UTAH GENERAL PERMIT FOR STORM WATER DISCHARGES FROM CONSTRUCTION ACTIVITIES UPDES PERMIT NO. UTRC00000

STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

QUESTAR GAS COMPANY dba DOMINION ENERGY UTAH
City of Eureka, Utah Distribution System Project
Utah County, Eureka, Utah

Planned Construction Start Date: May 10, 2021
Planned Construction Completion Date: May 10, 2022

Construction Supervisor:
Telephone:

Project Manager (signature): _____

Construction Contractor (signature): _____

Note:
THIS SWPPP MUST BE KEPT AT THE CONSTRUCTION SITE DURING WORKING HOURS

SWPPP Prepared by: Tetra Tech, Inc.
UTR #: C02689

DELEGATION OF AUTHORITY

Duly Authorized Representative(s) or Position(s):

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I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name: Craig Wagstaff

Title: Senior Vice President and General Manager Western Distribution

Signature: Craig Wagstaff

Date: 5/3/21

Contents

SECTION 1: PROJECT OVERVIEW 1
1.1 Introduction 1
1.2 SWPPP Access 1
1.3 Project Description 1
1.4 Project Contacts 2
1.5 Site Conditions 3
SECTION 2: DESCRIPTION OF CONSTRUCTION ACTIVITIES AND AREAS DISTURBED 6
2.1 Project/Site Information 6
2.2 Construction Sequencing 6
2.3 Area of Disturbance 7
SECTION 3: POLLUTION SOURCES 8
SECTION 4: WATER QUALITY 9
4.1 Discharge Information 9
4.2 Receiving Waters 9
4.3 Impaired Waters 9
4.4 High Water Quality 9
SECTION 5: EROSION AND SEDIMENT CONTROLS 10
5.1 Control Storm Water Flowing onto and through the Project 10
5.2 Perimeter Controls and Sediment Control 10
5.3 Track Out Control 11
5.4 Stockpiled Soil or Other Erodible Material 11
5.5 Dust Suppression 12
5.6 Top Soil 12
5.7 Soil Compaction 12
5.8 High Altitude/Heavy Snows 12
5.9 Final Stabilization 13
5.10 Buffer Compliance Alternatives 13
5.11 UPDES CGP Coverage Sign 13
SECTION 6: POLLUTION PREVENTION AND OPERATIONAL CONTROLS 14
6.1 Waste Management 14
6.2 Management of Construction Materials 14
6.3 Equipment Management Practices 15
6.4 Spill Prevention, Control, and Countermeasure Plan 16
6.5 Non-Storm Water Discharge Management 17
SECTION 7: INSPECTIONS AND CORRECTIVE ACTION REPORTS 19
7.1 Inspections 19
7.2 Correction of Deficiencies 20
7.3 SWPPP Amendment Log 20
7.4 Grading and Stabilization Log 20
7.5 Training 20
7.6 Record Keeping 21

APPENDICES:

Appendix A – Site Maps/Erosion Control Plan
Appendix B – BMP Specifications and Details
Appendix C – Notice of Intent and MS4 Certification
Appendix D – Training Certificates
Appendix E – SWPPP Materials Estimate Form
Appendix F – Re-seeding Plan
Appendix G – Inspection Form
Appendix H – Corrective Action Form
Appendix I – SWPPP Amendment Log
Appendix J – Grading and Stabilization Log
Appendix K – Training Log

SECTION 1: PROJECT OVERVIEW

1.1 Introduction

The contents of this document and the accompanying attachments comprise the Storm Water Pollution Prevention Plan (SWPPP) for *the City of Eureka, Utah Distribution System Project* (Project).

The purpose of this SWPPP is to present procedures that will be followed during construction of this Project and to minimize adverse environmental impacts from storm water runoff and sediment pollution. The construction contractor will implement the SWPPP as written and updated from commencement of construction activity until final stabilization is complete. This SWPPP was prepared in accordance with the requirements of the Utah Pollutant Discharge Elimination System (UPDES) General Permit for Storm Water Discharges from Construction Activities (UPDES Permit No. UTRC00000) (UPDES CGP).

The SWPPP shall be amended if there is a change in design, construction, operation, or maintenance that has a significant effect on the discharge of pollutants to waters of the state and that has not been previously addressed in the SWPPP. The SWPPP will be revised to identify any new contractor or subcontractor that will implement a measure. Revisions to the SWPPP will be dated and signed.

1.2 SWPPP Access

The SWPPP will be retained, along with a copy of the UPDES CGP and Notice of Intent at the construction site or other location easily accessible during normal business hours from the date of commencement of construction activity to the date of final stabilization. Operators with day-to-day operational control over SWPPP implementation will have access to a copy of this SWPPP. If an on-site location is unavailable to store the SWPPP when no personnel are present, notice of the SWPPP's location will be posted near the main entrance at the construction site.

The construction contractor will post a sign at the Project site that includes the UPDES CGP tracking number, construction contractor name, a phone number and email for the SWPPP responsible party, and information on how to access the SWPPP. The notice will be posted with lettering large enough to be readable from a public right-of-way (ROW).

The SWPPP and its updates will be made available, in its entirety, to the Utah Department of Environmental Quality (UDEQ) and the operator of the Municipal Storm Sewer System (MS4, i.e., Utah Department of Transportation) receiving discharges from the site for review at the time of an on-site inspection.

1.3 Project Description

Questar Gas Company dba Dominion Energy Utah (Dominion Energy) developed this SWPPP for the Project. The Project involves the installation of new 8-inch, 4-inch, and 2-inch intermediate high pressure (IHP) natural gas pipelines to provide service connections to commercial and residential customers in the City of Eureka (City or Eureka). The 8-inch pipe will be located primarily in UDOT’s State Highway 6/Main Street right-of-way (ROW). The new 2-inch and 4-inch pipes will be installed primarily in paved/dirt roads. The Project is located on private lands in Juab and Utah counties, Utah. The pipes will be installed via trenching or horizontal directional drilling (HDD) methods. See Site Maps/Erosion Control Plan (ECP) in

Appendix A and in ComplianceGO. Construction is anticipated to occur between May 10, 2021 and May 10, 2022.

Temporary sediment and erosion control Best Management Practices (BMPs) will be installed as needed to minimize sedimentation from run-off and erosion. These temporary controls may include silt fence, earthen berms, straw wattles, storm drain inlet protection, and stabilized construction entrances. The Site Maps/ECP is provided in Appendix A and in ComplianceGO. Diagrams of typical BMPs are provided in Appendix B.

The Project will be conducted in accordance with the UPDES CGP (https://documents.deq.utah.gov/water-quality/stormwater/construction/DWQ-2019-004173.pdf). A Notice of Intent has been submitted to the UDEQ (Appendix C).

The Project will also be conducted in accordance with Chapter 13 of the Eureka City Zoning Ordinance (Chapter 13 Ordinance), the City of Eureka Excavation Permit, and the Project's Soil Management Plan. See Section 1.5.1 for more details.

1.4 Project Contacts

Project Manager:

Company Name: Questar Gas Company dba Dominion Energy Utah
Name: Scott Messersmith
Address: 1140 West 200 South, POB 45360
City, State, Zip: Salt Lake City, UT 84145-0360
Cell: (801) 673-7871
Email: scott.messersmith@dominionenergy.com

SWPPP Preparer

Company Name: Tetra Tech, Inc.
Name: Jill Reid and Justin DeCaro
Address: 4750 West 2100 South, Suite 400
City, State, Zip: Salt Lake City, Utah 84120
Cell: (385) 348-9884 (Jill Reid); (385) 214-9014 (Justin DeCaro)
Email: jill.reid@tetratech.com; justin.decaro@tetratech.com

Construction Site Supervisor

Company Name: To Be Determined
Name:
Address:
City, State, Zip:
Phone:
Cell:
Email:

SWPPP Administrator:

Company Name: Dominion Energy Gas Infrastructure Group
Name: Adam Plonsky, Supervisor
Address: 2221 Westgate Drive
City, State, Zip: Rock Springs, Wyoming 82901

Cell: (307) 371-0966
Email: Adam.R.Plonsky@DominionEnergy.com

Dominion Energy Emergency
Responsibility: 24-hour emergency contact
Phone: (800) 767-1689

Storm Water Team

SWPPP Inspector
Responsibilities: Weekly Inspections, Maintenance of Site Maps/ECP, Corrective Action Forms, SWPPP Amendment Log, Grading and Stabilization Log, and Contractor On-site Training
Name: Justin DeCaro (see Appendix D for training certificate)
Phone: (385) 214-9014

Environmental Compliance Coordinator
Responsibilities: UPDES CGP Compliance Oversight
Name: Jennifer Hazeldine
Phone: (814) 505-9430
Email: Jennifer.M.Hazeldine@DominionEnergy.com

Construction Foreman
Responsibilities: BMP Maintenance and Repairs
Name:
Phone:

Pipeline Inspector
Responsibilities:
Name:
Phone:

Each member of the storm water team must have a ready access to either an electronic or paper copy of applicable portions of the UPDES CGP and this SWPPP.

1.5 Site Conditions

1.5.1 Soils

Soil Map Units:

There are four soil units mapped in the Project area. The soil units are listed in the following table. The soil units consist of alluvial fans, mountain slopes, alluvium, and colluvium, derived from conglomerate, quartzite and sandstoneous rocks, limestone, and igneous rock. The depth to a restrictive layer is greater than 80 inches deep. The groundwater table is more than 80 inches deep. The soil drainage type is well drained.

Soil Map Units in the Project Area

Soil Unit	Percentage (%) in Project Area	Landforms	Drainage	Water Table (inches = “)
Deer Creek cobbly loam, 6 to 25 percent slopes	57.2%	Alluvial Fans	Well Drained	More than 80”
Lizzant very cobbly loam, 8 to 30 percent slopes	35.6%	Alluvial Fans, Mountain Slopes	Well Drained	More than 80”
Wallsburg-Yeates Hollow complex, 25 to 40 percent slopes	5.7%	Mountain Slopes	Well Drained	More than 80”
PK—Pits-Dumps complex	1.5%	Pits and Dumps	Not Applicable	Not Applicable

Impacted Soils:

Eureka was an active mining town from 1870 until the early 1900s. The primary ores contained silver and lead. Several large waste piles associated with historic mining were deposited on the south side of the valley. Subsequent wind and water erosion of the waste piles distributed heavy metals across the majority of the City and waste pile material was used for grading in residential and commercial areas in the City. Installation of the distribution pipes may disturb lead- and/or arsenic-affected soils that remain in place subsequent to environmental remediation work that was completed by the United States Environmental Protection Agency (EPA) from 2001 to 2010.

The City’s Chapter 13 Ordinance provides requirements for excavations and soil management to prevent recontamination within EPA’s Cleanup Area and undeveloped areas. The Chapter 13 Ordinance performance standards require excavations to be conducted in a manner that keeps contaminated soil separate from clean soil, especially in capped areas, and preserves the Protective Cap placed during EPA’s cleanup. The Project will overlay portions of the existing boundaries of the historical Eureka Mills Site, and thus requires compliance with the Chapter 13 Ordinance. The Project’s Soil Management Plan will serve as a guide during initial installations of the distribution pipes, help Dominion Energy and its subcontractors comply with the Chapter 13 Ordinance requirements, and provide health and safety guidelines for workers operating within the historical Eureka Mills Site (see Figures 2 and 3 in the Project’s Soil Management Plan for the historical Eureka Mills Site boundaries).The Project must be conducted in accordance with the Chapter 13 Ordinance, the City of Eureka Excavation Permit, and the Project’s Soil Management Plan.

1.5.2 Existing Vegetation

Along the State Highway 6/Main Street shoulder, there are scattered grasses and shrubs in the form of rabbitbrush and sagebrush. The rest of the Project is located within City limits, which consists primarily of residential landscaping.

1.5.3 Cultural Resources/Historic Preservation

In the case of the discovery of possible Historical, Archaeological, or Paleontological Objects, Features, Sites, or Human Remains:

A. Immediately suspend construction operations within 100 feet of the discovery.

B. Immediately notify (by telephone) the Dominion Energy Environmental Compliance Coordinator.

C. The Dominion Energy Environmental Compliance Coordinator will coordinate with a Utah licensed archeologist to determine if the find needs further protection/analysis. The action will depend on the archeologist's assessment.

D. City and State mitigation laws will be followed.

E. If human remains are discovered, call the Utah County Sheriff's Office (801-851-4000).

SECTION 2: DESCRIPTION OF CONSTRUCTION ACTIVITIES AND AREAS DISTURBED

2.1 Project/Site Information

Project/Site Name: City of Eureka, Utah Distribution System

Project Street/Location: State Highway 6/Main Street and Various Streets within City of Eureka

City: Eureka State: UT ZIP Code: 84628 and 84626

County or Similar Subdivision: Juab and Utah County

Latitude/Longitude: 39.956445, -112.109209

Method for determining latitude/longitude: ArcMap 10.7.1 approximate midpoint of Project

Is the project located in Indian country? ☐ Yes ☒ No

Is this project considered a federal facility? ☐ Yes ☒ No

2.2 Construction Sequencing

Phase I

Prior to construction, Dominion Energy will locate and mark all existing utilities. Dominion Energy will flag/stake/mark the pipelines' centerline and stake/mark the outside boundaries of the limits of disturbance. Flags/stakes/marks will be maintained as needed throughout construction. There are no BMPs necessary for this phase of construction.

Phase II

Temporary sediment and erosion control BMPs will be installed as needed to minimize sedimentation from run-off and erosion. These temporary controls may include silt fence, earthen berms, straw wattles, storm drain inlet protection, and stabilized construction entrances. Other BMPs such as spill kits, portable toilets, and dumpsters will also be installed. SWPPP signs will also be installed. See Site Maps/ECP in Appendix A and in ComplianceGO for locations of BMPs. Diagrams of typical BMPs are provided in Appendix B. See SWPPP Materials Estimate Form in Appendix E for the estimated amounts of erosion and sediment control BMPs.

Phase III

Trenches and HDD boreholes will be excavated. Excavated soil within the historical Eureka Mills Site will be handled in accordance with the Chapter 13 Ordinance, the City of Eureka Excavation Permit, and the Soil Management Plan. There are numerous locations (see Site Maps/ECP in Appendix A and in ComplianceGO) where HDD will be used instead of trenching. BMPs installed during Phase II will apply to this phase.

Phase IV

The pipes will be installed in the trench or via HDD (see Site Maps/ECP in Appendix A and in ComplianceGO). Excavations within the historical Eureka Mills Site will be backfilled in accordance with the Chapter 13 Ordinance, the City of Eureka Excavation Permit, and the Soil Management Plan. BMPs installed during Phase II will apply to this phase.

Phase V

As soon as practicable, all construction materials and trash will be removed from the area. BMPs installed during Phase II will apply to this phase.

Phase VI

Pressure testing, final stabilization, reclamation, and final clean-up will be conducted. See SWPPP Materials Estimate Form in Appendix E and re-seeding plan table in Appendix F for the estimated amounts of acres to be re-seeded, application method, and seed mixes.

2.3 Area of Disturbance

Total Project area:	2.46 acre(s)
Construction site area to be disturbed:	2.46 acre(s)

The runoff coefficient will not be changed by this Project.

SECTION 3: POLLUTION SOURCES

Activities	Construction Phase	Sediment	Nutrients	Heavy Metals	pH (acids and bases)	Pesticides & Herbicides	Oil & Grease	Bacteria & Viruses	Trash, Debris, Solids	BMP Sections
Clearing, grading, excavating, and un-stabilized areas	III-IV	√							√	5
Soil Storage	III-IV	√								5.4, 5.6
Vehicle Entrance/Exits	II-VI	√								5.3
Dewatering operations	III-IV, VI	√							√	6.5
Material delivery and storage	III-IV, VI	√	√	√	√		√		√	6.2
Material use during building process	III-IV, VI		√	√	√		√		√	6.2
Spills	I-VI			√	√	√	√			6.4
Sanitary waste	III-VI		√		√			√		6.1.1, 6.1.2
Vehicle/equipment fueling, maintenance, use and storage	III-IV, VI						√		√	6.3.1
Landscaping operations	VI	√	√			√			√	5.6, 5.9
Concrete washout	III-IV				√					6.2.2

SECTION 4: WATER QUALITY

4.1 Discharge Information

Does your project/site discharge storm water into a Municipal Separate Storm Sewer System (MS4)? ☒ Yes ☐ No

List the MS4 that receives the discharge from the construction project: Utah Department of Transportation

4.2 Receiving Waters

Are there any surface waters that are located within 50 feet of the construction disturbance?
☐ Yes ☒ No
If yes, complete the table below.

Names of Receiving Waters

Name(s) of the first surface water that receives storm water directly from your site and/or from the MS4. (Note: multiple rows provided where your site has more than one point of discharge that flows to different surface waters.)
1.

4.3 Impaired Waters

	Is the surface water(s) listed in Section 4.2 "impaired"?*	If you answered yes, then answer the following:		
		What pollutant(s) are causing the impairment?	Has a TMDL been completed?	Pollutant(s) for which there is a TMDL
1.	☐ Yes ☐ No		☐ Yes ☐ No	

*refer to http://wq.deq.utah.gov

4.4 High Water Quality

	Is the surface water(s) listed in Section 4.2 designated as High Water Quality?*	If yes, specify which category the surface water is designated as?
1.	☐ Yes ☐ No	☐ Category 1 ☐ Category 2

*refer to http://wq.deq.utah.gov

SECTION 5: EROSION AND SEDIMENT CONTROLS

5.1 Control Storm Water Flowing onto and through the Project

There are no surface water conveyances located within the Project limits of disturbance.

5.2 Perimeter Controls and Sediment Control

BMP Description: Preservation of Existing Vegetation (refer to Appendix B for additional details)	
Installation Schedule:	Prior to Project area use, as needed.
Maintenance and Inspection:	Will be observed and maintained daily, as necessary, to ensure Project is being constructed within the limits of disturbance. Vegetated areas will be inspected for proper distribution of flows, sediment accumulations, and sign of rill formation. Inspection and documentation will occur weekly.
Responsible Staff:	SWPPP Inspector and Construction Site Supervisor

BMP Description: Silt Fence (refer to Appendix B for additional details)	
Installation Schedule:	Prior to Project area use, as needed.
Maintenance and Inspection:	Silt fence will be inspected weekly and will be repaired as necessary.
Responsible Staff:	SWPPP Inspector and Construction Site Supervisor

BMP Description: Earthen Berm (refer to Appendix B for additional details)	
Installation Schedule:	Prior to Project area use, as needed.
Maintenance and Inspection:	Earthen berm will be inspected weekly and will be maintained as necessary.
Responsible Staff:	SWPPP Inspector and Construction Site Supervisor

BMP Description: Straw Wattle (refer to Appendix B for additional details)	
Installation Schedule:	Prior to Project area use, as needed.
Maintenance and Inspection:	Straw wattle will be inspected weekly and will be repaired as necessary.
Responsible Staff:	SWPPP Inspector and Construction Site Supervisor

BMP Description: Wattle Check Dam (refer to Appendix B for additional details)	
Installation Schedule:	Prior to Project area use, as needed.
Maintenance and Inspection:	Wattle check dams will be inspected weekly and will be repaired as necessary.
Responsible Staff:	SWPPP Inspector and Construction Site Supervisor

BMP Description: Storm Drain Inlet Protection (refer to Appendix B for additional details)	
Installation Schedule:	Prior to construction, as needed.
Maintenance and Inspection:	Storm drain inserts will be inspected per the inspection schedule. Maintenance will be conducted as needed to remove sediment and debris.
Responsible Staff:	SWPPP Inspector and Construction Site Supervisor

5.3 Track Out Control

Track out prevention pads will be installed where construction traffic may enter a paved surface from a dirt surface as needed. Street sweeping will be conducted at the end of each shift and throughout the work day as needed.

BMP Description: Track out Prevention Pad (refer to Appendix B for additional details)	
Installation Schedule:	Track out prevention pad(s) will be installed as needed. The track out prevention pad(s) will be inspected daily and will be repaired as necessary.
Maintenance and Inspection:	Track out prevention pad(s) will be installed at site entrance(s)/exit(s) where access is from a paved surface to dirt surface. Entering/exiting traffic will be directed to drive over the pad. The construction contractor will maintain effective track out prevention pad(s) throughout construction.
Responsible Staff:	SWPPP Inspector and Construction Site Supervisor

BMP Description: Street Sweeping (refer to Appendix B for additional details)	
Installation Schedule:	Nightly if needed on paved surfaces.
Maintenance and Inspection:	Site entrance(s)/exit(s) will be swept at least once every night during times when dirt is tracked onto the paved surface. Additional street sweeping will be conducted as needed.
Responsible Staff:	SWPPP Inspector and Construction Site Supervisor

5.4 Stockpiled Soil or Other Erodible Material

Stockpiled soil within the historical Eureka Mills Site, will be handled in accordance with the Chapter 13 Ordinance, the City of Eureka Excavation Permit, and the Soil Management Plan. For areas outside the historical Eureka Mills Site, straw wattle will be used as needed around the stockpiled soil or other erodible material.

BMP Description: Straw Wattle (refer to Appendix B for additional details)	
Installation Schedule:	Straw wattle will be used as needed around stockpiled soil or other erodible material.
Maintenance and Inspection:	Straw wattle will be inspected weekly and will be repaired as necessary.
Responsible Staff:	SWPPP Inspector and Construction Site Supervisor

5.5 Dust Suppression

The Project area is located in Juab and Utah County. Utah County is in a non-attainment area; therefore, a Fugitive Dust Control Plan (FDCP) is required for the Project. A FDCP was obtained through the Utah Department of Air Quality's website for the Project and is included in Appendix B. The FDCP will be followed throughout construction. A water truck and reduced vehicle speeds will be used to control fugitive dust as needed.

BMP Description: Water Truck (refer to Appendix B for additional details)	
Installation Schedule:	Throughout construction as needed.
Maintenance and Inspection:	Will be inspected throughout the work shifts.
Responsible Staff:	SWPPP Inspector and Construction Site Supervisor

BMP Description: Reduced Speeds	
Installation Schedule:	Throughout construction.
Maintenance and Inspection:	Will be monitored throughout the work shifts.
Responsible Staff:	SWPPP Inspector and Construction Site Supervisor

5.6 Top Soil

Top soil (i.e., Protective Cap material) and subsurface soils within the historical Eureka Mills Site, will be handled in accordance with the Chapter 13 Ordinance, the City of Eureka Excavation Permit, and the Soil Management Plan. For areas outside the historical Eureka Mills Site, top soil will be cleared and stored separate from underlying soils and will be replaced in the trenched and borehole areas.

5.7 Soil Compaction

In areas where final vegetative stabilization will occur, top soil will be segregated and placed in a manner that avoids disturbance and compaction. Vehicles and equipment operation will be restricted upon final surface roughening/tracking and seed application.

5.8 High Altitude/Heavy Snows

Based on the anticipated Project dates, the Project will be completed before winter; therefore, this is not applicable.

5.9 Final Stabilization

The majority of the distribution pipes installation will occur in paved or graveled roads. Upon completion of construction, the paved roads will be re-paved, and the gravel roads will be returned to pre-construction conditions. Any disturbed vegetated areas will be surface roughened/tracked and re-seeded.

BMP Description: Surface Roughening/Tracking (refer to Appendix B for additional details)	
Installation Schedule:	Surface roughening/tracking to be conducted as needed during and after construction.
Maintenance and Inspection:	Will be inspected throughout the work shifts.
Responsible Staff:	Construction Site Supervisor

BMP Description: Seeding (refer to Appendix B for additional details)	
Installation Schedule:	Upon completion of the Project, disturbed areas will be seeded with the appropriate seed mix and distribution method for the area based on landowner requirements (see re-seeding plan in Appendix F).
Maintenance and Inspection:	The Project area falls under the semi-arid area exception (UPDES CGP Part 2.2.14.(3)b.(iii)(1)). A semi-arid area is defined as areas with an average annual rainfall of over 10 to 20 inches, as stated in Part 10 of the UPDES CGP. Final stabilization is met if the area has been seeded or planted in a manner that vegetation is expected to be established within 3 years which provides 70 percent or more of the cover that was provided by vegetation prior to commencing earth disturbing activities and, to the extent necessary to prevent erosion on the seeded or planted area, non-vegetative erosion controls meet standards in footnote 16 of the UPDES CGP (see UPDES CGP Part 2.2.14.(3)b.(iii)(1)).
Responsible Staff:	SWPPP Inspector

5.10 Buffer Compliance Alternatives

Are there any surface waters within 50 feet of your project's earth disturbances?

☐ YES ☒ NO

5.11 UPDES CGP Coverage Sign

The construction contractor will post a UPDES CGP coverage sign conspicuously at a safe, publicly accessible location in close proximity to the Project site. The sign will state the UPDES CGP tracking number, the construction contractor company name, and the name and phone number of the contractor's SWPPP coordinator. The sign will be located so that it is visible from a public access point that is nearest to the active part of the construction site, and it will use a font that is large enough to be read from a public ROW. The posted contact number will have a person available for response during business hours.

SECTION 6: POLLUTION PREVENTION AND OPERATIONAL CONTROLS

6.1 Waste Management

6.1.1 Trash Management

A dumpster or trash barrel will be used to dispose of construction debris and standard waste such as lunch sacks and other trash and debris. The trash container(s) will be covered so that lightweight trash will not blow out. The trash disposal location will be indicated on the Site Maps/ECP (Appendix A and in ComplianceGO). The container(s) will be inspected to identify when it is becoming full and will be emptied on a periodic basis as needed. No solid materials, including building materials, will be discharged to waters of the state. All applicable State and/or local waste disposal regulations will be complied with. See Good Housekeeping Practices in Appendix B for details.

6.1.2 Portable Toilet Facilities

Portable toilet facilities will be used for sanitary and septic waste. The location of the toilet facilities will be indicated on the Site Maps/ECP (Appendix A and in ComplianceGO). Toilet facilities will be anchored securely with stakes if they are located on a permeable surface. If there is a need to keep the toilet on asphalt or concrete, secondary containment will be installed. The toilet facilities will be inspected to identify when it is becoming full and will be emptied on a periodic basis by a licensed contractor but will be emptied not less than once every 2 weeks. An inspection for leaks in the toilet facility will occur at a minimum of once per week or when emptied, whichever is sooner. See Good Housekeeping Practices in Appendix B for details.

6.1.3 Concrete Cutting Waste

There will not be any concrete saw cutting waste for this Project.

6.2 Management of Construction Materials

Construction materials will consist of pipe, excavated material, and fill material. All materials will be stored in a clean and orderly way or per the Chapter 13 Ordinance, City of Eureka Excavation Permit, and Soil Management Plan as applicable. Most construction materials will be stored off-site and brought onto the work site only as needed. See Good Housekeeping Practices in Appendix B for details.

6.2.1 Establish Proper Building Material Staging Areas

Construction material will be primarily laid alongside the trench and at the HDD boreholes. Some materials may be stored on site in designated laydown areas.

6.2.2 Designate Washout Areas

Concrete may be used to replace disturbed concrete such as sidewalks, curbs, and gutters. Concrete trucks used for concrete delivery and pouring, will be washed out on site at a designated, signed concrete washout area(s). See Site Maps/ECP (Appendix A and in ComplianceGO) for locations. Concrete trucks used for flow-filling sand into the trench, will be washed out in the trench.

6.3 Equipment Management Practices

6.3.1 Fueling and Lubrication

With the exception of the greasing of pins and tracks and the topping off of fluids and vehicle fueling, vehicle and equipment maintenance will not be conducted on-site. Equipment and vehicle operators will conduct daily safety inspections that include visual inspection for leaks of fuels and lubrication fluids. Dominion Energy Environmental Compliance Coordinator approval is required for on-site repairs that are necessary to return the equipment to a safe operating condition, and tasks that may typically be considered maintenance. Fueling will be conducted with absorbent pads and catch pans beneath the fueling area. Any spilled fuel or spent fluids trapped by the spill prevention items will be placed in appropriate containers that are appropriately labeled, removed from the site by the construction contractor, and appropriately disposed of off-site. See Good Housekeeping Practices in Appendix B for details.

BMP Description: Absorbent Pads (refer to Good Housekeeping Practices in Appendix B for details)

Installation Schedule:	When fueling equipment or vehicles.
Maintenance and Inspection:	Will be replaced if become saturated.
Responsible Staff:	Equipment or vehicle operator

BMP Description: Catch (Drip) Pans (refer to Good Housekeeping Practices in Appendix B for details)

Installation Schedule:	When fueling equipment or vehicles.
Maintenance and Inspection:	Will be emptied if become full.
Responsible Staff:	Equipment or vehicle operator

6.3.2 Control Equipment/Vehicle Washing

Equipment will be washed before entering the site. Excess mud will be removed in order to prevent site contamination of hazardous materials and/or noxious weed seeds. Vehicle and equipment washing will not be conducted on-site. When used for flow-filling sand into the trench, concrete trucks will wash out in the trench. See Good Housekeeping Practices in Appendix B for details.

6.4 Spill Prevention, Control, and Countermeasure Plan

Each contractor will carry less than 1,320 gallons in aggregate on site; therefore, a formal Spill Prevention, Control, and Countermeasure Plan is not required for this Project. However, appropriate safeguards will be taken to ensure spills are eliminated or minimized.

Each piece of equipment (including larger stationary equipment), contractor trucks, and appropriate vendor vehicles will carry at a minimum, one 5-gallon spill kit. Several large spill kits containing one drip pan, absorbent pads, one shovel, one broom, one 55-gallon container, and two 5-gallon pails will also be available on site. While fueling on-site, the drip pan will be placed beneath the fueling port. Absorbent pads will be used to capture any drips from fueling devices. The pails or drums will be used in the event there is a spill. If a spill does occur onto the street areas, it will be absorbed with absorbent pads and placed in the pails or drum. If fuel is spilled onto the soil, all visibly contaminated soil will be removed and placed into the pails or drum. Impacted items will be disposed of off-site.

If a spill occurs, the spill will be contained immediately with buckets, booms, and absorbent pads. The spill material will be cleaned up using absorbent pads, booms, and/or absorbent granular material. All spent clean-up material will be collected in plastic bags and transported to a Dominion Energy-approved disposal facility.

If a spill of any material, in any amount occurs, the spill will be cleaned up immediately and the construction contractor or pipeline inspector will contact the Dominion Energy Emergency line (800-767-1689) immediately. The emergency line dispatch personnel will notify the on-call Dominion Energy Environmental Compliance Coordinator. The Dominion Energy Environmental Compliance Coordinator will direct clean-up procedures and make required notifications to governing bodies.

Any discharges in 24 hours equal to or in excess of the reportable quantities listed in 40 Code of Federal Regulations (CFR) 117, 40 CFR 110, and 40 CFR 302 will be reported to the National Response Center and the Division of Water Quality (DWQ) as soon as practical after knowledge of the spill is known to the permittee (i.e., Dominion Energy [owner]). The permittee will submit within 14 calendar days of knowledge of the release, a written description of: the release (including the type and estimate of the amount of material released), the date that such release occurred, the circumstances leading to the release, and measures taken and/or planned to be taken to the DWQ, 288 North 1460 West, P.O. Box 144870, Salt Lake City, Utah 84114-4870. The SWPPP will be modified within 14 calendar days of knowledge of the release to provide a description of the release, the circumstances leading to the release, and the date of the release. In addition, the SWPPP will be modified to identify measures to prevent the reoccurrence of such releases and to respond to such releases.

Agency	Phone Number
National Response Center	(800) 424-8802
Division of Water Quality 24-Hr Reporting	(801) 538-6146 (801) 536-4123
Utah Department of Health Emergency Response	(801) 580-6681

Material	Media Released To	Reportable Quantity
Engine oil, fuel, hydraulic & brake fluid	Land	25 gallons
Paints, solvents, & thinners	Land	100 pounds (lbs.) (13 gallons)
Engine oil, fuel, hydraulic & brake fluid	Water	Visible Sheen
Antifreeze, battery acid, gasoline, & engine degreasers	Air, Land, Water	100 lbs. (13 gallons)
Refrigerant	Air	1 lb.

1. Make sure the spill area is safe to enter and that it does not pose an immediate threat to health or safety of any person.
2. Check for hazards (flammable material, noxious fumes, cause of spill) – If flammable liquid, turn off engines and nearby electrical equipment. If serious hazards are present leave area and call 911. LARGE SPILLS ARE LIKELY TO PRESENT A HAZARD.
3. Stop the spill source and contain flowing spills immediately with spill kits, dirt or other material that will achieve containment.
4. Call co-workers and supervisor for assistance and to make them aware of the spill and potential dangers
5. Cleanup all spills (flowing or non-flowing) immediately following containment. Clean up spilled material according to manufacturer specifications, for liquid spills use absorbent materials. DO NOT FLUSH AREA WITH WATER.
6. Properly dispose of cleaning materials and used absorbent material according to manufacturer specifications and Dominion Energy Environmental Compliance Coordinator direction.
7. If material has entered a storm sewer the Dominion Energy Environmental Compliance Coordinator will report the reportable quantity to the municipal Storm Water Division.

6.5 Non-Storm Water Discharge Management

Uncontaminated excavation dewatering may be conducted in the following cases: 1) if groundwater is encountered during excavation, 2) if a water line is accidentally damaged, and/or 3) if there is a storm event that causes accumulation of water in the trench. Dewatering may be conducted onsite, in an upland area with erosion and sediment controls (see Dewatering Operations BMPs in Appendix B) if it is contained within an upland area that is controlled within the UPDES CGP. The SWPPP Inspector or the Dominion Energy Environmental Compliance Coordinator can help identify areas where this may be possible.

If dewatering off-site, into a storm drain, or into a wetland or other waterbody becomes necessary, a UPDES General Permit for Construction Dewatering and Hydrostatic Testing (UPDES Permit No. UTG070000) will be obtained. All water will be filtered, contained, sampled, and have compliant laboratory analytical results before it can be discharged. Visual inspection, sample collection, and laboratory analysis will be conducted as required by the UPDES General Permit for Construction Dewatering and Hydrostatic Testing: https://deq.utah.gov/water-quality/general-construction-storm-water-updes-permits.

Contact the Dominion Energy Environmental Compliance Coordinator for assistance with obtaining the UPDES Construction General Permit for Construction Dewatering and Hydrostatic Testing and with permit compliance.

BMP Description: Silt Bags	
Installation Schedule:	As needed.
Maintenance and Inspection:	If silt bags are used, they will be evaluated during weekly inspections. Maintenance will be scheduled as needed.
Responsible Staff:	SWPPP Inspector and Construction Site Supervisor

BMP Description: Water filter units specific to sediment 2 microns and greater in diameter.	
Installation Schedule:	As needed.
Maintenance and Inspection:	Constantly throughout use.
Responsible Staff:	Construction Site Supervisor

SECTION 7: INSPECTIONS AND CORRECTIVE ACTION REPORTS

7.1 Inspections

7.1.1 Inspection Personnel

Inspections will be conducted by a qualified person who is knowledgeable in the principles and practices of erosion and sediment controls and pollution prevention, who possesses the skills to assess conditions at the construction site that could impact storm water quality, and the skills to assess the effectiveness of any storm water controls selected and installed to meet the requirements of the UPDES CGP. This person will be a Registered Storm Water Inspector.

7.1.2 Inspection Schedule and Procedures

A Registered Storm Water Inspector (see SWPPP Inspector certificate in Appendix D) will conduct SWPPP inspections every week and complete an Inspection Form such as the one in Appendix G or a similar Inspection Form. The Inspection Form will detail all areas and BMPs that were inspected.

7.1.3 Areas to Inspect

During the site inspection, the following areas will be inspected:

- All areas that have been cleared, graded, or excavated and that have not yet completed stabilization;
- All storm water controls (including pollution prevention measures) installed at the site to comply with the UPDES CGP;
- Material, waste, borrow, or equipment storage and maintenance areas that are covered by the UPDES CGP;
- All areas where storm water typically flows within the site, including drainage ways designed to divert, convey, and/or treat storm water;
- All points of discharge from the site; and
- All locations where stabilization measures have been implemented.

7.1.4 Inspection Requirements

During the site inspection, the following will be completed:

- Check whether all erosion and sediment controls and pollution prevention controls are installed, appear to be operational, and are working as intended to minimize pollutant discharges. Determine if any controls need to be replaced, repaired or maintained;
- Check for the presence of conditions that could lead to spills, leaks or other accumulations of pollutants on the site;
- Identify any locations where new or modified storm water controls are necessary to meet the requirements of the UPDES CGP;

- At points of discharge and, if applicable, the banks of any surface waters flowing within the property boundaries or immediately adjacent to the property, check for signs of visible erosion and sedimentation that have occurred and are attributable to discharges from the site; and
- Identify any and all incidents of noncompliance observed.

If there is a discharge occurring at the site during the inspection, the following will be noted:

- Identify all points of the property from which there is a discharge;
- Observe and document the visual quality of the discharge, and take note of the characteristics of the storm water discharge, including color; odor; floating, settled, or suspended solids; foam; oil sheen; and other obvious indicators of storm water pollutants; and
- Document whether your storm water controls are operating effectively and describe any such controls that are not operating as intended or are in need of maintenance.

7.2 Correction of Deficiencies

Corrective actions include any of the following:

- Repair, modification or replacement of any storm water control used at the site
- Clean-up and proper disposal of spills, releases or other deposits
- Remedy of a UPDES CGP violation

Corrective actions will be documented on a Corrective Action Log (Appendix H) or a similar form within 24 hours of the discovery of the BMP deficiency. Corrective actions are automatically logged in the inspection reporting system when using ComplianceGO, so a separate form is not necessary.

The corrective action will be completed as soon as possible, but no later than 1 week after discovery. The repair of the deficient item will be documented on a Corrective Action Log within 7 days of the discovery. The Corrective Action Log will be signed every 6 weeks by a representative appointed by a Duly Authorized Representative (Delegation of Authority at the beginning of this SWPPP).

7.3 SWPPP Amendment Log

Changes to the impacted area, Project schedule dates, personnel, and responsibilities will be recorded in the SWPPP Amendment Log (Appendix I) or a similar log.

7.4 Grading and Stabilization Log

Date(s) when major grading activities occur will be recorded on the Grading and Stabilization Log (Appendix J) or a similar form. Areas that have final stabilization will also be recorded on the log to identify areas that no longer need to be inspected.

7.5 Training

SWPPP training will be provided to personal at the start of the Project and to all new personnel entering the site. Training will be recorded in the Training Log (Appendix K) or a similar form documenting the personnel in attendance and the subjects covered.

7.6 Record Keeping

Inspection Forms, Corrective Action Logs, Grading and Stabilization Logs, SWPPP Amendment Logs, and Training Logs will be kept in the SWPPP and available for audit during regular working hours. Records will be retained for a minimum period of at least 3 years after the UPDES CGP is terminated.

Appendix A – Site Maps/Erosion Control Plan

SHEET LIST TABLE

SHEET #	SHEET TITLE	ADDRESS	ADDRESS/ STATIONING
01	COVER SHEET	EUREKA CITY	0+00 - 270+27
02	SITE KEY PLAN	EUREKA CITY	0+00 - 270+27
03	LEGEND SHEET	EUREKA CITY	0+00 - 270+27
04	AREA SHEET 04	LAST CHANCE ST TO ARLINGTON ST	0+00 - 13+00
05	AREA SHEET 05	ARLINGTON ST, DEPRIZIN ST	13+00 - 23+00
06	AREA SHEET 06	ARLINGTON ST, ALLEY ST	23+00 - 34+50
07	AREA SHEET 07	ARLINGTON ST, LEADVILLE ROW	34+50 - 46+00
08	AREA SHEET 08	LEADVILLE ROW, TERRACE HEIGHTS	46+00 - 56+00
09	AREA SHEET 09	TERRACE HEIGHTS, BUTLER RD	56+00 - 61+19
10	AREA SHEET 10	CHURCH ST, LEADVILLE ROW	0+00 - 11+50
11	AREA SHEET 11	LEADVILLE ROW, F STREET	11+50 - 23+50
12	AREA SHEET 12	LEADVILLE ROW, C ST	23+50 - 35+67
13	AREA SHEET 13	MAIN ST HATFIELD AVE	0+00 - 11+50
14	AREA SHEET 14	MAIN ST, DUBLIN AVE	11+50 - 23+00
15	AREA SHEET 15	MAIN ST, BECK ST	23+00 - 35+00
16	AREA SHEET 16	MAIN ST, SPRING ST	35+00 - 46+50
17	AREA SHEET 17	MAIN ST, BULK PLANT RD	46+50 - 58+00
18	AREA SHEET 18	HWY 6 (MAIN ST)	58+00 - 69+50
19	AREA SHEET 19	HWY 6 (MAIN ST)	69+50 - 81+00
20	AREA SHEET 20	HWY 6 (MAIN ST)	81+00 - 92+50
21	AREA SHEET 21	HWY 6 (MAIN ST)	92+50 - 103+00
22	AREA SHEET 22	HWY 6 (MAIN ST)	103+00 - 114+00
23	AREA SHEET 23	HWY 6 (MAIN ST)	114+00 - 118+84
24	AREA SHEET 24	McCRYSTAL AVE, HATFIELD AVE	0+00 - 12+00
25	AREA SHEET 25	IRON AND O'CONNER, EAGLE ST	12+00 - 23+50
26	AREA SHEET 26	HAULAGE RD, BECK ST	23+50 - 35+55
27	AREA SHEET 27	EAGLE ST, BECK ST	0+00 - 11+00
28	AREA SHEET 28	EAGLE ST, HAULAGE RD	11+00 - 12+96
29	AREA SHEET 29	BECK ST, HAULAGE RD	0+00 - 3+68
30	AREA SHEET 30	MAIN ST	0+00 - 5+33
31	DETAIL SHEET	EUREKA CITY	0+00 - 270+27

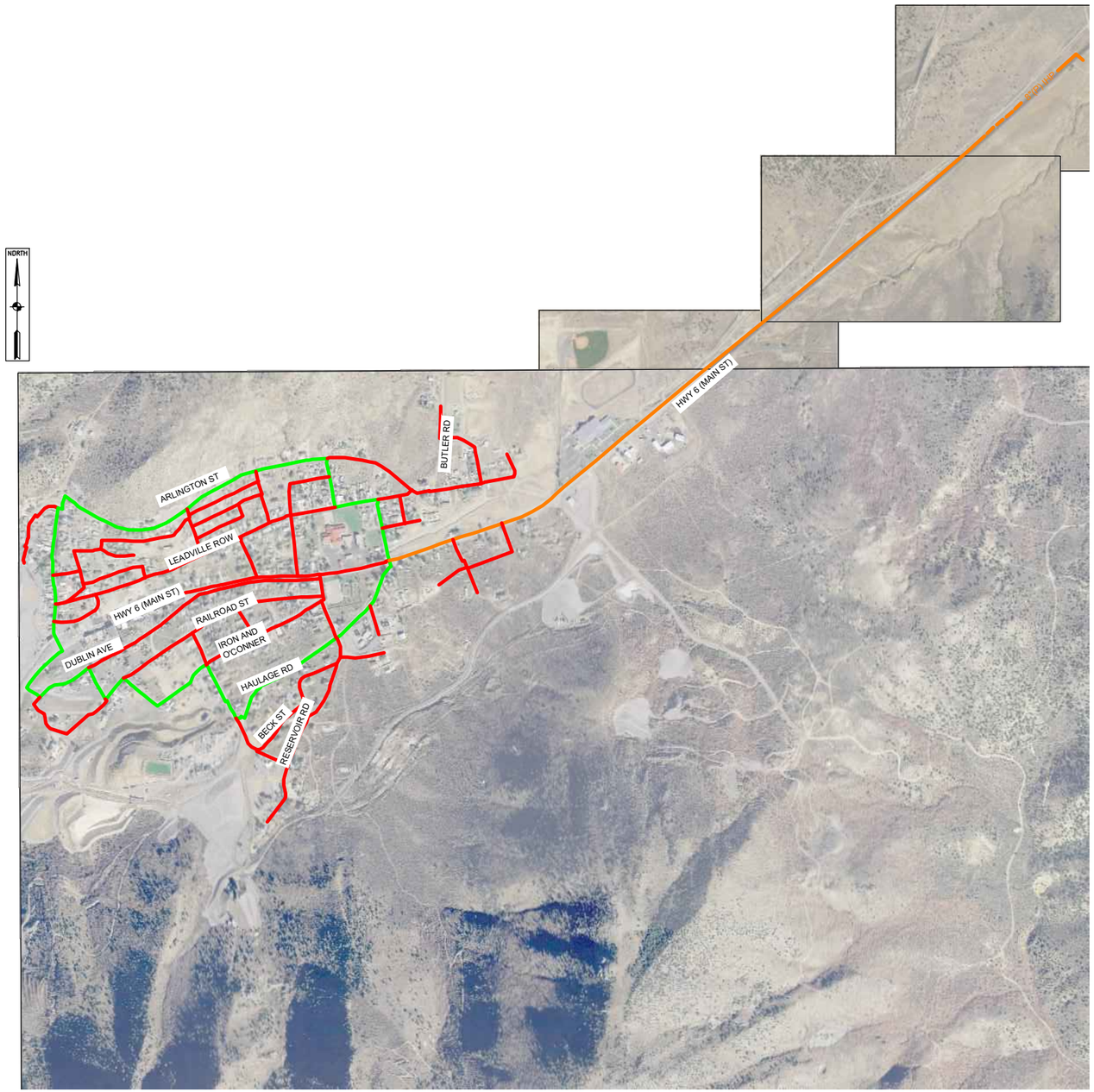
MAIN INSTALL AND RETIRE SUMMARY (WBS 78055.25.SPV)

MJ 2024548 - INSTALL:

8230 FT OF 8" PLASTIC PIPE (11.5 SDR)
11,385 FT OF 4" PLASTIC PIPE (11.5 SDR)
32,400 FT OF 2" PLASTIC PIPE (11.5 SDR)

Dominion Energy®

DOMINION ENERGY UTAH
IHP REINFORCEMENT PROJECT
EUREKA CITY
EUREKA CITY, JUAB COUNTY, UTAH



KEYED NOTES

	TEST & TIE		INSERT
T1/2	TIE INTO PLASTIC SERVICE 1/2" (P)	IN1/2	INSERT 1/2" (P)
T3/4	TIE INTO PLASTIC SERVICE 3/4" (P)	IN3/4	INSERT 3/4" (P)
T1-1/4	TIE INTO PLASTIC SERVICE 1-1/4" (P)	IN1-1/4	INSERT 1-1/4" (P)
T2	TIE INTO PLASTIC SERVICE 2" (P)	IN2	INSERT 2" (P)
T3	TIE INTO PLASTIC SERVICE 3" (P)	IN3	INSERT 3" (P)
T4	TIE INTO PLASTIC SERVICE 4" (P)	IN4	INSERT 4" (P)
	REPLACEMENT		OTHER NOTES
R1/2	REPLACE WITH 1/2" (P)	AN(#)	INSTALL 17LB ANODES (ANODE QUANTITY)
R3/4	REPLACE WITH 3/4" (P)	CTS	INSTALL CATHODIC TEST STATION
R1-1/4	REPLACE WITH 1-1/4" (P)	HAZ	HAZMAT AREA
R2	REPLACE WITH 2" (P)	HP	HIGH PRESSURE GAS LINE
R3	REPLACE WITH 3" (P)	HVTT	HIGH VOLUME TAPPING TEE
R4	REPLACE WITH 4" (P)	PLT	TIE INTO PLASTIC MAIN
	EXTEND	RET	RETIRE SERVICE
Ex1/2	EXTEND PLASTIC SERVICE 1/2" (P)	STT	TIE INTO STEEL MAIN
Ex3/4	EXTEND PLASTIC SERVICE 3/4" (P)	TL	INSTALL TEST LEAD
Ex1-1/4	EXTEND PLASTIC SERVICE 1-1/4" (P)	UTN	SEPARATE SERVICE LINES

GENERAL NOTES

1. CONTRACTOR TO POTHOLE ALL EXISTING BURIED UTILITY CROSSINGS TO VERIFY DEPTH PRIOR TO GAS INSTALLATION. (IMMEDIATELY NOTIFY DOMINION ENERGY OF POSSIBLE CONFLICTS BETWEEN EXISTING UTILITIES AND PROPOSED IHP GAS MAIN DESIGN. CONTACT PROJECT ENGINEER.)
2. COATING/PROTECTION
   BURIED FABRICATION PIPING SHALL BE CLEANED AND COATED. RECOMMENDED COATING FOR BURIED STEEL PIPING IS 2-PART EPOXY (IF PRACTICAL, REQUIRES GRIT BLAST PRIOR TO APPLYING COATING), TAPE COAT H35 OR H50 WITH PRIMER. TRENTON WAX TAPE (NUMBER 1 WITH GUARDWRAP) IS TO BE USED ONLY AS OVERWRAP; RECOMMENDED AT COATING TRANSITIONS OR WHENEVER SPECIFIED OR WHEN THE COATING APPLICATOR DEEMS NECESSARY. RECOMMENDED COATING FOR ABOVE GROUND PIPING IS TRENTON WAX TAPE NUMBER 2. ALL BURIED PIPING TO BE CATHODICALLY PROTECTED.
3. FIELD VERIFY WALL THICKNESS AT ALL TIE IN LOCATIONS.
4. BALL VALVES - REMOVE ALL MANUFACTURER VENT PLUGS AND REPLACE WITH SMALL BALL VALVES.
5. ANY MATERIAL SUBSTITUTION OR FIELD CHANGES TO DESIGN REQUIRE REVIEW WITH AND CONCURRENCE BY ENGINEERING.
6. ALL BRANCH TIE-INS 3" AND LARGER SHALL BE FULL TEE'S UNLESS OTHERWISE SPECIFIED BY THE PROJECT ENGINEER.
7. DEPTH AND LOCATION OF SEWER MAIN AND LATERAL MUST BE IDENTIFIED AT EACH PROPOSED GAS CROSSING PRIOR TO DIRECTIONAL DRILLING. ANY SEWER LATERAL NOT LOCATED OR EXPOSED PRIOR TO DRILLING MUST BE VIDEOED NO MORE THAN 48 HOURS AFTER THE DRILLING PROCESS. IF REQUIRED BY CITY, CONTRACTOR MUST SUBMIT AN INSPECTION REPORT.
8. BORE DEPTH NOT TO EXCEED 6-FEET UNLESS OTHERWISE SPECIFIED OR SHOWN.

UTAH BLUE STAKES

CALL FOR LOCATION OF UNDERGROUND UTILITIES
811 OR 1-800-662-4111

FOR EMERGENCY CALL 911

THEN CALL DOMINION ENERGY UTAH
1-800-767-1689

PROJECT CONTACTS

PROJECT MANAGER:	[illegible]	(801) 324-[illegible]
PROJECT ENGINEER:	[illegible]	(801) 324-[illegible]
IHP SUPERVISOR:	[illegible]	(801) 324-[illegible]
IHP SUPERVISOR:	[illegible]	(801) 324-[illegible]
RIGHT OF WAY AGENT:	[illegible]	(801) 324-[illegible]
ENVIRONMENTAL/HERITAGE:	[illegible]	(801) 324-[illegible]
SAFETY:	[illegible]	(801) 324-[illegible]

ISSUED FOR CONSTRUCTION

REVISIONS				
NO	DESCRIPTION	DATE	BY	CHECK
A	FOR INITIAL REVIEW	2-15-21	CNO	MH
1	ISSUE FOR CONSTRUCTION	2-23-21	CNO	MH
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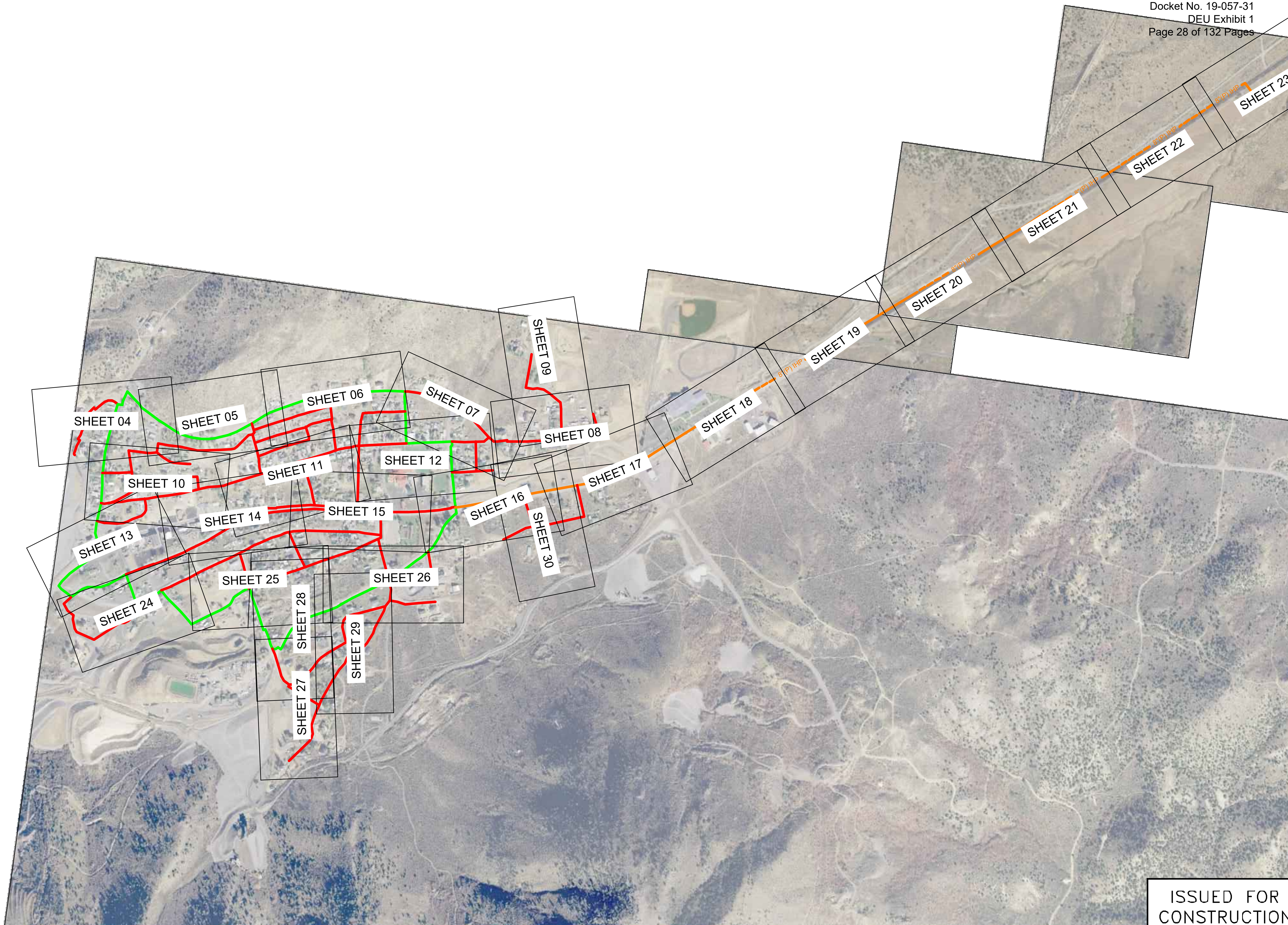
ENGINEERING RECORD		
PROJECT NUMBER: 78055.25.SPV	DATE CREATED: 2-15-21	ENGINEERING MNGR: K. FREDERICKS
DRAWN BY: C. OWEN	PROJECT ENGINEER: M. HANSEN	CONSTR MNGR: R. ANDERSON
CHECKED BY: M. HANSEN	SURVEYOR: G. NEWHART	APVD FOR CONSTR: 2-23-21
DWG. SCALE: 1:40		

Dominion Energy®
DOMINION ENERGY UTAH

TITLE:	IHP REINFORCEMENT	CITY	COUNTY	STATE
DESCRIPTION:	COVER SHEET	EUREKA	JUAB	UT
ADDRESS:	EUREKA CITY 0+00 - 270+27	DRAWING NUMBER: MJ2024548	SHEET: 01	REVISION: 1

NORTH



ISSUED FOR CONSTRUCTION

REVISIONS

NO	DESCRIPTION	DATE	BY	CHECK
A	FOR INITIAL REVIEW	2-15-21	CNO	MH
1	ISSUE FOR CONSTRUCTION	2-23-21	CNO	MH
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ENGINEERING RECORD

PROJECT NUMBER: 78055.25.SPV	DATE CREATED: 2-15-21	ENGINEERING MNGR: K. FREDERICKS
DRAWN BY: C. OWEN	PROJECT ENGINEER: M. HANSEN	CONSTR MNGR: R. ANDERSON
CHECKED BY: M. HANSEN	SURVEYOR: G. NEWHART	APVD FOR CONSTR: 2-23-21
DWG. SCALE: 1:40		

Dominion Energy
DOMINION ENERGY UTAH

TITLE: IHP REINFORCEMENT
DESCRIPTION: SITE KEY PLAN
ADDRESS: EUREKA CITY
0+00 - 270+27

CITY	COUNTY	STATE
EUREKA	JUAB	UT

DRAWING NUMBER	SHEET	REVISION
MJ2024548	02	1

DOMINION ENERGY NATURAL GAS LINE LEGEND

- PROPOSED IHP GAS LINE (SEE PLANS FOR PIPING SIZE WHICH ARE COLOR SPECIFIC)
- PROPOSED IHP GAS SERVICE LINE
- EXISTING IHP GAS LINE (SEE PLANS FOR PIPING SIZE WHICH ARE COLOR SPECIFIC)
- EXISTING IHP GAS SERVICE LINE
- RETIRE EXISTING IHP GAS LINE (SEE PLANS FOR PIPING SIZE WHICH ARE COLOR SPECIFIC)
- RETIRE EXISTING IHP GAS SERVICE LINE
- PROPOSED IHP GAS LINE IN CASING (SEE PLANS FOR PIPING SIZE WHICH ARE COLOR SPECIFIC)
- EXISTING IHP GAS LINE IN CASING (SEE PLANS FOR PIPING SIZE WHICH ARE COLOR SPECIFIC)
- RETIRED IHP GAS LINE
- PROPOSED HIGH PRESSURE (HP) GAS LINE (SEE PLANS FOR PIPING SIZE WHICH ARE COLOR SPECIFIC)
- EXISTING HP GAS LINE (SEE PLANS FOR PIPING SIZE WHICH ARE COLOR SPECIFIC)
- RETIRED HP GAS LINE

LINE LEGEND

- MATCHLINE
- BACK OF CURB
- CENTERLINE FOR CREEK
- RIGHT-OF-WAY (ROW) CENTERLINE
- RIGHT-OF-WAY (ROW) LINE (HIGHWAY R0W LINE)
- CTV — EXISTING CABLE TV LINE
- EDGE OF ROAD / FRONT OF CURB
- X — EXISTING FENCE LINE
- FO — EXISTING FIBER OPTIC LINE
- IRR — EXISTING IRRIGATION LINE
- GIRR — EXISTING GRAVITY IRRIGATION LINE
- PIRR — EXISTING PRESSURE IRRIGATION LINE
- OVHD — EXISTING OVERHEAD POWER LINE
- OVHDT — EXISTING OVERHEAD COMMUNICATIONS LINE
- P — EXISTING BURIED POWER LINE
- EXISTING RAILROAD TRACKS
- S — EXISTING SANITARY SEWER LINE
- SD — EXISTING STORM DRAIN LINE
- T — EXISTING BURIED COMMUNICATIONS LINE
- W — EXISTING DOMESTIC WATER LINE
- EXISTING FAULT LINE
- ZR — PROPOSED ZINC RIBBON

SYMBOL LEGEND

- CROSSING KIT
- COUPON TEST POINT
- CATHODIC PROTECTION TEST STATION
- ANODE
- C — CNG COMPRESSOR
- HIGH CAPACITY DISTRICT REGULATOR STATION
- MEDIUM CAPACITY DISTRICT REGULATOR STATION
- LOW CAPACITY DISTRICT REGULATOR STATION
- M — INDUSTRIAL METER SET
- ISOLATION VALVE
- CABLE TV MANHOLE
- FIBER OPTIC MANHOLE
- GAS MANHOLE
- IRRIGATION CURB BOX
- IRRIGATION MANHOLE
- IRRIGATION ROAD BOX
- MISC. MANHOLE
- POWER MANHOLE
- SEWER MANHOLE
- SIGNAL MANHOLE
- STORMDRAIN MANHOLE
- TELEPHONE MANHOLE
- FIRE HYDRANT
- WATER CURB BOX
- WATER MANHOLE
- WATER ROAD BOX
- CABLE TV PEDESTAL
- ELECTRICAL PEDESTAL
- FIBER OPTIC PEDESTAL
- POWER PEDESTAL
- SIGNAL PEDESTAL
- TELEPHONE PEDESTAL
- POWER POLE
- GUY WIRE

SYMBOL LEGEND CONT'D.

- LIGHTPOLE
- BOC — BACK OF CURB
- EOA — EDGE OF ASPHALT
- TH — TEST HOLE
- SURVEY MONUMENT
- SIGN
- STORM DRAIN CATCH BASIN
- EXISTING VALVE
- VALVE ASSEMBLY
- PROPOSED VALVE (SEE PLANS FOR VALVE SIZE WHICH ARE COLOR SPECIFIC)
- DELIVERY POINT
- PIPE TRANSITION
- DETAIL # / SHEET #

PROPOSED IHP MAIN

- 3/4"(P) IHP — 3/4" PLASTIC
- 1"(P) IHP — 1" PLASTIC
- 1-1/4"(P) IHP — 1-1/4" PLASTIC
- 2"(P) IHP — 2" PLASTIC
- 3"(P) IHP — 3" PLASTIC
- 4"(P) IHP — 4" PLASTIC
- 6"(P) IHP — 6" PLASTIC
- 8"(P) IHP — 8" PLASTIC
- 10"(S) IHP — 10" STEEL
- 12"(S) IHP — 12" STEEL
- 14"(S) IHP — 14" STEEL
- 16"(S) IHP — 16" STEEL

EXISTING IHP MAIN

- 3/4" PLASTIC
- 3/4" STEEL
- 1" PLASTIC
- 1" STEEL
- 1-1/4" PLASTIC
- 1-1/4" STEEL
- 2" PLASTIC
- 2" STEEL
- 3" PLASTIC
- 3" STEEL
- 4" PLASTIC
- 4" STEEL
- 6" PLASTIC
- 6" STEEL
- 8" PLASTIC
- 8" STEEL
- 10" STEEL
- 12" STEEL
- 14" STEEL
- 16" STEEL
- 20" STEEL

ISSUED FOR CONSTRUCTION

REVISIONS				
NO	DESCRIPTION	DATE	BY	CHECK
A	FOR INITIAL REVIEW	2-15-21	CNO	MH
1	ISSUE FOR CONSTRUCTION	2-23-21	CNO	MH
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ENGINEERING RECORD		
PROJECT NUMBER: 78055.25.SPV	DATE CREATED: 2-15-21	ENGINEERING MNGR: K. FREDERICKS
DRAWN BY: C. OWEN	PROJECT ENGINEER: M. HANSEN	CONSTR MNGR: R. ANDERSON
CHECKED BY: M. HANSEN	SURVEYOR: G. NEWHART	APVD FOR CONSTR: 2-23-21
DWG. SCALE: NONE		

DOMINION ENERGY UTAH

TITLE: IHP REINFORCEMENT
DESCRIPTION: LEGEND SHEET
ADDRESS: EUREKA CITY 0+00 - 270+27

CITY	COUNTY	STATE
EUREKA	JUAB	UT

DRAWING NUMBER	SHEET	REVISION
MJ2024548	03	1

4" PLASTIC MAIN	
R.O.W./PERMIT	EUREKA
INSTALL METHOD	HORIZONTAL DIRECTIONAL DRILL
BACKFILL MATERIAL	GRANULAR
SURFACE RESTORATION	ASPHALT
SPECIAL PROVISIONS	

PLAN

0 40 80 Feet

NORTH

INSTALL 2" (P-TR) MJ2024548 ON WEST EDGE OF ASPHALT

INSTALL 2" (P-TR) MJ2024548 ON SOUTH EDGE OF ASPHALT

INSTALL 4" (P-TR) MJ2024548 ON NORTH EDGE OF ASPHALT

INSTALL 4" (P-TR) MJ2024548 ON WEST EDGE OF ASPHALT

INSTALL 2" (P-TR) MJ2024548 ON EAST EDGE OF ASPHALT

INSTALL 4" (P-TR) MJ2024548 ON NORTH EDGE OF ASPHALT

INSTALL 2" (P-TR) MJ2024548 ON WEST EDGE OF ASPHALT

INSTALL 2" (P-TR) MJ2024548 ON NORTH EDGE OF ASPHALT

LAST CHANCE ST

CHURCH ST

ARLINGTON ST

DEPRIZIN ST

DEPRIZIN ST

MATCHLINE – SEE SHEET 5

167

153

ISSUED FOR CONSTRUCTION

2" PLASTIC MAIN	
R.O.W./PERMIT	EUREKA
INSTALL METHOD	HORIZONTAL DIRECTIONAL DRILL
BACKFILL MATERIAL	GRANULAR
SURFACE RESTORATION	ASHPALT
SPECIAL PROVISIONS	

REVISIONS				
NO	DESCRIPTION	DATE	BY	CHECK
A	FOR INITIAL REVIEW	2-15-21	CNO	MH
1	ISSUE FOR CONSTRUCTION	2-23-21	CNO	MH
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ENGINEERING RECORD		
PROJECT NUMBER: 78055.25.SPV	DATE CREATED: 2-15-21	ENGINEERING MNGR: K. FREDERICKS
DRAWN BY: C. OWEN	PROJECT ENGINEER: M. HANSEN	CONSTR MNGR: R. ANDERSON
CHECKED BY: M. HANSEN	SURVEYOR: G. NEWHART	APVD FOR CONSTR: 2-23-21
DWG. SCALE: (34x22) 1"=40' (17x11) 1"=80'		

Dominion Energy

DOMINION ENERGY UTAH

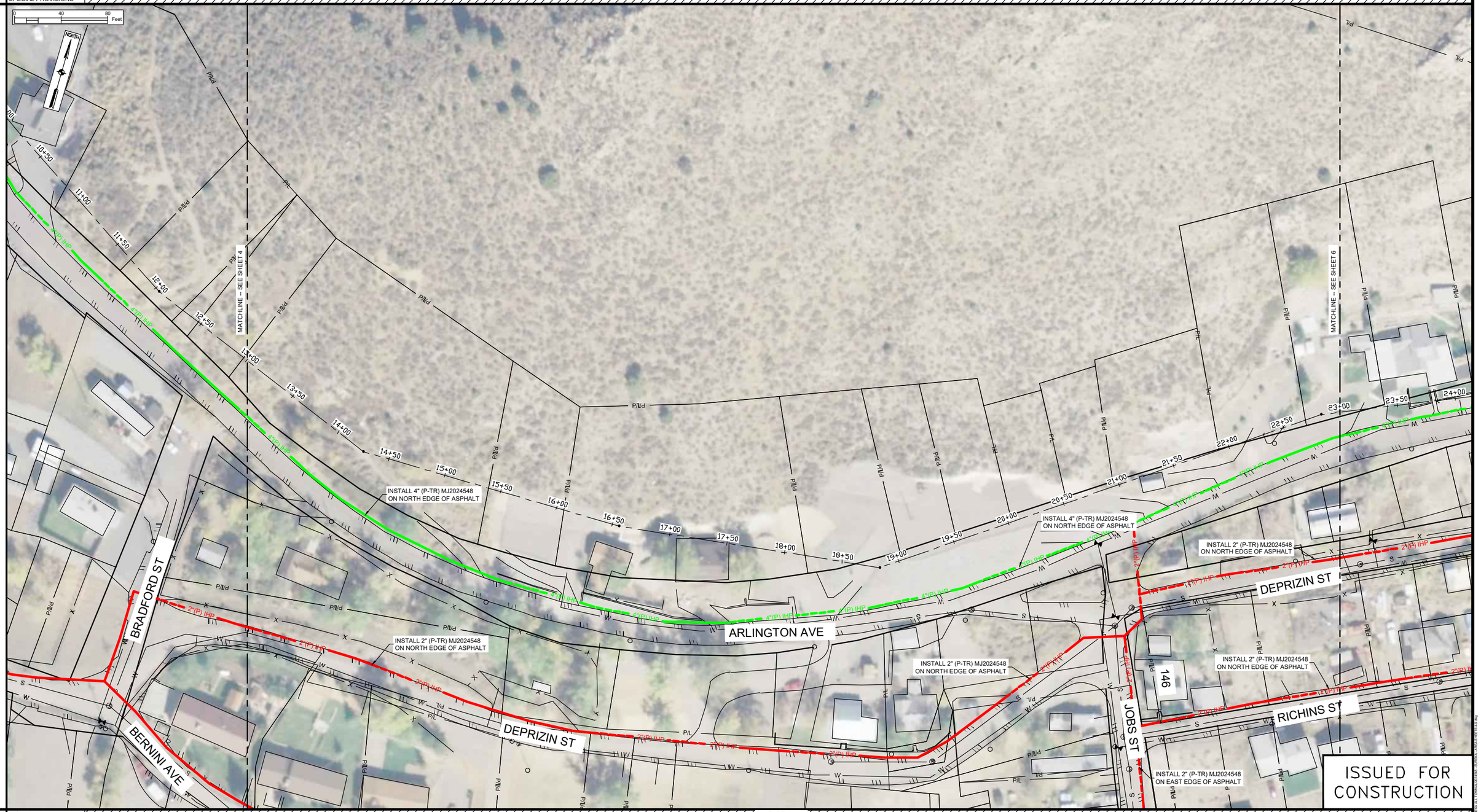
TITLE:	IHP REINFORCEMENT
DESCRIPTION:	AREA SHEET 4
ADDRESS:	LAST CHANCE ST, ARLINGTON ST
	0+00 - 13+00

CITY	COUNTY	STATE
EUREKA	JUAB	UT

DRAWING NUMBER	SHEET	REVISION
MJ2024548	04	1

4" PLASTIC MAIN	
R.O.W./PERMIT	EUREKA
INSTALL METHOD	HORIZONTAL DIRECTIONAL DRILL
BACKFILL MATERIAL	GRANULAR
SURFACE RESTORATION	ASPHALT
SPECIAL PROVISIONS	

PLAN



ISSUED FOR CONSTRUCTION

2" PLASTIC MAIN	
R.O.W./PERMIT	EUREKA
INSTALL METHOD	HORIZONTAL DIRECTIONAL DRILL
BACKFILL MATERIAL	GRANULAR
SURFACE RESTORATION	ASPHALT
SPECIAL PROVISIONS	

REVISIONS				
NO	DESCRIPTION	DATE	BY	CHECK
A	FOR INITIAL REVIEW	2-15-21	CNO	MH
1	ISSUE FOR CONSTRUCTION	2-23-21	CNO	MH
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ENGINEERING RECORD		
PROJECT NUMBER: 78055.25.SPV	DATE CREATED: 2-15-21	ENGINEERING MNGR: K. FREDERICKS
DRAWN BY: C. OWEN	PROJECT ENGINEER: M. HANSEN	CONSTR MNGR: R. ANDERSON
CHECKED BY: M. HANSEN	SURVEYOR: G. NEWHART	APVD FOR CONSTR: 2-23-21
DWG. SCALE: (34x22) 1"=40' (17x11) 1"=80'		

Dominion Energy
DOMINION ENERGY UTAH

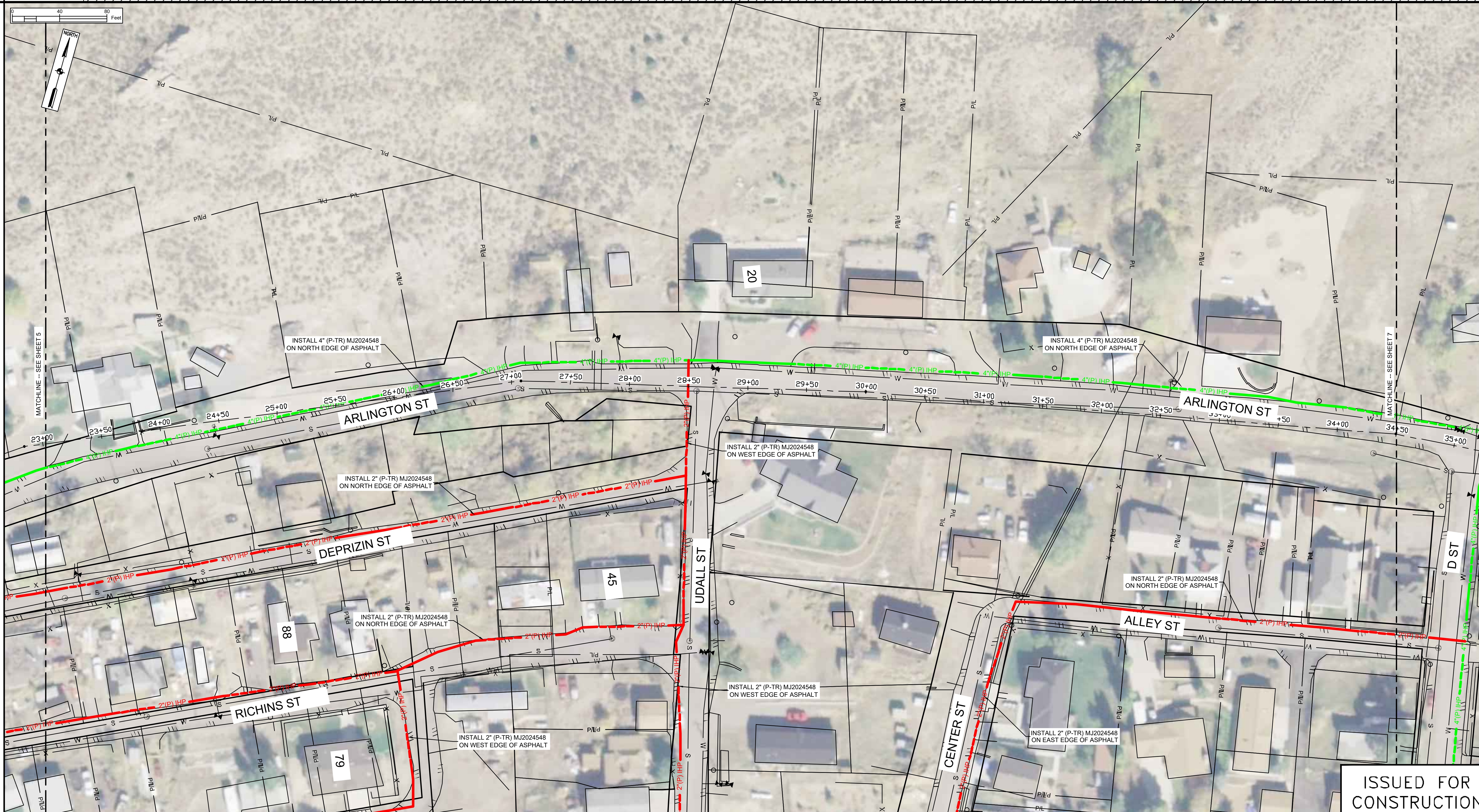
TITLE:	IHP REINFORCEMENT
DESCRIPTION:	AREA SHEET 5
ADDRESS:	ARLINGTON ST, DEPRIZIN ST 13+00 - 23+00

CITY	COUNTY	STATE
EUREKA	JUAB	UT

DRAWING NUMBER	SHEET	REVISION
MJ2024548	05	1

4" PLASTIC MAIN	
R.O.W./PERMIT	EUREKA
INSTALL METHOD	HORIZONTAL DIRECTIONAL DRILL
BACKFILL MATERIAL	GRANULAR
SURFACE RESTORATION	ASPHALT
SPECIAL PROVISIONS	

PLAN



2" PLASTIC MAIN	
R.O.W./PERMIT	EUREKA
INSTALL METHOD	HORIZONTAL DIRECTIONAL DRILL
BACKFILL MATERIAL	GRANULAR
SURFACE RESTORATION	ASPHALT
SPECIAL PROVISIONS	

REVISIONS

NO	DESCRIPTION	DATE	BY	CHECK
A	FOR INITIAL REVIEW	2-15-21	CNO	MH
1	ISSUE FOR CONSTRUCTION	2-23-21	CNO	MH
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ENGINEERING RECORD

PROJECT NUMBER: 78055.25.SPV	DATE CREATED: 2-15-21	ENGINEERING MNGR: K. FREDERICKS
DRAWN BY: C. OWEN	PROJECT ENGINEER: M. HANSEN	CONSTR MNGR: R. ANDERSON
CHECKED BY: M. HANSEN	SURVEYOR: G. NEWHART	APVD FOR CONSTR: 2-23-21
DWG. SCALE: (34x22) 1"=40' (17x11) 1"=80'		

DOMINION ENERGY UTAH

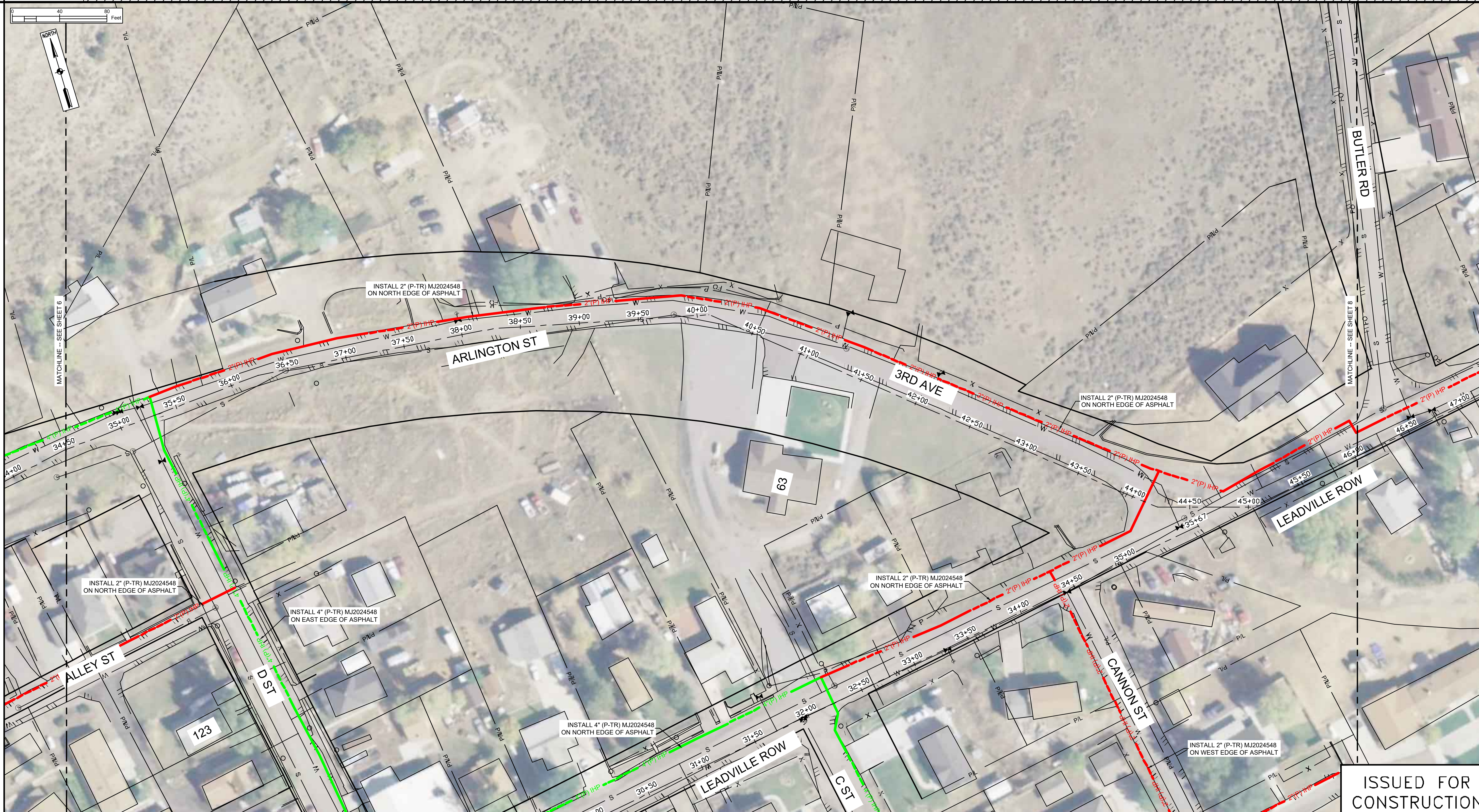
TITLE:	IHP REINFORCEMENT
DESCRIPTION:	AREA SHEET 6
ADDRESS:	ARLINGTON ST, ALLEY ST
	23+00 - 34+50

CITY	COUNTY	STATE
EUREKA	JUAB	UT

DRAWING NUMBER	SHEET	REVISION
MJ2024548	06	1

2" PLASTIC MAIN		
	R.O.W./PERMIT	EUREKA
	INSTALL METHOD	HORIZONTAL DIRECTIONAL DRILL
	BACKFILL MATERIAL	GRANULAR
	SURFACE RESTORATION	ASPHALT
	SPECIAL PROVISIONS	

PLAN



ISSUED FOR CONSTRUCTION

4" PLASTIC MAIN		
	R.O.W./PERMIT	EUREKA
	INSTALL METHOD	HORIZONTAL DIRECTIONAL DRILL
	BACKFILL MATERIAL	GRANULAR
	SURFACE RESTORATION	ASPHALT
	SPECIAL PROVISIONS	

REVISIONS

NO	DESCRIPTION	DATE	BY	CHECK
A	FOR INITIAL REVIEW	2-15-21	CNO	MH
1	ISSUE FOR CONSTRUCTION	2-23-21	CNO	MH
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ENGINEERING RECORD

PROJECT NUMBER: 78055.25.SPV	DATE CREATED: 2-15-21	ENGINEERING MNGR: K. FREDERICKS
DRAWN BY: C. OWEN	PROJECT ENGINEER: M. HANSEN	CONSTR MNGR: R. ANDERSON
CHECKED BY: M. HANSEN	SURVEYOR: G. NEWHART	APVD FOR CONSTR: 2-23-21
DWG. SCALE: (34x22) 1"=40' (17x11) 1"=80'		

Dominion Energy
DOMINION ENERGY UTAH

TITLE:	IHP REINFORCEMENT
DESCRIPTION:	AREA SHEET 7
ADDRESS:	ARLINGTON ST, LEADVILLE ROW 34+50 - 46+00

CITY	COUNTY	STATE
EUREKA	JUAB	UT

DRAWING NUMBER	SHEET	REVISION
MJ2024548	07	1

PLAN

ISSUED FOR CONSTRUCTION

2" PLASTIC MAIN		
	R.O.W./PERMIT	EUREKA
	INSTALL METHOD	HORIZONTAL DIRECTIONAL DRILL
	BACKFILL MATERIAL	GRANULAR
	SURFACE RESTORATION	ASPHALT
	SPECIAL PROVISIONS	

REVISIONS

NO	DESCRIPTION	DATE	BY	CHECK
A	FOR INITIAL REVIEW	2-15-21	CNO	MH
1	ISSUE FOR CONSTRUCTION	2-23-21	CNO	MH
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ENGINEERING RECORD

PROJECT NUMBER: 78055.25.SPV	DATE CREATED: 2-15-21	ENGINEERING MNGR: K. FREDERICKS
DRAWN BY: C. OWEN	PROJECT ENGINEER: M. HANSEN	CONSTR MNGR: R. ANDERSON
CHECKED BY: M. HANSEN	SURVEYOR: G. NEWHART	APVD FOR CONSTR: 2-23-21
DWG. SCALE: (34x22) 1"=40' (17x11) 1"=80'		

Dominion Energy
DOMINION ENERGY UTAH

TITLE:	IHP REINFORCEMENT
DESCRIPTION:	AREA SHEET 8
ADDRESS:	LEADVILLE ROW, TERRACE HEIGHTS 46+00 - 56+00

CITY	COUNTY	STATE
EUREKA	JUAB	UT

DRAWING NUMBER	SHEET	REVISION
MJ2024548	08	1

PLAN

ISSUED FOR CONSTRUCTION

2" PLASTIC MAIN	
R.O.W./PERMIT	EUREKA
INSTALL METHOD	HORIZONTAL DIRECTIONAL DRILL
BACKFILL MATERIAL	GRANULAR
SURFACE RESTORATION	ASPHALT
SPECIAL PROVISIONS	

REVISIONS

NO	DESCRIPTION	DATE	BY	CHECK
A	FOR INITIAL REVIEW	2-15-21	CNO	MH
1	ISSUE FOR CONSTRUCTION	2-23-21	CNO	MH
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ENGINEERING RECORD

PROJECT NUMBER: 78055.25.SPV	DATE CREATED: 2-15-21	ENGINEERING MNGR: K. FREDERICKS
DRAWN BY: C. OWEN	PROJECT ENGINEER: M. HANSEN	CONSTR MNGR: R. ANDERSON
CHECKED BY: M. HANSEN	SURVEYOR: G. NEWHART	APVD FOR CONSTR: 2-23-21
DWG. SCALE: (34x22) 1"=40' (17x11) 1"=80'		

Dominion Energy®
DOMINION ENERGY UTAH

TITLE: IHP REINFORCEMENT
DESCRIPTION: AREA SHEET 9
ADDRESS: TERRACE HEIGHTS, BUTLER RD
56+00 - 61+19

CITY	COUNTY	STATE
EUREKA	JUAB	UT

DRAWING NUMBER	SHEET	REVISION
MJ2024548	09	1

2" PLASTIC MAIN	
R.O.W./PERMIT	EUREKA
INSTALL METHOD	HORIZONTAL DIRECTIONAL DRILL
BACKFILL MATERIAL	GRANULAR
SURFACE RESTORATION	ASPHALT
SPECIAL PROVISIONS	

PLAN

0 40 80 Feet

NORTH

DEPRIZIN ST

INSTALL 2" (P-TR) MJ2024548 ON NORTH EDGE OF ASPHALT

INSTALL 4" (P-TR) MJ2024548 ON WEST EDGE OF ASPHALT

INSTALL 2" (P-TR) MJ2024548 ON WEST EDGE OF ASPHALT

JARVIS ST

BERNINI AVE

PIKE ALLEY

CHURCH ST

89

N LEADVILLE ROW

74

LEADVILLE ROW

31

GEAR ST

MAIN ST

MATCHLINE - - SEE SHEET 11

ISSUED FOR CONSTRUCTION

4" PLASTIC MAIN	
R.O.W./PERMIT	EUREKA
INSTALL METHOD	HORIZONTAL DIRECTIONAL DRILL
BACKFILL MATERIAL	GRANULAR
SURFACE RESTORATION	ASPHALT
SPECIAL PROVISIONS	

REVISIONS				
NO	DESCRIPTION	DATE	BY	CHECK
A	FOR INITIAL REVIEW	2-15-21	CNO	MH
1	ISSUE FOR CONSTRUCTION	2-23-21	CNO	MH
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ENGINEERING RECORD		
PROJECT NUMBER: 78055.25.SPV	DATE CREATED: 2-15-21	ENGINEERING MNGR: K. FREDERICKS
DRAWN BY: C. OWEN	PROJECT ENGINEER: M. HANSEN	CONSTR MNGR: R. ANDERSON
CHECKED BY: M. HANSEN	SURVEYOR: G. NEWHART	APVD FOR CONSTR: 2-23-21
DWG. SCALE: (34x22) 1"=40' (17x11) 1"=80'		

Dominion Energy

DOMINION ENERGY UTAH

TITLE:	IHP REINFORCEMENT
DESCRIPTION:	AREA SHEET 10
ADDRESS:	CHURCH ST, LEADVILLE ROW 0+00 - 11+50

CITY	COUNTY	STATE
EUREKA	JUAB	UT

DRAWING NUMBER	SHEET	REVISION
MJ2024548	10	1

2" PLASTIC MAIN	
R.O.W./PERMIT	EUREKA
INSTALL METHOD	HORIZONTAL DIRECTIONAL DRILL
BACKFILL MATERIAL	GRANULAR
SURFACE RESTORATION	ASPHALT
SPECIAL PROVISIONS	

PLAN

0 40 80 Feet

NORTH

STACK ST

JOBS ST

UDALL ST

LEADVILLE ROW

F ST

CENTER ST

DUBLIN AVE

MAIN ST

INSTALL 2" (P-TR) MJ2024548 ON NORTH EDGE OF ASPHALT

INSTALL 2" (P-TR) MJ2024548 ON EAST EDGE OF ASPHALT

INSTALL 2" (P-TR) MJ2024548 ON WEST EDGE OF ASPHALT

INSTALL 2" (P-TR) MJ2024548 UNDER SIDEWALK

INSTALL 2" (P-TR) MJ2024548 ON SOUTH EDGE OF ASPHALT

2"(P) IHP

106

36

MATCHLINE – SEE SHEET 10

MATCHLINE – SEE SHEET 12

ISSUED FOR CONSTRUCTION

2" PLASTIC MAIN	
R.O.W./PERMIT	EUREKA
INSTALL METHOD	HORIZONTAL DIRECTIONAL DRILL
BACKFILL MATERIAL	GRANULAR
SURFACE RESTORATION	SIDEWALK
SPECIAL PROVISIONS	

REVISIONS				
NO	DESCRIPTION	DATE	BY	CHECK
A	FOR INITIAL REVIEW	2-15-21	CNO	MH
1	ISSUE FOR CONSTRUCTION	2-23-21	CNO	MH
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ENGINEERING RECORD		
PROJECT NUMBER: 78055.25.SPV	DATE CREATED: 2-15-21	ENGINEERING MNGR: K. FREDERICKS
DRAWN BY: C. OWEN	PROJECT ENGINEER: M. HANSEN	CONSTR MNGR: R. ANDERSON
CHECKED BY: M. HANSEN	SURVEYOR: G. NEWHART	APVD FOR CONSTR: 2-23-21
DWG. SCALE: (34x22) 1"=40' (17x11) 1"=80'		

Dominion Energy

DOMINION ENERGY UTAH

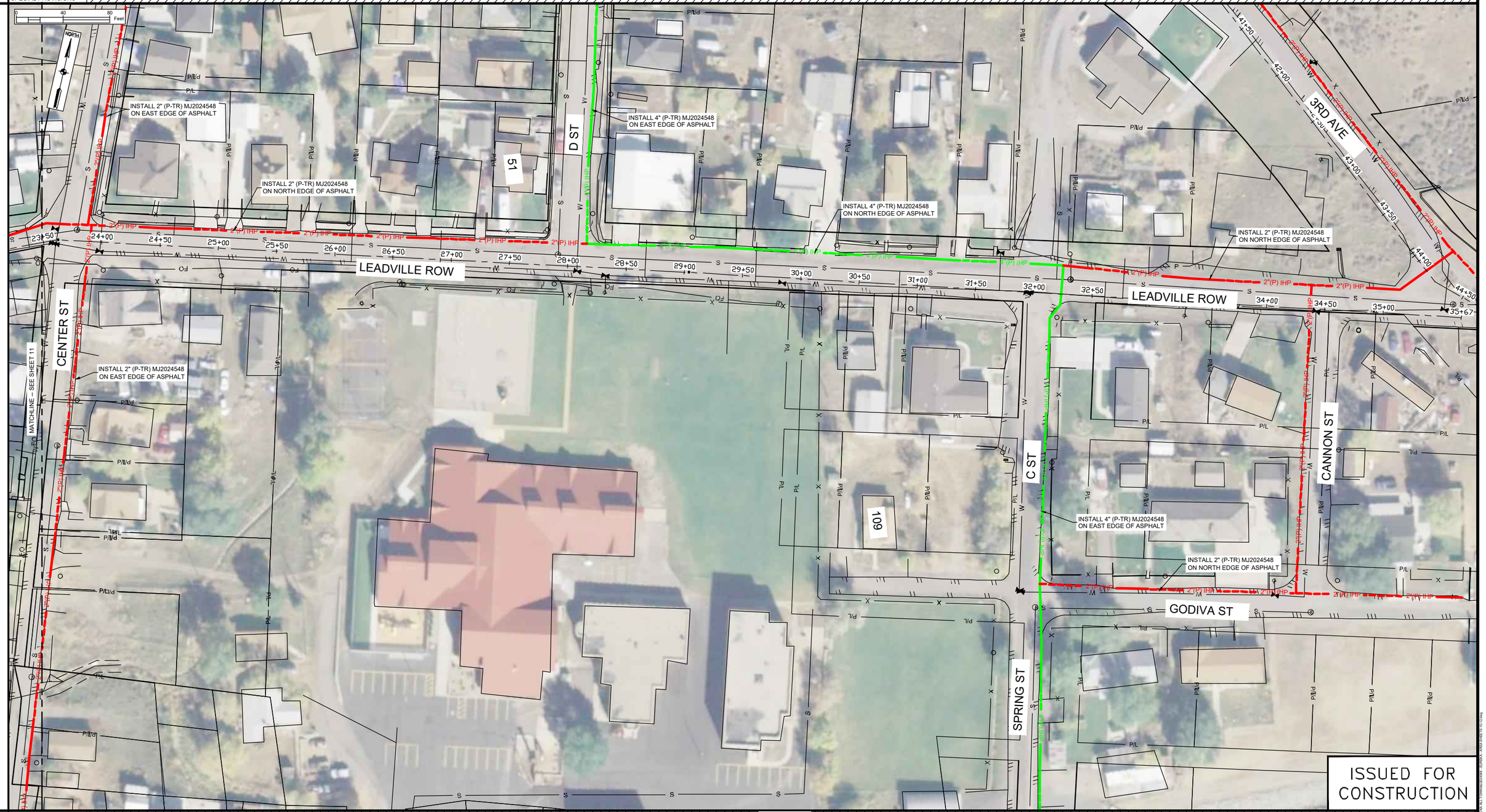
TITLE:	IHP REINFORCEMENT
DESCRIPTION:	AREA SHEET 11
ADDRESS:	LEADVILLE ROW, F STREET 11+50 - 23+50

CITY	COUNTY	STATE
EUREKA	JUAB	UT

DRAWING NUMBER	SHEET	REVISION
MJ2024548	11	1

4" PLASTIC MAIN	
R.O.W./PERMIT	EUREKA
INSTALL METHOD	HORIZONTAL DIRECTIONAL DRILL
BACKFILL MATERIAL	GRANULAR
SURFACE RESTORATION	ASPHALT
SPECIAL PROVISIONS	

PLAN



ISSUED FOR CONSTRUCTION

2" PLASTIC MAIN	
R.O.W./PERMIT	EUREKA
INSTALL METHOD	HORIZONTAL DIRECTIONAL DRILL
BACKFILL MATERIAL	GRANULAR
SURFACE RESTORATION	ASPHALT
SPECIAL PROVISIONS	

REVISIONS				
NO	DESCRIPTION	DATE	BY	CHECK
A	FOR INITIAL REVIEW	2-15-21	CNO	MH
1	ISSUE FOR CONSTRUCTION	2-23-21	CNO	MH
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ENGINEERING RECORD		
PROJECT NUMBER: 78055.25.SPV	DATE CREATED: 2-15-21	ENGINEERING MNGR: K. FREDERICKS
DRAWN BY: C. OWEN	PROJECT ENGINEER: M. HANSEN	CONSTR MNGR: R. ANDERSON
CHECKED BY: M. HANSEN	SURVEYOR: G. NEWHART	APVD FOR CONSTR: 2-23-21
DWG. SCALE: (34x22) 1"=40' (17x11) 1"=80'		

Dominion Energy
DOMINION ENERGY UTAH

TITLE:	IHP REINFORCEMENT
DESCRIPTION:	AREA SHEET 12
ADDRESS:	LEADVILLE ROW, C ST
	23+50 - 35+67

CITY	COUNTY	STATE
EUREKA	JUAB	UT

DRAWING NUMBER	SHEET	REVISION
MJ2024548	12	1

2" PLASTIC MAIN	
R.O.W./PERMIT	EUREKA
INSTALL METHOD	HORIZONTAL DIRECTIONAL DRILL
BACKFILL MATERIAL	GRANULAR
SURFACE RESTORATION	ASPHALT
SPECIAL PROVISIONS	

PLAN

0 40 80 Feet

NORTH

LAST CHANCE ST
INSTALL 4" (P-TR) MJ2024548 ON WEST EDGE OF ASPHALT
4"(P) IHP
CHURCH ST
2"(P) IHP
322
LEADVILLE ROW
2"(P) IHP
INSTALL 2" (P-TR) MJ2024548 ON NORTH EDGE OF ASPHALT
GEAR ST
EVANS ST
INSTALL 4" (P-TR) MJ2024548 UNDER SIDEWALK
MAIN ST
MATCHLINE - SEE SHEET 14
MCCRYSTAL AVE
INSTALL 4" (P-TR) MJ2024548 ON EAST EDGE OF ASPHALT
DUBLIN AVE
INSTALL 4" (P-TR) MJ2024548 ON SOUTH EDGE OF ASPHALT
INSTALL 2" (P-TR) MJ2024548 ON WEST EDGE OF ASPHALT
HATFIELD AVE
309
285
P/L
P/O/L

ISSUED FOR CONSTRUCTION

4" PLASTIC MAIN	
R.O.W./PERMIT	EUREKA / UDOT
INSTALL METHOD	HORIZONTAL DIRECTIONAL DRILL
BACKFILL MATERIAL	GRANULAR
SURFACE RESTORATION	ASPHALT
SPECIAL PROVISIONS	

REVISIONS

NO	DESCRIPTION	DATE	BY	CHECK
A	FOR INITIAL REVIEW	2-15-21	CNO	MH
1	ISSUE FOR CONSTRUCTION	2-23-21	CNO	MH
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ENGINEERING RECORD

PROJECT NUMBER: 78055.25.SPV	DATE CREATED: 2-15-21	ENGINEERING MNGR: K. FREDERICKS
DRAWN BY: C. OWEN	PROJECT ENGINEER: M. HANSEN	CONSTR MNGR: R. ANDERSON
CHECKED BY: M. HANSEN	SURVEYOR: G. NEWHART	APVD FOR CONSTR: 2-23-21
DWG. SCALE: (34x22) 1"=40' (17x11) 1"=80'		

Dominion Energy
DOMINION ENERGY UTAH

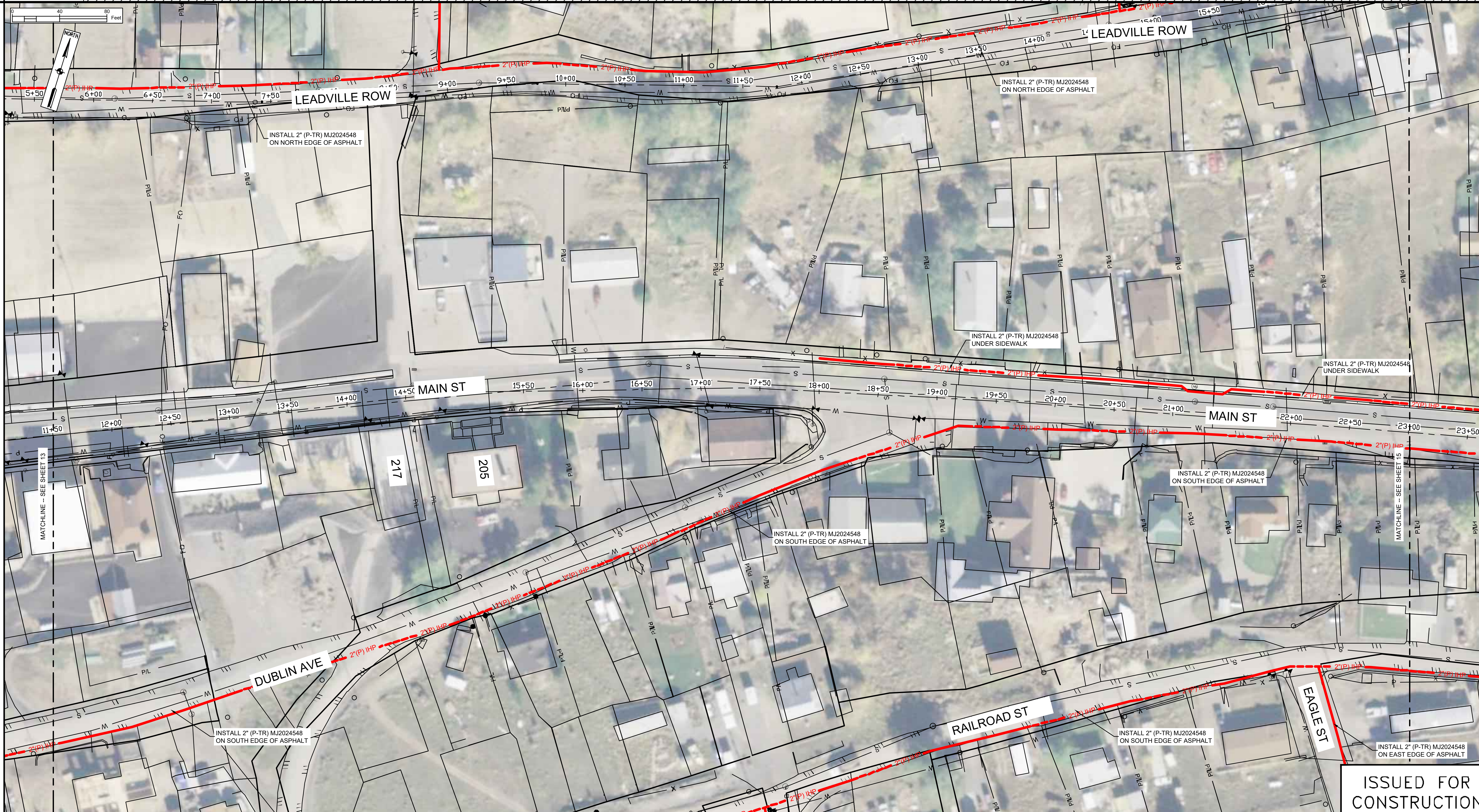
TITLE:	IHP REINFORCEMENT
DESCRIPTION:	AREA SHEET 13
ADDRESS:	MAIN ST, HATFIELD AVE
	0+00 - 11+50

CITY	COUNTY	STATE
EUREKA	JUAB	UT

DRAWING NUMBER	SHEET	REVISION
MJ2024548	13	1

2" PLASTIC MAIN	
R.O.W./PERMIT	EUREKA / UDOT
INSTALL METHOD	HORIZONTAL DIRECTIONAL DRILL
BACKFILL MATERIAL	GRANULAR
SURFACE RESTORATION	SIDEWALK
SPECIAL PROVISIONS	

PLAN



2" PLASTIC MAIN	
R.O.W./PERMIT	EUREKA
INSTALL METHOD	HORIZONTAL DIRECTIONAL DRILL
BACKFILL MATERIAL	GRANULAR
SURFACE RESTORATION	ASPHALT
SPECIAL PROVISIONS	

REVISIONS

NO	DESCRIPTION	DATE	BY	CHECK
A	FOR INITIAL REVIEW	2-15-21	CNO	MH
1	ISSUE FOR CONSTRUCTION	2-23-21	CNO	MH
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ENGINEERING RECORD

PROJECT NUMBER: 78055.25.SPV	DATE CREATED: 2-15-21	ENGINEERING MNGR: K. FREDERICKS
DRAWN BY: C. OWEN	PROJECT ENGINEER: M. HANSEN	CONSTR MNGR: R. ANDERSON
CHECKED BY: M. HANSEN	SURVEYOR: G. NEWHART	APVD FOR CONSTR: 2-23-21
DWG. SCALE: (34x22) 1"=40' (17x11) 1"=80'		

Dominion Energy
DOMINION ENERGY UTAH

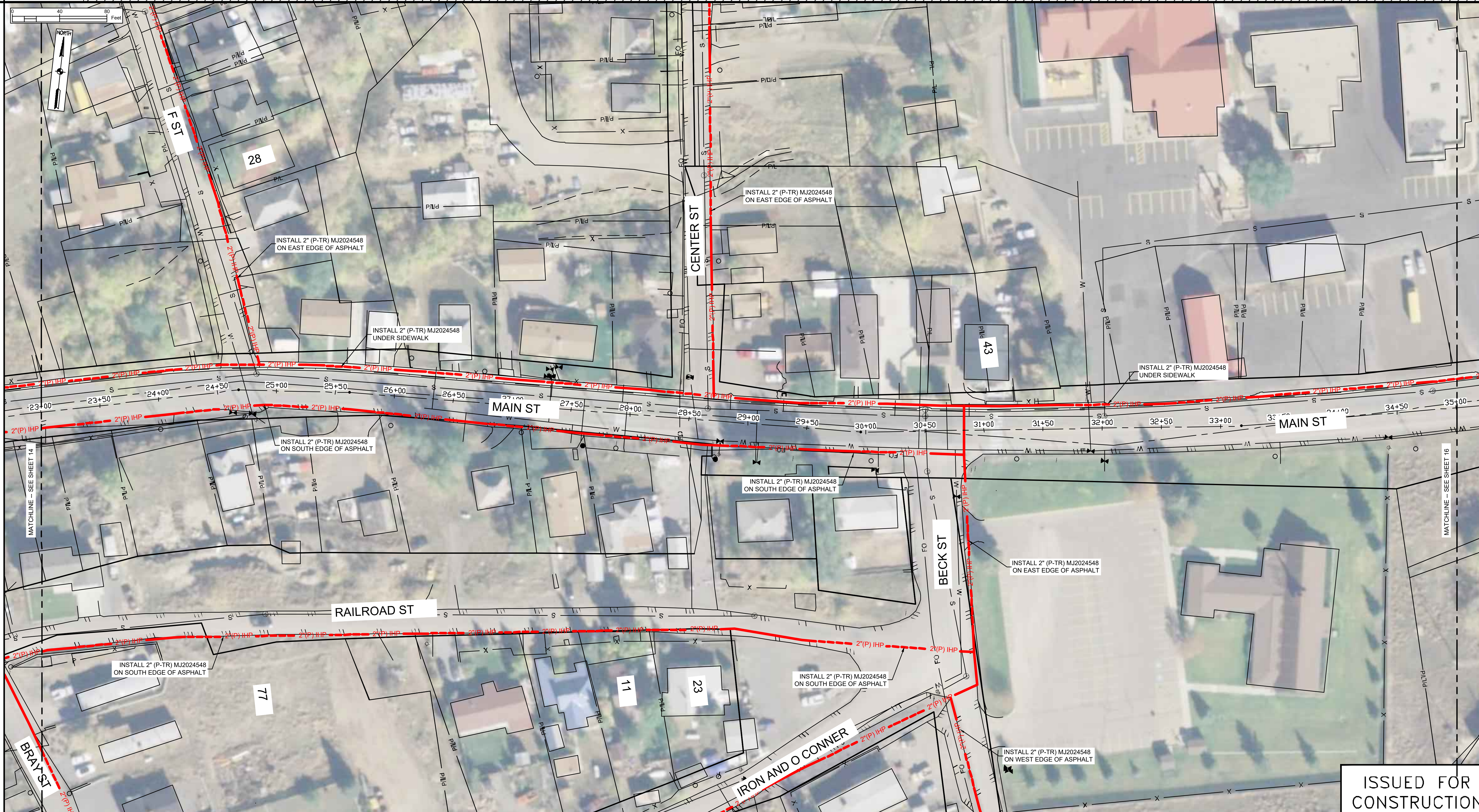
TITLE: IHP REINFORCEMENT
DESCRIPTION: AREA SHEET 14
ADDRESS: MAIN ST, DUBLIN AVE
11+50 - 23+00

CITY	COUNTY	STATE
EUREKA	JUAB	UT

DRAWING NUMBER	SHEET	REVISION
MJ2024548	14	1

2" PLASTIC MAIN	
R.O.W./PERMIT	EUREKA / UDOT
INSTALL METHOD	HORIZONTAL DIRECTIONAL DRILL
BACKFILL MATERIAL	GRANULAR
SURFACE RESTORATION	SIDEWALK
SPECIAL PROVISIONS	

PLAN



2" PLASTIC MAIN	
R.O.W./PERMIT	EUREKA
INSTALL METHOD	HORIZONTAL DIRECTIONAL DRILL
BACKFILL MATERIAL	GRANULAR
SURFACE RESTORATION	ASPHALT
SPECIAL PROVISIONS	

REVISIONS

NO	DESCRIPTION	DATE	BY	CHECK
A	FOR INITIAL REVIEW	2-15-21	CNO	MH
1	ISSUE FOR CONSTRUCTION	2-23-21	CNO	MH
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ENGINEERING RECORD

PROJECT NUMBER: 78055.25.SPV	DATE CREATED: 2-15-21	ENGINEERING MNGR: K. FREDERICKS
DRAWN BY: C. OWEN	PROJECT ENGINEER: M. HANSEN	CONSTR MNGR: R. ANDERSON
CHECKED BY: M. HANSEN	SURVEYOR: G. NEWHART	APVD FOR CONSTR: 2-23-21
DWG. SCALE: (34x22) 1"=40' (17x11) 1"=80'		

Dominion Energy
DOMINION ENERGY UTAH

TITLE:	IHP REINFORCEMENT
DESCRIPTION:	AREA SHEET 15
ADDRESS:	MAIN ST, BECK ST
	23+00 - 35+00

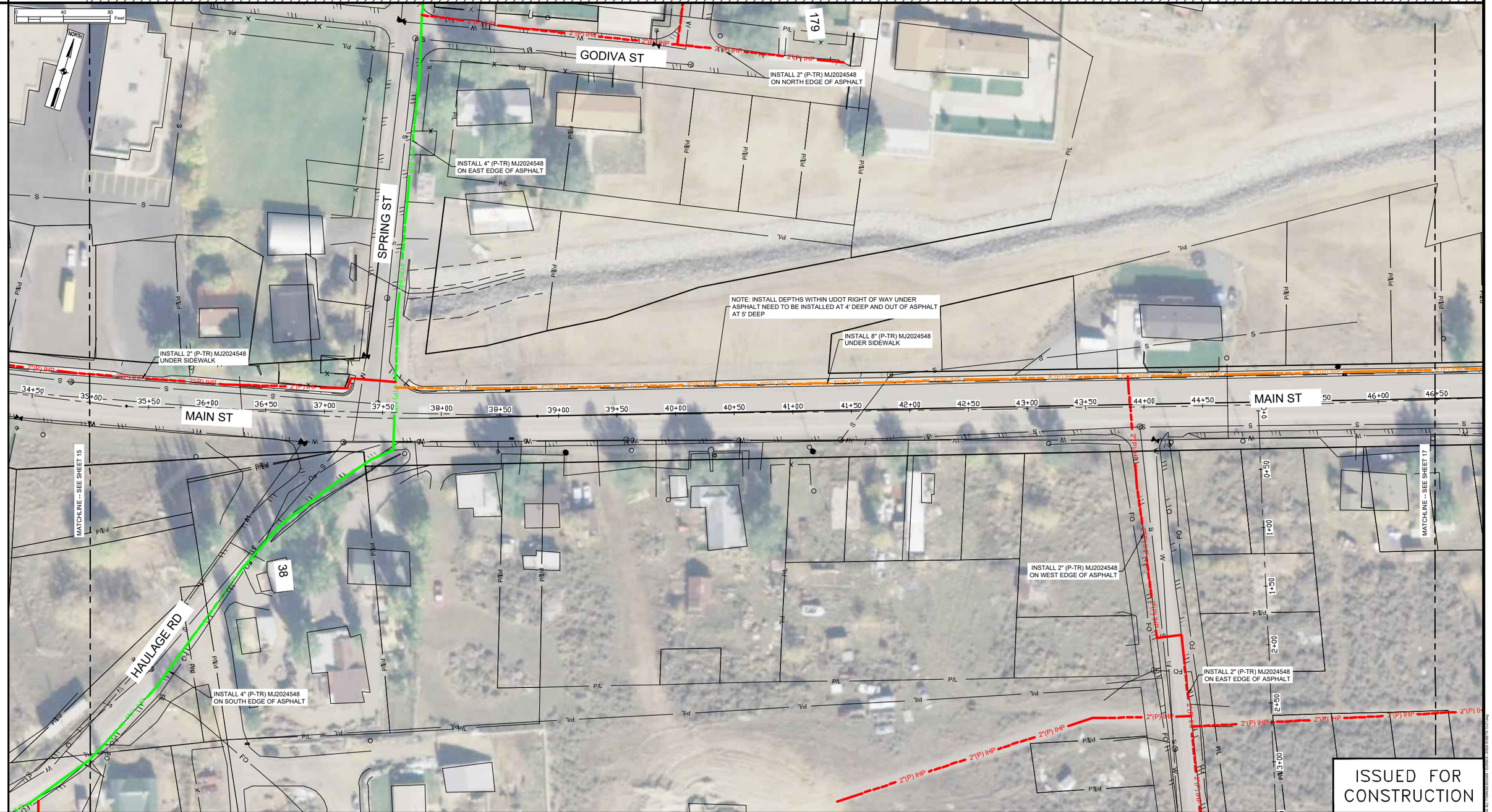
CITY	COUNTY	STATE
EUREKA	JUAB	UT

DRAWING NUMBER	SHEET	REVISION
MJ2024548	15	1

R.O.W./PERMIT	EUREKA / UDOT
INSTALL METHOD	HORIZONTAL DIRECTIONAL DRILL
BACKFILL MATERIAL	GRANULAR
SURFACE RESTORATION	SIDEWALK
SPECIAL PROVISIONS	

8" PLASTIC MAIN

PLAN



R.O.W./PERMIT	EUREKA
INSTALL METHOD	HORIZONTAL DIRECTIONAL DRILL
BACKFILL MATERIAL	GRANULAR
SURFACE RESTORATION	ASPHALT
SPECIAL PROVISIONS	

2" PLASTIC MAIN

REVISIONS				
NO	DESCRIPTION	DATE	BY	CHECK
A	FOR INITIAL REVIEW	2-15-21	CNO	MH
1	ISSUE FOR CONSTRUCTION	2-23-21	CNO	MH
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ENGINEERING RECORD		
PROJECT NUMBER: 78055.25.SPV	DATE CREATED: 2-15-21	ENGINEERING MNGR: K. FREDERICKS
DRAWN BY: C. OWEN	PROJECT ENGINEER: M. HANSEN	CONSTR MNGR: R. ANDERSON
CHECKED BY: M. HANSEN	SURVEYOR: G. NEWHART	APVD FOR CONSTR: 2-23-21
DWG. SCALE: (34x22) 1"=40' (17x11) 1"=80'		

Dominion Energy
DOMINION ENERGY UTAH

TITLE:	IHP REINFORCEMENT
DESCRIPTION:	AREA SHEET 16
ADDRESS:	MAIN ST, SPRING ST
	35+00 - 46+50

CITY	COUNTY	STATE
EUREKA	JUAB	UT

DRAWING NUMBER	SHEET	REVISION
MJ2024548	16	1

8" PLASTIC MAIN	
R.O.W./PERMIT	EUREKA / UDOT
INSTALL METHOD	HORIZONTAL DIRECTIONAL DRILL
BACKFILL MATERIAL	GRANULAR
SURFACE RESTORATION	SIDEWALK
SPECIAL PROVISIONS	

PLAN

0 40 80 Feet

NORTH

MAIN ST

BULK PLANT RD

KNIGHTVILLE RD

211

386

390

NOTE: INSTALL DEPTHS WITHIN UDOT RIGHT OF WAY UNDER ASPHALT NEED TO BE INSTALLED AT 4' DEEP AND OUT OF ASPHALT AT 5' DEEP

INSTALL 6" (P-TR) MJ2024548 UNDER SIDEWALK

INSTALL 2" (P-TR) MJ2024548 IN DIRT ROAD

2"(P) IHP

MATCHLINE – SEE SHEET 16

MATCHLINE – SEE SHEET 18

ISSUED FOR CONSTRUCTION

2" PLASTIC MAIN	
R.O.W./PERMIT	EUREKA
INSTALL METHOD	HORIZONTAL DIRECTIONAL DRILL
BACKFILL MATERIAL	GRANULAR
SURFACE RESTORATION	DIRT ROAD
SPECIAL PROVISIONS	

REVISIONS				
NO	DESCRIPTION	DATE	BY	CHECK
A	FOR INITIAL REVIEW	2-15-21	CNO	MH
1	ISSUE FOR CONSTRUCTION	2-23-21	CNO	MH
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ENGINEERING RECORD		
PROJECT NUMBER: 78055.25.SPV	DATE CREATED: 2-15-21	ENGINEERING MNGR: K. FREDERICKS
DRAWN BY: C. OWEN	PROJECT ENGINEER: M. HANSEN	CONSTR MNGR: R. ANDERSON
CHECKED BY: M. HANSEN	SURVEYOR: G. NEWHART	APVD FOR CONSTR: 2-23-21
DWG. SCALE: (34x22) 1"=40' (17x11) 1"=80'		

Dominion Energy

DOMINION ENERGY UTAH

TITLE:	IHP REINFORCEMENT
DESCRIPTION:	AREA SHEET 17
ADDRESS:	MAIN ST, BULK PLANT RD
	46+50 - 58+00

CITY	COUNTY	STATE
EUREKA	JUAB	UT

DRAWING NUMBER	SHEET	REVISION
MJ2024548	17	1

R.O.W./PERMIT	EUREKA / UDOT
INSTALL METHOD	HORIZONTAL DIRECTIONAL DRILL
BACKFILL MATERIAL	GRANULAR
SURFACE RESTORATION	SIDEWALK
SPECIAL PROVISIONS	

8" PLASTIC MAIN

PLAN

ISSUED FOR CONSTRUCTION

REVISIONS				
NO	DESCRIPTION	DATE	BY	CHECK
A	FOR INITIAL REVIEW	2-15-21	CNO	MH
1	ISSUE FOR CONSTRUCTION	2-23-21	CNO	MH
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ENGINEERING RECORD		
PROJECT NUMBER: 78055.25.SPV	DATE CREATED: 2-15-21	ENGINEERING MNGR: K. FREDERICKS
DRAWN BY: C. OWEN	PROJECT ENGINEER: M. HANSEN	CONSTR MNGR: R. ANDERSON
CHECKED BY: M. HANSEN	SURVEYOR: G. NEWHART	APVD FOR CONSTR: 2-23-21
DWG. SCALE: (34x22) 1"=40' (17x11) 1"=80'		

Dominion Energy

DOMINION ENERGY UTAH

TITLE:	IHP REINFORCEMENT
DESCRIPTION:	AREA SHEET 18
ADDRESS:	HWY 6 (MAIN ST)
	58+00 - 69+50

CITY	COUNTY	STATE
EUREKA	JUAB	UT

DRAWING NUMBER	SHEET	REVISION
MJ2024548	18	1

8" PLASTIC MAIN

R.O.W./PERMIT	EUREKA / UDOT
INSTALL METHOD	HORIZONTAL DIRECTIONAL DRILL
BACKFILL MATERIAL	GRANULAR
SURFACE RESTORATION	ASPHALT
SPECIAL PROVISIONS	

PLAN

ISSUED FOR CONSTRUCTION

REVISIONS				
NO	DESCRIPTION	DATE	BY	CHECK
A	FOR INITIAL REVIEW	2-15-21	CNO	MH
1	ISSUE FOR CONSTRUCTION	2-23-21	CNO	MH
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ENGINEERING RECORD		
PROJECT NUMBER: 78055.25.SPV	DATE CREATED: 2-15-21	ENGINEERING MNGR: K. FREDERICKS
DRAWN BY: C. OWEN	PROJECT ENGINEER: M. HANSEN	CONSTR MNGR: R. ANDERSON
CHECKED BY: M. HANSEN	SURVEYOR: G. NEWHART	APVD FOR CONSTR: 2-23-21
DWG. SCALE: (34x22) 1"=40' (17x11) 1"=80'		

Dominion Energy
DOMINION ENERGY UTAH

TITLE:	IHP REINFORCEMENT
DESCRIPTION:	AREA SHEET 19
ADDRESS:	HWY 6 (MAIN ST)
	69+50 - 81+00

CITY	COUNTY	STATE	
EUREKA	UTAH	UT	
DRAWING NUMBER		SHEET	REVISION
MJ2024548		19	1

8" PLASTIC MAIN	
R.O.W./PERMIT	EUREKA / UDOT
INSTALL METHOD	HORIZONTAL DIRECTIONAL DRILL
BACKFILL MATERIAL	GRANULAR
SURFACE RESTORATION	ASPHALT
SPECIAL PROVISIONS	

PLAN

0 40 80 Feet

NORTH

NOTE: INSTALL DEPTHS WITHIN UDOT RIGHT OF WAY UNDER ASPHALT NEED TO BE INSTALLED AT 4' DEEP AND OUT OF ASPHALT AT 5' DEEP

INSTALL 8" (P-TR) MJ2024548 ON NORTH EDGE OF ASPHALT

8"(P) IHP

81+00 81+50 82+00 82+50 83+00 83+50 84+00 84+50 85+00 85+50 86+00 86+50 87+00 87+50 88+00 88+50 89+00 89+50 90+00 90+50 91+00 91+50 92+00 92+50 93+00

MAIN ST (HWY 6)

MAIN ST (HWY 6)

MATCHLINE – SEE SHEET 19

MATCHLINE – SEE SHEET 21

ISSUED FOR CONSTRUCTION

REVISIONS				
NO	DESCRIPTION	DATE	BY	CHECK
A	FOR INITIAL REVIEW	2-15-21	CNO	MH
1	ISSUE FOR CONSTRUCTION	2-23-21	CNO	MH
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ENGINEERING RECORD		
PROJECT NUMBER: 78055.25.SPV	DATE CREATED: 2-15-21	ENGINEERING MNGR: K. FREDERICKS
DRAWN BY: C. OWEN	PROJECT ENGINEER: M. HANSEN	CONSTR MNGR: R. ANDERSON
CHECKED BY: M. HANSEN	SURVEYOR: G. NEWHART	APVD FOR CONSTR: 2-23-21
DWG. SCALE: (34x22) 1"=40' (17x11) 1"=80'		

Dominion Energy

DOMINION ENERGY UTAH

TITLE:	IHP REINFORCEMENT
DESCRIPTION:	AREA SHEET 20
ADDRESS:	HWY 6 (MAIN ST) 81+00 - 92+50

CITY	COUNTY	STATE
EUREKA	UTAH	UT

DRAWING NUMBER	SHEET	REVISION
MJ2024548	20	1

8" PLASTIC MAIN	
R.O.W./PERMIT	EUREKA / UDOT
INSTALL METHOD	HORIZONTAL DIRECTIONAL DRILL
BACKFILL MATERIAL	GRANULAR
SURFACE RESTORATION	ASPHALT
SPECIAL PROVISIONS	

PLAN

ISSUED FOR CONSTRUCTION

REVISIONS					ENGINEERING RECORD		
NO	DESCRIPTION	DATE	BY	CHECK	PROJECT NUMBER: 78055.25.SPV	DATE CREATED: 2-15-21	ENGINEERING MNGR: K. FREDERICKS
A	FOR INITIAL REVIEW	2-15-21	CNO	MH	DRAWN BY: C. OWEN	PROJECT ENGINEER: M. HANSEN	CONSTR MNGR: R. ANDERSON
1	ISSUE FOR CONSTRUCTION	2-23-21	CNO	MH	CHECKED BY: M. HANSEN	SURVEYOR: G. NEWHART	APVD FOR CONSTR: 2-23-21
----	----	----	----	----	DWG. SCALE: (34x22) 1"=40' (17x11) 1"=80'		

DOMINION ENERGY UTAH

TITLE:	IHP REINFORCEMENT	CITY	COUNTY	STATE
DESCRIPTION:	AREA SHEET 21	EUREKA	UTAH	UT
ADDRESS:	HWY 6 (MAIN ST) 92+50 - 103+00	DRAWING NUMBER MJ2024548	SHEET 21	REVISION 1

8" PLASTIC MAIN	
R.O.W./PERMIT	EUREKA / UDOT
INSTALL METHOD	HORIZONTAL DIRECTIONAL DRILL
BACKFILL MATERIAL	GRANULAR
SURFACE RESTORATION	ASPHALT
SPECIAL PROVISIONS	

PLAN

ISSUED FOR CONSTRUCTION

REVISIONS				
NO	DESCRIPTION	DATE	BY	CHECK
A	FOR INITIAL REVIEW	2-15-21	CNO	MH
1	ISSUE FOR CONSTRUCTION	2-23-21	CNO	MH
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ENGINEERING RECORD		
PROJECT NUMBER: 78055.25.SPV	DATE CREATED: 2-15-21	ENGINEERING MNGR: K. FREDERICKS
DRAWN BY: C. OWEN	PROJECT ENGINEER: M. HANSEN	CONSTR MNGR: R. ANDERSON
CHECKED BY: M. HANSEN	SURVEYOR: G. NEWHART	APVD FOR CONSTR: 2-23-21
DWG. SCALE: (34x22) 1"=40' (17x11) 1"=80'		

Dominion Energy
DOMINION ENERGY UTAH

TITLE:	IHP REINFORCEMENT
DESCRIPTION:	AREA SHEET 22
ADDRESS:	EUREKA CITY
	103+00 - 114+00

CITY	COUNTY	STATE
EUREKA	JUAB	UT

DRAWING NUMBER	SHEET	REVISION
MJ2024548	22	1

8" PLASTIC MAIN	
R.O.W./PERMIT	EUREKA / UDOT
INSTALL METHOD	HORIZONTAL DIRECTIONAL DRILL
BACKFILL MATERIAL	GRANULAR
SURFACE RESTORATION	ASPHALT
SPECIAL PROVISIONS	

PLAN

ISSUED FOR CONSTRUCTION

REVISIONS				
NO	DESCRIPTION	DATE	BY	CHECK
A	FOR INITIAL REVIEW	2-15-21	CNO	MH
1	ISSUE FOR CONSTRUCTION	2-23-21	CNO	MH
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ENGINEERING RECORD		
PROJECT NUMBER: 78055.25.SPV	DATE CREATED: 2-15-21	ENGINEERING MNGR: K. FREDERICKS
DRAWN BY: C. OWEN	PROJECT ENGINEER: M. HANSEN	CONSTR MNGR: R. ANDERSON
CHECKED BY: M. HANSEN	SURVEYOR: G. NEWHART	APVD FOR CONSTR: 2-23-21
DWG. SCALE: (34x22) 1"=40' (17x11) 1"=80'		

Dominion Energy
DOMINION ENERGY UTAH

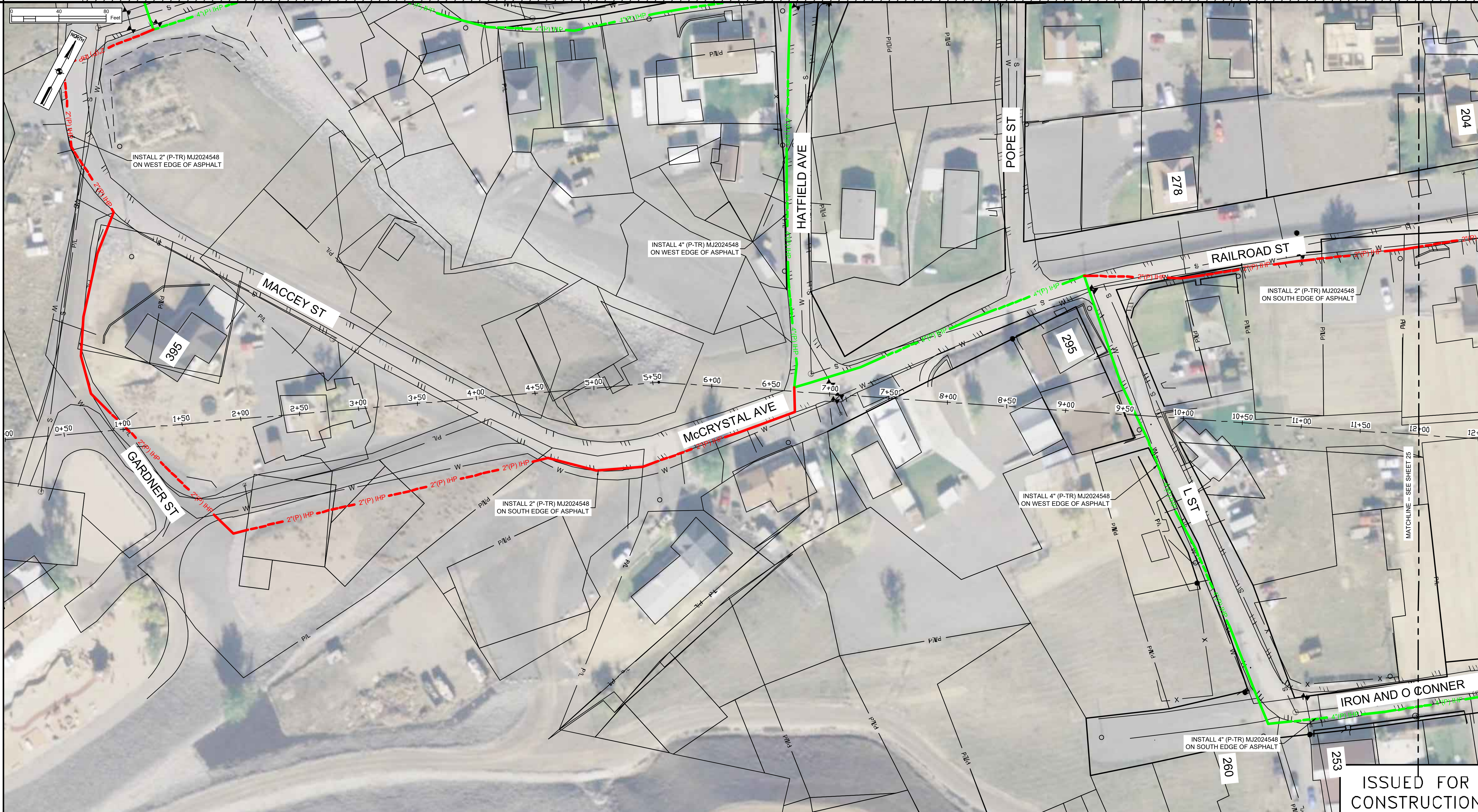
TITLE:	IHP REINFORCEMENT
DESCRIPTION:	AREA SHEET 23
ADDRESS:	EUREKA CITY
	114+00 - 118+84

CITY	COUNTY	STATE	
EUREKA	JUAB	UT	
DRAWING NUMBER		SHEET	REVISION
MJ2024548		23	1

4" PLASTIC MAIN

R.O.W./PERMIT	EUREKA
INSTALL METHOD	HORIZONTAL DIRECTIONAL DRILL
BACKFILL MATERIAL	GRANULAR
SURFACE RESTORATION	ASPHALT
SPECIAL PROVISIONS	

PLAN



2" PLASTIC MAIN

R.O.W./PERMIT	EUREKA
INSTALL METHOD	HORIZONTAL DIRECTIONAL DRILL
BACKFILL MATERIAL	GRANULAR
SURFACE RESTORATION	ASPHALT
SPECIAL PROVISIONS	

REVISIONS

NO	DESCRIPTION	DATE	BY	CHECK
A	FOR INITIAL REVIEW	2-15-21	CNO	MH
1	ISSUE FOR CONSTRUCTION	2-23-21	CNO	MH
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ENGINEERING RECORD

PROJECT NUMBER: 78055.25.SPV	DATE CREATED: 2-15-21	ENGINEERING MNGR: K. FREDERICKS
DRAWN BY: C. OWEN	PROJECT ENGINEER: M. HANSEN	CONSTR MNGR: R. ANDERSON
CHECKED BY: M. HANSEN	SURVEYOR: G. NEWHART	APVD FOR CONSTR: 2-23-21
DWG. SCALE: (34x22) 1"=40' (17x11) 1"=80'		

Dominion Energy

DOMINION ENERGY UTAH

TITLE:	IHP REINFORCEMENT
DESCRIPTION:	AREA SHEET 24
ADDRESS:	MCCRYSTAL AVE, HATFIELD AVE
	0+00 - 12+00

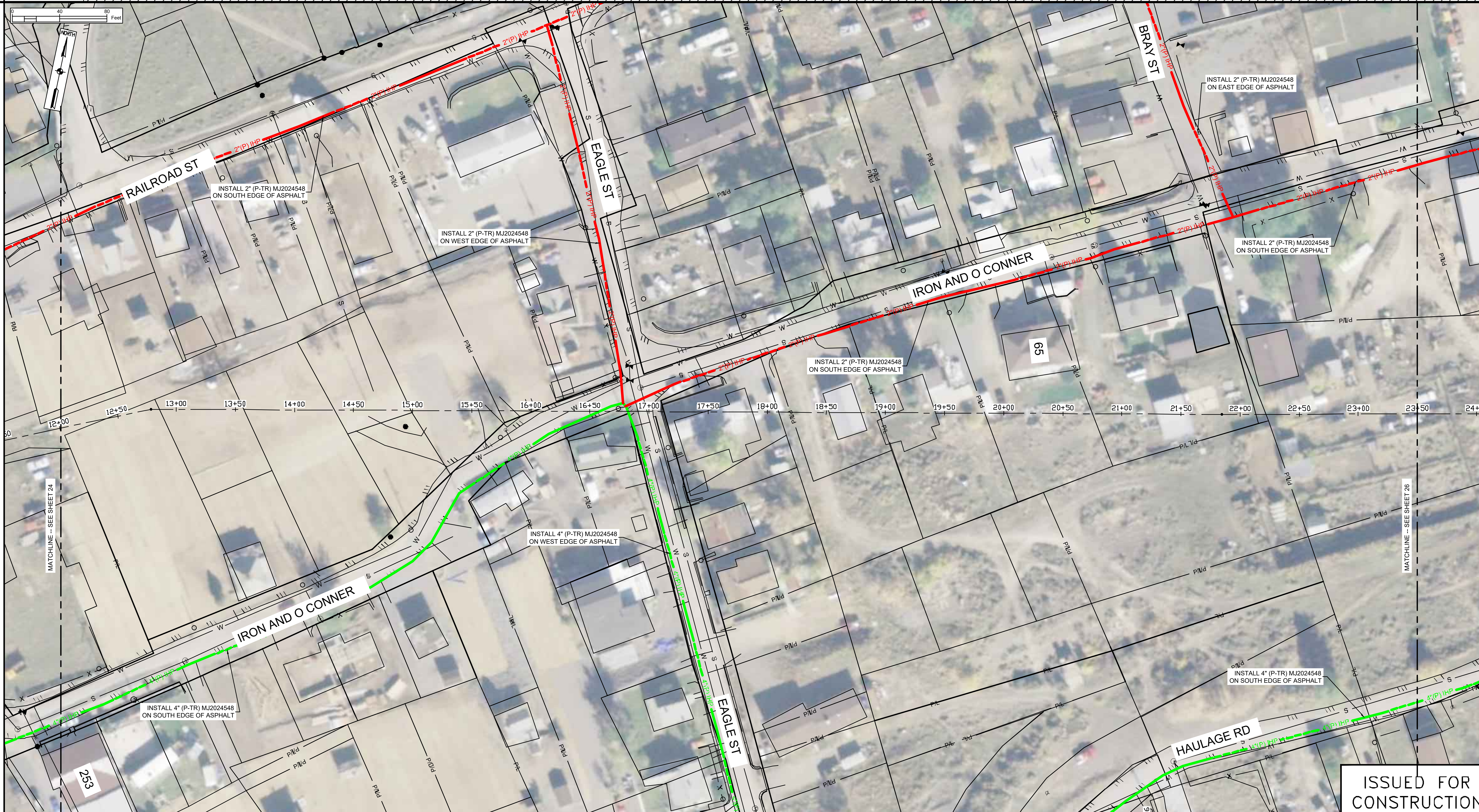
CITY	COUNTY	STATE
EUREKA	JUAB	UT

DRAWING NUMBER	SHEET	REVISION
MJ2024548	24	1

2" PLASTIC MAIN

R.O.W./PERMIT	EUREKA
INSTALL METHOD	HORIZONTAL DIRECTIONAL DRILL
BACKFILL MATERIAL	GRANULAR
SURFACE RESTORATION	ASPHALT
SPECIAL PROVISIONS	

PLAN



4" PLASTIC MAIN

R.O.W./PERMIT	EUREKA
INSTALL METHOD	HORIZONTAL DIRECTIONAL DRILL
BACKFILL MATERIAL	GRANULAR
SURFACE RESTORATION	ASPHALT
SPECIAL PROVISIONS	

REVISIONS

NO	DESCRIPTION	DATE	BY	CHECK
A	FOR INITIAL REVIEW	2-15-21	CNO	MH
1	ISSUE FOR CONSTRUCTION	2-23-21	CNO	MH
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ENGINEERING RECORD

PROJECT NUMBER: 78055.25.SPV	DATE CREATED: 2-15-21	ENGINEERING MNGR: K. FREDERICKS
DRAWN BY: C. OWEN	PROJECT ENGINEER: M. HANSEN	CONSTR MNGR: R. ANDERSON
CHECKED BY: M. HANSEN	SURVEYOR: G. NEWHART	APVD FOR CONSTR: 2-23-21
DWG. SCALE: (34x22) 1"=40' (17x11) 1"=80'		

Dominion Energy
DOMINION ENERGY UTAH

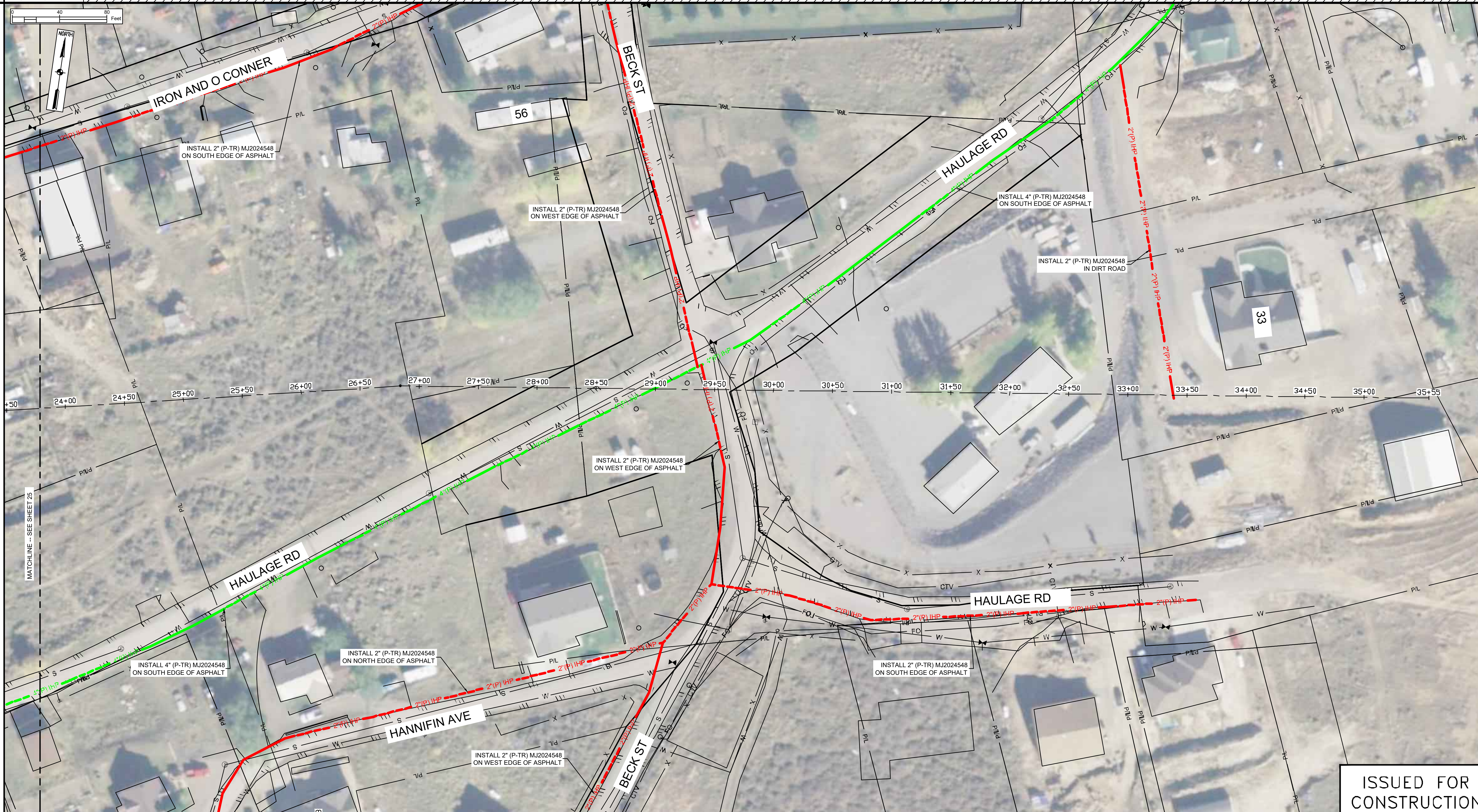
TITLE:	IHP REINFORCEMENT
DESCRIPTION:	AREA SHEET 25
ADDRESS:	IRON AND O'CONNER, EAGLE ST
	12+00 - 23+50

CITY	COUNTY	STATE
EUREKA	JUAB	UT

DRAWING NUMBER	SHEET	REVISION
MJ2024548	25	1

2" PLASTIC MAIN	
R.O.W./PERMIT	EUREKA
INSTALL METHOD	HORIZONTAL DIRECTIONAL DRILL
BACKFILL MATERIAL	GRANULAR
SURFACE RESTORATION	ASPHALT
SPECIAL PROVISIONS	

PLAN



4" PLASTIC MAIN	
R.O.W./PERMIT	EUREKA
INSTALL METHOD	HORIZONTAL DIRECTIONAL DRILL
BACKFILL MATERIAL	GRANULAR
SURFACE RESTORATION	ASPHALT
SPECIAL PROVISIONS	

REVISIONS

NO	DESCRIPTION	DATE	BY	CHECK
A	FOR INITIAL REVIEW	2-15-21	CNO	MH
1	ISSUE FOR CONSTRUCTION	2-23-21	CNO	MH
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ENGINEERING RECORD

PROJECT NUMBER: 78055.25.SPV	DATE CREATED: 2-15-21	ENGINEERING MNGR: K. FREDERICKS
DRAWN BY: C. OWEN	PROJECT ENGINEER: M. HANSEN	CONSTR MNGR: R. ANDERSON
CHECKED BY: M. HANSEN	SURVEYOR: G. NEWHART	APVD FOR CONSTR: 2-23-21
DWG. SCALE: (34x22) 1"=40' (17x11) 1"=80'		

Dominion Energy
DOMINION ENERGY UTAH

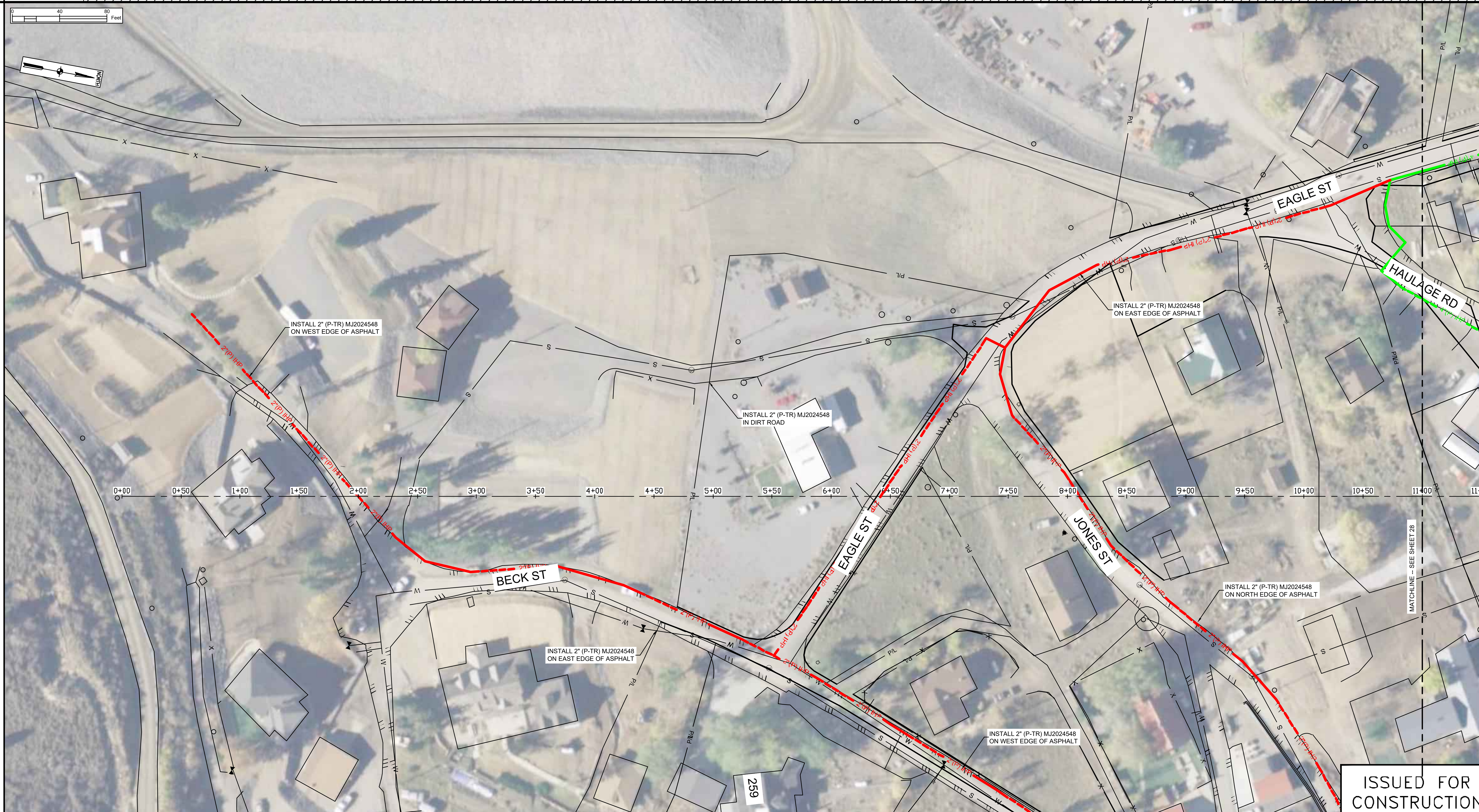
TITLE:	IHP REINFORCEMENT
DESCRIPTION:	AREA SHEET 26
ADDRESS:	HAULAGE RD, BECK ST
	23+50 - 35+55

CITY	COUNTY	STATE
EUREKA	JUAB	UT

DRAWING NUMBER	SHEET	REVISION
MJ2024548	26	1

2" PLASTIC MAIN		
	R.O.W./PERMIT	EUREKA
	INSTALL METHOD	HORIZONTAL DIRECTIONAL DRILL
	BACKFILL MATERIAL	GRANULAR
	SURFACE RESTORATION	ASPHALT
	SPECIAL PROVISIONS	

PLAN



ISSUED FOR CONSTRUCTION

2" PLASTIC MAIN		
	R.O.W./PERMIT	EUREKA
	INSTALL METHOD	HORIZONTAL DIRECTIONAL DRILL
	BACKFILL MATERIAL	GRANULAR
	SURFACE RESTORATION	ASPHALT
	SPECIAL PROVISIONS	

REVISIONS

NO	DESCRIPTION	DATE	BY	CHECK
A	FOR INITIAL REVIEW	2-15-21	CNO	MH
1	ISSUE FOR CONSTRUCTION	2-23-21	CNO	MH
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ENGINEERING RECORD

PROJECT NUMBER: 78055.25.SPV	DATE CREATED: 2-15-21	ENGINEERING MNGR: K. FREDERICKS
DRAWN BY: C. OWEN	PROJECT ENGINEER: M. HANSEN	CONSTR MNGR: R. ANDERSON
CHECKED BY: M. HANSEN	SURVEYOR: G. NEWHART	APVD FOR CONSTR: 2-23-21
DWG. SCALE: (34x22) 1"=40' (17x11) 1"=80'		

Dominion Energy

DOMINION ENERGY UTAH

TITLE:	IHP REINFORCEMENT
DESCRIPTION:	AREA SHEET 27
ADDRESS:	EAGLE ST, BECK ST
	0+00 - 11+00

CITY	COUNTY	STATE	
EUREKA	JUAB	UT	
DRAWING NUMBER		SHEET	REVISION
MJ2024548		27	1

2" PLASTIC MAIN	
R.O.W./PERMIT	EUREKA
INSTALL METHOD	HORIZONTAL DIRECTIONAL DRILL
BACKFILL MATERIAL	GRANULAR
SURFACE RESTORATION	ASPHALT
SPECIAL PROVISIONS	

PLAN

ISSUED FOR CONSTRUCTION

4" PLASTIC MAIN	
R.O.W./PERMIT	EUREKA
INSTALL METHOD	HORIZONTAL DIRECTIONAL DRILL
BACKFILL MATERIAL	GRANULAR
SURFACE RESTORATION	ASPHALT
SPECIAL PROVISIONS	

REVISIONS

NO	DESCRIPTION	DATE	BY	CHECK
A	FOR INITIAL REVIEW	2-15-21	CNO	MH
1	ISSUE FOR CONSTRUCTION	2-23-21	CNO	MH
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ENGINEERING RECORD

PROJECT NUMBER: 78055.25.SPV	DATE CREATED: 2-15-21	ENGINEERING MNGR: K. FREDERICKS
DRAWN BY: C. OWEN	PROJECT ENGINEER: M. HANSEN	CONSTR MNGR: R. ANDERSON
CHECKED BY: M. HANSEN	SURVEYOR: G. NEWHART	APVD FOR CONSTR: 2-23-21
DWG. SCALE: (34x22) 1"=40' (17x11) 1"=80'		

Dominion Energy
DOMINION ENERGY UTAH

TITLE: IHP REINFORCEMENT
DESCRIPTION: AREA SHEET 28
ADDRESS: EAGLE ST, HAULAGE RD
11+00 - 12+96

CITY	COUNTY	STATE
EUREKA	JUAB	UT

DRAWING NUMBER	SHEET	REVISION
MJ2024548	28	1

2" PLASTIC MAIN	
R.O.W./PERMIT	EUREKA
INSTALL METHOD	HORIZONTAL DIRECTIONAL DRILL
BACKFILL MATERIAL	GRANULAR
SURFACE RESTORATION	ASPHALT
SPECIAL PROVISIONS	

PLAN

0 40 80 Feet

NORTH

BECK ST

JONES ST

CAMPBELL ST

CARLSON ST

HAULAGE RD

HANNIFIN AVE

259

INSTALL 2" (P-TR) MJ2024548 ON WEST EDGE OF ASPHALT

INSTALL 2" (P-TR) MJ2024548 ON NORTH EDGE OF ASPHALT

INSTALL 2" (P-TR) MJ2024548 ON WEST EDGE OF ASPHALT

INSTALL 2" (P-TR) MJ2024548 ON SOUTH EDGE OF ASPHALT

INSTALL 2" (P-TR) MJ2024548 ON WEST EDGE OF ASPHALT

INSTALL 2" (P-TR) MJ2024548 ON NORTH EDGE OF ASPHALT

0+00 0+50 1+00 1+50 2+00 2+50 3+00 3+68

23+00 23+50 24+00 24+50 25+00 25+50 26+00 26+50 27+00 27+50 28+00 28+50 29+00

ISSUED FOR CONSTRUCTION

4" PLASTIC MAIN	
R.O.W./PERMIT	EUREKA
INSTALL METHOD	HORIZONTAL DIRECTIONAL DRILL
BACKFILL MATERIAL	GRANULAR
SURFACE RESTORATION	ASPHALT
SPECIAL PROVISIONS	

REVISIONS

NO	DESCRIPTION	DATE	BY	CHECK
A	FOR INITIAL REVIEW	2-15-21	CNO	MH
1	ISSUE FOR CONSTRUCTION	2-23-21	CNO	MH
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ENGINEERING RECORD

PROJECT NUMBER: 78055.25.SPV	DATE CREATED: 2-15-21	ENGINEERING MNGR: K. FREDERICKS
DRAWN BY: C. OWEN	PROJECT ENGINEER: M. HANSEN	CONSTR MNGR: R. ANDERSON
CHECKED BY: M. HANSEN	SURVEYOR: G. NEWHART	APVD FOR CONSTR: 2-23-21
DWG. SCALE: (34x22) 1"=40' (17x11) 1"=80'		

Dominion Energy

DOMINION ENERGY UTAH

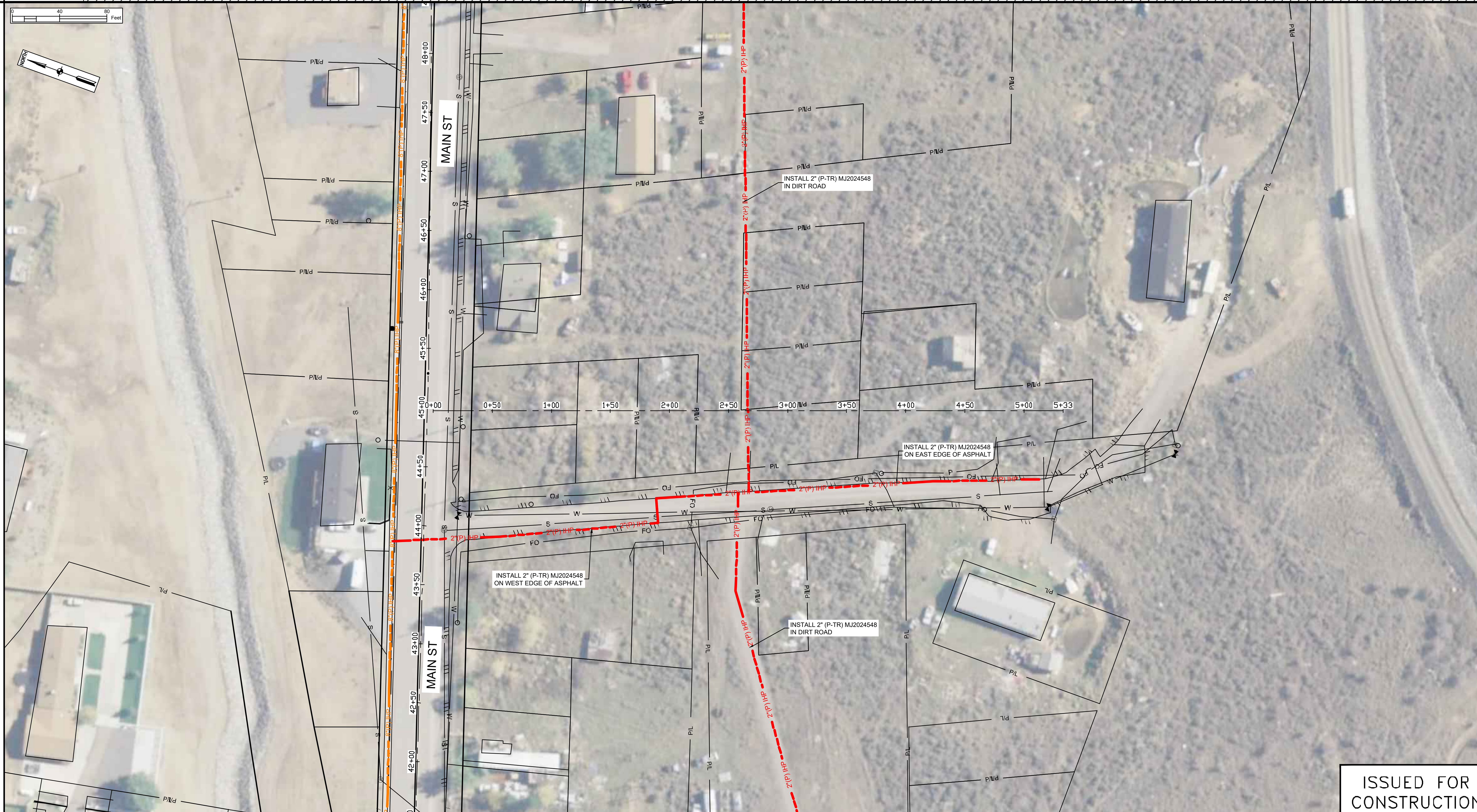
TITLE:	IHP REINFORCEMENT
DESCRIPTION:	AREA SHEET 29
ADDRESS:	BECK ST, HAULAGE RD
	0+00 - 3+68

CITY	COUNTY	STATE
EUREKA	JUAB	UT

DRAWING NUMBER	SHEET	REVISION
MJ2024548	29	1

2" PLASTIC MAIN		
	R.O.W./PERMIT	EUREKA
	INSTALL METHOD	HORIZONTAL DIRECTIONAL DRILL
	BACKFILL MATERIAL	GRANULAR
	SURFACE RESTORATION	ASPHALT
	SPECIAL PROVISIONS	

PLAN



2" PLASTIC MAIN		
	R.O.W./PERMIT	EUREKA
	INSTALL METHOD	HORIZONTAL DIRECTIONAL DRILL
	BACKFILL MATERIAL	GRANULAR
	SURFACE RESTORATION	DIRT ROAD
	SPECIAL PROVISIONS	

REVISIONS

NO	DESCRIPTION	DATE	BY	CHECK
A	FOR INITIAL REVIEW	2-15-21	CNO	MH
1	ISSUE FOR CONSTRUCTION	2-23-21	CNO	MH
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ENGINEERING RECORD

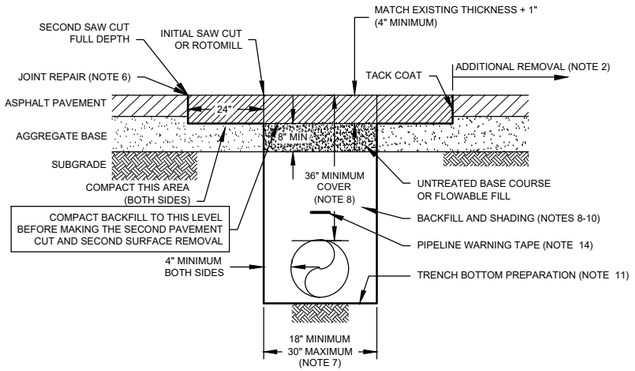
PROJECT NUMBER: 78055.25.SPV	DATE CREATED: 2-15-21	ENGINEERING MNGR: K. FREDERICKS
DRAWN BY: C. OWEN	PROJECT ENGINEER: M. HANSEN	CONSTR MNGR: R. ANDERSON
CHECKED BY: M. HANSEN	SURVEYOR: G. NEWHART	APVD FOR CONSTR: 2-23-21
DWG. SCALE: (34x22) 1"=40' (17x11) 1"=80'		

Dominion Energy
DOMINION ENERGY UTAH

TITLE: IHP REINFORCEMENT
DESCRIPTION: AREA SHEET 30
ADDRESS: MAIN ST
0+00 - 5+33

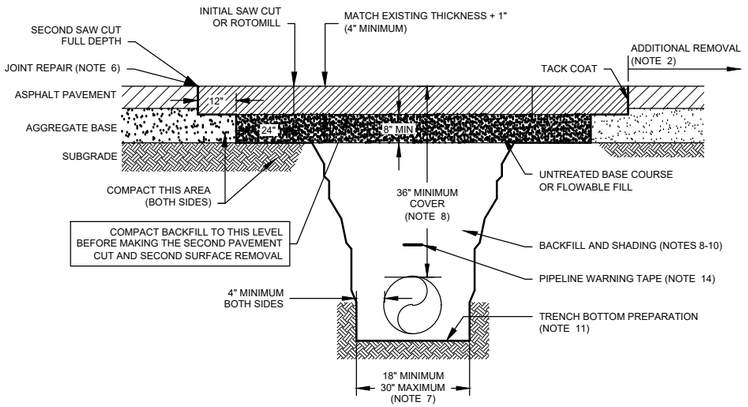
CITY	COUNTY	STATE
EUREKA	JUAB	UT

DRAWING NUMBER	SHEET	REVISION
MJ2024548	30	1

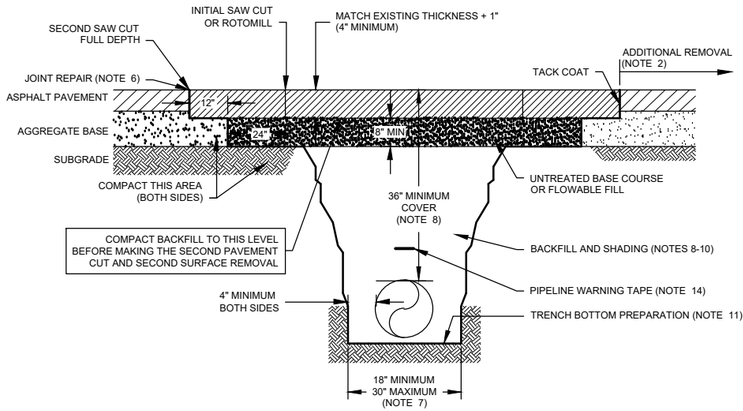


"T" PATCH - SHALLOW TRENCH RESTORATION

(48 INCHES OR LESS FROM PAVEMENT SURFACE TO BOTTOM OF EXCAVATION)

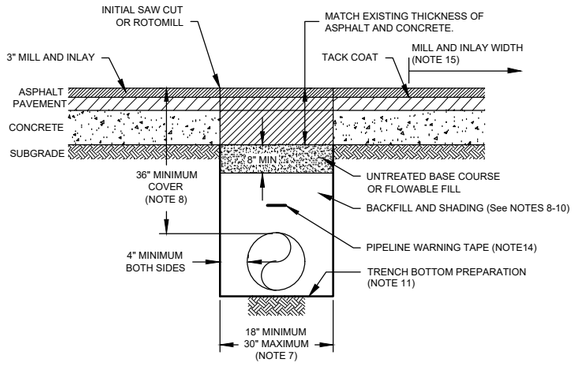


"T" PATCH - UDOT RIGHT OF WAY



"T" PATCH - DEEP TRENCH RESTORATION

(MORE THAN 48 INCHES FROM PAVEMENT SURFACE TO BOTTOM OF EXCAVATION)



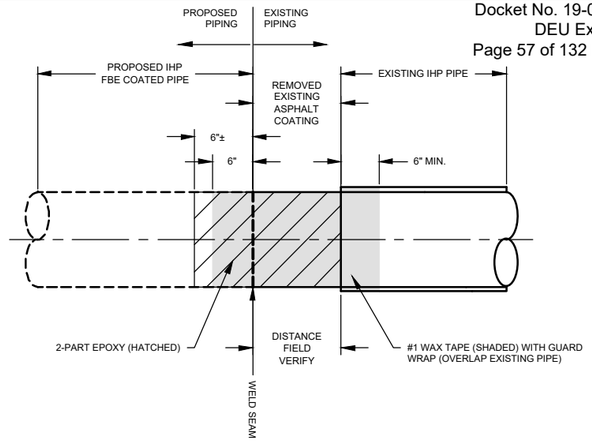
"T" PATCH - MODIFIED PATCH

"T" PATCH DETAILS 1

SCALE: NONE

NOTES:

1. THESE STANDARD DETAILS ARE SUPERCEDED BY ANY SPECIFICATION OR STANDARD FROM THE GOVERNING AUTHORITY THAT IS MORE STRINGENT.
2. ADDITIONAL PAVEMENT REMOVAL FOR TRADITIONAL T PATCH: REMOVE ADDITIONAL PAVEMENT TO A PAINTED LANE STRIPE, A LIP OF GUTTER, A CURB, AN EXISTING PAVEMENT PATCH, OR AN EDGE OF THE PAVEMENT IF SUCH STREET FEATURE IS WITHIN 2 FEET OF THE "T-PATCH" SAW-CUT.
3. SAW CUTS: ALL CUTS MUST HAVE CLEAN, STRAIGHT EDGES PRIOR TO BEING REPAIRED.
4. FULL TACK COAT COVERAGE ON ALL VERTICAL SURFACES
5. ASPHALT LIFTS: NO GREATER THAN 3 INCHES AFTER COMPACTION; COMPACT TO 94%T OF ASTM D 2041 (RICE METHOD) PLUS OR MINUS 2%.
6. JOINT REPAIR: IF A CRACK OCCURS AT THE "T" PATCH CONNECTION TO EXISTING PAVEMENT OR AT ANY STREET FIXTURE, REPAIR AS SPECIFIED BY THE GOVERNING AUTHORITY.
7. TRENCH WIDTH: MINIMUM WIDTH SHALL BE 18", BUT IN NO EVENT SHALL A WIDTH OF 30" BE ALLOWED WITHOUT COMPANY'S APPROVAL UNLESS REQUIRED FOR ENSURING WORKER SAFETY.
8. MINIMUM COVER: 36" MINIMUM COVER SHALL BE MEASURED FROM THE TOP OF PIPE TO THE TOP OF FINISHED GRADE FOR THE RIGHT-OF-WAY; 30" MINIMUM COVER TO THE TOP OF ANY ASSOCIATED FITTING.
9. EXCAVATION BACKFILL:
   - 9.1. GRANULAR FILL. 3" MINUS AND COMPACT TO A MODIFIED PROCTOR DENSITY OF 96% OR GREATER. MAXIMUM LIFT THICKNESS IS 8" BEFORE COMPACTION.
   - 9.2. FLOWABLE FILL. SHALL MEET GOVERNING AUTHORITIES SPECIFICATIONS. SHADING SHALL BE A MINIMUM OF 12" ABOVE PIPE.
10. SHADING ABOVE/AROUND PIPE: SHADING MATERIAL SHALL BE DIRT OR SAND WITH ROCKS 1" MINUS AND NO SHARP EDGES. SHADING SHALL BE A MINIMUM OF 8" OVER THE PIPE AND 4" ON BOTH SIDES.
11. TRENCH BOTTOM PREPARATION:
    - 11.1. BEFORE BACKFILLING, CONTRACTOR SHALL PROVIDE FIRM, FLAT, CLEAN SUPPORT UNDER THE PIPE ON UNDISTURBED OR COMPACTED SOIL AND CLEAR AWAY ALL HARD OBJECTS AND LOOSE OR PROJECTING ROCK THAT IS 1" IN DIAMETER OR GREATER THAT MIGHT DAMAGE THE PIPE.
    - 11.2. IF BACKFILL MATERIAL FOR TRENCH BOTTOM IS ROCKY OR CONTAINS MATERIAL WHICH MIGHT DAMAGE THE PIPE, SHADE UNDER THE PIPE WITH AT LEAST 4" OF DIRT OR SAND WITH ROCKS 1" MINUS AND NO SHARP EDGES.
12. ALL TRENCH SLOPES SHALL COMPLY WITH OSHA STANDARDS
13. ALL APPLICABLE DOMINION ENERGY STANDARD PRACTICES (INCLUDING 2-17-02, 9-11-05)
14. WARNING TAPE: INSTALL WARNING TAPE A MINIMUM OF 8" ABOVE PIPE AND AT LEAST 12" BELOW FINISHED GRADE.
15. MILL AND INLAY FOR MODIFIED T PATCH: MILL 3" ASPHALT AND INLAY FOR A MINIMUM WIDTH OF 6' EITHER SIDE OF PIPE. WIDTH TO EXTEND TO A PAINTED STRIPE, LIP OF GUTTER, OR AN EDGE OF PAVEMENT PER CITY INSPECTOR.
16. MODIFIED T PATCH: THE MODIFIED T-PATCH CAN ONLY BE USED IN LOCATIONS WHERE EXISTING CONCRETE SUBSTRATE IS IN ACCEPTABLE CONDITION, PER CITY INSPECTOR. OTHERWISE, A FULL T-PATCH WILL BE REQUIRED.
17. UDOT T PATCH SPECIFICATIONS: 9 INCHES OF UDOT- APPROVED HOT MIX ASPHALT (HMA), PG-GRADE 64-34 ASPHALT BINDER, 1/2 INCH NOMINAL MAX, 7-75-115 GYRATION PER UDOT STANDARD SPECIFICATION 02741; OVER 6 INCHES UNTREATED BASE COURSE (UTBC) PER UDOT SPECIFICATION 02721; OVER 16 INCHES GRANULAR BORROW (GB) PER UDOT SPECIFICATION 02056.



COATING DETAIL 2

SCALE: NONE

ISSUED FOR CONSTRUCTION

REVISIONS					ENGINEERING RECORD		
NO	DESCRIPTION	DATE	BY	CHECK	PROJECT NUMBER: 78055.25.SPV	DATE CREATED: 2-15-21	ENGINEERING MNGR: K. FREDERICKS
A	FOR INITIAL REVIEW	2-15-21	CNO	MH	DRAWN BY: C. OWEN	PROJECT ENGINEER: M. HANSEN	CONSTR MNGR: R. ANDERSON
1	ISSUE FOR CONSTRUCTION	2-23-21	CNO	MH	CHECKED BY: M. HANSEN	SURVEYOR: G. NEWHART	APVD FOR CONSTR: 2-23-21
----	----	----	----	----	DWG. SCALE: NONE		

DOMINION ENERGY UTAH

TITLE:	IHP REINFORCEMENT	CITY	COUNTY	STATE
DESCRIPTION:	DETAIL SHEET	EUREKA	JUAB	UT
ADDRESS:	EUREKA CITY	DRAWING NUMBER	SHEET	REVISION
	0+00 - 270+27	MJ2024548	31	1

Appendix B –BMP Specifications and Details

B.1 Erosion Control Methods

Temporary control measures are designed to effectively reduce erosion and sedimentation to sensitive resources during construction. These temporary erosion control measures will be installed concurrently with construction earthwork and will be maintained throughout the course of construction. When necessary, these measures may be left in place along with permanent measures during the post construction period until effective revegetation has been reestablished. Sediment barriers and water bars (as described below) will be the primary measures for temporary erosion control used on the project.

Permanent erosion control measures are designed to minimize erosion and sedimentation after construction until revegetation efforts have effectively stabilized the construction area. Installation of permanent erosion control measures should be performed within 14 days following backfilling of the trench except as follows: In areas where the construction ROW has been restricted, the zone over the backfilled trench will be used temporarily for spoil storage as contractors continue construction along the ROW. Contractors will install permanent erosion control measures within ten days, if possible, following "temporary" use of these areas for spoil storage. In general, temporary erosion control measures will be removed after permanent erosion control measures have been installed.

The following sections review materials, installation requirements, and performance criteria for temporary, interim, and permanent erosion and sediment control measures.

B.1.1 Sediment Barriers

Straw bale sediment barriers (certified to be free of noxious weeds) and silt fence sediment barriers are temporary sediment barriers designed to slow down water flow and to intercept suspended sediment conveyed by sheet flow, while allowing runoff to continue down gradient. These installations are used to prevent sediment delivery from the construction area as well as to divert water off the construction area. Temporary sediment barriers will be installed, as necessary, at the following locations immediately after initial ground disturbance:

Across the ROW at the base of slopes where the ROW crosses roadways, water bodies, springs, wetlands and other sensitive resources;
Along the edge of the ROW adjacent to and up slope of roadways, water bodies, springs, wetlands or other sensitive resources; and
Around topsoil or subsoil piles where necessary (e.g. adjacent to water bodies or wetlands)

The requirement to install a sediment barrier is dependent on the slope angle (when a hillside slopes in multiple directions, the slopes can off-set each other and reduce the need for sediment barriers), slope length, and soil type (texture and coarse fragment content). While typically used only during construction, silt fences and straw bale sediment barriers will be left in place following seeding, possibly for a complete growing season.

B.1.1.2 General Requirements

Straw bale or silt fence sediment barriers placed at the toe of a slope will be at least 6 feet from the toe of the slope, where possible, in order to increase ponding volume. The ends of the sediment barrier will be turned upslope to capture sediment.

If sediment barriers are necessary, they will be placed so as not to hinder construction activities and outside of (above the high water mark) active stream channels. If silt fences or straw bale sediment barriers are placed across the construction area (adjacent to water bodies, wetlands, or roads) where construction traffic is allowed to cross, provisions will be made for traffic flow. An approximately 15-foot-wide gap will be provided along the silt fence or straw bale row, with the ends of the sediment barrier turned slightly up slope. Drivable earth berms will be installed and maintained across the gap immediately up slope of the sediment barrier. Alternatively, straw bales will be installed across the gap with 24 inches of overlap with the adjacent sediment barrier at the end of each day.

If sediment loading is noted during regular inspections of temporary sediment barriers to be at or greater than 40 percent of barrier capacity, sediment behind the barrier will be spread on the disturbed ROW uphill of the sediment barrier. Loose stakes, loosely abutted bales, damaged bales, or damaged or under-mined sections of silt fence will be repaired or replaced as necessary.

Straw Bales
Straw bale sediment barriers consist of a row of tightly abutted straw bales placed perpendicular to the runoff direction with the ends turned up slope. The barriers are typically one bale high, placed on the fiber-cut edge in a 4-inch trench (tie not in contact with the ground), and anchored securely with two wooden stakes driven through each bale. A small amount of soil is then piled across the up slope side of the straw bale barrier. Only certified, weed-free straw will be used in these bales which will be identified by multicolored, orange and blue, baling twine. Excelsior logs may be substituted for straw bales. Installation will be as recommended by the manufacturer. When straw bales are used as a temporary substitute for water bars, the same spacing noted for water bars will be used (see Section C.3.2).

Silt Fences
Commercial filter fabrics, with sufficient strength to prevent failure will be provided by contractors. The height of a silt fence will not exceed 36 inches and the fabric will be cut from a continuous roll of fabric with splices only at support posts, with a minimum 6-inch overlap and both ends of fabric securely attached to the post. Support posts will be a maximum of 10 feet apart.

The bottom edge of silt fences will be installed in a trench excavated approximately 4 inches wide by 6 inches deep and refilled with compacted soil, unless on-site constraints dictate otherwise (e.g., rock). Silt fences will be attached to supporting posts by staples or wire.

If additional support is needed to contain wet spoil or to provide added protection near a sensitive resource, either wire mesh or straw bales may be placed immediately behind the silt fence on the down-gradient side. If wire mesh is used, the wire will be attached to the support posts, prior to installation of the fabric, with heavy duty wire staples at least one inch long, wire ties, or hog rings. The wire will be keyed into the trench at least 2 inches, and extended up the posts to the top of the filter fabric.

B.2 Stabilization Practices

B.2.1 Mulching

Mulching is the application of noxious weed-free straw or wood fiber to disturbed soils to minimize the effects of wind or rain on exposed soils. During rainy conditions, mulch reduces the impact of rainfall and slows the flow of water down the slope. Mulch, rather than erosion control mats, would typically be used across large sections of the ROW to reduce wind erosion and raindrop impact, if needed.

If mulching is necessary, it will be monitored for adequacy in area coverage and cover thickness during application. Application rates will be adjusted, as necessary, to provide adequate coverage. Mulch will be reapplied to areas where erosion repairs are necessary.

Mulch as Temporary Erosion Control

Application of mulch for temporary erosion control is based on slope surface type and condition (i.e., sand, clay, rock, etc.), slope steepness, and the amount of exposed surface area not covered by plant residue.

During construction, water or non-toxic, organic tackifier may be applied to topsoil storage mounds composed of soils with high wind erodibility at 120 pounds/acre. Tackifier will not be applied within 100 feet of a watercourse or wetlands.

If reclamation and seeding is deferred more than 10 days after final grade restoration near water bodies or wetlands, all disturbed slopes above the water body or wetland will be temporarily stabilized by applying 2000 pounds/acre of straw mulch for a minimum distance of 100 feet above the edge of the water body or wetlands. Similar temporary stabilization may be used on slopes steeper than 30 percent. Interim seeding may also be performed. Seed bed preparation, including thinning or removal of the mulch, will be repeated as necessary prior to application of the final seed mix.

Mulch as Permanent Erosion Control

If needed after final restoration and seeding, permanent mulch applications will be applied to slopes greater than 30 percent, slopes within 100 feet of water bodies and wetlands, and other sensitive sites (dry, sandy, steep slopes, etc.) to control erosion. Where appropriate, contractors will randomly distribute any windrowed shrubs or other remaining vegetation debris over the ROW. Large unmerchantable trees may be placed on the ROW to provide slope stabilization and erosion control benefits. On steep slopes and other areas where broadcast rather than drill seeding must be employed, trees and shrubs will be spread or placed during final cleanup and prior to seeding. Where any spreading woody debris results in an adequate mulch layer, mulch rates may be reduced or eliminated.

Straw Mulch

Weed-free straw mulch, if necessary, will be applied and anchored into the seed bed using a mechanical crimper specifically designed to crimp mulch to a depth of 2 to 3 inches. The straw will be crimped perpendicular to slope. Acceptable straw mulch crimpers include:

Mechanical crimper, backhoe with crimper forks,
Racked equipment tracking across slopes (restricted to areas where other methods will not work),
Hand-punching with round-pointed shovel.

Sheep's foot packers will not be used, though organic liquid mulch binders may be used in accordance with

manufacturer's recommendations. If a straw mulch blower is used, strands of the mulching material will be long enough to allow anchoring.

Wood Fiber Mulch
If wood fiber mulch is used, it will be made of 100-percent wood fiber or equivalent and will be applied by a hydroseeder with non-toxic, organic tackifier (except within 100 feet of a water body or wetland) such as a guar-based tackifier.

B.2.2 Erosion Control Matting
After final grade restoration, erosion control matting may be installed, as necessary, to reduce rain impacts on soils, to control erosion and to stabilize steep slopes and water body banks. Erosion control matting will typically be used on stream banks and slopes steeper than 3:1.
Mats will typically be furnished in continuous rolls of 30 feet or greater with a minimum width of 4 feet. Staples will be made of wire, 0.091 inch in diameter or greater, and have a U-shape with legs 8 inches in length and a 2-inch crown. Wire staples will be driven into the ground for the full length of the staple legs. Alternatively, wood pegs (2-inch diameter) may be used to secure the erosion control fabric.

For stream bank installations, mats will generally be laid parallel (upper mat overlapping lower mat in a shingle pattern) to the water body to a point above the top of the bank. The erosion control mats identified above for stream bank stabilization are designed to handle flow and can be placed under the ordinary high water mark of the stream bank. Native materials (rocks, logs, etc.) may be used in conjunction with the matting to aid in stabilization of banks. During regular erosion control monitoring, erosion control matting will be inspected for washouts, adequate staking, and loss of matting. Damaged or undermined matting will be repaired or replaced as necessary.

Revegetation
Revegetation will follow, as soon as possible after final clean-up of a ROW or a site, with the agreement of the land owner or land management agency. In some areas, such as the desert, seeding is not required and the desert erosion control plan will be implemented. This may be true in other areas. Generally, seed mixes, rate of application, and types and rates of application of fertilizer will be project specific and agreed upon with the land owner or land management agency. Ground cover will be established to a level of 70% of the original cover density or other stabilization practices will be installed before the Notice of Termination, described in Part 4 of the General Construction Permit UTR 300000, is submitted. Weather related conditions may determine the schedule for revegetation and/or final stabilization.

B.3 Structural Practices

In addition to the stabilization and erosion methods above, structural practices are used to divert flows from exposed soils, store flows, or otherwise limit runoff and discharge of pollutants from exposed areas of the site. To the extent practical, structural devices will not be placed in floodplains. Additionally, the appropriate sediment basin requirements provided in the general permit will be implemented when necessary.

B.3.1 Trench Breakers
Trench breakers will be installed in the trench to restrict or slow ground water flow along the trench line.

They will be installed prior to backfilling on slopes that drain into water bodies (natural or artificial stream, river, or drainage with perceptible flow at the time of crossing, and ponds, or lakes), wetlands, and improved roads. Trench breakers will also be constructed immediately down slope of any location where groundwater could enter and migrate along the trench at any time of year.

Breakers will be installed at the same spacing as, and up slope of, permanent slope breakers. In agricultural fields where water bars are typically not required, trench breakers will be installed on the same spacing as if permanent slope breakers were required. The number of water bars and trench breakers need not be the same due to site-specific conditions. Trench breakers can be constructed from sandbags or polyurethane foam. If the sandbag method is selected, topsoil will not be used as a fill material.

B.3.2 Water bars

Water bars are utilized in various forms (e.g., rolling dips on access roads, derivable berms across travel ways, water bars on slopes) during project construction and after final grade restoration. Water bars are intended to intercept water traveling down a disturbed slope and divert water off disturbed soil into stable, well-vegetated, or adjacent rocky areas.

If necessary, temporary water bars will be installed concurrently with initial grading operations and will be maintained throughout construction. Permanent water bars will be installed after the ROW grade is restored if needed. Water bars will also be installed near the base of slopes adjacent to wetlands and watercourses except at those specific sites (e.g., terrain slopes away from a canal) where water bars are not necessary to prevent discharge of sediment into a wetland or watercourse. Though site-specific details may differ, the spacing for temporary and permanent water bars will be generally as follows:

Slope (%)	Spacing (feet)
5 to 15	300
15 to 30	200
> 30	100

Alternative spacing may be requested by the landowner or land management agencies for isolated, site-specific areas and conditions (i.e., in areas of highly erodible soils). Water bar spacing is based on a site-specific evaluation of the ROW and standard construction protective measures. This spacing takes into account the soils, timing of construction, and area of disturbance anticipated for construction of the project. Water bars will be generally sited so that they do not outlet into sensitive resource areas (cultural sites, rare plant sites, etc.).

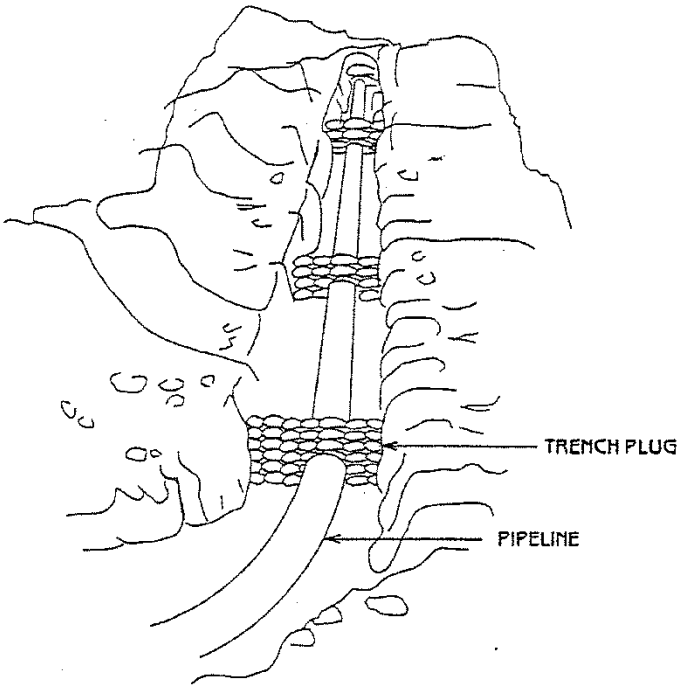
Except for site-specific situations as determined by land owners and land management agency representatives (e.g., extremely long slopes with highly erodible soils), temporary water bars will not be constructed on slopes with less than five-percent gradient. Water bars are not typically installed in residential or active agricultural areas.

Water bars will be constructed of existing suitable material (compacted soil), a series of tightly abutted

straw bales, excelsior logs, or burlap bags filled with native soil. The installation angle will be approximately 2 to 5 percent down slope and will extend beyond the edge of the disturbed construction area. Where possible, water bars will discharge into stable, non-erosive (vegetated or rocky) receiving areas.

In isolated instances where water bars discharge into unstable or highly erosive areas without rock or vegetation flow, energy dissipaters or "J-hook" shaped sediment barriers will be positioned at the water bar outlet. However, decreasing spacing or adjusting the spacing to locate outlets onto a stable site is preferable to using outlet energy dissipaters. When allowed by existing topographic conditions the flow energy dissipaters will be offset (staggered) on slopes greater than 20 percent.

Contractors will regularly inspect and repair water bars during construction to maintain their effectiveness. Water bars worn down by heavy construction traffic or filled with sediments will be repaired as needed, and the sediments will be spread on the disturbed ROW uphill of the bar.



TRENCH BREAKERS

Description

Protection of existing vegetation on a construction site can be accomplished through installation of a construction fence around the area requiring protection. In cases where upgradient areas are disturbed, it may also be necessary to install perimeter controls to minimize sediment loading to sensitive areas such as wetlands. Existing vegetation may be designated for protection to maintain a stable surface cover as part of construction phasing, or vegetation may be protected in areas designated to remain in natural condition under post-development conditions (e.g., wetlands, mature trees, riparian areas, open space).

Photograph PV-1. Protection of existing vegetation and a sensitive area. Photo courtesy of CDOT.

Appropriate Uses

Existing vegetation should be preserved for the maximum practical duration on a construction site through the use of effective construction phasing. Preserving vegetation helps to minimize erosion and can reduce revegetation costs following construction.

Protection of wetland areas is required under the Clean Water Act, unless a permit has been obtained from the U.S. Army Corps of Engineers (USACE) allowing impacts in limited areas.

If trees are to be protected as part of post-development landscaping, care must be taken to avoid several types of damage, some of which may not be apparent at the time of injury. Potential sources of injury include soil compaction during grading or due to construction traffic, direct equipment-related injury such as bark removal, branch breakage, surface grading and trenching, and soil cut and fill. In order to minimize injuries that may lead to immediate or later death of the tree, tree protection zones should be developed during site design, implemented at the beginning of a construction project, as well as continued during active construction.

Design and Installation

General

Once an area has been designated as a preservation area, there should be no construction activity allowed within a set distance of the area. Clearly mark the area with construction fencing. Do not allow stockpiles, equipment, trailers or parking within the protected area. Guidelines to protect various types of existing vegetation follow.

Protection of Existing Vegetation	
Functions	
Erosion Control	Yes
Sediment Control	Moderate
Site/Material Management	Yes

Surface Cover During Phased Construction

Install construction fencing or other perimeter controls around areas to be protected from clearing and grading as part of construction phasing.

Maintaining surface cover on steep slopes for the maximum practical duration during construction is recommended.

Open Space Preservation

Where natural open space areas will be preserved as part of a development, it is important to install construction fencing around these areas to protect them from compaction. This is particularly important when areas with soils with high infiltration rates are preserved as part of LID designs. Preserved open space areas should not be used for staging and equipment storage.

Wetlands and Riparian Areas

Install a construction fence around the perimeter of the wetland or riparian (streamside vegetation) area to prevent access by equipment. In areas downgradient of disturbed areas, install a perimeter control such as silt fence, sediment control logs, or similar measure to minimize sediment loading to the wetland.

Tree Protection[1]

- Before beginning construction operations, establish a tree protection zone around trees to be preserved by installing construction fences. Allow enough space from the trunk to protect the root zone from soil compaction and mechanical damage, and the branches from mechanical damage (see Table PV-1). If low branches will be kept, place the fence outside of the drip line. Where this is not possible, place fencing as far away from the trunk as possible. In order to maintain a healthy tree, be aware that about 60 percent of the tree's root zone extends beyond the drip line.

Table PV-1
Guidelines for Determining the Tree Protection Zone
(Source: Matheny and Clark, 1998; as cited in GreenCO and WWE 2008)

	Distance from Trunk (ft) per inch of DBH		
Species Tolerance to Damage	*Young*	*Mature*	*Over mature*
Good	0.5'	0.75'	1.0'
Moderate	0.75'	1.0'	1.25'
Poor	1.0'	1.25'	1.5'
Notes: DBH = diameter at breast height (4.5 ft above grade); Young = <20% of life expectancy; Mature = 20%-80% of life expectancy; Over mature =>80% of life expectancy			

- Most tree roots grow within the top 12 to 18 inches of soil. Grade changes within the tree protection zone should be avoided where possible because seemingly minor grade changes can either smother

[1] Tree Protection guidelines adapted from GreenCO and WWE (2008). *Green Industry Best Management Practices (BMPs) for the Conservation and Protection of Water Resources in Colorado: Moving Toward Sustainability, Third Release.* See www.greenco.org for more detailed guidance on tree preservation.

roots (in fill situations) or damage roots (in cut situations). Consider small walls where needed to avoid grade changes in the tree protection zone.

- Place and maintain a layer of mulch 4 to 6-inch thick from the tree trunk to the fencing, keeping a 6-inch space between the mulch and the trunk. Mulch helps to preserve moisture and decrease soil compaction if construction traffic is unavoidable. When planting operations are completed, the mulch may be reused throughout planting areas.

- Limit access, if needed at all, and appoint one route as the main entrance and exit to the tree protection zone. Within the tree protection zone, do not allow any equipment to be stored, chemicals to be dumped, or construction activities to take place except fine grading, irrigation system installation, and planting operations. These activities should be conducted in consultation with a landscaping professional, following Green Industry BMPs.

- Be aware that soil compaction can cause extreme damage to tree health that may appear gradually over a period of years. Soil compaction is easier to prevent than repair.

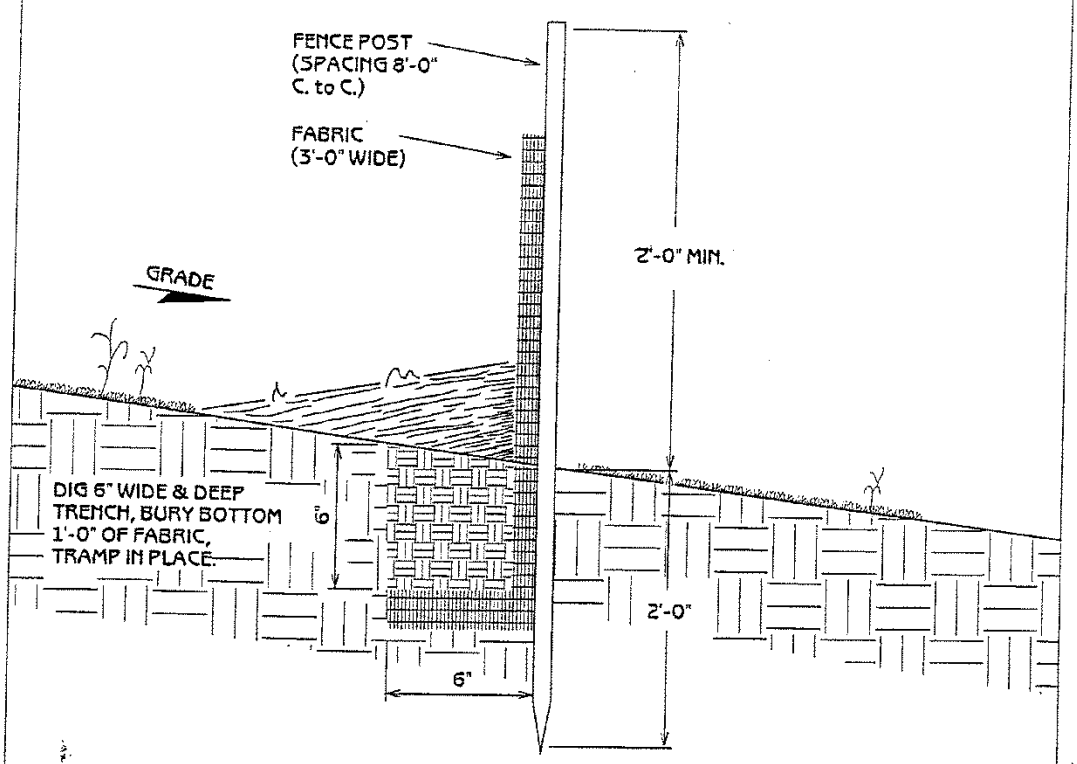
Maintenance and Removal

Repair or replace damaged or displaced fencing or other protective barriers around the vegetated area.

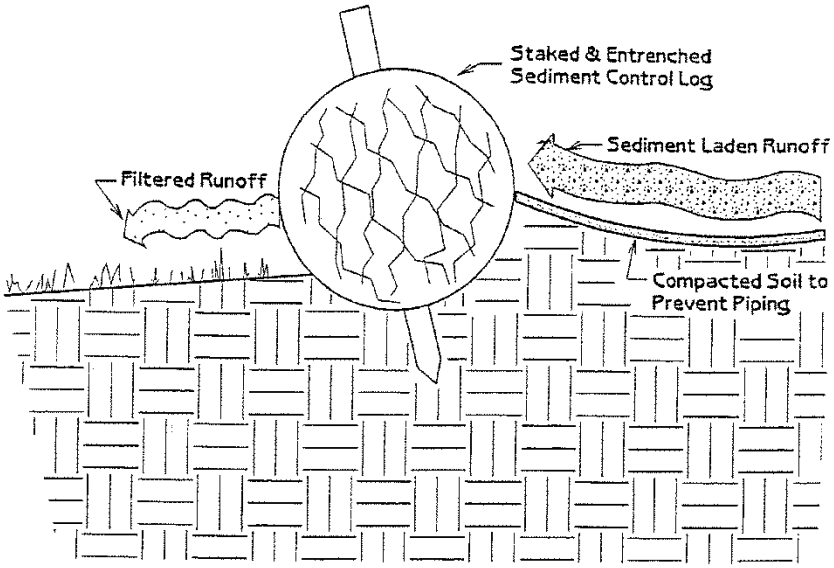
If damage occurs to a tree, consult an arborist for guidance on how to care for the tree. If a tree in a designated preservation area is damaged beyond repair, remove and replace with a 2-inch diameter tree of the same or similar species.

Construction equipment must not enter a wetland area, except as permitted by the U.S. Army Corps of Engineers (USACE). Inadvertent placement of fill in a wetland is a 404 permit violation and will require notification of the USACE.

If damage to vegetation occurs in a protected area, reseed the area with the same or similar species, following the recommendations in the USDCM *Revegetation* chapter.



SILT FENCE CONSTRUCTION



CROSS-SECTION OF A PROPERLY INSTALLED SEDIMENT CONTROL LOG (EXCELSIOR LOG OR EQUIVALENT)

1. DESCRIPTION:

Temporary Berms are temporary control measure barriers made of compacted subsoil or other approved materials such as embankment or sand bags. Their function is to intercept and divert sheet surface runoff away from areas not yet stabilized, prevent erosion, manage sheet flow, and reduce sediment transport.

2. CONTROL MEASURE USES

☒ Erosion Control
☒ Sediment Control
☐ Site/Materials Management

3. RELEVANT SPECIFICATION SECTIONS

Section 208 – Erosion Control
a) ***208.05 (d)*** – Construction BMPS
b) ***208.11*** – Method of Measurement

4. RELEVANT M-STANDARD DETAILS

M-208-1, Sheet 7 of 11 (Grading Applications)

5. BASIS OF PAYMENT

Pay item	Description	Pay Unit
208-00300	Temporary Berm	LF

6. APPLICATIONS

- May be constructed across roadways (transverse berm) at a slight angle with respect to the centerline.
- May be constructed along the top edge of fill slopes or below the toe of exposed and erodible slopes (upslope or downslope side of a construction area). They can also be used at storm drain inlets (when approved) and across minor swales and ditches.
- May be used to construct Rough Cut Street Control measures.
- May be used to divert surface sheet flows from areas where flows may damage property or interfere with establishment of vegetation.
- May be used to divert surface runoff to other control measures like Sediment Traps.

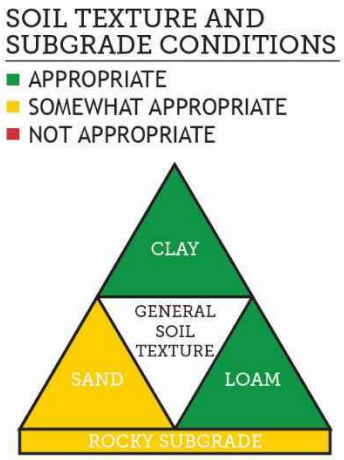
Temporary Berm along access road

- May be used on relatively flat slopes to capture surface runoff to shorten the overall slope length before it has a chance to concentrate and cause rill and gully erosion

7. LIMITATIONS

- Only to be used as a temporary measure on flat areas with slopes less than 2H:1V.
- Must use a secondary erosion control measure device when sediment control is an objective.
- Susceptible to erosion when intercepted concentrated flows have high velocities.

8. SOILS TRIANGLE



9. SWMP ADMINISTRATOR FOR DESIGN CRITERIA

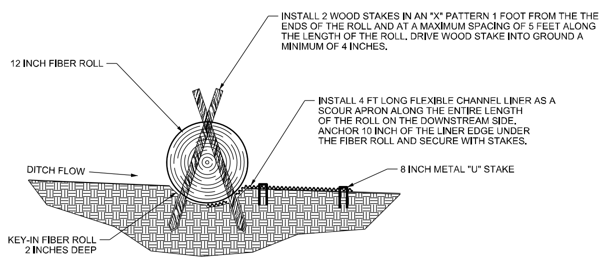
- Temporary Berm:
  - Berm must be at least 18 inches tall or high enough to prevent overtopping.
  - Berm must have a minimum of 4- to 6-foot base.
  - Gradient of all receiving area above berm must be less than 2:1, or flatter.
  - Berms must be designed so that flow line of water is at a gradient of less than 3 percent. Greater than 3 percent may require the use of Check Dams in the flow line behind the berm.
  - Outlets of anticipated flow from captured water behind berms must be designed with additional control measures suitable to control concentrated flow. Maximum drainage area for each outlet must be limited to 2 acres.
  - Berms installed taller than 2 feet require additional control measures at the toe opposite of the conveyance side.

10. INSTALLATION CRITERIA

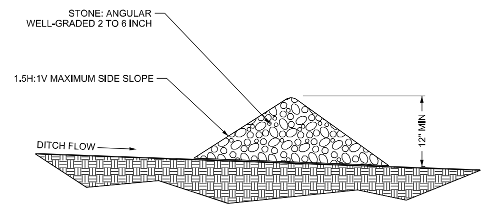
- Construct Temporary Berm using native subsoil materials that can be compacted. Topsoil **may not be used** to construct these structures.
- Temporary Berm must be compacted manually or by mechanical means.
- The berms shall be constructed at regular intervals along the road and shall be perpendicular to the longitudinal slope from the outer edge of the swale to the crown of the road.

11. MAINTENANCE AND REMOVAL

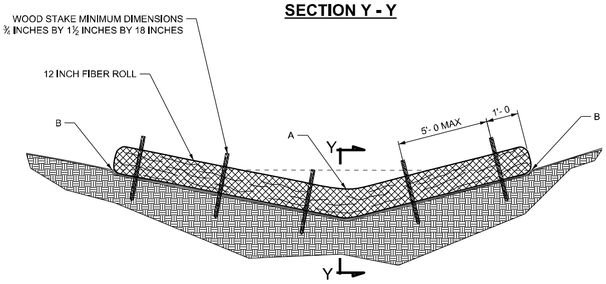
- Inspect Temporary Berms on a daily basis for signs of erosion, stability, and compaction. Whenever erosion is spotted, replace lost material and recompact berm to match original conditions.
- If intensive maintenance is necessary to keep this control measure functional, consider using a different control measure device (see Silt Dike [fact sheet No. 19] or Erosion Logs [fact sheet No. 17].
- When upstream area is stabilized, Temporary Berms may be removed. Disturbed area around control measure must be cleared of any debris or sediment, receive subgrade soil preparation, and be seeded and mulched.
- Removed material for Temporary Berms may be distributed on-site at a location approved by the Engineer.



SECTION Y - Y

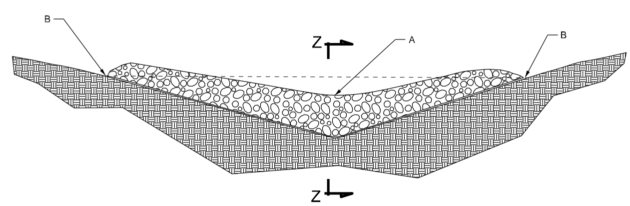


SECTION Z - Z



ELEVATION

CHECK DAM - FIBER ROLL



ELEVATION

CHECK DAM - STONE

MATERIAL QUANTITY CHART		
DITCH SIDE SLOPE	LENGTH (FT) OF 12 INCH DIAMETER FIBER ROLL REQUIRED FOR HALF OF DITCH	CUBIC YARDS OF STONE REQUIRED FOR HALF OF DITCH
2:1	2.5	0.17
3:1	3.5	0.24
4:1	4.7	0.31
6:1	7.0	0.45
8:1	9.4	0.60
10:1	11.7	0.75
12:1	14	0.90

EXAMPLE: A CUT DITCH WITH A 6:1 FORE SLOPE AND A 2:1 BACK SLOPE WOULD REQUIRE A 9.5 (7.0 + 2.5) FT MIN. FIBER ROLL OR 0.62 (0.45 + 0.17) CUBIC YARD MIN. OF STONE.

NOTES:

1. PLACE A CHECK DAM AT EVERY ONE FT DROP IN ELEVATION ALONG THE CUT DITCH.
2. PLACE CHECK DAMS PERPENDICULAR TO THE FLOW LINE OF THE DITCH.
3. DO NOT PLACE CHECK DAMS ACROSS NATURAL STREAM BEDS.
4. PLACE STONE CHECK DAMS OUTSIDE OF CLEAR ZONES.
5. INSTALL CHECK DAMS WITH POINT "A" A MINIMUM OF 4 INCHES LOWER THAN POINT "B".
6. REMOVE CHECK DAMS BY SPREADING STONE OR BREAKING APART AND SPREADING FIBER ROLL MATRIX MATERIAL WITHIN CUT DITCH OR COMPLETELY REMOVING FIBER ROLL.

REVISIONS

NO. | DATE | APPR. | REMARKS

UTAH DEPARTMENT OF TRANSPORTATION
STANDARD DRAWINGS FOR ROAD AND BRIDGE CONSTRUCTION
SALT LAKE CITY, UTAH

RECOMMENDED FOR APPROVAL — AUGUST 2020 DATE
CHAIRMAN STANDARDS COMMITTEE
APPROVED — AUGUST 2020 DATE
DEPUTY DIRECTOR

TEMPORARY
EROSION CONTROL
(CHECK DAMS)

STANDARD DRAWING TITLE

STD. DWG. NO.
EN 1

Description

Inlet protection consists of 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 approved by the local jurisdiction. Area inlets can also be protected by over-excavating around the inlet to form a sediment trap.

Photograph IP-1. Inlet protection for a curb opening inlet.

Appropriate Uses

Install protection at storm sewer inlets that are operable during construction. Consider the potential for tracked-out sediment or temporary stockpile areas to contribute sediment to inlets when determining which inlets must be protected. This may include inlets in the general proximity of the construction area, not limited to downgradient inlets. Inlet protection is not a stand-alone BMP and should be used in conjunction with other upgradient BMPs.

Design and Installation

To function effectively, inlet protection measures must be installed to ensure that flows do not bypass the inlet protection and enter the storm drain without treatment. However, designs must also enable the inlet to function without completely blocking flows into the inlet in a manner that causes localized flooding. When selecting the type of inlet protection, consider factors such as type of inlet (e.g., curb or area, sump or on-grade conditions), traffic, anticipated flows, ability to secure the BMP properly, safety and other site-specific conditions. For example, block and rock socks will be better suited to a curb and gutter along a roadway, as opposed to silt fence or sediment control logs, which cannot be properly secured in a curb and gutter setting, but are effective area inlet protection measures.

Several inlet protection designs are provided in the Design Details. Additionally, a variety of proprietary products are available for inlet protection that may be approved for use by local governments. If proprietary products are used, design details and installation procedures from the manufacturer must be followed. Regardless of the type of inlet protection selected, inlet protection is most effective when combined with other BMPs such as curb socks and check dams. Inlet protection is often the last barrier before runoff enters the storm sewer or receiving water.

Design details with notes are provided for these forms of inlet protection:

IP-1. Block and Rock Sock Inlet Protection for Sump or On-grade Inlets

IP-2. Curb (Rock) Socks Upstream of Inlet Protection, On-grade Inlets

Inlet Protection (various forms)	
Functions	
Erosion Control	No
Sediment Control	Yes
Site/Material Management	No

IP-3. Rock Sock Inlet Protection for Sump/Area Inlet

IP-4. Silt Fence Inlet Protection for Sump/Area Inlet

IP-5. Over-excavation Inlet Protection

IP-6. Straw Bale Inlet Protection for Sump/Area Inlet

CIP-1. Culvert Inlet Protection

Propriety inlet protection devices should be installed in accordance with manufacturer specifications.

More information is provided below on selecting inlet protection for sump and on-grade locations.

Inlets Located in a Sump

When applying inlet protection in sump conditions, it is important that the inlet continue to function during larger runoff events. For curb inlets, the maximum height of the protective barrier should be lower than the top of the curb opening to allow overflow into the inlet during larger storms without excessive localized flooding. If the inlet protection height is greater than the curb elevation, particularly if the filter becomes clogged with sediment, runoff will not enter the inlet and may bypass it, possibly causing localized flooding, public safety issues, and downstream erosion and damage from bypassed flows.

Area inlets located in a sump setting can be protected through the use of silt fence, concrete block and rock socks (on paved surfaces), sediment control logs/straw wattles embedded in the adjacent soil and stacked around the area inlet (on pervious surfaces), over-excavation around the inlet, and proprietary products providing equivalent functions.

Inlets Located on a Slope

For curb and gutter inlets on paved sloping streets, block and rock sock inlet protection is recommended in conjunction with curb socks in the gutter leading to the inlet. For inlets located along unpaved roads, also see the Check Dam Fact Sheet.

Maintenance and Removal

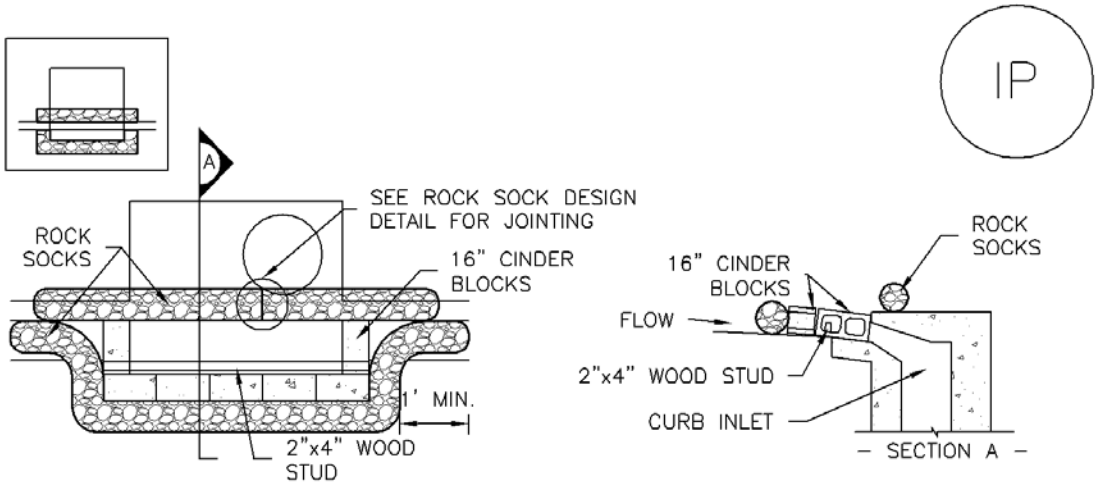
Inspect inlet protection frequently. Inspection and maintenance guidance includes:

- Inspect for tears that can result in sediment directly entering the inlet, as well as result in the contents of the BMP (e.g., gravel) washing into the inlet.
- Check for improper installation resulting in untreated flows bypassing the BMP and directly entering the inlet or bypassing to an unprotected downstream inlet. For example, silt fence that has not been properly trenched around the inlet can result in flows under the silt fence and directly into the inlet.
- Look for displaced BMPs that are no longer protecting the inlet. Displacement may occur following larger storm events that wash away or reposition the inlet protection. Traffic or equipment may also crush or displace the BMP.
- Monitor sediment accumulation upgradient of the inlet protection.

- Remove sediment accumulation from the area upstream of the inlet protection, as needed to maintain BMP effectiveness, typically when it reaches no more than half the storage capacity of the inlet protection. For silt fence, remove sediment when it accumulates to a depth of no more than 6 inches. Remove sediment accumulation from the area upstream of the inlet protection as needed to maintain the functionality of the BMP.

- Propriety inlet protection devices should be inspected and maintained in accordance with manufacturer specifications. If proprietary inlet insert devices are used, sediment should be removed in a timely manner to prevent devices from breaking and spilling sediment into the storm drain.

Inlet protection must be removed and properly disposed of when the drainage area for the inlet has reached final stabilization.



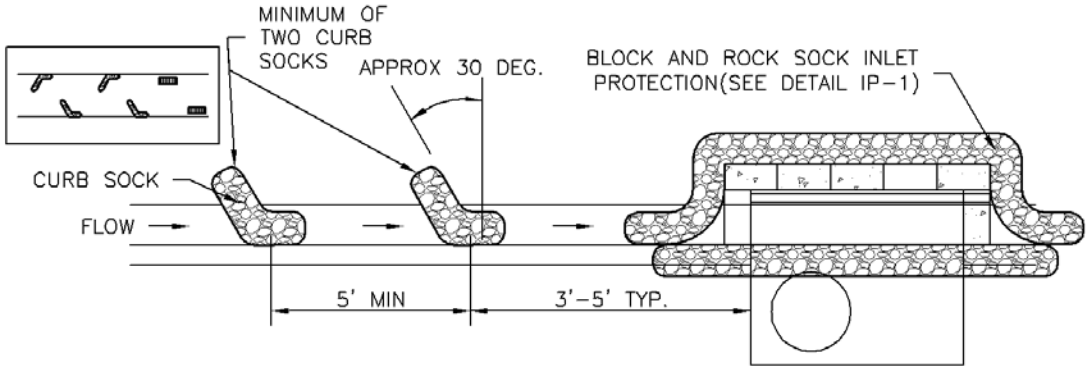
IP–1. BLOCK AND ROCK SOCK SUMP OR ON GRADE INLET PROTECTION

BLOCK AND CURB SOCK INLET PROTECTION INSTALLATION NOTES

1. SEE ROCK SOCK DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.

2. 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.

3. 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

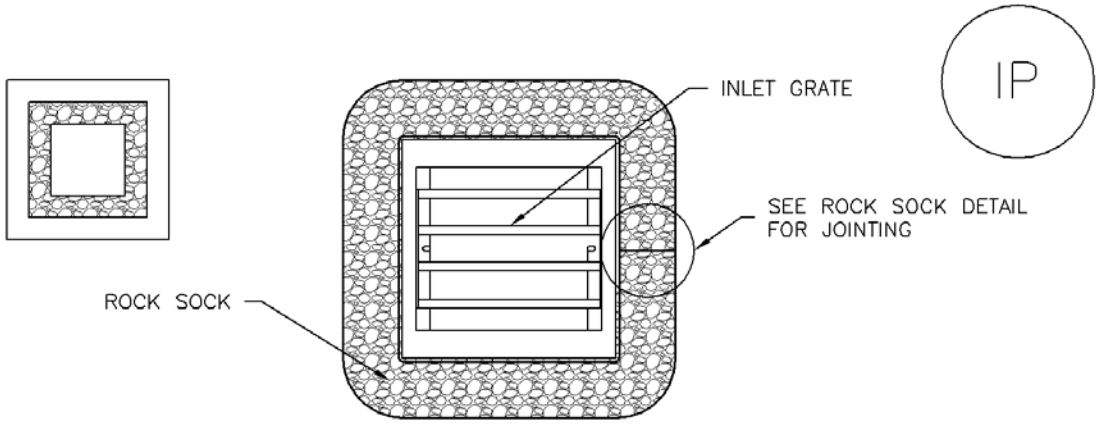
CURB ROCK SOCK INLET PROTECTION INSTALLATION NOTES

1. SEE ROCK SOCK DESIGN DETAIL INSTALLATION REQUIREMENTS.

2. PLACEMENT OF THE SOCK SHALL BE APPROXIMATELY 30 DEGREES FROM PERPENDICULAR IN THE OPPOSITE DIRECTION OF FLOW.

3. SOCKS ARE TO BE FLUSH WITH THE CURB AND SPACED A MINIMUM OF 5 FEET APART.

4. AT LEAST TWO CURB SOCKS IN SERIES ARE REQUIRED UPSTREAM OF ON–GRADE INLETS.

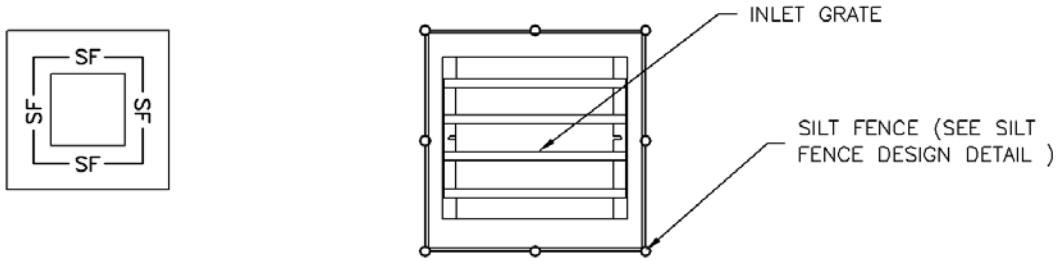


IP–3. ROCK SOCK SUMP/AREA INLET PROTECTION

ROCK SOCK SUMP/AREA INLET PROTECTION INSTALLATION NOTES

1. SEE ROCK SOCK DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.

2. STRAW WATTLES/SEDIMENT CONTROL LOGS MAY BE USED IN PLACE OF ROCK SOCKS FOR INLETS IN PERVIOUS AREAS. INSTALL PER SEDIMENT CONTROL LOG DETAIL.



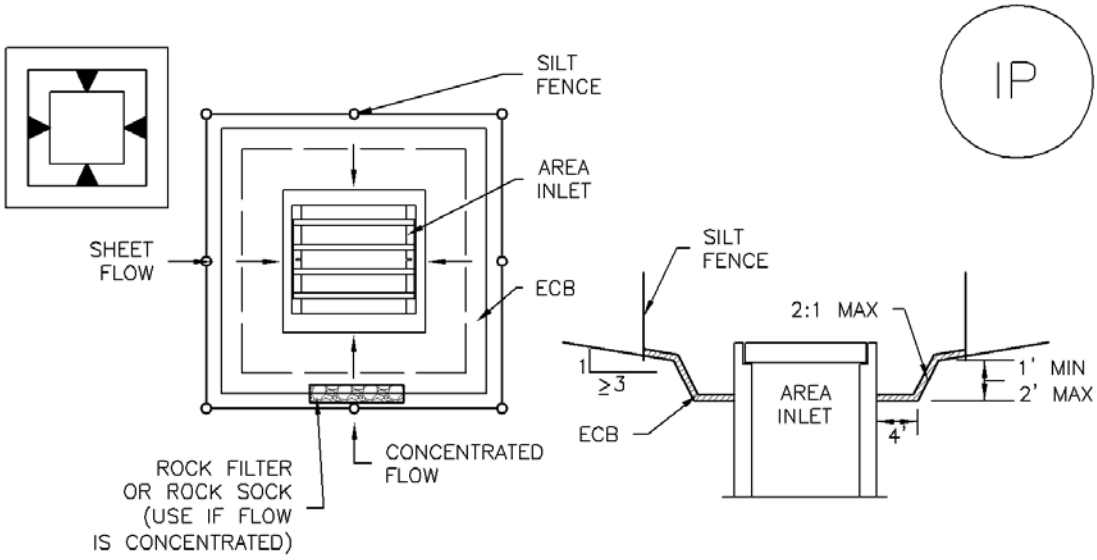
IP–4. SILT FENCE FOR SUMP INLET PROTECTION

SILT FENCE INLET PROTECTION INSTALLATION NOTES

1. SEE SILT FENCE DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.

2. POSTS SHALL BE PLACED AT EACH CORNER OF THE INLET AND AROUND THE EDGES AT A MAXIMUM SPACING OF 3 FEET.

3. STRAW WATTLES/SEDIMENT CONTROL LOGS MAY BE USED IN PLACE OF SILT FENCE FOR INLETS IN PERVIOUS AREAS. INSTALL PER SEDIMENT CONTROL LOG DETAIL.



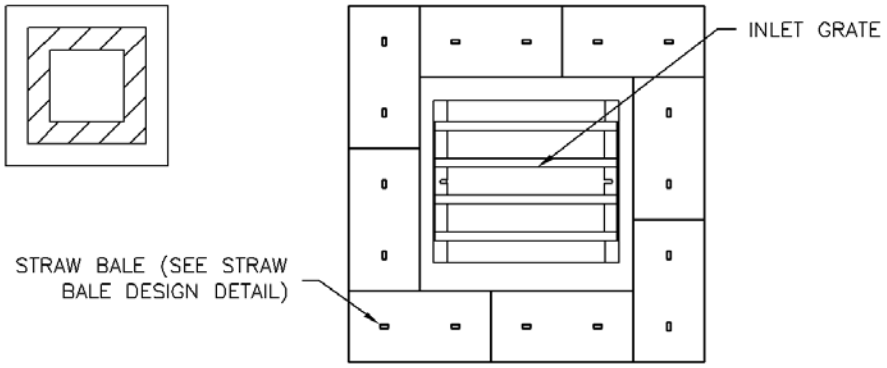
IP–5. OVEREXCAVATION INLET PROTECTION

OVEREXCAVATION INLET PROTECTION INSTALLATION NOTES

1. 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.

2. WHEN USING FOR CONCENTRATED FLOWS, SHAPE BASIN IN 2:1 RATIO WITH LENGTH ORIENTED TOWARDS DIRECTION OF FLOW.

3. SEDIMENT MUST BE PERIODICALLY REMOVED FROM THE OVEREXCAVATED AREA.

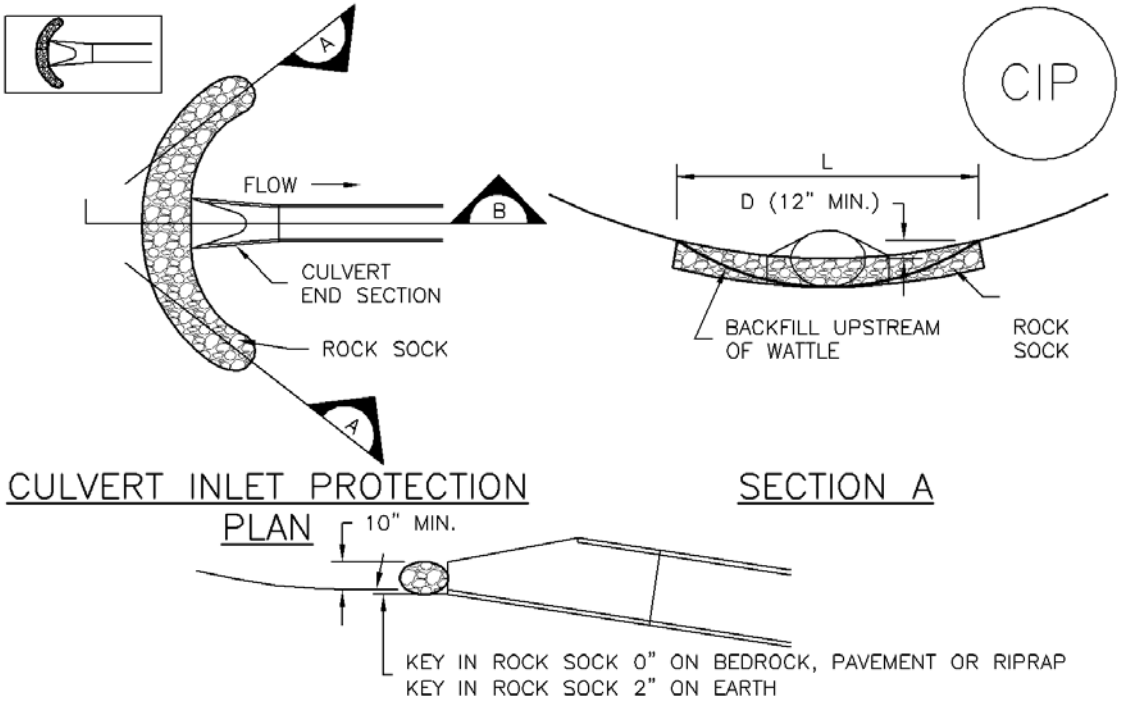


IP–6. STRAW BALE FOR SUMP INLET PROTECTION

STRAW BALE BARRIER INLET PROTECTION INSTALLATION NOTES

1. SEE STRAW BALE DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.

2. BALES SHALL BE PLACED IN A SINGLE ROW AROUND THE INLET WITH ENDS OF BALES TIGHTLY ABUTTING ONE ANOTHER.



CULVERT INLET PROTECTION PLAN

SECTION A

SECTION B

CIP–1. CULVERT INLET PROTECTION

CULVERT INLET PROTECTION INSTALLATION NOTES

1. SEE PLAN VIEW FOR
   –LOCATION OF CULVERT INLET PROTECTION.

2. SEE ROCK SOCK DESIGN DETAIL FOR ROCK GRADATION REQUIREMENTS AND JOINTING DETAIL.

CULVERT INLET 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.

4. SEDIMENT ACCUMULATED UPSTREAM OF THE CULVERT SHALL BE REMOVED WHEN THE SEDIMENT DEPTH IS ½ THE HEIGHT OF THE ROCK SOCK.

5. 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.

GENERAL INLET PROTECTION INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   –LOCATION OF INLET PROTECTION.
   –TYPE OF INLET PROTECTION (IP.1, IP.2, IP.3, IP.4, IP.5, IP.6)

2. 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.

3. 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

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 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 ¼ OF THE HEIGHT FOR STRAW BALES.

5. 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.

6. 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.

Description

Vehicle tracking controls provide stabilized construction site access where vehicles exit the site onto paved public roads. An effective vehicle tracking control helps remove sediment (mud or dirt) from vehicles, reducing tracking onto the paved surface.

Photograph VTC-1. A vehicle tracking control pad constructed with properly sized rock reduces off-site sediment tracking.

Appropriate Uses

Implement a stabilized construction entrance or vehicle tracking control where frequent heavy vehicle traffic exits the construction site onto a paved roadway. An effective vehicle tracking control is particularly important during the following conditions:

- Wet weather periods when mud is easily tracked off site.
- During dry weather periods where dust is a concern.
- When poorly drained, clayey soils are present on site.

Although wheel washes are not required in designs of vehicle tracking controls, they may be needed at particularly muddy sites.

Design and Installation

Construct the vehicle tracking control on a level surface. Where feasible, grade the tracking control towards the construction site to reduce off-site runoff. Place signage, as needed, to direct construction vehicles to the designated exit through the vehicle tracking control. There are several different types of stabilized construction entrances including:

VTC-1. Aggregate Vehicle Tracking Control. This is a coarse-aggregate surfaced pad underlain by a geotextile. This is the most common vehicle tracking control, and when properly maintained can be effective at removing sediment from vehicle tires.

VTC-2. Vehicle Tracking Control with Construction Mat or Turf Reinforcement Mat. This type of control may be appropriate for site access at very small construction sites with low traffic volume over vegetated areas. Although this application does not typically remove sediment from vehicles, it helps protect existing vegetation and provides a stabilized entrance.

Vehicle Tracking Control	
Functions	
Erosion Control	Moderate
Sediment Control	Yes
Site/Material Management	Yes

VTC-3. Stabilized Construction Entrance/Exit with Wheel Wash. This is an aggregate pad, similar to VTC-1, but includes equipment for tire washing. The wheel wash equipment may be as simple as hand-held power washing equipment to more advance proprietary systems. When a wheel wash is provided, it is important to direct wash water to a sediment trap prior to discharge from the site.

Vehicle tracking controls are sometimes installed in combination with a sediment trap to treat runoff.

Maintenance and Removal

Inspect the area for degradation and replace aggregate or material used for a stabilized entrance/exit as needed. If the area becomes clogged and ponds water, remove and dispose of excess sediment or replace material with a fresh layer of aggregate as necessary.

With aggregate vehicle tracking controls, ensure rock and debris from this area do not enter the public right-of-way.

Remove sediment that is tracked onto the public right of way daily or more frequently as needed. Excess sediment in the roadway indicates that the stabilized construction entrance needs maintenance.

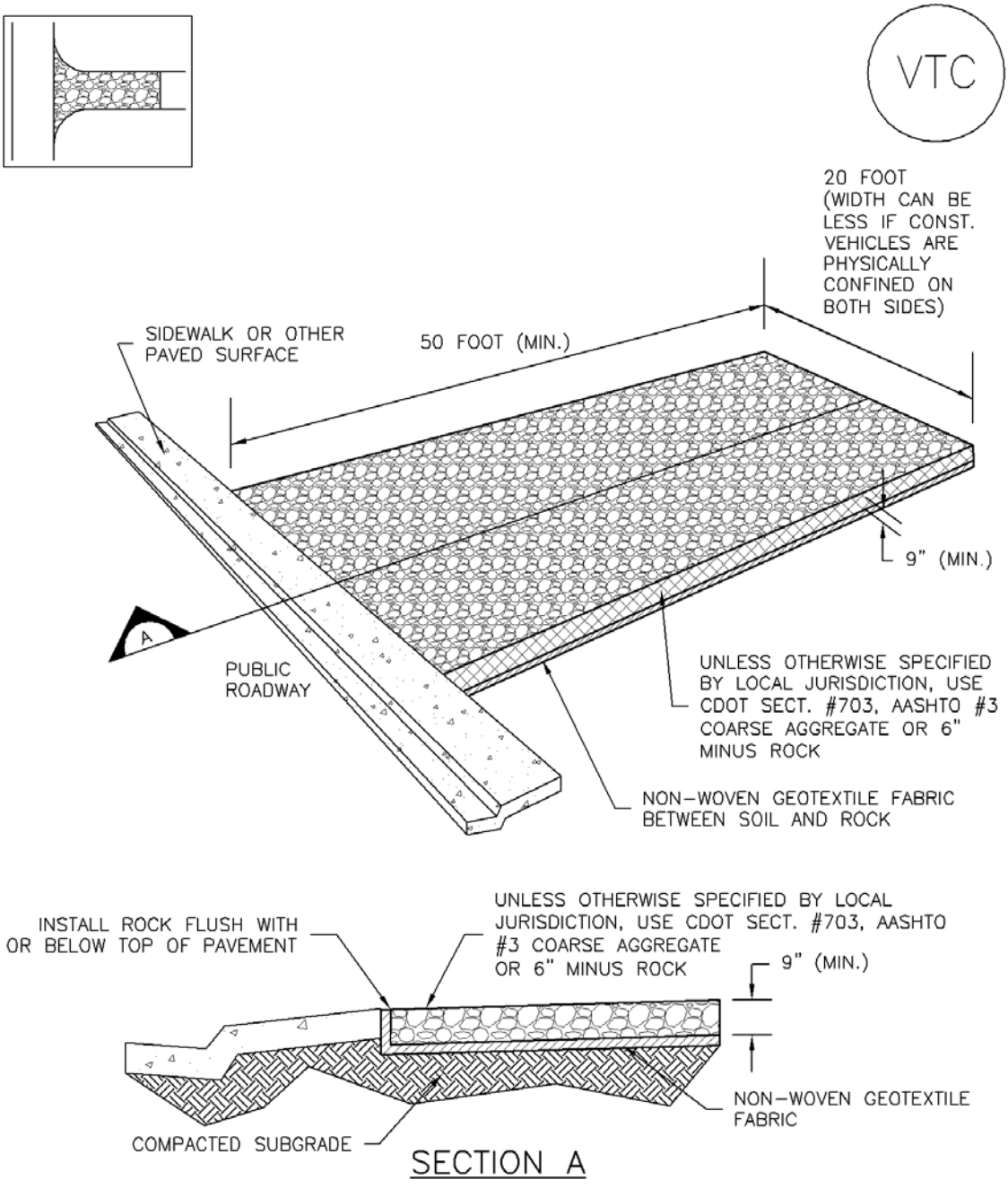
Ensure that drainage ditches at the entrance/exit area remain clear.

Photograph VTC-2. A vehicle tracking control pad with wheel wash facility. Photo courtesy of Tom Gore.

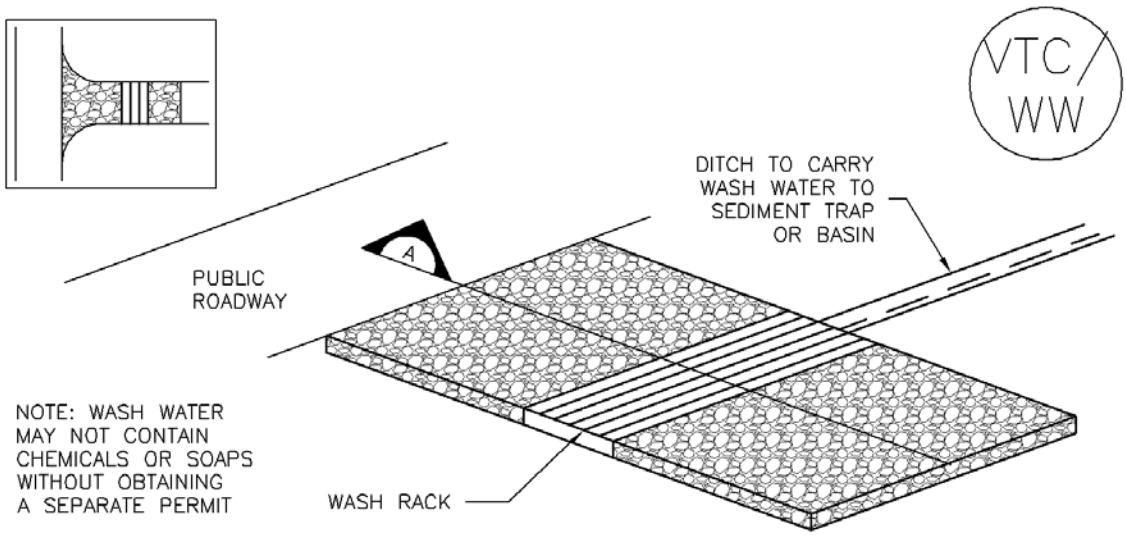
A stabilized entrance should be removed only when there is no longer the potential for vehicle tracking to occur. This is typically after the site has been stabilized.

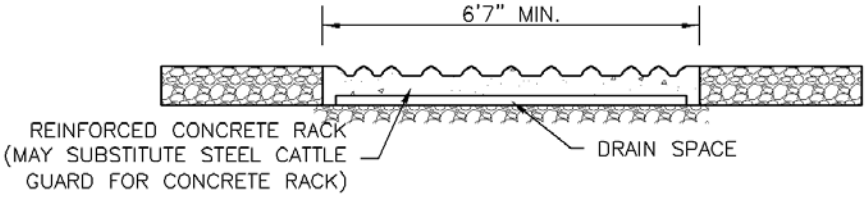
When wheel wash equipment is used, be sure that the wash water is discharged to a sediment trap prior to discharge. Also inspect channels conveying the water from the wash area to the sediment trap and stabilize areas that may be eroding.

When a construction entrance/exit is removed, excess sediment from the aggregate should be removed and disposed of appropriately. The entrance should be promptly stabilized with a permanent surface following removal, typically by paving.



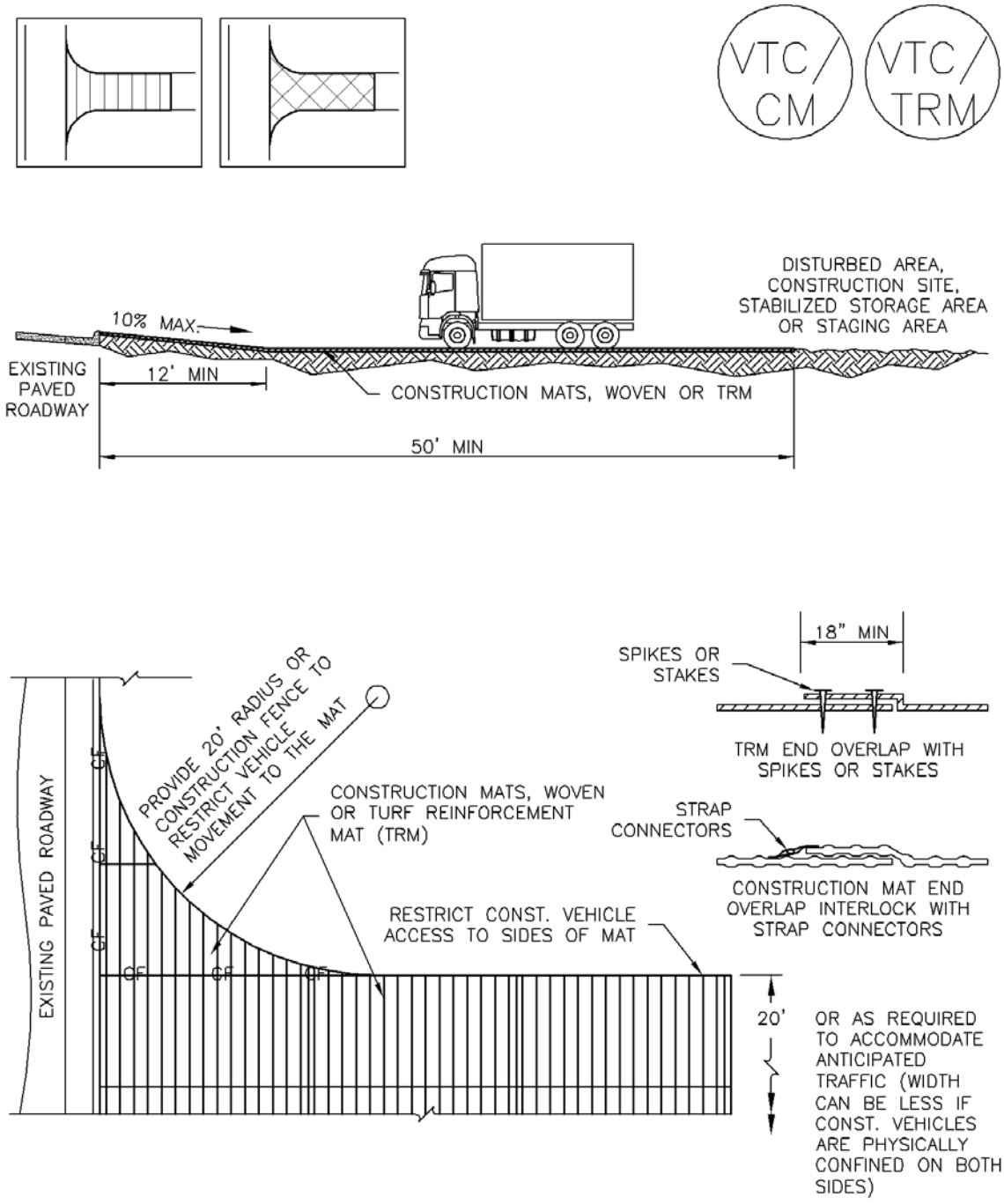
VTC-1. AGGREGATE VEHICLE TRACKING CONTROL





SECTION A

VTC–2. AGGREGATE VEHICLE TRACKING CONTROL WITH WASH RACK



VTC–3. VEHICLE TRACKING CONTROL W/ CONSTRUCTION MAT OR TURF REINFORCEMENT MAT (TRM)

STABILIZED CONSTRUCTION ENTRANCE/EXIT INSTALLATION NOTES

1. SEE PLAN VIEW FOR
   -LOCATION OF CONSTRUCTION ENTRANCE(S)/EXIT(S).
   -TYPE OF CONSTRUCTION ENTRANCE(S)/EXITS(S) (WITH/WITHOUT WHEEL WASH, CONSTRUCTION MAT OR TRM).

2. CONSTRUCTION MAT OR TRM STABILIZED CONSTRUCTION ENTRANCES ARE ONLY TO BE USED ON SHORT DURATION PROJECTS (TYPICALLY RANGING FROM A WEEK TO A MONTH) WHERE THERE WILL BE LIMITED VEHICULAR ACCESS.

3. A STABILIZED CONSTRUCTION ENTRANCE/EXIT SHALL BE LOCATED AT ALL ACCESS POINTS WHERE VEHICLES ACCESS THE CONSTRUCTION SITE FROM PAVED RIGHT-OF-WAYS.

4. STABILIZED CONSTRUCTION ENTRANCE/EXIT SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.

5. A NON-WOVEN GEOTEXTILE FABRIC SHALL BE PLACED UNDER THE STABILIZED CONSTRUCTION ENTRANCE/EXIT PRIOR TO THE PLACEMENT OF ROCK.

6. UNLESS OTHERWISE SPECIFIED BY LOCAL JURISDICTION, ROCK SHALL CONSIST OF DOT SECT. #703, AASHTO #3 COARSE AGGREGATE OR 6" (MINUS) ROCK.

STABILIZED CONSTRUCTION ENTRANCE/EXIT 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 TO THE STABILIZED ENTRANCE/EXIT TO MAINTAIN A CONSISTENT DEPTH.

5. SEDIMENT TRACKED ONTO PAVED ROADS IS TO BE REMOVED THROUGHOUT THE DAY AND AT THE END OF THE DAY BY SHOVELING OR SWEEPING. SEDIMENT MAY NOT BE WASHED DOWN STORM SEWER DRAINS.

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 CITY OF BROOMFIELD, COLORADO, NOT AVAILABLE IN AUTOCAD)

Description

Street sweeping and vacuuming remove sediment that has been tracked onto roadways to reduce sediment transport into storm drain systems or a surface waterway.

Appropriate Uses

Use this practice at construction sites where vehicles may track sediment offsite onto paved roadways.

Design and Installation

Photograph SS-1. A street sweeper removes sediment and potential pollutants along the curb line at a construction site. Photo courtesy of Tom Gore.

Street sweeping or vacuuming should be conducted when there is noticeable sediment accumulation on roadways adjacent to the construction site. Typically, this will be concentrated at the entrance/exit to the construction site. Well-maintained stabilized construction entrances, vehicle tracking controls and tire wash facilities can help reduce the necessary frequency of street sweeping and vacuuming.

On smaller construction sites, street sweeping can be conducted manually using a shovel and broom. Never wash accumulated sediment on roadways into storm drains.

Maintenance and Removal

- Inspect paved roads around the perimeter of the construction site on a daily basis and more frequently, as needed. Remove accumulated sediment, as needed.
- Following street sweeping, check inlet protection that may have been displaced during street sweeping.
- Inspect area to be swept for materials that may be hazardous prior to beginning sweeping operations.

Street Sweeping/ Vacuuming	
Functions	
Erosion Control	No
Sediment Control	Yes
Site/Material Management	Yes

Description

Wind erosion and dust control BMPs help to keep soil particles from entering the air as a result of land disturbing construction activities. These BMPs include a variety of practices generally focused on either graded disturbed areas or construction roadways. For graded areas, practices such as seeding and mulching, use of soil binders, site watering, or other practices that provide prompt surface cover should be used. For construction roadways, road watering and stabilized surfaces should be considered.

Photograph DC-1. Water truck used for dust suppression. Photo courtesy of Douglas County.

Appropriate Uses

Dust control measures should be used on any site where dust poses a problem to air quality. Dust control is important to control for the health of construction workers and surrounding waterbodies.

Design and Installation

The following construction BMPs can be used for dust control:

- An irrigation/sprinkler system can be used to wet the top layer of disturbed soil to help keep dry soil particles from becoming airborne.
- Seeding and mulching can be used to stabilize disturbed surfaces and reduce dust emissions.
- Protecting existing vegetation can help to slow wind velocities across the ground surface, thereby limiting the likelihood of soil particles to become airborne.
- Spray-on soil binders form a bond between soil particles keeping them grounded. Chemical treatments may require additional permitting requirements. Potential impacts to surrounding waterways and habitat must be considered prior to use.
- Placing rock on construction roadways and entrances will help keep dust to a minimum across the construction site.
- Wind fences can be installed on site to reduce wind speeds. Install fences perpendicular to the prevailing wind direction for maximum effectiveness.

Wind Erosion Control/ Dust Control	
Functions	
Erosion Control	Yes
Sediment Control	No
Site/Material Management	Moderate

Maintenance and Removal

When using an irrigation/sprinkler control system to aid in dust control, be careful not to overwater. Overwatering will cause construction vehicles to track mud off-site.

Description

Surface roughening is an erosion control practice that involves tracking, scarifying, imprinting, or tilling a disturbed area to provide temporary stabilization of disturbed areas. Surface roughening creates variations in the soil surface that help to minimize wind and water erosion. Depending on the technique used, surface roughening may also help establish conditions favorable to establishment of vegetation.

Appropriate Uses

Photograph SR-1. Surface roughening via imprinting for temporary stabilization.

Surface roughening can be used to provide temporary stabilization of disturbed areas, such as when revegetation cannot be immediately established due to seasonal planting limitations. Surface roughening is not a stand-alone BMP, and should be used in conjunction with other erosion and sediment controls.

Surface roughening is often implemented in conjunction with grading and is typically performed using heavy construction equipment to track the surface. Be aware that tracking with heavy equipment will also compact soils, which is not desirable in areas that will be revegetated. Scarifying, tilling, or ripping are better surface roughening techniques in locations where revegetation is planned. Roughening is not effective in very sandy soils and cannot be effectively performed in rocky soil.

Design and Installation

Typical design details for surfacing roughening on steep and mild slopes are provided in Details SR-1 and SR-2, respectively.

Surface roughening should be performed either after final grading or to temporarily stabilize an area during active construction that may be inactive for a short time period. Surface roughening should create depressions 2 to 6 inches deep and approximately 6 inches apart. The surface of exposed soil can be roughened by a number of techniques and equipment. Horizontal grooves (running parallel to the contours of the land) can be made using tracks from equipment treads, stair-step grading, ripping, or tilling.

Fill slopes can be constructed with a roughened surface. Cut slopes that have been smooth graded can be roughened as a subsequent operation. Roughening should follow along the contours of the slope. The tracks left by truck mounted equipment working perpendicular to the contour can leave acceptable horizontal depressions; however, the equipment will also compact the soil.

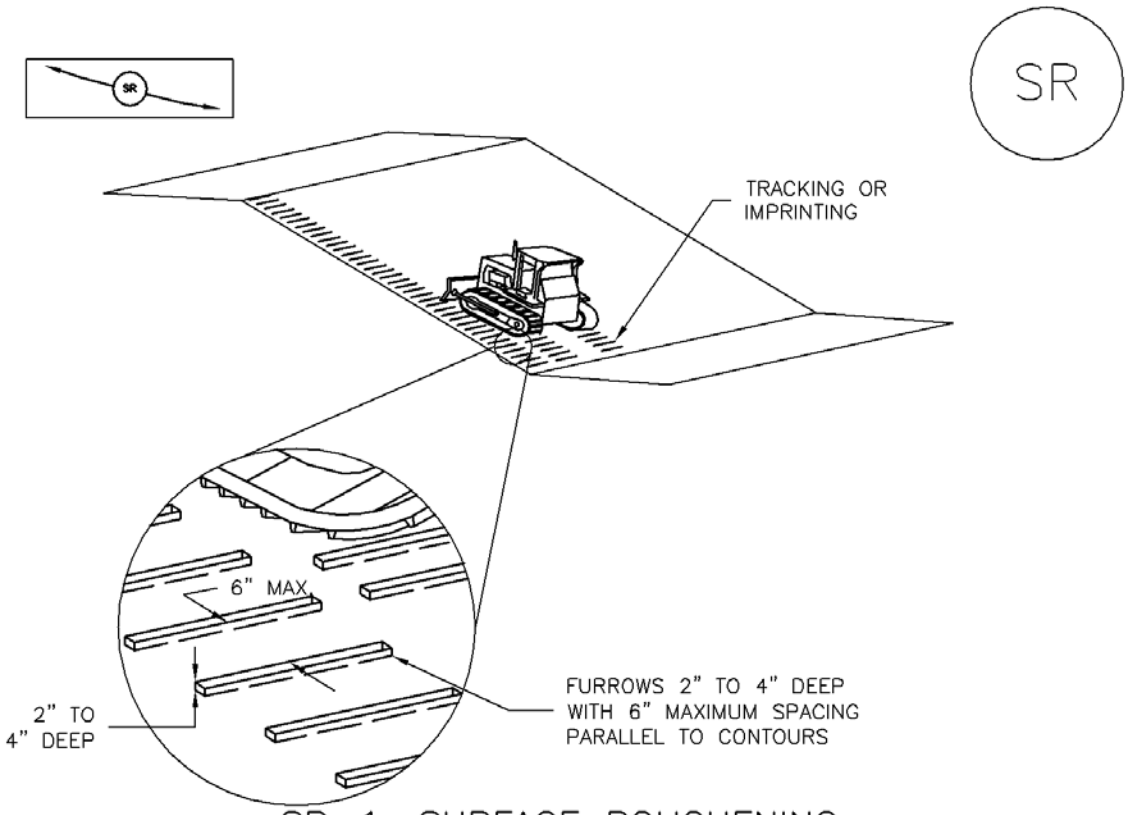
Surface Roughening	
Functions	
Erosion Control	Yes
Sediment Control	No
Site/Material Management	No

Maintenance and Removal

Care should be taken not to drive vehicles or equipment over areas that have been surface roughened. Tire tracks will smooth the roughened surface and may cause runoff to collect into rills and gullies.

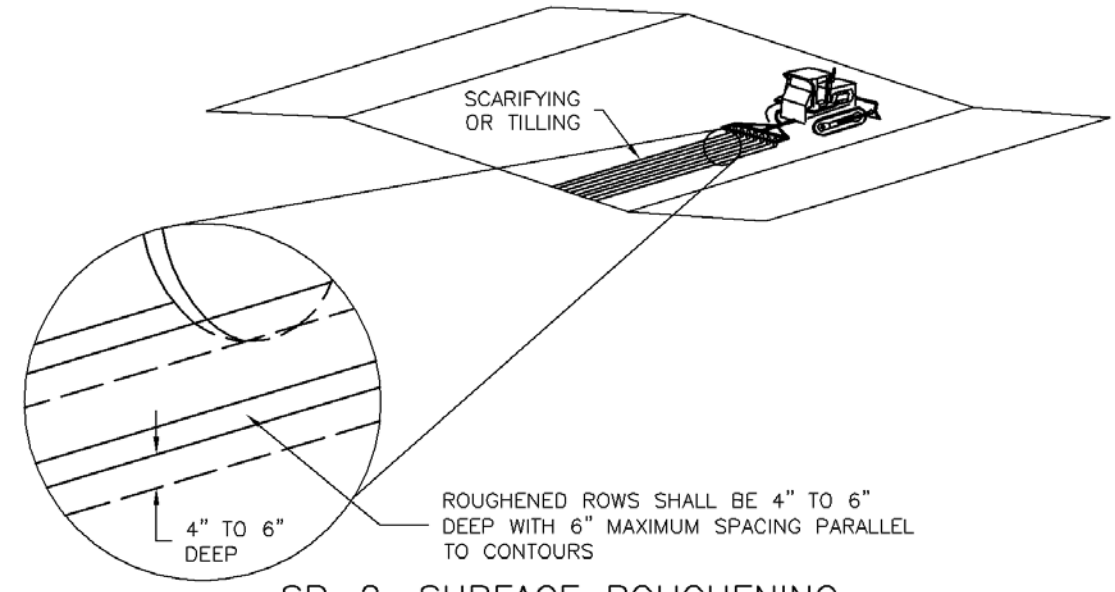
Because surface roughening is only a temporary control, additional treatments may be necessary to maintain the soil surface in a roughened condition.

Areas should be inspected for signs of erosion. Surface roughening is a temporary measure, and will not provide long-term erosion control.



SR–1. SURFACE ROUGHENING

FOR STEEP SLOPES (3:1 OR STEEPER)



SR–2. SURFACE ROUGHENING

FOR LOW SLOPES (LESS THAN 3:1)

SURFACE ROUGHENING INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   -LOCATION(S) OF SURFACE ROUGHENING.

2. SURFACE ROUGHENING SHALL BE PROVIDED PROMPTLY AFTER COMPLETION OF FINISHED GRADING (FOR AREAS NOT RECEIVING TOPSOIL) OR PRIOR TO TOPSOIL PLACEMENT OR ANY FORECASTED RAIN EVENT.

3. AREAS WHERE BUILDING FOUNDATIONS, PAVEMENT, OR SOD WILL BE PLACED WITHOUT DELAY IN THE CONSTRUCTION SEQUENCE, SURFACE ROUGHENING IS NOT REQUIRED.

4. DISTURBED SURFACES SHALL BE ROUGHENED USING RIPPING OR TILLING EQUIPMENT ON THE CONTOUR OR TRACKING UP AND DOWN A SLOPE USING EQUIPMENT TREADS.

5. A FARMING DISK SHALL NOT BE USED FOR SURFACE ROUGHENING.

SURFACE ROUGHENING 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 REPLACE UPON DISCOVERY OF THE FAILURE.

4. VEHICLES AND EQUIPMENT SHALL NOT BE DRIVEN OVER AREAS THAT HAVE BEEN SURFACE ROUGHENED.

5. IN NON-TURF GRASS FINISHED AREAS, SEEDING AND MULCHING SHALL TAKE PLACE DIRECTLY OVER SURFACE ROUGHENED AREAS WITHOUT FIRST SMOOTHING OUT THE SURFACE.

6. IN AREAS NOT SEEDED AND MULCHED AFTER SURFACE ROUGHENING, SURFACES SHALL BE RE-ROUGHENED AS NECESSARY TO MAINTAIN GROOVE DEPTH AND SMOOTH OVER RILL EROSION.

(DETAILS ADAPTED FROM TOWN 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.

Description

Temporary seeding can be used to stabilize disturbed areas that will be inactive for an extended period. Permanent seeding should be used to stabilize areas 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.

Appropriate Uses

Photograph TS/PS -1. Equipment used to drill seed. Photo courtesy of Douglas County.

When the soil surface is disturbed and will remain inactive for an extended period (typically 30 days or longer), proactive stabilization measures should be implemented. If the inactive period is short-lived (on the order of two weeks), techniques such as surface roughening may be appropriate. For longer periods of inactivity, temporary seeding and mulching can provide effective erosion control. Permanent seeding should be used on finished areas that have not been otherwise stabilized.

Typically, local governments have their own seed mixes and timelines for seeding. Check jurisdictional requirements for seeding and temporary stabilization.

Design and Installation

Effective seeding requires proper seedbed preparation, selection of an appropriate seed mixture, use of appropriate seeding equipment to ensure proper coverage and density, and protection with mulch or fabric until plants are established.

The USDCM Volume 2 *Revegetation* Chapter contains detailed seed mix, soil preparations, and seeding and mulching recommendations that may be referenced to supplement this Fact Sheet.

Drill seeding is the preferred seeding method. Hydroseeding is not recommended except in areas where steep slopes prevent use of drill seeding equipment, and even in these instances it is preferable to hand seed and mulch. Some jurisdictions do not allow hydroseeding or hydromulching.

Seedbed Preparation

Prior to seeding, ensure that areas to be revegetated have soil conditions capable of supporting vegetation. Overlot grading can result in loss of topsoil, resulting in poor quality subsoils at the ground surface that have low nutrient value, little organic matter content, few soil microorganisms, rooting restrictions, and conditions less conducive to infiltration of precipitation. As a result, it is typically necessary to provide stockpiled topsoil, compost, or other

Temporary and Permanent Seeding	
Functions	
Erosion Control	Yes
Sediment Control	No
Site/Material Management	No

soil amendments and rototill them into the soil to a depth of 6 inches or more.

Topsoil should be salvaged during grading operations for use and spread on areas to be revegetated later. Topsoil should be viewed as an important resource to be utilized for vegetation establishment, due to its water-holding capacity, structure, texture, organic matter content, biological activity, and nutrient content. The rooting depth of most native grasses in the semi-arid Denver metropolitan area is 6 to 18 inches. At a minimum, the upper 6 inches of topsoil should be stripped, stockpiled, and ultimately respread across areas that will be revegetated.

Where topsoil is not available, subsoils should be amended to provide an appropriate plant-growth medium. Organic matter, such as well digested compost, can be added to improve soil characteristics conducive to plant growth. Other treatments can be used to adjust soil pH conditions when needed. Soil testing, which is typically inexpensive, should be completed to determine and optimize the types and amounts of amendments that are required.

If the disturbed ground surface is compacted, rip or rototill the surface prior to placing topsoil. If adding compost to the existing soil surface, rototilling is necessary. Surface roughening will assist in placement of a stable topsoil layer on steeper slopes, and allow infiltration and root penetration to greater depth.

Prior to seeding, the soil surface should be rough and the seedbed should be firm, but neither too loose nor compacted. The upper layer of soil should be in a condition suitable for seeding at the proper depth and conducive to plant growth. Seed-to-soil contact is the key to good germination.

Seed Mix for Temporary Vegetation

To provide temporary vegetative cover on disturbed areas which will not be paved, built upon, or fully landscaped or worked for an extended period (typically 30 days or more), plant an annual grass appropriate for the time of planting and mulch the planted areas. Annual grasses suitable for the Denver metropolitan area are listed in Table TS/PS-1. These are to be considered only as general recommendations when specific design guidance for a particular site is not available. Local governments typically specify seed mixes appropriate for their jurisdiction.

Seed Mix for Permanent Revegetation

To provide vegetative cover on disturbed areas that have reached final grade, a perennial grass mix should be established. Permanent seeding should be performed promptly (typically within 14 days) after reaching final grade. Each site will have different characteristics and a landscape professional or the local jurisdiction should be contacted to determine the most suitable seed mix for a specific site. In lieu of a specific recommendation, one of the perennial grass mixes appropriate for site conditions and growth season listed in Table TS/PS-2 can be used. The pure live seed (PLS) rates of application recommended in these tables are considered to be absolute minimum rates for seed applied using proper drill-seeding equipment.

If desired for wildlife habitat or landscape diversity, shrubs such as rubber rabbitbrush (*Chrysothamnus nauseosus*), fourwing saltbush (*Atriplex canescens*) and skunkbrush sumac (*Rhus trilobata*) could be added to the upland seedmixes at 0.25, 0.5 and 1 pound PLS/acre, respectively. In riparian zones, planting root stock of such species as American plum (*Prunus americana*), woods rose (*Rosa woodsii*), plains cottonwood (*Populus sargentii*), and willow (*Populus spp.*) may be considered. On non-topsoiled upland sites, a legume such as Ladak alfalfa at 1 pound PLS/acre can be included as a source of nitrogen for perennial grasses.

Seeding dates for the highest success probability of perennial species along the Front Range are generally in the spring from April through early May and in the fall after the first of September until the ground freezes. If the area is irrigated, seeding may occur in summer months, as well. See Table TS/PS-3 for appropriate seeding dates.

Table TS/PS-1. Minimum Drill Seeding Rates for Various Temporary Annual Grasses

Species[a] (Common name)	Growth Season[b]	Pounds of Pure Live Seed (PLS)/acre[c]	Planting Depth (inches)
1. Oats	Cool	35 - 50	1 - 2
2. Spring wheat	Cool	25 - 35	1 - 2
3. Spring barley	Cool	25 - 35	1 - 2
4. Annual ryegrass	Cool	10 - 15	½
5. Millet	Warm	3 - 15	½ - ¾
6. Sudangrass	Warm	5–10	½ - ¾
7. Sorghum	Warm	5–10	½ - ¾
8. Winter wheat	Cool	20–35	1 - 2
9. Winter barley	Cool	20–35	1 - 2
10. Winter rye	Cool	20–35	1 - 2
11. Triticale	Cool	25–40	1 - 2

[a] Successful seeding of annual grass resulting in adequate plant growth will usually produce enough dead-plant residue to provide protection from wind and water erosion for an additional year. This assumes that the cover is not disturbed or mowed closer than 8 inches.

Hydraulic seeding may be substituted for drilling only where slopes are steeper than 3:1 or where access limitations exist. When hydraulic seeding is used, hydraulic mulching should be applied as a separate operation, when practical, to prevent the seeds from being encapsulated in the mulch.

[b] See Table TS/PS-3 for seeding dates. Irrigation, if consistently applied, may extend the use of cool season species during the summer months.

[c] Seeding rates should be doubled if seed is broadcast, or increased by 50 percent if done using a Brillion Drill or by hydraulic seeding.

Table TS/PS-2. Minimum Drill Seeding Rates for Perennial Grasses

Common[a] Name	Botanical Name	Growth Season[b]	Growth Form	Seeds/ Pound	Pounds of PLS/acre
Alakali Soil Seed Mix					
Alkali sacaton	*Sporobolus airoides*	Cool	Bunch	1,750,000	0.25
Basin wildrye	*Elymus cinereus*	Cool	Bunch	165,000	2.5
Sodar streambank wheatgrass	*Agropyron riparium 'Sodar'*	Cool	Sod	170,000	2.5
Jose tall wheatgrass	*Agropyron elongatum 'Jose'*	Cool	Bunch	79,000	7.0
Arriba western wheatgrass	*Agropyron smithii 'Arriba'*	Cool	Sod	110,000	5.5
Total					**17.75**
Fertile Loamy Soil Seed Mix					
Ephriam crested wheatgrass	*Agropyron cristatum 'Ephriam'*	Cool	Sod	175,000	2.0
Dural hard fescue	*Festuca ovina 'duriuscula'*	Cool	Bunch	565,000	1.0
Lincoln smooth brome	*Bromus inermis leyss 'Lincoln'*	Cool	Sod	130,000	3.0
Sodar streambank wheatgrass	*Agropyron riparium 'Sodar'*	Cool	Sod	170,000	2.5
Arriba western wheatgrass	*Agropyron smithii 'Arriba'*	Cool	Sod	110,000	7.0
Total					**15.5**
High Water Table Soil Seed Mix					
Meadow foxtail	*Alopecurus pratensis*	Cool	Sod	900,000	0.5
Redtop	*Agrostis alba*	Warm	Open sod	5,000,000	0.25
Reed canarygrass	*Phalaris arundinacea*	Cool	Sod	68,000	0.5
Lincoln smooth brome	*Bromus inermis leyss 'Lincoln'*	Cool	Sod	130,000	3.0
Pathfinder switchgrass	*Panicum virgatum 'Pathfinder'*	Warm	Sod	389,000	1.0
Alkar tall wheatgrass	*Agropyron elongatum 'Alkar'*	Cool	Bunch	79,000	5.5
Total					**10.75**
Transition Turf Seed Mix[c]					
Ruebens Canadian bluegrass	*Poa compressa 'Ruebens'*	Cool	Sod	2,500,000	0.5
Dural hard fescue	*Festuca ovina 'duriuscula'*	Cool	Bunch	565,000	1.0
Citation perennial ryegrass	*Lolium perenne 'Citation'*	Cool	Sod	247,000	3.0
Lincoln smooth brome	*Bromus inermis leyss 'Lincoln'*	Cool	Sod	130,000	3.0
Total					**7.5**

Table TS/PS-2. Minimum Drill Seeding Rates for Perennial Grasses (cont.)

Common Name	Botanical Name	Growth Season[b]	Growth Form	Seeds/ Pound	Pounds of PLS/acre
Sandy Soil Seed Mix					
Blue grama	*Bouteloua gracilis*	Warm	Sod-forming bunchgrass	825,000	0.5
Camper little bluestem	*Schizachyrium scoparium 'Camper'*	Warm	Bunch	240,000	1.0
Prairie sandreed	*Calamovilfa longifolia*	Warm	Open sod	274,000	1.0
Sand dropseed	*Sporobolus cryptandrus*	Cool	Bunch	5,298,000	0.25
Vaughn sideoats grama	*Bouteloua curtipendula 'Vaughn'*	Warm	Sod	191,000	2.0
Arriba western wheatgrass	*Agropyron smithii 'Arriba'*	Cool	Sod	110,000	5.5
Total					**10.25**
Heavy Clay, Rocky Foothill Seed Mix					
Ephriam crested wheatgrass[d]	*Agropyron cristatum 'Ephriam'*	Cool	Sod	175,000	1.5
Oahe Intermediate wheatgrass	*Agropyron intermedium 'Oahe'*	Cool	Sod	115,000	5.5
Vaughn sideoats grama[e]	*Bouteloua curtipendula 'Vaughn'*	Warm	Sod	191,000	2.0
Lincoln smooth brome	*Bromus inermis leyss 'Lincoln'*	Cool	Sod	130,000	3.0
Arriba western wheatgrass	*Agropyron smithii 'Arriba'*	Cool	Sod	110,000	5.5
Total					**17.5**

[a] All of the above seeding mixes and rates are based on drill seeding followed by crimped straw mulch. These rates should be doubled if seed is broadcast and should be increased by 50 percent if the seeding is done using a Brillion Drill or is applied through hydraulic seeding. Hydraulic seeding may be substituted for drilling only where slopes are steeper than 3:1. If hydraulic seeding is used, hydraulic mulching should be done as a separate operation.

[b] See Table TS/PS-3 for seeding dates.

[c] If site is to be irrigated, the transition turf seed rates should be doubled.

[d] Crested wheatgrass should not be used on slopes steeper than 6H to 1V.

[e] Can substitute 0.5 lbs PLS of blue grama for the 2.0 lbs PLS of Vaughn sideoats grama.

Table TS/PS-3. Seeding Dates for Annual and Perennial Grasses

	Annual Grasses (Numbers in table reference species in Table TS/PS-1)		Perennial Grasses	
Seeding Dates	**Warm**	**Cool**	**Warm**	**Cool**
January 1–March 15			✓	✓
March 16–April 30	4	1,2,3	✓	✓
May 1–May 15	4		✓	
May 16–June 30	4,5,6,7			
July 1–July 15	5,6,7			
July 16–August 31				
September 1–September 30		8,9,10,11		
October 1–December 31			✓	✓

Mulch

Cover seeded areas with mulch or an appropriate rolled erosion control product to promote establishment of vegetation. Anchor mulch by crimping, netting or use of a non-toxic tackifier. See the Mulching BMP Fact Sheet for additional guidance.

Maintenance and Removal

Monitor and observe seeded areas to identify areas of poor growth or areas that fail to germinate. Reseed and mulch these areas, as needed.

An area that has been permanently seeded should have a good stand of vegetation within one growing season if irrigated and within three growing seasons without irrigation in Colorado. Reseed portions of the site that fail to germinate or remain bare after the first growing season.

Seeded areas may require irrigation, particularly during extended dry periods. Targeted weed control may also be necessary.

Protect seeded areas from construction equipment and vehicle access.

Description

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. Mulching helps reduce erosion by protecting bare soil from rainfall impact, increasing infiltration, and reducing runoff. Although often applied in conjunction with temporary or permanent seeding, it can also be used for temporary stabilization of areas that cannot be reseeded due to seasonal constraints.

Mulch can be applied either using standard mechanical dry application methods or using hydromulching equipment that hydraulically applies a slurry of water, wood fiber mulch, and often a tackifier.

Photograph MU-1. An area that was recently seeded, mulched, and crimped.

Appropriate Uses

Use mulch in conjunction with seeding to help protect the seedbed and stabilize the soil. Mulch can also be used as a temporary cover on low to mild slopes to help temporarily stabilize disturbed areas where growing season constraints prevent effective reseeding. Disturbed areas should be properly mulched and tacked, or seeded, mulched and tacked promptly after final grade is reached (typically within no longer than 14 days) on portions of the site not otherwise permanently stabilized.

Standard dry mulching is encouraged in most jurisdictions; however, hydromulching may not be allowed in certain jurisdictions or may not be allowed near waterways.

Do not apply mulch during windy conditions.

Design and Installation

Prior to mulching, surface-roughen areas by rolling with a crimping or punching type roller or by track walking. Track walking should only be used where other methods are impractical because track walking with heavy equipment typically compacts the soil.

A variety of mulches can be used effectively at construction sites. Consider the following:

Mulch	
Functions	
Erosion Control	Yes
Sediment Control	Moderate
Site/Material Management	No

- Clean, weed-free and seed-free cereal grain straw should be applied evenly at a rate of 2 tons per acre and must be tacked or fastened by a method suitable for the condition of the site. Straw mulch must be anchored (and not merely placed) on the surface. This can be accomplished mechanically by crimping or with the aid of tackifiers or nets. Anchoring with a crimping implement is preferred, and is the recommended method for areas flatter than 3:1. Mechanical crimpers must be capable of tucking the long mulch fibers into the soil to a depth of 3 inches without cutting them. An agricultural disk, while not an ideal substitute, may work if the disk blades are dull or blunted and set vertically; however, the frame may have to be weighted to afford proper soil penetration.

- Grass hay may be used in place of straw; however, because hay is comprised of the entire plant including seed, mulching with hay may seed the site with non-native grass species which might in turn out-compete the native seed. Alternatively, native species of grass hay may be purchased, but can be difficult to find and are more expensive than straw. Purchasing and utilizing a certified weed-free straw is an easier and less costly mulching method. When using grass hay, follow the same guidelines as for straw (provided above).

- On small areas sheltered from the wind and heavy runoff, spraying a tackifier on the mulch is satisfactory for holding it in place. For steep slopes and special situations where greater control is needed, erosion control blankets anchored with stakes should be used instead of mulch.

- Hydraulic mulching consists of wood cellulose fibers mixed with water and a tackifying agent and should be applied at a rate of no less than 1,500 pounds per acre (1,425 lbs of fibers mixed with at least 75 lbs of tackifier) with a hydraulic mulcher. For steeper slopes, up to 2000 pounds per acre may be required for effective hydroseeding. Hydromulch typically requires up to 24 hours to dry; therefore, it should not be applied immediately prior to inclement weather. Application to roads, waterways and existing vegetation should be avoided.

- Erosion control mats, blankets, or nets are recommended to help stabilize steep slopes (generally 3:1 and steeper) and waterways. Depending on the product, these may be used alone or in conjunction with grass or straw mulch. Normally, use of these products will be restricted to relatively small areas. Biodegradable mats made of straw and jute, straw-coconut, coconut fiber, or excelsior can be used instead of mulch. (See the ECM/TRM BMP for more information.)

- Some tackifiers or binders may be used to anchor mulch. Check with the local jurisdiction for allowed tackifiers. Manufacturer's recommendations should be followed at all times. (See the Soil Binder BMP for more information on general types of tackifiers.)

- Rock can also be used as mulch. It provides protection of exposed soils to wind and water erosion and allows infiltration of precipitation. An aggregate base course can be spread on disturbed areas for temporary or permanent stabilization. The rock mulch layer should be thick enough to provide full coverage of exposed soil on the area it is applied.

Maintenance and Removal

After mulching, the bare ground surface should not be more than 10 percent exposed. Reapply mulch, as needed, to cover bare areas.

Description

Implement construction site good housekeeping practices to prevent pollution associated with solid, liquid and hazardous construction-related materials and wastes. Stormwater Management Plans (SWMPs) should clearly specify BMPs including these good housekeeping practices:

- Provide for waste management.
- Establish proper building material staging areas.
- Designate paint and concrete washout areas.
- Establish proper equipment/vehicle fueling and maintenance practices.
- Control equipment/vehicle washing and allowable non-stormwater discharges.
- Develop a spill prevention and response plan.

Acknowledgement: This Fact Sheet is based directly on EPA guidance provided in *Developing Your Stormwater Pollution Prevent Plan* (EPA 2007).

Photographs GH-1 and GH-2. Proper materials storage and secondary containment for fuel tanks are important good housekeeping practices. Photos courtesy of CDOT and City of Aurora.

Appropriate Uses

Good housekeeping practices are necessary at all construction sites.

Design and Installation

The following principles and actions should be addressed in SWMPs:

- **Provide for Waste Management.** Implement management procedures and practices to prevent or reduce the exposure and transport of pollutants in stormwater from solid, liquid and sanitary wastes that will be generated at the site. Practices such as trash disposal, recycling, proper material handling, and cleanup measures can reduce the potential for stormwater runoff to pick up construction site wastes and discharge them to surface waters. Implement a comprehensive set of waste-management practices for hazardous or toxic materials, such as paints, solvents, petroleum products, pesticides, wood preservatives, acids, roofing tar, and other materials. Practices should include storage, handling, inventory, and cleanup procedures, in case of spills. Specific practices that should be considered include:

  Solid or Construction Waste

  - Designate trash and bulk waste-collection areas on-site.

Good Housekeeping	
Functions	
Erosion Control	No
Sediment Control	No
Site/Material Management	Yes

- Recycle materials whenever possible (e.g., paper, wood, concrete, oil).
- Segregate and provide proper disposal options for hazardous material wastes.
- Clean up litter and debris from the construction site daily.
- Locate waste-collection areas away from streets, gutters, watercourses, and storm drains. Waste-collection areas (dumpsters, and such) are often best located near construction site entrances to minimize traffic on disturbed soils. Consider secondary containment around waste collection areas to minimize the likelihood of contaminated discharges.
- Empty waste containers before they are full and overflowing.

Sanitary and Septic Waste

- Provide convenient, well-maintained, and properly located toilet facilities on-site.
- Locate toilet facilities away from storm drain inlets and waterways to prevent accidental spills and contamination of stormwater.
- Maintain clean restroom facilities and empty portable toilets regularly.
- Where possible, provide secondary containment pans under portable toilets.
- Provide tie-downs or stake-downs for portable toilets.
- Educate employees, subcontractors, and suppliers on locations of facilities.
- Treat or dispose of sanitary and septic waste in accordance with state or local regulations. Do not discharge or bury wastewater at the construction site.
- Inspect facilities for leaks. If found, repair or replace immediately.
- Special care is necessary during maintenance (pump out) to ensure that waste and/or biocide are not spilled on the ground.

Hazardous Materials and Wastes

- Develop and implement employee and subcontractor education, as needed, on hazardous and toxic waste handling, storage, disposal, and cleanup.
- Designate hazardous waste-collection areas on-site.
- Place all hazardous and toxic material wastes in secondary containment.

Photograph GH-3. Locate portable toilet facilities on level surfaces away from waterways and storm drains. Photo courtesy of WWE.

- Hazardous waste containers should be inspected to ensure that all containers are labeled properly and that no leaks are present.

- **Establish Proper Building Material Handling and Staging Areas**. The SWMP should include comprehensive handling and management procedures for building materials, especially those that are hazardous or toxic. Paints, solvents, pesticides, fuels and oils, other hazardous materials or building materials that have the potential to contaminate stormwater should be stored indoors or under cover whenever possible or in areas with secondary containment. Secondary containment measures prevent a spill from spreading across the site and may include dikes, berms, curbing, or other containment methods. Secondary containment techniques should also ensure the protection of groundwater. Designate staging areas for activities such as fueling vehicles, mixing paints, plaster, mortar, and other potential pollutants. Designated staging areas enable easier monitoring of the use of materials and clean up of spills. Training employees and subcontractors is essential to the success of this pollution prevention principle. Consider the following specific materials handling and staging practices:

  - Train employees and subcontractors in proper handling and storage practices.

  - Clearly designate site areas for staging and storage with signs and on construction drawings. Staging areas should be located in areas central to the construction site. Segment the staging area into sub-areas designated for vehicles, equipment, or stockpiles. Construction entrances and exits should be clearly marked so that delivery vehicles enter/exit through stabilized areas with vehicle tracking controls (See Vehicle Tracking Control Fact Sheet).

  - Provide storage in accordance with Spill Protection, Control and Countermeasures (SPCC) requirements and plans and provide cover and impermeable perimeter control, as necessary, for hazardous materials and contaminated soils that must be stored on site.

  - Ensure that storage containers are regularly inspected for leaks, corrosion, support or foundation failure, or other signs of deterioration and tested for soundness.

  - Reuse and recycle construction materials when possible.

- **Designate Concrete Washout Areas**. Concrete contractors should be encouraged to use the washout facilities at their own plants or dispatch facilities when feasible; however, concrete washout commonly occurs on construction sites. If it is necessary to provide for concrete washout areas on-site, designate specific washout areas and design facilities to handle anticipated washout water. Washout areas should also be provided for paint and stucco operations. Because washout areas can be a source of pollutants from leaks or spills, care must be taken with regard to their placement and proper use. See the Concrete Washout Area Fact Sheet for detailed guidance.

  Both self-constructed and prefabricated washout containers can fill up quickly when concrete, paint, and stucco work are occurring on large portions of the site. Be sure to check for evidence that contractors are using the washout areas and not dumping materials onto the ground or into drainage facilities. If the washout areas are not being used regularly, consider posting additional signage, relocating the facilities to more convenient locations, or providing training to workers and contractors.

  When concrete, paint, or stucco is part of the construction process, consider these practices which will help prevent contamination of stormwater. Include the locations of these areas and the maintenance and inspection procedures in the SWMP.

- Do not washout concrete trucks or equipment into storm drains, streets, gutters, uncontained areas, or streams. Only use designated washout areas.
- Establish washout areas and advertise their locations with signs. Ensure that signage remains in good repair.
- Provide adequate containment for the amount of wash water that will be used.
- Inspect washout structures daily to detect leaks or tears and to identify when materials need to be removed.
- Dispose of materials properly. The preferred method is to allow the water to evaporate and to recycle the hardened concrete. Full service companies may provide dewatering services and should dispose of wastewater properly. Concrete wash water can be highly polluted. It should not be discharged to any surface water, storm sewer system, or allowed to infiltrate into the ground in the vicinity of waterbodies. Washwater should not be discharged to a sanitary sewer system without first receiving written permission from the system operator.

- **Establish Proper Equipment/Vehicle Fueling and Maintenance Practices**. Create a clearly designated on-site fueling and maintenance area that is clean and dry. The on-site fueling area should have a spill kit, and staff should know how to use it. If possible, conduct vehicle fueling and maintenance activities in a covered area. Consider the following practices to help prevent the discharge of pollutants to stormwater from equipment/vehicle fueling and maintenance. Include the locations of designated fueling and maintenance areas and inspection and maintenance procedures in the SWMP.
  - Train employees and subcontractors in proper fueling procedures (stay with vehicles during fueling, proper use of pumps, emergency shutoff valves, etc.).
  - Inspect on-site vehicles and equipment regularly for leaks, equipment damage, and other service problems.
  - Clearly designate vehicle/equipment service areas away from drainage facilities and watercourses to prevent stormwater run-on and runoff.
  - Use drip pans, drip cloths, or absorbent pads when replacing spent fluids.
  - Collect all spent fluids, store in appropriate labeled containers in the proper storage areas, and recycle fluids whenever possible.
- **Control Equipment/Vehicle Washing and Allowable Non-Stormwater Discharges.** Implement practices to prevent contamination of surface and groundwater from equipment and vehicle wash water. Representative practices include:
  - Educate employees and subcontractors on proper washing procedures.
  - Use off-site washing facilities, when available.
  - Clearly mark the washing areas and inform workers that all washing must occur in this area.
  - Contain wash water and treat it using BMPs. Infiltrate washwater when possible, but maintain separation from drainage paths and waterbodies.

- Use high-pressure water spray at vehicle washing facilities without detergents. Water alone can remove most dirt adequately.

- Do not conduct other activities, such as vehicle repairs, in the wash area.

- Include the location of the washing facilities and the inspection and maintenance procedures in the SWMP.

- **Develop a Spill Prevention and Response Plan.** Spill prevention and response procedures must be identified in the SWMP. Representative procedures include identifying ways to reduce the chance of spills, stop the source of spills, contain and clean up spills, dispose of materials contaminated by spills, and train personnel responsible for spill prevention and response. The plan should also specify material handling procedures and storage requirements and ensure that clear and concise spill cleanup procedures are provided and posted for areas in which spills may potentially occur. When developing a spill prevention plan, include the following:

  - Note the locations of chemical storage areas, storm drains, tributary drainage areas, surface waterbodies on or near the site, and measures to stop spills from leaving the site.

  - Provide proper handling and safety procedures for each type of waste. Keep Material Safety Data Sheets (MSDSs) for chemical used on site with the SWMP.

  - Establish an education program for employees and subcontractors on the potential hazards to humans and the environment from spills and leaks.

  - Specify how to notify appropriate authorities, such as police and fire departments, hospitals, or municipal sewage treatment facilities to request assistance. Emergency procedures and contact numbers should be provided in the SWMP and posted at storage locations.

  - Describe the procedures, equipment and materials for immediate cleanup of spills and proper disposal.

  - Identify personnel responsible for implementing the plan in the event of a spill. Update the spill prevention plan and clean up materials as changes occur to the types of chemicals stored and used at the facility.

Spill Prevention, Control, and Countermeasure (SPCC) Plan

Construction sites may be subject to 40 CFR Part 112 regulations that require the preparation and implementation of a SPCC Plan to prevent oil spills from aboveground and underground storage tanks. The facility is subject to this rule if it is a non-transportation-related facility that:

- Has a total storage capacity greater than 1,320 gallons or a completely buried storage capacity greater than 42,000 gallons.
- Could reasonably be expected to discharge oil in quantities that may be harmful to navigable waters of the United States and adjoining shorelines.

Furthermore, if the facility is subject to 40 CFR Part 112, the SWMP should reference the SPCC Plan. To find out more about SPCC Plans, see EPA's website on SPPC at www.epa.gov/oilspill/spcc.htm.

Reporting Oil Spills

In the event of an oil spill, contact the National Response Center toll free at 1-800-424- 8802 for assistance, or for more details, visit their website: www.nrc.uscg.mil.

Maintenance and Removal

Effective implementation of good housekeeping practices is dependent on clear designation of personnel responsible for supervising and implementing good housekeeping programs, such as site cleanup and disposal of trash and debris, hazardous material management and disposal, vehicle and equipment maintenance, and other practices. Emergency response "drills" may aid in emergency preparedness.

Checklists may be helpful in good housekeeping efforts.

Staging and storage areas require permanent stabilization when the areas are no longer being used for construction-related activities.

Construction-related materials, debris and waste must be removed from the construction site once construction is complete.

Design Details

See the following Fact Sheets for related Design Details:

MM-1 Concrete Washout Area

MM-2 Stockpile Management

SM-4 Vehicle Tracking Control

Design details are not necessary for other good housekeeping practices; however, be sure to designate where specific practices will occur on the appropriate construction drawings.

Description

The BMPs selected for construction dewatering vary depending on site-specific features such as soils, topography, anticipated discharge quantities, and discharge location. Dewatering typically involves pumping water from an inundated area to a BMP, and then downstream to a receiving waterway, sediment basin, or well-vegetated area. Dewatering typically involves use of several BMPs in sequence.

Photograph DW-1. A relatively small dewatering operation using straw bales and a dewatering bag.

Appropriate Uses

Dewatering operations are used when an area of the construction site needs to be dewatered as the result of a large storm event, groundwater, or existing ponding conditions. This can occur during deep excavation, utility trenching, and wetland or pond excavation.

Photograph DW-2. Dewatering bags used for a relatively large dewatering operation.

Design and Installation

Dewatering techniques will vary depending on site conditions. However, all dewatering discharges must be treated to remove sediment before discharging from the construction site. Discharging water into a sediment trap or basin is an acceptable treatment option. Water may also be treated using a dewatering filter bag, and a series of straw bales or sediment logs. If these previous options are not feasible due to space or the ability to passively treat the discharge to remove sediment, then a settling tank or an active treatment system may need to be utilized. Settling tanks are manufactured tanks with a series of baffles to promote settling. Flocculants can also be added to the tank to induce more rapid settling. This is an approach sometimes used on highly urbanized construction sites. Contact the state agency for special requirements prior to using flocculents and land application techniques.

Some commonly used methods to handle the pumped water without surface discharge include land application to vegetated areas through a perforated discharge hose (i.e., the "sprinkler method") or dispersal from a water truck for dust control.

Dewatering Operations	
Functions	
Erosion Control	Moderate
Sediment Control	Yes
Site/Material Management	Yes

Dewatering discharges to non-paved areas must minimize the potential for scour at the discharge point either using a velocity dissipation device or dewatering filter bag.

Design Details are provided for these types of dewatering situations:

DW-1. Dewatering for Pond Already Filled with Water

DW-2 Dewatering Sump for Submersed Pump

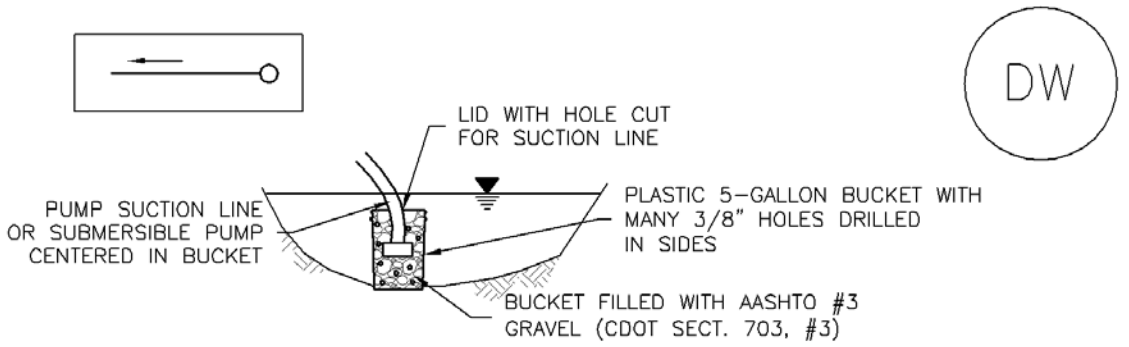
DW-3 Sump Discharge Settling Basin

DW-4 Dewatering Filter Bag

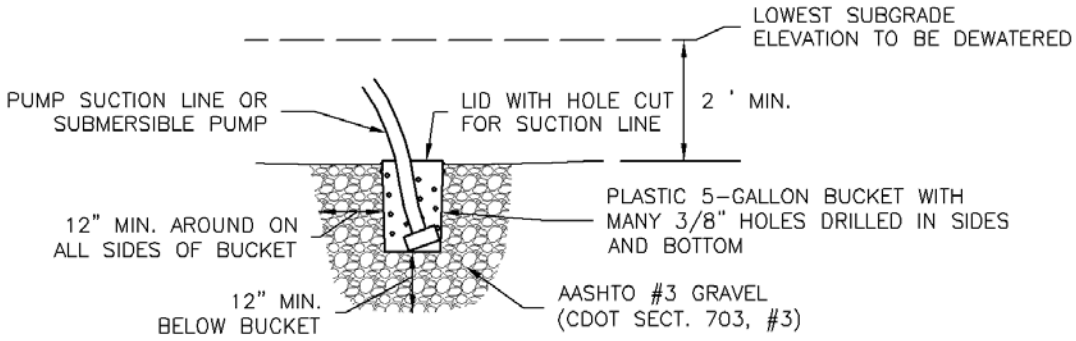
Maintenance and Removal

When a sediment basin or trap is used to enable settling of sediment from construction dewatering discharges, inspect the basin for sediment accumulation. Remove sediment prior to the basin or trap reaching half full. Inspect treatment facilities prior to any dewatering activity. If using a sediment control practice such as a sediment trap or basin, complete all maintenance requirements as described in the fact sheets prior to dewatering.

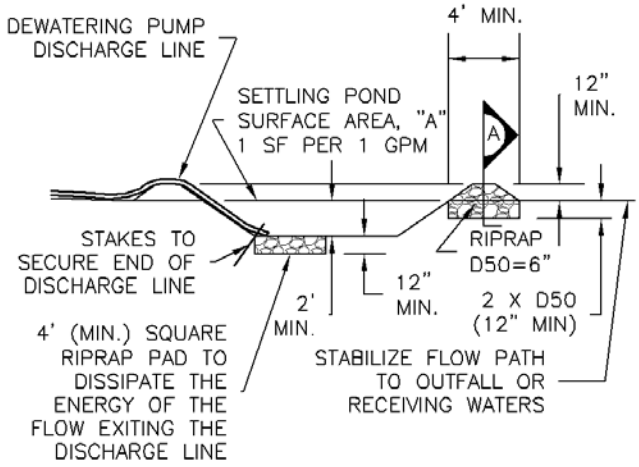
Properly dispose of used dewatering bags, as well as sediment removed from the dewatering BMPs. Depending on the size of the dewatering operation, it may also be necessary to revegetate or otherwise stabilize the area where the dewatering operation was occurring.

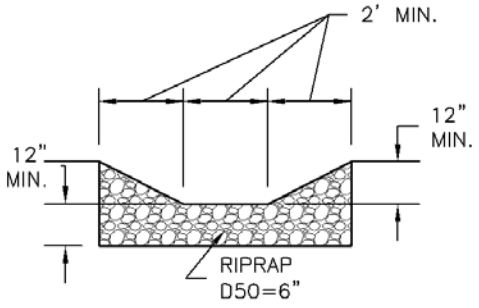


DW-1. DEWATERING POND ALREADY FILLED WITH WATER



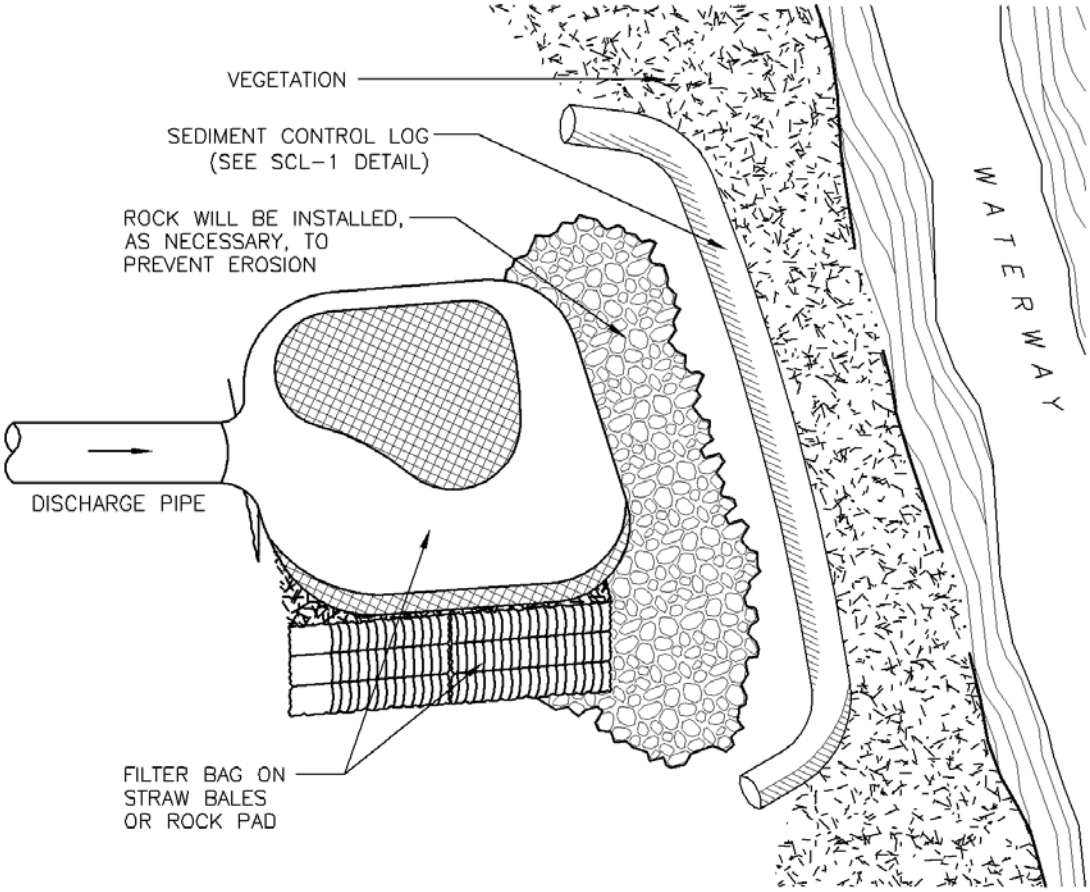
DW-2. DEWATERING SUMP FOR SUBMERSED PUMP





DW-3. SUMP DISCHARGE SETTLING BASIN

SETTLING BASIN SECTION A



DW-4. DEWATERING FILTER BAG

DEWATERING INSTALLATION NOTES

1. SEE PLAN VIEW FOR;
   -LOCATION OF DEWATERING EQUIPMENT.
   -TYPE OF DEWATERING OPERATION (DW-1 TO DW-4).

2. THE OWNER OR CONTRACTOR SHALL OBTAIN A CONSTRUCTION DISCHARGE (DEWATERING) PERMIT FROM THE STATE PRIOR TO ANY DEWATERING OPERATIONS DISCHARGING FROM THE SITE. ALL DEWATERING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE PERMIT.

3. THE OWNER OR OPERATOR SHALL PROVIDE, OPERATE, AND MAINTAIN DEWATERING SYSTEMS OF SUFFICIENT SIZE AND CAPACITY TO PERMIT EXCAVATION AND SUBSEQUENT CONSTRUCTION IN DRY CONDITIONS AND TO LOWER AND MAINTAIN THE GROUNDWATER LEVEL A MINIMUM OF 2-FEET BELOW THE LOWEST POINT OF EXCAVATION AND CONTINUOUSLY MAINTAIN EXCAVATIONS FREE OF WATER UNTIL BACK-FILLED TO FINAL GRADE.

DEWATERING INSTALLATION NOTES

4. DEWATERING OPERATIONS SHALL USE ONE OR MORE OF THE DEWATERING SUMPS SHOWN ABOVE, WELL POINTS, OR OTHER MEANS APPROVED BY THE LOCAL JURISDICTION TO REDUCE THE PUMPING OF SEDIMENT, AND SHALL PROVIDE A TEMPORARY SEDIMENT BASIN OR FILTRATION BMP TO REDUCE SEDIMENT TO ALLOWABLE LEVELS PRIOR TO RELEASE OFF SITE OR TO A RECEIVING WATER. A SEDIMENT BASIN MAY BE USED IN LIEU OF SUMP DISCHARGE SETTLING BASIN SHOWN ABOVE IF A 4-FOOT-SQUARE RIPRAP PAD IS PLACED AT THE DISCHARGE POINT AND THE DISCHARGE END OF THE LINE IS STAKED IN PLACE TO PREVENT MOVEMENT OF THE LINE.

DEWATERING 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. DEWATERING BMPs ARE REQUIRED IN ADDITION TO ALL OTHER PERMIT REQUIREMENTS.

5. TEMPORARY SETTLING BASINS SHALL BE REMOVED WHEN NO LONGER NEEDED FOR DEWATERING OPERATIONS. ANY DISTURBED AREA SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE LOCAL JURISDICTION.

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 DOUGLAS COUNTY, COLORADO, NOT AVAILABLE IN AUTOCAD)

Appendix C – Notice of Intent and MS4 Certification

STATE OF UTAH, DEPARTMENT OF ENVIRONMENTAL QUALITY, DIVISION OF WATER QUALITY 195 North 1950 West, P.O. Box 144870 Salt Lake City, Utah 84114-4870 (801)-536-4300		
UTAH DEPARTMENT of ENVIRONMENTAL QUALITY WATER QUALITY	**Authorization to Discharge under the Construction General Permit (CGP) for Storm Water Discharges Associated with Industrial Activities**	**CGP**

The Utah Division of Water Quality (DWQ) is in receipt of the Notice of Intent (NOI) requesting coverage for Eureka IHP Distribution Project (WBS#85086.5), State Highway 6, Eureka, UT 84628 under the Construction General Permit for Storm Water Discharges (CGP). As of 05/04/2021, this facility is authorized to discharge storm water, provided that all discharges are in compliance with the requirements of the current CGP. This includes development and implementation of a storm water pollution prevention plan, conducting self-inspections, training, visual assessments of discharges, and potentially analytical monitoring. Please keep a copy of this Authorization to Discharge on site with your NOI.

An annual fee is required each calendar year to maintain coverage. If the fee is paid and the facility complies with the permit terms, then the coverage will remain effective until 05/03/2022. At that time the NOI will need to be re-certified and a new Authorization to Discharge will be issued.

Your electronic signature on the NOI form certifies that you have read, understood, and are implementing all of the applicable requirements. An important aspect of this certification requires that you have correctly determined whether you are eligible for coverage under this permit. This authorization does not represent a determination by DWQ regarding the validity of the information provided on the NOI. A copy of the NOI submission can be downloaded at this link: https://cdxnodengn.epa.gov/net-cgp/api/public/v1/form/1355215/attachment/zip.

Site Details

UPDES Permit Number: UTRC02689

Project/Site Name: Eureka IHP Distribution Project (WBS#85086.5)

Project/Site Address: State Highway 6, Eureka, UT 84628

Effective Date: 05/04/2021

Expiration Date: 05/03/2022

Appendix D – Training Certificates

Certified

under the direction of

The Utah Chapter of the American Public Works Association

and the

Utah Storm Water Committee

in coordination with the

State of Utah Department of Environmental Quality, Division of Water Quality

Justin DeCaro

has passed the competency examination, and met all further requirements,
to qualify as a

Registered Storm Water Inspector

M. Scott Bird, USWAC Chair

Jun 16, 2022

Expires

Appendix E – SWPPP Materials Estimate Form

Appendix F – Re-seeding Plan

Appendix G – Inspection Form

Stormwater Construction Site Inspection Report

General Information

Project Name:					
Date of Inspection:		**Start Time:**		**End Time:**	
Inspectors Name:					
Inspectors Title:					
Inspectors Contact Information:	(Phone)		(Email)		

Inspection Information

Type of Inspection

☐ Regular ☐ Pre-storm event ☐ During-storm event ☐ Post-storm event

Weather Information

Has there been a storm event since the last inspection? ☐ Yes ☐ No

Storm Date & Time:		Storm Duration (hrs):		Approx. amount of precipitation (in):	

Weather at time of inspection?

☐ Clear ☐ Cloudy ☐ Rain ☐ Snow ☐ Sleet ☐ Wind ☐ Other:
Temperature:

#	BMP Description/Location	Installed & Operation Properly?	Corrective Action Needed	Notes
1		Yes No		
2		Yes No		
3		Yes No		
4		Yes No		
5		Yes No		
6		Yes No		
7		Yes No		
8		Yes No		
9		Yes No		
10		Yes No		

11		Yes No		
12		Yes No		
13		Yes No		
14		Yes No		
15		Yes No		
16		Yes No		
17		Yes No		
18		Yes No		
19		Yes No		
20		Yes No		
21		Yes No		
22		Yes No		
23		Yes No		
24		Yes No		
25		Yes No		
26		Yes No		
27		Yes No		
28		Yes No		
29		Yes No		
30		Yes No		

Test

Dominion Energy

UT Construction_02 - Dominion

1717 W 12600 S
RIVERTON, UT 84065

Last Rain Event: --

Last Precipitation: Thursday, February 4, 2021, 0.07"

48h Forecast: 57% Chance of Rain

Inspection Date and Time	Completed by	Frequency	Permit #
Feb 4, 2021, 9:41:40 AM	Sample Sample		

Inspection Form Instructions - Review each question for this inspection carefully, then answer YES, NO, or N/A (not applicable). A YES answer indicates that everything regarding this question is OK and in order. A NO answer requires action. Click the add action item button in order to add action items to this inspection.

SWPPP Document

01 - Has an NOI Permit and the applicable City MS4 permit been filed for construction activities specific to this project and are these permits current and signed/certified in the SWPPP?

Yes

~~No~~

02 - Is the NOI posted on the site with a site notice that signifies where the SWPPP is located and the person to call for SWPPP questions regarding this site?

Yes

~~No~~

03 - Are certification pages in the SWPPP signed by the owner and operator of the project according to local /state/federal signature standards?

Yes

~~No~~

04 - Does the inspector of this site have the required qualifications (RSI, CPESC, CPSWQ, CESSWI, CISEC, NICET Level 3, ECS) and are these qualifications listed in the SWPPP?

Yes

~~No~~

05 - Has the inspector and those signing SWPPP documents been properly delegated and is the delegation letter found in the SWPPP?

Yes

~~No~~

06 - Are all of the required BMPs (as is set forth in the UPDES construction general permit) listed in the SWPPP and applied to the site according to the phase of construction?

Yes

~~No~~

07 - Are all pollutants/hazardous materials (fuel, concrete waste/washout waters, stucco waste, paint, portable toilet, trash bin,etc.)/spoils/stockpiles on site identified on the SWPPP map?

- **Yes**
- ~~No~~

NOTE: For map updating, this requires the SITE MAP to be updated with specific pollutants (including dates/locations when a pollutant was introduced, moved, or removed with an activity description where applicable) in the SITE MAPS section when using complianceGO.

08 - Are BMPs utilized on site able to be noted on the SWPPP map (are the SWPPP and site consistent with each other)?

- **Yes**
- ~~No~~

NOTE: For map updating, this requires the SITE MAP to be updated with specific BMPs (including dates/locations when a BMP was added, moved, repaired, or removed with an activity description where applicable) in the SITE MAPS section when using complianceGO

09 - Have all staff personnel, BMP contractors, and subcontractors that are required to receive training been trained? Has the training log in the SWPPP been updated with this information?

- **Yes**
- ~~No~~

Note: for SWPPPs that are kept on complianceGO be sure to update the training log in the documents section

10 - Is the SWPPP document up to date with no need of amendments (Including storm water team contacts, site activities, or other site activities)?

- **Yes**
- ~~No~~

Site Activities

All areas of the site should be inspected, i.e., all BMPs (erosion and sediment controls), Pollutants, Storage Areas, Discharge Points, Outfalls,and Surface Waters

11 - Is the site FREE of any discharges of sediments or pollutants leaving site boundaries or perimeters (i.e. lot boundaries, into streets, parking areas, or site perimeter boundary)?

- **Yes**
- ~~No~~
- ~~N/A~~

NOTE: If the site has fertilizers, be sure to check to see the site is FREE from them being in the street, on sidewalks, or other areas that could cause a discharge of the fertilizer.

12 - Have the required erosion/sediment/pollutant controls (BMPs) been installed; Are the required erosion /sediment/pollutant controls (BMPs) correctly installed; Are the erosion/sediment/pollutant controls (BMPs)

functioning properly to prevent erosion from occurring or from allowing sediment/pollutants to leave the site, boundaries or perimeters (Perimeter controls must be installed for all areas that may receive storm water flows; may also be at the back of lots)?

Yes

~~No~~

13 - Are impervious surfaces FREE from evidence of tracking of sediment/pollutants (roads, ramps, sidewalks, parking areas, etc.)?

Yes

~~No~~

~~N/A~~

14 - Are all construction traffic access/exit points, including individual lots, stabilized properly or are controls in place to prevent tracking from the site?

Yes

~~No~~

~~N/A~~

15 - Are concrete/stucco washouts and paint washouts on site, clearly marked, properly contained, and FREE from any washout or spillage outside of the contained areas?

Yes

~~No~~

~~N/A~~

16 - Are the proper pollution prevention measures in place and functioning properly in order to control construction debris, blowable trash, portable toilets (10 feet back and secured), fertilizers, herbicides, pesticides, landscaping materials, and any other site storage?

Yes

~~No~~

~~N/A~~

17 - Are the stockpiles located off of any impervious surfaces; Are the stockpiles located outside of any natural buffers; Do the stockpiles on site have the proper sediment controls at the base (If the stockpile is in place for more than three days) or have they been covered or stabilized?

Yes

~~No~~

~~N/A~~

18 - Where applicable, are the site Run-On flows properly controlled (i.e. waters entering the site from upslope) with BMPs to prevent contact with pollutants and to prevent erosion, and are all storm water flow structures (drainage channels, diversions, conveyance, sediment basins) FREE of erosion, sediment buildup of over 50%, or needing additional BMPs?

Yes

~~No~~

~~N/A~~

19 - Are all discharge points and outfalls on or near the site FREE from sediment buildup, pollutants, and erosion, and are all surface waters on or near the site FREE from visible pollutants coming from the construction site? e.g. outfalls into a water body, retention basin outfalls, detention basin outfalls.

Yes

~~No~~

~~N/A~~

20 - Where applicable, If the site is within 50 feet of a surface water (Area of water that is in place more than two months out of the year) is the natural buffer or natural buffer equivalent in place on site?

Yes

~~No~~

~~N/A~~

21 - Is dust being properly controlled on site, and is the site FREE from additional dust control BMPs being needed?

Yes

~~No~~

~~N/A~~

22 - Are all materials on site properly stored on site (i.e. undercover, plastic cover, secondary containment, out of the street and off of impervious surfaces)?

Yes

~~No~~

~~N/A~~

23 - Is the site FREE from having any signs of spills or leaks from equipment or storage, and is the appropriate spill prevention in place including proper storage of fuels, oils, or chemicals with secondary containment and coverings where possible? If the site is storing over 1320 gallons of fuels has a site specific SPCC plan been created?

Yes

~~No~~

~~N/A~~

24 - Does the site have a spill kit with the proper materials to contain and clean-up spills or leaks? Spill kits need to contain the proper materials to clean-up a hydraulic line break, fuel spill, or other oil leaks or spills. Is the spill kit located in an accessible location where it can be used if a spill or leak occurs?

Yes

~~No~~

~~N/A~~

25 - Is the site FREE from de-watering off site perimeter boundaries, or has a de-watering permit been obtained from the state, and is proper sampling occurring?

Yes

~~No~~

~~N/A~~

26 - Do all of the off site support activities (e.g. off-site staging, storage,batch plants, stockpiling) have the proper BMPs in place; are the BMPs installed and functioning properly; and is the site FREE from any pollutants leaving the site boundaries?

Yes

~~No~~

~~N/A~~

27 - Are all non-stormwater activities being properly contained, and if there are any discharges are the discharges FREE of sediment or other pollutants?

Yes

~~No~~
~~N/A~~

28 - If applicable are all the BMPs that are needed in place prior to winter conditions occurring?

Yes
~~No~~
~~N/A~~

29 - If Post Construction BMPs are required, are they being installed according to the phase of construction, or have they been completed?

Yes
~~No~~
~~N/A~~

30 - Are topsoil's and vegetation being preserved where possible?

Yes
~~No~~
~~N/A~~

STABILIZATION

31 - Have all slopes and disturbed areas not actively being worked for over 14 days had stabilization initiated?

Yes
~~No~~
~~N/A~~

32 - According to climate conditions or impaired receiving waters, have stabilization practices of completed areas of the site been initiated or completed in the appropriate time period?

Yes
~~No~~
~~N/A~~

NOTICE OF TERMINATION

33 - If the site is nearing completion, have all the requirements been met to file the Notice of Termination (NOT)? (NOT requirements include -change of ownership - OR - Site properly stabilized; All waste, materials, and equipment removed from the site; All BMPs not meant to stay need to be removed; All potential pollutants from construction need to be removed; The post construction BMPs need to be inspected; The site needs to be properly cleaned-up.

Yes
~~No~~
~~N/A~~

34 - If applicable has the final inspection been scheduled with the MS4?

Yes
~~No~~
~~N/A~~

35 - Are future inspections needed?

- **Yes**
- ~~No~~
- ~~N/A~~

Site Activity and Required Disturbance/Stabilization Information

Indicate the current phase or phases of construction activity for this site:

Note areas that were unsafe / non-accessible during this inspection:

Note the dates and locations of any new disturbances, excavations, major digs, areas that have been temporarily/permanently stabilized or sold:

Indicate when construction activities have temporarily or permanently ceased and what temporary or permanent stabilization measures will be applied to applicable areas:

Communication/Observations and Notes/Regulatory - Text Box input field

Indicate who these inspection findings were reviewed with or sent to.

Provide any additional observations/notes pertinent to this inspection. (E.g.- is this inspection for emergency construction activities?)

Text

Discharge and Notes

Was the site FREE from a discharge during today's inspection?

- **Yes**
- ~~No~~

If there is a discharge, a visual sample is required. Be sure to add a visual monitoring form to this inspection.

Certification

Inspector Certification Statement:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Electronic Signature

X ***Sample Sample***

Date
February 4, 2021 at 9:44:58 AM MST

Title

There Are No Action Items

Appendix H – Corrective Action Form

Project Name:
SWPPP Contact:

Inspection Date	Inspector Name(s)	Description of BMP Deficiency	Corrective Action Needed (including planned date/responsible person)	Date Action Taken/Responsible Person

Appendix I – SWPPP Amendment Log

Project Name:
SWPPP Contact:

Amendment No.	Description of the Amendment	Date of Amendment	Amendment Prepared by [Name(s) and Title]

Appendix J – Grading and Stabilization Log

Project Name:
SWPPP Contact:

Date Grading Activity Initiated	Description of Grading Activity	Date Grading Activity Ceased (Indicate Temporary or Permanent)	Date When Stabilization Measures Are Initiated	Description of Stabilization Measure and Location

Appendix K – Training Log

SWPPP Training Log

Project Name:
Project Location:
Instructor's Name(s):
Instructor's Title(s):
Course Location:
Date:
Course Length (hours):

Stormwater Training Topic: *(check as appropriate)*

❑	**Erosion Control BMPs**	❑	**Emergency Procedures**
❑	**Sediment Control BMPs**	❑	**Good Housekeeping BMPs**
❑	**Non-Stormwater BMPs**		

Specific Training Objective:

Attendee Roster: *(attach additional pages as necessary)*

No.	Name of Attendee	Company
1		
2		
3		
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