vacuum test retest using the leakage test.
7. Upon completion of a successful vacuum test, the interior and exterior joints shall be filled and pointed.

3.5 CLEANING

- A. Clean all new manholes to be free of silt, debris and foreign matter of any kind, prior to final inspection.

3.6 ATTACHMENTS

- A. Storm Sewer Manholes: Precast concrete sections, galvanized steel steps, not less than 48 inches inside dimension, to depth indicated, with bolted lid.
- B. Electric Service Manholes: Prefabricated FRP sections, integral molded steps, 60 inches inside dimension, to depth indicated.

END OF SECTION 330513

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SECTION 330523 - HORIZONTAL DIRECTIONAL DRILLING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This section presents requirements for the approximate 268-foot-long and 137-foot-long Horizontal Directional Drilling (HDD) installation of the City of Arvada Water Department's 2-inch HDPE and 3-inch HDPE Site G crossing of Wadsworth Boulevard in Arvada, Colorado. The Contractor shall perform, but is not limited to the following tasks:
 - 1. Arrange and conduct a project kick-off meeting with the Owner, Project Engineer, General Contractor, and HDD Subcontractor prior to the initiating HDD construction.
 - 2. Review and confirm the HDD design for the proposed alignment meets the Contractor's selected means and methods.
 - 3. Transport all suitable equipment, labor and materials to and from the job site.
 - 4. Install the Carrier Pipe using Horizontal Directional Drilling including drilling the Pilot Bore and Reaming a suitable diameter Borehole for the installation of the Carrier Pipe into the Borehole. The selected materials must meet all project requirements and be approved by the Project Engineer.
 - 5. Cleanup and perform final restoration of all work areas.
- B. Related Sections:
 - 1. 012200 – Measurement and Payment.
 - 2. 331213 – Water Service Connections.

1.3 BASIS OF MEASUREMENT AND PAYMENT

- A. As specified in Section 01 22 00 – Measurement and Payment.

1.4 REFERENCES

- A. Technical Report TR-46, Guidelines for Use of Mini-Horizontal Directional Drilling.
- B. ASTM D3035-21, Standard Specification for Polyethylene (PE) Plastic Pipe (DR-PR) Based on Controlled Outside Diameter.
- C. Geotechnical Investigation Report, Lithos Engineering, Arvada 2021 Waterlines Replacement, Arvada, Colorado, February 2023.

- D. Plan and Profile Drawings, Arvada 2021 Waterlines Replacement, Arvada, Colorado, August 2022, G4 and G4B, February 2023.
- E. National Utility Contractors Association (NUCA): NUCA – HDD Installation Guidelines.
- F. North American Society for Trenchless Technology (NASTT).
 - 1. HDD Good Practices Guidelines – 2017 (4th Edition).

1.5 DEFINITIONS

- A. REAMER: A tool that connects to drill pipe and is designed to enlarge the Borehole after the Pilot Bore has been established.
- B. BORE OR BOREHOLE: The elongated cavity created through the drilling process. The Borehole is not a void, but rather a hole filled and stabilized with Drilling Fluids mixed with native soil/formation.
- C. CARRIER PIPE: Final product waterline Carrier Pipe; 2-inch HDPE ISP SDR11 HDPE and 3-inch HDPE ISP SDR11 HDPE.
- D. CASING PIPE: Pipe installed along the designed trenchless alignment that also serves as the Initial Support
- E. COA: City of Arvada.
- F. CONTRACTOR: Specialty HDD subcontractor in charge of installing the carrier pipe using HDD.
- G. DRILL HEAD: Tooling used to facilitate steering and to excavate soil or rock at the face of the Bore.
- H. DIMENSION RATIO (DR): The ratio of Carrier Pipe diameter to wall thickness; $DR = D/t$ where “D” is the outside diameter and “t” is the pipe wall thickness.
- I. DRILLING FLUIDS: Fluids consisting of water, bentonite and any Project Engineer approved additives such as environmentally safe polymers, lubricants, and viscosifiers.
- J. FILTER CAKE: The wall cake that forms from the platelets in bentonite-based Drilling Fluid. Filter Cake is the barrier between the Borehole and the formation, this can help protect the Borehole from lost circulation.
- K. HORIZONTAL DIRECTIONAL DRILLING (HDD): A surface-launched trenchless technology for the installation of pipes, conduits, and cables. HDD creates a pilot bore along the design pathway and reams the pilot bore in one or more passes to a diameter suitable for the product, which is pulled into the prepared bore in the final step of the process.
- L. INADVERTENT FLUID RELEASE (IFR): When the Drilling Fluid pressure exceeds the strength and confining pressure of the ground and Drilling Fluid leaves the Borehole and reaches the surface, waterway, or underground facilities. Also known as hydrofracture or frac-out.

Horizontal Directional Drilling

- M. **MAXIMUM ALLOWBLE DOWNHOLE PRESSURE:** Drilling Fluids injection pressure at which higher pressures will theoretically cause IFR to occur. Estimates of this pressure for a given location within the Borehole use subsurface geotechnical engineering properties, Drilling Fluid properties, HDD means and methods, and HDD alignment geometry.
- N. **PILOT BORE:** The initial, controlled drilled path used to establish the plan and profile of the HDD, guide Borehole enlargement to the required size, and define the eventual final alignment of the Carrier Pipe.
- O. **PITCH:** The deviation angle from a horizontal plane is measured as Pitch. When the drill is directed downward, the Pitch is negative. When it is directed toward the surface, the Pitch is positive. Also known as inclination.
- P. **PULLBACK:** The Carrier Pipe installation process where the Carrier Pipe is connected behind the Reamer using a Swivel and pulling head and the Carrier Pipe is pulled into place.
- Q. **REAMING:** The enlargement of the initial Pilot Bore in one or more passes to accommodate the desired Carrier Pipe diameter.
- R. **SWAB PASS:** A proof pass with a barrel or compacting style Reamer of equal to or greater diameter than the Carrier Pipe used to check the Borehole is properly conditioned and has been prepared to an appropriate final diameter. The Swab Pass does not cut the Borehole to a larger diameter from the Borehole diameter established during the final Reaming pass.
- S. **SWIVEL:** A device that allows the pullhead and Carrier Pipe to be isolated from drill pipe rotation yet transfers tensile forces from the drill pipe to the pullhead.
- T. **TRACKING SYSTEM:** Equipment and procedures that allow for the positioning of the downhole assembly to be tracked during Pilot Bore drilling. The Borepath is monitored during the Pilot Bore by taking periodic readings of the measured distance, inclination, and azimuth of a sonde located within the downhole assembly. Generally categorized as a walkover or non-walkover system. Readings can be compared to the Drawings to determine the accuracy of the drilled Borepath.

1.6 GENERAL

- A. The Contractor shall be responsible for the HDD design verification, construction, and performance of the HDD installation of the Casing and Carrier Pipe for this project.
- B. This is a performance specification. Minimum design and construction requirements are presented herein and in the Drawings. It is the Contractor's responsibility to review and confirm the design to fulfill the specified design requirements specified by the COA necessary for completion of the work.
- C. A geotechnical investigation was completed for the project as indicated in Section 1.4B.

1.7 REQUIREMENTS

- A. Obtain permits by submitting applications and notify impacted Governing Agency(s), for this work prior to beginning construction activities as dictated by the specific application. Provide copies of executed permits to the Owner. Be responsible for full compliance with all permit conditions. Failure to comply with permit conditions can result in the Project Engineer/Owner shutting down the construction within the Governing Agency(s) right-of-way until compliance is established and confirmed. Compliance with permit conditions shall be established and verified at no additional cost to the Owner.
- B. Perform HDD in accordance with all Governing Agency(s) applicable permit requirements and industry standards. In the case of differing Governing Agency(s) specifications or requirements, the more stringent requirements shall apply as determined by the Owner.
- C. Provide a Tracking System that is capable of tracking the Pilot Bore progress within the specified tolerances herein.
- D. Provide adequate communication between entry and exit locations if work is being performed at both ends of the alignment.
- E. Notify Colorado 811 a minimum of three complete working days or as required by conflicting utility owners prior to any excavation or drilling and obtain utility clearance for all construction work. This utility clearance shall remain active and be updated for the duration of the project.
- F. Be responsible for containing, collecting and cleanup of all Drilling Fluid released by remediation tasks which may be required by the Project Engineer or permit agencies. Such work shall be at no additional cost to the Owner.
- G. Conduct operations so as not to interfere with, interrupt, damage, destroy, or endanger integrity of surface or subsurface structures or utilities, and landscape in immediate or adjacent areas.

1.8 QUALITY ASSURANCE

- A. Prior to beginning any HDD work, establish and mark field survey of the proposed drill path including starting and ending point locations and intermediate marks at a maximum spacing of the length of one drill rod using the City of Arvada's Professional Land Surveyor registered in the State of Colorado.

1.9 QUALIFICATIONS

- A. Contractor shall meet the minimum qualification requirements as identified in the City of Arvada Request For Qualifications Bid. Additionally, the Contractor shall submit names and experience resumes for key field personnel. Key staff shall demonstrate on their resumes that they meet the following qualifications:
 - 1. HDD Project Manager: Minimum three years' experience as a Project Manager and have a minimum of three similar HDD project experience. Similar projects are defined as:

- a. At least five (5) HDD installations of at least 2-inch nominal diameter HDPE with a minimum length of 250 feet each and that have passed within the last five (5) years.
 - b. One of these previous projects shall have been a crossing of CDOT ROW through significant percentages of gravel and/or cobble (at least 30 percent) along a significant portion of the alignment.
2. HDD Superintendent: Minimum three years' experience as a superintendent and have a minimum of three similar HDD project experience.
- B. All personnel employed by the Contractor in the work shall be experienced and competent in their respective tasks and shall work only under the direct control of a suitably experienced Superintendent specified in this Section.

1.10 SUBMITTALS

- A. Submit the following submittals with sufficient detail to allow the Project Engineer to determine whether the proposed means and methods, materials, and equipment meet the specified requirements. Project Engineer acceptance of Contractor submittals shall not relieve the Contractor of their responsibilities under this contract.
- B. Preconstruction: Submit to the Project Engineer the following a minimum of two weeks before the scheduled start of HDD related construction activity:
 1. Qualification Documentation, see Paragraph 1.9.
 2. Submit copies of all required permits for the HDD work.
 3. An accident prevention program, a site-specific health and safety plan, and an emergency response plan.
 4. The Contractor shall review and confirm in writing the design for the proposed HDD installation prior to construction.
 - a. If proposed Borehole geometry differ from those indicated in the HDD design, differences shall be submitted in writing a minimum of 2 weeks prior to the start of construction for the Project Engineer approval.
 - b. If the Contractor wishes to substantially deviate, as determined by the Project Engineer, from the COA-supplied HDD design geometry then the Contractor is responsible for having a new HDD profile and alignment drawing. The revised design shall be submitted and approved by the Owner and Project Engineer prior to construction. The Project Engineer may perform these tasks for the Contractor upon agreement from the Owner and at the Contractors expense.
 5. Working Drawings including the following: work, storage, staging, and Carrier Pipe assembly areas; access; traffic control; layout of excavation and ancillary equipment for the Casing and Carrier Pipe installation; and pollution prevention measures.
 6. Schedule. A critical path schedule of HDD-related activities and activities for project components interfacing with the HDD installation. At a minimum, the schedule shall include site set up, Pilot Bore installation, ream pass(es), Casing pipe, Carrier Pipe Pullback, and Carrier Pipe testing.
 7. Equipment. Supply full details and manufacturer's technical specifications for the HDD system to be utilized including the following, at minimum: drill rig, pit pump, Tracking

System components, downhole tooling to include reamer numbers and sizes, and drill pipe loading equipment. All equipment shall meet the requirements of Paragraph 2.1.

- a. Tracking System submittal shall include the accuracy of the guidance system at the design drill depths and a description of how the Pilot Bore will be tracked during the installation. Include an example as-built plan and profile using the same Tracking System as proposed for this Work.
8. Materials. Supply manufacturer data sheets and identify the type and size for required materials to complete the project including:
 - a. Casing Pipe (see Section 2.2). Include manufacturer's certificate certifying the Casing Pipe meets or exceeds specified requirements.
 - b. Carrier Pipe (see Section 2.2). Include manufacturer's certificate certifying the Carrier Pipe meets or exceeds specified requirements.
 - c. Tracer Wire (see Section 2.2)
 9. Drilling Fluids:
 - a. Include the proposed Drilling Fluid mix design based on anticipated subsurface conditions, including percentages of bentonite and additives. Include manufacturers information and purpose of any additives used in the mix design. The Drilling Fluid shall be designed to maintain and stabilize the Borehole during all phases of HDD installation.
 - b. Submit management procedures employed throughout the installation, including:
 - 1) Drilling Fluid Management Plan. Plan shall describe means and methods for containment, collecting and disposal of Drilling Fluid during the project, and equipment and materials that will be included in the Drilling Fluid Spill Kit.
 - 2) Drilling Fluid disposal plan listing the equipment to be used and the location that is willing and able to accept Drilling Fluid waste from the project.
 10. Fuel and Hydraulic Fluid Containment and Contingency Spill Plan is required. Include means and methods for managing, containing, and cleanup of fuel and oil spills should they occur at the site. Contractor shall dispose of all fuel, oil, or other leakage from equipment including diapers, absorbent material, and other related cleanup and spill control materials. A Fuel and Oil Spill Kit shall be on site and available for use during all drilling operations.
 11. Contingency plans for the following scenarios are required and shall include, measures that will be taken to minimize probability of the below scenarios, observations that may indicate the presence of the scenario occurring, and possible actions that may be taken in the event the scenario occurs:
 - a. Inadvertent Fluid Return (IFR). The plan shall specifically address methods and procedures to minimize the possibility of an IFR and contain a potential IFR through Geotechnical Bore LB-03 conducted roughly 15-feet south of the alignment as shown on the Contract Drawings. The plan shall also address how drilling fluids will be contained in the event of an IFR in Wadsworth Boulevard.
 - b. Loss of Drilling Fluid circulation.
 - c. Obstruction encountered during Pilot Bore drilling or Reaming.
 - d. Broken drill pipe.

- e. Broken Casing or Carrier Pipe during Casing or Carrier Pipe positioning or Pullback
 - f. Pull back pipe stoppage during pipe pull back of Casing or Carrier Pipe due to Borehole collapse or other obstruction.
 - g. Utility strike or damage to an existing utility.
 - h. Line or grade outside specified tolerances.
 - i. Unforeseen subsurface conditions.
- C. Construction: Submit the following to the Project Engineer during construction, within 24 hours of the day they describe:
- 1. A preliminary Pilot Bore as-built shall be submitted and accepted prior to proceeding with Reaming.
 - 2. Drill Logs (minutes per drill pipe, torque (ft-lbs), thrust (lbs), depth or inclination and measured distance, azimuth and measured distance or distance left/right, Pitch, drilling fluid pressure (psi), as a minimum. Drill Logs shall be digital and recorded by the drill rig or Tracking System as appropriate.
 - 3. Drilling Fluid logs: Include sand content, density, and viscosity measurements, as well as quantities of additives, bentonite, and water used when mixing Drilling Fluid.
- D. Post construction Submittals:
- 1. As-built plan and profile information for the Borepath based on electronic guidance system data. At a minimum, a survey data point shall be obtained for the As-Built drill path at a maximum spacing equivalent to one drill pipe.
 - 2. Identify and describe unexpected variations to subsurface conditions or discovery of uncharted utilities.
 - 3. Show depth and location of any abandoned drill paths.

1.11 DELIVERY, STORAGE, AND HANDLING

- A. The Subcontractor shall transport, handle, and store Casing and Carrier Pipes and fittings as recommended by the manufacturer.
- B. Product pipe and fittings that are damaged before or during installation shall be repaired or replaced, as recommended by the manufacturer or required by the Project Engineer. The costs of such repair or replacement shall be borne by the Contractor and be accomplished prior to proceeding with the project.
- C. The Contractor shall deliver, store and handle other materials as required to prevent damage. Materials that are damaged or lost shall be repaired or replaced by the Contractor at no additional expense to the Project Engineer or Owner.
- D. Provide temporary end caps and closures on piping and fittings. Maintain in place until installation.
- E. Protect piping system pieces from entry of foreign materials and water by temporary covers, completing sections of work, and isolating parts of completed system.

- F. Accept products on site in manufacturer's original containers or configuration. Inspect for damage.
- G. Store field joint materials per manufacturer's recommendations.

1.12 ENVIRONMENTAL REQUIREMENTS

- A. The Contractor shall comply with all other Federal, State, and local environmental requirements including, but not limited to, storm water runoff, construction dewatering, disposal of drilling fluid, and hazardous waste management and disposal.

PART 2 - PRODUCTS

2.1 EQUIPMENT

- A. Provide the equipment necessary for excavation of the Borepath and HDD installation of the waterline and to complete all work associated with this section.
 - 1. The drill rig shall have a minimum capability of 10,000 lbs. of thrust/pullback.
- B. Drilling fluid spill kit shall be adequate to contain, collect, and dispose of drilling fluid that is either spilled on site or surfaced to the ground or waterbody through an IFR. A drilling fluid spill kit shall be located at each end of the Borepath during all HDD operations.
- C. Be responsible for type of drill rig, drill pipe, drill and Reaming tools, Drilling Fluid management, and other pertinent equipment required for complete installation of the proposed Casing and Carrier Pipe. Be responsible for mobilizing on-site with a full range of drill stems and Reaming heads to allow for the anticipated subsurface conditions, based on the boring logs. Drill pipes shall be of proper size and diameter to allow for full thrust and torque capabilities of the drilling machines.
- D. Provide a Tracking System that is capable of tracking the Pilot Bore progress within the specified tolerances. The Tracking System shall be capable of providing horizontal and vertical steering data along the entire drill path for this crossing as shown in the Drawings.
 - 1. Tolerances for the HDD plan and profile are provided in PART 3.
 - 2. The tracking system must be a non-walkover type, such as wire line tracking system.

2.2 MATERIALS

- A. Pipe:
 - 1. Casing and Carrier Pipes shall be as shown on the Drawings and shall be specifically capable of installation by HDD method. Increase the thickness the Casing and Carrier Pipe or grade of pipe material at the Contractors discretion and sole expense. The Carrier Pipe shall be in accordance with the pipe manufacturer's specifications and guidelines for HDD. Adhere to pipe manufacturer's installation guidelines for: 1) handling, 2) positioning into

the Borehole, 3) end preparations, mating procedures, and installation, and 4) special applications.

a. Casing Pipe allowed:

- 1) 4-inch and 6-inch nominal diameter HDPE with a minimum DR 11
- 2) Casing Pipe shall include two tracer wires attached opposite each other during Pullback with tape or other means to keep the tracer wires in place.

b. Carrier Pipe allowed:

- 1) 2-inch and 3-inch nominal diameter HDPE with a minimum DR 11
- 2) Carrier Pipe shall be suitable for use as a pressure conduit.

2. Drilling Fluids:

- a. Drilling Fluid design and Drilling Fluid maintenance to design parameters shall be the responsibility of the Contractor. The Drilling Fluid shall be non-toxic and consist of bentonite slurry and additives compatible with the Drilling Fluid approved by the Project Engineer. It shall be the Contractor's responsibility and cost to obtain and pre-treat make-up water as required.
- b. A water source for Drilling Fluids will be provided by the Owner. The Contractor shall be responsible for transporting the water from the source to the project site.
- c. Drilling Fluids shall be non-hazardous and suitable for landfill or similar disposal.
- d. Remove all Drilling Fluids from the site and dispose of all Drilling Fluids as required by Governing Agency(s) and local codes.

3. Fill materials shall be in accordance with Specification Section 31 23 10 – Excavation and Backfill.

PART 3 - EXECUTION

3.1 GENERAL REQUIREMENTS

A. Do not begin work until:

1. Required preconstruction submittals listed in Section 1.10 have been accepted by the Project Engineer and Owner.
2. Verify connection to existing piping system size, location, and invert elevations are in accordance with the Drawings.
3. All required permits are in place and the Governing Agency(s) have been satisfactorily notified of the schedule and work.

B. Identify required lines, levels, contours, and datum locations.

C. Protect benchmarks, survey control points, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

- D. Perform grading and site modifications necessary to control Drilling Fluids and prevent drainage of fluids or contaminated material away from the site. A minimum 1-foot-tall berm shall be constructed, or straw wattles shall be used around the drill rig and convey Drilling Fluids nearest the drill rig.
- E. Perform Borehole excavation operations in a manner that will minimize loss of ground and minimize settlement of the ground surface, structures, and utilities above and adjacent to the alignment.
- F. Drilling Fluid may be used during Pilot Bore, Reaming, and Pullback. Drilling Fluid may be present within the Borehole to the extent possible throughout the HDD operation.
- G. Prior to the Pilot Bore and each Reaming Pass, sufficient Drilling Fluid shall be mixed such that Drilling Fluid pump rates are sufficient to flush cuttings from the hole for the planned excavation rate without requiring a pause in excavation to allow for additional Drilling Fluid to be mixed. In the event sufficient Drilling Fluid is not prepared, in the opinion of the Project Engineer or the COA, the COA or Project Engineer reserves the right to stop HDD construction and request the HDD Contractor to mix additional Drilling Fluid prior to continuing.
- H. Excavate approach trenches in accordance with approved Working Drawings and as site conditions require for the HDD installation and open cut pipe connection. Minimize excavation to the extent reasonable.
- I. Maintain clean working conditions at all times at the job site. All excavated soil, and any other material not required for construction shall be removed from the excavation area in a timely manner.
- J. Safety fencing shall be installed around the perimeter of any pits during nonworking hours.
- K. The Borehole shall be reamed to a sufficient size at least 1.5 times larger in diameter than the Casing Pipe specified in the Contract Documents.
- L. Contractor shall assume liability for loss or damage to downhole equipment.
- M. Install and operate HDD equipment and support utilities as necessary for the proposed construction and the safety of workers in accordance with project requirements and all Federal, State, and local laws, regulations, and codes.
- N. Casing and Carrier Pipe shall be laid out and assembled in such a manner as to not obstruct or impact traffic or third parties within the easement limits presented on the Drawings.

3.2 HORIZONTAL DIRECTIONAL DRILLING

- A. Perform HDD in a manner required to install Casing and Carrier Pipe as indicated on the Drawings. Furnish all manpower and equipment required to perform the Casing and Carrier Pipe installation. The operation shall include all excavation, Pilot Bore, Reaming, conditioning, and Pullback operations, at a minimum. The Contractor shall:
 - 1. Be responsible for mixing the required Drilling Fluids to suit the proposed drilling application and the subsurface materials to be encountered. Drilling Fluids shall be utilized

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- and mixed in full accordance with the Drilling Fluid manufacturer's printed instructions. Subsurface material information has been provided in the Geotechnical Investigation Report for the project.
2. Be responsible for collecting and disposal of excess Drilling Fluids and cuttings. Materials shall be collected, transported and disposed of at an approved site or facility.
- B. Drilling shall be conducted with controlled Drilling Fluid and advancement rates to minimize Borehole annular pressures and prevent from excavating at a rate not able to be maintained by the mud pump.
- C. Continuously monitor drilling fluid pumping rate and pressure during HDD operations to ensure adequate removal of soil cuttings and stabilization of bore.
- D. At minimum, monitor sand content, density, and viscosity of the Drilling Fluid no less than once every two hours during HDD operations.
- E. Pilot Bore
1. The Pilot Bore shall progress from the HDD entry location at the eastern end of the HDD alignment to the HDD exit location on the western end of the HDD alignment for both bores.
 2. Guide and monitor the Pilot Bore using the accepted Tracking System.
 3. Drill the Pilot Bore along the vertical and horizontal alignment as indicated on the Drawings, within the tolerances specified herein.
 4. Establish and mark field survey of the installed drill path, including starting and ending point locations and intermediate stakes at a maximum spacing of one drill pipe.
 5. If the Pilot Bore is sufficiently off line and grade such that the Casing Pipe will not meet the tolerances specified herein, a new Pilot Bore meeting the line and grade tolerances specified herein shall be drilled at the sole expense of the Contractor.
 6. Maintain the minimum offset between the drill holes and the existing utilities as shown on the Drawings.
- F. Reaming
1. After completing the Pilot Bore, the hole may be enlarged using a reamer as determined by the Contractor. Be responsible for conditioning the Borehole as necessary prior to the installation of the Casing Pipe. Conditioning may include utilizing tooling that provides compactive force on Borehole walls.
 2. The final conditioned Borehole diameter shall be in concert with HDD Good Practices Guidelines.
- G. Pullback
1. Do not proceed with Pullback without an accepted submittal of the Pilot Bore as-built profile and alignment.
 2. Pullback operations shall be carried out as soon as possible following any Swab Pass of the Borehole. The Swab Pass, if used, shall be completed a maximum of 4 hours prior to Pullback. During Pullback, the Contractor shall continue Pullback operations without interruption regardless of the day of week or hour of the day.

3. A Pullback head shall be attached to the Casing Pipe to allow fastening to the Swivel. The head shall be closed to prevent Drilling Fluid from entering the Carrier Pipe during Pullback and be fixed to the Carrier Pipe in accordance with pipe Manufacturer's recommendations.
4. Do not damage the Casing or Carrier Pipes during installation.
5. Do not rotate the Casing or Carrier Pipes during installation.
6. Do not exceed the pipe manufacturer's recommended maximum pullback forces.
7. Do not bend the Casing or Carrier Pipe at a bend radius tighter than the manufacturer's recommendations.
8. Install continuous tracer wire without splices. Tape or insulate trace wire to prevent corrosion and maintain integrity of pipe detection.
9. At completion of Pullback, Carrier and Casing Pipe shall extend a minimum of 5 feet past connection locations or as recommended by the manufacturer, whichever is greater.

3.3 QUALITY CONTROL

- A. All existing utilities within the project area shall be marked and/or potholed by the Contractor prior to initiating HDD operations, including connecting pit excavations.
 1. Where the drill path is designed to cross within 10 feet of an existing utility, the utility shall be potholed and monitored throughout HDD construction through the open pothole.
- B. Perform all work in the presence of the Project Engineer, unless the Owner or Project Engineer has granted prior approval in writing to perform such work in their absence.
- C. Perform all work in accordance with all current applicable regulations and codes of Federal, State, and local agencies. In the event of conflict, comply with the most restrictive requirements.
- D. Drilling Fluid monitoring shall be at the Contractor's expense and discretion.
 1. Stop drilling, search for an IFR, and notify the Project Engineer if a Drilling Fluid circulation volume or Drilling Fluid circulation pressure loss of 25 percent or greater is observed during HDD operations.
- E. Intermediate Drilling Fluid management locations, or relief wells, are not allowed and all Drilling Fluids shall be maintained. The Contractor shall account for managing Drilling Fluids in accepting the provided HDD design and in design of Drilling Fluids.

3.4 TOLERANCES

- A. The Casing and Carrier Pipes shall not be installed shallower than the minimum cover specified on the Contract Drawings at any point in the alignments.
- B. The entry and exit locations of the installed Casing and Carrier Pipes shall be within 2 feet radially of the locations shown on the Drawings.
- C. The Contractor shall be responsible for connecting the HDD installed pipeline to the open cut installed pipeline on either end of the HDD installation regardless of whether the HDD installed pipeline is within or outside of tolerances specified herein. Costs for any necessary connection

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appurtenances, or change or modification to these appurtenances to facilitate pipeline connection, shall be the sole expense of the Contractor.

- D. If the Casing and Carrier Pipes is off line and/or grade by more than the specified tolerances, make adjustments, repairs and changes, or replacement as necessary to achieve the specified tolerances as approved by the Project Engineer and at no cost to Owner.
- E. If the Casing and Carrier Pipes is sufficiently far off line and/or grade to require redesign of structures or connections, acquisition of easements, or backfilling and re-excavation, be responsible for necessary additional work at no additional cost to the Owner. If the Casing and Carrier Pipes are off line and/or grade by an amount that requires, in the opinion of the Project Engineer, re-design of any structure, be responsible for all redesign costs.

3.5 SAFETY REQUIREMENTS

- A. Methods of construction shall be such as to ensure the safety of the work, project participants, the public, third parties, and adjacent properties, whether public or private. All work shall conform to the requirements of all Federal, State, and local laws and regulations. Traffic control and minimum separation distances from travel lanes shall conform to the requirements of all Federal, State, and local laws and regulations. The Contractor is solely responsible for maintaining safe working conditions at the site at all times.
- B. Designate a Safety Officer. The Safety Officer shall administer an accident prevention program and shall prepare a code of safe practices and an emergency plan. Hold safety meetings daily prior to initiating work and provide safety instruction for new employees.
- C. Fire Prevention and Control: All construction shall be performed in accordance with the applicable fire prevention and control requirements of all Federal, State, and local agencies.

3.6 CLEANUP AND RESTORATION:

- A. Remove all equipment, unused materials, Drilling Fluids, and debris from the site at the end of the job. Restoration shall follow construction as the work progresses and shall be completed as soon as possible. Restore and repair any damage resulting from surface settlement caused by the work. Any property or improvements damaged or destroyed, shall be restored to a condition equal to or better than existing prior to construction at no additional cost to the Owner and as approved by the Project Engineer and Governing Agency(s). Restoration shall be completed immediately if a third party or the Owner is inconvenienced by the damage, and in no case later than thirty (30) days after the damage is discovered. This provision for restoration shall include all property which was affected by the construction operations.
- B. Dispose of all Drilling Fluids, cuttings, and Mud Circulation Pit spoil after completion of the project at a legal off-site disposal area and provide all permits necessary for such disposal. All fees and costs related to the collection, transport and disposal of fluids and cuttings and any related permit costs shall be the Contractor's responsibility. During transport, all fluids shall be contained in steel tanks or other suitable vessels. Pavement surfaces where Drilling Fluids have been spilled shall be sprayed off with water to achieve pre-construction condition.

3.7 DISINFECTION AND FLUSHING, PRESSURE AND LEAKAGE TESTING, BACKFILL

- A. Disinfection, flushing, pressure and leakage testing shall be conducted in accordance with City of Arvada Standards.

3.8 CONSTRUCTION RECORDS

- A. Maintain Daily Shift Reports for all components and phases of work. The reports shall be signed by the site superintendent or shift foreman, submitted to the Project Engineer within 24 hours of completed daily work, and shall contain the following:
 - 1. Subcontractors onsite with their personnel and equipment, and the work performed. The reports shall be broken down into work time and down/standby time for each Subcontractor.
 - 2. Work crews and equipment onsite, and the work performed. The reports shall be broken down into work time and down/standby time for each crew and piece of equipment.
 - 3. Progress made for each construction stage.
 - 4. Problems or unusual conditions encountered, and actions taken to address these situations.
 - 5. Record of safety meetings conducted.
 - 6. List of visitors to construction site.
- B. Maintain records of all instrumentation and monitoring of the Borehole excavation including but not limited to the following:
 - 1. The station of the excavation and advance distance with respect to drill pipe count and date and time.
 - 2. The position of the drill path in relation to the design line and grade as measured during the Pilot Bore installation.
 - 3. The date, starting time, and finish time.
 - 4. Drill and Drilling Fluid logs (Section 1.10).
 - 5. Any unusual conditions, breakdowns, and delays.
- C. Keep and maintain at the construction site a complete set of field drawings for the recording of as-built conditions. It shall be marked or noted thereon all field information, properly dated, recording up-to-date as-built conditions. As-built drawings shall be submitted and accepted by the Project Engineer prior to recommending final payment. Any survey completed before, during, or after construction shall be at the determination of the Contractor and shall be at no additional cost to the COA.
- D. Submit construction records digitally to the COA and Project Engineer.

END OF SECTION 330523

SECTION 330531.16 - POLYVINYL CHLORIDE PRESSURE PIPE FOR WATER SERVICE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Polyvinyl chloride (PVC) water pipe and fittings, complete as shown on Drawings and as specified.
 - 1. Pipe or Piping: Refers to all pipe, fittings, material and appurtenances required to construct PVC water pipe complete, in place.
 - 2. Equipment and materials specified are intended to be standard types used in transporting potable water.
- B. Related Requirements:
 - 1. Section 330509.33, "Thrust Restraint for Utility Piping."
 - 2. Section 330513, "Manholes and Structures."
- C. Coordinate Work of this Section with City of Arvada Standards.

1.3 PREINSTALLATION MEETINGS

- A. Convene minimum one week prior to commencing Work of this Section.

1.4 ACTION SUBMITTALS

- A. Product Data: Name of pipe and fitting manufacturers, materials list furnished by each manufacturer and catalog information for each product.
- B. Shop Drawings:
 - 1. Piping layouts and schedules including dimensioning, fittings, types and locations of valves and appurtenances, and joint details.
 - 2. Methods and location of supports, anchorage, gasket material, grade of material and all other pertinent technical information.
 - 3. Indicate restrained joint locations.

1.5 INFORMATIONAL SUBMITTALS

- A. Manufacturer's Certificate: Submit certified test reports that products meet or exceed specified requirements.

1.6 CLOSEOUT SUBMITTALS

- A. Project Record Documents: Document actual locations of installed pipe.

1.7 QUALITY ASSURANCE

- A. Perform Work according to City of Arvada and CDPHE Standards. In cases of conflict, City of Arvada standards take precedence.
- B. PVC water pipe shall be from a single manufacturer.
- C. PVC pipe installed under this Contract may be inspected at the plant for compliance with this Section by an independent testing laboratory provided by Owner.
 - 1. Manufacturer's cooperation is required in these inspections.
 - 2. cost of plant inspection of pipe approved for this Contract, plus cost of inspection of a reasonable amount of disapproved pipe, will be borne by Owner.
- D. Inspections of pipe may also be made by Project Engineer or other representatives of Owner after delivery.
 - 1. Pipe is subject to rejection at any time due to failure to meet any of requirements specified, even though sample pipes may have been accepted as satisfactory at place of manufacture.
 - 2. Marked for identification, rejected pipe and removed from job at once.

1.8 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum three years' experience.
- B. Installer: Company specializing in performing Work of this Section with minimum three years' experience.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Delivery:
 - 1. Bundled or package items to provide adequate protection of ends during transportation to site. Pipe damaged in shipment will be replaced as directed by Project Engineer.
 - 2. Where applicable, deliver materials in manufacturer's packaging including application instructions.

- B. Inspection: Accept materials on Site in manufacturer's original packaging and inspect for damage.
 - 1. Any gouges or scratches that extend 10 percent or more into pipe wall shall be cause for rejection of that pipe.
 - 2. undamaged portion may cut off and used.
 - 3. Clearly mark rejected materials as rejected. Segregate and remove from site.
- C. Storage: Per manufacturer's instructions, referenced standards and as specified
 - 1. Adequately support stored pipe from below, at 3 feet maximum intervals to prevent deformation. Pipe stored in stacks no higher than that given in the following table or manufacturer's instructions whichever is more restrictive:
 - a. Pipe Diameter 8 inches or Less: Maximum Number of Rows Stacked: 5
 - b. Pipe Diameter 12 to 24: Maximum Number of Rows Stacked: 4
 - c. Pipe Diameter 24 to 30: Maximum Number of Rows Stacked: 3
 - d. Pipe Diameter 33 to 48: Maximum Number of Rows Stacked: 2
 - 2. Do not store plastic manholes, pipe, and fittings in direct sunlight.
 - 3. Store in a manner keeping materials at ambient outdoor temperatures.
 - 4. No pipe or fitting is to be exposed to sunlight for more than 30 days.
 - 5. Provide temporary shading as required to meet this requirement.
 - 6. Simple covering of pipe and fittings which allows temperature buildup or direct or indirect sunlight will not be permitted.
- D. Protection:
 - 1. Pipe and fittings showing cracks, or which have received a blow that may have caused an incident fracture, even though no such fracture can be seen, is to be marked as rejected and removed at once from work.
 - 2. Thoroughly clean pipe and fittings before installation. Keep interior clean until testing
 - 3. Handle per manufacturer's written rigging instructions.
 - a. Use special devices and methods as required to achieve results specified. Do not use uncushioned devices in handling.
 - 4. Store gaskets for mechanical and push-on joints in cool and dry location, out of direct sunlight, and not in contact with petroleum products.
 - 5. Provide additional protection according to manufacturer instructions.

1.10 EXISTING CONDITIONS

- A. Field Measurements:
 - 1. Verify field locations and sizes of connections to existing piping and equipment prior to submitting pipe lay drawings.
 - 2. Document field measurements on Shop Drawings.

1.11 WARRANTY

- A. Furnish two-year manufacturer's warranty for PVC pipe and fittings.

PART 2 - PRODUCTS

2.1 SYSTEMS

- A. Contractor is responsible for compatibility between pipe materials, fittings and appurtenances.

2.2 POLYVINYL CHLORIDE (PVC) PRESSURE PIPE AND FITTINGS

- A. Polyvinyl Chloride (PVC) Pipe:

1. PVC Pressure Pipe: 4 through 60 inch per AWWA C909 requirements.
2. Piping 12 inch and Less: Class 200 with a Dimension Ratio of 21.
3. Piping Materials: PVC compounds Class 12454 as defined in ASTM D1784.
 - a. Mark pipe lengths with manufacturer's name or trademark, size, material code, pressure class, AWWA designation number and seal of test agency that verified pipe material for potable-water service.

- B. Polyvinyl Chloride (PVC) Fitting:

1. Bell and Spigot Push-on Joints.
 - a. Bell: Consists of integral wall section with solid cross-section elastomeric gasket securely locked in place to prevent displacement during assembly.
 - b. Installation of elastomeric gasketed joints and joint performance: Per ASTM F477, ASTM D3139. Joint lubricants as recommended by manufacturer and meet all requirements of NSF/ANSI Standard 61 (NSF 61).
2. Fittings and Accessories for Waterlines and Sewers: Bell and/or spigot configurations compatible with pipe.
3. Fittings for Water Mains: Cast or ductile iron per AWWA C110 or C153 for mechanical joints. Furnish Adaptors, fittings, and transition gaskets necessary to connect cast or ductile iron fittings to PVC.
4. PVC Fittings: Per AWWA C900. Pressure rating same as or higher than pipeline. If color is based on local requirements, change as needed.
5. Water Lines: Blue in color.
6. Install restraining glands. Restraining glands for PVC pipe shall conform to AWWA C111 and be Megalug by EBAA Iron Sales Inc., or equal.

2.3 ACCESSORIES

- A. Provide Trace wire for placement above direct buried utility in accordance with City of Arvada Standards.

2.4 SOURCE QUALITY CONTROL

- A. Certificate of Compliance: When fabricator is approved by authorities having jurisdiction, submit certificate of compliance indicating Work performed at fabricator's facility conforms to Contract Documents.
- B. Specified shop tests are not required for Work performed by approved fabricator.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that excavation base is ready to receive Work.
- B. Verify that excavations, dimensions, and elevations are as indicated on Drawings.
- C. Do not deviate centerline of pipe from a straight line drawn between centers of openings at ends of pipe by more than 1/6 inch per foot of length.

3.2 PREPARATION

- A. Pipe and Fittings: Thoroughly cleaned before installation and kept clean until they are used in Work.
 - 1. When laid, must conform to lines and grades required.

3.3 INSTALLATION

- A. As soon as excavation is complete to normal grade of bottom of trench:
 - 1. Place bedding, compact and grade to provide firm, uniform, and continuous support for pipe.
 - 2. Excavate bell holes so only barrel of pipe bears upon bedding.
 - 3. Lay pipe accurately to lines and grades indicated on Drawings.
 - 4. Blocking under pipe is not permitted.
- B. Bedding Placement:
 - 1. Place Bedding evenly on each side of pipe to mid-diameter.
 - a. Use hand tools to force bedding under haunches of pipe and into bell holes to give firm continuous support for pipe.
 - 2. Place bedding to 12 inches above top of pipe.
 - 3. Place initial 36 inch of backfill above bedding in 12 inches layers and carefully compacted.
 - 4. Compaction: Generally done evenly on each side of pipe.
 - a. Compaction Equipment: Do not operate directly over pipe until sufficient backfill has been placed ensuring such compaction equipment will not damage pipe.

- b. Obtain pipe manufacturer's approval of equipment used in compacting initial 36 inch of backfill prior to use.
- C. Piping:
 - 1. Install PVC pipe and fittings per requirements of manufacturer, ASTM D2321 and AWWA C605 or as otherwise specified.
 - 2. Sound and clean before installation.
 - 3. When installation is not in progress, including lunchtime, open ends of pipe must be closed by watertight plug or other approved means.
 - 4. Preserve proper alignment during installation.
 - 5. Joint Deflection: Not to exceed manufacturer recommendations.
 - 6. Fittings: Provide in addition to those shown on Drawings, if required, in crossing utilities that may be encountered upon opening trench.
- D. Defective Pipe Discovered After Installation: Remove and replace with sound pipe in a satisfactory manner.
- E. When Cutting Pipe: By machine, leaving a smooth cut at right angles to pipe axis.
 - 1. Cut Ends of Pipe Used with Bell: Bevel to conform to manufactured spigot end and a reference mark made at same distance from pipe end as measured from a factory marked end from same manufacturer.
 - 2. Project Engineer may examine each bell and spigot end to determine whether any preformed joint has been damaged prior to installation.
 - a. Reject pipe having defective joint surfaces. Marked as defective and immediately remove from job site.
- F. Pipe lengths must have assembly mark aligned with pipe previously laid and held securely until enough backfill has been placed to hold pipe in place. Joints must not be subjected to any applied longitudinal or lateral stresses other than bedding compaction as specified.
- G. Before Joint are Made: Inspect pipe to assure a close joint with next adjoining pipe has been maintained and that inverts are matched and conform to required grade. Do not drive pipe down to grade by striking it.
- H. Take precautions to prevent flotation of pipe in trench.
- I. Moveable Trench Bracing: Trench boxes, moveable sheeting, shoring or plates to support sides of trench.
 - 1. Prevent movement of pipe, and disturbance of pipe bedding and backfill, when placing and moving boxes or supporting bracing.
 - 2. Do not allow Trench boxes, moveable sheeting, shoring or plates to extend below top of pipe. If trench boxes, moveable sheeting, shoring or plates are installed below top of pipe, they must be moved slowly taking care not to disturb pipe, bedding or backfill. As trench boxes, moveable sheeting, shoring or plates are moved, Place pipe bedding filling voids created and then recompact backfill to provide uniform side support for pipe.

- J. Concrete Thrust Blocks: Installed at fittings and locations as directed by Project Engineer.
1. Minimum bearing area shall be as shown on Drawings.
 2. Place blocks against undisturbed material and must not cover joints, bolts or nuts, or interfere with removal of any joint.
 3. Wooden side forms may be provided for thrust blocks.
- K. Jointing:
1. Restrained Joints: Install where shown on Drawings.
 2. Jointing PVC Pipe (Push-on type):
 - a. Installed in strict accordance with manufacturer's instructions.
 - b. Lay pipe with bell ends looking ahead.
 - c. Be sure joint surfaces clean.
 - d. Insert a rubber gasket in groove of bell end of pipe.
 - e. Lubricate with approved lubricant per manufacturer's recommendations.
 - f. Insert plain end of pipe to be installed into bell of pipe to which it is to be joined, and when in alignment pushed home with a come-along or by other means.
 - g. Check that reference mark on spigot end is flush with end of bell.
 3. Jointing Mechanical Joint Fittings:
 - a. Mechanical Joints at Valves, Fittings and Where Designated: Jointed per AWWA C111 and manufacturer detailed instructions.
 - b. PVC Sewer Pipe and Fittings: Jointed per recommendations of latest ASTM standards and manufacturer detailed instructions.
 - c. Install Suitable PVC to cast iron adaptors prior to installing fittings.
 - d. Cut PVC beveled spigot flush prior to insertion in mechanical joint pipe.
 - e. Field Assembled Joints: Thoroughly clean joint surfaces and rubber gaskets with soapy water before tightening bolts to specified torques.
 - 1) Under no circumstances are extension wrenches or pipe over handle of ordinary ratchet wrench to be used to secure greater leverage.
- L. Pipe Identification: Install pipe identification per City of Arvada Standards.

END OF SECTION 330531.16

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SECTION 330531.19 - FUSIBLE POLYVINYL CHLORIDE (fPVC) PRESSURE PIPE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Furnish all labor, materials, equipment and incidentals required and install and test fusible polyvinyl chloride (fPVC) force main pipes and fittings, complete with all necessary jointing facilities and materials, specials, adapters and other appurtenances as shown on the Drawings and as specified herein for HDD crossings.

1.3 SUBMITTALS

- A. Submit to the Project Engineer, within 30 days of the Effective Date of the Agreement, the name of the pipe and fitting manufacturers and a list of materials to be furnished by each manufacturer. Also, include information on local representative for each manufacturer, if product is sold through a distributor.
- B. Shop Drawings including piping layouts and schedules shall include dimensioning, fittings, types and locations of valves and appurtenances, joint details, methods and location of supports, anchorage, gasket material, grade of material and all other pertinent technical information for all items to be furnished.
- C. Prior to each shipment of pipe, certified test reports that the pipe for this Contract was manufactured and tested in accordance with the ASTM and AWWA Standards specified herein shall be submitted.
- D. Submit a plan to the Project Engineer that would discuss steps/procedures to ensure that the original pipe internal diameter will be the same after the pipe installation including post grouting of the annulus between the pipe and the borehole.
- E. Submit a plan to the Project Engineer that would discuss a testing method to measure the pipe internal diameter upon completion of the installation of the pipe including removing the water used for ballasting the pipe during pullback.

1.4 REFERENCE STANDARDS

A. American Society for Testing and Materials (ASTM):

1. ASTM D638 - Standard Test Method for Tensile Properties of Plastics
2. ASTM D1784 - Standard Specification for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds.
3. ASTM D1785 - Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120
4. ASTM D2241 - Standard Specification for Poly (Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR Series)
5. ASTM D2444 - Standard Test Method for Determination of the Impact Resistance of Thermoplastic Pipe and Fittings by Means of a Tup (Falling Weight)
6. ASTM D2584 - Standard Test Method for Ignition Loss of Cured Reinforced Resins
7. ASTM F1057 - Standard Practice for Estimating the Quality of Extruded Poly (Vinyl Chloride) (PVC) Pipe by the Heat Reversion Technique

B. American Water Works Association (AWWA):

1. AWWA C110/C153 - Standard for Ductile-Iron and Gray-Iron Fittings
2. AWWA C111 - Standard for Rubber-Gasket Joints for Ductile-Iron Pipe and Fittings
3. AWWA C605 - Standard for Underground Installation of Polyvinyl Chloride (PVC) Pressure Pipe and Fittings for Water
4. AWWA C900 - Polyvinyl Chloride (PVC) Water Transmission Pipe, Nominal Diameters 14-in Through 36-in.

C. National Sanitation Foundation (NSF):

1. Standard No. 14 - Plastic Piping Components and Related Materials.

D. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

1.5 QUALITY ASSURANCE

A. All fPVC water pipe and fittings shall be from a single manufacturer. The supplier shall be responsible for the provisions of all test requirements specified in NSF Standards No. 14, 60 and 61 as applicable. In addition, all fPVC pipe to be installed under this Contract may be inspected at the plant for compliance with this Section by an independent testing laboratory provided by the Owner. The Contractor shall require the manufacturer's cooperation in these inspections. The cost of plant inspection of all pipe approved for this Contract, plus the cost of inspection of a reasonable amount of disapproved pipe, will be borne by the Owner.

B. Inspections of the pipe may also be made by the Project Engineer or other representatives of the Owner after delivery. The pipe shall be subject to rejection at any time on account of failure to meet any of the requirements specified herein, even though sample pipes may have been accepted as satisfactory at the place of manufacture. Pipe rejected after delivery shall be marked for identification and shall be removed from the job at once.

C. Fusion Technician Requirements:

1. Fusion Technician shall be provided by the pipe supplier and be fully qualified by the pipe supplier to install fusible polyvinyl chloride pipe of the type(s) and size(s) being used. Qualification shall be current as of the actual date of fusion performance on the project. Fusion Technician shall have three (3) years of experience in order to provide their services on the project.

1.6 SYSTEM DESCRIPTION

- A. Contractor shall be responsible for compatibility between pipe materials, fittings, and appurtenances.

1.7 DELIVERY, STORAGE AND HANDLING

- A. All items shall be bundled or packaged in such a manner as to provide adequate protection of the ends during transportation to the site. Any pipe damaged in shipment shall be replaced as directed by the Project Engineer.
- B. Care shall be taken in loading, transporting, and unloading items to prevent damage to the items, particularly in colder temperatures.
- C. All items shall be examined before installation and no piece shall be installed which is found to be defective. Handling and installation of pipe and fittings shall be in accordance with the manufacturer's instructions, referenced standards and as specified herein.
- D. Any pipe or fitting showing a crack, or which have received a blow that may have caused an incident fracture, even though no such fracture can be seen, shall be marked as rejected and removed at once from the Work.
- E. While stored, pipe shall be adequately supported from below at not more than 3-ft intervals to prevent deformation. The pipe shall be stored in stacks no higher than 3 pipes.
- F. Pipe and fittings shall be stored in a manner which will keep them at ambient outdoor temperatures and out of the sunlight or delivered to the site so that no pipe is exposed to sunlight for more than 60 days. Temporary shading as required to meet this requirement shall be provided. Simple covering of the pipe and fittings which allows temperature build-up or direct or indirect sunlight will not be permitted.
- G. If any defective item is discovered after it has been installed, it shall be removed and replaced with an exact replacement item in a satisfactory manner by the Contractor, at the Contractor's own expense. All pipe and fittings shall be thoroughly cleaned before installation and the interior shall be kept clean until testing.
- H. In handling the items, use special devices and methods as required to achieve the results specified herein. No uncushioned devices shall be used in handling the item.

PART 2 - PRODUCTS

2.1 FUSIBLE POLYVINYL CHLORIDE (fPVC) PIPE AND FITTINGS

- A. fPVC pressure pipe shall conform to the requirements of AWWA C900. The pipe shall be made from PVC compounds Class 12454 as defined in ASTM D1784. Each pipe length shall be marked with the manufacturer's name or trademark, nominal pipe size, material code, Dimension Ratio, pressure class, AWWA reference and seal of test agency that verified pipe material for sewer service and service for carrying brine discharges. All pipes 12-inch and smaller shall be Fusible C-900 DR21, 200 psi maximum working pressure. All pipes larger than 12-inch shall be Fusible C-900 DR25, 165 psi maximum working pressure.
- B. Fusible PVC pipe shall be extruded with plain ends. The ends shall be square to the pipe, with no bevel or chamfer. There shall be no bell or gasket of any kind incorporated into the pipe.
- C. All fittings for force mains shall be cast or ductile iron conforming to AWWA C110/C153 for mechanical joints. All adaptors, fittings, and transition gaskets necessary to connect cast or ductile iron fittings to PVC shall be furnished. Joint restraint shall be EBAA Iron, Inc., Series 2000PV, Uni Flange, Romac Industries or approved equal.
- D. Fusible PVC pipe shall be furnished by Underground Solutions, Inc.

2.2 ACCESSORIES

- A. Provide tracer wire to be installed alongside fusible PVC via slip lining. Tracer wire shall be 7 x 7 stranded copper clad steel, extreme strength with 4,700 lb break load, with minimum 50-mil HDPE insulation thickness, or equal.

PART 3 - EXECUTION

3.1 HOST PIPE PREPARATION

- A. The host pipe shall be cleaned in accordance with all applicable standards and guidelines. Unless otherwise specified, all interior pipe surfaces shall be cleaned per AWWA M28. The number of cleaning passes will depend on the method used and what is needed to create a uniform interior host pipe surface that is free of all loose material and sharp edges. Any potentially deleterious areas of the host pipe should be removed or secured in place, prior to the insertion of fusible polyvinyl chloride (PVC) pipe.
- B. Hazardous materials shall be removed and disposed of per all applicable requirements and regulations.

3.2 VIDEO INSPECTION

- A. The host pipe shall be inspected by video camera after or during the cleaning process in accordance with these specifications.
- B. Video camera inspection after host pipe cleaning shall indicate condition of host pipe and the suitability of host pipe for fusible polyvinyl chloride (PVC) pipe insertion.
- C. Obstructions such as corporation taps, valves, and valve bodies, and collapsed piping shall be remedied prior to pipe insertion. Spot repairs shall be made in accordance with the project contract drawings and these specifications.

3.3 INSTALLATION OF FUSIBLE PVC PIPE AND FITTINGS

- A. If any defective pipe is discovered after it has been installed, it shall be removed and replaced with a sound pipe in a satisfactory manner at no additional cost to the Owner. All pipe and fittings shall be thoroughly cleaned before installation, shall be kept clean until they are used in the Work and when laid, shall conform to the lines and grades required. fPVC pipe and fittings shall be installed in accordance with requirements of the manufacturer, or as otherwise provided herein.
- B. All pipe shall be sound and clean before installation. When installation is not in progress, including lunchtime, the open ends of the pipe shall be closed by watertight plug or other approved means. Good alignment shall be preserved during installation. The bend radius of the pipe shall not exceed that recommended by manufacturer or as shown on the Drawings. Fittings, in addition to those shown on the Drawings, shall be provided, if required, in crossing utilities which may be encountered.
- C. When cutting pipe is required, the cutting shall be done by machine, leaving a smooth cut at right angles to the axis of the pipe.
- D. Make thermal butt fusion using only procedures that are recommended by the pipe manufacturer and in accordance with the manufacturer's and pipe supplier's written procedures for the fusion process.
- E. Install tracer wire alongside fPVC pipe to allow for future location of existing pipe.

3.4 JOINTING MECHANICAL JOINT FITTINGS

- A. Mechanical joints at valves, fittings and where designated shall be in accordance with the AWWA C111 and the instructions of the manufacturer. Suitable fPVC to ductile iron adaptors shall be installed prior to installing fittings. fPVC beveled spigot shall be cut flush prior to insertion in mechanical joint pipe. To assemble the joints in the field, thoroughly clean the joint surfaces and rubber gasket with soapy water before tightening the bolts.
- B. Bolts shall be tight to the specified torques. Under no condition shall extension wrenches or pipe over handle of ordinary ratchet wrench be used to secure greater leverage.

3.5 FUSION JOINTS

- A. Unless otherwise specified, fusible polyvinylchloride pipe lengths shall be assembled in the field with butt-fused joints. The Contractor shall follow the pipe supplier's written instructions for this procedure. Joint strength shall be equal to the pipe as demonstrated by testing requirements. All fusion joints shall be completed as described in this Specification.

3.6 FUSION PROCESS

A. General

1. Fusible polyvinylchloride pipe will be handled in a safe and non-destructive manner before, during, and after the fusion process and in accordance with this Specification and pipe supplier's recommendations.
2. Fusible polyvinylchloride pipe will be fused by qualified fusion technicians provided by the pipe supplier, as documented by the pipe supplier. Training records for qualified fusion technicians shall be available to Owner or Project Engineer upon request.
3. Each joint fusion shall be recorded and logged by an electronic monitoring device (data logger) affixed to the fusion machine. Joint data shall be submitted as part of the As-Recorded information, in accordance with this Specification.
4. The fusible polyvinylchloride pipe will be installed in a manner so as not to exceed the recommended bending radius.
5. Where fusible polyvinylchloride pipe is installed by pulling in tension, the recommended Safe Pulling Force, according to the pipe supplier, shall not be exceeded.
6. Only appropriately sized and outfitted fusion machines that have been approved by the pipe supplier shall be used for the fusion process. Fusion machines must incorporate the following properties, including the following elements:
 - a. HEAT PLATE - Heat plates shall be in good condition with no deep gouges or scratches within the pipe circle being fused. Plates shall be clean and free of any contamination. Heater controls shall properly function, and cord and plug shall be in good condition. The appropriately sized heat plate shall be capable of maintaining a uniform and consistent heat profile and temperature for the size of pipe being fused, per the pipe supplier's recommendations.
 - b. CARRIAGE – Carriage shall travel smoothly with no binding at less than 50 psi. Jaws shall be in good condition with proper inserts for the pipe size being fused. Insert pins shall be installed with no interference to carriage travel.
 - c. GENERAL MACHINE - Overview of machine body shall yield no obvious defects, missing parts, or potential safety issues during fusion.
 - d. DATALOGGER - The current version of the pipe supplier's recommended and compatible software shall be used. Protective case shall be utilized for the handheld wireless portion of the unit. Datalogger operations and maintenance manual shall be with the unit at all times. If fusing for extended periods of time, an independent 110V power source shall be available to extend battery life.

7. Other equipment specifically required for the fusion process shall include the following:

- a. Pipe rollers shall be used for support of pipe to either side of the machine.
 - b. A weather protection canopy that allows full machine motion of the heat plate, fusion assembly and carriage shall be provided for fusion in inclement and /or windy weather.
 - c. Fusion machine operations and maintenance manual shall be kept with the fusion machine at all times.
 - d. Facing blades specifically designed for cutting fusible polyvinylchloride pipe.
- B. Each fusion joint shall be recorded and logged by an electronic monitoring device (data logger) connected to the fusion machine. The fusion data logging and joint report shall be generated by software developed specifically for the butt-fusion of thermoplastic pipe. The software shall register and/or record the parameters required by the manufacturer and these Specifications. Data not logged by the data logger shall be logged manually and be included in the Fusion Technician's joint report.

3.7 TESTING

- A. After the casing pipe installation, the casing pipe shall be tested for integrity of pipe internal diameter. Refer to Section 331300 Disinfecting of Water Utility Distribution for testing requirements.

3.8 GROUT FILLING ANNULAR SPACE

- A. Once installation is complete, contractor shall grout annular space as described by the approved grouting plan submittal per Paragraph 1.3.D.

END OF SECTION 330531.19

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SECTION 331213 - WATER SERVICE CONNECTIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Pipe and fittings for 2-inch water service connections to buildings.
 - 2. Curb stop assemblies.
 - 3. Underground pipe markers.
 - 4. Water Service Saddletaps.

1.3 ACTION SUBMITTALS

- A. Section 013300 "Submittal Procedures" for requirements for submittals.
- B. Product Data: Submit data on pipe materials, pipe fittings, corporation stop assemblies, curb stop assemblies, meters, meter setting equipment, service saddles, backflow preventer, and accessories.
- C. Shop Drawings: Indicate details showing vault and accessories.

1.4 INFORMATIONAL SUBMITTALS

- A. Manufacturer Instructions: Submit detailed instructions on installation requirements, including storage and handling procedures.
- B. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.
- C. Qualifications Statement:
 - 1. Submit qualifications for manufacturer.

1.5 CLOSEOUT SUBMITTALS

- A. Section 017700 "Closeout Procedures" for requirements for submittals.
- B. Project Record Documents: Record actual locations of piping mains, curb stops, connections, thrust restraints, and invert elevations.

- C. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.6 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum three years' experience.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Inspection: Accept materials on Site in manufacturer's original packaging and inspect for damage.
- B. Store products and materials off ground and under protective coverings and away from walls.
- C. Exercise care in handling precast concrete products to avoid chipping, cracking, and breakage.

PART 2 - PRODUCTS

2.1 WATER PIPING AND FITTINGS

- A. Copper Tubing:
 - 1. Comply with ASTM B88.
 - 2. Type K, annealed.
 - 3. Fittings: Conform to ASME B16.18, cast copper.
 - 4. Joints: Compression connection.

2.2 SERVICE SADDLE

- A. Description:
 - 1. Type: Two stainless bands with brass body.
 - 2. Designed to hold pressures in excess of pipe working pressure.
 - 3. Shall be compatible with approved corporation stops.
- B. Manufacturers:
 - 1. AY McDonald, Model 3855
 - 2. Mueller, Model BR2S
 - 3. Ford, Model 202BS
 - 4. Romac, Model 202BS
 - 5. James Jones, Model J-969
 - 6. Power Seal, Model 3409

2.3 CURB STOP ASSEMBLIES

A. Manufacturers:

1. Mueller
2. Ford
3. AY McDonald
4. Cambridge
5. James Jones Co.

B. Curb Stops:

1. Body: Brass or red brass alloy.
2. Comply with AWWA C800 and ASTM B62.
3. Valve Type: Compression ball type.
4. Sealing: Positive pressure.
5. Working pressure: 300 psig maximum.

C. Curb Boxes and Covers:

1. Tyler 6500 Series Screw Type or 6860 Series Box in Asphalt.
2. Furnish per City of Arvada Standards

2.4 UNDERGROUND PIPE MARKERS

A. Install utility identification per City of Arvada Standards.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Section 017300 "Execution" for requirements for installation examination.
- B. Verify that building service connections and municipal utility water main sizes, locations, and inverts are as indicated on Drawings.

3.2 PREPARATION

- A. Section 017300 "Execution" for requirements for installation preparation.
- B. Cut pipe ends square, ream pipe and tube ends to full pipe diameter, and remove burrs.
- C. Remove scale and dirt from inside and outside of piping before assembly.
- D. Prepare pipe connections to equipment with flanges or unions.

3.3 INSTALLATION

A. Bedding:

1. Placement:

- a. Place bedding material at trench bottom.
- b. Level fill materials in one continuous layer not exceeding 6 inches compacted depth.
- c. Compact to 95 percent maximum density.

2. Backfill around sides and to top of pipe with cover fill, tamp in place, and compact to 95 percent maximum density.

B. Pipe and Fittings:

1. Maintain separation of water main from sewer according to CDPHE code.

C. Curb Stop Assemblies:

1. Set curb stops on compacted soil.
2. Boxes:
 - a. Center and plumb curb boxes over curb stops.
 - b. Set box cover flush with finished grade.

D. Disinfection of Water Piping System:

1. Disinfect installed piping per City of Arvada Standards.

3.4 FIELD QUALITY CONTROL

- A. Section 017300 "Execution" for requirements for testing, adjusting, and balancing.
- B. Pressure test water distribution system according to AWWA C600.
- C. If tests indicate Work does not meet specified requirements, remove Work, replace, and retest.

END OF SECTION 331213

APPENDIX A

GEOTECHNICAL INVESTIGATION REPORT

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GEOTECHNICAL INVESTIGATION REPORT

2021 WATER MAIN IMPROVEMENTS PROJECT

ARVADA, COLORADO

February 2023





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Denver, Colorado 80227
303.625.9502
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February 22, 2022
Project No. 21210

CDM Smith
555 17th Street, Suite 500
Denver, CO 80202

Attention: Ms. Shilpa Shivakumar, PE
Project Manager

Regarding: Geotechnical Engineering Investigation
2021 Water Main Improvements Project
Arvada, Colorado

Ms. Shivakumar,

Submitted herewith is the Geotechnical Engineering Investigation report for the 2021 Water Main Improvements Project. This study was conducted in general accordance with the Task Order with CDM Smith dated April 10, 2022. This report contains the subsurface data and geotechnical recommendations to aid design and construction of earth-related phases of this project.

If you have any questions regarding the contents of this report, please contact the undersigned.

Sincerely,
Lithos Engineering

A handwritten signature in black ink, appearing to read "Alex Warren".

Alex Warren, EI, GIT
Staff Engineer

A handwritten signature in black ink, appearing to read "James Carroll".

James Carroll, PE
Project Manager

A handwritten signature in blue ink, appearing to read "Benny Siljenberg".

Benny Siljenberg PE
Vice President



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B	Geotechnical Laboratory Testing Results

1 INTRODUCTION & PROJECT BACKGROUND

The City of Arvada (City) 2021 Water Main Improvements Project (Project) includes a series of water main replacements, relocations, installations, and interconnections at project sites located throughout the City. CDM Smith retained Lithos Engineering (Lithos) to provide geotechnical engineering and trenchless design services for the Project sites (Figure 1). The proposed improvements include:

1. A new 12-inch PVC interconnect in West 72nd Avenue under the Farmer's Highline Canal (Site E).
2. New service line connections to within the HomeDepot parking lot, Costco Wholesale on Wadsworth Boulevard. This site also includes : two 8-inch PVC lines, one 3-inch HDPE to copper line, and a 2-inch irrigation service line (Site G).
3. A new 12-inch PVC water main replacement in Jellison Street from Croke and Farmer's Highline Canal to West 74th Place (Jellison).
4. A 24-inch steel water main replacement in West 74th and Carr Street (74th).
5. A new installation 8 or 10-inch water main that will run along the south side of West 72nd Avenue (72nd).

The purpose of this report is to provide the results of the geotechnical investigation and geotechnical recommendations for design and construction of various project elements.

2 GEOLOGIC SETTING & GEOHAZARDS

2.1 Regional Geology

Geologic mapping performed by Bryant, B., McGrew, L.W., and Wobus, R.A. (1981) indicates the Project sites are underlain by Holocene-aged Post-Piney Creek and Piney Creek alluvium, Pleistocene-aged loess, Louviers alluvium, and Verdos alluvium. The Post-Piney Creek and Piney Creek alluvium is described as brown to gray to yellow clay, silt, and sand with coarse pebbly to cobbly gravel up to 30 feet thick. The loess deposits are described as brown, yellow, gray, or red slightly clayey, sandy silt or silty sand up to five feet thick. The loess generally contains small pebbles and can be calcareous. Louviers alluvium is described as brown, gray, yellow, or red clayey silt and sand and coarse-cobbly clayey sand and gravel up to 118 feet thick. The Verdos alluvium is described as red, brown, yellow, or gray clayey, silty sand and boulder gravel with a variable amount of calcareous cement and a thickness up to 69 feet. Bedrock in the area is mapped as Pleistocene to Upper Cretaceous-aged Denver and Arapahoe Formations. The Denver Formation is described as yellowish-brown to grayish-olive claystone, siltstone, and sandstone up to 951 feet thick. The Arapahoe Formation is described as yellowish-gray to yellowish-brown, coarse- to fine-grained quartz-mica-feldspar sandstone, siltstone, and claystone with thickness as much as 502 feet.

3 GEOTECHNICAL INVESTIGATION

Lithos conducted the subsurface investigation at the Project sites between May 19, 2022 and January 26th, 2023. The geotechnical investigation included geotechnical drilling and a geotechnical laboratory testing program. Lithos completed sixteen geotechnical borings to investigate the general subsurface conditions at the different Project sites. Boring location maps for each site are shown in Figures 2 through 9 at the end of this report.

Geotechnical borings were advanced to depths between 8.9 feet below the existing ground surface (bgs) and 31.5 feet bgs. Lithos subcontracted Vine Laboratories to drill the borings utilizing a CME 55/300 track-mounted drilling rig and CME 55 and CME 75 truck-mounted drilling rigs. Drilling and sampling procedures were conducted in general accordance with ASTM D3550 – *Standard Practice for Thick Wall, Ring-Lined, Split Barrel, Drive Sampling of Soils*, and ASTM D1587 – *Standard Practice for Thin-Walled Tube Sampling of Fine-Grained Soils for Geotechnical Purposes*. Continuous-flight, hollow-stem and solid-stem augers were used to advance borings below the existing ground surface through soil and into bedrock. During advance of the augers, split spoon and Modified California samples (1.4-inch inner diameter, 2.0-inch inner diameter) were obtained at 2.5- and 5-foot intervals. The number of blows by a 140-pound hammer falling 30-inches required for 12 inches of sampler penetration (recorded in 6-inch increments) are presented on the boring logs. Boring logs are included in Appendix A.

3.1 Geotechnical Laboratory Testing

A geotechnical laboratory testing program was developed by Lithos and conducted by Martinez Associates on representative samples collected during the subsurface investigation. A laboratory summary table is provided in Appendix B. Laboratory tests conducted in general accordance with associated ASTM standards are presented in the table below.

Geotechnical Laboratory Testing	
Test	Standard
Grain Size Distribution	ASTM D422/ASTM C136
#200 Sieve Wash	ASTM D1140
Unconfined Compressive Strength	ASTM D2166
Swell / Consolidation	ASTM D4546
Atterberg Limits	ASTM D4318
Moisture Content & Dry Density	ASTM D2216 & D2937

If field characterized soil or bedrock descriptions differed from results indicated by laboratory classification testing, the boring logs presented in Appendix A were amended to reflect laboratory testing results.

3.2 Corrosion Potential Testing

Bulk samples were collected from multiple borings at the Jellison and 74th project sites. Samples were delivered to QualCorr for testing, analysis, and corrosion recommendations. Results of the corrosion laboratory testing will be presented by QualCorr in a separate report.

4 SUBSURFACE CONDITIONS

Subsurface conditions were assessed based on the findings of the geotechnical investigation described in the previous section. Soil and rock descriptions noted on the boring logs and below are in general accordance with ASTM D2487 – *Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)* and D2488 – *Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)*.

4.1 Subsurface Materials

Primary materials encountered during the subsurface investigation include fill, fine alluvium, coarse alluvium, and claystone and sandstone bedrock of the Denver and Arapahoe Formations. Boring logs and a supplementary boring log key explaining boring log details are provided in Appendix A.

4.1.1 Fill

Fill was encountered in all borings at Site G and 72nd at the ground surface and extended to depths from 5 to 8 feet bgs. Encountered fill was described as the following in accordance with the United Soil Classification System (USCS):

- LEAN CLAY (CL)
- LEAN CLAY with sand (CL)
- LEAN CLAY with sand and gravel (CL)
- Sandy LEAN CLAY (CL)
- Sandy LEAN CLAY with gravel (CL)

Fill was primarily comprised of clay with varying amounts of sand and gravel with blow counts from 6 to 19 blows per foot (bpf) indicating a consistency of medium stiff to very stiff.

Two unconfined compressive strength (UCS) tests were conducted on fill samples with results of 1,946 and 3,240 pounds per square foot (psf).

Two swell-consolidation tests were performed on fill samples from 72nd. Both samples exhibited a swell of 0.3 percent under an inundation pressure of 500 psf and a swell pressure of 850 and 1,500 psf, respectively, indicating a low swell potential (as defined by the Colorado Association of Geotechnical Engineers (1996)).

4.1.2 Fine Alluvium

Fine alluvium was encountered in all borings at Site E, G, Jellison, 74th, and 72nd, generally at the ground surface or underlying fill and coarse alluvium, extending to depths from 5 to 31.5 feet bgs. Encountered fine alluvium was described as the following in accordance with the United Soil Classification System (USCS):

- LEAN CLAY (CL)
- LEAN CLAY with sand (CL)
- Sandy LEAN CLAY (CL)
- FAT CLAY with sand (CH)

Fine alluvium was primarily comprised of clay with varying amounts of sand. Blow counts ranged from 4 to 19 bpf indicating a consistency of soft to very stiff.

One unconfined compressive strength UCS test was conducted on the fine alluvium with a result of 1,125 psf.

4.1.3 Coarse Alluvium

Coarse alluvium was encountered in all borings at Site G and Jellison, generally at the ground surface or underlying fill and extended to depths from 10 to 25 feet bgs. Encountered coarse alluvium was described as the following in accordance with the United Soil Classification System (USCS):

- Clayey SAND (SC)
- Poorly-graded SAND with gravel (SP)
- Poorly-graded SAND with gravel and clay (SP-SC)
- Well-graded SAND with gravel and clay (SW-SC)
- Poorly-graded GRAVEL with sand and clay (GP-GC)

Coarse alluvium was primarily comprised of sand and gravel with varying amounts of clay. Blow counts ranged from 7 to 63 bpf indicating a loose to very dense relative density of.

4.1.4 Denver Formation Bedrock

Claystone bedrock of the Denver Formation was encountered in borings at Site G, with depths ranging from 18 to greater than 25 feet bgs to end of exploration. The bedrock was slightly weathered to fresh with blow counts of 41 bpf to 50 blows per 2 inches of sampler penetration (50/2”).

Two UCS tests were conducted on the bedrock with results ranging from 2,991 to 10,237 psf.

4.1.5 Arapahoe Formation Bedrock

Claystone and sandstone bedrock of the Arapahoe Formation was encountered in borings at Site E, Jellison, and 74th, with depths ranging from 5 and 30 feet bgs to end of exploration. Claystone bedrock was slightly to highly weathered with blow counts of 15 to 31 bpf. Sandstone bedrock was slightly to highly weathered with blow counts of 37 to 50/4”.

One UCS test was conducted on the claystone bedrock with a result of 5,348 psf. Two UCS tests were conducted on the sandstone bedrock with results ranging from 2,765 to 9,503 psf.

Two swell-consolidation tests were performed on the claystone bedrock. One sample from Site E exhibited a swell of 1.8 percent under an inundation pressure of 500 psf and a swell pressure of 1,240 psf, indicating a low swell potential (as defined by the Colorado Association of Geotechnical Engineers (1996)). One sample from 74th exhibited consolidation of 0.8 percent under inundation pressures of 500 psf. This consolidation sample is discounted in our analysis due to laboratory procedures on a disturbed sample.

4.2 Groundwater

Groundwater was encountered in eight borings during the subsurface investigation from 8.9 to 21.3 feet bgs. Groundwater was not encountered in boring LE-2 at Site E, LE 5 and 6 at Site G, and in any boring at 72nd. Fluctuations in the groundwater level may occur due to variations in rainfall, temperature, site development, and other factors not evident at the time that these measurements were made. The table below presents initial groundwater levels during drilling.

Groundwater Readings	
Boring	Groundwater Level (feet below existing ground surface)
LE-1 Site E	20
LE-2 Site E	Did Not Encounter
LE-1 Site G	10
LE-3 Site G	8.9
LE-5 Site G	Did Not Encounter
LE-6 Site G	Did Not Encounter
LE-7 Site G	9.4
LE-1 Jellison	17.9
LE-2 Jellison	16.7
LE-1 74th	21.3
LE-3 74 th	5.1
LE-72 nd -B1	Did Not Encounter
LE-72 nd -B2	Did Not Encounter
LE-72 nd -B3	Did Not Encounter
LE-72 nd -B4	Did Not Encounter
LE-72 nd -B5	Did Not Encounter

5 PIPELINE RECOMMENDATIONS

The following sections are included primarily for the engineer performing design. If additional geotechnical design and pipeline recommendations are necessary, Lithos should be contacted to provide the required information.

Corrosion Pipe installation trenches are anticipated to be backfilled with properly compacted granular pipe bedding material. Depending on the specific pipe type selected, the corrosion potential of soils and water surrounding trench backfill should be assessed. The designer should account for the corrosive soil conditions when selecting pipe materials based on the corrosion laboratory results presented by QualCorr in a separate report, presented in Appendix A.

5.1 Pavement Recommendations

Onsite pavement for access roads and parking areas should consist of 6-inch (full depth) asphalt without base course, 4-inches asphalt over 6 inches of Class 6 base course; or 5.5 inches of Portland Cement concrete without base course as per the City of Arvada Engineering Code of Standards and Specifications Section 700: Roadway and Parking Lot Design, Traffic Control Devices and Street Lighting. The subgrade should be proof rolled to verify stability and if the proof roll reveals soft or loose soils, the subgrade should be stabilized. Stabilization can be accomplished through the use of geotextile stabilization or by utilizing rockfill material over the base of the excavation.

5.2 Differential Movement

Pipelines excavated through various soils and bedrock will be susceptible to differential movements up to 1 inch. Pipe penetrations into structures should be designed to tolerate a total of 1 inch of upward or downward relative movement. Existing and proposed structures are expected to function as relatively rigid structures, therefore, flexible joints and/or connections between lines and structures are recommended. Allowance for differential movement should be expected and planned for where pipelines penetrate structures. We recommend CLSM backfill be used in pipe trenches within 10 feet of structures, in lieu of traditional pipe bedding and pipe trench backfill to mitigate the migration of groundwater which could lead to soil movement.

5.3 Thrust Restraint

Buried, pressurized pipes experience thrust forces at various pipe configurations including tees, reducers, dead ends, valves, bends, and wyes. In order to balance internal transient pressures, thrust blocks or restrained joints are recommended for pipe restraint. For thrust block design, the contractor is directed to follow the City of Arvada Standard detail 400-18. A minimum of 1 foot of cover over thrust blocks is recommended and thrust blocks should be oriented such that the passive pressure influence zones do not overlap for adjacent blocks and do not impact other subsurface utilities. If restrained joints are selected, various coefficients of friction for potential pipe materials against anticipated trench backfill material are presented below.

Coefficient of Friction for Buried Pipe	
Pipe Type	Coefficient of Friction
Steel	0.30
Ductile Iron	0.30
Plastic	0.25

5.4 Modulus of Soil Reaction (E')

The modulus of soil reaction (E') is an empirically derived coefficient which is related to the stiffness of the native soils and the nature and degree of compaction of the pipe bedding and backfill material. Various design guidelines specific to pipe material provide recommended values for E'. For full embedment of pipe in compacted granular pipe bedding, where the trench is excavated in soils that are loose/medium stiff or better (stiffer or denser, typically with blow counts greater than 4 blows per foot), and where the trench width measured at the pipe elevation (Bd) is at least 2 times the pipe diameter (D), an E' value as shown in the table below should be used.

Modulus of Soil Reaction (E')	
Pipe Type	E' (psi)
Steel	1,000
PVC	2,000
Ductile Iron	700
HDPE	1,000

5.5 Seepage Control

Free-draining pipe bedding creates a conduit for the migration of groundwater along the backfilled pipeline trench. The migration of groundwater can alter local hydrogeologic regimes. To reduce groundwater migration in the pipeline trench, Lithos recommends low permeability trench plugs be constructed from impervious material and should be keyed into the in-situ soils or bedrock along the trench bottom and sidewalls, extending at least 6 inches to 12 inches above the top of the bedding elevation. Trench plugs should be installed at a spacing not to exceed 500 feet and on either side of structures. Material requirements for trench plugs are provided in Section 6.2.2.

6 CONSTRUCTION CONSIDERATIONS

The following sections are intended for the Engineer producing specifications and the contractor constructing the proposed project. Construction considerations include temporary excavations, site grading and earthwork, bedrock or oversized material excavation, and construction dewatering.

6.1 Temporary Excavations

General site safety including temporary excavations are the sole responsibility of the contractor performing construction. Lithos is providing temporary excavation information strictly as an informational benefit to the project team, specifically the general contractor. An Occupational Safety and Health Administration (OSHA) defined competent person should be identified by the contractor to be in charge of temporary excavations. In general, the contractor's competent person should have experience or training in determining soil types, benching and shoring, and have the ability to detect potential temporary slope stability and protective system issues.

OSHA defines an excavation as a man-made cut, trench, or depression formed by the removal of earth. A trench is a specific type of narrow excavation with a geometry including a greater depth than width and a width of 15 feet or less. Trenches 5 feet deep or greater should be sloped, retained with shoring, or shielded appropriately. Shielding most commonly includes trench boxes. In general, shoring can include inclined, horizontal, or vertical systems depending on the excavation geometry and availability of retention alternatives. Sloping and benching should be in accordance with OSHA recommendations. Benching should include a maximum 4-foot vertical face for each bench and the overall excavation geometry less than or equal to the OSHA defined slope.

A registered professional engineer should approve the contractor's approach for trenches greater than or equal to 20 feet in depth. In addition, shoring for trench excavations should be designed by a professional engineer or be based on tabulated data prepared or approved by a registered professional engineer in accordance with OSHA 1926.652(b) and (c).

Lithos has evaluated observed soil conditions likely to be penetrated by the proposed construction. Based on the OSHA determined soil Types, the following table presents maximum recommended temporary excavation slopes to be utilized during construction.

OSHA Temporary Excavation Slopes		
Backfill Material Type	OSHA Classification	Maximum Recommended Slope (H:V) ^{1,2}
Coarse Grained Alluvial Deposits	Type C	1½:1
Fine Grained Alluvial Deposits	Type B	1:1
Bedrock	Type A	0.75:1

¹ H:V is an abbreviation for Horizontal:Vertical

² Valid for trench excavations less than 20 feet in depth

During construction, heavy equipment or excavated material stockpiles should be kept away from excavation edges to the extent possible. It is recommended that heavy equipment or excavated material stockpiles be kept at least 10 feet from the edges of excavations. Underground utilities should be fully understood and documented prior to initiating excavations. Finally, the contractor's competent person should inspect trenches and excavations routinely for signs of instability including sliding, toppling, subsidence and bulging, heaving or squeezing, boiling, and/or other visual concerns.

6.1.1 Shored Temporary Excavations

The contractor may elect to use a temporary shoring system to limit excavation extents, particularly if other site infrastructure may be impacted. For excavations greater than 20 feet deep, the contractor will be required to submit a design prepared by a professional engineer registered in the state of Colorado to demonstrate that the shoring system maintains both local and global slope stability for the duration of the open excavation.

Typically trench boxes are used to support lateral loads during excavation and construction in soils that have sufficient standup time to excavate the trench, install the trench box, complete installation and remove the trench box without full contact of the soils. Tight shoring typically involves full contact of the soils with the shoring system. Typical tight shoring systems include sheet pile walls, soldier pile and lagging walls, secant pile walls, soil nail walls and slide rail systems.

6.2 Site Grading and Earthwork

Appropriate site preparation, material placement and compaction, and backfill selection can reduce the risk of post-construction settlement and potential issues related to lateral earth pressures. General site grading and earthwork considerations are presented in the following sections.

6.2.1 Site Preparation

Areas supporting backfill and pipe bedding should be properly prepared. Once the rough grade has been established in excavated areas, and prior to placement of backfill, the exposed subgrade should be carefully inspected via proof rolling, probing, and testing, as determined necessary by the geotechnical engineer. Frozen, wet, soft, or loose soil, as well as any other undesirable material should be removed. Once suitable soil conditions are achieved, the subgrade should be scarified and compacted prior to fill placement. The suitable exposed soil materials should be scarified and moistened or dried, as necessary, to a minimum depth of 8 inches below the proposed construction. Scarified material should be compacted

to the minimum specifications defined in the following sections. If within bedrock, the subgrade does not need to be scarified and recompact.

6.2.2 Structure and Trench Backfill Material

Backfill is anticipated within pipeline trenches. Material recommendations are provided below:

1. Earthen material consisting of non-organic sands, gravels, silts, and clays or mixture thereof with a maximum size of 3 inches is recommended for backfill above the pipe bedding zone. Backfill materials are based on City of Arvada Engineering Code of Standards and Specifications Section 300: Soils and Earthwork.
2. CDOT “Fine Aggregate” meeting the gradation presented in CDOT Section 703.01 is recommended as backfill for the pipe bedding zone. The pipe bedding zone considered includes a minimum of 6 inches of separation between the subsoil and the pipe. Pipe bedding materials and placement recommendations are based City of Arvada Engineering Code of Standards and Specifications Section 300: Soils and Earthwork.
3. Controlled Low Strength Material (CLSM) or imported, low permeability, non-expansive clay material is recommended for use as trench plugs. If imported clay material is used, it shall have a minimum fines content of 60 percent and a minimum plasticity index of 15.
4. Imported CDOT Class 1 backfill meeting the general gradation of “Class 1 Structure Backfill Material” as specified in CDOT Section 703.08, CLSM “flowable fill” is recommended for backfill of structures.

Pipeline trenches may be backfilled with native soil if in accordance with the recommendations above. Claystone or processed claystone should not be used as backfill. The contractor may need to provide separation and/or processing of the onsite excavated soils for reuse purposes. If another material is considered for any of the presented applications, Lithos should be contacted to review submitted particle size distribution and plasticity testing results.

6.2.3 Fill Placement and Compaction

Lift thickness for pipe bedding should not exceed 6 inches. Minimum recommended compaction specifications are outlined in the following table.

Soil Compaction Recommendations		
Backfill Material Type ^{3,4}	Moisture and Compaction Specifications	
	Moisture Content ¹	Dry Density ²
Select Fill	-1% to +3%	≥ 95%
Imported Structural Backfill	-2% to +2%	≥ 95%

¹ Moisture content relative to the optimum moisture content as determined by ASTM D698

² Dry density relative to the maximum dry density as determined by ASTM D698

³ Pipe bedding should be compacted to a minimum relative density of 65% in accordance with ASTM D4263 and D4254.

⁴ The Geotechnical Engineer shall determine whether backfill material exhibits a suitable Standard Proctor compaction curve and can be tested in accordance with ASTM D698. If the material does not exhibit a Standard Proctor compaction curve such as CDOT Fine Aggregate, we recommend material is compacted to a minimum relative density of 65% (ASTM D4253 and ASTM D4254).

Project specifications require the minimum testing frequency of placed fill. Lithos recommends testing each lift of placed material to determine if compaction specifications are achieved. Adequate moisture control and small lift thicknesses will substantially aid in achieving the desired compaction and shall be carefully controlled throughout fill placement. If fill materials visibly exceed moisture specifications, Lithos recommends reworking the materials until the desired moisture is obtained. Lithos can also be consulted to aid in the further defining testing specifications for placed fill materials.

Mechanical compaction is required for all materials placed as backfill during construction. Compaction of cohesive materials is best accomplished with equipment such as a jumping jack or padfoot roller. Non-cohesive soils are best compacted with a vibratory plate or vibratory smooth-drum roller. Compaction utilizing any flooding type technique should not be allowed. Care should be taken when compacting fill adjacent to structures. Generally, we recommend operating only light-weight compaction equipment such as jumping jacks and vibratory plates immediately adjacent to structures.

6.3 Bedrock or Oversized Material Excavation

Based on the subsurface investigation, bedrock at Site E and 74th was classified as claystone and sandstone and bedrock excavation is anticipated during proposed construction activities. Therefore, the use of heavy-duty excavation equipment is anticipated to be sufficient to excavate bedrock layers. It is likely excavations may be performed using a bucket with the correct teeth.

6.4 Construction Dewatering

Groundwater was encountered during the subsurface investigation. Temporary construction dewatering should be anticipated for the proposed construction at locations where excavations extend below groundwater. Generally, sump pumps to control minor groundwater seepage should be anticipated for the majority of the excavations. Trench drains, deep wells and well points may also be needed. Construction dewatering must adhere to the Colorado Department of Public Health and Environment (CDPHE) regulations and discharge permit requirements. Lithos is available to assist with dewatering

design if required. Dewatering should be carefully evaluated and accounted for in the construction estimate to avoid construction cost and time increases.

7 CONSTRUCTION OBSERVATION AND QUALITY ASSURANCE

Site observations during construction specifically to address the geotechnical and trenchless components of the Project by Lithos are recommended including, trenchless construction, trench and bedrock excavations, placement of pipe bedding, and backfill placement and compaction. Quality assurance of compaction and backfill materials are necessary to increase long-term performance of the proposed waterline. Lithos recommends that a qualified testing agency is retained during construction to monitor backfill materials and compaction. Lithos should be notified if unanticipated subsurface conditions are encountered during construction in order to re-evaluate and potentially change the design and/or construction recommendations presented in this report.

8 LIMITATIONS

This study was conducted in accordance with generally accepted geotechnical engineering and engineering geologic practices and principals; no warranty, express or implied is made. The subsurface conditions described in this report were based on data obtained from widely spaced exploratory borings, geotechnical laboratory testing, information provided by the client, engineering judgement, and our experience with similar subsurface conditions and projects. The boring logs presented in this report only depict the subsurface conditions at the actual boring locations. Subsurface conditions are typically variable, both laterally and vertically, and the nature and extent of the subsurface variations across the site may not become evident until construction. The boundaries between different soil types and bedrock presented in this report are approximate and, in some cases, may be more abrupt or gradational than described herein. Groundwater levels may vary with time, adjacent surface water levels, precipitation, and changes to the hydrogeological conditions at or surrounding the project site.

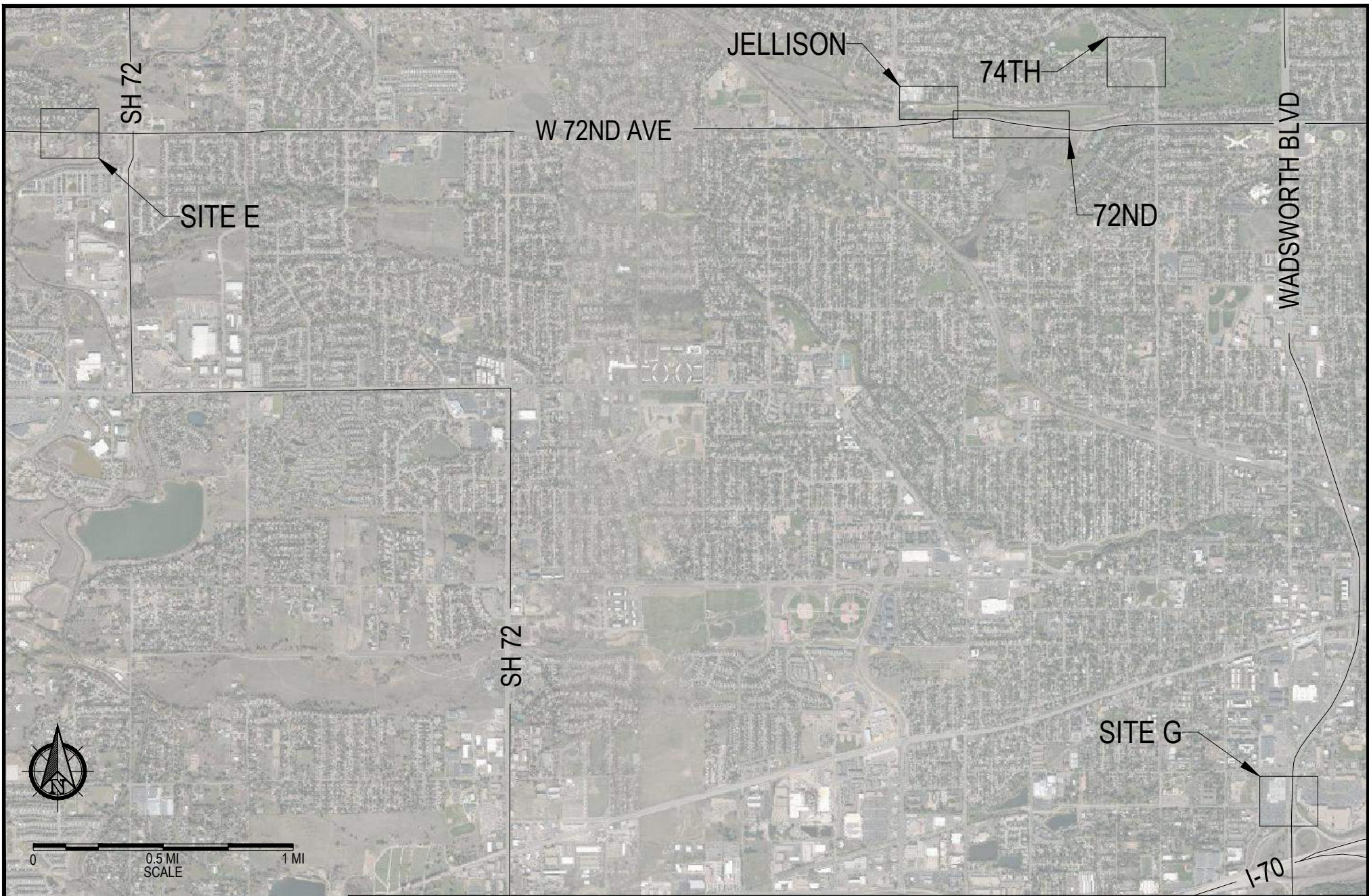
This report has been prepared exclusively for our client for design purposes for the subject project. Lithos Engineering is not responsible for technical interpretations by others of the data presented in this report or use of this report by others for the subject project or other projects. If differing site conditions are encountered during further evaluation of the subsurface conditions by others or during construction, Lithos Engineering should be notified immediately to determine if any changes to our recommendations presented in this report are warranted.

The recommendations presented in this report are only intended for the proposed design and construction as understood by Lithos Engineering at the time of issuing this report. If the proposed design and construction changes, Lithos Engineering should be notified immediately and given the opportunity to review the proposed changes and if necessary, modify our recommendations presented herein.

An environmental assessment was not included in Lithos Engineering scope of work for this project. Any statements regarding the absence or presence of hazardous and/or toxic substances presented herein are only intended for informational purposes. If the client is concerned about the environmental conditions at the site, Lithos Engineering recommends the client and/or owner retain a qualified environmental firm to conduct an environmental site assessment.

REFERENCES

- ASTM Standards, ASTM International, West Conshohocken, PA (2012).
- Bryant, Bruce, McGrew, L.W., and Wobus, R.A. (1981) *Geologic Map of the Denver 1° x 2° Quadrangle, North-Central Colorado*, USGS National Geologic Map Database.
- City of Arvada 2022 Engineering Code of Standards and Specifications Section 300: Soils and Earthwork
- City of Arvada 2022 Engineering Code of Standards and Specifications Section 700: Roadway and Parking Lot Design, Traffic Control Devices and Street Lighting
- Colorado Association of Geotechnical Engineers (1996), Guideline for Slab Performance Risk Evaluation and Residential Basement Floor System Recommendations.



LEGEND:

- MAJOR ROADWAYS
- PROJECT LOCATIONS

LITHOS
ENGINEERING
2750 S. WADSWORTH BLVD. SUITE D-200
DENVER, COLORADO 80227
303.625.9502

PROJECT
TITLE

2021 WATER MAIN
IMPROVEMENTS PROJECT

DRAWING
TITLE

SITE VICINITY MAP

OWNER



CLIENT



PROJECT NO.:

21210

DRAWN BY:

AW

LOCATION:

ARVADA, CO

DESIGNED BY:

JC

DATE:

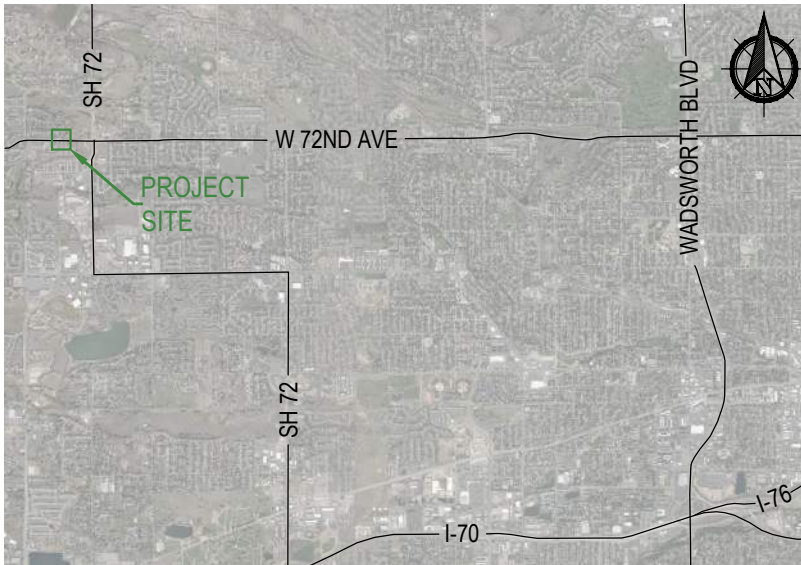
11/15/22

CHECKED BY:

RD

FIGURE NUMBER

1



LEGEND:

● BORING LOCATION

NOTE:

1. SEE CONTRACT DRAWINGS FOR OFFICIAL ALIGNMENT. BORING LOCATIONS FROM GEOTECHNICAL INVESTIGATION REPORT.

— · — SITE VICINITY MAP



0 50 FT SCALE 100 FT

— · — SITE INVESTIGATION MAP

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PROJECT
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2021 WATER MAIN
IMPROVEMENTS PROJECT

BORING LOCATION MAP
SITE E

OWNER
CITY OF ARVADA

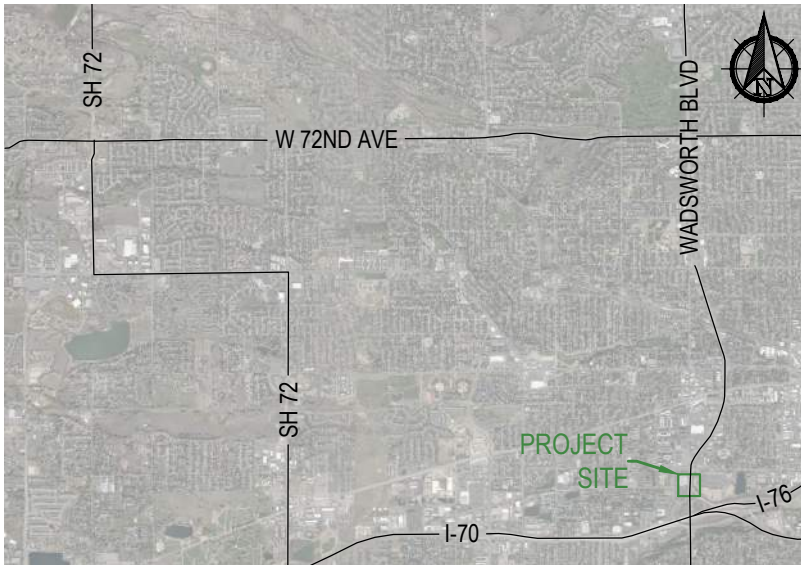
CLIENT
CDM Smith

PROJECT NO.: 21210
LOCATION: ARVADA, CO
DATE: 11/15/22

DRAWN BY: AW
DESIGNED BY: JC
CHECKED BY: RD

FIGURE NUMBER

2



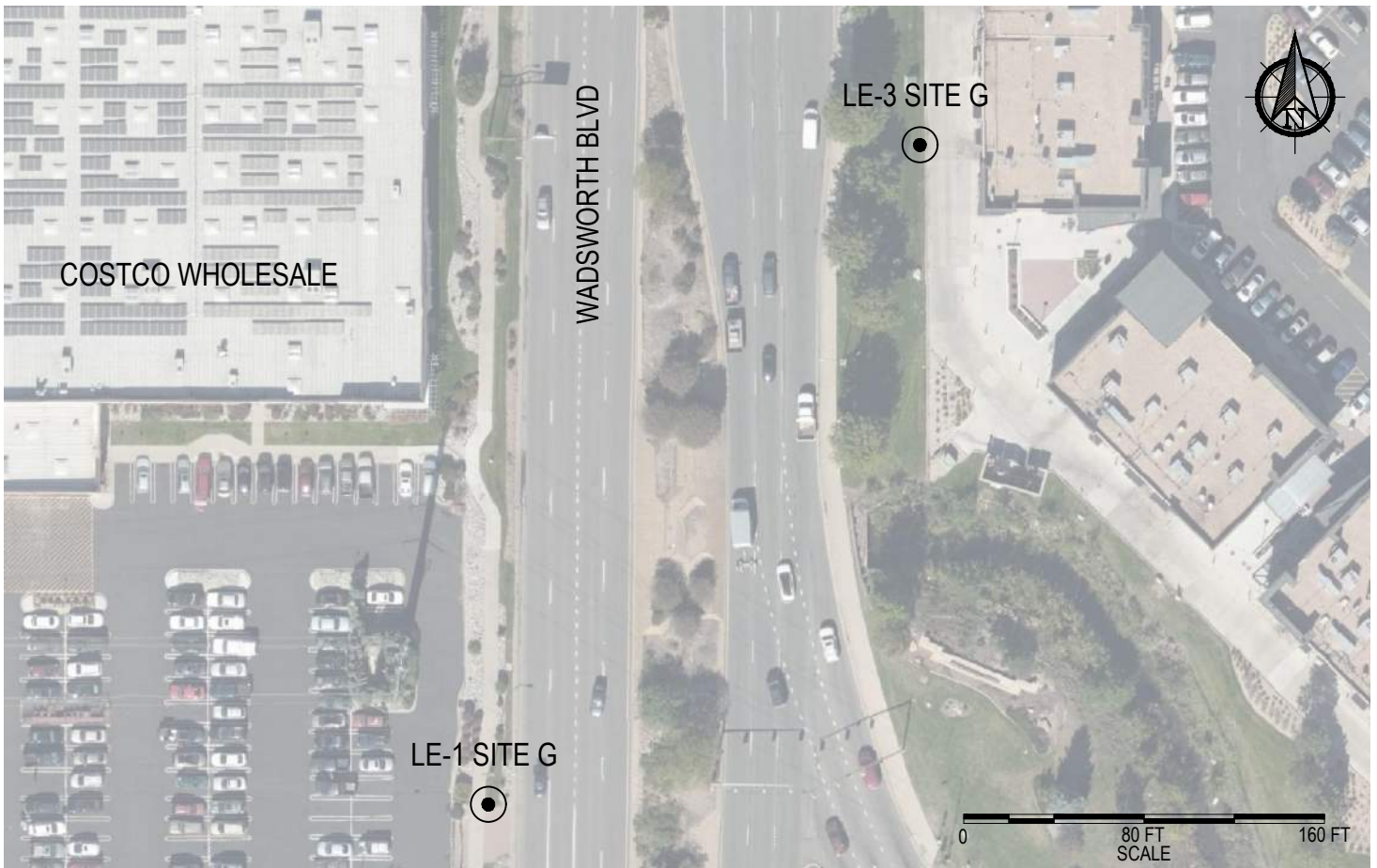

SITE VICINITY MAP

LEGEND:


BORING LOCATION

NOTE:

1. SEE CONTRACT DRAWINGS FOR OFFICIAL ALIGNMENT. BORING LOCATIONS FROM GEOTECHNICAL INVESTIGATION REPORT.




SITE INVESTIGATION MAP

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PROJECT
 TITLE
 DRAWING
 TITLE

2021 WATER MAIN
 IMPROVEMENTS PROJECT
 BORING LOCATION MAP
 SITE G

OWNER

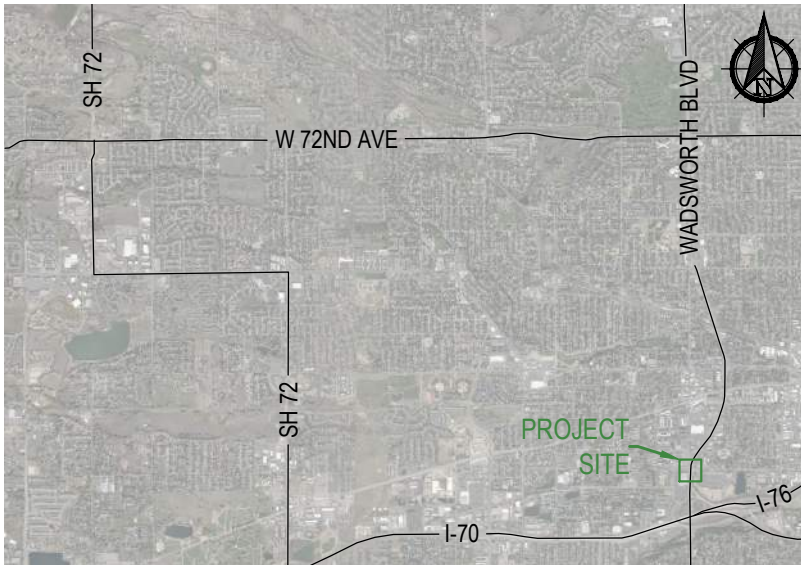

CLIENT


PROJECT NO.: 21210
 LOCATION: ARVADA, CO
 DATE: 11/15/22

DRAWN BY: AW
 DESIGNED BY: JC
 CHECKED BY: RD

FIGURE NUMBER

3



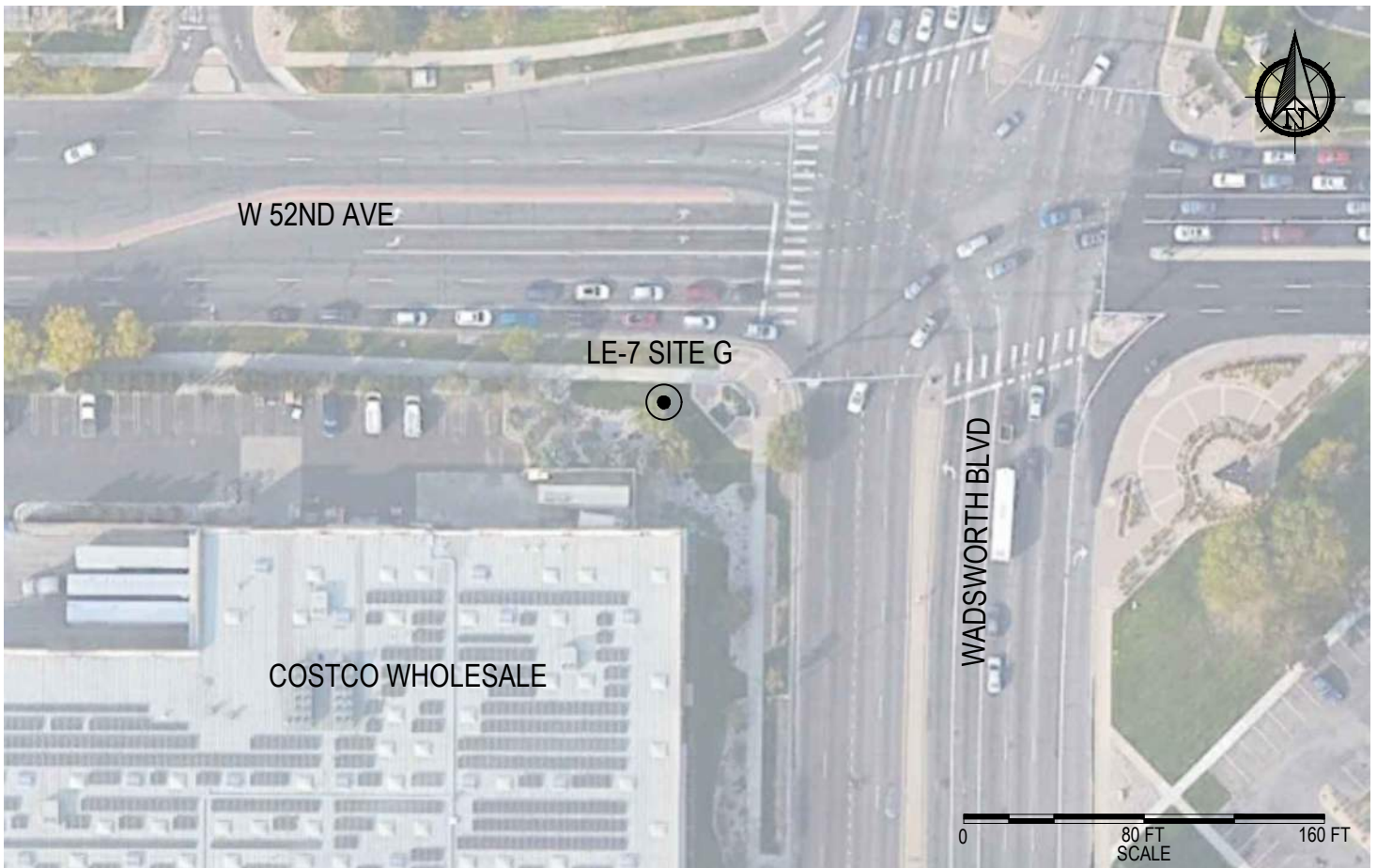

SITE VICINITY MAP

LEGEND:


BORING LOCATION

NOTE:

1. SEE CONTRACT DRAWINGS FOR OFFICIAL ALIGNMENT. BORING LOCATIONS FROM GEOTECHNICAL INVESTIGATION REPORT.




SITE INVESTIGATION MAP

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PROJECT
 TITLE
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 TITLE

2021 WATER MAIN
 IMPROVEMENTS PROJECT
 BORING LOCATION MAP
 SITE G

OWNER
 CITY OF
 ARVADA

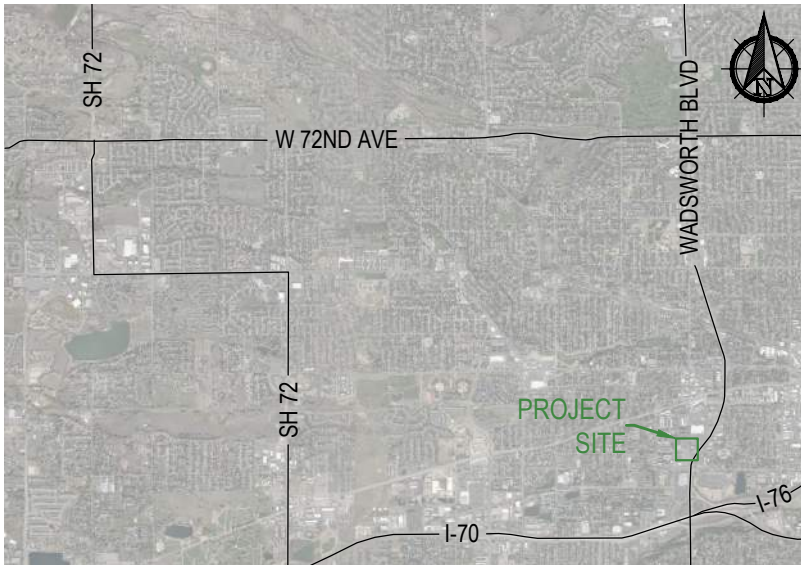
CLIENT
**CDM
 Smith**

FIGURE NUMBER

4

PROJECT NO.: 21210
 LOCATION: ARVADA, CO
 DATE: 01/31/23

DRAWN BY: AM
 DESIGNED BY: JC
 CHECKED BY: RD



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SITE VICINITY MAP

LEGEND:

● BORING LOCATION

NOTE:

1. SEE CONTRACT DRAWINGS FOR OFFICIAL ALIGNMENT. BORING LOCATIONS FROM GEOTECHNICAL INVESTIGATION REPORT.



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SITE INVESTIGATION MAP

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PROJECT
TITLE

DRAWING
TITLE

2021 WATER MAIN
IMPROVEMENTS PROJECT

BORING LOCATION MAP
SITE G

OWNER
CITY OF ARVADA

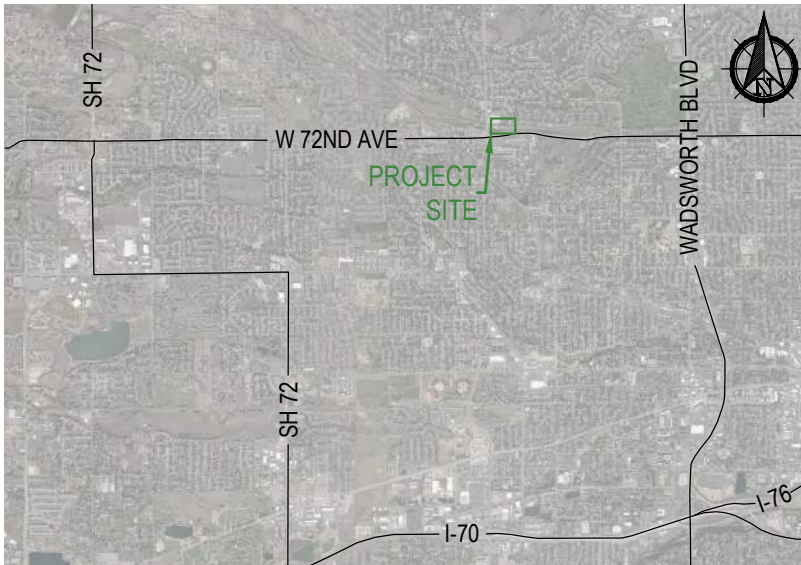
CLIENT
CDM Smith

PROJECT NO.: 21210
LOCATION: ARVADA, CO
DATE: 01/31/23

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DESIGNED BY: JC
CHECKED BY: RD

FIGURE NUMBER

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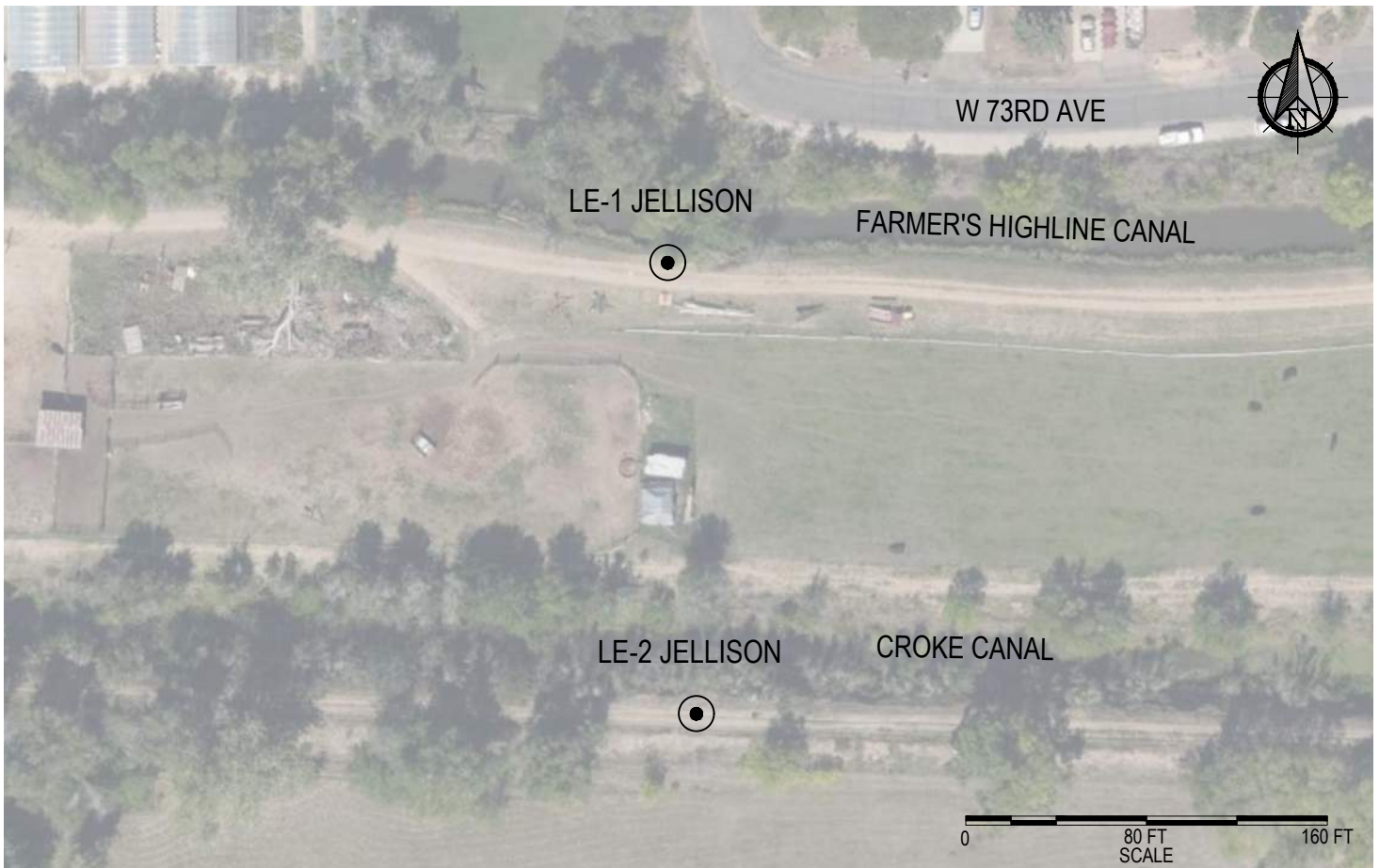
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● BORING LOCATION

NOTE:

1. SEE CONTRACT DRAWINGS FOR OFFICIAL ALIGNMENT. BORING LOCATIONS FROM GEOTECHNICAL INVESTIGATION REPORT.

-
- SITE VICINITY MAP



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- SITE INVESTIGATION MAP

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PROJECT
TITLE

2021 WATER MAIN
IMPROVEMENTS PROJECT

DRAWING
TITLE

BORING LOCATION MAP
JELLISON

OWNER

CITY OF
ARVADA

CLIENT

CDM
Smith

PROJECT NO.:

21210

DRAWN BY:

AW

LOCATION:

ARVADA, CO

DESIGNED BY:

JC

DATE:

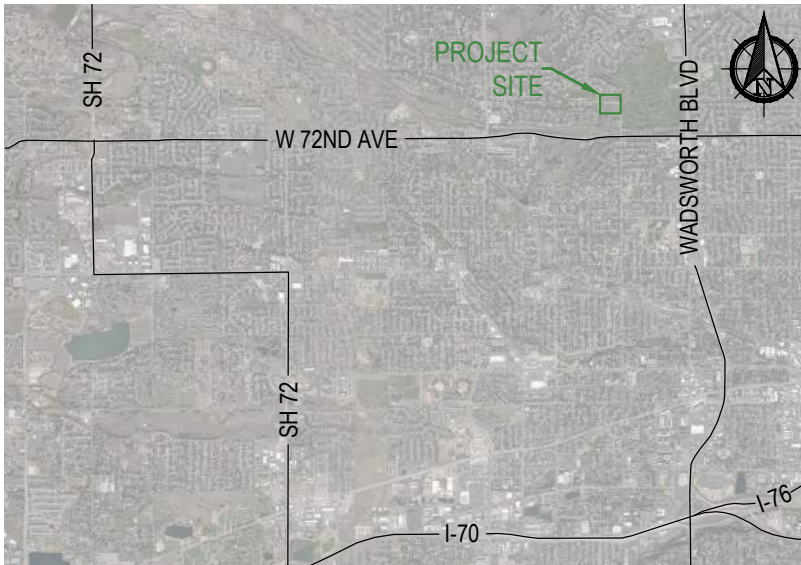
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6



LEGEND:

● BORING LOCATION

NOTE:

1. SEE CONTRACT DRAWINGS FOR OFFICIAL ALIGNMENT. BORING LOCATIONS FROM GEOTECHNICAL INVESTIGATION REPORT.

-
- SITE VICINITY MAP



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- SITE INVESTIGATION MAP

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DENVER, COLORADO 80227
303.625.9502

PROJECT
TITLE

DRAWING
TITLE

2021 WATER MAIN
IMPROVEMENTS PROJECT

BORING LOCATION MAP
74TH

OWNER
CITY OF
ARVADA

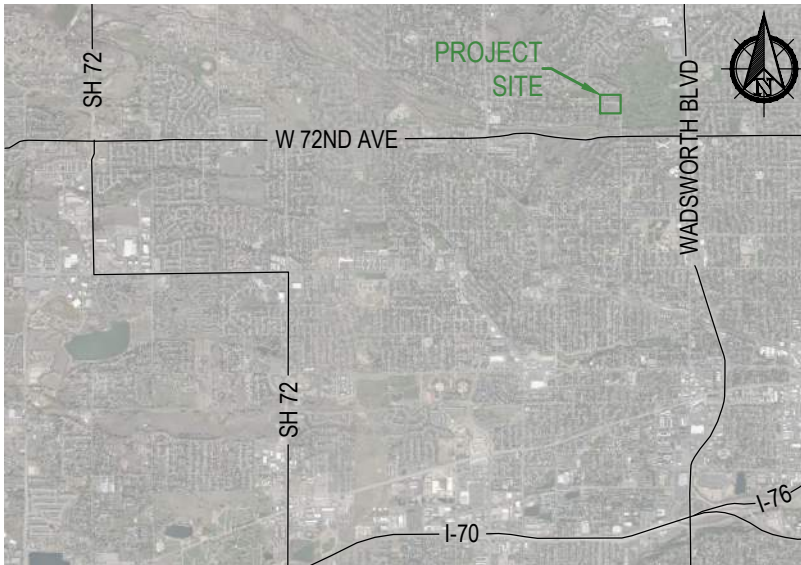
CLIENT
**CDM
Smith**

PROJECT NO.: 21210
LOCATION: ARVADA, CO
DATE: 11/15/22

DRAWN BY: AW
DESIGNED BY: JC
CHECKED BY: RD

FIGURE NUMBER

7



LEGEND:

● BORING LOCATION

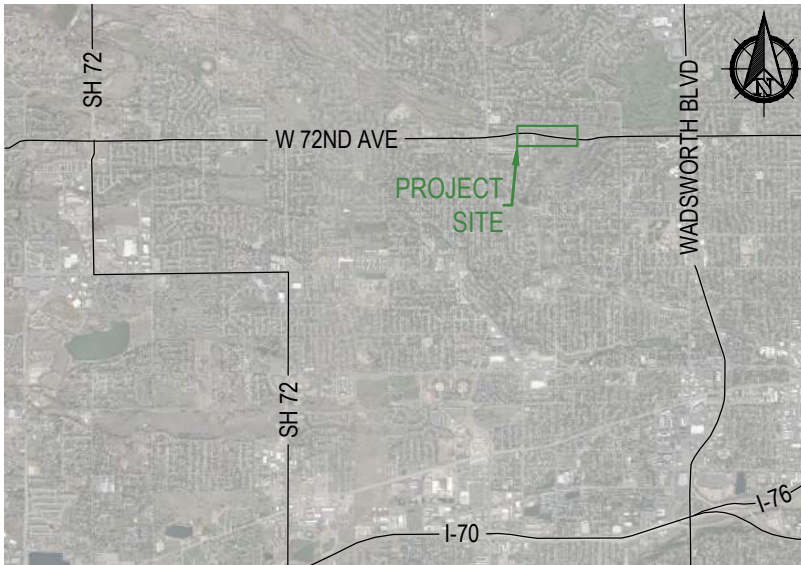
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1. SEE CONTRACT DRAWINGS FOR OFFICIAL ALIGNMENT. BORING LOCATIONS FROM GEOTECHNICAL INVESTIGATION REPORT.

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SITE VICINITY MAP



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SITE INVESTIGATION MAP



LEGEND:

● BORING LOCATION

NOTE:

1. SEE CONTRACT DRAWINGS FOR OFFICIAL ALIGNMENT. BORING LOCATIONS FROM GEOTECHNICAL INVESTIGATION REPORT.

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SITE VICINITY MAP



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SITE INVESTIGATION MAP

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PROJECT
TITLE

2021 WATER MAIN
IMPROVEMENTS PROJECT

DRAWING
TITLE

BORING LOCATION MAP
72ND

OWNER

CITY OF
ARVADA

CLIENT

CDM
Smith

PROJECT NO.:

21210

DRAWN BY:

AW

LOCATION:

ARVADA, CO

DESIGNED BY:

JC

DATE:

11/15/22

CHECKED BY:

RD

FIGURE NUMBER

9



APPENDIX A

Geotechnical Drilling Keys and Boring Logs

BORING LOG KEY

STANDARD GEOTECHNICAL DRILLING

Soil Classifications:

Clear Square Sieve Openings				U.S. Standard Series Sieve Sizes			
12"	3"	3/4"	4	10	40	200	
Boulders	Cobbles	Gravel		Sand			Silts and Clays
		Coarse	Fine	Coarse	Medium	Fine	
300mm	75mm	19mm	4.75mm	2.0mm	0.42mm	0.075mm	

Gradation Estimates by Field Observation	
Description	Quantity (%)
Trace	<5
Few	5 to 10
Little	15 to 25
Some	30 to 45
Mostly	> 50

Relative Density or Consistency of Non-cohesive and Cohesive Soils			
Non-cohesive Soils		Cohesive Soils	
Classification	Blows per 12 in	Classification	Blows per 12 in
Very Loose	0 to 4	Very Soft	0 to 2
Loose	5 to 10	Soft	3 to 4
Medium Dense	11-30	Medium Stiff	5 to 8
		Stiff	9 to 15
Dense	31 to 50	Very Stiff	16 to 30
Very Dense	>50	Hard	>30

Color: Sample colors are in general accordance with basic brown, red, yellow, and gray combinations

Description of Moisture	
Description	Criteria
Dry	Absence of moisture, dusty, dry to the touch
Moist	Damp but no visible water
Wet	Visible free water, usually soil below the groundwater table

Plasticity	
Description	Criteria
Nonplastic	A $\frac{1}{8}$ " diameter thread cannot be rolled
Low	A $\frac{1}{8}$ " in diameter thread can be rolled with difficulty; a lump cannot be formed at a moisture lower than the plastic limit
Medium	A $\frac{1}{8}$ " in diameter thread can be rolled easily; a crumbly lump can be formed at a moisture lower than the plastic limit
High	A $\frac{1}{8}$ " in diameter thread can be rolled very easily; a lump can be formed at a moisture lower than the plastic limit

Description of Odor	
Description	Criteria
No Organic Odor	Organic odor is not present
Trace Organic Odor	Mild organic odor; mixture of soil and organics
Strong Organic Odor	Prominent organic odor; sample is primarily organic

Cementation	
Description	Criteria
Weak	Crumbles with light finger pressure
Moderate	Crumbles with considerable finger pressure
Strong	Will not crumble with finger pressure

Rock Descriptions:

Weathering	
Description	Criteria
Fresh	No visible sign of rock material weathering; perhaps slight discoloration on major discontinuity surfaces.
Slightly Weathered	Discoloration of rock material on discontinuity surfaces.
Moderately Weathered	Less than half of the rock material is decomposed and/or disintegrated to soil. Fresh or discolored rock is present either as a continuous framework or as corestones.
Highly Weathered	More than half of the rock material is decomposed and/or disintegrated to a soil. Fresh or discolored rock is present either as a discontinuous framework or as corestones
Completely Weathered	All rock material is decomposed and/or disintegrated to soil. The original mass structure is still largely intact.

Texture	
Description	Criteria
Very Fine Grained	Grains not individually visible to the unaided eye
Fine Grained	Grains barely visible to the unaided eye, up to $\frac{1}{16}$ " diameter
Medium Grained	Grain diameter between $\frac{1}{16}$ " and $\frac{3}{16}$ "
Coarse Grained	Grains diameter between $\frac{3}{16}$ " and $\frac{1}{4}$ "
Very Coarse Grained	Grains larger than $\frac{1}{4}$ " in diameter

Field Hardness	
Description	Criteria
Very Hard	Cannot be scratched with a knife or sharp pick.
Hard	Can be scratched with a knife or pick only with difficulty
Medium	Can be gouged $\frac{1}{16}$ " deep by firm pressure on knife or pick point
Soft	Can be grooved or gouged readily with knife or pick point
Very Soft	Can be carved with knife and scratched readily by fingernail

Geologic Interpretation:

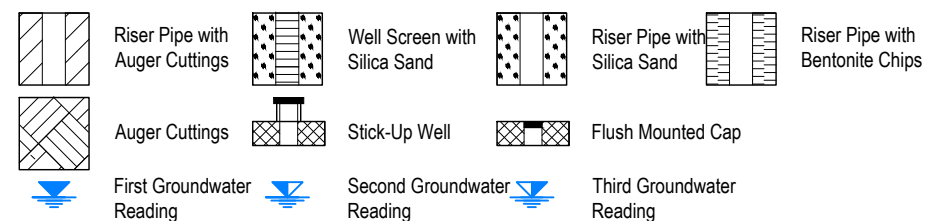
A **Geologic Interpretation** of encountered soil and bedrock units is provided for each specific **Visual Material Description**. Examples of geologic interpretations for soil that may be presented include: FILL, ALLUVIUM, AEOLIAN, AND GLACIAL TILL, AND RESIDUUM. Rock geologic interpretations are referenced based on a combination of field classifications and applicable geologic maps.

Sample Graphics and Descriptions:

-  California Barrel Sampler: Barrel sampler loaded with sample liners and driven to collect a relatively representative and intact specimen of soil or weak rock.
-  Split-Spoon Sampler: Split-barrel sampler driven in accordance with ASTM D1586 used to provide visual material descriptions and collect a disturbed specimen.
-  Shelby Tube Sampler: Thin wall tube hydraulically pushed into the subsurface to collect a representative and intact specimen of soil.
-  Bulk Sample: Bulk or bagged sample taken from auger cuttings.

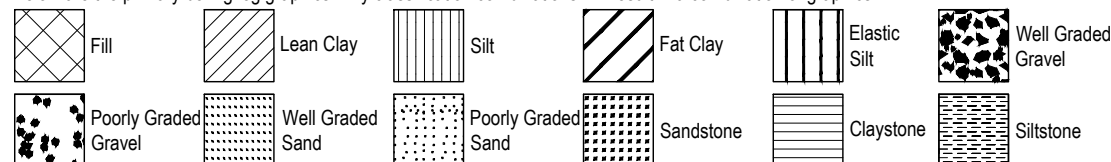
 Continuous Sampler: A 5-foot long sampler barrel that is driven to collect a continuous 5-foot run of cohesive and non-cohesive soil.

Groundwater Monitoring Well Graphics:



Boring Graphics:

Below are the primary boring log graphics. Any classification combinations will result in a combination of graphics.



BORING: LE-1 Site E

Project Name: Arvada Waterline
 Project Number: 21210
 Client's Name: CDM Smith
 Owner's Name: City of Arvada
 Drilling Subcontractor: _____
 Lithos Representative: A Warren
 Date(s) of Drilling: 5/19/22

Drilling and Sampling Methods

Drill Make and Model: CME 55/300 Track
 Drilling Method: Hollow Stem Auger
 Bit Type: Cutting Head
 Casing Description: N/A
 Hammer Weight (lbs)/Fall (in): 140lbs/30in
 Sampler Type(s): Split Spoon, Mod Cal
 Sampler Diameter(s): 1.4", 2.0"



Boring Location: 39.8271169, -105.1695972
 Boring Elevation: 5587'
 Notes: Location and elevation from Google Earth

Sampling Data						Geologic Graphic	Visual Material Description	Groundwater Depth / Monitoring Well Configuration	Laboratory Testing Results														
Depth (ft)	Elevation (ft)	Sample Identification	Blow Count/6 in	Recovery (in) / RQD (%)	Drilling Rate (min./ft.)				In-Situ States			INDEX DATA				Strength & Compressibility							
									Moisture Content (%)	Dry Unit Weight (pcf)	Water Soluble Sulfates (%)	Gravel Content (%)	Sand Content (%)	Fines Content (%)	Liquid Limit (%)	Plasticity Index (%)	UCS (psf)	Swell Pressure (psf)	Swell Percent (%)				
0	5586						FINE ALLUVIUM Asphalt base course Lean clay with sand cuttings																
6	5580		3 4 8	2			ARAPAHOE FORMATION Claystone, soft, slightly weathered, olive to gray, black organics As above except olive, few fine sand, iron oxidation, calcareous, no black organics As above except slightly to highly weathered, black organics, not calcareous			13.3	113.5							5,348					
12	5574		7 13	8			Sandstone, soft, slightly to highly weathered, olive to yellowish brown, mostly fine sand, some clay, iron oxidation, black organics As above																
18	5568		12 25	10			As above except slightly weathered			11.3	116.2												
24	5562		19 36	8			As above										38.1						
30	5556		50/6	8			As above																
36	5550		50/5	6			As above																
							END OF EXPLORATION																

General Notes:

- 1) Soil classifications are in general accordance with ASTM D2487 Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)
- 2) The maximum particle size identified in the material description is dependent on sampler dimensions.
- 3) Additional information is provided on the Boring Log Key.
- 4) Groundwater measurements for monitoring wells present water levels at the time of drilling, highest level, and lowest level. Refer to the respective report for a complete history of groundwater values.

Groundwater Data:		
Date:	Elapsed Time:	Depth to Groundwater:
5/19/22	0hr	20 feet

BORING: LE-2 Site E Project Name: Arvada Waterline Project Number: 21210 Client's Name: CDM Smith Owner's Name: City of Arvada Drilling Subcontractor: Lithos Representative: A Warren Date(s) of Drilling: 5/19/22						Drilling and Sampling Methods Drill Make and Model: CME 55/300 Track Drilling Method: Hollow Stem Auger Bit Type: Cutting Head Casing Description: N/A Hammer Weight (lbs)/Fall (in): 140lbs/30in Sampler Type(s): Split Spoon, Mod Cal Sampler Diameter(s): 1.4", 2.0"						LITHOSENGINEERING Boring Location: 39.8270726, -105.1693343 Boring Elevation: 5579' Notes: Location and elevation from Google Earth											
Sampling Data						Visual Material Description						Laboratory Testing Results											
Depth (ft)	Elevation (ft)	Sample Identification	Blow Count/6 in	Recovery (in) / RQD (%)	Drilling Rate (min./ft.)	Geologic Graphic	Soil: -GEOLOGIC INTERPRETATION- USCS Classification (group symbol), particle sizes, density or consistency, color, moisture, odor, other descriptions Rock: -GEOLOGIC INTERPRETATION- Bedrock Classification, hardness, weather, color, texture, joint size, other descriptions						Groundwater Depth / Monitoring Well Configuration	In-Situ States		INDEX DATA				Strength & Compressibility			
							Moisture Content (%)	Dry Unit Weight (pcf)	Water Soluble Sulfates (%)	Gravel Content (%)	Sand Content (%)	Fines Content (%)		Liquid Limit (%)	Plasticity Index (%)	UCS (psf)	Swell Pressure (psf)	Swell Percent (%)					
0							FINE ALLUVIUM Lean clay with sand cuttings																
5574			6	6			5.0 ft.-																
6			4	12			ARAPAHOE FORMATION Claystone, soft, slightly weathered, olive, mostly clay, some fine to medium sand, little fine and coarse gravel up to 1" in matrix, iron oxidation, calcareous As above except pale olive, trace gravel up to 1" in matrix																
5568			7	4			As above except slightly to highly weathered, trace fine sand						15.6	107.9			46	19					
12			5	14			Claystone, soft, slightly weathered, olive, little fine sand interbedded, iron oxidation, black organics																
5562			17	6			As above except slightly to highly weathered, pale olive to olive, trace sand, no black organics																
18			19	6			Sandstone, soft, slightly to highly weathered, pale olive to olive, mostly fine sand, some clay, iron oxidation						14.0	113.8					9,503				
5556			20	10			As above																
24			50/6	8			As above except slightly weathered, pale olive																
5550			50/4	6			As above except few interbedded lignite																
5544							END OF EXPLORATION																
30							30.5 ft.-																
36																							

General Notes:

1) Soil classifications are in general accordance with ASTM D2487 Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)

2) The maximum particle size identified in the material description is dependent on sampler dimensions.

3) Additional information is provided on the Boring Log Key.

4) Groundwater measurements for monitoring wells present water levels at the time of drilling, highest level, and lowest level. Refer to the respective report for a complete history of groundwater values.

Groundwater Data:

Date: 5/19/22

Elapsed Time: 0hr

Depth to Groundwater: DNE

BORING: LE-1 Site G

Project Name: Arvada Waterline
 Project Number: 21210
 Client's Name: CDM Smith
 Owner's Name: City of Arvada
 Drilling Subcontractor: _____
 Lithos Representative: A Warren
 Date(s) of Drilling: 6/20/22

Drilling and Sampling Methods

Drill Make and Model: CME 55 Track
 Drilling Method: SSA/HSA
 Bit Type: Cutting Head
 Casing Description: N/A
 Hammer Weight (lbs)/Fall (in): 140lbs/30in
 Sampler Type(s): Split Spoon, Mod Cal
 Sampler Diameter(s): 1.4", 2.0"



Boring Location: 39.7890415, -105.0816948
 Boring Elevation: 5310'
 Notes: Location and elevation from Google Earth

Sampling Data						Visual Material Description	Groundwater Depth / Monitoring Well Configuration	Laboratory Testing Results														
Depth (ft)	Elevation (ft)	Sample Identification	Blow Count/6 in	Recovery (in) / RQD (%)	Drilling Rate (min./ft.)			Geologic Graphic	In-Situ States			INDEX DATA				Strength & Compressibility						
									Moisture Content (%)	Dry Unit Weight (pcf)	Water Soluble Sulfates (%)	Gravel Content (%)	Sand Content (%)	Fines Content (%)	Liquid Limit (%)	Plasticity Index (%)	UCS (psf)	Swell Pressure (psf)	Swell Percent (%)			
0	5310						FILL Lean clay with sand cuttings, dark brown															
6	5304		5 9	8			COARSE ALLUVIUM Clayey SAND (SC), mostly fine to coarse sand, some clay, little fine to coarse gravel up to 1", medium dense, olive to yellowish brown, moist		16.7	105.4			30.7	28	9							
12	5298	 	20 15 12 25 24	14 10			As above except few fine gravel, olive, slightly plastic Poorly-graded SAND with gravel (SP), mostly coarse sand, some fine to coarse gravel up to 2", trace fines, medium dense, olive, wet Well-graded SAND with gravel and clay (SW-SC), mostly fine to coarse sand, some fine to coarse gravel up to 2.5", few fines, dense, olive to olive yellow, wet As above except some fine to coarse gravel up 2", trace fines, very dense, olive Driller switched to Hollow Stem Auger	(10-0.0) 														
18	5292	 	8 24 8 27 30	8 18			DENVER FORMATION Claystone, soft, slightly weathered, dark gray, few fine sand As above															
24	5286		19 43	10			As above, wet		15.9	117.5									10,237			
30	5280		50/2	3			As above															
36	5274						END OF EXPLORATION															

General Notes:

- 1) Soil classifications are in general accordance with ASTM D2487 Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)
- 2) The maximum particle size identified in the material description is dependent on sampler dimensions.
- 3) Additional information is provided on the Boring Log Key.
- 4) Groundwater measurements for monitoring wells present water levels at the time of drilling, highest level, and lowest level. Refer to the respective report for a complete history of groundwater values.

Groundwater Data:		
Date:	Elapsed Time:	Depth to Groundwater:
6/20/22	0hr	10-feet

BORING: LE-3 Site G

Project Name: Arvada Waterline
 Project Number: 21210
 Client's Name: CDM Smith
 Owner's Name: City of Arvada
 Drilling Subcontractor: _____
 Lithos Representative: A Warren
 Date(s) of Drilling: 5/26/22

Drilling and Sampling Methods

Drill Make and Model: CME 75
 Drilling Method: SSA/HSA
 Bit Type: Cutting Head
 Casing Description: N/A
 Hammer Weight (lbs)/Fall (in): 140lbs/30in
 Sampler Type(s): Split Spoon, Mod Cal
 Sampler Diameter(s): 1.4", 2.0"



Boring Location: 39.789839, -105.081014
 Boring Elevation: 5309'
 Notes: Location and elevation from Google Earth

Sampling Data						Geologic Graphic	Visual Material Description	Groundwater Depth / Monitoring Well Configuration	Laboratory Testing Results																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
Depth (ft)	Elevation (ft)	Sample Identification	Blow Count/6 in	Recovery (in) / RQD (%)	Drilling Rate (min./ft.)				In-Situ States			INDEX DATA				Strength & Compressibility																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
									Moisture Content (%)	Dry Unit Weight (pcf)	Water Soluble Sulfates (%)	Gravel Content (%)	Sand Content (%)	Fines Content (%)	Liquid Limit (%)	Plasticity Index (%)	UCS (psf)	Swell Pressure (psf)	Swell Percent (%)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
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General Notes:

- Soil classifications are in general accordance with ASTM D2487 Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)
- The maximum particle size identified in the material description is dependent on sampler dimensions.
- Additional information is provided on the Boring Log Key.
- Groundwater measurements for monitoring wells present water levels at the time of drilling, highest level, and lowest level. Refer to the respective report for a complete history of groundwater values.

Groundwater Data:		
Date:	Elapsed Time:	Depth to Groundwater:
5/26/22	0hr	8.9 feet

Groundwater Data:		
Date:	Elapsed Time:	Depth to Groundwater:

BORING: LE-Site G-B6 Project Name: <u>Arvada Waterlines</u> Project Number: <u>21210</u> Client's Name: <u>CDM Smith</u> Owner's Name: <u>City of Arvada</u> Drilling Subcontractor: <u>Vine Laboratories, LLC</u> Lithos Representative: <u>Adam M</u> Date(s) of Drilling: <u>01/26/2023</u>						Drilling and Sampling Methods Drill Make and Model: <u>CME 55 Truck Mounted</u> Drilling Method: <u>Solid Stem Auger</u> Bit Type: <u>Auger Cutting Head</u> Casing Description: <u>N/A</u> Hammer Weight (lbs)/Fall (in): <u>140 lbs. / 30 in.</u> Sampler Type(s): <u>Split Spoon, Mod Cal</u> Sampler Diameter(s): <u>1.4", 2.0"</u>						LITHOS ENGINEERING Boring Location: <u>39.7930, -105.0814</u> Boring Elevation: <u>5314</u> Notes: <u>Location from Google Earth, Elevation from USGS 3D Elevation Program</u>							
Sampling Data						Visual Material Description						Laboratory Testing Results							
Depth (ft)	Elevation (ft)	Sample Identification	Blow Count/6 in	Recovery (in) / RQD (%)	Drilling Rate (min./ft.)	Geologic Graphic	Soil:		Rock:		Groundwater Depth / Monitoring Well Configuration	In-Situ States		INDEX DATA				Strength & Compressibility	
							-GEOLOGIC INTERPRETATION-		-GEOLOGIC INTERPRETATION-			Moisture Content (%)	Dry Unit Weight (pcf)	Water Soluble Sulfates (%)	Gravel Content (%)	Sand Content (%)	Fines Content (%)	Liquid Limit (%)	Plasticity Index (%)
0							COARSE ALLUVIUM												
5	5310		9 9 13	18			Poorly graded SAND with clay and gravel (SP-SC), medium dense, greenish black to dark brown, dry												
10	5305		22 25	12			As above except dense, dark brown to olive brown												
15	5300		22 24 26	18			Poorly graded SAND (SP) with gravel, very dense, olive, dry												
16.5							END OF EXPLORATION												
20	5295																		
25	5290																		
30	5285																		

General Notes:

1) Soil classificaitons are in general accordance with ASTM D2487

2) The maximum particle size identified in the material description is dependent on sampler dimensions.

3) Additional information is provided on the Boring Log Key.

4) Groundwater measurements for monitoring wells present water levels at the time of drilling, highest level, and lowest level. Refer to the respective report for a complete history of groundwater values.

Groundwater Data:

Date:

Elapsed Time:

Depth to Groundwater:

BORING: LE-Site G-B7 Project Name: Arvada Waterlines Project Number: 21210 Client's Name: CDM Smith Owner's Name: City of Arvada Drilling Subcontractor: Vine Laboratories, LLC Lithos Representative: Adam M Date(s) of Drilling: 01/26/2023					Drilling and Sampling Methods Drill Make and Model: CME 55 Truck Mounted Drilling Method: Solid Stem Auger Bit Type: Auger Cutting Head Casing Description: N/A Hammer Weight (lbs)/Fall (in): 140 lbs. / 30 in. Sampler Type(s): Split Spoon, Mod Cal Sampler Diameter(s): 1.4", 2.0"					LITHOSENGINEERING Boring Location: 39.7910, -105.0818 Boring Elevation: 5310 Notes: Location from Google Earth, Elevation from USGS 3D Elevation Program						
Sampling Data					Visual Material Description					Laboratory Testing Results						
Depth (ft)	Elevation (ft)	Sample Identification	Blow Count/6 in	Recovery (in) / RQD (%)	Drilling Rate (min./ft.)	Geologic Graphic	Soil:		Groundwater Depth / Monitoring Well Configuration	In-Situ States		INDEX DATA			Strength & Compressibility	
							-GEOLOGIC INTERPRETATION-			Moisture Content (%)	Dry Unit Weight (pcf)	Water Soluble Sulfates (%)	Gravel Content (%)	Sand Content (%)	Fines Content (%)	Liquid Limit (%)
USCS Classification (group symbol), particle sizes, density or consistency, color, moisture, odor, other descriptions																
Rock:		Bedrock Classification, hardness, weather, color, texture, joint size, other descriptions														
-GEOLOGIC INTERPRETATION-																
COARSE ALLUVIUM																
Poorly graded SAND with clay and gravel (SP-SC), loose, dark brown, dry																
Well graded SAND (SW) with gravel and trace clay, medium dense, olive to dark brown, dry																
As above except very dense, wet. Bottom 3" is angular quartz gravel 1/4" to 1/2" diameter. Max gravel size is 2" diameter																
Poorly graded GRAVEL (GP) with sand, dense, olive gray, wet																
Poorly graded SAND (SP) with gravel, very desne, pale olive, wet, gravel up to 2" diameter																
END OF EXPLORATION																
General Notes:					Groundwater Data:											
1) Soil classificaitons are in general accordance with ASTM D2487					Date: 01/26											
2) The maximum particle size identified in the material description is dependent on sampler dimensions.					Elapsed Time: 0 hr											
3) Additional information is provided on the Boring Log Key.					Depth to Groundwater: 9.4'											
4) Groundwater measurements for monitoring wells present water levels at the time of drilling, highest level, and lowest level. Refer to the respective report for a complete history of groundwater values.																

BORING: LE-1 Jellison

Project Name: Arvada Waterline
 Project Number: 21210
 Client's Name: CDM Smith
 Owner's Name: City of Arvada
 Drilling Subcontractor: _____
 Lithos Representative: A Warren
 Date(s) of Drilling: 5/27/22

Drilling and Sampling Methods

Drill Make and Model: CME 55
 Drilling Method: Hollow Stem Auger
 Bit Type: Cutting Head
 Casing Description: N/A
 Hammer Weight (lbs)/Fall (in): 140lbs/30in
 Sampler Type(s): Split Spoon, Mod Cal
 Sampler Diameter(s): 1.4", 2.0"



Boring Location: 39.828381, -105.107281

Boring Elevation: 5560'

Notes: Location and elevation from Google Earth

Sampling Data						Visual Material Description	Groundwater Depth / Monitoring Well Configuration	Laboratory Testing Results												
Depth (ft)	Elevation (ft)	Sample Identification	Blow Count/6 in	Recovery (in) / RQD (%)	Drilling Rate (min./ft.)			Geologic Graphic	In-Situ States		INDEX DATA					Strength & Compressibility				
									Moisture Content (%)	Dry Unit Weight (pcf)	Water Soluble Sulfates (%)	Gravel Content (%)	Sand Content (%)	Fines Content (%)	Liquid Limit (%)	Plasticity Index (%)	UCS (psf)	Swell Pressure (psf)	Swell Percent (%)	
0							Soil: -GEOLOGIC INTERPRETATION- USCS Classification (group symbol), particle sizes, density or consistency, color, moisture, odor, other descriptions Rock: -GEOLOGIC INTERPRETATION- Bedrock Classification, hardness, weather, color, texture, joint size, other descriptions													
5556							COARSE ALLUVIUM													
6			4 3 5	2			Clayey SAND (SC), mostly fine sand, some clay, loose, olive to brown, slightly moist, roots													
			3 3 4	8			As above except thin interbeds of medium sand, olive, medium plasticity	18.5					42.7							
5550			2 3 3	13			FINE ALLUVIUM Sandy LEAN CLAY (CL), mostly clay, some fine to medium sand, medium stiff, olive, moist, medium plasticity As above except soft													
12			2 2 2	18																
5544			2 2 3	18			As above except medium stiff, some iron oxidation in sampler shoe						53.4							
18			2 2 3	18			LEAN CLAY with sand (CL), mostly clay, little fine sand, medium stiff, olive, wet, black organics, medium plasticity													
			3 4	12			As above	22.3	101.6				30	14	1,125					
5538																				
24			5 7 9	18			As above except calcareous													
5532																				
30			9 13	6			ARAPAHOE FORMATION Claystone, soft, slightly to highly weathered, olive, black organics, iron oxidation													
5526							END OF EXPLORATION													
36																				

General Notes:

- Soil classifications are in general accordance with ASTM D2487 Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)
- The maximum particle size identified in the material description is dependent on sampler dimensions.
- Additional information is provided on the Boring Log Key.
- Groundwater measurements for monitoring wells present water levels at the time of drilling, highest level, and lowest level. Refer to the respective report for a complete history of groundwater values.

Groundwater Data:		
Date:	Elapsed Time:	Depth to Groundwater:
5/27/22	0hr	17.9 feet

BORING: LE-2 Jellison

Project Name: Arvada Waterline
 Project Number: 21210
 Client's Name: CDM Smith
 Owner's Name: City of Arvada
 Drilling Subcontractor: _____
 Lithos Representative: A Warren
 Date(s) of Drilling: 5/27/22

Drilling and Sampling Methods

Drill Make and Model: CME 55
 Drilling Method: Solid Stem Auger
 Bit Type: Cutting Head
 Casing Description: N/A
 Hammer Weight (lbs)/Fall (in): 140lbs/30in
 Sampler Type(s): Split Spoon, Mod Cal
 Sampler Diameter(s): 1.4", 2.0"



Boring Location: 39.827839, -105.107244

Boring Elevation: 5548'

Notes: Location and elevation from Google Earth

Sampling Data						Visual Material Description		Groundwater Depth / Monitoring Well Configuration	Laboratory Testing Results											
Depth (ft)	Elevation (ft)	Sample Identification	Blow Count/6 in	Recovery (in) / RQD (%)	Drilling Rate (min./ft.)				Geologic Graphic	In-Situ States			INDEX DATA				Strength & Compressibility			
										Moisture Content (%)	Dry Unit Weight (pcf)	Water Soluble Sulfates (%)	Gravel Content (%)	Sand Content (%)	Fines Content (%)	Liquid Limit (%)	Plasticity Index (%)	UCS (psf)	Swell Pressure (psf)	Swell Percent (%)
0							Soil: -GEOLOGIC INTERPRETATION- USCS Classification (group symbol), particle sizes, density or consistency, color, moisture, odor, other descriptions Rock: -GEOLOGIC INTERPRETATION- Bedrock Classification, hardness, weather, color, texture, joint size, other descriptions													
5544							COARSE ALLUVIUM													
6			6 6 6	5			Clayey SAND (SC), mostly fine sand, some clay, medium dense, olive, dry, calcareous, plant material													
			4 4 5	12			As above except brown, small roots, black organics							46.7						
5538			4 5 8	4			FINE ALLUVIUM	10.0 ft.												
12			4 5 5	14			LEAN CLAY with sand (CL), mostly clay, little fine sand, stiff, olive to olive yellow, slightly moist, calcareous As above except olive													
5532			3 4	10			As above except medium stiff	(16.7 ft.) 	18.3	100.8										
18			2 2 2	18			As above except soft, iron oxidation, medium plasticity													
			2 2 3	18			As above except medium stiff, wet, no iron oxidation	(20.0 ft.) 												
5526																				
24			2 3 2	15			Sandy LEAN CLAY (CL), mostly clay, some fine sand, medium stiff, olive, wet						59.4	32	11					
5520																				
30			5 7 10	18			As above except very stiff													
5514							END OF EXPLORATION	31.5 ft.												
36																				

General Notes:

- Soil classifications are in general accordance with ASTM D2487 Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)
- The maximum particle size identified in the material description is dependent on sampler dimensions.
- Additional information is provided on the Boring Log Key.
- Groundwater measurements for monitoring wells present water levels at the time of drilling, highest level, and lowest level. Refer to the respective report for a complete history of groundwater values.

Groundwater Data:		Date:		Elapsed Time:		Depth to Groundwater:	
		5/27/22	0hr			20 feet	
		5/27/22	30min			16.7 feet	

BORING: LE-1 74th

Project Name: Arvada Waterline
 Project Number: 21210
 Client's Name: CDM Smith
 Owner's Name: City of Arvada
 Drilling Subcontractor: _____
 Lithos Representative: A Warren
 Date(s) of Drilling: 5/27/22

Drilling and Sampling Methods

Drill Make and Model: CME 55
 Drilling Method: Hollow Stem Auger
 Bit Type: Cutting Head
 Casing Description: N/A
 Hammer Weight (lbs)/Fall (in): 140lbs/30in
 Sampler Type(s): Split Spoon, Mod Cal
 Sampler Diameter(s): 1.4", 2.0"



Boring Location: 39.8310913, -105.0922403
 Boring Elevation: 5559'
 Notes: Location and elevation from Google Earth

Sampling Data						Geologic Graphic	Visual Material Description	Groundwater Depth / Monitoring Well Configuration	Laboratory Testing Results																
Depth (ft)	Elevation (ft)	Sample Identification	Blow Count/6 in	Recovery (in) / RQD (%)	Drilling Rate (min./ft.)				In-Situ States			INDEX DATA				Strength & Compressibility									
									Moisture Content (%)	Dry Unit Weight (pcf)	Water Soluble Sulfates (%)	Gravel Content (%)	Sand Content (%)	Fines Content (%)	Liquid Limit (%)	Plasticity Index (%)	UCS (psf)	Swell Pressure (psf)	Swell Percent (%)						
0																									
5.556																									
6			5 4 3	6																					
			3 2 2	15																					
5.550			3 4 6	18																					
12			3 6 7	16																					
5.544			10 13	10																					
			10 30	8																					
18			13 24	8																					
5.538			50/9	6																					
24			50/10	8																					
5.532																									
30																									
5.526																									
36																									

General Notes:

- 1) Soil classifications are in general accordance with ASTM D2487 Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)
- 2) The maximum particle size identified in the material description is dependent on sampler dimensions.
- 3) Additional information is provided on the Boring Log Key.
- 4) Groundwater measurements for monitoring wells present water levels at the time of drilling, highest level, and lowest level. Refer to the respective report for a complete history of groundwater values.

Groundwater Data:		
Date:	Elapsed Time:	Depth to Groundwater:
5/27/22	30min	21.3 feet

BORING: LE-74th-B3

Project Name: Arvada Waterlines

Project Number: 21210

Client's Name: CDM Smith

Owner's Name: City of Arvada

Drilling Subcontractor: Vine Laboratories, LLC

Lithos Representative: Adam M

Date(s) of Drilling: 01/26/2023

Drilling and Sampling Methods

Drill Make and Model: CME 55 Truck Mounted

Drilling Method: Solid Stem Auger

Bit Type: Auger Cutting Head

Casing Description: N/A

Hammer Weight (lbs)/Fall (in): 140 lbs. / 30 in.

Sampler Type(s): Split Spoon, Mod Cal

Sampler Diameter(s): 1.4", 2.0"

LITHOSENGINEERING

Boring Location: 39.8307, -105.0910

Boring Elevation: 5536

Notes: Location from Google Earth, Elevation from USGS 3D Elevation Program

Sampling Data

Depth (ft)

Elevation (ft)

Sample Identification

Blow Count/6 in

Recovery (in) / RQD (%)

Drilling Rate (min./ft.)

Geologic Graphic

0

5535

5

5530

3 4 6

18

10

5525

6 8

12

15

5520

5 5 7

18

20

5515

25

5510

30

5505

Visual Material Description

Soil:
-GEOLOGIC INTERPRETATION-
USCS Classification (group symbol), particle sizes, density or consistency, color, moisture, odor, other descriptions

Rock:
-GEOLOGIC INTERPRETATION-
Bedrock Classification, hardness, weather, color, texture, joint size, other descriptions

FINE ALLUVIUM

Lean CLAY (CL) with trace sand, stiff, olive gray to reddish brown, moist

As above except stiff, pale olive with brown mottling, wet

Sandy lean CLAY (CL), stiff, pale olive, wet

END OF EXPLORATION

Groundwater Depth / Monitoring Well Configuration

(5.1 ft.)

Laboratory Testing Results

In-Situ States

INDEX DATA

Strength & Compressibility

Moisture Content (%)

Dry Unit Weight (pcf)

Water Soluble Sulfates (%)

Gravel Content (%)

Sand Content (%)

Fines Content (%)

Liquid Limit (%)

Plasticity Index (%)

UCS (psf)

Swell Pressure (psf)

Swell Percent (%)

General Notes:

1) Soil classificaitons are in general accordance with ASTM D2487

2) The maximum particle size identified in the material description is dependent on sampler dimensions.

3) Additional information is provided on the Boring Log Key.

4) Groundwater measurements for monitoring wells present water levels at the time of drilling, highest level, and lowest level. Refer to the respective report for a complete history of groundwater values.

Groundwater Data:

Date: 01/26

Elapsed Time: 0 hr

Depth to Groundwater: 5.1'

BORING: LE-72nd-B1

Project Name: Arvada Waterline
 Project Number: 21210
 Client's Name: CDM Smith
 Owner's Name: City of Arvada
 Drilling Subcontractor: Drilling Engineers
 Lithos Representative: J. Halverson
 Date(s) of Drilling: 09/28/22

Drilling and Sampling Methods

Drill Make and Model: CME-75
 Drilling Method: Solid Stem Auger (SSA)
 Bit Type: Cutting Head
 Casing Description: N/A
 Hammer Weight (lbs)/Fall (in): 140/30
 Sampler Type(s): Modified California
 Sampler Diameter(s): 2.0-inches



Boring Location: 39.8274652, -105.1045791
 Boring Elevation: 5,541.0-feet
 Notes: _____

Sampling Data						Geologic Graphic	Visual Material Description	Groundwater Depth / Monitoring Well Configuration	Laboratory Testing Results													
Depth (ft)	Elevation (ft)	Sample Identification	Blow Count/6 in	Recovery (in) / RQD (%)	Drilling Rate (min./ft.)				In-Situ States			INDEX DATA				Strength & Compressibility						
									Moisture Content (%)	Dry Unit Weight (pcf)	Water Soluble Sulfates (%)	Gravel Content (%)	Sand Content (%)	Fines Content (%)	Liquid Limit (%)	Plasticity Index (%)	UCS (psf)	Swell Pressure (psf)	Swell Percent (%)			
0							PAVEMENT SECTION Asphalt: 9.0-inches Base: 3.0-inches															
2.5	5540		3 8	7			FILL Sandy LEAN CLAY with gravel (CL), some fine to coarse sand, little fine to coarse gravel, stiff, olive brown, moist, maximum particle size 1.0-inches. As above.	1.0 ft.														
5	5537.5		5 4	11			Sandy LEAN CLAY (CL), some fine to coarse sand, trace fine gravel, stiff, dark blueish gray to olive brown, moist, maximum particle size 0.5-inches.		22.1	100.3			50.9	41	24	1,946	850	0.3				
7.5	5535		4 6	12				6.5 ft.														
10	5532.5		6 7	6			FINE ALLUVIUM LEAN CLAY with sand (CL), little fine to medium sand, stiff, pale olive, moist, calcite.															
12.5	5530		5 6	9			Sandy LEAN CLAY (CL), some fine to coarse sand, stiff, pale olive, moist, calcite.	10.0 ft.														
15	5527.5						END OF EXPLORATION															

General Notes:

- 1) Soil classifications are in general accordance with ASTM D2487 Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)
- 2) The maximum particle size identified in the material description is dependent on sampler dimensions.
- 3) Additional information is provided on the Boring Log Key.
- 4) Groundwater measurements for monitoring wells present water levels at the time of drilling, highest level, and lowest level. Refer to the respective report for a complete history of groundwater values.

Groundwater Data:		Date:		Elapsed Time:		Depth to Groundwater:	
		09/28/22		0-days		DNE	

BORING: LE-72nd-B2

Project Name: Arvada Waterline
 Project Number: 21210
 Client's Name: CDM Smith
 Owner's Name: City of Arvada
 Drilling Subcontractor: Drilling Engineers
 Lithos Representative: J. Halverson
 Date(s) of Drilling: 09/28/22

Drilling and Sampling Methods

Drill Make and Model: CME-75
 Drilling Method: Solid Stem Auger (SSA)
 Bit Type: Cutting Head
 Casing Description: N/A
 Hammer Weight (lbs)/Fall (in): 140/30
 Sampler Type(s): Modified California
 Sampler Diameter(s): 2.0-inches



Boring Location: 39.8274323, -105.1030383
 Boring Elevation: 5,542.0-feet
 Notes: _____

Sampling Data						Geologic Graphic	Visual Material Description	Groundwater Depth / Monitoring Well Configuration	Laboratory Testing Results																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
Depth (ft)	Elevation (ft)	Sample Identification	Blow Count/6 in	Recovery (in) / RQD (%)	Drilling Rate (min./ft.)				In-Situ States			INDEX DATA				Strength & Compressibility																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
									Moisture Content (%)	Dry Unit Weight (pcf)	Water Soluble Sulfates (%)	Gravel Content (%)	Sand Content (%)	Fines Content (%)	Liquid Limit (%)	Plasticity Index (%)	UCS (psf)	Swell Pressure (psf)	Swell Percent (%)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
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General Notes:

- 1) Soil classifications are in general accordance with ASTM D2487 Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)
- 2) The maximum particle size identified in the material description is dependent on sampler dimensions.
- 3) Additional information is provided on the Boring Log Key.
- 4) Groundwater measurements for monitoring wells present water levels at the time of drilling, highest level, and lowest level. Refer to the respective report for a complete history of groundwater values.

Groundwater Data:		Depth to Groundwater:
Date:	Elapsed Time:	
09/28/22	0-days	DNE

BORING: LE-72nd-B3

Project Name: Arvada Waterline
 Project Number: 21210
 Client's Name: CDM Smith
 Owner's Name: City of Arvada
 Drilling Subcontractor: Drilling Engineers
 Lithos Representative: J. Halverson
 Date(s) of Drilling: 09/28/22

Drilling and Sampling Methods

Drill Make and Model: CME-75
 Drilling Method: Solid Stem Auger (SSA)
 Bit Type: Cutting Head
 Casing Description: N/A
 Hammer Weight (lbs)/Fall (in): 140/30
 Sampler Type(s): Modified California
 Sampler Diameter(s): 2.0-inches



Boring Location: 39.8273026, -105.1013263
 Boring Elevation: 5,540.0-feet
 Notes: _____

Sampling Data						Geologic Graphic	Visual Material Description	Groundwater Depth / Monitoring Well Configuration	Laboratory Testing Results																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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									Moisture Content (%)	Dry Unit Weight (pcf)	Water Soluble Sulfates (%)	Gravel Content (%)	Sand Content (%)	Fines Content (%)	Liquid Limit (%)	Plasticity Index (%)	UCS (psf)	Swell Pressure (psf)	Swell Percent (%)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
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General Notes:

- Soil classifications are in general accordance with ASTM D2487 Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)
- The maximum particle size identified in the material description is dependent on sampler dimensions.
- Additional information is provided on the Boring Log Key.
- Groundwater measurements for monitoring wells present water levels at the time of drilling, highest level, and lowest level. Refer to the respective report for a complete history of groundwater values.

Groundwater Data:		Data:	
Date:	09/28/22	Elapsed Time:	0-days
		Depth to Groundwater:	DNE

LITHOS
ENGINEERING

Boring Location: 39.8271771, -105.0999774
Boring Elevation: 5,544.0-feet
Notes:

General Notes:		Date:	Groundwater Data:
1) Soil classifications are in general accordance with ASTM D2487 Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)		09/28/22	Elapsed Time: Depth to Groundwater:
2) The maximum particle size identified in the material description is dependent on sampler dimensions.			0-days DNE
3) Additional information is provided on the Boring Log Key.			
4) Groundwater measurements for monitoring wells present water levels at the time of drilling, highest level, and lowest level. Refer to the respective report for a complete history of groundwater values.			

BORING: LE-72nd-B5

Project Name: Arvada Waterline
 Project Number: 21210
 Client's Name: CDM Smith
 Owner's Name: City of Arvada
 Drilling Subcontractor: Drilling Engineers
 Lithos Representative: J. Halverson
 Date(s) of Drilling: 09/28/22

Drilling and Sampling Methods

Drill Make and Model: CME-75
 Drilling Method: Solid Stem Auger (SSA)
 Bit Type: Cutting Head
 Casing Description: N/A
 Hammer Weight (lbs)/Fall (in): 140/30
 Sampler Type(s): Modified California
 Sampler Diameter(s): 2.0-inches



Boring Location: 39.8270434, -105.0981481
 Boring Elevation: 5,544.0-feet
 Notes: _____

Sampling Data						Geologic Graphic	Visual Material Description	Groundwater Depth / Monitoring Well Configuration	Laboratory Testing Results															
Depth (ft)	Elevation (ft)	Sample Identification	Blow Count/6 in	Recovery (in) / RQD (%)	Drilling Rate (min./ft.)				In-Situ States			INDEX DATA				Strength & Compressibility								
									Moisture Content (%)	Dry Unit Weight (pcf)	Water Soluble Sulfates (%)	Gravel Content (%)	Sand Content (%)	Fines Content (%)	Liquid Limit (%)	Plasticity Index (%)	UCS (psf)	Swell Pressure (psf)	Swell Percent (%)					
0							PAVEMENT SECTION Asphalt: 7.0-inches Base: 4.0-inches																	
2.5	5542.5		3 6	9			FILL LEAN CLAY with sand (CL), little fine to coarse sand, stiff, mottled yellowish brown to olive to gray, moist, chunks of claystone. As above.																	
5	5540		5 10	12			As above.			23.4	98.3			71.4	44	25	3,240	1,500	0.3					
7.5	5537.5		7 12	8			FINE ALLUVIUM LEAN CLAY (CL), few fine sand, very stiff, dark brown, moist, calcite, trace roots.																	
10	5535		7 11	9			LEAN CLAY with sand (CL), little fine to coarse sand, very stiff, yellowish brown, moist, calcite.																	
12.5	5532.5						END OF EXPLORATION																	
15	5530																							

General Notes:

- Soil classifications are in general accordance with ASTM D2487 Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)
- The maximum particle size identified in the material description is dependent on sampler dimensions.
- Additional information is provided on the Boring Log Key.
- Groundwater measurements for monitoring wells present water levels at the time of drilling, highest level, and lowest level. Refer to the respective report for a complete history of groundwater values.

Groundwater Data:		
Date:	Elapsed Time:	Depth to Groundwater:
09/28/22	0-days	DNE



APPENDIX B

Geotechnical Laboratory Testing Results

2021 WATER MAIN IMPROVEMENTS PROJECT - 21210
GEOTECHNICAL LABORATORY TESTING RESULTS

Boring	Depth (feet bgs)	Moisture (%)	Dry Unit Weight (pcf)	Gradation			Atterberg			Swell Pressure (psf) ²	Swell (+)/ Consolidation (-) (%)	Unconfined Compressive Strength (psf)	USCS Classification ¹
				% Gravel	% Sand	% Fines	LL	PL	PI				
LE-1 Site E	10	13.3	113.5									5,348	Claystone
LE-1 Site E	17.5	11.3	116.2										Sandstone
LE-1 Site E	20					38.1							Sandstone
LE-2 Site E	5									1,240	1.8		Claystone
LE-2 Site E	10	15.6	107.9				46	27	19				Claystone
LE-2 Site E	17.5	14.0	113.8									9,503	Sandstone
LE-1 Site G	5	16.7	105.4			30.7	28	19	9				SC
LE-1 Site G	15			32.9	55.1	12.0							SW-SC
LE-1 Site G	25	15.9	117.5									10,237	Claystone
LE-3 Site G	7.5	7.0											SP
LE-3 Site G	12.5			49.0	43.5	7.5							GP-GC
LE-3 Site G	20						40	23	17				Claystone
LE-3 Site G	30	14.3	114.2									2,991	Claystone
LE-1 Jellison	7.5	18.5				42.7							SC
LE-1 Jellison	15					53.4							CL
LE-1 Jellison	20	22.3	101.6				30	16	14			1,125	CL
LE-2 Jellison	7.5					46.7							SC
LE-2 Jellison	15	18.3	100.8										CL
LE-2 Jellison	25					59.4	32	21	11				CL
LE-1 74th	7.5						37	20	17				CL
LE-1 74th	15	15.5	107.1							NA	-0.8		Claystone
LE-1 74th	25	17.8	103.9			44.2						2,765	Sandstone
LE-72nd-B1	5	22.1	100.3			50.9	41	17	24	850	0.3	1,946	CL
LE-72nd-B5	5	23.4	98.3			71.4	44	19	25	1,500	0.3	3,240	CL

¹Where fines content and Atterberg Limits testing was not conducted, USCS Classifications were determined per ASTM D2488. USCS column is provided for soil. Bedrock descriptions provided for information only.

²Swell pressure as measured under an inundation pressure of 500 psf

APPENDIX B

SWMP 2021 WATER MAIN IMPROVEMENTS

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STORMWATER MANAGEMENT PLAN

2021 Water Main Improvements Project

Date of Preparation: April 7, 2023

Arvada Site Disturbance Permit: (SITE ##-####)
CDPS Number: (COR #####)

Property Owner:

Bethany Yaffe byaffe@arvada.org
720-898-7774

Property Operator:

Sam Lewis slewis@arvada.org
720-898-7796

SWMP Preparer:

Ryan Tordella tordellart@cdmsmith.com
303-383-2307

STORMWATER MANAGEMENT PLAN

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APPENDICES

- Appendix A – CDPS Construction Permit (One page document)
- Appendix B – Erosion and Sediment Control Plans, BMP Details and Landscape Plan
- Appendix C – Soils Report
- Appendix D – National Flood Hazard Layer - FIRMette
- Appendix E – Inspection Forms

1.0 INTRODUCTION

This SWMP identifies possible pollutant sources at this construction site that may contribute pollutants to stormwater, and identifies control measures that, when implemented in accordance with good engineering, hydrologic, and pollution control practices, will reduce or eliminate any possible water quality impacts. A copy of this SWMP will be available onsite or will be easily accessible via an electronic format. This SWMP will be revised, as necessary, when site conditions change.

This SWMP was prepared in accordance with good engineering, hydrologic and pollution control practices. Changes or additions may be required to address changes in conditions at the project. If such changes are made, this SWMP will be updated accordingly. This SWMP will be implemented as written and updated from commencement of construction activity until final stabilization is achieved. This SWMP was developed to meet the Colorado Discharge Permit System (CDPS) General Permit for Stormwater Discharges Associated with Construction Activity (Permit No. COR-400000, effective April 1, 2019) authorizing stormwater discharges from construction activities that result in a total land disturbance of one acre or greater or if a project is less than an acre but part of a larger common plan of development. This SWMP was also developed to meet the City of Arvada's requirements. The City regulates stormwater through its Site Development Permit (SDP). A copy of the CDPS Construction Permit for this project is included in **Appendix A**.

2.0 PROJECT SITE LOCATION AND DESCRIPTION

This project includes 5 separate locations within the City of Arvada (Locations C, D, E, F, G)
Location C – Carr St @ 74th Avenue – 0.27 Acres Disturbed
Location D – Jellison St between 74th Ave and 72nd Ave – 0.13 Acres Disturbed
Location E – 72nd Ave just west of Indiana St – 0.08 Acres Disturbed
Location F – 72nd Ave between Kipling St and Carr St – 0.49 Acres Disturbed
Location G – Wadsworth Blvd at 52nd Ave – 0.15 Acres Disturbed

The project sites for each location are all very similar. Each area includes a replacement of existing or new water main underneath existing pavement. There are 3 ditch crossings included with this project that will include open cutting across each ditch during the dry season. For this project, the limits of construction and limits of disturbance are the same. The areas adjacent to the construction work include roadway and parking lots. The adjacent land for a short part of Segment D is farmland.

- Total Area of Construction Limits: [1.12 acres]
- Total Area of Disturbance Limits: [1.12 acres]

There are no planned grading or landscaping activities associated with this project. All disturbed asphalt and landscaping will be replaced to its original status.

Erosion and Sediment Control Plans are included in **Appendix B**.

3.0 SITE CONTACT INFORMATION

Owner:

Name: Bethany Yaffe
Title: Civil Engineer
Address: 8101 Ralston Rd Arvada, CO 800002
Phone: 720-898-7774
Email: byaffe@arvada.org

Operator

Name: Sam Lewis
Title: Water System Utility Supervisor
Address: 720-898-7796
Phone: 8101 Ralston Rd Arvada, CO 800002
Email: slewis@arvada.org

Project Manager/Site Supervisor:

Name:
Title:
Address:
Phone:
Email:

Qualified Stormwater Manager:

Name:
Title:
Address:
Phone:
Email:

Control Measure Contractor:

Name:
Title:
Address:
Phone:
Email:

Other:

Name:
Title:
Address:
Phone:
Email:

4.0 PROPOSED SEQUENCE FOR MAJOR CONSTRUCTION ACTIVITIES

Each of the 5 locations will follow the same phases described below:

Stage 1 – Mobilization including: initializing the stabilized staging area, any/all vehicle tracking pads, curb socks and inlet protection

Stage 2 – During construction – All BMPs will be maintained in an operable and effective condition, which includes removing sediment that has deposited on a weekly basis. Street sweeping of any roads near disturbed areas shall occur on a weekly basis as well. All BMPs from phase 1 will be left in place and maintained during phase 2.

Stage 3 – Demobilization – Final stabilization, which shall occur almost immediately after paving operations have completed. After final paving, all curb socks, VTCs, stabilized staging areas, and inlet protection shall be removed from the site. After all BMPs have been removed, one final street sweeping operation shall occur.

Project Phase	Estimate Date	Controls to be implemented during each phase*
Pre-Disturbance/Site Preparation		• Curb socks, inlet protection, vehicle tracking pads
Construction		• All installed BMPs to be maintained
Final Stabilization		• After final paving is complete, BMPs to be removed.

5.0 EXISTING SOIL DATA

Fill was encountered at the ground surface and extended to depths from 5 ft to 8ft below grade. Fill was described as the following: Sandy Lean Clay (CL)

Fine alluvium was encountered generally at the ground surface or underlying coarse alluvium and extended to depths 5 to 31.5 ft below grade and was described as: Lean Clay, Sandy Lean Clay

Coarse Alluvium was encountered generally at the ground surface or underlying fill and extended to depths from 10 to 21 ft below grade and was described as: Clayey sand, poorly-graded sand with gravel, poorly graded sand with gravel and clay, well-graded sand with gravel and clay, poorly graded gravel with sand and clay.

SEGMENT	SOIL TYPE
C	FINE ALLUVIUM
	CLAYSTONE AND SANDSTONE BEDROCK OF THE ARAPAHOE FORMATION
D	FINE ALLUVIUM
	COARSE ALLUVIUM
	CLAYSTONE AND SANDSTONE BEDROCK OF THE ARAPAHOE FORMATION
E	FINE ALLUVIUM
	CLAYSTONE AND SANDSTONE BEDROCK OF THE ARAPAHOE FORMATION
F	
G	FILL
	COARSE ALLUVIUM
	CLAYSTONE BEDROCK OF THE DENVER FORMATION

A copy of the soils report is included in **Appendix C**.

6.0 EXISTING VEGETATION

The majority of the project limits are under asphalt. However, the project does include open cutting across 3 ditches as well as some work in an open farm field. The replacement seed mix for all of these locations will be CDOT for regions outside roadway or the following:

Western Wheatgrass	Arriba	30%
	Barton	(4.8)
	Rosana	
Switchgrass	Grenville	20%
	Nebraska 20	(0.9)
	Blackwell	
	Pathfinder	
Sideoats Grama	Vaughn or Butte	15%
		(1.35)
Big Bluestem	Kaw	15%
		(1.65)
Blue Grama	Lovington	10%
	Hachita	(0.3)
Buffalograss	Texoka or	10%
	Sharps' Improved	(0.3)

		100%
		(9.3 lbs PLS/acre)

7.0 RECEIVING WATERS

7.1 Immediate and Ultimate Receiving Waters

Location C: This segment crosses the Croke Canal within a small segment and immediately outfalls into the City's MS4 along Carr St prior to entering the ponds within the Indian Tree Golf Course. This ultimately discharges into Little Dry Creek, which is tributary to Clear Creek.

Location D: A portion of this segment crosses the Farmers Highline Canal and then flows south along Jellison St. prior to immediately entering the City of Arvada MS4 on the NE corner of 73rd Ave. & Jellison St. This then outfalls ultimately into the Farmers Highline Canal, a private irrigation canal. The other portion of this segment immediately enters the City of Arvada's MS4 along the north side of 74th Ave. flowing to the west. This ultimately outfalls into Raston Creek, which is tributary to Clear Creek.

Location E: This segment adjacent to 72nd Ave. sheet flows to the east along the south side of 72nd Ave. It then becomes a concentrated flow prior to entering the City of Arvada's MS4 on the SW corner of 72nd Ave. & Indiana St. This then outfalls ultimately into Ralston Creek, which is tributary to Clear Creek.

Location F: This segment adjacent to 72nd Ave. flows along the south side of 72nd Ave. to the east where it immediately enters the City of Arvada's MS4 on the south side of 72nd Ave. These flows pass through a series of ponds throughout Majestic View Park and ultimately outfall into Ralston Creek, which is tributary to Clear Creek.

Location G: This segment immediately outfalls into the City of Arvada's MS4 on the west side of Wadsworth Blvd (multiple locations). This then ultimately outfalls directly to Clear Creek.

This construction project is within the City of Arvada, which has a Phase II Municipal Separate Storm Sewer System (MS4) Permit from the State of Colorado.

Are their anticipated wetland impacts (Circle)? Yes ☒ No
Stream impacts (Circle)? Yes ☒ No

Each of the project locations is outside the 100 year flood zone.

A copy of the flood insurance rate map (FIRM) for this site (FIRMette) is included in Appendix E.

7.2 Stream Crossings

This project includes open cutting across the following ditches during dry season:

Segment C – Croke Canal Crossing

Segment D - Farmers highline Canal Crossing, Croke Canal Crossing

7.3 Impaired Waters

Is the stream listed as impaired (on 303 (d) list)? If so, list the parameter of impairment and if any special treatment is required?

Clear Creek is on the 303(d) list As-T; 303(d) : E.ColiS; 303(d) : Mn-D; 303(d) : OrgSed; 303(d) : Temp

This project should not negatively impact the pollutants listed above.

If yes impaired, does the stream have a TMDL and if so, list the impairment and any special treatment required? N/A

8.0 POTENTIAL POLLUTANT SOURCES

Potential Source of Pollution	Potential Exists for this Project?	Description of Activities & Control Measures Used
Disturbed and stored soils • Stockpiled soils (e.g. topsoil, embankments, wetland, spoils, etc.) • Disturbed soils (exposed areas, staging areas, parking, etc.)v	Yes	Potential during all phases of construction activities, including but not limited to excavating, grading, cutting, filling, landscaping, etc. Potential pollutants include disturbed eroded sediment entering state waterways, inlets and sewers, and off right of way. <u>Control Measures-</u> Sediment control and stockpile containment may include usage of silt fence, rock socks, sediment control logs, and inlet protection as outlined in the SWMP narratives. Erosion control may include mulch/mulch tackifier application, seeding/ mulching, and vegetative protection.

Potential Source of Pollution	Potential Exists for this Project?	Description of Activities & Control Measures Used
		Administrative BMPs include site management and limiting number and location of stockpiles. Phased construction to reduce the amount of open area at any given time.
Vehicle tracking of sediments	Yes	Potential during all construction activities. Control Measures - Sediment control including vehicle tracking pads, street sweeping, and inlet protection. Minimize the number of entry and exit points, add orange perimeter fence to define construction entries/exits and establish perimeter control, and require equipment to be cleaned prior to arrival on site.
Management of contaminated soils	No	No known contaminated soils are expected to be encountered during this project. If contaminated soils/water are encountered, all activity shall be stopped until the situation can be assessed. The owner will be contacted.
Loading and unloading operations	Yes	Potential during delivery and staging of materials, equipment, soil, debris, etc. <u>Control Measures</u> - Loading and unloading operations shall occur within the disturbance limits of the project using designated vehicle tracking pads. Administrative controls include site management to minimize the number of areas at which loading/unloading occurs. Education as to where access points are on the project to prevent vehicle tracking.
Outdoor storage activities (erodible building materials, fertilizers, chemicals, etc.)	Yes	Potential during all phases of construction activities including delivery, staging/storage and use of various materials. <u>Control Measures</u> – Containment of the storage or staging areas using temporary berms or plastic/metal containment structures. Use of secondary containment device for storage of chemicals and petroleum products. Chemicals shall not be used, stored or stockpiled within 50 feet of state waters.

Potential Source of Pollution	Potential Exists for this Project?	Description of Activities & Control Measures Used
		Administrative controls including site management to ensure limited amount of materials are stored on site and are placed in proper designated areas.
Vehicle and equipment maintenance and fueling	Yes	Fueling of equipment or vehicles and equipment or vehicle repair activities may occur during all phases of construction activity. <u>Control Measures</u> – Limit areas where fueling occurs (no less than 50 feet from any state water, inlet, flow line). Ensure spill response kit is accessible where fueling is taking place. Use of plastic sheeting, drip pans, dirt berms and other measures to contain fluids. Immediate clean-up and disposal of spoils as detailed in the Spill Prevention, Control and Countermeasure Plan (Section 13). Secondary containment will be provided for containers 55 gallons or greater. Administrative controls include site management to limit equipment and vehicle maintenance that occurs on site.
Significant dust or particulate generating processes (e.g., saw cutting material, including dust)	Yes	Potential during clearing and grubbing, cut/fill activities, saw cutting/sanding work and final stabilization. <u>Control Measures</u> – Water truck on site for use as needed to minimize dust production. Use of pickup broom or vacuum during or immediately following saw cutting projects.
Routine maintenance activities including fertilizers, pesticides, herbicides, detergents, fuels, solvents, oils, etc.	Yes	Very few routine maintenance activities will occur on site. See Vehicle and Equipment maintenance for activities associated with those items. <u>Control Measures</u> – See Vehicle and Equipment Maintenance
On-site waste management practices (waste piles, liquid wastes, dumpsters)	Yes	All activities including clear and grubbing, demolition activities, et. <u>Control Measures</u> – Trash receptacles will be placed on site and garbage disposed of when full. Public trash will be routinely picked up around the site (daily) and disposed of in proper containers. Waste

Potential Source of Pollution	Potential Exists for this Project?	Description of Activities & Control Measures Used
		piles shall be placed a minimum of 50 feet from state waters, contained by earthen berms, silt fence, erosion logs, and landforms. Waste piles shall be placed in areas where stormwater runoff would not result in contamination of state waters. Liquid wastes will be contained and removed from site and properly disposed of by the subcontractors/contractor generating wastes in accordance with the Spill Prevention, Control and Countermeasure Plan (Section 13).
Concrete truck/equipment washing, including washing of the concrete truck chute and associated fixtures and equipment	Yes	Activities associated with this pollution source are concrete pours. <u>Control Measures</u> – Dedicated concrete washout areas that are clearly marked and maintained.
Dedicated asphalt, concrete batch plants and masonry mixing stations	No	Not applicable for this site. If these activities are added, then the SWMP will be amended.
Non-industrial waste sources such as worker trash and portable toilets	Yes	Potential throughout construction. <u>Control Measures</u> – See onsite waste management. Cleanup of trash will occur daily. A dumpster will be placed on site, at our office trailer. This will be emptied on a weekly basis, and more often, if waste amounts warrant extra pick-ups. Portable toilets will be located a minimum of 50 feet from state waters. They shall be adequately staked and cleaned on a weekly basis. They will be inspected daily for spills. Administrative controls will include site management practices to ensure workers are placing trash in the appropriate dumpsters. Monitoring to ensure trash dumpsters are removed from the site when full. Monitoring to ensure portable toilets are cleaned as needed, and repaired or removed if found to be leaking.
Other areas or procedures where spills can occur	Yes	Not applicable for this site. If these activities are added, then the SWMP will be amended.

9.0 NON-STORMWATER DISCHARGES

Potential Non-Stormwater Discharges	Potential Exists for this Project?	Description of Activities & Control Measures Used
Discharges from uncontaminated springs that do not originate from an area of land disturbance	No	Not applicable for this site. If these activities are added, then the SWMP will be amended.
Discharges to the ground of concrete washout water associated with the washing of concrete tools and concrete mixer chutes. Discharges of concrete washout water must not leave the site as surface runoff or reach receiving waters	Yes	A concrete wash-out area will be utilized to capture wastewater and waste products resulting from the cleaning of concrete and masonry equipment.
Discharges of landscape irrigation return flow	No	Not applicable for this site. If these activities are added, then the SWMP will be amended.
Discharges from emergency fire-fighting activities	Yes	To the extent allowed by the circumstances at the scene and without compromising the health and safety of personnel or the public, emergency firefighting activities should be performed in a manner that avoids or minimizes discharges to the MS4. <u>BMPs</u> – If possible, avoid directing firefighting flows directly on erodible surfaces if runoff will enter Receiving Waters or MS4 facilities. If possible, apply fire-fighting flows so that runoff will flow over vegetated areas.
Dewatering activities meeting a low-risk discharge guidance	Yes	Groundwater is not anticipated to be encountered based on the Geotechnical Investigation. If dewatering is needed, and not able to be discharged per the CDPS

Potential Non-Stormwater Discharges	Potential Exists for this Project?	Description of Activities & Control Measures Used
		low risk guidelines, a supplemental dewatering permit for dewatering through CDPS will be obtained. Any surface water dewatering covered under the CDPS guidelines needed for the project will be clearly identified on the site maps after installation.
Discharges covered under other CDPS discharge permits? 1. When a flowing watercourse must be crossed regularly during construction and a temporary stream crossing is needed, approval may be required by the U.S. Army Corps of Engineers. Under State requirements, documentation must be available showing that analysis was conducted to determine whether or not a permit was required. 2. Anytime a discharge is pumped from a construction site due to groundwater, or groundwater comingled with stormwater, and discharged to a waterway or inlet, a Construction Dewatering Discharge Permit must be obtained from the State of Colorado. 3. Other permits may include, but are not limited to, sand and gravel permits for batch plants, hydrostatic testing discharge permits, floodplain permits and others.	Yes	Groundwater Permit required for site

10.0EFFLUENT LIMITATIONS

10.1 Control Measure Details

This section includes the narrative description of appropriate control measures that will be implemented before, during, and after construction activities. Both structural and non-structural control measures will be described.

Control Measure Name	Description	Phase
Concrete Washout Area	Designating and properly managing a specific area of the construction site as a concrete washout area. Designed to receive wash water from washing of tools and concrete mixer chutes, liquid concrete waste from dump trucks, mobile batch mixers, or pump trucks. <u>Surface discharges of concrete washout water from construction sites are prohibited.</u>	All phases
Construction Fencing	Restricts site access to designated entrances and exits, delineates construction site boundaries, and keeps construction out of sensitive areas such as natural areas to be preserved as open space, wetlands and riparian areas.	All phases
Construction Phasing	Attention to construction phasing, scheduling, and sequencing of land disturbing activities. Erosion and sediment controls needs adjustment as the project progresses and should be documented in the SWMP.	All phases
Erosion Control Blanket	Temporary or permanently installed manufactured products designed to control erosion and enhance vegetation establishment and survivability, particularly on slopes and in channels.	Final stabilization
Good House-keeping	Prevents pollution associated with solid, liquid and hazardous construction-related materials and wastes.	All phases
Inlet Protection	Permeable barriers installed around an inlet to filter runoff and remove sediment prior to entering a storm drain inlet. Inlet protection can be constructed from rock socks, sediment control logs, silt fence, block and rock socks, or other materials.	All phases
Outlet Protection	Helps reduce erosion immediately downstream of a pipe, culvert, slope drain, rundown or other conveyance with concentrated, high-velocity flows. Typical outlet protection consists of riprap or rock aprons at the conveyance outlet.	All phases
Rock Socks	Used either as a perimeter control or as part of inlet protection. Traps sediment from stormwater runoff that flows onto roadways as a result of construction activities. Constructed of gravel that has been wrapped by wire mesh or a geotextile to form an elongated cylindrical filter.	All phases
Sediment Control Log	A linear roll made of natural materials such as straw, coconut fiber, or other fibrous material trenched into the ground and held with a wooden stake. They are used as	All phases construction

Control Measure Name	Description	Phase
	a sediment barrier to intercept sheet flow runoff from disturbed areas.	
Seeding and Mulching	Seeding is used to stabilize disturbed areas that will be inactive for an extended period or at final grade that will not be otherwise stabilized. Effective seeding includes preparation of a seedbed, selection of an appropriate seed mixture, proper planting techniques, and protection of the seeded area with mulch, geotextiles, or other appropriate measures. Mulching consists of evenly applying straw, hay, shredded wood mulch, rock, bark or compost to disturbed soils and securing the mulch by crimping, tackifiers, netting or other measures. Reduces erosion by protecting bare soil from rainfall impact, increasing infiltration, and reducing runoff.	Final stabilization
Silt Fencing	Geotextile fabric installed using stakes on down-gradient side and trenched into soil. Provides sediment control by reducing runoff velocity. Used as perimeter control and back of curb control	All phases
Stabilized Staging Area	A clearly designated area where construction equipment and vehicles, stockpiles, waste bins, and other construction-related materials are stored. The contractor office trailer may also be located in this area.	All phases
Stockpile Management	Minimizes erosion and sediment transport from soil stockpiles. Should be used when soils or other erodible materials are stored at the construction site. Special attention should be given to stockpiles in close proximity to natural or manmade storm systems.	All phases
Street Sweeping	Uses mechanical pavement cleaning practices to reduce sediment, litter and other debris washed into storm sewers by runoff. Reduces pollutant loading to receiving waters and in some cases reduces clogging of storm sewers and prolong the life of infiltration oriented BMPs and reduce clogging of outlet structures in detention BMPs.	All phases; as needed
Tree Protection	Used to maintain a stable surface cover as part of construction phasing, or provide protection in areas designated to remain in natural conditions under post-development conditions. Includes installation of a construction fence around the area requiring protection. Where upgradient areas are disturbed, it may also be necessary to install perimeter controls to minimize sediment loading to sensitive areas.	All phases
Vehicle Tracking Control	Provides stabilized construction site access where vehicles exit the site onto paved public roads. Helps remove sediment (mud or dirt) from vehicles, reducing tracking onto the paved surface. Constructed from angular rock or other proprietary materials.	All phases

10.2 Other Effluent Limitations

Additional controls measures:

- Soil Compaction – Soil compaction must be minimized for areas where infiltration control measures will occur or where final stabilization will be achieved through vegetative cover.
- Topsoil Preservation – Unless infeasible, topsoil will be preserved for those areas of a site that will utilize vegetative final stabilization. [If infeasible, provide information on why it is infeasible). Consider adding the following with any bullets that apply. If this does not apply to the project, do not include. None of these are requirements and once added to the SWMP they should be followed in the field. Topsoil preservation may include the following measures:
 - Limit construction disturbance area including those used for access by installing construction fence or other means to limit impacts to existing topsoil.
 - In areas of grading or excavation, strip and segregate topsoil separately from other excavated materials.
 - In areas with construction traffic where topsoil is likely to mix with subsoil, strip and stockpile topsoil.
- Minimize Disturbances – Disturbances will be minimized to the extent feasible especially on steep slopes.
- Temporary Stabilization – Temporary stabilization must be implemented for earth disturbing activities on any portion of the site where ground disturbing construction activity has permanently ceased, or temporarily ceased for more than 14 calendar days. Temporary stabilization methods may include, but are not limited to, surface roughening, tarps, soil tackifier, and hydroseed and although not specifically outlined in the permit may also include temporary hard surfaces. During the seasons when seeding does not produce vegetative cover, temporary stabilization will occur. The permittee may exceed the 14-day schedule when either the function of the specific area of the site requires it to remain disturbed, or, physical characteristics of the terrain and climate prevent stabilization. The SWMP must document the constraints necessitating the alternative schedule, provide the alternate stabilization schedule, and identify all locations where the alternative schedule is applicable on the site map.
- Construction activities will be limited to those areas within the limits of disturbance as shown on the plans. Construction activities in addition to normal construction procedures will include the on-site parking of vehicles or equipment, on-site staging, on-site batch plants, haul roads or work access and any other action which would disturb existing conditions. Off road staging areas or stockpiles must be pre-approved by the City of Arvada. Disturbances beyond these limits will be restored to original condition.

Other controls related to final stabilization, bulk storage, spill prevention, and protection of vegetation within 50 feet of receiving waters are covered in other sections of this SWMP.

11.0 MATERIALS HANDLING

This section includes the narrative description of all potential pollutants other than sediment that will be handled and disposed of in an appropriate manner that does not contaminate stormwater.

Material/Waste Product Name	Description and Intended Use and Associated Control Measure	Phase
Concrete Curing Compounds	Used for concrete work. Containers will be kept intact with no leakage and in an area with good housekeeping practices to avoid spills	During concrete pouring activities
Diesel	Used to fuel equipment. Containers will be kept intact with no leakage and in an area with good housekeeping practices to avoid spills	All phases when heavy equipment is in use
Diesel Engine Antifreeze Coolant	Used in equipment. Containers will be kept intact with no leakage and in an area with good housekeeping practices to avoid spills	All phases when heavy equipment is in use
Hydraulic Oil	Used in equipment. Containers will be kept intact with no leakage and in an area with good housekeeping practices to avoid spills	All phases when heavy equipment is in use
Motor Oil	Used in equipment. Containers will be kept intact with no leakage and in an area with good housekeeping practices to avoid spills	All phases when heavy equipment is in use
Unleaded Gasoline	Used to fuel equipment. Containers will be kept intact with no leakage and in an area with good housekeeping practices to avoid spills	All phases when heavy equipment is in use

12.0 CONTROL MEASURE MAINTENANCE

All erosion and sediment control practices and other protective measures identified in the SWMP will be maintained in effective operating condition. Control measures that are not adequately maintained in accordance with good engineering, hydrologic and pollution control practices, including removal of collected sediment outside the acceptable tolerances of the control measures are considered to be no longer operating effectively and must be addressed.

Assessment of control measures will be performed as part of the comprehensive inspection. Where site assessment results in the determination that new or replacement control measures are necessary, the control measures must be installed to ensure ongoing compliance with this SWMP. Where control measures have failed or are otherwise non-compliant, they must be addressed immediately or an alternative schedule with rationale will be supplied in the inspection corrective action log. See control measures details and specification for specific maintenance information

13.0 SPILL PREVENTION AND RESPONSE PLAN

13.1 Spill Prevention

All parties on site will take all measures necessary to prevent spills that could negatively impact stormwater quality. The following general spill prevention methods should be used on site:

- Ensuring personal safety for all personnel affected by the spill;
- Proper storage of all materials;
- Proper maintenance of all containers;
- Bulk storage, 55 gallons or greater, for petroleum products and other liquid chemicals must have secondary containment or equivalent;
- Train employees in spill prevention and cleanup;
- Designate responsible individuals to oversee and enforce control measures;
- Spills should be covered and protected from stormwater run-on during rainfall to the extent that it doesn't compromise cleanup activities;
- Do not bury or clean/wash spills with water without using a wet vacuum;
- Store and dispose of used clean up materials, contaminated materials, and recovered spill material properly;
- Do not allow water used for cleaning and decontamination to enter storm drains or waterways;
- Contain water overflow or minor water spillage and do not allow it to discharge into storm drains or waterways;
- Loading and unloading of chemicals should be observed by on site personnel at all times;
- Do not store chemicals within 50 feet of a storm drain or waterway; and
- All spills must be documented and properly cleaned up immediately.

13.2 Spill Prevention and Response Training

Prior to project startup, personnel and contractors will be trained in the following spill control procedures by the Erosion Control Specialist/Qualified Stormwater Manager.

- Chemicals planned to be used on site;
- Spill control;
- Containment, vessel, tank, and piping inspection and maintenance;

- Spill response, containment, and clean-up; and
- Company policies on reporting and responding to spills.

13.3 Environmental Sensitive Areas

There are no environmentally sensitive areas in the work area.

13.4 Spill Reporting and Cleanup Contacts

All responsible personnel and their corresponding contact information are presented in the table below.

Responsibility	Name and Title	Phone Number
Emergency Local Fire, Police, & Ambulance	N/A	911
EPA National Response Center	N/A	1-800-424-8802
CDPHE Spill Reporting Hotline	N/A	1-877-518-5608
Primary Contact for Spills		
Secondary Contact for Spills		
On-Site Spill Responder		
Arvada Stormwater Team	Jake Moyer/Stormwater Administrator	720-898-7812

13.5 Location of Spill Kits

The kit will contain an absorbent boom, absorbent rags, absorbent litter and an over-pack drum to storm the material. Spill kit materials should be replenished after use in the field. Spill kits should be inspected regularly to check if materials need to be replenished.

Type of Spill Kit	Location

13.6 Quantities of Chemical and Locations Stored On-Site

The following is a table of chemical quantities and where they are located on site. (Note: Also refer to the Potential Pollutants list and evaluation in Section 8 of this SWMP.)

Material	Quantity	Staging/Storage Location

13.7 Chemical Container Labeling

Any products/chemicals that are located or stored on site shall be properly labeled as to the contents of the material. The Safety Data Sheet (SDS) for all products/chemicals utilized on site can be found in a notebook at the project trailer.

13.8 Minor Spills (less than 5 gallons)

Notification and cleanup procedures to be implemented in the event of a spill for spills which do not enter state waters or are under reporting limits of the chemical of concern (e.g. diesel fuel, hydraulic fluid, motor oil, used hydraulic fluid and motor oil, tack oil).

- Minor spills typically involve small quantities of oil, gasoline, paint, etc. which can be controlled by the first responder at the discovery of the spill.
- Use absorbent materials on small spills rather than hosing down or burying the spills.
- Absorbent materials should be promptly removed and disposed of properly.
- Follow the practice below for a minor spill:
 - Contain the spread of the spill.
 - Recover spilled materials.
 - Clean the contaminated area and properly dispose of contaminated materials.
- Keep within permitted area.
- It must not threaten any stormwater conveyance.

13.9 Major Spills (greater than 5 gallons)

Significant spill procedures for spills of any size that enter state waters or have the potential to do so and can be controlled by the first responder along with the aid of other trained personnel. Section 13.4 above contains spill notification contacts and phone numbers. This response may require all work to stop. Spills must be clean up immediately

- Contain spread of the spill.
- Notify the project foreman immediately.
- If the spill occurs on paved or impermeable surfaces, clean up using dry methods. Contain the spill by encircling with absorbent materials and do not let the spill spread. Make sure nearby storm drains and waterways are protected.
- If the spill occurs in a dirt area, immediately contain the spill by constructing an earthen berm. Dig up and properly disposed of contaminated soil.
- If the spill occurs during a rain event, cover the spill with tarps, visqueen or similar material to prevent contaminating runoff. Make sure nearby storm drains and waterways are protected.

13.10 Notification of Regulatory Agencies

For non-hazardous materials which may endanger health or the environment; spills or discharge of hazardous substance or oil, which may cause pollution of the waters of the state; the following measures shall be implemented:

- Contact the CDPHE Environmental Emergency Spill Reporting Line (1-877-518-5608) within 24 hours of the spill event. A written notification to the CDPHE-EMP is necessary within 5 days.
- Contact the Colorado State Patrol 24-hour hotline (1-303-239-4501) if the spill is on a state highway.
- Report spill to the Project Engineer.
- Call the Arvada Stormwater Team (720-898-7812) if spilled material spreads to an Arvada storm drain or a waterway.

For spills involving hazardous materials, the following measures shall be implemented:

- Contact the local emergency response team by dialing 911.
- Contact the CDPHE Environmental Emergency Spill Reporting Line (1-877-518-5608) within 24 hours of the spill event. A written notification to the CDPHE-EMP is necessary within 5 days.
- Contact the Colorado State Patrol 24-hour hotline (1-303-239-4501) if the spill is on a state highway.
- Call the Arvada Stormwater Team (720-898-7812) if spilled material spreads to an Arvada storm drain or a waterway.

14.0 FINAL STABILIZATION

14.1 Establishing Final Stabilization

Final stabilization is reached when all ground surface disturbing activities at the construction site are complete; and, for all areas of ground surface disturbing activities, a uniform vegetative cover with an individual plant density of at least 70 percent (uniform) of what would have been provided by native vegetation in a local, undisturbed area.

14.2 Final Stabilization Measures

- a) The SWMP shall clearly describe the practices used to achieve final stabilization of all disturbed areas at the site, and any planned practices to control pollutants in stormwater discharges that will occur after construction operations have been completed at the site.*
- b) Unless infeasible, topsoil shall be preserved for those areas of a site that will utilize vegetative final stabilization.*
- c) Final stabilization practices for obtaining a vegetative cover should include, as appropriate: seed mix selection and application methods; soil preparation and amendments; soil stabilization practices (e.g., crimped straw, hydro mulch or rolled erosion control products); and appropriate sediment control measures as needed until final stabilization is achieved; etc.*

All final stabilization methods shall be in accordance with Section 1000 of the City of Arvada's Engineering Standards and Specifications

14.2.1 Seeding Plan

The majority of the project limits are under asphalt. However, the project does include open cutting across 3 ditches as well as some work in an open farm field. The replacement seed mix for all of these locations will be CDOT for regions outside roadway or the following:

See next page for seed mix.

Western Wheatgrass	Arriba	30%
	Barton	(4.8)
	Rosana	
Switchgrass	Grenville	20%
	Nebraska 20	(0.9)
	Blackwell	
	Pathfinder	
Sideoats Grama	Vaughn or Butte	15%
		(1.35)
Big Bluestem	Kaw	15%
		(1.65)
Blue Grama	Lovington	10%
	Hachita	(0.3)
Buffalograss	Texoka or	10%
	Sharps' Improved	(0.3)

		100%
		(9.3 lbs PLS/acre)

14.2.2 Reseeding Operations /Corrective Stabilization

Areas where seed has not germinated after one season will be evaluated by the City. Areas that have not germinated will have seed, mulch and mulch tackifier (or blanket) reapplied in accordance with Section 1000 of the City's Engineering Standards and Specifications.

14.3 Long-Term/Permanent Stormwater Control Measures

The site will be returned to pre-construction vegetated conditions.

15.0 INSPECTIONS

During construction the site will be inspected by a Qualified Stormwater Manager at one of the following frequencies approved by the CDPHE:

- At least one inspection every 7 calendar days
- At least one inspection every 14 calendar days including post storm inspections within 24 hours of a storm that causes surface erosion.

The City of Arvada allows a 14-day and post storm inspection frequency.

Inspect the following areas for evidence of, or the potential for, pollutants leaving the construction site boundaries, entering the stormwater drainage system, or discharging to state waters:

- Construction site perimeter;
- All disturbed areas;
- Designated haul routes;

- Material and waste storage areas exposed to precipitation;
- Locations where stormwater has the potential to discharge offsite; and
- Locations where vehicles exit the site.

A reduced frequency inspection schedule may be followed with approval from the City of Arvada for the following site conditions:

- Inspections at completed sites that are awaiting final stabilization
- Winter conditions exclusion

A copy of a blank inspection form is included in **Appendix E**. Completed inspection forms must be kept on site or be easily accessible via an electronic format.

16.0 RECORDKEEPING

A copy of this SWMP and all inspection records must be retained for three years from the permit termination date.

APPENDIX A

CDPS Construction Permit

PENDING CONTRACTOR

APPENDIX B

EROSION AND SEDIMENT CONTROL PLANS, BMP DETAILS, AND LANDSCAPE PLANS

REFER TO DESIGN SHEETS

APPENDIX C
SOILS REPORT



United States
Department of
Agriculture

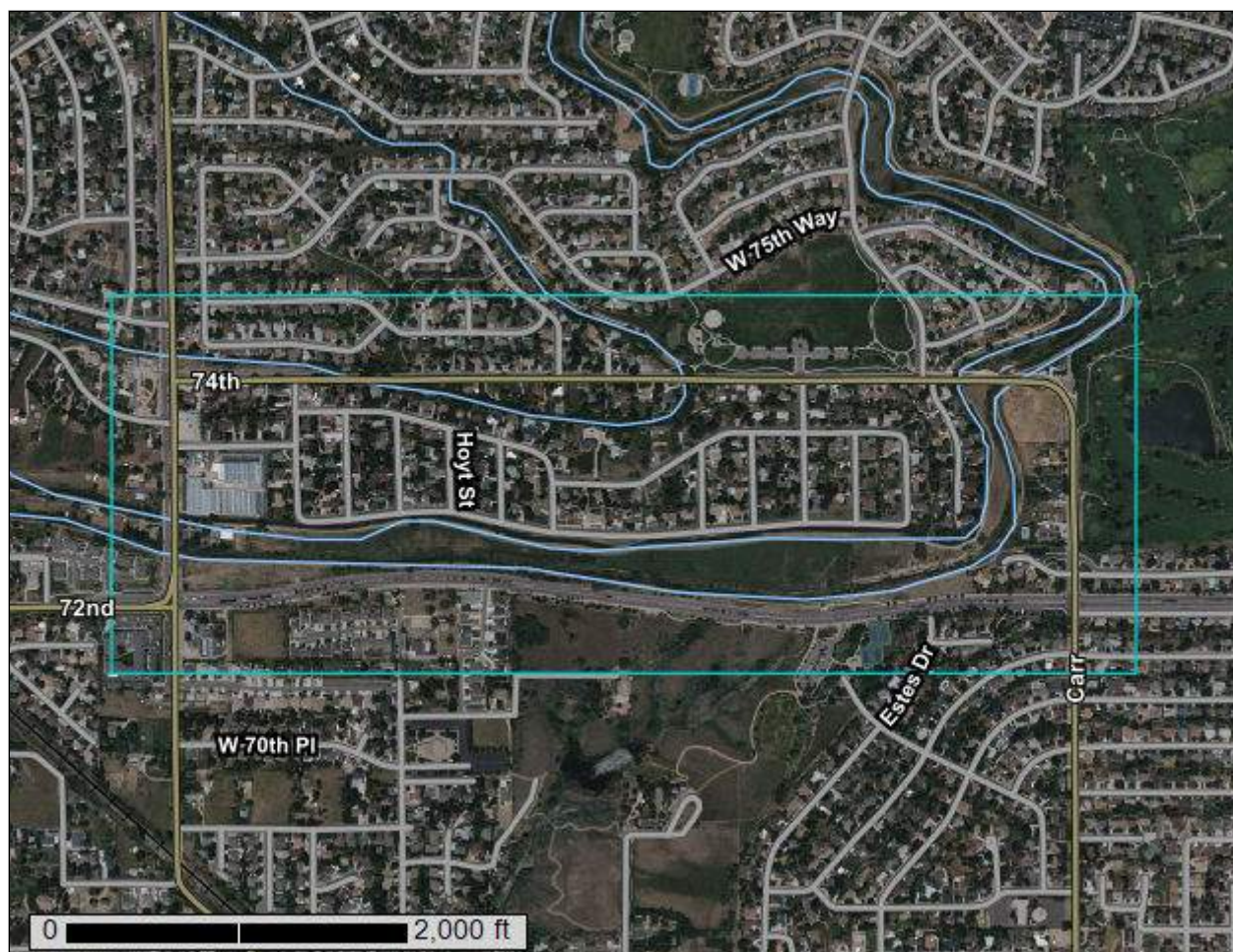
NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for Golden Area, Colorado, Parts of Denver, Douglas, Jefferson, and Park Counties

Segment C,D,F



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

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identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report Soil Map



Custom Soil Resource Report

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features

 Blowout

 Borrow Pit

 Clay Spot

 Closed Depression

 Gravel Pit

 Gravelly Spot

 Landfill

 Lava Flow

 Marsh or swamp

 Mine or Quarry

 Miscellaneous Water

 Perennial Water

 Rock Outcrop

 Saline Spot

 Sandy Spot

 Severely Eroded Spot

 Sinkhole

 Slide or Slip

 Sodic Spot

 Spoil Area

 Stony Spot

 Very Stony Spot

 Wet Spot

 Other

 Special Line Features

Water Features

 Streams and Canals

Transportation

 Rails

 Interstate Highways

 US Routes

 Major Roads

 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Golden Area, Colorado, Parts of Denver, Douglas, Jefferson, and Park Counties
Survey Area Data: Version 17, Sep 7, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 1, 2020—Jul 2, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND

MAP INFORMATION

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
42	Englewood clay loam, 2 to 5 percent slopes	6.4	2.1%
80	Leyden-Primen-Standley cobbly clay loams, 15 to 50 percent slopes	3.8	1.2%
94	Manzanola clay loam, 15 to 25 percent slopes	8.7	2.9%
96	Manzanola-Renohill-Stoneham complex, 9 to 15 percent slopes	12.9	4.2%
105	Nunn-Urban land complex, 0 to 2 percent slopes	138.7	45.6%
106	Nunn-Urban land complex, 2 to 5 percent slopes	77.0	25.3%
163	Ulm-Urban land complex, 5 to 9 percent slopes	56.8	18.7%
Totals for Area of Interest		304.4	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a

given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Golden Area, Colorado, Parts of Denver, Douglas, Jefferson, and Park Counties

42—Englewood clay loam, 2 to 5 percent slopes

Map Unit Setting

National map unit symbol: jpn
Elevation: 5,200 to 6,500 feet
Mean annual precipitation: 13 to 17 inches
Frost-free period: 126 to 142 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Englewood and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Englewood

Setting

Landform: Drainageways, alluvial fans
Down-slope shape: Linear
Across-slope shape: Concave, linear
Parent material: Clayey, calcareous alluvium

Typical profile

H1 - 0 to 9 inches: clay loam
H2 - 9 to 39 inches: clay
H3 - 39 to 60 inches: clay loam

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 9.5 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: R049XB208CO - Clayey Foothill
Other vegetative classification: CLAYEY FOOTHILL (048AY208CO)
Hydric soil rating: No

Minor Components

Urban land

Percent of map unit: 3 percent
Hydric soil rating: No

Nunn

Percent of map unit: 3 percent
Landform: Fans
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R049XB208CO - Clayey Foothill
Hydric soil rating: No

Haverson, rarely flooded

Percent of map unit: 3 percent
Landform: Drainageways, flood plains
Down-slope shape: Linear
Across-slope shape: Concave, linear
Ecological site: R049XY036CO - Overflow
Hydric soil rating: No

Denver

Percent of map unit: 3 percent
Landform: Alluvial fans
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R049XB208CO - Clayey Foothill
Hydric soil rating: No

Englewood, wet, rarely flooded

Percent of map unit: 3 percent
Landform: Drainageways, flood plains, alluvial fans
Down-slope shape: Linear
Across-slope shape: Concave, linear
Ecological site: R048BY265CO - Salt Meadow
Hydric soil rating: No

80—Leyden-Primen-Standley cobbly clay loams, 15 to 50 percent slopes

Map Unit Setting

National map unit symbol: jpq9
Elevation: 5,200 to 6,500 feet
Mean annual precipitation: 13 to 17 inches
Frost-free period: 126 to 142 days
Farmland classification: Not prime farmland

Map Unit Composition

Leyden and similar soils: 35 percent
Primen and similar soils: 30 percent

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Standley and similar soils: 20 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Leyden

Setting

Landform: Hillslopes

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Linear

Across-slope shape: Linear, convex

Parent material: Calcareous, gravelly, cobbly, stony, and clayey slope alluvium over residuum weathered from mudstone

Typical profile

H1 - 0 to 3 inches: cobbly clay loam

H2 - 3 to 35 inches: gravelly clay

H3 - 35 to 39 inches: weathered bedrock

Properties and qualities

Slope: 15 to 50 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: Very high

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7e

Hydrologic Soil Group: D

Ecological site: R049XB208CO - Clayey Foothill

Other vegetative classification: CLAYEY FOOTHILL (048AY208CO)

Hydric soil rating: No

Description of Primen

Setting

Landform: Hillslopes, ridges

Landform position (two-dimensional): Shoulder

Landform position (three-dimensional): Side slope, crest

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Cobbly, gravelly, clayey material over residuum weathered from sandstone

Typical profile

H1 - 0 to 9 inches: cobbly clay loam

H2 - 9 to 14 inches: cobbly clay

H3 - 14 to 18 inches: gravelly clay

H4 - 18 to 22 inches: weathered bedrock

Properties and qualities

Slope: 15 to 50 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 2.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: R049XB208CO - Clayey Foothill
Other vegetative classification: CLAYEY FOOTHILL (048AY208CO)
Hydric soil rating: No

Description of Standley

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Calcareous, gravelly, cobbly, stony, and clayey alluvium and/or colluvium

Typical profile

H1 - 0 to 9 inches: cobbly clay loam
H2 - 9 to 22 inches: gravelly clay
H3 - 22 to 60 inches: gravelly clay loam

Properties and qualities

Slope: 15 to 50 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 9.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C

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Ecological site: R049XB208CO - Clayey Foothill
Other vegetative classification: CLAYEY FOOTHILL (048AY208CO)
Hydric soil rating: No

Minor Components

Denver

Percent of map unit: 3 percent
Landform: Alluvial fans
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R049XB208CO - Clayey Foothill
Hydric soil rating: No

Kutch

Percent of map unit: 3 percent
Landform: Hillslopes
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Ecological site: R049XB208CO - Clayey Foothill
Hydric soil rating: No

Midway

Percent of map unit: 3 percent
Landform: Ridges
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: R049XB212CO - Shaly Foothill
Hydric soil rating: No

Urban land

Percent of map unit: 3 percent
Hydric soil rating: No

Nunn

Percent of map unit: 3 percent
Landform: Fans
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R049XB208CO - Clayey Foothill
Hydric soil rating: No

94—Manzanola clay loam, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: jpq5

Elevation: 5,200 to 6,500 feet

Mean annual precipitation: 13 to 17 inches

Frost-free period: 126 to 142 days

Farmland classification: Not prime farmland

Map Unit Composition

Manzanola and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Manzanola

Setting

Landform: Hillslopes, ridges

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Linear, convex

Across-slope shape: Linear, convex

Parent material: Calcareous, clayey alluvium

Typical profile

H1 - 0 to 5 inches: clay loam

H2 - 5 to 29 inches: clay

H3 - 29 to 60 inches: clay loam

Properties and qualities

Slope: 15 to 25 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: Very high

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 15 percent

Gypsum, maximum content: 2 percent

Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)

Sodium adsorption ratio, maximum: 2.0

Available water supply, 0 to 60 inches: High (about 9.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified

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Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: R049XB208CO - Clayey Foothill
Other vegetative classification: CLAYEY FOOTHILL (048AY208CO)
Hydric soil rating: No

Minor Components

Midway

Percent of map unit: 3 percent
Landform: Ridges
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: R049XB212CO - Shaly Foothill
Hydric soil rating: No

Denver

Percent of map unit: 3 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R049XB208CO - Clayey Foothill
Hydric soil rating: No

Englewood

Percent of map unit: 3 percent
Landform: Drainageways
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: R049XB208CO - Clayey Foothill
Hydric soil rating: No

Ulm

Percent of map unit: 3 percent
Landform: Hillslopes
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Interfluvium, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R049XB208CO - Clayey Foothill
Hydric soil rating: No

Renohill

Percent of map unit: 2 percent
Landform: Ridges
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Convex
Across-slope shape: Linear, convex
Ecological site: R049XB208CO - Clayey Foothill
Hydric soil rating: No

Urban land

Percent of map unit: 1 percent

Hydric soil rating: No

96—Manzanola-Renohill-Stoneham complex, 9 to 15 percent slopes

Map Unit Setting

National map unit symbol: jpqv

Elevation: 5,200 to 6,500 feet

Mean annual precipitation: 13 to 17 inches

Frost-free period: 126 to 142 days

Farmland classification: Not prime farmland

Map Unit Composition

Manzanola and similar soils: 35 percent

Renohill and similar soils: 30 percent

Stoneham and similar soils: 20 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Manzanola

Setting

Landform: Hillslopes

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Convex, linear

Across-slope shape: Convex, linear

Parent material: Calcareous, clayey alluvium

Typical profile

H1 - 0 to 5 inches: clay loam

H2 - 5 to 29 inches: clay

H3 - 29 to 60 inches: clay loam

Properties and qualities

Slope: 9 to 15 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: Very high

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 15 percent

Gypsum, maximum content: 2 percent

Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)

Sodium adsorption ratio, maximum: 2.0

Available water supply, 0 to 60 inches: High (about 9.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: R049XB208CO - Clayey Foothill
Other vegetative classification: CLAYEY FOOTHILL (048AY208CO)
Hydric soil rating: No

Description of Renohill

Setting

Landform: Hillslopes, ridges
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Parent material: Calcareous, clayey residuum weathered from sandstone and shale

Typical profile

H1 - 0 to 3 inches: loam
H2 - 3 to 16 inches: clay
H3 - 16 to 32 inches: clay loam
H4 - 32 to 36 inches: unweathered bedrock

Properties and qualities

Slope: 9 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 5.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Ecological site: R049XB208CO - Clayey Foothill
Other vegetative classification: CLAYEY FOOTHILL (048AY208CO)
Hydric soil rating: No

Description of Stoneham

Setting

Landform: Knobs, hillslopes, ridges
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Calcareous, loamy alluvium and/or eolian deposits

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Typical profile

H1 - 0 to 3 inches: loam
H2 - 3 to 12 inches: clay loam
H3 - 12 to 60 inches: loam

Properties and qualities

Slope: 9 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: High (about 9.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: R049XB202CO - Loamy Foothill
Hydric soil rating: No

Minor Components

Primen

Percent of map unit: 3 percent
Landform: Hillslopes
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: R049XB208CO - Clayey Foothill
Hydric soil rating: No

Ulm

Percent of map unit: 3 percent
Landform: Hillslopes
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R049XB208CO - Clayey Foothill
Hydric soil rating: No

Midway

Percent of map unit: 3 percent
Landform: Ridges
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: R049XB212CO - Shaly Foothill
Hydric soil rating: No

Nunn

Percent of map unit: 3 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R049XB208CO - Clayey Foothill
Hydric soil rating: No

Leyden

Percent of map unit: 2 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex, linear
Ecological site: R049XB208CO - Clayey Foothill
Hydric soil rating: No

Urban land

Percent of map unit: 1 percent
Hydric soil rating: No

105—Nunn-Urban land complex, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: jpkj
Elevation: 5,200 to 6,500 feet
Mean annual precipitation: 13 to 17 inches
Frost-free period: 126 to 142 days
Farmland classification: Not prime farmland

Map Unit Composition

Nunn and similar soils: 65 percent
Urban land: 20 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nunn

Setting

Landform: Terraces, fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Clayey, calcareous alluvium

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Typical profile

H1 - 0 to 6 inches: clay loam
H2 - 6 to 30 inches: clay
H3 - 30 to 60 inches: clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: High (about 10.2 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 3c
Hydrologic Soil Group: C
Ecological site: R049XB208CO - Clayey Foothill
Other vegetative classification: CLAYEY FOOTHILL (048AY208CO)
Hydric soil rating: No

Description of Urban Land

Typical profile

H1 - 0 to 6 inches: variable

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: No

Minor Components

Denver

Percent of map unit: 5 percent
Landform: Alluvial fans, terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R049XB208CO - Clayey Foothill
Hydric soil rating: No

Englewood

Percent of map unit: 5 percent
Landform: Drainageways
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: R049XB208CO - Clayey Foothill
Hydric soil rating: No

Standley

Percent of map unit: 5 percent

Custom Soil Resource Report

Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R049XB208CO - Clayey Foothill
Hydric soil rating: No

106—Nunn-Urban land complex, 2 to 5 percent slopes

Map Unit Setting

National map unit symbol: jpkk
Elevation: 5,200 to 6,500 feet
Mean annual precipitation: 13 to 17 inches
Frost-free period: 126 to 142 days
Farmland classification: Not prime farmland

Map Unit Composition

Nunn and similar soils: 65 percent
Urban land: 20 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nunn

Setting

Landform: Fans, terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Clayey, calcareous alluvium

Typical profile

H1 - 0 to 6 inches: clay loam
H2 - 6 to 30 inches: clay
H3 - 30 to 60 inches: clay loam

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: High (about 10.2 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: R049XB208CO - Clayey Foothill
Other vegetative classification: CLAYEY FOOTHILL (048AY208CO)
Hydric soil rating: No

Description of Urban Land

Typical profile

H1 - 0 to 6 inches: variable

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: No

Minor Components

Denver

Percent of map unit: 5 percent
Landform: Alluvial fans, terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R049XB208CO - Clayey Foothill
Hydric soil rating: No

Englewood

Percent of map unit: 5 percent
Landform: Drainageways
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: R049XB208CO - Clayey Foothill
Hydric soil rating: No

Standley

Percent of map unit: 5 percent
Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R049XB208CO - Clayey Foothill
Hydric soil rating: No

163—Ulm-Urban land complex, 5 to 9 percent slopes

Map Unit Setting

National map unit symbol: jpm1

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Elevation: 5,200 to 6,500 feet
Mean annual precipitation: 13 to 17 inches
Frost-free period: 126 to 142 days
Farmland classification: Not prime farmland

Map Unit Composition

Ulm and similar soils: 65 percent
Urban land: 20 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ulm

Setting

Landform: Terraces, hillslopes
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Interfluve, side slope, tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Calcareous, clayey alluvium derived from calcareous shale

Typical profile

H1 - 0 to 6 inches: clay loam
H2 - 6 to 21 inches: clay
H3 - 21 to 50 inches: clay
H4 - 50 to 60 inches: clay loam

Properties and qualities

Slope: 5 to 9 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.5 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: R049XB208CO - Clayey Foothill
Other vegetative classification: CLAYEY FOOTHILL (048AY208CO)
Hydric soil rating: No

Description of Urban Land

Setting

Landform: Terraces, hillslopes
Down-slope shape: Linear
Across-slope shape: Linear

Typical profile

H1 - 0 to 6 inches: variable

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 8s

Hydric soil rating: No

Minor Components

Renohill

Percent of map unit: 3 percent

Landform: Hillslopes, ridges

Landform position (two-dimensional): Shoulder, backslope

Landform position (three-dimensional): Side slope, crest

Down-slope shape: Convex, linear

Across-slope shape: Convex, linear

Ecological site: R049XB208CO - Clayey Foothill

Hydric soil rating: No

Manzanola

Percent of map unit: 3 percent

Landform: Hillslopes, ridges

Landform position (two-dimensional): Summit, backslope

Landform position (three-dimensional): Side slope, crest

Down-slope shape: Convex, linear

Across-slope shape: Linear, convex

Ecological site: R049XB208CO - Clayey Foothill

Hydric soil rating: No

Nunn

Percent of map unit: 3 percent

Landform: Hillslopes, terraces

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope, tread

Down-slope shape: Linear

Across-slope shape: Linear

Ecological site: R049XB208CO - Clayey Foothill

Hydric soil rating: No

Denver

Percent of map unit: 3 percent

Landform: Hillslopes, terraces

Landform position (two-dimensional): Backslope, footslope

Landform position (three-dimensional): Side slope, tread

Down-slope shape: Linear

Across-slope shape: Linear

Ecological site: R049XB208CO - Clayey Foothill

Hydric soil rating: No

Englewood

Percent of map unit: 3 percent

Landform: Drainageways

Down-slope shape: Linear

Across-slope shape: Concave

Ecological site: R049XB208CO - Clayey Foothill

Hydric soil rating: No

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United States
Department of
Agriculture

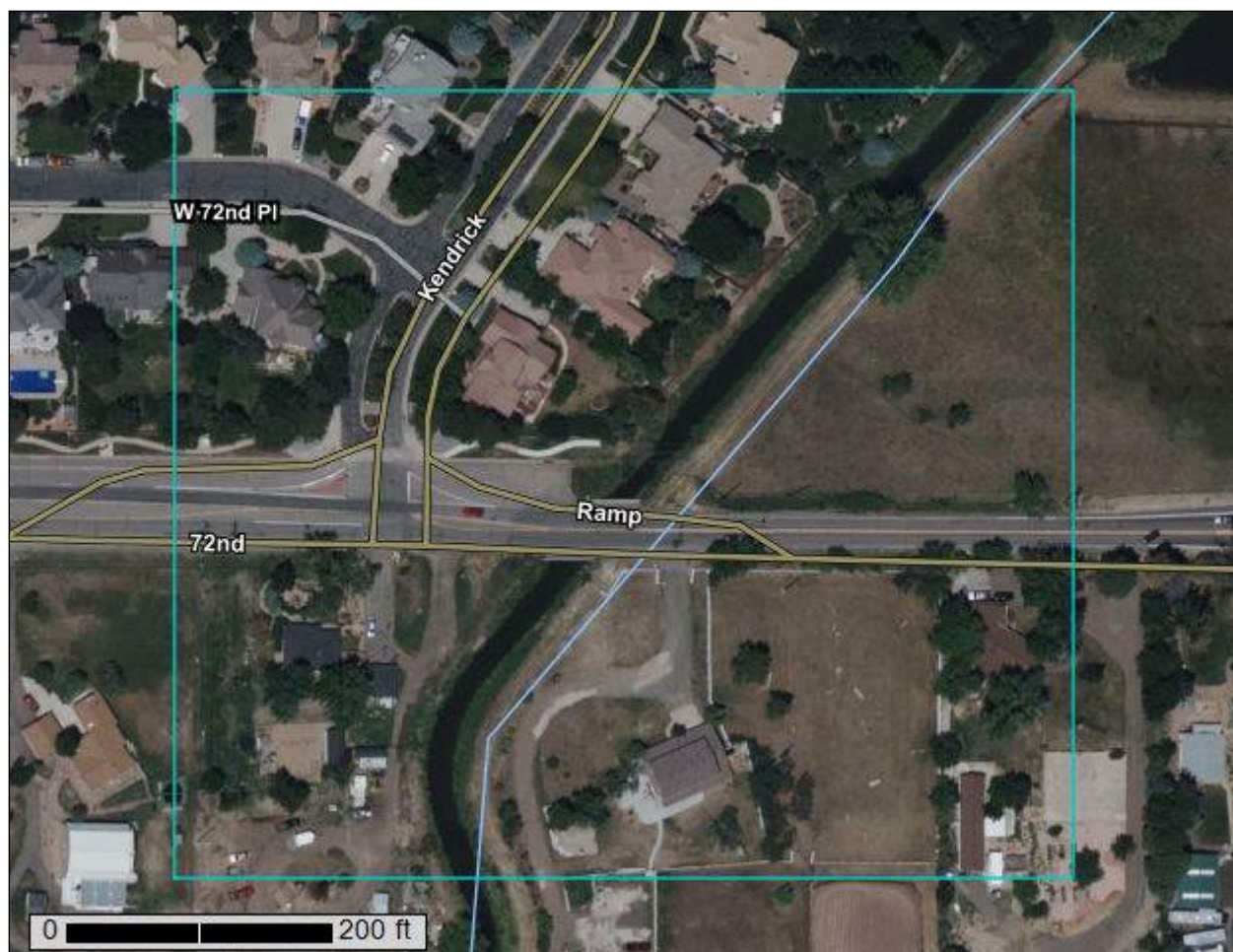
NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for Golden Area, Colorado, Parts of Denver, Douglas, Jefferson, and Park Counties

Segment E



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

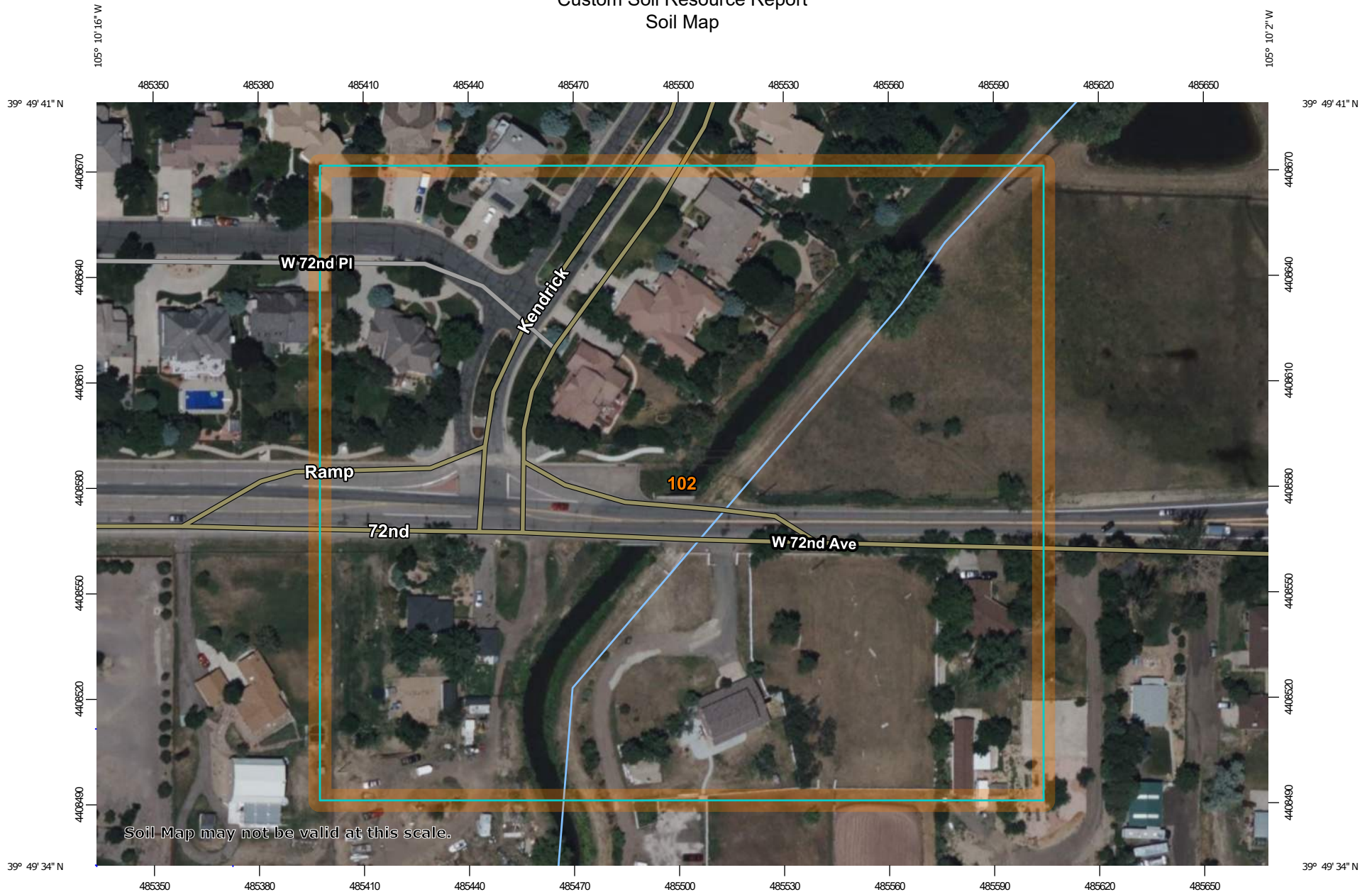
Custom Soil Resource Report

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

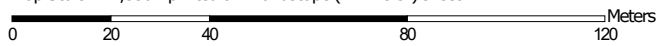
The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report Soil Map



Soil Map may not be valid at this scale.

Map Scale: 1:1,530 if printed on A landscape (11" x 8.5") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84

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MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features

 Blowout

 Borrow Pit

 Clay Spot

 Closed Depression

 Gravel Pit

 Gravelly Spot

 Landfill

 Lava Flow

 Marsh or swamp

 Mine or Quarry

 Miscellaneous Water

 Perennial Water

 Rock Outcrop

 Saline Spot

 Sandy Spot

 Severely Eroded Spot

 Sinkhole

 Slide or Slip

 Sodic Spot

 Spoil Area

 Stony Spot

 Very Stony Spot

 Wet Spot

 Other

 Special Line Features

Water Features

 Streams and Canals

Transportation

 Rails

 Interstate Highways

 US Routes

 Major Roads

 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Golden Area, Colorado, Parts of Denver, Douglas, Jefferson, and Park Counties
Survey Area Data: Version 17, Sep 7, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 1, 2020—Jul 2, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND

MAP INFORMATION

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
102	Nunn clay loam, 0 to 2 percent slopes	9.3	100.0%
Totals for Area of Interest		9.3	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Golden Area, Colorado, Parts of Denver, Douglas, Jefferson, and Park Counties

102—Nunn clay loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2tlps
Elevation: 5,300 to 5,800 feet
Mean annual precipitation: 15 to 19 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 100 to 130 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Nunn and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nunn

Setting

Landform: Terraces, alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

A - 0 to 6 inches: clay loam
Bt - 6 to 18 inches: clay
Btk - 18 to 30 inches: clay
Bk - 30 to 47 inches: clay loam
BCK - 47 to 80 inches: clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 7 percent
Maximum salinity: Nonsaline to very slightly saline (0.1 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 0.5
Available water supply, 0 to 60 inches: High (about 9.6 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: R049XB208CO - Clayey Foothill
Hydric soil rating: No

Minor Components

Englewood

Percent of map unit: 9 percent

Landform: Alluvial fans, terraces

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Ecological site: R049XB208CO - Clayey Foothill

Hydric soil rating: No

Standley

Percent of map unit: 6 percent

Landform: Terraces, alluvial fans

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Ecological site: R049XB208CO - Clayey Foothill

Hydric soil rating: No

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United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

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a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for Golden Area, Colorado, Parts of Denver, Douglas, Jefferson, and Park Counties

Segment G



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

Custom Soil Resource Report

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report Soil Map



Custom Soil Resource Report

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features

 Blowout

 Borrow Pit

 Clay Spot

 Closed Depression

 Gravel Pit

 Gravelly Spot

 Landfill

 Lava Flow

 Marsh or swamp

 Mine or Quarry

 Miscellaneous Water

 Perennial Water

 Rock Outcrop

 Saline Spot

 Sandy Spot

 Severely Eroded Spot

 Sinkhole

 Slide or Slip

 Sodic Spot

 Spoil Area

 Stony Spot

 Very Stony Spot

 Wet Spot

 Other

 Special Line Features

Water Features

 Streams and Canals

Transportation

 Rails

 Interstate Highways

 US Routes

 Major Roads

 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Golden Area, Colorado, Parts of Denver, Douglas, Jefferson, and Park Counties
Survey Area Data: Version 17, Sep 7, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 1, 2020—Jul 2, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND

MAP INFORMATION

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
1	Alda loam, 0 to 2 percent slopes	7.0	9.5%
108	Nunn variant-Urban land complex, 0 to 3 percent slopes	66.4	90.5%
Totals for Area of Interest		73.4	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

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Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Golden Area, Colorado, Parts of Denver, Douglas, Jefferson, and Park Counties

1—Alda loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: jpk9
Elevation: 5,200 to 6,500 feet
Mean annual precipitation: 13 to 17 inches
Frost-free period: 126 to 142 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Alda and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Alda

Setting

Landform: Flood plains, terraces, valley floors
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Calcareous, stratified alluvium over sandy and gravelly alluvium

Typical profile

H1 - 0 to 11 inches: loam
H2 - 11 to 38 inches: stratified loamy sand to loam
H3 - 38 to 60 inches: very gravelly loamy sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: About 24 to 36 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 5.6 inches)

Interpretive groups

Land capability classification (irrigated): 2w
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: B
Ecological site: R049XA178WY - Wetland (Foothills And Mountains Southeast)
Other vegetative classification: WET MEADOW (48AY315CO)
Hydric soil rating: No

Minor Components

Niwot

Percent of map unit: 3 percent

Landform: Meandering channels

Down-slope shape: Concave, linear

Across-slope shape: Concave

Ecological site: R049XA178WY - Wetland (Foothills And Mountains Southeast)

Hydric soil rating: No

Fluventic haplaquolls

Percent of map unit: 3 percent

Landform: Flood plains

Down-slope shape: Linear

Across-slope shape: Linear

Ecological site: R049XA178WY - Wetland (Foothills And Mountains Southeast)

Hydric soil rating: Yes

Urban land

Percent of map unit: 3 percent

Hydric soil rating: No

Loveland

Percent of map unit: 3 percent

Landform: Terraces

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Ecological site: R048BY265CO - Salt Meadow

Hydric soil rating: Yes

Loveland variant

Percent of map unit: 3 percent

Landform: Terraces

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Ecological site: R049XY036CO - Overflow

Hydric soil rating: No

108—Nunn variant-Urban land complex, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: jpkm

Elevation: 5,200 to 6,500 feet

Mean annual precipitation: 13 to 17 inches

Frost-free period: 126 to 142 days

Farmland classification: Not prime farmland

Map Unit Composition

Nunn variant, rarely flooded, and similar soils: 65 percent

Urban land: 20 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nunn Variant, Rarely Flooded

Setting

Landform: Alluvial fans, flood plains, terraces

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Calcareous alluvium

Typical profile

H1 - 0 to 12 inches: clay loam

H2 - 12 to 43 inches: clay

H3 - 43 to 60 inches: loam

Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Somewhat poorly drained

Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)

Depth to water table: About 24 to 36 inches

Frequency of flooding: Rare

Frequency of ponding: None

Calcium carbonate, maximum content: 10 percent

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water supply, 0 to 60 inches: High (about 9.8 inches)

Interpretive groups

Land capability classification (irrigated): 2w

Land capability classification (nonirrigated): 3s

Hydrologic Soil Group: C

Ecological site: R048BY265CO - Salt Meadow

Hydric soil rating: No

Description of Urban Land

Typical profile

H1 - 0 to 6 inches: variable

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 8s

Hydric soil rating: No

Minor Components

Englewood

Percent of map unit: 5 percent

Landform: Drainageways

Down-slope shape: Linear

Custom Soil Resource Report

Across-slope shape: Concave
Ecological site: R049XB208CO - Clayey Foothill
Hydric soil rating: No

Nunn

Percent of map unit: 5 percent
Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R049XB208CO - Clayey Foothill
Hydric soil rating: No

Loveland variant, rarely flooded

Percent of map unit: 5 percent
Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R049XY036CO - Overflow
Hydric soil rating: No

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Custom Soil Resource Report

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APPENDIX D

NATIONAL FLOOD HAZARD LAYER – FIRMette

DWL RQDD DRRG-EPUGDHU)BWWH



HQ

Q) 6557 7543(65) 551.557

6557 6555		LWRW %DH)DRGPHDMLRQ % -RQH\$ 9 \$ LWK%RU)BWK -RQH\$ 55 9 5 \$HODMRL)DRG
26552 2655		\$QDD &QPH)DRG-EPUG \$H)D/ R DQDD RQPHIORGZWKDHUHD G-BWKOHVWWDQQRHRRW RU ZWKGDQ DJHD/R OHVWWDQQRHVXDUHEOHQ; XWUH&QD WLRQ/\$QDD &QPH)DRG-EPUG -RQH; \$H)DZWK\$GPH)DRG\$NGHWR HHH GH)RHHV -RQH; \$H)DZWK)DRG\$NGHWRHHH -RQH'
26556		\$H)DR QLEB)DRG-EPUG -RQH; (HFWLYH)
65 65556		\$H)DR QGWHUEQ)DRG-EPUG -RQH' &QDD &OYUW RU BVRUR)ZU HHH)NH RU DRRGDDO
26 2655		&R)W)BFWLRQ/ZWK\$QDD &QPH DHU BUIPH)H)DMLRQ &DWD) TUDQHW %DH)DRGPHDMLRQLQH % LEW R B)XG -XULGLFWLRQ%RQDD &DWD) TUDQHW %D)DLQH BURLQH%D)DLQH BURLD\$LF)D)XU
6556		L)JWDD DWD\$D)D)D)H R)JWDD DWD\$D)D)D)H QDSSG
		7H)S)QL VSD)HG)QWKH)B)LV)DQD)B)R)B)W S)R)QV V)OH)F)W)G)B)W)H)X)H) DQ)G)G)H)V)Q)W)U)H)B)H) DQD)W)K)U)L)W)D)W)L)Y)H)S)R)S)U)W)O)R)D)W)L)R)Q

7H)VB)F)B)D)L)V)ZWK)B)V)W)DQD)U)G)V)RU)W)K)X)H)R
 G)J)WDD)IO)R)G)B)S)V)L)W)L)V)Q)W)Y)R)G)V)G)H)F)U)L)B)G)B)O)RZ
 7H)ED)F)S)V)R)Q)F)B)D)L)V)ZWK)B)V)ED)F)S
 D)F)U)D)R)W)DQD)U)G)V)
 7H)IO)R)G)KQD)U)G)Q)R)U)B)M)R)Q)L)V)G)U)L)Y)G)U)H)F)W)O)I)U)R)W)K
 D)W)K)U)L)W)D)W)L)Y)H)Z)E)V)U)Y)L)F)V)S)U)R)L)G)G)B)B) 7H)VB)S
 Z)V)H)S)U)W)H)G)R)Q) D)V) \$ DQ)G)G)H)V)Q)W)
 U)H)O)H)W)R)Q)Q)H)V)RU)D)F)Q)Q)W)V)B)H)X)Q)V)W)R)W)L)V)G)W)H)DQ)G
 W)L)R) 7H)H)DQ)G)H)H)F)W)L)H)Q)R)U)B)M)R)Q)B)R)Q)Q)H)R)
 B)F)F)V)S)U)W)H)G)G)B)Q)Z)D)W)D)R)H)U)W)L)R)
 7H)VB)S)D)B)H)V)Y)R)G)L)I)W)K)H)Q)H)RU)RU)H)R)W)K)H)I)R)O)R)Z)Q)B)S
 H)O)H)Q)W)V)G)R)Q)W)D)S)D)U) ED)F)S)B)H)U)IO)R)G)R)Q)H)O)D)E)O)V
 O)H)H)G)V)D)D)H)ED)U)B)S)U)H)D)W)L)R)Q)D)W)H)F)F)Q)W)L)G)Q)W)L)H)U)V
)S)Q)D)O)Q)H)U)DQ)G)B)H)H)F)W)L)Y)G)W)H)D)S)L)B)H)V)RU
 X)D)S)G)DQ)G)X)Q)G)U)Q)J)G)D)H)V)DQ)Q)W)B)H)X)H)G)I)RU
 U)H)O)D)M)R)U)S)U)S)R)H)V)

DWL RQDD PRRG-EPUGDHU)BWWH



HQS

01637 754(16) 551,557

66.52
6.555

- LWKRW %DH)PRGPHDWLRQ %
-RQHS 9 \$
- LWK%RUFSWK -RQHS 9 \$ 9 \$
- \$HODMRL)PRG

26.52
2.55

- \$QDD &QPH)PRG-EPUG \$H/D
R QDDO RQPHIORRGZWKDHUHD
G-SWKOHVWQDQHQHRRW RU ZWKGDQ
DUHD/R OHVWQDQHQHRRWQHEOHQ;
- XWUH&QD WLRQ/\$QDD
&QPH)PRG-EPUG -RQ;
- \$H/ZWK\$GPH)PRG\$NGHWR
HMH GHHRMH -RQ;
- \$H/ZWK)PRG\$NGHWRHMH -RQ;

26.56

- \$H/D RQLEO)PRG-EPUG -RQ;
- (HFWLYH
- \$H/D RQWHUEQ)PRG-EPUG -RQ;
- &QDD &OYHUW RU WRURH
- ||||| HMH LNH RU)PRGDDO

26
2.56

- \$URW/6FWLRQ/ZWK\$QDD &QPH
DWHU QUIDPHOHYDLRQ
- &QDDO TUDQHW
- ~~~~~ %DH)PRGPHDWLRQLQH %
- LEW R 6VXG
- XULVLFWLRQ%QDDU
- &QDDO TUDQHW %DHLQH
- \$URLOH%DHLQH
- \$URUDSLF)DWHU

6.56

- LJLWDD DWD\$DLOEDH
- LJLWDD DWD\$DLOEDH
- QSSG
- 7HSLQGLVSDHGRQWKHBSLV/DQDSSURLEWH
SLQV VHOHFWHGBWKHXLJ DQGGRVQRW UHSH
DQDWRULWDLVHSHRSHUWOFDMLRQ

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GLJWDD IORGBS/LILW LVQRW YRLGDVGHVULHGGBORZ
7HEDHBSVQDQFBLHVZWK\$VVDHBS
DQDURWQDQUGV

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WLR 7HJQDGHSHHFWLHQLRUBMLRQBRQDHRU
BHHHVSUWHGBQZDQDVRHULWLR

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HOFQWVGRQRW DSSDU, EDHSLBHUIORRGHQHDEOV
OHHQ VADHEDU BSHHMLRQDWH FRQLWLGQMLLHV
)SSQDQH-U DQGHSHHFWLHGDWH DSLBHVIRU
XQSSGDQGXQGUQLJGDHVDQDQV BHHHGRU
UHDMLRUSURH



~~62,512~~
~~\$3,315~~

75862
1285

7586

678270

25
1846

836

7KLVBSFBOLH/ZWK)BVWDDUG/IRU WKHXHR
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7KHED/BSWROFBOLH/ZWK)BVEDVBS
DFXUDF WDDUG/

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UHOHFWRQDQVUR **DQ**QVWVSHXQVWRWMLVGDWHDQ
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)SDDO QEU DGS)SHIFAWLYHGDWH DSLHVIUR
XSSGDDG)QRGUQLJGDJHDV FQQRV EHXMGIRU
UHDMDRUA SUSRVH

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 FQ\$ \$9\$
 LWK%~~X~~RUFSMK FQ\$ \$2\$ \$3\$ \$5\$
 \$DODWU)DPGZ

\$Q00 &QHPRGJUG \$JH/
 R DQ00 RQTHIORGZWKDHJH
 G-SVKOH/WKQQRHFW RJ ZWKGLQ
 DHD/R OH/WKQQRHVDJHEOHQ;

 JXVUH FQJ WLFQJ \$PQD
 &QFHJPRG-EPUG -FQH;
 \$JHDZWK\$GAGPRG\$NGHWR
 HHH GHJWH/ -FQH;
 \$JHDZWKPRG\$NGHWRHH -FQH;

~~PG~~ \$JHDI QLEO DREG-DUG -RCH;
 (IHFWLYHIV

\$JHDI & QHWUEQ-G)RRG-EDUG =RQ'

----- &QQD &OYHUW RU WRURHU
IIIIII AMHLEH RU DRGDOO







8URW 6FWLRQ/ ZWK\$QDD 8QFH
 DMHU 6UIDHQHMDLRQ
 8QDWD 7UDQFW
 %DMHPRGQHMDLRQLQH %

————— LEW R 6WG
 ————— XULVGFWLQ%RQDU
 - - - - - 8DWD 7UDQFHV %DHLQH
 - - - - - 3RLOH%DHLQH
 ————— YRUDSLFHWXUH

- ☐ L1WDDWD\$LODEH
- ☐ R1LWDDWD\$LODEH
- ☒ ~~QPSG~~

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SRLQV VDHFWHGEWKHXHU DQGGRVQRW UHSH
DQDWKRLWDWMLYHSURSHUWOFDMLRQ

%DWPS 86DMLRQD DS ZWKRLD\ DWDUHUHK-GZWFU

DWLRQD DRRG-EPUGDHU)BWWH



HQS

Q)6\$7 7\$4(6\$)5\$5\$7

6\$72 6\$55		LWHRW %DH)DRGPHDWLRQ % -FQH\$ 9\$ LWK%RUFSWK -FQH\$ 9\$ 9\$ \$HODMRU)DRG
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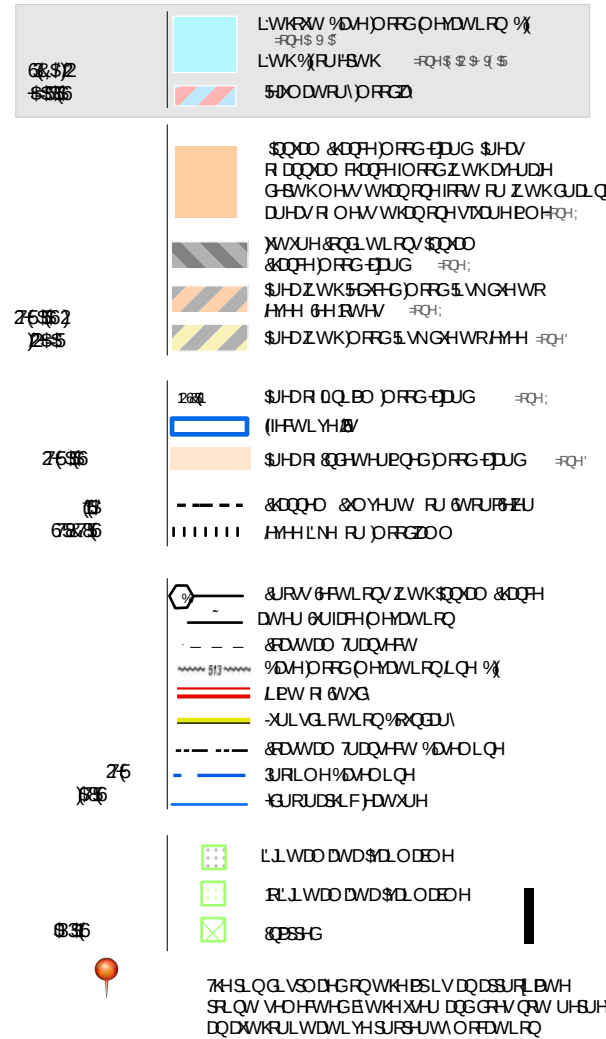
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26\$6 6\$55		\$JHDR OQLBO)DRG-EPUG -FQH; (IHFWL YHJ \$JHDR QGWHUEQ)DRG-EPUG -FQH'
		--- &QDQD &OYHUW RU \$WRURJZU HMH LNH RU)DRGZDO

26 26\$		\$JRW \$FWLRQ/ZWK\$QDQD &QDH DWHU QDIDH OHYDWLRQ --- &QDQD ZUDQHW ~~~~~ %DH)DRGPHDWLRQLQH % --- LEW R \$VXG --- XULVLFWLRQ%QDQD --- &QDQD ZUDQHW %DMDLQH --- \$JRLQH%DMDLQH --- \$JRUDSL F)DWHUH
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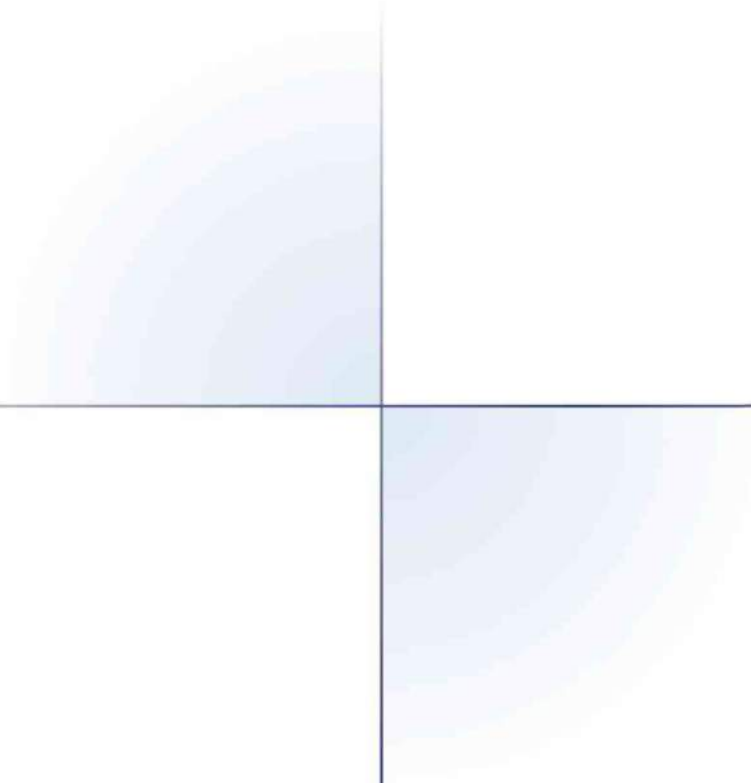
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74LVBSFFBOLHVZWK\$VWWDQDUGVIRU WKHXHR
GLJWDD IOFRGB/LILW LVQRW YRLGDVGHVULBGBORZ
74HDMBSVFRQFFBOLHVZWK\$VVDHBS
DFFUDR WWDQDUGV
74HIOFRGKQDUGLQRUBMLRQLVGHULYHG LUHFWO\IURFWKH
DWRULWDLVHJZEYHUYLHV SURLGGB 74LVBS
ZVH\$UWVHGQ DV, 3 DQGRHV QRV
UHOHFW RQDQV RU DQDQV V\$HIXQV WRWKLVDWH DQ
WLR 74HJ DQGHIIHFWL YHLQRUBMLRQ\$RQDHRU
BFFRVSHUHVGBQZGDVDRYH WLR
74LVBSL\$HLYLRLGLI WKHQRU RUHR WKHIOFRZQBS
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OHQDQ VADHEDU BSFUDWLRLQDWH FFRQWALGQMLIHUV
)SSQDQ Q\$H DQGHIIHFWL YHGDWH D\$LBH/IRU
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 DFXUDRWQDQUGV
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 ZVHSRUWHGQF DV, 3 DQGGRHVQRW
 UHOHFWRQHVIRU DQFQWVVEHDXQVWRWKLVCMDWHQGS
 WLA 7KHJQDHHFVLYHLQRUBMLRQLVHQRHVR
 EFRFVSLVHGHEGQZQDWRHVLWLA
 7KLVBESLHVLVYRLGLIWKHQRHVRUHRWHHFOORZQIES
 HOFHQWVRQRWDSHUV, EDHESLHBLAIOFRFQHOEHOV
 OHJGVEDHED, BSUFHMDQDQGVHFRQWMLGHQWLILHUV
 JSSQHOQEHU DQGSJHHFVWLYHGDWHOSLHVRU
 XQSSGHQGXQGHUQLGDUHVRQQRW EHXHFGIRU
 UHOHWRUHSURVH/

APPENDIX E
INSPECTION FORMS
PENDING CONTRACTOR



APPENDIX C

FRICO Approval Letter and Contractor Requirements

The following documents were provided to us for review purposes:

1. Bid Set Drawing submittal 2021 WATER MAIN IMPROVEMENT PROJECT drawings by CDM Smith dated 10/3/23.
2. Geotechnical Investigation Report, 2021 Water main Improvement Project, February 2023 by Lithos Engineering.
3. Response letters from CDSmith dated February 24, 2023, and May 2, 2023.

GENERAL COMMENTS

1. FRICO expressly reserves the right to require projects to be constructed at a minimum in accordance with the guidelines set forth in the “Farmers Reservoir and Irrigation Company Design Review Manual” in order to protect the quality, integrity, operation, and efficiency of FRICO Property and Facilities.
2. A standard license agreement is required between FRICO and the developer (and any successor). A temporary construction easement and other agreements may also be required.

RECOMMENDATIONS

Based on our review of the drawings and associated design documents, ERC recommends that FRICO provide technical approval of the project with the following conditions:

1. Coordination with FRICO will be needed well in advance of excavating into the canal embankment deeming the canal inoperable. The allotted canal downtime will need to be agreed to with FRICO.
2. At least 72 hours before construction activities commence, schedule, and conduct a preconstruction meeting with all parties involved with the work including FRICO.
3. At least 48 hours prior to beginning construction, provide written notification to FRICO.
4. Provide a closed utility locate ticket to a FRICO representative at the pre-construction meeting.
5. As part of the agreement, FRICO will need to have assurance that an access route is maintained open for FRICO during and after construction.
6. Ponding/nuisance flows and wet conditions will likely persist throughout the project. Consequently, the contractor shall have a water management plan which includes controls required to ensure the work can be completed within the planned construction timeframe.
7. The contractor should be prepared to divert up to 20 cfs.
8. Keep a record of the dewatering effort that is required. This can be done by visually inspecting the discharge a few times a day, estimating the flow, and keeping a record of this information.
9. If trench boxes are to be used for installation of the pipe, there may be sloughing of adjacent materials causing a weakened zone between the trench and canal banks/bottom. The contractor should be aware that this may require additional work effort to remove/replace/repair any weakened zones to see that the new construction is securely keyed into the existing materials.
10. Provide submittals of proposed construction materials, including but not limited to, grout mixtures, concrete mix designs, soils, riprap, pipe, seed mixes and shop drawings to FRICO for approval prior to placement, allowing a minimum of two week for FRICO to review.

11. Provide submittal of pipe installation and backfill plan to FRICO for approval prior to installation, allowing a minimum of two weeks for FRICO to review.
12. FRICO will need to confirm the final canal elevations to insure correct grades for effective hydraulic functioning. The elevation shown on the plans for the canal bottom may need to be adjusted slightly based on field conditions.
13. Inform FRICO 48-hours in advance to allow for inspection of the following items:
 - a. Removal and abandonment of the existing overhead pipe.
 - b. Excavation for installation of the pipe.
 - c. Final prepared subbase for placement of the pipe.
 - d. Installation of the casing pipe.
 - e. Pipe/trench backfill.
 - f. Forming for the concrete cutoff walls.
 - g. Concrete placement.
 - h. Channel soil lining.
14. Provide results for concrete strength and backfill compaction with 24 hours of testing.
15. Re-establish FRICO's access roads including placing a gravel wearing course as needed.
16. Provide redlined As-Built Drawings at completion of the project and provide coordinates of the pipe alignment in NAD83 State Plane or lat/long format.

The recommendation of technical approval by ERC of this project does not constitute notice to proceed. An approved construction schedule and written notice to proceed from FRICO's General Manager are required prior to commencing construction activities.

Thank you for the opportunity to complete this service on behalf of FRICO. Please feel free to call ERC if you have any questions regarding the review of this project.

Sincerely,

ECOLOGICAL RESOURCE CONSULTANTS

A handwritten signature in black ink, appearing to read 'Lisa Shea'.

Lisa Shea, PE
Project Manager
303-679-4820 Ext. 110
lisa@erccolorado.net

cc: Jeff DeLisio (FRICO)

Exhibit 3

Phase II Construction Plans

AMENDMENT NO. 1

TO “A CONSTRUCTION MANAGEMENT/GENERAL CONTRACTOR (CM/GC) AGREEMENT BY AND BETWEEN THE CITY OF ARVADA AND BT CONSTRUCTION, INC. FOR THE 2021 WATERLINE IMPROVEMENTS PROJECT, AWARDED PHASE I SERVICES ONLY, IN AN AMOUNT NOT TO EXCEED \$28,700.00” FOR PURPOSES OF AWARDED CONTRACTOR PHASE II WITH A GUARANTEED MAXIMUM PRICE OF \$928,296.82, THEREBY INCREASING THE TOTAL CONTRACT AMOUNT TO AN AMOUNT NOT TO EXCEED \$956,996.82

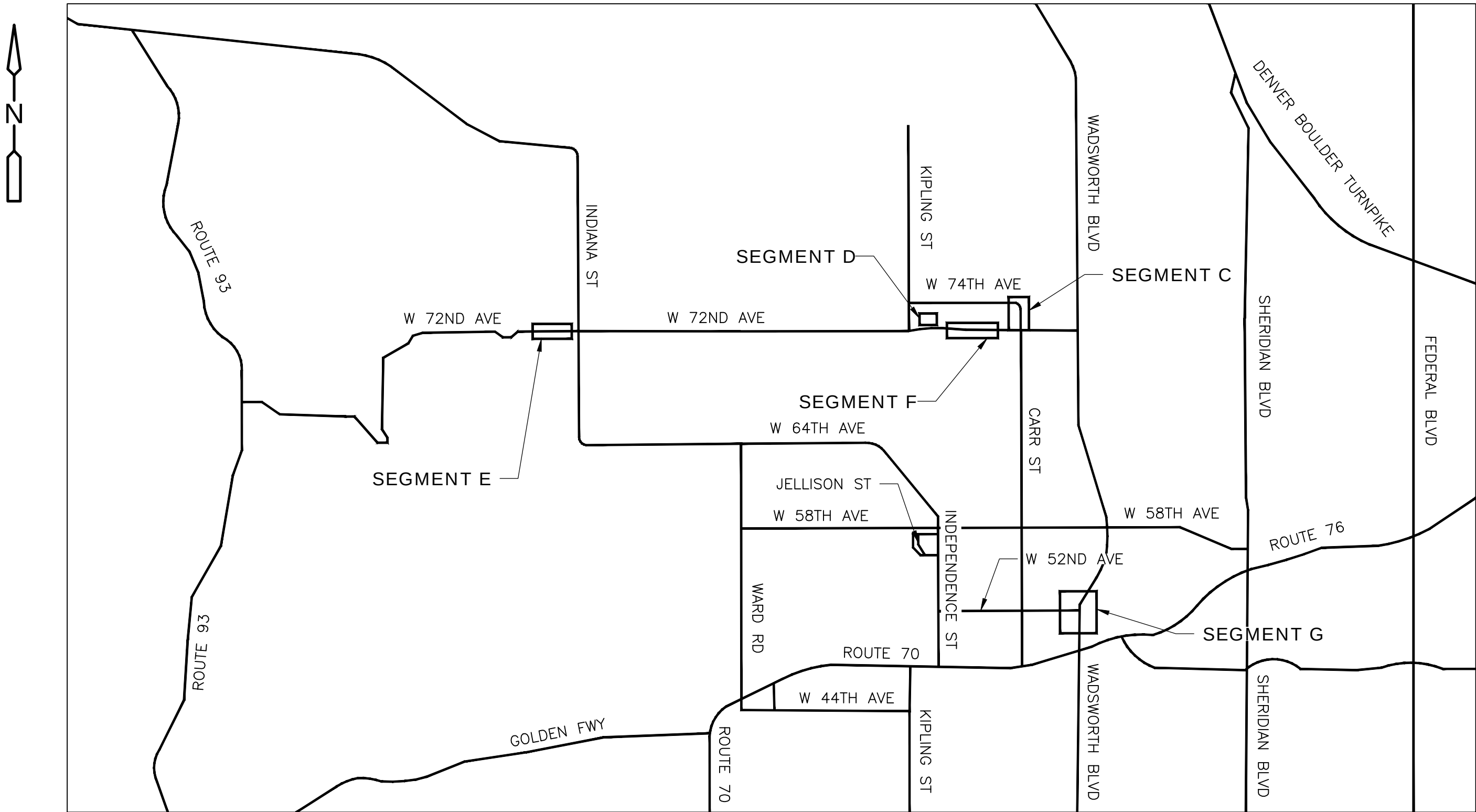
CITY OF ARVADA, COLORADO

2021 WATER MAIN IMPROVEMENTS PROJECT

CITY OF ARVADA **CSB 23-PW-091**

LIST OF DRAWINGS

SHEET	TITLE
GENERAL	
GN-0	COVER
GN-1	GENERAL NOTES I
GN-2	GENERAL NOTES II
GN-3	ABBREVIATIONS AND SYMBOLS
CIVIL	
SEGMENT C	
C-1	W. 74TH AVE. PLAN AND PROFILE
C-2	W. 74TH AVE. AND CARR STREET PLAN AND PROFILE
C-3	CARR ST. PLAN AND PROFILE
SEGMENT D	
D-1	JELLISON ST. VAULT DEMOLITION AND MODIFICATION PLAN
SEGMENT E	
E-1	FARMERS HIGHLINE CANAL CROSSING PLAN AND PROFILE
SEGMENT F	
F-1	W. 72ND AVE. PLAN AND PROFILE I
F-2	W. 72ND AVE. PLAN AND PROFILE II
F-3	W. 72ND AVE. PLAN AND PROFILE III
F-4	W. 72ND AVE. PLAN AND PROFILE IV
F-5	W. 72ND AVE. PLAN
SEGMENT G	
G-1	W. 52ND AVE. AND WADSWORTH BLVD. KEY PLAN
G-2	HOME DEPOT SHOPPING CENTER PLAN AND PROFILE
G-3	W. 52ND AVE. AND WADSWORTH BLVD. PLAN AND PROFILE
G-4A	WADSWORTH BLVD. IRRIGATION LINE PLAN AND PROFILE
G-4B	COSTCO SERVICE LINE PLAN AND PROFILE
G-5	COSTCO AC PIPE REMOVAL
CIVIL DETAILS	
CD-1	CITY OF ARVADA STANDARD DETAILS I
CD-2	CITY OF ARVADA STANDARD DETAILS II
CD-3	CITY OF ARVADA STANDARD DETAILS III
CD-4	CITY OF ARVADA STANDARD DETAILS IV
CD-5	CITY OF ARVADA STANDARD DETAILS V
CD-6	STANDARD DETAILS VI
CD-7	STANDARD DETAILS VII
CD-8	STANDARD DETAILS VIII
CD-9	STANDARD DETAILS IX
EROSION CONTROL PLANS	
EC-1	W. 74TH AVE. EROSION CONTROL PLAN
EC-2	CARR ST. EROSION CONTROL PLAN
EC-3	JELLISON ST. VAULT DEMOLITION AND MODIFICATION EROSION CONTROL PLAN
EC-4	FARMERS HIGHLINE CANAL CROSSING EROSION CONTROL PLAN
EC-5	W. 72ND AVE. EROSION CONTROL PLAN I
EC-6	W. 72ND AVE. EROSION CONTROL PLAN II
EC-7	HOME DEPOT SHOPPING CENTER EROSION CONTROL PLAN
EC-8	W. 52ND AVE. AND WADSWORTH BLVD. EROSION CONTROL PLAN
EC-9	COSTCO SERVICE LINE EROSION CONTROL PLAN
EC-10	COSTCO AC PIPE REPLACEMENT EROSION CONTROL PLAN
EC-11	EROSION CONTROL STANDARD DETAILS I
EC-12	EROSION CONTROL STANDARD DETAILS II
EC-13	EROSION CONTROL STANDARD DETAILS III
CATHODIC PROTECTION	
CP-1	CATHODIC PROTECTION TEST STATION DETAILS
CP-2	CATHODIC PROTECTION DETAILS



FRICO APPROVAL BLOCK

The signature of the General Manager of FRICO is for the purposes of acknowledging acceptance of the design of the Permitted Structures only. The signature shall not in any way change the rights and obligations of either party with respect to the (TITLE OF EASEMENT OR LICENSE AGREEMENT) to which these designs are attached. FRICO is expressly relying upon the design standards and performance standards set forth in these drawings as presented by CITY OF ARVADA, and CITY OF ARVADA shall be solely responsible for, as constructed, the Permitted Structures shall perform as specified herein.

General Manager, the Farmers Reservoir and Irrigation Company

**CDM
Smith**

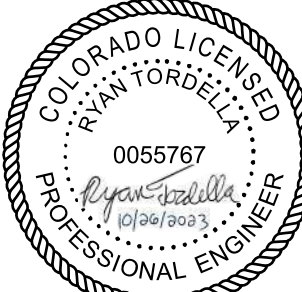
DENVER, COLORADO

Water Environment Transportation Energy Facilities

APPROVED
City of Arvada, Colorado

Janey Wolfshley PE. 3/1/24 21-WA-02
CITY ENGINEER DATE JOB NUMBER

REVIEW IS FOR GENERAL COMPLIANCE WITH THE CITY OF ARVADA "ENGINEERING CODE OF STANDARDS AND SPECIFICATIONS FOR THE DESIGN AND CONSTRUCTION OF PUBLIC IMPROVEMENTS", LATEST EDITION. SOLE RESPONSIBILITY FOR COMPLETENESS AND/OR ACCURACY OF THESE DOCUMENTS SHALL REMAIN WITH THE REGISTERED PROFESSIONAL ENGINEER SEALING THESE PLANS, IF APPLICABLE. THE CITY DOES NOT ACCEPT LIABILITY FOR FACILITIES DESIGNED BY OTHERS.



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| | 2/24 | CC | SS | ISSUED FOR CONSTRUCTION |
| REV. NO. | DATE | DRWN | CHKD | REMARKS |

- CDM
Smith**
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Denver, CO 80202
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Scott Edgar, General Manager
Farmers Reservoir and Irrigation Company (FRICO)
80 South 27th Avenue
Brighton CO 80601
(303) 659-7373

FILE NAME: G001NFNT.DWC

GN-1

ISSUED FOR CONSTRUCTION

1. DEFINITIONS
- A. FACILITY OWNER – CITY OF ARVADA
B. PROPERTY OWNER – FRICO
C. CONTRACTOR – (TO BE DETERMINED)
D. ENGINEER – CDM SMITH
2. ALL IRRIGATION AND CANAL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE FARMERS RESERVOIR AND IRRIGATION COMPANY DESIGN REVIEW MANUAL. LATEST EDITION. EXCEPT AS SPECIFICALLY MODIFIED BY THESE PROJECT DRAWINGS.
3. CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD FRICO HARMLESS FROM ANY AND ALL LIABILITY, REAL AND ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT. EXCEPTING FOR LIABILITY ARISING FROM THE GROSS NEGLIGENCE OF FRICO.
4. FRICO AND ITS AGENTS OR CONSULTANTS DO NOT WARRANT OR GUARANTEE THE ADEQUACY OF DESIGNS REVIEWED AND APPROVED BY FRICO. FRICO'S REVIEW OF PROJECT REPORTS, PLANS, AND SPECIFICATIONS IS FOR THE SOLE BENEFIT OF FRICO TO DETERMINE IF PROJECT DETAILS CONFORM TO FRICO DESIGN GUIDELINES, WHICH ARE NECESSARY TO REASONABLY ASSURE THAT PROJECTS DO NOT ADVERSELY AFFECT THE FACILITIES OR OPERATIONS OF FRICO.
5. CONTRACTOR SHALL SCHEDULE A PRE-CONSTRUCTION MEETING WITH FRICO REPRESENTATIVE AND LOCAL GOVERNING MUNICIPALITY OR COUNTY GOVERNMENT AT LEAST 72 HOURS PRIOR TO START OF CONSTRUCTION. THOSE IN ATTENDANCE SHALL INCLUDE OWNERS REPRESENTATIVE, ENGINEER, CONTRACTOR, AND OTHER AFFECTED AGENCIES. CONSTRUCTION PLANS WILL BE DISTRIBUTED AT THE PRE-CONSTRUCTION MEETING.
6. TECHNICAL APPROVAL BY FRICO OF THE DESIGN OF THE IMPROVEMENTS SPECIFIED HEREIN SHALL NOT CONSTITUTE AUTHORIZATION TO BEGIN WORK. AN EASEMENT OR LICENSE AGREEMENT APPROVED TEMPORARY ACCESS AND CONSTRUCTION PERMIT (INCLUDING SCHEDULE THAT INCLUDES THE DAY, MONTH, AND YEAR WHEN WORK IS ALLOWED), AND WRITTEN NOTICE TO PROCEED FROM FRICO'S GENERAL MANAGER ARE ALSO REQUIRED PRIOR TO COMMENCING CONSTRUCTION ACTIVITIES. FOLLOWING THE APPROVAL OF THE DESIGN PLANS AND EASEMENT OR LICENSE AGREEMENT, AND PRIOR TO THE PRE-CONSTRUCTION MEETING, IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO SUBMIT A CONSTRUCTION SCHEDULE TO FRICO FOR REVIEW AND APPROVAL. FRICO'S APPROVAL OF THE CONSTRUCTION SCHEDULE IS IN FRICO'S SOLE DISCRETION. AND FRICO MAY REFUSE TO APPROVE A SCHEDULE IF IT MAY IMPACT THE CANAL'S OPERATIONS OR FRICO'S ABILITY TO MAINTAIN OR ACCESS ITS FACILITIES.
7. CONTRACTOR SHALL RESTRICT CONSTRUCTION ACTIVITY TO AREAS DEFINED AS PERMANENT AND/OR TEMPORARY CONSTRUCTION EASEMENTS. UNLESS OTHERWISE AUTHORIZED BY FRICO AND PROPERTY OWNER.
8. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING CONTINUOUS ACCESS FOR FRICO PERSONNEL AND EQUIPMENT ALONG THE LENGTH OF THE EXISTING CANAL THROUGHOUT THE COURSE OF THE PROJECT
9. ALL MATERIALS AND WORKMANSHIP SHALL BE SUBJECT TO INSPECTION BY FRICO. FRICO RESERVES THE RIGHT TO ACCEPT OR REJECT ANY SUCH MATERIALS AND WORKMANSHIP THAT DO NOT CONFORM TO STANDARDS AND SPECIFICATIONS. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS TO FRICO FOR ENGINEERING REVIEW AND APPROVAL PRIOR TO INSTALLATION OF MATERIALS OR FACILITIES FOR WHICH SHOP DRAWINGS ARE CREATED.
10. CONTRACTOR SHALL VERIFY ACCURACY BETWEEN WORK SET FORTH ON THESE PLANS AND WORK REQUIRED IN THE FIELD. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER AND FRICO REPRESENTATIVE PRIOR TO START OF CONSTRUCTION.
11. IT IS THE ENGINEER'S RESPONSIBILITY TO RESOLVE CONSTRUCTION PROBLEMS WITH FRICO DUE TO CHANGED CONDITIONS ENCOUNTERED BY CONTRACTOR DURING THE PROGRESS OF ANY PORTION OF THE PROPOSED WORK. IF, IN THE SOLE OPINION OF FRICO, PROPOSED ALTERATIONS TO THE APPROVED CONSTRUCTION PLANS INVOLVES SIGNIFICANT CHANGES TO THE CHARACTER OF THE WORK. OR TO THE FUTURE CONTIGUOUS PUBLIC OR PRIVATE IMPROVEMENTS. ENGINEER SHALL BE RESPONSIBLE FOR SUBMITTING REVISED PLANS TO FRICO FOR REVIEW AND APPROVAL, PRIOR TO ANY FURTHER CONSTRUCTION RELATED TO THAT PORTION OF THE WORK.
12. GROUNDWATER ENCOUNTERED DURING CONSTRUCTION SHALL NOT BE RELEASED TO FRICO'S CANAL OR OTHER FACILITIES WITHOUT WRITTEN APPROVAL FROM THE FRICO GENERAL MANAGER. NUISANCE FLOWS IN THE DITCH MAY BE BYPASSED WITH APPROVAL.
13. ALL CONCRETE STRUCTURES USED FOR THE PROJECT SHALL CONFORM TO ACI 350. CONCRETE MIXTURES SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4500 PSI AND A MAXIMUM WATER TO CEMENT RATIO OF 0.42. ALL CONCRETE JOINTS SHALL HAVE A CONTINUOUS WATERSTOP TO PROVIDE A WATERTIGHT SEAL. THE CONTRACTOR SHALL SUPPLY FRICO WITH SHOP DRAWINGS AND SPECIFICATIONS FOR ALL PRE-FABRICATED CONCRETE STRUCTURES TO INSURE CONFORMANCE TO ACI 350. WHERE THE EXISTING SIDES OR BOTTOM OF THE CANAL ARE DISTURBED AND ARE TO BE REPLACED. THE TOP TWO FEET OF BACKFILL MATERIAL SHALL BE CLAY CONTAINING AT LEAST 40 PERCENT BY DRY WEIGHT PASSING THE #200 SIEVE (FINES) AND A PLASTICITY INDEX OF 15 OR GREATER. AS AN ALTERNATIVE. THE EXISTING MATERIAL CAN BE MIXED WITH TWO PERCENT POWDERED DRY BENTONITE (BY DRY WEIGHT) PROVIDED THE EXISTING SOILS CONTAIN AT LEAST 25 PERCENT FINES. THE MATERIALS UPON COMPACTION SHALL HAVE A PERMEABILITY LESS THAN OR EQUAL TO 1×10^{-6} CM/SEC AS DETERMINED BY ASTM D 5084.
14. THE CHANNEL CLAY LINING SHALL BE COMPACTED TO 95% OF THE STANDARD PROCTOR (ASTM D698) OR 90% OF THE MODIFIED PROCTOR (ASTM D1557) AND WITHIN -2% TO $+2\%$ OF THE OPTIMUM MOISTURE CONTENT. FILL SHALL BE PLACED IN THIN LIFTS WITH MAXIMUM LOOSE LIFT THICKNESS OF 12 INCHES. PLACEMENT ON DITCH SLOPES MAY REQUIRE OVERBUILDING AND CUTTING BACK TO OBTAIN THE REQUIRED COMPACTION.
15. ALL PROPOSED MATERIAL TYPES TO BE USED AS BEDDING. CLAY LINING AND BACKFILL SHALL BE SUBMITTED TO FRICO FOR APPROVAL PRIOR TO PLACEMENT.
16. MATERIALS GRAIN SIZE ANALYSIS (ASTM D422). ATTERBERG LIMITS (ASTM D4318), AND MOISTURE-DENSITY RELATIONSHIP TESTS (ASTM D1557) SHALL BE COMPLETED. AS A MINIMUM, ON EACH SOIL TYPE OR AT A RATE OF ONE TEST EVERY 300 CY OF MATERIAL PLACED, WHICHEVER IS GREATER.
17. COMPACTION OF BEDDING, CLAY LINING AND ALL TYPES OF BACKFILL SHALL BE TESTED AT A RATE OF AT LEAST ONE TEST PER 1,000 SQUARE FEET OF FILL MATERIAL PER LIFT OR ONCE A DAY WHEN BACKFILL IS BEING COMPACTED, WHICH EVER IS MORE FREQUENT. THIS FREQUENCY MAY BE ALTERED BY THE ENGINEER OR FRICO REPRESENTATIVE DEPENDING ON THE PROJECT. THE METHODS BY WHICH THE CONTRACTOR IS USING TO OBTAIN COMPACTION. OR IF CIRCUMSTANCES WARRANT ADDITIONAL TESTING. THE TESTING SHALL BE AT VARIOUS DEPTHS AND LOCATIONS. THE ENGINEER OR AN OWNERS REPRESENTATIVE RESERVES THE RIGHT TO REQUEST ADDITIONAL TESTS AND DETERMINE THE LOCATION OF TESTING. THE TESTING MAY BE COMPLETED EITHER BY SAND CONE DENSITY TEST (ASTM D1656) OR BY THE NUCLEAR GAUGE (ASTM D6938) METHODS. TEST RESULTS SHALL BE SUBMITTED TO FRICO'S REPRESENTATIVE WITHIN 24 HOURS OF THE TEST OR ON THE NEXT WORKING DAY.
18. ON STEEP SIDE SLOPES, FILL MATERIALS, WHETHER CLAY LINING OR SUBGRADE SOILS, MAY BE REQUIRED TO BE PLACED IN HORIZONTAL LIFTS ALONG THE SLOPE TO ACHIEVE THE REQUIRED COMPACTION. THIS METHOD WILL CREATE AN OVERBUILT SECTION THAT WILL BE CUT BACK TO FORM THE DESIGN SLOPE.
19. CONTRACTOR SHALL MAINTAIN SILT FENCE AND OTHER EROSION AND SEDIMENT CONTROL BMPS ON A DAILY BASIS AND SHALL PREVENT DEBRIS FROM ENTERING INTO THE CANAL. THE CONTRACTOR WILL BE RESPONSIBLE FOR DAILY CLEANING OF DEBRIS THAT ENTERS THE CANAL, IF BMPS FAIL.
20. UNLESS ANOTHER SPECIFIC MAINTENANCE AGREEMENT IS IN PLACE, CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER FUNCTIONING OF FACILITY IMPROVEMENTS FOR A MINIMUM OF TWO YEARS FROM THE DATE OF SUBSTANTIAL COMPLETION / CONSTRUCTION ACCEPTANCE OF THE IMPROVEMENTS BY FRICO. ANY FAILURE DURING THIS PERIOD OF GUARANTEE SHALL BE REMEDIED BY CONTRACTOR TO THE SATISFACTION OF FRICO AT CONTRACTORS EXPENSE.
21. AS-BUILT DOCUMENTS ARE TO BE SUPPLIED TO FRICO PRIOR TO SUBSTANTIAL COMPLETION / CONSTRUCTION ACCEPTANCE OF THE IMPROVEMENTS RECORD DOCUMENTS SHALL BE SUBMITTED ELECTRONICALLY IN BOTH PDF AND AUTOCAD FORMAT PRIOR TO FRICO ACCEPTANCE AS-BUILT DRAWINGS SHALL BE SIGNED AND STAMPED BY A REGISTERED PROFESSIONAL ENGINEER.
22. INSTALL MARKER POSTS AT FRICO'S ROW LIMITS ON BOTH SIDE OF THE CANAL TO DESIGNATE THE LOCATION OF ANY UNDERGROUND UTILITIES.
23. NO WEEKEND WORK ALLOWED WITHIN FRICO'S ROW WITHOUT PRIOR AUTHORIZATION.
24. IF TRENCH BOXES ARE USED FOR OPEN CUT PIPE INSTALLATION, A MINITIGATION PLAN FOR HANDLING POTENTIAL LOOSE MATERIALS AT THE INTERFACE OF UNDISTURBED EARTH SHALL BE SUBMITTED TO FRICO FOR REVIEW.

					DESIGNED BY: <u>R. TORDELLA</u>
					DRAWN BY: <u>R. PAWAR</u>
					SHEET CHK'D BY: <u>C. CERRETA</u>
					CROSS CHK'D BY: <u>T. CHARLES</u>
	2/24	CC	SS	ISSUED FOR CONSTRUCTION	APPROVED BY: <u>R. TORDELLA</u>
REV. NO.	DATE	DRWN	CHKD	REMARKS	DATE: <u>OCTOBER 2023</u>

DESIGNED BY: R. TORDELLA
DRAWN BY: R. PAWAR
SHEET CHK'D BY: C. CERRETA
CROSS CHK'D BY: T. CHARLES
APPROVED BY: R. TORDELLA
DATE: OCTOBER 2023



CITY OF ARVADA
2021 WATER MAIN IMPROVEMENTS PROJECT
CITY OF ARVADA PROJECT NO. 21-WA-02

GENERAL NOTES II

APPROVED		
City of Arvada, Colorado		
	3/1/24	21-WA-02
CITY ENGINEER	DATE	JOB NUMBER

REVIEW IS FOR GENERAL COMPLIANCE WITH THE CITY OF ARVADA "ENGINEERING CODE OF STANDARDS AND SPECIFICATIONS FOR THE DESIGN AND CONSTRUCTION OF PUBLIC IMPROVEMENTS". LATEST EDITION. SOLE RESPONSIBILITY FOR COMPLETENESS AND/OR ACCURACY OF THESE DOCUMENTS SHALL REMAIN WITH THE REGISTERED PROFESSIONAL ENGINEERING THESE PLANS, IF APPLICABLE. THE CITY DOES NOT ACCEPT LIABILITY FOR FACILITIES DESIGNED BY OTHERS.



PROJECT NO.	263334-271511
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GN-2

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ABBREVIATIONS AND LEGEND:

ANSI – AMERICAN NATIONAL STANDARDS INSTITUTE
ARV – AIR RELEASE VALVE

BC – BOTTOM OF CURVE
BL – BASE LINE
B.M. – BENCH MARK
BOC – BACK OF CURB

CATV – CABLE TELEVISION
C.B. – CATCH BASIN
CDPHE – COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT
CDWA – CHURCH DITCH WATER AUTHORITY
C.I. – CAST IRON
C&G – CURB & GUTTER
CL – CENTER LINE
CLF – CHAIN LINK FENCE
CPP – CORRUGATED PLASTIC PIPE
CONC. – CONCRETE
CONST. – CONSTRUCTION
CULV. – CULVERT

D.B.I. – DITCH BOTTOM INVERT
DB – DIRECT BURY
DEG – DEGREE
DI – DUCTILE IRON
D.W – DRIVEWAY

ECC – ECCENTRIC
ELECT – ELECTRIC
ELEV – ELEVATION
E.O.P. – EDGE OF PAVEMENT
EXP. JT. – EXPANSION JOINT

FH – FIRE HYDRANT
FHL – FARMERS HIGH LINE
FLG – FLANGED
FM – FORCEMAIN
FO – FIBER OPTIC LINE
FRICO – FARMERS RESERVOIR AND IRRIGATION COMPANY

GLV – GALVANIZED
GPM – GALLONS PER MINUTE
GV – GATE VALVE

HDPE – HIGH DENSITY POLYETHYLENE PIPE
HFAC – HARNESS FLANGE ADAPTOR COUPLING

ID – IDENTIFICATION
IEEE – INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS
INV – INVERT

LR – LONG RADIUS

MES – MITERED END SECTION
MG – MILLION GALLON
MGD – MILLIONS OF GALLONS PER DAY
MH – MANHOLE
MIN – MINIMUM
MISC – MISCELLANEOUS
MJ – MECHANICAL JOINT

NAVD – NORTH AMERICAN VERTICAL DATUM
N.C. – NORMALLY CLOSED
NEMA – NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
N.T.S – NOT TO SCALE

OH – OVERHEAD
OIT – OPERATOR INTERFACE TERMINAL
O&M – OPERATIONS AND MAINTENANCE
O.T. – OVERHEAD TELEPHONE

PVC – POLY VINYL CHLORIDE
PSI – POUNDS PER SQUARE INCH
PTFE – POLYTETRAFLUOROETHYLENE
PW – POTABLE WATER

R – RADIUS
R.C.P. – REINFORCED CONCRETE PIPE
RED – REDUCER
REF – REFERENCE
RJ – RESTRAINED JOINT
R/W – RIGHT OF WAY
RW – REUSE WATER

SAN – SANITARY SEWER
SB – SOIL BORING
SD – STORM DRAIN
SST – STAINLESS STEEL
SS – SANITARY SEWER
STL – STEEL
S/W – SIDEWALK
STA – STATION
SU – STANDARD UNITS

TC – TOP OF CURVE
TELE – TELEPHONE
TOB – TOP OF BANK
TOP – TOP OF PIPE
TOS – TOE OF SLOPE/TOP OF SLAB
TYP – TYPICAL

UG – UNDERGROUND
UGE – UNDERGROUND ELECTRIC
UGT – UNDERGROUND TELEPHONE
UNK – UNKNOWN
UPS – UNINTERRUPTED POWER SUPPLY
USC & GS – UNITED STATES COASTAL & GEODETIC SURVEY

VERT – VERTICAL
VPI – VERTICAL POINT INFLECTION

W – WATER
WM – WATER METER
WPP – WOOD POWER POLE
WTP – WOOD TELEPHONE POLE

GENERAL LEGEND

EXISTING

RIGHT OF WAY LINE

PROPERTY LINE

LIMITS OF CONSTRUCTION

FENCE (HEIGHT & MAT'L. INDICATED)

DITCH OR SWALE

DRAIN PIPE

CATCH BASIN

STORM DRAIN GRATE

STORM DRAIN (SIZE & MAT'L. INDICATED)

STORM DRAIN

CULVERT W/ENDWALLS (SIZE & MAT'L. INDICATED)

WATER MAIN

WATERMAIN SIZE, TYPE INDICATED

SANITARY SEWER SIZE, TYPE INDICATED

LINE VALVE

FIRE HYDRANT

VALVE (TYPE INDICATED)

END CAP

PLUG (AT END OF LINE)

REDUCER

SPOT ELEVATION

MANHOLE – TYPE (IF INDICATED)
E – ELECTRIC S – SANITARY
D – STORM T – TELEPHONE

CLEAN OUT

SILT FABRIC BARRIER

PROPOSED

L.O.C.

6' CHAIN LINK

D D

D D

24" SD RCP

SD

SD 18" CMP

8"W PVC

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UTILITY SYMBOLS

ELECTRIC POLE OR S.B.T. POLE (WOOD) OR (WITH LIGHT)

WOOD POWER POLE WPP

ELECTRIC POLE OR S.B.T. POLE (CONC.) OR (WITH LIGHT)

CONCRETE POWER POLE CPP

GUY WIRE

OVERHEAD ELECTRIC

UNDERGROUND ELECTRIC

OVERHEAD TELEPHONE

UNDERGROUND TELEPHONE

GAS MAIN (SIZE AND MAT'L. INDICATED)

GAS MAIN (SIZE INDICATED)

CABLE TELEVISION

FIBER OPTIC LINE (SIZE AND MAT'L. INDICATED)

FIBER OPTIC LINE

UNDERGROUND CABLE (TYPE UNDETERMINED)

WATER METER

WATER METER WITH TOUCHREAD

TELEPHONE BOX

CATV BOX

GAS VALVE

SOIL BORING (NUMBER INDICATED)

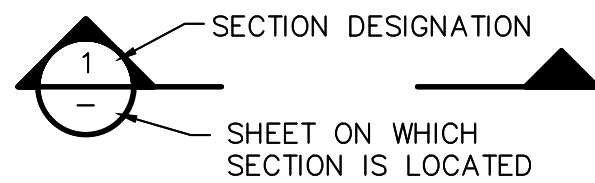
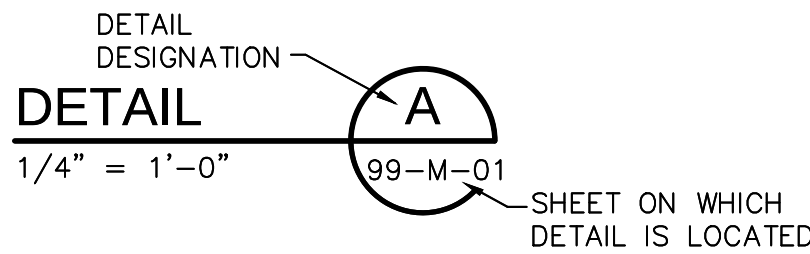
SOFT DIG (NUMBER INDICATED)

MONITORING WELL (NUMBER INDICATED)

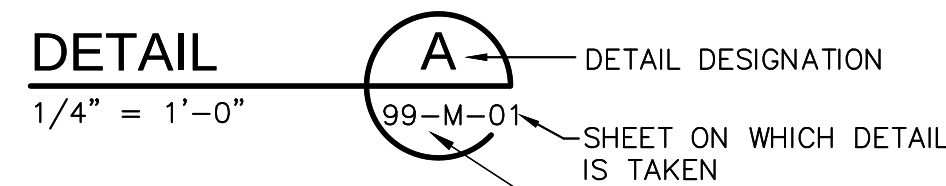
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SIGN – TYPE INDICATED

DETAIL AND SECTION IDENTIFICATION



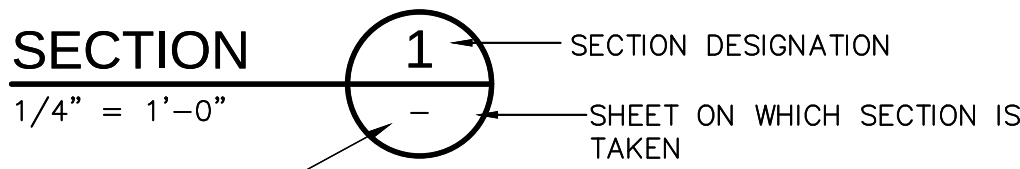
DETAIL REFERENCE



DETAIL SHOWN

IF SECTION OR DETAIL IS DRAWN ON THE SAME SHEET THAT IT IS TAKEN FROM, THE SHEET NUMBER MAY BE REPLACED WITH A HYPHEN. IF THE SECTION IS REFERENCED ON MULTIPLE SHEETS, THE SHEET NUMBER SHOWN SHOULD INDICATE THE FIRST SHEET THE SECTION IS TAKEN FROM.

SECTION REFERENCE



SECTION SHOWN

UTILITY INVESTIGATION RESULTS

LEVEL A – POTHOLE COMPLETED AND UTILITY LOCATED BY KINETIC INDUSTRIES

LEVEL D – NO UNDERGROUND INVESTIGATION PERFORMED. RECORD DRAWINGS AND BEST AVAILABLE INFORMATION WAS USED TO ESTIMATE UTILITY LOCATION

NOTES:
1. REFER TO SPECIFICATIONS FOR SUE REPORTS AND DIMENSIONS FROM GRADE TO TOP OF PIPE.

CITY OF ARVADA

2021 WATER MAIN IMPROVEMENTS PROJECT
CITY OF ARVADA PROJECT NO. 21-WA-02

ABBREVIATION AND SYMBOLS

APPROVED

City of Arvada, Colorado

City Engineer

3/1/24

DATE

21-WA-02

JOB NUMBER

REVIEW IS FOR GENERAL COMPLIANCE WITH THE CITY OF ARVADA "ENGINEERING CODE OF STANDARDS AND SPECIFICATIONS FOR THE DESIGN AND CONSTRUCTION OF PUBLIC IMPROVEMENTS", LATEST EDITION. SOLE RESPONSIBILITY FOR COMPLETENESS AND/OR ACCURACY OF THESE DOCUMENTS SHALL REMAIN WITH THE REGISTERED PROFESSIONAL ENGINEER SEALING THESE PLANS, IF APPLICABLE. THE CITY DOES NOT ACCEPT LIABILITY FOR FACILITIES DESIGNED BY OTHERS.



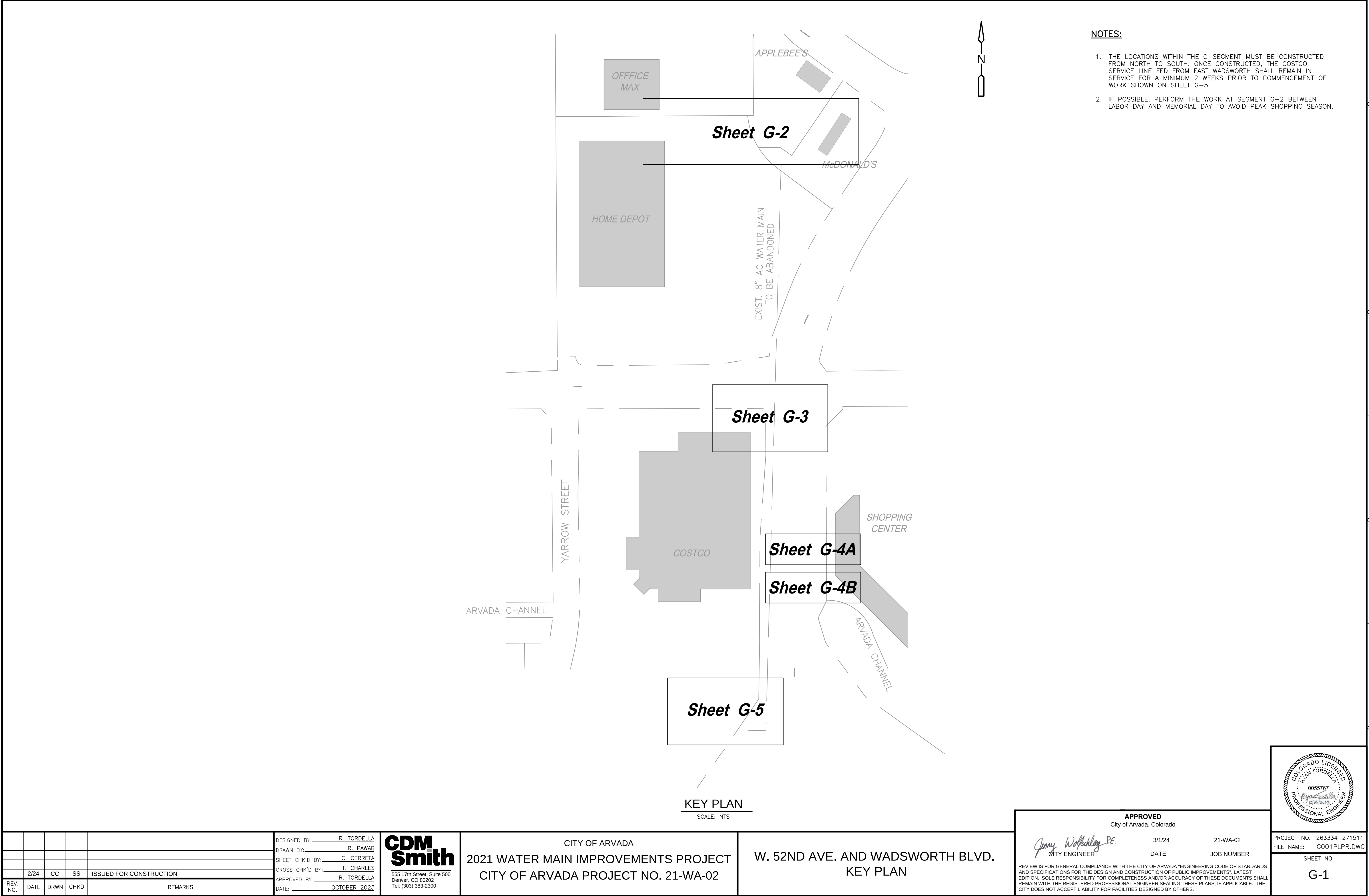
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FILE NAME: G003NFAB.DWG

SHEET NO.

GN-3

ISSUED FOR CONSTRUCTION

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	2/24	CC	SS	ISSUED FOR CONSTRUCTION
REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY:	R. TORDELLA
DRAWN BY:	R. PAWAR
SHEET CHK'D BY:	C. CERRETA
CROSS CHK'D BY:	T. CHARLES
APPROVED BY:	R. TORDELLA
DATE:	OCTOBER 2023

CDM
Smith

555 17th Street, Suite 500
Denver, CO 80202
Tel: (303) 383-2300

CITY OF ARVADA

2021 WATER MAIN IMPROVEMENTS PROJECT

CITY OF ARVADA PROJECT NO. 21-WA-02

W. 52ND AVE. AND WADSWORTH BLVD.

KEY PLAN

APPROVED

City of Arvada, Colorado

Jimmy Wolfshaley P.E.

CITY ENGINEER

3/1/24

DATE

21-WA-02

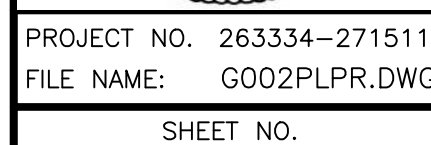
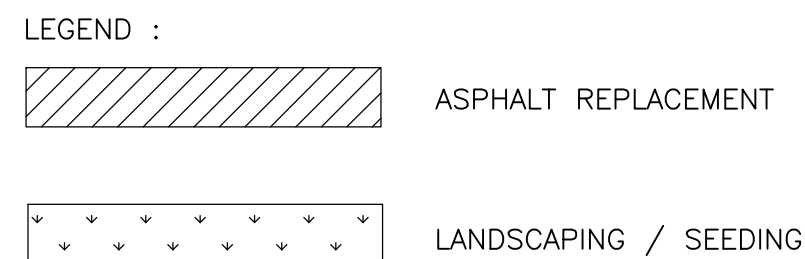
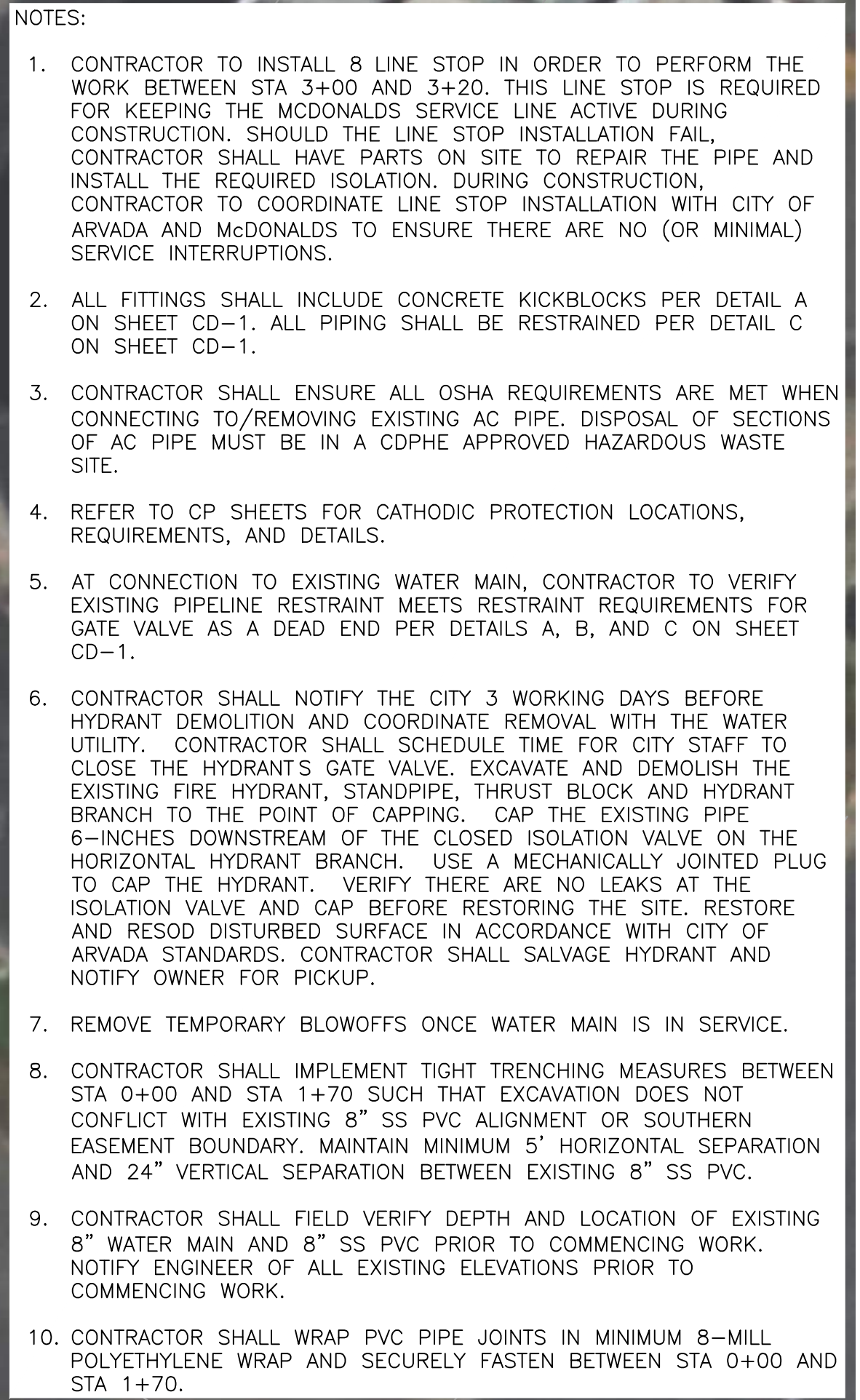
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REVIEW IS FOR GENERAL COMPLIANCE WITH THE CITY OF ARVADA "ENGINEERING CODE OF STANDARDS AND SPECIFICATIONS FOR THE DESIGN AND CONSTRUCTION OF PUBLIC IMPROVEMENTS", LATEST EDITION. SOLE RESPONSIBILITY FOR COMPLETENESS AND/OR ACCURACY OF THESE DOCUMENTS SHALL REMAIN WITH THE REGISTERED PROFESSIONAL ENGINEER SEALING THESE PLANS, IF APPLICABLE. THE CITY DOES NOT ACCEPT LIABILITY FOR FACILITIES DESIGNED BY OTHERS.

COLORADO LICENSED
R. TORDELLA
0055767
PROFESSIONAL ENGINEER

PROJECT NO. 263334-271511
FILE NAME: G001PLPR.DWG
SHEET NO.
G-1

ISSUED FOR CONSTRUCTION



21-WA-02
JOB NUMBER

REVIEW IS FOR GENERAL COMPLIANCE WITH THE CITY OF ARVADA "ENGINEERING CODE OF STANDARDS AND SPECIFICATIONS FOR THE DESIGN AND CONSTRUCTION OF PUBLIC IMPROVEMENTS", LATEST EDITION. SOLE RESPONSIBILITY FOR COMPLETENESS AND/OR ACCURACY OF THESE DOCUMENTS SHALL REMAIN WITH THE REGISTERED PROFESSIONAL ENGINEER SEALING THESE PLANS, IF APPLICABLE. THE CITY DOES NOT ACCEPT LIABILITY FOR FACILITIES DESIGNED BY OTHERS.

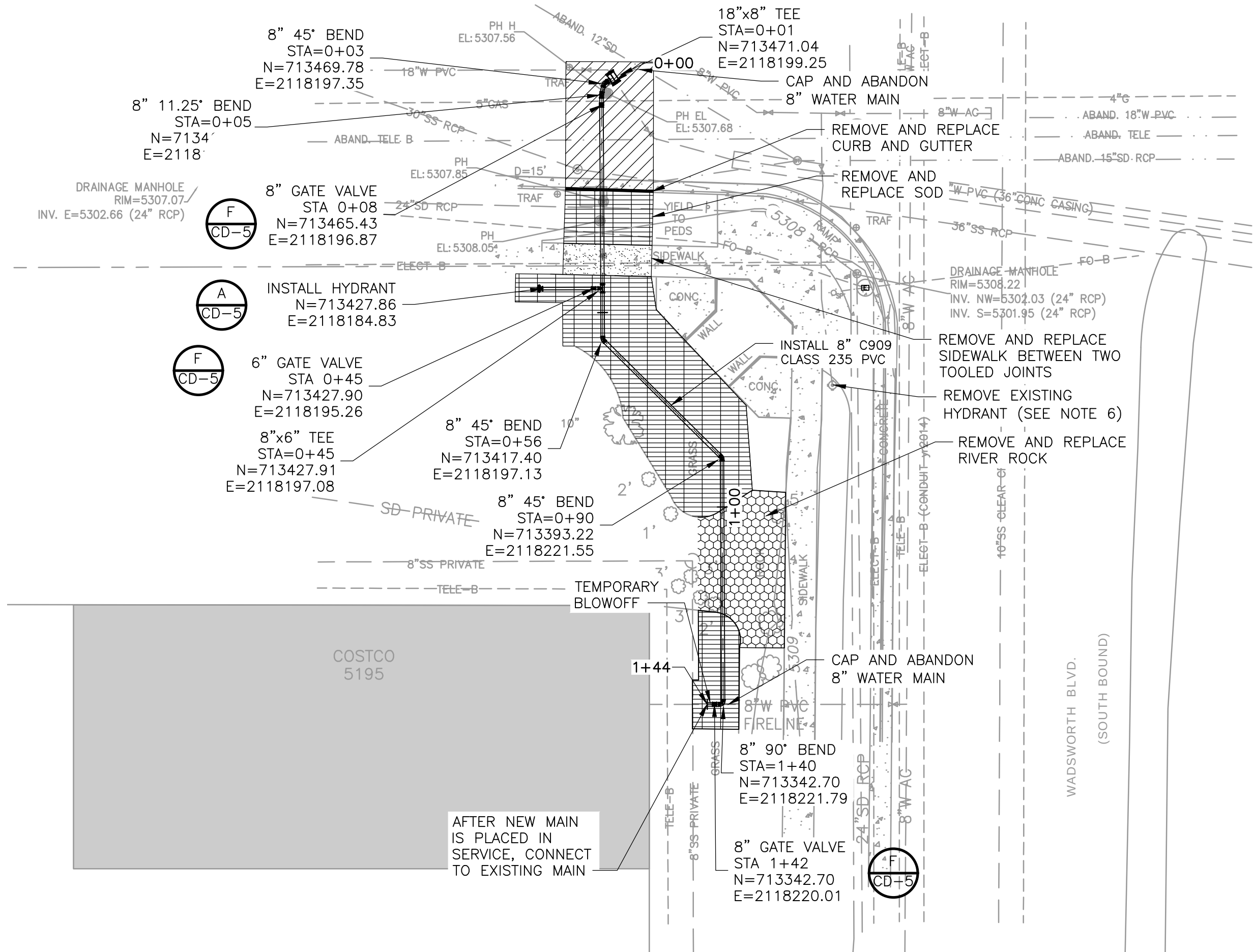
ISSUED FOR CONSTRUCTION

DESIGNED BY: _____ R. TORDELLA
DRAWN BY: _____ R. PAWAR
SHEET CHK'D BY: _____ C. CERRETA
CROSS CHK'D BY: _____ T. CHARLES
APPROVED BY: _____ C. CERRETA
DATE: _____ APRIL 2024



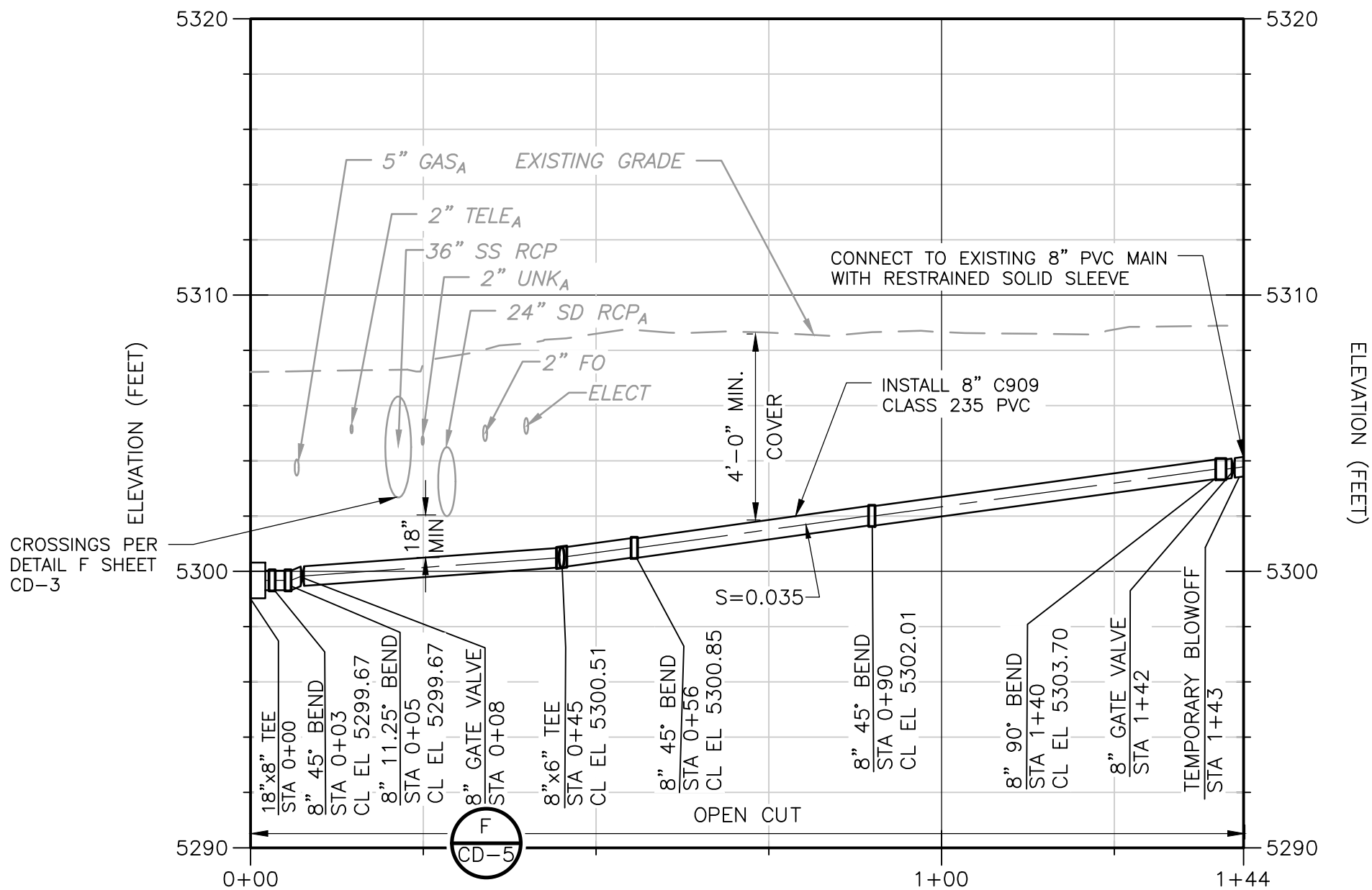
HOME DEPOT SHOPPING CENTER PLAN AND PROFILE

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PLAN

SCALE: 1" = 20'



PROFILE

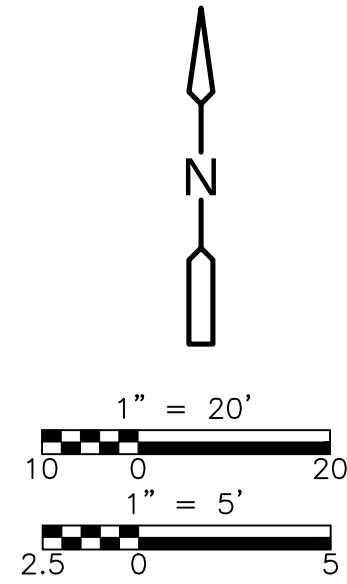
HORIZONTAL: 1" = 20'
VERTICAL: 1" = 5'

NOTES:

- ALL FITTINGS SHALL INCLUDE CONCRETE KICKBLOCKS PER DETAIL A ON SHEET CD-1. ALL PIPING SHALL BE RESTRAINED PER DETAIL C ON SHEET CD-1.
- REFER TO CP SHEETS FOR CATHODIC PROTECTION LOCATIONS, REQUIREMENTS, AND DETAILS.
- FOR PRESSURE TESTING AND DISINFECTION, NEW WATER LINE SHALL BE FILLED FROM THE CONNECTION AT STA 0+00.
- REMOVE TEMPORARY BLOWOFFS ONCE WATER MAIN IS IN SERVICE.
- AT CONNECTION TO EXISTING WATER MAIN, CONTRACTOR TO VERIFY EXISTING PIPELINE RESTRAINT MEETS RESTRAINT REQUIREMENTS FOR GATE VALVE AS A DEAD END PER DETAILS A, B, AND C ON SHEET CD-1.
- CONTRACTOR SHALL NOTIFY THE CITY 3 WORKING DAYS BEFORE HYDRANT DEMOLITION AND COORDINATE REMOVAL WITH THE WATER UTILITY. CONTRACTOR SHALL SCHEDULE TIME FOR CITY STAFF TO CLOSE THE HYDRANT'S GATE VALVE. EXCAVATE AND DEMOLISH THE EXISTING FIRE HYDRANT, STANDPIPE, THRUST BLOCK AND HYDRANT BRANCH TO THE POINT OF CAPPING. CAP THE EXISTING PIPE 6-INCHES DOWNSTREAM OF THE CLOSED ISOLATION VALVE ON THE HORIZONTAL HYDRANT BRANCH. USE A MECHANICALLY JOINTED PLUG TO CAP THE HYDRANT. VERIFY THERE ARE NO LEAKS AT THE ISOLATION VALVE AND CAP BEFORE RESTORING THE SITE. RESTORE AND RESOD DISTURBED SURFACE IN ACCORDANCE WITH CITY OF ARVADA STANDARDS. CONTRACTOR SHALL SALVAGE HYDRANT AND NOTIFY OWNER FOR PICKUP.

LEGEND :

- ASPHALT REPLACEMENT
- LANDSCAPING / SEEDING
- REMOVE AND REPLACE RIVER ROCK
- REMOVE AND REPLACE SOD
- SIDEWALK REPLACEMENT



DESIGNED BY:	R. TORDELLA
DRAWN BY:	R. PAWAR
SHEET CHK'D BY:	C. CERRETA
CROSS CHK'D BY:	T. CHARLES
APPROVED BY:	R. TORDELLA
DATE:	OCTOBER 2023

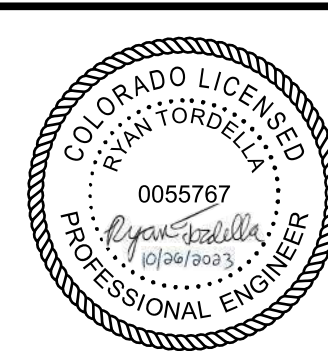
REV. NO.	DATE	DRWN	CHKD	REMARKS
2/24	CC	SS		ISSUED FOR CONSTRUCTION



CITY OF ARVADA
2021 WATER MAIN IMPROVEMENTS PROJECT
CITY OF ARVADA PROJECT NO. 21-WA-02

W. 52ND AVE. AND WADSWORTH BLVD.
PLAN AND PROFILE

APPROVED	3/1/24	21-WA-02
City of Arvada, Colorado	DATE	JOB NUMBER
City ENGINEER		
REVIEW IS FOR GENERAL COMPLIANCE WITH THE CITY OF ARVADA "ENGINEERING CODE OF STANDARDS AND SPECIFICATIONS FOR THE DESIGN AND CONSTRUCTION OF PUBLIC IMPROVEMENTS", LATEST EDITION. SOLE RESPONSIBILITY FOR COMPLETENESS AND/OR ACCURACY OF THESE DOCUMENTS SHALL REMAIN WITH THE REGISTERED PROFESSIONAL ENGINEER SEALING THESE PLANS, IF APPLICABLE. THE CITY DOES NOT ACCEPT LIABILITY FOR FACILITIES DESIGNED BY OTHERS.		

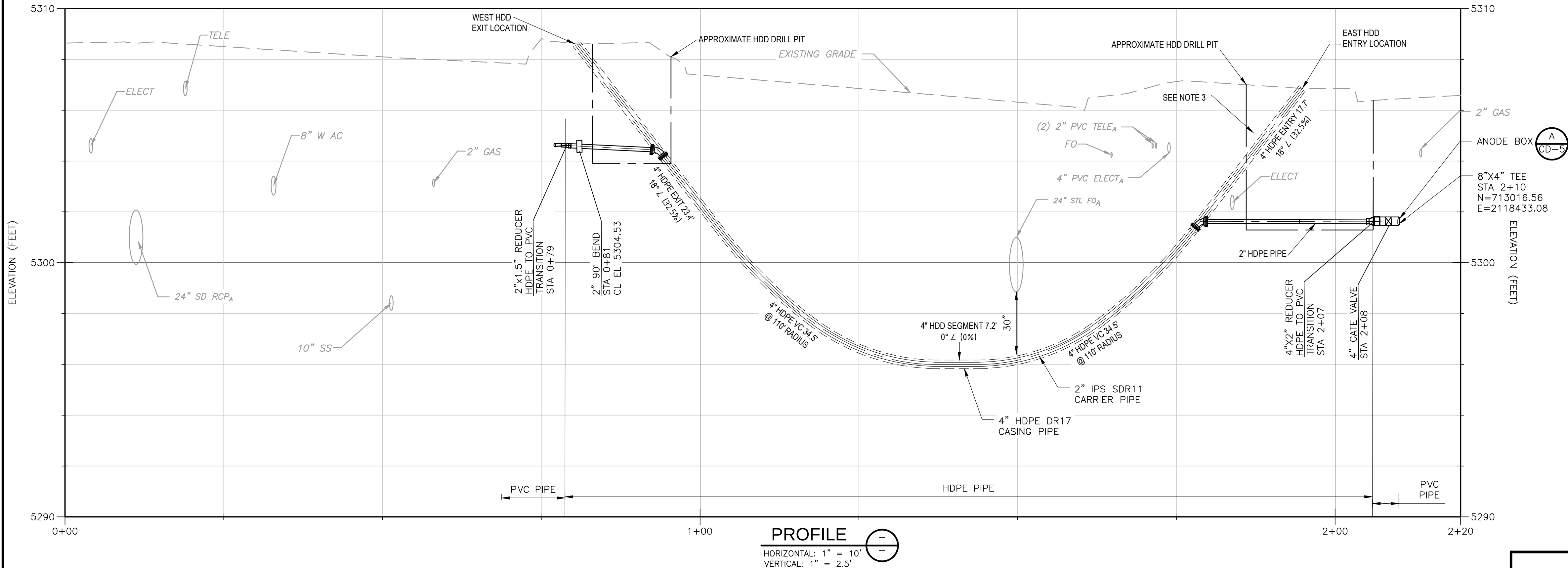
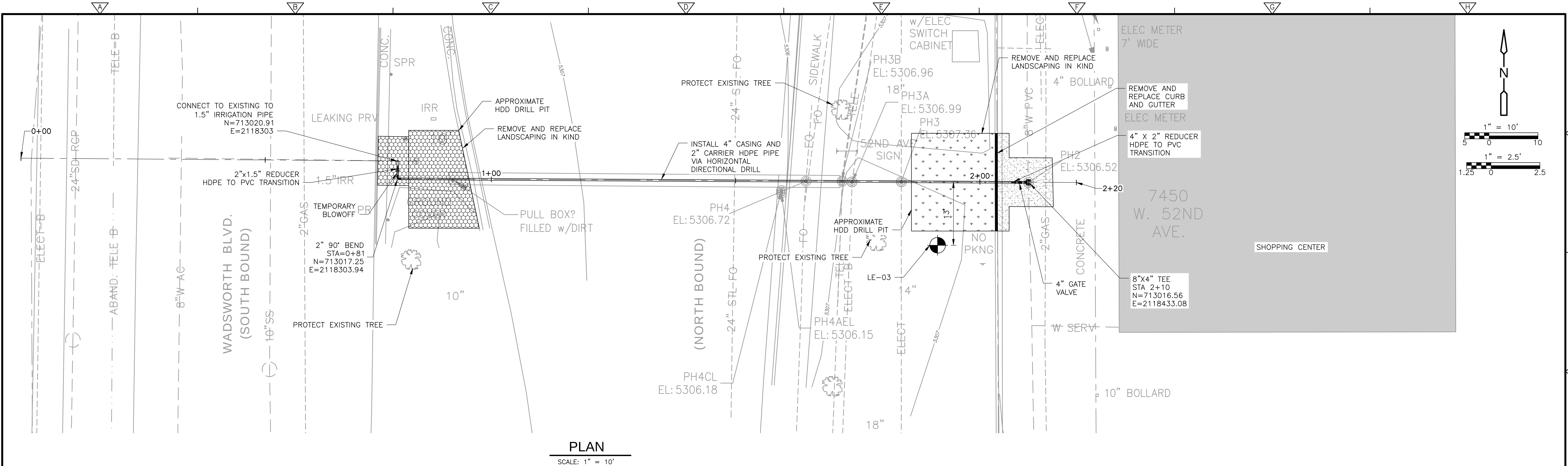


PROJECT NO. 265334-271511
FILE NAME: G003PLPR.DWG
SHEET NO.

G-3

ISSUED FOR CONSTRUCTION

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- NOTES:
- HDD PATH PROVIDED MAY BE MODIFIED AT THE DISCRETION OF THE CONTRACTORS PROVIDED:
 - CONTRACTOR MAINTAINS ENTRY AND EXIT POINT WITHIN 2 FEET OF WHERE SHOWN IN ALL DIRECTIONS
 - CONTRACTOR MAINTAINS CLEARANCES OF 2 FEET OF ALL UTILITIES
 - HDD PIPE SHALL BE 2" IPS SDR11 PE4710 INSIDE 4" HDPE CARRIER PIPE
 - CONTRACTOR TO SUPPORT OR COORDINATE RELOCATION OF UTILITIES EXPOSED DURING THE PIPELINE INSTALLATION.
 - GEOTECHNICAL INFORMATION REGARDING THIS CROSSING IS LOCATED IN THE PROJECT GIR. GEOTECHNICAL BORING LE-03 SITE G IS THE CLOSEST BORING TO THIS CROSSING WITH AN OFFSET OF APPROX. 13'-FT. GROUND CONDITIONS ARE ANTICIPATED TO BE FILL MATERIAL CONSISTING OF LEAN CLAY FROM THE GROUND SURFACE TO 8'-FEET, COARSE ALLUVIUM TO 21'-FEET, WITH CLAYSTONE BEYOND 21'-FEET.
 - REFER TO CP SHEETS FOR CATHODIC PROTECTION LOCATIONS, REQUIREMENTS, AND DETAILS.
 - FOR PRESSURE TESTING AND DISINFECTION, NEW WATER LINE SHALL BE FILLED FROM THE CONNECTION AT STA 2+20.
 - REMOVE TEMPORARY BLOWOFFS ONCE WATER MAIN IS IN SERVICE.
 - AT CONNECTION TO EXISTING WATER MAIN, CONTRACTOR TO VERIFY EXISTING PIPELINE RESTRAINT MEETS RESTRAINT REQUIREMENTS FOR GATE VALVE AS A DEAD END PER DETAILS A, B, AND C ON SHEET CD-1.
 - CONTRACTOR SHALL OBTAIN REQUIRED CDOT PERMITS PRIOR TO COMMENCING WORK.
 - PROTECT EXISTING MATURE TREES ON EAST SIDE OF WADSWORTH BLVD.

- LEGEND :
- LANDSCAPING / SEEDING
 - REMOVE AND REPLACE RIVER ROCK
 - SIDEWALK REPLACEMENT

DESIGNED BY:	J. CARROL
DRAWN BY:	R. PAWAR
SHEET CHK'D BY:	C. CERRETA
CROSS CHK'D BY:	T. CHARLES
APPROVED BY:	B. SILJENBERG
DATE:	OCTOBER 2023

REV.	NO.	DATE	DRWN	CHKD	REMARKS
2/24	CC	SS			ISSUED FOR CONSTRUCTION



CITY OF ARVADA
2021 WATER MAIN IMPROVEMENTS PROJECT
CITY OF ARVADA PROJECT NO. 21-WA-02

WADSWORTH BLVD. IRRIGATION LINE
PLAN AND PROFILE

APPROVED
City of Arvada, Colorado

CITY ENGINEER

3/1/24
DATE

21-WA-02
JOB NUMBER

PROJECT NO. 263334-271511
FILE NAME: G004PLPR.DWG

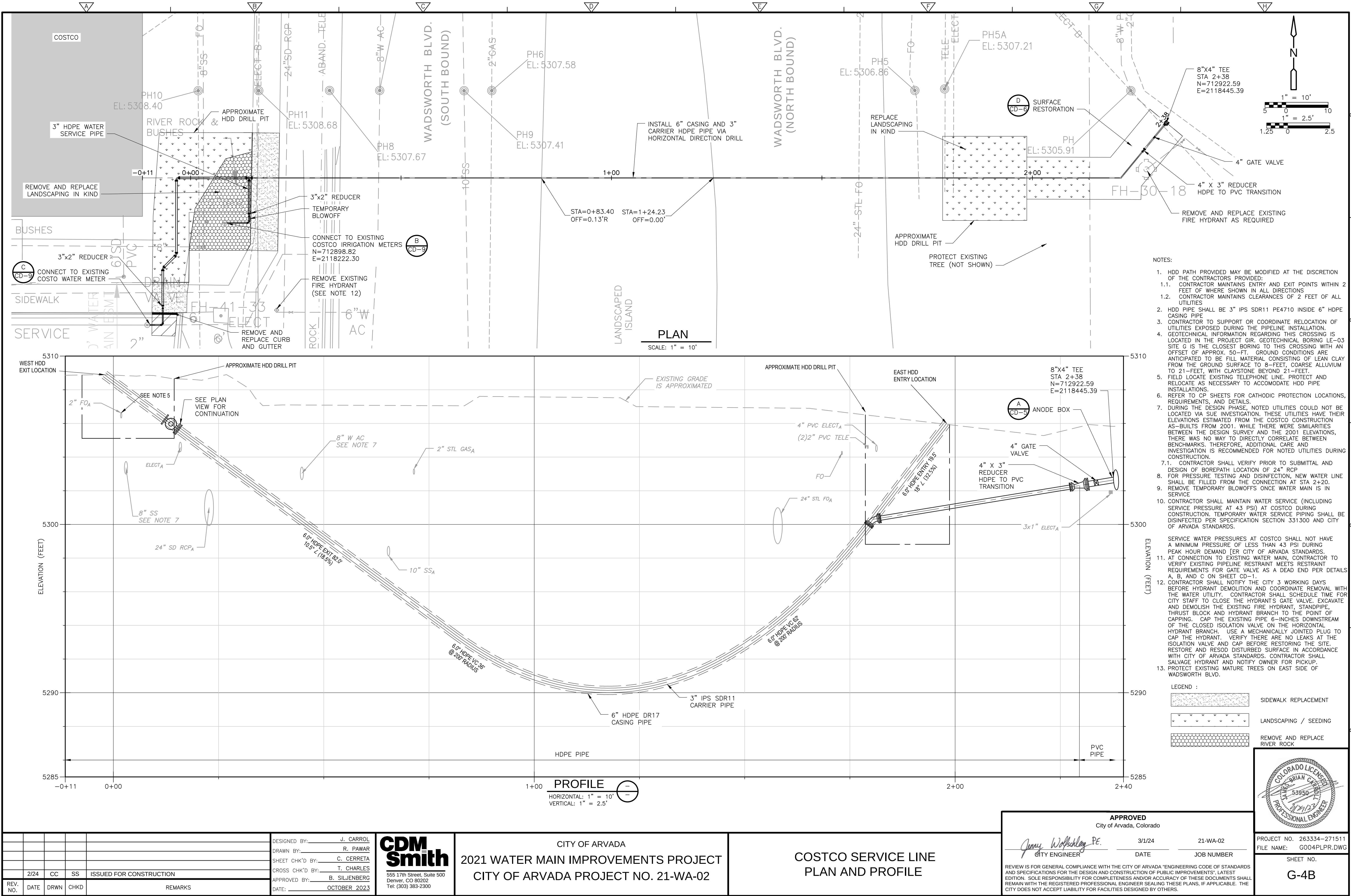
SHEET NO.
G-4A

ISSUED FOR CONSTRUCTION



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DESIGNED BY:	J. CARROL
DRAWN BY:	R. PAWAR
SHEET CHK'D BY:	C. CERRETA
CROSS CHK'D BY:	T. CHARLES
APPROVED BY:	B. SILJENBERG
DATE:	OCTOBER 2023

REV. NO.	DATE	DRWN	CHKD	REMARKS
2/24	CC	SS		ISSUED FOR CONSTRUCTION



CITY OF ARVADA
2021 WATER MAIN IMPROVEMENTS PROJECT
CITY OF ARVADA PROJECT NO. 21-WA-02

COSTCO SERVICE LINE
PLAN AND PROFILE

APPROVED
City of Arvada, Colorado

Janey Wolfshley PE.
CITY ENGINEER

3/1/24
DATE

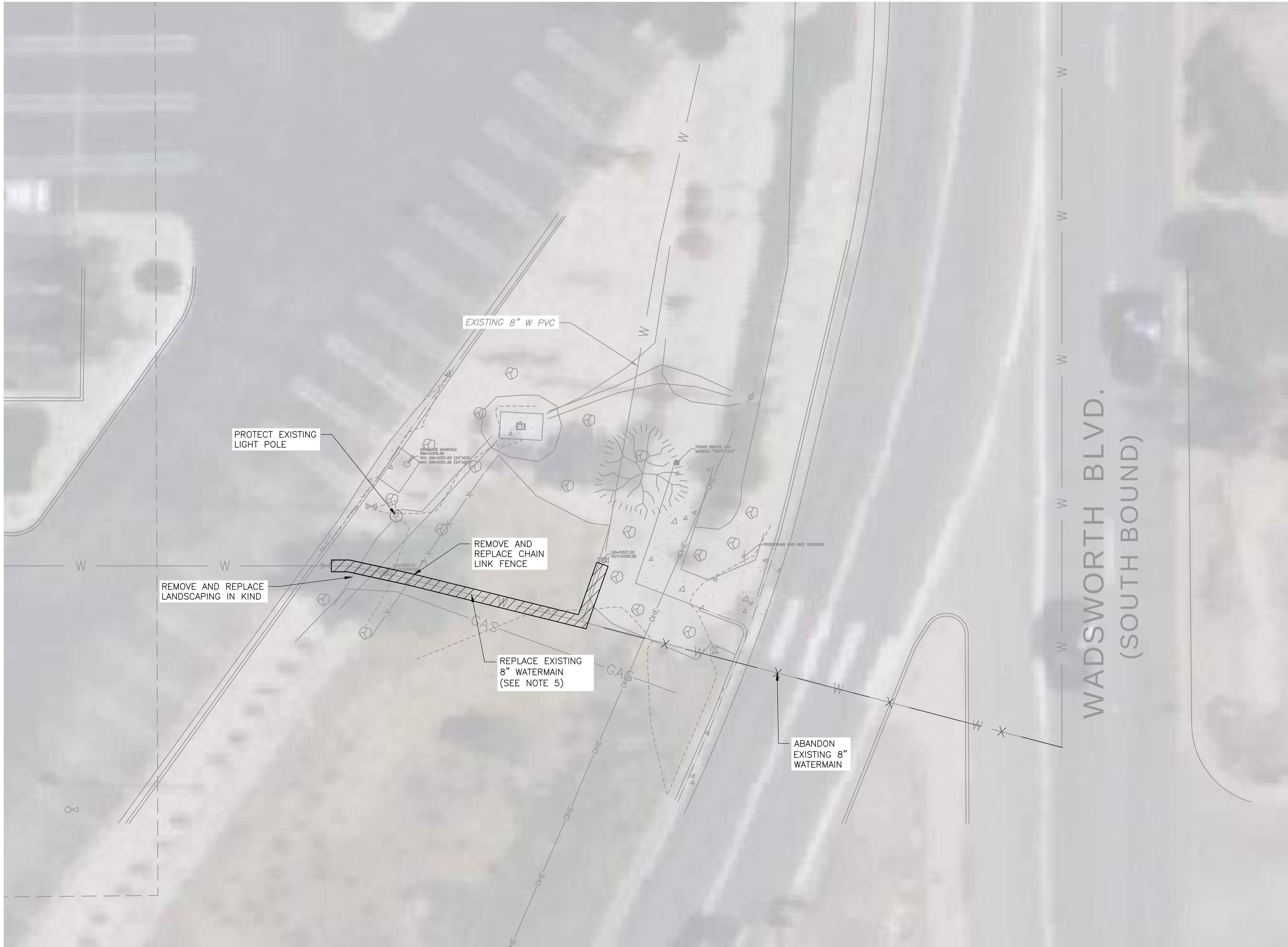
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JOB NUMBER

REVIEW IS FOR GENERAL COMPLIANCE WITH THE CITY OF ARVADA "ENGINEERING CODE OF STANDARDS AND SPECIFICATIONS FOR THE DESIGN AND CONSTRUCTION OF PUBLIC IMPROVEMENTS" LATEST EDITION. SOLE RESPONSIBILITY FOR COMPLETENESS AND/OR ACCURACY OF THESE DOCUMENTS SHALL REMAIN WITH THE REGISTERED PROFESSIONAL ENGINEER SEALING THESE PLANS, IF APPLICABLE. THE CITY DOES NOT ACCEPT LIABILITY FOR FACILITIES DESIGNED BY OTHERS.

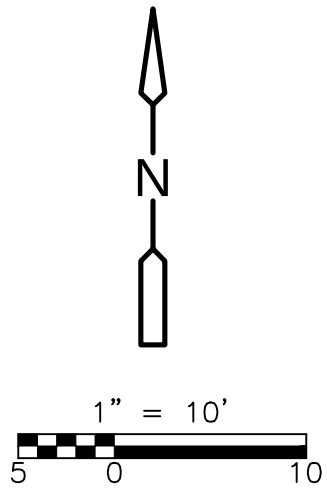
PROJECT NO. 263334-271511
FILE NAME: G004PLPR.DWG
SHEET NO.
G-4B

ISSUED FOR CONSTRUCTION

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PLAN
SCALE: 1" = 10'



- NOTES:
1. A MINIMUM OF ONE EXISTING VALVE SHALL REMAIN. ONCE EXCAVATED, REMOVE EXISTING VALVES LOCATED ON AC PIPE.
 2. IF BOTH EXISTING VALVES ARE LOCATED ON AC PIPE, COORDINATE WITH CITY OF ARVADA TO DETERMINE WHICH VALVE WILL REMAIN.
 3. CONTRACTOR SHALL REPAIR ALL DISTURBED AREAS TO PRECONSTRUCTION CONDITIONS.
 4. AT CONNECTION TO EXISTING WATER MAIN, CONTRACTOR TO VERIFY EXISTING PIPELINE RESTRAINT MEETS RESTRAINT REQUIREMENTS FOR GATE VALVE AS A DEAD END PER DETAILS A, B, AND C ON SHEET CD-1.
 5. REFER TO SPECIFICATION SECTION 013526 "GOVERNMENTAL SAFETY REQUIREMENTS" FOR DISPOSAL OF HARZARDOUS PIPE MATERIAL.

REV. NO.	DATE	DRWN	CHKD	REMARKS
2/24	CC	SS		ISSUED FOR CONSTRUCTION

DESIGNED BY: R. TORDELLA
DRAWN BY: R. PAWAR
SHEET CHK'D BY: C. CERRETA
CROSS CHK'D BY: T. CHARLES
APPROVED BY: R. TORDELLA
DATE: OCTOBER 2023



CITY OF ARVADA
2021 WATER MAIN IMPROVEMENTS PROJECT
CITY OF ARVADA PROJECT NO. 21-WA-02

COSTCO AC PIPE REMOVAL PLAN

APPROVED
City of Arvada, Colorado

CITY ENGINEER

3/1/24
DATE

21-WA-02
JOB NUMBER

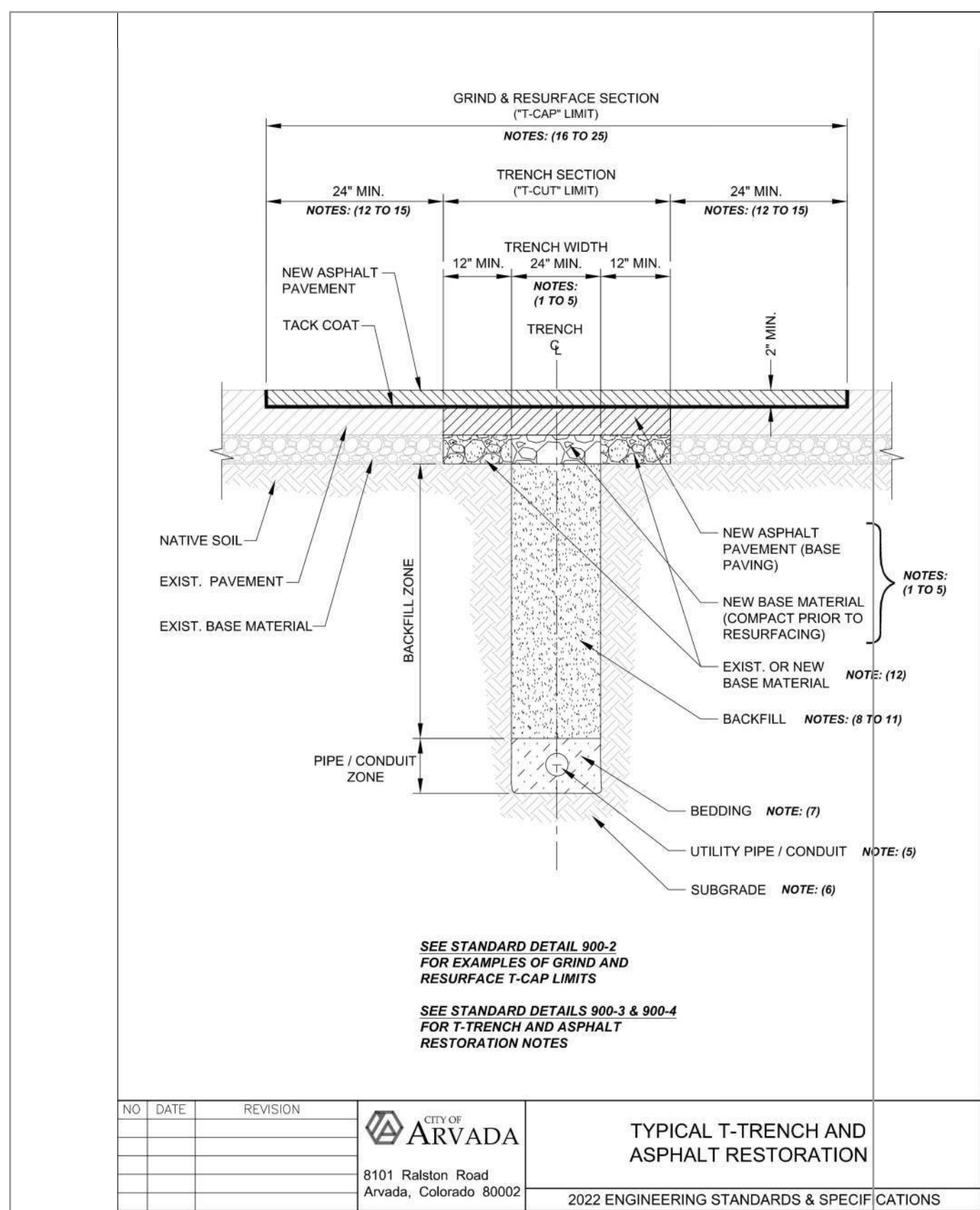
REVIEW IS FOR GENERAL COMPLIANCE WITH THE CITY OF ARVADA "ENGINEERING CODE OF STANDARDS AND SPECIFICATIONS FOR THE DESIGN AND CONSTRUCTION OF PUBLIC IMPROVEMENTS", LATEST EDITION. SOLE RESPONSIBILITY FOR COMPLETENESS AND/OR ACCURACY OF THESE DOCUMENTS SHALL REMAIN WITH THE REGISTERED PROFESSIONAL ENGINEER SEALING THESE PLANS, IF APPLICABLE. THE CITY DOES NOT ACCEPT LIABILITY FOR FACILITIES DESIGNED BY OTHERS.



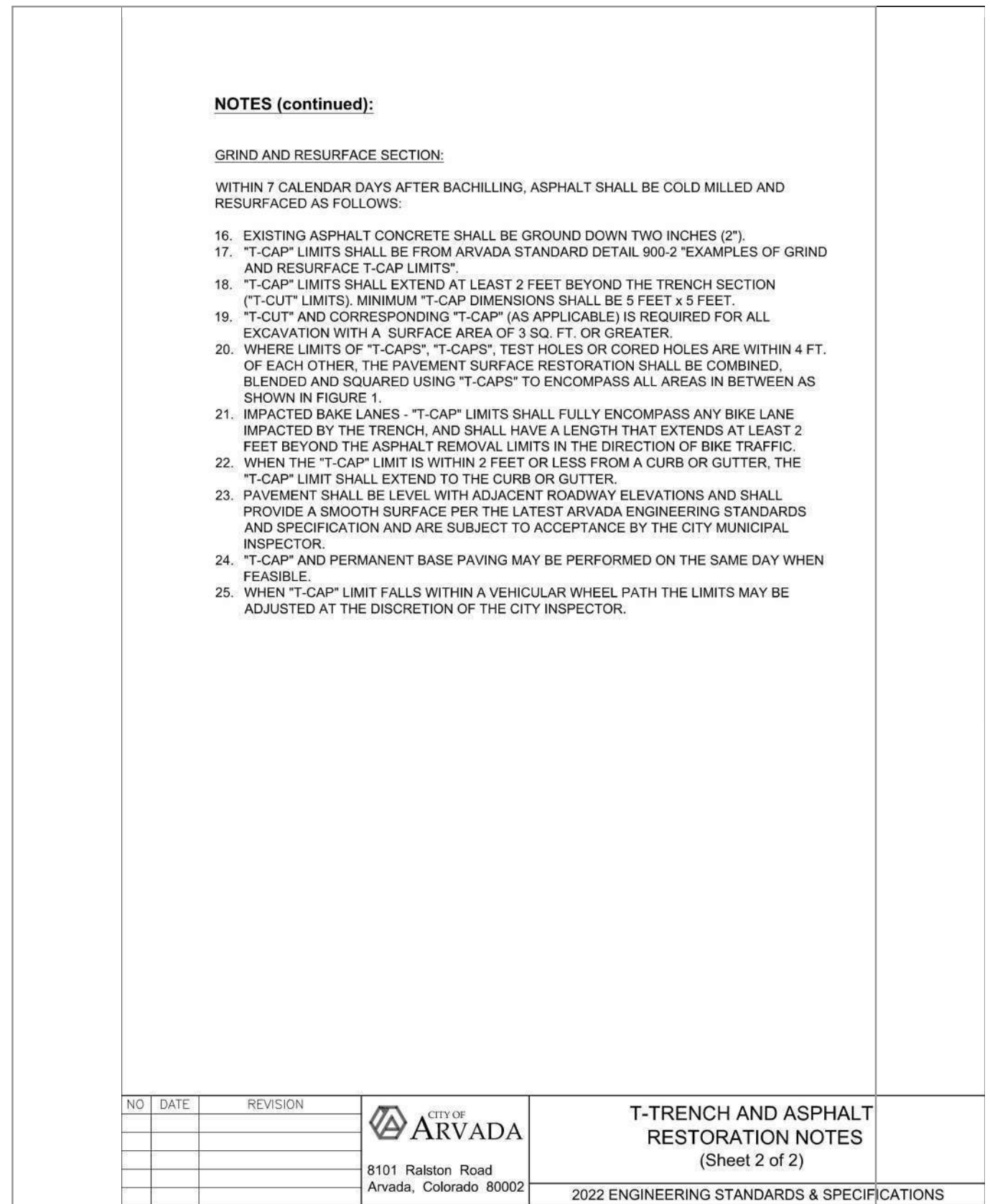
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FILE NAME: G005PLPR.DWG
SHEET NO.
G-5

ISSUED FOR CONSTRUCTION

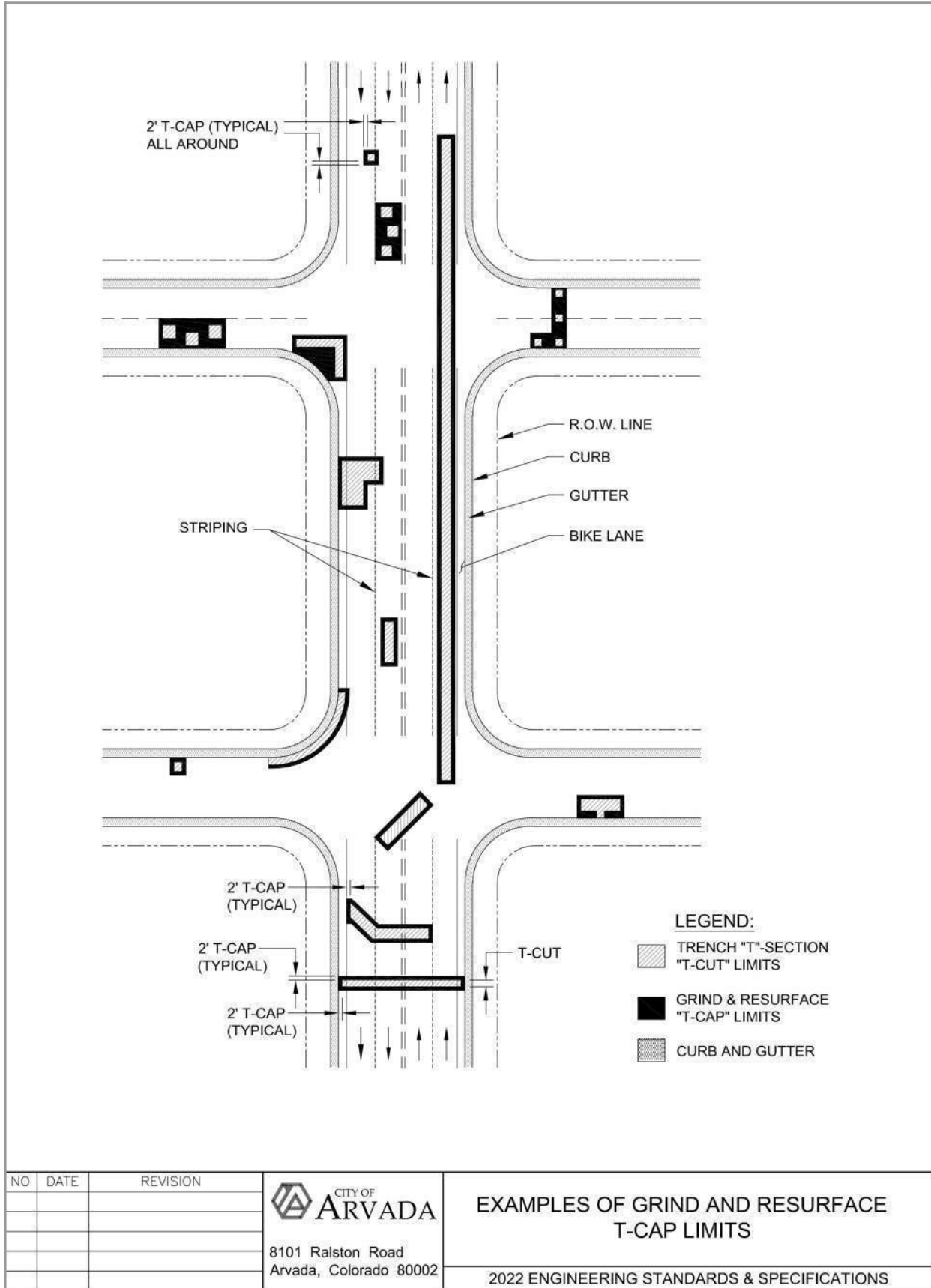
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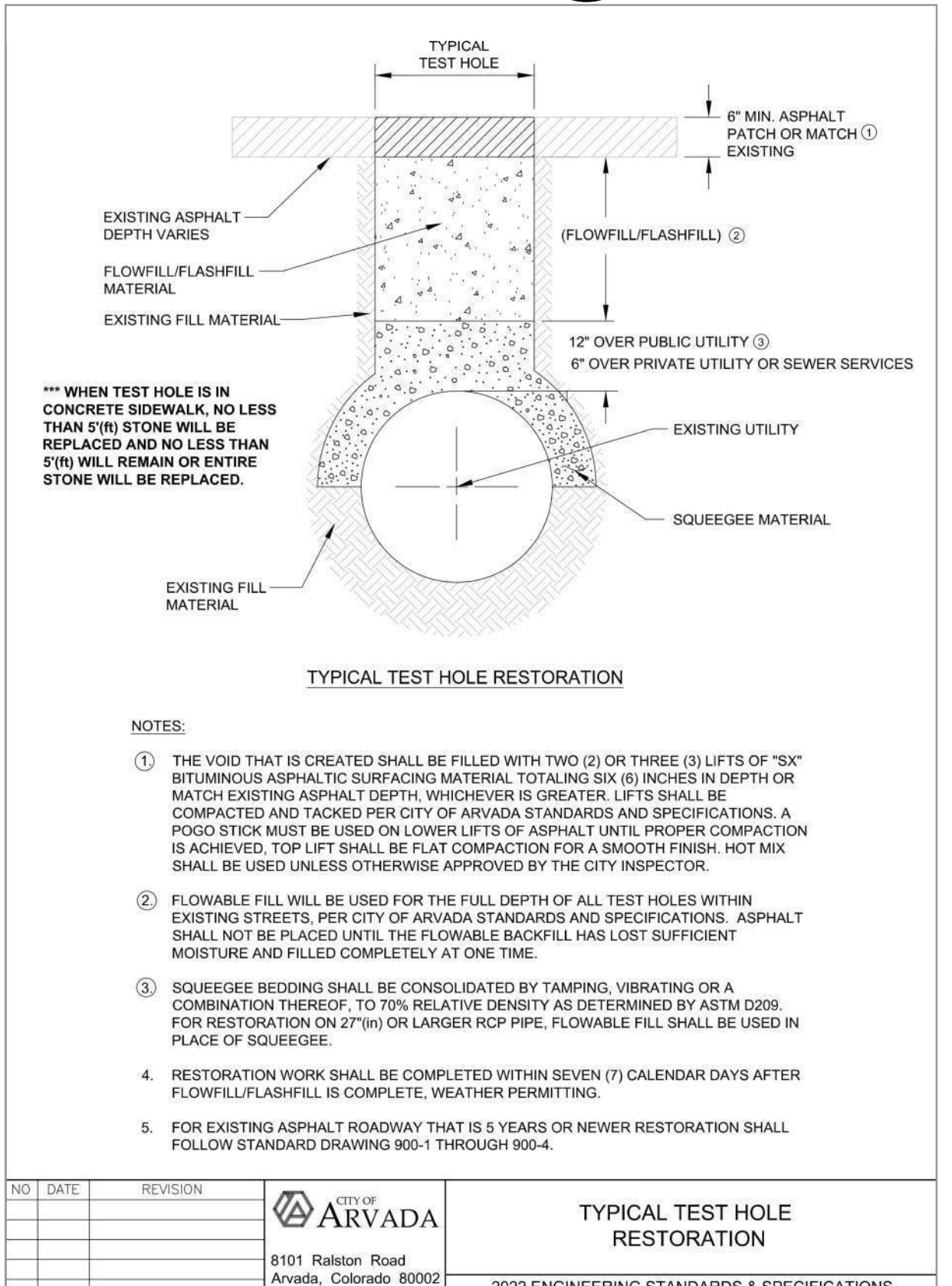
DETAIL A
NTS



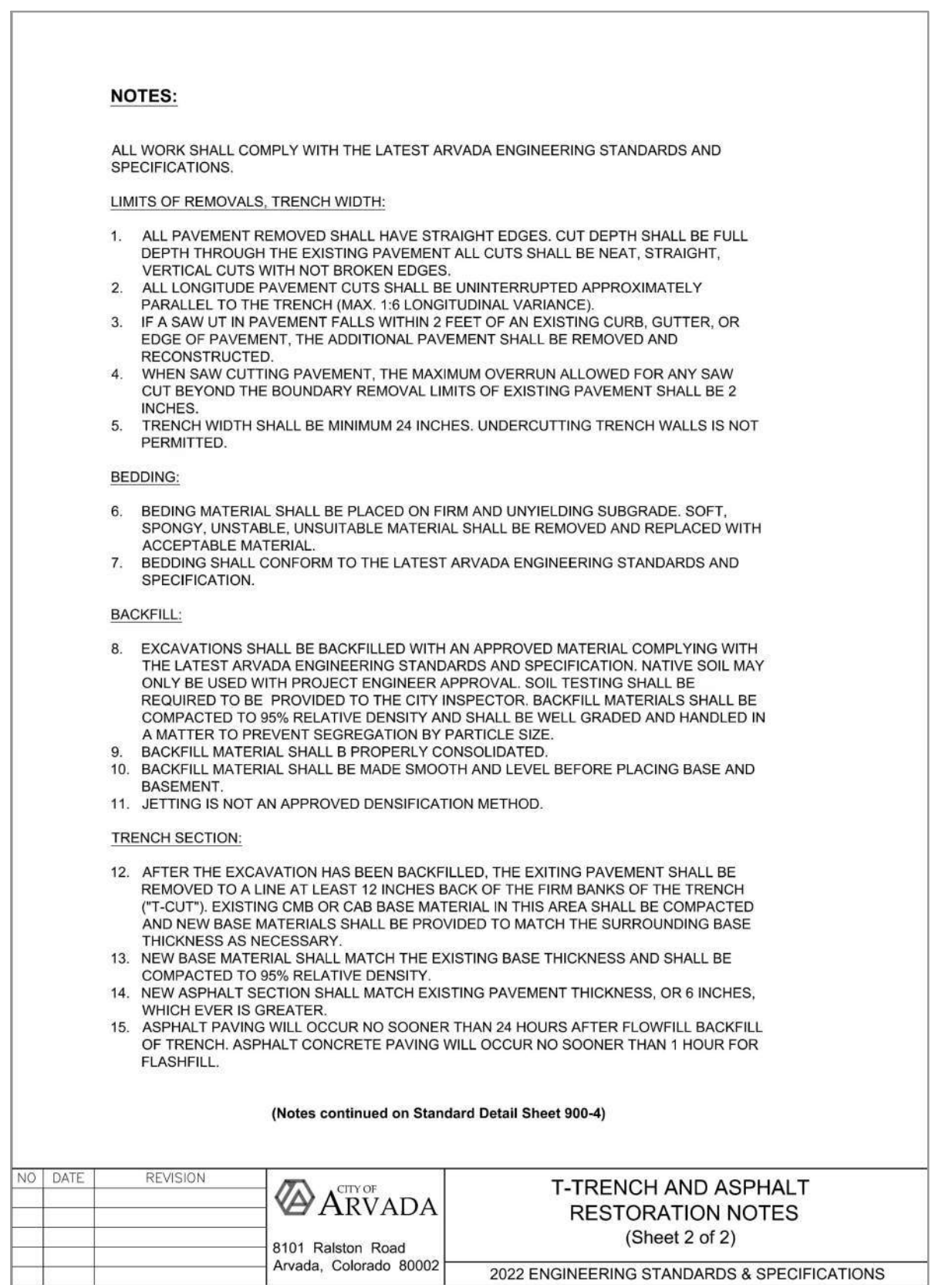
DETAIL D
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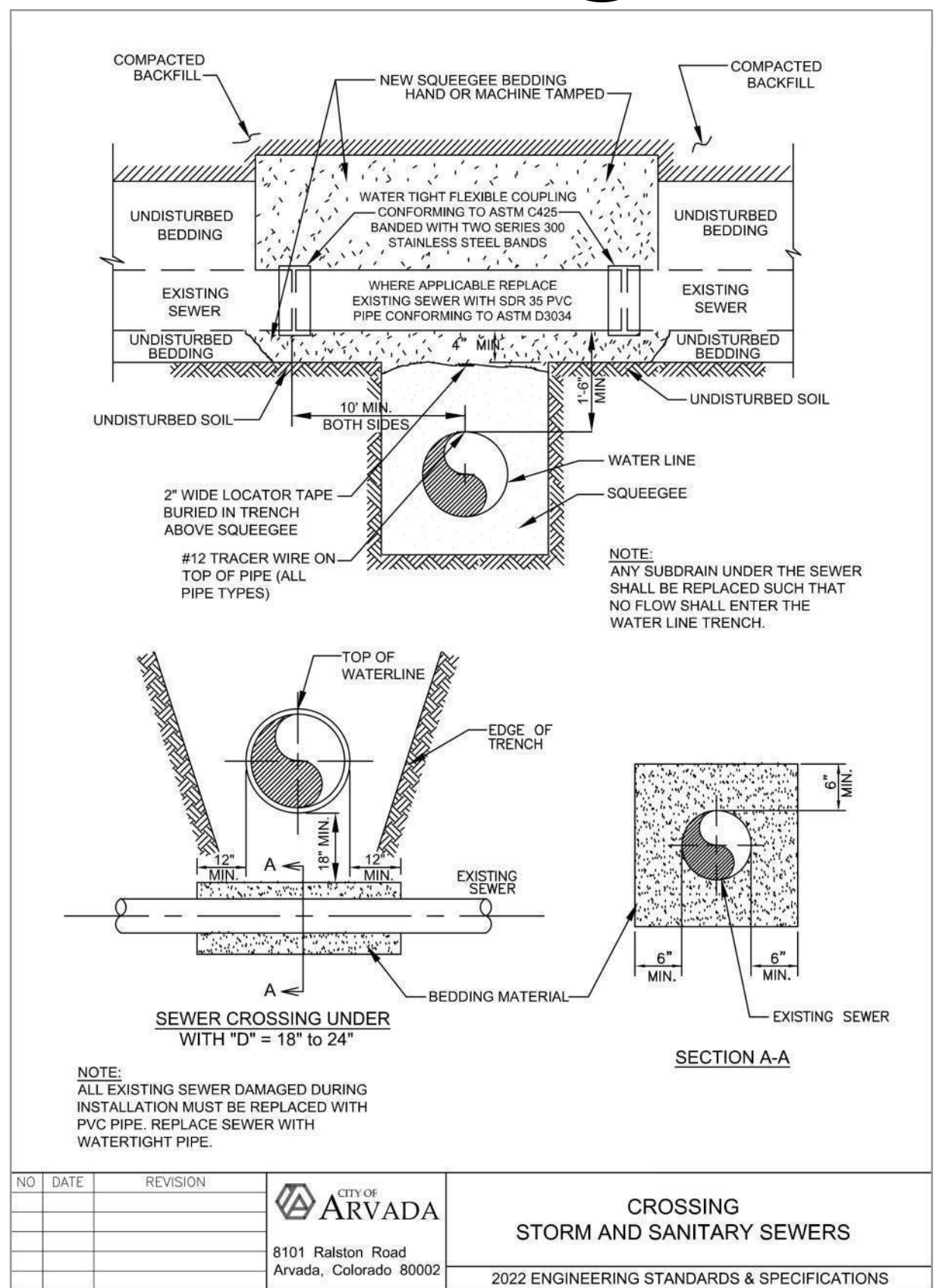
DETAIL B
NTS



DETAIL E
NTS



DETAIL C
NTS



DETAIL F
NTS

					DESIGNED BY: <u>R. TORDELLA</u>
					DRAWN BY: <u>R. PAWAR</u>
					SHEET CHK'D BY: <u>C. CERRETA</u>
					CROSS CHK'D BY: <u>T. CHARLES</u>
	2/24	CC	SS	ISSUED FOR CONSTRUCTION	APPROVED BY: <u>R. TORDELLA</u>
REV. NO.	DATE	DRWN	CHKD	REMARKS	DATE: <u>OCTOBER 2023</u>



CITY OF ARVADA
2021 WATER MAIN IMPROVEMENTS PROJECT
CITY OF ARVADA PROJECT NO. 21-WA-02

CITY OF ARVADA
STANDARD DETAILS III

APPROVED
City of Arvada, Colorado

3/1/24
DATE

21-WA-02
JOB NUMBER

REVIEW IS FOR GENERAL COMPLIANCE WITH THE CITY OF ARVADA "ENGINEERING CODE OF STANDARDS AND SPECIFICATIONS FOR THE DESIGN AND CONSTRUCTION OF PUBLIC IMPROVEMENTS", LATEST EDITION. SOLE RESPONSIBILITY FOR COMPLETENESS AND/OR ACCURACY OF THESE DOCUMENTS SHALL REMAIN WITH THE REGISTERED PROFESSIONAL ENGINEER SEALING THESE PLANS, IF APPLICABLE. THE CITY DOES NOT ACCEPT LIABILITY FOR FACILITIES DESIGNED BY OTHERS.



PROJECT NO. 263334-271511
FILE NAME: CD03STD.DWG
SHEET NO.

CD-3

ISSUED FOR CONSTRUCTION

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JELLISON ST. VAULT MODIFICATIONS

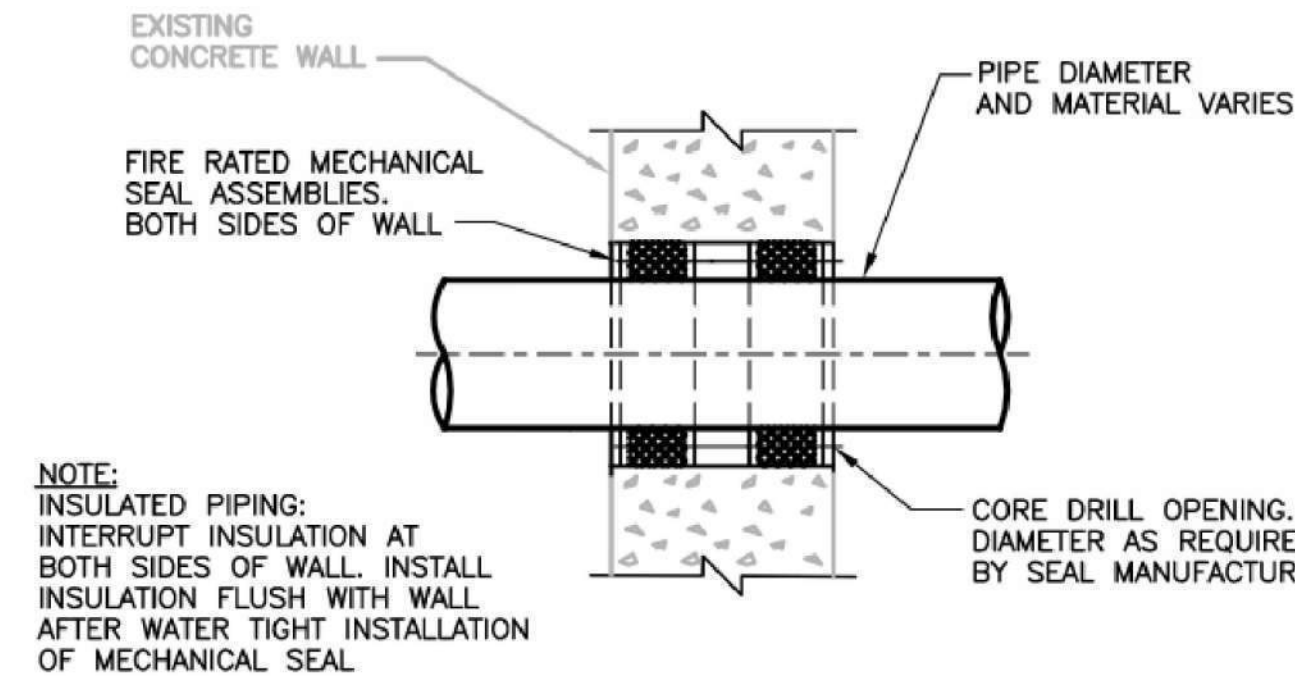
NOTES:

1. CONNECT TO EXISTING FLANGES ON UPSTREAM AND DOWNSTREAM SIDE OF VAULT WITH INSULATING FLANGES AS PER DETAIL C, CP-2.
2. INSTALL CP CONTINUITY BONDS ALONG NEW PIPE SPOOL TO CONNECT EXISTING UPSTREAM PIPE TO EXISTING DOWNSTREAM PIPE PER DETAIL A, CP-2. TAPE CP CONTINUITY BOND WIRES TO TOP OF NEW PIPE USING POLYETHYLENE TAPE SPACED EVERY 18 INCHES.

DETAIL

D

NTS



CORE DRILLED OPENING AND FIRE RATED MECHANICAL MODULAR WALL SEALS PENETRATION THROUGH EXISTING WALL

DETAIL

E

NTS

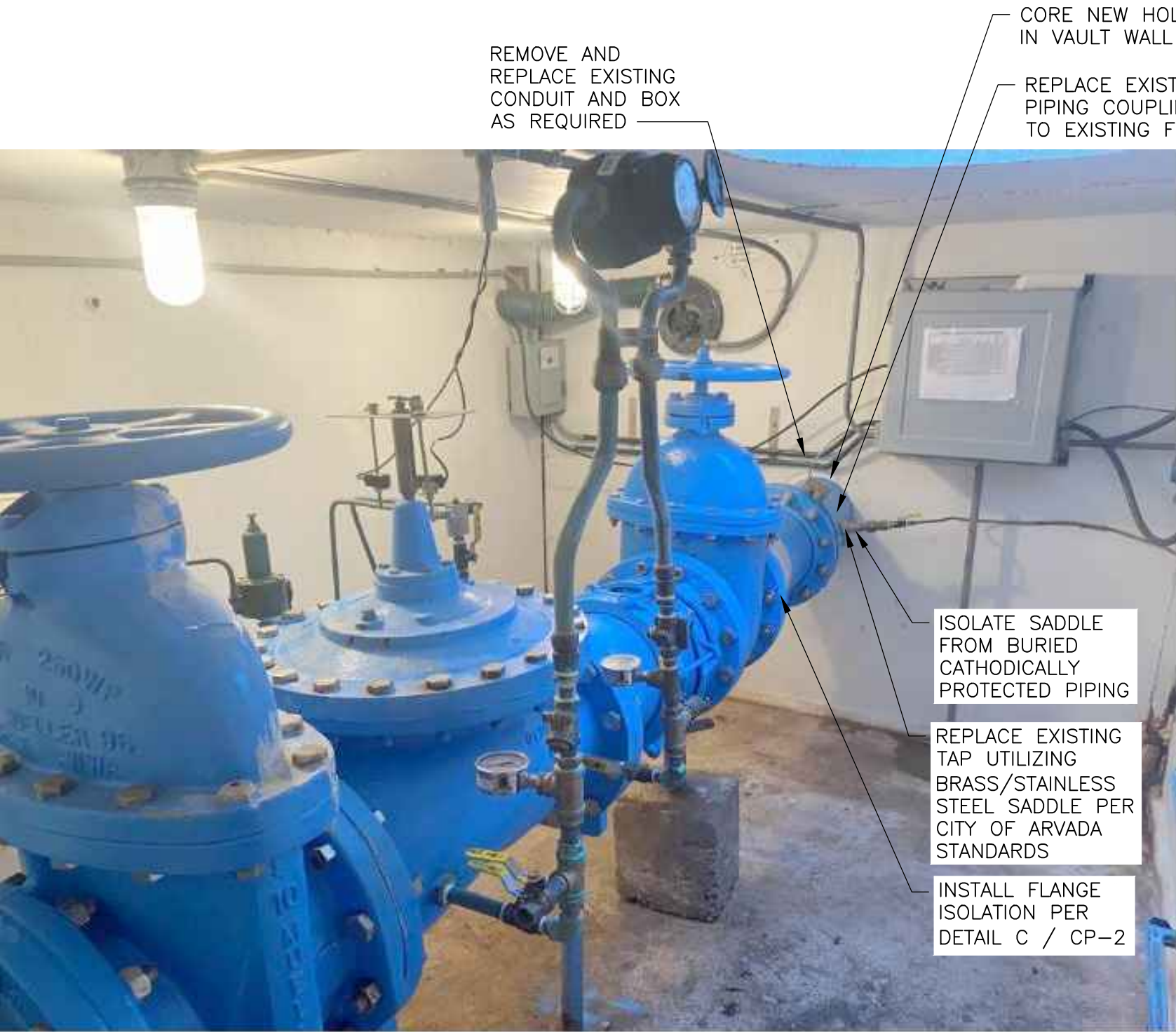


PHOTO INSIDE OF CARR ST. PRV VAULT (SHEET C-1)

DETAIL

F

NTS



PHOTO INSIDE OF CARR ST. DRAIN VAULT (SHEET C-2)

DETAIL

G

NTS

REV. NO.	DATE	DRWN	CHKD	REMARKS
2/24	CC	SS		ISSUED FOR CONSTRUCTION

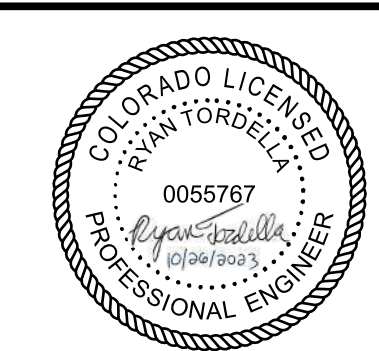
DESIGNED BY: R. TORDELLA
DRAWN BY: R. PAWAR
SHEET CHK'D BY: C. CERRETA
CROSS CHK'D BY: T. CHARLES
APPROVED BY: R. TORDELLA
DATE: OCTOBER 2023



CITY OF ARVADA
2021 WATER MAIN IMPROVEMENTS PROJECT
CITY OF ARVADA PROJECT NO. 21-WA-02

STANDARD DETAILS VII

APPROVED
City of Arvada, Colorado
Jenny Wolfshay PE.
CITY ENGINEER
3/1/24
DATE
21-WA-02
JOB NUMBER
REVIEW IS FOR GENERAL COMPLIANCE WITH THE CITY OF ARVADA 'ENGINEERING CODE OF STANDARDS AND SPECIFICATIONS FOR THE DESIGN AND CONSTRUCTION OF PUBLIC IMPROVEMENTS', LATEST EDITION. SOLE RESPONSIBILITY FOR COMPLETENESS AND/OR ACCURACY OF THESE DOCUMENTS SHALL REMAIN WITH THE REGISTERED PROFESSIONAL ENGINEER SEALING THESE PLANS, IF APPLICABLE. THE CITY DOES NOT ACCEPT LIABILITY FOR FACILITIES DESIGNED BY OTHERS.



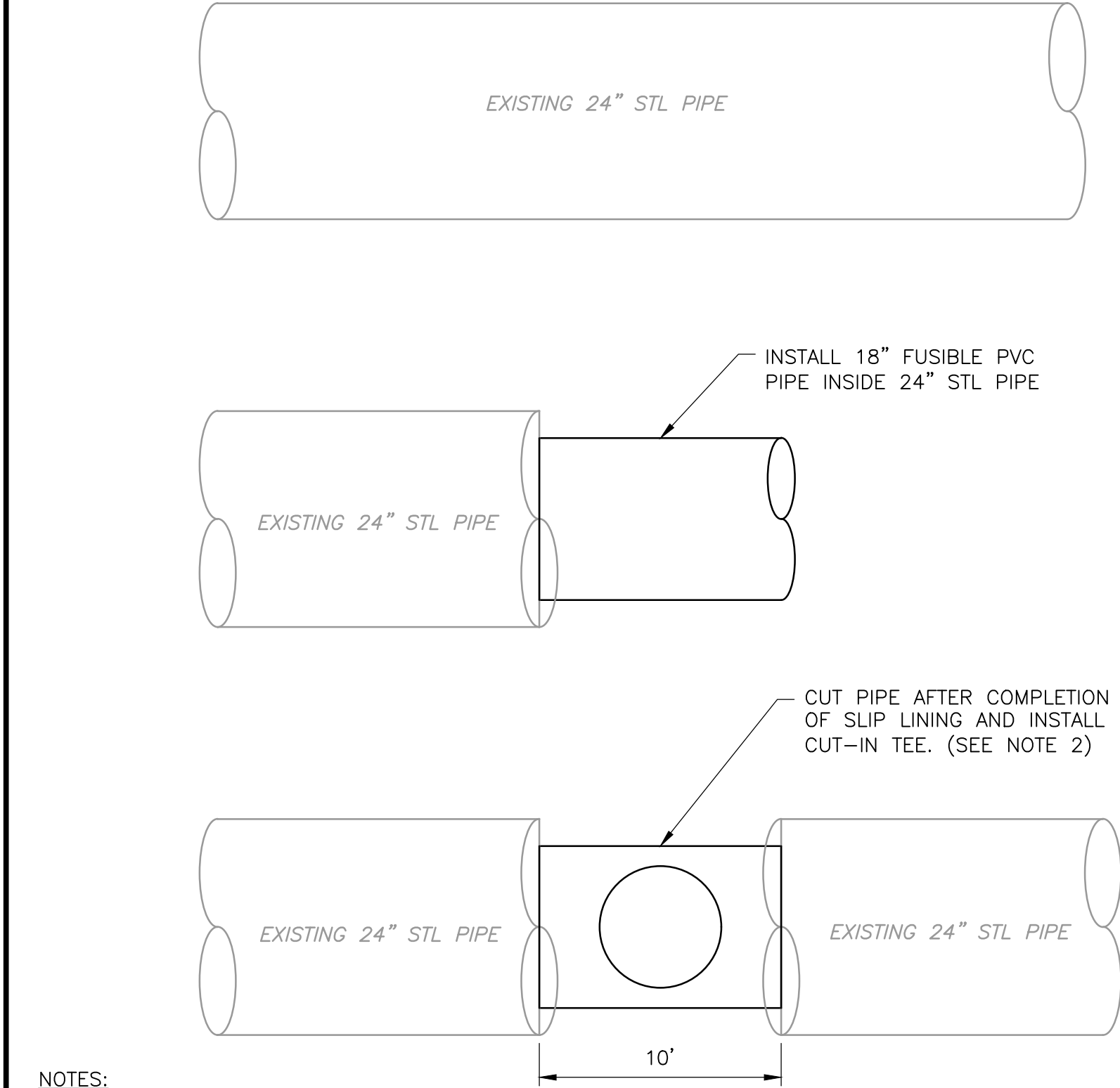
PROJECT NO. 263334-271511
FILE NAME: CD07STD.TD.DWG

SHEET NO.

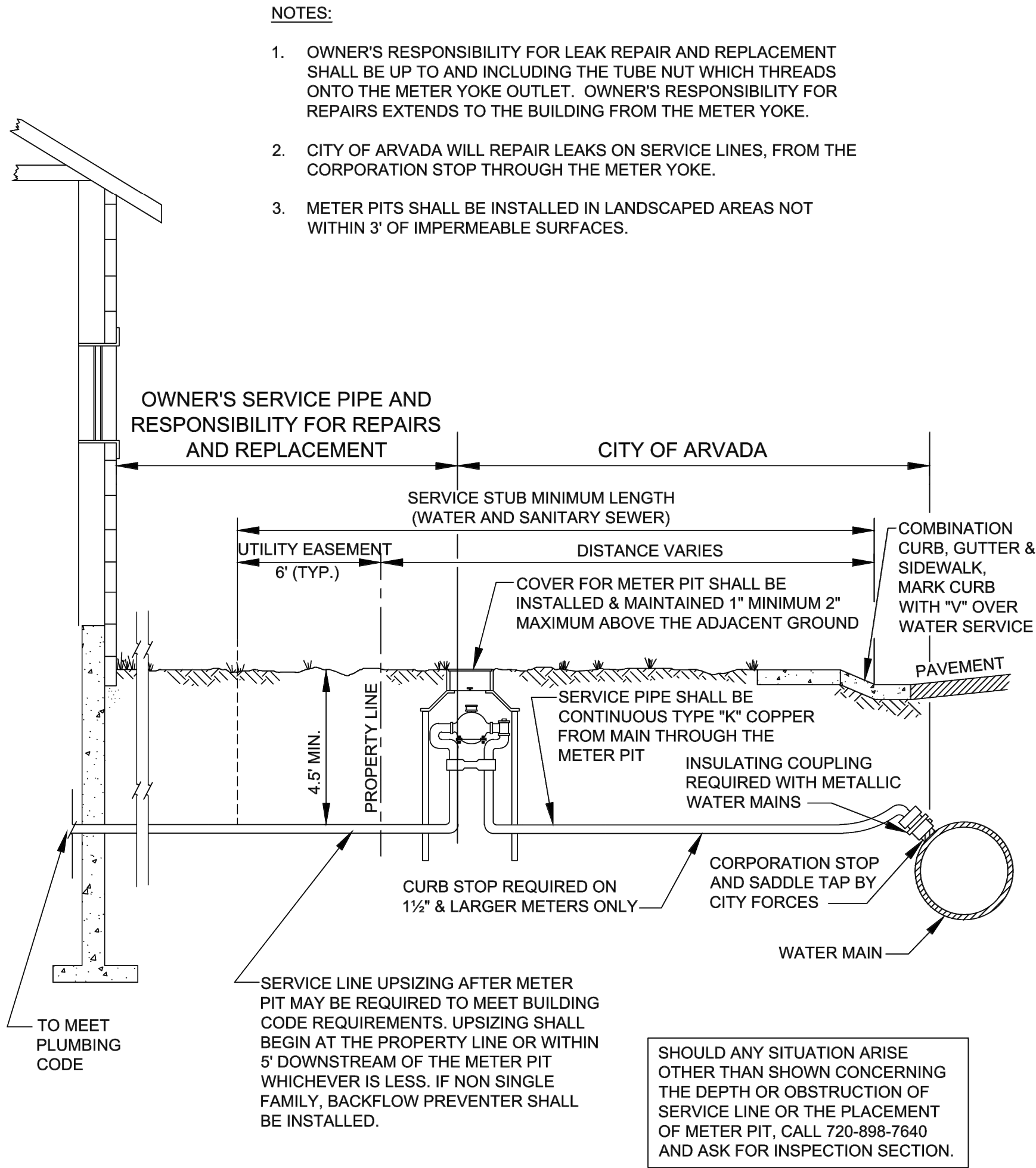
CD-7

ISSUED FOR CONSTRUCTION

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- NOTES:
- COORDINATE WITH FUSIBLE PVC PIPE MANUFACTURER'S REPRESENTATIVE FOR PROPER INSTALLATION.
 - INSTALL TAPPING SADDLE ON NEW FUSIBLE PVC PIPE IN LIEU OF NEW TEE WHERE SHOWN ON THE DRAWINGS.
 - DURING REMOVAL OF EXISTING STEEL PIPE, CONTRACTOR SHALL PROTECT FUSIBLE PVC.
- DETAIL A
NTS



- NOTES:
- OWNER'S RESPONSIBILITY FOR LEAK REPAIR AND REPLACEMENT SHALL BE UP TO AND INCLUDING THE TUBE NUT WHICH THREADS ONTO THE METER YOKE OUTLET. OWNER'S RESPONSIBILITY FOR REPAIRS EXTENDS TO THE BUILDING FROM THE METER YOKE.
 - CITY OF ARVADA WILL REPAIR LEAKS ON SERVICE LINES, FROM THE CORPORATION STOP THROUGH THE METER YOKE.
 - METER PITS SHALL BE INSTALLED IN LANDSCAPED AREAS NOT WITHIN 3' OF IMPERMEABLE SURFACES.
- OWNER'S SERVICE PIPE AND RESPONSIBILITY FOR REPAIRS AND REPLACEMENT
- CITY OF ARVADA
- SERVICE STUB MINIMUM LENGTH (WATER AND SANITARY SEWER)
- UTILITY EASEMENT 6' (TYP.)
- DISTANCE VARIES
- COMBINATION CURB, GUTTER & SIDEWALK, MARK CURB WITH "V" OVER WATER SERVICE
- PAVEMENT
- COVER FOR METER PIT SHALL BE INSTALLED & MAINTAINED 1" MINIMUM 2" MAXIMUM ABOVE THE ADJACENT GROUND
- SERVICE PIPE SHALL BE CONTINUOUS TYPE "K" COPPER FROM MAIN THROUGH THE METER PIT
- INSULATING COUPLING REQUIRED WITH METALLIC WATER MAINS
- CURB STOP REQUIRED ON 1 1/2" & LARGER METERS ONLY
- CORPORATION STOP AND SADDLE TAP BY CITY FORCES
- WATER MAIN
- TO MEET PLUMBING CODE
- SERVICE LINE UPSIZING AFTER METER PIT MAY BE REQUIRED TO MEET BUILDING CODE REQUIREMENTS. UPSIZING SHALL BEGIN AT THE PROPERTY LINE OR WITHIN 5' DOWNSTREAM OF THE METER PIT WHICHEVER IS LESS. IF NON SINGLE FAMILY, BACKFLOW PREVENTER SHALL BE INSTALLED.
- SHOULD ANY SITUATION ARISE OTHER THAN SHOWN CONCERNING THE DEPTH OR OBSTRUCTION OF SERVICE LINE OR THE PLACEMENT OF METER PIT, CALL 720-898-7640 AND ASK FOR INSPECTION SECTION.

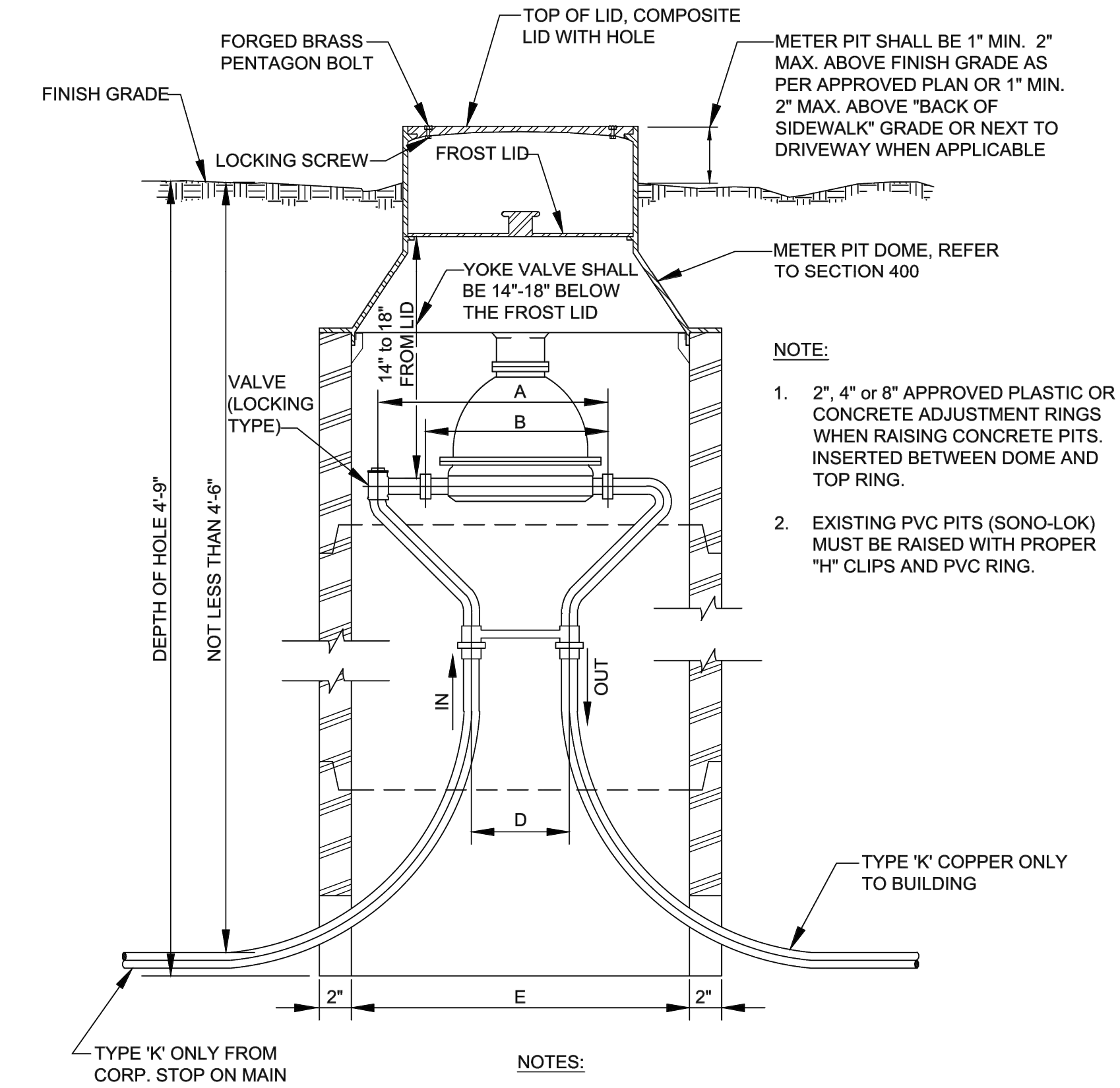
WATER SERVICE PROFILE 5/8"x3/4", 3/4" AND 1"

DETAIL C
NTS



HOLLAND CT. HYDRANT CONNECTION

DETAIL E
NTS



- NOTES:
- LOCATION OF METER PIT SHALL BE ESTABLISHED BY THE PROJECT ENGINEER.
 - ALL METER PITS MUST BE INSPECTED BY THE MUNICIPAL INSPECTOR BEFORE BACKFILLING.
 - METER PITS SHALL BE INSTALLED IN LANDSCAPE AREAS UNLESS APPROVED BY PROJECT ENGINEER.
 - A MULTI-FAMILY DWELLING, SERVICED BY A 3/4" WATER LINE WILL USE A 3/4" METER.
 - WHEN APPROVED FOR INSTALLATION IN ASPHALT, TOP OF METER PIT SHALL BE FLUSH WITH FINISH GRADE AND RECESSED LID.
 - NO CONCRETE FLOOR ALLOWED IN METER PIT. LAWN SPRINKLER CONNECTIONS SHALL BE A MINIMUM OF FIVE FEET FROM THE METER PIT WALL ON THE OUTLET SIDE.
 - METER RESETTERS ARE NOT ALLOWED.
- | METER SIZE | A | B | C | D | E |
|-------------|----------|----------|-----------|----|-----|
| 5/8" x 3/4" | 12- 5/8" | 7- 7/8" | 7- 13/16" | 4" | 24" |
| 3/4" | 14- 1/4" | 9- 3/8" | 8- 15/16" | 5" | 24" |
| 1" | 17- 1/4" | 11- 1/8" | 11- 1/4" | 6" | 24" |

OUTSIDE METER SETTING 1" & SMALLER

DETAIL D
NTS

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: R. TORDELLA	NOT USED
DRAWN BY: R. PAWAR	DETAIL B
SHEET CHK'D BY: C. CERRETA	NTS
CROSS CHK'D BY: T. CHARLES	
APPROVED BY: C. CERRETA	
DATE: APRIL 2024	



CITY OF ARVADA

2021 WATER MAIN IMPROVEMENTS PROJECT

CITY OF ARVADA PROJECT NO. 21-WA-02

STANDARD DETAILS VIII

APPROVED

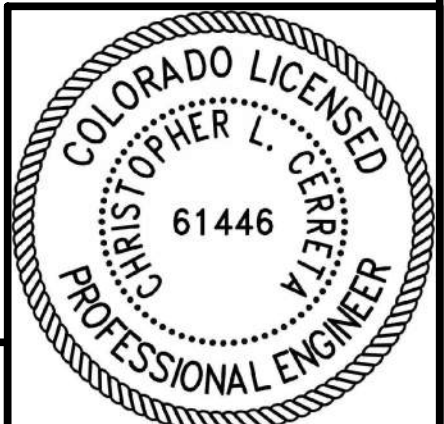
City of Arvada, Colorado

5/15/24

21-WA-02

CITY ENGINEER DATE JOB NUMBER

REVIEW IS FOR GENERAL COMPLIANCE WITH THE CITY OF ARVADA "ENGINEERING CODE OF STANDARDS AND SPECIFICATIONS FOR THE DESIGN AND CONSTRUCTION OF PUBLIC IMPROVEMENTS", LATEST EDITION. SOLE RESPONSIBILITY FOR COMPLETENESS AND/OR ACCURACY OF THESE DOCUMENTS SHALL REMAIN WITH THE REGISTERED PROFESSIONAL ENGINEER SEALING THESE PLANS, IF APPLICABLE. THE CITY DOES NOT ACCEPT LIABILITY FOR FACILITIES DESIGNED BY OTHERS.



PROJECT NO. 263334-271511

FILE NAME: CD08STD.TD.DWG

SHEET NO.

CD-8

ISSUED FOR CONSTRUCTION

PROTECT OR TEMPORARILY
RELOCATE EXISTING
OVERHEAD WIRES.

PROTECT AND SUPPORT
EXISTING POWER POLES

PROTECT EXISTING TREE

PRV
VAULT

PROTECT EXISTING
FIBER MANHOLE

PROTECT EXISTING TREE

PROTECT EXISTING TREE

PROTECT EXISTING TREE

NOTES:

1. COORDINATE WITH EXISTING UTILITIES AND HOMEOWNERS AS REQUIRED FOR UTILITY RELOCATIONS/DISRUPTIONS TO COMPLETE CONSTRUCTION.

CARR ST TREE PROTECTION AND UTILITY COORDINATION

DETAIL

NTS

A

—



COSTCO METER RECONNECTION

DETAIL

NTS

B



COSTCO METER RECONNECTION

DETAIL

NTS

C

100

					DESIGNED BY: <u>R. TORDELLA</u>
					DRAWN BY: <u>R. PAWAR</u>
					SHEET CHK'D BY: <u>C. CERRETA</u>
					CROSS CHK'D BY: <u>T. CHARLES</u>
	2/24	CC	SS	ISSUED FOR CONSTRUCTION	APPROVED BY: <u>R. TORDELLA</u>
REV. NO.	DATE	DRWN	CHKD	REMARKS	DATE: <u>OCTOBER 2023</u>

DESIGNED BY: _____ R. TORDELLA
DRAWN BY: _____ R. PAWAR
SHEET CHK'D BY: _____ C. CERRETA
CROSS CHK'D BY: _____ T. CHARLES
APPROVED BY: _____ R. TORDELLA
DATE: _____ OCTOBER 2023

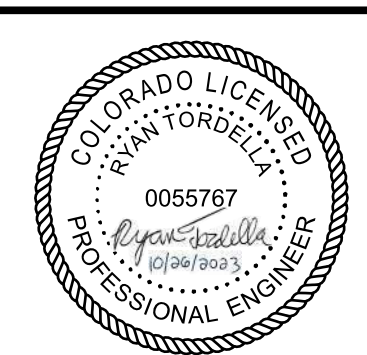


CITY OF ARVADA
2021 WATER MAIN IMPROVEMENTS PROJECT
CITY OF ARVADA PROJECT NO. 21-WA-02

STANDARD DETAILS IX

APPROVED		
City of Arvada, Colorado		
	3/1/24	21-WA-02
CITY ENGINEER	DATE	JOB NUMBER

REVIEW IS FOR GENERAL COMPLIANCE WITH THE CITY OF ARVADA "ENGINEERING CODE OF STANDARDS AND SPECIFICATIONS FOR THE DESIGN AND CONSTRUCTION OF PUBLIC IMPROVEMENTS". LATEST EDITION. SOLE RESPONSIBILITY FOR COMPLETENESS AND/OR ACCURACY OF THESE DOCUMENTS SHALL REMAIN WITH THE REGISTERED PROFESSIONAL ENGINEER SEALING THESE PLANS. IF APPLICABLE, THE CITY DOES NOT ACCEPT LIABILITY FOR FACILITIES DESIGNED BY OTHERS.

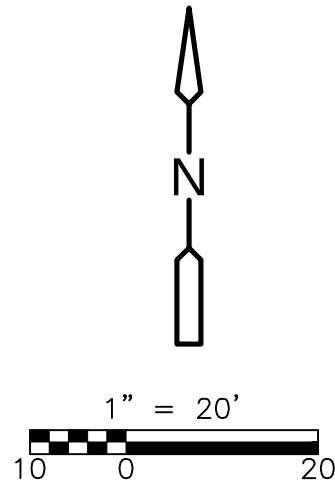
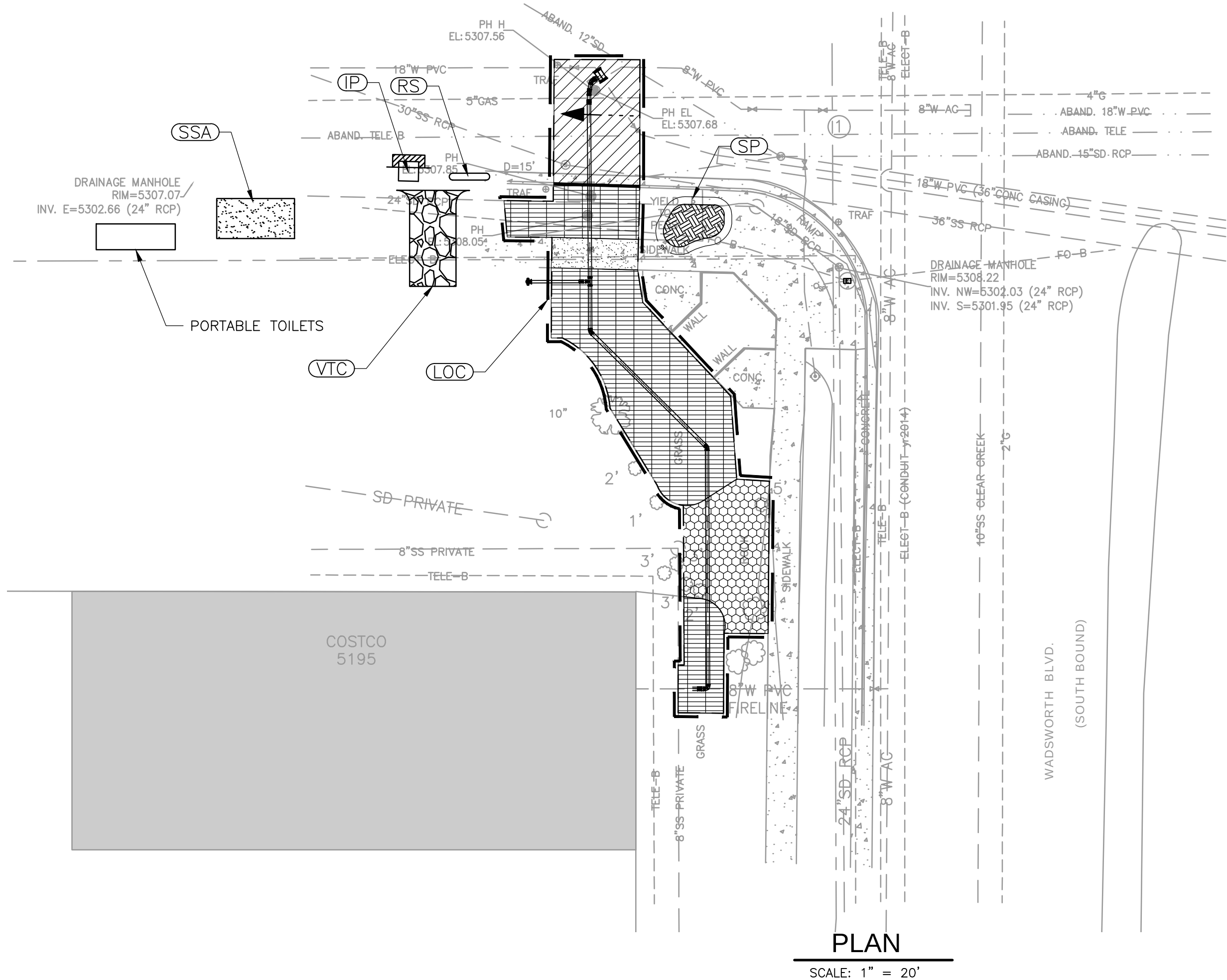


PROJECT NO. 263334-271511
FILE NAME: CD09STDT.DWG
SHEET NO.

CD-9

ISSUED FOR CONSTRUCTION

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LEGEND :

- ASPHALT REPLACEMENT
- LANDSCAPING / SEEDING (REFER TO SWMP FOR SEED MIX AND APPLICATION)
- CLAY
- SIDEWALK REPLACEMENT

BMP LEGEND

- CONCRETE WASHOUT AREA (CWA)
- ROCK SOCK (RS)
- INLET PROTECTION (IP)
- SILT FENCE (SF)
- STABILIZED STAGING AREA (SSA)
- VEHICLE TRACKING CONTROL (VTC)
- LIMITS OF CONSTRUCTION (LOC)
- LIMITS OF DEMOLITION (LOD)
- FLOW ARROW
- STOCKPILE MANAGEMENT (SP)
- SEDIMENT CONTROL LOG (SCL)

- NOTES :
- THESE CONTROL MEASURES ARE SUBJECT TO CHANGED BASED ON SITE CONDITIONS, THEREFORE THE CONTRACTOR WILL MODIFY THE EROSION CONTROL PLANS TO REFLECT CURRENT CONDITIONS.
 - CONTRACTOR TO ENSURE ALL STOCKPILE AREAS ARE PROTECTED.
 - TOTAL DISTURBED AREA = 0.07 ACRES

REV. NO.	DATE	DRWN	CHKD	REMARKS
2/24	CC	SS		ISSUED FOR CONSTRUCTION

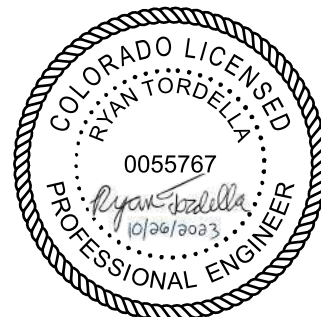
DESIGNED BY: R. TORDELLA
DRAWN BY: R. PAWAR
SHEET CHK'D BY: C. CERRETA
CROSS CHK'D BY: T. CHARLES
APPROVED BY: R. TORDELLA
DATE: OCTOBER 2023



CITY OF ARVADA
2021 WATER MAIN IMPROVEMENTS PROJECT
CITY OF ARVADA PROJECT NO. 21-WA-02

SEGMENT G
W. 52ND AVE. AND WADSWORTH BLVD.
EROSION CONTROL PLAN

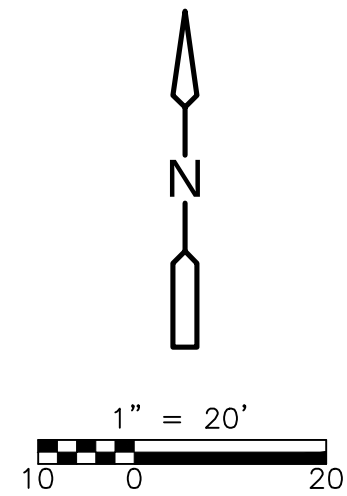
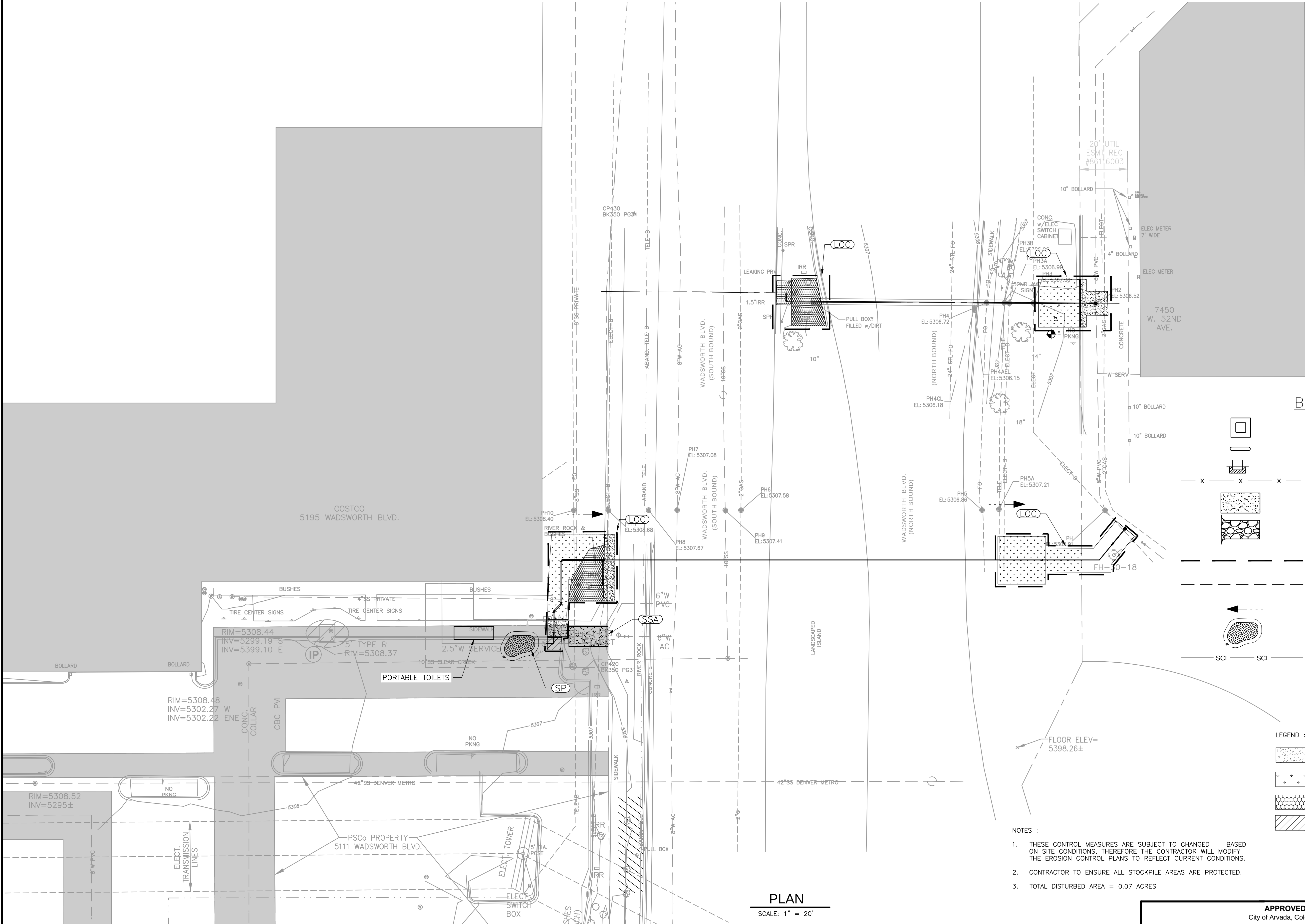
APPROVED	
City of Arvada, Colorado	
<i>Jimmy Wolfshaley PE.</i>	3/1/24
CITY ENGINEER	DATE
	JOB NUMBER 21-WA-02
REVIEW IS FOR GENERAL COMPLIANCE WITH THE CITY OF ARVADA "ENGINEERING CODE OF STANDARDS AND SPECIFICATIONS FOR THE DESIGN AND CONSTRUCTION OF PUBLIC IMPROVEMENTS", LATEST EDITION. SOLE RESPONSIBILITY FOR COMPLETENESS AND/OR ACCURACY OF THESE DOCUMENTS SHALL REMAIN WITH THE REGISTERED PROFESSIONAL ENGINEER SEALING THESE PLANS, IF APPLICABLE. THE CITY DOES NOT ACCEPT LIABILITY FOR FACILITIES DESIGNED BY OTHERS.	



PROJECT NO. 265334-271511
FILE NAME: EC008STPL.DWG
SHEET NO.
EC-8

ISSUED FOR CONSTRUCTION

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BMP LEGEND

- (CWA) CONCRETE WASHOUT AREA
- (RS) ROCK SOCK
- (IP) INLET PROTECTION
- (SF) SILT FENCE
- (SSA) STABILIZED STAGING AREA
- (VTC) VEHICLE TRACKING CONTROL
- (LOC) LIMITS OF CONSTRUCTION
- (LOD) LIMITS OF DEMOLITION
- (FA) FLOW ARROW
- (SP) STOCKPILE MANAGEMENT
- (SCL) SEDIMENT CONTROL LOG

LEGEND :

- SIDEWALK REPLACEMENT
- LANDSCAPING / SEEDING (REFER TO SWMP FOR SEED MIX AND APPLICATION)
- REMOVE AND REPLACE RIVER ROCK
- ASPHALT REPLACEMENT

NOTES :

- THESE CONTROL MEASURES ARE SUBJECT TO CHANGED BASED ON SITE CONDITIONS, THEREFORE THE CONTRACTOR WILL MODIFY THE EROSION CONTROL PLANS TO REFLECT CURRENT CONDITIONS.
- CONTRACTOR TO ENSURE ALL STOCKPILE AREAS ARE PROTECTED.
- TOTAL DISTURBED AREA = 0.07 ACRES

PLAN

SCALE: 1" = 20'

REV. NO.	DATE	DRWN	CHKD	REMARKS
2/24	CC	SS		ISSUED FOR CONSTRUCTION

DESIGNED BY: R. TORDELLA
DRAWN BY: R. PAWAR
SHEET CHK'D BY: C. CERRETA
CROSS CHK'D BY: T. CHARLES
APPROVED BY: R. TORDELLA
DATE: OCTOBER 2023



CITY OF ARVADA
2021 WATER MAIN IMPROVEMENTS PROJECT
CITY OF ARVADA PROJECT NO. 21-WA-02

SEGMENT G
COSTCO SERVICE LINE
EROSION CONTROL PLAN

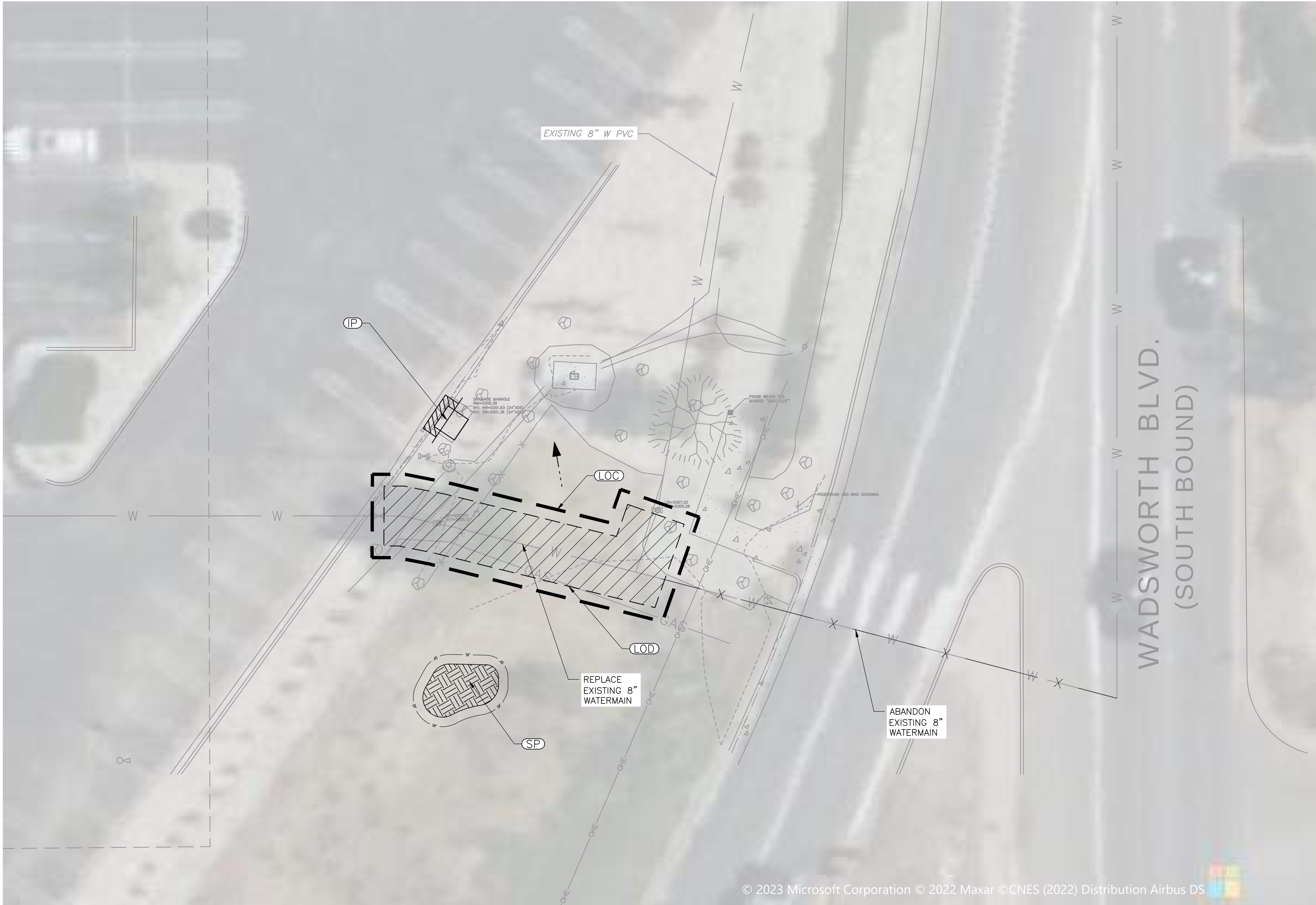
APPROVED
City of Arvada, Colorado
Janey Wolfshley PE.
CITY ENGINEER
3/1/24
DATE
21-WA-02
JOB NUMBER
REVIEW IS FOR GENERAL COMPLIANCE WITH THE CITY OF ARVADA "ENGINEERING CODE OF STANDARDS AND SPECIFICATIONS FOR THE DESIGN AND CONSTRUCTION OF PUBLIC IMPROVEMENTS", LATEST EDITION. SOLE RESPONSIBILITY FOR COMPLETENESS AND/OR ACCURACY OF THESE DOCUMENTS SHALL REMAIN WITH THE REGISTERED PROFESSIONAL ENGINEER SEALING THESE PLANS, IF APPLICABLE. THE CITY DOES NOT ACCEPT LIABILITY FOR FACILITIES DESIGNED BY OTHERS.



PROJECT NO. 263334-271511
FILE NAME: EC009STPL.DWG
SHEET NO.
EC-9

ISSUED FOR CONSTRUCTION

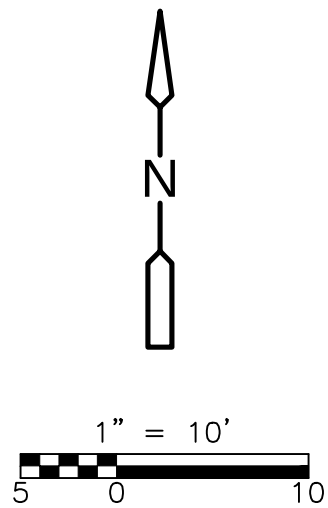
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PLAN

SCALE: 1" = 10'

- NOTES :
1. THESE CONTROL MEASURES ARE SUBJECT TO CHANGED BASED ON SITE CONDITIONS, THEREFORE THE CONTRACTOR WILL MODIFY THE EROSION CONTROL PLANS TO REFLECT CURRENT CONDITIONS.
 2. CONTRACTOR TO ENSURE ALL STOCKPILE AREAS ARE PROTECTED.
 3. TOTAL DISTURBED AREA = 0.01 ACRES



BMP LEGEND

	(CWA)	CONCRETE WASHOUT AREA
	(RS)	ROCK SOCK
	(IP)	INLET PROTECTION
	(SF)	SILT FENCE
	(SSA)	STABILIZED STAGING AREA
	(VTC)	VEHICLE TRACKING CONTROL
	(LOC)	LIMITS OF CONSTRUCTION
	(LOD)	LIMITS OF DEMOLITION
		FLOW ARROW
	(SP)	STOCKPILE MANAGEMENT
	(SCL)	SEDIMENT CONTROL LOG

LEGEND :

	SIDEWALK REPLACEMENT
	LANDSCAPING / SEEDING (REFER TO SWMP FOR SEED MIX AND APPLICATION)
	REMOVE AND REPLACE RIVER ROCK

REV. NO.	DATE	DRWN	CHKD	REMARKS
2/24	CC	SS		ISSUED FOR CONSTRUCTION

DESIGNED BY: R. TORDELLA
DRAWN BY: R. PAWAR
SHEET CHK'D BY: C. CERRETA
CROSS CHK'D BY: T. CHARLES
APPROVED BY: R. TORDELLA
DATE: OCTOBER 2023



CITY OF ARVADA
2021 WATER MAIN IMPROVEMENTS PROJECT
CITY OF ARVADA PROJECT NO. 21-WA-02

SEGMENT G
COSTCO AC PIPE REPLACEMENT
EROSION CONTROL PLAN

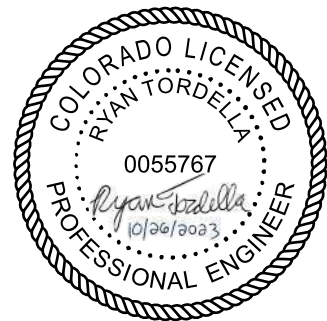
APPROVED
City of Arvada, Colorado

CITY ENGINEER

3/1/24
DATE

21-WA-02
JOB NUMBER

REVIEW IS FOR GENERAL COMPLIANCE WITH THE CITY OF ARVADA 'ENGINEERING CODE OF STANDARDS AND SPECIFICATIONS FOR THE DESIGN AND CONSTRUCTION OF PUBLIC IMPROVEMENTS', LATEST EDITION. SOLE RESPONSIBILITY FOR COMPLETENESS AND/OR ACCURACY OF THESE DOCUMENTS SHALL REMAIN WITH THE REGISTERED PROFESSIONAL ENGINEER SEALING THESE PLANS, IF APPLICABLE. THE CITY DOES NOT ACCEPT LIABILITY FOR FACILITIES DESIGNED BY OTHERS.



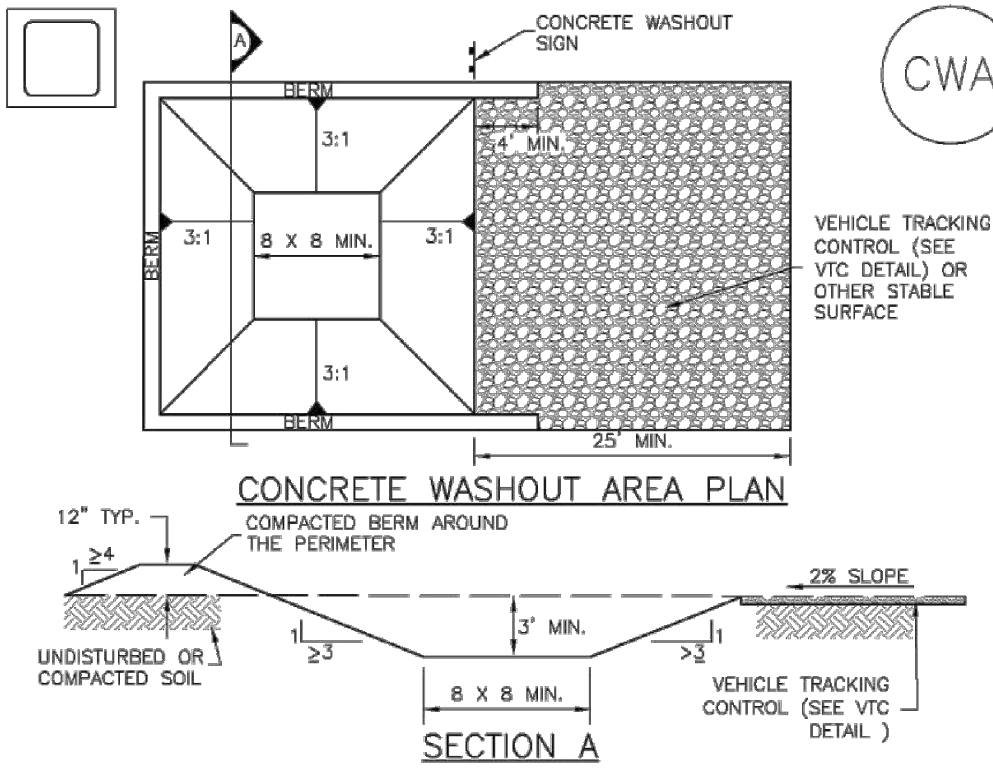
PROJECT NO. 263334-271511
FILE NAME: EC010STPL.DWG
SHEET NO.
EC-10

ISSUED FOR CONSTRUCTION

XREFS: [CDMS_2234] Images: []
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pw\\cdm-smith-arvada-2021-wa-02-pw-bentley.com\pw-arvada-2021-wa-02-pw-bentley.com\263334-271511-04 Design Services NM_90%02 CWA\10 CAD\EC010STD.DWG
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Concrete Washout Area (CWA)

MM-1



CWA-1. CONCRETE WASHOUT AREA

CWA INSTALLATION NOTES

- SEE PLAN VIEW FOR:
-CWA INSTALLATION LOCATION.
- DO NOT LOCATE AN UNLINED CWA WITHIN 400' OF ANY NATURAL DRAINAGE PATHWAY OR WATERBODY. DO NOT LOCATE WITHIN 1,000' OF ANY WELLS OR DRINKING WATER SOURCES. IF SITE CONSTRAINTS MAKE THIS INFEASIBLE, OR IF HIGHLY PERMEABLE SOILS EXIST ON SITE, THE CWA MUST BE INSTALLED WITH AN IMPERMEABLE LINER (1/8 MIL MIN. THICKNESS) OR SURFACE STORAGE ALTERNATIVES USING PREFABRICATED CONCRETE WASHOUT DEVICES OR A LINED ABOVE GROUND STORAGE ARE SHOULD BE USED.
- THE CWA SHALL BE INSTALLED PRIOR TO CONCRETE PLACEMENT ON SITE.
- CWA SHALL INCLUDE A FLAT SUBSURFACE PIT THAT IS AT LEAST 8' BY 8' SLOPES LEADING OUT OF THE SUBSURFACE PIT SHALL BE 3:1 OR FLATTER. THE PIT SHALL BE AT LEAST 3' DEEP.
- BERM SURROUNDING SIDES AND BACK OF THE CWA SHALL HAVE MINIMUM HEIGHT OF 1'.
- VEHICLE TRACKING PAD SHALL BE SLOPED 2% TOWARDS THE CWA.
- SIGNS SHALL BE PLACED AT THE CONSTRUCTION ENTRANCE, AT THE CWA, AND ELSEWHERE AS NECESSARY TO CLEARLY INDICATE THE LOCATION OF THE CWA TO OPERATORS OF CONCRETE TRUCKS AND PUMP RIGS.
- USE EXCAVATED MATERIAL FOR PERIMETER BERM CONSTRUCTION.

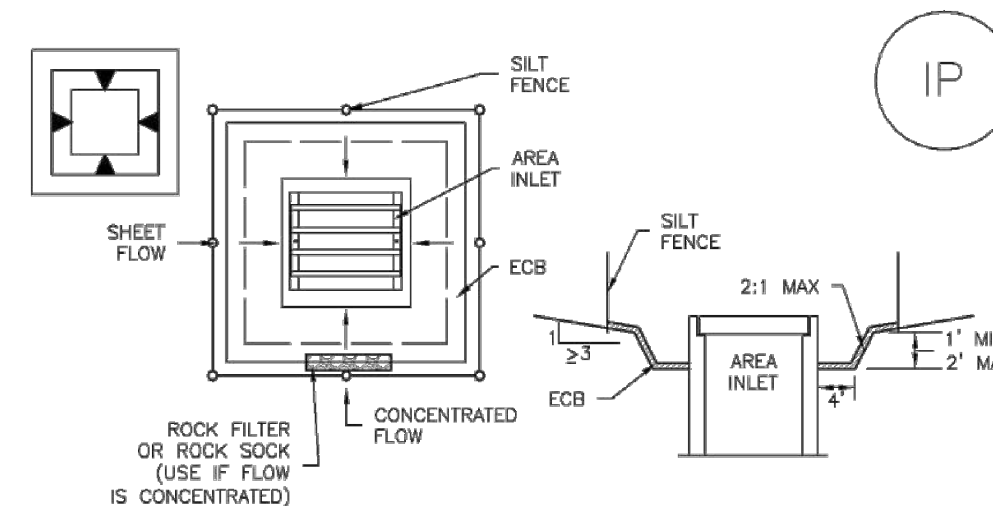
DETAIL

NTS

A

SC-6

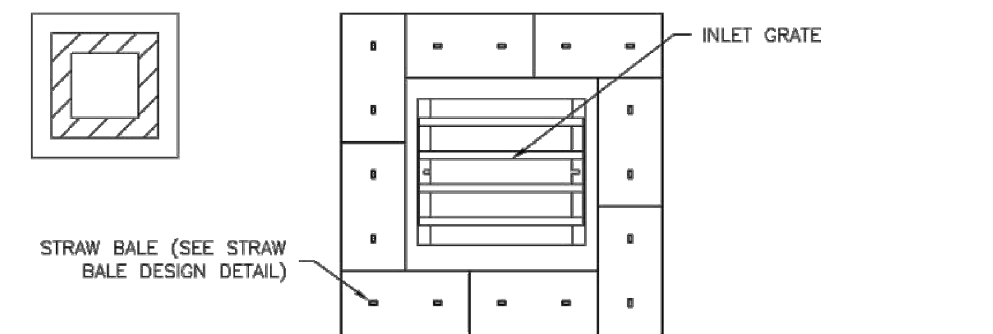
Inlet Protection (IP)



IP-5. OVEREXCAVATION INLET PROTECTION

OVEREXCAVATION INLET PROTECTION INSTALLATION NOTES

- THIS FORM OF INLET PROTECTION IS PRIMARILY APPLICABLE FOR SITES THAT HAVE NOT YET REACHED FINAL GRADE AND SHOULD BE USED ONLY FOR INLETS WITH A RELATIVELY SMALL CONTRIBUTING DRAINAGE AREA.
- WHEN USING FOR CONCENTRATED FLOWS, SHAPE BASIN IN 2:1 RATIO WITH LENGTH ORIENTED TOWARDS DIRECTION OF FLOW.
- SEDIMENT MUST BE PERIODICALLY REMOVED FROM THE OVEREXCAVATED AREA.



IP-6. STRAW BALE FOR SUMP INLET PROTECTION

STRAW BALE BARRIER INLET PROTECTION INSTALLATION NOTES

- SEE STRAW BALE DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.
- BALES SHALL BE PLACED IN A SINGLE ROW AROUND THE INLET WITH ENDS OF BALES TIGHTLY ABUTTING ONE ANOTHER.

DETAIL

NTS

E

MM-1

Concrete Washout Area (CWA)

CWA MAINTENANCE NOTES

- INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
- FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
- WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
- THE CWA SHALL BE REPAIRED, CLEANED, OR ENLARGED AS NECESSARY TO MAINTAIN CAPACITY FOR CONCRETE WASTE, CONCRETE MATERIALS, ACCUMULATED IN PIT, SHALL BE REMOVED ONCE THE MATERIALS HAVE REACHED A DEPTH OF 2'.
- CONCRETE WASHOUT WATER, WASTED PIECES OF CONCRETE AND ALL OTHER DEBRIS IN THE SUBSURFACE PIT SHALL BE TRANSPORTED FROM THE JOB SITE IN A WATER-TIGHT CONTAINER AND DISPOSED OF PROPERLY.
- THE CWA SHALL REMAIN IN PLACE UNTIL ALL CONCRETE FOR THE PROJECT IS PLACED.
- WHEN THE CWA IS REMOVED, COVER THE DISTURBED AREA WITH TOP SOIL, SEED AND MULCH OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE LOCAL JURISDICTION.

(DETAIL ADAPTED FROM DOUGLAS COUNTY, COLORADO AND THE CITY OF PARKER, COLORADO, NOT AVAILABLE IN AUTOCAD)
NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

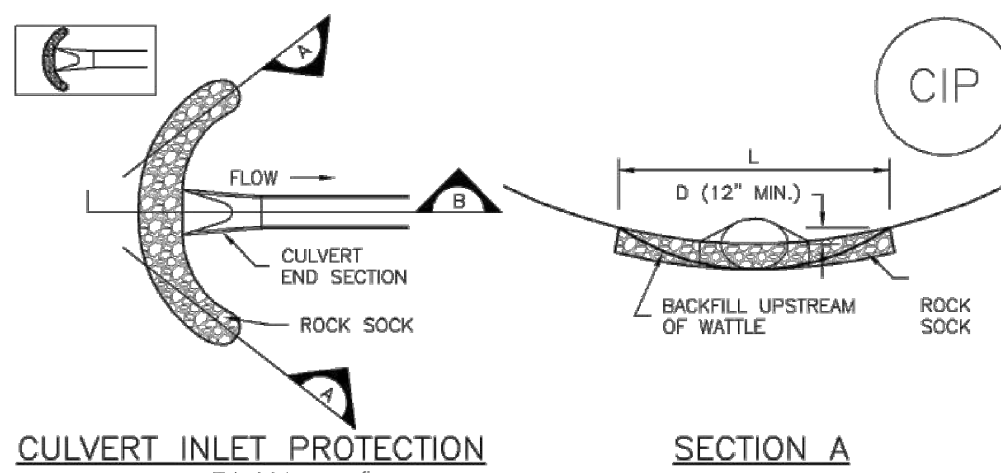
DETAIL

NTS

B

Inlet Protection (IP)

SC-6



CIP-1. CULVERT INLET PROTECTION

CULVERT INLET PROTECTION INSTALLATION NOTES

- SEE PLAN VIEW FOR:
-LOCATION OF CULVERT INLET PROTECTION.
- SEE ROCK SOCK DESIGN DETAIL FOR ROCK GRADATION REQUIREMENTS AND JOINTING DETAIL.

CULVERT INLET PROTECTION MAINTENANCE NOTES

- INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
- FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
- WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
- SEDIMENT ACCUMULATED UPSTREAM OF THE CULVERT SHALL BE REMOVED WHEN THE SEDIMENT DEPTH IS 1/2 THE HEIGHT OF THE ROCK SOCK.
- CULVERT INLET PROTECTION SHALL REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS PERMANENTLY STABILIZED AND APPROVED BY THE LOCAL JURISDICTION.

(DETAILS ADAPTED FROM AURORA, COLORADO, NOT AVAILABLE IN AUTOCAD)

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

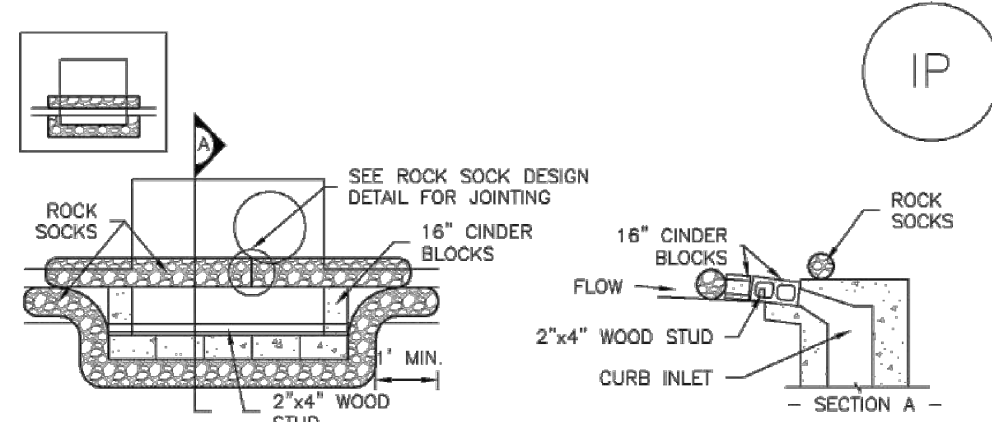
DETAIL

NTS

F

SC-6

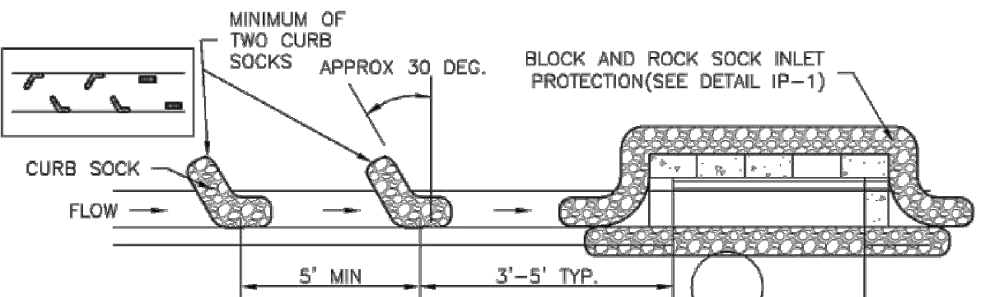
Inlet Protection (IP)



IP-1. BLOCK AND ROCK SOCK SUMP OR ON GRADE INLET PROTECTION

BLOCK AND CURB SOCK INLET PROTECTION INSTALLATION NOTES

- SEE ROCK SOCK DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.
- CONCRETE "CINDER" BLOCKS SHALL BE LAID ON THEIR SIDES AROUND THE INLET IN A SINGLE ROW, ABUTTING ONE ANOTHER WITH THE OPEN END FACING AWAY FROM THE CURB.
- GRAVEL BAGS SHALL BE PLACED AROUND CONCRETE BLOCKS, CLOSELY ABUTTING ONE ANOTHER AND JOINTED TOGETHER IN ACCORDANCE WITH ROCK SOCK DESIGN DETAIL.



IP-2. CURB ROCK SOCKS UPSTREAM OF INLET PROTECTION

CURB ROCK SOCK INLET PROTECTION INSTALLATION NOTES

- SEE ROCK SOCK DESIGN DETAIL INSTALLATION REQUIREMENTS.
- PLACEMENT OF THE SOCK SHALL BE APPROXIMATELY 30 DEGREES FROM PERPENDICULAR IN THE OPPOSITE DIRECTION OF FLOW.
- SOCKS ARE TO BE FLUSH WITH THE CURB AND SPACED A MINIMUM OF 5 FEET APART.
- AT LEAST TWO CURB SOCKS IN SERIES ARE REQUIRED UPSTREAM OF ON-GRADE INLETS.

DETAIL

NTS

C

SC-6

Inlet Protection (IP)

GENERAL INLET PROTECTION INSTALLATION NOTES

- SEE PLAN VIEW FOR:
-LOCATION OF INLET PROTECTION.
-TYPE OF INLET PROTECTION (IP-1, IP-2, IP-3, IP-4, IP-5, IP-6)
- INLET PROTECTION SHALL BE INSTALLED PROMPTLY AFTER INLET CONSTRUCTION OR PAVING IS COMPLETE (TYPICALLY WITHIN 48 HOURS). IF A RAINFALL/RUNOFF EVENT IS FORECAST, INSTALL INLET PROTECTION PRIOR TO ONSET OF EVENT.
- MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

INLET PROTECTION MAINTENANCE NOTES

- INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
- FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
- WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
- SEDIMENT ACCUMULATED UPSTREAM OF INLET PROTECTION SHALL BE REMOVED AS NECESSARY TO MAINTAIN BMP EFFECTIVENESS, TYPICALLY WHEN STORAGE VOLUME REACHES 50% OF CAPACITY, A DEPTH OF 6" WHEN SILT FENCE IS USED, OR 1/2 OF THE HEIGHT FOR STRAW BALES.
- INLET PROTECTION IS TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS PERMANENTLY STABILIZED, UNLESS THE LOCAL JURISDICTION APPROVES EARLIER REMOVAL OF INLET PROTECTION IN STREETS.
- WHEN INLET PROTECTION AT AREA INLETS IS REMOVED, THE DISTURBED AREA SHALL BE COVERED WITH TOP SOIL, SEEDED AND MULCHED, OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE LOCAL JURISDICTION.

(DETAIL ADAPTED FROM TOWN OF PARKER, COLORADO AND CITY OF AURORA, COLORADO, NOT AVAILABLE IN AUTOCAD)
NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

NOTE: THE DETAILS INCLUDED WITH THIS FACT SHEET SHOW COMMONLY USED, CONVENTIONAL METHODS OF INLET PROTECTION IN THE DENVER METROPOLITAN AREA. THERE ARE MANY PROPRIETARY INLET PROTECTION METHODS ON THE MARKET. UDFCD NEITHER ENDORSES NOR DISCOURAGES USE OF PROPRIETARY INLET PROTECTION; HOWEVER, IN THE EVENT PROPRIETARY METHODS ARE USED, THE APPROPRIATE DETAIL FROM THE MANUFACTURER MUST BE INCLUDED IN THE SWMP AND THE BMP MUST BE INSTALLED AND MAINTAINED AS SHOWN IN THE MANUFACTURER'S DETAILS.

NOTE: SOME MUNICIPALITIES DISCOURAGE OR PROHIBIT THE USE OF STRAW BALES FOR INLET PROTECTION. CHECK WITH LOCAL JURISDICTION TO DETERMINE IF STRAW BALE INLET PROTECTION IS ACCEPTABLE.

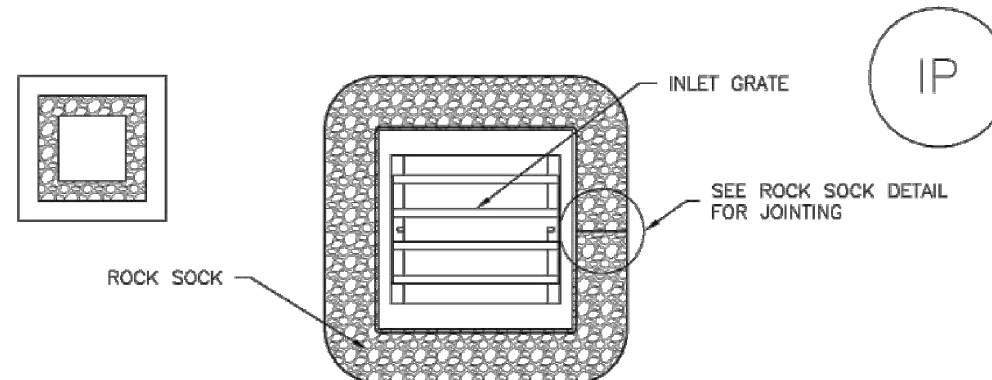
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Inlet Protection (IP)

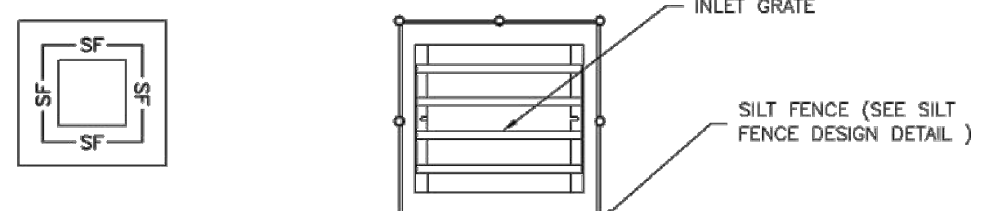
SC-6



IP-3. ROCK SOCK SUMP/AREA INLET PROTECTION

ROCK SOCK SUMP/AREA INLET PROTECTION INSTALLATION NOTES

- SEE ROCK SOCK DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.
- STRAW WATTLES/SEDIMENT CONTROL LOGS MAY BE USED IN PLACE OF ROCK SOCKS FOR INLETS IN PEROUS AREAS. INSTALL PER SEDIMENT CONTROL LOG DETAIL.



IP-4. SILT FENCE FOR SUMP INLET PROTECTION

SILT FENCE INLET PROTECTION INSTALLATION NOTES

- SEE SILT FENCE DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.
- POSTS SHALL BE PLACED AT EACH CORNER OF THE INLET AND AROUND THE EDGES AT A MAXIMUM SPACING OF 3 FEET.
- STRAW WATTLES/SEDIMENT CONTROL LOGS MAY BE USED IN PLACE OF SILT FENCE FOR INLETS IN PEROUS AREAS. INSTALL PER SEDIMENT CONTROL LOG DETAIL.

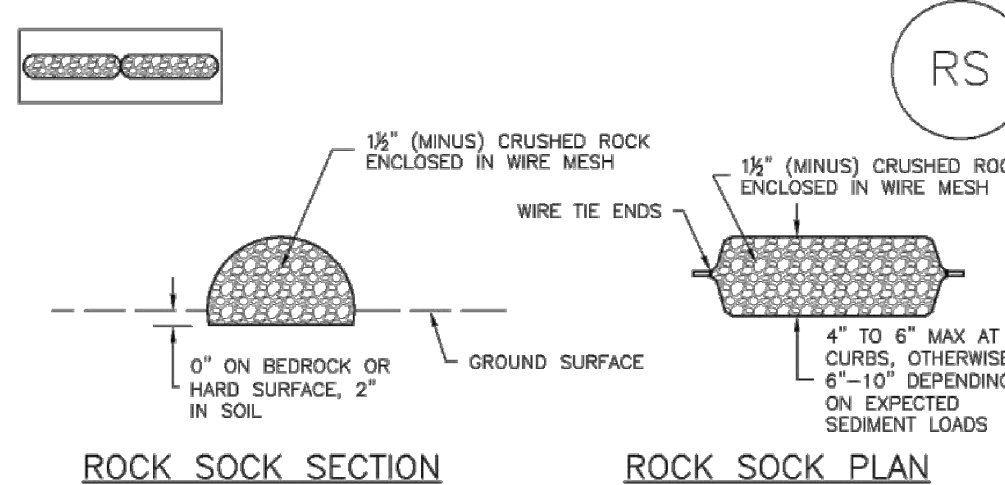
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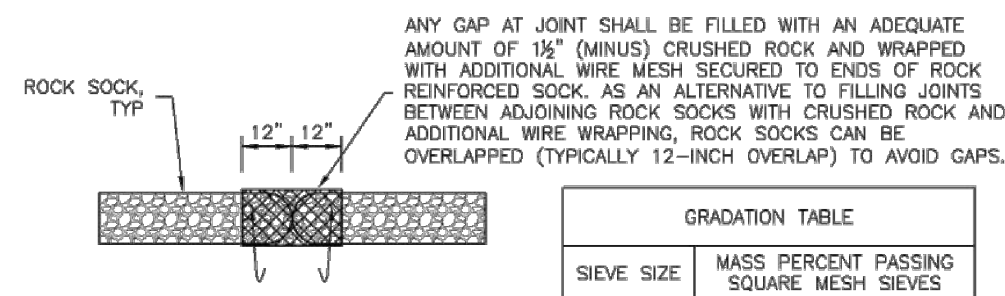
SC-5

Rock Sock (RS)



ROCK SOCK SECTION

ROCK SOCK PLAN



ROCK SOCK JOINTING

ROCK SOCK INSTALLATION NOTES

- SEE PLAN VIEW FOR:
-LOCATION(S) OF ROCK SOCKS.
- CRUSHED ROCK SHALL BE 1/2" (MINUS) IN SIZE WITH A FRACTURED FACE (ALL SIDES) AND SHALL COMPLY WITH GRADATION SHOWN ON THIS SHEET (1/2" MINUS).
- WIRE MESH SHALL BE FABRICATED OF 10 GAGE POULTRY MESH, OR EQUIVALENT, WITH A MAXIMUM OPENING OF 1/2", RECOMMENDED MINIMUM ROLL WIDTH OF 48"
- WIRE MESH SHALL BE SECURED USING "HOG RINGS" OR WIRE TIES AT 6" CENTERS ALONG ALL JOINTS AND AT 2" CENTERS ON ENDS OF SOCKS.
- SOME MUNICIPALITIES MAY ALLOW THE USE OF FILTER FABRIC AS AN ALTERNATIVE TO WIRE MESH FOR THE ROCK ENCLOSURE.

RS-1. ROCK SOCK PERIMETER CONTROL

DETAIL

NTS

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REV. NO.	DATE	DRWN	CHKD	REMARKS
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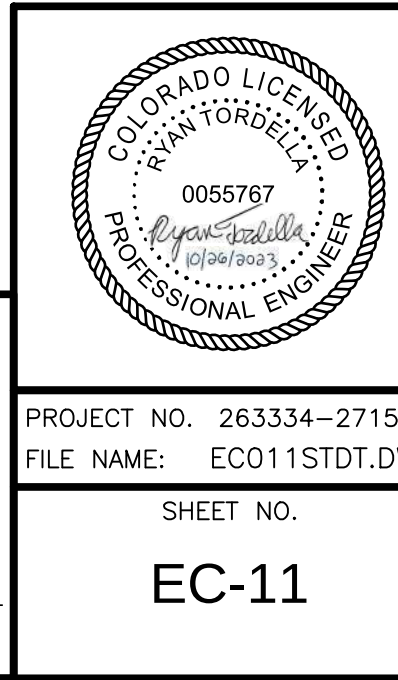
DESIGNED BY: R. TORDELLA
DRAWN BY: R. PAWAR
SHEET CHK'D BY: C. CERRETA
CROSS CHK'D BY: T. CHARLES
APPROVED BY: R. TORDELLA
DATE: OCTOBER 2023



CITY OF ARVADA
2021 WATER MAIN IMPROVEMENTS PROJECT
CITY OF ARVADA PROJECT NO. 21-WA-02

EROSION CONTROL
STANDARD DETAILS I

APPROVED	
City of Arvada, Colorado	
3/1/24	21-WA-02
DATE	JOB NUMBER
REVIEW IS FOR GENERAL COMPLIANCE WITH THE CITY OF ARVADA "ENGINEERING CODE OF STANDARDS AND SPECIFICATIONS FOR THE DESIGN AND CONSTRUCTION OF PUBLIC IMPROVEMENTS" LATEST EDITION. SOLE RESPONSIBILITY FOR COMPLETENESS AND/OR ACCURACY OF THESE DOCUMENTS SHALL REMAIN WITH THE REGISTERED PROFESSIONAL ENGINEER SEALING THESE PLANS, IF APPLICABLE. THE CITY DOES NOT ACCEPT LIABILITY FOR FACILITIES DESIGNED BY OTHERS.	



PROJECT NO. 263334-271511
FILE NAME: EC011STD.DWG
SHEET NO.
EC-11

ISSUED FOR CONSTRUCTION

XREFS: [CDMS_2234] Images: []
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pw\\cdm-smith-arvada-pw-bentley.com\\pw-ent\\263334\\271511\\04 Design Services NM_90%\\02 Cw\\10 CAD\\ECO10STD.TD.dwg
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REUSE OF DOCUMENTS: THESE DOCUMENTS AND DESIGNS PROVIDED BY PROFESSIONAL SERVICE, INCORPORATED HEREIN, ARE THE PROPERTY OF CDM SMITH AND ARE NOT TO BE USED, IN WHOLE OR PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CDM SMITH.

Rock Sock (RS)

SC-5

ROCK SOCK MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
4. ROCK SOCKS SHALL BE REPLACED IF THEY BECOME HEAVILY SOILED, OR DAMAGED BEYOND REPAIR.
5. SEDIMENT ACCUMULATED UPSTREAM OF ROCK SOCKS SHALL BE REMOVED AS NEEDED TO MAINTAIN FUNCTIONALITY OF THE BMP. TYPICALLY WHEN DEPTH OF ACCUMULATED SEDIMENTS IS APPROXIMATELY 1/2 OF THE HEIGHT OF THE ROCK SOCK.
6. ROCK SOCKS ARE TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND APPROVED BY THE LOCAL JURISDICTION.
7. WHEN ROCK SOCKS ARE REMOVED, ALL DISTURBED AREAS SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED AS APPROVED BY LOCAL JURISDICTION.

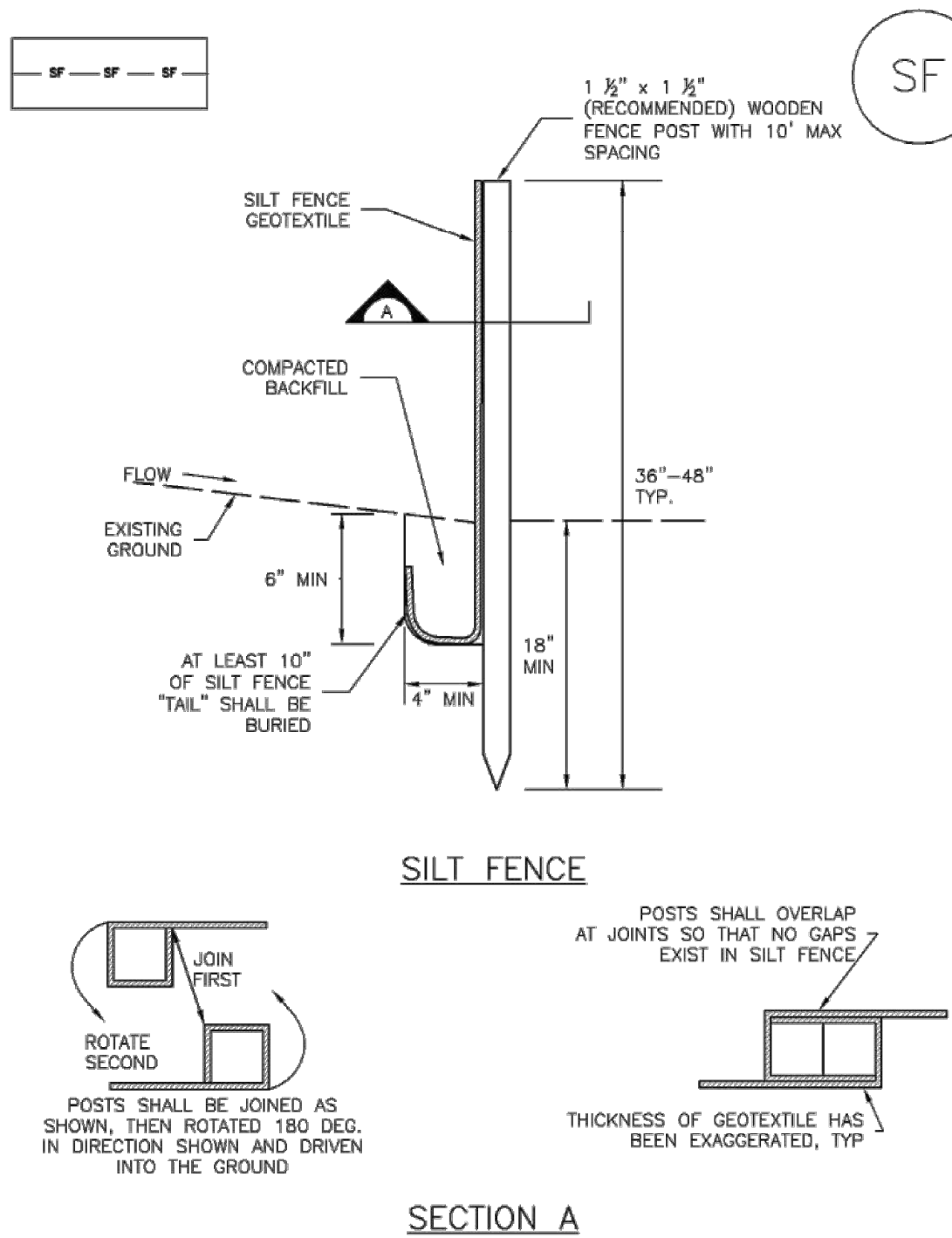
(DETAIL ADAPTED FROM TOWN OF PARKER, COLORADO AND CITY OF AURORA, COLORADO, NOT AVAILABLE IN AUTOCAD)

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

NOTE: THE DETAILS INCLUDED WITH THIS FACT SHEET SHOW COMMONLY USED, CONVENTIONAL METHODS OF ROCK SOCK INSTALLATION IN THE DENVER METROPOLITAN AREA. THERE ARE MANY OTHER SIMILAR PROPRIETARY PRODUCTS ON THE MARKET. UDFCD NEITHER ENDORSES NOR DISCOURAGES USE OF PROPRIETARY PROTECTION PRODUCTS; HOWEVER, IN THE EVENT PROPRIETARY METHODS ARE USED, THE APPROPRIATE DETAIL FROM THE MANUFACTURER MUST BE INCLUDED IN THE SWMP AND THE BMP MUST BE INSTALLED AND MAINTAINED AS SHOWN IN THE MANUFACTURER'S DETAILS.

Silt Fence (SF)

SC-1



DETAIL

NTS

A

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DETAIL

NTS

B

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SC-1

Silt Fence (SF)

SILT FENCE INSTALLATION NOTES

1. SILT FENCE MUST BE PLACED AWAY FROM THE TOE OF THE SLOPE TO ALLOW FOR WATER PONDING. SILT FENCE AT THE TOE OF A SLOPE SHOULD BE INSTALLED IN A FLAT LOCATION AT LEAST SEVERAL FEET (2-5 FT) FROM THE TOE OF THE SLOPE TO ALLOW ROOM FOR PONDING AND DEPOSITION.
2. A UNIFORM 6\"/>
3. COMPACT ANCHOR TRENCH BY HAND WITH A \"JUMPING JACK\" OR BY WHEEL ROLLING. COMPACTION SHALL BE SUCH THAT SILT FENCE RESISTS BEING PULLED OUT OF ANCHOR TRENCH BY HAND.
4. SILT FENCE SHALL BE PULLED TIGHT AS IT IS ANCHORED TO THE STAKES. THERE SHOULD BE NO NOTICEABLE SAG BETWEEN STAKES AFTER IT HAS BEEN ANCHORED TO THE STAKES.
5. SILT FENCE FABRIC SHALL BE ANCHORED TO THE STAKES USING 1\"/>
6. AT THE END OF A RUN OF SILT FENCE ALONG A CONTOUR, THE SILT FENCE SHOULD BE TURNED PERPENDICULAR TO THE CONTOUR TO CREATE A \"J-HOOK.\" THE \"J-HOOK\" EXTENDING PERPENDICULAR TO THE CONTOUR SHOULD BE OF SUFFICIENT LENGTH TO KEEP RUNOFF FROM FLOWING AROUND THE END OF THE SILT FENCE (TYPICALLY 10\"/>
7. SILT FENCE SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.

SILT FENCE MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
4. SEDIMENT ACCUMULATED UPSTREAM OF THE SILT FENCE SHALL BE REMOVED AS NEEDED TO MAINTAIN THE FUNCTIONALITY OF THE BMP. TYPICALLY WHEN DEPTH OF ACCUMULATED SEDIMENTS IS APPROXIMATELY 1/2
5. REPAIR OR REPLACE SILT FENCE WHEN THERE ARE SIGNS OF WEAR, SUCH AS SAGGING, TEARING, OR COLLAPSE.
6. SILT FENCE IS TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND APPROVED BY THE LOCAL JURISDICTION, OR IS REPLACED BY AN EQUIVALENT PERIMETER SEDIMENT CONTROL BMP.
7. WHEN SILT FENCE IS REMOVED, ALL DISTURBED AREAS SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED AS APPROVED BY LOCAL JURISDICTION.

(DETAIL ADAPTED FROM TOWN OF PARKER, COLORADO AND CITY OF AURORA, NOT AVAILABLE IN AUTOCAD)

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

DETAIL

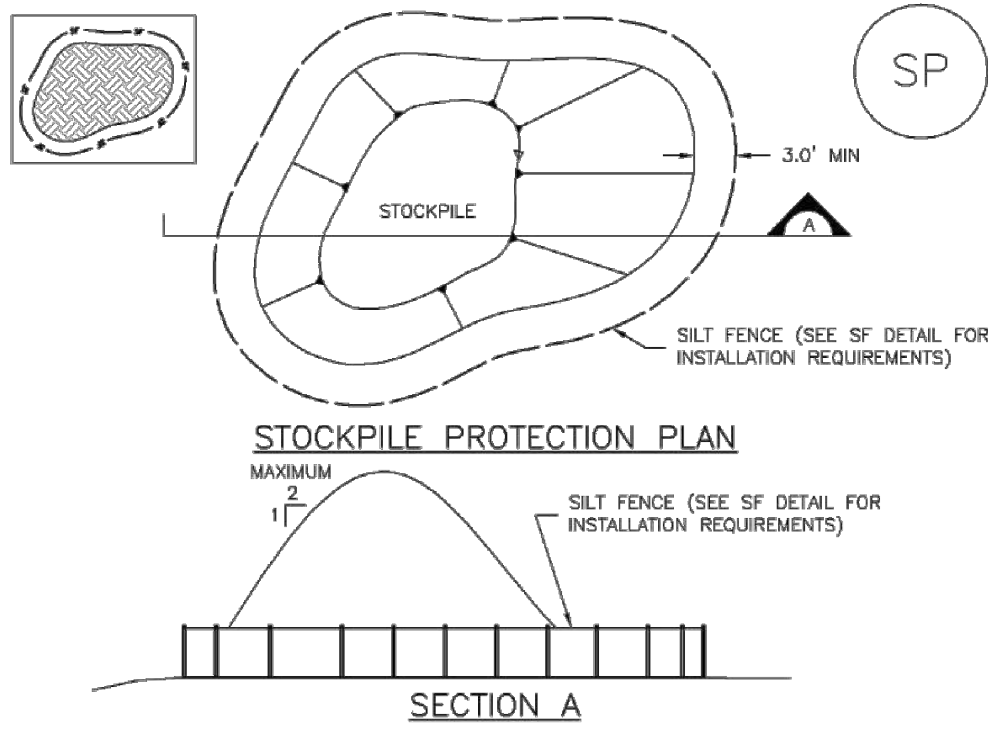
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Stockpile Management (SP)

MM-2



SP-1. STOCKPILE PROTECTION

STOCKPILE PROTECTION INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
 - LOCATION OF STOCKPILES.
 - TYPE OF STOCKPILE PROTECTION.
2. INSTALL PERIMETER CONTROLS IN ACCORDANCE WITH THEIR RESPECTIVE DESIGN DETAILS. SILT FENCE IS SHOWN IN THE STOCKPILE PROTECTION DETAILS; HOWEVER, OTHER TYPES OF PERIMETER CONTROLS INCLUDING SEDIMENT CONTROL LOGS OR ROCK SOCKS MAY BE SUITABLE IN SOME CIRCUMSTANCES. CONSIDERATIONS FOR DETERMINING THE APPROPRIATE TYPE OF PERIMETER CONTROL FOR A STOCKPILE INCLUDE WHETHER THE STOCKPILE IS LOCATED ON A PERVIOUS OR IMPERVIOUS SURFACE, THE RELATIVE HEIGHTS OF THE PERIMETER CONTROL AND STOCKPILE, THE ABILITY OF THE PERIMETER CONTROL TO CONTAIN THE STOCKPILE WITHOUT FAILING IN THE EVENT THAT MATERIAL FROM THE STOCKPILE SHIFTS OR SLUMPS AGAINST THE PERIMETER, AND OTHER FACTORS.
3. STABILIZE THE STOCKPILE SURFACE WITH SURFACE ROUGHENING, TEMPORARY SEEDING AND MULCHING, EROSION CONTROL BLANKETS, OR SOIL BINDERS. SOILS STOCKPILED FOR AN EXTENDED PERIOD (TYPICALLY FOR MORE THAN 60 DAYS) SHOULD BE SEEDED AND MULCHED WITH A TEMPORARY GRASS COVER ONCE THE STOCKPILE IS PLACED (TYPICALLY WITHIN 14 DAYS). USE OF MULCH ONLY OR A SOIL BINDER IS ACCEPTABLE IF THE STOCKPILE WILL BE IN PLACE FOR A MORE LIMITED TIME PERIOD (TYPICALLY 30-60 DAYS).
4. FOR TEMPORARY STOCKPILES ON THE INTERIOR PORTION OF A CONSTRUCTION SITE, WHERE OTHER CONFORMANCE CONTROLS, INCLUDING PERIMETER CONTROL, ARE IN PLACE, STOCKPILE PERIMETER CONTROLS MAY NOT BE REQUIRED.

DETAIL

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MM-2

Stockpile Management (SM)

STOCKPILE PROTECTION MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

STOCKPILE PROTECTION MAINTENANCE NOTES

4. IF PERIMETER PROTECTION MUST BE MOVED TO ACCESS SOIL STOCKPILE, REPLACE PERIMETER CONTROLS BY THE END OF THE WORKDAY.
5. STOCKPILE PERIMETER CONTROLS CAN BE REMOVED ONCE ALL THE MATERIAL FROM THE STOCKPILE HAS BEEN USED.

(DETAILS ADAPTED FROM PARKER, COLORADO, NOT AVAILABLE IN AUTOCAD)

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

DETAIL

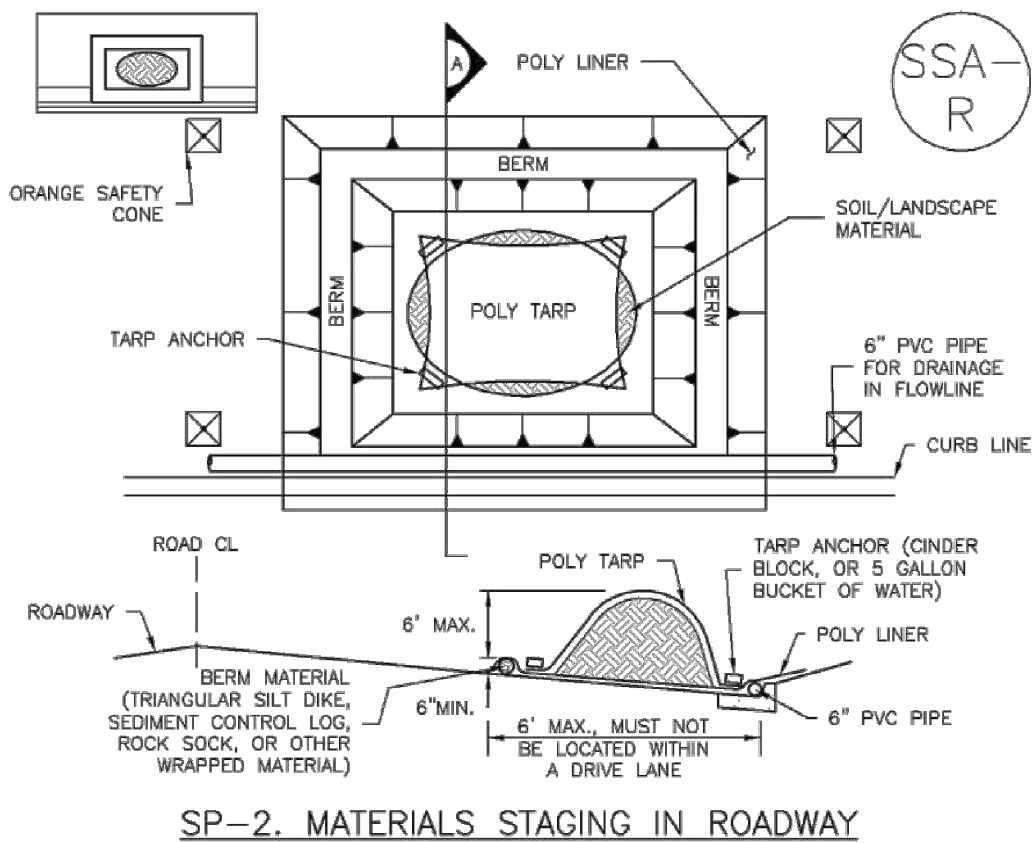
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Stockpile Management (SP)

MM-2



SP-2. MATERIALS STAGING IN ROADWAY

MATERIALS STAGING IN ROADWAYS INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
 - LOCATION OF MATERIAL STAGING AREA(S).
 - CONTRACTOR MAY ADJUST LOCATION AND SIZE OF STAGING AREA WITH APPROVAL FROM THE LOCAL JURISDICTION.
2. FEATURE MUST BE INSTALLED PRIOR TO EXCAVATION, EARTHWORK OR DELIVERY OF MATERIALS.
3. MATERIALS MUST BE STATIONED ON THE POLY LINER. ANY INCIDENTAL MATERIALS DEPOSITED ON PAVED SECTION OR ALONG CURB LINE MUST BE CLEANED UP PROMPTLY.
4. POLY LINER AND TARP COVER SHOULD BE OF SIGNIFICANT THICKNESS TO PREVENT DAMAGE OR LOSS OF INTEGRITY.
5. SAND BAGS MAY BE SUBSTITUTED TO ANCHOR THE COVER TARP OR PROVIDE BERMING UNDER THE BASE LINER.
6. FEATURE IS NOT INTENDED FOR USE WITH WET MATERIAL THAT WILL BE DRAINING AND/OR SPREADING OUT ON THE POLY LINER OR FOR DEMOLITION MATERIALS.
7. THIS FEATURE CAN BE USED FOR:
 - UTILITY REPAIRS.
 - WHEN OTHER STAGING LOCATIONS AND OPTIONS ARE LIMITED.
 - OTHER LIMITED APPLICATION AND SHORT DURATION STAGING.

DETAIL

NTS

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MM-2

Stockpile Management (SM)

MATERIALS STAGING IN ROADWAY MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
4. INSPECT PVC PIPE ALONG CURB LINE FOR CLOGGING AND DEBRIS. REMOVE OBSTRUCTIONS PROMPTLY.
5. CLEAN MATERIAL FROM PAVED SURFACES BY SWEEPING OR VACUUMING.

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

(DETAILS ADAPTED FROM AURORA, COLORADO)

DETAIL

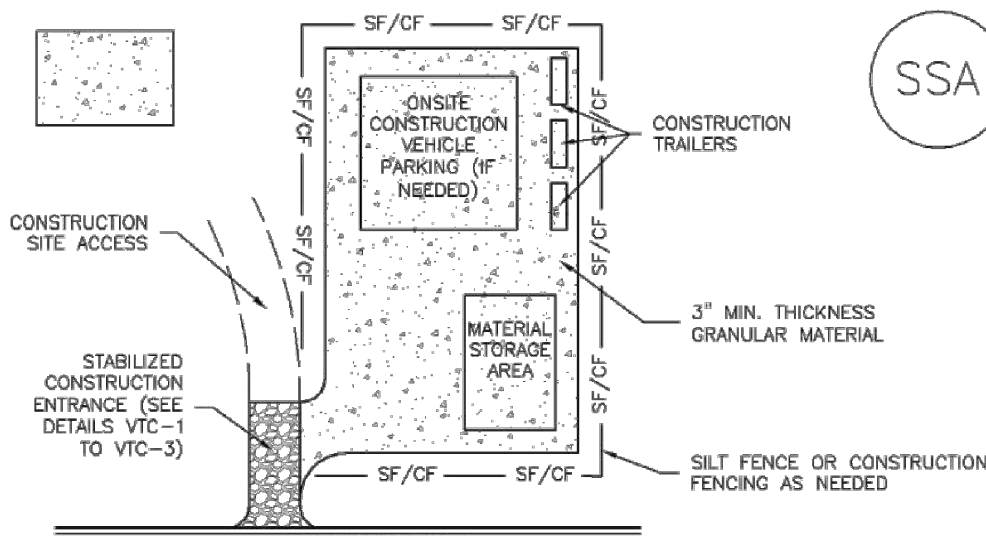
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Stabilized Staging Area (SSA)

SM-6



SSA-1. STABILIZED STAGING AREA

STABILIZED STAGING AREA INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
 - LOCATION OF STAGING AREA(S).
 - CONTRACTOR MAY ADJUST LOCATION AND SIZE OF STAGING AREA WITH APPROVAL FROM THE LOCAL JURISDICTION.
2. STABILIZED STAGING AREA SHOULD BE APPROPRIATE FOR THE NEEDS OF THE SITE. OVERSIZING RESULTS IN A LARGER AREA TO STABILIZE FOLLOWING CONSTRUCTION.
3. STAGING AREA SHALL BE STABILIZED PRIOR TO OTHER OPERATIONS ON THE SITE.
4. THE STABILIZED STAGING AREA SHALL CONSIST OF A MINIMUM 3\"/>
5. UNLESS OTHERWISE SPECIFIED BY LOCAL JURISDICTION, ROCK SHALL CONSIST OF DOT SECT. #703, ASHTO #3 COARSE AGGREGATE OR 6\"/>
6. ADDITIONAL PERIMETER BMPs MAY BE REQUIRED INCLUDING BUT NOT LIMITED TO SILT FENCE AND CONSTRUCTION FENCING.

STABILIZED STAGING AREA MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
4. ROCK SHALL BE REAPPLIED OR REGRADED AS NECESSARY IF RUTTING OCCURS OR UNDERLYING SUBGRADE BECOMES EXPOSED.

DETAIL

NTS

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					DESIGNED BY: R. TORDELLA
					DRAWN BY: R. PAWAR
					SHEET CHK'D BY: C. CERRETA
					CROSS CHK'D BY: T. CHARLES
					APPROVED BY: R. TORDELLA
					DATE: OCTOBER 2023
REV. NO.	DATE	DRWN	CHKD		REMARKS
2/24	CC	SS			ISSUED FOR CONSTRUCTION



CITY OF ARVADA
2021 WATER MAIN IMPROVEMENTS PROJECT
CITY OF ARVADA PROJECT NO. 21-WA-02

EROSION CONTROL
STANDARD DETAILS II

APPROVED	City of Arvada, Colorado
<i>Janey Wolfshley PE.</i>	3/1/24
CITY ENGINEER	DATE
	21-WA-02
	JOB NUMBER
REVIEW IS FOR GENERAL COMPLIANCE WITH THE CITY OF ARVADA "ENGINEERING CODE OF STANDARDS AND SPECIFICATIONS FOR THE DESIGN AND CONSTRUCTION OF PUBLIC IMPROVEMENTS", LATEST EDITION. SOLE RESPONSIBILITY FOR COMPLETENESS AND/OR ACCURACY OF THESE DOCUMENTS SHALL REMAIN WITH THE REGISTERED PROFESSIONAL ENGINEER SEALING THESE PLANS, IF APPLICABLE. THE CITY DOES NOT ACCEPT LIABILITY FOR FACILITIES DESIGNED BY OTHERS.	



PROJECT NO. 263334-271511
FILE NAME: ECO12STD.TDWG
SHEET NO.

EC-12

ISSUED FOR CONSTRUCTION

Architectural drawing showing Cathodic Protection Test Station Details for the City of Arvada. The drawing includes three main sections: A1 (Pipe Lead #1), B1 (Casing Lead #1), and C1 (Isolation Test Station). Each section shows a cross-section of the pipe and the test station assembly, including components like the Red, Tinker and RASOR T-3 Test Station, Arvada Test Station Label, 3" PVC Post, Concrete Footing, 1/2" Anchor Pipe, 1 1/2" PVC Conduit, and 32LB Anode (Typ. 2 - Route Anode Wire(s) to Test Station). The drawing also includes a Terminal Board Layout and a Flush Mount Type Test Station detail.

GENERAL NOTES:

- CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ANY DISCREPANCIES BETWEEN THE PLANS FOR THIS PROJECT AND ACTUAL FIELD CONDITIONS WHICH MAY INTERFERE WITH THIS PROJECT.
- NO BELOW GRADE SPLICING OF WIRES IS ALLOWED WITHOUT PRIOR APPROVAL FROM THE ENGINEER. CONTRACTOR SHALL ENSURE ALL WIRES ARE OF SUFFICIENT LENGTH FOR EACH INTENDED APPLICATION.
- REMOVE ANODES AND REFERENCE ELECTRODES FROM PLASTIC OR OTHER SHIPPING BAG AND POSITION ACCORDING TO DETAIL DRAWINGS. DO NOT REMOVE CLOTH SACK. DO NOT PLACE IN PIPE BEDDING.
- INSTALL REFERENCE ELECTRODES AND COUPONS IN NATIVE SOILS AND PLACE PARALLEL TO THE PIPE. DO NOT PLACE IN PIPE BEDDING. COUPONS SHALL CONSIST OF THE SAME MATERIAL AS THE PIPE AT THE LOCATION OF INSTALLATION.
- INSTALL ANODES IN NATIVE SOILS A MINIMUM OF 3 FEET FROM EDGE OF PIPE OR ANY OTHER METALLIC OBJECT AND PLACE AT OR BELOW THE INVERT OF THE PIPE.
- BACKFILL WITH NATIVE SOIL A MINIMUM OF 12 INCHES AROUND ANY REFERENCE ELECTRODES, COUPONS, OR ANODES THEN FLOOD EACH WITH A MINIMUM OF 5 GALLONS OF FRESH WATER. AFTER WATER ABSORPTION, CONTINUE BACKFILLING AS PER SPECIFICATIONS.
- ROUTE ALL TEST LEADS AND ANODE WIRES IN 1 1/2 INCH CONDUIT BETWEEN THE PIPE AND THE TEST STATION BASE. THE CONDUIT WILL ALSO AID THE INSTALLER AS THE PIPELINE IS PADDED AND BACKFILLED BY PROVIDING MEANS TO LEAN THE TEST STATION AGAINST THE TRENCH WALL.
- IF POSSIBLE, INSTALL TEST STATIONS OVER CENTERLINE OF PIPE. PLACE TEST STATIONS IN PROTECTED LOCATIONS (NEXT TO FENCES, APPURTENANCES, OUT OF ROADWAYS, ETC.) OR OTHER EASILY ACCESSIBLE AREAS.
- PIPELINE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ELECTRICAL ISOLATION OF THE NEW PIPELINE FROM EXISTING PIPELINES, CONCRETE REBAR, ELECTRICAL GROUNDING, TUNNEL LININGS, PIPE SUPPORTS, OR OTHER METALLIC STRUCTURES.
- DURING BACKFILL, INSTALL DETECTABLE CATHODIC PROTECTION WARNING TAPE 12-18 INCHES ABOVE ANY CATHODIC PROTECTION WIRES OR DEVICES.
- TYPICAL WIRE INSULATION COLORS:
 - BLUE = PROJECT PIPE
 - WHITE = EXISTING OR FOREIGN PIPE
 - ORANGE = CASING PIPE
 - BLACK = STRUCTURE/NEGATIVE CABLES, ANODE LEADS, JOINT/CONTINUITY BONDS
 - GREEN = METALLIC COUPON
 - YELLOW = REFERENCE ELECTRODE
- SEE PROJECT SPECIFICATIONS FOR FURTHER INFORMATION.

APPROVED
City of Arvada, Colorado
3/1/24
21-WA-02
DATE
JOB NUMBER
CITY ENGINEER
No. 9232
REGISTERED
CORROSION PROTECTION SPECIALIST
PROJECT NO. 263334-271511
FILE NAME: CP-1.DWG
SHEET NO. CP-1

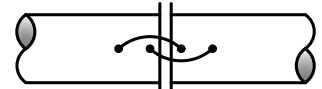
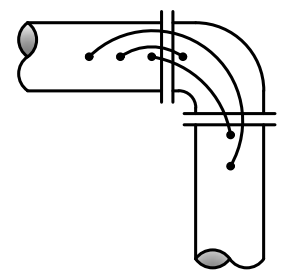
PROJECT NO. 263334-271511
FILE NAME: CP-1.DWG
SHEET NO.
CP-1

ISSUED FOR CONSTRUCTION

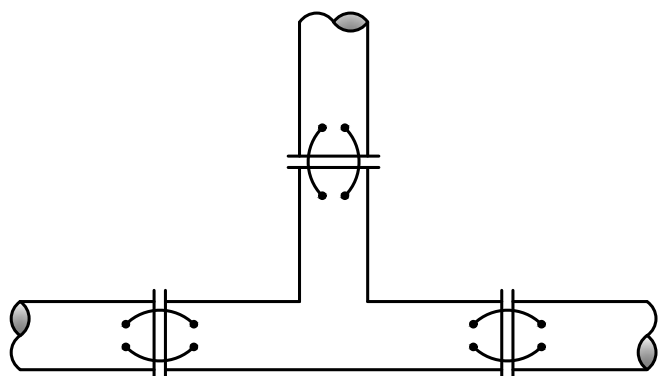
CONTINUITY BONDING NOTES:

-
- A diagram of a tapered shaft with a keyway. The shaft is wider on the left and tapers to the right. It has a keyway cut into its side. The transition from the wider section to the narrower section is a fillet. The transition from the narrower section to the keyway is also a fillet. Stress lines are shown as curved arrows, indicating high stress concentration at the fillet transitions and the keyway.

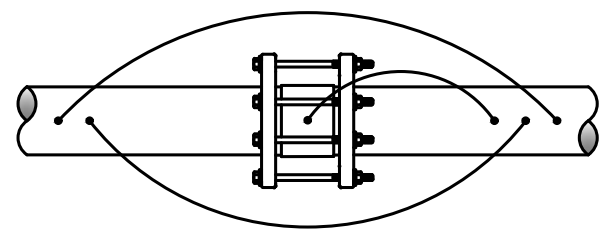
FLEXIBLE JOINT

FLANGE TO FLANGEBELL & SPIGOT

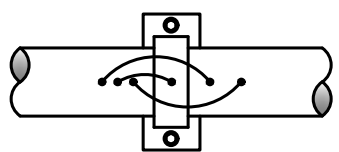
BEND



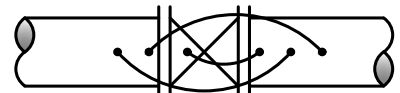
TEE



NON-ISOLATING (FLEX) COUPLING



VICTAULIC COUPLING



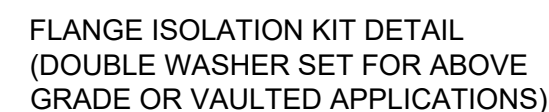
VALVE

CONTINUITY BONDING DETAILS

NOT TO SCALE



NOT TO SCALE



NOT TO SCALE

ARVADA 2021 WATER MAIN IMPROVEMENTS PROJECT PROJECT NO. 21-WA-02										
TEST STATION ID	STATION	PIPE SEGMENT	ALIGNMENT DRAWING/ PROFILE	OFFSET	PIPE DIAMETER	TYPE	DETAIL DRAWING	TEST STATION TYPE	ANODE QUANTITY	NOTES / COMMENTS
1	0+00	C	C-1/A	CENTER	24" STL	POST	A/CP-1	ANODE	6	INSTALL ON EXISTING STEEL
2	0+09	C	C-1/A	CENTER	24" DIP	POST	A/CP-1	ANODE	2	ARV
3	0+85	C	C-1/A	CENTER	36" STL	POST	B/CP-1	CASING	2	CROKE CANAL NORTH SIDE
4	1+95	C	C-1/A	CENTER	36" STL	POST	B/CP-1	CASING	2	CROKE CANAL SOUTH SIDE
5	1+50	C	C-1/B	CENTER	10" STL	POST	A/CP-1	ANODE	2	PROFILE B, CONNECTION TO EXISTING 10" PRV. INSTALL ISOLATION FLANGE PER DETAIL C/CP2 AT CONNECTION TO EXISTING PIPING WITHIN PRV
6	6+51	C	C-2	CENTER	24" STL	POST	A/CP-1	ANODE	4	
7	7+74	C	C-2	CENTER	24" STL	POST	A/CP-1	ANODE	4	
8	7+94	C	C-2	CENTER	24" STL	POST	A/CP-1	ANODE	4	
9	9+36	C	C-3	CENTER	24" STL	POST	A/CP-1	ANODE	4	
10	9+56	C	C-3	CENTER	24" STL	POST	A/CP-1	ANODE	4	
11	10+18	C	C-3	CENTER	24" STL	POST	A/CP-1	ANODE	4	
12	10+53	C	C-3	CENTER	24" STL	POST	A/CP-1	ANODE	4	
13	12+95	C	C-3	CENTER	24" STL	POST	A/CP-1	ANODE	4	
14	13+58	C	C-1/A	CENTER	24" STL	POST	A/CP-1	ANODE	6	INSTALL ON EXISTING STEEL
15	N/A	D	D-1/CD-7	CENTER	16" STL	N/A	C/CP-2	N/A	N/A	INSTALL ISOLATION FLANGES AT UPSTREAM AND DOWNSTREAM CONNECTIONS TO EXISTING FLANGES. INSTALL CONTINUITY BONDS FROM EXISTING UPSTREAM PIPE TO EXISTING DOWNSTREAM PIPE PER DETAIL A/CP-2. TAPE CP CONTINUITY BOND WIRES TO TOP OF NEW PIPE USING POLYETHYLENE TAPE SPACED EVERY 10 INCHES.
16	1+07	E	E-1	CENTER	12" DIP	POST	A/CP-1	ANODE	2	
17	1+47	E	E-1	CENTER	24" STL	POST	B/CP-1	CASING	2	FARMERS HIGHLINE CANAL WEST SIDE
18	2+33	E	E-1	CENTER	24" STL	POST	B/CP-1	CASING	2	FARMERS HIGHLINE CANAL EAST SIDE
19	0+18	F	F-1	CENTER	8" DIP	POST	A/CP-1	ANODE	2	INSTALL TEST STATION OUTSIDE OF ROADWAY NEXT TO ARV VENT PIPE
20	16+50	F	F-4	CENTER	8" DIP	POST	A/CP-1	ANODE	2	INSTALL TEST STATION OUTSIDE OF ROADWAY NEXT TO ARV VENT PIPE

DESIGNED BY: _____ MMV
DRAWN BY: _____ MTJ
SHEET CHK'D BY: _____ VWJ
CROSS CHK'D BY: _____
APPROVED BY: _____ MMV
DATE: _____ OCTOBER 2023



CATHODIC PROTECTION STANDARD DETAILS

APPROVED

City of Arvada, Colorado

Jenny Wolschlag PE
CITY ENGINEER

3/1/24

21-WA-02

DATE _____

JOB NUMBER

REVIEW IS FOR GENERAL COMPLIANCE WITH THE CITY OF ARVADA "ENGINEERING CODE OF STANDARDS AND SPECIFICATIONS FOR THE DESIGN AND CONSTRUCTION OF PUBLIC IMPROVEMENTS", LATEST EDITION. SOLE RESPONSIBILITY FOR COMPLETENESS AND/OR ACCURACY OF THESE DOCUMENTS SHALL REMAIN WITH THE REGISTERED PROFESSIONAL ENGINEER SEALING THESE PLANS, IF APPLICABLE. THE CITY DOES NOT ACCEPT LIABILITY FOR FACILITIES DESIGNED BY OTHERS.



PROJECT NO. 263334-271511

FILE NAME: CP-2.DWG

SHEET NO.

CP-2



REPORT TO CITY COUNCIL RESOLUTION

AGENDA ITEM
8.A.3.

TO: THE HONORABLE CITY COUNCIL

DATE: October 7, 2025

SUBJECT: R25-087, A Resolution Approving Administrative Rules Governing the Designated Drinking Areas in Olde Town Arvada

Report in Brief

PRESENTER: Kylie Justus

As part of the City's strategy to create a more vibrant Olde Town and support local businesses, these rules are intended to create areas in which people may gather in social settings. To that end, these rules designate certain pedestrian areas within the Entertainment District where persons at least twenty-one years of age may consume Takeout Beverages purchased from Eligible Liquor Licensed Businesses.

The Arvada team recommends that the City Council approve R25-087, A Resolution Approving Administrative Rules Governing the Designated Drinking Areas in Olde Town Arvada.

Financial Impact

The implementation of these rules does not have any associated cost to the City.

Background

In 2022, the City enacted Chapter 6, Article V of the Arvada City Code which established an Entertainment District in Olde Town Arvada. These rules further the City's goal of creating a more vibrant Olde Town by allowing open containers and consumption within the Designated Drinking Areas. Alcoholic beverages must be purchased from Eligible Liquor Licensed businesses within the Entertainment District for consumption within the Designated Drinking Areas. The rules are promulgated and may be revised by the City Manager.

Discussion

These rules create opportunities for residents and visitors to gather in a lively, social setting while ensuring alcohol consumption occurs in a safe, regulated environment. The policy supports local restaurants and retailers by encouraging patrons to explore Olde Town, stay longer, and visit multiple businesses. It also enhances Olde Town's identity as a cultural and entertainment hub for the region. The rules provide flexibility for ongoing improvements, with the City Manager authorized to update them as needed to reflect community feedback and operational experience.

Public Contact

A Public Hearing was held in front of the City's Liquor Authority on September 22, 2025. Posting of the City Council agenda.

Commission Recommendation

None.

Strategic Alignment

The approval of these rules directly contributes to City Council's strategic goal of bolstering a vibrant local economy by providing support for business in Arvada. Specifically, these rules seek to enhance the Olde Town area to attract residents, businesses, and visitors.

Alternative Courses of Action

1. Approve the Rules to allow common consumption within the Designated Drinking Areas within Olde Town.
2. Reject the Rules, and open containers will continue to be prohibited in Olde Town.

Recommendation for Action

The Arvada team recommends that the City Council approve the Administrative Rules Governing the Designated Drinking Areas in Olde Town Arvada.

Suggested Motion:

I move that R25-087, A Resolution Approving Administrative Rules Governing the Designated Drinking Areas in Olde Town Arvada, be (approved) (rejected).

Prepared by:
Kylie Justus, Assistant City Attorney

Reviewed by:

Approved by:

Janelle Miller, Assistant City Attorney	09/15/2025
Sarah Walters, Deputy City Clerk	09/15/2025
Kristen Rush, City Clerk	09/18/2025
Rachel Morris, City Attorney	09/18/2025
Linda Haley, Deputy City Manager	09/19/2025
Don Wick, City Manager	09/23/2025

Enclosure, exhibits & attachments required to support the report

RESOLUTION NO. R 25-087

A RESOLUTION APPROVING ADMINISTRATIVE RULES GOVERNING THE DESIGNATED
DRINKING AREAS IN OLDE TOWN ARVADA

WHEREAS, in 2022, the City enacted Chapter 6, Article V of the Arvada City Code which established an Entertainment District in Olde Town Arvada; and

WHEREAS, pursuant to Section 6-4, of the Arvada City Code the City Manager may permit the consumption of alcoholic beverages on public property; and

WHEREAS, pursuant to Section 2-141 *et. seq.*, the City Manager is permitted to promulgate administrative rules applicable to the public; and

WHEREAS, these rules further the City's goal of creating a more vibrant Olde Town by allowing open containers and consumption within the Designated Drinking Areas; and

WHEREAS, these rules permit alcoholic beverages to be purchased from Eligible Liquor Licensed businesses within the Entertainment District for consumption within the Designated Drinking Areas; and

WHEREAS, these rules create opportunities for residents and visitors to gather in a lively, social setting while ensuring alcohol consumption occurs in a safe, regulated environment.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF ARVADA, COLORADO:

Section 1. Pursuant to Section 2-143 of the Arvada City Code, the City Council hereby approves the Administrative Rules Governing the Designated Drinking Areas in Olde Town Arvada and gives the City Manager authority to promulgate and revise such rules.

Section 2. This resolution shall be effective upon its approval by the City Council.

APPROVED AND ADOPTED this 7th day of October, 2025.

Lauren Simpson, Mayor

ATTEST:

City Clerk

APPROVED AS TO FORM:
Rachel A. Morris, City Attorney

By: _____



Administrative Rules Governing the Designated Drinking Areas in Olde Town Arvada

Authorized by the City Manager: _____

Effective date: _____, 20__.

TITLE: Administrative Rules Governing the City-Established Designated Drinking Areas in Olde Town Arvada

PURPOSE: As part of the City's strategy to create a more vibrant Olde Town and support local businesses, these rules are intended to create areas in which people may gather in social settings. To that end, these rules designate areas within the Entertainment District where persons at least twenty-one years of age may consume Takeout Beverages purchased from Eligible Liquor Licensed Businesses.

AUTHORITY: Pursuant to 44-3-901(1)(i)(VII), C.R.S., a municipality may designate a public place, other than a right of way, in which consumption of alcohol beverages by persons who are at least twenty-one years of age is permitted by resolution or rule. Pursuant to Arvada City Code, Section 6-4, the city manager has the authority to grant written permission to consume alcohol on public property within the City. Pursuant to Arvada City Code, Section 2-143 *et. seq.*, the city manager has the authority to promulgate rules applicable to the public upon approval of City Council.

RESPONSIBLE DIRECTOR: The city manager or designee.

SCOPE: These rules apply to the public twenty-one years of age or older who wish to consume Takeout Beverages sold by Eligible Liquor Licensed Businesses in the City-Established Designated Drinking Area(s) in Olde Town Arvada. These rules also apply to the Eligible Liquor Licensed Businesses that participate in selling Takeout Beverages to be consumed in the City-Established Designated Drinking Area(s).

DEFINITIONS:

City-Established Designated Drinking Area(s) means geographical area(s), in a non-liquor licensed public place, designated by the City in its Entertainment District established by Resolution 23-073, in which persons at least twenty-one years of age may consume Takeout Beverages from Eligible Liquor Licensed Businesses.

City-Established Designated Drinking Area Map means a map establishing the geographical boundaries of City-Established Designated Drinking Area(s) within the Entertainment District from which Eligible Liquor Licensed Businesses may sell Takeout Beverages for consumption in the City-Established Designated Drinking Areas.

Eligible Liquor Licensed Businesses means businesses who meet the following criteria: (a) have a valid non-retail liquor license from the City and/or state; (b) hold a valid state-issued takeout beverage permit; and (c) are located within the City's Entertainment District.

Takeout Beverage means an alcohol beverage sold pursuant to a permit obtained by a licensee under Section 44-3-911, C.R.S. and Regulation 47-1101, and complies with all regulations therein, including that such beverage be sold sealed. In addition, each Takeout Beverage sold pursuant to these Rules must be sold with an attached sticker provided by the Olde Town Business Improvement District which bears a QR code that links to a page informing the public of the applicable rules for City-Established Designated Drinking Area(s). The applicable rules are attached to these rules as an appendix.

PROCEDURES:

1. Established. The city manager hereby designates City-Established Designated Drinking Area(s) as set forth in the map attached to these Rules as an appendix.

- 1.1 Modification of City-Established Designated Drinking Areas: The city manager, in their discretion, may, at any time, modify the boundaries of City-Established Designated Drinking Area(s), and include or exclude Eligible Liquor Licensed Businesses from selling Takeout Beverages to be consumed in such areas.

2. Other Requirements. All other rules apply. These rules do not alter requirements in state or local laws, rules, or regulations which may be enforced in City-Established Designated Drinking Area(s). These rules do not affect any permissions granted to or regulations established by a Special Event Permit issued pursuant to Arvada City Code 6-141 *et. seq.*

- 2.1 Rules pertaining to consumption: Persons at least twenty-one years of age may consume Takeout Beverages in City-Established Designated Drinking Area(s) if those Takeout Beverages were purchased from Eligible Liquor Licensed Businesses. Once a Takeout Beverage has been removed from the licensed premises of an Eligible Liquor Licensed Business, taken into a City-Established Designated Drinking Area and opened, the Takeout Beverage may not be removed from the City-Established Designated Drinking Area, including onto the premises of any business, into a public right of way, or back onto the liquor-licensed premises in which it was purchased. Takeout Beverages to be opened and consumed in City-Established Designated Drinking Area(s) must be consumed or disposed of on the same date the Takeout Beverage is purchased.

- 2.2 Eligible hours: Persons at least twenty-one years of age may consume Takeout Beverages from Eligible Liquor Licensed Businesses in City-Established Designated Drinking Area(s) only between the hours of 9:00 a.m. and 11:00

p.m. daily.

2.3 Outside alcohol beverages prohibited: The consumption of any alcohol beverages not purchased from Eligible Liquor Licensed Businesses in City-Established Designated Drinking Area(s) is prohibited.

2.4 Signage: The city shall provide signage, which must be displayed at the entry and exit points of City-Established Designated Drinking Area(s), informing the public they are entering the City-Established Designated Drinking Area and that all alcohol beverages must be disposed of prior to exiting the City-Established Designated Drinking Area.

2.5 Non-consumption areas: The city manager may prohibit consumption of Takeout Beverages in parts of City-Established Designated Drinking Areas at their discretion.

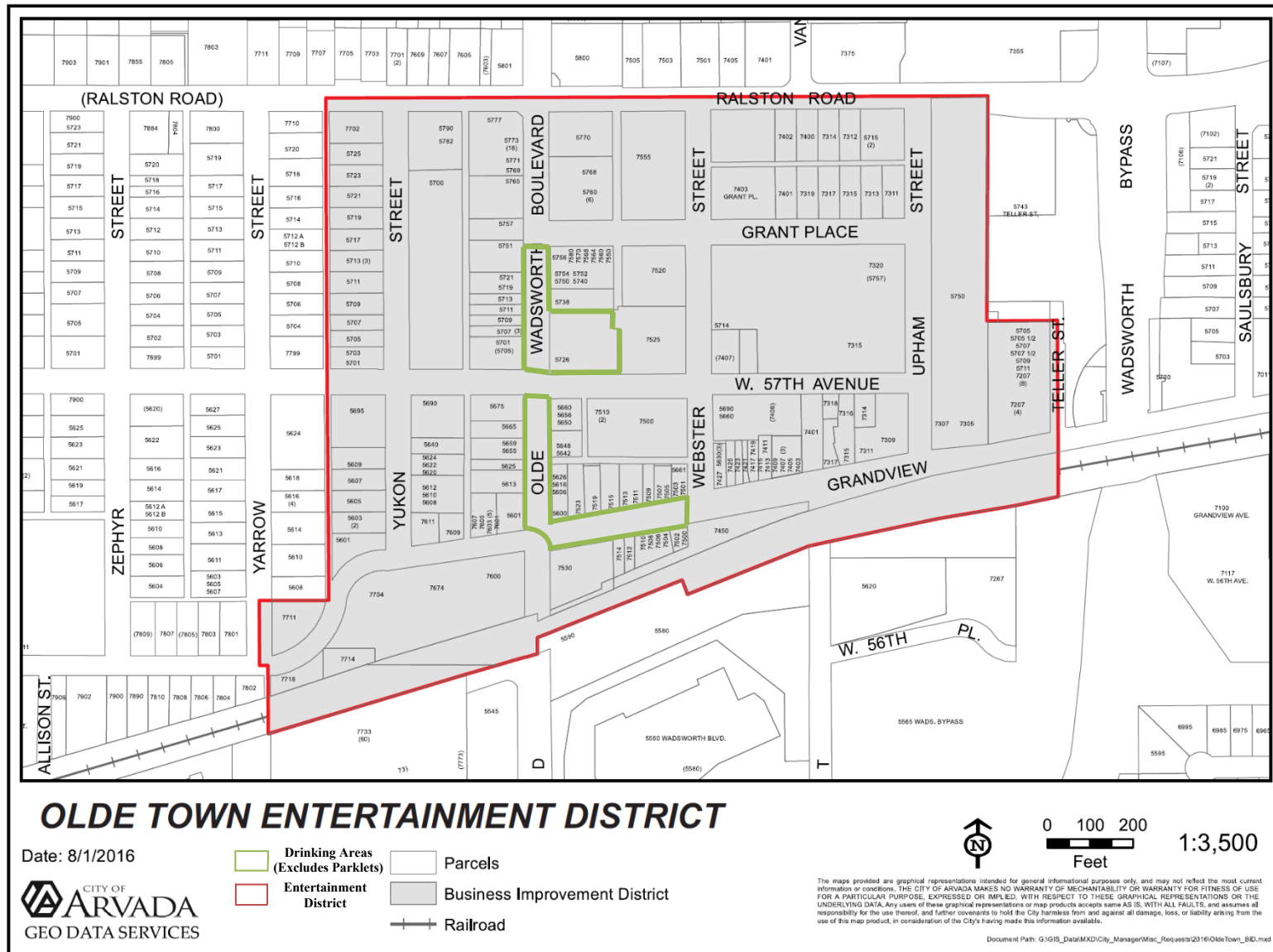
2.6 Compliance with state and local laws: Eligible Liquor Licensed Businesses that sell Takeout Beverages shall obtain all necessary permits and comply with all applicable rules and regulations issued by state and local licensing authorities. The city manager or City Liquor Licensing Authority may deny or revoke authorizations given to an Eligible Liquor Licensed Business for failure to comply with any applicable state or local law including, but not limited to, suspension or termination of the business' license, unpaid fines, or any code or law violations.

2.7 Delivery prohibited: The delivery of alcohol beverages to City-Established Designated Drinking Area(s), even if done by a liquor licensee with a valid takeout and delivery permit, is prohibited.

3. REVIEW, REVISION, AND RESCISSION. These rules may be reviewed, revised, or rescinded by the city manager. These rules shall automatically terminate in the event City Council rescinds Resolution 23-073.

Appendix

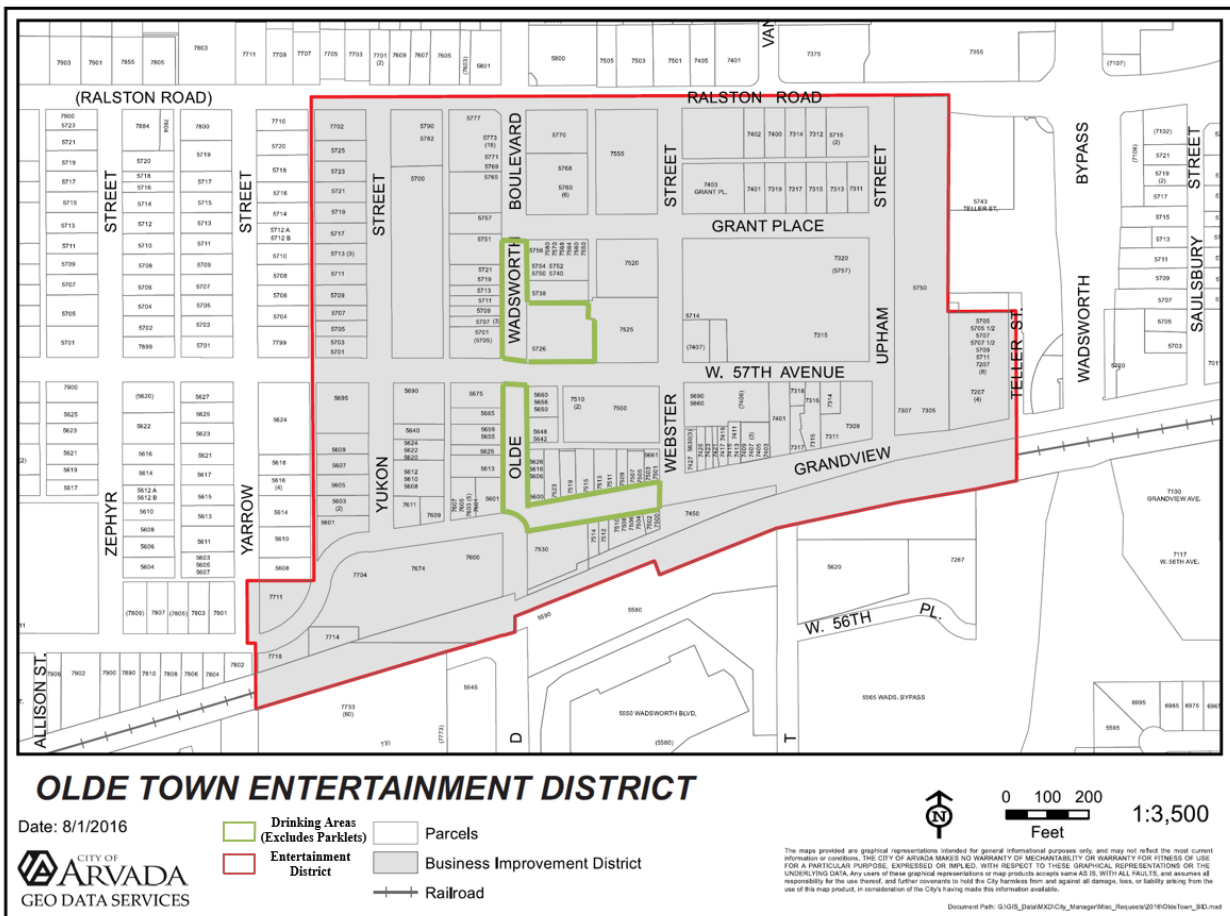
City-Established Designated Drinking Areas Map



Appendix

Applicable Rules

1. You must purchase Takeout Beverages from an Eligible Liquor Licensed Business (restaurants, taverns, tasting rooms, or bars) within the Entertainment District (see map for the boundaries of the Entertainment District).
2. You may not consume or open your own alcohol or alcohol purchased from a retail store in the Designated Drinking Area(s).
3. Please leave the sticker with the QR code attached to your alcohol beverage(s) so that police can readily identify your beverage as a Takeout Beverage able to be consumed in Designated Drinking Areas.
4. Takeout Beverages are to remain unopened until you enter a Designated Drinking Area and must be fully consumed or thrown away prior to exiting the Designated Drinking Area (see map for Designated Drinking Area(s)).
5. Takeout Beverages to be consumed in a Designated Drinking Area must be consumed or disposed of the same date the Takeout Beverage is purchased.
6. Open consumption of alcoholic beverages outside of a Designated Drinking Area is prohibited.
7. You may not consume Takeout Beverages while crossing roads or streets open to motor vehicle traffic.
8. You must be 21 years of age to consume alcohol.





REPORT TO CITY COUNCIL RESOLUTION

AGENDA ITEM
8.A.4.

TO: THE HONORABLE CITY COUNCIL

DATE: October 7, 2025

SUBJECT: R25-088, A Resolution Repealing The Programming And Use Of Arvada's Government Access Cable Channel Policy

Report in Brief

PRESENTER: Rachael Kuroiwa

The City recently adopted an internal policy outlining appropriate uses of City of Arvada communication channels to share third-party partner content. The policy is broadly inclusive of all current and future City of Arvada communication channels including KATV Channel 8. With the adoption of this policy, it made the KATV Channel 8 policy redundant.

Therefore, the City team recommends that the City Council approve R25-088, A Resolution Repealing The Programming And Use Of Arvada's Government Access Cable Channel Policy.

Financial Impact

There is no financial impact.

Background

The City of Arvada adopted Resolution 94-286 A Resolution Adopting A Policy On The Programming And Use Of Arvada's Government Access Cable Channel in December, 1994. The resolution set forth rules and procedures governing the programming and use of Arvada's government access cable channel. While the policy served the organization for many years, two policies were recently adopted through the internal policy process that rendered the referenced policy obsolete: the Third-Party Content Policy and the Candidate Debate Policy.

The new policies are broader approaches to communication content, not limited to KATV Channel 8 and remove specifications of technology that will change over time. The City team believes the updated policies provide adequate guidelines for appropriate use of City of Arvada communication channels now and into the future.

Discussion

The City team's perspective is that having one policy governing decisions about sharing third-party content across all current and future City of Arvada communication channels simplifies and clarifies decision making for staff and partner organizations. In addition, by focusing on content and not channel, it allows for the same guidelines to be used should new communication channels be created in the future. While KATV remains an important communication channel, it does not warrant separate guidelines.

Furthermore, the Policy On The Programming And Use Of Arvada's Government Access Cable Channel contains references to obsolete technology and audience interaction expectations. By focusing on content guidelines, the City team will not need to continually monitor communication policies for obsolete technology, platforms or other issues that are expected with a rapidly changing communication technology landscape.

There is no budgetary impact for this change.

Public Contact

Posting of the City Council agenda.

Commission Recommendation

N/A

Strategic Alignment

Repealing the Policy on Programming and Use of Arvada's Government Access Cable Channel aligns with the City's strategic goal to provide exceptional customer service to all residents, businesses, and visitors of the city. Approving R25-088 aligns with this goal by streamlining expectations associated with KATV, as well as removing obsolete obligations that the City could not comply with, if requested.

Alternative Courses of Action

Recommendation for Action

The City team recommends that the City Council approve R25-088, A Resolution Repealing The Programming And Use Of Arvada's Government Access Cable Channel Policy.

Suggested Motion:

I move that R25-088, A Resolution Repealing The Programming And Use Of Arvada's Government Access Cable Channel Policy, be (approved) (rejected).

Prepared by:
Tammy Hedlund, Legal Specialist

Reviewed by:

Approved by:

Bryan Archer, Chief Financial Officer	09/18/2025
Tammy Hedlund, Legal Specialist	09/18/2025
Zachary Woolweaver, Assistant City Attorney I	09/19/2025
Rachael Kuroiwa, Director of Communications & Engagement	09/19/2025
Rachel Morris, City Attorney	09/25/2025
Alli Scheck, Deputy City Manager	09/25/2025
Don Wick, City Manager	09/26/2025

Enclosure, exhibits & attachments required to support the report

RESOLUTION NO. R25-088

A RESOLUTION REPEALING THE PROGRAMMING AND USE OF ARVADA'S
GOVERNMENT ACCESS CABLE CHANNEL POLICY

WHEREAS, On December 19, 1994 City Council passed R94-286, A Resolution Adopting a Policy on the Programming and Use of Arvada's Government Access Cable Channel (the "Policy").

WHEREAS, A significant amount of time has passed since its adoption and the Policy is obsolete and redundant with other policies that the City has since adopted.

WHEREAS, the City of Arvada wishes to repeal the Policy in its entirety.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF ARVADA, COLORADO:

Section 1. The Mayor or Mayor Pro Tem is authorized to sign and the City Clerk to attest, in form approved by the City Attorney, an Amendment to an Agreement that is in substantially the same form as that attached hereto.

Section 2. This resolution shall be effective upon its approval by the City Council.

APPROVED AND ADOPTED this 7th day of October, 2025.

Lauren Simpson, Mayor

ATTEST:

City Clerk

APPROVED AS TO FORM:
Rachel A. Morris, City Attorney

By: _____



REPORT TO CITY COUNCIL RESOLUTION

AGENDA ITEM
8.A.5.

TO: THE HONORABLE CITY COUNCIL

DATE: October 7, 2025

SUBJECT: R25-089, A Resolution Granting A Non-Exclusive Public Utility Easement To The Public Service Company of Colorado (Xcel Energy) To Construct, Operate, Maintain, Repair, And Replace Utility Lines At Indiana Shops

Report in Brief

PRESENTER: Michael Hodyno

The applicant, Public Service Company of Colorado (Xcel Energy), is requesting that the City grant a Non-Exclusive Public Utility Easement at the Indiana Shops. An easement grants Xcel Energy the legal right to install electrical infrastructure on the City's property. This easement is required to support the installation of up to six electric vehicle charging ports.

The Arvada team recommends that the City Council approve R25-089, A Resolution Granting A Non-Exclusive Public Utility Easement To The Public Service Company of Colorado To Construct, Operate, Maintain, Repair, And Replace Utility Lines At The Indiana Shops.

Financial Impact

The materials and labor to install additional power infrastructure will be a one-time cost of \$16,425.39.

Background

At the end of 2024, Resolution 24-119 was passed to install electrical vehicle chargers at various locations throughout the City. Four of these locations need additional electric infrastructure installed to support the power requirements utilized by these vehicle chargers. A utility easement is required by Xcel Energy to install the power lines and transformers as these components will run through City property.

Xcel Energy has completed the design, cost estimates, and rebate application for the Indiana Shops location. The cost of installation and materials for this project is \$44,320.39. However, rebates have been granted to reduce the overall amount to \$16,425.39.

Discussion

The utility easement will allow Xcel Energy to extend power lines to the site for the increased power requirements. The new electrical infrastructure will be constructed starting from the existing transformer east of the wash bay and will terminate with a new transformer just south of the new automated vehicle gate. This new transformer will feed up to (6) 80 amp electric vehicle chargers with capability for future expansion of (2) more chargers if needed.

Public Contact

Posting of the City Council Agenda

Commission Recommendation

N/A

Strategic Alignment

This project and easement is aligned with the Infrastructure Work System of the City Council Strategic Plan. Specifically, the recommended actions support the following principle:

INF2 - *Invests in and maintains safe, resilient, accessible, and environmentally efficient City facilities and fleet vehicles*

Alternative Courses of Action

N/A

Recommendation for Action

The Arvada team recommends that the City Council approve R25-089, A Resolution Granting A Non-Exclusive Public Utility Easement To The Public Service Company of Colorado To Construct, Operate, Maintain, Repair, And Replace Utility Lines At The Indiana Shops.

Suggested Motion:

I move that R25-089, A Resolution Granting A Non-Exclusive Public Utility Easement To The Public Service Company of Colorado To Construct, Operate, Maintain, Repair, And Replace Utility Lines At The Indiana Shops, be (approved) (rejected).

Prepared by:
Michael Hodyno, Project Manager of City Facilities

Reviewed by:

Approved by:

Kim Vagher, Manager of City Facilities	09/15/2025
Jacqueline Rhoades, Director of Infrastructure	09/16/2025
Bryan Archer, Chief Financial Officer	09/16/2025
Tammy Hedlund, Legal Specialist	09/18/2025
Kelsy Sargent, Assistant City Attorney	09/18/2025
Zachary Woolweaver, Assistant City Attorney I	09/18/2025
Rachel Morris, City Attorney	09/18/2025
Alli Scheck, Deputy City Manager	09/24/2025
Don Wick, City Manager	09/25/2025

Enclosure, exhibits & attachments required to support the report

RESOLUTION NO. R25-089

A RESOLUTION GRANTING A NON-EXCLUSIVE PUBLIC UTILITY EASEMENT TO THE PUBLIC SERVICE COMPANY OF COLORADO (XCEL ENERGY) TO CONSTRUCT, OPERATE, MAINTAIN, REPAIR, AND REPLACE UTILITY LINES AT INDIANA SHOPS

BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF ARVADA, COLORADO:

Section 1. The Mayor or Mayor Pro Tem is authorized to sign and the City Clerk to attest, in form approved by the City Attorney, a non-exclusive utility easement to Construct, Operate, Maintain, Repair, and Replace Utility Lines at Indiana Shops.

Section 2. This resolution shall be effective upon its approval by the City Council.

APPROVED AND ADOPTED this 7th day of October, 2025.

Lauren Simpson, Mayor

ATTEST:

City Clerk

APPROVED AS TO FORM:
Rachel A. Morris, City Attorney

By: _____

S-T-R: S1 T3S R70W	Grantor: The City of Arvada	Doc No:
County: Jefferson	Address/Intersection: 6701 INDIANA ST	Reception No:
Division-City/Town: N Metro - Arvada	Dist/HP Trans: Dist	Surveyor: Christopher P. Juliana, PLS 31158
Division Agent: Jesse Vallejos	Contract Agent/Co: Lee, Austin	Survey Company: Precision Survey & Mapping
LAT & LONG GPS: 39°49'3.97"N / 105° 9'58.86"W		

PUBLIC SERVICE COMPANY OF COLORADO UTILITY EASEMENT

The undersigned Grantor (whether one or more) hereby acknowledges receipt of good and valuable consideration from PUBLIC SERVICE COMPANY OF COLORADO (Company), in consideration of which Grantor(s) hereby grants unto said Company, its successors and assigns, a non-exclusive easement (“**Easement**”) for utility lines, and all fixtures and devices used or useful in the operation of the same, on, through, over, under, across, and along a course as said lines may be hereafter constructed the **South East 1/4** of Section **1**, Township **3 South**, Range **70 West** in the following lands located in County of Jefferson, State of Colorado, the easement being described as follows (“**Easement Area**”):

SEE “EXHIBIT A” ATTACHED HERETO AND INCORPORATED HEREIN BY THIS REFERENCE.

Together with the right (i) to enter upon said premises, to survey, construct, install, operate, repair, remove, replace, reconstruct, alter, relocate, patrol, inspect, improve, enlarge, remove, maintain and use utility lines and all related facilities, other fixtures, devices, and appurtenances used or useful in connection therewith (collectively the “**Facilities**”), and (ii) to remove objects interfering therewith, including the trimming or felling of trees and bushes, and (iii) to use so much of the adjoining premises of Grantor during surveying, construction, maintenance, repair, removal, or replacement of said Facilities and related fixtures and devices as may be required to permit the operation of standard utility construction or repair machinery.

The Grantor reserves the right to use and occupy the Easement Area for any purpose consistent with the rights and privileges above granted and which will not interfere with or endanger any of the said Company's Facilities therein or use thereof. Such reservations by Grantor shall in no event include the right to erect or cause to be erected any temporary or permanent buildings, structures (including without limitation trailers or mobile homes), signs, or wells on, under, or over the Easement Area. No other objects shall be erected, placed, or permitted to remain on, under, or over the Easement Area, which will or may interfere with the Facilities installed on the Easement Area or interfere with the exercise of any of the rights herein granted. No failure by Company to remove or otherwise raise an objection to any objects or improvements located or installed on the Easement Area by Grantor, shall be deemed to constitute consent on the part of Company to such improvements or objects, nor a waiver of Company's rights regarding removal of any such improvements or objects.

Grantor agrees to contact the Call Before You Dig - Utility Notification Center of Colorado (811 or 1-800-922-1987), or any similar one-call utility line locator system which may replace or supplement it, at least four (4) business days (or such longer time if required by applicable law) prior to the commencement of construction, excavation, or digging of the Easement Area to arrange for field locating of Facilities.

Grantor shall disclose to Company any pre-existing waste materials (“**Pre-Existing Wastes**”), that Grantor knows or reasonably suspects to be present in soils, water (surface or groundwater), vapors or air, whether on, in, above, migrating to or from, or under the Easement Area and any other information that would help Company assess the risks of working in the area. Company shall have the right to

perform environmental sampling in the Easement Area at its discretion. If Company encounters any Pre-Existing Wastes, Company retains the right to stop work and may choose to exercise that right. Grantor shall retain its obligations to comply with all applicable laws and regulations related to such Pre-Existing Wastes. Grantor shall release Company from any claims or responsibilities related to such Pre-Existing Wastes.

The work of installing and maintaining said lines and fixtures shall be done with care; the surface along the easement area and any adjoining premises used by Company shall be restored substantially to its original level and condition following completion of Company activities, taking into account, among other things, the existence of the Facilities and the restrictions stated in this Easement.

The provisions of this Easement shall run with, be binding on and burden the Easement Area and shall bind and benefit the heirs, executors, administrators, personal representatives, successors, and assigns of Grantor and Company. Non-use or a limited use of the Easement Area shall not prevent Grantee from thereafter making use of the Easement Area to the full extent herein authorized.

Grantor warrants and represents that Grantor is the owner of the Easement and has the right to sell, transfer, convey, confirm and grant this Easement and the rights contained herein. This Easement is binding on Grantor, is not conditioned upon obtaining the consent of any third party.

This Easement incorporates all agreements between the parties as to the subject matter of this Easement, and no prior representations or statements, verbal or written, shall modify, supplement or change the terms of this Easement. This Easement consists of the document entitled “Utility Easement”, and Exhibit(s) containing a legal description and a sketch depicting the legal description, if referenced above or attached hereto. No other exhibit, addendum, schedule or other attachment (collectively “**Addendum**”) is authorized by Company, and no Addendum shall be effective and binding upon Company unless executed by an authorized representative of Company.

Signed this _____ day of _____, 2025

(Type or print name below each signature line with official title if corporation, partnership, etc.):

GRANTOR: **The City of Arvada**

BY: _____
_____(print name)

ITS: _____

STATE OF _____)
)ss
COUNTY OF _____)

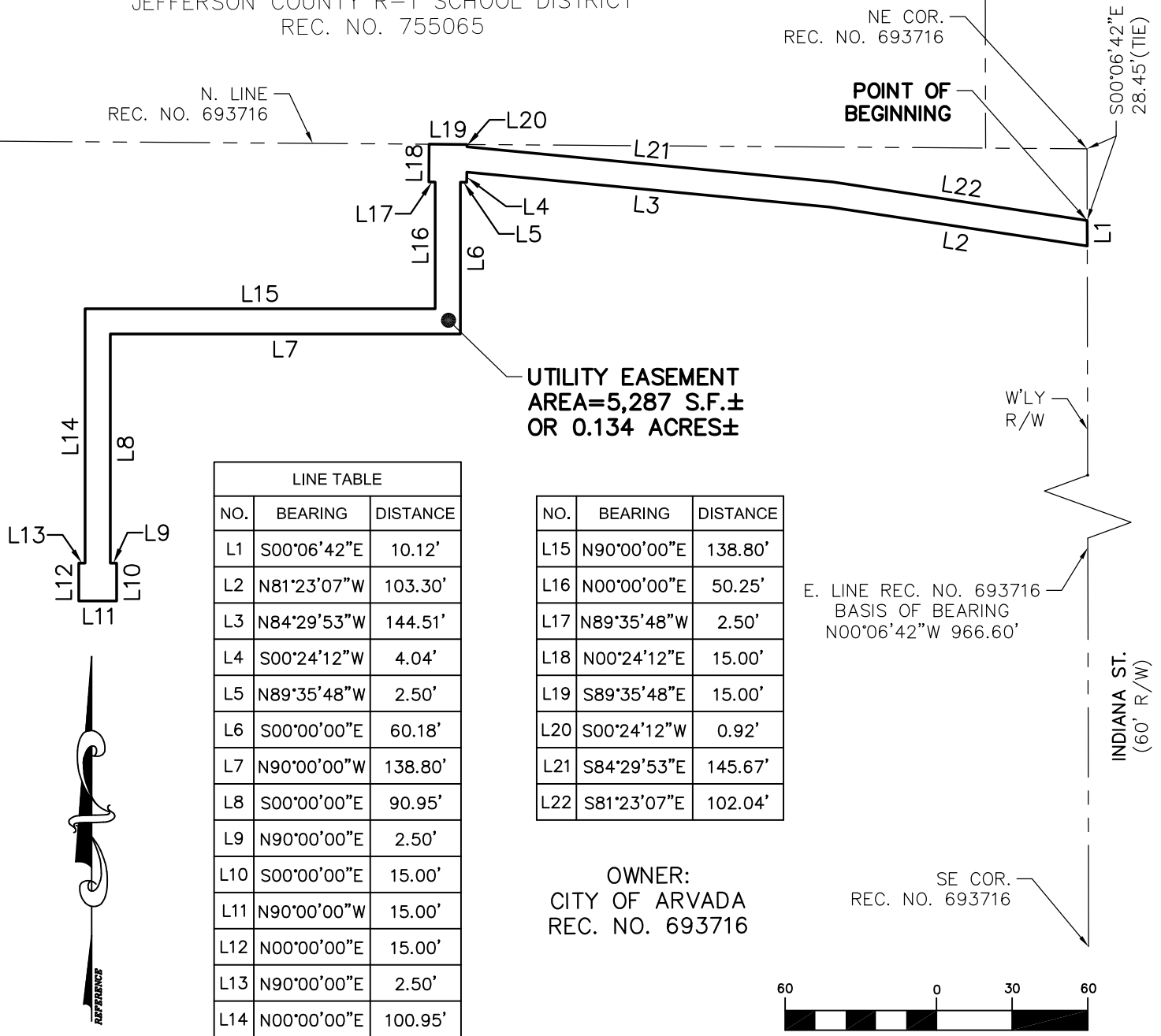
The foregoing instrument was acknowledged before me this _____ day of _____, 2025
by [Grantor name(s) from above]:

My commission Expires _____
(Seal) _____ Notary Public

EXHIBIT "A"

OWNER:
JEFFERSON COUNTY R-1 SCHOOL DISTRICT
REC. NO. 755065

SE1/4 SECTION 1
T3S, R70W, 6TH P.M.
JEFFERSON COUNTY



- 1.) PARCEL OWNERSHIP IS BASED ON THE RECORDS OF THE COUNTY ASSESSOR.
- 2.) ACCORDING TO COLORADO LAW, YOU MUST COMMENCE ANY LEGAL ACTION BASED UPON ANY DEFECT IN THIS SURVEY WITHIN THREE YEARS AFTER YOU FIRST DISCOVER SUCH DEFECT. IN NO EVENT MAY ANY ACTION BASED UPON ANY DEFECT IN THIS SURVEY BE COMMENCED MORE THAN TEN YEARS AFTER THE DATE OF THE CERTIFICATION SHOWN HEREON.
- 3.) THE ONLY PURPOSE OF THIS EXHIBIT IS TO SHOW THE LOCATION OF THE EASEMENT(S).
- 4.) THIS DOCUMENT SHALL BE CONSIDERED NULL AND VOID IF IT DOES NOT BEAR THE ORIGINAL SIGNATURE AND SEAL OF THE PROFESSIONAL LAND SURVEYOR OR IF ALTERED IN ANY WAY.

LEGAL DESCRIPTION

A PARCEL OF LAND LOCATED IN THE SOUTHEAST QUARTER OF SECTION 1, TOWNSHIP 3 SOUTH, RANGE 70 WEST OF THE SIXTH PRINCIPAL MERIDIAN, COUNTY OF JEFFERSON, STATE OF COLORADO, ALSO BEING A PORTION OF LANDS DESCRIBED AT RECEPTION NO. 693716, FILED IN THE JEFFERSON COUNTY CLERK AND RECORDER'S OFFICE, SAID PARCEL OF LAND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

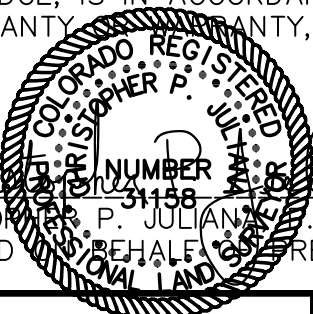
BASIS OF BEARING OF THIS DESCRIPTION IS ALONG THE EAST LINE OF SAID LANDS, ASSUMED TO BEAR N00°06'42"W A DISTANCE OF 966.60 FEET FROM THE SOUTHEAST CORNER OF SAID LANDS TO THE NORTHEAST CORNER OF SAID LANDS;

BEGINNING AT A POINT ON SAID EAST LINE AND BEING ON THE WESTERLY RIGHT-OF-WAY OF INDIANA STREET, SAID POINT BEARS S00°06'42"E A DISTANCE OF 28.45 FEET FROM SAID NORTH EAST CORNER;

THENCE S00°06'42"E ALONG SAID EAST LINE AND SAID WESTERLY RIGHT-OF-WAY A DISTANCE OF 10.12 FEET; THENCE N81°23'07"W A DISTANCE OF 103.30 FEET; THENCE N84°29'53"W A DISTANCE OF 144.51 FEET; THENCE S00°24'12"W A DISTANCE OF 4.04 FEET; THENCE N89°35'48"W A DISTANCE OF 2.50 FEET; THENCE S00°00'00"E A DISTANCE OF 60.18 FEET; THENCE N90°00'00"W A DISTANCE OF 138.80 FEET; THENCE S00°00'00"E A DISTANCE OF 90.95 FEET; THENCE N90°00'00"E A DISTANCE OF 2.50 FEET; THENCE S00°00'00"E A DISTANCE OF 15.00 FEET; THENCE N90°00'00"W A DISTANCE OF 15.00 FEET; THENCE N00°00'00"E A DISTANCE OF 15.00 FEET; THENCE N90°00'00"E A DISTANCE OF 2.50 FEET; THENCE N00°00'00"E A DISTANCE OF 100.95 FEET; THENCE N90°00'00"E A DISTANCE OF 138.80 FEET; THENCE N00°00'00"E A DISTANCE OF 50.25 FEET; THENCE N89°35'48"W A DISTANCE OF 2.50 FEET; THENCE N00°24'12"E A DISTANCE OF 15.00 FEET TO THE NORTH LINE OF SAID LANDS; THENCE S89°35'48"E ALONG SAID NORTH LINE A DISTANCE OF 15.00 FEET; THENCE S00°24'12"W A DISTANCE OF 0.92 FEET; THENCE S84°29'53"E A DISTANCE OF 145.67 FEET; THENCE S81°23'07"E A DISTANCE OF 102.04 FEET TO THE POINT OF BEGINNING.

SAID PARCEL CONTAINS 5,287 SQUARE FEET OR 0.134 ACRES, MORE OR LESS.

I, CHRISTOPHER P. JULIANA, A PROFESSIONAL LAND SURVEYOR IN THE STATE OF COLORADO, DO HEREBY CERTIFY THAT THIS SURVEY HAS BEEN PERFORMED BY ME OR UNDER MY RESPONSIBLE CHARGE, IS TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE, IS IN ACCORDANCE WITH APPLICABLE STANDARDS OF PRACTICE AND IS NOT A GUARANTY OF ACCURACY, EITHER EXPRESSED OR IMPLIED.



CHRISTOPHER P. JULIANA, L.S. 31158, 08/14/25
FOR AND ON BEHALF OF PRECISION SURVEY & MAPPING, INC.

 **PRECISION SURVEY & MAPPING**
PROFESSIONAL LAND SURVEYING CONSULTANTS
9025 E. KENYON AVENUE, SUITE 150
DENVER, COLORADO 80237
TEL: 303-753-9799

DRN. BY: R.U.
CHKD. BY: J.L.
DATE: 08/14/25
SCALE: 1" = 60'

FILE: R14311
SHEET: 2 OF 2
W/O #:

**UTILITY
EASEMENT**



REPORT TO CITY COUNCIL RESOLUTION

AGENDA ITEM
8.A.6.

TO: THE HONORABLE CITY COUNCIL

DATE: October 7, 2025

SUBJECT: R25-090, A Resolution Granting A Non-Exclusive Public Utility Easement To The Public Service Company of Colorado (Xcel Energy) To Construct, Operate, Maintain, Repair, and Replace Utility Lines At The Parks and Vehicle Maintenance Facility

Report in Brief

PRESENTER: Michael Hodyno

The applicant, Public Service Company of Colorado (Xcel Energy), is requesting that the City grant a Non-Exclusive Public Utility Easement at the Parks & Vehicle Maintenance Facility. An easement grants Xcel Energy the legal right to install electrical infrastructure on the City's property. This easement is required to support the installation of up to eight electric vehicle charging ports.

The Arvada team recommends that the City Council approve R25-090, A Resolution Granting A Non-Exclusive Public Utility Easement To The Public Service Company of Colorado To Construct, Operate, Maintain, Repair, And Replace Utility Lines At The Parks & Vehicle Maintenance Facility.

Financial Impact

There is no fiscal impact to the City.

Background

At the end of 2024, Resolution R24-119 was passed to install electric vehicle chargers at various locations throughout the City. Four of these locations need additional electrical infrastructure installed to support the power requirements utilized by these vehicle chargers. A utility easement is required by Xcel Energy to install the power lines and transformers as these components will run through City property.

Xcel Energy has completed the design, cost estimates, and processed the rebate applications for the Parks & Vehicle Maintenance Facility. The cost of installation and materials for this project is \$47,406.56. However, rebates have been granted to cover the entire cost of this project.

Discussion

The utility easement will allow Xcel Energy to extend power lines to the site for the increased power requirements. The new electrical infrastructure will be constructed starting from the existing building transformer to the north of the building and will terminate by the automated vehicle gate. This new transformer will feed up to (6) 80 amp electrica vehicle chargers and (2) 120 amp chargers.

Public Contact

Posting of the City Council Agenda

Commission Recommendation

SUBJECT: R25-090, A Resolution Granting A Non-Exclusive Public Utility Easement To The Public Service Company of Colorado (Xcel Energy) To Construct, Operate, Maintain, Repair, and Replace Utility Lines At The Parks and Vehicle Maintenance Facility

PAGE: 2
ITEM: 8.A.6.

N/A

Strategic Alignment

This project and easement is aligned with the Infrastructure Work System of the City Council Strategic Plan. Specifically, the recommended actions support the following principle:

INF2 - *Invests in and maintains safe, resilient, accessible, and environmentally efficient facilities and fleet vehicles*

Alternative Courses of Action

N/A

Recommendation for Action

The Arvada team recommends that the City Council approve R25-090, A Resolution Granting A Non-Exclusive Public Utility Easement To The Public Service Company of Colorado (Xcel Energy) To Construct, Operate, Maintain, Repair, and Replace Utility Lines At The Parks & Vehicle Maintenance Facility.

Suggested Motion:

I move that R25-090, A Resolution Granting A Non-Exclusive Public Utility Easement To The Public Service Company of Colorado (Xcel Energy) To Construct, Operate, Maintain, Repair, and Replace Utility Lines At The Parks & Vehicle Maintenance Facility, be (approved) (rejected)

Prepared by:
Michael Hodyno, Project Manager of City Facilities

Reviewed by:

Approved by:

Kim Vagher, Manager of City Facilities	09/16/2025
Jacqueline Rhoades, Director of Infrastructure	09/16/2025
Bryan Archer, Chief Financial Officer	09/17/2025
Tammy Hedlund, Legal Specialist	09/18/2025
Kelsy Sargent, Assistant City Attorney	09/18/2025
Zachary Woolweaver, Assistant City Attorney I	09/18/2025
Rachel Morris, City Attorney	09/18/2025
Alli Scheck, Deputy City Manager	09/24/2025
Don Wick, City Manager	09/25/2025

Enclosure, exhibits & attachments required to support the report

SUBJECT: R25-090, A Resolution Granting A Non-Exclusive Public Utility Easement To The Public Service Company of Colorado (Xcel Energy) To Construct, Operate, Maintain, Repair, and Replace Utility Lines At The Parks and Vehicle Maintenance Facility

PAGE: 3
ITEM: 8.A.6.

RESOLUTION NO. R25-090

A RESOLUTION GRANTING A NON-EXCLUSIVE PUBLIC UTILITY EASEMENT TO THE PUBLIC SERVICE COMPANY OF COLORADO (XCEL ENERGY) TO CONSTRUCT, OPERATE, MAINTAIN, REPAIR, AND REPLACE UTILITY LINES AT THE PARKS & VEHICLE MAINTENANCE FACILITY

BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF ARVADA, COLORADO:

Section 1. The Mayor or Mayor Pro Tem is authorized to sign and the City Clerk to attest, in form approved by the City Attorney, a non-exclusive utility easement to Construct, Operate, Maintain, Repair, and Replace Utility Lines at the Parks and Vehicle Maintenance Facility.

Section 2. This resolution shall be effective upon its approval by the City Council.

APPROVED AND ADOPTED this 7th day of October, 2025.

Lauren Simpson, Mayor

ATTEST:

City Clerk

APPROVED AS TO FORM:
Rachel A. Morris, City Attorney

By: _____

S-T-R: NW1/4-S11-T3S-R69W	Grantor: The City of Arvada	Doc No:
County: Jefferson	Address/Intersection: 7800 W 62 nd Ave Arvada, CO 80004	Reception No:
Division-City/Town: NM - Arvada	Dist/HP Trans: Distribution	Surveyor: Kyle Walker PLS 38664
Division Agent: Jesse Vallejos	Contract Agent/Co: Stephanie Braun Western States Land Services, LLC	Survey Company: Topographic Co.
LAT & LONG GPS: 39.80873 / -105.08468		

PUBLIC SERVICE COMPANY OF COLORADO UTILITY EASEMENT

The undersigned Grantor (whether one or more) hereby acknowledges receipt of good and valuable consideration from PUBLIC SERVICE COMPANY OF COLORADO (Company), in consideration of which Grantor(s) hereby grants unto said Company, its successors and assigns, a non-exclusive easement (“**Easement**”) for utility lines, and all fixtures and devices used or useful in the operation of the same, on, through, over, under, across, and along a course as said lines may be hereafter constructed in Lot G, Arvada Gardens subdivision, in the NW1/4 of Section 11, Township 3 South, Range 69 West of the 6th Principal Meridian in the following lands located in County of Jefferson, State of Colorado, the easement being described as follows (“**Easement Area**”):

SEE “EXHIBIT A” ATTACHED HERETO AND INCORPORATED HEREIN BY THIS REFERENCE.

Together with the right (i) to enter upon said premises, to survey, construct, install, operate, repair, remove, replace, reconstruct, alter, relocate, patrol, inspect, improve, enlarge, remove, maintain and use utility lines and all related facilities, other fixtures, devices, and appurtenances used or useful in connection therewith (collectively the “**Facilities**”), and (ii) to remove objects interfering therewith, including the trimming or felling of trees and bushes, and (iii) to use so much of the adjoining premises of Grantor during surveying, construction, maintenance, repair, removal, or replacement of said Facilities and related fixtures and devices as may be required to permit the operation of standard utility construction or repair machinery.

The Grantor reserves the right to use and occupy the Easement Area for any purpose consistent with the rights and privileges above granted and which will not interfere with or endanger any of the said Company's Facilities therein or use thereof. Such reservations by Grantor shall in no event include the right to erect or cause to be erected any temporary or permanent buildings, structures (including without limitation trailers or mobile homes), signs, or wells on, under, or over the Easement Area. No other objects shall be erected, placed, or permitted to remain on, under, or over the Easement Area, which will or may interfere with the Facilities installed on the Easement Area or interfere with the exercise of any of the rights herein granted. No failure by Company to remove or otherwise raise an objection to any objects or improvements located or installed on the Easement Area by Grantor, shall be deemed to constitute consent on the part of Company to such improvements or objects, nor a waiver of Company’s rights regarding removal of any such improvements or objects.

Grantor agrees to contact the Call Before You Dig - Utility Notification Center of Colorado (811 or 1-800-922-1987), or any similar one-call utility line locator system which may replace or supplement it, at least four (4) business days (or such longer time if required by applicable law) prior to the commencement of construction, excavation, or digging of the Easement Area to arrange for field locating of Facilities.

Grantor shall disclose to Company any pre-existing waste materials (“**Pre-Existing Wastes**”), that Grantor knows or reasonably suspects to be present in soils, water (surface or groundwater), vapors or air, whether on, in, above, migrating to or from, or under the Easement Area and any other information that would help Company assess the risks of working in the area. Company shall have the right to perform environmental sampling in the Easement Area at its discretion. If Company encounters any Pre-Existing Wastes, Company retains the right to stop work and may choose to exercise that right. Grantor shall retain its obligations to comply with all applicable laws and regulations related to such Pre-Existing Wastes. Grantor shall release Company from any claims or responsibilities related to such Pre-Existing Wastes.

The work of installing and maintaining said lines and fixtures shall be done with care; the surface along the easement area and any adjoining premises used by Company shall be restored substantially to its original level and condition following completion of Company activities, taking into account, among other things, the existence of the Facilities and the restrictions stated in this Easement.

The provisions of this Easement shall run with, be binding on and burden the Easement Area and shall bind and benefit the heirs, executors, administrators, personal representatives, successors, and assigns of Grantor and Company. Non-use or a limited use of the Easement Area shall not prevent Grantee from thereafter making use of the Easement Area to the full extent herein authorized.

Grantor warrants and represents that Grantor is the owner of the Easement and has the right to sell, transfer, convey, confirm and grant this Easement and the rights contained herein. This Easement is binding on Grantor, is not conditioned upon obtaining the consent of any third party.

This Easement incorporates all agreements between the parties as to the subject matter of this Easement, and no prior representations or statements, verbal or written, shall modify, supplement or change the terms of this Easement. This Easement consists of the document entitled “Utility Easement”, and Exhibit(s) containing a legal description and a sketch depicting the legal description, if referenced above or attached hereto. No other exhibit, addendum, schedule or other attachment (collectively “**Addendum**”) is authorized by Company, and no Addendum shall be effective and binding upon Company unless executed by an authorized representative of Company.

Signed this _____ day of _____, 2025

GRANTOR: **THE CITY OF ARVADA**

BY: _____
_____(print name)

ITS: _____

STATE OF _____)
)ss
COUNTY OF _____)

The foregoing instrument was acknowledged before me this _____ day of _____, 2025 by _____ as _____ of The City of Arvada.

My commission Expires: _____
(Seal) _____ Notary Public

**EXHIBIT A
PERMANENT EASEMENT -
LOT G ARVADA GARDENS**

Aug 18, 2025
Sheet 1 of 2

A parcel of land located in the northwest quarter (NW 1/4) of Section 11, Township 3 South, Range 69 West, of the 6th Principal Meridian, County of Jefferson, State of Colorado, being a portion of Lot G, Arvada Gardens as recorded at Reception No. 2020160097, of the Jefferson County Clerk and Recorder's office, being more particularly described as follows:

Notes:

1. **Basis of Bearings:** The east line of lot G, Arvada Gardens, assumed to bear S 00°12'11" E.
2. All linear distances shown hereon are in U.S. Survey Feet.
3. This is not a monumented land survey.

Commencing at the northeast corner of said Lot G;

Thence along the east line of said Lot G, S 00°12'11" E, a distance of 114.11 feet to a point on the east line of said Lot G, and the **Point of Beginning**;

Thence continuing along the east line of said Lot G, S 00°12'11" E, a distance of 76.49 feet;

Thence S 89°47'49" W, 45.97 feet;

Thence N 00°12'11" W, 45.45 feet;

Thence N 82°40'24" W, 249.17 feet;

Thence N 07°19'36" E, 10.00 feet;

Thence S 82°40'24" E, 257.94 feet;

Thence S 00°12'11" E, 44.21 feet;

Thence N 89°47'49" E, 25.97 feet;

Thence N 00°12'11" W, 57.42 feet;

Thence N 84°36'47" W, 11.78 feet;

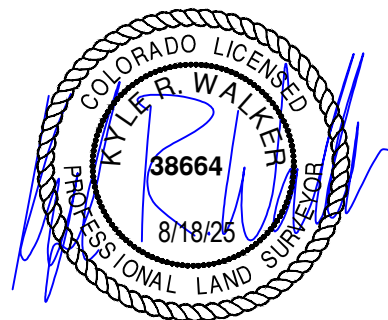
Thence N 05°23'13" E, 10.00 feet;

Thence S 84°36'47" E, 20.85 feet; to the **Point of Beginning**.

As shown on Exhibit A, sheet 2 of 2, attached hereto and made a part hereof.

Said parcel contains an area of 0.10 Acres or 4,176.26 square feet more or less.

The author of this description is Kyle R. Walker, PLS 38664, prepared on behalf of Topographic Co., 520 Stacy Ct, Unit B, Lafayette, CO 80026, under job number 1015949 for Xcel Energy.

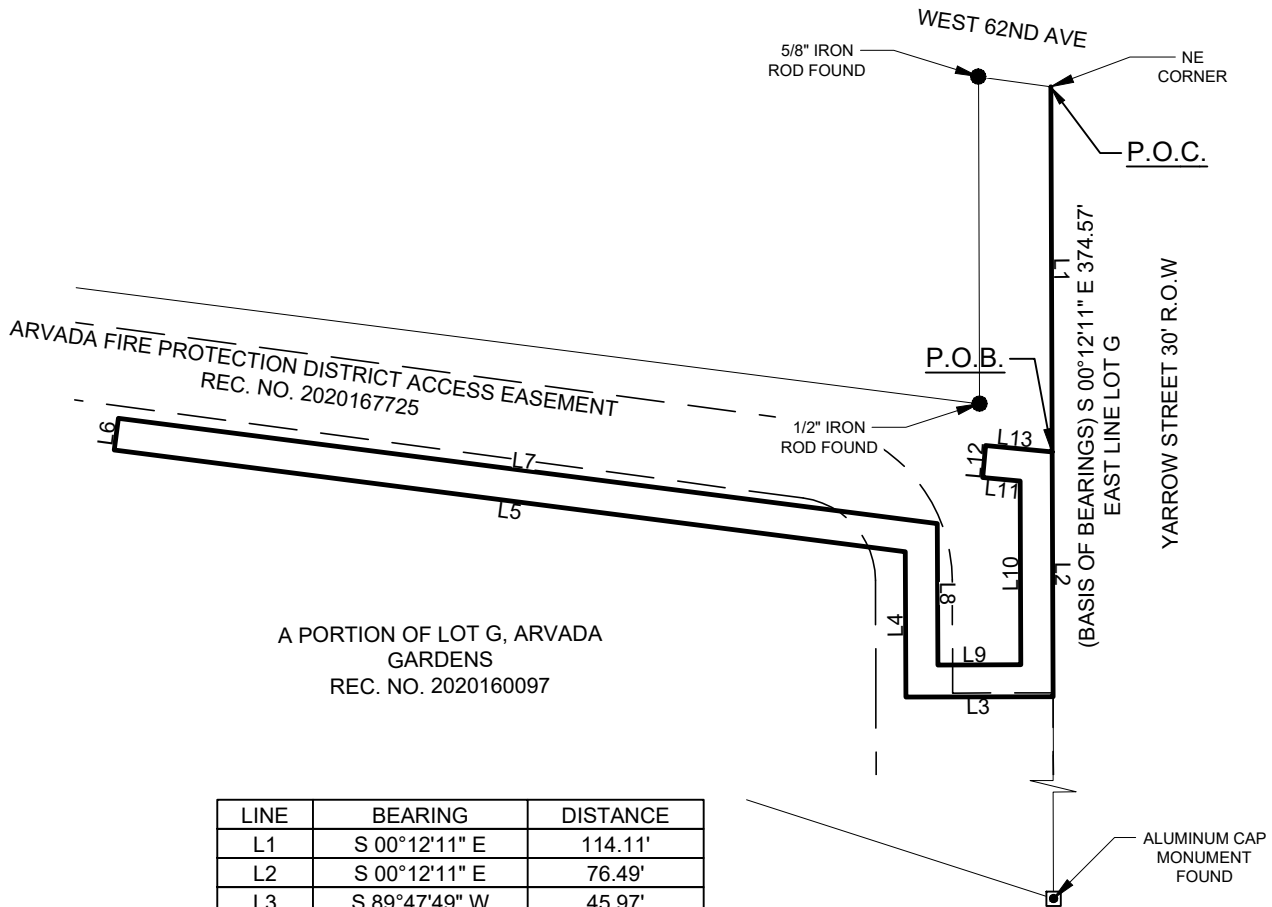


Kyle R. Walker, P.L.S. No. 38664

EXHIBIT A PERMANENT EASEMENT - LOT G ARVADA GARDENS

NW 1/4 S11, T3S, R69W, 6TH P.M.
0.10 ACRES ±

Aug 18, 2025
Sheet 2 of 2



LINE	BEARING	DISTANCE
L1	S 00°12'11" E	114.11'
L2	S 00°12'11" E	76.49'
L3	S 89°47'49" W	45.97'
L4	N 00°12'11" W	45.45'
L5	N 82°40'24" W	249.17'
L6	N 07°19'36" E	10.00'
L7	S 82°40'24" E	257.94'
L8	S 00°12'11" E	44.21'
L9	N 89°47'49" E	25.97'
L10	N 00°12'11" W	57.42'
L11	N 84°36'47" W	11.78'
L12	N 05°23'13" E	10.00'
L13	S 84°36'47" E	20.85'



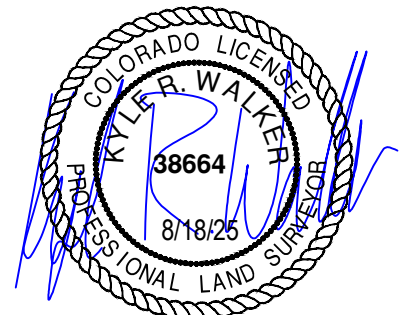
SCALE: 1" = 60'
0' 30' 60'

TOPOGRAPHIC
LOYALTY INNOVATION LEGACY
520 STACY COURT, UNIT B • LAFAYETTE, CO 80026
TELEPHONE: (303) 666-0379 • FAX (817) 744-7554
WWW.TOPOGRAPHIC.COM

JOB NO: 1015949

NOTES:

1. ORIGINAL DOCUMENT SIZE: 8.5" X 11"
2. ADJOINER INFORMATION SHOWN FOR INFORMATIONAL PURPOSES ONLY.
3. P.O.B. = POINT OF BEGINNING
4. P.O.C. = POINT OF COMMENCEMENT
5. THIS IS NOT A LAND SURVEY NOR A LAND SURVEY PLAT.



Kyle R. Walker, P.L.S. No. 38664



REPORT TO CITY COUNCIL RESOLUTION

AGENDA ITEM
8.A.7.

TO: THE HONORABLE CITY COUNCIL

DATE: October 7, 2025

SUBJECT: R25-091, A Resolution Granting Non-Exclusive Public Utility Easements To The Public Service Company Of Colorado (Xcel Energy) To Construct, Operate, Maintain, Repair, And Replace Utility Lines At City Hall

Report in Brief

PRESENTER: Michael Hodyno

The applicant, Public Service Company of Colorado (Xcel Energy), is requesting that the City grant a Non-Exclusive Public Utility Easement at City Hall. An easement grants Xcel Energy the legal right to install electrical infrastructure on the City's property. This easement is required to support the installation of up to eight electric vehicle charging ports.

The Arvada team recommends that the City Council approve R25-091, A Resolution Granting A Non-Exclusive Public Utility Easement To The Public Service Company of Colorado To Construct, Operate, Maintain, Repair, And Replace Utility Lines At City Hall.

Financial Impact

There is no fiscal impact to the City.

Background

At the end of 2024, Resolution R24-119 was passed to install electric vehicle chargers at various locations throughout the City. Four of these locations need additional electrical infrastructure installed to support the power requirements utilized by these vehicle chargers. A utility easement is required by Xcel Energy to install the power lines and transformers as these components will run through City property.

Xcel Energy has completed the design, cost estimates, and processed the rebate applications for City Hall. The cost of installation and materials for this project is \$51,736.68. However, rebates have been granted to cover the entire cost of this project.

Discussion

The utility easement will allow Xcel Energy to extend power lines to the site for the increased power requirements. The new electrical infrastructure will be a new loop power feed starting and ending from West 59th Ave. This new transformer will feed up to (6) 80 amp electrical vehicle chargers and (2) 120 amp chargers.

Public Contact

Posting of the City Council Agenda

Commission Recommendation

N/A

Strategic Alignment

This project and easement is aligned with the Infrastructure Work System of the City Council Strategic Plan. Specifically, the recommended actions support the following principle:

INF2 - *Invests in and maintains safe, resilient, accessible, and environmentally efficient facilities and fleet vehicles*

Alternative Courses of Action

N/A

Recommendation for Action

The Arvada team recommends that the City Council approve R25-091, A Resolution Granting A Non-Exclusive Public Utility Easement To The Public Service Company of Colorado To Construct, Operate, Maintain, Repair, And Replace Utility Lines At City Hall.

Suggested Motion:

I move that R25-091, A Resolution Granting A Non-Exclusive Public Utility Easement To The Public Service Company of Colorado (Xcel Energy) To Construct, Operate, Maintain, Repair, and Replace Utility Lines At City Hall, be (approved) (rejected).

Prepared by:
Michael Hodyno, Project Manager of City Facilities

Reviewed by:

Approved by:

Kim Vagher, Manager of City Facilities	09/15/2025
Jacqueline Rhoades, Director of Infrastructure	09/16/2025
Bryan Archer, Chief Financial Officer	09/16/2025
Tammy Hedlund, Legal Specialist	09/18/2025
Zachary Woolweaver, Assistant City Attorney I	09/18/2025
Rachel Morris, City Attorney	09/18/2025
Alli Scheck, Deputy City Manager	09/24/2025
Don Wick, City Manager	09/25/2025

Enclosure, exhibits & attachments required to support the report

RESOLUTION NO. R25-091

A RESOLUTION GRANTING NON-EXCLUSIVE PUBLIC UTILITY EASEMENTS TO THE PUBLIC SERVICE COMPANY OF COLORADO (XCEL ENERGY) TO CONSTRUCT, OPERATE, MAINTAIN, REPAIR, AND REPLACE UTILITY LINES AT CITY HALL

BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF ARVADA, COLORADO:

Section 1. The Mayor or Mayor Pro Tem is authorized to sign and the City Clerk to attest, in form approved by the City Attorney, non-exclusive utility easements to Public Service Company of Colorado (Xcel Energy) to Construct, Operate, Maintain, Repair, and Replace Utility Lines at City Hall.

Section 2. This resolution shall be effective upon its approval by the City Council.

APPROVED AND ADOPTED this 7th day of October, 2025.

Lauren Simpson, Mayor

ATTEST:

City Clerk

APPROVED AS TO FORM:
Rachel A. Morris, City Attorney

By: _____

S-T-R: SW1/4 of Sec. 11, T3S – R69W	Grantor: City of Arvada	Doc No:
County: Jefferson	Address/Intersection: 8001 Ralston Road	Reception No:
Division-City/Town: NMR-Arvada	Dist/HP Trans: Distribution	Surveyor:
Division Agent: Cheryl L. Diedrich	Contract Agent/Co: Gil Sandoval/Percheron	Survey Company:
LAT & LONG GPS: 39.803234095955844, / -105.08792138516117		

**PUBLIC SERVICE COMPANY OF COLORADO
ELECTRIC EASEMENT**

The undersigned Grantor (whether one or more) hereby acknowledges receipt of good and valuable consideration from PUBLIC SERVICE COMPANY OF COLORADO (Company), 1800 Larimer Street, Attn: Right-of-Way and Permits Dept., Denver, Colorado, 80202, in consideration of which Grantor hereby grants unto said Company, its successors and assigns, a non-exclusive easement (“Easement”) for electric utility lines and related communication signals and electric vehicle charging stations on, through, over, under, across, and along a course as said lines may be hereafter constructed in **a Parcel of Land**, in the **SW1/4** of Section **11**, Township **3S**, Range **69W** of the **6th** Principal Meridian P.M. in the following lands located in **Jefferson** County, in the city of **Arvada**, State of **Colorado**, the easement being described as follows (“Easement Area”):

See “EXHIBIT A” attached hereto and incorporated herein by this reference.

Upon completion of the installation, Grantor, at its sole cost and expense shall have a survey to be made to the utility lines, as constructed. Grantor and Company shall thereafter agree on a legal description for the easement based on the survey. Company will then re-record this easement with updated As-built survey legal description and sketch.

Together with the right (i) to enter upon said premises, to survey, construct, install, operate, repair, remove, replace, reconstruct, alter, relocate, patrol, inspect, improve, enlarge, remove, maintain and use electric lines and related communication facilities, including towers, poles, and other supports; together with braces, guys, anchors, cross-arms, cables, conduits, wires, conductors, manholes, transformers, and other fixtures, devices, and appurtenances used or useful in connection therewith and all service panels, conduit, wiring, and associated fixtures and devices used or useful for the operation, service, and connection of electric vehicle charging equipment (collectively the **“Facilities”**), and (ii) to remove objects interfering therewith, including the trimming or felling of trees and bushes, and (iii) to use so much of the adjoining premises of Grantor during surveying, construction, maintenance, repair, removal, or replacement of said Facilities and related fixtures and devices as may be required to permit the operation of standard utility construction or repair machinery.

The Grantor reserves the right to use and occupy the Easement Area for any purpose consistent with the rights and privileges above granted and which will not interfere with or endanger any of the said Company's Facilities therein or use thereof. Such reservations by Grantor shall in no event include the right to erect or cause to be erected any buildings or structures upon the easement granted or to locate any mobile home or trailer units thereon. No other objects shall be erected, placed, or permitted to remain on, under, or over the Easement Area, which will or may interfere with the Facilities installed on the Easement Area or interfere with the exercise of any of the rights herein granted. Grantor shall not, without the prior written approval of Company, alter the existing ground elevations or change the compaction of the soil on the Easement Area. No failure by Company to remove or otherwise raise an objection to any objects or improvements located or installed on the Easement Area by Grantor, shall be deemed to constitute consent on the part of Company to such improvements or objects, nor a waiver of Company's rights regarding removal of any such improvements or objects.

Grantor agrees to contact the Utility Notification Center of Colorado (1-800-922-1987), or any similar one-call utility line locator system which may replace or supplement it, at least four (4) business days (or such longer time if required by applicable law) prior to the commencement of construction or excavation of the Easement Area to arrange for field locating of Facilities.

Grantor shall disclose to Company any pre-existing waste materials (“Pre-Existing Wastes”), that Grantor knows or reasonably suspects to be present in soils, water (surface or groundwater), vapors or air, whether on, in, above, migrating to or from, or under the Easement Area and any other information that would help Company assess the risks of working in the area. Company shall have the right to perform environmental sampling in the Easement Area at its discretion. If Company encounters any Pre-Existing Wastes, Company retains the right to stop work and may choose to exercise that right. Grantor shall retain its obligations to comply with all applicable laws and regulations related to such Pre-Existing Wastes. Grantor shall release Company from any claims or responsibilities related to such Pre-Existing Wastes.

In case of the permanent abandonment of the easement, all right, privilege, and interest granted shall terminate.

The work of installing and maintaining the Facilities shall be done with care. Following completion of construction or maintenance of its Facilities on the Easement Area, the Company shall restore the surface of the Easement Area to as near a condition as existed prior to such work as is reasonably practicable, taking into account, among other things, the existence of the Facilities and the restrictions stated in this Electric Easement.

The provisions of this Easement shall run with, be binding on and burden the Easement Area and shall bind and benefit the heirs, executors, administrators, personal representatives, successors, and assigns of Grantor and Company. The term “Grantor” includes the singular, plural, feminine, masculine and neuter.

Grantor warrants and represents that Grantor is the owner of the Easement and has the right to sell, transfer, convey, confirm and grant this Easement and the rights contained herein. This Easement is binding on Grantor, is not conditioned upon obtaining the

consent of any third party, and is not subject to any mortgages or liens, except those for which Grantor has provided Grantee with a consent and subordination agreement, executed by such mortgagee or lienholder and attached hereto.

This Easement incorporates all agreements between the parties as to the subject matter of this Easement, and no prior representations or statements, verbal or written, shall modify, supplement or change the terms of this Easement. This Easement consists of the document entitled "Electric Easement", and Exhibit(s) containing a legal description and a sketch depicting the legal description, if referenced above or attached hereto, and if attached hereto, a Consent and Subordination. No other exhibit, addendum, schedule or other attachment (collectively "**Addendum**") is authorized by Company, and no Addendum shall be effective and binding upon Company unless executed by an authorized representative of Company.

Signed this _____ day of _____, 2025

(Type or print name below each signature line with official title if corporation, partnership, etc.):

GRANTOR: **City of Arvada**, a Colorado municipal corporation

BY: _____
_____(print name)

ITS: _____

STATE OF COLORADO,)
)ss.
COUNTY OF _____)

The foregoing instrument was acknowledged before me this _____ day of _____, 2025
by [Grantor name(s) from above]:

Witness my hand and official seal.

My commission Expires _____
Notary Public _____

EXHIBIT “A”

AS-BUILT SURVEY TO BE DELIVERED AT COMPLETION OF
CONSTRUCTION

(Space Above Line for Recorder's Use Only)

RECORDING REQUESTED BY:

Sherman & Howard L.L.C.
633 Seventeenth Street, Suite 3000
Denver, Colorado 80202
Attn: Public Finance Department

AFTER RECORDING RETURN TO AND
MAIL TAX STATEMENT TO:

City of Arvada Finance Corporation
P.O. Box 8101
Arvada, Colorado 80001
Attention: City Manager

PURSUANT TO § 39-13-104(1)(a) COLORADO REVISED STATUTES, THIS DEED IS EXEMPT FROM THE DOCUMENTARY FEE.

SPECIAL WARRANTY DEED

SPECIAL WARRANTY DEED dated as of July 27, 2005 from CITY OF ARVADA FINANCE CORPORATION, a Colorado nonprofit corporation, as grantor hereunder, to CITY OF ARVADA, a Colorado municipal corporation, as grantee hereunder.

WITNESSETH

CITY OF ARVADA FINANCE CORPORATION, a Colorado nonprofit corporation, whose street address is 8101 Ralston Road, Arvada, Colorado 80002, for the consideration of One and 00/100 Dollars (\$1.00) and other good and valuable consideration, in hand paid, hereby sells and conveys to CITY OF ARVADA, a Colorado municipal corporation, whose street address is 8101 Ralston Road, Arvada, Colorado 80002 the real property described in Exhibit A attached hereto and incorporated herein by this reference with all its appurtenances and warrants the title to the same against all persons claiming under it, SUBJECT TO the title exceptions set forth in Exhibit B attached hereto and incorporated herein by this reference.

IN WITNESS WHEREOF, CITY OF ARVADA FINANCE CORPORATION has caused this Special Warranty Deed to be executed in its name and the seal thereof to be affixed hereto and attested by its authorized officers all as of the date first above written.

(SEAL)



Attest: [Signature]
Secretary-Treasurer

CITY OF ARVADA FINANCE
CORPORATION,
as Grantor

By: [Signature]
President

110419810
HTC

STATE OF COLORADO)
) ss.
COUNTY OF Jefferson)

The foregoing instrument was acknowledged and executed before me this 22nd day of July, 2005 by Craig G. Kocian, as President, of the City of Arvada Finance Corporation.

WITNESS my hand and official seal.

My commission expires: 10/03/2007
(SEAL)

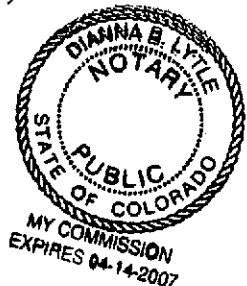
Shirley D. Perry
Notary Public

STATE OF COLORADO)
) ss.
COUNTY OF Jefferson)

The foregoing instrument was acknowledged and executed before me this 22nd day of July, 2005 by Steven Camins, as Secretary-Treasurer, of the City of Arvada Finance Corporation.

WITNESS my hand and official seal.

My commission expires: 04-14-2007
(SEAL)



Diana B Lytle
Notary Public

EXHIBIT A

(LEGAL DESCRIPTION OF THE PROPERTY)

A PARCEL SITUATED IN THE EAST ONE-HALF OF THE NORTHWEST ONE-QUARTER OF THE SOUTHWEST ONE-QUARTER (E $\frac{1}{2}$, NW $\frac{1}{4}$, SW $\frac{1}{4}$) OF SECTION 11, TOWNSHIP 3 SOUTH, RANGE 69 WEST OF THE SIXTH PRINCIPAL MERIDIAN, IN THE CITY OF ARVADA, COUNTY OF JEFFERSON, STATE OF COLORADO, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

THE SOUTH 818 FEET OF SAID EAST $\frac{1}{2}$, NORTHWEST $\frac{1}{4}$, SOUTHWEST $\frac{1}{4}$ OF SECTION 11, EXCEPTING THE FOLLOWING:

- 1) THE SOUTH 30 FEET THEREOF;
- 2) THE EAST 20 FEET OF THE NORTH 275 FEET OF THE SOUTH 305 FEET THEREOF;
- 3) THE NORTH 240 FEET OF THE SOUTH 417.5 FEET OF THE WEST 270 FEET OF THE EAST 290 FEET THEREOF;
- 4) AND ANY PORTION THEREOF LYING WITHIN OGILVIE SUBDIVISION, AS RECORDED IN PLAT BOOK 12, PAGE 37, OF THE JEFFERSON COUNTY RECORDS;

SAID PARCEL CONTAINING 9.69 ACRES, MORE OR LESS.

S-T-R: SW 1/4 of Sec. 11, T3S – R69W	Grantor: City of Arvada	Doc No:
County: Jefferson	Address/Intersection: 8101 Ralston Road	Reception No:
Division-City/Town: DMR - Arvada	Dist/HP Trans: Dist	Surveyor:
Division Agent: Cheryl Diedrich	Contract Agent/Co: Gil Sandoval/Percheron	Author:
LAT & LONG GPS: 39.803234095955844, / -105.08792138516117		

PUBLIC SERVICE COMPANY OF COLORADO UTILITY EASEMENT

The undersigned Grantor (whether one or more) hereby acknowledges receipt of good and valuable consideration from PUBLIC SERVICE COMPANY OF COLORADO (Company), in consideration of which Grantor(s) hereby grants unto said Company, its successors and assigns, a non-exclusive easement (“**Easement**”) for utility lines, and all fixtures and devices used or useful in the operation of the same, on, through, over, under, across, and along a course as said lines may be hereafter constructed in a **Parcel of Land**, in the **SW1/4** of Section **11**, Township **3 South**, Range **69 West** of the 6th Principal Meridian in the following lands located in County of Jefferson, State of Colorado, the easement being described as follows (“**Easement Area**”):

See “EXHIBIT A” attached hereto and incorporated herein by this reference.

Upon completion of the installation, Grantor, at its sole cost and expense shall have a survey to be made to the utility lines, as constructed. Grantor and Company shall thereafter agree on a legal description for the easement based on the survey. Company will then re-record this easement with updated As-built survey legal description and sketch.

A non-exclusive easement over, under, through and across Exhibit A for the construction, operation, maintenance, repair and replacement of gas and electric distribution systems and appurtenances thereto as may be necessary to provide such services within this development or property contiguous thereto. Excepting building envelopes as they are shown on the final recorded site plan.

Grantor, upon completion of the installation, at Grantor’s sole cost and expense, shall have the option to cause a survey to be made of the utility lines as constructed. Grantor and Company shall, thereafter, agree on a legal description for the easement, based on the survey, which easement shall be 8’ for electrical utility lines, 15’ x 15’ for transformers, 20’ X 20’ for switch cabinets and 6’ for gas main, as installed. An easement may also be required along all lot lines. Grantor shall thereafter execute and deliver to Company a replacement easement in the same form as this easement conveying to Company an easement through, over, under, across, and along the surveyed legal description. Upon receipt of said executed easement, this easement shall be quit claimed to the property owner.

Together with the right (i) to enter upon said premises, to survey, construct, install, operate, repair, remove, replace, reconstruct, alter, relocate, patrol, inspect, improve, enlarge, remove, maintain and use utility lines and all related facilities, other fixtures, devices, and appurtenances used or useful in connection therewith (collectively the “**Facilities**”), and (ii) to remove objects interfering therewith, including the trimming or felling of trees and bushes, and (iii) to use so much of the adjoining premises of Grantor during surveying, construction, maintenance, repair, removal, or replacement of said Facilities and related fixtures and devices as may be required to permit the operation of standard utility construction or repair machinery.

The Grantor reserves the right to use and occupy the Easement Area for any purpose consistent with the rights and privileges above granted and which will not interfere with or endanger any of the said Company’s Facilities therein or use thereof. Such reservations by Grantor shall in no event include the right to erect or cause to be erected any temporary or permanent buildings, structures (including without limitation trailers or mobile homes), signs, or wells on, under, or over the Easement Area. No other objects shall be erected, placed, or permitted to remain on, under, or over the Easement Area, which will or may interfere with the Facilities installed on the Easement Area or interfere with the exercise of any of the rights herein granted. No failure by Company to remove or otherwise raise an objection to any objects or improvements located or installed on the Easement Area by Grantor, shall be deemed to constitute consent on the part of Company to such improvements or objects, nor a waiver of Company’s rights regarding removal of any such improvements or objects.

Grantor agrees to contact the Call Before You Dig - Utility Notification Center of Colorado (811 or 1-800-922-1987), or any similar one-call utility line locator system which may replace or supplement it, at least four (4) business days (or such longer time if required by applicable law) prior to the commencement of construction, excavation, or digging of the Easement Area to arrange for field locating of Facilities.

Grantor shall disclose to Company any pre-existing waste materials (“Pre-Existing Wastes”), that Grantor knows or reasonably suspects to be present in soils, water (surface or groundwater), vapors or air, whether on, in, above, migrating to or from, or under the Easement Area and any other information that would help Company assess the risks of working in the area. Company shall have the right to perform environmental sampling in the Easement Area at its discretion. If Company encounters any Pre-Existing Wastes, Company retains the right to stop work and may choose to exercise that right. Grantor shall retain its obligations to comply with all applicable laws and regulations related to such Pre-Existing Wastes. Grantor shall release Company from any claims or responsibilities related to such Pre-Existing Wastes.

The work of installing and maintaining said lines and fixtures shall be done with care; the surface along the easement area and any adjoining premises used by Company shall be restored substantially to its original level and condition following completion of Company activities, taking into account, among other things, the existence of the Facilities and the restrictions stated in this Easement.

The provisions of this Easement shall run with, be binding on and burden the Easement Area and shall bind and benefit the heirs, executors, administrators, personal representatives, successors, and assigns of Grantor and Company. Non-use or a limited use of the Easement Area shall not prevent Grantee from thereafter making use of the Easement Area to the full extent herein authorized.

Grantor warrants and represents that Grantor is the owner of the Easement and has the right to sell, transfer, convey, confirm and grant this Easement and the rights contained herein. This Easement is binding on Grantor, is not conditioned upon obtaining the consent of any third party.

This Easement incorporates all agreements between the parties as to the subject matter of this Easement, and no prior representations or statements, verbal or written, shall modify, supplement or change the terms of this Easement. This Easement consists of the document entitled “Utility Easement”, and Exhibit(s) containing a legal description and a sketch depicting the legal description, if referenced above or attached hereto. No other exhibit, addendum, schedule or other attachment (collectively “**Addendum**”) is authorized by Company, and no Addendum shall be effective and binding upon Company unless executed by an authorized representative of Company.

Signed this _____ day of _____, 2025

(Type or print name below each signature line with official title if corporation, partnership, etc.):

GRANTOR: **City of Arvada**, a Colorado municipal corporation

BY: _____
_____(print name)

ITS: _____

STATE OF _____)
)ss
COUNTY OF _____)

The foregoing instrument was acknowledged before me this _____ day of _____, 2025 by [Grantor name(s) from above]:

My commission Expires _____

EXHIBIT “A”

AS-BUILT SURVEY TO BE DELIVERED AT COMPLETION OF
CONSTRUCTION

(Space Above Line for Recorder's Use Only)

RECORDING REQUESTED BY:

Sherman & Howard L.L.C.
633 Seventeenth Street, Suite 3000
Denver, Colorado 80202
Attn: Public Finance Department

AFTER RECORDING RETURN TO AND
MAIL TAX STATEMENT TO:

City of Arvada Finance Corporation
P.O. Box 8101
Arvada, Colorado 80001
Attention: City Manager

PURSUANT TO § 39-13-104(1)(a) COLORADO REVISED STATUTES, THIS DEED IS EXEMPT FROM THE DOCUMENTARY FEE.

SPECIAL WARRANTY DEED

SPECIAL WARRANTY DEED dated as of July 27, 2005 from CITY OF ARVADA FINANCE CORPORATION, a Colorado nonprofit corporation, as grantor hereunder, to CITY OF ARVADA, a Colorado municipal corporation, as grantee hereunder.

WITNESSETH

CITY OF ARVADA FINANCE CORPORATION, a Colorado nonprofit corporation, whose street address is 8101 Ralston Road, Arvada, Colorado 80002, for the consideration of One and 00/100 Dollars (\$1.00) and other good and valuable consideration, in hand paid, hereby sells and conveys to CITY OF ARVADA, a Colorado municipal corporation, whose street address is 8101 Ralston Road, Arvada, Colorado 80002 the real property described in Exhibit A attached hereto and incorporated herein by this reference with all its appurtenances and warrants the title to the same against all persons claiming under it, SUBJECT TO the title exceptions set forth in Exhibit B attached hereto and incorporated herein by this reference.

IN WITNESS WHEREOF, CITY OF ARVADA FINANCE CORPORATION has caused this Special Warranty Deed to be executed in its name and the seal thereof to be affixed hereto and attested by its authorized officers all as of the date first above written.

(SEAL)



Attest: [Signature]
Secretary-Treasurer

CITY OF ARVADA FINANCE
CORPORATION,
as Grantor

By: [Signature]
President

110419810
HTC

STATE OF COLORADO)
) ss.
COUNTY OF Jefferson)

The foregoing instrument was acknowledged and executed before me this 22nd day of July, 2005 by Craig G. Kocian, as President, of the City of Arvada Finance Corporation.

WITNESS my hand and official seal.

My commission expires: 10/03/2007
(SEAL)

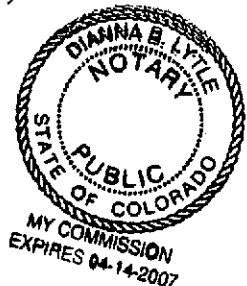
Sheila D. Perry
Notary Public

STATE OF COLORADO)
) ss.
COUNTY OF Jefferson)

The foregoing instrument was acknowledged and executed before me this 22nd day of July, 2005 by Steven Camins, as Secretary-Treasurer, of the City of Arvada Finance Corporation.

WITNESS my hand and official seal.

My commission expires: 04-14-2007
(SEAL)



Diana B Lytle
Notary Public

EXHIBIT A

(LEGAL DESCRIPTION OF THE PROPERTY)

A PARCEL SITUATED IN THE EAST ONE-HALF OF THE NORTHWEST ONE-QUARTER OF THE SOUTHWEST ONE-QUARTER (E $\frac{1}{2}$, NW $\frac{1}{4}$, SW $\frac{1}{4}$) OF SECTION 11, TOWNSHIP 3 SOUTH, RANGE 69 WEST OF THE SIXTH PRINCIPAL MERIDIAN, IN THE CITY OF ARVADA, COUNTY OF JEFFERSON, STATE OF COLORADO, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

THE SOUTH 818 FEET OF SAID EAST $\frac{1}{2}$, NORTHWEST $\frac{1}{4}$, SOUTHWEST $\frac{1}{4}$ OF SECTION 11, EXCEPTING THE FOLLOWING:

- 1) THE SOUTH 30 FEET THEREOF;
- 2) THE EAST 20 FEET OF THE NORTH 275 FEET OF THE SOUTH 305 FEET THEREOF;
- 3) THE NORTH 240 FEET OF THE SOUTH 417.5 FEET OF THE WEST 270 FEET OF THE EAST 290 FEET THEREOF;
- 4) AND ANY PORTION THEREOF LYING WITHIN OGILVIE SUBDIVISION, AS RECORDED IN PLAT BOOK 12, PAGE 37, OF THE JEFFERSON COUNTY RECORDS;

SAID PARCEL CONTAINING 9.69 ACRES, MORE OR LESS.



REPORT TO CITY COUNCIL RESOLUTION

AGENDA ITEM
8.B.1.

TO: THE HONORABLE CITY COUNCIL

DATE: October 7, 2025

SUBJECT: R25-092, A Resolution Approving the Submission of the First Substantial Amendment to the 2024 Annual Action Plan for the Community Development Block Grant ("CDBG") Program to Reprogram Allocated CDBG Funds

Report in Brief

Presenter: Carrie Espinosa

This agenda item includes consideration of a resolution that details the First Substantial Amendment to the 2024 Annual Action Plan for 2024 Community Development Block Grant ("CDBG") funding. The purpose of the substantial amendment is to reprogram funds from the Essential Home Repairs Program to the Beyond Home rehabilitation project. The Essential Home Repairs Program has sufficient budget to allow the reprogramming of funds to a new project and still continue to support homeowner rehabilitation.

The Arvada team recommends that the City Council approve R25-092, A Resolution Approving the Submission of the First Substantial Amendment to the 2024 Annual Action Plan for the Community Development Block Grant ("CDBG") Program to Reprogram Allocated CDBG Funds.

Financial Impact

The purpose of this resolution is to reprogram funds for a different project. There is no financial impact related to the total amount of grant funding received from HUD.

Background

The U.S. Department of Housing and Urban Development (HUD) requires all entitlement communities receiving Community Development Block Grant (CDBG) funds, such as the City of Arvada, to prepare and submit a Consolidated Plan every five years to establish a unified, strategic vision for economic development, housing and community development actions. The Consolidated Plan encompasses the analysis of local community needs and coordinates appropriate responses to those needs and priorities. The Consolidated Plan is carried out through Annual Action Plans which provide a concise summary of the actions, activities, and the specific federal and non-federal resources that will be used each year to address the priority needs and specific goals identified in the Consolidated Plan. The City must submit an Annual Action Plan to HUD by no later than April 15 of each year during the five-year period (unless otherwise specified by HUD). The Arvada City Council adopted the 2024 Action Plan ("Action Plan") on December 4, 2023 and submitted the document to HUD before the required deadline date. Per the City's Citizen Participation Plan (CPP), a Substantial Amendment to a Consolidated Plan and Action Plan is required when a "substantial" change is proposed as it relates to funding priorities, proposed activities, goals and objectives. The Housing Division recommends the approval of a substantial amendment to the 2024 Annual Action Plan to support Beyond Home's rehabilitation project. This would be accomplished by reprogramming budget from the Essential Home Repairs program to support Beyond Home. The Essential Home Repairs Program has enough funding to support its projects through 2026 allowing remaining budget to be reprogrammed to a new project.

The draft amended 2024 Annual Action Plan is included in the agenda packet.

Discussion

The Community Development Block Grant (CDBG) provides the City with critical funding to support services and resources for low to moderate income Arvada residents. The recommended action facilitates the reprogramming of HUD resources that will support the rehabilitation of transitional housing at Beyond Home. Beyond Home provides a comprehensive, service-enriched housing program designed to help families achieve long-term self-sufficiency. Their model combines safe, stable housing with wraparound support that addresses the root causes of poverty and housing instability. Services include:

- **Affordable Housing:** BeyondHome owns and operates 37 housing units in Arvada, offering deeply affordable rental homes to families earning less than 30% of Area Median Income (AMI) at entry. Rent is income-based to ensure stability while participants pursue their goals, and participants never pay more than 30% of their income on rent, including utilities.
- **Case Management & Goal Planning:** Each family works with a dedicated case manager to create and implement personalized self-sufficiency plans. Focus areas include housing stability, education, employment, parenting, health, and personal finance.
- **Financial Education & Coaching:** Families receive support in budgeting, saving, reducing debt, increasing credit scores, and preparing for long-term goals like homeownership or post-secondary education.
- **Career Development:** Beyond Home assists participants in securing stable, living-wage employment through job readiness training, resume support, professional mentoring, and access to educational or vocational opportunities.
- **Youth & Family Services:** Beyond Home offers structured youth programming that supports academic achievement, emotional regulation, and social skills, along with family-centered programming that strengthens bonds and improves communication.
- **Counseling & Mental Health Support:** Families have access to individual and group counseling, trauma-informed support, and parenting workshops. These services help build emotional resilience and address the intergenerational impacts of poverty and trauma. Families do not pay for these services.
- **Community Engagement & Peer Support:** Through classes, group nights, and shared community events, families build supportive relationships and reduce social isolation.

Many of Beyond Home's housing units were built in the 1980s and 1990s and in need of significant renovations. Of the 37 units owned by Beyond Home, the oldest 22 require comprehensive updates to improve safety, energy and water efficiency, durability, and modern livability. Each unit receives critical updates including new HVAC, flooring, appliances, insulation, lighting, cabinetry, and plumbing fixtures.

Public Contact

A 30 day public comment period was held from August 25, 2025 to September 24, 2025. A public hearing on the amendment was held on September 15, 2025.

Commission Recommendation

N/A

Strategic Alignment

This agenda item supports the Arvada City Council Strategic Plan Housing Strategic Result: Improve access to diverse, safe and affordable housing options and programs, providing residents with opportunities to obtain housing that meets their needs in all phases of life.

Alternative Courses of Action

N/A

Recommendation for Action

SUBJECT: R25-092, A Resolution Approving the Submission of the First Substantial Amendment to the 2024 Annual Action Plan for the Community Development Block Grant ("CDBG") Program to Reprogram Allocated CDBG Funds

PAGE: 3
ITEM: 8.B.1.

The Arvada team recommends that the City Council approve R25-092, A Resolution Approving the Submission of the First Substantial Amendment to the 2024 Annual Action Plan for the Community Development Block Grant ("CDBG") Program to Reprogram Allocated CDBG Funds.

Suggested Motion:

I move that R25-092, A Resolution Approving the Submission of the First Substantial Amendment to the 2024 Annual Action Plan for the Community Development Block Grant ("CDBG") Program to Reprogram Allocated CDBG Funds, be (approved) (rejected).

Prepared by:

Carrie Espinosa, Manager of Housing Preservation and Resources

Reviewed by:

Approved by:

Carrie Espinosa, Manager of Housing Preservation and Resources	09/15/2025
Jessica Garner, Director of Community and Economic Development	09/16/2025
Gail Walker, Legal Specialist-Contracts	09/16/2025
Megan McCall, Assistant City Attorney II	09/18/2025
Rachel Morris, City Attorney	09/18/2025
Alli Scheck, Deputy City Manager	09/24/2025
Don Wick, City Manager	09/25/2025

Enclosure, exhibits & attachments required to support the report

RESOLUTION NO. R25-092

A RESOLUTION APPROVING THE SUBMISSION OF THE FIRST SUBSTANTIAL
AMENDMENT TO THE 2024 ANNUAL ACTION PLAN FOR THE COMMUNITY
DEVELOPMENT BLOCK GRANT (“CDBG”) PROGRAM TO
REPROGRAM ALLOCATED CDBG FUNDS

WHEREAS, on December 4, 2023, the City Council of the City of Arvada (the “City”) approved the submission of the 2024 Annual Action Plan for 2024 CDBG Funding to the U.S. Department of Housing and Urban Development (“HUD”); and

WHEREAS, HUD requires all entitlement communities receiving CDBG funds to prepare and submit a “Consolidated Plan” every five years to establish a unified, strategic vision for economic development, housing, and community development actions. The Consolidated Plan encompasses the analysis of local community needs and coordinates appropriate responses to those needs and priorities; and

WHEREAS, the Consolidated Plan is carried out through annual action plans which provide a concise summary of the actions, activities, and the specific federal and non-federal resources that will be used each year to address the priority needs and specific goals in the Consolidated Plan; and

WHEREAS, pursuant to Resolution No. R23-112, the 2024 Annual Action Plan was submitted to HUD and subsequently received approval by HUD; and

WHEREAS, per the City’s Citizen Participation Plan, a substantial amendment to an annual action plan is required when a “substantial” change is proposed as it relates to funding priorities, proposed activities, goals, and objectives; and

WHEREAS, a substantial amendment to the 2024 Annual Action Plan is necessary because it will allow the City to create a new program for the Beyond Home Rehabilitation Project and reprogram \$480,000 from the Essential Home Repair funding pool to this new program; and

WHEREAS, according to federal requirements, the City must submit a substantial amendment to the most recent annual action plan that has been approved by HUD, which is the 2024 Annual Action Plan; and

WHEREAS, following public notice of the First Substantial Amendment to the 2024 Annual Action Plan, the public comment period on the amendment was from August 25, 2025 through September 24, 2025 and a public hearing on the amendment was held on September 15, 2025 at 5:30 p.m. at City Hall in the Anne Campbell Room.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF ARVADA, COLORADO, AS FOLLOWS:

Section 1. That the City Council of the City of Arvada, Colorado approves the submission of

the First Substantial Amendment to the 2024 Annual Action Plan for CDBG funding to create a new program for the Beyond Home Rehabilitation Project and reprogram \$480,000 in unspent, available CDBG funds from the Essential Home Repair Program to the new program for the Beyond Home Rehabilitation Project; and

Section 2. That the City Council of the City of Arvada, Colorado directs that the First Substantial Amendment to the 2024 Annual Action Plan for the CDBG Program for the City of Arvada for 2024 CDBG funding be submitted to HUD; and

Section 3. That the City Council of the City of Arvada, Colorado designates the City Manager, or city staff that the City Manager may designate, to approve alterations, deletions, and/or additions to the First Substantial Amendment to the 2024 Annual Action Plan Submission for the CDBG Program for the City of Arvada, Colorado and the First Substantial Amendment to the 2024 Annual Action Plan for 2024 CDBG funding that may be necessitated in response to minimal HUD funding alterations, HUD requirements, subsequent HUD review, or citizen comments.

Section 4. This resolution shall be effective upon its approval by the City Council.

APPROVED AND ADOPTED this 7th day of October, 2025.

Lauren Simpson, Mayor

ATTEST:

City Clerk

APPROVED AS TO FORM:
Rachel A. Morris, City Attorney

By: _____

The purpose of this amendment is to reprogram CDBG funds from the Essential Home Repairs Program to the Beyond Home Rehabilitation Project.

Executive Summary

AP-05 Executive Summary - 24 CFR 91.200(c), 91.220(b)

1. Introduction

The Community Development Block Grant (CDBG) is a flexible federal funding source that the City of Arvada utilizes to address a wide range of unique community development needs. The City prioritizes activities that benefit low- and moderate-income persons. Activities may also be carried out which aid in the prevention or elimination of slums or blight, or certified activities that meet other community development needs having a particular urgency because existing conditions pose a serious and immediate threat to the health or welfare of the community, and where other financial resources are not available to meet such needs. CDBG funds may not be used for activities that do not meet these broad national objectives. The CDBG program ensures that decent, affordable housing is created and preserved, that services to the most vulnerable in the community are implemented, public facilities are sustained, and that economic development opportunities are supported. In accordance with the U.S. Department of Housing and Urban Development's (HUD) entitlement community requirements, City of Arvada prepared a five-year Consolidated Plan in order to implement Federal programs within the community for the period of January 1, 2020, to December 31, 2024. Each year the City of Arvada creates an Annual Action Plan to address the high-priority housing, public service, public facility, and economic development needs of the City, as outlined in City of Arvada's Consolidated Plan and Comprehensive Plan. The FY24 Annual Action Plan's program year runs from January 1, 2024, through December 31, 2024.

2. Summarize the objectives and outcomes identified in the Plan

This could be a restatement of items or a table listed elsewhere in the plan or a reference to another location. It may also contain any essential items from the housing and homeless needs assessment, the housing market analysis or the strategic plan.

The objectives and outcomes in the Plan are the same as those identified in the Consolidated Strategy and Plan Submission for Housing and Community Development Programs City of Arvada, Colorado 2020-2024. Arvada's goals for the 2024 Annual Action Plan period will primarily focus on serving low to moderate income homeowners with essential home repairs as well as assisting low income households through the human services grant program. Services offered through the essential home repairs

program will be performed by Brothers Redevelopment to provide necessary improvements to single-family homes owned by low income and elderly residents.

The City of Arvada will use \$78,000 of CDBG funding to support public service activities through the human services grant program.

3. Evaluation of past performance

This is an evaluation of past performance that helped lead the grantee to choose its goals or projects.

The programs and activities from 2023 were evaluated for past performance from the CAPER and that evaluation shows that the City has made good progress with good performance relative to the Consolidated Strategy and Plan Submission for Housing and Community Development Programs City of Arvada, Colorado 2020-2024.

4. Summary of Citizen Participation Process and consultation process

Summary from citizen participation section of plan.

The stakeholder and citizen participation process for the 2024 Annual Action Plan included the following:

Public hearing held on September 26, 2023 to gather input on community needs and proposed 2024 activities. A notice was published in the Arvada Press and on the City's website.

Public hearing held in-person on December 4, 2023 . Public notification was posted in both English and Spanish. The notice was published in the Arvada Press and posted on the city website.

A copy of the Annual Action Plan was made available at the City of Arvada Housing Division and posted on the website for comments. The public comment period began November 2, 2023 and ended December 1, 2023.

The First Substantial Amendment to the 2024 Annual Action Plan involved the following public comment period:

The City of Arvada offered a public comment period from August 25, 2025 through September 24, 2025 to gather input on reprogramming funds from the Single Family Rehabilitation Project to the Beyond Home transitional housing rehabilitation project. A public hearing will be held on September 15, 2025 at

5:30pm in the Anne Campbell Room at Arvada City Hall. Notice of the public hearing and public comment period was published in the Denver Post and on the City's website.

5. Summary of public comments

This could be a brief narrative summary or reference an attached document from the Citizen Participation section of the Con Plan.

No public comments were received during the 30 day public comment period from November 2, 2023 through December 1, 2023. No comments were received during the public hearing held on September 26, 2023. The plan will be updated if there are comments received during the December 4, 2023 public hearing.

6. Summary of comments or views not accepted and the reasons for not accepting them

No comments received.

7. Summary

PR-05 Lead & Responsible Agencies – 91.200(b)

1. Agency/entity responsible for preparing/administering the Consolidated Plan

Describe the agency/entity responsible for preparing the Consolidated Plan and those responsible for administration of each grant program and funding source.

Agency Role	Name	Department/Agency
CDBG Administrator	ARVADA	Housing Preservation and Resources

Table 1 – Responsible Agencies

Narrative (optional)

Consolidated Plan Public Contact Information

City of Arvada

8101 Ralston Rd

Arvada, CO 80002

Carrie Espinosa

720-898-7475

AP-10 Consultation – 91.100, 91.200(b), 91.215(l)

1. Introduction

The Arvada Citizen Participation Plan provides for and encourages citizen participation including involvement of low income residents where housing and community development funds may be spent as outlined in the Plan elements that follow. The City will take actions that are appropriate and reasonable for the participation of all residents including minorities and non-English speaking persons as well as persons with mobility, visual, or hearing impairments to participate in the development process of the Consolidated Strategy and Plan Submission for Housing and Community Development Programs.

Provide a concise summary of the jurisdiction’s activities to enhance coordination between public and assisted housing providers and private and governmental health, mental health and service agencies (91.215(l))

Prior to the process of preparing its five year Consolidated Plan, the City consulted with appropriate public agencies including internal City Departments by mailing a letter to such agencies notifying them of the Consolidated Plan process for the City and requesting their input. Maintenance of a mailing list of persons, agencies, or groups that have requested they be notified of when proposals for funding or review of the Consolidated Plan including the Action Plan: One Year Use of Funds will Occur. That list will be updated and utilized to mail notices prior to hearing dates as they occur.

Describe coordination with the Continuum of Care and efforts to address the needs of homeless persons (particularly chronically homeless individuals and families, families with children, veterans, and unaccompanied youth) and persons at risk of homelessness.

Maintenance of a mailing list of persons, agencies, or groups that have requested they be notified of when proposals for funding or review of the Consolidated Plan including the Action Plan: One Year Use of funds will occur. That list will be updated and utilized to mail notices prior to hearing dates as they occur. Prior to the process of preparing its five year Consolidated Plan, the City consulted with appropriate social service agencies the housing needs of children, minorities, the elderly, the disabled, the homeless, and other special populations within the community by mailing a letter to such agencies notifying them of the Consolidated Plan process for the City and requesting their participation. The following information and assistance was directly requested from 48 separate social service, housing and special needs agencies or nonprofit groups or agencies serving the disadvantaged in the community and region:

The City of Arvada would like to invite your participation in the preparation of the City 2024 Annual Action Plan. We would like to request written input on what your agency or group perceives to be specific housing and community development needs within the City of Arvada. We would like to especially request information on the needs of Children, Minority Groups, the Elderly, the

Disabled (including persons with HIV/AIDS and their families), the Homeless, and other members of the community with special needs. We would also like to request any specific data you may have relative to size, income, ethnicity and characteristics of these special needs populations along with the source of data. In addition the City would like to request your input on strategies or approaches you would recommend to help address Arvada's housing and community development needs.

Describe consultation with the Continuum(s) of Care that serves the jurisdiction's area in determining how to allocate ESG funds, develop performance standards for and evaluate outcomes of projects and activities assisted by ESG funds, and develop funding, policies and procedures for the operation and administration of HMIS

Varied activities and funding applications by MDHI entities are reviewed for compliance with the City Consolidated Plan.

2. Describe Agencies, groups, organizations and others who participated in the process and describe the jurisdiction's consultations with housing, social service agencies and other entities

Table 2 – Agencies, groups, organizations who participated

1	Agency/Group/Organization	City of Arvada Human Services Advisory Committee
	Agency/Group/Organization Type	Services - Housing Services-Children Services-Elderly Persons Services-Persons with Disabilities Services-Victims of Domestic Violence Services-homeless Services-Health Services-Education Services-Employment Service-Fair Housing Services - Victims Other government - Local
	What section of the Plan was addressed by Consultation?	Homeless Needs - Chronically homeless Homeless Needs - Families with children Homelessness Needs - Veterans Homelessness Needs - Unaccompanied youth Non-Homeless Special Needs
	Briefly describe how the Agency/Group/Organization was consulted. What are the anticipated outcomes of the consultation or areas for improved coordination?	City of Arvada Human Services Advisory Committee considers all applications for CDBG human services requests from the private nonprofit sector for potential use of CDBG and City human services funding support. The Committee makes recommendations to the City Council regarding those requests.
2	Agency/Group/Organization	Jefferson County Public Health
	Agency/Group/Organization Type	Health Agency Agency - Emergency Management

	What section of the Plan was addressed by Consultation?	Homeless Needs - Chronically homeless
	Briefly describe how the Agency/Group/Organization was consulted. What are the anticipated outcomes of the consultation or areas for improved coordination?	The City of Arvada Resiliency Coordinator meets regularly with Jeffco Public Health to discuss emergency and public health related needs. During peak times of COVID, the City would coordinate with Jeffco Public Health for resources for individuals experiencing homelessness to address emergency shelter needs. The Resiliency Coordinator also meets with other Jeffco jurisdictions for discussions related to extreme cold weather/artic blast sheltering and migrant needs related to shelter. Anticipated outcomes of the consultation is partnership and collaboration with other jurisdictions to support homeless and migrant sheltering.
3	Agency/Group/Organization	Comcast
	Agency/Group/Organization Type	Services - Broadband Internet Service Providers Services - Narrowing the Digital Divide
	What section of the Plan was addressed by Consultation?	Housing Need Assessment

	Briefly describe how the Agency/Group/Organization was consulted. What are the anticipated outcomes of the consultation or areas for improved coordination?	The City of Arvada is partnering with Comcast to install broadband fiber to extensive areas throughout the City. The purpose of the partnership is to increase connectivity for various entities including Jeffco Public Schools. There are several schools in Arvada that serve a majority of students that fall into the low/moderate income category including Arvada K-8, Lawrence Elementary and Foster Elementary. Students at these schools will now benefit from state of the art broadband services. Additionally, the City is in discussion with Comcast as well as other broadband internet providers to discuss diversity, equity and inclusion issues related to internet connectivity and how those gaps can be filled. Rick Assmus, City of Arvada Community Connectivity Manager and President of the National Association of Telecommunications Officers and Advisors (NATOA), is leading the discussions with Comcast and other businesses on how the City can be part of the filling the gap. Thesediscussions are in the preliminary stages and the next steps for the City's involvement is forthcoming.
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Identify any Agency Types not consulted and provide rationale for not consulting

Other local/regional/state/federal planning efforts considered when preparing the Plan

Name of Plan	Lead Organization	How do the goals of your Strategic Plan overlap with the goals of each plan?
Continuum of Care	Metro Denver Homeless Initiative	Varied activities and funding applications by MDHI entities are reviewed for compliance with the City Consolidated Plan
City of Arvada Comprehensive Plan	City of Arvada	The City Comprehensive Plan is closely coordinated with, depends upon, and overlaps a large portion of the Consolidated Plan

Name of Plan	Lead Organization	How do the goals of your Strategic Plan overlap with the goals of each plan?
Language Assistance Plan	City of Arvada	The LAP provides for specific action items the City will Housing Preservation and ResourcesDivision will undertake as part of its program operations

Table 3 – Other local / regional / federal planning efforts

Narrative (optional)

The City of Arvada did consult with local emergency management organizations including Jefferson County Public Health regarding concerns of emergency shelter for people experiencing homelessness. Options for emergency shelter during cold winter months include partnerships with faith-based organizations and other local jurisdictions. The City has completed extensive studies related to water resources in the community to address and plan for future water needs. The City recently implemented a large tap fee and water rate increase to address the growing need for water resources including infrastructure. Additionally the City has been in conversation with the Arvada Fire Department and surrounding jurisdictions regarding wildfire mitigation particularly in the northwest Arvada area. These conversations are a result of the recent Marshall fire in the Superior/Louisville area. Potential outcomes of these discussions are additional means of egress out of neighborhoods that fall in higher risk areas.

The City of Arvada is also overhauling its internal emergency operation center that will focus on providing critical and lifesaving services during periods of emergency. The essential roles of the emergency operations center include:

Firefighting, public health, mass care, communication, transportation, public safety and security, , external affairs, and volunteer donation management. The training and planning involved in these efforts will prepare the Arvada team to continue to provide services for its residents during emergency events such as fire, flood, etc.

AP-12 Participation – 91.105, 91.200(c)

1. Summary of citizen participation process/Efforts made to broaden citizen participation Summarize citizen participation process and how it impacted goal-setting

The US Department of Housing and Urban Development requires local jurisdictions receiving certain grant funds to prepare a Consolidated Strategy and Plan Submission for Housing and Community Development Programs (Consolidated Plan). The City of Arvada prepared a Consolidated Plan for the period of 2020 through 2024. An Annual Action Plan must be submitted for each year during that term and the City is providing for and encouraging citizen participation in the preparation of the 2024 Annual Action Plan. The proposed 2024 Annual Action Plan outlines the proposed use of \$425,000 in 2024 Community Development Block Grant Funds for housing rehabilitation and public services. The City invites all citizens, public agencies, and other interested parties to review the proposed 2024 Annual Action Plan and use of funds, review past program performance and provide comments. The public comment period on the proposed 2024 Annual Action Plan is from November 2, 2023 through December 1, 2023. Comments can be mailed to the address below. A copy of the proposed draft 2024 Annual Action Plan is available for public review and comment at the: Housing Preservation and Resources Division, Annex Building, 8001 Ralston Road , Arvada, Colorado 80002, Between the hours of 8:30 A.M. to 4:30 P.M., weekdays.

A Public Hearing will be held to allow public comment on the proposed 2024 Annual Action Plan and on related requests for funds from the Human Services Funding Pool THE PUBLIC HEARING WILL BE HELD At 6:15 P.M., December 4, 2023 in Council Chambers, Arvada Municipal Building, 8101 Ralston Road, Arvada, Colorado. A City Human Services Advisory Committee reviewed the 23 funding applications and made recommendations for funding to the City Council on December 4, 2023.

Citizen Participation Outreach

Sort Order	Mode of Outreach	Target of Outreach	Summary of response/attendance	Summary of comments received	Summary of comments not accepted and reasons	URL (If applicable)
1	30 Day Public Comment Period on 2024 Annual Action Plan	Minorities Persons with disabilities Non-targeted/broad community	None	No comments received	None	
2	Public Hearing	Minorities Persons with disabilities Non-targeted/broad community	None	No comments received	None	

Sort Order	Mode of Outreach	Target of Outreach	Summary of response/attendance	Summary of comments received	Summary of comments not accepted and reasons	URL (If applicable)
3	Internet Outreach	Minorities Non-English Speaking - Specify other language: Spanish Persons with disabilities Non-targeted/broad community	23 funding applications were received by the September 1, 2023 deadline	Funding applications	None	https://arvada.org/residents/city-neighborhoods/cdgb-funds-at-work-in-arvada
4	Public Meeting	Minorities Persons with disabilities Non-targeted/broad community	23 funding applications were received by the September 1, 2023 deadline	Funding applications	None	https://arvada.org/residents/city-neighborhoods/cdgb-funds-at-work-in-arvada

Table 4 – Citizen Participation Outreach

Expected Resources

AP-15 Expected Resources – 91.220(c)(1,2)

Introduction

The City of Arvada plans to allocate \$1,214,728.81 in CDBG to support public services, single-family home rehabilitation (Essential Home Repairs and Paint-a-Thon) and CDBG program administration.

Anticipated Resources

Program	Source of Funds	Uses of Funds	Expected Amount Available Year 1				Expected Amount Available Remainder of ConPlan \$	Narrative Description
			Annual Allocation: \$	Program Income: \$	Prior Year Resources: \$	Total: \$		
CDBG	public - federal	Acquisition Admin and Planning Economic Development Housing Public Improvements Public Services	458,033.00	94,813.87	661,881.94	1,214,728.81	1,214,728.81	CDBG 2024 annual allocation of \$458,033. Program income includes Revolving Loan amount of \$94,161.97 and \$651.90 in Program Income. Prior year resources of \$661,881.94 is allocated to the Single Family Rehab Programs.

Table 5 - Expected Resources – Priority Table

Explain how federal funds will leverage those additional resources (private, state and local funds), including a description of how

matching requirements will be satisfied

CDBG will be critical to allow for and encourage leveraging of other private and city funds for housing and community development activities. The city will utilize cash from non-federal sources, the value of waived taxes and fees and the value of any donated land to support goals and activities.

If appropriate, describe publically owned land or property located within the jurisdiction that may be used to address the needs identified in the plan

N/A

Discussion

The City's expected resources are as follows:

\$458,033 2024 CDBG Annual Allocation

\$661,881.94 Prior Year Grant Funds

\$94,161.97 Revolving loan

\$651.90 Program Income

Annual Goals and Objectives

AP-20 Annual Goals and Objectives

Goals Summary Information

Sort Order	Goal Name	Start Year	End Year	Category	Geographic Area	Needs Addressed	Funding	Goal Outcome Indicator
3	maintain and improve housing and neighborhoods	2020	2024	Affordable Housing Non-Housing Community Development		Maintain and improve housing stock	CDBG: \$1,032,122.81	Rental units rehabilitated: 4 Household Housing Unit Homeowner Housing Rehabilitated: 25 Household Housing Unit
5	Facilitate development of human resources	2020	2024			development of human resources	CDBG: \$78,000.00	Public service activities other than Low/Moderate Income Housing Benefit: 1000 Persons Assisted

Table 6 – Goals Summary

Goal Descriptions

3	Goal Name	maintain and improve housing and neighborhoods
	Goal Description	The City of Arvada's annual goal is to provide home repair services to 25 low to moderate-income Arvada homeowners through the Essential Home Repairs and Paint-a-Thon programs. The City also plans to use CDBG to support the rehabilitation of the Beyond Home transitional housing project. A total of 480,000 in CDBG has been allocated to support Beyond Home. The total amount allocated is \$1,032,122.81 (\$275,427 2024 grant; \$661,881.94 prior year funds; \$651.90 Program Income; \$94,161.97 Revolving Loan)
5	Goal Name	Facilitate development of human resources
	Goal Description	The City of Arvada's one year public services goal is to serve approximately 1,000 Arvada residents through public service activities.

Projects

AP-35 Projects – 91.220(d)

Introduction

The City of Arvada intends to utilize \$458,033 to support 2024 CDBG program administration, public services and single family rehabilitation. The breakdown of funding for these activities is as follows:

\$78,000 Public Services

\$104,606 CDBG program administration

\$275,427 Single Family Rehabilitation. This includes the Essential Home Repairs Program and Paint-a-Thon programs

The total amount allocated to the Single Family Rehab is \$552,122.81. The total consists of \$275,427 of 2024 grant funds, \$94,161.97 of Revolving Loan, \$651.90 of Program Income and \$181,881.94 of prior year funds.

Projects

#	Project Name
1	Public Services
2	Single Family Rehabilitation Program
3	CDBG Program Administration
4	Beyond Home Rehabilitation Project

Table 7 - Project Information

Describe the reasons for allocation priorities and any obstacles to addressing underserved needs

The Single-Family Home Repairs program has been a longstanding City program that provides critical home repairs to low/moderate income homeowners in Arvada. It has proven to be a needed and worthy use of CDBG funds. The City of Arvada's one year goal is to serve 25 households through the single family rehabilitation program in 2024. The City recently shifted the administration of the Single Family Rehab program to Brothers Redevelopment. There were some delays in completing projects while Brothers Redevelopment increased capacity of their team as well as delays in executing an agreement with the State Historic Preservation Office to assist with streamlining project completion. Now that these tasks are completed, Brothers Redevelopment is on track to achieve the set goal of 25 projects in

2024.

The City of Arvada Human Services program provides financial support to various non-profit agencies that provide critical services to Arvada residents. The City anticipates serving 1,000 low to moderate income Arvada households through the human services grant program. The City expects to serve 1,000 Arvada households in 2024 and estimates that we will continue to serve between 500-1000 households annually for the next five years.

AP-38 Project Summary
Project Summary Information

1	Project Name	Public Services
	Target Area	
	Goals Supported	Facilitate development of human resources
	Needs Addressed	development of human resources
	Funding	CDBG: \$78,000.00
	Description	The activities under this project will be carried out through non-profit organizations serving residents of Arvada. Services supported include food pantry, meals for individuals who are medically fragile and salaries to support programs that offer subsistence payments.
	Target Date	12/31/2024
	Estimate the number and type of families that will benefit from the proposed activities	It is estimated that the City of Arvada will serve 1,000 residents through the human services program.
	Location Description	Services will be offered throughout the City of Arvada.
	Planned Activities	The City of Arvada is interested in supporting the Carin Clinic which provides medical services to low income residents, the Family Tree which supports homeless and at-risk households with housing services and the Community Table that provides food pantry services to the Arvada and surrounding communities.
2	Project Name	Single Family Rehabilitation Program
	Target Area	
	Goals Supported	maintain and improve housing and neighborhoods
	Needs Addressed	Maintain and improve housing stock
	Funding	CDBG: \$1,032,122.00
	Description	The Essential Home Repair Program/Single Family Rehab Program and the Paint a Thon program provides critical home repair services to low to moderate income homeowners in Arvada.
	Target Date	12/31/2024
	Estimate the number and type of families that will benefit from the proposed activities	The City of Arvada estimates it will serve 25 families through the Essential Home Repairs Program.

	Location Description	The jobs completed through the Essential Home Repairs Program are scattered throughout the City of Arvada.
	Planned Activities	Planned activities include essential homeowner repairs.
3	Project Name	CDBG Program Administration
	Target Area	
	Goals Supported	
	Needs Addressed	
	Funding	CDBG: \$104,606.00
	Description	CDBG Program Administration
	Target Date	12/31/2024
	Estimate the number and type of families that will benefit from the proposed activities	
	Location Description	
	Planned Activities	Planned activities under this project include program administrative support to coordinate and monitor the Single Family Rehabilitation Program and public services/human services grant program.
4	Project Name	Beyond Home Rehabilitation Project
	Target Area	
	Goals Supported	maintain and improve housing and neighborhoods
	Needs Addressed	
	Funding	CDBG: \$480,000.00
	Description	Beyond Home provides transitional housing to homeless families. The average length of stay for a household is two years. Families engage in supportive services during their residency to enhance self-sufficiency. Beyond Home's southern site comprises a total of 22 townhomes, and the City proposes to use CDBG funds to support the rehabilitation of four of these townhome units.
	Target Date	6/30/2026
	Estimate the number and type of families that will benefit from the proposed activities	It is anticipated that four formerly homeless families will benefit from this activity.

	Location Description	Southeast Arvada. The exact address of the property is confidential for safety concerns.
	Planned Activities	The rehabilitation of four townhomes.

AP-50 Geographic Distribution – 91.220(f)

Description of the geographic areas of the entitlement (including areas of low-income and minority concentration) where assistance will be directed

All funded activities will benefit persons living within the city limits of the City of Arvada. The highest percentage of individuals reported as White alone and the second highest reported as Hispanic or Latino. In the 2020 Census, 17,651 or 14.3% of persons reported having Hispanic or Latino origin.

Geographic Distribution

Target Area	Percentage of Funds

Table 8 - Geographic Distribution

Rationale for the priorities for allocating investments geographically

The City of Arvada is dedicated to the preservation of low/moderate income neighborhoods in Arvada.

Discussion

Affordable Housing

AP-55 Affordable Housing – 91.220(g)

Introduction

The City intends to use CDBG to fund a subrecipient to provide a Single-Family Home Repairs Program. Assistance will also be leveraged through the use of CDBG for collaboration with non profit and other service providers to assist special needs and low/moderate income households with public services as appropriate. In addition to using CDBG, The City will use non-federal funds for gap financing to support affordable housing development and preservation. The city is also utilizing local financial resources for the Safe And Accessible Arvada Program and the Help For Homes Program in partnership with Brothers Redevelopment.

The City also intends to use CDBG to support Beyond Home, a transitional housing services provider that provides term-limited housing to homeless families. Funds will be used to support the rehabilitation of housing units.

One Year Goals for the Number of Households to be Supported	
Homeless	4
Non-Homeless	0
Special-Needs	0
Total	4

Table 9 - One Year Goals for Affordable Housing by Support Requirement

One Year Goals for the Number of Households Supported Through	
Rental Assistance	0
The Production of New Units	0
Rehab of Existing Units	19
Acquisition of Existing Units	0
Total	19

Table 10 - One Year Goals for Affordable Housing by Support Type

Discussion

It is estimated that 15 households will be served through the Single Family Rehabilitation Program and 4 families through the Beyond Home rehab project.

AP-60 Public Housing – 91.220(h)

Introduction

The Arvada Housing Authority (AHA) received an allocation of 562 Housing Choice Vouchers from the U.S. Department of Housing and Urban Development (HUD). The AHA's voucher utilization rate remains extremely high at 98%. The AHA does not own any public housing units.

Foothills Regional Housing (Jefferson County Housing Authority) does own affordable housing developments in Arvada. Foothills and the AHA have maintained a strong relationship over the years and the AHA does its best to support Foothills Regional Housing's affordable housing development efforts.

Actions planned during the next year to address the needs to public housing

The AHA does not own any public housing units. To address the affordable housing needs in the community, the AHA will continue its efforts to maximize voucher utilization for its Housing Choice Voucher Program.

The City of Arvada recently completed and adopted the Arvada Housing Strategic Plan that identifies strategies and goals for the City and the Housing Authority to pursue to increase and preserve affordable housing in the community. The newly created Arvada Housing Advisory Committee will develop actionable steps over the next year to achieve these goals.

Actions to encourage public housing residents to become more involved in management and participate in homeownership

The Arvada Housing Authority created a Resident Advisory Board to make recommendations to AHA leadership related to the housing authority plan, including policies and procedures. The Resident Advisory Board consists of AHA Housing Choice Voucher participants who wish to provide input and direction.

AHA participants who are interested in homeownership opportunities are referred to the Colorado Housing Assistance Corporation and the Colorado Housing and Finance Authority for education related to downpayment and loan assistance.

If the PHA is designated as troubled, describe the manner in which financial assistance will be provided or other assistance

N/A

Discussion

The City of Arvada and the Arvada Housing Authority have made significant strides over the past two years to increase the amount of affordable housing in the community. The City values its partners in these efforts and strives to include stakeholder input as new policies and partnerships are developed.

AP-65 Homeless and Other Special Needs Activities – 91.220(i)

Introduction

This section discusses the 2024 program year activities that will benefit people who are homeless and populations with special needs.

Describe the jurisdictions one-year goals and actions for reducing and ending homelessness including

Reaching out to homeless persons (especially unsheltered persons) and assessing their individual needs

In January 2020, the City of Arvada hired a homeless navigator to conduct homeless outreach and connect people with much needed services. The homeless navigator completes a VI-SPDAT to access the needs and vulnerability of people experiencing homelessness. Data entry in the Homeless Management Information System assists the Navigator with tracking the history of services for each person. By assessing their individual needs, the Navigator has created a By Name list that allows her to prioritize her services to the people who are the most vulnerable in the community. The chronically homeless population is the priority in the City of Arvada at this time and will continue to be throughout 2024.

Addressing the emergency shelter and transitional housing needs of homeless persons

The City of Arvada supports the emergency shelter efforts coordinated by the Severe Weather Shelter Network (SWSN). In years past, the SWSN provides emergency shelter during cold weather nights by offering shelter in local churches. The SWSN will resume the congregate sheltering model in 2023. Individuals with COVID-19 exposure are sheltered in motels during cold weather. The City of Arvada has provided financial assistance to assist with these efforts and will continue to do so throughout 2024.

Helping homeless persons (especially chronically homeless individuals and families, families with children, veterans and their families, and unaccompanied youth) make the transition to permanent housing and independent living, including shortening the period of time that individuals and families experience homelessness, facilitating access for homeless individuals and families to affordable housing units, and preventing individuals and families who were recently homeless from becoming homeless again

In January 2020, the City of Arvada hired a homeless navigator to conduct homeless outreach and connect people with much needed services. The homeless navigator completes a VI-SPDAT to access the needs and vulnerability of the person experiencing homelessness. Data entry in the Homeless Management Information System assists the Navigator with tracking the history of services for each person. By assessing their individual needs, the Navigator has created a By Name list that allows her to prioritize her services to the people who are the most vulnerable in the community. The chronically

homeless population is the priority in the City of Arvada at this time and will continue to be throughout 2023. The Homeless navigator has partnered with the Arvada Housing Authority to connect people who are chronically homeless with permanent housing. In 2022, the Navigator was able to house 39 people from internal and external referrals to permanent housing.

Helping low-income individuals and families avoid becoming homeless, especially extremely low-income individuals and families and those who are: being discharged from publicly funded institutions and systems of care (such as health care facilities, mental health facilities, foster care and other youth facilities, and corrections programs and institutions); or, receiving assistance from public or private agencies that address housing, health, social services, employment, education, or youth needs.

Through the efforts of the City of Arvada Human Services Advisory Committee, the City of Arvada provides financial support to various non-profit agencies that provide homeless prevention services and other services such as medical, employment and education. The support of these programs will continue in 2024. The Arvada Housing Authority provides permanent housing to extremely low income households throughout the community.

Discussion

AP-75 Barriers to affordable housing – 91.220(j)

Introduction:

The City of Arvada completed a Housing Assessment in 2020 and is working to identify strategies to incentivize affordable housing in Arvada. In 2022, the Arvada City Council approved the creation of an Affordable Housing Advisory Committee composed of Arvada residents that will be tasked with making recommendations to the city council related to affordable housing strategies. The Committee was seated in May 2023 and began its first task of creating an Affordable Housing Strategic Plan for the City. To support this effort, the City applied for and was awarded \$100,000 from the Colorado Department of Local Affairs Planning Grant Program to hire a consultant to lead the strategic planning work. The Arvada Housing Strategic Plan was completed and adopted by the Arvada City Council on May 20, 2024. The Arvada Housing Advisory Committee will identify actionable steps over the next year to meet the strategies identified in the Plan.

The City of Arvada updated its Land Development Code. The City of Arvada City Council Strategic Plan includes strategic goals related to housing. The Strategic Plan was amended in 2022 to include the strategic milestone of developing a homeless navigation center that will serve as a one-stop shop for offering supportive services to households experiencing homelessness or housing instability. The navigation center will also provide overnight sheltering to homeless individuals and permanent supportive housing to people in need of long term housing as well as supportive services. The City is in the process of purchasing a site to be for the future navigation center.

Actions it planned to remove or ameliorate the negative effects of public policies that serve as barriers to affordable housing such as land use controls, tax policies affecting land, zoning ordinances, building codes, fees and charges, growth limitations, and policies affecting the return on residential investment

The City updated its Land Development Code in 2020 to allow for density bonuses and streamlined application processes to encourage developers to build affordable housing in the area.

Discussion:

The City of Arvada Strategic Plan 2020-2025 addresses concerns related to barriers to affordable housing. One strategic result is to implement a tool kit of housing mix and style plans to improve access to quality housing affordable for a broad range of income levels. This includes a strategic milestone of creating a regional strategy to address homelessness and completing an affordable housing assessment including incentive options.

AP-85 Other Actions – 91.220(k)

Introduction:

This section describes a variety of other efforts that the City of Arvada will continue during the program year to address housing and community development needs.

Actions planned to address obstacles to meeting underserved needs

During 2024, CDBG will be the primary program through which underserved needs are addressed, affordable housing is created and families and persons living in poverty are served.

Actions planned to foster and maintain affordable housing

The City is involved in regional housing planning efforts and work to expand awareness and understanding of housing needs among residents and community leaders. On May 20, 2024 the Arvada City Council adopted the Arvada Housing Strategic Plan to identify strategies and goals desired to improve housing affordability in the community.

Actions planned to reduce lead-based paint hazards

The Single-Family Home Repairs housing rehabilitation program includes a section designed to address the issue of lead based paint as stated below regarding its compliance with applicable law and regulations: (b) Lead Hazard and Lead Based Paint Regulations: The Residential Lead Based Paint Hazard Reduction Act of 1992, or Title X Sections 1012 and 1013 of the Housing and Community Development Act of 1992, related regulations of the Environmental Protection Agency, the Occupational Health and Safety Administration, and Regulation No. 19 of the Colorado Air Quality Control Commission The actions above are intended to insure the Single-Family Home Repairs Program addresses issues regarding testing for and addressing lead based paint during housing rehabilitation. The Single-Family Home Repairs Program provides for Notice of Lead Based Paint Inspection and Risk Assessment as part of its process. In addition the costs of lead based paint mitigation are included as eligible costs for the program as stated below. 4.1 Eligible Costs Eligible costs include expenses to meet the following items. All determinations of eligible costs by the City are final. (a) Single-Family Home Repairs Minimum Design and Property Rehabilitation Standards (PRS) (Part II), lead hazard and abatement measures, related air quality and energy conservation measures, and measures, related air quality and energy conservation measures, and measures to establish a readily maintainable condition.

Actions planned to reduce the number of poverty-level families

Homelessness is on the rise in Arvada and throughout Colorado. Recent data shows that families experiencing homelessness are increasing in number faster than any other group. In our community, homelessness is increasingly affecting families with children, the underemployed, veterans and the

chronically homeless. The City of Arvada strives to be a community where residents, regardless of age, mobility or income, are comfortable and safe in their homes. To have a greater impact, the City of Arvada has partnered with Brothers Redevelopment to operate a single-family home rehabilitation program to benefit Arvada residents using CDBG funds to accomplish activities. This program will still offer home repair services for low and moderate-income, elderly, and disabled households for Arvada residents. Economic Growth- Over the next 5 years it is anticipated the local economy will continue to improve. As rents increase and vacancies remain low, the rental housing market will be tight and less accessible to low and moderate households looking to achieve affordable housing. In the same manner, prices may increase for single family owner occupied housing opportunities making it more difficult for low and moderate income households to achieve homeownership. The dynamic of this barrier to affordable housing cannot be altered by the City but the City will need more extensive funding from the Federal and State levels to structure opportunities to provide additional housing affordable to low and moderate income households. The City has created a homeless navigation program to address the needs of the people experiencing homelessness in the community. A homeless navigator has been hired to connect people to housing opportunities and to network with other Jefferson County municipalities and Jefferson County for a regional strategy to address homelessness.

Actions planned to develop institutional structure

The City of Arvada completed a Housing Assessment in 2020 and is working to identify strategies to incentivize affordable housing in Arvada. In 2022, the Arvada City Council approved the creation of an Affordable Housing Advisory Committee composed of Arvada residents that will be tasked with making recommendations to the city council related to affordable housing strategies. The Committee was seated in May 2023 and began its first task of creating an Affordable Housing Strategic Plan for the City. To support this effort, the City applied for and was awarded \$100,000 from the Colorado Department of Local Affairs Planning Grant Program to hire a consultant to lead the strategic planning work. On May 20, 2024, the Arvada City Council adopted the Arvada Housing Strategic Plan that was created using the DOLA grant. The Housing Strategic Plan identifies strategies and goals the City will utilize to achieve the desired affordable housing outcomes in the community.

Actions planned to enhance coordination between public and private housing and social service agencies

The City would work with private non profit groups relative to supportive housing to educate such non profits on the role and policy of the City relative to the use of funds for low and moderate income housing. The City will continue to work with non profit private entities such as Habitat for Humanity, Family Tree, Inc. and others to cooperate on their private proposals to provide supportive or affordable housing as applicable through transitional housing. Any targeted Housing Choice Voucher Program rental assistance coordinated with such proposals will use applicable local preferences. A primary geographic target for such proposals will be for adequate dispersion of such facilities or housing in the community to avoid concentration in the southeast portion of the City. The responsible agencies would

be non profit private entities working in concert with local lenders, City of Arvada, and other applicable state jurisdictions or entities. The time required to produce housing will be reliant upon proposals made by non profit private sector groups. The City will try to remove barriers to quality affordable housing by emphasizing that such housing under this goal should be dispersed and not concentrated. In 2024, the City will provide CDBG funds to a sub-recipient to operate a single-family home rehabilitation program for Arvada residents. To assist low-moderate income homeowners overcome financial barriers to maintaining quality-housing stock, 2024 CDBG funds can cover all eligible costs for rehabilitation projects. The forthcoming housing strategy will identify other areas for enhanced coordination as well.

Discussion:

Program Specific Requirements

AP-90 Program Specific Requirements – 91.220(I)(1,2,4)

Introduction:

Community Development Block Grant Program (CDBG)

Reference 24 CFR 91.220(I)(1)

Projects planned with all CDBG funds expected to be available during the year are identified in the Projects Table. The following identifies program income that is available for use that is included in projects to be carried out.

1. The total amount of program income that will have been received before the start of the next program year and that has not yet been reprogrammed	65,000
2. The amount of proceeds from section 108 loan guarantees that will be used during the year to address the priority needs and specific objectives identified in the grantee's strategic plan.	0
3. The amount of surplus funds from urban renewal settlements	0
4. The amount of any grant funds returned to the line of credit for which the planned use has not been included in a prior statement or plan	0
5. The amount of income from float-funded activities	0
Total Program Income:	65,000

Other CDBG Requirements

1. The amount of urgent need activities	0
2. The estimated percentage of CDBG funds that will be used for activities that benefit persons of low and moderate income. Overall Benefit - A consecutive period of one, two or three years may be used to determine that a minimum overall benefit of 70% of CDBG funds is used to benefit persons of low and moderate income. Specify the years covered that include this Annual Action Plan.	100.00%

**NOTICE OF PUBLIC HEARING
AND
AVAILABILITY OF FIRST SUBSTANTIAL AMENDMENT TO 2024 ANNUAL ACTION
PLAN FOR PUBLIC REVIEW AND COMMENT**

The City of Arvada prepared a Consolidated Plan for the period of 2020 through 2024. An Annual Action Plan must be submitted for each year during that term. In addition to the \$ 423,831 the City of Arvada received for Community Development Block Grant (CDBG) annual allotment, the City of Arvada is proposing to reprogram \$480,000 from the Single Family Rehabilitation project to the rehabilitation of transitional housing units owned by a local non-profit, Beyond Home. The City of Arvada is required to complete a substantial amendment documenting the reprogramming of CDBG funds.

The City invites all citizens, public agencies, and other interested parties to review the proposed First Substantial Amendment to the 2024 Annual Action Plan and provide comments. The public comment period on the proposed First Substantial Amendment of the 2024 Annual Action Plan is from August 25, 2025 through September 24, 2025. Comments can be mailed to the address below or emailed to Nicholas Ashmore at nashmore@arvada.org.

A copy of the proposed draft First Substantial Amendment to the 2024 Annual Action Plan is available for public review weekdays between 8:00am-4:00 pm at the:

City of Arvada Housing Division
8101 Ralston Road
Arvada, Colorado 80002

A Public Hearing will be held for comment on the proposed First Substantial Amendment to 2024 Annual Action Plan. The public hearing will be held on September 15, 2025 at 5:30pm at Arvada City Hall, Anne Campbell Room, Arvada, Colorado.

For further information, please contact Nicholas Ashmore at nashmore@arvada.org or 720-898-7497.



REPORT TO CITY COUNCIL ORDINANCE FIRST READING

AGENDA ITEM
8.C.1.

TO: THE HONORABLE CITY COUNCIL

DATE: October 7, 2025

SUBJECT: CB25-021, An Ordinance Amending Various Sections of Chapter 102, Utilities, of the Arvada City Code Pertaining to Water Users Rates and Bimonthly Service Charges (Public Hearing to be set for October 21, 2025 at 6:15 p.m.)

Report in Brief

PRESENTER: Jacqueline Rhoades, Infrastructure Director

At the August 12, 2025 City Council workshop, the City team presented a series of revenue increase scenarios for updated water, sewer, and stormwater rates and bimonthly service fees for 2026 to support the delivery of the capital improvement plan. City Council directed the City team to return with the scenario that is reflected in the attached ordinance.

The ordinance before the City Council will adjust Water Rates and Bimonthly Service Fees for 2026. The attached ordinance will increase water volumetric rates by 5% and bimonthly service fees by 18.3% for an overall revenue increase of 6.9% for 2026. This will increase the typical in-city single-family water bill by \$52.21 per year (\$8.70 per bimonthly bill or \$4.35 per month).

The City's Infrastructure Work System continues to prepare for investments in operations and infrastructure as part of our ongoing commitment to continue to provide reliable water, sewer, and stormwater drainage services to our community. This work aligns with the Infrastructure Priority Area of the City Council Strategic Plan, specifically Infrastructure Work System Service 1: Provides the community with a safe, resilient, high-quality water supply, drainage system, wastewater disposal, and solid waste management services for full city build-out, as defined by the Comprehensive Plan. This work also aligns with the principle that the City maintains utility rates at the lowest practical levels, with accurate billing that supports robust and reliable infrastructure.

The Arvada team recommends that the City Council approve CB25-021, An Ordinance Amending Various Sections of Chapter 102, Utilities, of the Arvada City Code Pertaining to Water Users Rates and Bimonthly Service Charges (Public Hearing to be set for October 21, 2025).

Financial Impact

The Water fund revenue scenario presented in this Ordinance will generate approximately \$2,761,000 of new revenues, which will be used primarily towards paying for debt service and capital projects.

Background

In support of the City Council Strategic Plan and the Infrastructure Work System, the City team has been developing, implementing and refining a financial strategy to support reinvestment in aging water infrastructure and expansion of capacity to support planned development.

Over the course of three workshops in 2025, the City team presented City Council with foundational information about utility financial strategies, presented a series of revenue increase scenarios for the water fund, and requested direction about how best to provide assistance to customers who are struggling to pay their utility bill.

At the final workshop on August 12, 2025, the City team presented four revenue increase scenarios for the water fund for updating water rates and bimonthly service fees for 2026. At that workshop, the City team received direction about which of these scenarios to bring back to City Council for adoption on October 7, 2025 for first reading. Additional revenue from these adjustments enables major water system reinvestments and capacity-building projects to proceed in accordance with a schedule laid out in the master planning work directed in the City Council Strategic Plan.

The 2026 budget for the Water Enterprise Fund includes new revenues of approximately \$2,761,000, which will be used primarily towards paying for debt service and capital projects.

Discussion

The City's Infrastructure Department continues to prepare for investments in operations and infrastructure as part of our ongoing commitment to continue to provide reliable water, sewer, and stormwater drainage services to our community. This work supports the Infrastructure Priority Area of the City Council Strategic Plan, specifically Infrastructure Works System Service 1: Provides the community with a safe, resilient, high-quality water supply, drainage system, wastewater disposal and solid waste management services for full city build-out, as defined by the Comprehensive Plan. The City team's presentation of the requested revenue increase scenario for the 2026 adjustments to the water rate and fee schedule also aligns with the principle that the City maintains utility rates at the lowest practical levels.

On an annual basis, the City team provides City Council with foundational utility enterprise information and a series of revenue scenarios for adjusting volumetric rates and fixed bimonthly service fees. There continue to be pressures that are driving a water rate and fee increase for 2026. The primary cost driver for 2026 is the need for capital reinvestment projects that will replace or repair aging water treatment and distribution system infrastructure. These projects were identified as priorities in master planning conducted in recent years. While inflation is still a concern, the City team is also anticipating and managing the impact that current and potential future tariffs will have on project costs.

The City team is presenting a rate increase of 5% and a bimonthly service charge increase of 18.3%, for a total revenue increase of 6.9%. If approved, this rate and fee change will result in an additional \$52.21 per year (\$8.70 per bimonthly bill, or \$4.35 per month) for a typical in-city single family owner. In accordance with past practice, the in-city rate and fee increases are used as an index to calculate all other customer categories. The complete updated rate schedule is in the proposed ordinance.

Based on the City Council's feedback, the City team will also investigate opportunities to provide an additional utility bill assistance program to our customers who are struggling to pay their utility bill. In addition to the hardship credits, bill equalizations and bill arrangements that we currently offer, we will work with the Colorado agency(ies) that offer LEAP (Low-income Energy Assistance Program) benefits to potentially gain access to their customer list. If implemented, Arvada utility customers who already qualify for the state's LEAP benefits would be automatically eligible to receive a \$25 credit per bimonthly bill. While the LEAP program has been suspended for the remainder of 2025, the City team will continue to communicate with the appropriate agencies into 2026, with the intent to implement this program in 2026.

Public Contact

Posting of the City Council agenda.

Commission Recommendation

Strategic Alignment

The recommended action aligns with the Infrastructure Work System Services within the City Council Strategic Plan. Specifically, the recommended action is consistent with the following work system service included in the Infrastructure Priority Area:

Provides the community with a safe, reliable high quality water supply, drainage system, and wastewater disposal services

for full city build-out, as defined in the Comprehensive Plan. This includes maintaining utility rates at the lowest practical levels with accurate billing that supports replacement of aging infrastructure in order to maintain robust utility systems.

Alternative Courses of Action

1. Approve this ordinance increasing the rates and fees for the Water Fund in 2026.
2. Direct staff to return with an alternate revenue increase.

Recommendation for Action

The Arvada team recommends that the City Council approve Alternative No. 1.

Suggested Motion:

I move that CB25-021, An Ordinance Amending Various Sections of Chapter 102, Utilities, of the Arvada City Code Pertaining to Water Users Rates and Bimonthly Service Charges, be approved on first reading, ordered published in full, and a public hearing set for October 21, 2025, at 6:15 p.m.)

Prepared by:
Christine Gray, Utilities Business Manager

Reviewed by:

Approved by:

Jacqueline Rhoades, Director of Infrastructure	09/17/2025
Bryan Archer, Chief Financial Officer	09/17/2025
Tammy Hedlund, Legal Specialist	09/17/2025
Jessica Morales, Deputy City Attorney	09/18/2025
Rachel Morris, City Attorney	09/18/2025
Alli Scheck, Deputy City Manager	09/24/2025
Don Wick, City Manager	09/25/2025

Enclosure, exhibits & attachments required to support the report

COUNCIL BILL NO. 25-021
ORDINANCE NO. _____

AN ORDINANCE AMENDING VARIOUS SECTIONS OF CHAPTER 102, UTILITIES, OF
THE ARVADA CITY CODE PERTAINING TO WATER USERS RATES AND
BIMONTHLY SERVICE CHARGES

BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF ARVADA, COLORADO:

Section 1. Section 102-170, Residential user charges – Within city, of the Arvada City Code, is hereby amended and shall read as follows:

“Sec. 102-170. Residential user charges—Within city.

Bimonthly user charges for residential class of service within the city shall be based upon the following service charges and usage rates; provided, however, there will be a bimonthly service charge regardless of usage as set forth in this section:

(1) Single-family or other individually connected units:

- a. The bimonthly service charge is..... \$25.83
- b. Plus, a bimonthly usage charge as follows:
 - 1. 0—30,000 gallons, per 1,000.....\$6.50
 - 2. from 30,001 to 60,000 gallons, per 1,000.....\$8.13
 - 3. from 60,001 to 90,000 gallons, per 1,000.....\$9.78
 - 4. All above 90,000 gallons, per 1,000.....\$13.02

(2) Duplex, multifamily, townhouse, or other units that are interconnected:

- a. The total bimonthly service charge regardless of usage is as follows:

<i>Number of Units</i>	<i>Service Charge</i>
2—6	\$40.54
7—18	\$70.87
19—60	\$96.19
61—144	\$217.72
Over 144	\$369.62

- b. Plus, a bimonthly usage charge as follows:

1. 0—30,000 gallons for the first unit plus 13,000 gallons for each additional unit at the rate of \$6.50 per 1,000 gallons.
2. 30,001—60,000 gallons for the first unit plus 26,000 gallons for each additional unit at the rate of \$8.13 per 1,000 gallons.
3. 60,001—90,000 gallons for the first unit plus 39,000 gallons for each additional unit at the rate of \$9.78 per 1,000 gallons.
4. All remaining usage at the rate of \$13.02 per 1,000 gallons

Section 2. Section 102-171, Residential user charges—Outside city, of the Arvada City Code, is hereby amended and shall read as follows:

“Sec. 102-171. Residential user charges—Outside city.

Bimonthly user charges for residential service outside the city shall be based upon the following service charges and user rates; provided, however, there will be a bimonthly service charge regardless of usage as set forth in this section:

(1) Single-family or other individually connected units:

- a. The bimonthly service charge is.....\$51.66
- b. Plus, a bimonthly usage charge as follows:
 1. 0—30,000 gallons per 1,000.....\$13.01
 2. from 30,001 to 60,000 gallons, per 1,000.....\$16.26
 3. from 60,001 to 90,000 gallons, per 1,000.....\$19.55
 4. All over 90,000 gallons, per 1,000.....\$26.05

(2) Duplex, multifamily, townhouse, or other units that are interconnected:

- a. The total bimonthly service charge regardless of usage is as follows:

<i>Number of Units</i>	<i>Service Charge</i>
2—6	\$81.07
7—18	\$141.77
19—60	\$192.41
61—144	\$435.45
Over 144	\$739.25

- b. Plus, a bimonthly usage charge as follows:

1. 0—30,000 gallons for the first unit plus 13,000 gallons for each additional unit at the rate of \$13.01 per 1,000 gallons.
2. 30,001—60,000 gallons for the first unit plus 26,000 gallons for each additional unit at the rate of \$16.26 per 1,000 gallons.
3. 60,001—90,000 gallons for the first unit plus 39,000 gallons for each additional unit at the rate of \$19.55 per 1,000 gallons.
4. All remaining usage at the rate of \$26.05 per 1,000 gallons.”

Section 3. Section 102-172. Nonresidential user charges--Within city, of the Arvada City Code, is hereby amended and shall read as follows:

“Sec. 102-172. Nonresidential user charges—Within city.

Bimonthly user charges for nonresidential class of service within the city is based upon the following service charges and user rates; provided, however, there will be a bimonthly service charge regardless of usage as set forth in this section:

<i>Meter Size</i>	<i>Service Charge</i>
$\frac{5}{8}$ " $\times$ $\frac{3}{4}$ "	\$25.83
$\frac{3}{4}$ "	\$30.79
1"	\$40.54
1 $\frac{1}{2}$ "	\$70.87
2"	\$96.19
3"	\$217.72
4"	\$369.62

<i>Meter Size</i>	<i>Quantity (in 1,000 gallons) at a rate of \$6.50 per 1,000 gallons</i>	<i>Quantity (in 1,000 gallons) at a rate of \$8.13 per 1,000 gallons</i>	<i>Quantity (in 1,000 gallons) at a rate of \$9.78 per 1,000 gallons</i>	<i>Quantity (in 1,000 gallons) at a rate of \$13.02 per 1,000 gallons</i>
$\frac{5}{8}$ " $\times$ $\frac{3}{4}$ "	0 to 170	170 to 340	340 to 510	All over 510
$\frac{3}{4}$ "	0 to 170	170 to 340	340 to 510	All over 510
1"	0 to 280	280 to 560	560 to 840	All over 840
1 $\frac{1}{2}$ "	0 to 600	600 to 1,200	1,200 to 1,800	All over 1,800
2"	0 to 900	900 to 1,800	1,800 to 2,700	All over 2,700
3"	0 to 2,000	2,000 to 4,000	4,000 to 6,000	All over 6,000
4"	0 to 3,400	3,400 to 6,800	6,800 to 10,200	All over 10,200

”

Section 4. Section 102-173. Nonresidential user charges—outside city, of the Arvada City Code, is hereby amended and shall read as follows:

“Sec. 102-173. Nonresidential user charges—outside city.

Bimonthly user charges for nonresidential class of service outside the city is based upon

the following service charges and user rates; provided, however, there will be a bimonthly service charge regardless of usage as set forth in this section:

<i>Meter Size</i>	<i>Service Charge</i>
$\frac{5}{8}$ " $\times$ $\frac{3}{4}$ "	\$51.66
$\frac{3}{4}$ "	\$61.59
1"	\$81.07
1 $\frac{1}{2}$ "	\$141.77
2"	\$192.41
3"	\$435.45
4"	\$739.25

<i>Meter Size</i>	<i>Quantity (in 1,000 gallons) at a rate of \$13.01 per 1,000 gallons</i>	<i>Quantity (in 1,000 gallons) at a rate of \$16.26 per 1,000 gallons</i>	<i>Quantity (in 1,000 gallons) at a rate of \$19.55 per 1,000 gallons</i>	<i>Quantity (in 1,000 gallons) at a rate of \$26.05 per 1,000 gallons</i>
$\frac{5}{8}$ " $\times$ $\frac{3}{4}$ "	0 to 170	170 to 340	340 to 510	All over 510
$\frac{3}{4}$ "	0 to 170	170 to 340	340 to 510	All over 510
1"	0 to 280	280 to 560	560 to 840	All over 840
1 $\frac{1}{2}$ "	0 to 600	600 to 1,200	1,200 to 1,800	All over 1,800
2"	0 to 900	900 to 1,800	1,800 to 2,700	All over 2,700
3"	0 to 2,000	2,000 to 4,000	4,000 to 6,000	All over 6,000
4"	0 to 3,400	3,400 to 6,800	6,800 to 10,200	All over 10,200

”

Section 5. Section 102-174. Distributor and institution user rates, of the Arvada City Code, is hereby amended and shall read as follows:

“Sec. 102-174. Distributor and institution user rates.

The following water user rates are applicable to contractual service in or out of the city accountable through master meter or meters to user-owned and user-maintained distribution systems:

- (1) First 500,000 gallons per month, per 1,000 gallons.....\$6.66
- (2) Excess of 500,000 gallons per month, per 1,000 gallons.....\$6.42

Section 6. Section 102-175. Fill station user rates, of the Arvada City Code, is hereby amended and shall read as follows:

“Sec. 102-175. Fill station user rates.

The water user rate applicable for fill station usage will be charged at \$9.78 per 1,000

gallons.”

Section 7. Section 102-176. Fire hydrant metered water user rates, of the Arvada City Code, is hereby amended and shall read as follows:

“Sec. 102-176. Fire hydrant metered water user rates.

(a) The water user rate applicable to permitted users of fire hydrant meters for measuring water supplied from a city fire hydrant is \$9.78 per 1,000 gallons, plus a service charge as follows:

(1) 1 to 90 days: \$1.00 per day, minimum of 1 day

(2) 91 to 180 days: \$2.00 per day

(3) 181 days or more: \$3.00 per day

A damage deposit of \$1,250.00 will be collected at the time of issuance of the fire hydrant permit. Upon return of the fire hydrant meter in condition acceptable to the city, the damage deposit will be returned.

(b) Tampering with, or in any manner altering the operation of the meter such that the register usage is less than the actual usage will result in an additional fee of \$5.00 per day being charged retroactive to the date the hydrant meter permit was issued and ending on the date the meter is returned. The charges provided in this paragraph shall be in addition to the charges provided in paragraph (a) of this section.

(c) If the city cannot furnish a fire hydrant meter, the customer may use the customer's own meter upon obtaining a permit under provisions of this section. The customer may be required to submit written proof that the meter has been calibrated and reads accurately.”

Section 8. Section 102-177. Municipal park rate, of the Arvada City Code, is hereby amended and shall read as follows:

“Sec. 102-177. Municipal park rate.

(a) Monthly user rate for the municipal park class is based upon the rate of \$3.70 per 1,000 gallons.

(b) This service is interruptible to the extent the city may limit the times of irrigation and the amount of water used. The city and the Apex Park and Recreation District-owned properties, which have occupied structures located thereon, are excluded from this class of water service.”

Section 9. Section 102-178. Unmetered standby fire protection service charge, of the Arvada City Code, is hereby amended and shall read as follows:

“Sec. 102-178. - Unmetered standby fire protection service charge.

Bimonthly charges for unmetered standby fire protection service is as follows:

	In City	Out of City
a. Fire hydrants, each	\$9.78	\$14.67
b. Automatic sprinkler system:		
5/8" — 3/4" service line	\$9.78	\$14.67
1" service line	\$9.78	\$14.67
1 1/4" service line	\$19.57	\$29.34
1 1/2" service line	\$19.57	\$29.34
2" service line	\$29.31	\$43.96
3" service line	\$39.05	\$58.57
4" service line	\$58.64	\$87.97
6" service line	\$78.17	\$117.27
8" service line	\$92.49	\$138.77

”

Section 10. Section 102-179. Lost water rate, of the Arvada City Code, is hereby amended and shall read as follows:

“Sec. 102-179. Lost water rate.

Unmetered water lost or used due to activities such as, but not limited to, excavation, demolition, landscaping, or intentional acts of vandalism or theft will be billed to the responsible party at the rate of \$9.78 per 1,000 gallons. The estimated volume of unmetered lost water will be based on main size, break size, water pressure, flow time, or other available data.”

Section 11. Section 102-180. Special service fees and user rates, of the Arvada City Code, is hereby amended and shall read as follows:

“Sec. 102-180. Special Service fees and user rates.

Prior to use of the fire hydrant as a source of water for special short-term community activities, the applicant will obtain a hydrant permit and water meter from the utilities department at least 24 hours prior to the time of use. Charges for the service and the water used will be based only on the water user rate of \$6.50 per 1,000 gallons.”

Section 12. Severability. Should any provision of this ordinance be declared by a court to be unconstitutional or invalid, such decision shall not affect the validity of the ordinance as a whole, or any part thereof, other than the part so declared unconstitutional or invalid. The City Council declares it would have adopted this ordinance and each part or parts hereof irrespective of the fact that any one part or parts be declared unconstitutional or invalid.

Section 13. This ordinance shall take effect on January 1, 2026.

INTRODUCED, READ, AND ORDERED PUBLISHED this 7th day of October, 2025.

PASSED, ADOPTED AND APPROVED this _____ day of October, 2025.

Lauren Simpson, Mayor

ATTEST:

City Clerk

APPROVED AS TO FORM:
Rachel A. Morris, City Attorney:

BY: _____

Publication Dates: October 9, 2025

~~REDLINE/STRIKETHROUGH VERSION~~

FOR INFORMATION ONLY -- NOT PART OF THE ORDINANCE

Underlined indicates new material
~~Strikethrough~~ indicates deleted material

Sec. 102-170. Residential user charges—Within city.

Bimonthly user charges for residential class of service within the city shall be based upon the following service charges and usage rates; provided, however, there will be a bimonthly service charge regardless of usage as set forth in this section:

(1) Single-family or other individually connected units:

- a. The bimonthly service charge is..... \$25.83 ~~\$21.83~~
- b. Plus, a bimonthly usage charge as follows:
 - 1. 0—30,000 gallons, per 1,000.....\$6.50 ~~\$6.19~~
 - 2. from 30,001 to 60,000 gallons, per 1,000.....\$8.13 ~~\$7.74~~
 - 3. from 60,001 to 90,000 gallons, per 1,000.....\$9.78 ~~\$9.31~~
 - 4. All above 90,000 gallons, per 1,000.....\$13.02 ~~\$12.40~~

(2) Duplex, multifamily, townhouse, or other units that are interconnected:

- a. The total bimonthly service charge regardless of usage is as follows:

<i>Number of Units</i>	<i>Service Charge</i>
2—6	<u>\$40.54</u> \$34.26
7—18	<u>\$70.87</u> \$59.90
19—60	<u>\$96.19</u> \$81.30
61—144	<u>\$217.72</u> \$184.01
Over 144	<u>\$369.62</u> \$312.39

- b. Plus, a bimonthly usage charge as follows:
 - 1. 0—30,000 gallons for the first unit plus 13,000 gallons for each additional unit at the rate of \$6.50 ~~\$6.19~~ per 1,000 gallons.
 - 2. 30,001—60,000 gallons for the first unit plus 26,000 gallons for each additional unit at the rate of \$8.13 ~~\$7.74~~ per 1,000 gallons.

3. 60,001—90,000 gallons for the first unit plus 39,000 gallons for each additional unit at the rate of ~~\$9.78~~ \$9.31 per 1,000 gallons.
4. All remaining usage at the rate of ~~\$13.02~~ \$12.40 per 1,000 gallons.

Sec. 102-171. Residential user charges—Outside city.

Bimonthly user charges for residential service outside the city shall be based upon the following service charges and user rates; provided, however, there will be a bimonthly service charge regardless of usage as set forth in this section:

(1) Single-family or other individually connected units:

- a. The bimonthly service charge is.....~~\$51.66~~ \$43.66
- b. Plus, a bimonthly usage charge as follows:
 1. 0—30,000 gallons per 1,000.....~~\$13.01~~ \$12.39
 2. from 30,001 to 60,000 gallons, per 1,000.....~~\$16.26~~ \$15.49
 3. from 60,001 to 90,000 gallons, per 1,000.....~~\$19.55~~ \$18.62
 4. All over 90,000 gallons, per 1,000.....~~\$26.05~~ \$24.81

(2) Duplex, multifamily, townhouse, or other units that are interconnected:

- a. The total bimonthly service charge regardless of usage is as follows:

<i>Number of Units</i>	<i>Service Charge</i>
2—6	\$81.07 <u>\$68.52</u>
7—18	\$141.77 <u>\$119.82</u>
19—60	\$192.41 <u>\$162.62</u>
61—144	\$435.45 <u>\$368.01</u>
Over 144	\$739.25 <u>\$624.79</u>

- b. Plus, a bimonthly usage charge as follows:
 1. 0—30,000 gallons for the first unit plus 13,000 gallons for each additional unit at the rate of ~~\$13.01~~ \$12.39 per 1,000 gallons.
 2. 30,001—60,000 gallons for the first unit plus 26,000 gallons for each additional unit at the rate of ~~\$16.26~~ \$15.49 per 1,000 gallons.
 3. 60,001—90,000 gallons for the first unit plus 39,000 gallons for each additional unit at the rate of ~~\$19.55~~ \$18.62 per 1,000 gallons.
 4. All remaining usage at the rate of ~~\$26.05~~ \$24.81 per 1,000 gallons.

Sec. 102-172. Nonresidential user charges—Within city.

Bimonthly user charges for nonresidential class of service within the city is based upon the following service charges and user rates; provided, however, there will be a bimonthly service charge regardless of usage as set forth in this section:

<i>Meter Size</i>	<i>Service Charge</i>
$\frac{5}{8}$ " $\times$ $\frac{3}{4}$ "	\$25.83 \$21.83
$\frac{3}{4}$ "	\$30.79 \$26.02
1"	\$40.54 \$34.26
1 $\frac{1}{2}$ "	\$70.87 \$59.91
2"	\$96.19 \$81.31
3"	\$217.72 \$184.02
4"	\$369.62 \$312.42

<i>Meter Size</i>	<i>Quantity (in 1,000 gallons) at a rate of \$6.50 \$6.19 per 1,000 gallons</i>	<i>Quantity (in 1,000 gallons) at a rate of \$8.13 \$7.74 per 1,000 gallons</i>	<i>Quantity (in 1,000 gallons) at a rate of \$9.78 \$9.31 per 1,000 gallons</i>	<i>Quantity (in 1,000 gallons) at a rate of \$13.02 \$12.40 per 1,000 gallons</i>
$\frac{5}{8}$ " $\times$ $\frac{3}{4}$ "	0 to 170	170 to 340	340 to 510	All over 510
$\frac{3}{4}$ "	0 to 170	170 to 340	340 to 510	All over 510
1"	0 to 280	280 to 560	560 to 840	All over 840
1 $\frac{1}{2}$ "	0 to 600	600 to 1,200	1,200 to 1,800	All over 1,800
2"	0 to 900	900 to 1,800	1,800 to 2,700	All over 2,700
3"	0 to 2,000	2,000 to 4,000	4,000 to 6,000	All over 6,000
4"	0 to 3,400	3,400 to 6,800	6,800 to 10,200	All over 10,200

Sec. 102-173. Nonresidential user charges—outside city.

Bimonthly user charges for nonresidential class of service outside the city is based upon the following service charges and user rates; provided, however, there will be a bimonthly service charge regardless of usage as set forth in this section:

<i>Meter Size</i>	<i>Service Charge</i>
$\frac{5}{8}$ " $\times$ $\frac{3}{4}$ "	\$51.66 \$43.66
$\frac{3}{4}$ "	\$61.59 \$52.05
1"	\$81.07 \$68.53
1 $\frac{1}{2}$ "	\$141.77 \$119.83
2"	\$192.41 \$162.63
3"	\$435.45 \$368.04
4"	\$739.25 \$624.85

Meter Size	Quantity (in 1,000 gallons) at a rate of \$13.01 \$12.39 per 1,000 gallons	Quantity (in 1,000 gallons) at a rate of \$16.26 \$15.49 per 1,000 gallons	Quantity (in 1,000 gallons) at a rate of \$19.55 \$18.62 per 1,000 gallons	Quantity (in 1,000 gallons) at a rate of \$26.05 \$24.87 per 1,000 gallons
$\frac{5}{8}$ " $\times$ $\frac{3}{4}$ "	0 to 170	170 to 340	340 to 510	All over 510
$\frac{3}{4}$ "	0 to 170	170 to 340	340 to 510	All over 510
1"	0 to 280	280 to 560	560 to 840	All over 840
1 $\frac{1}{2}$ "	0 to 600	600 to 1,200	1,200 to 1,800	All over 1,800
2"	0 to 900	900 to 1,800	1,800 to 2,700	All over 2,700
3"	0 to 2,000	2,000 to 4,000	4,000 to 6,000	All over 6,000
4"	0 to 3,400	3,400 to 6,800	6,800 to 10,200	All over 10,200

Sec. 102-174. Distributor and institution user rates.

The following water user rates are applicable to contractual service in or out of the city accountable through master meter or meters to user-owned and user-maintained distribution systems:

- (1) First 500,000 gallons per month, per 1,000 gallons.....~~\$6.66~~ ~~\$6.34~~
- (2) Excess of 500,000 gallons per month, per 1,000 gallons.....~~\$6.42~~ ~~\$6.11~~

Sec. 102-175. Fill station user rates.

The water user rate applicable for fill station usage will be charged at ~~\$9.78~~ ~~\$9.31~~ per 1,000 gallons.

Sec. 102-176. Fire hydrant metered water user rates.

- (a) The water user rate applicable to permitted users of fire hydrant meters for measuring water supplied from a city fire hydrant is ~~\$9.78~~ ~~\$9.31~~ per 1,000 gallons, plus a service charge as follows:

- (1) 1 to 90 days: \$1.00 per day, minimum of 1 day
- (2) 91 to 180 days: \$2.00 per day
- (3) 181 days or more: \$3.00 per day

A damage deposit of \$1,250.00 will be collected at the time of issuance of the fire hydrant permit. Upon return of the fire hydrant meter in condition acceptable to the city, the damage deposit will be returned.

- (b) Tampering with, or in any manner altering the operation of the meter such that the register usage is less than the actual usage will result in an additional fee of \$5.00 per day being charged retroactive to the date the hydrant meter permit was issued and ending on the date the meter is returned. The charges provided in this paragraph shall be in addition to the charges provided in paragraph (a) of this section.
- (c) If the city cannot furnish a fire hydrant meter, the customer may use the customer's own meter upon obtaining a permit under provisions of this section. The customer may be required to submit written proof that the meter has been calibrated and reads accurately.

Sec. 102-177. Municipal park rate.

- (a) Monthly user rate for the municipal park class is based upon the rate of ~~\$3.70~~ ~~\$3.52~~ per 1,000 gallons.
- (b) This service is interruptible to the extent the city may limit the times of irrigation and the amount of water used. The city and the Apex Park and Recreation District-owned properties, which have occupied structures located thereon, are excluded from this class of water service.

Sec. 102-178. - Unmetered standby fire protection service charge.

Bimonthly charges for unmetered standby fire protection service is as follows:

	In City	Out of City
a. Fire hydrants, each	\$9.78 \$9.31	\$14.67 \$13.97
b. Automatic sprinkler system:		
5/8"—3/4" service line	\$9.78 \$9.31	\$14.67 \$13.97
1" service line	\$9.78 \$9.31	\$14.67 \$13.97
1 1/4" service line	\$19.57 \$18.64	\$29.34 \$27.94
1 1/2" service line	\$19.57 \$18.64	\$29.34 \$27.94
2" service line	\$29.31 \$27.91	\$43.96 \$41.87
3" service line	\$39.05 \$37.19	\$58.57 \$55.78
4" service line	\$58.64 \$55.85	\$87.97 \$83.78
6" service line	\$78.17 \$74.45	\$117.27 \$111.69
8" service line	\$92.49 \$88.09	\$138.77 \$132.16

Sec. 102-179. Lost water rate.

Unmetered water lost or used due to activities such as, but not limited to, excavation, demolition, landscaping, or intentional acts of vandalism or theft will be billed to the responsible party at the rate of ~~\$9.78~~ ~~\$9.31~~ per 1,000 gallons. The estimated volume of unmetered lost water will be based on main size, break size, water pressure, flow time, or other available data.

Sec. 102-180. Special service fees and user rates.

Prior to use of the fire hydrant as a source of water for special short-term community activities, the applicant will obtain a hydrant permit and water meter from the utilities department at least 24 hours prior to the time of use. Charges for the service and the water used will be based only on the water user rate of ~~\$6.50~~ ~~\$6.19~~ per 1,000 gallons.



REPORT TO CITY COUNCIL ORDINANCE FIRST READING

**AGENDA ITEM
8.C.2.**

TO: THE HONORABLE CITY COUNCIL

DATE: October 7, 2025

SUBJECT: CB25-022, An Ordinance Amending Section 102-206 of Chapter 102, Utilities, of the Arvada City Code Pertaining to Wastewater Users Rates and Bimonthly Service Charges, and Section 102-355 of Chapter 102, Utilities, of the Arvada City Code Pertaining to Stormwater User Rates (Public Hearing to be set for October 21, 2025 at 6:15 p.m.)

Report in Brief

PRESENTER: Jacqueline Rhoades, Infrastructure Director

At the August 12, 2025 City Council meeting, the City team presented a workshop on revenue increase scenarios for updated water, sewer, and stormwater rates and bimonthly service fees for 2026. City Council directed the City team to return with the wastewater and stormwater fund scenarios that are reflected in the attached ordinance.

The ordinance before the City Council will adjust Wastewater and Stormwater Rates for 2026. The attached ordinance will increase wastewater rates by 12%, with no change to the bimonthly service fees. The overall revenue increase will be 10.5% for 2026. This will increase the typical in-city single-family wastewater bill by \$43.20 per year (\$7.20 per bimonthly bill or \$3.60 per month). The Infrastructure Department is also presenting a stormwater rate increase of 6% in 2026. This will increase the typical in-city single-family wastewater bill by \$4.05 per year (\$0.68 per bimonthly bill or \$0.34 per month).

The City's Infrastructure Department continues to prepare for investments in operations and infrastructure as part of our ongoing commitment to continue to provide reliable water, sewer, and stormwater drainage services to our community. This work aligns with the Infrastructure Priority Area of the City Council Strategic Plan, specifically Infrastructure Work System Service 1: Provides the community with a safe, resilient, high-quality water supply, drainage system, wastewater disposal, and solid waste management services for full city build-out, as defined by the Comprehensive Plan. This work also aligns with the principle that the City maintains utility rates at the lowest practical levels, with accurate billing that supports robust and reliable infrastructure.

The Arvada team recommends that the City Council approve CB25-022, An Ordinance Amending Section 102-206 of Chapter 102, Utilities, of the Arvada City Code Pertaining to Wastewater Users Rates and Bimonthly Service Charges, and Section 102-355 of Chapter 102, Utilities, of the Arvada City Code Pertaining to Stormwater User Rates.

Financial Impact

The Wastewater Fund revenue scenario presented in this Ordinance will generate approximately \$1,966,000 of new revenues, which will be used primarily towards paying for debt service and capital projects. The Stormwater Fund revenue scenario presented in this Ordinance will generate approximately \$293,228 of new revenues, which will be used primarily towards paying for capital projects.

Background

In support of the City Council Strategic Plan and the Infrastructure Work System, the City team has been developing, implementing and refining a financial strategy to support reinvestment in aging wastewater and stormwater infrastructure and expansion of capacity to support planned development.

Over the course of three workshops in 2025, the City team presented City Council with foundational information about utility financial strategies, presented a series of revenue increase scenarios for the wastewater fund, presented a single revenue scenario for the stormwater fund, and requested direction about how best to provide assistance to customers who are struggling to pay their utility bill.

At the final workshop on August 12, 2025, the City team presented four revenue increase scenarios for the wastewater fund for updating wastewater rates for 2026. No change in the bimonthly wastewater service fee was proposed for 2026. At the August workshop, the City team received direction about which of these scenarios to bring back to City Council for adoption on October 7, 2025 for first reading. Additional revenue from these adjustments enables major reinvestments and capacity building projects to proceed in accordance with a schedule laid out in the master planning work directed in the City Council Strategic Plan. The 2026 budget for the Wastewater Enterprise Fund includes new revenues of approximately \$1,966,000, which will be used primarily towards paying for debt service and capital projects.

At the same workshop, the City team presented a Stormwater Fund scenario that would provide new revenues of approximately \$293,000. These revenues will be used primarily for capital projects. The City team provided a single revenue increase scenario to City Council for 2026 while the City team assesses and refines the Stormwater Fund's capital project prioritization process. The intent is to return to City Council in early 2026 with a Stormwater 101 presentation and a discussion about establishing financial sustainability for this fund.

Discussion

The City's Infrastructure Work System continues to prepare for investments in operations and infrastructure as part of our ongoing commitment to continue to provide reliable water, sewer, and stormwater drainage services to our community. This work supports the Infrastructure Priority Area of the City Council Strategic Plan, specifically Infrastructure Works System Service 1: Provides the community with a safe, resilient, high-quality water supply, drainage system, wastewater disposal and solid waste management services for full city build-out, as defined by the Comprehensive Plan. The City team's presentation of the requested revenue increase scenario for the 2026 adjustments to the wastewater rate and fee schedule and the stormwater rate schedule also aligns with the principle that the City maintains utility rates at the lowest practical levels.

On an annual basis, the City team provides City Council with foundational utility enterprise information and a series of revenue scenarios for adjusting wastewater volumetric rates and fixed bimonthly service fees. There continue to be pressures that are driving a significant wastewater rate increase for 2026. The primary cost driver for 2026 is the need for capital reinvestment projects that will replace or repair aging wastewater collection systems. These projects were identified as priorities in master planning conducted in recent years. While inflation is still a concern, the City team is also managing the impact that current and potential future tariffs will have on project costs.

The City team is presenting an in-city rate increase of 12% and a bimonthly service charge increase of 0%, for a total revenue increase of 6.9%. If approved, this rate change will result in an additional \$43.20 per year (\$7.20 per bimonthly bill, or \$3.60 per month) for a typical in-city single family owner.

On an annual basis, the City team also makes a recommendation for adjusting stormwater revenues. The City team is presenting an increase of 6%. If approved, this rate change will result in an additional \$4.05 per year (\$0.68 per bimonthly bill, or \$0.34 per month) for a typical in-city single family owner. In accordance with past practice, the in-city rate increases are used as an index to calculate all other customer categories.

The complete updated wastewater and stormwater rate schedules are in the proposed ordinance.

Based on the City Council's feedback, the City team will also investigate opportunities to provide an additional utility bill assistance program to our customers who are struggling to pay their utility bill. In addition to the hardship credits, bill equalizations and bill arrangements that we currently offer, we will work with the Colorado agency(ies) that offer LEAP (Low-income Energy Assistance Program) benefits to potentially gain access to their customer list. If implemented, Arvada utility

SUBJECT: CB25-022, An Ordinance Amending Section 102-206 of Chapter 102, Utilities, of the Arvada City Code Pertaining to Wastewater Users Rates and Bimonthly Service Charges, and Section 102-355 of Chapter 102, Utilities, of the Arvada City Code Pertaining to Stormwater User Rates (Public Hearing to be set for October 21, 2025 at 6:15 p.m.)

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ITEM: 8.C.2.

customers who already qualify for the state's LEAP benefits would be automatically eligible to receive a \$25 credit per bimonthly bill. While the LEAP program has been suspended for the remainder of 2025, the City team will continue to communicate with the appropriate agencies into 2026, with the intent to implement this program in 2026.

Public Contact

Posting of the City Council agenda.

Commission Recommendation

Strategic Alignment

The recommended action aligns with the Infrastructure Work System Services within the City Council Strategic Plan. Specifically, the recommended action is consistent with the following work system service included in the Infrastructure Priority Area:

Provides the community with a safe, reliable high quality water supply, drainage system, and wastewater disposal services for full city build-out, as defined in the Comprehensive Plan. This includes maintaining utility rates at the lowest practical levels with accurate billing that supports replacement of aging infrastructure in order to maintain robust utility systems.

Alternative Courses of Action

1. Approve this ordinance increasing the rates for the Wastewater and Stormwater Fund in 2026.
2. Direct staff to return with an alternate revenue increase.

Recommendation for Action

The Arvada team recommends that the City Council approve Alternative No. 1.

Suggested Motion:

I move that CB25-022, An Ordinance Amending Section 102-206 of Chapter 102, Utilities, of the Arvada City Code Pertaining to Wastewater Users Rates and Bimonthly Service Charges, and Section 102-355 of Chapter 102, Utilities, of the Arvada City Code Pertaining to Stormwater User Rates, be (approved on first reading, ordered published in full and a public hearing date be set for October 21, 2025 at 6:15 p.m.) (rejected).

Prepared by:
Christine Gray, Utilities Business Manager

Reviewed by:

Approved by:

Jacqueline Rhoades, Director of Infrastructure 09/17/2025
Bryan Archer, Chief Financial Officer 09/18/2025

SUBJECT: CB25-022, An Ordinance Amending Section 102-206 of Chapter 102, Utilities, of the Arvada City Code Pertaining to Wastewater Users Rates and Bimonthly Service Charges, and Section 102-355 of Chapter 102, Utilities, of the Arvada City Code Pertaining to Stormwater User Rates (Public Hearing to be set for October 21, 2025 at 6:15 p.m.)

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Tammy Hedlund, Legal Specialist	09/18/2025
Jessica Morales, Deputy City Attorney	09/18/2025
Rachel Morris, City Attorney	09/18/2025
Alli Scheck, Deputy City Manager	09/24/2025
Don Wick, City Manager	09/25/2025

Enclosure, exhibits & attachments required to support the report

COUNCIL BILL NO. 25-022
ORDINANCE NO. _____

AN ORDINANCE AMENDING SECTION 102-206 OF CHAPTER 102, UTILITIES, OF THE
ARVADA CITY CODE PERTAINING TO WASTEWATER USERS RATES AND
BIMONTHLY SERVICES CHARGES AND SECTION 102-355 OF CHAPTER 102,
UTILITIES, OF THE ARVADA CITY CODE PERTAINING TO STORMWATER USERS
RATES

BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF ARVADA, COLORADO:

Section 1. Section 102-206, User charges, of Article II, Water and Sewer, of Chapter 102, Utilities, of the Arvada City Code is hereby amended to read as follows:

“Sec. 102-206. User charges.

Each connected property owner or user of the city sewer system is required to pay to the city a user charge based upon the following rate schedule according to the classified strength of sewage:

(1) Normal strength charges:

Bi-monthly usage (gallons)	Rate
a. Service charge, regardless of usage	\$10.44
b. All usage, per 1,000 gallons	\$8.36

(2) Plus, extra strength charges as follows:

	Per Pound
a. BOD in excess of 300 mg/l	\$0.85
b. SS in excess of 330 mg/l	\$0.92
c. TKN in excess of 35 mg/l	\$1.78

”

Section 2. Section 102-355, Stormwater management utility service charge established, of Article VI, Arvada Stormwater Management Utility Ordinance, of Chapter 102, Utilities, of the Arvada City Code is hereby amended to read as follows:

“Sec. 102-355. Stormwater management utility service charge established.

- (a) There is hereby imposed on the owner of each and every lot or parcel of land within the city containing an impervious surface, except as specifically provided in subsection (b) of this section, a stormwater management utility service charge. This service charge is deemed reasonable and necessary to pay for the project costs of the existing city stormwater facilities

and stormwater quality programs; and project costs of future city stormwater facilities and stormwater quality programs. The proceeds of said charge, upon collection, are made as payment for the use of the city's stormwater facilities by owners of real property upon which the service charge is imposed.

- (b) All public and private highways, roadways, streets and alleys and associated sidewalks and bike paths shall be part of the stormwater facilities, and, therefore, shall be exempt from all charges imposed by this article. The exemption provided herein shall not apply to public or private parking lots, driveways, service drives, drive aisles or internal site roadways, beltways, access drives or lanes, and sidewalks.
- (c) The charge provided herein shall be based upon the extent to which the city's stormwater facilities are used by persons within the city. Use of stormwater facilities shall be based upon a calculation of runoff from the impervious surfaces of parcels of land located within the city.
- (d) The city shall bill, as part of its regular utility bill or as a separate bill in cases where a parcel of real property is not served or serviced by city water or sewer utilities, for the service charge provided in this article. The bill shall be made to the owner of record of the property as set forth in the records of the city, or to such other person as the owner may designate in writing to accept the bill and the recipient of the bill shall pay the bill upon receipt thereof. Nothing in this subsection shall serve to relieve the owner of responsibility for ensuring that payment of the service charge is made is the bill sent to some other person designated by the owner as recipient.
- (e) The bimonthly service charge as provided in this article shall be \$0.003978 per square foot of impervious surface located on the property. The charge described in this subsection is imposed on each and every improved lot and parcel of land within the city upon which an impervious surface exists. The service charge shall be billed by the city and shall be paid upon receipt thereof.
- (f) In the calendar year 2001, to be effective in the calendar year 2002, the director shall determine or cause the determination to be made, of the estimated number of square feet of impervious surface in or on the real property of each owner within the city, using the definition of impervious surface set forth in this article. The director may make such measurement based upon any reasonable means, including, but not by way of limitation, aerial survey and statistical analysis of real property and impervious surfaces located thereon. The service charge for the stormwater management utility shall be calculated by dividing the estimated cost of providing stormwater facilities and project costs by the estimated square footage of impervious surface within the boundaries of the city, which product shall yield the per square footage cost of service. The director may update the measurement of impervious surface area at such times as the director deems reasonable and necessary to do so, but in any event, not less than once each ten years, with any change to be effective in the next calendar year. If, for any reason, a recalculation of the service charge does not occur, then the most recent rate charged shall continue until the recalculation is made. No failure to make a recalculation of the service charge shall repeal, amend, or suspend operation of this article.

- (g) Each development occurring within the city after adoption of this article that results in an increase or decrease in impervious surface area shall be subject to the provisions of this article. The director shall be entitled to measure an increase or decrease to any impervious surface area resulting from a development, and add the resulting increase to or deduct the resulting decrease from, the service charge to the city utility bill for the property wherein the development occurred. The director shall establish such administrative rules in accordance with section 102-359 for determining when an increase or decrease to impervious surface areas has occurred as may be reasonable and necessary to give effect to this subsection.
- (h) The service charge provided in this article shall be subject to additional fees for delinquent payment, uncollectible checks, liens and any other penalties which are the same as those imposed with city water or sewer utility charges as provided in this chapter, or pursuant to the provisions of chapter 59 entitled "municipal liens."

Section 3. Severability. Should any provision of this ordinance be declared by a court to be unconstitutional or invalid, such decision shall not affect the validity of the ordinance as a whole, or any part thereof, other than the part so declared unconstitutional or invalid. The City Council declares it would have adopted this ordinance and each part or parts hereof irrespective of the fact that any one part or parts be declared unconstitutional or invalid.

Section 4. This ordinance shall take effect on January 1, 2026.

INTRODUCED, READ, AND ORDERED PUBLISHED this 7th day of October, 2025.

PASSED, ADOPTED AND APPROVED this ____ day of October, 2025.

Lauren Simpson, Mayor

ATTEST:

City Clerk

APPROVED AS TO FORM:
Rachel A. Morris, City Attorney:

BY: _____

Publication Dates: October 9, 2025

~~REDLINE/STRIKETHROUGH VERSION~~

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~~Strikethrough~~ indicates deleted material

Sec. 102-206. User charges.

Each connected property owner or user of the city sewer system is required to pay to the city a user charge based upon the following rate schedule according to the classified strength of sewage:

(1) Normal strength charges:

Bi-monthly usage (gallons)	Rate
a. Service charge, regardless of usage	\$10.44
b. All usage, per 1,000 gallons	\$8.36 <u>\$7.46</u>

(2) Plus, extra strength charges as follows:

	Per Pound
a. BOD in excess of 300 mg/l	\$0.85 <u>\$0.76</u>
b. SS in excess of 330 mg/l	\$0.92 <u>\$0.82</u>
c. TKN in excess of 35 mg/l	\$1.78 <u>\$1.59</u>

Sec. 102-355. Stormwater management utility service charge established.

- (a) There is hereby imposed on the owner of each and every lot or parcel of land within the city containing an impervious surface, except as specifically provided in subsection (b) of this section, a stormwater management utility service charge. This service charge is deemed reasonable and necessary to pay for the project costs of the existing city stormwater facilities and stormwater quality programs; and project costs of future city stormwater facilities and stormwater quality programs. The proceeds of said charge, upon collection, are made as payment for the use of the city's stormwater facilities by owners of real property upon which the service charge is imposed.
- (b) All public and private highways, roadways, streets and alleys and associated sidewalks and bike paths shall be part of the stormwater facilities, and, therefore, shall be exempt from all charges imposed by this article. The exemption provided herein shall not apply to public or

private parking lots, driveways, service drives, drive aisles or internal site roadways, beltways, access drives or lanes, and sidewalks.

- (c) The charge provided herein shall be based upon the extent to which the city's stormwater facilities are used by persons within the city. Use of stormwater facilities shall be based upon a calculation of runoff from the impervious surfaces of parcels of land located within the city.
- (d) The city shall bill, as part of its regular utility bill or as a separate bill in cases where a parcel of real property is not served or serviced by city water or sewer utilities, for the service charge provided in this article. The bill shall be made to the owner of record of the property as set forth in the records of the city, or to such other person as the owner may designate in writing to accept the bill and the recipient of the bill shall pay the bill upon receipt thereof. Nothing in this subsection shall serve to relieve the owner of responsibility for ensuring that payment of the service charge is made is the bill sent to some other person designated by the owner as recipient.
- (e) The bimonthly service charge as provided in this article shall be ~~\$0.003753~~ \$0.003978 per square foot of impervious surface located on the property. The charge described in this subsection is imposed on each and every improved lot and parcel of land within the city upon which an impervious surface exists. The service charge shall be billed by the city and shall be paid upon receipt thereof.
- (f) In the calendar year 2001, to be effective in the calendar year 2002, the director shall determine or cause the determination to be made, of the estimated number of square feet of impervious surface in or on the real property of each owner within the city, using the definition of impervious surface set forth in this article. The director may make such measurement based upon any reasonable means, including, but not by way of limitation, aerial survey and statistical analysis of real property and impervious surfaces located thereon. The service charge for the stormwater management utility shall be calculated by dividing the estimated cost of providing stormwater facilities and project costs by the estimated square footage of impervious surface within the boundaries of the city, which product shall yield the per square footage cost of service. The director may update the measurement of impervious surface area at such times as the director ~~he~~ deems reasonable and necessary to do so, but in any event, not less than once each ten years, with any change to be effective in the next calendar year. If, for any reason, a recalculation of the service charge does not occur, then the most recent rate charged shall continue until the recalculation is made. No failure to make a recalculation of the service charge shall repeal, amend, or suspend operation of this article.
- (g) Each development occurring within the city after adoption of this article that results in an increase or decrease in impervious surface area shall be subject to the provisions of this article. The director shall be entitled to measure an increase or decrease to any impervious surface area resulting from a development, and add the resulting increase to or deduct the resulting decrease from, the service charge to the city utility bill for the property wherein the development occurred. The director shall establish such administrative rules in accordance with section 102-359 for determining when an increase or decrease to impervious surface areas has occurred as may be reasonable and necessary to give effect to this subsection.

- (h) The service charge provided in this article shall be subject to additional fees for delinquent payment, uncollectible checks, liens and any other penalties which are the same as those imposed with city water or sewer utility charges as provided in this chapter, or pursuant to the provisions of chapter 59 entitled "municipal liens.



REPORT TO CITY COUNCIL ORDINANCE FIRST READING

AGENDA ITEM
8.C.3.

TO: THE HONORABLE CITY COUNCIL

DATE: October 7, 2025

SUBJECT: CB25-023, An Ordinance Prohibiting the Installation of Graywater Treatment Works and the Use of Graywater Within the City of Arvada (Public Hearing to be set for October 21, 2025 at 6:15 p.m.)

Report in Brief

PRESENTER: Jacqueline Rhoades

CB25-023, An Ordinance Prohibiting the Installation of Graywater Treatment Works and the Use of Graywater Within the City of Arvada, is a new ordinance to ensure compliance with state Regulation 86 and HB 24-1362. This ordinance prohibits the installation or use of graywater and graywater systems within the city and the city's water system boundaries.

The Arvada team recommends that the City Council approve CB25-023, An Ordinance Prohibiting the Installation of Graywater Treatment Works and the Use of Graywater Within the City of Arvada.

Financial Impact

If the ordinance is approved as is, there is no financial impact. If the council chooses to allow graywater treatment works or use of graywater, either partially or wholly, there would be financial requirements for the creation, establishment, and management of a new control program including staffing and training needs, a new permitting framework, inspections and enforcement, software integration, education and outreach materials, etc.

Background

Graywater is wastewater generated from bathroom sinks, bathtubs, showers, and laundry machines that can be reused for non-potable purposes, such as toilet flushing and subsurface irrigation. Graywater treatment works is an arrangement of devices and structures used to: (a) collect graywater from within a building or facility; and (b) treat, neutralize, or stabilize graywater within the same building or facility to the level necessary for safe use. Regulation 86, adopted by the Colorado Water Quality Control Commission, establishes the minimum standards for graywater treatment works and graywater use. HB 24-1362 transfers oversight of household graywater treatment works and graywater use to counties and municipalities and requires these jurisdictions to "opt-out" by January 1, 2026, if they do not wish to allow graywater treatment works or graywater use. Jurisdictions that do not "opt-out" must immediately establish and manage a full graywater control program with permitting, inspections, enforcement, staff training, public education, and interagency coordination.

Discussion

HB24-1362 requires the City to establish and manage a graywater control program. While water savings could be realized by the residents that install graywater treatment works, there are still regulatory and public health risks to be managed. Prohibiting graywater treatment works and graywater use at this time reduces the risk of cross-contamination, limits operational challenges, and minimizes legal and enforcement complexity. After careful evaluation, assessing resource capacity as well as uncertainties such as whether this use is allowable under the City's 1965 contract with Denver Water that explicitly prohibits successive uses of water by Arvada or any customers of Arvada, the team is recommending to "opt-out" of HB 24-1362. If future conditions change, HB 24-1362 allows the City to partially or wholly allow the installation of graywater treatment works and graywater use at any time by passing a new ordinance.

Should the City Council pass this Ordinance, the City team will propose amendments to Arvada's Building Code at a later date that will further codify the prohibition on installing graywater treatment works and using graywater within Arvada and Arvada's water system.

Public Contact

Posting of the City Council agenda

Commission Recommendation

n/a

Strategic Alignment

This action is in alignment with the Infrastructure Principles and Work System Services in the City Council Strategic Plan., including: INF1 Provides the community with a safe, resilient, high-quality water supply, drainage system, wastewater disposal, and solid waste management services for full city build-out; and INF7 Ensures compliance with federal and state regulations.

Alternative Courses of Action

1. Approve the Ordinance as written
2. Take no action and automatically be "opted-in" to allow the installation of graywater treatment works and use of graywater, either wholly or partially. Opting-in in any capacity requires the City to create, fund, manage, and enforce a new graywater control program.

Recommendation for Action

The Arvada team recommends that the City Council approve CB25-023, An Ordinance Prohibiting the Installation of Graywater Treatment Works and the Use of Graywater Within the City of Arvada.

Suggested Motion:

I move that CB25-023, An Ordinance Prohibiting the Installation of Graywater Treatment Works and the Use of Graywater Within the City of Arvada, be (approved on first reading, ordered published in full, and a public hearing set for October 21, at 6:15 p.m.) (rejected).

Prepared by:
Laura Hemler, Assistant City Attorney

Reviewed by:

Approved by:

Jacob Moyer, Stormwater Administrator	09/12/2025
Evelyn Rhodes, Water Quality Administrator	09/15/2025
Tammy Hedlund, Legal Specialist	09/15/2025
Laura Hemler, Assistant City Attorney	09/15/2025

SUBJECT: CB25-023, An Ordinance Prohibiting the Installation of Graywater Treatment Works and the Use of Graywater Within the City of Arvada (Public Hearing to be set for October 21, 2025 at 6:15 p.m.)

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Jacqueline Rhoades, Director of Infrastructure 09/17/2025

Bryan Archer, Chief Financial Officer 09/18/2025

Rachel Morris, City Attorney 09/18/2025

Alli Scheck, Deputy City Manager 09/24/2025

Don Wick, City Manager 09/25/2025

Enclosure, exhibits & attachments required to support the report

COUNCIL BILL NO. 25-023
ORDINANCE NO.

AN ORDINANCE PROHIBITING THE INSTALLATION OF GRAYWATER TREATMENT
WORKS AND THE USE OF GRAYWATER WITHIN THE CITY OF ARVADA

WHEREAS, graywater is wastewater collected specifically from bathroom and laundry room sinks, bathtubs, showers, and laundry machines; and

WHEREAS, graywater treatment works are an arrangement of devices and structures used to collect and lightly treat graywater within a building or facility, so that the graywater can be used for nondrinking water purposes, such as toilet flushing and outdoor subsurface irrigation; and

WHEREAS, despite treatment within graywater treatment works, graywater likely contains human pathogens that have the potential to be dangerous to public health; and

WHEREAS, Arvada's public water system has a statutory obligation to provide safe drinking water to all its customers, and to provide safeguards against cross connections that could introduce contamination to the water supply; and

WHEREAS, on May 29, 2024, the Colorado legislature passed HB 24-1362, which allows Colorado residents to install graywater treatment works in new construction projects and use the collected and treated graywater for toilet flushing and outdoor subsurface irrigation unless a local city adopts an ordinance prohibiting the installation of graywater treatment works and the use of all graywater in the municipality; and

WHEREAS, if the City of Arvada ("Arvada") does not prohibit the installation of graywater treatment works and use of graywater within Arvada and Arvada's water system, HB 24-1362 requires Arvada to implement a local graywater control program consistent with Regulation No. 86 – Graywater Control Regulation promulgated by Colorado's Department of Public Health and Environment's Water Quality Control Division (5 CCR 1002-86); and

WHEREAS, C.R.S. §31-15-601(1)(m), as amended by HB 24-1362, empowers the governing body of a municipality to adopt an ordinance prohibiting the installation of graywater treatment works and the use of all graywater; and

WHEREAS, implementing a local graywater control program would require extensive resources, and Arvada currently does not have the resources available to implement the required local graywater control program; and

WHEREAS, the Arvada City Council recognizes the importance of water conservation and supports many other impactful ways to advance water savings; and

WHEREAS, the Arvada City Council therefore wishes to prohibit the installation of graywater treatment works and the use of all graywater within the City's water system boundaries to comply with HB 24-1362 and protect public health, safety, and welfare; and

WHEREAS, updates to the Arvada Building Code will be forthcoming following the passage of this prohibition.

NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF ARVADA COLORADO:

Section 1. The Arvada City Council hereby declares that the installation of graywater treatment works and the use of graywater in Arvada and Arvada's water system are prohibited.

Section 2. This ordinance shall be effective five days after publication following final passage.

INTRODUCED, READ, AND ORDERED PUBLISHED this 7th day of October, 2025.

PASSED, ADOPTED AND APPROVED this ____ day of _____, 2025.

Lauren Simpson, Mayor

ATTEST:

City Clerk

APPROVED AS TO FORM:
Rachel A. Morris, City Attorney

By: _____

Publication Dates: October 9, 2025



REPORT TO CITY COUNCIL ORDINANCE FIRST READING

**AGENDA ITEM
8.C.4.**

TO: THE HONORABLE CITY COUNCIL

DATE: October 7, 2025

SUBJECT: CB25-024, An Ordinance Appropriating Funds for Fiscal year 2026 (Public Hearing to be set for October 21, 2025 at 6:15 p.m.)

Report in Brief

Pursuant to Section 10.4 of the Home Rule Charter, the Council shall adopt an ordinance for the annual appropriation.

The total ordinance is in the amount of \$382,736,177.

The Arvada team recommends that the City Council approve CB25-024, An Ordinance Appropriating Funds for Fiscal Year 2026 on first reading, ordered published in full, and a public hearing set for October 21, 2025 at 6:15 p.m.

Financial Impact

The appropriating ordinance is in the amount of \$382,736,177.

Background

The Arvada team's presentation of the budget started on June 10, 2025 when the Finance and CMO teams presented the revised 10-year models along with a detailed review of current and previous revenue estimates and updates to the 10-year CIP model.

In mid September, 2025, the budget document was provided to the Council and posted to the City's website. The budget document includes the City Manager's transmittal letter, which provides an overview of the budget document as well as the major changes and issues associated with the proposed expenditure of over \$382 million of public funds.

On August 12, 2025, members of the Infrastructure Work System along with the Finance and CMO teams presented recommendations for funding the City's water, wastewater and stormwater infrastructure.

A budget workshop will be held on October 14, 2025, which will include: what is being proposed for funding, what was not funded and what areas need to be addressed in the upcoming years. The City Manager's Office and Finance teams will facilitate the presentation in collaboration with Work Systems Leaders, who will be available to provide additional details and information associated with the proposed changes.

Discussion

The 2025-2026 Proposed Revised Biennial Operating and Capital Budget was released to the City Council in mid September and the Arvada Community. Information within the Proposed Revised Biennial Budget provides an excellent overview of proposed allocations of resources and priorities identified by the City Council and team members.

Public Contact

Posting of the City Council agenda.

Commission Recommendation

N/A

Strategic Alignment

The ordinance supports the following principle within the Organizational and Service Effectiveness Priority Area within the City Council Strategic Plan:

Provides a well-managed, fiscally responsible government that operates effectively and efficiently while identifying revenue requirements to sustain current service levels and achieve future requested levels of service.

Alternative Courses of Action

N/A

Recommendation for Action

The Arvada team recommends that the City Council approve CB25-024, An Ordinance Appropriating Funds for Fiscal Year 2026 on first reading, ordered published in full, and a public hearing set for October 21, 2025 at 6:15 p.m.

Suggested Motion:

I move that CB25-024, An Ordinance Appropriating Funds for Fiscal Year 2026, be (approved on first reading, ordered published in full and a public hearing set for October 21, 2025, at 6:15 p.m.) (rejected).

Prepared by:
Debra Nielson, Deputy Director of Finance

Reviewed by:

Approved by:

Jenna Belec, Executive Assistant	09/15/2025
Bryan Archer, Chief Financial Officer	09/15/2025
Gail Walker, Legal Specialist-Contracts	09/15/2025
Laura Hemler, Assistant City Attorney	09/16/2025
Rachel Morris, City Attorney	09/18/2025
Linda Haley, Deputy City Manager	09/19/2025
Don Wick, City Manager	09/23/2025

Enclosure, exhibits & attachments required to support the report

COUNCIL BILL NO. 25-024
ORDINANCE NO. 25-_____

AN ORDINANCE APPROPRIATING FUNDS FOR FISCAL YEAR 2026

BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF ARVADA, COLORADO:

Section 1. Pursuant to the provisions of Section 10.4 of the Home Rule Charter, there is hereby appropriated money for fiscal year 2026 by fund in the following amounts:

Fund	Amount
General Fund	\$144,116,026
Grants Fund	\$1,811,588
Streets Maintenance Fund	\$23,851,950
Community Development	\$1,188,683
Arvada Housing Authority	\$9,206,746
Parks	\$16,229,628
Police Seizure	\$33,123
COP Debt Service	\$1,974,628
Police Tax Increment Fund .21	\$7,763,014
Police Tax Increment Fund .25	\$8,880,012
Debt Service	\$5,804,032
Capital Projects Fund	\$9,055,931
Water Fund	\$80,716,889
Wastewater Fund	\$31,283,503
Golf Course Fund	\$10,719,120
Stormwater Fund	\$4,214,429
Solid Waste	\$4,847,211
Insurance Fund	\$4,269,724

Computers	\$7,840,268
Print Shop	\$389,918
Vehicles	\$5,878,253
Buildings	\$2,661,501
TOTAL APPROPRIATION	\$382,736,177

Section 2. This ordinance shall be effective five days after publication following final passage.

INTRODUCED, READ AND ORDERED PUBLISHED this 7th day of October, 2025.

APPROVED AND ADOPTED this ____ day of October, 2025.

Lauren Simpson, Mayor

ATTEST:

City Clerk

APPROVED AS TO FORM:
Rachel A. Morris, City Attorney

By: _____

Publication Dates: October 9, 2025



REPORT TO CITY COUNCIL ORDINANCE FIRST READING

**AGENDA ITEM
8.C.5.**

TO: THE HONORABLE CITY COUNCIL

DATE: October 7, 2025

SUBJECT: CB25-025, An Ordinance Certifying the City of Arvada Mill Levy for 2025 for the Board of County Commissioners for Jefferson and Adams Counties (Public Hearing to be set for October 21, 2025 at 6:15 p.m.)

Report in Brief

The purpose of this ordinance is to certify the City's Mill Levy for the valuation year 2025. The 2026 proposed budget estimates that \$10,380,747 will be collected in 2026 based on a mill levy of 4.31 mills. There is no change in the mill levy from the previous year.

This mill levy will be used to assess all property within the City for taxes to be collected in 2026 for the valuation year of 2025.

The Arvada team recommends that the City Council approve CB25-025, An Ordinance Certifying the City Arvada Mill Levy for 2025 for the Board of County Commissioners for Jefferson and Adams Counties.

Financial Impact

The proposed revised 2025-2026 budget estimates that \$10,380,747 will be collected based on the proposed mill levy for 4.31 mills. This mill levy is part of the revenue sources that generate the estimated revenues for the General Fund in 2026.

Background

This action is associated with the adoption of the 2026 budget. Certification of the mill levy for the valuation year 2025 will enable the City to receive property tax in 2026.

Discussion

As described herein, the estimated property tax of \$10,380,747 for 2026 represents approximately 9.6% of the estimated General Fund revenue. Without the mill levy, the City would not be able to fund several critical services.

Public Contact

Posting of the City Council agenda.

Commission Recommendation

N/A

Strategic Alignment

The ordinance supports the following Principle within the Organizational and Service Effectiveness Priority Area of the City Council Strategic Plan:

SUBJECT: CB25-025, An Ordinance Certifying the City of Arvada Mill Levy for 2025 for the Board of County Commissioners for Jefferson and Adams Counties (Public Hearing to be set for October 21, 2025 at 6:15 p.m.)

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ITEM: 8.C.5.

Provides a sustainable government that operates effectively and efficiently while identifying revenue requirements to sustain current service levels and achieve future requested levels of service.

Alternative Courses of Action

N/A

Recommendation for Action

The Arvada team recommends that the City Council approve CB25-025, An Ordinance Certifying the City of Arvada Mill Levy for 2025 for the Board of County Commissioners for Jefferson and Adams Counties.

Suggested Motion:

I move that CB25-025, An ordinance Certifying the City of Arvada Mill Levy for 2025 for the Board of County Commissioners for Jefferson and Adams Counties, be (approved on first reading, ordered published in full and a public hearing date be set for October 21, 2025 at 6:15 p.m.) (rejected).

Prepared by:
Debra Nielson, Deputy Director of Finance

Reviewed by:

Approved by:

Jenna Belec, Executive Assistant	09/16/2025
Bryan Archer, Chief Financial Officer	09/16/2025
Gail Walker, Legal Specialist-Contracts	09/16/2025
Laura Hemler, Assistant City Attorney	09/16/2025
Rachel Morris, City Attorney	09/18/2025
Linda Haley, Deputy City Manager	09/19/2025
Don Wick, City Manager	09/23/2025

Enclosure, exhibits & attachments required to support the report

COUNCIL BILL NO. 25-025
ORDINANCE NO. _____

AN ORDINANCE CERTIFYING THE CITY OF ARVADA MILL LEVY FOR 2025 FOR
THE BOARD OF COUNTY COMMISSIONERS FOR JEFFERSON AND ADAMS
COUNTIES

BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF ARVADA, COLORADO:

Section 1. Pursuant to the provisions of C.R.S. 39-5-128(1), the City of Arvada does hereby certify the levy at 4.31 mills to be assessed against all property within the City of Arvada for taxes to be collected in 2026 for the valuation year of 2025.

Section 2. This Ordinance shall be effective five days after publication, following final passage.

INTRODUCED, READ, AND ORDERED PUBLISHED IN FULL this 7th day of October, 2025.

PASSED, ADOPTED AND APPROVED this ____ day of October, 2025.

Lauren Simpson, Mayor

ATTEST:

City Clerk

APPROVED AS TO FORM:
Rachel A. Morris, City Attorney

Publication Dates: October 9, 2025



REPORT TO CITY COUNCIL ORDINANCE FIRST READING

**AGENDA ITEM
8.C.6.**

TO: THE HONORABLE CITY COUNCIL

DATE: October 7, 2025

SUBJECT: CB25-026, An Ordinance Repealing and Reenacting Article XI (Micromobility Program) of Chapter 54, Motor Vehicles and Traffic, of the Arvada City Code (Public Hearing to be set for October 21, 2025 at 6:15 p.m.)

Report in Brief

The Arvada Team is requesting an update of City Code (ACC) Article XI (of Chapter 54, Motor Vehicles and Traffic) which regulates the City's Micromobility Program.

On July 8, 2025, the Arvada Team presented a City Council Workshop to discuss the future of the Micromobility Program. Council provided direction to remove the 'pilot' language from the program's regulating documents and allow the program to continue to operate on an annually permitted basis, as well as to implement parking infrastructure and service area expansion.

The proposed updates will remove the 'pilot' language and add clarity around the Program's status as an annually permitted program and requirements for reference checks for new vendors. Language was also added to make it easier for staff to utilize maintenance bonds to pay unpaid invoices from vendors when a permit is suspended, revoked, or terminated.

The Arvada team recommends that the City Council approve CB25-026, An Ordinance Repealing and Reenacting Article XI (Micromobility Program) of Chapter 54, Motor Vehicles and Traffic, of the Arvada City Code.

Financial Impact

There is no financial impact to the City.

Background

In 2019, following the opening of the G Line stations in the City of Arvada, the City's Citizen Transportation Advisory Committee (TAC) initiated an evaluation process to consider "first and last mile" solutions to transit. While several solutions were considered, the TAC landed on a three-prong approach: 1) Focus on 1-Mile areas of the G Line Stations; 2) Encourage Private Sector Mobility Investments; and 3) Pilot a Traffic Calming Program for Neighborhoods.

As a result of extensive community outreach and planning, the Pilot Program was launched in September 2021. The program is designed to permit vendors where a limited number of Shared Micromobility devices are permitted to operate within a limited pilot project area. The program was launched in January 2022 during winter, with its first vendor, Bird. Bird left the Arvada market in September 2023 and Lime has been the City's sole micromobility vendor since this time. An initial report to the City Manager was provided in February 2022 and there was a follow-up presentation to Council in October 2022 and at that time Council recommended program continuance under the pilot and service area expansion.

The Arvada team reported most recently to City Council at a workshop on July 8, 2025. The workshop offered an opportunity to consider four options: 1) Extend: Remove 'pilot' from the program name and continue the program on an annually permitted basis. 2) Educate: Staff continues and improves educational programming around micromobility rules and rules of the road. 3) Establish: Staff works with the vendor to establish parking locations for micromobility devices where rider density encourages

doing so. 4) Expand: Staff works with the vendor, the Arvada team, and regional partners to implement service area expansions. At this workshop, Council let the team know that all four recommendations should be implemented.

Discussion

Article XI of Chapter 54 was established in 2021 to provide for the management and creation of the pilot micromobility program. This section detailed the origins of the pilot program and established basic rules for its management. The updates proposed to Article XI are intended to reflect direction from Council to remove the 'pilot' language as well as to make it easier to manage. The specific updates include:

- Removal of the word 'pilot' and the removal of any out-of-date background information.
- Revision of 'Public Works' to 'Infrastructure' to reflect recent naming changes.
- Addition of language to allow staff to utilize the maintenance bond for unpaid invoices from vendors that have had their permits revoked, suspended, or terminated.
- Addition of language to require that new vendors submit three references upon requesting a permit.

Public Contact

The Arvada Team attended a City Council Workshop on July 8.

Commission Recommendation

N/A

Strategic Alignment

The Ordinance presented here will ensure the continued management of the Micromobility Program for Arvada residents and visitors, increasing transportation options and access to services, transit, and recreation. This aligns with City Council's Strategic Plan priority area and work system services of Infrastructure, including INF4 Innovates safe, accessible, and efficient connections to modes of transportation, including transit, streets, sidewalks, and bikeways, with a focus on enhanced technology at high-priority intersections improving safety, minimizing traffic congestion, and making first and last-mile connections.

Alternative Courses of Action

1. Approve the Ordinance as written.
2. Take no action.

Recommendation for Action

The Arvada team recommends City Council approve CB25-026, An Ordinance Repealing and Reenacting Article XI of Chapter 54, Motor Vehicles and Traffic, of the Arvada City Code.

Suggested Motion:

I move that CB25-026, An Ordinance Repealing and Reenacting Article XI of Chapter 54, Motor Vehicles and Traffic, of the Arvada City Code, be (approved on first reading, ordered published in full and a public hearing date be set for October 21, 2025 at 6:15 p.m. (rejected).

Prepared by:
Aislinn Droski, Transportation Planner

SUBJECT: CB25-026, An Ordinance Repealing and Reenacting Article XI (Micromobility Program) of Chapter 54, Motor Vehicles and Traffic, of the Arvada City Code (Public Hearing to be set for October 21, 2025 at 6:15 p.m.)

PAGE: 3
ITEM: 8.C.6.

Reviewed by:

Approved by:

Claudia Vaughan, City Engineer	09/16/2025
Jacqueline Rhoades, Director of Infrastructure	09/17/2025
Bryan Archer, Chief Financial Officer	09/17/2025
Tammy Hedlund, Legal Specialist	09/17/2025
Kelsy Sargent, Assistant City Attorney	09/18/2025
Rachel Morris, City Attorney	09/18/2025
Alli Scheck, Deputy City Manager	09/24/2025
Don Wick, City Manager	09/25/2025

Enclosure, exhibits & attachments required to support the report

COUNCIL BILL NO. 25-026
ORDINANCE NO.

AN ORDINANCE REPEALING AND REENACTING ARTICLE XI, MICROMOBILITY
PROGRAM, OF CHAPTER 54, MOTOR VEHICLES AND TRAFFIC, OF THE ARVADA
CITY CODE

WHEREAS, the City of Arvada, Colorado, (“City”), is a home rule municipality, organized and existing under Article XX, Section 6 of the Colorado Constitution; and

WHEREAS, on or about August 16, 2021, Article XI, Micromobility Program, of Chapter 54, Motor Vehicles and Traffic, of the Arvada City Code was enacted pursuant to CB 21-020; and

WHEREAS, the Micromobility as a Service Program ran initially as a pilot program in the City; and

WHEREAS, City Council has determined that it is in the best interest of the City to continue the program in a permanent capacity; and

WHEREAS, the City now wishes to amend Article XI, Micromobility Program, of Chapter 54, Motor Vehicles and Traffic to reflect the program’s permanent status and to clarify, update, and correct obligations of the City and the operators.

NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF ARVADA, COLORADO:

Section 1. Article XI, Micromobility Program, of Chapter 54, Motor Vehicles and Traffic, is hereby repealed and reenacted to read as follows:

“ARTICLE XI. MICROMOBILITY PROGRAM

Sec. 54-301. Definitions.

For purposes of this article, the following words and phrases have the following meaning, unless otherwise indicated:

City means the City of Arvada.

Devices means bicycles, scooters, electrical assisted bicycles, electric scooters, and other small, wheeled vehicles designed specifically for shared-use and deployed by micromobility operators.

Director means the director of Infrastructure or his or her designee.

Micromobility means a network or system of devices, placed in the public right-of-way and for rent in short time increments, that provides increased mobility options over short distances in urban areas.

Mobility as a service permit program or program means a program allowing for the implementation and operation of micromobility within the city through annual permit applications.

Operator means a person or entity who offers devices to be used for micromobility.

Permit means a document issued by the director to an operator that allows the operator to offer micromobility devices and services in the city.

Sec. 54-302. Micromobility operator permit program.

To assist with the implementation and operation of micromobility within the city, the director shall create the “mobility as a service permit program.” The director shall establish a permit application process, and develop program criteria and requirements for micromobility operation within the city's rights-of-way.

Sec. 54-303. Rules and regulations.

- (a) The director may promulgate rules and regulations consistent with this chapter to govern the program, including, but not limited to, permitting obligations, the operation of devices, and rules necessary to enhance public safety.
- (b) All persons must comply with the rules and regulations adopted pursuant to this chapter.

Sec. 54-304. Permit required.

No person or entity shall conduct or carry on the business of offering devices without first obtaining a permit from the director under this article.

Sec. 54-305. Permit application.

- (a) An operator desiring a permit must submit a permit application and three references with current contact information to the director under the rules and regulations adopted pursuant to section 54-303 of this article, and must pay the fee(s) prescribed in section 54-306 of this article.
- (b) In accordance with the program criteria established under this article, the director is authorized to review, approve, and issue a micromobility permit to an operator who applies for a permit.

Sec. 54-306. Permit fees.

- (a) An operator must pay the initial, maintenance, and renewal fees associated with a program permit as prescribed in the rules and regulations adopted pursuant to section 54-303 of this article.
- (b) Fees prescribed pursuant to this article are non-refundable.

Sec. 54-307. Denial, suspension, or revocation of permits.

- (a) The director may deny an application for a permit under this chapter if the applicant fails to demonstrate that it meets all of the requirements for a permit as provided in the rules and regulations adopted pursuant to section 54-303.
- (b) The director may suspend or revoke a permit issued under this chapter if the operator fails to comply with the requirements of this chapter. A request for appeal must be provided in writing to the director no less than seven days after receiving the termination letter via certified mail. Any permit holder not satisfied with the director's decision may request a final appeal hearing with a hearing officer pursuant to chapter 2, article V, division 3 of this Code. Such hearing shall be set before the end of the 30-day decommissioning period set by Arvada in the original notice provided via certified mail. The decision made by the hearing officer is final.
- (c) Any operator whose permit is suspended or revoked must reclaim and remove their entire fleet of devices within 30 days of notice of suspension or revocation.
- (d) Any operator whose permit is terminated, suspended, or revoked must pay all unpaid invoices within 30 days of said termination, suspension, or revocation. Invoices not paid within 30 days of said termination, suspension, or revocation may, at the Director's discretion, be withdrawn from the maintenance bonds provided by the operator.

Sec. 54-308. Status of program.

The micromobility program began operating as a city program on the same terms set forth in this article beginning on January 1, 2023.”

Section 2. This repeal shall not affect or prevent the prosecution or punishment of any person for any act done or committed prior to the effective date of this ordinance and that is in violation of the section repealed by this ordinance.

Section 3. Severability. Should any provision of this ordinance be declared by a court to be unconstitutional or invalid, such decision shall not affect the validity of the ordinance as a whole, or any part thereof, other than the part so declared unconstitutional or invalid. The City Council declares it would have adopted this ordinance and each part or parts hereof irrespective of the fact that any one part or parts be declared unconstitutional or invalid.

Section 4. This ordinance shall be effective five days after publication following final passage.

INTRODUCED, READ, AND ORDERED PUBLISHED this 7th day of October, 2025.

PASSED, ADOPTED AND APPROVED this ____ day of _____, 2025.

Lauren Simpson, Mayor

ATTEST:

City Clerk

APPROVED AS TO FORM:
Rachel A. Morris, City Attorney

BY: _____

Publication Dates: October 9, 2025

~~REDLINE/STRIKETHROUGH VERSION~~

FOR INFORMATION ONLY -- NOT PART OF THE ORDINANCE

Underlined indicates new material
~~Strikethrough~~ indicates deleted material

ARTICLE XI. MICROMOBILITY PROGRAM

Sec. 54-301. Definitions.

For purposes of this article, the following words and phrases have the following meaning, unless otherwise indicated:

City means the City of Arvada.

Devices means bicycles, scooters, electrical assisted bicycles, electric scooters, and other small, wheeled vehicles designed specifically for shared-use and deployed by micromobility operators.

Director means the director of ~~public works~~Infrastructure or his or her designee.

Micromobility means a network or system of devices, placed in the public right-of-way and for rent in short time increments, that provides increased mobility options over short distances in urban areas.

Mobility as a service permit program or program means a program allowing for the implementation and operation of micromobility within the city ~~for a prescribed period of time~~through annual permit applications.

Operator means a person or entity who offers devices to be used for micromobility.

Permit means a document issued by the director to an operator that allows the operator to offer micromobility devices and services in the city.

(Ord. No. 4772, § 8, 8-16-2021)

Sec. 54-302. Micromobility operator permit ~~and pilot~~ program.

To assist with the implementation and operation of micromobility within the city, the director shall create the “mobility as a service permit program.” The director shall establish a permit application process, and develop program criteria and requirements for micromobility operation within the city's rights-of-way.

(Ord. No. 4772, § 8, 8-16-2021)

Sec. 54-303. Rules and regulations.

(a) The director may promulgate rules and regulations consistent with this chapter to govern the program, including, but not limited to, permitting obligations, the operation of devices, and rules necessary to enhance public safety.

(b) All persons must comply with the rules and regulations adopted pursuant to this chapter.

(Ord. No. 4772, § 8, 8-16-2021)

Sec. 54-304. Permit required.

No person or entity shall conduct or carry on the business of offering devices without first obtaining a permit from the director under this article.

(Ord. No. 4772, § 8, 8-16-2021)

Sec. 54-305. Permit application.

(a) An operator desiring a permit must submit a permit application ~~and three references with current contact information~~ to the director under the rules and regulations adopted pursuant to section 54-303 of this article, and must pay the fee(s) prescribed in section 54-306 of this article.

(b) In accordance with the program criteria established under this article, the director is authorized to

review, approve, and issue a micromobility permit to an operator who applies for a permit.
(Ord. No. 4772, § 8, 8-16-2021)

Sec. 54-306. Permit fees.

- (a) An operator must pay the initial, maintenance, and renewal fees associated with a program permit as prescribed in the rules and regulations adopted pursuant to section 54-303 of this article.
 - (b) Fees prescribed pursuant to this article are non-refundable.
- (Ord. No. 4772, § 8, 8-16-2021)

Sec. 54-307. Denial, suspension, or revocation of permits.

- (a) The director may deny an application for a permit under this chapter if the applicant fails to demonstrate that it meets all of the requirements for a permit as provided in the rules and regulations adopted pursuant to section 54-303.
 - (b) The director may suspend or revoke a permit issued under this chapter if the operator fails to comply with the requirements of this chapter. A request for appeal must be provided in writing to the director no less than seven days after receiving the termination letter via certified mail. Any permit holder not satisfied with the director's decision may request a final appeal hearing with a hearing officer pursuant to chapter 2, article V, division 3 of this Code. Such hearing shall be set before the end of the 30 day decommissioning period set by Arvada in the original notice provided via certified mail. The decision made by the hearing officer is final.
 - (c) Any operator whose permit is suspended or revoked must reclaim and remove their entire fleet of devices within 30 days of notice of suspension or revocation.
 - (d) Any operator whose permit is terminated, suspended, or revoked must pay all unpaid invoices within 30 days of said termination, suspension, or revocation. Invoices not paid within 30 days of said termination, suspension, or revocation may, at the Director's discretion, be withdrawn from the maintenance bonds provided by the operator.
- (Ord. No. 4772, § 8, 8-16-2021)

Sec. 54-308. Status of program.

~~The director will file with the city manager no later than January 31, 2022, a report assessing the program for city council's six month review. City council may terminate the pilot program on February 16, 2022 or allow the pilot program to continue. The program described herein will operate as a pilot program through and including September 13, 2022 with the possibility of extending to December 31, 2022. Unless terminated by city council action prior to that date, the micromobility program will operate~~The micromobility program began operating as a city program on the same terms set forth in this article beginning on January 1, 2023.
(Ord. No. 4772, § 8, 8-16-2021)



REPORT TO CITY COUNCIL

AGENDA ITEM
10.A.

TO: THE HONORABLE CITY COUNCIL

DATE: October 7, 2025

SUBJECT: Major Comprehensive Plan Amendment and Rezoning for Allendale Elementary School, 9.66 acres parcel of land generally located at 5900 Oak St. (Rob Smetana, Manager of Planning & Development)

Report in Brief

This is a coversheet for the two items for Allendale Elementary school. Please see the sub items for project information.

Prepared by:

Josie Suk, Development Systems and Administrative Manager

Reviewed by:

Approved by:

Josie Suk, Development Systems and Administrative Manager 09/15/2025

Enclosure, exhibits & attachments required to support the report



REPORT TO CITY COUNCIL RESOLUTION

AGENDA ITEM
10.A.1.

TO: THE HONORABLE CITY COUNCIL

DATE: October 7, 2025

SUBJECT: R25-093, A Resolution by the Arvada City Council for the City of Arvada, Colorado to Amend the 2014 Arvada Comprehensive Plan Land Use Designation Pertaining to the Former Allendale Elementary School from City of Arvada Public/Quasi-Public to City of Arvada Suburban Residential, a Parcel of Land Located at 5900 Oak Street (Presenter: Rob Smetana, Manager of City Planning & Development)

Report in Brief

The applicant is requesting approval of a Rezoning for the former Allendale Elementary school located at 5900 Oak Street. The current zoning is RN-7.5 (Residential Neighborhood), and the Rezoning request is to R6 (Residential, 6). Concurrently, a Comprehensive Plan Amendment from Public/Quasi-Public to Suburban Residential is requested in order to appropriately align with the requested zoning.

The applicant desires to construct 57 detached Single-Unit Dwellings on the 9.66-acre site which is currently developed with an elementary school. The project would have a density of 5.9 dwelling units per acre, consistent with the R6 zoning request. If the Comprehensive Plan Amendment and Rezoning are approved, a Site Plan and Minor Subdivision application will later be reviewed administratively. All of the project documents, staff report and planning commission meeting minutes are located on item 10.A.2.

The Arvada Team recommends that the City Council approve R25-093, A Resolution by the Arvada City Council for the City of Arvada, Colorado to Amend the 2014 Arvada Comprehensive Plan Land Use Designation Pertaining to the Former Allendale Elementary School from City of Arvada Public/Quasi-Public to City of Arvada Suburban Residential, a Parcel of Land Located at 5900 Oak Street.

Financial Impact

There is no fiscal impact to the city.

Background

A Comprehensive Plan Amendment from Public/Quasi-Public to Suburban Residential is being proposed. The current designation of Public/Quasi-Public Facilities is intended to support a mix of uses which includes uses related to community services, such as fire stations, schools, libraries, community centers, indoor recreation centers, hospitals, city buildings, utilities, and cemeteries. As zoned, residential uses are not a permitted use for the property. Additionally, the OS (Parks and Open Space District) zone is the only zone allowed under the Public and Quasi-Public Facilities designation. The Allendale Elementary School site is currently zoned RN-7.5, which is inconsistent with the current designation of Public/Quasi-Public Facilities.

The applicant is requesting approval of a Rezoning for the former Allendale Elementary school located at 5900 Oak Street. The current zoning is RN-7.5 (Residential Neighborhood), and the Rezoning request is to R6 (Residential, 6). Concurrently, a Comprehensive Plan Amendment from Public/Quasi-Public to Suburban Residential is requested in order to appropriately align with the requested zoning.

Discussion

SUBJECT: R25-093, A Resolution by the Arvada City Council for the City of Arvada, Colorado to Amend the 2014 Arvada Comprehensive Plan Land Use Designation Pertaining to the Former Allendale Elementary School from City of Arvada Public/Quasi-Public to City of Arvada Suburban Residential, a Parcel of Land Located at 5900 Oak Street (Presenter: Rob Smetana, Manager of City Planning & Development)

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COMPREHENSIVE PLAN AMENDMENT CONSIDERATIONS	Finding	STAFF ASSESSMENT
1. The existing comprehensive plan and/or any related element thereof is in need of the proposed amendment.	Complies	The existing Comprehensive Plan designation of Public/Quasi-Public does not align with the current realities of the closed and unutilized elementary school. The existing RN-7.5 Zone is also inconsistent with the existing Public/Quasi-Public designation. An amendment to Suburban Residential is necessary. This designation matches properties surrounding the site and will support future Single-Unit Dwelling development.
2. The proposed amendment is compatible with the surrounding area and the goals and policies of the Comprehensive Plan.	Complies	As detailed in the <i>Compliance with the Comprehensive Plan</i> section of the staff report and criterion one above, the amendment is consistent with numerous goals and policies and the surrounding area.
3. The proposed amendment will have no major negative impacts on transportation, services, and facilities.	Complies	The proposed amendment will not have a major impact on transportation, services, or facilities.
4. The proposed amendment will have minimal effect on service provision, including adequacy or availability of urban facilities and services, and is compatible with existing and planned service provisions.	Complies	The proposed amendment will not have a negative effect on existing or proposed service provisions.
5. The proposed amendment, if for an area outside of the City's current municipal boundaries, is consistent with the City's ability to annex property.	Complies	The proposed amendment does not pertain to an area outside of the City's municipal boundaries.
6. Strict adherence to the existing comprehensive plan would result in a situation neither intended nor in keeping with other key elements and policies of the plan.	Complies	Strict adherence to the Comprehensive Plan designation of Public/Quasi-Public would prevent future redevelopment consistent with the existing

SUBJECT: R25-093, A Resolution by the Arvada City Council for the City of Arvada, Colorado to Amend the 2014 Arvada Comprehensive Plan Land Use Designation Pertaining to the Former Allendale Elementary School from City of Arvada Public/Quasi-Public to City of Arvada Suburban Residential, a Parcel of Land Located at 5900 Oak Street (Presenter: Rob Smetana, Manager of City Planning & Development)

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		residential neighborhood. The site is not operated as a school due to population decline and is therefore, underutilized. The current zone is inconsistent with the land use designation.
7. The proposed plan amendment will promote the public welfare and will be consistent with the goals and policies of the comprehensive plan and the elements thereof.	Complies	As stated in the <i>Compliance with the Comprehensive Plan</i> section above, amending the Comprehensive Plan to allow for development of this underutilized property is consistent with a variety of goals and policies.

Public Contact

Division 8-2-2 of the Land Development Code requires that at least one neighborhood meeting be held for projects that require public hearings before the Planning Commission and City Council.

The applicant held two separate Neighborhood Meetings for the project. The neighborhood meetings for this project took place on November 21, 2024, and again on February 20, 2025. The applicant, staff, and 76 neighbors were in attendance at the first meeting. Thirty-seven neighbors, as well as the applicant's team and staff attended the second meeting.

Commission Recommendation

On August 6, 2025, the Planning Commission voted 4 to 2 (1 absence) to deny the Comprehensive Plan Amendment.

Strategic Alignment

The project is consistent with the City Council Strategic Plan principles for the Community and Economic Development work system. The project aligns with CED5 in the Strategic Plan by improving access to quality housing that is affordable to a broad range of incomes. The project increases housing supply on a currently unutilized site within an existing residential neighborhood.

Alternative Courses of Action

N/A

Recommendation for Action

The Arvada Team recommends that the City Council approve R25-093, A Resolution by the Arvada City Council for the City of Arvada, Colorado to Amend the 2014 Arvada Comprehensive Plan Land Use Designation Pertaining to the Former Allendale Elementary School from City of Arvada Public/Quasi-Public to City of Arvada Suburban Residential, a Parcel of Land Located at 5900 Oak Street.

Suggested Motion:

I move that R25-093, A Resolution by the Arvada City Council for the City of Arvada, Colorado to Amend the 2014 Arvada Comprehensive Plan Land Use Designation Pertaining to the Former Allendale Elementary School from City of Arvada Public/Quasi-Public to City of Arvada Suburban Residential, a Parcel of Land Located at 5900 Oak Street, be

SUBJECT: R25-093, A Resolution by the Arvada City Council for the City of Arvada, Colorado to Amend the 2014 Arvada Comprehensive Plan Land Use Designation Pertaining to the Former Allendale Elementary School from City of Arvada Public/Quasi-Public to City of Arvada Suburban Residential, a Parcel of Land Located at 5900 Oak Street (Presenter: Rob Smetana, Manager of City Planning & Development)

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(approved) (denied).

This motion is based on the findings of fact as determined this evening.

This motion is based on the following findings of fact for denial by the Planning Commission.

Prepared by:

Josie Suk, Development Systems and Administrative Manager

Reviewed by:

Approved by:

Julia Duncan, Senior Planner	09/15/2025
Rob Smetana, Planning Manager	09/15/2025
Jessica Garner, Director of Community and Economic Development	09/15/2025
Gail Walker, Legal Specialist-Contracts	09/15/2025
Kelsy Sargent, Assistant City Attorney	09/18/2025
Rachel Morris, City Attorney	09/18/2025
Alli Scheck, Deputy City Manager	09/24/2025
Don Wick, City Manager	09/25/2025

Enclosure, exhibits & attachments required to support the report

RESOLUTION NO. R25-093

A RESOLUTION BY THE ARVADA CITY COUNCIL FOR THE CITY OF ARVADA, COLORADO TO AMEND THE 2014 ARVADA COMPREHENSIVE PLAN LAND USE DESIGNATION PERTAINING TO THE FORMER ALLENDALE ELEMENTARY SCHOOL FROM CITY OF ARVADA PUBLIC/QUASI-PUBLIC TO CITY OF ARVADA SUBURBAN RESIDENTIAL, A PARCEL OF LAND LOCATED AT 5900 OAK STREET

WHEREAS, Planning Commission, by Resolution No. CP2014-0003, adopted the 2014 Arvada Comprehensive Plan on September 19, 2014; and

WHEREAS, pursuant to § 8-1-2-1(E)(4) of the Land Development Code, City Council has final ratification and approval authority with respect to the Comprehensive Plan and any amendments thereto; and

WHEREAS, pursuant to Chapter 74, Article III, Section 74-64 of the code of the City of Arvada, the Planning Commission has held a public hearing as required by law, notice thereof being duly published in the Wheat Ridge Transcript and Arvada Press on June 12, 2025, and said public hearing being held before the Planning Commission for the City of Arvada on July 2, 2025.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF ARVADA, COLORADO:

Section 1. The 2014 Comprehensive Plan is hereby amended by changing the land use designation from City of Arvada Public/Quasi Public to City of Arvada Suburban Residential.

Section 2. This resolution shall be effective upon its approval by the City Council.

APPROVED AND ADOPTED this 7th day of October, 2025.

Lauren Simpson, Mayor

ATTEST:

City Clerk

APPROVED AS TO FORM:
Rachel A. Morris, City Attorney

By: _____



REPORT TO CITY COUNCIL PUBLIC HEARING

AGENDA ITEM
10.A.2.

TO: THE HONORABLE CITY COUNCIL

DATE: October 7, 2025

SUBJECT: CB25-020 An Ordinance Rezoning Certain Land within the City of Arvada, the former Allendale Elementary School from City of Arvada RN-7.5 (Residential Neighborhood) to City of Arvada R-6 (Residential, 6). and Amending the Official Zoning Maps of the City of Arvada, Colorado, 5900 Oak Street (Ordinance No. 4906) (Presenter: Rob Smetana, Manager of City Planning & Development)

Report in Brief

Presenter: Rob Smetana, Manager of City Planning and Development

The applicant is requesting approval of a Rezoning for the former Allendale Elementary school located at 5900 Oak Street. The current zoning is RN-7.5 (Residential Neighborhood), and the Rezoning request is for R-6 (Residential, 6). Concurrently, a Comprehensive Plan Amendment from Public/Quasi-Public to Suburban Residential is requested in order to appropriately align with the requested zoning.

The applicant desires to construct 57 detached Single-Unit Dwellings on the 9.66-acre site which is currently developed with an elementary school. The project would have a density of 5.9 dwelling units per acre, consistent with the R6 zoning request. If the Comprehensive Plan Amendment and Rezoning are approved, a Site Plan and Minor Subdivision application will later be reviewed administratively.

The Arvada Team recommends Council approve CB25-020, An Ordinance Rezoning Certain Land within the City of Arvada, the former Allendale Elementary School from City of Arvada RN-7.5 (Residential Neighborhood) to City of Arvada R-6 (Residential, 6). and Amending the Official Zoning Maps of the City of Arvada, Colorado, 5900 Oak Street.

UPDATED RE-ZONING CONCEPT PLAN: Following the Planning Commission hearing, the applicant, in response to comments, revised the Re-Zoning Concept Plan. The northernmost property boundary was initially proposed for 12 lots with a minimum width of 45 feet. The revised plan proposes 10 lots with a minimum width of 55 feet. The two removed lots were relocated internally to the site. The revision produces lots of a larger scale that are more compatible with the abutting lots to the north of the project site.

Financial Impact

There is no fiscal impact to the city.

Background

The project is requesting a Major Comprehensive Plan Amendment from Public/Quasi-Public to Suburban Residential and a Rezoning from RN-7.5 (Residential Neighborhood) to R-6 (Residential, 6) for the former Allendale Elementary School site. Under the Suburban Residential land use category, primary uses include Single-Unit dwellings, duplexes, and attached residences. Suburban residential is appropriate in suburban settings. New residential developments are accessed from local or collector streets and may be away from activity centers. The purpose of the R6 zoning district is to allow for new residential development of a variety of housing products up to a gross density of six units per acre along with supporting community and institutional uses. If approved, the rezoning would allow to redevelop the site with single-unit dwellings not to exceed a density of 6 dwelling units per acre.

SUBJECT: CB25-020 An Ordinance Rezoning Certain Land within the City of Arvada, the former Allendale Elementary School from City of Arvada RN-7.5 (Residential Neighborhood) to City of Arvada R-6 (Residential, 6). and Amending the Official Zoning Maps of the City of Arvada, Colorado, 5900 Oak Street (Ordinance No. 4906) (Presenter: Rob Smetana, Manager of City Planning & Development)

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Discussion

Div. 8-3-4 Zoning and Rezoning Approval Criteria	Finding	Rationale
1. The rezoning is consistent with the Arvada Comprehensive Plan, or an adopted sub-area plan, corridor plan, or urban renewal plan, or reflects conditions that have changed since the adoption of the Comprehensive Plan.	Complies	The rezoning to R6 is consistent with the Comprehensive Plan, if amended, and the Suburban Residential designation on the Future Land Use map.
2. The intended land use is consistent with the stated intent of the proposed zoning district.	Complies	The intended use for Single-Unit Dwellings with up to 6 dwelling units per acre is consistent with the R6 zone district.
3. Facilities and services (including sewage and waste disposal, water, gas, electricity, police and fire protection, and roads and transportation, as applicable) will, prior to development, be available to serve the subject property while maintaining adequate levels of service to existing development.	Complies	All public facilities and services are available to service to the site. Additional infrastructure necessary to service the site will be constructed after approval of the Site Plan and Minor Subdivision.
4. The intended land use for which the rezoning is sought will not result in significant adverse impacts upon the natural environment, including air, water, noise, stormwater management, wildlife, and vegetation, or such impacts will be substantially mitigated.	Complies	The intended land use will not result in significant adverse impacts.
5. The rezoning is consistent with the character of existing or planned development on adjacent properties and in the surrounding area or neighborhood, or measures will be taken to substantially buffer or otherwise substantially mitigate any negative impacts.	Complies	The rezoning is consistent with the character of existing development. The surrounding properties are zoned RN-D and RN-7.5 and developed with both duplexes and Single-Unit dwellings. The intended character of this site will be similar.

Public Contact

Division 8-2-2 of the Land Development Code requires that at least one neighborhood meeting be held for projects that require public hearings before the Planning Commission and City Council.

The applicant held two separate Neighborhood Meetings for the project. The neighborhood meetings for this project took place on November 21, 2024, and again on February 20, 2025. The applicant, staff, and 76 neighbors were in attendance at the first meeting. Thirty-seven neighbors, as well as the applicant's team and staff attended the second meeting.

The November 21, 2024, meeting was held in a Question & Answer format, with introductions and a general project overview/summary. The issues expressed by neighbors included concerns related to density, traffic, and removal of perceived open space. In response to comments the applicant revised their conceptual site plan and removed units that previously backed

SUBJECT: CB25-020 An Ordinance Rezoning Certain Land within the City of Arvada, the former Allendale Elementary School from City of Arvada RN-7.5 (Residential Neighborhood) to City of Arvada R-6 (Residential, 6). and Amending the Official Zoning Maps of the City of Arvada, Colorado, 5900 Oak Street (Ordinance No. 4906) (Presenter: Rob Smetana, Manager of City Planning & Development)

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onto Oak Street and reoriented the proposed open space to be more accessible to the neighborhood and public. Lot widths on the northern portion of the site were increased to better align with the existing lot sizes to the north. Along the southern border, a 30-foot buffer was incorporated. Density was concentrated toward the center of the site and along the eastern border, which is adjacent to an RN-D zoned neighborhood.

The second meeting included a formal presentation, and the applicant team addressed concerns from the first meeting. Topics and concerns were similar to those expressed at the first meeting, specifically traffic and density. Questions were asked concerning the construction timeline and City review processes.

Commission Recommendation

On August 6, 2025, the Planning Commission voted 6 to 0 (1 absent) to recommend denial to the City Council.

Strategic Alignment

The project is consistent with the City Council Strategic Plan principles for the Community and Economic Development work system. The project aligns with CED5 in the Strategic Plan by improving access to quality housing that is affordable to a broad range of incomes. The project increases housing supply on a currently unutilized site within an existing residential neighborhood.

Alternative Courses of Action

N/A

Recommendation for Action

The Arvada Team recommends that the City Council approve CB25-020, An Ordinance Rezoning Certain Land within the City of Arvada, the former Allendale Elementary School from City of Arvada RN-7.5 (Residential Neighborhood) to City of Arvada R-6 (Residential, 6). and Amending the Official Zoning Maps of the City of Arvada, Colorado, 5900 Oak Street.

Suggested Motion:

I move that CB25-020 An Ordinance Rezoning Certain Land within the City of Arvada, the former Allendale Elementary School, 5900 Oak St., from City of Arvada RN-7.5 (Residential Neighborhood) to City of Arvada R-6 (Residential, 6). and Amending the Official Zoning Maps of the City of Arvada, Colorado be (approved on final reading, numbered 4906 and ordered published by title only) (rejected).

Prepared by:

Heidi Van Gieson, Administrative Specialist

Reviewed by:

Approved by:

Josie Suk, Development Systems and Administrative Manager

09/10/2025

Julia Duncan, Senior Planner

09/15/2025

SUBJECT: CB25-020 An Ordinance Rezoning Certain Land within the City of Arvada, the former Allendale Elementary School from City of Arvada RN-7.5 (Residential Neighborhood) to City of Arvada R-6 (Residential, 6). and Amending the Official Zoning Maps of the City of Arvada, Colorado, 5900 Oak Street (Ordinance No. 4906) (Presenter: Rob Smetana, Manager of City Planning & Development)

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Rob Smetana, Planning Manager	09/15/2025
Jessica Garner, Director of Community and Economic Development	09/15/2025
Gail Walker, Legal Specialist-Contracts	09/15/2025
Kelsy Sargent, Assistant City Attorney	09/15/2025
Rachel Morris, City Attorney	09/18/2025
Alli Scheck, Deputy City Manager	09/24/2025
Don Wick, City Manager	09/25/2025

Enclosure, exhibits & attachments required to support the report

COUNCIL BILL NO. 25-020
ORDINANCE NO. 4906

AN ORDINANCE REZONING CERTAIN LAND WITHIN THE CITY OF ARVADA,
THE FORMER ALLENDALE ELEMENTARY SCHOOL FROM CITY OF ARVADA
RN-7.5 (RESIDENTIAL NEIGHBORHOOD) TO CITY OF ARVADA R-6
(RESIDENTIAL, 6). AND AMENDING THE OFFICIAL ZONING MAPS OF THE
CITY OF ARVADA, COLORADO, 5900 OAK STREET

BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF ARVADA,
COLORADO:

Section 1. The following described property is hereby rezoned from City of Arvada RN-7.5
(Residential Neighborhood 7.5) to City of Arvada R-6 (Residential, 6).

LOCATED AT 5900 OAK STREET MORE PARTICULARLY DESCRIBED ON THE
ATTACHED EXHIBIT A.

Section 2. The Official Zoning Maps of the City of Arvada are hereby amended in
accordance herewith.

Section 3. This ordinance shall be effective fifteen days after publication following final
passage.

INTRODUCED, READ, AND ORDERED PUBLISHED this 19th day of August, 2025.

PASSED, ADOPTED, AND APPROVED this 7th day of October, 2025.

Lauren Simpson, Mayor

ATTEST:

City Clerk

APPROVED AS TO FORM:
Rachel A. Morris, City Attorney

By: _____

Publication Dates: August 21, 2025
October 9, 2025

Exhibit A

AN ORDINANCE REZONING CERTAIN LAND
WITHIN THE CITY OF ARVADA, THE FORMER
ALLENDALE ELEMENTARY SCHOOL FROM CITY OF
ARVADA RN-7.5 (RESIDENTIAL NEIGHBORHOOD) TO
CITY OF ARVADA RN-6 (RESIDENTIAL, 6). AND
AMENDING THE OFFICIAL ZONING MAPS OF THE CITY
OF ARVADA, COLORADO, 5900 OAK STREET

EXHIBIT A
LEGAL DESCRIPTION

THE NORTHWEST QUARTER OF THE NORTHWEST QUARTER OF THE SOUTHEAST QUARTER OF SECTION 9, TOWNSHIP 3 SOUTH, RANGE 69 WEST OF THE 6TH P.M., EXCEPT THOSE PORTIONS CONVEYED TO THE CITY OF ARVADA IN DEEDS RECORDED DECEMBER 14, 1962, IN BOOK 1550 AT PAGES 182 AND 183, COUNTY OF JEFFERSON, STATE OF COLORADO; BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE CENTER QUARTER CORNER OF SAID SECTION 9, FROM WHICH THE EAST QUARTER CORNER OF SAID SECTION 9 BEARS NORTH 89°42'06" EAST, A DISTANCE OF 2,647.42 FEET, WITH ALL BEARINGS HEREIN RELATIVE THERETO;

THENCE NORTH 89°42'06" EAST, ALONG THE NORTH LINE OF SAID SOUTHEAST QUARTER OF SECTION 9, A DISTANCE OF 25.00 FEET TO THE **POINT OF BEGINNING**, BEING A POINT ON THE EASTERLY RIGHT-OF-WAY OF OAK STREET;

THENCE NORTH 89°42'06" EAST, CONTINUING ALONG SAID NORTH LINE, A DISTANCE OF 636.85 FEET TO THE NORTHEAST CORNER OF THE NORTHWEST QUARTER OF THE NORTHWEST QUARTER OF SAID SOUTHEAST QUARTER OF SECTION 9;

THENCE SOUTH 00°03'17" EAST, ALONG THE NORTH-SOUTH CENTERLINE OF SAID NORTHWEST QUARTER OF THE SOUTHEAST QUARTER OF SECTION 9, A DISTANCE OF 660.24 FEET TO THE SOUTHEAST CORNER OF THE NORTHWEST QUARTER OF THE NORTHWEST QUARTER OF SAID SOUTHEAST QUARTER OF SECTION 9;

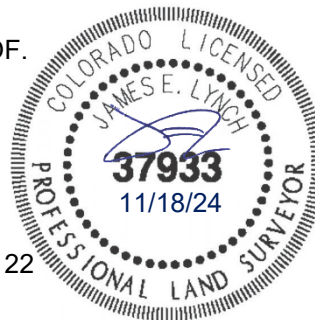
THENCE SOUTH 89°41'16" WEST, ALONG THE EAST-WEST CENTERLINE OF SAID NORTHWEST QUARTER OF THE SOUTHEAST QUARTER OF SECTION 9, A DISTANCE OF 637.67 FEET TO A POINT ON SAID EASTERLY RIGHT-OF-WAY OF OAK STREET;

THENCE NORTH 00°00'57" EAST, ALONG SAID EASTERLY RIGHT-OF-WAY, A DISTANCE OF 660.40 FEET TO THE **POINT OF BEGINNING**.

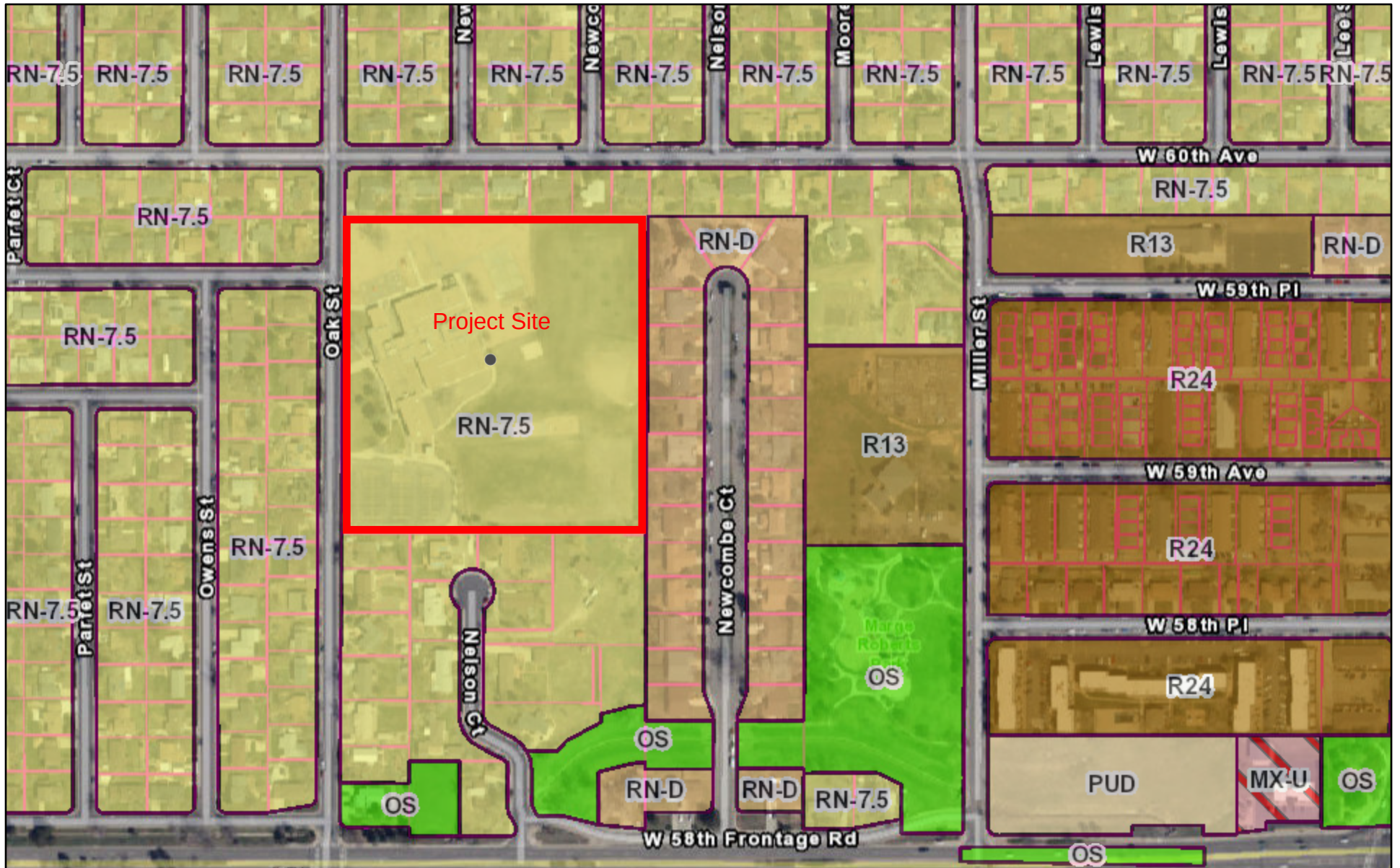
CONTAINING AN AREA OF 9.660 ACRES, (420,792 SQUARE FEET), MORE OR LESS.

ILLUSTRATION ATTACHED AND MADE A PART HEREOF.

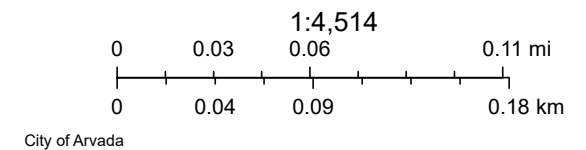
JAMES E. LYNCH, PLS 37933
FOR AND ON BEHALF OF AZTEC CONSULTANTS, INC.
300 EAST MINERAL AVE., SUITE 1, LITTLETON, CO 80122
303-713-1898



Vicinity Map



Zoning	MX-U, Mixed-Use Urban	OT-RR, Olde Town Ralston Road	RN-7.5, Residential Neighborhood 7,500
CG, General Commercial	OS, Parks and Open Space	OT-W, Olde Town Webster	RN-12.5, Residential Neighborhood 12,500
IL, Light Industrial	OT-E, Olde Town East	PUD, Planned Unit Development	RN-32.5, Residential Neighborhood 32,500
IG, General Industrial	OT-EY, Olde Town East Yukon	RA, Residential Agricultural	R6, Residential 6
MX-N, Mixed-Use Neighborhood	OT-GV, Olde Town Grandview	RN-D, Residential Neighborhood One and Two-Family	R13, Residential 13
MX-S, Mixed-Use Suburban	OT-OW, Olde Town Olde Wadsworth	RN-4, Residential Neighborhood 4,000	R24, Residential 24
MX-T, Mixed-Use Transit	OT-RN, Olde Town Residential Neighborhood	RN-6, Residential Neighborhood 6,000	



City of Arvada
Community and Economic Development Department
PUBLIC HEARING STAFF REPORT

Allendale Elementary School Rezoning
Comprehensive Plan Amendment & Rezoning
DA2025-0013

NATURE OF REQUEST

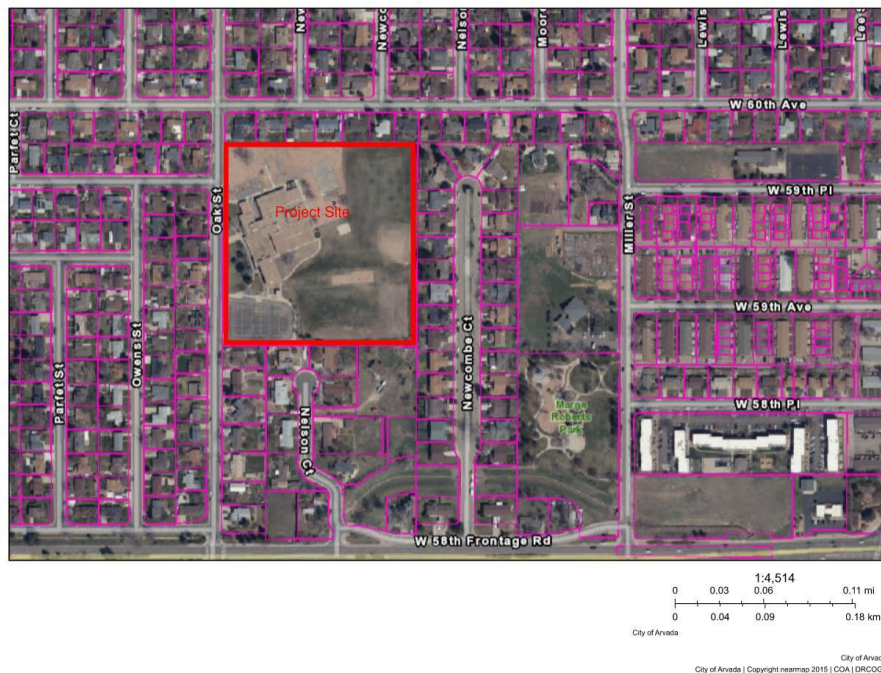
The applicant is requesting approval of a Rezoning for the former Allendale Elementary school located at 5900 Oak Street. The current zoning is RN-7.5 (Residential Neighborhood), and the Rezoning request is to R6 (Residential, 6). Concurrently, a Comprehensive Plan Amendment from Public/Quasi-Public to Suburban Residential is requested in order to appropriately align with the requested zoning.

The applicant desires to construct 57 detached Single-Unit Dwellings on the 9.66-acre site which is currently developed with an elementary school. The project would have a density of 5.9 dwelling units per acre, consistent with the R6 zoning request. If the Comprehensive Plan Amendment and Rezoning are approved, a Site Plan and Minor Subdivision application will later be reviewed administratively.

LOCATION AND HISTORY

The subject property is 9.66 acres in size and is located north of W. 58th Avenue, south of W. 60th Avenue and in-between Oak Street and Newcombe Court. The property was annexed into the City in 1964 with the Wray Annexation. The property is unplatted. A 38,615 square foot former school, Allendale Elementary School, occupies the site and was built in 1964. Over a several year period, the school experienced a significant drop in enrollment, which averaged around 100 students. As part of a larger restructuring, Jefferson County School District closed the school at the end of the 2020-2021 school year.

Vicinity Map



NEIGHBORHOOD MEETING

Division 8-2-2 of the Land Development Code requires that at least one neighborhood meeting be held for projects that require public hearings before the Planning Commission and City Council.

The applicant held two separate Neighborhood Meetings for the project. The neighborhood meetings for this project took place on November 21, 2024, and again on February 20, 2025. The applicant, staff, and 76 neighbors were in attendance at the first meeting. Thirty-seven neighbors, as well as the applicant's team and staff attended the second meeting.

The November 21, 2024, meeting was held in a Question & Answer format, with introductions and a general project overview/summary. The issues expressed by neighbors included concerns related to density, traffic, and removal of perceived open space. In response to comments the applicant revised their conceptual site plan and removed units that previously backed onto Oak Street and reoriented the proposed open space to be more accessible to the neighborhood and public. Lot widths on the northern portion of the site were increased to better align with the existing lot sizes to the north. Along the southern border, a 30-foot buffer was incorporated. Density was concentrated toward the center of the site and along the eastern border, which is adjacent to an RN-D zoned neighborhood.

The second meeting included a formal presentation, and the applicant team addressed concerns from the first meeting. Topics and concerns were similar to those expressed at the first meeting, specifically traffic and density. Questions were asked concerning the construction timeline and City review processes.

The applicant prepared a summary of the meeting, which is attached.

PUBLIC NOTIFICATION

Division 8-2-4 of the Land Development Code requires public notification for all public hearings as follows:

Written Notice: At least 15 days prior to all public hearings, written notice must be mailed to all property owners within 1,500 feet of the subject property and to all homeowners' associations and neighborhood associations with a known interest in the subject property. The applicant will provide an affidavit of mailing verifying this requirement has been met prior to the public hearing.

Posted Notice: At least 15 days prior to all public hearings, signs notifying the public of the hearing must be posted on the subject property. The applicant will provide a posting log verifying that this requirement has been met prior to the public hearing.

Published Notice: At least 15 days prior to all public hearings, notice of the hearing must be published in a newspaper of general circulation in the City. The required notice has been published.

SEVERED MINERAL RIGHTS

At least 30 days prior to the public hearing, written notice of the application must be mailed to any owner of mineral rights associated with the subject property. The Mineral Rights have not been severed and the applicant provided documentation the owner waived the 30-day notification requirement.

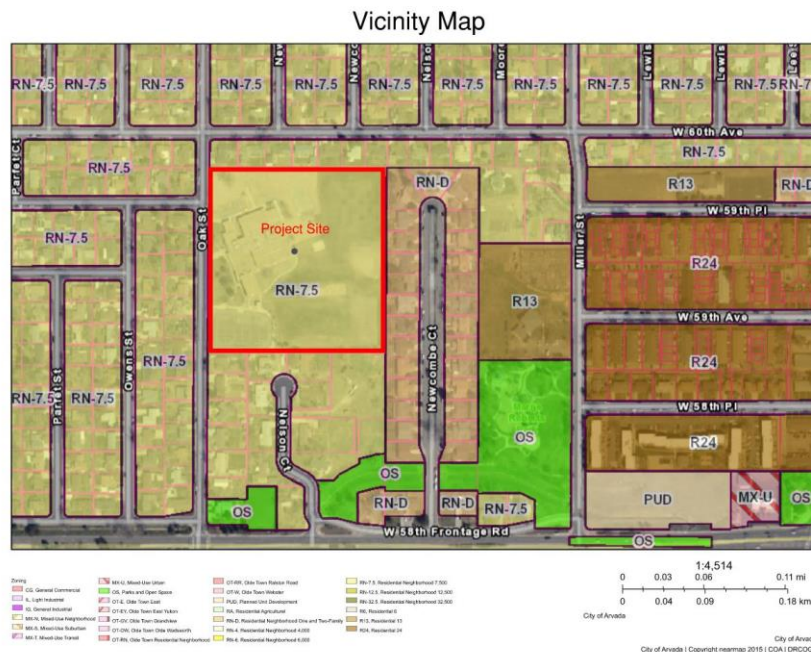
DEVELOPMENT REVIEW TIMELINE

Review of the application began on March 24th, 2025. Two reviews were required prior to proceeding with public hearings.

ALIGNMENT WITH CITY COUNCIL STRATEGIC PLAN

The project is consistent with the City Council Strategic Plan principles for the Community and Economic Development work system. The project aligns with CED5 in the Strategic Plan by improving access to quality housing that is affordable to a broad range of incomes. The project increases housing supply on a currently unutilized site within an existing residential neighborhood.

ZONING AND LAND USE



The subject property is currently zoned RN-7.5 (Residential Neighborhood) and is approximately 9.66 acres in size.

Surrounding properties are zoned and utilized as follows:

Direction	Zoning	Actual Use
North	RN-7.5	Single-Unit Dwelling Detached
South	RN-7.5	Single-Unit Dwelling Detached
East	RN-D	Duplexes
West	RN-7.5	Single-Unit Dwelling Detached

The project is requesting a Major Comprehensive Plan Amendment from Public/Quasi-Public to Suburban Residential and a Rezoning from RN-7.5 (Residential Neighborhood) to R6 (Residential, 6) for the former Allendale Elementary School site. Under the Suburban Residential land use category primary uses include Single-Unit dwellings, duplexes, and attached residences. Suburban residential is appropriate in suburban settings. New residential developments are accessed from local or collector streets and may be away from activity centers. The purpose of the R6 zoning district is to allow for new residential development of a variety of housing products up to a gross density of six units per acre along with supporting community and institutional uses.

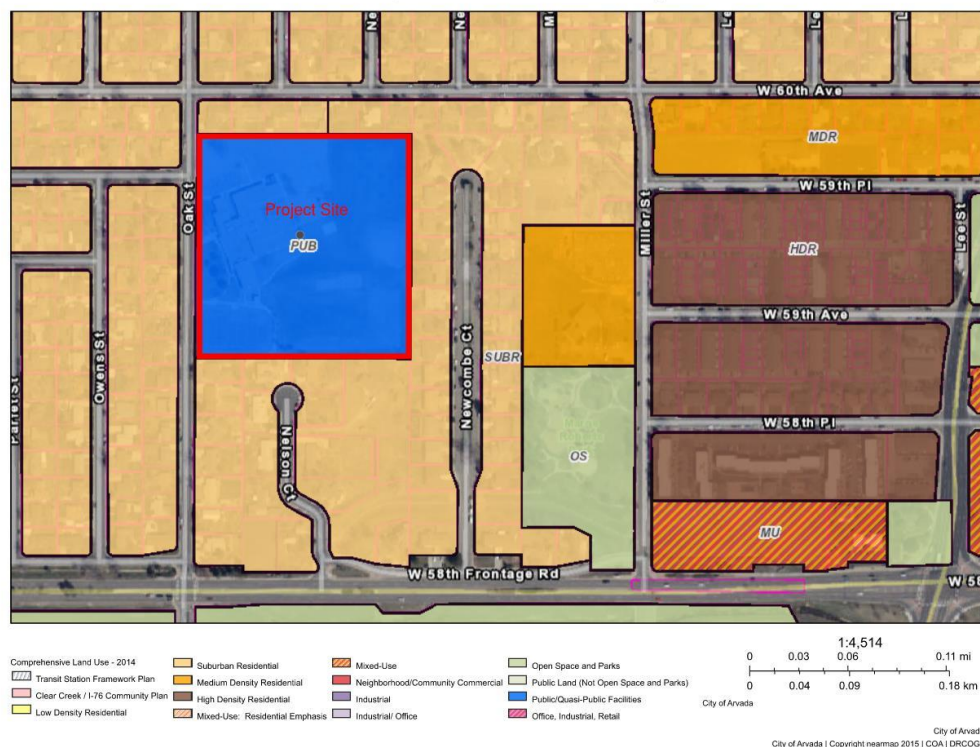
If approved, the rezoning would allow to redevelop the site with single-unit dwellings not to exceed a density of 6 dwelling units per acre. Future entitlements would require a Minor

Subdivision Plat to create individual for sale lots as well as open space or parks tracts, as well as a Site Plan. Both of these entitlements utilize administrative approvals provided the development application meets or exceeds all of the applicable standards and regulations in the R6 zone district.

PROJECT ANALYSIS

Compliance with the Comprehensive Plan

Comprehensive Plan Map



A Comprehensive Plan Amendment from Public/Quasi-Public to Suburban Residential is being proposed. The current designation of Public/Quasi-Public Facilities is intended to support a mix of uses which includes uses related to community services, such as fire stations, schools, libraries, community centers, indoor recreation centers, hospitals, city buildings, utilities, and cemeteries. As zoned, residential uses are not a permitted use for the property. Additionally, the OS (Parks and Open Space District) zone is the only zone allowed under the Public and Quasi-Public Facilities designation. The Allendale Elementary School site is currently zoned RN-7.5, which is inconsistent with the current designation of Public/Quasi-Public Facilities.

The applicant is requesting approval of a Rezoning for the former Allendale Elementary school located at 5900 Oak Street. The current zoning is RN-7.5 (Residential Neighborhood), and the Rezoning request is to R6 (Residential, 6). Concurrently, a Comprehensive Plan Amendment from Public/Quasi-Public to Suburban Residential is requested in order to appropriately align with the requested zoning.

The surrounding and abutting residential properties to the former Allendale Elementary site have a Comprehensive Land Use designation of Suburban Residential, which primary uses consist of single-family residences, duplexes, and attached residences. Zones consistent with the Suburban Residential land use designation include R6 (Residential 6 District), RN (Residential Neighborhood District), and any PUD (Planned Unit Development District) up to 6.0 dwelling units per acre.

Staff has determined that the Comprehensive Land Use Amendment to Suburban Residential is consistent with the surrounding and abutting land use designations, is consistent with the Arvada Comprehensive Plan, and additionally, reflects that conditions have changed since the adoption of the Comprehensive Plan and the original designation of the site for Public/Quasi-Public, as student population has declined. The proposed amendment is consistent with the Purposes of this Code. The Comprehensive Plan contains several goals and policies that guide development and investment decisions and direct future land use patterns.

The project complies with the following goals and policies within the Comprehensive Plan:

GOAL L-2: Plan for a balanced mix of commercial and residential land uses in Arvada.

POLICY L-2.1: Complete Community

The City will provide for a balanced mix of land uses by promoting redevelopment and continuing to reserve lands for future commercial and industrial development as well as a variety of housing choices.

GOAL L-5: Designate and promote redevelopment and infill to generate economic revitalization, improve physical conditions, and provide an appropriate mix of quality housing choices.

POLICY L-5.3: Regulatory Climate to Encourage Redevelopment and Infill

The City will continue providing incentives, as appropriate, and a positive regulatory climate in order to encourage infill development and redevelopment.

GOAL CC-1: Plan Arvada as a City of different development character districts.

POLICY CC-1.2: Promote Integration Within Districts through Design

The City will promote integration and a sense of place within districts of the City through the context-sensitive design of new development.

POLICY CC-1.3: Compatible Infill

The City will encourage new infill development to consider and be sensitive to the character of existing neighborhoods. Considerations shall include building scale, placement, size, height transitions, landscape, streetscape, and other design measures (see also Redevelopment and Infill Principles).

GOAL CC-2: Establish and maintain Arvada's distinct qualities and small-town identity.

POLICY CC-2.2: High Quality Private Development

The City will promote high quality architecture, site planning, landscaping, signage, and lighting for new residential and commercial developments.

GOAL N-1: Plan for a range of neighborhoods and accessible housing of different tenure types to accommodate diverse incomes and all ages and abilities.

The Comprehensive Plan Amendment to Suburban Residential and Rezoning to R6 is consistent with the surrounding area and designations as well as the Goals and Policies of the Comprehensive Plan. The R6 zone district will implement the intent of the land use map designation. The Rezoning and will allow the site to develop in accordance with the LDC.

Setbacks

For the R6 zone district, lot and building standards for single-family detached homes are set out in Table 2-1-8-4 of the LDC. There are seven lot types, which are classified based on their area, width, and location of vehicular access. To meet the requirements for any lot type, both the lot area and the lot width minimums must be met. Setbacks will be reviewed as part of any Site Plan application.

Building Height

The maximum building height allowed in this R6 zoning district is 35 feet. Building height will be reviewed as part of any Site Plan application.

Open Space

The R6 zoning district requires a minimum of 20 percent of the site be landscape surface area. Compliance with the landscaped surface area will be reviewed as part of any Site Plan.

Landscaping, Buffering and Fencing

The Site Plan landscaping will be required to comply with the standards and regulations within LDC 4-6 and any others that may apply. A landscape plan will be required to be submitted with any Site Plan application.

Parks

Park Land Dedication or a Fee-In-Lieu will be required prior to, or as part of, the approval of the final plat. The owner/developer of land is required to convey to the City in fee simple not less than ten (10) acres per thousand (1000) population projected for the development of such land or pay the City the cash equivalent of the fair market value of the land otherwise required to be dedicated. A Park Development Fee is also required.

Building Design

All buildings constructed on the future lots will be required to adhere to Chapter 5 (Building Design) of the LDC. Design will be reviewed with any future Site Plan application.

Circulation and Connectivity

Two points of vehicular access will be proposed from Oak Street. The layout aligns with existing streets, specifically the subject property's northern entrance with the existing W. 59th Place to the east. This access is proposed to be full movement and side-street stop controlled. The second access will be located approximately 743 feet north of W 58th Rd and is proposed to be full movement and side-street stop controlled. The driveways will provide one inbound lane and one outbound lane, and the volumes do not warrant auxiliary lanes. These connections are designed to evenly distribute traffic flow and create two points of access for fire protection.

Vehicular traffic volumes associated with the project have been analyzed for the existing, short-term (Year 2027), and long-term (Year 2045) scenarios without and with the project. Using ITE trip generation rates, the project is anticipated to generate approximately 511 vehicle trips per day, with 38 trips occurring in the morning peak hour and 51 trips occurring in the PM peak hour. It was determined that the existing roadways can accommodate the estimated traffic volumes for buildout conditions. No improvements were identified as necessary to support either background traffic growth or project-added traffic on the study area roadways and intersections for both short-term and long-term buildout conditions.

Grading and Drainage

All existing grades are generally flat. A detailed grading and drainage plan will be required to be submitted with a Site Plan application.

Parking and Loading

Off-street parking and loading requirements will be determined with any Site Plan application and shall be consistent with Article 4-5 of the LDC. Single-Unit Dwellings require two spaces per a dwelling unit.

Utility Services

Water and sanitary sewer service is provided by the City of Arvada, and they have the capacity to service the site.

Public Service Company (XCEL) has no objection to this proposed rezone.

Police and Fire Protection

The proposal has been reviewed by the Arvada Fire and Protection District. All Fire Lane and Emergency Access (Fire Apparatus Access Roads) roads shall provide minimum turning radius and an outside radius sufficient to all navigation of the AFPD apparatus and allow effective emergency operations. This will be reviewed with the Site Plan submittal. The property is served by Arvada Police.

LAND DEVELOPMENT CODE APPROVAL CRITERIA

It is the responsibility of the applicant to justify the requested land use application. The Planning Commission should make a recommendation to the City Council based on its findings regarding the approval criteria shown in the table(s) below and upon testimony heard during the public hearing as it applied to the criteria.

Staff performed an analysis of the proposal, based on the approval criteria listed in Chapter 8 of the Land Development Code, and presents the following findings:

COMPREHENSIVE PLAN AMENDMENT CONSIDERATIONS	Finding	STAFF ASSESSMENT
1. The existing comprehensive plan and/or any related element thereof is in need of the proposed amendment.	Complies	The existing Comprehensive Plan designation of Public/Quasi-Public does not align with the current realities of the closed and unutilized elementary school. The existing RN-7.5 Zone is also inconsistent with the existing Public/Quasi-Public designation. An amendment to Suburban Residential is necessary. This designation matches properties surrounding the site and will support future Single-Unit Dwelling development.
2. The proposed amendment is compatible with the surrounding area and the goals and policies of the Comprehensive Plan.	Complies	As detailed in the <i>Compliance with the Comprehensive Plan</i> section of the staff report and criterion one above, the amendment is consistent with numerous goals and policies and the surrounding area.
3. The proposed amendment will have no major negative impacts on transportation, services, and facilities.	Complies	The proposed amendment will not have a major impact on transportation, services, or facilities.
4. The proposed amendment will have minimal effect on service provision, including adequacy or availability of urban facilities and services, and is compatible with existing and planned service provisions.	Complies	The proposed amendment will not have a negative effect on existing or proposed service provisions.
5. The proposed amendment, if for an area outside of the City's current municipal boundaries, is consistent with the City's ability to annex property.	Complies	The proposed amendment does not pertain to an area outside of the City's municipal boundaries.
6. Strict adherence to the existing comprehensive plan would result in a situation neither intended nor in keeping with other key elements and policies of the plan.	Complies	Strict adherence to the Comprehensive Plan designation of Public/Quasi-Public would prevent future redevelopment consistent with the existing residential neighborhood. The site is not operated as a school due to population decline and is therefore, underutilized. The current zone is inconsistent with the land use designation.

7. The proposed plan amendment will promote the public welfare and will be consistent with the goals and policies of the comprehensive plan and the elements thereof.	Complies	As stated in the <i>Compliance with the Comprehensive Plan</i> section above, amending the Comprehensive Plan to allow for development of this underutilized property is consistent with a variety of goals and policies.
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Div. 8-3-4 Zoning and Rezoning Approval Criteria	Finding	Rationale
1. The rezoning is consistent with the Arvada Comprehensive Plan, or an adopted sub-area plan, corridor plan, or urban renewal plan, or reflects conditions that have changed since the adoption of the Comprehensive Plan.	Complies	The rezoning to R6 is consistent with the Comprehensive Plan, if amended, and the Suburban Residential designation on the Future Land Use map.
2. The intended land use is consistent with the stated intent of the proposed zoning district.	Complies	The intended use for Single-Unit Dwellings with up to 6 dwelling units per acre is consistent with the R6 zone district.
3. Facilities and services (including sewage and waste disposal, water, gas, electricity, police and fire protection, and roads and transportation, as applicable) will, prior to development, be available to serve the subject property while maintaining adequate levels of service to existing development.	Complies	All public facilities and services are available to service to the site. Additional infrastructure necessary to service the site will be constructed after approval of the Site Plan and Minor Subdivision.
4. The intended land use for which the rezoning is sought will not result in significant adverse impacts upon the natural environment, including air, water, noise, stormwater management, wildlife, and vegetation, or such impacts will be substantially mitigated.	Complies	The intended land use will not result in significant adverse impacts.
5. The rezoning is consistent with the character of existing or planned development on adjacent properties and in the surrounding area or neighborhood, or measures will be taken to substantially buffer or otherwise substantially mitigate any negative impacts.	Complies	The rezoning is consistent with the character of existing development. The surrounding properties are zoned RN-D and RN-7.5 and developed with both duplexes and Single-Unit dwellings. The intended character of this site will be similar.

STAFF RECOMMENDATION

Based upon project analysis and review of the Land Development Code approval criteria, staff recommends approval of the Comprehensive Plan Amendment and Rezoning.

The Planning Commission may recommend denial of the request(s) if it cannot make affirmative findings of the approval criteria stated above.

Neighborhood Meeting Summary

Neighborhood Meeting Summary

Project Name: Re-development of Allendale Elementary School Site

Location: 5900 Oak Street, Arvada, CO 80004

Applicant: Cardel Denver Homes, LLC

Prepared By: JMC Consulting Services, LLC

Over a span of four months, the applicant, Cardel Denver Homes, LLC and consultants held two separate Neighborhood Meeting to present our concept to the re-development of the Allendale Elementary School site.

Below is a summary of our two meetings.

Neighborhood Meeting #1:

1. Dates and Locations of all Meetings:

Date: Thursday, November 21, 2024

Location: Apex Field House, 5724 Oak St., Arvada, CO 80002

Time: 6:00 PM

2. Content, dates mailed, and number of mailings, including letters, meeting notices, and any other written material.

The objective of our first meeting was to have an open Q&A forum. The meeting started with a quick introduction about the team and our project and then opened it up to Q&A. Prior to the start of our meeting we handed out fact sheets about our project to the attendees which summarized our project and provided a land plan. Additionally, we had boards that showed our land plan. And can be found in exhibits 1.A and 1.B, respectively, following this document.

On November 6th, 2024, our team sent a total of 752 notices to our surrounding residents. An affidavit certifying our mailers, our notice and list of recipients can be found under exhibit 1.C after this document.

3. The number of people that participated in the meetings and names of development team members in attendance and City of Arvada staff in attendance.

Based on our sign-in sheets, we recorded a total of 76 attendees. Exhibit 1.F.

The development team included:

- Bryan Conway - Cardel Homes – Applicant
- Jeff Keeley - JMC Consulting Services – Development Manager
- Travis Frazier - Redland – Civil Engineer
- Julie Gamec - THK Associates – Landscape Architect
- Cassie Slade - Fox Tuttle – Traffic Engineer

Additionally, Jeremiah Bebo from the City of Arvada staff was present.

4. A summary of concerns, issues, and problems expressed during the meetings, including:

A. The substance of the concerns, issues, and problems.

Our meeting notes can be found in exhibit 1.G in this document which contains comments, questions, issues and problems expressed during our first neighborhood meeting.

Some of the most repeated comments were around the following:

Density:

Several participants raised concerns that the proposed density does not align with the character of the existing neighborhood.

Traffic:

Residents expressed concerns regarding the potential traffic impacts of the proposed redevelopment. Many were worried about increased congestion on existing roadways, particularly at key intersections, and questioned whether the current infrastructure could support the additional vehicle load. There were also comments about pedestrian safety, particularly in areas with limited sidewalks or high foot traffic. Some attendees requested a traffic study to assess the development's impact and explore potential mitigation measures.

Product:

There was significant confusion regarding the type of development we are proposing for the site. Some residents believed that the plan included three-story townhomes or a three-story multifamily building. This misunderstanding stemmed from two primary factors. First, our mailed notice referenced city standards and zoning regulations related to the requested R6 designation, including the 35-foot maximum height limit, which may have led to assumptions about the scale and type of housing. Second, we did not present our product in our fact sheet or formal presentation at the meeting, which could have helped clarify the specifics of our proposal.

Removal and lack of access to proposed openspace:

Many residents expressed concerns that the proposed development would result in a loss of open space within the neighborhood. These concerns were compounded by uncertainty about how the development would integrate landscaping, setbacks, and community-accessible areas to maintain a sense of openness. We received feedback that our proposed open space felt difficult to access and appeared to be designed primarily for residents within the development.

B. How the Applicant has addressed or intends to address concerns, issues, and problems expressed at the meetings.

Traffic:

Our traffic counts are very comparable to the historic use of the site, ensuring that our development will not significantly alter existing traffic patterns. As part of our submittal for the comprehensive master plan amendment and rezoning, we have prepared a traffic impact study, which will be thoroughly reviewed by the city. We are committed to adhering to the findings and recommendations of this study. Additionally, our revised land plan has relocated lots that previously backed onto Oak Street, eliminating potential safety concerns for both traffic and pedestrians.

Product:

Many of the questions and concerns raised during the meeting centered around what we were proposing to build. At the time of the first meeting, we did not yet have that information available. However, we came prepared to present our intended product and provide clarity on our development plans. Our plan is to build single-family detached homes. One home per lot.

Loss of Openspace:

The property, owned by the Jefferson County School District, was previously used as a school site and has never been designated as open space or parkland. However, we recognize that residents have been utilizing the area for outdoor activities. In response to this, we have adjusted our land plan to be more welcoming to the broader community by incorporating an access point on Oak Street and integrating looped walking paths to enhance accessibility for all neighbors.

- C. Concerns, issues, and problems the Applicant is unwilling or unable to address and why. For detailed requirements, see NEIGHBORHOOD MEETING CHECKLIST.

Density:

Based on our discussions with City staff, we believe that R6 is the most appropriate zoning designation for this site. In response to neighbors' concerns about density, we adjusted the lot widths along the northern border to better align with the existing homes. On the southern border, we have incorporated a 30-foot buffer to provide additional separation. Additionally, as requested by neighbors, we have concentrated most of the density toward the center of the site and along the eastern border, which is adjacent to an RN-D zoned neighborhood consisting primarily of duplex homes.

Neighborhood Meeting #2:

1. Dates and Locations of all Meetings:

Date: Thursday, February 20, 2025

Location: Revive Church, 8270 W. 80th Avenue, Arvada, CO 80005

Time: 6:00 PM

2. Content, dates mailed, and number of mailings, including letters, meeting notices, and any other written material.

Our second neighborhood meeting took on a more formal presentation addressing concerns we heard from our first meeting and presenting additional information for further clarity on what we are proposing to build on the site. We held our second meeting on February 20, 2025, and we sent notice letters on February 4, 2025. We noticed 751 neighbors. As evidenced by our Affidavit, mailing list and letter found in exhibit 2.B, 2.D, and 2.C below. Our presentation can also be found in exhibit 2.A.

3. The number of people that participated in the meetings and names of development team members in attendance and City of Arvada staff in attendance.

Based on our sign-in sheets, we recorded a total of 37 attendees. exhibit 2.E.

The development team included:

- Sara Dieringer – Cardel Homes – Applicant
- Bryan Conway – Cardel Homes – Applicant
- Mike Newman – Cardel Homes – Applicant
- Jeff Keeley – JMC Consulting Services – Development Manager & Applicant Representative
- Travis Frazier – Redland – Civil Engineer
- Julie Gamec – THK Associates – Landscape Architect
- Cassie Slade – Fox Tuttle – Traffic Engineer

Additionally, Linda Hoover from the City of Arvada staff was present.

4. A summary of concerns, issues, and problems expressed during the meetings, including: A. The substance of the concerns, issues, and problems.

Many of the same concerns from our first neighborhood meeting were reiterated in our second meeting, particularly regarding traffic and density. Additionally, residents had questions about the construction timeline and the city's entitlement process, seeking more clarity on the steps involved and the expected duration of development activities.

B. How the Applicant has addressed or intends to address concerns, issues, and problems expressed at the meetings.

Traffic:

Our traffic counts are very comparable to the historic use of the site, ensuring that our development will not significantly alter existing traffic patterns. As part of our submittal for the comprehensive master plan amendment and rezoning, we have prepared a traffic impact study, which will be thoroughly reviewed by the city. We are committed to adhering to the findings and recommendations of this study. Additionally, our revised land plan has relocated lots that previously backed onto Oak Street, eliminating potential safety concerns for both traffic and pedestrians.

Construction Timeline:

We informed residents that the overall development timeline is expected to be approximately nine months, with each individual home taking around six months to build. We also clarified that construction activities will adhere to the city's designated working hours. Additionally, we will provide contact information for both the contractor and a representative from our team, encouraging neighbors to reach out with any concerns or questions throughout the process.

Process:

We outlined our two-step process, beginning with the comprehensive master plan amendment and rezone, followed by the site plan review. We also informed residents that the comprehensive master plan amendment and rezone will be presented in a public meeting, providing them with another opportunity to share their feedback on the project. Linda Hoover, a representative from City staff, confirmed this process to the neighbors.

- C. Concerns, issues, and problems the Applicant is unwilling or unable to address and why. For detailed requirements, see NEIGHBORHOOD MEETING CHECKLIST.

Density:

Based on our discussions with City staff, we believe that R6 is the most appropriate zoning designation for this site. In response to neighbors' concerns about density, we adjusted the lot widths along the northern border to better align with the existing homes. On the southern border, we have incorporated a 30-foot buffer to provide additional separation. Additionally, as requested by neighbors, we have concentrated most of the density toward the center of the site and along the eastern border, which is adjacent to an RN-D zoned neighborhood consisting primarily of duplex homes.



CED Boards and Commission <cedboardsandcommission@arvada.org>

Allendale Elementary School Rezoning

1 message

Deb Kats-Allum [REDACTED]

Wed, Jul 2, 2025 at 12:21 PM

To: "cedboardsandcommission@arvada.org" <cedboardsandcommission@arvada.org>

*Rezoning to allow more height of structures in this residential area is unacceptable. Will take away from the architecture of our community. There are no nearby buildings to which this aligns with.

*Latest real estate reports are saying that the housing market in the Denver area is dropping in price with condos and townhouses being the most affected.

*That many vehicles coming and going in a quiet neighborhood with no direct access to main street is not acceptable.

*This planned project will cause homes in the area to lose value, especially those in direct contact.

This project has no benefit to our community. In our opinion, only disruption and loss of home values will be caused.

Sincerely

Deb Kats-Allum and Matt Allum

Arvada Planning Commission Talk Against Zoning Change
7-2-25 City Council Chambers, Arvada City Hall
6:15 P.M. Public Comments 8101 Regatta Rd.

About 2
minutes

My name is Bruce Johnson, and I'm speaking in opposition to the proposed zoning change being discussed tonight concerning Allendale Elementary School.

Section A of Chapter Two of the Arvada Land Development Code describes the purpose of the Residential Neighborhood zoning district.

Section A Purpose. The purpose of the Residential Neighborhood (RN) - zoning district is to maintain the character of mature established neighborhoods in locations where residents expect that character be relatively stable and allow development, redevelopment, and/or public projects that are consistent with a neighborhood's architectural character.

Note that maintaining the character of established neighborhoods is accented 3 times within Section A, and apparently central to the purpose of the Residential Neighborhood zoning district.

Bruce Johnson
11021 W. 60th Ave.
Arvada, Co. 80004

Section C of Chapter 2 addresses zoning subdistricts.

Section C Subdistricts The Residential Neighborhood zoning district is divided into six subdistricts (RN-32.5, RN-12.5, RN-7.5, RN-6, RN-4 and RN-D) in order to reflect and preserve the existing development patterns within each subdistrict, while allowing for redevelopment and expansions of existing buildings at scales that are not disruptive of the surrounding neighborhood fabric.

The mature established neighborhood surrounding ^{School} Allendale consists of ranch, split-level, and two-story houses built within the RN-7.5 subdistrict.

The proposed zoning change does not maintain the ~~character of the mature, established~~ neighborhood, is not consistent with the architectural character of the neighborhood, does not preserve the existing development pattern of the ^{present} RN-7.5 subdistrict, and is disruptive of the surrounding neighborhood fabric.

This proposed zoning change needs to be rejected because it violates both the purpose and regulations stated in Sections A and C within Chapter 2 of the Arvada Land Development Code.



CED Boards and Commission <cedboardsandcommission@arvada.org>

Allendale Elementary School Rezoning , Case # DA2025-0013

1 message

MITCH LAPP [REDACTED]

Thu, Jul 24, 2025 at 11:57 AM

To: "CEDBOARDSANDCOMMISSION@aRVADA.ORG" <CEDBOARDSANDCOMMISSION@arvada.org>

To whom It may concern:

40' x100' lots don't fit into a RN-7.5 zoned neighborhood. The standard lot sizes proposed for R6 zoning are approximately one-half of those in the RN-7.5 zoning. The difference in the width of the properties is excessively dramatic. The new standard lot sizes should be closer to the RN-7.5 square footage keeping the current height restriction. Also, the piddly amount of brick proposed in the models doesn't fit with the surrounding neighborhood. Most of the neighboring houses have a substantial amount of brick.

I understand the need for making housing more affordable, but constructing houses on lots one-half the size of the adjacent properties for relatively the same cost only benefits the developer and tax collector. Let's keep the Allendale neighborhood inviting by maintaining the appearance and separation of the houses.

Sincerely,

Mitch Lapp
Property Owner 10824 Allendale Drive



CED Boards and Commission <cedboardsandcommission@arvada.org>

August 6th Planning Commission Meeting - Support for Allendale Elementary Rezoning

1 message

T [REDACTED]
To: CED Boards and Commission <cedboardsandcommission@arvada.org>

Fri, Jul 25, 2025 at 4:14 PM

Dear Planning Commission,

I'm writing to express my **strong support** for the proposed Comprehensive Plan Amendment and Rezoning for the former Allendale Elementary site. This is an excellent location for thoughtful infill development, and many Arvada residents – myself included – welcome more housing in our community. We say **YES** to new housing in our backyard.

Please don't assume that only those who live near the site care about this project. Land use decisions like this impact **all of Arvada**, and our city is in urgent need of housing of all types.

This property should not be reserved solely as parkland, and the immediate neighbors are not in the right to make such a request. Jefferson County Public Schools and the developer are fully within their rights to pursue housing here. I'm encouraged to see that community feedback has led to a revised plan, now including open space fronting onto Oak Street.

Suggestions for Improvement

While I support the project overall, I have two constructive criticisms to offer:

1. **Stormwater Management:** The detention pond in the southeast corner represents an outdated approach to stormwater management. Arvada should prioritize integrating **blue-green infrastructure**, such as rain gardens and other forms of Bioretention, into usable public open spaces. Doing so could both improve design quality and allow for more housing units to fit on the site.
2. **Southern Buffer Zone:** The 30-foot buffer along the south edge seems unnecessary and potentially problematic, as it may encourage unwanted access behind homes. This extra land could be put to much better use.

Public Notice Concerns

I must also address a serious issue: **public notice for this case was mishandled**. As a planner in another jurisdiction, I find this deeply troubling. While the code assigns some responsibility to the applicant, it is ultimately the **Planning Department's job** to ensure notices are correct and complete. This is the second instance in under a year that notice was botched on a project I've followed.

This failure:

- Wastes everyone's time
- Undermines public trust
- Exposes both the city and applicant to legal risk

As a reminder, signs must also be checked and logged daily by the applicant, and these signs must be removed within a week of this hearing. A new sign must be posted at least 15 days before the next City Council hearing. These are reasonable expectations, and they should always be followed.

Many other cities have **modern, inclusive public outreach practices** including project-specific webpages, clear signage with meeting info, and easy ways to submit comments. Arvada should adopt similar tools.

Since I will be out of town on August 6, I'm submitting my comments in writing. I hope these are considered as seriously as spoken testimony. I appreciate the Commission's decision to continue the hearing until proper notice could be provided, but we should never find ourselves in this position again.

Sincerely,
Ted Harberg, AICP



CED Boards and Commission <cedboardsandcommission@arvada.org>

August 6 Arvada Planning Commission Meeting - Allendale Elementary Rezoning Support

1 message

[REDACTED] [REDACTED]
to: cedboardsandcommission@arvada.org <cedboardsandcommission@arvada.org>

Mon, Aug 4, 2025 at 12:18 PM

Dear Planning Commission,

I am an Arvada resident writing in Support of the proposed Comprehensive Plan Amendment and Rezoning for the former Allendale Elementary school parcel. Although I wish that the Jeffco Public School District and the developer had been able to collaborate to create more affordable starter homes or "missing middle" duplex/triplexes in this area, these market-rate homes will help fill an important gap for the workers (and many current renters) who wish to own a home in Arvada. Although I no longer live in the Allendale area, I had previously lived nearby and had two daughters who attended Vanderhoof Elementary.

As documented in the city's Housing Needs Assessment, as of 2022 about 82% of the local jobs in Arvada are filled by in-commuters (workers such as teachers and the other service providers who typically cannot afford to live near where they work). By helping fill the housing needs of our city, we will reduce the wear and tear on our local roads. This project will also help to continue to create welcoming neighborhoods with multiple generations of residents.

Sincerely,

Mindy Mohr



CED Boards and Commission <cedboardsandcommission@arvada.org>

Planning Commission - 8/6/25 Public Hearing A

1 message

Jordan Gree

Tue, Aug 5, 2025 at 3:29 PM

To: cedboardsandcommission@arvada.org

Planning Commission,

I'm writing to address the redevelopment of the Allendale Elementary School. The zoning change request to R6 from RN7.5 should be considered an improvement however, neither satisfies the community housing needs.

Realistically I know you all will base the decision on mostly objective criteria as currently defined therefore you should approve the R6 zoning request. Ideally however, this redevelopment plan is the best that it can be, especially because it's replacing a school or a public service lot funded by local property taxes and any redevelopment should optimize benefit while meeting at least one community need.

Housing density is a clearly defined spectrum and this plan is far from the high end. With a 70%+ housing stock of single family detached, the community does not need more at this time regardless of lot size therefore my request is that you take the opportunity to ask the developer some questions to hopefully redefine and improve your criteria in the future to prevent further hindering of city potential such as:

- What do you actually see as the housing need in that neighborhood and city overall?
 - Why not submit that request instead?
- If zoning (use or density) or other LDC requirements (set backs, lot coverage, etc.) weren't a concern, what would or could your redevelopment plan be instead? What other projects would pencil out?
 - If residential and higher density than R6, why not submit that request?
 - Why not mixed use?
- Through the process, did you ever feel restricted on what could be approved? How or Why?

No neighborhood should experience drastic change and no neighborhood should be exempt from change. "Drastic" is subjective but this zoning request to R6 is quite literally the smallest incremental step away from the current state that it's essentially negligible when comparing qty of homes between RN7.5 and R6 on this lot. We need more housing variety, this doesn't cut it, and you should consider why.

Best regards,

--

Jordan Green



CED Boards and Commission <cedboardsandcommission@arvada.org>

Allendale Elementary School rezoning Case # DA2025-0013

1 message

Anna Mietzn [REDACTED]

Tue, Aug 5, 2025 at 1:19 PM

To: "cedboardsandcommission@arvada.org" <cedboardsandcommission@arvada.org>

Robert & Anna Mietzner
5897 Owens St

August 5, 2025

To the Members of the Planning Commission,

We are writing as residents of Allendale Neighborhood to express our **strong opposition** to the proposed zoning change for the former Allendale School site — from **RN-7.5** to **R-6**.

The current RN-7.5 designation was put in place to **protect and preserve the character of mature, established neighborhoods** like ours. As stated on your own website, this zoning is “intended to maintain the character of mature, established neighborhoods... and allow development, redevelopment, and/or public projects that are consistent with a neighborhood's architectural character.”

The proposed R-6 zoning, by contrast, is designed for **newer developments** and allows for **higher density residential housing**, up to six units per acre. This may be appropriate for new subdivisions — but not in the middle of a well-established neighborhood built in the 1960s, where homeowners have invested in and maintained a distinct community character for decades.

The developers claim that this project will have minimal impact on surrounding infrastructure, but the reality is different. Our streets, particularly Oak St and 58th St are already struggling with traffic congestion. Nearby **Vanderhoof School is already over capacity**, and additional families from this development would only worsen the strain. The cumulative effect of recent developments in the area must also be considered — not just this one.

There is also a mismatch between the **proposed price point** of over \$750,000 for smaller, more densely packed homes and the current local housing market. The average list price of the seven homes recently sold or listed in our area is \$690,000, with actual sales averaging around \$650,000 — and with average time on market exceeding 50 days. This does not support the idea that the neighborhood can absorb such pricing or that buyers are eager for smaller, high-density homes in this location.

We understand that development is part of growth and progress. However, thoughtful planning should also include the voices of those who will live with the consequences. We are not opposed to **responsible development** — but we believe strongly that **this zoning change is not in the best interest of our neighborhood or the broader community**.

For these reasons, we respectfully urge you to **deny the zoning change from RN-7.5 to R-6**.

Thank you for your time and for considering the voices of your constituents.

Sincerely,
Robert & Anna Mietzner

Planning Commission Meeting August 6, 2025

PUBLIC HEARINGS REQUEST TO SPEAK OR REQUEST TO HAVE NAME ENTERED INTO RECORD

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PLEASE PRINT:

Name

Mark Horowitz

Address

11069 W. 59th Pl

AGENDA ITEMS SPEAKING ON:

Ceconomy

Please check appropriate boxes:

I will be representing a group: _____

1. I wish to speak ☒

i. I am for the Issue ☐

ii. I am against the Issue ☐

2. I don't wish to speak but enter my name in the record ☐

i. I am for the Issue ☐

ii. I am against the Issue ☐

Planning Commission Meeting August 6, 2025

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PLEASE PRINT:

Name Sam Eiser

Address 5905 Nelson Ct Arvada, CO 80004

AGENDA ITEMS SPEAKING ON: rezoning of Alendale

Please check appropriate boxes:

I will be representing a group: _____

1. I wish to speak

- i. I am for the Issue
- ☒ ii. I am against the Issue

2. I don't wish to speak but enter my name in the record

- i. I am for the Issue
- ii. I am against the Issue

Planning Commission Meeting August 6, 2025

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PLEASE PRINT:

Name

Kristi Hemingway

Address

5891 Oak Street

AGENDA ITEMS SPEAKING ON: Allendale Zoning

Please check appropriate boxes:

I will be representing a group: _____

1. I wish to speak ☒

i. I am for the Issue ☐

ii. I am against the Issue ☒

2. I don't wish to speak but enter my name in the record ☐

i. I am for the Issue ☐

ii. I am against the Issue ☐

Planning Commission Meeting August 6, 2025

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PLEASE PRINT:

Name GARY FURBER

Address 5895 PARFET ST.

AGENDA ITEMS SPEAKING ON: ZONING

Please check appropriate boxes:

I will be representing a group: N/A

1. I wish to speak ☒

i. I am for the Issue ☐

ii. I am against the Issue ☒

2. I don't wish to speak but enter my name in the record ☐

i. I am for the Issue ☐

ii. I am against the Issue ☐

Planning Commission Meeting August 6, 2025

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PLEASE PRINT:

Name

TYLER RICHEY

Address

11569 W. 59th Pl.

AGENDA ITEMS SPEAKING ON: ALLENDALE

Please check appropriate boxes:

I will be representing a group: _____

1. I wish to speak ☒

i. I am for the Issue ☐

ii. I am against the Issue ☒

2. I don't wish to speak but enter my name in the record ☐

i. I am for the Issue ☐

ii. I am against the Issue ☐

Planning Commission Meeting August 6, 2025

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PLEASE PRINT:

Name

Jeff Uszacki

Address

6158 Owens St

AGENDA ITEMS SPEAKING ON:

Attendee

Please check appropriate boxes:

I will be representing a group: _____

1. I wish to speak ☒

i. I am for the Issue ☐

ii. I am against the Issue ☐

2. I don't wish to speak but enter my name in the record ☐

i. I am for the Issue ☐

ii. I am against the Issue ☐

Planning Commission Meeting August 6, 2025

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PLEASE PRINT:

Name

Kirsten Moore

Address

6052 Newcombe Ct, Arvada

AGENDA ITEMS SPEAKING ON:

Allendale School rezoning
proposal

Please check appropriate boxes:

I will be representing a group: n/a

1. I wish to speak

i. I am for the Issue

☒ ii. I am against the Issue

2. I don't wish to speak but enter my name in the record

i. I am for the Issue

ii. I am against the Issue

Planning Commission Meeting August 6, 2025

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PLEASE PRINT:

Name

GARY P MEI'S

Address

6010 MOORE ST

AGENDA ITEMS SPEAKING ON: _____

Please check appropriate boxes:

I will be representing a group: _____

①

I wish to speak

- i. I am for the Issue
- ii. I am against the Issue

②

I don't wish to speak but enter my name in the record

- i. I am for the Issue
- ii. I am against the Issue

Planning Commission Meeting August 6, 2025

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PLEASE PRINT:

Name

John Lacroix

Address

11067 W 59th Ave Arvada, CO 80004

AGENDA ITEMS SPEAKING ON: ~~NOT on AGENDA~~ Allendale School Dev

Please check appropriate boxes:

I will be representing a group: of residents

1. I wish to speak

i. I am for the Issue

☒ ii. I am against the Issue

2. I don't wish to speak but enter my name in the record

i. I am for the Issue

ii. I am against the Issue

Planning Commission Meeting August 6, 2025

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PLEASE PRINT:

Name Amy Johnson

Address 18821 W 60th Ave

AGENDA ITEMS SPEAKING ON: Allendale

Please check appropriate boxes:

I will be representing a group: _____

1. I wish to speak

- i. I am for the Issue
- ☒ ii. I am against the Issue

2. I don't wish to speak but enter my name in the record

- i. I am for the Issue
- ☒ ii. I am against the Issue

Planning Commission Meeting August 6, 2025

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PLEASE PRINT:

Name

Dorian Dougherty

Address

5911 Oak St

AGENDA ITEMS SPEAKING ON: Allendale Elem.

Please check appropriate boxes:

I will be representing a group: _____

1. I wish to speak ☒
 - i. I am for the Issue
 - ii. I am against the Issue ☒
2. I don't wish to speak but enter my name in the record
 - i. I am for the Issue
 - ii. I am against the Issue

Planning Commission Meeting August 6, 2025

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PLEASE PRINT:

Name Harrison Wilterdink

Address 8430 Clavabelle Drive, Arvada, CO 80002

AGENDA ITEMS SPEAKING ON: Altendale Rezoning

Please check appropriate boxes:

I will be representing a group: _____

1. I wish to speak

- i. I am for the Issue
- ii. I am against the Issue

2. I don't wish to speak but enter my name in the record

- i. I am for the Issue
- ii. I am against the Issue

Planning Commission Meeting August 6, 2025

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PLEASE PRINT:

Name

Dan Dicks

Address

5870 Nelson Ct

AGENDA ITEMS SPEAKING ON:

Allendale

Please check appropriate boxes:

I will be representing a group: _____

1. I wish to speak

- i. I am for the Issue
- ii. I am against the Issue

2. I don't wish to speak but enter my name in the record

- i. I am for the Issue
- ii. I am against the Issue

Planning Commission Meeting August 6, 2025

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PLEASE PRINT:

Name John Frost

Address 6037 Owens St, Arvada CO, 80004

AGENDA ITEMS SPEAKING ON: Allendale Rezoning

Please check appropriate boxes:

I will be representing a group: _____

1. I wish to speak ☒

i. I am for the Issue ☐

ii. I am against the Issue ☒

2. I don't wish to speak but enter my name in the record ☐

i. I am for the Issue ☐

ii. I am against the Issue ☐

Planning Commission Meeting August 6, 2025

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PLEASE PRINT:

Name

Paul Dicks

Address

5870 Nelson Ct

AGENDA ITEMS SPEAKING ON:

Allendale dev.

Please check appropriate boxes:

I will be representing a group: _____

1. I wish to speak

i. I am for the Issue

ii. I am against the Issue

2. I don't wish to speak but enter my name in the record

i. I am for the Issue

ii. I am against the Issue

Planning Commission Meeting August 6, 2025

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PLEASE PRINT:

Name

Nathan Rumley

Address

11008 W 59 Pl, Arvada CO 80004

AGENDA ITEMS SPEAKING ON:

Attendee

Please check appropriate boxes:

I will be representing a group: _____

1. I wish to speak

i. I am for the Issue

ii. I am against the Issue

2. I don't wish to speak but enter my name in the record

i. I am for the Issue

ii. I am against the Issue

Planning Commission Meeting August 6, 2025

PUBLIC HEARINGS REQUEST TO SPEAK OR REQUEST TO HAVE NAME ENTERED INTO RECORD

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Notice of Disclosure: Comments submitted on this form become part of the public record and subject to disclosure under the Colorado Open Records Act, (CORA) C.R.S. § 24-72-201 to 206.

PLEASE PRINT:

Name Jacqueline Abrams

Address 10938 W 59th Pl Arvada 80004

AGENDA ITEMS SPEAKING ON: Allendale Rezoning request

Please check appropriate boxes:

I will be representing a group: _____

☒ 1. I wish to speak

☒ i. I am for the Issue
☐ ii. I am against the Issue

2. I don't wish to speak but enter my name in the record

i. I am for the Issue
ii. I am against the Issue

Planning Commission Meeting August 6, 2025

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PLEASE PRINT:

Name

Donald Van Devenor

Address

6027 Owens Street

AGENDA ITEMS SPEAKING ON: Allendale Elementary School Rezoning

Please check appropriate boxes:

I will be representing a group: _____

1. I wish to speak

i. I am for the Issue

☒ ii. I am against the Issue

2. I don't wish to speak but enter my name in the record

i. I am for the Issue

ii. I am against the Issue

Planning Commission Meeting August 6, 2025

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PLEASE PRINT:

Name JAMES JEMBEY

Address 6127 MOORE ST

AGENDA ITEMS SPEAKING ON: ALLENDALE SCHOOL REZONING

Please check appropriate boxes:

I will be representing a group: _____

1. I wish to speak

- i. I am for the Issue
- ☒ ii. I am against the Issue

2. I don't wish to speak but enter my name in the record

- i. I am for the Issue
- ii. I am against the Issue

Planning Commission Meeting August 6, 2025

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PLEASE PRINT:

Name Brad Beeler

Address 10938 W 59th Pl Arvada CO 80004

AGENDA ITEMS SPEAKING ON: _____

Please check appropriate boxes:

I will be representing a group: _____

1. I wish to speak

- i. I am for the Issue
- ii. I am against the Issue

2. I don't wish to speak but enter my name in the record

- i. I am for the Issue
- ☒ ii. I am against the Issue

Planning Commission Meeting August 6, 2025

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PLEASE PRINT:

Name Carol Rickett

Address 10860 W. 60th Ave Arvada 80004

AGENDA ITEMS SPEAKING ON: Attendant

Please check appropriate boxes:

I will be representing a group: _____

1. I wish to speak

- i. I am for the Issue
- ii. I am against the Issue

2. I don't wish to speak but enter my name in the record

- i. I am for the Issue
- ii. I am against the Issue

Planning Commission Meeting August 6, 2025

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PLEASE PRINT:

Name

Darrell Rickett

Address

10860 W. 60th AVE ARVADA 80004

AGENDA ITEMS SPEAKING ON: Allendale

Please check appropriate boxes:

I will be representing a group: Attorney

1. I wish to speak

- i. I am for the Issue
- ii. I am against the Issue

2. I don't wish to speak but enter my name in the record

- i. I am for the Issue
- ii. I am against the Issue

Planning Commission Meeting August 6, 2025

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PLEASE PRINT:

Name

Lucille Romero

Address

AGENDA ITEMS SPEAKING ON: Allendale

Please check appropriate boxes:

I will be representing a group: _____

1. I wish to speak

- i. I am for the Issue
- ii. I am against the Issue

2. I don't wish to speak but enter my name in the record

- i. I am for the Issue
- ii. I am against the Issue



CED Boards and Commission <cedboardsandcommission@arvada.org>

Objection to Proposed Rezoning of Allendale Elementary

2 messages

Daniel Coen [REDACTED] >
To: cedboardsandcommission@arvada.org

Tue, Aug 5, 2025 at 8:56 PM

Dear Planning Commission,

I am writing as a resident of the Allendale Neighborhood, where I live right down the street from the school, to express my strong opposition to the proposed rezoning of the former Allendale Elementary property for high-density housing.

This change would fundamentally alter the character of our community. Allendale is a quiet, family-oriented neighborhood, and introducing high-density development would significantly increase traffic congestion, strain existing infrastructure, and negatively impact property values as well as the overall quality of life for current residents. As newer residents move into the neighborhood with young families, the need for this space is critical and we have moved into this area due to the quiet, neighborhood feel. A high occupancy resident will destroy that feel.

I am also deeply concerned about the potential loss of green space and the additional pressure on local schools, emergency services, and utilities, which are not equipped to accommodate such a dramatic population increase. This proposal does not reflect the needs or priorities of the existing community, many of whom chose this neighborhood specifically for its lower-density, residential nature.

I strongly urge the Planning Commission to reject this rezoning proposal and instead consider alternative uses for the property that align with the current zoning and community values—such as a park, community center, or educational facility.

Although I am unable to attend tomorrow night's meeting due to being out of town, I want to ensure my perspective—and the concerns of many others in the neighborhood—are part of the discussion.

Thank you,

Daniel Coen

CED Boards and sandcommission@arvada.org>
To: Daniel Coen >

Wed, Aug 6, 2025 at 8:43 AM

Thank you for taking the time to share your comments regarding the upcoming Planning Commission hearing. We appreciate your engagement and interest in the planning process.

Unfortunately, your comment was received after the deadline for inclusion in the Planning Commission's meeting materials. You are able to attend the meeting in person to make comments if you wish. Your feedback will be forwarded to the City Council for their upcoming hearing on the same matter, where it will still be part of the public record.

If you have any questions or would like more information about the City Council hearing, [please check the agenda online](#). Currently the public hearing for this case is scheduled for September 2, 2025 at 6:15pm. This date could always change is needed.

[Quoted text hidden]

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Community and Economic Development

Desk: [720-898-7435](tel:720-898-7435)

E-Mail: cedboardsandcommission@arvada.org

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Dixielee Rodriguez <droduiguez@arvada.org>

Re: Allendale Voicemail

1 message

Julia Duncan

Wed, Aug 6, 2025 at 10:46 AM

To: Jon Gaue [REDACTED]

Bcc: plnadmin@arvada.org

Good Morning Jon,

Because the due date for written public comment has passed this can no longer be included in the Planning Commission packet. You are welcome to attend tonight's meeting however and speak during public comment.

Likewise, I have forwarded this email to our Admin team and it will be included in the City Council packet when it goes to Council.

Sincerely,

Julia

Julia Duncan

Senior Planner

8001 Ralston Rd.

Arvada, CO 80002

Phone: 720-898-7458

jduncan@arvada.org

Regular Office Hours: Monday through Friday 8:00 am - 5:00 pm



On Wed, Aug 6, 2025 at 9:30 AM Jon Gaue [REDACTED] wrote:
Hi Julia,



I left you another voicemail since we're now in business hours. To be sure you have it in writing as well: I support the rezoning at Allendale. Arvada needs more housing to keep up with cost of living, and there's no reason to let an elementary school sit empty if the area can be put to better use. Please add this to the public record if possible.

Thanks,
JRG

On Wed, Aug 6, 2025 at 8:29 AM Julia Duncan <jduncan@arvada.org> wrote:

Good Morning Jon,

I wanted to let you know I received your voicemail but because it was after 5:00 pm yesterday it will not be a part of the public record. If you would like to come to the meeting tonight there is a public comment segment, at which time anything spoken is a part of the official public record.

Please let me know if you have any questions.

Sincerely,

Julia

Julia Duncan

Senior Planner

8001 Ralston Rd.

Arvada, CO 80002

Phone: 720-898-7458

jduncan@arvada.org

Regular Office Hours: Monday through Friday 8:00 am - 5:00 pm





CED Boards and Commission <cedboardsandcommission@arvada.org>

Objection to Proposed Rezoning of Allendale Elementary

2 messages

Renee Horne [REDACTED]

Wed, Aug 6, 2025 at 4:46 PM

To: "cedboardsandcommission@arvada.org" <cedboardsandcommission@arvada.org>

Dear Planning Commission,

I am writing to formally object to the proposed rezoning of Allendale Elementary school located in our neighborhood.

This change poses serious concerns for local residents, including the likelihood of decreased property values and increased traffic congestion. The school is a central part of our community, and altering its zoning designation could negatively affect the desirability of the area for current and future homeowners.

Please reconsider this rezoning proposal and to prioritize the interests and well-being of the existing community.

Thank you for your time and consideration.

Sincerely,
Renee Horner
[10755 W 60th Ave](#)

CED Boards and

ommission@arvada.org>

Wed, Aug 6, 2025 at 5:09 PM

To: Renee Horne [REDACTED]

Thank you for taking the time to share your comments regarding the upcoming Planning Commission hearing. We appreciate your engagement and interest in the planning process.

Unfortunately, your comment was received after the deadline for inclusion in the Planning Commission's meeting materials. You are able to attend the meeting in person to make comments if you wish. Your feedback will be forwarded to the City Council for their upcoming hearing on the same matter, where it will still be part of the public record.

If you have any questions or would like more information about the City Council hearing, [please check the agenda online](#). Currently the public hearing for this case is scheduled for September 2, 2025 at 6:15pm. This date could always change is needed

[Quoted text hidden]

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 Twitter Icon |
 LinkedIn Icon |
 YouTube Icon |
 E-Mail Icon



CED Boards and Commission <cedboardsandcommission@arvada.org>

Aug 6 meeting

2 messages

Deb Kats-Allum [REDACTED]

Wed, Aug 6, 2025 at 9:23 AM

To: "cedboardsandcommission@arvada.org" <cedboardsandcommission@arvada.org>

Dear Sirs

As previously stated, I believe the development as laid out is not acceptable. A high number of people, cars and buildings in a single family residential area where nothing like that exists is detrimental to our community.

Financially the markets show this is not right time or area for this development. It will decrease the stability of our community both financially and the quality of livability.

This is not a just a question of zoning but a determination on the effect of peoples lives.

sincerely Deb Kats-Allum

CED Boards and Co [REDACTED] sandcommission@arvada.org>

Wed, Aug 6, 2025 at 9:50 AM

To: Deb Kats-Allum [REDACTED] >

Thank you for taking the time to share your comments regarding the upcoming Planning Commission hearing. We appreciate your engagement and interest in the planning process.

Unfortunately, your comment was received after the deadline for inclusion in the Planning Commission's meeting materials. You are able to attend the meeting in person to make comments if you wish. Your feedback will be forwarded to the City Council for their upcoming hearing on the same matter, where it will still be part of the public record.

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CED Boards and Commission <cedboardsandcommission@arvada.org>

Aug 6th Allendale rezoning

2 messages

Stacy Liles

Wed, Aug 6, 2025 at 8:34 AM

To: cedboardsandcommission@arvada.org

Hello,

I just wanted to voice my support for the rezoning application that is before the planning commission tonight.

I feel that this is the type of infill development that Arvada needs and is well suited to the former Allendale school campus. These 57 single family homes are very much compatible with the existing neighborhoods.

New housing on that site would allow for people to live closer to amenities like Old town, Arvada Beer Garden, the Soccer fields and Ralston Park.

I moved to Arvada about four years ago myself from NW Denver and I want to continue to see others have the same opportunity that I did to be a part of this wonderful community.

On a more personal note I would like for my 6 year old daughter to be able to afford to live here in the future and the housing supply we provide now will dictate Arvada's affordability in the future.

Thanks!

Stacy Liles
8516 W 66th Pl,
Arvada, CO 80004

CED Boards an boardsandcommission@arvada.org>

Wed, Aug 6, 2025 at 9:49 AM

To: Stacy Liles

Thank you for taking the time to share your comments regarding the upcoming Planning Commission hearing. We appreciate your engagement and interest in the planning process.

Unfortunately, your comment was received after the deadline for inclusion in the Planning Commission's meeting materials. You are able to attend the meeting in person to make comments if you wish. Your feedback will be forwarded to the City Council for their upcoming hearing on the same matter, where it will still be part of the public record.

If you have any questions or would like more information about the City Council hearing, [please check the agenda online](#). Currently the public hearing for this case is scheduled for September 2, 2025 at 6:15pm. This date could always change is needed

[Quoted text hidden]

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[LinkedIn Icon](#) |

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 E-Mail Icon



CED Boards and Commission <cedboardsandcommission@arvada.org>

Strong Opposition to Rezoning of Allendale Elementary

1 message

Sierra Porter

Tue, Aug 5, 2025 at 8:05 PM

To: "cedboardsandcommission@arvada.org" <cedboardsandcommission@arvada.org>

Dear Planning Commission,

I am writing as a concerned resident of Allendale Neighborhood (I can see the school site from my front door) to express my strong opposition to the proposed rezoning of the former Allendale Elementary property for high-density housing.

This change would fundamentally alter the character of our neighborhood. Allendale is a quiet, family-oriented area, and introducing high-density development would significantly increase traffic congestion, strain existing infrastructure, and negatively impact property values and the overall quality of life for current residents.

Additionally, I am deeply concerned about the potential loss of green space and the increased pressure on local schools, emergency services, and utilities, which are not equipped to handle such a dramatic influx of new residents. This proposal does not reflect the needs or desires of the existing community, many of whom chose to live here precisely because of its lower-density, residential nature.

I urge the Planning Commission to reject this rezoning proposal and instead consider alternative uses for the site that align with the current zoning and community values—such as a park, community center, or educational facility.

I am not able to make the meeting tomorrow night as I am working, but I would like to ensure my voice—and the voice of others in the neighborhood—are heard on this matter.

Sincerely,

Sierra Porter





CED Boards and Commission <cedboardsandcommission@arvada.org>

Strong Opposition to Rezoning of Allendale Elementary

3 messages

Sierra Porter [REDACTED]

Tue, Aug 5, 2025 at 8:05 PM

To: "cedboardsandcommission@arvada.org" <cedboardsandcommission@arvada.org>

Dear Planning Commission,

I am writing as a concerned resident of Allendale Neighborhood (I can see the school site from my front door) to express my strong opposition to the proposed rezoning of the former Allendale Elementary property for high-density housing.

This change would fundamentally alter the character of our neighborhood. Allendale is a quiet, family-oriented area, and introducing high-density development would significantly increase traffic congestion, strain existing infrastructure, and negatively impact property values and the overall quality of life for current residents.

Additionally, I am deeply concerned about the potential loss of green space and the increased pressure on local schools, emergency services, and utilities, which are not equipped to handle such a dramatic influx of new residents. This proposal does not reflect the needs or desires of the existing community, many of whom chose to live here precisely because of its lower-density, residential nature.

I urge the Planning Commission to reject this rezoning proposal and instead consider alternative uses for the site that align with the current zoning and community values—such as a park, community center, or educational facility.

I am not able to make the meeting tomorrow night as I am working, but I would like to ensure my voice—and the voice of others in the neighborhood—are heard on this matter.

Sincerely,

Sierra Porter

[REDACTED]

CED Boards and [REDACTED] oardsandcommission@arvada.org>

Wed, Aug 6, 2025 at 9:49 AM

To: Sierra Porter [REDACTED]

Thank you for taking the time to share your comments regarding the upcoming Planning Commission hearing. We appreciate your engagement and interest in the planning process.

Unfortunately, your comment was received after the deadline for inclusion in the Planning Commission's meeting materials. You are able to attend the meeting in person to make comments if you wish. Your feedback will be forwarded to the City Council for their upcoming hearing on the same matter, where it will still be part of the public record.

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[Quoted text hidden]

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Community and Economic Development

Desk: 720-898-7435

E-Mail: cedboardsandcommission@arvada.org

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Sierra Porter [REDACTED]

Wed, Aug 6, 2025 at 10:06 AM

To: CED Boards and Commission <cedboardsandcommission@arvada.org>

Hello,

I'm writing to respectfully request that our letters of opposition regarding the proposed high-density housing project in Allendale be considered, despite being submitted approximately three hours past the stated deadline.

I understand the importance of deadlines in ensuring a fair and organized review process, and I apologize for the late submission. Unfortunately, we work full time jobs and have a small child. It is extremely unrealistic that we would be able to make any meeting in person. We unfortunately did not see the letter sent to us until after the deadline.

However, I hope the Planning Commission will consider our comments, as they reflect serious concerns shared by many residents; and we are directly affected as we can see Allendale Elementary out our front door. We have a small child and plan to have more in the future. Adding something like this to the neighborhood will force us to move out of the area to seek what we moved here for.

I appreciate your time and consideration, and I thank the Commission for its work in representing the public's interests.

Thank you.

Sierra and Daniel

[Quoted text hidden]



CED Boards and Commission <cedboardsandcommission@arvada.org>

Fwd: Allendale

1 message

Marina SB Kottke [REDACTED] >

Wed, Aug 6, 2025 at 6:32 PM

To: "cedboardsandcommission@arvada.org" <cedboardsandcommission@arvada.org>

Hello, I have lived here in the allendale area for 9 years. We love the area and how peaceful it is for our kids. There are so many houses for sale right now. Why add 70 more homes to the neighborhood? Traffic will be insane, it's like adding 140 cars flowing through our streets, there is not infrastructure for that. We will need allendale elementary in the future when the babies grow... please don't do this to our community.

Best,

Marina



CED Boards and Commission <cedboardsandcommission@arvada.org>

Allendale Elementary

1 message

David Headley [REDACTED]

Fri, Aug 8, 2025 at 9:40 AM

To: "cedboardsandcommission@arvada.org" <cedboardsandcommission@arvada.org>

Dear Members of the Arvada Planning Commission,

I am writing to express my strong objection to the proposed demolition of Allendale Elementary School for the purpose of building high-density housing.

Our neighborhood is experiencing a significant demographic shift, with an influx of young families and children. This trend presents a valuable opportunity to reestablish Allendale Elementary as a vibrant educational resource and community anchor. Closing this door by replacing the school with dense housing not only removes a vital public asset but also disregards the long-term needs of the families who are choosing to make Arvada their home.

The presence of a local school supports walkability, fosters a stronger sense of community, and reduces traffic congestion by allowing children to attend school within their own neighborhood. Removing this resource will force families to send their children farther away, increasing transportation needs and straining other schools that are already nearing capacity.

I urge the Commission to carefully consider the lasting impact of this decision. Once this school is gone, we cannot get it back. I believe our city should prioritize the educational and community needs of our growing young population over short-term development interests.

Thank you for your time and consideration. I hope you will stand with the families of Arvada in preserving and reinvesting in Allendale Elementary for future generations.

Sincerely,
David Headley



CED Boards and Commission <cedboardsandcommission@arvada.org>

Opposition to Proposed Re-Zoning of Allendale Elementary

1 message

Brian Workman [REDACTED]

Thu, Aug 14, 2025 at 1:15 PM

To: "cedboardsandcommission@arvada.org" <cedboardsandcommission@arvada.org>

Dear CEB Boards and Commission,

I am writing as a concerned resident and parent to respectfully object to the proposed re-zoning of Allendale Elementary School. While I understand the need for thoughtful district planning, this change would place an unnecessary burden on our neighboring elementary schools, which are already operating at or near capacity.

Overcrowding in other schools would not only strain facilities but also compromise the quality of education, reduce access to extracurricular activities, and increase safety concerns in hallways, playgrounds, and transportation.

I urge the council to reconsider this proposal. Thank you for your attention to this important matter and for your continued commitment to the well-being of our children and community.

Sincerely,

Brian and Meagan Workman



SUMMARY MINUTES OF PLANNING COMMISSION ACTION HELD
August 6, 2025

Planning Commission meeting minutes are not an exact transcript and represent key points and the basis of discussion.

1. **CALLED MEETING TO ORDER– By Michael Griffith at 6:21 P.M.**
2. **PLEDGE OF ALLEGIANCE**
3. **ROLL CALL OF MEMBERS**

Those present: Andrew Gay, Tim Knapp, Brandon Figliolino, Tom Aljinovich, Steve Hannan, Eric Doner, Michael P. Griffith

THOSE ABSENT

Steve Hannan

4. It was moved by Mr. Griffith, to excuse Mr.Hannan from the meeting.

Those voting Yes: Doner, Figliolino, Knapp, Aljinovich, Gay, Knapp

Those voting No:

Those absent: Hannan

The motion carried 6-0

ALSO PRESENT: Jessica Garner, Director of Community and Economic Development; Rob Smetana, City Planning Manager; Kelsy Sargent, Sr. Ass't. City Attorney; Josie Suk, Development Systems and Administrative Manager; Julia Duncan, Senior Planner; Franklin Martone, Civil Engineer III; Heidi Van Gieson, Development Technician I; Dixielee Rodriguez, Recording Secretary.

5. **APPROVAL OF MINUTES**

July 2, 2025. The minutes stand approved as printed with correction.

6. **GENERAL BUSINESS**

None

7. **REPORTS**

None

8. PUBLIC COMMENT (not on the Agenda)

Dr. Colin Jenney lives at 14585 W 91st Ave unit F, Arvada. Concerned about zoning issues near their residence. How their townhome community is close to a commercial property zoned close to commercial property. Zoning changed at first as apartments. Submits questions to staff. (These questions are part of the permanent record). Concerned with noise from commercial properties and businesses. Asked the question of how did the zoning change from apartments to what it is now? Also stated that the developer that sold them their residence was not forthcoming about what was being built in that area.

Kathleen Jenney lives at 14585 W 91st Ave unit F, Arvada. She states that their community has come together, obviously with concerns as to what is being built across the street from their community. Having gone to a council meeting, she stated they were asked to do a good neighbor agreement with the car wash. Concerns with the permits and going through the permit system. Not user friendly. Lennar did not disclose to her about the businesses that are coming in like Discount Tires, car wash etc. Asked why it takes 3 years for construction? She asked how to file an appeal to get this stopped. Construction across from her residence.

9. PUBLIC HEARINGS

9. A. Major Comprehensive Plan Amendment and Rezoning for Allendale Elementary School, a 9.66 acres parcel of land generally located 5900 Oak St.

- 1. A Resolution for a Major Comprehensive Plan Amendment for Allendale Elementary School, a 9.66 acres parcel of land generally located at 5900 Oak St.**
- 2. An Ordinance for Rezoning for Allendale Elementary School, a 9.66 acres parcel of land generally located at 5900 Oak St.**

Mr. Griffith opened the public hearing.

Ms. Duncan stated that there was a notice in the paper, posting affidavit and mailing affidavit as well.

Ms. Duncan introduced the project. Staff recommends approval of the Allendale Comprehensive Plan Amendment and rezoning.

Jeff Keeley- Development Consultant with JMC Investments, 5675 DTC Blvd, Greenwood Village. Mr Keeley gave an overview of the public engagement that they have done to get to this design. He stated that they had two neighborhood meetings and met with staff several times. From the input of those meetings they have made some changes to the original design. Such as removed driveways on Oak street that they identified as a traffic problem with the amount of traffic that this development will increase. Will maintain a 30-foot buffer to the south end of the project.

A concern that was raised from neighborhood meetings was that the homes would block existing solar panels on the homes to the east of the project. JMC Investments did a solar study and found that their homes would only block existing solar panels for maybe one hour during the winter solstice. Mr. Keeley addressed the concern about the enrollment of the surrounding schools, stating that the school district gave them calculations on how to calculate for new students on new developments. The calculations showed that with 57 units in this community, it

will generate about 23 new students across all grade levels. Surrounding schools such as Vanderhoof elementary, Drake Middle School and Arvada West High School will have plenty of room. These schools are not at capacity now and will not reach capacity with the projected number of students from this development. Allendale Elementary School is no longer in use for existing institutional purposes. This creates an opportunity for a thoughtful infill development in our single family neighborhood that reflects the plan's vision for adaptive reuse and infill development.

Mr. Keeley continued to present that the infrastructure development will connect to existing water and sewer lines and other services within the area. If upgrades are needed they will comply. Minimal environmental impacts, there will be on site detention for stormwater control. Spoke to water and dry utilities and if needed upgrades will be done to meet city requirements. Minimal disruption to existing vegetation, wildlife and low density residential, and introduces no permanent heavy industrial or traffic generated elements.

PUBLIC COMMENT

Mr. Griffith reads off names of those that are not wishing to speak and that are against the issue. Brad Bueller, Carol Rickett, Daryl Rickett and Lucille Romero.

IN OPPOSITION

Kirsten Moore - 6052 Newcomb Ct, Arvada, - Concerns about water availability, and safety in terms of fire. She does understand that there will be input from fire, water and local support services to keep the community safe. States that other developments are experiencing reduced resources like low water supply. If there were a fire emergency she feels it would impact in terms of how much water is available to deal with that emergency. Also has environmental concerns, use of resources and draining available resources. Concern with the amount of houses in the area proposed as to the surrounding area. Safety in neighborhood traffic. No stop signs in that area. Feels the residents in that area would not have a way out.

Gary Meis - 6010 Moore St, Arvada, – Feels the size of the proposed houses will block the view of the mountains. Reiterated about the proposed amount of houses, feels it is too many in that area of the development. Adding more traffic in the block he lives in. Impact on schools add more to the neighborhood. Style of homes in the Allendale area, they are all brick ranch style homes. Suggested make it a dog park or community park, you know, that we could kind of split with the park across 58th Avenue there and make it like a recreational center where kids can go.

John Lacroix - 11067 W 59th Ave, Arvada - States his professional work includes a Master's of Planning of land parcels on the local, state and federal level. He also wrote land use legislation on the state and federal level and also worked as a GIS analyst. He agrees that the proposed development and rezoning may meet Arvada city code. That it meets the 10 year comprehensive plan of the city. He believes that the research required to adequately assess this plan is incomplete and done hastily. Reiterated traffic concerns, doesn't believe that the traffic study included cars coming off of the West 58th frontage road to the light at Oak and West 58th. The area already struggles with Van Bibber Creek storm water collection. Feels the city is not being transparent about the activity for this project. Strongly opposes this project.

Amy Johnson - 10821 W 60th Ave, Arvada - Wanted to remind others that there are children that live in this area. States that the kids in this area need to be represented as well as the adults. Her family uses Allendale elementary for her kids to play. It is their main area of

recreation, and feels it is one of the few safe open spaces where kids can run, imagine and just be kids. Have been waiting on Marge Roberts park for months for its opening that is overdue and Allendale Playground close to her is in serious need of renovation. Concerned about the two way stop at 60th and Oak where we hear car horns all times of the day because of the amount of traffic currently.

Diane Dougherty - 5911 Oak St. Arvada - The community right now consists of ranch style and tri level homes, this development does not conform to the homes in this area. She reiterated about the Traffic being a safety issue. This area cannot accommodate the additional vehicles from the proposed 57 high density homes. 59th place does not access a major road daily back ups due to increased volume of vehicles and overflow parking on Oak resulting from 120 to 150 additional vehicles. Traffic study was done in the winter month- March 2025, data collected didn't reflect increased community activities or increase in traffic, pedestrians, children, bicycles, and dog walks that you will see in the summer months. For trip generation analysis it can be successful when used if numbers accurately reflect activity but it is not perfect when data used does not accurately reflect activity, conclusions are inaccurate. Data in this case did not properly reflect this community RTD that's a justification for the R6.

Dan Dicks - 5870 Nelson Ct. Arvada, - States do not destroy the neighborhood. Surely there's something that could be done with the school. You got a cafeteria, office space apart, and a perfectly good gymnasium. People use it constantly. It would make an ideal like a youth sports complex. Use this area for something for the community, don't turn it into more homes. He reiterates the traffic issue. Nice quiet neighborhood and traffic is bad enough in the area.

John Frost - 6037 Owens St. Arvada - Proposed serious risk -Believe the changes pose serious risks to the character, safety and quality of life in our neighborhood. Feels the proposed zoning does not line up with existing zoning. Reiterates traffic concerns and safety issues. Traffic will increase danger of people using the sidewalks. The developer does not plan for the safety of the traffic danger. He would like the Commission to reject this site.

Paul Dicks - 5870 Nelson Ct. Arvada - The problem he has is the detention pond that is fed by the ditch. Running water underground that feeds the well on his residence, uses the water that flows under the residence. When the digging starts it will become a muddy mess. This development would adversely affect us and our other neighbors, neighbors that use that water and have been for a long time. Suggested the City could keep the field, could keep the gymnasium, could keep the playground, and could build a beautiful outdoor pool right in the footprint of the building of Allendale. could even use the building and make a great pool. Would generate a lot more revenue over time than cramming 57 houses in there and running out all the people that have loved the neighborhood.

Nathan Rumley - 11008 W 59th Pl, Arvada - Should not be changed and has a high concentration of senior population that are residents. In years to come this will change and sales will go to younger generations of child-bearing age and these young families will need additional schools. Vanderhoof is already over capacity. Says that the statement there is still capacity at Vanderhoof is not true. Surprised that the numbers shown for capacity earlier do not match what is actually there. Should be repurposed for something else. Possibly a facility to support children born with autism and other intellectual and developmental disorders.

Jackline Abrams - 10938 W 59th Pl, Arvada - She went on Cardel home website and stated that Cardel's homes are not affordable housing. Stated that this development does not state a reason they need the rezoning other than to pack more homes into this area for profit purposes.

Does not go with neighborhood design. She also feels in the next couple of years there will be issues with current infrastructure. The City of Arvada is already asking current residents to consistently take double digit increases in their utility bills. Reiterates traffic concerns. That the traffic study conducted did not take 59th place into account nor did it take into account Quail. Quail is a main thoroughfare for families going to both Vanderhoof elementary and Arvada West. Public safety should be a priority and taken into consideration. Additionally, the traffic study was conducted on November 21, a cold weather day with a high of 50 and a low of 25.

Donald Van Devener - 6027 Owens St, Arvada - Stated what he had to say has already been said prior to him coming up to speak. He did add that he opposes the proposed rezoning to go from 7.5 to 6. Does not see that it serves the purpose of the neighborhood or that it has any value to add and the developer could still build houses at RN 7.5.

James Jeambey - 6127 Moore St. Arvada - He is involved in site development as something he does, what about the new energy codes that are coming in. Data was brought in that the residents were not given. Give residents the data to review to give the residents information to refute what is being said by the developer. Another item he brought up was with the duplexes that are already there in the neighborhood, which have transients coming in and out. Already have the police that go through there. There are a ton of Code Enforcement violations that he can see. Why introduce this development into the neighborhood to add to the already existing issues.

Mark Horowitz - 11069 W 59th Pl., Arvada - Opposes the items for the same reasons as the ones who spoke before. Feels the only person that spoke who supports this development does not live around this project. Seems everyone that is opposed lives in the neighborhood. That this speaks to what the community who it would impact wants.

Sam Eisler - 5905 Nelson Ct., Arvada - Opposes the rezoning, only one that will benefit from this rezoning is Cardel homes because of profit. There is zero benefit to him and the residents of the neighborhood. The only purpose of this rezoning is for an increased profit for Cardell Homes and potential increased tax money for the city.

Kristi Hemingway - 5891 Oak St, Arvada - She has seen the trend that a prior resident spoke of the turnover of the residents in the homes. She is very involved in this community. Understands that the job of city government is to enhance, protect the lives of the citizens in that city and the things that would enhance the lives of the people in the neighborhood, many of whom you see here tonight. Things that would enhance lives in this neighborhood are more green space, a dog park, gathering space. All of those things can happen in conjunction with a development plan, but not the development plan that is in place right now. There can be a plan with the current zoning that would include parks and other benefits. Would like the plan to be of equal consideration to the residents who are already in that neighborhood, along with future potential residents. Opposed to the rezoning.

Gary Pachal - 5895 Parfet St, Arvada - Feels throughout the city of Arvada it is starting to look like when you drive down Colfax, there is open space, there are apartment buildings or condo buildings going up everywhere. What kinds of ideas have been put on a true basis to the Commission where people, developers have come and said, why don't we build a community center? Why are these questions not asked? He is against the development of Allendale.

Tyler Richey - 11569 W 59th Pl, Arvada - Opposed to this development for the same reasons that a lot of the people that are there have brought up. Feels that Cardel is just following the

money. More units, more money if rezoned. If it does not get rezoned, Cardel loses out on money and feels the city loses out on taxes. If the city needs to make up \$200,000 of tax revenue because of that plot, give the neighborhood the plot and let all the neighbors in the neighborhood split up the \$200,000 of tax revenue amongst them, and then the neighborhood can decide what to do with the plot.

Jeff Uszacki - 6158 Owens St., Arvada - That the 7.5 zoning to be maintained versus the R6 to blend with the neighborhood. Reiterates the concerns with traffic safety and amount of traffic it would create. He is opposed to this project.

IN FAVOR

Harrison Wilterdink - 8430 Cara Bell Dr., This area has historically had a varied mix of home types and densities and this proposal fits quite well within that fabric. This project's character lies comfortably in the middle of what has existed in this neighborhood for well over 50 years. He likes the opportunities provided by these new homes. Feels it opens up more opportunities with projects. He agrees and recommends this project

Mr. Griffith closed public comment.

APPLICANT REBUTTAL

Mr. Keeley chooses not to rebut and will wait for questions from the commission.

QUESTIONS FROM THE COMMISSION

Mr. Griffith asked about code issues and code concerns? Understand this is not what is being talked about tonight.

Ms. Garner stated the city is not proactively out enforcing our code because the city does not have the staff nor the resources. This is largely true for every municipality in the metro area. If a resident has a concern they are more than welcome to submit a comment to "Ask Arvada", the Code Enforcement team will respond.

Mr. Griffith asked does the City of Arvada have any say in what happens to a Jefferson County school site?

Ms. Garner stated no the city does not have a say in this site. The school district is a completely separate quasi governmental entity. The city is just processing this request from the developer. The city does not own this property, the school district is responsible for the ownership of the site currently and the disposition of it. She wanted to emphasize the city had nothing to do with that decision.

Mr. Griffith stated in a question " the city does not own the property"?

Ms. Garner reiterates the city does not own the property and with all due respect to all the comments that were made, the city has no control and nor does the city have the resources to

construct a park, to construct a community center, to construct a pool. She stated that for all intents and purposes this is private property.

Mr. Griffith wanted to reiterate this meeting is about a rezoning of the area.

Mr. Griffith asked what would be the general size of the new homes?

Mr. Keeley stated the homes will be about 2,200 to 2,300 sq ft.

Mr. Griffith asked what the approximate valuation on one of these homes?

Mr. Keeley stated he was unsure but based on a similar product about \$700,000.

Mr. Griffith wanted to reiterate what is being looked at is the rezoning of the area.

Mr. Griffith asked about the open space requirements as proposed?

Ms. Duncan stated yes there are park development requirements for both zones, RN7.5 and RN6. In the R6 zone, there is a 20% minimum landscaping requirement, which you do not see in the RN 7.5 zone.

Mr. Griffith wanted to make sure that the RN 7.5 does not have an open space requirement. Or is it smaller?

Ms. Duncan stated there's still the park land dedication requirement for the code, which is calculated based off of the density and a ratio. It's approximately 2.875 per dwelling unit. The R6 zone also has an additional landscaping requirement of 20%.

Mr. Griffith asked, does the RN 7.5, refer to the lot size? And the RN 6 is not the lot size.

Ms. Duncan explains that it is a different metric that the R6 requires a maximum density of 6 dwelling units per acre. Whereas the metric for the RN 7.5 district is a minimum lot size and lot standards.

Mr. Griffith asked if the RN6 zoning was an older designation?

Mr. Smetana stated there never was an RN district. It mimicked an older zone district when the city updated the land development code in 2020. Anything with just an R is a new zone district that has different metrics.

Mr. Griffith, how many additional units can be built under RN 7.5 as to RN 6?

Ms. Duncan stated it would be a difference of 1.

Mr. Gay asked who owns the property now. Understands that it is Jefferson County. Has not been sold to the developer yet. Did the city conduct a study for any open space for this property at all?

Ms. Garner stated there is already a parks master plan. The city's Vibrant-Community and Neighborhoods (VCN) team goes through a pretty laborious process of identifying where they're going to be building new parks, where they're going to be addressing trails, all of those things.

The city has had discussions about the various school sites to develop or purchase them. She also mentioned that the city has been aware since, she believes, late 2023 about the school district's intent to essentially go through this process of dispossession of several of their school sites. The city is currently very tight on our resources and needs to be strategic with their funding. There is no ability right now for the city to purchase this site or to do any programming on it for parks or recreation purposes. We knew that that would be impacting the city.

Mr. Gay asked about the impact the city would have on the property is whether or not the development plan gets approved?

Ms. Garner the city's role in this is to process any development application.

Mr. Gay asked about if the city approves this measure tonight, both of these entitlements, which include the site plan and subdivision plat, will be administrative approvals which I would understand would be contained within the city staff. He has concerns with the focus of this development and the city's transparency of it as perceived. To consider this may not be appropriate for an administrative approval.

Mr. Smetana explains that there is a uniform process across the city and anything in a standard zoning district and does not have the ability to change it from project to project. When an application is received and the city accepts it, there are requirements that the applicant mails a notice of the application submission to be notified for the applications. So a 1,500 foot radius around the site would get notification of the application. We have strict criteria and if it meets that criteria we are obligated to approve the application.

Mr. Griffith reminded that the City Council has the ability to call up a project. And that would be something they could do in any case.

Mr. Gay asked if the city wanted to rezone this property as open space would not require a comprehensive plan exception or change. Because the comprehensive plan already has the public and quasi public facilities already let's use an open space zoning, is that correct?

Ms. Duncan it would just be a rezone not a comprehensive plan amendment.

Mr. Ajinovich is questioning the goals in the L2. And it says under policy CC1.3 compatible infill. The city will encourage infield development to consider and be sensitive to the character of the existing neighborhood. Does R6 meet that intent of that goal?

Ms. Duncan answered that it falls under the suburban residential land use category for the future, the Comprehensive plan map. This is also evaluated through the site plan application.

Mr. Knapp did the city receive any comment from the VCN on this application?

Ms. Duncan no they did not.

Mr. Knapp do we know if they are interested in the site or not. Or just have not heard back.

Ms. Garner if VCN wanted to purchase the site that would have spoken up already. They would not have waited. If you refer to the Parks Master plan this is not an identified site.

Mr. Knapp if the commission rejects the comprehensive plan amendment would we still vote on two different things?

Ms. Duncan yes if the comp plan amendment is denied the zoning would be inconsistent with the current comp plan. You would still need to take a vote on both.

Mr. Knapp asked if the developer stands by the \$700,000 per parcel price tag.

Mr. Jeff stated that is what this type of models are selling in a different community.

Mr. Knapp is asking about affordable housing. States that it reads in the applicant's application part of the criteria that the staff is making a recommendation on is that this is affordable housing. That \$400,00 and \$700,00 is a big difference.

Ms. Garner stated just want to clarify that the home price is not part of the criteria that is used for approval or consideration. The city is not looking at this development for affordable housing as part of it.

Mr. Keeley said he never stated this project would be affordable housing.

Mr. Knapp asked if the applicant had done an assessment of the home values in this area.

Mr. Keeley stated yes they did.

Mr. Knapp asked if these homes will be 2 stories or 3 stories?

Mr. Keeley stated the homes will be 2 stories not 3 stories.

Ms. Garner stated the graphic data shows the median average is \$600,000 in Arvada.

Mr. Knapp stated after the first or second neighborhood meeting in the area that the number of lots that were going to be developed in some open space were reconfigured to be more compatible or more aligned, with those that are adjacent to them on the perimeter of the subdivision.

Mr. Keeley that is correct especially on the northern border. The lots were 40 feet wide and they are now 50 feet.

Mr. Figliolino if the applicant had selected RN-D which is adjacent to the property. What is the maximum density they would have been allowed to build? And what is the difference between RN-D and RN-6?

Ms. Duncan states the RN-D requires a 9,000 sq ft lot.

Mr. Figliolino asked if Fire had reviewed and approved the rezoning?

Ms. Duncan stated yes they have and Fire will also do an additional review for the site plan review process.

Mr. Figliolino asked if XCEL Energy has concerns with this project?

Ms. Duncan stated no they do not.

Mr. Figliolino asked about the cistern water access and that it would all be resolved during the site plan review and will not be impacted by the detention ponds?

Ms. Duncan stated that is correct and engineering has reviewed the preliminary concept plan.

Mr. Donor asked the applicant if they study the site plan under the current zoning at what it is now - RN 7.5?

Mr. Keeley stated that it is just not a feasible project under that zoning.

Mr. Donor asked if zoning remains the same then the project is not feasible?

Mr. Keeley stated that is correct.

Mr. Donor asked if it stays the current zoning RN 7.5 it does not have the open space requirement.

Ms. Duncan stated that is correct under the RN 7.5.

Mr. Donor asked how the detention outfall gets to the creek?

Travis Frachier, with Redland, 1500 West Canal Court, Littleton, CO - applicants civil engineer - explains there is an existing storm sewer that comes up from the cul de sac that would serve as the outfall for the site. It currently serves the school site for drainage and that is where the detention ponds would be.

Mr. Donor asked city staff if we can request a more detailed traffic study over a longer period of time?.

Mr. Martone stated yes would get into a more detailed traffic study during the site plan and at that point if it is found there are further concerns, the city would require more to remedy the situation.

Mr. Donor asked if there will be an HOA or who would maintain the open space?

Mr. Keeley stated yes there will be an HOA.

Mr. Griffith asked if there is data from when this was a school and those early morning pickup and drop off during when school was in session. What did traffic look like? Was it an issue that the city already knew about or is it absorbed within the existing infrastructure?

Mr. Martone states to his knowledge it's been absorbed in existing infrastructure and there's been no existing issues with that.

Mr. Griffith asked approximately how many students attended this school?

Mr. Keeley stated over the 10 years prior to closing there were on average 243 students annually.

Mr. Griffith stated he had concerns with the time the traffic study was done and assumed there would be some challenges there.

Mr. Figliolino just a follow up clarification from city staff. If the applicant proceeds with RN 6 they build 57 units. If they go with RN 7.5, if they strip out the park, which is not required under that RN 7.5, Then they could still build 56 units, but there would be no park?

Ms Duncan states that is correct with that rough calculation on the gross acres of the site.

Mr. Knapp asked if this project would be within our demands as a city given the growth and future increases of water demands in the future for the city. Has that been looked at by water?

Ms Duncan stated both water and sanitary sewer are provided by the city and the city has capacity for this project. It will also be reviewed in more detail through the site plan process.

MOTION:

It was moved by Mr. Figliolino, that CP2025-0002, a Resolution by the Planning Commission for the City of Arvada, Colorado to amend the 2014 Arvada Comprehensive Plan future land use map designation pertaining to Allendale Elementary School from public quasi public to Suburban Residential, a 9.66-acre parcel of land generally located at 5900 Oak Street in the city of Arvada and state of Colorado be approved and recommended to City Council for ratification.

This motion is based on the findings of fact and approval Criteria on pages 8 through 10 of the staff report.

DISCUSSION OF MOTION

Mr. Griffith is more concerned that usage of the school property can cause problems if not used and stays empty. Has concerns with the unique borders of this project to what is there today. Has a problem with the second criteria. He feels it is not compatible with the surrounding area and the goals and policies of the Comprehensive Plan. He will not be supporting this motion.

Mr. Knapp states he reiterates the same concern. He also feels this fails in meeting the criteria number two. Also feels it does not meet criteria number six. He will not be supporting this motion.

Mr. Figliolino is concerned that if the comprehensive plan does not change the property will become derelict and will impact the neighborhood. He will be supporting the Comprehensive Plan Amendment.

Mr. Donor states he reiterates it seems to fit in the Comprehensive Plan Amendment. He will be supporting the Comprehensive Plan Amendment but not the rezoning.

Mr. Gay states it does not meet the requirement of criteria number two and is going to be voting against the change to the Comprehensive Plan Amendment.

Mr. Ajinovich stated he too will not be able to support the Comprehensive Plan Amendment because of the disparities of what he is seeing between the density, the congestion and everything that my partners appear echoed.

Those voting Yes: Doner, Figliolino

Those voting No: Knapp, Ajinovich, Gay, Griffith

Those absent: Hannan

The motion does not pass: 4-2 (1 absence)

DISCUSSION OF VOTE:

None

MOTION :

It was moved by Mr. Figliolino, that DA2025-0013 An Ordinance for Rezoning for Allendale Elementary School, a 9.66 acres parcel of land generally located at 5900 Oak St. be recommended to City Council for approval.

This motion is based on the finds of fact and approved criteria on Page 10 of the staff report.

DISCUSSION OF MOTION

Mr. Griffith states he echoes earlier comments and has a particular issue with the clarity of criteria number five. Criteria number five deals with consistency of character and believes that they are challenged there.

Mr. Gay states he feels there is nothing in the criteria for rezoning it does not meet but he did not agree with the Comprehensive Plan Amendment, so he will be voting against the rezoning.

Mr. Knapp stated this does not meet the criteria to number five and also adds number two. The intended land use is not consistent with the stated intended purpose of the zoning district.

Mr. Figliolino states he is concerned with policy goal L.2.1 - Complete community. "The city will provide a balanced mix of land uses by promoting redevelopment, continuing to observe land use for future commuter, future commercial and industrial, as well as a variety of housing choices." Single family is just one housing choice. He would have liked to see a little bit more creativity with smaller scale housing that has either duplexes or other housing products. Policy CC 1.3 compatible infill, he is concerned with not having single story homes or a mix of those different sizes in a neighborhood that is predominantly single family with the exception of those duplexes.

Mr. Doner wants to point out that the project does not meet criteria number one since the Comprehensive Plan Amendment was not approved.

Those voting Yes: None

Those voting No: Doner, Hannan, Knapp, Ajinovich, Gay, Figliolino, Griffith

Those absent: Hannan,
The motion does not pass: 6-0 (1 absence)

11. OTHER ITEMS

Mr. Smetana states that we do not have any items on the agenda for meetings on August 20th and September 3rd and if we could cancel those meetings?

It was moved by Mr. Knapp, to cancel the August 20th and September 3rd meetings.

Those voting Yes: Doner, Knapp, Ajinovich, Gay, Figliolino, Griffith

Those voting No:

Those absent: Hannan

The motion carried 6-0

No meetings scheduled for August 20 or September 3, 2025 (meetings canceled by motion, 6-0).

Ms. Suk letting the commissioner know about a survey coming out. It will come from either Jessica or her. All members urged to respond; results to inform future council discussions regarding board/commission operations.

12. ADJOURNED at 8:44 P.M.

Michael P. Griffith, Chair

Brandon Figliolino, Secretary

Dixielee Rodriguez, Recording Secretary

A PARCEL LOCATED IN THE SOUTHEAST QUARTER OF SECTION 9,
TOWNSHIP 3 SOUTH, RANGE 69 WEST OF THE SIXTH PRINCIPAL MERIDIAN,
CITY OF ARVADA, COUNTY OF JEFFERSON, STATE OF COLORADO

APPLICANT

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L: BRYAN.CONWAY@CARDELHOMES.COM

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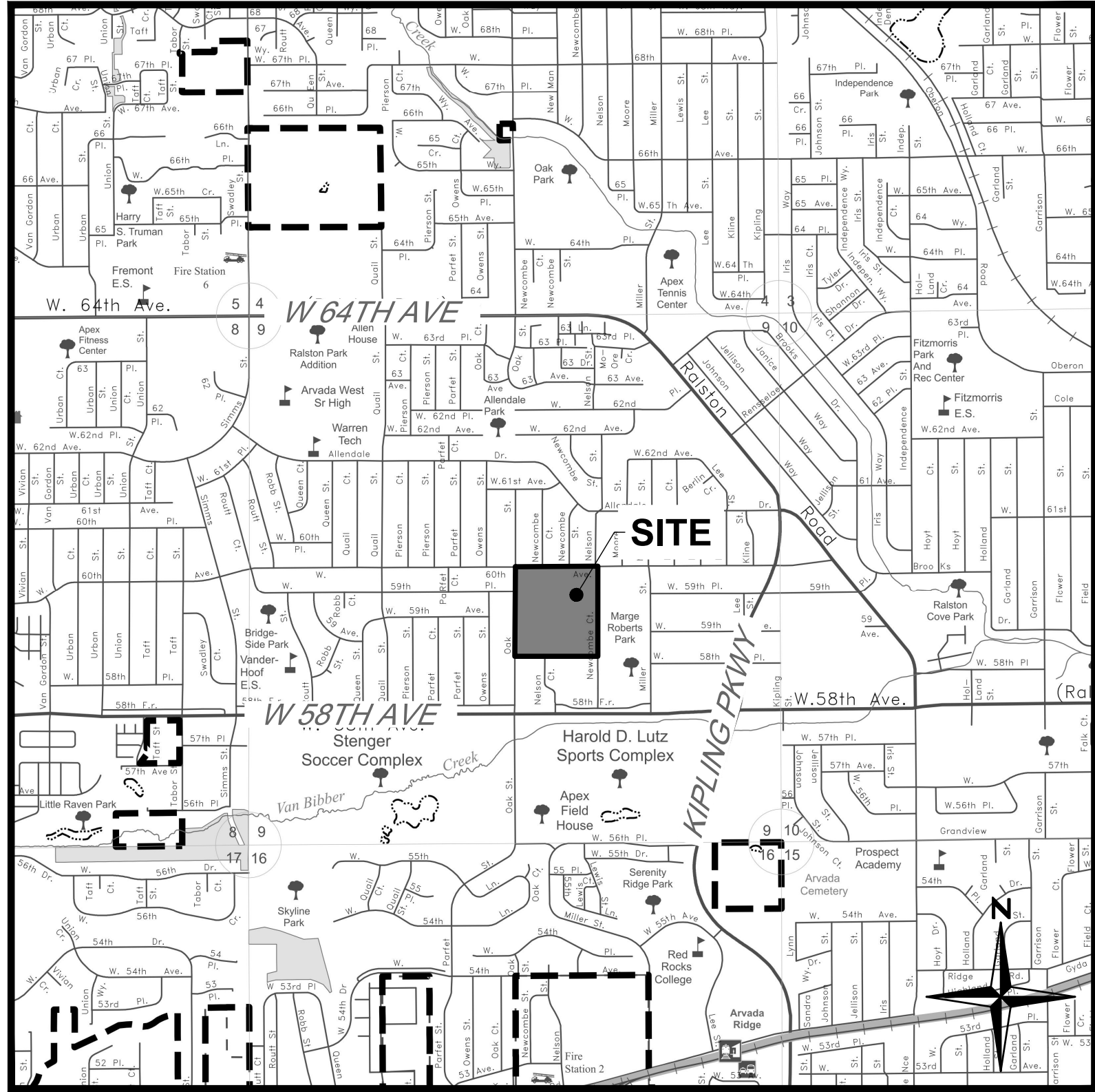
PER LAND TITLE GUARANTEE COMPANY ORDER NO.
ABC70842899-3, WITH A COMMITMENT DATE OF JULY 31, 2024
AT 5:00 P.M.

THE NORTHWEST QUARTER OF THE NORTHWEST QUARTER
OF THE SOUTHEAST QUARTER OF SECTION 9, TOWNSHIP 3
SOUTH, RANGE 69 WEST OF THE 6TH P.M.,

EXCEPT THOSE PORTIONS CONVEYED TO THE CITY OF
ARVADA IN DEEDS RECORDED DECEMBER 14, 1962 IN BOOK
1550 AT PAGES 182 AND 183,

COUNTY OF JEFFERSON, STATE OF COLORADO

PARCEL CONTAINS: 9.660 ACRES, 420,792 SQ.FT



VICINITY MAP
SCALE: 1" = 2640'

Sheet Index	
Sheet Number	Sheet Title
1	COVER SHEET
2	SITE PLAN
3	UTILITY PLAN

NARRATIVE SUMMARY:

THE PROPOSED PROJECT CONTAINS 9.66 ACRES AND IS LOCATED AT 5900 AK STREET IN ARVADA, COLORADO. THE SITE IS CURRENTLY ALLENDALE ELEMENTARY SCHOOL WHICH WAS CLOSED BY JEFFERSON COUNTY SCHOOL DISTRICT. THE EXISTING SCHOOL PARKING LOT AND ACCESS DRIVES WILL BE DEMOLISHED. THE PROJECT WILL PROVIDE 57 SINGLE-FAMILY DETACHED UNITS SERVED BY A LOOPED PUBLIC STREET. A CENTRAL GREEN SPACE WILL PROVIDE LANDSCAPE AND PARK AMENITIES. THE PROJECT WILL DEDICATE AN ADDITIONAL 7' OF RIGHT-OF-WAY ALONG AK STREET AND PROVIDE A DETACHED 5' SIDEWALK ALONG THE PROJECT FRONTAGE.

Site Development Information			
	Zone District	R6 (Residential 6) District	
	Housing Palette Lot Type	Single Family Detached - Urban Street housing palette	
	Total Project Area	420,792 (9.660 acres)	
Development Standards		Site	Standard
Lot Standards			
	Lot Area (min)	4,000 SF	4,000 SF
	Lot Width (min)	40'-0"	40'-0"
	Lot Width (corner)	50'-0"	50'-0"
	Lot Coverage (max)	40%	60%
Building and Parking Siting Standards (not Required for single-family or duplex units in RA, RN, or R District)			
	Front Setback (min)	15'-0"	15'-0"
	Front Parking Setback (min)	n/a	n/a
	Front Garage Door Setback (min)	18'-0"	18'-0"
	Side Setback, Street (min)	15'-0"	15'-0"
	Side Setback, Interior (min)	5'-0"	5'-0"
	Rear Setback (min)	10'-0"	10'-0"
Building Standards			
	Height (ft. (max)/Stories)	28' / 2	35'-0"
Site Standards			
	Landscape Surface Area (min)	78,622 sf / 18%	20%
	Amenitized Landscape Surface Area (min)	78,622 sf / 18%	5%
Parking Standards			
	Standard Spaces	2/unit (garage)	n/a
	Accessible Spaces	0	n/a
	TOTAL	114	n/a
	Bicycle Spaces (may require short-term/long-term breakout)	n/a	n/a
Dwelling Units			
	TOTAL (Bedroom/Units)	171 / 57	n/a

**NOT FOR
CONSTRUCTION**

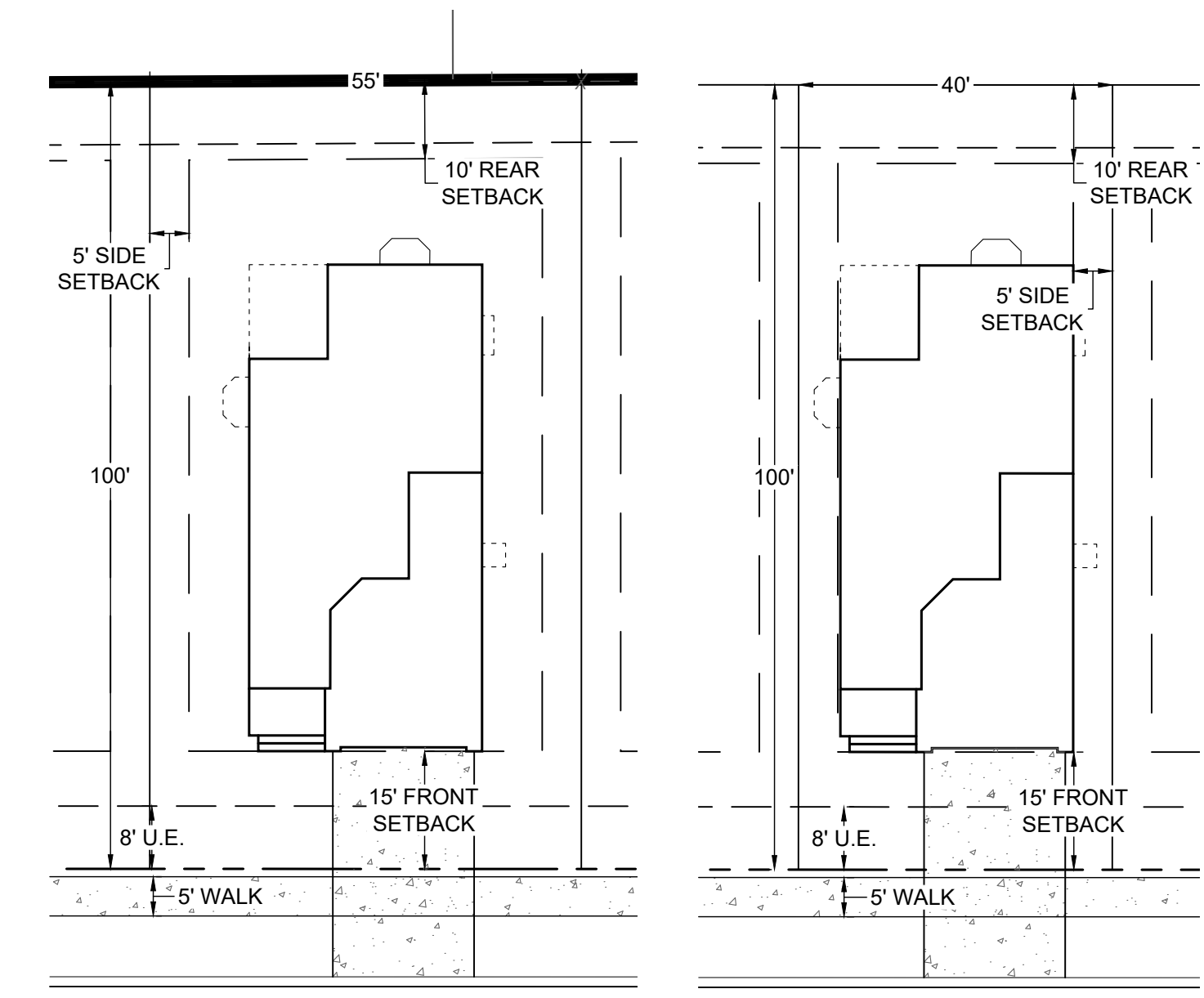
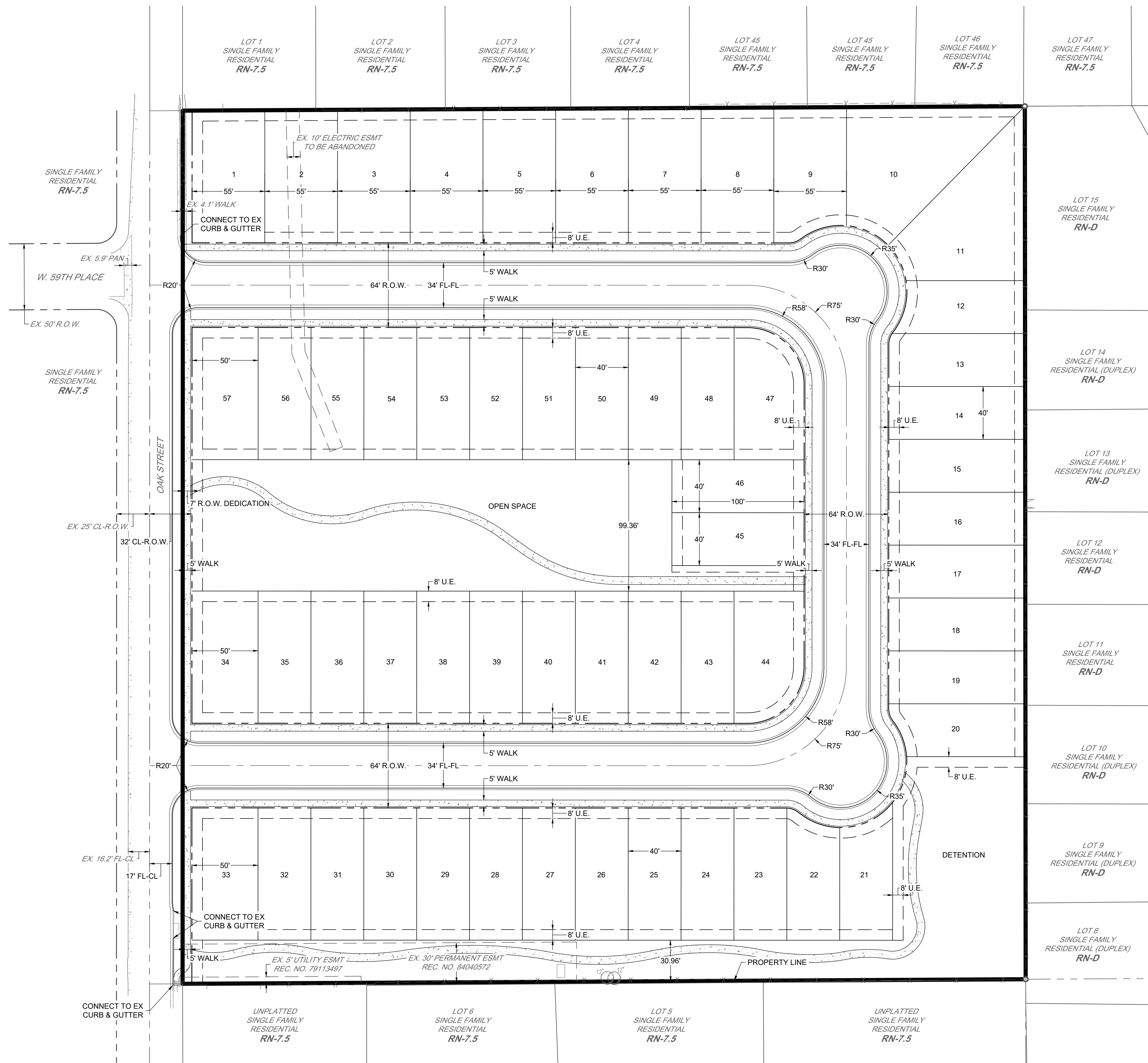
[illegible]

ALLENDALE
5900 OAK STREET - ARVADA, CO
COVER SHEET

SHEET

ALLENDALE

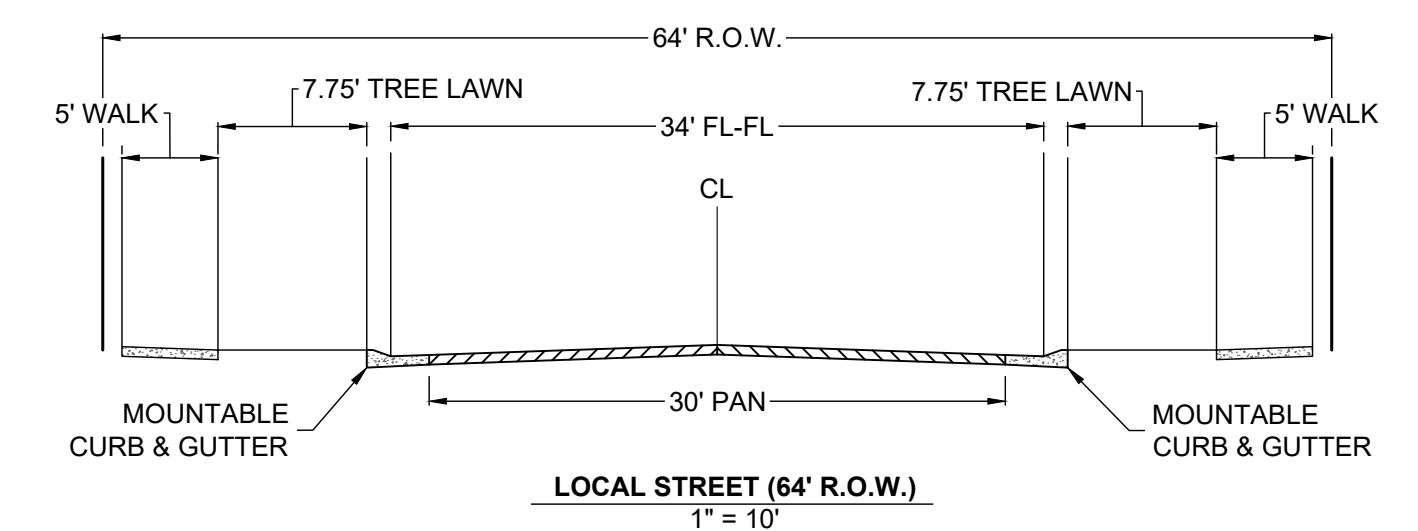
RE-ZONING CONCEPT PLAN



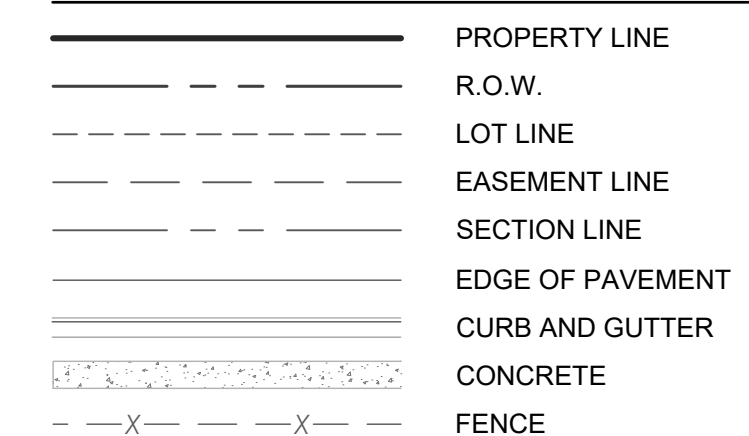
55'X100' LOT TYPICAL
SCALE 1" = 1'

40'X100' LOT TYPICAL

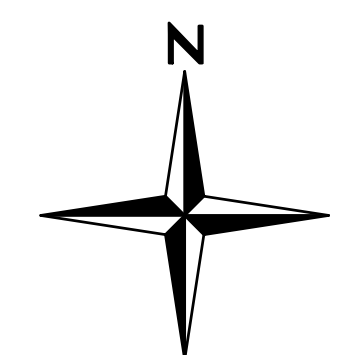
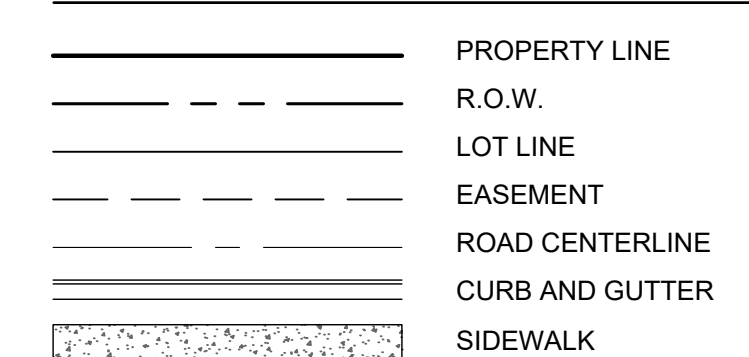
SCALE 1" = 1'



EXISTING LEGEND



PROPOSED LEGEND



**NOT FOR
CONSTRUCTION**

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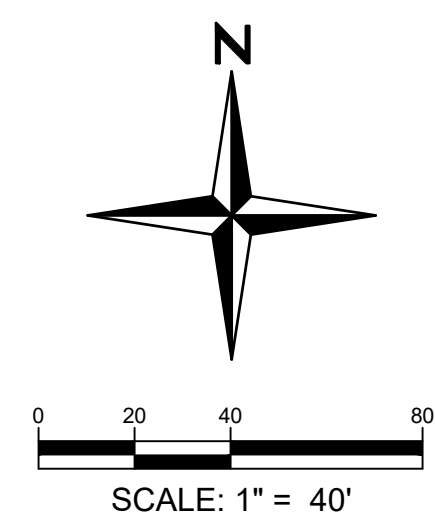
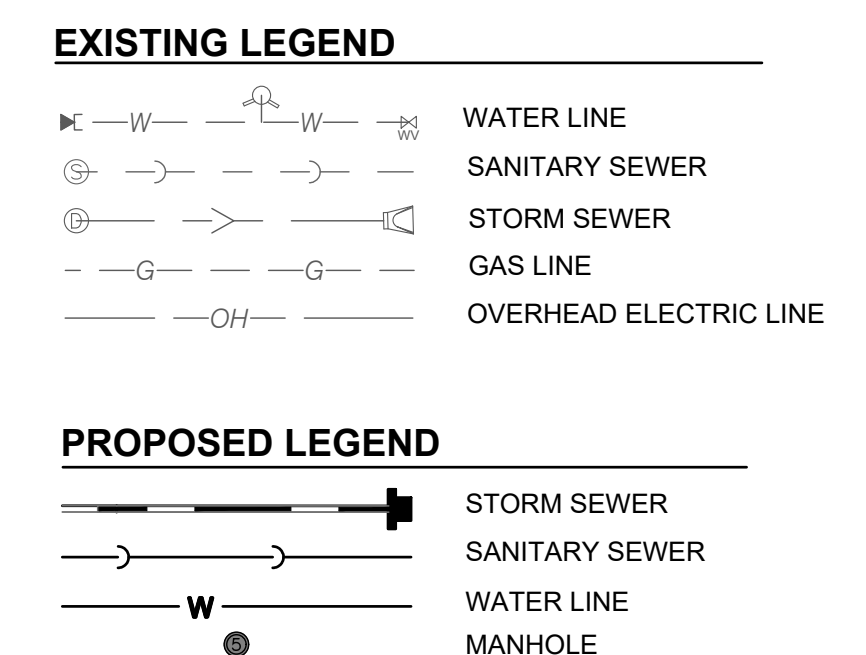
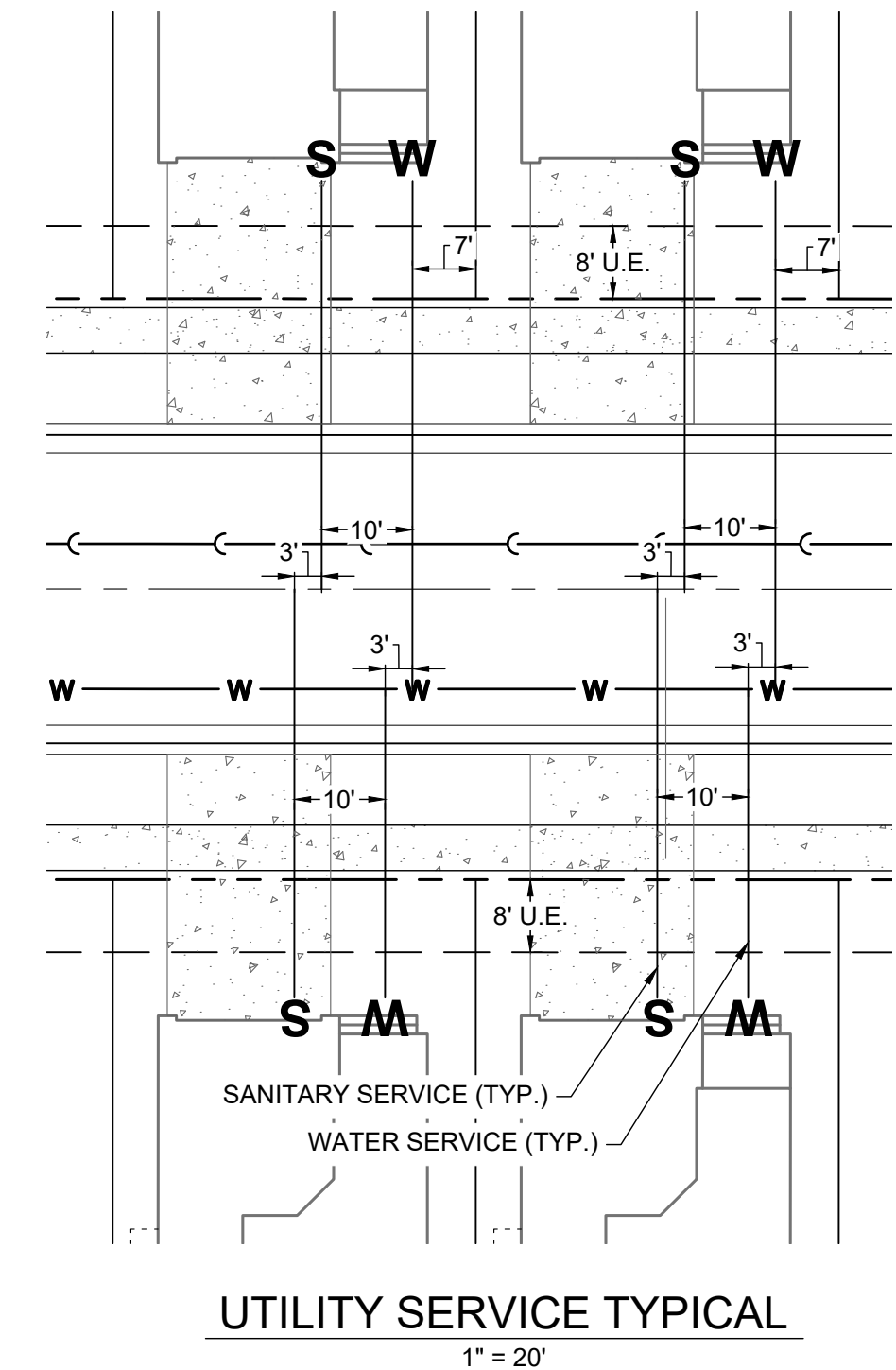
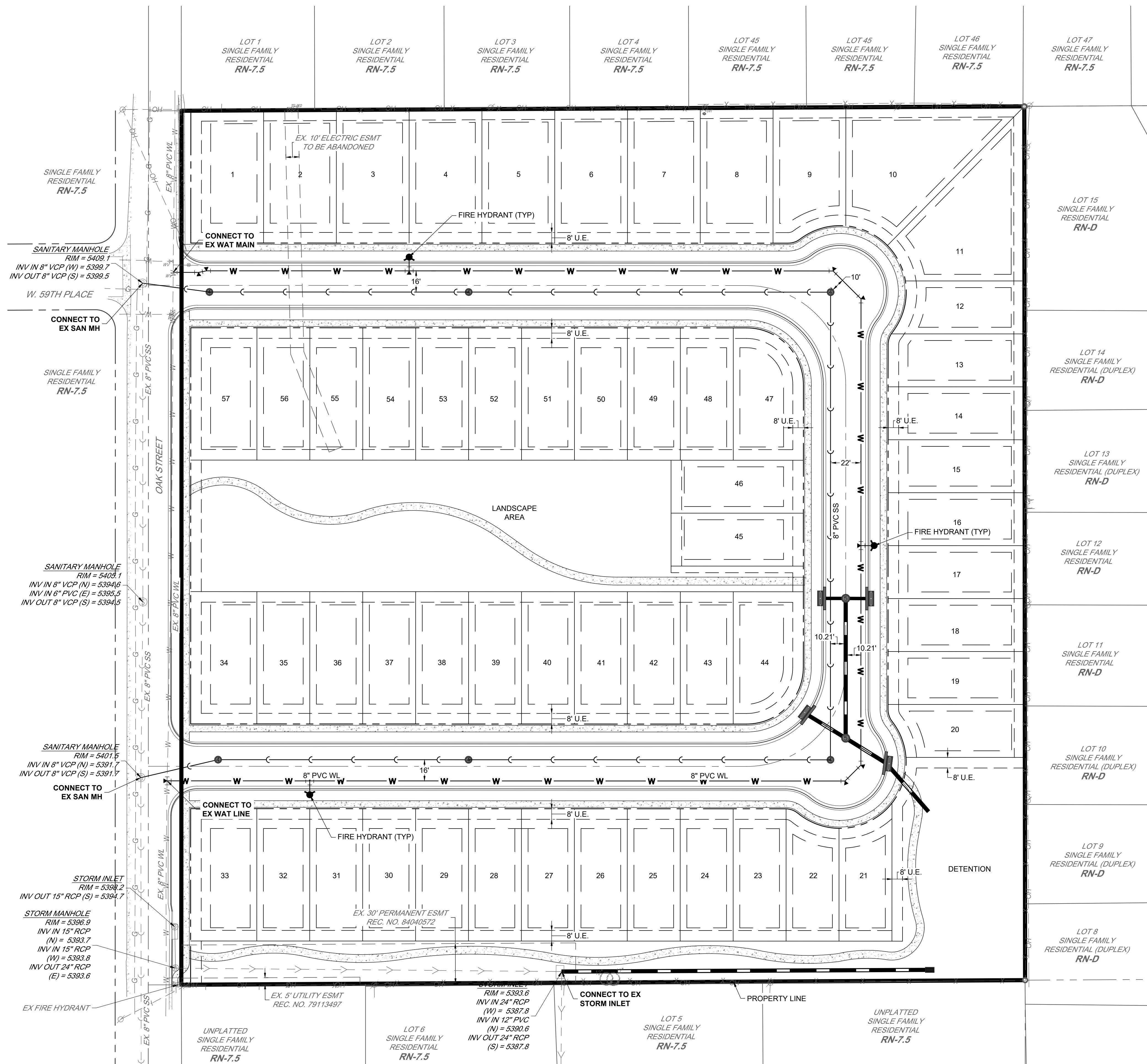
ALLENDALE
5900 OAK STREET - ARVADA, CO
CONCEPTUAL SITE PLAN

SHEET

I:\2024\24002 - Allendale\CADD\Sheet Sets\24002 - Allendale Conceptual Plan\24002.001 - SITE PLAN.dwg tab: 2 - SITE PLAN Sep 23, 2025 - 10:49am tfrazier

ALLENDALE

RE-ZONING CONCEPT PLAN



**NOT FOR
CONSTRUCTION**

[illegible]

ALLENDALE
5900 OAK STREET - ARVADA, CO
CONCEPTUAL UTILITY PLAN

Public
Comment
Received
Since
September 24,
2025



Heidi Van Gieson <hvangieson@arvada.org>

Fwd: Opposition to Rezoning of Allendale Elementary School

Josie Suk <jsuk@arvada.org>

Thu, Sep 25, 2025 at 9:33 AM

To: Dixielee Rodriguez <droduiguez@arvada.org>, Heidi Van Gieson <hvangieson@arvada.org>

----- Forwarded message -----

From: **Kristen Rush** <kristen@arvada.org>

Date: Wed, Sep 24, 2025 at 9:54 PM

Subject: Fwd: Opposition to Rezoning of Allendale Elementary School

To: Josie Suk <jsuk@arvada.org>

Is this one going to council?

----- Forwarded message -----

From: **Scott McDonnell** [REDACTED] >

Date: Wed, Sep 24, 2025 at 5:19 PM

Subject: Opposition to Rezoning of Allendale Elementary School

To: kristen@arvada.org <kristen@arvada.org>

Dear City Council,

I am writing to voice my strong opposition to the proposed rezoning of the Allendale Elementary School property from RN7.5 to R6.

This change would negatively impact our community in several key ways:

Neighborhood Character: The proposed density does not align with the established character of our neighborhood, which is built on lower-density, family-oriented housing.

Traffic & Infrastructure Strain: The rezoning would increase population density and traffic beyond what our current roads and infrastructure can reasonably support. Importantly, there are already multiple housing developments and apartment complexes under construction in the immediate vicinity that have yet to be completed or occupied. These projects are not adequately factored into the current infrastructure studies, meaning the true traffic and utility burdens are being underestimated.

Safety Concerns for Children: Increased traffic and congestion will make our streets more dangerous. This is particularly concerning given that children regularly play and bike in the neighborhood.

For these reasons, I urge you to preserve the existing RN7.5 zoning and prevent overdevelopment that would compromise both safety and quality of life in our community.

Thank you for your attention and for considering the long-term impacts on the families who call this neighborhood home.

Sincerely,

Scott McDonnell
[REDACTED]

--

Kristen Rush
City Clerk

9/29/25, 2:17 PM

City of Arvada Mail - Fwd: Opposition to Rezoning of Allendale Elementary School

720-898-7546 (Work)
303-915-5246 (Cell)
kristen@arvada.org



--
Josie Suk
Development Systems and Administrative Manager
Desk: [720-898-7627](tel:720-898-7627)
Mobile: [720-582-4419](tel:720-582-4419)
E-Mail: jsuk@arvada.org
Regular Office Hours: Monday through Friday 8:00 am - 5:00 pm





Heidi Van Gieson <hvangieson@arvada.org>

Fwd: Allendale Elementary School Rezoning CASE DA2025-0013

Josie Suk <jsuk@arvada.org>
To: Planning Admin <plnadmin@arvada.org>

Mon, Sep 29, 2025 at 4:44 PM

----- Forwarded message -----

From: **Kristen Rush** <kristen@arvada.org>
Date: Mon, Sep 29, 2025 at 4:43 PM
Subject: Fwd: Allendale Elementary School Rezoning CASE DA2025-0013
To: Josie Suk <jsuk@arvada.org>

----- Forwarded message -----

From: **Sam Eisler** <[REDACTED]>
Date: Mon, Sep 29, 2025 at 3:42 PM
Subject: Allendale Elementary School Rezoning CASE DA2025-0013
To: kristen@arvada.org <kristen@arvada.org>

Hello Kristen,

I would like to provide this email to be made a part of the permanent record for this case. I unfortunately will be out of town and will not be able to attend the hearing on Oct. 7th. I did attend the pervious hearing on this case.

My first comment/question is why is this meeting happening? The previous hearing resulted in the city council rejecting the comprehensive plan amendment and the rezoning application, it looks like another meeting is being held to review the same changes that were already rejected...

My second comment/question is if this were to go through, the school district would receive \$1-\$2 million for the sale of the land, does the public/city of Arvada have any say as to what happens to this money? Does the school district have plans for how this money would be allocated?

My third comment has been mentioned in every town hall and city council meeting that I've attended about this case. The proposed housing does not in any way match the housing that is currently in place. The houses to the south of the school would have in some cases four properties per single house property line. The proposed housing is too dense and I (along with almost every member of the community) do not support the re-zoning of the land.

The notice I received in the mail mentioned this will be a hybrid meeting, will I be able to watch the meeting online? If so, can you please provide a link for this?

Thank you,
Samuel Seidman-Eisler
[REDACTED]

--
Kristen Rush
City Clerk
720-898-7546 (Work)
303-915-5246 (Cell)
kristen@arvada.org



--
Josie Suk
Development Systems and Administrative Manager
Desk: [720-898-7627](tel:720-898-7627)
Mobile: [720-582-4419](tel:720-582-4419)
E-Mail: jsuk@arvada.org
Regular Office Hours: Monday through Friday 8:00 am - 5:00 pm





Heidi Van Gieson <hvangieson@arvada.org>

Fwd: Arvada permit DA2025-0013 at City council meeting 10/7/25

Josie Suk <jsuk@arvada.org>
To: Planning Admin <plnadmin@arvada.org>

Mon, Sep 29, 2025 at 3:28 PM

----- Forwarded message -----

From: **Kristen Rush** <kristen@arvada.org>
Date: Sun, Sep 28, 2025 at 9:42 PM
Subject: Fwd: Arvada permit DA2025-0013 at City council meeting 10/7/25
To: Josie Suk <jsuk@arvada.org>

Sent from my iPhone

Begin forwarded message:

From: John [REDACTED]
Date: September 28, 2025 at 9:19:31 PM MDT
To: Kristen Rush <kristen@arvada.org>
Subject: Arvada permit DA2025-0013 at City council meeting 10/7/25

Kristen,

I'm writing to keep zoning of the Allendale Elementary property as part of permit DA2025-00013 at its current zoning classification of RN 7.5.

The developer wants to completely change the character of the neighborhood by packing in more homes than what is typical of the homes in the surrounding area. Some of the surrounding homes have been here since the late 1950s for these 65 years, other developers have come in and have all been able to make it profitable to build homes in the RN 7.5 zoning designation.

The neighbors have spoken, they do not want this property to be rezoned. The planning department has reviewed the request and the ask to redone has been denied.

Hear the voices that have spoken and deny the request by the developer to change zoning to R6 from R7.5 for the Allendale Elementary property.

Regards,

John A. Schiel
[REDACTED]

--
Josie Suk
Development Systems and Administrative Manager
Desk: 720-898-7627
Mobile: 720-582-4419
E-Mail: jsuk@arvada.org
Regular Office Hours: Monday through Friday 8:00 am - 5:00 pm



ALLENDALE CITY COUNCIL HEARING

Tuesday, October 7, 2025

City Council Chambers – 8101 Ralston Rd, Arvada, CO 80001

6:15 PM



AGENDA & TEAM

1. Team
2. Vicinity Map
3. Applicant
4. Project Overview
5. Entitlement & Development Process
6. Community Engagement
7. Comprehensive Plan Amendment Compliance
8. Zoning Comparison
9. Zoning Maps
10. Rezoning Compliance
11. Land Plans
12. Product
13. Drainage
14. Cross-section
15. School Assessment
16. Traffic Analysis
17. Shade Study
18. Product Comparison
19. Cost Breakdown
20. Fiscal Impact
21. Thank You

Team:

Applicant: Cardel Homes – Bryan Conway

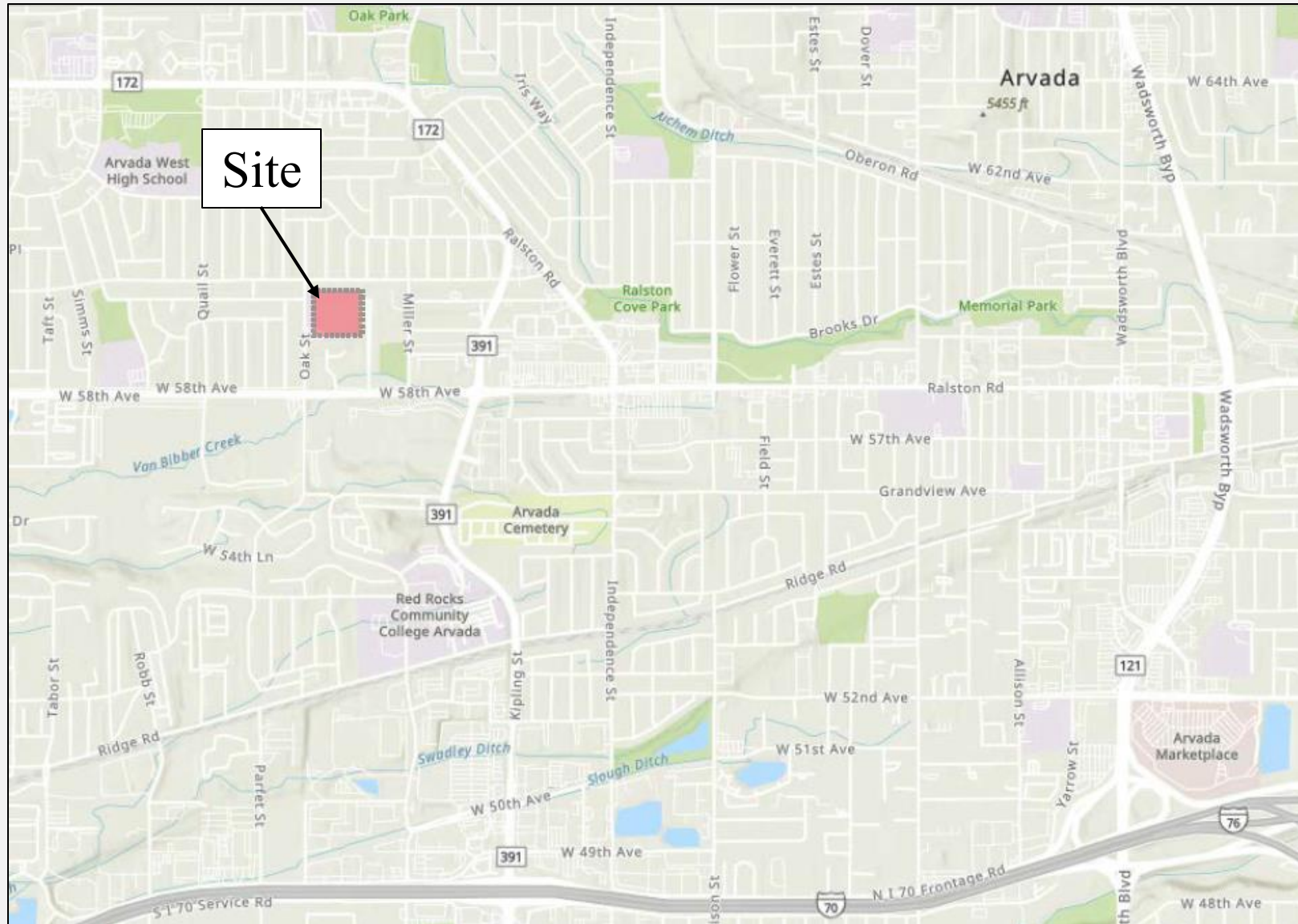
Civil Engineer: Redland – Travis Frazier

Development Consultant: JMC Consulting – Jeff Keeley

Landscape Architect: THK Associates – Julie Gamec

Traffic Engineer: Fox Tuttle - Cassie Slade

VICINITY MAP



CARDEL HOMES

Who we are

- Family-owned
- Building homes since 1973
- Regions - Alberta, Ontario, Florida, Colorado

Time in Denver

- 20 Years

Colorado communities we have built

- Current: Deer Creek, Three Hills, Vivant, Westminster Station

Foundations

- Cardel actively supports initiatives that enrich lives and communities through our charitable division, Cardel Foundations.

Design

- Our in-house architects design our floorplans for every season of life allowing for personalization.
- Each community is architecturally designed to blend with the existing neighborhood.



PROJECT OVERVIEW

Public RFP Process

1. Request for Qualifications
2. Request for Proposals

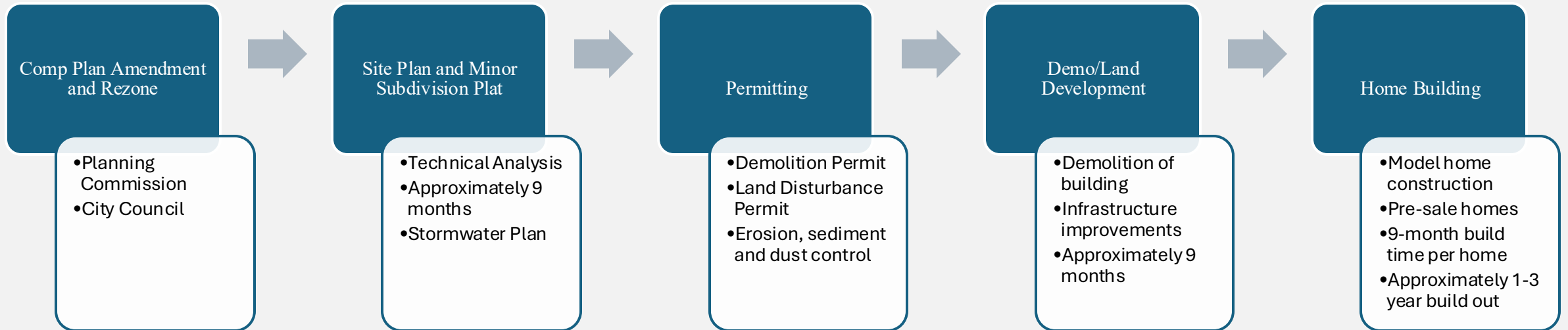


Pre-Application Meeting & Neighborhood Meetings

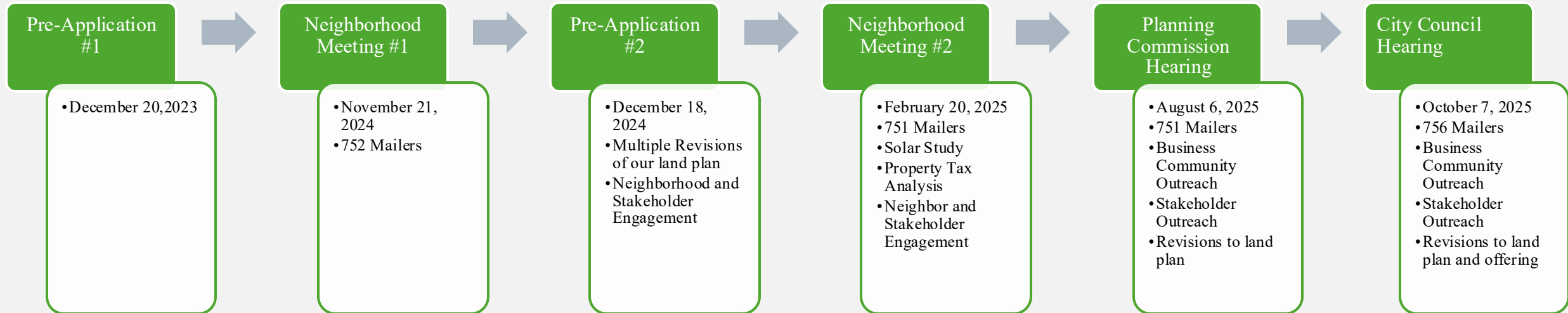
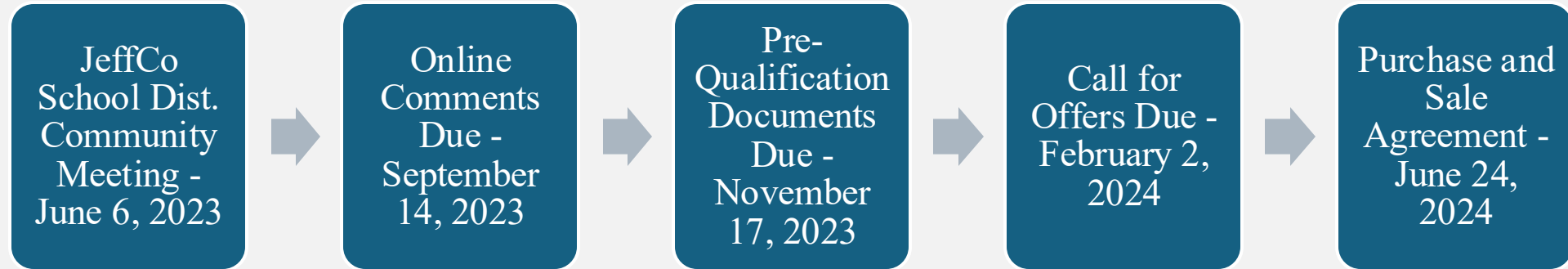
Entitlement process

1. Comprehensive Master Plan Amendment
2. Rezone
3. Site Plan and Minor Subdivision Plat

ENTITLEMENT & DEVELOPMENT PROCESS



COMMUNITY ENGAGEMENT, MEETINGS & HEARINGS



COMPREHENSIVE PLAN AMENDMENT COMPLIANCE CRITERIA

Existing Plan Needs the Proposed Amendment.



- The school has been vacant since 2021 and will remain closed and vacant.
- Focuses growth where infrastructure exists, helping preserve natural areas elsewhere.



Why are we here?

- Since 2000, Jefferson County has grown by 55,854 residents, but the number of school-aged children has declined by over 29,000
- The District lost more than 5,000 students between 2019 and 2022
- Jeffco has capacity to serve 96,000 students in traditional district-managed schools and currently serve only 69,000 students in these schools
- Financial and operational challenges needed to addressed
- Call to action: Regional Opportunities for Thriving Schools

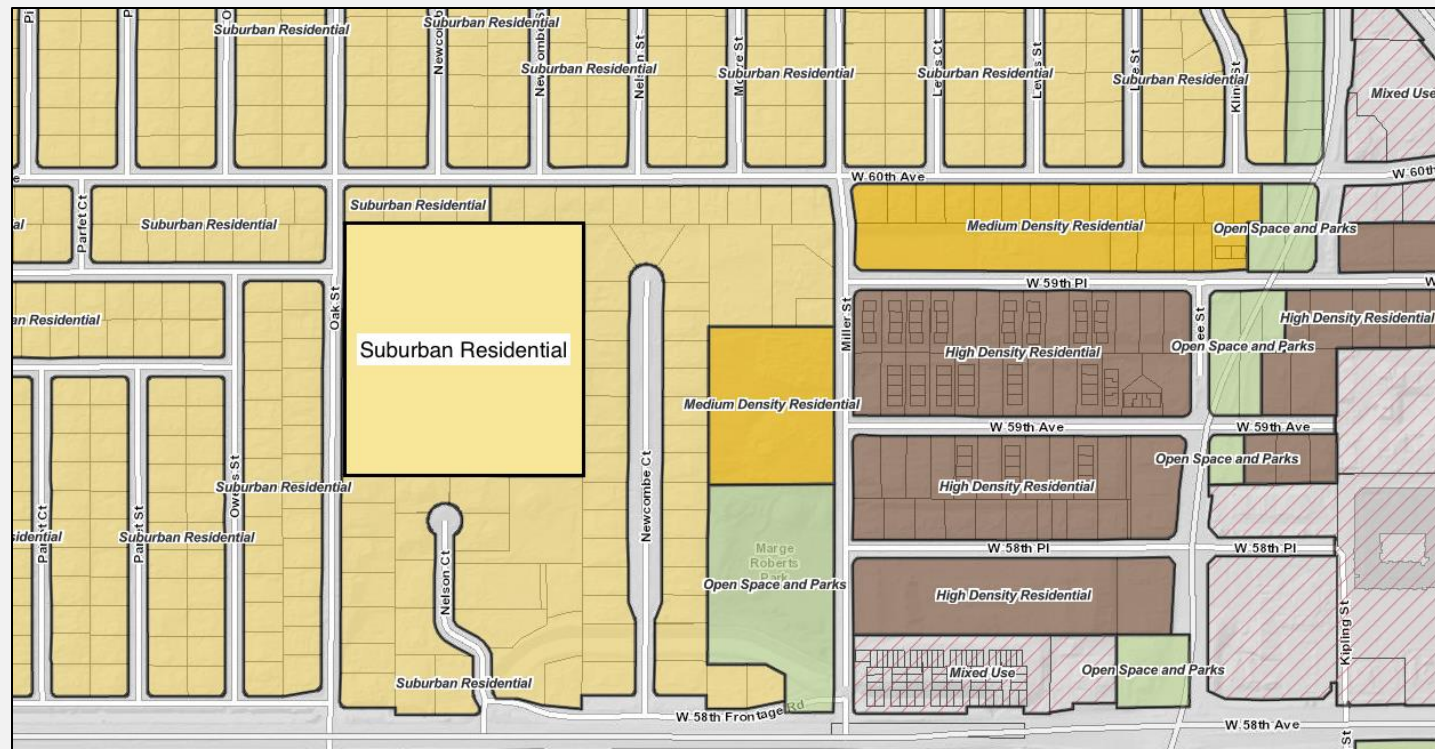


COMPREHENSIVE PLAN AMENDMENT COMPLIANCE CRITERIA

Compatibility with Surroundings and Plan Goals



- Suburban Residential fits naturally with the surrounding single-family neighborhood.
- Adds open space, pedestrian paths, and street connections to support walkability and quality of life.
- Aligns with City policy for infill, matching scale, design, and placement to the community.



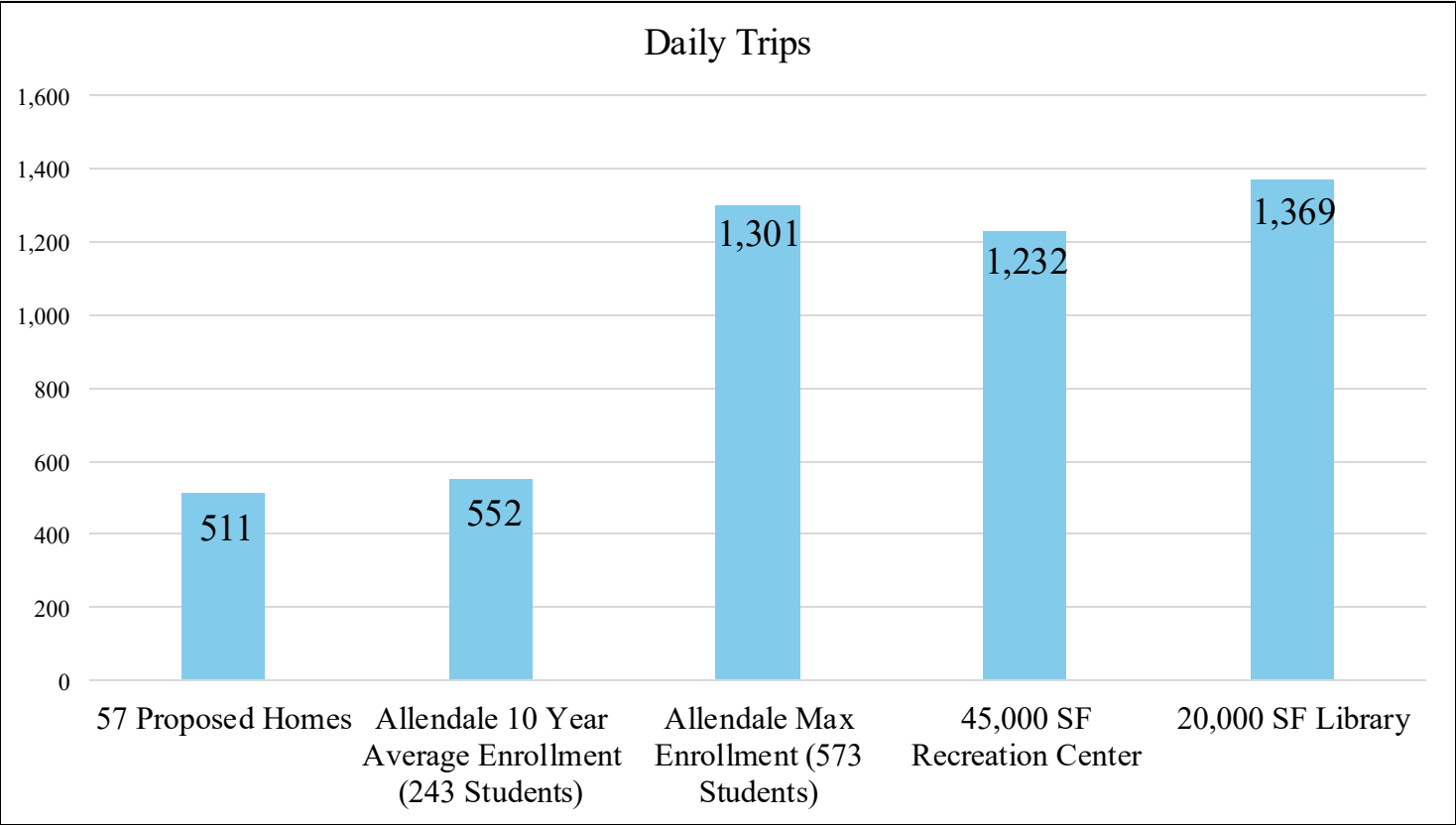
Policy CC-1.3: Compatible Infill

- *The City will encourage new infill development to consider and be sensitive to the character of existing neighborhoods. Considerations shall include building scale, placement, size, height transitions, landscape, streetscape, and other design measures.*

COMPREHENSIVE PLAN AMENDMENT COMPLIANCE CRITERIA

No Major Negative Impacts to Transportation, Services, or Facilities.

- 
- Connects efficiently to existing streets with two access points to spread traffic.
 - Any needed street improvements or traffic mitigation will be handled during development review.
 - Existing services are sufficient; upgrades will be addressed as part of the review.



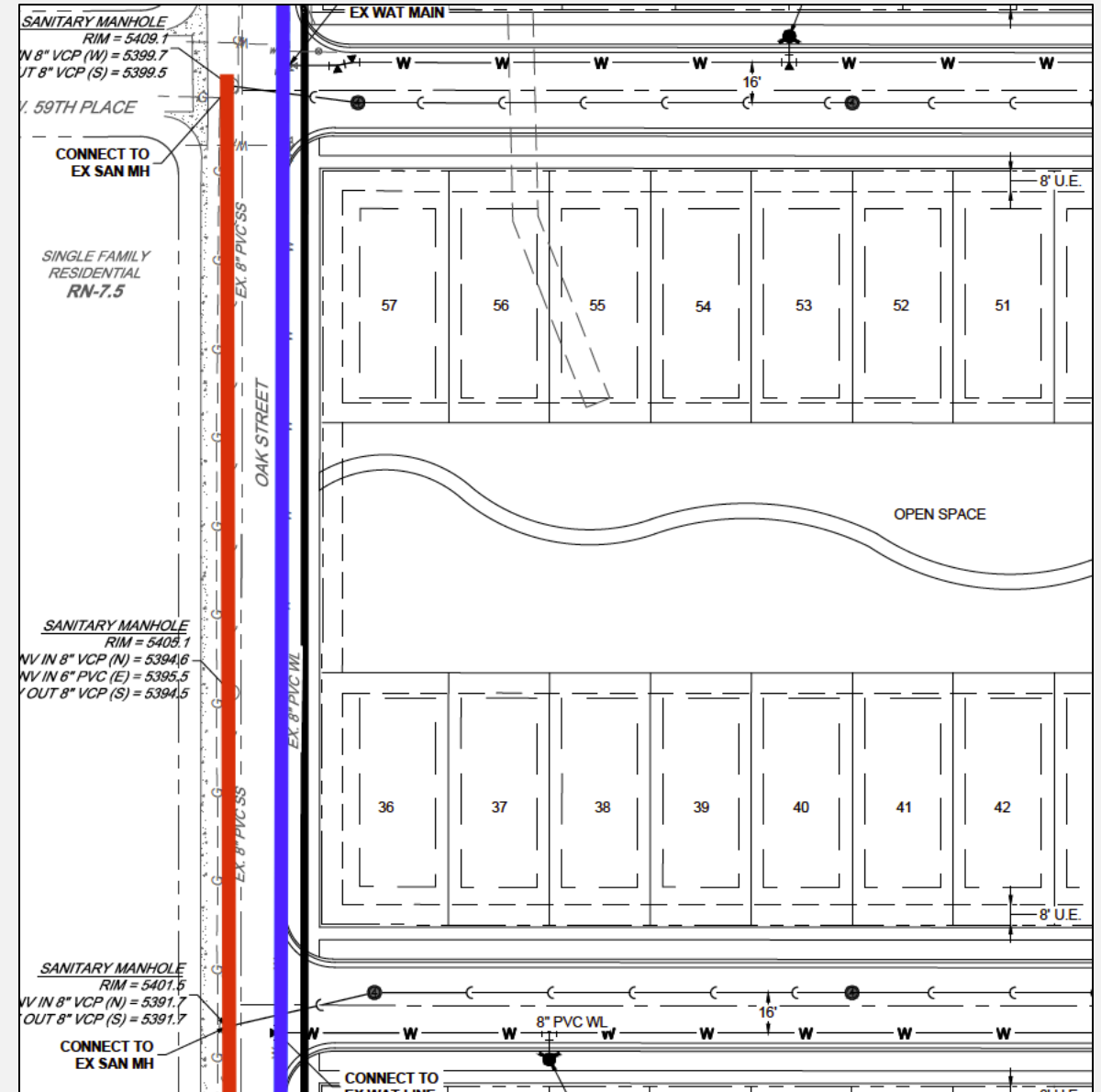
COMPREHENSIVE PLAN AMENDMENT - CONTINUED

Minimal Effects on Service Provision



- The site is located within the city's existing urban services area and is already served by nearby utility and public service infrastructure.
- Trash collection, snow removal, emergency services, and other municipal functions can be efficiently extended to serve the neighborhood.

GOAL U-1: Ensure that adequate public facilities and utilities are available in the developed areas of the City.

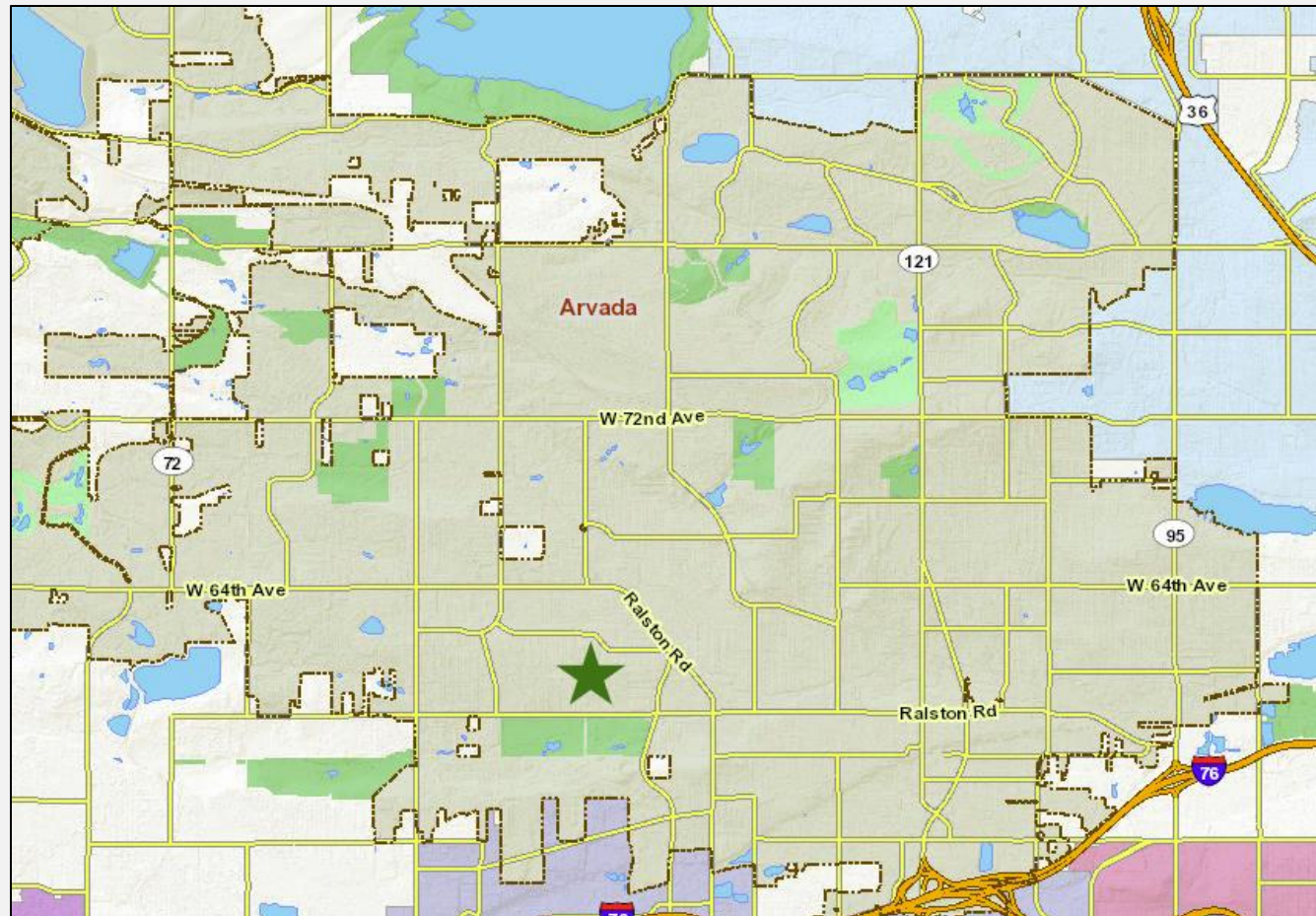


COMPREHENSIVE PLAN AMENDMENT - CONTINUED

Annexation Not Required



- The subject property is located entirely within the current municipal boundaries of the City of Arvada.
- No annexation is required as part of this amendment request.



COMPREHENSIVE PLAN AMENDMENT - CONTINUED

Strict Adherence Would Conflict with Plan Intent



- Keeping the site's old institutional designation would leave it vacant and underused.
- Would contradict the plans objectives of promoting efficient infill and neighborhood vitality.



Redevelopment as defined the Arvada Comprehensive Plan

- *The replacement or reconstruction of buildings that are in substandard physical condition or that do not make effective use of the land on which they are located.*

GOAL L-5: *Designate and promote redevelopment and infill to generate economic revitalization, improve physical conditions, and provide an appropriate mix of quality housing choices.*

COMPREHENSIVE PLAN AMENDMENT - CONTINUED

Promotes Public Welfare and Aligns with Plan Policies



- We will be transforming a vacant school into a vibrant, family-oriented residential neighborhood that is walkable, connected, and compatible with surrounding land uses.
- The project contributes to housing diversity and community reinvestment, two key pillars of the Comprehensive Plan.
- It revitalizes the site, delivers needed housing, enhances open space, and reinforces environmental responsibility.



Annual Municipal
Revenue Increase

\$255,768

ZONING COMPARISON

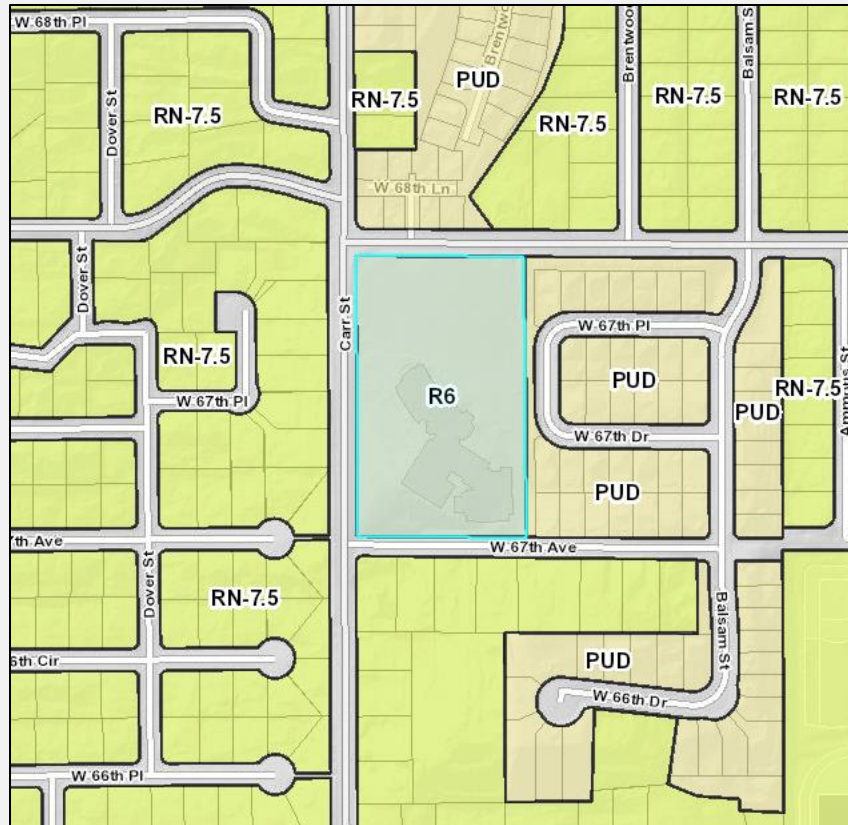
Zoning Districts allowed under the Suburban Residential Land Designation

- R6 – Residential 6 District;
- RN – Residential Neighborhood District; and
- Any PUD up to 6.0 dwelling units per acre – Planned Unit Development District

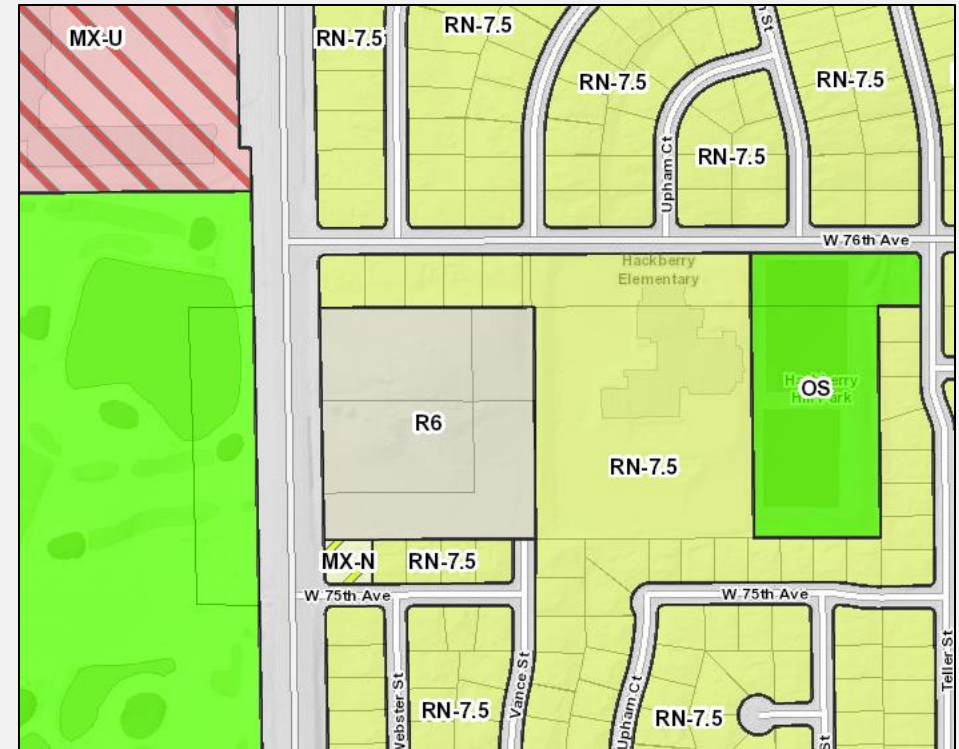
ZONING DESIGNATION	Minimum Lot Area (SF)	Lot Width	Front Setback (Building/Garage)	Interior Side Setback	Maximum Building Coverage	Maximum Height	Park and Trail Requirements
RN-7.5	7,500	75 ft.	20/20 ft.	7.5 ft.	40%	28 ft.	N/A
R6	4,000	40 ft.	15/18 ft.	5 ft.	60%	35 ft.	20%

- Our two-story product is below 35ft.

ZONING MAP

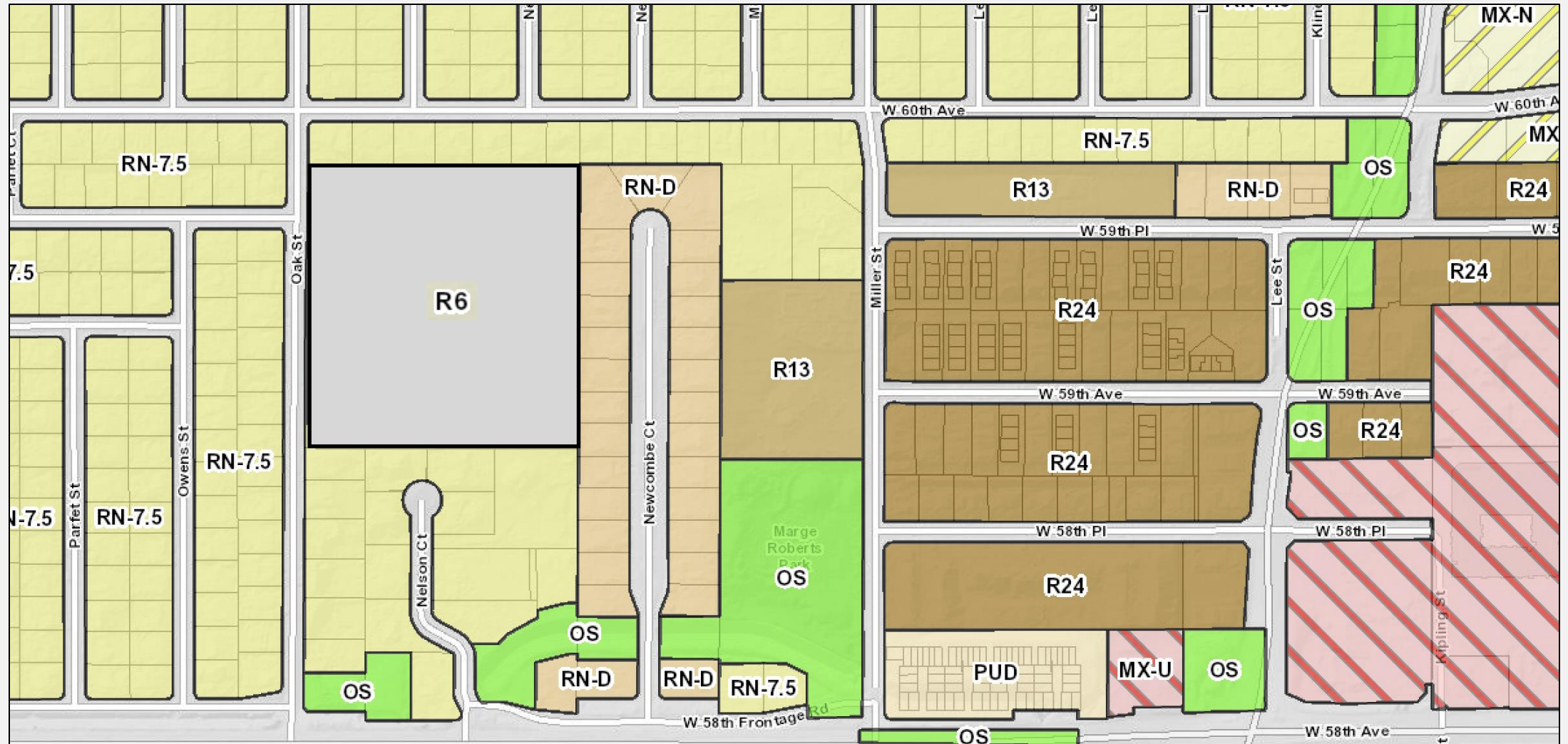


- CARR ST. & W. 67TH AVE



- WADSWORTH between W. 74th & 76th Avenues

ZONING MAP



REZONING COMPLIANCE

Consistent with Plan or Changed Conditions.



- Former Allendale Elementary School site is no longer in use for institutional purposes.
- The site is not desirable for the city to re-develop into another civic use.



Why are we here?

- Since 2000, Jefferson County has grown by 55,854 residents, but the number of school-aged children has declined by over 29,000
- The District lost more than 5,000 students between 2019 and 2022
- Jeffco has capacity to serve 96,000 students in traditional district-managed schools and currently serve only 69,000 students in these schools
- Financial and operational challenges needed to addressed
- Call to action: Regional Opportunities for Thriving Schools



REZONING COMPLIANCE

Consistent with Zone’s Intent



- R6 zoning district allows for new residential development of a variety of housing products up to a gross density of six units per acre.
 - 5.9 DU/Acre
 - Single-Family Detached Homes

ZONING DESIGATION	Minimum Lot Area (SF)	Lot Width	Front Setback (Building/Garage)	Interior Side Setback	Maximum Building Coverage	Maximum Height	Park and Trail Requirements
R6	4,000	40 ft.	15/18 ft.	5 ft.	60%	35 ft.	20%

REZONING COMPLIANCE

Services are Available.



- Site sits within the City of Arvada's municipal boundaries.
- Services are available and to the site.



WILL SERVE LETTER

January 26, 2024

Cardel Denver Homes; Attn Sara Dieringer
9110 East Nichols Ave, Suite 120
Denver, CO 80112

Re: 5900 Oak Street, Arvada CO

Dear Sara,

This letter is to confirm that Xcel Energy is your utility provider for natural gas and electric service. In accordance with our tariffs, on file with and approved by the Colorado Public Utilities Commission, gas and electric facilities can be made available to serve the project at 5900 Oak Street, Arvada CO. The cost, and whether any reinforcements or extensions are required, for the Company to provide those facilities will be determined by your designer upon receipt of application and project plans.

Your utility service(s) will be provided after the following steps are completed:

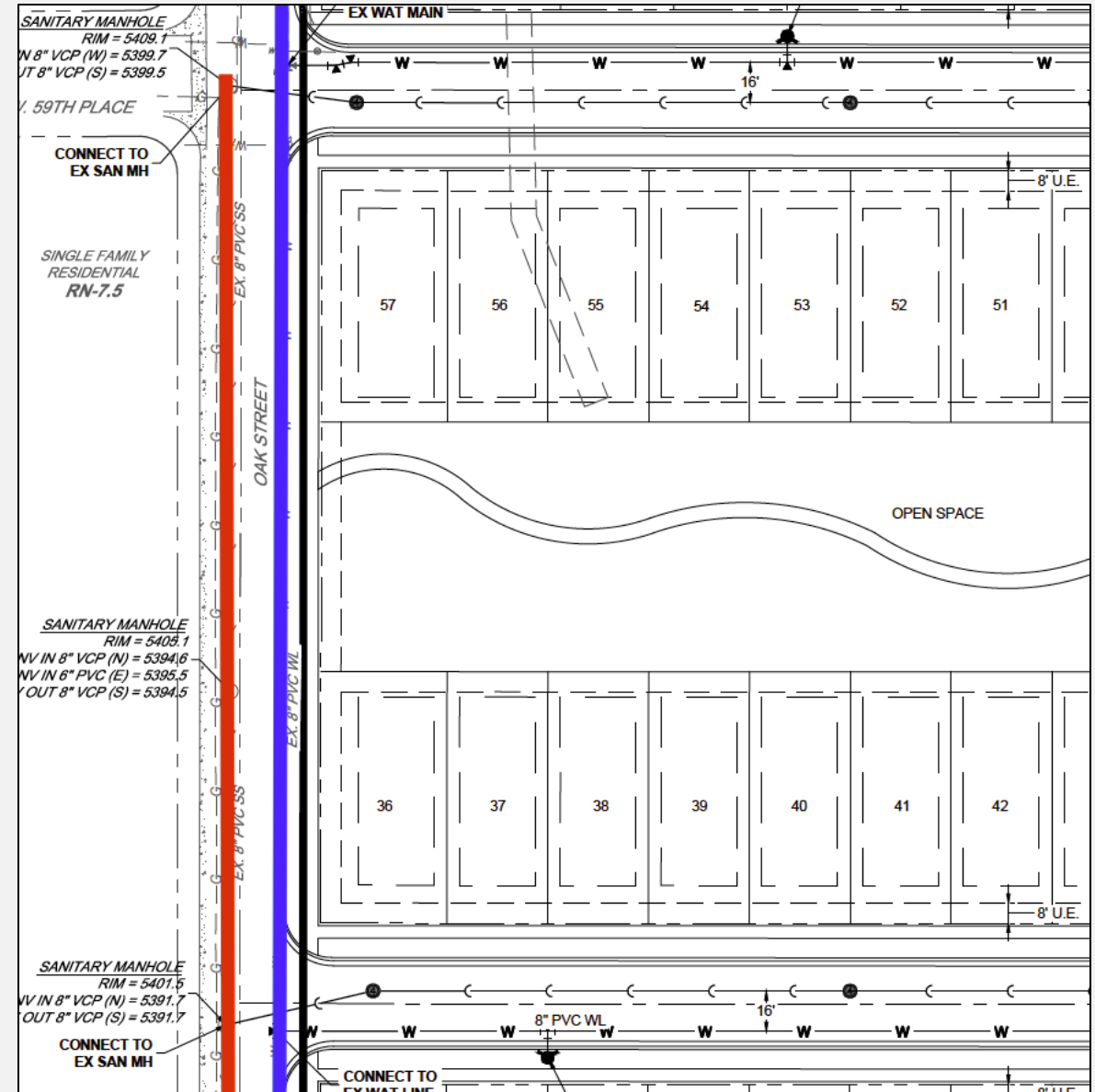
- *Application submitted to Xcel Energy's "Builders Call Line (BCL)"* – once your application is accepted you will be assigned a design department representative who will be your primary point of contact
- *Utility design is completed* – you must provide your design representative with the site plan, the one - line diagrams, and panel schedules for electric and gas loads if applicable
- *All documents provided by design representative are signed and returned*
- *Payment is received* (Residential Service Laterals if applicable)
- *Required easements are granted* - you must sign and return applicable easement documents to your Right-of-Way agent
- *Site is ready for utility construction* - the site ready information can be found on our website at may be viewed at [Construction and Inspection | Xcel Energy](#).

An estimated scheduled in-service date will be provided once these requirements have been met. It is important to keep in mind that the terms and conditions of utility service, per our tariffs, require that you provide adequate space and an easement on your property for all gas and electric facilities required to serve your project, including but not limited to gas and electrical lines and meters, transformers, and pedestals. General guidelines for requirements can be found on our website at [xcelenergy.com/InstallAndConnect](#).

Xcel Energy looks forward to working with you on your project and if I can be of further assistance, please contact me at the phone number or email listed below.

Sincerely,
Jason Bersano
Xcel Energy Builder and Developer Representative

Mailing address: Public Service Company of Colorado
1123 W 3rd Ave
Denver, CO 80231



REZONING COMPLIANCE

Minimal Environmental Impacts



- Onsite detention pond for stormwater control which promotes the public health, safety, and welfare by minimizing flood losses.
- Site is developed, minimal disruption to existing vegetation and wildlife.



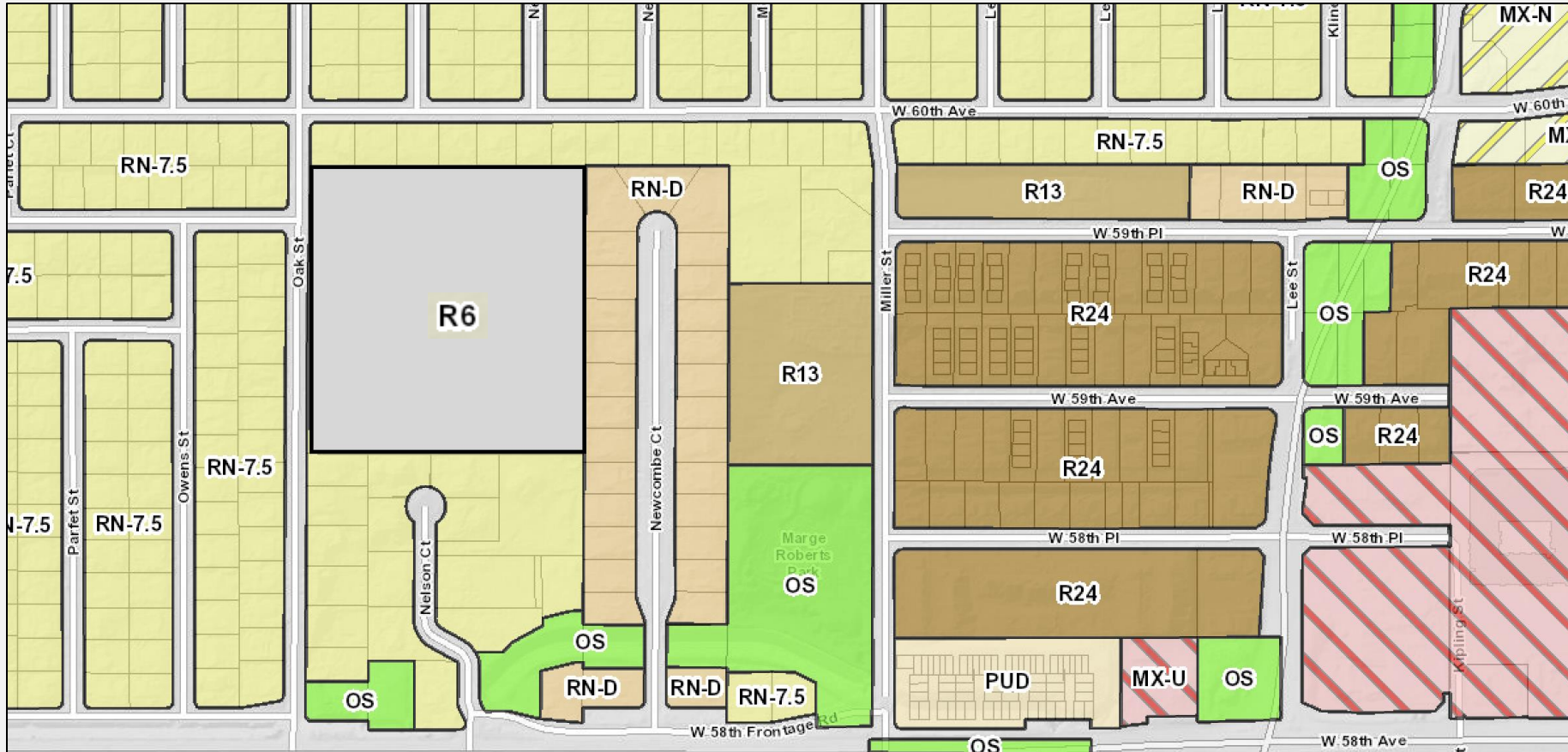
GOAL R-1: Minimize the impact of new development on natural areas to allow continued cohabitation of people and wildlife.

REZONING COMPLIANCE

Compatible with Neighborhood



- Surrounding uses are single-family homes.
- Compatibility shall consider building scale, placement, size, height transitions, landscape, streetscape, and other design measures.



ORIGINAL LAND PLANS



Original Land Plan



Planning Commission

LAND PLAN

Pre Planning Commission Land Plan Updates

- Orientated open space to connect directly to Oak Street for better neighborhood access
- Removed driveways on Oak St.
- Provided looped walking path
- Increased open space land

Post Planning Commission Land Plan Updates

- Increased northern lot sizes by increasing lot widths
- Maintained 30' buffer on South
- Focused density on interior of site
- Ranch style homes available

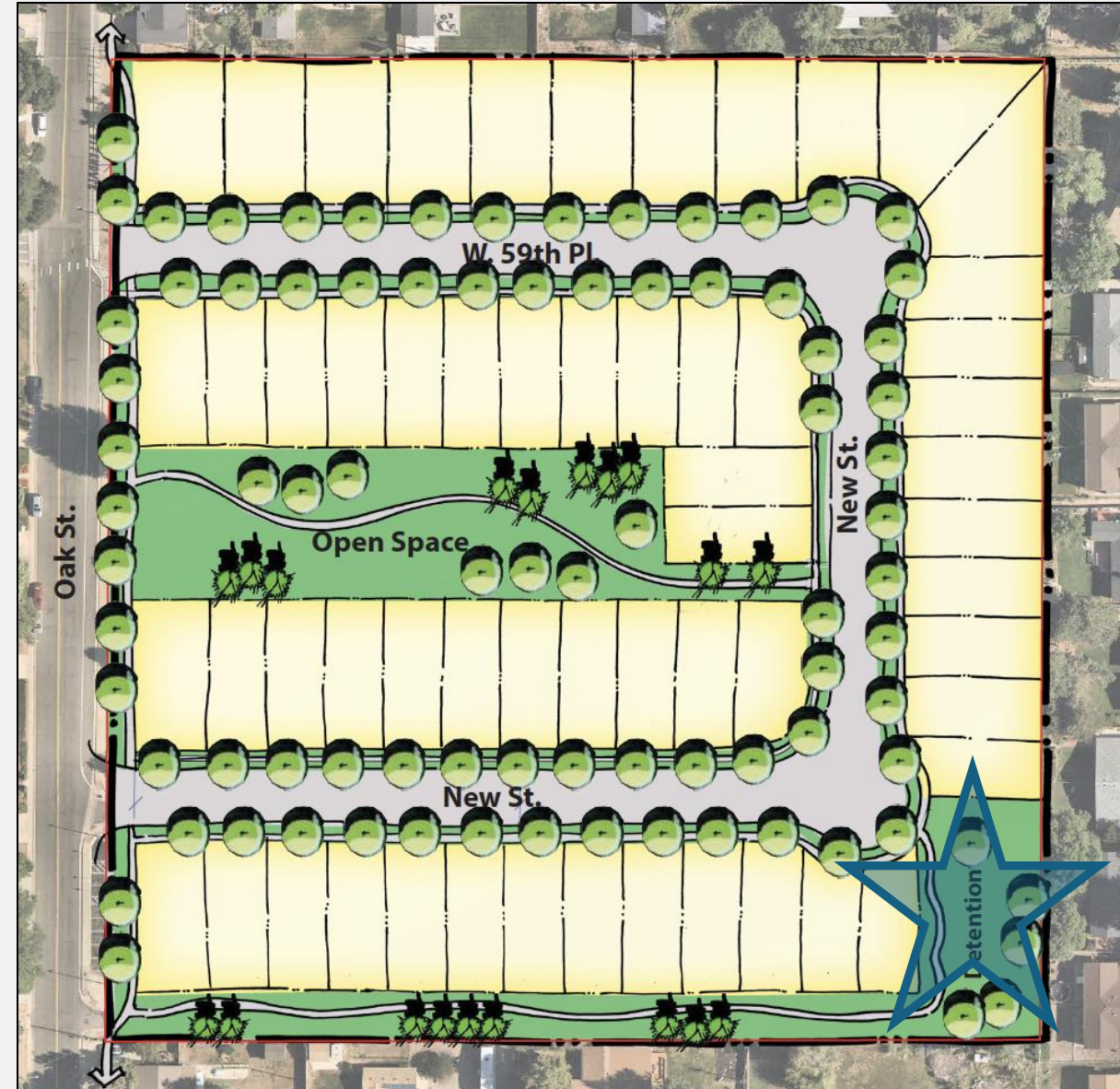


CARDEL ELEVATIONS



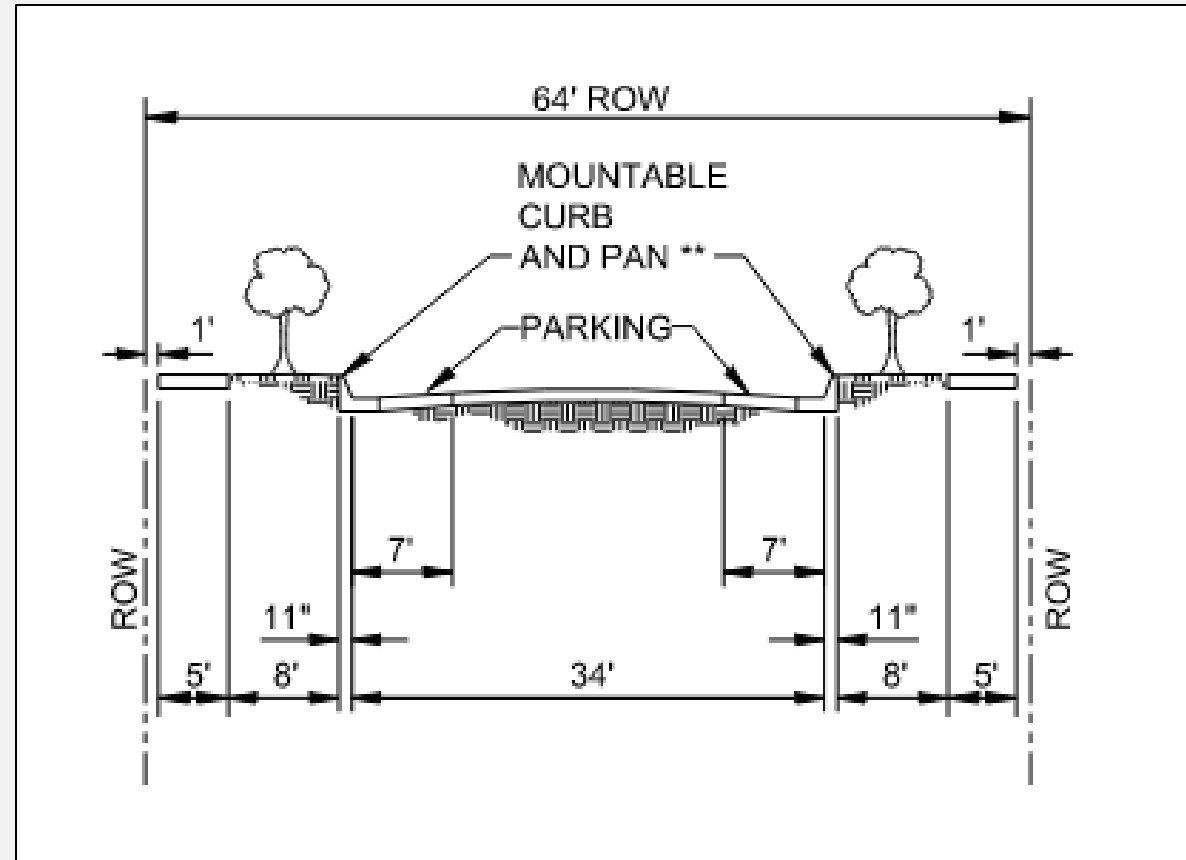
DRAINAGE

- Stormwater will be captured on-site in a detention pond
- All stormwater will be treated for water quality and released at 90% of pre-development rates
- Historic outfall to the south to Van Bibber Creek
- We are reducing the imperviousness of the site by 6%

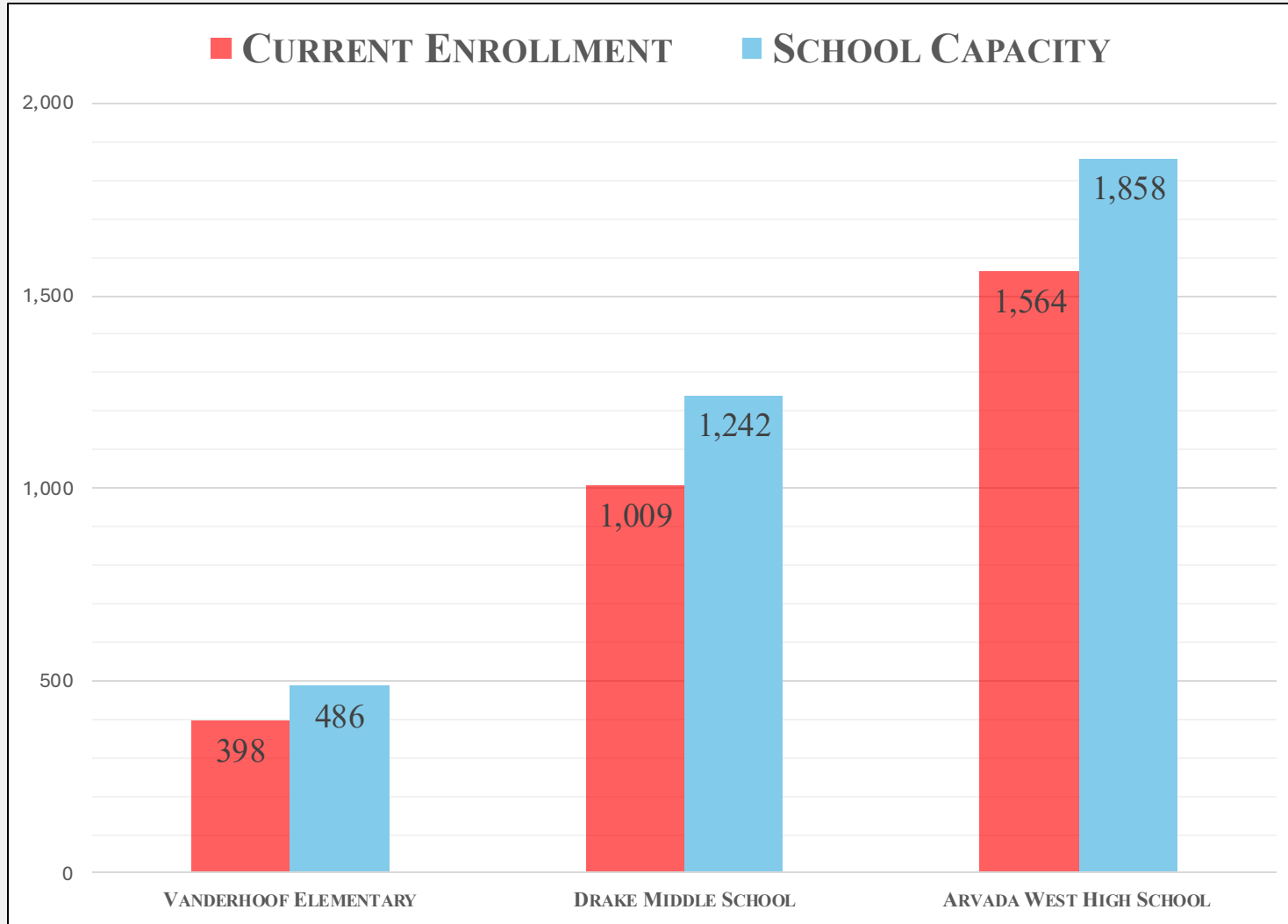


INTERNAL ROAD CROSS SECTION

- City of Arvada Local Road Section per 2023 Engineering Standards.
- All Roads will be public with 5' sidewalks.



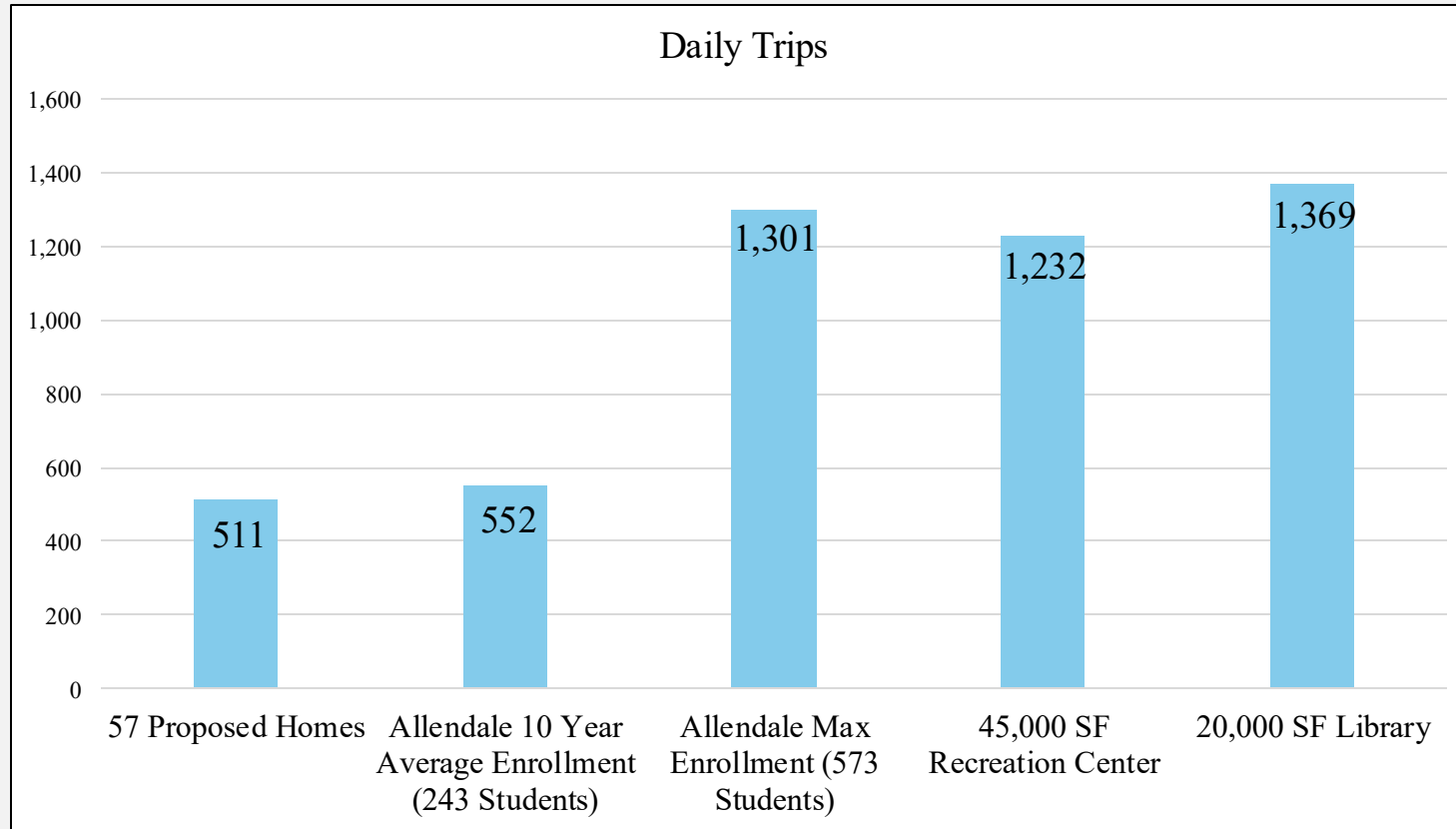
SCHOOL ASSESSMENT



Total Homes	57
Students per Household	0.4
Total New Students	23



TRAFFIC ANALYSIS



- Scoped the Traffic Study with City Staff and meets local and national standards.
- Traffic counts are adequate and capture a typical day.
- Allendale enrollment from Jefferson County School District (Max Capacity & 10 Year Average).
- Similar sized recreation centers in Westminster and same size of the Golden Library (Belmar & Standley Lake are slightly bigger)

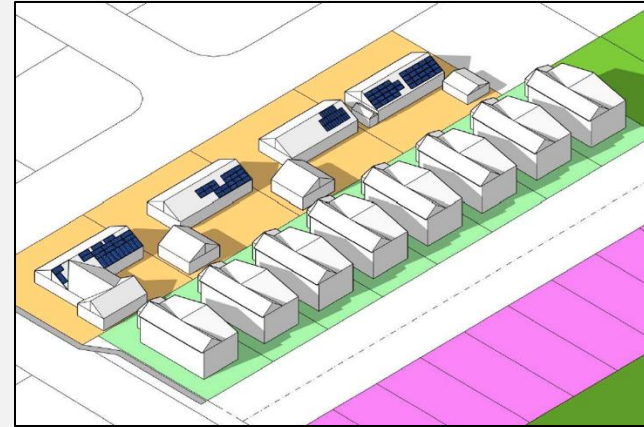
SHADE STUDY

Spring Equinox



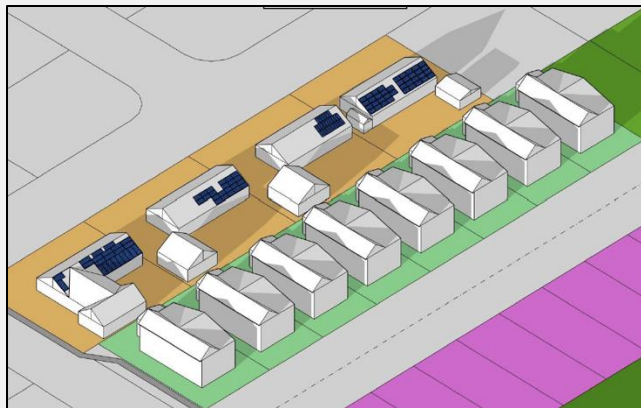
5 PM

Summer Solstice



5 PM

Autumn Equinox



5 PM

Winter Solstice



4 PM

SHADE STUDY CONTINUED

DECEMBER 21: 8AM – 4PM



PRODUCT COMPARISON

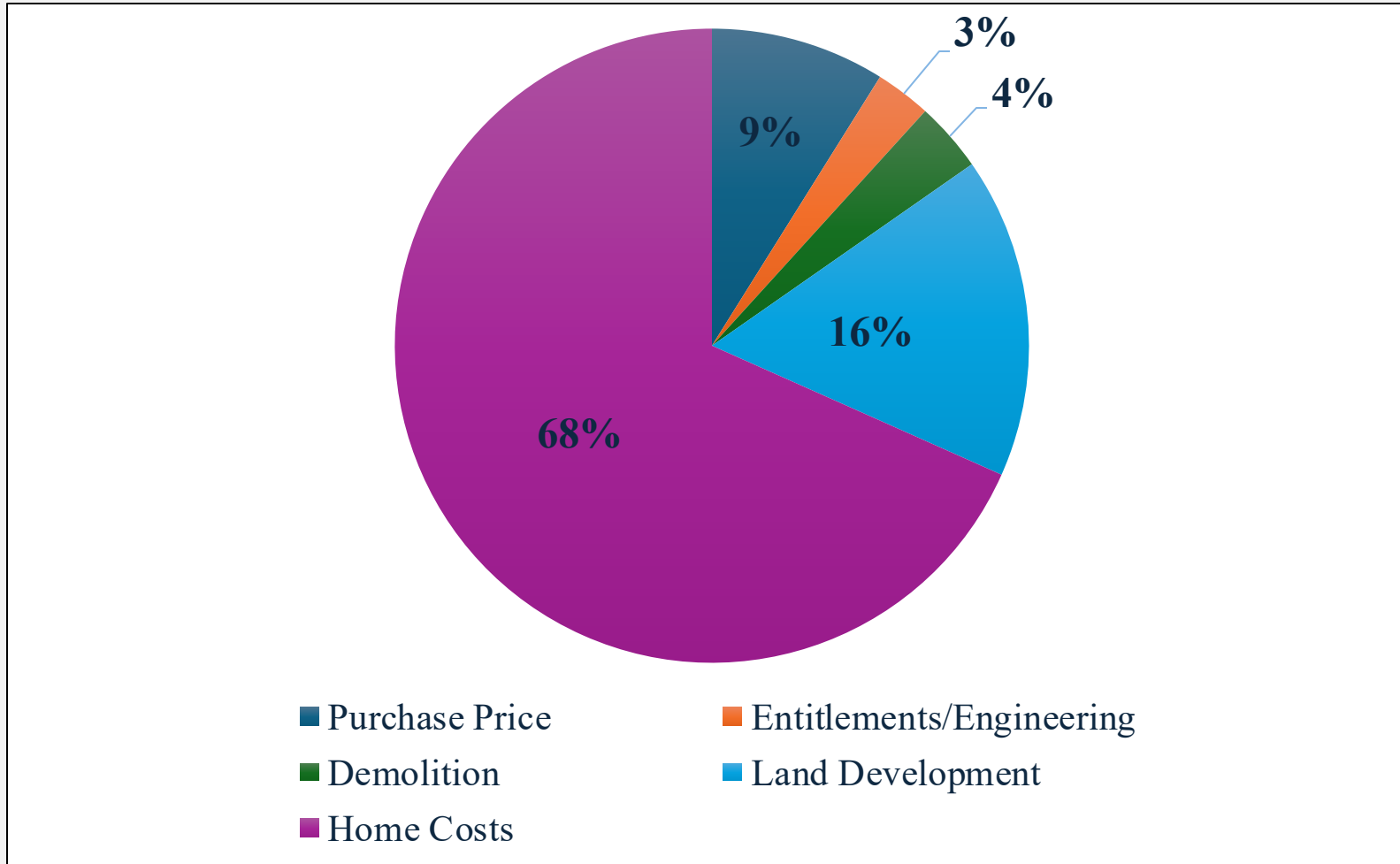
ZONING DESIGNATION	AVERAGE SF	GARAGE TOTAL
RN-7.5**	3,200+	3-4
<i>RN-7.5 (Existing)*</i>	<i>1,700</i>	<i>1-2</i>
R6**	2,000 – 2,400	2

*Existing data reflects immediate neighbors

**Sample Square Footage and Garage totals that would be built under each Zoning Designations



COST BREAKDOWN



FISCAL IMPACT

Market Value	\$ 700,000
Assessed Value	
Local Government	\$ 43,750
School District	\$ 49,350

Tax Authority	Mill Levy	Property Tax Revenue	Total Community Tax Revenue
County General Fund	18.8890	\$ 826	\$ 47,104
Dept of Social Services	1.4460	\$ 63	\$ 3,606
Developmental Disability Fund	1.0000	\$ 44	\$ 2,494
Library Fund	4.5000	\$ 197	\$ 11,222
Road & Bridge Fund	1.1430	\$ 50	\$ 2,850
R1 School Bond Redemption Fund	5.9060	\$ 291	\$ 16,613
R1 School General Fund	38.5820	\$ 1,904	\$ 108,529
Apex Park & Rec Dist	4.4240	\$ 194	\$ 11,032
Arvada	4.3100	\$ 189	\$ 10,748
Arvada Fire Dist	15.6690	\$ 686	\$ 39,075
Urban Drainage & Flood C SO Plat	0.1000	\$ 4	\$ 249
Urban Drainage & Flood Cont Dist	0.9000	\$ 39	\$ 2,244
Total	96.8690	\$ 4,487	\$ 255,768

Annual Municipal
Revenue Increase

\$255,768

THANK YOU

- City Motto: “Continuing to Build a Great Community”



CONTACT INFO: denver.land@cardelhomes.com



REPORT FROM CITY COUNCIL

AGENDA ITEM
12.A.

DATE: October 7, 2025

SUBJECT: Council Committee Reports

Report in Brief

City Council members are appointed to various committees and boards as set out on the attached listing. As meetings are held, individual council members will report back to the full City Council any relevant discussions and issues that occurred.

Prepared by:
Chris Koch, CCO Admin

Lauren Simpson	Arvada City Attorney Committee Arvada Municipal Court/Judicial Committee Arvada Urban Renewal Authority Arvada Visitors Center Committee *Metro Mayors' Caucus Urban Drainage and Flood Control District West Connect Coalition E-470 Authority (Alternate)
Randy Moorman	Arvada Audit Committee Arvada Center for the Arts and Humanities Arvada Sustainability Committee CML Policy Committee Jefferson Parkway Public Highway Authority Northwest Parkway Authority (Alternate)
Shawna Ambrose	Adams County Regional Economic Partnership (ACREP) Arvada Audit Committee Bond Oversight Committee CML Policy Committee Housing Advisory Committee Jefferson County R-1 Schools Coordinating Committee Arvada Visitors Center Committee (Alternate) Olde Town Business Improvement (BID) (Alternate)

Sharon Davis	Apex Coordinating Committee Arvada Municipal Court/Judicial Committee Denver Regional Council of Governments (DRCOG) Jefferson County Community Corrections Board Jefferson Economic Development Council (JDEC) Jeffco Transportation Action & Advisory Group (JEFFTAAG) E-470 Authority (Alternate)
Bob Fifer	Arvada City Attorney Committee Arvada Fire Protection District Coordinating Committee Arvada Transportation Committee Jefferson Parkway Public Highway Authority Smart City Advisory Committee Northwest Parkway Authority (Alternate)
John Marriott	Arvada Economic Development Association Board Bond Oversight Committee Olde Town Business Improvement (BID)
Brad Rupert	Arvada Chamber of Commerce Government Affairs Committee Arvada Fire Protection District Coordinating Committee Jefferson County R-1 Schools Coordinating Committee Smart City Advisory Committee Adams County Regional Economic Partnership (ACREP) (Alternate) Denver Regional Council of Governments (DRCOG) (Alternate) Jeffco Transportation Action & Advisory Group (JEFFTAAG) (Alternate) Jefferson County Community Corrections Board (Alternate) West Connect Coalition (Alternate)

*asterisked committees are not appointed by Council



REPORT TO CITY COUNCIL

AGENDA ITEM
13.A.

TO: THE HONORABLE CITY COUNCIL

DATE: October 7, 2025

SUBJECT: Review of Future Workshops and Presentations

Report in Brief

The City Manager's Office maintains a list of upcoming workshops and presentations to be scheduled for City Council meetings. During City Manager Reports, at the end of City Council business meetings, City Manager, Don Wick, will review with City Council the tentative schedule and make any adjustments necessary.

Prepared by:
Chris Koch, CCO Admin

Reviewed by:

Approved by:

Rachel Morris, City Attorney	09/18/2025
Linda Haley, Deputy City Manager	09/18/2025
Don Wick, City Manager	09/19/2025

Enclosure, exhibits & attachments required to support the report

2025 CITY COUNCIL WORKSHOPS, STUDY SESSIONS, PRESENTATIONS AND RETREATS (TENTATIVE)

WORKSHOPS	Date	Lead
Budget Workshop	Oct 14	Fin
Waste Diversion Action Plan	Oct 28	INFRA
Sidewalk Assistance (formerly 50/50 program)	Oct 28	INFRA
Comp Plan Update	Dec 9	CED
Infrastructure Annual Report (Tentative)	Dec 9	INFRA
2026		
Storm Water 101	Jan 13	INFRA
Climate Action Plan The City team and consultants will be providing an update on the draft Climate Action and Sustainability Plan. We will be seeking input from the Council on direction and priorities to include in the final plan we intend to bring forward for adoption in January.	Jan 27	INFRA
ADA Transition Plan Updates	Feb 10	INFRA
No Meeting – Board and Commission Interviews	Feb 24	
Solid Waste Rates and Fees	Mar 10	INFRA
Business meeting – no workshops	Mar 24	
Annual Update for City Attorney’s Office	Apr 14	CAO
Annual Update for Municipal Court	Apr 14	MC
SW Rate Structure	Apr 28	INFRA
W/WW/SW Rates and Fees – Why and How	May 12	INFRA
	May 26	
System Development Charges	June 9	INFRA
No meeting – CML Conference	June 23	
No Meeting – Appointee Evaluations	July 14	
W/WW/SW Rates and Fees – Financial Scenario	July 28	INFRA
W/WW/SW Rates and Fees – Final Scenario	Aug 25	INFRA
	Sept 8	
Place holder for additional W/WW/SW Rates and Fees (if needed)	Sept 22	INFRA
	Oct 13	
	Oct 27	
	Nov 10	
No Meeting – Holiday Week	Nov 24	
Infrastructure Annual Report	Dec 8	INFRA
No Meeting – Holiday Week	Dec 22	
Harvest Festival	TBD	
End of Year City Council Strategic Plan Update	TBD	CMO
Building Code Update	TBD	CED
Parks Master Plan	TBD	VCN
Pavement Program	TBD	INFRA
PRESENTATIONS		
STUDY SESSIONS		
City Expenditures, BID and Chamber funding	TBD	Finance

Waste Diversion Plan	TBD	INFRA
COUNCIL JOINT MEETINGS/DINNERS:		
Denver Water Board Apex Board AURA Board Arvada Center Board—Per Coop Agreement - Annually after October 1 of each year Jefferson Parkway Meeting with Jeffco and Broomfield Council Annual Retreat		