



SUBDIVISION-MINOR / FINAL

Application submittals must include all documents on this checklist as well as this page. Please use the reference guide (pg. 3) included in this packet for more information on each submittal item.

All applications shall be submitted electronically to epermitcenter@adcogov.org. If the submittal is too large to email as an attachment, the application may be sent as an unlocked OneDrive link. Alternatively, the application may be delivered on a flash drive to the One-Stop Customer Service Center. All documents should be combined in a single PDF. Once a complete application has been received, fees will be invoiced and payable online at <https://permits.adcogov.org/CitizenAccess/>.

1. Development Application Form (pg. 5)
2. Application Fees (pg. 2)
3. Written Explanation of the Project
4. Site Plan Showing Proposed Development
5. Copy of Plat prepared by Registered Land Surveyor (pg. 7)
6. Subdivision Improvement Agreement (SIA) Application
7. School Impact Analysis (contact applicable District)
8. Fire Protection Report (contact applicable District)
9. Proof of Ownership
10. Proof of Water and Sewer Services
11. Proof of Utilities
12. Legal Description
13. Statement of Taxes Paid
14. Certificate of Notice to Mineral Estate Owners/and Lessees (pg. 12)
15. Certificate of Surface Development (pg. 13)
16. Subdivision Engineering Review application (**2 hard copies**)

continued on next page...



Application Fees	Amount	Due
Minor Subdivision (final plat)	\$1,500	After complete application received
Tri-County Health	\$150 (with public utilities-TCHD Level 1), \$210 (with individual septic system-TCHD Level 2)	After complete application received
Soil Conservation	\$100 (less than 5 lots), \$150 (more than 5 lots)	After complete application received
Colorado Geological Survey	\$600 (1-3 dwellings and less than 100 ac)\$900 (< 3 dwellings and less than 100 ac) \$1,550 (between 100 and 500 acres) \$2,500 (500 acres or more)	After complete application received
Engineering Review	\$1,000 (less than 5 lots) \$2,500 (5-25 lots) \$7,500 (greater than 25 lots)	After complete application received
Copying	\$5 per page	Prior to public hearing
Recording *Check made payable to Clerk and Recorder	\$13 first page, \$10 each additional page	Prior to public hearing
Public Land Dedication	Determined during staff review of project	Prior to public hearing

Minor Subdivision (Preliminary/Final Plat) - Guide to Development Application Submittal

The submittal documents for all Land Use/Development Applications are listed below. Detailed explanations of the submittal documents are also provided.

All development application submittals shall comprise of one (1) electronic copy (emailed or delivered on a USB). **Application submittals that do not conform to these guidelines shall not be accepted.**

3. Written Explanation of the Project:

- A clear and concise, yet thorough, description of the proposal. Please include, if applicable, timeframe, purpose of project, and improvements that will be made to the site

4. Site Plan Showing Proposed Development:

- A detailed drawing of existing and proposed improvements
- Including:
 - Streets, roads, and intersections
 - Driveways, access points, and parking areas
 - Existing and proposed structures, wells, and septic systems,
 - Easements, utility lines, and no build or hazardous areas
 - Scale, north arrow, and date of preparation
- An Improvement Location Certificate or Survey may be required during the official review

5. Copy of Plat Prepared by Registered Land Surveyor

- A map or maps together with supporting documentation of certain described land providing permanent and accurate record of the legal description, dedications, exact size, shape, and location of lots, blocks, streets, easements, and parcels

6. Subdivision Improvements Agreement:

- This agreement addresses the manner, timing, and responsibility of completion of all required public improvements (i.e. curb, gutter, and sidewalk)
- Shall include the Word version of the Subdivision Improvements Agreement, all exhibits, and a collateral estimate

7. School Impact Analysis:

- Contact the applicable school district for the analysis
- Should include the increase in elementary, middle, and high school students and the existing school sites and structure of the applicable district in which the subdivision is proposed to be located

8. Fire Protection Report:

- Shall discuss the adequacy of protection within the propose subdivision and be approved by the appropriate fire district

9. Proof of Ownership:

- A deed may be found in the Office of the Clerk and Recorder
- A title commitment is prepared by a professional title company

10. Proof of Water:

- Public utilities - A written statement from the appropriate water district indicating that they will provide service to the property **OR** a copy of a current bill from the service provider
- Private utilities - Well permit(s) information can be obtained from the Colorado State Division of Water Resources at (303) 866-3587

Proof of Sewer:

- Public utilities - A written statement from the appropriate sanitation district indicating that they will provide service to the property **OR** a copy of a current bill from the service provider
- Private utilities - A written statement from Tri-County Health indicating the viability of obtaining Onsite Wastewater Treatment Systems

11. Proof of Utilities (Gas, Electric, etc):

- A written statement from the appropriate utility provider indicating that they will provide service to the property
- Copy of a current bill from the service provider

12. Legal Description:

- Geographical description used to locate and identify a property
- Visit <http://gisapp.adcogov.org/quicksearch/> to find the legal description for your property

13. Statement of Taxes Paid:

- All taxes on the subject property must be paid in full. Please contact the Adams County Treasurer's Office
- Or <https://adcotax.com/treasurer/web/>

14-15. Certificate of Notice to Mineral Estate Owners/ Certificate of Surface Development:

- The State of Colorado requires notification to mineral rights owners of applications for surface development (i.e. zoning, plats, etc.)
- Mineral or Surface right owners may be found in the title commitment for the subject property
- You may also search the Office of the Clerk and Recorder for any recorded deeds, easements, or other documents.

Subdivision Engineering Review

Level 1-Storm Drainage Plan:

- A level 1 Storm Drainage Plan is a preliminary design plan showing existing and proposed site drainage features or improvements and, is intended to show how the storm drainage will be mitigated.
- See Appendix B of the Development Standards for a plan preparation checklist

Level 2-Storm Drainage Study (SDS):

- A level 2 SDS is a preliminary design report that describes the existing and proposed drainage features and, includes a hydrologic analysis of the proposed site. A Level 2 SDS also includes a drainage plan.
- See Appendix B of the Development Standards for a plan preparation checklist

Level 3-Storm Drainage Study (SDS):

- A level 3 SDS is a preliminary design report that describes the existing and proposed drainage features, includes a hydrologic analysis of the proposed site and hydraulic analysis of all proposed drainage mitigation measures. A Level 3 SDS also includes a drainage plan and construction plans for all drainage mitigation features.
- See Appendix B of the Development Standards for a plan preparation checklist

Traffic Impact Study:

- Intended to forecast and mitigate the transportation and traffic impacts of a proposed land use development or redevelopment project
- See Chapter 8 of the Adams County Development Standards for requirements

Erosion and Sediment Control Plans:

- Erosion and Sediment Control (ESC) plans are construction plans showing the proposed Best Management Practices, or BMP's, that will be used to mitigate erosion and the transport of sediment from a site under construction.
- ESC plans are often done in three (3) phases: Initial, Interim and, Final.
- These plans must also include installation details for each of the BMP's.

Construction / Engineering Design Plans:

- A set of maps and/or drawings showing how a proposed development is to be constructed.
- The plans must include:
 - site maps of the existing conditions and proposed improvements,
 - installation/construction details for all proposed improvements,
 - survey control (horizontal and vertical) for locating the improvements and,
 - all necessary specification for the products to be used.
- Construction plans are often broken out for specific improvements; for example: site plan, grading plan, waterline improvement plans, roadways improvements plans, etc.



DEVELOPMENT APPLICATION FORM

Application Type:

<input type="checkbox"/> Conceptual Review	<input type="checkbox"/> Preliminary PUD	<input type="checkbox"/> Temporary Use
<input type="checkbox"/> Subdivision, Preliminary	<input type="checkbox"/> Final PUD	<input type="checkbox"/> Variance
<input type="checkbox"/> Subdivision, Final	<input type="checkbox"/> Rezone	<input type="checkbox"/> Conditional Use
<input type="checkbox"/> Plat Correction/ Vacation	<input type="checkbox"/> Special Use	<input type="checkbox"/> Other: _____

PROJECT NAME:

APPLICANT

Name(s): Phone #:

Address:

City, State, Zip:

2nd Phone #: Email:

OWNER

Name(s): Phone #:

Address:

City, State, Zip:

2nd Phone #: Email:

TECHNICAL REPRESENTATIVE (Consultant, Engineer, Surveyor, Architect, etc.)

Name: Phone #:

Address:

City, State, Zip:

2nd Phone #: Email:

DESCRIPTION OF SITE

Address:

City, State, Zip:

Area (acres or
square feet):

Tax Assessor
Parcel Number

Existing
Zoning:

Existing Land
Use:

Proposed Land
Use:

Have you attended a Conceptual Review? YES ☐

NO ☐

If Yes, please list PRE#:

I hereby certify that I am making this application as owner of the above described property or acting under the authority of the owner (attached authorization, if not owner). I am familiar with all pertinent requirements, procedures, and fees of the County. I understand that the Application Review Fee is non-refundable. All statements made on this form and additional application materials are true to the best of my knowledge and belief.

Name:

Date:

Owner's Printed Name

Name:

Owner's Signature





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January 20, 2022

Community & Economic Development Department
Adams County
4430 S Adams County Parkway
Brighton, CO 80601

Re: PRE2020-00035 14901 Minor Subdivision

Dear Adams County Staff:

This letter is intended to serve as the “Written Explanation” related to the Neitenbach Subdivision as part of our Minor Subdivision application. The proposed project consists of subdividing a 10-acre lot into 3, +/-3 acre lots at 14901 Co. Blvd, Brighton, CO 80602. The lot is zoned A-1 and each of the lots created would carry this same zoning. This project is family owned and we intend to build a house and raise our families on the lots created by the subdivision.

A neighborhood meeting was held virtually on Feb 25th, 2021 with 8 people in attendance. There were no objections to our request and the neighbors were encouraged by the plans for this property. Our goal for the subdivision aligns with Policy 11.1.c of Adams County long term development plans which is to “preserve character and quality of an area”. We wish to maintain the agriculture/rural character of the environmental quality.

Access to the development is proposed from Colorado Boulevard along the southern-most property line and will consist of a private access road and turn around, designed to give emergency vehicles room to turn around. This access would be maintained by the 3 property owners via a covenant.

The existing east lot already has utilities and a residence in place, but the two additional lots will be served by potable water wells and individual sewage disposal (septic) systems. Permits for these systems will be processed and obtained from the appropriate agencies concurrent to the approval process for each building permit. We have provided a Non-Tributary Aquifer Groundwater Supply analysis as prepared by William Berg, P.G. of Martin Wood Water Consultants. The analysis demonstrates a 300-year supply is available for the proposed lots, per Adams County Requirements.

The existing oil & gas facilities that lie within the proposed northwest lot have been plugged and abandoned and remediation is currently underway under the supervision of Michael Hickey, Director of the Colorado Oil & Gas Conservation Commission’s orphaned well program.

We look forward to your review of this application and are available to answer any questions you may have.

Andrew Neitenbach, Owner’s Representative

SITE PLAN CONSTRUCTION DOCUMENTS
FOR
NEITENBACH SUBDIVISION, BRIGHTON, COLORADO

A PORTION OF LAND LOCATED IN THE NORTHEAST QUARTER OF SECTION 13, TOWNSHIP 1 SOUTH,
RANGE 68 WEST OF THE 6TH P.M., COUNTY OF ADAMS, STATE OF COLORADO

JANUARY 2022

BENCHMARK:

ELEVATIONS ARE BASED ON NAVD88 DATUM, USING NGS CONTROL STATION: BIG DRY
[PID:AB3294] WITH AN ELEVATION OF 5102.34'

NOTES:

1. PUBLIC IMPROVEMENTS SHALL CONFORM TO ADAMS COUNTY STANDARDS AND SPECIFICATIONS AND LATEST EDITION OF COLORADO DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS.

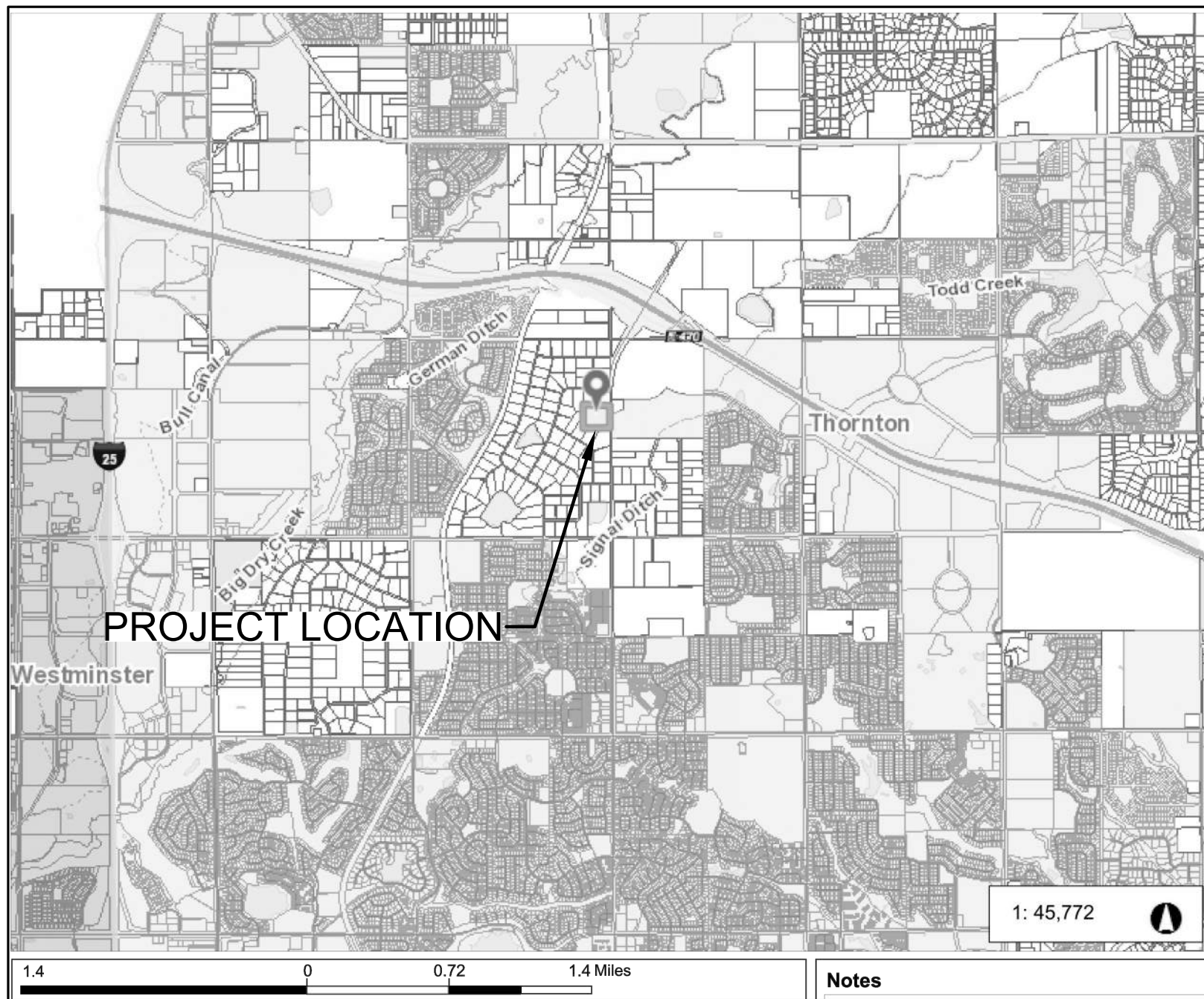
2. THE LINEAL DIMENSIONS AS CONTAINED HEREIN ARE BASED UPON THE "U.S. SURVEY FOOT."

3. THIS DRAWING IS AT MODIFIED STATE PLANE. TO REDUCE TO STATE PLANE COORDINATES, SCALE AT 0.999729365 (1.000270708) ABOUT THE ORIGIN 0,0.

1. ALL PROPERTY PINS, INTERSECTION MONUMENTS, AND SECTION CORNERS DISTURBED DURING CONSTRUCTION MUST BE REFERENCED AND REPLACED UNDER THE SUPERVISION OF A LICENSED SURVEYOR.

2. THE SIZE, TYPE AND LOCATION OF ALL KNOWN UNDERGROUND UTILITIES ARE APPROXIMATE WHEN SHOWN ON THESE DRAWINGS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE EXISTENCE OF ALL UNDERGROUND UTILITIES IN THE AREA OF THE WORK BEFORE COMMENCING NEW CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL UNDERGROUND UTILITIES AND SHALL BE RESPONSIBLE FOR ALL UNKNOWN UNDERGROUND UTILITIES.

3. ALL PROJECT CONTROL LISTED HEREIN IS PROVIDED AS A COURTESY. IT IS THE RESPONSIBILITY OF THE RECIPIENT TO VERIFY THE ACCURACY OF THE COORDINATES AND ELEVATIONS SHOWN PRIOR TO USING THEM FOR ANY PURPOSES.



PROPERTY OWNER:
BRYAN AND KIM NEITENBACH
3855 EAST 151ST AVENUE
BRIGHTON, COLORADO 80602

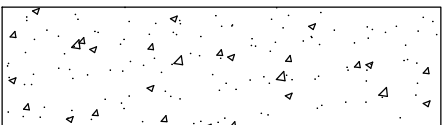
APPLICANT:
ANDREW NEITENBACH
720-939-6892
ANDREW@HORIZONWESTBUILDERS.COM

CIVIL ENGINEER:
SORENSEN ENGINEERING & CONSTRUCTION, INC.
PAUL SORENSEN
1901 BEAR COURT
FORT COLLINS, COLORADO 80525
970-590-1579
PAUL@SECENGINEERING.NET

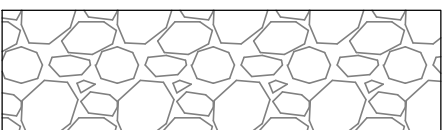
SURVEYOR:
PLS CORPORATION
1205 DES MOINES AVENUE
LOVELAND, COLORADO 80537
970-669-2100

Sheet Number	Sheet Title
1	PROJECT TITLE SHEET
2	GENERAL NOTES
3	OVERALL SITE PLAN
4	GRADING AND EROSION CONTROL PLAN
5	149TH AVE PLAN AND PROFILE
6	CULVERT PROFILES
7	EROSION CONTROL DETAILS

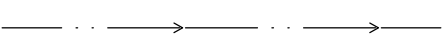
LEGEND:



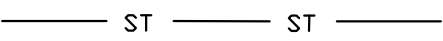
PROPOSED PRIVATE GRAVEL DRIVE



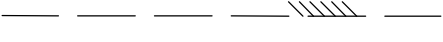
PROPOSED FIRE ACCESS GRAVEL DRIVE



PROPOSED SWALE FLOWLINE



EXISTING PIPE



EXISTING EDGE OF ASPHALT



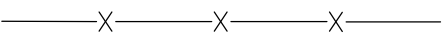
EXISTING OVERHEAD WIRE



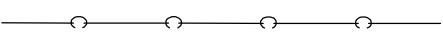
EXISTING UNDERGROUND GAS



EXISTING UNDERGROUND TELEPHONE



EXISTING BARBED WIRE FENCE



EXISTING CHAIN LINK FENCE

BOLLARD

WATER VALVE

WATER METER

POWER POLE

GUY WIRE

ELECTRIC METER

TELEPHONE RISER

MAILBOX

SPIGOT

SEAL

SORENSEN ENGINEERING & CONSTRUCTION, INC
CIVIL / ENVIRONMENTAL ENGINEERING
SEC
1901 BEAR COURT
FORT COLLINS, CO 80525
PHONE: 970 590-1579
paul@secengineering.net

PROJECT
NEITENBACH SUBDIVISION
CONSTRUCTION PLANS
ADAMS COUNTY, COLORADO
PROJECT TITLE SHEET

REVISIONS
DESCRIPTION

NO. DATE

DRAWN BY:
M.KEEFE
CHECKED BY:
P.SORENSEN

SHEET NUMBER:
1
SHEET INDEX:
JOB NUMBER: 2021-023

SCALE:
N.T.S.
DATE:
01/31/2022



Drawing Name: C:\Users\jmgall\OneDrive\Documents\Kaete Civil\2021-23_Neitenbach\Construction Documents\NEITENBACH_1 NOTES.dwg Monday, January 31, 2022 6:48 PM By: Megan Kaete, Engineer

ADAMS COUNTY EROSION CONTROL PLAN - GENERAL NOTES:

ALL CONSTRUCTION PROJECTS, REGARDLESS OF THE SIZE, SHALL INSTALL, MAINTAIN, AND REPAIR STORMWATER POLLUTION **CONTROL MEASURES (CMS)** TO EFFECTIVELY MINIMIZE EROSION, SEDIMENT TRANSPORT, AND THE RELEASE OF POLLUTANTS RELATED TO CONSTRUCTION ACTIVITY. CMS EXAMPLE INCLUDE: SEDIMENT CONTROL LOGS (SCL), SILT FENCE (SF), DIKES/SWALES, SEDIMENT TRAPS (ST), INLET PROTECTION (IP), OUTLET PROTECTION (OP), CHECK DAMS (CD), SEDIMENT BASINS (SB), TEMPORARY/PERMANENT SEEDING AND MULCHING (MU), SOIL ROUGHENING, MAINTAINING EXISTING VEGETATION AND PROTECTION OF TREES. CMS MUST BE SELECTED, DESIGNED, ADEQUATELY SIZED, INSTALLED, AND MAINTAINED IN ACCORDANCE WITH GOOD ENGINEERING, HYDROLOGIC AND POLLUTION CONTROL PRACTICES. CMS/BMPS INSTALLATION AND MAINTENANCE DETAILS SHALL CONFORM TO URBAN DRAINAGE FLOOD CONTROL CRITERIA MANUAL VOLUME 3, OR THE COLORADO DEPARTMENT OF TRANSPORTATION (CDOT) ITEM CODE BOOK. CMS MUST FILTER, SETTLE, CONTAIN, OR STRAIN POLLUTANTS FROM STORMWATER FLOWS IN ORDER TO PREVENT BYPASS OF FLOWS WITHOUT TREATMENT. CMS MUST BE APPROPRIATE TO TREAT THE RUNOFF FROM THE AMOUNT OF DISTURBED AREA, THE EXPECTED FLOW RATE, DURATION, AND FLOW CONDITIONS (I.E., SHEET OR CONCENTRATED FLOW). CMS/BMPS **SHALL BE SPECIFIED IN THE SWMP (IF APPLICABLE), AND THE LOCATIONS SHOWN ON THE EC PLAN.**

- PRIOR TO CONSTRUCTION, PROJECTS DISTURBING 1 OR MORE ACRES OF LAND, OR ANY PROJECT BELONGING TO A COMMON PLAN OF DEVELOPMENT DISTURB 1 OR MORE ACRES, MUST OBTAIN:
 - A GENERAL **PERMIT** FOR STORMWATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITIES, FROM THE COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT, AND
 - AN ADAMS COUNTY STORMWATER QUALITY PERMIT WITHIN THE UNINCORPORATED ADAMS COUNTY MS4 AREA.
- PERMITTED PROJECTS SHALL DEVELOP A STORMWATER MANAGEMENT PLAN (**SWMP**), AKA EROSION AND SEDIMENT CONTROL PLAN (ESCP), IN COMPLIANCE WITH CDPHE MINIMUM REQUIREMENTS. THE APPROVED SWMP, INCLUDING EROSION CONTROL (EC) PLAN (SITE MAP), SHALL BE **KEPT** ON SITE AND **UPDATED** AT ALL TIMES. THE **QUALIFIED STORMWATER MANAGER** IS RESPONSIBLE FOR IMPLEMENTING THE SWMP AND CMS (AKA BMPS) DURING CONSTRUCTION.
- PERMITTED PROJECTS SHALL PERFORM REGULAR **STORMWATER INSPECTIONS** EVERY 7 CALENDAR DAYS; **OR** EVERY 14 CALENDAR DAYS AND WITHIN 24 HOURS AFTER ANY PRECIPITATION OR SNOWMELT EVENT THAT CAUSES SURFACE EROSION. INSPECTION FREQUENCY CAN BE REDUCED FOR **POST-STORM EVENT INSPECTIONS AT TEMPORARILY IDLE SITES** AND ALSO FOR **STORMWATER INSPECTIONS AT COMPLETED SITES WAITING FOR FINAL STABILIZATION**. INSPECTION REPORTS MUST IDENTIFY ANY INCIDENTS OF NON-COMPLIANCE.
- TRACKING** OF DIRT ONTO PAVED PUBLIC OR PRIVATE PAVED ROADS IS NOT ALLOWED. THE USE OF DIRT RAMPS TO ENTER/EXIT FROM AN UNPAVED INTO A PAVED AREA IS PROHIBITED. VEHICLE TRACKING CONTROLS SHALL BE IMPLEMENTED, OTHERWISE ENTRANCE AREA MUST DRAIN THRU A CM TOWARDS THE PRIVATE SITE.
- TRUCK LOADS** OF FILL MATERIAL IMPORTED TO OR CUT MATERIAL EXPORTED FROM THE SITE SHALL BE PROPERLY COVERED TO PREVENT LOSS OF THE MATERIAL DURING TRANSPORTATION ON PUBLIC ROW. HAUL ROUTES MUST BE PERMITTED BY THE COUNTY. NO MATERIAL SHALL BE TRANSPORTED TO ANOTHER SITE WITHOUT APPLICABLE PERMITS.
- CONTROL MEASURES DESIGNED FOR **CONCRETE WASHOUT WASTE** MUST BE IMPLEMENTED. THIS INCLUDES WASHOUT WASTE DISCHARGED TO THE GROUND AND WASHOUT WASTE FROM CONCRETE TRUCKS AND MASONRY OPERATIONS.
- TEMPORARY **CMS/BMPS SHALL BE REMOVED** AFTER THE SITE HAS REACHED FINAL STABILIZATION.
- DEWATERING OPERATIONS** DISCHARGING OFF-SITE INTO ANY WATERS CONVEYANCE SYSTEMS INCLUDING WETLANDS, IRRIGATION DITCHES, CANALS, RIVERS, STREAMS, OR STORM SEWER SYSTEMS, REQUIRE A STATE CONSTRUCTION DEWATERING PERMIT.
- PERMITTED PROJECTS SHALL **KEEP** THE CDPHE'S STORMWATER DISCHARGE PERMIT, STORMWATER MANAGEMENT PLAN (SWMP) AND INSPECTION LOGS AVAILABLE ON-SITE THROUGHOUT THE DURATION OF THE PROJECT, AND FOR AN ADDITIONAL 3 YEARS AFTER PERMIT CLOSE-OUT.
- PERMITTED LANDOWNER AND/OR CONTRACTOR SHALL **CLOSE** THE STATE AND CITY/COUNTY PERMIT ONCE **FINAL STABILIZATION** IS REACHED. STORMWATER INSPECTIONS SHALL CONTINUE UNTIL INACTIVATION NOTICE IS FILED WITH CDPHE.

PERFORMANCE STANDARD NOTES:

- STORMWATER RUNOFF FROM DISTURBED AREAS MUST FLOW TO AT LEAST **ONE (1)** CM TO MINIMIZE SEDIMENT IN THE DISCHARGE. DO NOT ALLOW **SEDIMENT TO LEAVE** THE SITE. THE BEST WAY TO PREVENT SEDIMENT OR POLLUTANTS FROM ENTERING THE STORM SEWER SYSTEM IS TO STABILIZE THE SITE AS QUICKLY AS POSSIBLE, PREVENTING EROSION AND STOPPING SEDIMENT RUN- OFF AT ITS SOURCE.
- PHASE CONSTRUCTION TO MINIMIZE DISTURBED AREAS**, INCLUDING DISTURBANCE OF STEEP SLOPES. (I.E., THE ENTIRE PROJECT SITE SHOULD NOT BE DISTURBED IF CONSTRUCTION WILL ONLY BE OCCURRING IN ONE PARTICULAR SECTION OF THE SITE). LIMIT SOIL EXPOSURE TO THE SHORTEST POSSIBLE PERIOD OF TIME. PROTECT NATURAL FEATURES AND **EXISTING VEGETATION** WHENEVER POSSIBLE. REMOVAL OF EXISTING VEGETATION SHALL BE LIMITED TO THE AREA REQUIRED FOR IMMEDIATE CONSTRUCTION OPERATIONS. MAINTAIN PRE-EXISTING VEGETATION (OR EQUIVALENT CMS) FOR AREAS WITHIN 50 HORIZONTAL FT OF RECEIVING WATERS.
- SOIL COMPACTION** MUST BE MINIMIZED FOR AREAS WHERE INFILTRATION CMS WILL OCCUR OR WHERE FINAL STABILIZATION WILL BE ACHIEVED THROUGH VEGETATIVE COVER.
- ALL **SOIL IMPORTED** TO OR **EXPORTED** FROM THE SITE SHALL BE PROPERLY COVERED TO PREVENT THE LOSS OF MATERIAL DURING TRANSPORT.
- DUST** EMISSIONS RESULTING FROM GRADING ACTIVITIES OR WIND SHALL BE CONTROLLED.
- INSTALL CONSTRUCTION FENCE** (ORANGE) TO PROTECT WETLANDS AND OTHER SENSITIVE AREAS AND TO PREVENT ACCESS, AND TO DELINEATE THE LIMITS OF CONSTRUCTION. DO NOT USE SILT FENCE TO PROTECT WETLANDS SINCE TRENCHING MAY IMPACT THESE AREAS.
- CMS INTENDED TO CAPTURE OVERLAND, LOW VELOCITY **SHEET FLOW** AT A FAIRLY LEVEL GRADE SHALL ONLY BE INSTALLED ALONG CONTOURS.
- INSTALL CMS, SUCH AS **CHECK DAMS**, PERPENDICULAR TO THE **CONCENTRATED FLOWS** TO REDUCE FLOW VELOCITY.
- STORM DRAIN **INLETS** WITHIN AND ADJACENT TO THE CONSTRUCTION SITE MUST BE PROTECTED. ANY PONDING OF STORMWATER AROUND INLET PROTECTION MUST NOT CAUSE EXCESSIVE FLOODING OR DAMAGE ADJACENT AREAS OR STRUCTURES.
- INSTALL **VEHICLE TRACKING CONTROL (VTC)** TO ENTER/EXIT UNPAVED AREA. DO NOT USE RECYCLED CRUSHED CONCRETE OR ASPHALT MILLINGS FOR VEHICLE TRACKING PADS.
- STRAW BALES** SHALL **NOT** BE USED FOR PRIMARY EROSION OR SEDIMENT CONTROL (I.E., STRAW BALES MAY BE USED FOR REINFORCEMENT BEHIND ANOTHER BMP SUCH AS SILT FENCE).
- OUTLET** SYSTEMS (SUCH AS SKIMMER OR PERFORATED RISER PIPE) SHALL BE INSTALLED TO WITHDRAW WATER FROM OR NEAR THE SURFACE LEVEL WHEN DISCHARGING FROM BASINS. WATER CANNOT DRAIN FROM THE BOTTOM OF THE POND.
- TEMPORARY STABILIZATION** MUST BE IMPLEMENTED FOR EARTH DISTURBING ACTIVITIES ON ANY PORTION OF THE SITE WHERE LAND DISTURBING ACTIVITIES HAVE PERMANENTLY OR TEMPORARILY CEASED (FOR MORE THAN 14 CALENDAR DAYS). TEMPORARY STABILIZATION METHODS EXAMPLES: TARPS, SOIL TACKIFIER, AND HYDROSEED. TEMPORARY STABILIZATION REQUIREMENT MAY **EXCEED** THE 14-DAY SCHEDULE WHEN EITHER THE FUNCTION OF THE SPECIFIC AREA REQUIRES IT TO REMAIN DISTURBED, OR, PHYSICAL CHARACTERISTICS OF THE TERRAIN AND CLIMATE PREVENT STABILIZATION AS LONG AS THE CONSTRAINTS AND ALTERNATIVE SCHEDULE IS DOCUMENTED ON THE SWMP, AND LOCATIONS ARE IDENTIFIED ON THE EC PLAN (SITE MAP).
- RUNOFF FROM **STOCKPILE AREA** MUST BE CONTROLLED. SOILS THAT WILL BE STOCKPILED FOR MORE THAN 30 DAYS SHALL BE PROTECTED FROM WIND AND WATER EROSION WITHIN 14 DAYS OF STOCKPILE CONSTRUCTION. INSTALL CMS/BMPS 5 FT AWAY FROM THE TOE OF THE STOCKPILE'S SLOPE.
- WATER USE TO CLEAN CONCRETE TRUCKS SHALL BE DISCHARGED INTO A **CONCRETE WASHOUT AREA (CWA)**. THE PREDEFINED CONTAINMENT AREA MUST BE IDENTIFIED WITH A SIGN AND SHALL ALLOW THE LIQUIDS TO EVAPORATE OR DRY OUT. CWA DISCHARGES THAT MAY REACH GROUNDWATER MUST FLOW THROUGH SOIL THAT HAS BUFFERING CAPACITY PRIOR TO REACHING GROUNDWATER. THE CONCRETE WASHOUT LOCATION SHALL NOT BE LOCATED IN AN AREA WHERE SHALLOW GROUNDWATER MAY BE PRESENT AND WOULD RESULT IN BUFFERING CAPACITY NOT BEING ADEQUATE, SUCH AS NEAR NATURAL DRAINAGES, SPRINGS, OR WETLANDS. IN THIS CASE, A LINER UNDERNEATH IS NEEDED FOR AREAS WITH HIGH GROUNDWATER LEVELS. CWA SHALL NOT BE PLACED IN LOW AREAS, DITCHES OR ADJACENT TO STATE WATERS. PLACE CWA 50 FT AWAY FROM STATE WATERS.
- WASTE**, SUCH AS BUILDING MATERIALS, WORKERS TRASH AND CONSTRUCTION DEBRIS, MUST BE PROPERLY MANAGED TO PREVENT STORMWATER POLLUTION.
- INSTALL **STABILIZED STAGING AREA (SSA)** TO STORE MATERIALS, CONSTRUCTION TRAILER, ETC.
- IF CONDITIONS IN THE FIELD WARRANT **ADDITIONAL** CMS/BMPS TO THE ONES ORIGINALLY APPROVED ON THE SWMP OR EC PLAN (CIVIL DRAWING), THE LANDOWNER OR CONTRACTOR SHALL IMPLEMENT MEASURES DETERMINED NECESSARY, **AS DIRECTED BY THE COUNTY.**
- PERMANENT CMS/BMPS FOR SLOPES, CHANNELS, DITCHES, OR DISTURBED LAND AREA SHALL BE PERFORMED IMMEDIATELY AFTER FINAL GRADING. CONSIDER THE USE **EROSION CONTROL BLANKETS** ON SLOPES 3:1 OR STEEPER AND AREAS WITH **CONCENTRATED FLOWS** SUCH AS SWALES, LONG CHANNELS, AND ROADSIDE DITCHES.
- THE DISCHARGE OF **SANITARY WASTE** INTO THE STORM SEWER SYSTEM IS PROHIBITED. PORTABLE TOILETS MUST BE PROVIDED, SECURED, AND PLACED ON PERMEABLE SURFACES, AWAY FROM THE CURBSIDE, STORM INLETS AND/OR DRAINAGE WAYS.
- REMOVE TEMPORARY CMS/BMPS** ONCE FINAL STABILIZATION IS REACHED, UNLESS OTHERWISE AUTHORIZED.
- FINAL STABILIZATION** MUST BE IMPLEMENTED. FINAL STABILIZATION IS REACHED WHEN ALL SOIL DISTURBING ACTIVITIES HAVE BEEN COMPLETED, AND EITHER A UNIFORM VEGETATIVE COVER HAS BEEN ESTABLISHED WITH AN INDIVIDUAL PLANT DENSITY OF AT LEAST 70% OF PRE-DISTURBANCE LEVELS, OR EQUIVALENT PERMANENT ALTERNATIVE METHOD HAS BEEN IMPLEMENTED.
- PROVIDE **SPILL PREVENTION** AND CONTAINMENT MEASURES FOR CONSTRUCTION MATERIALS, WASTE, AND FUEL STORAGE AREAS. **BULK STORAGE** (55 GALLONS OR GREATER) OF PETROLEUM PRODUCTS AND LIQUID CHEMICALS MUST HAVE SECONDARY CONTAINMENT, OR EQUIVALENT PROTECTION, IN ORDER TO CONTAIN SPILLS AND TO PREVENT SPILLED MATERIAL FROM ENTERING STATE WATERS.
- REPORT** SPILLS OR RELEASES OF CHEMICAL, OIL, PETROLEUM PRODUCT, SEWAGE, ETC., WHICH MAY REACH THE STORM SEWER OR ENTER STATE WATERS WITHIN **24-HOURS** FROM TIME OF DISCOVERY. GUIDANCE AVAILABLE AT WWW.CDPHE.STATE.CO.US/EMP/SPILLSANDRELEASED.HTM. STATE OF COLORADO SPILL-LINE: 1-877-518-5608. ADAMS COUNTY STORMWATER HOTLINE: 720-523-6400; PUBLIC WORKS 303-453-8787 AND THE TRI-COUNTY HEALTH DEPARTMENT AT 303- 220-9200.

MAINTENANCE STANDARD NOTES:

- MAINTAIN AND REPAIR CMS ACCORDING TO APPROVED EROSION CONTROL PLAN (CIVIL DRAWING) TO ASSURE THEY CONTINUE PERFORMING AS ORIGINALLY INTENDED.
- CMS/BMPS REQUIRING MAINTENANCE OR ADJUSTMENT SHALL BE **REPAIRED IMMEDIATELY** AFTER OBSERVATION OF THE FAILING BMP.
- CMS SHALL BE CLEANED WHEN SEDIMENT LEVELS ACCUMULATE TO **HALF THE DESIGN** UNLESS OTHERWISE SPECIFIED.
- SWMP AND EC PLAN SHALL BE CONTINUOUSLY **UPDATED** TO REFLECT NEW OR REVISED CMS/BMPS DUE TO CHANGES IN DESIGN, CONSTRUCTION, OPERATION, OR MAINTENANCE, TO ACCURATELY REFLECT THE ACTUAL FIELD CONDITIONS. A NOTATION SHALL BE MADE IN THE SWMP, INCLUDING DATE OF CHANGES IN THE FIELD, IDENTIFICATION OF THE CMS REMOVED, MODIFIED OR ADDED, AND THE LOCATIONS OF THOSE CMS. UPDATES MUST BE MADE WITHIN 72-HOURS FOLLOWING THE CHANGE.
- MAINTAIN **VEHICLE TRACKING CONTROL (VTC)**, IF SEDIMENT TRACKING OCCURS, CLEAN-UP IMMEDIATELY. SWEEP BY HAND OR THE USE STREET SWEEPERS (WITH VACUUM SYSTEM). FLUSHING OFF PAVED SURFACES WITH WATER IS PROHIBITED.
- CWA** MUST BE CLEANED ONCE WASTE ACCUMULATION REACHES ¾ OF THE WET STORAGE CAPACITY OF THE STRUCTURE. LEGALLY DISPOSED OF CONCRETE WASTE. DO NOT BURY ON-SITE.
- CLEAN-UP SPILLS** IMMEDIATELY AFTER DISCOVERY OR CONTAIN UNTIL APPROPRIATE CLEANUP METHODS CAN BE EMPLOYED. FOLLOW MANUFACTURER'S RECOMMENDED METHODS FOR SPILL CLEANUP, ALONG WITH PROPER DISPOSAL METHODS. **RECORDS** OF SPILLS, LEAKS, OR OVERFLOWS THAT RESULT IN DISCHARGE OF POLLUTANTS MUST BE DOCUMENTED AND MAINTAINED.
- REMOVE SEDIMENT FROM STORM SEWER INFRASTRUCTURE (PONDS, STORM PIPES, OUTLETS, INLETS, ROADSIDE DITCHES, ETC.), AND RESTORE VOLUME CAPACITY UPON COMPLETION OF PROJECT OR PRIOR TO INITIAL ACCEPTANCE OF PUBLIC IMPROVEMENTS (IF APPLICABLE). DO NOT FLUSH SEDIMENT OFFSITE, CAPTURE ON-SITE AND DISPOSED OF AT AN APPROVED LOCATION.

THESE NOTES ARE NOT INTENDED TO BE ALL-INCLUSIVE, BUT TO HIGHLIGHT THE BASIC STORMWATER POLLUTION PREVENTION REQUIREMENTS FOR CONSTRUCTION ACTIVITIES TO **COMPLY** WITH CDPS STORMWATER CONSTRUCTION PERMIT AND BE IN **CONFORMANCE** WITH COUNTY STANDARDS.

GENERAL NOTES

- ALL WORK SHALL COMPLY WITH CURRENT ADAMS COUNTY STANDARDS AND SPECIFICATIONS, AS WELL AS ALL APPLICABLE FEDERAL, STATE AND LOCAL CODES.
- ALL CONTRACTORS UTILIZING THESE PLANS ARE CAUTIONED TO COMPLY WITH THE REQUIREMENTS OF COLORADO CODE TITLE 9, ARTICLE 1.5, AS AMENDED, CONCERNING THE PROTECTION OF EXISTING UNDERGROUND FACILITIES FROM DAMAGE DUE TO EXCAVATIONS. THE LOCATION OF EXISTING UTILITIES AND FACILITIES SHOWN ARE BASED ON INFORMATION AVAILABLE, AND COMPLETENESS IS NOT GUARANTEED. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO STARTING WORK. THE CONTRACTOR SHALL CONTACT THE UTILITY NOTIFICATION CENTER AT 811 TWO DAYS IN ADVANCE OF STARTING WORK, AS REQUIRED BY COLORADO CODE.
- EXISTING CONDITIONS ARE SHOWN BASED ON FIELD SURVEYS COMPLETED BY PLS CORPORATION IN ELECTRONIC FORMAT.
- CONTRACTOR SHALL VERIFY THE DEPTH AND LOCATION OF ALL UTILITIES AND FACILITIES PRIOR TO STARTING WORK. HAND EXCAVATION MAY BE REQUIRED. WORK SHALL BE DONE IN ACCORDANCE WITH THE STANDARDS OF THE UTILITY COMPANIES WHOSE FACILITIES ARE IN THE PROXIMITY OF THE WORK.
- CONTRACTOR SHALL VERIFY EXISTING CONDITIONS INCLUDING ALL DIMENSIONS AND INVERTS PRIOR TO THE START OF THE WORK. CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY OF ANY VARIATIONS BETWEEN THESE PLANS AND THE ACTUAL FIELD CONDITIONS.
- CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIR TO ANY EXISTING IMPROVEMENTS DISTURBED OR DAMAGED BY CONSTRUCTION ACTIVITIES.
- CONTRACTOR SHALL MAINTAIN AND PROTECT VEHICULAR AND PEDESTRIAN TRAFFIC IN PROXIMITY OF THE WORK.
- CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS AND SUBMITTAL APPROVALS PRIOR TO THE BEGINNING OF WORK.
- ALL UTILITY DESIGN LOCATIONS REFER TO CENTERLINE OF UTILITY, UNLESS OTHERWISE NOTED ON THE PLANS.
- SEE SHEET C1 FOR SURVEY BENCHMARK AND CONTROL INFORMATION.

DEMOLITION & RESTORATION NOTES

- THE CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL CONSTRUCTION DEBRIS IN A LAWFUL MANNER.
- CONTRACTOR SHALL PROTECT FROM DAMAGE ALL EXISTING IMPROVEMENTS ADJACENT TO THE PROJECT LIMITS AND ALL EXISTING IMPROVEMENTS DESIGNATED TO REMAIN WITHIN THE PROJECT LIMITS.
- CONTRACTOR SHALL PROTECT FROM DAMAGE ALL EXISTING TREES, INCLUDING THE ROOT STRUCTURE.
- CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIR TO ANY EXISTING IMPROVEMENTS DISTURBED OR DAMAGED BY CONSTRUCTION ACTIVITIES TO A MINIMUM OF THEIR ORIGINAL CONDITION.
- THE CONTRACTOR SHALL RESTORE ANY EXISTING VEGETATION AND/OR SURFACE IMPROVEMENTS BEYOND THE PROJECT LIMITS DISTURBED OR DAMAGED DURING CONSTRUCTION.
- NATURAL LANDSCAPE AREAS SHALL BE RESEEDDED WITH AN APPROVED NATIVE GRASS SEED MIX PROVIDED BY THE CLIENT.

INSPECTION & TESTING NOTES

CONSTRUCTION INSPECTION AND TESTING SHALL CONFORM TO CDOT STANDARDS UNLESS OTHERWISE SPECIFIED WITHIN THE GEOTECHNICAL REPORT PROVIDED BY OWNER. IT IS THE OWNER'S OBLIGATION TO OBTAIN AN INDEPENDENT LABORATORY FOR TESTING. MATERIAL TESTING PROCEDURES AND FREQUENCIES SHALL CONFORM TO THE SPECIFICATIONS SET FORTH IN THE GEOTECHNICAL REPORT.

GENERAL UTILITY NOTES

- CONTRACTOR SHALL PROTECT ALL ADJACENT IMPROVEMENTS (BUILDINGS, PARKING LOTS, LANDSCAPE AREAS, ETC.) FROM DAMAGE AND EROSION. ALL DISTURBED AREAS OFF-SITE SHALL BE RESTORED TO A MINIMUM OF THEIR ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE.
- CONTRACTOR SHALL COORDINATE DRY UTILITY LOCATIONS WITH PROVIDER AGENCY.
- ALL DIMENSIONS ARE FROM FLOWLINE (OF CURB & GUTTER), PROPERTY LINE, WALL, OR TO THE CENTERLINES OF MANHOLES, INLETS AND UTILITY LINES UNLESS NOTED OTHERWISE.

STORMWATER MANAGEMENT NOTES

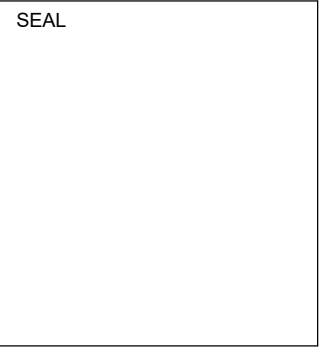
- THE CONTRACTOR SHALL OBTAIN ALL NECESSARY STATE AND LOCAL PERMITS, INCLUDING A COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT [CDPHE] CONSTRUCTION DISCHARGE PERMIT, IF REQUIRED, PRIOR TO STARTING ANY CONSTRUCTION.
- ALL TEMPORARY EROSION CONTROL FACILITIES SHALL BE INSTALLED BEFORE ANY OTHER CONSTRUCTION ACTIVITIES TAKE PLACE.
- PAVING AND LANDSCAPING SHALL BE COMPLETED AS SOON AS PRACTICAL TO CONTROL EROSION AND LIMIT SEDIMENT TRANSPORT.
- UNCONTAINED WASTE THAT MAY BLOW, WASH, OR OTHERWISE BE RELEASED FROM THE SITE IS PROHIBITED.
- READY-MIXED CONCRETE, OR ANY MATERIALS RESULTING FROM THE CLEANING OF VEHICLES OR EQUIPMENT CONTAINING, USED IN TRANSPORTING OR APPLICATION OF READY-MIXED CONCRETE, SHALL BE CONTAINED ON THE SITE FOR PROPER DISPOSAL.
- BMPS SHALL BE IMPLEMENTED TO PREVENT THE RELEASE OF SEDIMENT FROM THE CONSTRUCTION SITE. VEHICLE TRACKING CONTROL SHALL BE INSTALLED AT DESIGNATED SITE ENTRANCE. ANY SEDIMENT TRACKED ONTO THE ADJACENT PARKING AREA OR PUBLIC ROADWAYS SHALL BE CLEANED AND REMOVED.
- ANY DISTURBANCE TO TEMPORARY AND PERMANENT BMP'S SHALL BE REPAIRED OR REPLACED WITHIN 48 HOURS.
- FUGITIVE DUST EMISSIONS RESULTING FROM CONSTRUCTION ACTIVITIES AND/OR WIND SHALL BE CONTROLLED USING THE BEST AVAILABLE CONTROL TECHNOLOGY AT THE TIME OF GRADING AS DEFINED BY THE CDPHE.
- TOPSOIL SHALL BE SALVAGED AND STOCKPILED FOR REUSE.
- SOIL STABILIZATION MEASURES (SEEDING, ETC.) SHALL BE APPLIED WITHIN 30 DAYS TO DISTURBED AREAS THAT MAY NOT BE AT FINAL GRADE BUT WILL REMAIN UNDISTURBED FOR 60 DAYS OR MORE.
- ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED AND DISPOSED WITHIN 30 DAYS AFTER FINAL SITE STABILIZATION IS ACHIEVED OR AFTER THE TEMPORARY MEASURES ARE NO LONGER NEEDED, WHICHEVER OCCURS FIRST.

EARTHWORK & GRADING NOTES

- ALL PROPOSED CONTOURS ARE TO TOP OF FINISHED GROUND AND LANDSCAPED AREAS UNLESS OTHERWISE NOTED.
- IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO MAINTAIN AND PROVIDE FOR ADEQUATE DRAINAGE THROUGH THE SITE DURING THE PROCESS OF EXCAVATION, GRADING, AND EMBANKMENT. THE GRADE SHALL BE MAINTAINED IN SUCH CONDITION THAT IT IS WELL DRAINED AT ALL TIMES.
- LANDSCAPE SLOPES SHALL NOT EXCEED 3:1 (H:V) UNLESS OTHERWISE SHOWN ON THESE PLANS OR APPROVED BY THE OWNER/SOILS ENGINEER.
- MATCH EXISTING GRADES AT LIMITS OF CONSTRUCTION.
- GROUNDWATER MAY BE ENCOUNTERED DURING CONSTRUCTION ACTIVITIES FOR THIS PROJECT. EXCAVATION DEWATERING IS THE RESPONSIBILITY OF THE CONTRACTOR.
- UNSUITABLE MATERIALS (MUCK) ENCOUNTERED IN THE SUBGRADE SHALL BE REMOVED TO THE DEPTH DIRECTED BY THE SOILS ENGINEER. THE EXCAVATED AREA SHALL BE BACKFILLED TO THE FINISHED GRADE WITH APPROVED MATERIAL. ALL UNSUITABLE MATERIAL SHALL BE DISPOSED OF IN

SITE SPOILS/STOCKPILE NOTES

- EXCESS SITE MATERIAL GENERATED FROM SUBGRADE PREPARATION AND RE-GRADING OPERATIONS, ETC. SHALL BE STOCKPILED ON SITE IN A CONTROLLED MANNER. THE OWNER SHALL IDENTIFY A LOCATION ON THE NORTHERN PORTION OF THE SITE FOR TEMPORARY STOCKPILING OF EXCESS MATERIAL.
- ALL STOCKPILED MATERIAL ON SITE SHALL BE STABILIZED AND PROTECTED FROM EROSION IN ACCORDANCE WITH CDPHE AND CITY OF FORT LUPTON STANDARDS. SEE STORMWATER MANAGEMENT NOTES (THIS SHEET) FOR DETAILS.
- STOCKPILE AREAS SHALL BE CLEARED OF VEGETATION AND DEBRIS PRIOR TO PLACEMENT OF STOCKPILE MATERIALS.



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NEITENBACH SUBDIVISION
CONSTRUCTION PLANS
ADAMS COUNTY, COLORADO

GENERAL NOTES

PROJECT
SHEET TITLE

REVISIONS		DESCRIPTION	
NO.	DATE		

DRAWN BY: M.KEEFE	SCALE: N.T.S.
CHECKED BY: P.SORENSEN	DATE: 01/31/2022
SHEET NUMBER: 2	
SHEET INDEX: JOB NUMBER: 2021-003	

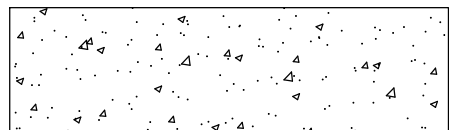


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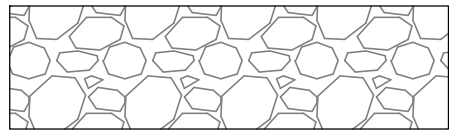
ABBREVIATION LEGEND:

CDOT COLORADO DEPARTMENT OF TRANSPORTATION
EG EXISTING GROUND
EX EXISTING
FO FIBER OPTIC
NMFRD NORTH METRO FIRE RESCUE DISTRICT
OHE OVERHEAD ELECTRIC
ROW RIGHT-OF-WAY
UG UNDERGROUND

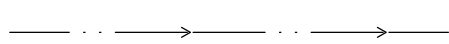
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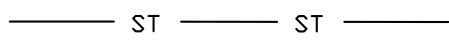
PROPOSED PRIVATE GRAVEL DRIVE



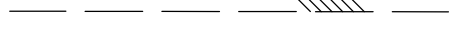
PROPOSED FIRE ACCESS GRAVEL DRIVE



PROPOSED SWALE FLOWLINE



EXISTING PIPE



EXISTING EDGE OF ASPHALT



EXISTING OVERHEAD WIRE



EXISTING UNDERGROUND GAS



EXISTING UNDERGROUND TELEPHONE



EXISTING BARBED WIRE FENCE



EXISTING CHAIN LINK FENCE



BOLLARD



WATER VALVE



WATER METER



POWER POLE



GUY WIRE



ELECTRIC METER



TELEPHONE RISER



MAILBOX



SPIGOT



TRACT A
149TH AVENUE
PRIVATE ROAD ACCESS

SEAL

SORENSEN ENGINEERING & CONSTRUCTION, INC
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NEITENBACH SUBDIVISION
CONSTRUCTION PLANS
ADAMS COUNTY, COLORADO

PROJECT

OVERALL SITE PLAN

SHEET TITLE

REVISIONS

DESCRIPTION

NO. DATE

DRAWN BY:
M.KEEFE

CHECKED BY:
P.SORENSEN

SHEET NUMBER:
3

SHEET INDEX:
JOB NUMBER: 2021-023

SCALE:
1"=40'

DATE:
01/31/2022

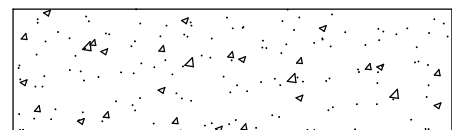


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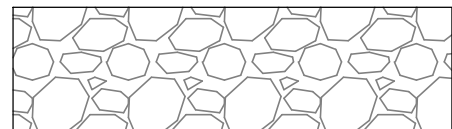
ABBREVIATION LEGEND:

- BMP BEST MANAGEMENT PRACTICES
EG EXISTING GROUND
EOG EDGE OF GRAVEL
ELEV ELEVATION
EX EXISTING
FES FLARED END SECTION
FG FINISHED GRADE
FL FLOWLINE
GB GRADE BREAK
INV INVERT
PL PROPERTY LINE
RCP REINFORCED CONCRETE
PIPE
ROW RIGHT-OF-WAY
STA STATION
VC VERTICAL CURVE

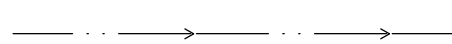
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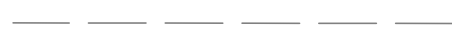
PROPOSED PRIVATE GRAVEL DRIVE



PROPOSED FIRE ACCESS GRAVEL DRIVE



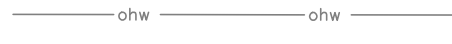
PROPOSED SWALE FLOWLINE



EXISTING PIPE



EXISTING EDGE OF ASPHALT



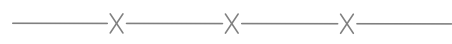
EXISTING OVERHEAD WIRE



EXISTING UNDERGROUND GAS



EXISTING UNDERGROUND TELEPHONE



EXISTING BARBED WIRE FENCE



EXISTING CHAIN LINK FENCE



BOLLARD



WATER VALVE



WATER METER



POWER POLE



GUY WIRE



ELECTRIC METER



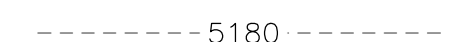
TELEPHONE RISER



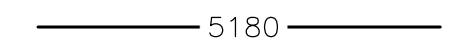
MAILBOX



SPIGOT



EXISTING CONTOUR



PROPOSED CONTOUR



PROPOSED SPOT ELEVATION



EXISTING SPOT ELEVATION

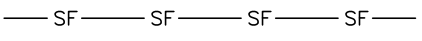


PROPOSED SLOPE

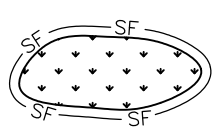


EXISTING SLOPE

BMP CONTROLS



SILT FENCE PER DETAIL SHEET 9



STOCKPILE PER DETAIL SHEET 9



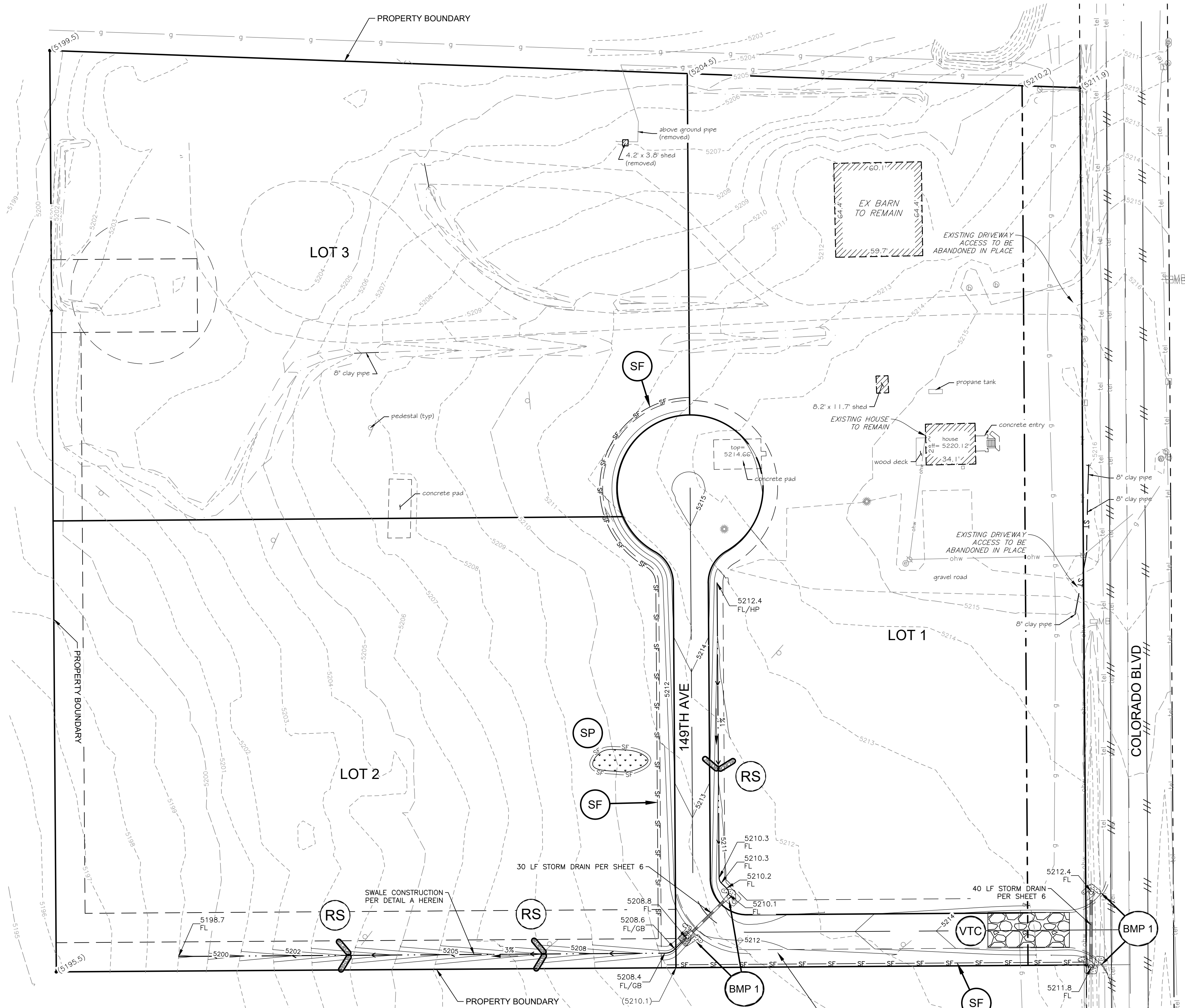
EROSION LOG PER STD. PLAN NO. M-208-1, SHEET NO. 6 OF 11 ON DETAIL SHEET 9 OF THESE CONSTRUCTION DRAWINGS



VEHICLE TRACKING CONTROL PER DETAIL SHEET 9



ROCK SOCK PER DETAIL SHEET 9



Drawing Name: C:\Users\inegal\OneDrive\Documents\Kaele Civil\2021-23_Neitenbach\Construction Documents\NEITENBACH_ ROAD RVP.dwg Monday, January 31, 2022 6:39 PM By: Megan Kaele, Bumer

LEGEND

PRIVATE GRAVEL DRIVEWAY

PROPOSED GRAVEL ROAD

BOUNDARY LINE

RIGHT OF WAY LINE

PROPOSED EASEMENT LINE

ROAD CENTERLINE

DITCH CENTERLINE

EXISTING CONTOUR

PROPOSED CONTOUR

PROPOSED SPOT ELEVATION

EXISTING SPOT ELEVATION

PROPOSED SLOPE

EXISTING SLOPE

ABBREVIATION LEGEND:

BMP

BEST MANAGEMENT PRACTICES

EG

EXISTING GROUND

EOG

EDGE OF GRAVEL

ELEV

ELEVATION

EX

EXISTING

FES

FLARED END SECTION

FG

FINISHED GRADE

FL

FLOWLINE

GB

GRADE BREAK

INVT

INVERT

INV

PROPERTY LINE

PL

PROPOSED CONCRETE PIPE

RCP

REINFORCED CONCRETE PIPE

ROW

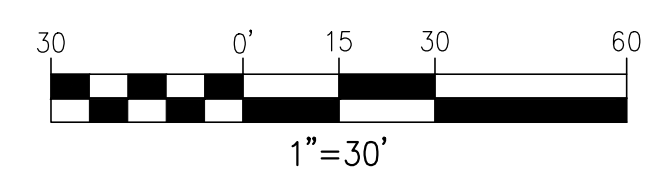
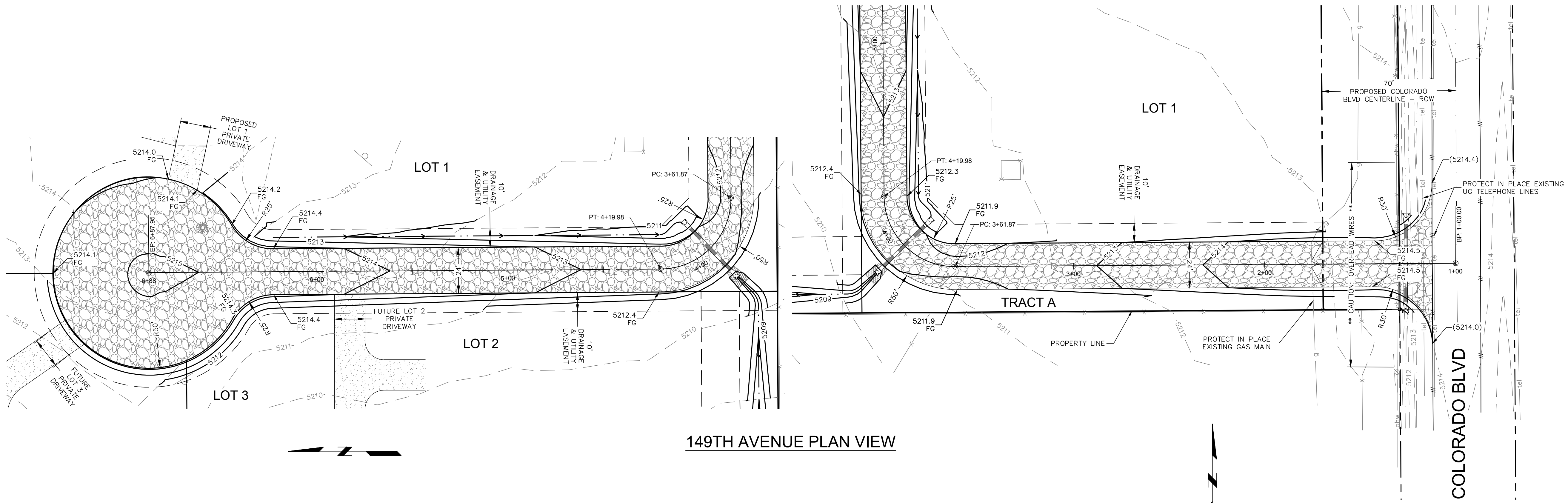
RIGHT-OF-WAY

STA

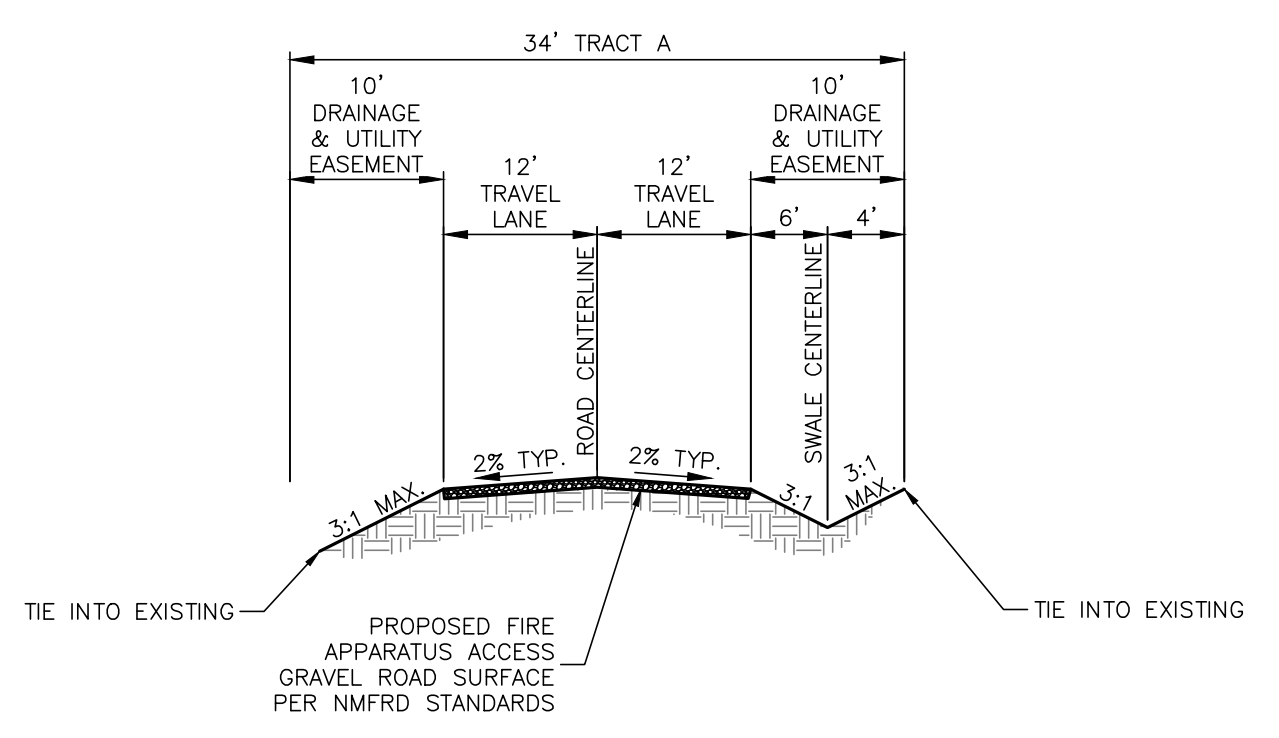
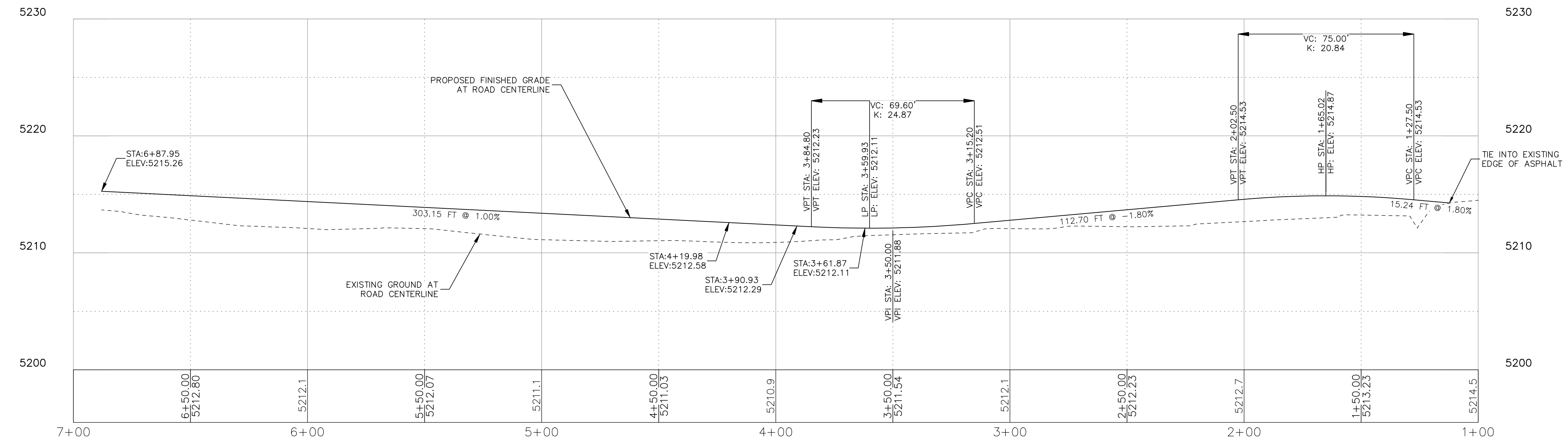
STATION

VC

VERTICAL CURVE



149TH AVENUE CENTERLINE PROFILE



149TH AVENUE ROADWAY CROSS SECTION

SEAL

SEC

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PROJECT

NEITENBACH SUBDIVISION
CONSTRUCTION PLANS
ADAMS COUNTY, COLORADO

SHEET TITLE

149TH AVE PLAN AND PROFILE

REVISIONS	
NO.	DESCRIPTION

DRAWN BY:
M.KEEFE

CHECKED BY:
P.SORENSEN

SCALE:

DATE:
01/31/2022

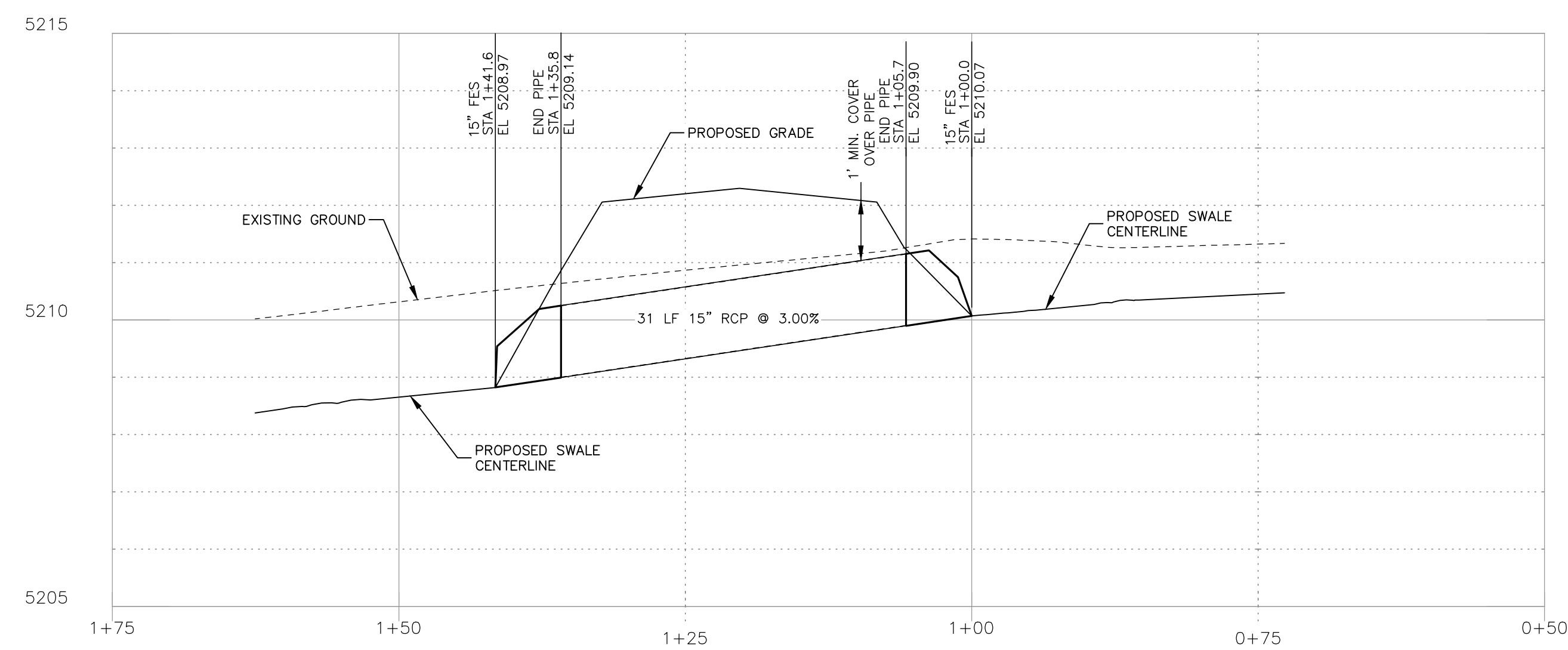
SHEET NUMBER:

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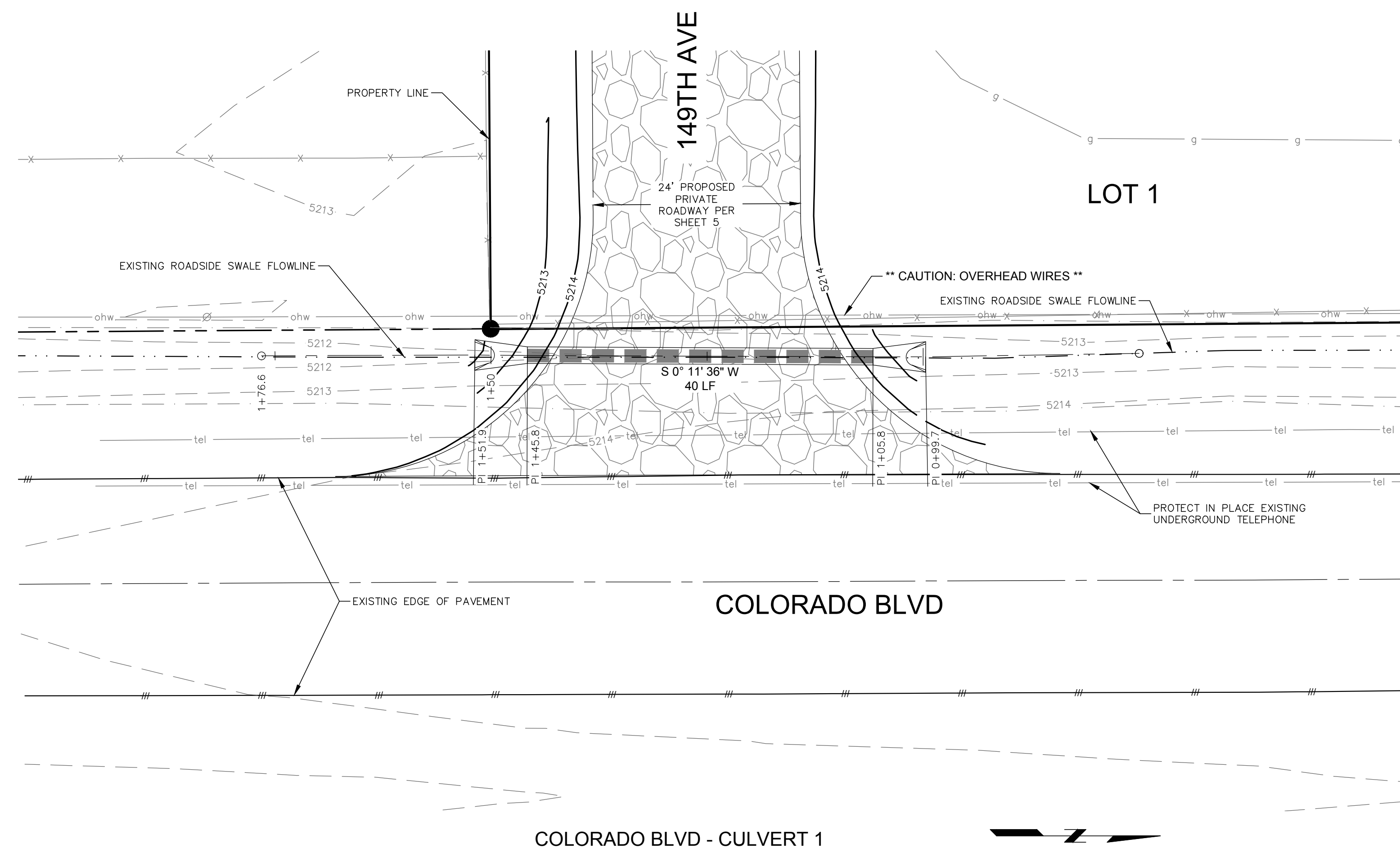
SHEET INDEX:

JOB NUMBER: 2021-023

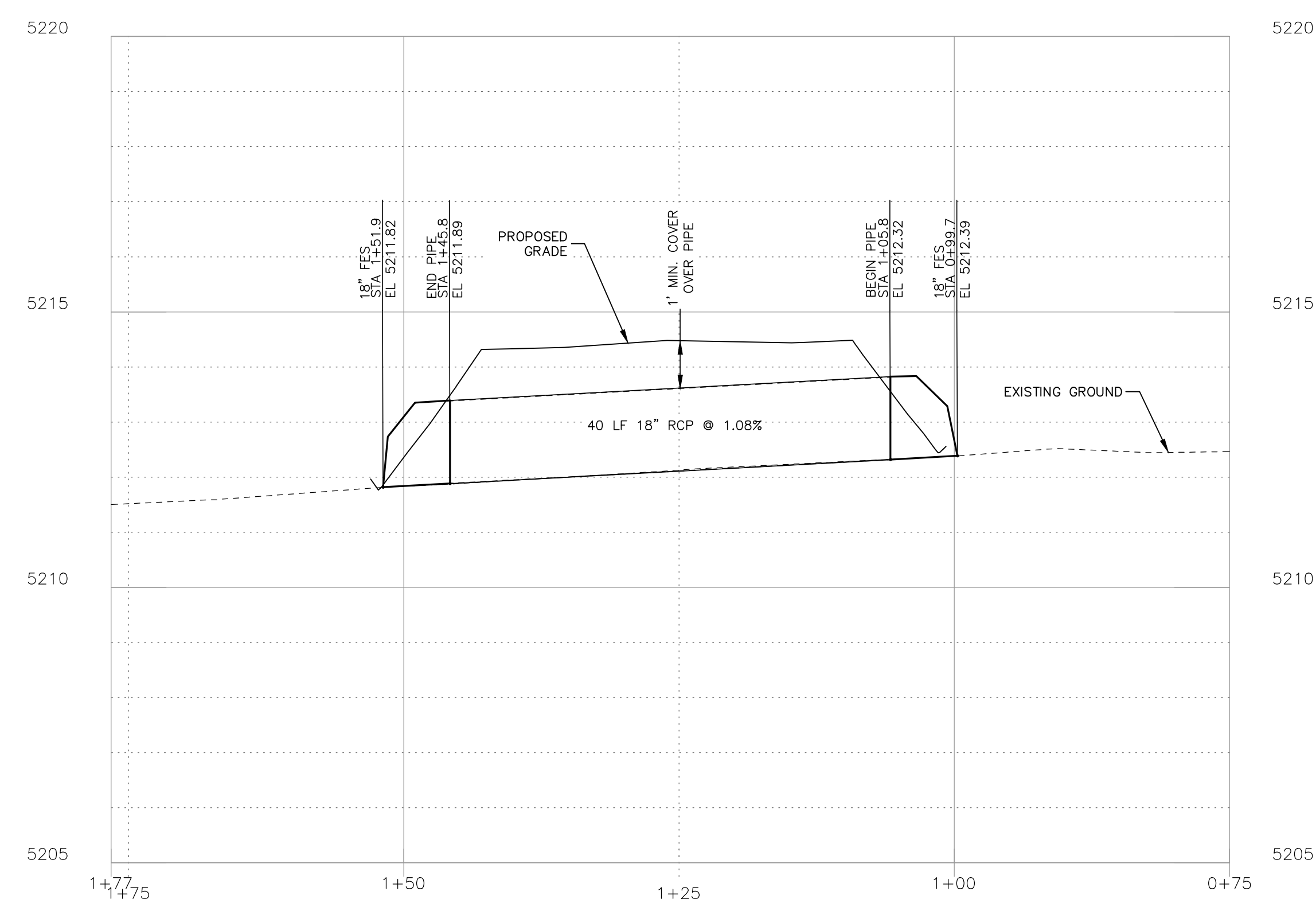




CULVERT 2 PROFILE
HORIZONTAL SCALE: 1"=10'
VERTICAL SCALE 1"=5'



COLORADO BLVD - CULVERT 1

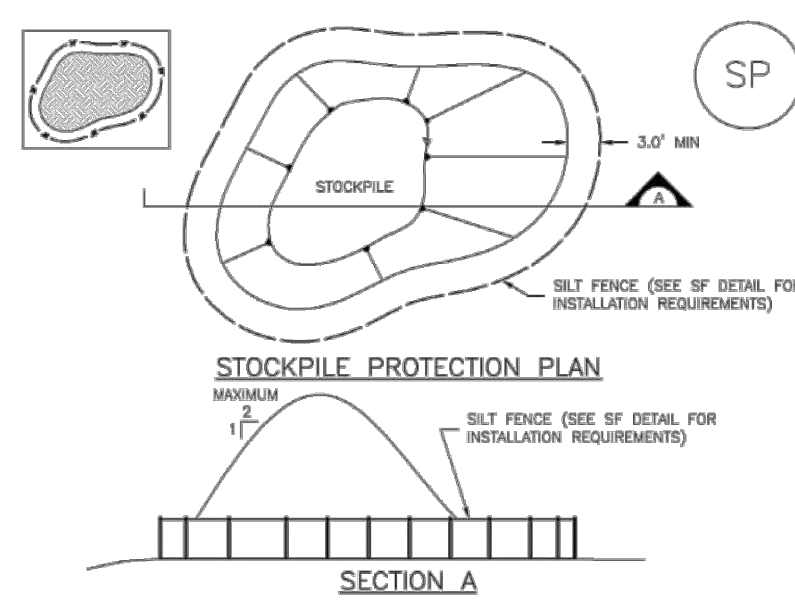


CULVERT 1 PROFILE
HORIZONTAL SCALE: 1"=10'
VERTICAL SCALE 1"=5'

Drawing Name: C:\Users\jngat\OneDrive\Documents\NTEENBACH\EROSION NOTES.dwg Monday, January 31, 2022 4:26 PM By: Megan Keefe Bomer

Stockpile Management (SP)

MM-2



STOCKPILE PROTECTION PLAN

SECTION A

SP-1. STOCKPILE PROTECTION

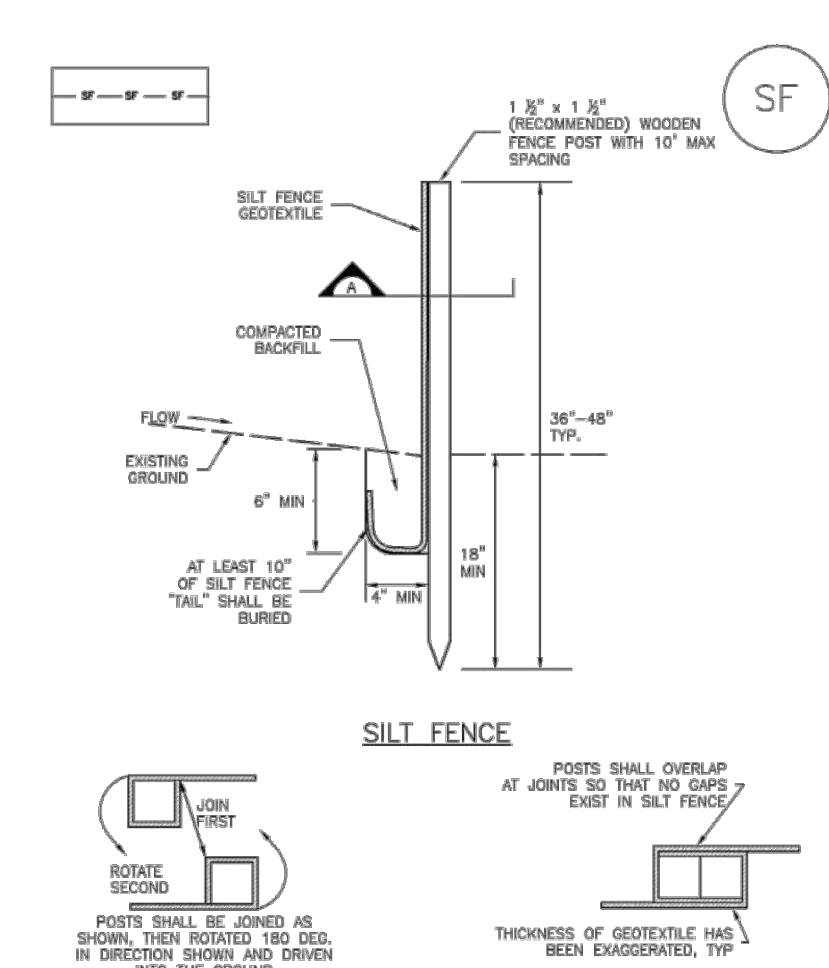
STOCKPILE PROTECTION INSTALLATION NOTES

- SEE PLAN VIEW FOR LOCATION OF STOCKPILE PERIMETER.
- INSTALL PERIMETER CONTROLS IN ACCORDANCE WITH THEIR RESPECTIVE DESIGN DETAILS. SILT FENCE IS SHOWN IN THE STOCKPILE PROTECTION DETAILS. HOWEVER, OTHER TYPES OF PERIMETER CONTROLS INCLUDING SEDIMENT CONTROL LOGS OR ROCK SOCKS MAY BE SUITABLE IN SOME CIRCUMSTANCES. CONSIDERATIONS FOR DETERMINING THE APPROPRIATE TYPE OF PERIMETER CONTROL FOR A STOCKPILE INCLUDE WHETHER THE STOCKPILE IS LOCATED ON A PERVIOUS OR IMPERVIOUS SURFACE, THE RELATIVE HEIGHTS OF THE PERIMETER CONTROL AND STOCKPILE, THE ABILITY OF THE PERIMETER CONTROL TO CONTAIN THE STOCKPILE WITHOUT FAILING IN THE EVENT THAT MATERIAL FROM THE STOCKPILE SHIFTS OR SLUMPS AGAINST THE FORMATION, AND OTHER FACTORS.
- STABILIZE THE STOCKPILE SURFACE WITH SURFACE BOUNDING, TEMPORARY SEEDING AND MULCHING, EROSION CONTROL BLANKETS, OR SOIL BINDERS. SOIL STOCKPILED FOR AN EXTENDED PERIOD (TYPICALLY FOR MORE THAN 60 DAYS) SHOULD BE SEEDED AND MULCHED WITH A TEMPORARY GRASS COVER ONCE THE STOCKPILE IS PLACED (TYPICALLY WITHIN 14 DAYS). USE OF MULCH ONLY OR A SOIL BINDER IS ACCEPTABLE IF THE STOCKPILE WILL BE IN PLACE FOR A MORE LIMITED TIME PERIOD (TYPICALLY 30-60 DAYS).
- FOR TEMPORARY STOCKPILES ON THE INTERIOR PORTION OF A CONSTRUCTION SITE, WHERE OTHER DOWNGRADIENT CONTROLS, INCLUDING PERIMETER CONTROL, ARE IN PLACE, STOCKPILE PERIMETER CONTROLS MAY NOT BE REQUIRED.

November 2010 Urban Drainage and Flood Control District Urban Storm Drainage Criteria Manual Volume 3 SP-3

Silt Fence (SF)

SC-1



SILT FENCE

SECTION A

SF-1. SILT FENCE

SILT FENCE INSTALLATION NOTES

- SILT FENCE MUST BE PLACED AWAY FROM THE TOE OF THE SLOPE TO ALLOW FOR WATER PONDING. SILT FENCE AT THE TOE OF A SLOPE SHOULD BE INSTALLED IN A FLAT LOCATION AT LEAST SEVERAL FEET (3-5 FT) FROM THE TOE OF THE SLOPE TO ALLOW ROOM FOR PONDING AND SEDIMENTATION.
- A UNIFORM 6" X 4" ANCHOR TRENCH SHALL BE EXCAVATED USING TRENCHER OR SILT FENCE INSTALLATION DEVICE, NO ROAD GRADERS, BACKHOES, OR SIMILAR EQUIPMENT SHALL BE USED.
- COMPACT ANCHOR TRENCH BY HAND WITH A "JUMPING JACK" OR BY WHEEL ROLLING. COMPACTION SHALL BE SUFFICIENT TO CREATE A "J-HOOK". THE "J-HOOK" EXTENDING PERPENDICULAR TO THE CONTOUR SHOULD BE OF SUFFICIENT LENGTH TO KEEP RUMPLEY FROM FLOWING ALONG THE END OF THE SILT FENCE (TYPICALLY 10' - 20').
- SILT FENCE FABRIC SHALL BE ANCHORED TO THE STAKES USING 1" HEAVY DUTY STAPLES OR NAILS WITH 1" HEADS. STAPLES AND NAILS SHOULD BE PLACED 3" ALONG THE FABRIC DOWN THE STAKE.
- AT THE END OF A RUN OF SILT FENCE ALONG A CONTOUR, THE SILT FENCE SHOULD BE TURNED PERPENDICULAR TO THE CONTOUR TO CREATE A "J-HOOK". THE "J-HOOK" EXTENDING PERPENDICULAR TO THE CONTOUR SHOULD BE OF SUFFICIENT LENGTH TO KEEP RUMPLEY FROM FLOWING ALONG THE END OF THE SILT FENCE (TYPICALLY 10' - 20').
- SILT FENCE SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.

SILT FENCE MAINTENANCE NOTES

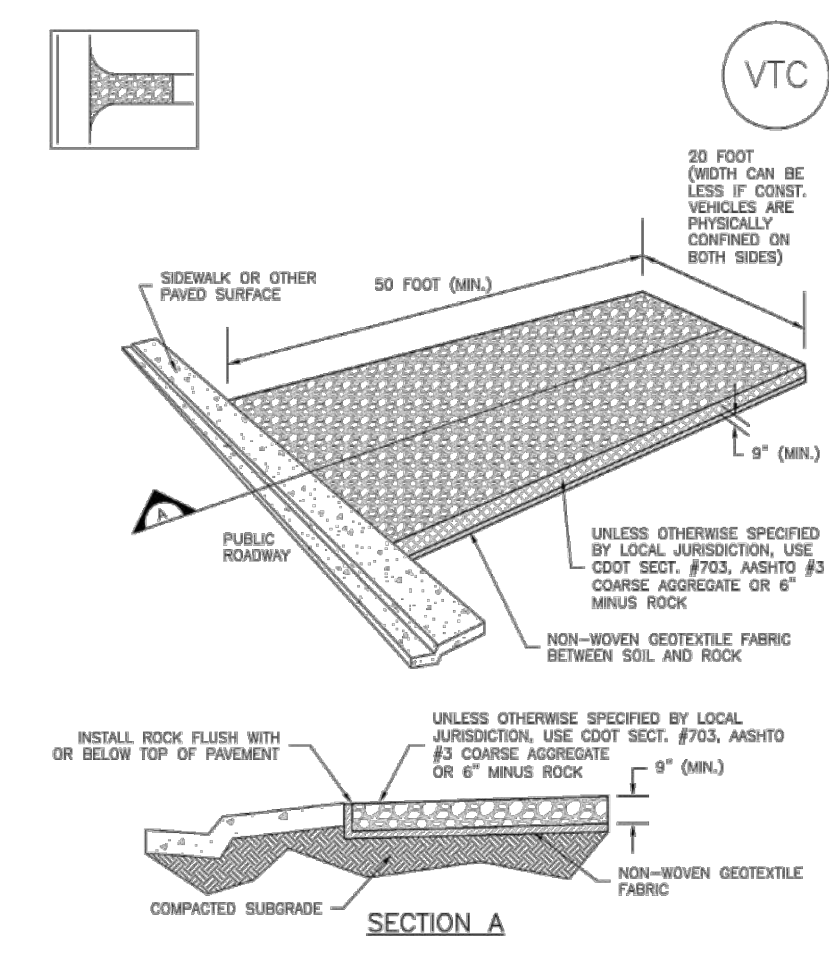
- INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
- FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
- WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
- SEDIMENT ACCUMULATED UPSTREAM OF THE SILT FENCE SHALL BE REMOVED AS NEEDED TO MAINTAIN THE FUNCTIONALITY OF THE BMP. TYPICALLY WHEN DEPTH OF ACCUMULATED SEDIMENTS IS APPROXIMATELY 6".
- REPAIR OR REPLACE SILT FENCE WHEN THERE ARE SIGNS OF WEAR, SUCH AS SAGGING, TEARING, OR COLLAPSE.
- SILT FENCE IS TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED, SEEDED AND MULCHED OR OTHERWISE STABILIZED AS APPROVED BY LOCAL JURISDICTION.
- WHEN SILT FENCE IS REMOVED, ALL DISTURBED AREAS SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED AS APPROVED BY LOCAL JURISDICTION.

(NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM USFC STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.)

November 2010 Urban Drainage and Flood Control District Urban Storm Drainage Criteria Manual Volume 3 SF-3

Vehicle Tracking Control (VTC)

SM-4



VEHICLE TRACKING CONTROL

SECTION A

VTC-1. AGGREGATE VEHICLE TRACKING CONTROL

VEHICLE TRACKING CONTROL INSTALLATION NOTES

- SEE PLAN VIEW FOR LOCATION OF CONSTRUCTION ENTRANCE(S)/EXIT(S).
- TYPE OF CONSTRUCTION ENTRANCE(S)/EXIT(S) (WITH/WITHOUT WHEEL WASH, CONSTRUCTION MAT OR TRAIL).
- CONSTRUCTION MAT OR TRAIL 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.
- A NON-WOVEN GEOTEXTILE FABRIC SHALL BE PLACED UNDER THE STABILIZED CONSTRUCTION ENTRANCE/EXIT PRIOR TO THE PLACEMENT OF MAT.
- UNLESS OTHERWISE SPECIFIED BY LOCAL JURISDICTION, ROCK SHALL CONSIST OF DOT SECT. #703, #40/10 OR #3 COARSE AGGREGATE OR 6" (MINUS) ROCK.

VEHICLE TRACKING CONTROL MAINTENANCE NOTES

- INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
- WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
- ROCK SHALL BE REPLACED OR REGRANDED AS NECESSARY TO THE STABILIZED ENTRANCE/EXIT TO MAINTAIN A CONSISTENT DEPTH.
- SEDIMENT TRACKED OVER PAVED ROADS IS TO BE REMOVED THROUGHOUT THE DAY AND AT THE END OF THE DAY BY SHOULDER OR BEEPING. SEDIMENT MAY NOT BE WASHED DOWN STORM SEWER DRAINS.

(NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM USFC 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)

November 2010 Urban Drainage and Flood Control District Urban Storm Drainage Criteria Manual Volume 3 VTC-3

Rock Sock (RS)

SC-5

Description

A rock sock is constructed of gravel that has been wrapped by wire mesh or a geotextile to form an elongated cylindrical filter. Rock socks are typically used either as a perimeter control or as part of inlet protection. When placed at angles in the curb line, rock socks are typically referred to as curb socks. Rock socks are intended to trap sediment from stormwater runoff that flows onto roadways as a result of construction activities.

Appropriate Uses

Rock socks can be used at the perimeter of a disturbed area to control localized sediment loading. A benefit of rock socks as opposed to other perimeter controls is that they do not have to be trenched or staked into the ground; therefore, they are often used on roadway construction projects where paved surfaces are present.

Design and Installation

When rock socks are used as inlet protection applications when the construction of a roadway is substantially complete and the roadway has been directly connected to a receiving storm system.


Maintenance and Removal

Rock socks are susceptible to displacement and breaking due to vehicle traffic. Inspect rock socks for damage and repair or replace as necessary. Remove sediment by sweeping or vacuuming as needed to maintain the functionality of the BMP, typically when sediment has accumulated behind the rock sock to one-half of the sock's height.

Once upstream stabilization is complete, rock socks and accumulated sediment should be removed and properly disposed.

November 2010 Urban Drainage and Flood Control District Urban Storm Drainage Criteria Manual Volume 3 RS-1

Rock Sock	
Functions	
Erosion Control	No
Sediment Control	Yes
Site/Material Management	No



Stockpile Management (SM)

MM-2

STOCKPILE PROTECTION MAINTENANCE NOTES

- INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
- FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
- WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
- IF PERIMETER PROTECTION MUST BE MOVED TO ACCESS SOIL STOCKPILE, REPLACE PERIMETER CONTROLS BY THE END OF THE WORKDAY.
- STOCKPILE PERIMETER CONTROLS CAN BE REMOVED ONCE ALL THE MATERIAL FROM THE STOCKPILE HAS BEEN USED.

(DETAILS ADAPTED FROM PARKER, COLORADO, NOT AVAILABLE IN AUTOCAD)

(NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM USFC STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.)

SP-4 Urban Drainage and Flood Control District Urban Storm Drainage Criteria Manual Volume 3 November 2010

Silt Fence (SF)

SC-1

SILT FENCE INSTALLATION NOTES

- SILT FENCE MUST BE PLACED AWAY FROM THE TOE OF THE SLOPE TO ALLOW FOR WATER PONDING. SILT FENCE AT THE TOE OF A SLOPE SHOULD BE INSTALLED IN A FLAT LOCATION AT LEAST SEVERAL FEET (3-5 FT) FROM THE TOE OF THE SLOPE TO ALLOW ROOM FOR PONDING AND SEDIMENTATION.
- A UNIFORM 6" X 4" ANCHOR TRENCH SHALL BE EXCAVATED USING TRENCHER OR SILT FENCE INSTALLATION DEVICE, NO ROAD GRADERS, BACKHOES, OR SIMILAR EQUIPMENT SHALL BE USED.
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SILT FENCE MAINTENANCE NOTES

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- SILT FENCE IS TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED, SEEDED AND MULCHED OR OTHERWISE STABILIZED AS APPROVED BY LOCAL JURISDICTION.
- WHEN SILT FENCE IS REMOVED, ALL DISTURBED AREAS SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED AS APPROVED BY LOCAL JURISDICTION.

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SF-4 Urban Drainage and Flood Control District Urban Storm Drainage Criteria Manual Volume 3 November 2010

Vehicle Tracking Control (VTC)

SM-4

STABILIZED CONSTRUCTION ENTRANCE/EXIT INSTALLATION NOTES

- SEE PLAN VIEW FOR LOCATION OF CONSTRUCTION ENTRANCE(S)/EXIT(S).
- TYPE OF CONSTRUCTION ENTRANCE(S)/EXIT(S) (WITH/WITHOUT WHEEL WASH, CONSTRUCTION MAT OR TRAIL).
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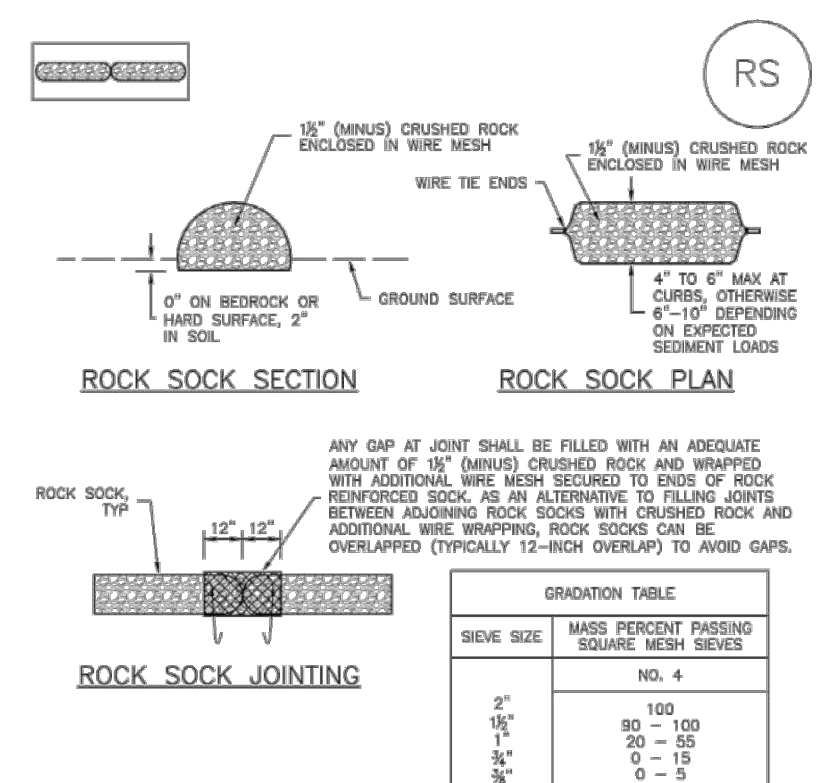
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(DETAILS ADAPTED FROM CITY OF BROOMFIELD, COLORADO, NOT AVAILABLE IN AUTOCAD)

VTC-6 Urban Drainage and Flood Control District Urban Storm Drainage Criteria Manual Volume 3 November 2010

Rock Sock (RS)

SC-5



ROCK SOCK SECTION

ROCK SOCK PLAN

ROCK SOCK JOINTING

ROCK SOCK INSTALLATION NOTES

- SEE PLAN VIEW FOR LOCATION OF ROCK SOCKS.
- CRUSHED ROCK SHALL BE 1/2" (MINUS) IN SIZE WITH A FRACTURED FACE (ALL SIDES) AND SHALL COMPLY WITH GRADATION SHOWN ON THIS SHEET (1/2" MINUS).
- WIRE MESH SHALL BE FABRICATED OF 10 GAUGE POLYETHYLENE OR EQUIVALENT, WITH A MAXIMUM OPENING OF 1/2", RECOMMENDED MINIMUM ROLL WIDTH OF 48".
- WIRE MESH SHALL BE SECURED USING "X" OR "H" STAPLES AT 6" CENTERS ALONG ALL JOINTS AND AT 2' CENTERS ON ENDS OF SOCKS.
- SOME MANUFACTURERS MAY ALLOW THE USE OF FILTER FABRIC AS AN ALTERNATIVE TO WIRE MESH FOR THE ROCK ENCLOSURE.

RS-1. ROCK SOCK PERIMETER CONTROL

ROCK SOCK MAINTENANCE NOTES

- INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
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- WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
- ROCK SOCKS SHALL BE REPLACED IF THEY BECOME HEAVILY SOILED, OR DAMAGED BEYOND REPAIR.
- SEDIMENT ACCUMULATED UPSTREAM OF ROCK SOCKS SHALL BE REMOVED AS NEEDED TO MAINTAIN FUNCTIONALITY OF THE BMP. TYPICALLY WHEN DEPTH OF ACCUMULATED SEDIMENTS IS APPROXIMATELY 1/2 OF THE HEIGHT OF THE ROCK SOCK.
- ROCK SOCKS ARE TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND APPROVED BY THE LOCAL JURISDICTION.
- WHEN ROCK SOCKS ARE REMOVED, ALL DISTURBED AREAS SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED AS APPROVED BY LOCAL JURISDICTION.

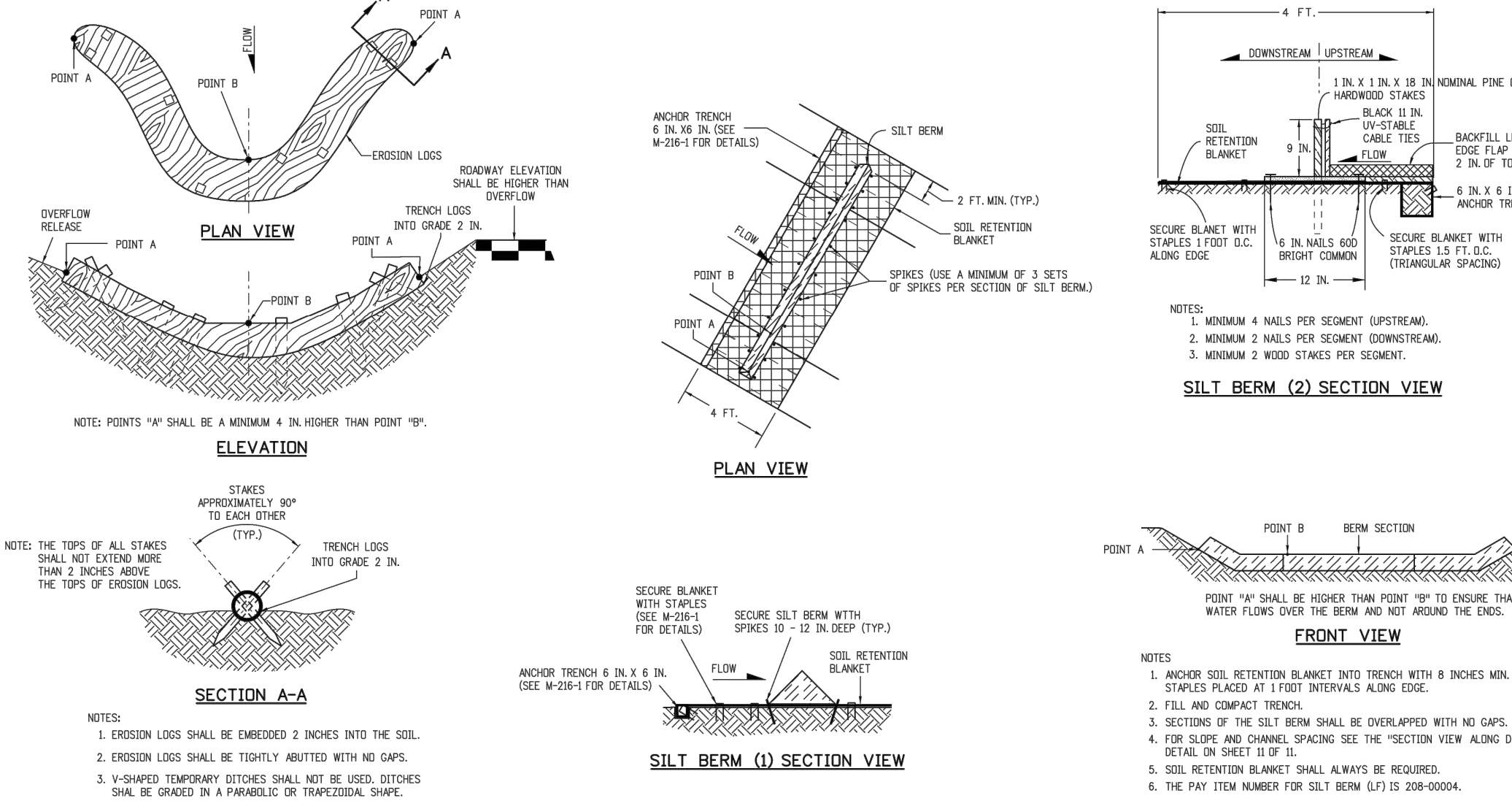
(NOTE: THE DETAILS INCLUDED WITH THIS FACT SHEET SHOW COMMONLY USED, CONVENTIONAL METHODS OF ROCK SOCK INSTALLATION IN THE NEUTENBACH SUBDIVISION. THERE ARE MANY OTHER SIMILAR PROPRIETARY PRODUCTS ON THE MARKET. USFC NEITHER ENDORSES NOR DISCOURAGES USE OF PROPRIETARY PRODUCTION PRODUCTS. HOWEVER, IN THE EVENT PROPRIETARY METHODS ARE USED, THE APPROPRIATE DETAIL FROM THE MANUFACTURER SHOULD BE INCLUDED IN THE BMP AND THE BMP MUST BE INSTALLED AND MAINTAINED AS SHOWN IN THE MANUFACTURER'S DETAILS.)

RS-2 Urban Drainage and Flood Control District Urban Storm Drainage Criteria Manual Volume 3 November 2010

GRADATION TABLE	
SIZE	MASS PERCENT PASSING
	NO. 4
2"	100
1 1/2"	80 - 100
1"	20 - 55
3/4"	0 - 10
3/8"	0 - 5

EROSION LOG INSTALLATION

DRAINAGE DITCH APPLICATIONS



PLAN VIEW

SECTION A-A

SILT BERM (1) SECTION VIEW

SILT BERM (2) SECTION VIEW

FRONT VIEW

SILT BERM INSTALLATION

EROSION LOG INSTALLATION

DRAINAGE DITCH APPLICATIONS

Computer File Information

Sheet Revisions

Colorado Department of Transportation

TEMPORARY EROSION CONTROL

STANDARD PLAN NO. M-208-1

Sheet No. 6 of 11

Rock Sock (RS)

SC-5

ROCK SOCK MAINTENANCE NOTES

- INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
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- WHEN ROCK SOCKS ARE REMOVED, ALL DISTURBED AREAS SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED AS APPROVED BY LOCAL JURISDICTION.

(NOTE: THE DETAILS INCLUDED WITH THIS FACT SHEET SHOW COMMONLY USED, CONVENTIONAL METHODS OF ROCK SOCK INSTALLATION IN THE NEUTENBACH SUBDIVISION. THERE ARE MANY OTHER SIMILAR PROPRIETARY PRODUCTS ON THE MARKET. USFC NEITHER ENDORSES NOR DISCOURAGES USE OF PROPRIETARY PRODUCTION PRODUCTS. HOWEVER, IN THE EVENT PROPRIETARY METHODS ARE USED, THE APPROPRIATE DETAIL FROM THE MANUFACTURER SHOULD BE INCLUDED IN THE BMP AND THE BMP MUST BE INSTALLED AND MAINTAINED AS SHOWN IN THE MANUFACTURER'S DETAILS.)

November 2010 Urban Drainage and Flood Control District Urban Storm Drainage Criteria Manual Volume 3 RS-3



PROJECT

REVISIONS

DRAWN BY: M.KEEFE

CHECKED BY: P.SORENSEN

SHEET NUMBER: 7

SHEET INDEX: JOB NUMBER: 2021-023

NEUTENBACH SUBDIVISION CONSTRUCTION PLANS

ADAMS COUNTY, COLORADO

EROSION CONTROL DETAILS

SHEET TITLE

SEAL

SORENSEN ENGINEERING & CONSTRUCTION, INC. CIVIL / ENVIRONMENTAL ENGINEERING

1901 BEAR COURT FORT COLLINS, CO 80525 PHONE: 970.590.1679 pat@sorensenengineering.net

Being a part of the Northeast Section 13, Township 1 South,
Range 68 West of the 6th P.M.,
County of Adams, State of Colorado

Known all men by these presents that Horizons West builders, being the owner of parcel of land lying in the Northeast of Section 13, Township 1 South, Range 68 West, of the sixth principal meridian, County of Adams, State of Colorado, being more particularly described as follows:

That part of the Northeast one-quarter of Section 13, Township 1 South, Range 68 West of the 6th Principal Meridian, County of Adams, State of Colorado, described as follows:

County of Adams, State of Colorado.

Has by these presents laid out, platted and subdivided the same into a tract, lots and easements as shown on this plat under the name and style of Nellenbach Subdivision and the undersigned does hereby delegate, grant and convey to Adams County those public easements as shown on the plat for the use of the public, easements, public way and lands hereon shown, for public utility, cable TV, and detention pond areas, floodway and floodplain limits, drainage and other public purposes as determined by Adams County; and further restricts the use of all public easement to Adams County and/or its assigns, provided however, that the sole right and authority to release or quitclaim all or any such public easements shall remain exclusively vested in Adams County; the private Street, 149th Avenue, is privately owned and maintained by Horizon West Builders, a Colorado Limited Liability Company.

By: Horizons West Builders, a Colorado Limited Liability Company.

_____ as _____
Name Title

b. All private streets (149th Avenue) are privately owned and maintained by (Neitenbach, Owners Association)

The policy of the county requires that maintenance access shall be provided to all storm facilities to assure continuous operational capability of the system. The property owners shall be responsible for the maintenance of all drainage facilities including inlets, pipes, culverts, channels, ditches, hydraulic structures, and detention basins located on their land unless modified by the subdivision development. Should the owner fail to maintain said facilities, the County shall have the right to enter said land for the sole purpose of operations and maintenance. All such maintenance cost will be assessed to the property owners.

Notary Public

Reception No. _____

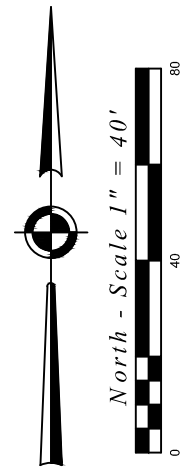
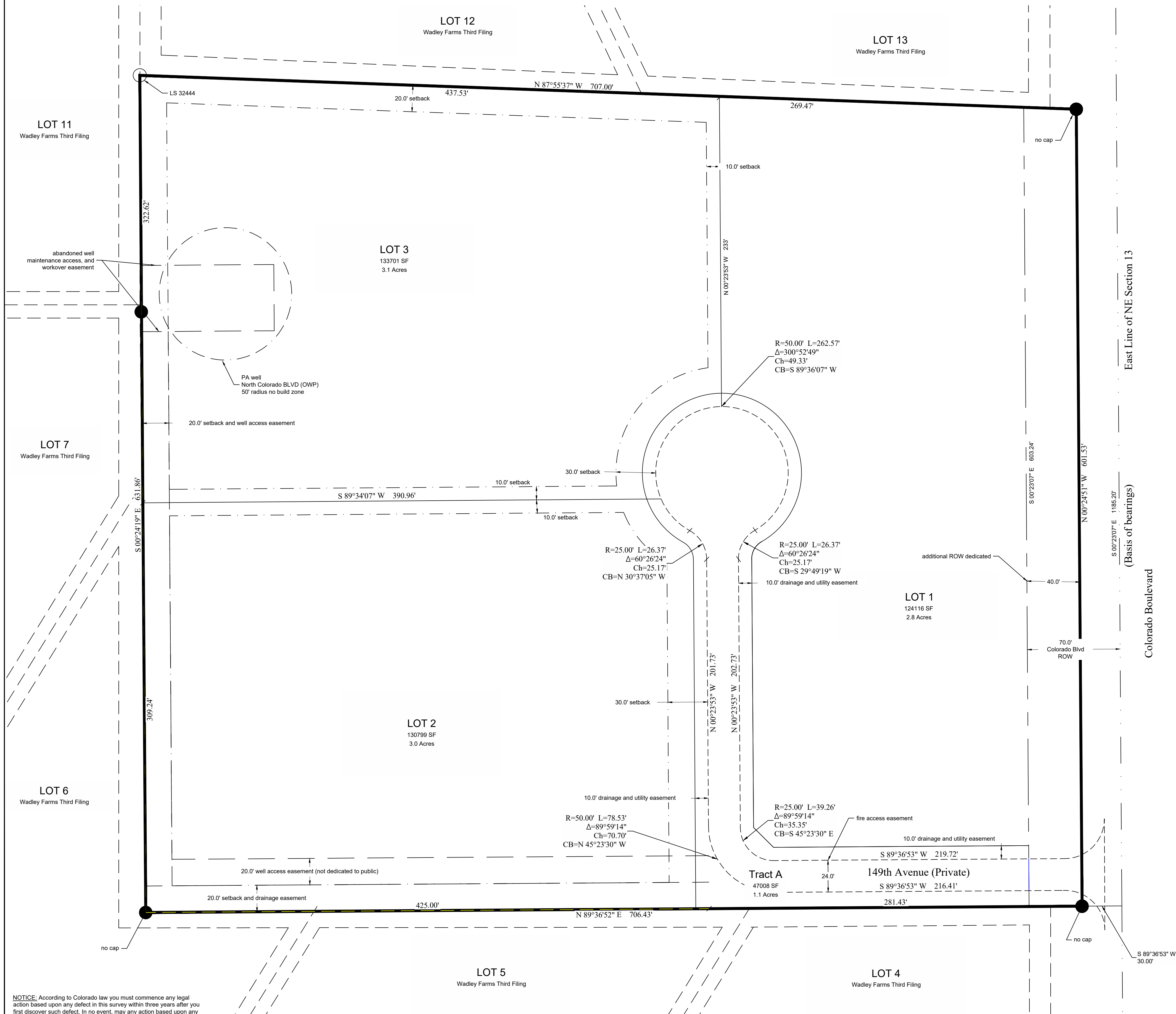
I, M. Bryan Short, a duly registered Professional Land Surveyor in the State of Colorado, do hereby state that this Topographic Survey Plat truly and correctly represents the results of a topographic survey made by me under my direction.

NOTICE: According to Colorado law you must commence any legal action based upon any defect in this survey within three years after you first discover such defect. In no event, may any action based upon any defect in this survey be commenced more than ten years from the date of the certification shown hereon.

REVISIONS Date _____ By _____ Description _____ Date _____ By _____ Description _____ Date _____ By _____ Description _____			Field Date <u>May 3, 2021</u> ST <u>KGM</u> Party Chief <u>ADS</u> PM <u>MBS</u> Print Date <u>January 27, 2022</u> PLS <u>MBS</u>			CLIENT <div style="text-align: center;">Neitenbachs</div>			<div style="text-align: center;"> PLS Corporation 1205 Des Moines Loveland, Colorado 80537 Phone: 970.669.2100 - info@plscorporation.com </div>			TITLE <div style="text-align: center;"> Final Plat Colorado Blvd Sect 13-01S-68W, ±10 ac Section 13, Township 1 North, Range 68 West, 6th P. M., Adams County, Colorado </div>			PROJECT NO. <div style="text-align: center;">20074.003</div>	SHEET NO. <div style="text-align: center;">1</div>	NO. OF SHEETS <div style="text-align: center;">2</div>
--	--	--	--	--	--	--	--	--	---	--	--	---	--	--	---	---	---

Neitenbach Subdivision Final Plat

Being a part of the Northeast Section 13, Township 1 South,
Range 68 West of the 6th P.M.,
County of Adams, State of Colorado



Legend:

- set iron rod and cap LS 32444
- found iron rod
- - - - - proposed access
- _____ lot line
- - - - - easement
- - - - - section line
- _____ boundary line
- _____ right of way
- - - - - adjacent lot lines
- - - - - setback

NOTICE: According to Colorado law you must commence any legal action based upon any defect in this survey within three years after you first discover such defect. In no event, may any action based upon any defect in this survey be commenced more than ten years from the date of the certification shown hereon.

Project\2020\20074\dwg\20074-003.dwg January 27, 2022 - 10:23am

REVISIONS

Date By Description

Date By Description

Date By Description

Field Date ST KGM

Party Chief PM MBS

Print Date January 27, 2022 PLS MBS

CLIENT

Neitenbachs

PLS Corporation

1205 Des Moines Loveland, Colorado 80537

Phone: 970.669.2100 - Info@plscorporation.com

TITLE

Amended Plat

Colorado Blvd Sect 13-01S-68W, ±10 ac

Section 13, Township 1 North, Range 68 West, 6th P.M., Adams County, Colorado

PROJECT NO.

20074.003

SHEET NO.

2

NO. OF SHEETS

2

Adams County

Residential Property Profile

Parcel Number: 0157313000003

<u>Owners Name and Address:</u>	<u>Property Address:</u>
NEITENBACH BRYAN D AND NEITENBACH KIM P 3855 E 151ST AVE BRIGHTON CO 80602	14901 COLORADO BLVD

Account Summary

Legal Description

SECT, TWN, RNG 13-1-68 DESC: THAT PT OF THE NE4 OF SEC 13 DESC AS FOLS COM AT THE E4 COR OF SD SEC 13 TH N 00D 00M 00S E ON AN ASSUMED BRNG ALG THE E LN SD NE4 A DIST OF 269/58 FT TH N 90D 00M 00S W A DIST OF 30 FT TO A PT ON THE W ROW OF COLORADO BLVD SD PT BEING THE POB TH N 00D 00M 00S E ALG SD W ROW LN A DIST OF 601/50 FT TH N 87D 32M 20S W A DIST OF 707 FT TH S 00D 00M 00S W // WITH THE E LN SD NE4 A DIST OF 631/86 FT TH S 90D 00M 00S E A DIST OF 706/35 FT TO THE POB 9/9967A

Subdivision Plat

N/A

Account Summary

Account Numbers	Date Added	Tax District	Mill Levy
R0014363	On or Before 01/01/1996	135	115.116

Permits

Permit Cases

OWNER'S AUTHORIZATION LETTER

I/we hereby certify that I/we am/are the owner(s) of the above described property. I/we am/are respectfully requesting processing and approval of the above referenced permit(s) review. I/we hereby authorize the Applicant listed on this application to act on my/our behalf during the processing and presentation of this request. They shall be the principal contact with the County in processing this application.



Owner's Signature

6/18/2020

Date



Owner's Signature

6/18/2020

Date

Bryan D. Neitenbach

1st Owner's Printed Name

Kim P. Neitenbach

2nd Owner's Printed Name



RECEIPT OF PAYMENT (Tax, Fees, Costs, Interests, Penalties)

Account	Parcel Number	Receipt Date	Receipt Number
R0014363	0157313000003	Apr 26, 2021	2021-04-26-WEB-20974

NEITENBACH BRYAN D AND
3855 E 151ST AVE
BRIGHTON, CO 80602

Situs Address

14901 COLORADO BLVD

Payor

Kim Neitenbach

Legal Description

SECT, TWN, RNG 13-1-68 DESC: THAT PT OF THE NE4 OF SEC 13 DESC AS FOLS COM AT THE E4 COR OF SD SEC 13 TH N 00D 00M 00S E ON AN ASSUMED BRNG ALG THE E LN SD NE4 A DIST OF 269/58 FT TH N 90D 00M 00S W A DIST OF 30 FT TO A PT ON THE W ROW OF COLORADO BLVD SD PT BEING THE POB TH N 00D 00M 00S E ALG SD W ROW LN A DIST OF 601/50 FT TH N 87D 32M 20S W A DIST OF 707 FT TH S 00D 00M 00S W // WITH THE E LN SD NE4 A DIST OF 631/86 FT TH S 90D 00M 00S E A DIST OF 706/35 FT TO THE POB 9/9967A

Property Code

RES IMPRV LAND - 1112
SINGLE FAMILY RES - 1212

Actual	Assessed	Year	Area	Mill Levy
140,250	10,030	2020	135	116.164
335,287	23,970	2020	135	116.164

Payments Received

E-check

\$3,949.58

Payments Applied

Year	Charges
2020	Tax Charge

Billed
\$3,949.58

Prior Payments
\$0.00

New Payments
\$3,949.58
\$3,949.58

Balance
\$0.00
\$0.00
\$0.00

Balance Due as of Apr 26, 2021

WE ARE EXPANDING TO SERVE YOU BETTER! WATCH FOR NEW LOCATIONS ON OUR WEBSITE!

4430 S ADAMS COUNTY PKWY C2436
BRIGHTON CO 80601
[Stay Safe! Please use website services www.adcotax.com]

Email: treasurer@adcogov.org
Telephone: 720-523-6160

ALL CHECKS ARE SUBJECT TO FINAL COLLECTION. THANK YOU FOR YOUR PAYMENT!



Adams County Treasurer

Receipt of Tax Payment

Account	Parcel Number	Receipt Date	Receipt Number
R0014363	0157313000003	Apr 14, 2020	2020-04-14-NetVantage-27312

NEITENBACH BRYAN D AND
3855 E 151ST AVE
BRIGHTON, CO 80602

Situs Address

14901 COLORADO BLVD

Payor**Legal Description**

SECT, TWN, RNG 13-1-68 DESC: THAT PT OF THE NE4 OF SEC 13 DESC AS FOLS COM AT THE E4 COR OF SD SEC 13 TH N 00D 00M 00S E ON AN ASSUMED BRNG ALG THE E LN SD NE4 A DIST OF 269/58 FT TH N 90D 00M 00S W A DIST OF 30 FT TO A PT ON THE W ROW OF COLORADO BLVD SD PT BEING THE POB TH N 00D 00M 00S E ALG SD W ROW LN A DIST OF 601/50 FT TH N 87D 32M 20S W A DIST OF 707 FT TH S 00D 00M 00S W // WITH THE E LN SD NE4 A DIST OF 631/86 FT TH S 90D 00M 00S E A DIST OF 706/35 FT TO THE POB 9/9967A

Property Code	Actual	Assessed	Year	Area	Mill Levy
RES IMPRV LAND - 1112	59,558	4,260	2019	135	116.249
SINGLE FAMILY RES - 1212	142,382	10,180	2019	135	116.249
PARSONAGE - 9154	80,692	23,400	2019	135	116.249
PARSONAGE/RECT - 9254	192,905	13,790	2019	135	116.249

Payments Received

Check	\$1,678.64
Check Number 00060073	

Payments Applied

Year	Charges	Billed	Prior Payments	New Payments	Balance
2019	Tax Charge	\$1,678.64	\$0.00	\$1,678.64	\$0.00
				\$1,678.64	\$0.00
				Balance Due as of Apr 14, 2020	\$0.00

WE ARE EXPANDING TO SERVE YOU BETTER! WATCH FOR NEW LOCATIONS ON OUR WEBSITE!

4430 S ADAMS COUNTY PKWY C2436
BRIGHTON CO 80601
MON - FRI 7 AM - 5 PM

720-523-6160

ALL CHECKS ARE SUBJECT TO FINAL COLLECTION. THANK YOU FOR YOUR PAYMENT!



10/19/2021

Andrew Neitenbach
Horizon West Builders, Inc.
3855 E. 151st Avenue
Brighton, CO 80602
andrew@horizonwestbuilders.com

Delivered via email

Re: Horizon West Subdivision
Water Supply
Job No. 960.2

Dear Andrew Neitenbach,

Horizon West Builders, Inc. (Horizon West) intends to build a three-lot subdivision on a 10-acre parcel located at 14901 Colorado Boulevard in Adams County, Colorado. The water supply for the proposed development will be provided by a well completed into the nontributary Laramie-Fox Hill aquifer and an existing water tap at an existing house on the property. Horizon West has retained Martin and Wood Water Consultants, Inc. (Martin & Wood) to estimate: 1) the water demand of the proposed subdivision, 2) the volume of non-tributary groundwater under the 10-acre parcel, and 3) the annual amount available for 300 years.

Martin & Wood has made a preliminary determination of nontributary groundwater availability from the Denver Basin aquifer system for the proposed development using Colorado Division of Water Resources Aquifer Determination Tool. Nontributary means that well depletions at a given location will not deplete the surface stream system at a rate greater than 0.01% over the life of the aquifer. Denver Basin aquifers are assumed to have a 100-year aquifer life, but Adams County requires an aquifer life of 300 years under Adams County Development Standards (per Chapter 5-04-05-06-04). The estimated annual volume of nontributary groundwater under the 10-acre parcel is approximately 2.42 acre-feet per year (af/yr) over a 100-year aquifer life for the Laramie-Fox Hills aquifer, totaling 242 acre-feet over 100 years. An analysis was performed using 242 acre-feet over a 300-year period as required by Adams County. The aquifer determination is attached to this letter.

Martin & Wood estimated water demand for the subdivision by assuming three single-family lots, with an average occupancy of 3.5 persons per lot consuming 80 gallons per person per day. These are common assumptions for single-family water use and occupancy. Using these assumptions, the annual indoor water demand is about 0.96 af/yr. Outdoor water demand, based on common annual plant and turf grass water demand, for residential lots in this area is estimated to average 2.2 feet per year (this is the depth of total application required to irrigate the turf grass for one year). This estimated demand for turf grass is consistent with the standard of 0.05 af/yr per 1,000 square-feet for proof of adequate water supply for irrigated lawns, per Chapter 5-04-05-06-04 of the Adams County Development Standards. The amounts of annual outdoor and total water demands are dependent on the acreage of turf grass. The existing water service will provide water for both indoor and outdoor uses for one of the three lots of the subdivision. (Note that the irrigated area for the lot using the existing water tap is limited by the area of the lot and limitations imposed by the water provider). The indoor water demand of 0.64 af/yr and the outdoor uses for the remaining two lots will be provided by a well completed into the nontributary Laramie-Fox Hill aquifer. After accounting for the indoor water demand for the two lots, the remaining available nontributary groundwater in the Laramie-Fox Hills aquifer beneath the 10-acre parcel can support up to 1,650 square-feet of irrigated turf on each of the two lots. A table with the supporting calculations is attached to this letter.

To our knowledge, there are no other proposed developments near the property that would affect the future availability of nontributary groundwater from the Laramie-Fox Hills aquifer. The property was evaluated for deemed consent of the Laramie-Fox Hills Aquifer by municipal water providers or sanitation districts, permitted wells and existing water rights. The property does not appear to intersect any area claimed by municipal water providers, determinations of groundwater rights, active well permits or cylinders of appropriation for groundwater rights. A map generated with the Colorado's Decision Support System Map Viewer that contains the Laramie-Fox Hills aquifer mylar is attached to this letter.

It is our opinion that the nontributary groundwater within the Laramie-Fox Hills aquifer along with the existing water tap is sufficient to support three single-family lots, with up to 1,650 square-feet of irrigation for the two lots using Laramie-Fox Hill water, for 300 years. As noted above, the irrigated area for the lot using the existing water tap is limited by the area of the lot and limitations imposed by the water provider. If there are any questions regarding the adequacy of water supplies regarding this proposed development, please contact us at the phone number above or via email at cvanalstine@martinandwood.com or wberg@martinandwood.com.

Sincerely,
MARTIN AND WOOD
WATER CONSULTANTS, INC.



Chase R. Van Alstine, P.G.
Staff Hydrogeologist



William Berg, P.G.
Senior Hydrogeologist

Enclosures:

*Bedrock Aquifer Evaluation
Determination Tool*

*Table 1 Laramie-Fox Hills
Groundwater Availability for the
Proposed Horizon West Subdivision*

*Horizon West Builders Proposed
Subdivision Map with Denver Basin
Mylar Overlay*



Bedrock Aquifer Evaluation Determination Tool
Denver Basin Aquifer - Specific Location Determination Tool

Applicant: Neitenbach Receipt Number:
Location: SE 1/4 of NE 1/4 of Sec. 13, T.1S, R.68W. (2069 NSL, 411 ESL) Evaluated By: CRV
Basin Designation: Location is within the UNKNOWN Designated Groundwater Basin
Ground Surface Elevation: 5200 Number of Acres: 10

Warning! The depth intervals estimated in this area may vary from actual conditions due to lack of data and/or structural complexity.

Aquifer	Elevation (ft)		Net Sand	Depth (ft)		Annual Approp. (AF)	Status
	Bottom	Top		Bottom	Top		
Upper Dawson	--	--	--	--	--	--	--
Lower Dawson	--	--	--	--	--	--	--
Denver	--	--	--	--	--	--	--
Upper Arapahoe	--	--	--	--	--	--	--
Lower Arapahoe	4780	5006	96.1	420	194	1.63	NNT
Laramie-Fox Hills	4166	4432	161.4	1034	768	2.42	NT

Data for the Laramie-Fox Hills aquifer may be missing or approximate and should be checked against the DENVER BASIN ATLAS NO. 4.

Table 1

Laramie Fox-Hills Aquifer Groundwater Availability
For the Proposed Horizon West Subdivision

Development	Indoor Demand (af) ¹	Irrigation per Lot (sq ft)	Irrigation Demand (af)	Total Annual Indoor and Outdoor Demand (af)	Total Demand 300 Year Pumping (af) ²	Non-Tributary Laramie Fox-Hills Water Supply Excess/Deficit (af)
2 Lots without irrigation	0.64	0	0.00	0.64	192	50
2 Lots with 1,650 sq ft of irrigation	0.64	1,650	0.17	0.81	242	0

1 [Adams County Development Standards and Regulations \(January 22, 2007\), Chapter 5, 5-04-05-06-04.](#)

2 [Adams County Development Standards and Regulations requires a 300-year aquifer life.](#)




3 Senate Bill 5, Colorado Decision Support System Aquifer Determination Tool, 2.42 af annual appropriation for 10 acres in the SENE Sec 13 T1S R68W.



Horizon West Builders Proposed Subdivision



Legend

-  Confluence Point
-  Source Water Route Framework
-  County

Location



Notes

Address:
14901 Colorado Boulevard
Brighton, CO 80602



1: 12,000



This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

Date Prepared: 9/29/2021 8:20:55 AM

Andrew Neitenbach <andrew@horizonwestbuilders.com>
to ehwebfillableforms ▾

Oct 26, 2021, 2:03 PM ☆ ↶ ⋮

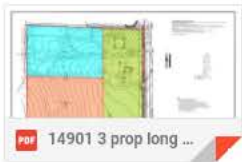
Hi,

My name is Andrew Neitenbach and I'm working on subdividing a 10 acre piece of property in Adams County into 3, 3.3 acre properties. In my application it's asking for a proof of sewer services so I am looking for a letter that would satisfy the county for this purpose. Please see the attached map of the property located at 14901 Co. Blvd, Brighton, Co 80602. Let me know if you have any questions and I appreciate your time.

Thanks,

Andrew Neitenbach

Horizon West Builders
720-939-6892
andrew@horizonwestbuilders.com



mweakley@tchd.org
to me ▾

Nov 12, 2021, 10:29 AM ☆ ↶ ⋮

Andrea,
TCHD will provide additional information relative to the **septic** system installation and other environmental health related issues as part of the overall land use review process associated with the conceptual design review through Adams County.

Michael Weakley
Water Program Supervisor
Environmental Health Division
[6162 S. Willow Drive, Suite 100](#)
[Greenwood Village, CO 80111](#)
O 720-200-1593 | C 720-774-3412
mweakley@tchd.org | www.tchd.org



149th Subdivision

Prill, Mike <mprill@northmetrofire.org>
To: Luc Neitenbach <lucas@horizonwestbuilders.com>
Cc: Andrew Neitenbach <andrew@horizonwestbuilders.com>

Mon, Oct 11, 2021 at 3:50 PM

Good Afternoon.

Looking over your plan, I don’t see the need to put in any hammerheads in the driveways. Look at the attached plan as I just figured the spot where the driveways might be from the roads. If you are thinking of some other design, please let me know.

Both driveways from where I think you might be putting them in, looks to be not more than 90 feet which will be less the fire code requirement of 150 feet.

If you are wanting to get the driveways to a point that can hold the weight of the fire apparatus, the apparatus weighs 85,000 pounds with the culvert will have to be designed to hold the weight.

For the road base, the Fire District will require a geo-technical report from the civil engineer for our approval and once the driveway is constructed, the same civil engineering company will have to submit a certified report advising that the driveway meets the requirement of the report.

I hope this helps and please let me know if you have any additional questions.

Thank you and have a wonderful day.

MICHAEL PRILL

Fire Prevention Specialist
ICC Inspector II #5280715 – Exp 8/31/2024
CO DFPC Fire Inspector II #186207310 – Exp 3/19/2024

North Metro Fire Rescue District
101 Spader Way
Broomfield, CO. 80020
Phone: 303-252-3546
Fax: 720-887-8336
Website: www.northmetrofire.org



"Excellence Through Each Individual Act."

From: Luc Neitenbach [mailto:lucas@horizonwestbuilders.com]
Sent: Monday, October 11, 2021 3:16 PM
To: Prill, Mike <mprill@northmetrofire.org>
Cc: Andrew Neitenbach <andrew@horizonwestbuilders.com>
Subject: 149th Subdivision

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or clicking links, especially from unknown senders.

[Quoted text hidden]



14901 3 split south drive 10.8.21 - NMFRD Markup.pdf
572K

October 29, 2021

Mr. Andrew Neitenbach
Horizon West Builders
720-939-6892
andrew@horizonwestbuilders.com

RE: 14901 Colorado Boulevard Subdivision

Dear Mr. Neitenbach,

Thank you for inquiring about the impact to the school district as a result of your request to subdivide a 10-acre lot in into three lots to allow for the construction of two additional single-family detached units.

The District has reviewed the development proposal in terms of (1) available school capacity, (2) required land dedications and/or cash-in-lieu fees and (3) transportation/access considerations. After reviewing the above proposal, **the School District finds that it has no objections to your subdivision request.** The reason for this position follows:

1. School Capacity.
 - a. 14901 Colorado Boulevard is currently served by Silver Creek Elementary School, Rocky Top Middle School and Mountain Range High School. We estimate a yield of 1 elementary student, 1 middle school student and 1 high school student. Capacity at these schools is expected to be sufficient for the proposed subdivision.
2. Land Dedication or cash-in-lieu.
 - a. The size and location of the development indicate that the school district land requirement should be made in the form of cash in lieu of land dedication as per the Adams County Development Standards and Regulations, Section 5-05-04-05.
3. Transportation/Access Considerations
 - a. The Transportation Department recommends street lighting at all bus pick-up points to assist wintertime safety.

We appreciate your and the County's cooperation and the opportunity to comment on issues of interest to the County and the District. If you have any further questions or concerns regarding this referral, please contact me via email at matt.schaefer@adams12.org or phone at 720-972-4289.

Sincerely,



Matthew D. Schaefer
Planning Manager



August 6, 2021

Andrew Neitenbach
14901 Co. Blvd
Brighton, CO 80602

Dear Andrew Neitenbach:

United Power is the provider of electric service at 14901 Colorado Blvd, in the area to the proposed residential subdivision, located in the Town of Brighton, County of Adams, state of Colorado.

There is electrical distribution in the area that may or may not need to be upgraded, depending on the requirements of the site, in order to provide capacity and safe reliable power to the area. Service will be provided according to the rules, regulations, and policies in effect by United Power at the time service is requested.

We look forward to this opportunity to provide electric service. If you have any questions, please give me a call at 303-618-2987.

Sincerely,

Michael Neu

Michael Neu
Project Coordinator II - West District

MKN: ba



WILL SERVE LETTER

August 5, 2021

Horizon West Builders
3855 E 151st Ave
Brighton, CO 80602

Re: 14901 Colorado Blvd Brighton, CO Subdivision Will Serve

Dear Andrew Neitenbach,

This letter is to confirm that Xcel Energy is your utility provider for natural gas. In accordance with our tariffs, on file with and approved by the Colorado Public Utilities Commission, gas facilities can be made available to serve the project at 14901 Colorado Blvd., Brighton, CO, 80602. The cost, and whether any reinforcements or extensions are required, for the Company to provide those facilities will be determined by your designer upon receipt of application and project plans.

Your utility service(s) will be provided after the following steps are completed:

- ***Application submitted to Xcel Energy's "Builders Call Line (BCL)"*** – once your application is accepted you will be assigned a design department representative who will be your primary point of contact
- ***Utility design is completed*** – you must provide your design representative with the site plan, the one - line diagrams, and panel schedules for electric and gas loads if applicable
- ***All documents provided by design representative are signed and returned***
- ***Payment is received*** (Residential Service Laterals if applicable)
- ***Required easements are granted*** - you must sign and return applicable easement documents to your Right-of-Way agent
- ***Site is ready for utility construction*** - the site ready information can be found on our website at may be viewed at [Construction and Inspection | Xcel Energy](https://www.xcelenergy.com/ConstructionAndInspection).

An estimated scheduled in-service date will be provided once these requirements have been met. It is important to keep in mind that the terms and conditions of utility service, per our tariffs, require that you provide adequate space and an easement on your property for all gas and electric facilities required to serve your project, including but not limited to gas and electrical lines and meters, transformers, and pedestals. General guidelines for requirements can be found on our website at [xcelenergy.com/InstallAndConnect](https://www.xcelenergy.com/InstallAndConnect).

Xcel Energy looks forward to working with you on your project and if I can be of further assistance, please contact me at the phone number or email listed below.

Sincerely,

Elise Ash
Pike Engineering

Mailing address: Pike Engineering
555 Zang, Suite 250
Lakewood, CO 80228

Level 3 – Storm Drainage Study Report

Neitenbach Subdivision

Prepared For:

Horizon West Builders

3855 E 151st Avenue

Brighton, CO 80602

(720) 939-6892

Contact: Andrew Neitenbach

Prepared By:

Sorensen Engineering & Construction, Inc.

1901 Bear Court

Fort Collins, CO 80525

(970) 590-1579

Contact: Paul C. Sorensen, PE

February 2022

ENGINEER CERTIFICATE OF DRAINAGE REPORT

"I hereby certify that this report (plan) for the Preliminary Drainage design of Neitenbach Subdivision was prepared by me or under my direct supervision in accordance with the provisions of Adams County Storm Drainage Design and Technical Criteria for the owners thereof. I understand that Adams County does not and will not assume liability for drainage facilities designed by others."

Paul C. Sorensen, P.E.
Registered Professional Engineer
State of Colorado No. 23679

Date

DEVELOPER CERTIFICATION OF DRAINAGE FACILITIES

"Horizon West Builders, Inc. hereby certifies that the drainage facilities for Neitenbach Subdivision shall be constructed according to the design presented in this report. I understand that Adams County does not and will not assume liability for the drainage facilities designed and/ or certified by my engineer. I understand that Adams County reviews drainage plans pursuant to Colorado Revised Statutes Title 30, Article 28; but cannot, on behalf of Neitenbach Subdivision, guarantee that final drainage design review will absolve Horizon West Builders, Inc. and/ or their successors and/ or assigns the future liability for improper design. I further understand that approval of the Final Plat and/ or Final Development Plan does not imply approval of my engineer's drainage design.

Name of Developer (please print)

Date

Authorized Signature

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INTRODUCTION

This Level 3 Storm Drainage Study Report presents an analysis of the proposed drainage patterns and requirements for the proposed Neitenbach Subdivision development, hereafter referred to as the "Site."

Site Location

As shown on Figure 1, Site Vicinity/Topographic Map, the Site is located in the Northeast Quarter of Section 13, Township 1 South, Range 68 West of the 6th Principal Meridian, Adams County, Colorado. The Site is west of and adjacent to Colorado Boulevard, Harrison Street is west of the property and curves around to the north side of the property, and Jackson Street is to the north. The Site address is 14901 Colorado Boulevard, Denver, Colorado. The Site is currently zoned A-1 in Adams County.

Site Description

The existing Site includes 10 acres currently contained in one (1) lot. Native grasses cover most of the Site, with abandoned gas well facilities (aboveground structures and underground flowlines have been removed) in the northwest portion of the Site. An existing home with outbuildings are present on the east side next to Colorado Boulevard. The Site slopes at 1% - 5% to the west and north, towards existing residential properties. The Site Vicinity Map is provided in Appendix A.

Proposed Project Description

The proposed project consists of subdividing a 10-acre lot into three lots at 14901 Co. Blvd, Brighton, CO 80602, as shown on Figure 1, Site Plan. The lot is zoned A-1 and each of the lots created would carry this same zoning. The lots will be developed to include one (1) single family residence per lot, including the existing residence on the proposed Lot 1, adjacent to Colorado Boulevard. A barn/outbuilding will be included on each lot. The subdivision aligns with Policy 11.1.c of Adams County long term development plans which is to "preserve character and quality of an area." The developer wishes to maintain the agriculture/rural character of the environmental quality.

Access to the development is proposed from Colorado Boulevard along the southern-most property line and will consist of a private access road and turnaround. This access would be maintained by the three property owners via a covenant.

The existing house has utilities and a residence in place, but the two additional lots will be served by potable water wells and on-site wastewater treatment system (OWTS) systems. Permits for these systems will be processed and obtained from the appropriate agencies concurrent to the approval process for each building permit. A Non-Tributary Aquifer Groundwater Supply analysis was prepared by William Berg, P.G. of Martin Wood Water Consultants, and is included in the application package. The analysis demonstrates a 300-year supply is available for the two proposed lots, per Adams County Requirements.

Required permits include:

- Residential building permit;
- Potable well permit; and
- Adams County OWTS permit

The existing oil and gas facilities that lie within the proposed northwest lot (Lot 3) have been plugged and abandoned and remediation is currently underway under the supervision of Michael Hickey, Director of the Colorado Oil & Gas Conservation Commission's orphaned well program. All existing above ground structures and underground flowlines will be removed, and the site will be reclaimed with native grasses.

Existing Conditions

The Site includes an existing access road to the aforementioned abandoned gas well facilities in the northern quarter of the Site. One home and a large barn are located near the eastern property line, adjacent to Colorado Boulevard, along with a few small outbuildings. A second access driveway exists for this home off Colorado Boulevard at the approximate midpoint of the property. Both of the existing access roads will be abandoned for the proposed project.

Flood Hazard and Drainage Studies Relevant to the Site

The Site is contained within the FEMA FIRM map panel #08001C0304J. According to the FIRM panel, no part of the Site lies within the 100-year flood plain. The FIRM Map panel is provided in Appendix A.

Soil Type

The NRCS soil survey indicates that the soil on Site is primarily Planter loam and Ulm loam. Planter loam at 0% to 3% slopes comprises the southern 60% of the Site, and Ulm loam at 3% to 5% slopes exist in the northeast portion of the Site with Ulm loam at 5% to 9% slopes in the northwest portion. These loams are in the Hydrologic Soil Group C. The NRCS soil map and relevant data are provided in the Appendix A for reference.

Developed Site Conditions

The proposed development will produce three large-lot residential properties as shown on Figure 2. A new private access roadway is proposed off Colorado Boulevard along the southern property boundary, extending into the Site for approximately 300-feet and then turning to the north with a centrally located turnaround. An existing home on the east lot (Lot 1) will remain, as will an existing barn in the northern part of Lot 1. New homes are proposed for both Lots 2 and 3, each with a barn/outbuilding. On-site wastewater treatment systems (OWTS) will be permitted and installed on Lots 2 and 3. Much of the Site will remain undisturbed, specifically the down-gradient western half of the property, with existing native grasses being maintained and preserved. The existing gas well facility along the northwestern portion of the site will be abandoned in place with all above ground structures and underground flow lines removed. The gas well area will be reclaimed with native grasses.

HISTORIC DRAINAGE SYSTEMS

Major Basins

The Site historically drains to the west and north to the Wadley Farms Third Filing subdivision (large residential estates) and Wadley Reservoir No. 3. As shown on Figure 3, Historic Drainage Exhibit, and summarized in Table 1, the Site is divided into three basins, described as follows:

Basin A (2.18 Acres)

Basin A (2.177 acres) is located along the north side of the Site and drains via sheet flow to the north, onto Wadley Farms. Basin A includes approximately 28,200 square feet (sf) of compacted gravel surface associated with the abandoned gas well facilities, and 5,020 sf of roof top associated with the gas well facility and new barn. In accordance with the Urban Drainage and Flood Control District (UDFCD), Urban Storm Drainage Criteria Manual (USDCM), Table 6-3, the recommended percentage impervious value for gravel (packed) to be considered 40% impervious. Accordingly, the total impervious calculations for Basin A are as follows:

$$\text{Impervious Area} = 28,200 * 0.40 + 5,020 = 16,300 \text{ sf}$$

$$\% \text{ Impervious} = 16,300 / (2.177 * 43,560) = 17.19\%$$

The historic gas well facilities shown in the north and west portion of Basin A will be removed and the existing gravel impervious surface will be abandoned in place and revegetated with native grasses.

Basin B (6.33 acres)

Basin B includes most of the western half of the property and includes the existing home and outbuildings near the east side adjacent to Colorado Boulevard. Basin B includes 6.334 acres draining via sheet flow to the west. Basin B includes 20,740 sf of compacted gravel, 2,875 sf of rooftop, 122 sf of wooded deck and 620 sf of concrete. The total impervious calculations are as follows:

$$\text{Impervious Area} = 20,740 * 0.40 + 2,875 + 122 + 620 = 11,913 \text{ sf}$$

$$\% \text{ Impervious} = 11,913 / (6.334 * 43,560) = 4.32\%$$

A portion of the aforementioned gas well facility is present in the northwestern corner of Basin B, including a plugged and abandoned gas well. As discussed above, the existing gas well facilities will be removed and revegetated with native grasses. The remaining area of Basin B (263,996 sf, or 6.06 acres) consists of native grasses.

Basin C (1.49 acres)

Basin C is located along the southeastern portion of the Site and includes 1.486 acres draining via sheet flow to the southwest. This basin includes 2,950 sf of compacted gravel surface and 150 sf of wooden deck. The total impervious area and percent impervious area are calculated as follows:

$$\text{Impervious Area} = 2,950 * 0.40 + 150 = 1,330 \text{ sf}$$

$$\% \text{ Impervious} = 1,330 / (1.486 * 43,560) = 2.05\%$$

The remaining area of Basin C consists of native grasses.

Description of Upstream Basins

As shown on Figure 1, Site Vicinity/Topographic Map, the upstream basins are east of Colorado Boulevard, with a basin divide located approximately 1,500 feet to the east. Colorado Boulevard acts as an upstream basin divide as well, i.e., there are no culverts or other conveyance structures to direct runoff across Colorado Boulevard onto the Site. Existing drainage on the east side of Colorado Boulevard directs upstream runoff to the north toward a minor tributary of Big Dry Creek. No upstream flow onto the Site is expected because of the Colorado Boulevard divide.

Downstream Drainage Analysis

The downstream drainage basin flows through Wadley Farms subdivision. Wadley Farms is a rural residential subdivision with large lots (estate residential area in the A-1 zoning district with a minimum lot size of 2.5 acres). Accordingly, most of each lot that may receive runoff from the Site remains open, with grass or other vegetative cover. Wadley Farms includes two ponds; one that existed prior to development, and one that was added to comply with Adams County development rules. The downstream drainage basins generally flow to the west and outfall into Wadley Reservoir No. 3, German Ditch, or to Big Dry Creek. Such large lot developments as Wadley Farms, and certainly Neitenbach Subdivision, should receive Low Impact Development (LID) consideration due to the large area of undisturbed native grasses that serve to filter stormwater runoff.

PROPOSED DRAINAGE SYSTEM AND BASINS

Criteria

This report is prepared in accordance with the Adams County *Stormwater Drainage Design and Stormwater Quality Control Regulations*; specifically, *Chapter 9 – Storm Drainage Design and Stormwater Quality Regulations* and the *Mile High Flood District Criteria Manual*.

The hydrologic design herein presented is based on the Mile High Flood District (MHFD) Criteria Manual and uses the Rational Method to analyze the Design Storm. The Design Storm includes the 5-year storm as the minor storm event and the 100-year storm as the major event. The one-hour point rainfall depth used for the 5-year event is 1.42 inches and for the 100-year event is 2.71 inches. The Rational Method is used to analyze the existing and fully developed conditions. The MHFD runoff calculations are presented in Appendix B.

Runoff / Proposed Basin Description

As described above, three existing basins are identified on the Site. The developed Site conditions include four drainage basins, with the fourth added for the southern half of the proposed new access road (crowned) along the south-eastern portion of the Site and the corresponding setback from the Site southern property line.

Major Basins

The proposed major basins include the existing Basins A, B and C, albeit with some changes as a result of the development (discussed in detail below), plus an additional Basin D resulting from the proposed private access road off Colorado Boulevard along the southern property line. Each basin is discussed below.

Basin A (2.18 Acres)

The total area of Basin A remains the same as the existing and will continue to drain via sheet flow to the north, but the impervious area decreases with the abandonment of the existing gas well facility in the northwest portion of the property. Much of the existing compacted gravel surface will be abandoned in place and reclaimed with native grasses. The impervious area will include 2,150 sf of compacted gravel and 6,100 sf of roof top area. As shown in Table 1, the percent of impervious area decreases to a great extent with the removal and reclamation of the gas well site, calculated as follows:

$$\begin{aligned}\text{Impervious Area} &= 2,150 * 0.40 + 6,100 = 6,960 \text{ sf} \\ \text{\% Impervious} &= 6,960 / (2.177 * 43,560) = 7.34\%\end{aligned}$$

Basin B (5.78 Acres)

As shown in Figure 2 Proposed Drainage Exhibit, Basin B is reduced in size to 5.784 acres to accommodate the proposed access road improvements. Stormwater will continue to drain via sheet flow to the west. Basin B will include 16,520 sf of compacted gravel (including the west half of the center-crowned access drive and turnaround), 7,750 sf of rooftop, and 120 sf of wooded deck. The total impervious area and percent impervious area are calculated as follows:

$$\begin{aligned}\text{Impervious Area} &= 16,520 * 0.40 + 7,750 + 120 = 14,478 \text{ sf} \\ \text{\% Impervious} &= 14,478 / (5.784 * 43,560) = 5.75\%\end{aligned}$$

The aforementioned gas well facility that is present in the northwestern corner of Basin B, including a plugged and abandoned well, will be removed and reclaimed with native grasses. The remaining area of Basin B (237,473 sf, or 5.45 acres) will consist of native grasses.

Basin C (1.88 Acres)

With the installation of the proposed access driveway, Basin C is increased in size from historic conditions. Basin C will include 1.880 acres and will drain via sheet flow and in a small drainage channel on the east side of the access road to the southwest, discharging to a proposed culvert under the southwest corner of the access road. The proposed Basin C includes 15,530 sf of compacted gravel surface (including one-half of the center-crowned access road) and 150 sf of wooden deck. The total impervious area and percent impervious area are calculated as follows:

$$\begin{aligned}\text{Impervious Area} &= 15,530 * 0.40 + 150 = 6,362 \text{ sf} \\ \text{\% Impervious} &= 6,362 / (1.880 * 43,560) = 7.77\%\end{aligned}$$

The remaining area of Basin C will consist of native grasses.

Basin D (0.16 Acres)

With the installation of the center-crowned access road, the new Basin D is created the will drain the south half of the access road, discharging via sheet flow to the south. The area of Basin D will include 0.155 acre, with 3,180 sf of compacted gravel. The total impervious calculations are as follows:

$$\text{Impervious Area} = 3,180 * 0.40 = 1,272 \text{ sf}$$

$$\% \text{ Impervious} = 1,272 / (0.155 * 43,560) = 18.84\%$$

The remaining area of Basin D will consist of native grasses.

The existing and proposed drainage basin characteristics are summarized in Table 1.

Table 1. Existing and Proposed Site Drainage Basin Characteristics

Basin	Total Existing Area		Existing Impervious Area		Total Developed Area		Developed Impervious Area	
	Acres	Square Feet	Area (SF)	Area (%)	Acres	Square Feet	Area (SF)	Area (%)
A	2.18	94,830	16,300	17.19	2.18	94,830	6,960	7.34
B	6.33	275,909	11,913	4.32	5.78	251,950	14,478	5.75
C	1.49	64,730	1,330	2.05	1.88	81,893	6,362	7.77
D	N/A	N/A	N/A	N/A	0.16	6,752	1,272	18.84
TOTAL	10.0		29,543		10.0		29,072	

HYDROLOGICAL ANALYSIS

The hydrological analysis was computed using the Peak Runoff Prediction by the Rational Method spreadsheets developed by the Urban Drainage and Flood Control District (Mile High Flood District) as described in the Urban Storm Drainage Criteria Manual (USDCM), Volume 1. The Hydrologic Calculations are presented in Appendix B, the results of which are summarized in Table 2.

Table 2. Results of Peak Runoff Prediction by the Rational Method

Basin	Runoff Coefficients				Peak Runoff Flow (cfs)			
	Existing		Developed		Existing		Developed	
	5-yr	100-yr	5-yr	100-yr	5-yr	100-yr	5-yr	100-yr
A	0.18	0.55	0.09	0.51	0.86	5.18	0.33	3.83
B	0.07	0.50	0.08	0.51	0.94	9.20	0.77	10.18
C	0.05	0.49	0.10	0.52	0.15	2.76	0.33	3.63
D	N/A	N/A	0.19	0.56	N/A	N/A	0.08	0.50
Total					1.95	17.14	1.51	18.14

Discussion of Hydrological Analysis Results

Basin A

As shown, with the removal and reclamation of the existing gas well facility, Site runoff from Basin A to the north is reduced for a 100-yr event from 5.18 cfs to 3.83 cfs. Considering the reduction in impervious area for Basin A, this is a reasonable result of the hydrological modeling.

Basin B

The total drainage area of Basin B is reduced from 6.33 acres to 5.78 acres with the proposed development, but the impervious area increases from 4.32% to 5.75%. This results in a slight increase in the 100-yr runoff from 9.21 cfs to 10.18 cfs. This stormwater runoff will flow via sheet flow across the western half of the undisturbed property with native grass cover, which will result in negligible increases in off-site discharge.

Basin C

With the installation of the proposed access driveway along the south side of the property, bending to the north at the approximate property midpoint, the configuration of Basin C changes and increases in size from the existing 1.49 acres to the proposed 1.88 acres. The proposed drainage boundary is defined by the new access road, with Basin C runoff concentrated to the northeast corner of the access road where it turns to the north. As described below and shown in Figure 2, Developed Drainage Exhibit, a new culvert is proposed to convey Basin C runoff to the southwest in a similar manner to existing conditions.

Basin D

Basin D is a new proposed drainage basin that is a result of the center-crowned access driveway that is proposed along the southern property line. The driveway access is off Colorado Boulevard, proceeds westerly for ~300 ft, then turning north to a central turnaround sized for emergency vehicle access. Runoff from the center crown will flow via sheet flow to the southwest in the same direction as from the existing Basin C, albeit with decreased flow volumes.

HYDRAULIC ANALYSIS

Culvert Design

As discussed above, a new culvert is proposed to convey Basin C runoff across the access road to the southwest. The hydraulic analysis was computed using the Excel Culvert Design – MHFD – Culvert v4.00 (May 2020) developed by the Urban Drainage and Flood Control District (Mile High Flood District) as described in the Urban Storm Drainage Criteria Manual (USDCM), Volume 2. The hydraulic calculations are presented in Appendix C. As described in the Adams County Development Standards and Regulations, for the proposed private access driveway, a corrugated metal pipe (CMP) culvert with both inlet and outlet flared end sections (FES) is proposed and is designed to meet HS-20 loading conditions.

Culvert design assumption are as follows:

- Design Flow: 100-year event discharge (Q_{100}) = 3.63 cfs
- Culvert length = 30 ft
- Design Slope = 0.030 ft/ft
- Maximum allowable headwater for 100-yr event = 1.5*culvert diameter

For the above conditions, and with the assumptions shown on the design spreadsheet printout provided in Appendix C, a 15-inch diameter CMP culvert with flared end sections (inlet and outlet) will adequately convey stormwater runoff from Basin C under the access driveway to the southwest. The selection of a 15-inch diameter culvert is based on UCFCD recommendations of minimum culvert size to prevent culvert plugging by sediment and debris. As shown in the Circular Conduit Flow calculations (Appendix C), for the design flow of 3.63 cfs at the design slope of 0.030 ft/ft, a flow velocity of 7.35 fps is calculated. This flow velocity is within the recommended velocity range 3 fps to 12 fps to assure that self-cleaning conditions exist to reduce long-term maintenance costs. This flow regime would result in supercritical flow within the pipe cylinder under normal flow conditions and outlet protection would be required. Accordingly, 4 ft long by 2 ft wide of VL type riprap will be placed at the outlet. The riprap will have a minimum diameter (d_{50min}) of 1 inch, and a nominal ($d_{50nominal}$) diameter of 6 inches.

DETENTION STORAGE

As outlined above, the proposed Neitenbach Subdivision project results in a reduction in impervious area from the existing 29,543 sf to the proposed 29,072 sf. In accordance with Section 9-01-11, DETENTION of the Adams County Development Standards and Regulations, Chapter 9 – Storm Drainage Design and Stormwater Quality Regulations, if “The total change in impervious area covers approximately 10,000 square feet or less,” an exemption from the detention storage requirement may be granted. Accordingly, the applicant requests an exemption from the detention storage requirement.

EROSION AND SEDIMENT CONTROL

Proposed ground disturbance on this 10-acre lot will be minimal – limited to the new access driveway, removal and reclamation of the existing gas well facility, and for the construction of two new homes and barns. Erosion control measures to be implemented include the following:

- **Silt fencing** shall be placed along the southern property line south of the proposed access driveway and extending further to the west along the south side of the proposed drainage swale. From the end of the drainage swale, the silt fencing shall be extended to the northwest to the west property line adjacent to the plugged and abandoned gas well workover easement and thence along the north side of the property to the east

adjacent to the gas well facility that will be abandoned and reclaimed with native grasses.

- **Vehicle Tracking Pad** shall be placed at the proposed new access point off of Colorado Boulevard near the southeast corner of the lot.
- **Concrete Washout Pits** shall be placed adjacent to the new home and barn construction sites. The specific locations shall be determined by the building contractor.
- **Sediment Straining** will occur naturally with the maintenance of existing native grasses along most of the western half of the property. With construction activities limited to the central and eastern portion of the property, the natural grass buffer will filter runoff as it flows across the existing native grasses, effectively straining and providing physical removal or retention of particulates from the runoff.

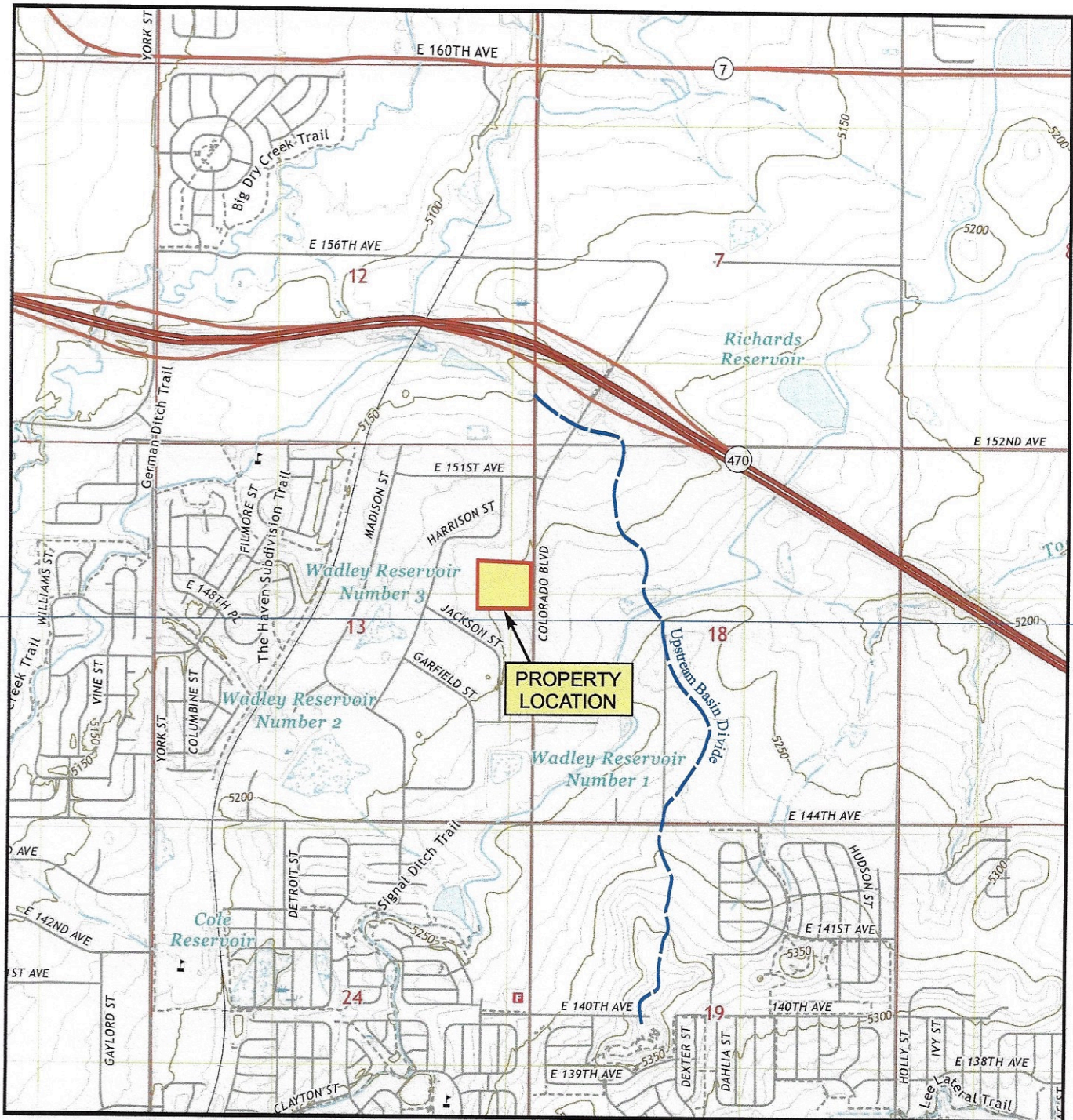
Disturbed areas of the project that will not be compacted gravel road surface, i.e., the drainage swale along the southern border and the reclaimed gas well facility, will be revegetated with native grasses.

CONCLUSIONS

The proposed Neitenbach Subdivision is a large-lot residential development that is compatible with the adjacent Wadley Farms Subdivision and maintains the rural residential development nature of the area. The proposed project will remove and reclaim the existing gas well facility, decrease the overall impervious area of the property, and in general enhance the rural residential amenities offered in this area of Adams County.

REFERENCES

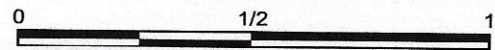
1. National Resources Conservation Service Soil Map – Adams County, Parts of Adams and Denver Counties, Colorado, Survey Area Data: Version 18, August 31, 2021.
2. Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM), Adams County, Panel 304 of 1150, Map Number 08001C0304J, Jan 20, 2016.
3. Adams County Stormwater Utility Credit Program Analysis, January 14, 2014.
4. Urban Drainage and Flood Control District, Denver, Colorado, Urban Storm Drainage Criteria Manual, Volume 1-3, Updated January 2016.
5. Adams County Stormwater Drainage Design and Stormwater Quality Control Regulations, December 8, 2020.



MAP SOURCE:

EASTLAKE, COLO - USGS 2019

ADAMS COUNTY PARCEL NUMBER:
0157313000003



Scale in Miles

CONTOUR INTERVAL: 10 FEET

PROJECT DATE: JANUARY 2022



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CIVIL / ENVIRONMENTAL ENGINEERING
1901 BEAR COURT FORT COLLINS, CO 80525
PHONE: 970 590-1579 paul@secengineering.net

PROJECT

Neitenbach Subdivision
14901 Colorado Blvd
Brighton, CO

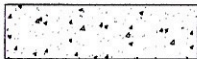





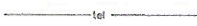
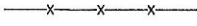
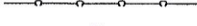










FIGURE 1
SITE VICINITY
TOPOGRAPHIC
MAP

Drawing Name: C:\Users\jmg04\OneDrive\Documents\Katie Cml\2021-23\Neitenbach\Construction Documents\NEITENBACH\OVERALL SITE PLAN.dwg Monday, January 31, 2022 3:50 PM By: Megan Korte Dummer

ABBREVIATION LEGEND:

CDOT COLORADO DEPARTMENT OF TRANSPORTATION
EG EXISTING GROUND
EX EXISTING
FO FIBER OPTIC
NMFRD NORTH METRO FIRE RESCUE DISTRICT
OHE OVERHEAD ELECTRIC
ROW RIGHT-OF-WAY
UG UNDERGROUND

LEGEND:

 PROPOSED PRIVATE GRAVEL DRIVE
 PROPOSED FIRE ACCESS GRAVEL DRIVE
 PROPOSED SWALE FLOWLINE
 EXISTING PIPE
 EXISTING EDGE OF ASPHALT
 EXISTING OVERHEAD WIRE
 EXISTING UNDERGROUND GAS
 EXISTING UNDERGROUND TELEPHONE
 EXISTING BARBED WIRE FENCE
 EXISTING CHAIN LINK FENCE
 BOLLARD
 WATER VALVE
 WATER METER
 POWER POLE
 GUY WIRE
 ELECTRIC METER
 TELEPHONE RISER
 MAILBOX
 SPIGOT

ABANDONED WELL MAINTENANCE
ACCESS, AND WORKOVER EASEMENT



TRACT A
149TH AVENUE
PRIVATE ROAD ACCESS

REAL
SORENSEN ENGINEERING & CONSTRUCTION, INC
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1901 BEAR COURT
FORT COLLINS, CO 80525
PHONE: 970.590-1579
paul@seseengineering.net

NEITENBACH SUBDIVISION
CONSTRUCTION PLANS
ADAMS COUNTY, COLORADO
PROJECT
SHEET TITLE

REVISIONS	
NO.	DESCRIPTION

DRAWN BY:
M.KEEPER
CHECKED BY:
P.SORENSEN
SCALE:
DATE:
01/31/2022
SHEET NUMBER:
FIGURE 2
SHEET INDEX:
JOB NUMBER: 2021-023



DRAWN BY: M.KEEFE	SCALE:
CHECKED BY: P.SORENSEN	DATE: 01/31/2022
SHEET NUMBER: FIGURE 4	
SHEET INDEX: JOB NUMBER: 2021-023	

APPENDIX A

FEMA FIRM Map and NRCS Soils Map



MAP UNIT INFORMATION

Map Unit Symbol	Map Unit Name	Acres Within Property	Percent of Property
PIB	Platner Loam	5.8	57.9%
UIC	Ulm Loam, 3-5 percent slopes	1.1	10.8%
UID	Ulm Loam, 5-9 percent slopes	3.1	31.3%

MAP SOURCE:

United States Department of Agriculture (USDA)
Natural resources Conservation Service (NRCS)

ADAMS COUNTY PARCEL NUMBER:
0157313000003



0 160 320
Approx Scale in Feet

PROJECT DATE: JANUARY 2022



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PROJECT

Neitenbach Subdivision
14901 Colorado Blvd
Brighton, CO

SOIL MAP

Soil Map—Adams County Area, Parts of Adams and Denver Counties, Colorado
(14901 Colorado Blvd)

MAP LEGEND

Area of Interest (AOI)		Spoil Area
Area of Interest (AOI)		Stony Spot
Soils		Very Stony Spot
Soil Map Unit Polygons		Wet Spot
Soil Map Unit Lines		Other
Soil Map Unit Points		Special Line Features
Special Point Features		
Blowout	Water Features	
Borrow Pit	Streams and Canals	
Clay Spot	Transportation	
Closed Depression	Rails	
Gravel Pit	Interstate Highways	
Gravelly Spot	US Routes	
Landfill	Major Roads	
Lava Flow	Local Roads	
Marsh or swamp	Background	
Mine or Quarry	Aerial Photography	
Miscellaneous Water		
Perennial Water		
Rock Outcrop		
Saline Spot		
Sandy Spot		
Severely Eroded Spot		
Sinkhole		
Slide or Slip		
Sodic Spot		

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Adams County Area, Parts of Adams and Denver Counties, Colorado
Survey Area Data: Version 18, Aug 31, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 20, 2018—Oct 26, 2018

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Adams County Area, Parts of Adams and Denver Counties, Colorado

PIB—Platner loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2tln0

Elevation: 4,000 to 4,930 feet

Mean annual precipitation: 14 to 17 inches

Mean annual air temperature: 46 to 50 degrees F

Frost-free period: 135 to 160 days

Farmland classification: Prime farmland if irrigated

Map Unit Composition

Platner and similar soils: 85 percent

Minor components: 15 percent

*Estimates are based on observations, descriptions, and transects of
the mapunit.*

Description of Platner

Setting

Landform: Interfluves

Landform position (two-dimensional): Summit

Landform position (three-dimensional): Interfluve

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Mixed eolian deposits over tertiary aged alluvium
derived from igneous, metamorphic and sedimentary rock

Typical profile

Ap - 0 to 6 inches: loam

Bt1 - 6 to 11 inches: clay

Bt2 - 11 to 20 inches: clay

Bk1 - 20 to 27 inches: loam

Bk2 - 27 to 37 inches: sandy clay loam

C - 37 to 80 inches: sandy clay loam

Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: Medium

Capacity of the most limiting layer to transmit water

(Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 15 percent

Maximum salinity: Nonsaline (0.0 to 1.0 mmhos/cm)

Available water supply, 0 to 60 inches: Moderate (about 8.1 inches)

Interpretive groups

Land capability classification (irrigated): 3s

Land capability classification (nonirrigated): 4s

Hydrologic Soil Group: C

Ecological site: R067BY002CO - Loamy Plains

Hydric soil rating: No

Minor Components

Ascalon

Percent of map unit: 10 percent

Landform: Interfluves

Landform position (two-dimensional): Summit, shoulder

Landform position (three-dimensional): Interfluve

Down-slope shape: Linear

Across-slope shape: Linear

Ecological site: R067BY002CO - Loamy Plains

Hydric soil rating: No

Rago, rarely flooded

Percent of map unit: 4 percent

Landform: Drainageways

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Head slope, base slope

Down-slope shape: Linear

Across-slope shape: Concave

Ecological site: R067BY036CO - Overflow

Hydric soil rating: No

Rago, ponded

Percent of map unit: 1 percent

Landform: Playas

Landform position (two-dimensional): Summit

Landform position (three-dimensional): Interfluve

Down-slope shape: Concave

Across-slope shape: Concave

Ecological site: R067BY010CO - Closed Upland Depression

Hydric soil rating: No

Data Source Information

Soil Survey Area: Adams County Area, Parts of Adams and Denver Counties,
Colorado

Survey Area Data: Version 18, Aug 31, 2021

Adams County Area, Parts of Adams and Denver Counties, Colorado

UIC—Ulm loam, 3 to 5 percent slopes

Map Unit Setting

National map unit symbol: 34x4

Elevation: 4,000 to 5,600 feet

Mean annual precipitation: 12 to 14 inches

Mean annual air temperature: 48 to 52 degrees F

Frost-free period: 125 to 155 days

Farmland classification: Prime farmland if irrigated

Map Unit Composition

Ulm and similar soils: 80 percent

Minor components: 20 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ulm

Setting

Landform: Plains

Landform position (three-dimensional): Talf

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Residuum weathered from sandstone and shale

Typical profile

H1 - 0 to 7 inches: loam

H2 - 7 to 13 inches: silty clay

H3 - 13 to 30 inches: clay

H4 - 30 to 48 inches: clay loam

H5 - 48 to 52 inches: unweathered bedrock

Properties and qualities

Slope: 3 to 5 percent

Depth to restrictive feature: 40 to 60 inches to paralithic bedrock

Drainage class: Well drained

Runoff class: Low

Capacity of the most limiting layer to transmit water

(Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 15 percent

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water supply, 0 to 60 inches: Moderate (about 8.2 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: R067BY002CO - Loamy Plains
Hydric soil rating: No

Minor Components

Renohill

Percent of map unit: 13 percent
Hydric soil rating: No

Shingle

Percent of map unit: 5 percent
Hydric soil rating: No

Apishapa

Percent of map unit: 2 percent
Landform: Swales
Ecological site: R067BY035CO - Salt Meadow
Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Adams County Area, Parts of Adams and Denver Counties, Colorado

Survey Area Data: Version 18, Aug 31, 2021

Adams County Area, Parts of Adams and Denver Counties, Colorado

UID—Ulm loam, 5 to 9 percent slopes

Map Unit Setting

National map unit symbol: 34x5

Elevation: 4,000 to 5,600 feet

Mean annual precipitation: 12 to 14 inches

Mean annual air temperature: 48 to 52 degrees F

Frost-free period: 125 to 155 days

Farmland classification: Not prime farmland

Map Unit Composition

Ulm and similar soils: 80 percent

Minor components: 20 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ulm

Setting

Landform: Plains

Landform position (three-dimensional): Talf

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Residuum weathered from sandstone and shale

Typical profile

H1 - 0 to 4 inches: loam

H2 - 4 to 13 inches: silty clay

H3 - 13 to 30 inches: clay

H4 - 30 to 48 inches: clay loam

H5 - 48 to 52 inches: unweathered bedrock

Properties and qualities

Slope: 5 to 9 percent

Depth to restrictive feature: 40 to 60 inches to paralithic bedrock

Drainage class: Well drained

Runoff class: Medium

Capacity of the most limiting layer to transmit water

(Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 15 percent

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water supply, 0 to 60 inches: Moderate (about 8.2 inches)

Interpretive groups

Land capability classification (irrigated): 4e

Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: C

Ecological site: R067BY002CO - Loamy Plains

Hydric soil rating: No

Minor Components

Shingle

Percent of map unit: 10 percent

Hydric soil rating: No

Renohill

Percent of map unit: 8 percent

Hydric soil rating: No

Apishapa

Percent of map unit: 2 percent

Landform: Swales

Ecological site: R067BY035CO - Salt Meadow

Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Adams County Area, Parts of Adams and Denver Counties,
Colorado

Survey Area Data: Version 18, Aug 31, 2021

APPENDIX B

HYDROLOGICAL CALCULATIONS

PEAK RUNOFF PREDICTION BY THE RATIONAL METHOD

Version 2.00 released May 2017

Urban Drainage and Flood Control District
Denver, Colorado

Purpose: This workbook applies the Rational Method to estimate stormwater runoff and peak flows from small urban catchments (typically less than 90 acres)

Function:

1. To calculate the runoff coefficient, C for a catchment
2. To calculate the time of concentration, and then compare with the regional time of concentration limit used for the Denver region. The smaller one is recommended as the rainfall duration for use with the Rational Method.
3. To calculate the design rainfall intensity and resulting peak flow rate.

Content: The workbook consists of the following five sheets:

Intro Describes the purpose of each sheet in the workbook.

Rational Calcs Performs Rational Method calculations, $Q = CIA$

Weighted C Supporting tool to calculate area-weighted runoff coefficients from sub-areas.

Weighted Slope Supporting tool to calculate length-weighted slope from multiple flow reaches.

Weighted Tc Supporting tool to calculate reach-weighted time of concentration from multiple flow reaches.

Design Info Provides background information from the USDCM

Acknowledgements: ***Spreadsheet Development Team:***
Derek N. Rapp, P.E.
Peak Stormwater Engineering, LLC
Holly Piza, P.E. and Ken MacKenzie, P.E.
Urban Drainage and Flood Control District

Comments? Direct all comments regarding this spreadsheet workbook to:
Revisions? Check for revised versions of this or any other workbook at:

[UDFCD email](#)
[Downloads](#)

Calculation of Peak Runoff using Rational Method									
1	2	3	4	5	6	7	8	9	10
Area	Runoff Coefficient	Time of Concentration	Time of Travel	Time of Lag	Time of Base	Time of Peak	Peak Runoff	Peak Discharge	Peak Volume
1000	0.5	10	5	5	15	15	100	100	100

$$Q(cfs) = CIA$$
[illegible]

Area-Weighted Runoff Coefficient Calculations

Version 2.00 released May 2017

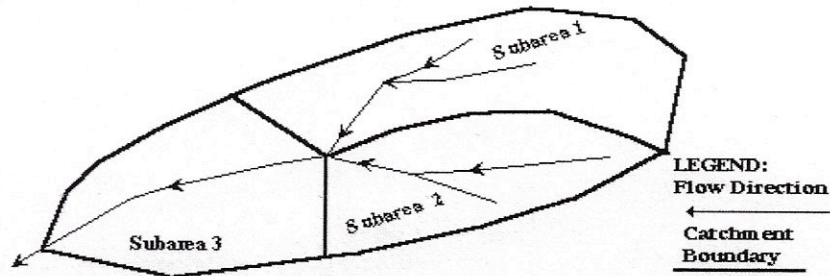
Designer: Paul Sorensen, PE

Company: Sorensen Engineering & Construction, Inc

Date: 1/21/22

Project: Neitenbach Subdivision - EXISTING CONDITIONS

Location: 14901 Colorado Blvd., Adams Co, CO



Subcatchment Name

Cells of this color are for required user-input
Cells of this color are for optional override values
Cells of this color are for calculated results based on overrides

See sheet "Design Info" for imperviousness-based runoff coefficient values.

Sub-Area ID	Area (ac)	NRCS Hydrologic Soil Group	Percent Imperviousness	Runoff Coefficient, C						
				2-yr	5-yr	10-yr	25-yr	50-yr	100-yr	500-yr
A	2.18	C	17.2	0.12	0.18	0.26	0.42	0.48	0.55	0.64
B	6.33	C	4.3	0.02	0.07	0.16	0.34	0.41	0.50	0.60
C	1.49	C	2.1	0.01	0.05	0.15	0.33	0.40	0.49	0.59
Total Area (ac)	10.00	Area-Weighted C		0.04	0.09	0.18	0.36	0.43	0.51	0.61
		Area-Weighted Override C		0.04	0.09	0.18	0.36	0.43	0.51	0.61

Length-Weighted Slope Calculations

Version 2.00 released May 2017

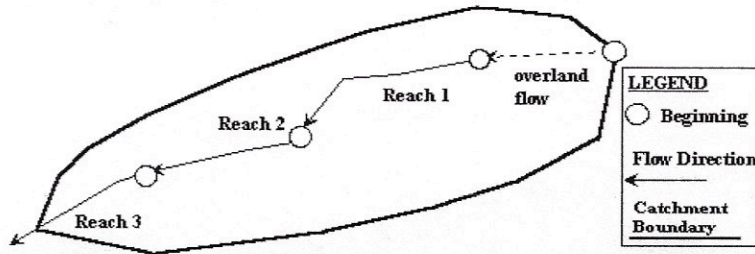
Designer: Paul Sorensen, PE

Company: Sorensen Engineering & Construction, Inc

Date: 1/21/22

Project: Neitenbach Subdivision - EXISTING CONDITIONS

Location: 14901 Colorado Blvd., Adams Co, CO



Subcatchment Name	Percent Imperviousness (%)

OVERLAND FLOW

Reach ID	Overland Flow Length L_i (ft)	U/S Elevation (ft) (Optional)	D/S Elevation (ft) (Optional)	Overland Flow Slope S_i (ft/ft)
A	300.00			0.026
B	500.00			0.037
C	500.00			0.018
Total Overland Length (ft)		1300.00	Length-Weighted Slope (ft/ft)	0.027

CHANNELIZED FLOW

Reach ID	Channelized Flow Length L_i (ft)	U/S Elevation (ft) (Optional)	D/S Elevation (ft) (Optional)	Channelized Flow Slope S_i (ft/ft)
A	675.00			0.018
B	700.00			0.027
C	700.00			0.013
Total Channelized Length (ft)		2075.00	Length-Weighted Slope (ft/ft)	0.019

Reach-Weighted Time of Concentration Calculations

Version 2.00 released May 2017

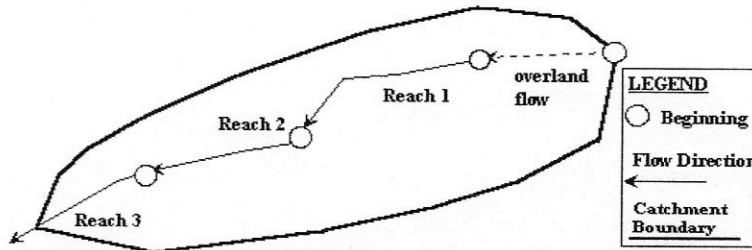
Designer: Paul Sorensen, PE

Company: Sorensen Engineering & Construction, Inc

Date: 1/21/22

Project: Neitenbach Subdivision - EXISTING CONDITIONS

Location: 14901 Colorado Blvd., Adams Co, CO



Subcatchment Name	Percent Imperviousness (%)

OVERLAND FLOW

Reach ID	Overland Flow Length L_t (ft)	Overland Flow Slope S_t (ft/ft)	5-yr Runoff Coefficient, C_s	Overland Flow Time t_t (min)
A	300.00	0.026	0.32	17.80
B	500.00	0.037	0.11	25.95
C	500.00	0.018	0.07	34.25
Weighted Totals	1300.00	0.027	Total t_t (min)	78.00

CHANNELIZED FLOW

Reach ID	Channelized Flow Length L_t (ft)	Channelized Flow Slope S_t (ft/ft)	NRCS Conveyance Factor K	Channelized Flow Time t_t (min)
A	675.00	0.018	10	8.39
B	700.00	0.027	7	10.14
C	700.00	0.013	7	14.62
Weighted Totals	2075.00	0.019	Total t_t (min)	33.15

Computed t_c (min)	111.15
Regional t_c (min)	
Selected t_c (min)	

Calculation of Peak Runoff using Rational Method									
--	--	--	--	--	--	--	--	--	--

$$Q(cfs) = CIA$$

Subcatchment Name	Area (ac)	NRCS Hydrologic Soil Group	Percent Imperviousness	Runoff Coefficient, C							Overland (Initial) Flow Time					Channelized (Travel) Flow Time							Time of Concentration			Rainfall Intensity, I (in/hr)								Peak Flow, Q (cfs)							
				2-yr	5-yr	10-yr	25-yr	50-yr	100-yr	500-yr	Overland Flow Length L _t (ft)	U/S Elevation (ft) (Optional)	D/S Elevation (ft) (Optional)	Overland Flow Slope S _t (ft/ft)	Overland Flow Time t _t (min)	Channelized Flow Length L _t (ft)	U/S Elevation (ft) (Optional)	D/S Elevation (ft) (Optional)	Channelized Flow Slope S _t (ft/ft)	NRCS Conveyance Factor K	Channelized Flow Velocity V _t (ft/sec)	Channelized Flow Time t _t (min)	Computed t _c (min)	Regional t _c (min)	Selected t _c (min)	2-yr	5-yr	10-yr	25-yr	50-yr	100-yr	500-yr	2-yr	5-yr	10-yr	25-yr	50-yr	100-yr	500-yr		
A	2.18	C	7.3	0.04	0.09	0.19	0.36	0.43	0.51	0.61	300.00			0.026	22.93	675.00			0.018	7	0.94	11.98	34.91	33.11	33.11	1.22	1.61	1.97	2.50	2.94	3.42	4.84	0.12	0.33	0.80	1.96	2.75	3.83	6.19		
				0.03	0.08	0.17	0.35	0.42	0.51	0.61													26.69			0.027	7	1.15	10.14	36.84	32.26	1.24	1.64	2.00	2.54	2.99	3.47	4.72	0.24	0.77	2.01
B	5.78	C	5.8	0.05	0.10	0.19	0.36	0.43	0.52	0.61	600.00			0.037		26.69	700.00		0.027	7	1.15	10.14	36.84	32.26	1.24	1.64	2.00	2.54	2.99	3.47	4.72	0.24	0.77	2.01	5.15	7.28	10.18	16.53			
C	1.88	C	7.8	0.05	0.10	0.19	0.36	0.43	0.52	0.61	410.00			0.014	32.77	270.00		0.014	7	0.83	5.43	38.20	28.45	28.45	1.34	1.76	2.15	2.74	3.22	3.74	5.08	0.12	0.33	0.77	1.88	2.61	3.63	5.85			
D	0.16	C	18.8	0.13	0.19	0.27	0.42	0.49	0.58	0.65	45.00			0.022	8.51	270.00		0.010	10	1.00	4.50	13.01	26.66	13.01	2.00	2.64	3.22	4.10	4.82	5.80	7.81	0.04	0.08	0.14	0.28	0.38	0.50	0.79			

Area-Weighted Runoff Coefficient Calculations

Version 2.00 released May 2017

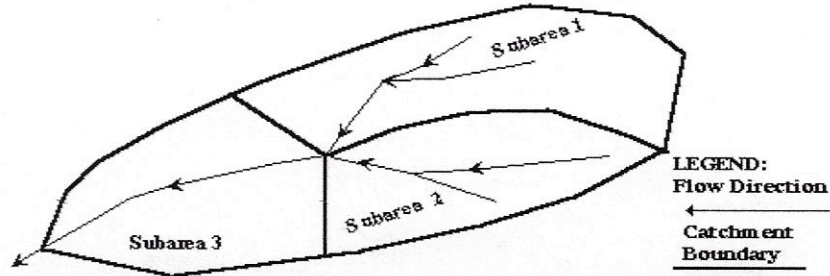
Designer: Paul Sorensen, PE

Company: Sorensen Engineering & Construction, Inc

Date: 1/21/22

Project: Neitenbach Subdivision - DEVELOPED

Location: 14901 Colorado Blvd., Adams Co. CO



Subcatchment
Name

Cells of this color are for required user-input

Cells of this color are for optional override values

Cells of this color are for calculated results based on overrides

See sheet "Design Info" for imperviousness-based runoff coefficient values.

Sub-Area ID	Area (ac)	NRCS Hydrologic Soil Group	Percent Imperviousness	Runoff Coefficient, C						
				2-yr	5-yr	10-yr	25-yr	50-yr	100-yr	500-yr
A	2.18	C	7.3	0.04	0.09	0.19	0.36	0.43	0.51	0.61
B	5.78	C	5.8	0.03	0.08	0.17	0.35	0.42	0.51	0.61
C	1.88	C	7.8	0.05	0.10	0.19	0.36	0.43	0.52	0.61
D	0.16	C	18.8	0.13	0.19	0.27	0.42	0.49	0.56	0.65
Total Area (ac)	10.00	Area-Weighted C		0.04	0.09	0.18	0.36	0.43	0.51	0.61
		Area-Weighted Override C		0.04	0.09	0.18	0.36	0.43	0.51	0.61

Length-Weighted Slope Calculations

Version 2.00 released May 2017

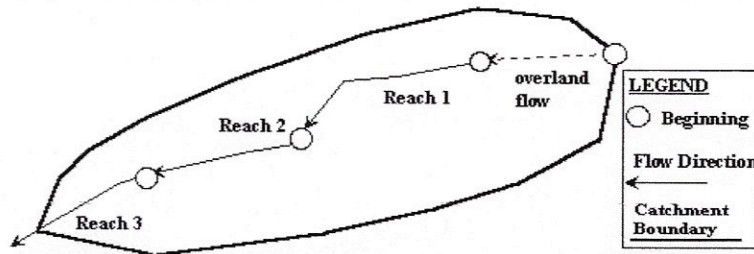
Designer: Paul Sorensen, PE

Company: Sorensen Engineering & Construction, Inc

Date: 1/21/22

Project: Neitenbach Subdivision - DEVELOPED

Location: 14901 Colorado Blvd., Adams Co. CO



Subcatchment Name	Percent Imperviousness (%)

OVERLAND FLOW

Reach ID	Overland Flow Length L_i (ft)	U/S Elevation (ft) (Optional)	D/S Elevation (ft) (Optional)	Overland Flow Slope S_i (ft/ft)
A	300.00			0.026
B	500.00			0.037
C	410.00			0.014
D	45.00			0.022
Total Overland Length (ft)		Length-Weighted Slope (ft/ft)		0.026

CHANNELIZED FLOW

Reach ID	Channelized Flow Length L_i (ft)	U/S Elevation (ft) (Optional)	D/S Elevation (ft) (Optional)	Channelized Flow Slope S_i (ft/ft)
A	675.00			0.018
B	700.00			0.027
C	270.00			0.014
D	270.00			0.010
Total Channelized Length (ft)		Length-Weighted Slope (ft/ft)		0.020

Reach-Weighted Time of Concentration Calculations

Version 2.00 released May 2017

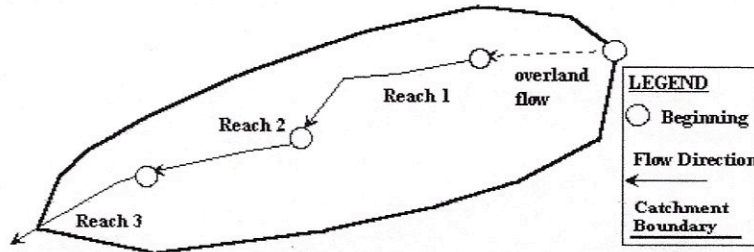
Designer: Paul Sorensen, PE

Company: Sorensen Engineering & Construction, Inc

Date: 1/21/22

Project: Neitenbach Subdivision - DEVELOPED

Location: 14901 Colorado Blvd., Adams Co. CO



Subcatchment Name	Percent Imperviousness (%)

OVERLAND FLOW

Reach ID	Overland Flow Length L_t (ft)	Overland Flow Slope S_t (ft/ft)	5-yr Runoff Coefficient, C_s	Overland Flow Time t_t (min)
A	300.00	0.026	0.09	23.04
B	500.00	0.037	0.08	26.74
C	410.00	0.014	0.10	32.72
D	45.00	0.022	0.19	8.50
Weighted Totals	1255.00	0.026	Total t_t (min)	91.00

CHANNELIZED FLOW

Reach ID	Channelized Flow Length L_t (ft)	Channelized Flow Slope S_t (ft/ft)	NRCS Conveyance Factor K	Channelized Flow Time t_t (min)
A	675.00	0.018	7	11.98
B	700.00	0.027	7	10.14
C	270.00	0.014	7	5.43
D	270.00	0.010	10	4.50
Weighted Totals	1915.00	0.020	Total t_t (min)	32.06

Computed t_c (min)	123.05
Regional t_c (min)	
Selected t_c (min)	

Supplementary Design Information for UD-Rational Workbook

Urban Storm Drainage Criteria Manual (USDCM) Volume 1, Chapter 6 - Runoff (March 2017)
Version 2.00 released May 2017

Table 6-1. Applicability of hydrologic methods

Watershed Size (acres)	Is the Rational Method Applicable?	Is CUHP Applicable?
0 to 90	Yes	Yes
90 to 160	No	Yes
160 to 3,000	No	Yes ¹
Greater than 3,000	No	Yes (subdividing into smaller catchments required) ¹

1. Subdividing into smaller subcatchments and routing the resultant hydrographs using SWMM may be needed to accurately model a catchment with areas of different soil types or percentages of imperviousness.

The general procedure for Rational Method calculations for a single catchment is as follows:

1. Delineate the catchment boundary and determine its area.
2. Define the flow path from the upper-most portion of the catchment to the design point. Divide the flow path into reaches of similar flow type (e.g., overland flow, shallow swale flow, gutter flow, etc.). Determine the length and slope of each reach.
3. Determine the time of concentration, t_c , for the selected waterway.
4. Find the rainfall intensity, I , for the design storm using the calculated t_c and the rainfall intensity-duration-frequency curve (see *Rainfall* chapter).
5. Determine the runoff coefficient, C .
6. Calculate the peak flow rate, Q , from the catchment using Equation 6-1.

The basic assumptions for the application of the Rational Method include:

1. The computed maximum rate of runoff to the design point is a function of the average rainfall rate during the time of concentration to that point.
2. The hydrologic losses in the catchment are homogeneous and uniform. The runoff coefficients vary with respect to type of soils, imperviousness percentage, and rainfall frequencies. These coefficients represent the average antecedent soil moisture condition.
3. The depth of rainfall used is one that occurs from the start of the storm to the time of concentration. The design rainfall depth during that period is converted to the average rainfall intensity for that period.
4. The maximum runoff rate occurs when the entire area is contributing flow. This assumption is not valid where a more intensely developed portion of the catchment with a shorter time of concentration produces a higher rate of runoff than the entire catchment with a longer time of concentration.

Table 6-4. Runoff coefficient equations based on NRCS soil group and storm return period

NRCS Soil Group	Storm Return Period						
	2-Year	5-Year	10-Year	25-Year	50-Year	100-Year	500-Year
A	$C_A = 0.84i^{1.302}$	$C_A = 0.86i^{1.276}$	$C_A = 0.87i^{1.232}$	$C_A = 0.84i^{1.124}$	$C_A = 0.85i+0.025$	$C_A = 0.78i+0.110$	$C_A = 0.65i+0.254$
B	$C_B = 0.84i^{1.169}$	$C_B = 0.86i^{1.088}$	$C_B = 0.81i+0.057$	$C_B = 0.63i+0.249$	$C_B = 0.56i+0.328$	$C_B = 0.47i+0.426$	$C_B = 0.37i+0.536$
C/D	$C_{C/D} = 0.83i^{1.122}$	$C_{C/D} = 0.82i+0.035$	$C_{C/D} = 0.74i+0.132$	$C_{C/D} = 0.56i+0.319$	$C_{C/D} = 0.49i+0.393$	$C_{C/D} = 0.41i+0.484$	$C_{C/D} = 0.32i+0.588$

Where:

i = % imperviousness (expressed as a decimal)

C_A = Runoff coefficient for Natural Resources Conservation Service (NRCS) HSG A soils

C_B = Runoff coefficient for NRCS HSG B soils

$C_{C/D}$ = Runoff coefficient for NRCS HSG C and D soils.

Table 6-2. NRCS Conveyance factors, K

Type of Land Surface	Conveyance Factor, K
Heavy meadow	2.5
Tillage/field	5
Short pasture and lawns	7
Nearly bare ground	10
Grassed waterway	15
Paved areas and shallow paved swales	20

Table 6-3. Recommended percentage imperviousness values

Land Use or Surface Characteristics	Percentage Imperviousness (%)
Business:	
Downtown Areas	95
Suburban Areas	75
Residential lots (lot area only):	
Single-family	
2.5 acres or larger	12
0.75 – 2.5 acres	20
0.25 – 0.75 acres	30
0.25 acres or less	45
Apartments	75
Industrial:	
Light areas	80
Heavy areas	90
Parks, cemeteries	10
Playgrounds	25
Schools	55
Railroad yard areas	50
Undeveloped Areas:	
Historic flow analysis	2
Greenbelts, agricultural	2
Off-site flow analysis (when land use not defined)	45
Streets:	
Paved	100
Gravel (packed)	40
Drive and walks	90
Roofs	90
Lawns, sandy soil	2
Lawns, clayey soil	2

Supplementary Design Information for UD-Rational Workbook

Urban Storm Drainage Criteria Manual (USDCM) Volume 1, Chapter 6 - Runoff (March 2017)
Version 2.00 released May 2017

Table 6-5. Runoff coefficients, *c*

Total or Effective % Impervious	NRCS Hydrologic Soil Group A						
	2-Year	5-Year	10-Year	25-Year	50-Year	100-Year	500-Year
2%	0.01	0.01	0.01	0.01	0.04	0.13	0.27
5%	0.02	0.02	0.02	0.03	0.07	0.15	0.29
10%	0.04	0.05	0.05	0.07	0.11	0.19	0.32
15%	0.07	0.08	0.08	0.1	0.15	0.23	0.35
20%	0.1	0.11	0.12	0.14	0.2	0.27	0.38
25%	0.14	0.15	0.16	0.19	0.24	0.3	0.42
30%	0.18	0.19	0.2	0.23	0.28	0.34	0.45
35%	0.21	0.23	0.24	0.27	0.32	0.38	0.48
40%	0.25	0.27	0.28	0.32	0.37	0.42	0.51
45%	0.3	0.31	0.33	0.36	0.41	0.46	0.54
50%	0.34	0.36	0.37	0.41	0.45	0.5	0.58
55%	0.39	0.4	0.42	0.45	0.49	0.54	0.61
60%	0.43	0.45	0.47	0.5	0.54	0.58	0.64
65%	0.48	0.5	0.51	0.54	0.58	0.62	0.67
70%	0.53	0.55	0.56	0.59	0.62	0.65	0.71
75%	0.58	0.6	0.61	0.64	0.66	0.69	0.74
80%	0.63	0.65	0.66	0.69	0.71	0.73	0.77
85%	0.68	0.7	0.71	0.74	0.75	0.77	0.8
90%	0.73	0.75	0.77	0.79	0.79	0.81	0.84
95%	0.79	0.81	0.82	0.83	0.84	0.85	0.87
100%	0.84	0.86	0.87	0.88	0.88	0.89	0.9
Total or Effective % Impervious	NRCS Hydrologic Soil Group B						
	2-Year	5-Year	10-Year	25-Year	50-Year	100-Year	500-Year
2%	0.01	0.01	0.07	0.26	0.34	0.44	0.54
5%	0.03	0.03	0.1	0.28	0.36	0.45	0.55
10%	0.06	0.07	0.14	0.31	0.38	0.47	0.57
15%	0.09	0.11	0.18	0.34	0.41	0.5	0.59
20%	0.13	0.15	0.22	0.38	0.44	0.52	0.61
25%	0.17	0.19	0.26	0.41	0.47	0.54	0.63
30%	0.2	0.23	0.3	0.44	0.49	0.57	0.65
35%	0.24	0.27	0.34	0.47	0.52	0.59	0.66
40%	0.29	0.32	0.38	0.5	0.55	0.61	0.68
45%	0.33	0.36	0.42	0.53	0.58	0.64	0.7
50%	0.37	0.4	0.46	0.56	0.61	0.66	0.72
55%	0.42	0.45	0.5	0.6	0.63	0.68	0.74
60%	0.46	0.49	0.54	0.63	0.66	0.71	0.76
65%	0.5	0.54	0.58	0.66	0.69	0.73	0.77
70%	0.55	0.58	0.62	0.69	0.72	0.75	0.79
75%	0.6	0.63	0.66	0.72	0.75	0.78	0.81
80%	0.64	0.67	0.7	0.75	0.77	0.8	0.83
85%	0.69	0.72	0.74	0.78	0.8	0.82	0.85
90%	0.74	0.76	0.78	0.81	0.83	0.84	0.87
95%	0.79	0.81	0.82	0.85	0.86	0.87	0.88
100%	0.84	0.86	0.86	0.88	0.89	0.89	0.9
Total or Effective % Impervious	NRCS Hydrologic Soil Group C						
	2-Year	5-Year	10-Year	25-Year	50-Year	100-Year	500-Year
2%	0.01	0.05	0.15	0.33	0.40	0.49	0.59
5%	0.03	0.08	0.17	0.35	0.42	0.5	0.6
10%	0.06	0.12	0.21	0.37	0.44	0.52	0.62
15%	0.1	0.16	0.24	0.4	0.47	0.55	0.64
20%	0.14	0.2	0.28	0.43	0.49	0.57	0.65
25%	0.18	0.24	0.32	0.46	0.52	0.59	0.67
30%	0.22	0.28	0.35	0.49	0.54	0.61	0.68
35%	0.26	0.32	0.39	0.51	0.57	0.63	0.7
40%	0.3	0.36	0.43	0.54	0.59	0.65	0.71
45%	0.34	0.4	0.46	0.57	0.62	0.67	0.73
50%	0.38	0.44	0.5	0.6	0.64	0.69	0.75
55%	0.43	0.48	0.54	0.63	0.66	0.71	0.76
60%	0.47	0.52	0.57	0.65	0.69	0.73	0.78
65%	0.51	0.56	0.61	0.68	0.71	0.75	0.79
70%	0.56	0.61	0.65	0.71	0.74	0.77	0.81
75%	0.6	0.65	0.68	0.74	0.76	0.79	0.82
80%	0.65	0.69	0.72	0.77	0.79	0.81	0.84
85%	0.7	0.73	0.76	0.79	0.81	0.83	0.86
90%	0.74	0.77	0.79	0.82	0.84	0.85	0.87
95%	0.79	0.81	0.83	0.85	0.86	0.87	0.89
100%	0.83	0.85	0.87	0.88	0.89	0.89	0.9

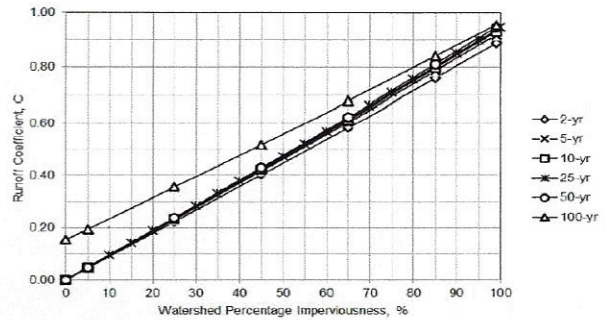


Figure 6-1. Runoff coefficient vs. watershed imperviousness NRCS HSG A

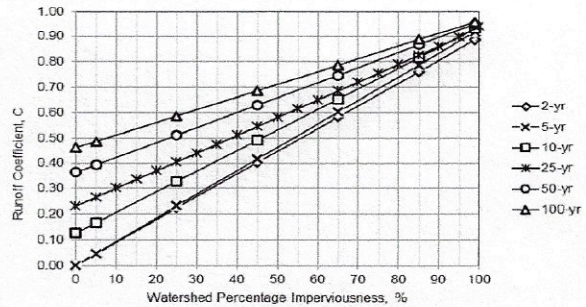


Figure 6-2. Runoff coefficient vs. watershed imperviousness NRCS HSG B

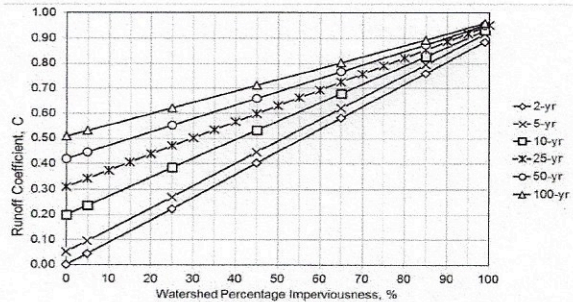


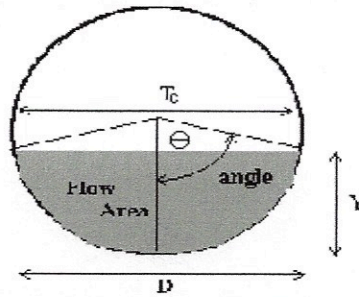
Figure 6-3. Runoff coefficient vs. watershed imperviousness NRCS HSG C and D

APPENDIX C
HYDRAULIC CALCULATIONS

CIRCULAR CONDUIT FLOW (Normal & Critical Depth Computation)

MHFD-Culvert, Version 4.00 (May 2020)

Project: Neitenbach Subdivision
Pipe ID: Access Road Culvert



Design Information (Input)

Pipe Invert Slope	$S_o =$	0.0300	ft/ft
Pipe Manning's n-value	$n =$	0.0150	
Pipe Diameter	$D =$	15.00	inches
Design discharge	$Q =$	3.63	cfs

Full-Flow Capacity (Calculated)

Full-flow area	$A_f =$	1.23	sq ft
Full-flow wetted perimeter	$P_f =$	3.93	ft
Half Central Angle	$\theta =$	3.14	radians
Full-flow capacity	$Q_f =$	9.72	cfs

Calculation of Normal Flow Condition

Half Central Angle ($0 < \theta < 3.14$)	$\theta =$	1.42	radians
Flow area	$A_n =$	0.49	sq ft
Top width	$T_n =$	1.24	ft
Wetted perimeter	$P_n =$	1.77	ft
Flow depth	$Y_n =$	0.53	ft
Flow velocity	$V_n =$	7.35	fps
Discharge	$Q_n =$	3.63	cfs
Percent of Full Flow	$\text{Flow} =$	37.3%	of full flow
Normal Depth Froude Number	$Fr_n =$	2.05	supercritical

Calculation of Critical Flow Condition

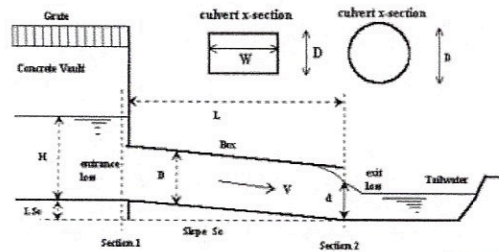
Half Central Angle ($0 < \theta_c < 3.14$)	$\theta_c =$	1.80	radians
Critical flow area	$A_c =$	0.79	sq ft
Critical top width	$T_c =$	1.22	ft
Critical flow depth	$Y_c =$	0.77	ft
Critical flow velocity	$V_c =$	4.58	fps
Critical Depth Froude Number	$Fr_c =$	1.00	

CULVERT SIZING (INLET vs. OUTLET CONTROL WITH TAILWATER EFFECTS)

MHFD-Culvert, Version 4.00 (May 2020)

Project: **Neitenbach Subdivision**

ID: **Access Road Culvert**



Design Information (Input):

Circular Culvert: Barrel Diameter (inches)
Inlet Edge Type (Choose from pull-down list)

D = 15 inches
Square Edge Projecting

OR:
Box Culvert: Barrel Height (Rise) in Feet
Barrel Width (Span) in Feet
Inlet Edge Type (Choose from pull-down list)

H (Rise) = ft
W (Span) = ft

Number of Barrels
Inlet Elevation at Culvert Invert
Outlet Elevation OR Slope
Culvert Length
Manning's Roughness
Bend Loss Coefficient
Exit Loss Coefficient

Barrels = 1
Elev IN = 5210.1 ft
Elev OUT = 5209.2 ft
L = 30 ft
n = 0.015
 K_b = 0
 K_e = 0.5

Design Information (calculated):

Entrance Loss Coefficient
Friction Loss Coefficient
Sum of All Loss Coefficients
Minimum Energy Condition Coefficient
Orifice Inlet Condition Coefficient

K_e = 0.20
 K_f = 0.92
 K_s = 1.62
 KE_{low} = 0.0243
 C_d = 0.60

Calculations of Culvert Capacity (output):

Backwater calculations required to obtain Outlet Control Flowrate when $H_{wo} < 0.75 * \text{Culvert Rise}$

Headwater Surface Elevation (ft)	Tailwater Surface Elevation (ft)	Inlet Control Equation Used	Inlet Control Flowrate (cfs)	Outlet Control Flowrate (cfs)	Controlling Culvert Flowrate (cfs)	Flow Control Used
5210.10	5209.20	No Flow (WS < inlet)	0.00	0.00	0.00	N/A
5210.20		Min. Energy Eqn.	0.04	#N/A	#N/A	#N/A
5210.30		Min. Energy Eqn.	0.13	#N/A	#N/A	#N/A
5210.40		Min. Energy Eqn.	0.33	#N/A	#N/A	#N/A
5210.50		Min. Energy Eqn.	0.57	#N/A	#N/A	#N/A
5210.60		Min. Energy Eqn.	0.87	#N/A	#N/A	#N/A
5210.70		Min. Energy Eqn.	1.23	#N/A	#N/A	#N/A
5210.80		Regression Eqn.	1.61	#N/A	#N/A	#N/A
5210.90		Regression Eqn.	2.01	#N/A	#N/A	#N/A
5211.00		Regression Eqn.	2.43	#N/A	#N/A	#N/A
5211.10		Regression Eqn.	2.88	6.72	2.88	INLET
5211.20		Regression Eqn.	3.32	7.09	3.32	INLET
5211.30		Regression Eqn.	3.77	7.46	3.77	INLET
5211.40		Regression Eqn.	4.19	7.82	4.19	INLET
5211.50		Regression Eqn.	4.60	8.16	4.60	INLET
5211.60		Regression Eqn.	5.01	8.49	5.01	INLET
5211.70		Regression Eqn.	5.35	8.81	5.35	INLET
5211.80		Regression Eqn.	5.70	9.13	5.70	INLET
5211.90		Regression Eqn.	6.03	9.44	6.03	INLET
5212.00		Regression Eqn.	6.34	9.74	6.34	INLET
5212.10		Regression Eqn.	6.64	10.03	6.64	INLET
5212.20		Regression Eqn.	6.92	10.31	6.92	INLET
5212.30		Regression Eqn.	7.21	10.59	7.21	INLET
5212.40		Regression Eqn.	7.45	10.87	7.45	INLET
5212.50		Regression Eqn.	7.70	11.13	7.70	INLET
5212.60		Regression Eqn.	7.94	11.39	7.94	INLET
5212.70		Regression Eqn.	8.17	11.65	8.17	INLET
5212.80		Regression Eqn.	8.41	11.89	8.41	INLET
5212.90		Regression Eqn.	8.62	12.14	8.62	INLET
5213.00		Regression Eqn.	8.83	12.38	8.83	INLET

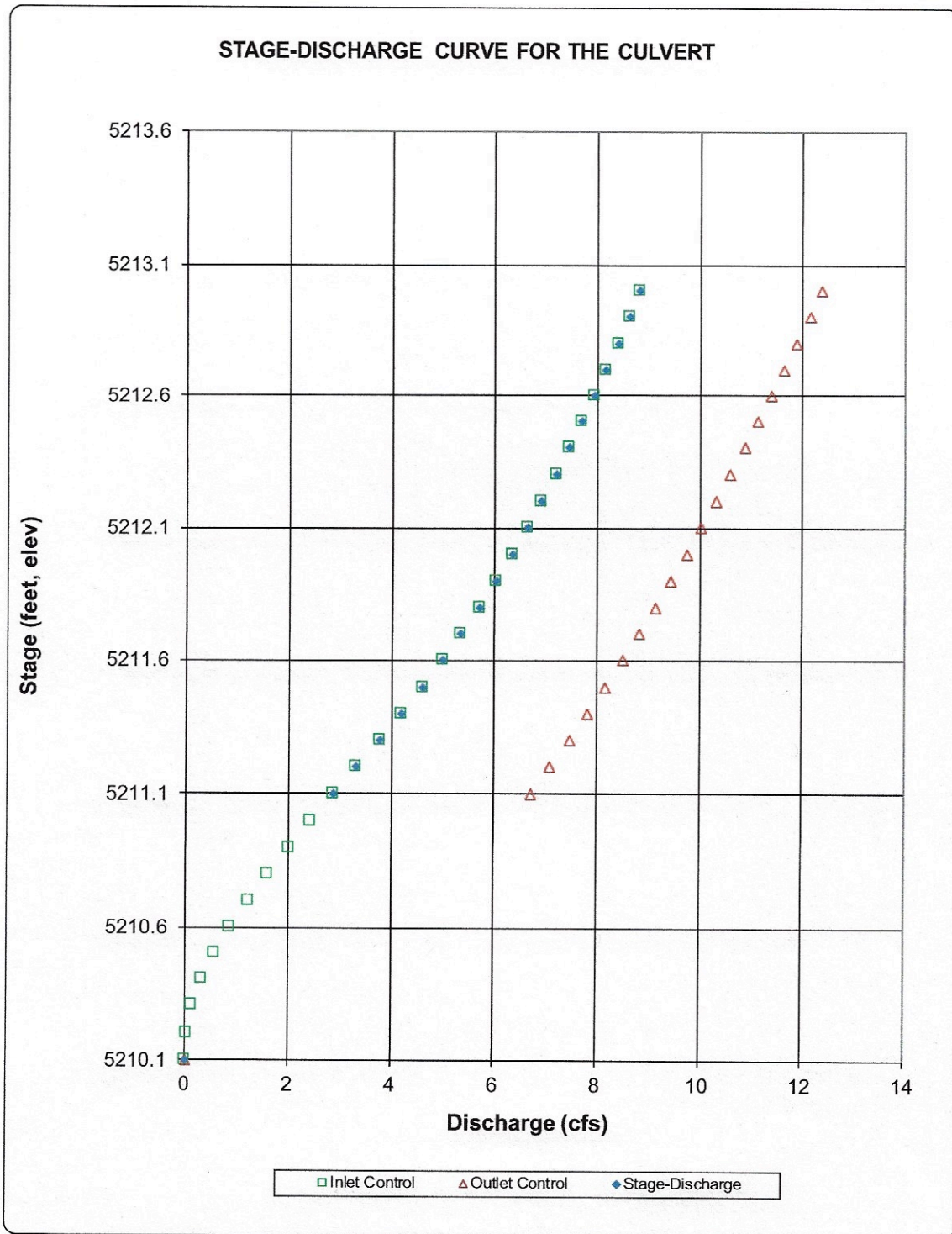
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CULVERT SIZING (INLET vs. OUTLET CONTROL WITH TAILWATER EFFECTS)

MHFD-Culvert, Version 4.00 (May 2020)

Project: **Neitenbach Subdivision**

ID: **Access Road Culvert**

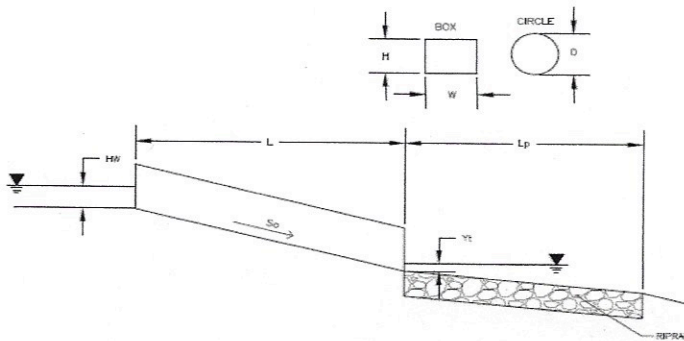


DETERMINATION OF CULVERT HEADWATER AND OUTLET PROTECTION

MHFD-Culvert, Version 4.00 (May 2020)

Project: **Neitenbach Subdivision**

ID: **Access Road Culvert**



Soil Type:

Choose One:

☐ Sandy

☒ Non-Sandy

Supercritical Flow! Using Adjusted Diameter to calculate protection type.

Design Information:

Design Discharge

Q = 3.63 cfs

Circular Culvert:

Barrel Diameter in Inches

D = 15 inches

Inlet Edge Type (Choose from pull-down list)

Square Edge Projecting

OR:

Box Culvert:

Barrel Height (Rise) in Feet

H (Rise) = ft

Barrel Width (Span) in Feet

W (Span) = ft

Inlet Edge Type (Choose from pull-down list)

OR

Number of Barrels

Barrels = 1

Inlet Elevation

Elev IN = 5210.1 ft

Outlet Elevation **OR** Slope

Elev OUT = 5209.2 ft

Culvert Length

L = 30 ft

Manning's Roughness

n = 0.015

Bend Loss Coefficient

k_b = 0

Exit Loss Coefficient

k_e = 1

Tailwater Surface Elevation

Y_t Elevation = 5209.97 ft

Max Allowable Channel Velocity

V = 7.33 ft/s

Calculated Results:

Culvert Cross Sectional Area Available

A = 1.23 ft²

Culvert Normal Depth

Y_n = 0.53 ft

Culvert Critical Depth

Y_c = 0.77 ft

Froude Number

Fr = 2.05

Entrance Loss Coefficient

k_e = 0.20

Friction Loss Coefficient

k_f = 0.92

Sum of All Loss Coefficients

k_s = 2.12

Supercritical!

Headwater:

Inlet Control Headwater

HW_i = 1.17 ft

Outlet Control Headwater

HW_o = N/A ft

Design Headwater Elevation

HW = 5211.27 ft

Headwater/Diameter OR Headwater/Rise Ratio

HW/D = 0.94

Outlet Control Headwater Approximation Method Inaccurate for Low Flow - Backwater Calculations Required

Outlet Protection:

Flow/(Diameter^{2.5})

Q/D^{2.5} = 2.08 ft^{0.5}/s

Tailwater Surface Height

Y_t = 0.77 ft

Tailwater/Diameter

Y_t/D = 0.62

Expansion Factor

1/(2*tan(θ)) = 6.70

Flow Area at Max Channel Velocity

A_c = 0.50 ft²

Width of Equivalent Conduit for Multiple Barrels

W_{eq} = ft

Length of Riprap Protection

L_p = 4 ft

Width of Riprap Protection at Downstream End

T = 2 ft

Adjusted Diameter for Supercritical Flow

Da = 0.89 ft

Minimum Theoretical Riprap Size

d_{50 min} = 1 in

Nominal Riprap Size

d_{50 nominal} = 6 in

MHFD Riprap Type

Type = VL