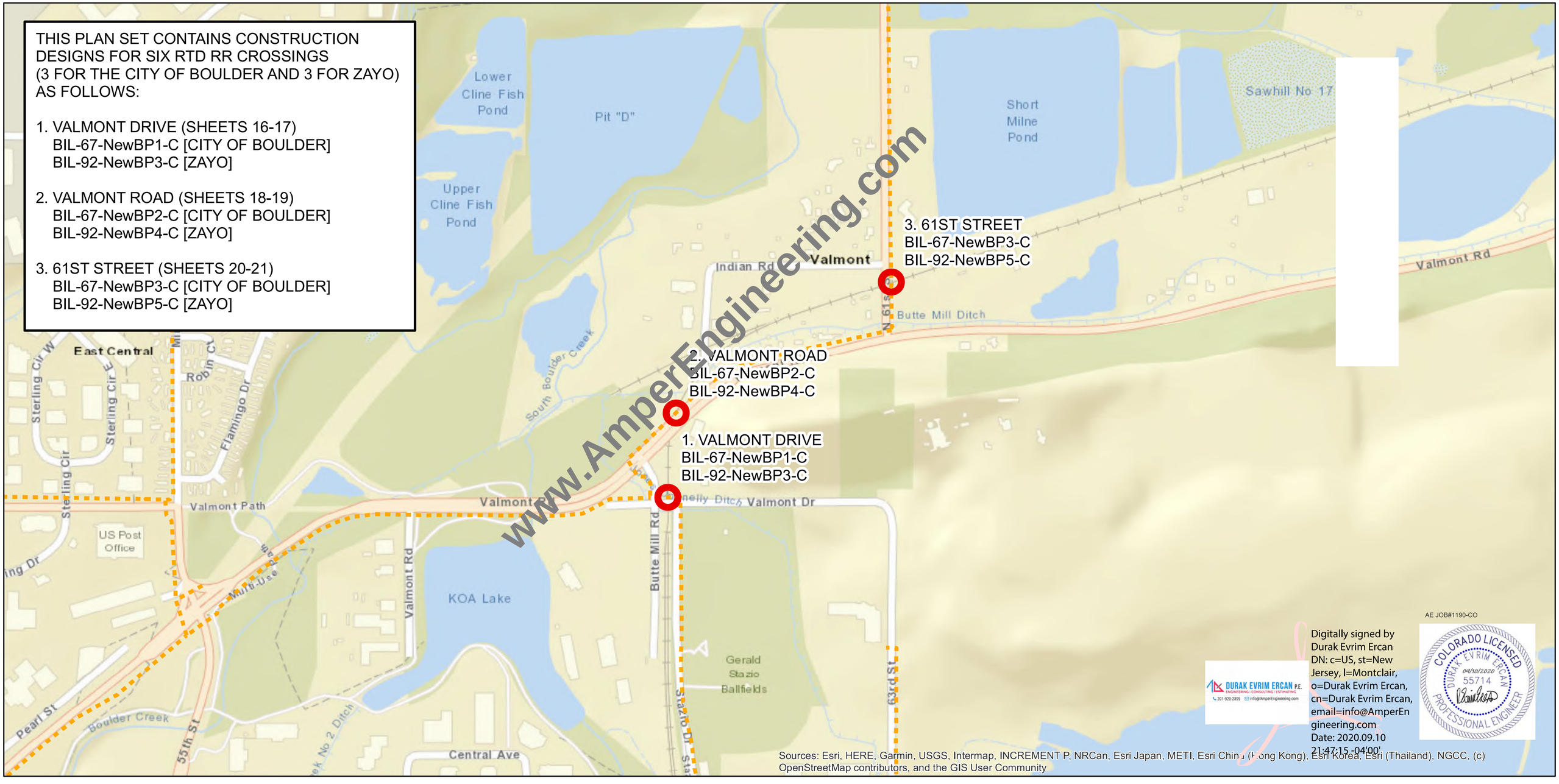
CITY OF BOULDER AND ZAYO RTD CROSSING: JOINT BUILD

THIS PLAN SET CONTAINS CONSTRUCTION DESIGNS FOR SIX RTD RR CROSSINGS (3 FOR THE CITY OF BOULDER AND 3 FOR ZAYO) AS FOLLOWS:

1. VALMONT DRIVE (SHEETS 16-17)
   BIL-67-NewBP1-C [CITY OF BOULDER]
   BIL-92-NewBP3-C [ZAYO]

2. VALMONT ROAD (SHEETS 18-19)
   BIL-67-NewBP2-C [CITY OF BOULDER]
   BIL-92-NewBP4-C [ZAYO]

3. 61ST STREET (SHEETS 20-21)
   BIL-67-NewBP3-C [CITY OF BOULDER]
   BIL-92-NewBP5-C [ZAYO]



Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

AE JOB#1190-CO

DURAK EVRIM ERCAN P.E. ENGINEERING | CONSULTING | ESTIMATING
201-920-2899 info@AmperEngineering.com

Digitally signed by Durak Evrim Ercan
DN: c=US, st=New Jersey, l=Montclair, o=Durak Evrim Ercan, cn=Durak Evrim Ercan, email=info@AmperEngineering.com
Date: 2020.09.10 21:47:15 -04'00'

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DURAK EVRIM ERCAN
04/01/2020
55714
PROFESSIONAL ENGINEER

811 Know what's below. Call before you dig.

OBSERVE ALL SAFETY PRECAUTIONS AND STANDARDS DURING CONSTRUCTION. OBSERVE ALL REQUIRED TRAFFIC CONTROL STANDARDS. OBSERVE ALL AREMA STANDARDS.
MAINTAIN A MINIMUM 15 FOOT CLEARANCE BELOW RAILROAD TRACKS AT CENTERLINE.
LOCATE ALL UNDERGROUND UTILITIES PRIOR TO INSTALLATION.

Legend

- RR_CROSSINGS
- Fibercable

N

CITY OF BOULDER

BOULDER RTD CROSSINGS:
BIL-67-NEWBP1-C
BIL-67-NEWBP2-C
BIL-67-NEWBP3-C

ZAYO RTD CROSSINGS:
BIL-92-NEWBP3-C
BIL-92-NEWBP4-C
BIL-92-NEWBP5-C

PERMIT DRAWING FOR:
CITY OF BOULDER / ZAYO
RTD RAILROAD
BOULDER, CO
FACILITIES ARE LOCATED IN
THE CITY OF BOULDER,
BOULDER COUNTY,
COLORADO

BOUNDER, COLORADO
BOULDER COUNTY

LIST OF DRAWINGS

SHEET NUMBER	DESCRIPTION
SHEET 1	MAP OVERVIEW
SHEET 2	LIST OF DRAWINGS / PROJECT CONTACTS
SHEET 3	MAP LEGEND
SHEET 4	STANDARD CONSTRUCTION NOTES
SHEET 5	RTD CONSTRUCTION NOTES
SHEET 6	CONSTRUCTION TYPICALS
SHEET 7	TREE PROTECTION DETAILS
SHEET 8	RESTORATIONI DETAILS
SHEET 9	EROSION CONTROL PLAN
SHEET 10	STOCKPILE MANAGEMENT PLAN
SHEET 11	SILT FENCE TYPICAL
SHEET 12	SEDIMENT CONTROL LOGS TYPICAL ROCK
SHEET 13	SOCK TYPICAL
SHEET 14	STRAW BALE BARRIER TYPICAL
SHEET 15	INLET PROTECTION TYPICAL
SHEET 16	BIL-67-NEWBP1-C PLAN DETAILS
	BIL-92-NEWBP3-C PLAN DETAILS
SHEET 17	BIL-67-NEWBP1-C PROFILE DETAILS
	BIL-92-NEWBP3-C PROFILE DETAILS
SHEET 18	BIL-67-NEWBP2-C PLAN DETAILS
	BIL-92-NEWBP4-C PLAN DETIALS
SHEET 19	BIL-67-NEWBP2-C PROFILE DETAILS
	BIL-92-NEWBP4-C PROFILE DETAILS
	BIL-67-NEWBP3-C PLAN DETAILS
	BIL-92-NEWBP5-C PLAN DETAILS
	BIL-67-NEWBP3-C PROFILE DETAILS
	BIL-92-NEWBP5-C PROFILE DETAILS

FACILITY OWNER

CITY OF BOULDER

Name: City of Boulder IT Department / Francis Duffy
Address: 3065 Center Green Drive, Boulder, CO 80303
Phone: 720-564-2020
Email: duffyf@bouldercolorado.gov

ZAYO

Name: Zayo Group / Robert Williams
Address: 1805 29th St. Suite 2050, Boulder, CO 80303
Phone: 720-633-3122
Email: robertd.williams@zayo.com

UTILITY CONTACTS

CITY OF BOULDER

Name: Utility Notification Center of Colorado
Address: 16361 Table Mountain Pkwy, Golden, CO 80403
Phone: 811 or 303-232-1991
Email: administrator@co811.org

ZAYO

Name: Zayo Group / Steve Ward
Address: 1805 29th St. Suite 2050, Boulder, CO 80303
Phone: 720-682-7698
Email: steven.ward@zayo.com

ENGINEERING

MAGELLAN ADVISORS
999 18TH STREET, SUITE 3000
DENVER, CO 80202
CONTACT: COLE HENKLE
PHONE: 913-706-3306
EMAIL: CHENKLE@MAGELLAN-ADVISORS.COM

PERMIT CONTACTS

CITY OF BOULDER PLANNING & DEVELOPMENT
1739 BROADWAY, 3RD FLOOR
BOULDER, CO 80301
CONTACT: MARK GARCIA
PHONE: 303-441-3291
EMAIL: GARCIAM2@BOULDERCOLORADO.GOV

BOULDER COUNTY TRANSPORTATION
2525 13TH ST
BOULDER, CO 80304
CONTACT: ROCKY MILANO
PHONE: 303-682-6737
EMAIL: UTILITYPERMIT@BOULDERCOUNTY.ORG

COLORADO DEPARTMENT OF TRANSPORTATION
REGION 4
10601 W. 10TH ST
GREELEY, CO 80634
CONTACT: BRUCE BARNETT
PHONE: 970-350-2147
EMAIL: BRUCE.BARNETT@STATE.CO.US

CONSTRUCTION

CITY OF BOULDER

Name: Construction Vendor
Address: 123 Main St, Boulder, CO 80301
Phone: xxx-xxx-xxxx
Email: TBD

ZAYO

Name: Paonia / Austin Sharp
Address: 12525 E Jamison Pl, Englewood, CO 80112
Phone: 251-253-5230
Email: Austin@paoniainc.com

PROJECT: CITY OF BOULDER AND ZAYO JOINT BUILD

FINAL DESIGN

TITLE: PROJECT INFORMATION

Date: 9/10/2020
Engineer: JD
Drawn By: ZK

Revisions

Date	Description	Initial
4/9/20	Plans-CoB Xing BIL-Rv.0	ZK
4/16/20	Plans-CoB Xing BIL-Rv.1	ZK
4/21/20	Plans-CoB Xing BIL-Rv.2	ZK
4/28/20	Plans-CoB Xing BIL-Rv.3	ZK
4/30/20	Plans-CoB Xing BIL-Rv.4	ZK
5/28/20	Plans-CoB Xing BIL-Rv.5	ZK
6/12/20	Plans-CoB Xing BIL-Rv.6	ZK
6/17/20	Plans-CoB Xing BIL-Rv.7	ZK
9/10/20	Plans-CoB Xing BIL-Rv.8	ZK

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Sheet: 2 OF 21
File:

BOULDER, COLORADO
BOULDER COUNTY

TRAFFIC SIGNAL
- Not on Backbone
- On Backbone

STRUCTURE
- Handhole,24x36x24,Planned
- Handhole,30x48x24,Planned
- Existing Handhole
- Existing Pedestal
- Existing Manhole

SPLICE CLOSURE
- MCA Splice Enclosure
- NAP MCA Splice Enclosure
- NAP RE Splice Enclosure
- NAP Splice Enclosure
- Proposed Enclosure
- RE Splice Enclosure

FIBERCABLE
- Installed
- Planned
- Future Placement

Communications
- Pedestal
- Meter/Valve
- Handhole
- Manhole
- Cabinet

DOT
- Handhole
- Manhole

Gas
- Pedestal
- Meter/Valve
- Handhole
- Manhole
- Cabinet

Power
- Pedestal
- Meter/Valve
- Handhole
- Manhole
- Cabinet

Reclaimed Water
- Meter/Valve
- Handhole
- Manhole
- Cabinet

Sewer
- Meter/Valve
- Handhole
- Manhole
- Cabinet

Traffic
- Pedestal
- Meter/Valve
- Handhole
- Manhole
- Cabinet

Water
- Pedestal
- Meter/Valve
- Handhole
- Manhole
- Cabinet

Unknown
- Pedestal
- Meter/Valve
- Handhole
- Manhole
- Cabinet

SURFACE FEATURES
- Traffic Light
- Street Light
- STORM DRAIN/CATCH BASIN
- Fire Hydrant
- POLE
- CULVERT
- Marker

PLANIMETRICS
- Driveway
- Edge of Pavement
- Dashed Lane
- Solid Lane
- Right of Way
- Sidewalk
- Bicycle Lane
- Crosswalk

UTILITIES
- Communications
- Electric
- Gas
- Sewer
- Storm
- Traffic
- Water

PLANIMETRICS
- Street_Centerlines
- City Limit
- FLOOD HAZARD ZONE

CITY FLOOD ZONES
- Conveyance Zone
- 100 Year Flood Zone
- 500 Year Flood Zone

CONTAMINATED SOIL
- Brownfields
- Voluntary Cleanup Sites
- Super Fund Sites

TREES
Trees by Leaf Cycle

LEAFCYCLE
- Deciduous
- Evergreen
- Other or Unknown
- Tree Canopy

MAJOR DRAINAGEWAYS
- Flow Structures
- Retaining Wall
- Drainageway Center Line
- Bridges
- Erosion Protection
- Improved Channels

Boulder Telecom
- Not of permit fibercable
- Not of permit structure
- Not of permit splice closure

OR TO LOCATE & VERIFY ALL EXISTING UTILITIES TION BY POTHOLING. UTILITY AND ROW ON PLANS Y RECORDS INFORMATION, SURFACE LEVEL FIELD ILITY OWNERS RESPONDING TO SUE TICKETS.

NOTE: ALL CONDUIT TO BE PLACED AT A MINIMUM DEPTH OF 30" UNLESS OTHERWISE NOTED

CITY OF BOULDER

PROJECT: CITY OF BOULDER AND ZAYO JOINT BUILD

FINAL DESIGN

TITLE: LEGEND

Date: 9/10/2020

Engineer: JD

Drawn By: ZK

Revisions

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4/9/20	Plans-CoB Xing BIL-Rv.0	ZK
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9/10/20	Plans-CoB Xing BIL-Rv.8	ZK

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BOUNDER, COLORADO
BOULDER COUNTY

CITY OF BOULDER STANDARD CONSTRUCTION NOTES:

1. All work shall be performed in accordance with the "Design and Construction Standards" of the City of Boulder, and shall be completed to the satisfaction of the Director of Public Works. In the event that a design element does not reflect City standards, the matter must be immediately brought to the attention of the Engineer and the Director of Public Works. The Engineer shall be responsible for recommending a solution or alternative solutions to the City for review and approval.

2. The approval of a Construction Plan does not relieve the Contractor of the responsibility of constructing workable public improvements. All revisions and/or corrections required will be solely the Contractor's responsibility, and at their expense.

3. These Plans have been checked by the City of Boulder only for conformance with the "Design and Construction Standards," compliance with development agreement conditions, and for general conceptual approval of public improvements as shown. The City's review does not verify or ensure the accuracy of existing or proposed dimensions, lines, coordinates, or grades shown, including all existing utilities shown or not shown.

4. Utility locations shown reflect available record data. The Contractor shall take precautionary measures to protect all utility lines shown and other utility lines otherwise located. The Contractor shall contact the "Utility Notification Center of Colorado" at 1-800-922-1987 or 811 for utility locates 24 hours prior to beginning construction.

5. Before work begins, the Contractor shall obtain a permit to work in the right-of-way from the City and must notify the City Right-of-Way Inspection staff at least 24 hours in advance of commencing construction activities.

6. The Contractor shall obtain and maintain a complete and approved set of Construction Plans. These drawings, and any required permits, shall be available at the project site at all times and shall be made available to City staff upon request. If construction plans are not readily available at the project site, the Director of Public Works may issue a stop work order and halt all construction activities pending compliance by the Contractor.

7. The Contractor agrees to comply with the provisions of the Traffic Control Plan and the current edition of the "Manual on Uniform Traffic Control Devices," "Temporary Traffic Control" section, for construction signage and traffic control.

8. All surplus materials, tools, and temporary structures, furnished by the Contractor, shall be removed from the project site by the Contractor. All debris and rubbish caused by the operations of the Contractor shall be removed, and the area occupied during construction activities shall be restored to its original condition, within 48 hours of project completion, unless otherwise directed by the Director of Public Works.

9. The Contractor shall provide tree and landscape protection as set forth in Chapter 6-6, "Protection of Trees and Plants," Boulder Revised Code (B.R.C.) 1981 and the City of Boulder Design and Construction Standards (DCS). All landscaping shall be provided and maintained in compliance with the approved Landscaping Plan, B.R.C. and DCS.

10. The Contractor is required to provide and maintain erosion and sediment control measures in accordance with the Urban Drainage and Flood Control District "Urban Storm Drainage Criteria Manual Volume 3", the M-Standard Plans of the Colorado Department of Transportation, and the approved stormwater management plan. The Director of Public Works may require the contractor to provide additional erosion control measures due to unforeseen erosion problems or if the plans do not function as intended.

11. The City of Boulder requires that sidewalks constructed have a cross slope of less than 2%. Sidewalks shall be designed and constructed with cross slopes sufficiently less than 2% to ensure that they do not exceed the 2% maximum.

PROJECT: CITY OF BOULDER AND ZAYO JOINT BUILD

FINAL DESIGN

TITLE: STANDARD CONSTRUCTION NOTES

Date: 9/10/2020

Engineer: JD

Drawn By: ZK

Revisions

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9/10/20	Plans-CoB Xing BIL-Rv.8	ZK

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BOUNDER, COLORADO
BOUNDER COUNTY

RTD CONSTRUCTION NOTES:

1) CONTRACTOR SHALL NOTIFY RTD'S UTILITY ENGINEERING/CONSTRUCTION TEAM (303-299-2811) A FULL TWO (2) WEEKS PRIOR TO CONSTRUCTION AND SHALL COORDINATE A UTILITY PRE-CONSTRUCTION MEETING WITH RTD. CONTRACTOR AND SUB-CONTRACTORS WORKING ON OR ACROSS RTD ROW/TRACKS MUST ATTEND THE UTILITY PRE-CONSTRUCTION MEETING. AN RTD REPRESENTATIVE MUST BE ON-SITE DURING CONSTRUCTION. THE UTILITY PRE-CONSTRUCTION MEETING SHALL OCCUR WITHIN A WEEK OF THE START OF CONSTRUCTION.

2) CONTRACTOR SHALL NOT BEGIN ANY WORK ON OR ACROSS RTD ROW/TRACKS UNTIL RTD HAS ISSUED AN EXECUTED UTILITY AGREEMENT.

3) CONTRACTOR MAY NOT BEGIN WORK UNTIL RTD HAS ISSUED A PRE-CONSTRUCTION RESOLUTION RECORD (PCRR). A PCRR WILL BE COMPLETED, SIGNED, AND ISSUED BY RTD'S UTILITY ENGINEERING/CONSTRUCTION TEAM DURING THE UTILITY PRE-CONSTRUCTION MEETING AND MUST BE KEPT ON-SITE AT ALL TIMES DURING CONSTRUCTION.

4) RTD ASSUMES NO RESPONSIBILITY FOR UTILITY LOCATIONS SHOWN ON THESE CONSTRUCTION DRAWINGS. IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD VERIFY THE LOCATION OF ALL UTILITIES PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION.

5) CONTRACTOR SHALL SURVEY AND SUBMIT THE COMPLETED HORIZONTAL PLAN AND VERTICAL PROFILE TO RTD WITHIN 30 CALENDAR DAYS OF THE COMPLETION OF CONSTRUCTION. THE PLAN AND PROFILE AS-BUILTS MUST CONTAIN THE FOLLOWING INFORMATION:
   a) BEFORE AND AFTER SURVEYS OF TOP OF RTD TRACKS – CONTRACTOR SHALL SURVEY TOP OF TRACKS TO SHOW NO MOVEMENT OF TRACKS DUE TO CONSTRUCTION: AT A MINIMUM, THE CONTRACTOR SHALL SURVEY A TOTAL OF 5 SURVEY POINTS PER RAIL (WITH 10 FOOT SEPARATION BETWEEN POINTS), WITH THE CENTER POINT ON EACH RAIL LOCATED AS CLOSE AS POSSIBLE OVER THE CENTERLINE OF THE NEW UTILITY SO THAT THE 5 SHOTS STRADDLE THE NEW CROSSING LOCATION. THE BEFORE (PRE-CONSTRUCTION) SURVEY MUST BE DONE NO MORE THAN 30 DAYS PRIOR TO CONSTRUCTION AND THE AFTER (POST-CONSTRUCTION) SURVEY MUST BE DONE NO MORE THAN 30 DAYS AFTER CONSTRUCTION IS COMPLETED. IF CONSTRUCTION DURATION EXTENDS BEYOND 2 MONTHS A TOP OF RAIL STATUS SURVEY MUST BE DONE AND SUBMITTED EVERY 30 DAYS DURING CONSTRUCTION ACROSS THE TRACKS. THE UTILITY AGREEMENT NUMBER AND SURVEY DATE MUST APPEAR ON ALL TOP OF RAIL SURVEY SUBMITTALS.
   b) AS-BUILT SURVEY OF INSTALLED UTILITY - CONTRACTOR SHALL SURVEY A MINIMUM OF FIVE (5) LOCATIONS EQUALLY SPACED ALONG THE INSTALLED PIPELINE ACROSS THE RTD ROW AND TRACKS TO SHOW THE EXACT INSTALLED HORIZONTAL LOCATION AND VERTICAL DEPTH OF THE NEW PIPELINE WHERE IT 1) ENTERS THE RTD ROW, 2) EXITS THE RTD ROW, 3) CROSSES THE CENTERLINE OF THE RTD TRACKS, 4) LOCATION HALF WAY BETWEEN ENTERING ROW & TRACK CENTERLINE ON EITHER SIDE OF THE TRACKS, 5) LOCATION HALF WAY BETWEEN EXITING ROW & TRACK CENTERLINE ON EITHER SIDE OF THE TRACKS. AS-BUILT SUBMITTAL SHALL INCLUDE THE FOLLOWING:
      - RTD UTILITY AGREEMENT NUMBER,
      - DATE UTILITY WAS INSTALLED,
      - SIZE OF PIPE AND SIZE OF CASING,
      - THICKNESS OF PIPE AND THICKNESS OF CASING,
      - MATERIAL OF PIPE AND MATERIAL OF CASING.
      - AS-BUILTS MUST BE STAMPED, SIGNED, AND DATED BY A LICENSED SURVEYOR OR ENGINEER.
   c) SURVEYOR FIELD NOTES - CONTRACTOR SHALL SUPPLY RTD WITH A COPY OF THE SURVEYOR'S FIELD NOTES TO SUPPORT THE BEFORE AND AFTER SURVEY DATA AND FINAL UTILITY INSTALLATION DATA.

6) CONTRACTOR SHALL CLEARLY MARK UTILITY CROSSING USING A METHOD AGREED UPON BY CONTRACTOR AND RTD AT PRE-CONSTRUCTION MEETING. MARKERS MAY INCLUDE 4 FOOT UTILITY POSTS OVER UTILITY OR VISIBLE MANHOLES ON BOTH SIDES OF RTD ROW/TRACKS. THE CONTRACTOR SHALL INSTALL TRACER WIRE IN ALL NON-METALLIC PIPES. ALL UTILITIES INSTALLED WITHIN RTD ROW OR CROSSING RTD TRACKS MUST BE LOCATABLE WITH STANDARD LOCATING EQUIPMENT.

7) THE DETAILS FOR CATHODIC PROTECTIONS SHOULD BE INCLUDED AND REFEREED TO RTD SPECIFICATION DETAIL DRAWINGS. THE CONTRACTOR SHALL SUBMIT THE AS BUILT DRAWING DETAILS AND TEST MEASUREMENT AND POST INSTALLATION DOCUMENTS.

8) CONTRACTOR MUST HAVE THE FOLLOWING DOCUMENTS ON-SITE DURING CONSTRUCTION AT ALL TIMES:
   - RTD'S EXECUTED UTILITY AGREEMENT,
   - PE STAMPED/SIGNED FOR CONSTRUCTION PLANS/PROFILES APPROVED BY RTD,
   - RR CROSSING APPLICATION DATA SHEET,
   - SIGNED PRE-CONSTRUCTION RESOLUTION RECORD.

) CHANGES ARE ALLOWED TO ANY PART OF THIS DESIGN WHERE THE UTILITY CROSSES RTD ROW/TRACKS WITHOUT WRITTEN APPROVAL FROM RTD PRIOR TO TION OF THE CHANGE.

PROJECT: CITY OF BOULDER AND ZAYO JOINT BUILD

FINAL DESIGN

TITLE: STANDARD CONSTRUCTION NOTES

Date: 9/10/2020

Engineer: JD

Drawn By: ZK

Revisions

Date	Description	Initial
4/9/20	Plans-CoB Xing BIL-Rv.0	ZK
4/16/20	Plans-CoB Xing BIL-Rv.1	ZK
4/21/20	Plans-CoB Xing BIL-Rv.2	ZK
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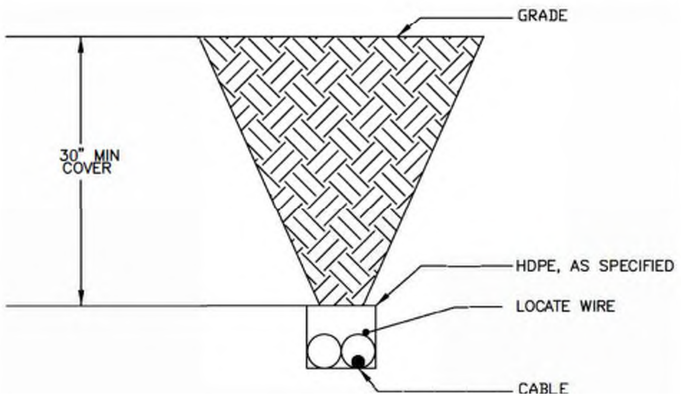
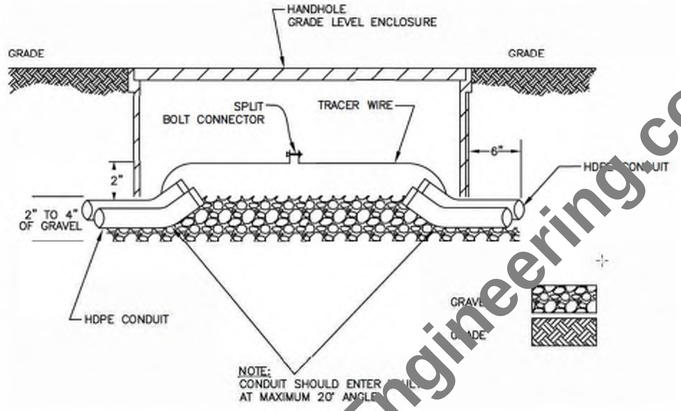
File:

BOUDLER, COLORADO
BOULDER COUNTY

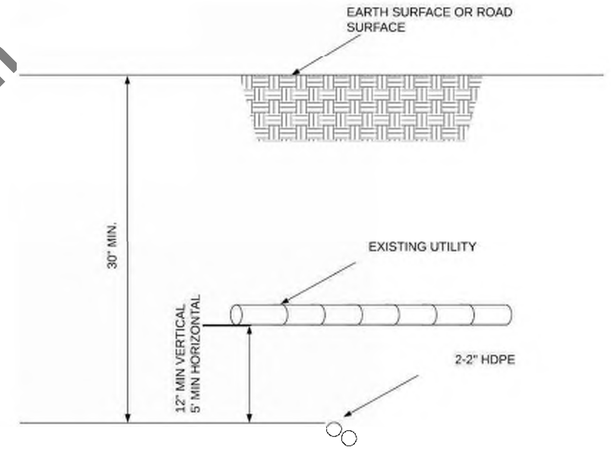
DIRECTIONAL BORE CROSS SECTION - TYPICAL



GRADE LEVEL HANDHOLE - TYPICAL

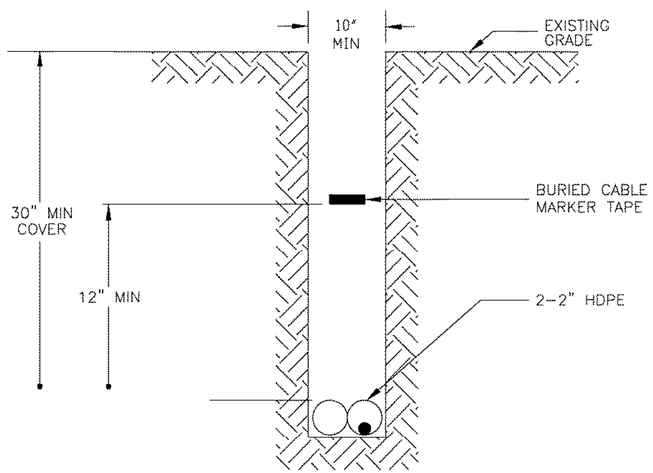


UTILITY CROSSING DETAIL - TYPICAL

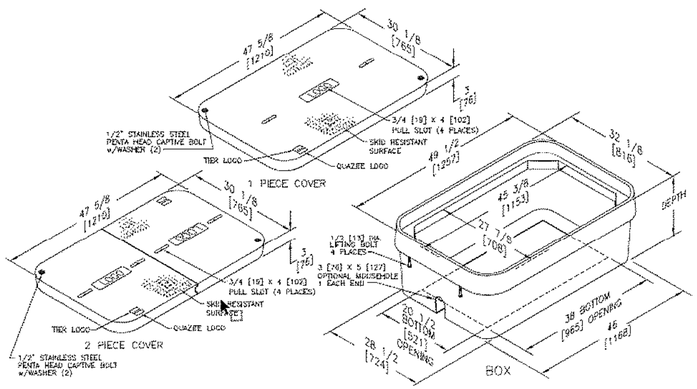


1. Maintain 5' horizontal separation from water utilities
2. Maintain 5' horizontal separation from stormwater utilities
3. Maintain 10' horizontal separation from sewer utilities
4. Maintain 12" vertical separation from all utilities

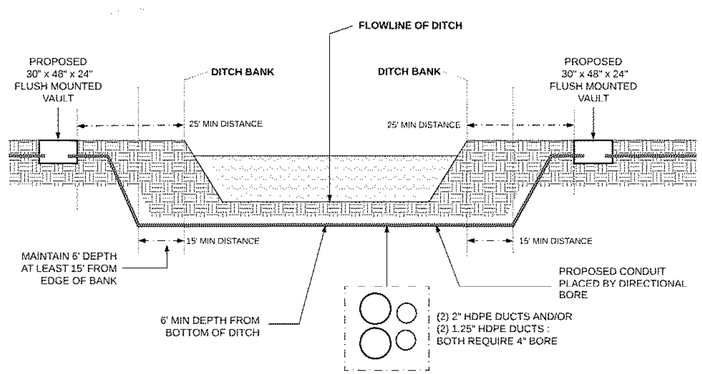
OPEN TRENCH CROSS SECTION - TYPICAL



30"x48" VAULT DETAIL - TYPICAL



BOULDER DITCH CROSSING - TYPICAL



NOTE: VAULTS AND/OR BORE PITS SHOULD NOT BE PLACED WITHIN WETLAND AREAS OR FLOOD CONVEYANCE ZONES TO THE EXTENT POSSIBLE. IN GENERAL, VAULTS AND/OR BORE PITS SHOULD NOT BE PLACED WITHIN 25' OF THE TOP OF THE STREAM BANK.

PROJECT: CITY OF BOULDER AND ZAYO JOINT BUILD

FINAL DESIGN

TITLE: CONSTRUCTION TYPICALS

Date: 9/10/2020

Engineer: JD

Drawn By: ZK

Revisions

Date	Description	Initial
4/9/20	Plans-CoB Xing BIL-Rv.0	ZK
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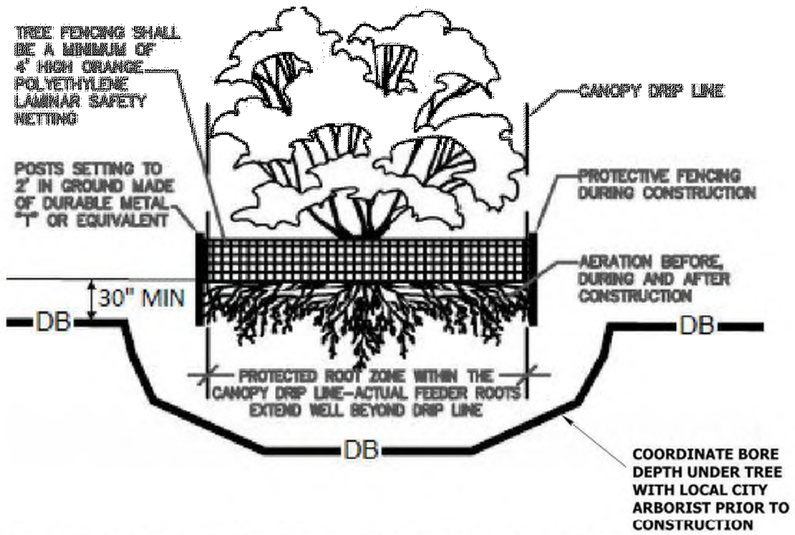
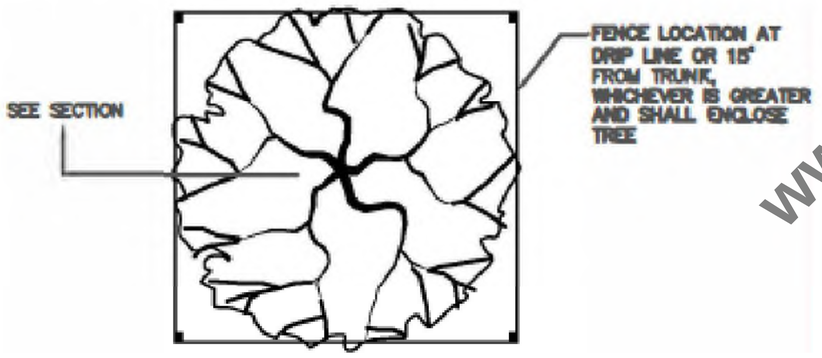
File:

BOUDER, COLORADO
BOULDER COUNTY

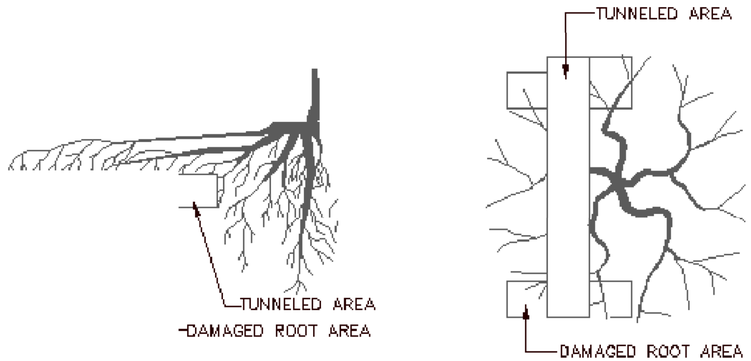
PROTECTED ROOT ZONE AND DRIP LINE - SECTION VIEW



PROTECTED ROOT ZONE AND DRIP LINE - PLAN VIEW



ROOT TUNNELING



TREE PROTECTION PROCEDURES:

THESE STANDARDS ARE ADAPTED FROM THE CITY OF BOULDER DESIGN AND CONSTRUCTION STANDARDS, CHAPTER 3 - "STREETSCAPE DESIGN AND TREE PROTECTION"

1. SOIL COMPACTION PREVENTION

A. TO PREVENT TREE ROOT SMOTHERING, NO SOIL STOCKPILES, SUPPLIES, EQUIPMENT, OR ANY OTHER MATERIAL SHALL BE PLACED OR STORED WITHIN A TREE DRIPLINE OR WITHIN 15 FEET OF THE TREE TRUNK FOR COLUMN SHAPED TREES, WHICHEVER DISTANCE IS GREATER.

2. ROOT PROTECTION

A. TREE ROOTS SHALL NOT BE CUT UNLESS CUTTING IS UNAVOIDABLE.

B. WHEN ROOT CUTTING IS UNAVOIDABLE, A CLEAN, SHARP CUT SHALL BE MADE TO AVOID SHREDDING OR SMASHING. ROOT CUTS SHOULD BE MADE BACK TO A LATERAL ROOT.

C. WHENEVER POSSIBLE, TREE ROOTS SHOULD BE CUT BETWEEN LATE FALL AND BUD OPENING, WHEN ROOT ENERGY SUPPLIES ARE HIGH AND CONDITIONS ARE LEAST FAVORABLE FOR DISEASE CAUSING AGENTS.

F. THE CITY SHALL BE NOTIFIED OF ANY CUTTING OF THE FOLLOWING ROOTS:

i. TWO ROOTS HAVING A DIAMETER OF MORE THAN 3 INCHES.

ii. FOUR ROOTS HAVING DIAMETERS BETWEEN 2 AND 3 INCHES.

iii. ANY SINGLE ROUTE HAVING A DIAMETER GREATER THAN 6 INCHES.

G. TRENCHES SHALL BE HAND DUG WITHIN THE DRIPLINE IN AREAS WHERE ROOTS 2 INCHES AND LARGER IN DIAMETER ARE PRESENT, AND WHEN LOW BRANCHES WHICH MAY BE DAMAGED BY EQUIPMENT ARE PRESENT.

H. WHENEVER POSSIBLE, ROOTS 2 INCHES OR LARGER IN DIAMETER SHALL BE TUNNELED OR BORED UNDER AND SHALL BE COVERED TO PREVENT DEHYDRATION. EXPOSED ROOTS SHALL BE COVERED IMMEDIATELY WITH SOIL OR BURLAP AND KEPT MOIST.

I. POWER TOOLS SHALL NOT BE USED TO PRUNE ROOTS, WITH THE EXCEPTION OF ARBORICULTURALLY APPROVED ROOT CUTTING EQUIPMENT USED UNDER THE SUPERVISION OF THE CITY. ONLY THE FOLLOWING APPROVED TOOLS SHALL BE ACCEPTABLE: OVERLAP HAND PRUNERS AND/OR LOPPERS, (NOT ANVIL TYPES) AND ARBORIST TYPE PRUNING SAWS.

J. WHEN MORE THAN ONE ROOT 2 INCHES OR LARGER IN DIAMETER ON ANY PUBLIC TREE IS CUT, SUPPLEMENTAL WATERING SHALL BE PROVIDED IF THE TREE LACKS AN OPERATIONAL SPRINKLER SYSTEM. THE APPLICANT OR ABUTTING LANDOWNER SHALL PROVIDE THE WATERING.

3. TREE FENCING

A. FENCING MATERIAL SHALL ENCIRCLE ANY TREE WHOSE OUTER DRIPLINE EDGE IS WITHIN 20 FEET OF ANY CONSTRUCTION ACTIVITIES.

B. FENCING MATERIAL SHALL BE A BRIGHT, CONTRASTING COLOR, DURABLE, AND AT LEAST 4 FEET HIGH. FENCE POSTS SHALL BE COMPARABLE TO METAL T POSTS OR HEAVIER POSTS AND PLACED AT LEAST 2 FEET BELOW GROUND.

C. FENCING MATERIAL SHALL BE PLACED AT THE DRIPLINE OR AT LEAST 15 FEET FROM ANY TREE TRUNK, WHICHEVER DISTANCE IS GREATER, AND MAINTAINED IN AN UPRIGHT POSITION THROUGHOUT THE DURATION OF CONSTRUCTION ACTIVITIES.

ADDITIONAL NOTES:

ANY DAMAGE TO TRUNK OR BRANCHES WITHIN THE CROWN OF A PROTECTED TREE SHALL BE REPORTED TO THE REPRESENTATIVE OF THE CITY'S FORESTRY DEPARTMENT IMMEDIATELY. DAMAGE SHALL BE REPAIRED AS SOON AS POSSIBLE USING ARBORICULTURALLY ACCEPTED STANDARDS, PROCEDURES AND PRACTICES

PROJECT: CITY OF BOULDER AND ZAYO JOINT BUILD

FINAL DESIGN

TITLE: TREE PROTECTION DETAILS

Date: 9/10/2020

Engineer: JD

Drawn By: ZK

Revisions

Date	Description	Initial
4/9/20	Plans-CoB Xing BIL-Rv.0	ZK
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9/10/20	Plans-CoB Xing BIL-Rv.8	ZK

COLORADO LICENSED DURAK EVRIM ERCAN 04/01/2020 55714 PROFESSIONAL ENGINEER

Sheet: 7 OF 21

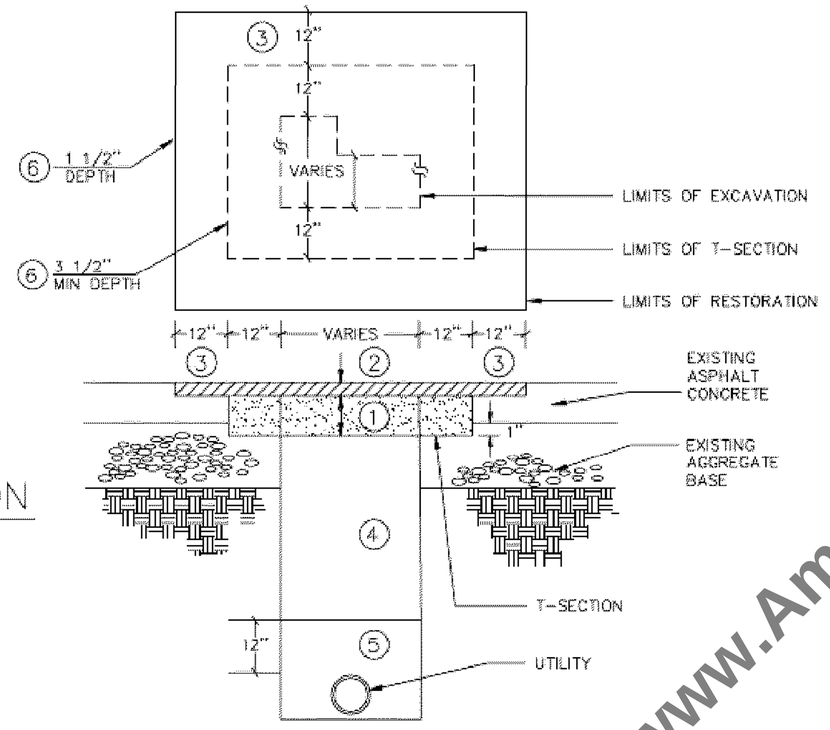
File:

BOUDER, COLORADO
BOUDER COUNTY

RESTORATION OF ASPHALT STREET EXCAVATIONS - STREETS LESS THAN 3 YEARS OLD

PLAN

SECTION



NOTES:

① CONSTRUCT NEW ASPHALT CONCRETE BASE COURSE, 1 INCH THICKER THAN THE EXISTING SECTION (MIN 6" THICK).

② CONSTRUCT NEW ASPHALT CONCRETE WEARING COURSE 1 1/2 INCHES IN DEPTH.

① & ② THE TOTAL THICKNESS OF ① + ② SHALL BE 6 INCHES MINIMUM FOR LOCAL/RESIDENTIAL STREETS AND 7 INCHES MINIMUM FOR COLLECTOR AND OTHER MAJOR STREETS.

③ THE LIMITS OF RESTORATION SHALL BE A RECTANGULAR AREA EXTENDING A MINIMUM OF 12 INCHES BEYOND THE OUTER EDGE OF THE WIDEST PORTION OF THE T-SECTION. THE LIMITS SHALL BE SAWCUT AFTER BACKFILL OF TRENCH IS COMPLETED. THE EXISTING ASPHALT CONCRETE SHALL BE REMOVED TO A DEPTH EQUAL TO THE THICKNESS OF THE WEARING COURSE (1 1/2 INCHES) BY COLD MILLING.

④ TRENCH BACKFILL SHALL BE UNSHRINKABLE BACKFILL (FLOWABLE-FILL) PER CITY STANDARDS AND SPECIFICATIONS.

⑤ PIPE BEDDING AND PIPE ZONE BACKFILL PER CITY STANDARDS AND SPECIFICATIONS.

⑥ SAWCUTTING SHALL BE REQUIRED AROUND THE PERIMETER OF ALL EXCAVATIONS TO PROVIDE CLEAN, STRAIGHT, VERTICAL SIDES.

⑦ ALL TRAFFIC STRIPING AND/OR MARKINGS REMOVED BY RESTORATION WORK SHALL BE REPLACED IN LIKE MATERIAL.

⑧ ALL WORK SHALL BE DONE IN ACCORDANCE WITH CITY OF BOULDER STANDARDS AND SPECIFICATIONS, LATEST EDITION, INCLUDING SUPPLEMENTS.

⑨ IF CUT IS ON STATE HIGHWAY, CDOT UTILITY CRITERIA MUST BE FOLLOWED.

RESTORATION NOTES:

1. STREETS AND ROADWAYS: ANY PAVEMENTS DISTURBED DURING CONSTRUCTION SHALL BE REPAIRED IN ACCORDANCE WITH THE REQUIREMENTS AS SET FORTH IN SECTION 8-5-12, "STANDARDS FOR REPAIRS AND RESTORATION OF PAVEMENT OR SIDEWALKS," B.R.C. 1981. ALL DIRT AND DEBRIS, INCLUDING DUST, SHALL BE REMOVED FROM STREETS AND PAVED SURFACES WITHIN 3 DAYS OF THE RESTORATION OF STREETS AND PAVED SURFACES. INITIAL REMOVAL OF DIRT AND DEBRIS SHALL BE MADE USING A VACUUM SWEEPER, AFTER WHICH THE PAVED SURFACES SHALL BE CLEANED USING WATER HOSES.

2. FENCING AND CULVERTS: RESTORE ALL EXISTING STRUCTURES TO CONDITIONS EQUAL TO OR EXCEEDING EXISTING STRUCTURES.

3. LANDSCAPE

A. AFTER OTHER OUTSIDE WORK HAS BEEN FINISHED, AND BACKFILLING AND EMBANKMENTS COMPLETED AND SETTLED, ALL AREAS THAT ARE TO BE GRADED SHALL BE BROUGHT TO GRADE AT THE INDICATED ELEVATIONS, SLOPES, AND CONTOURS. ALL CUTS, FILLS, EMBANKMENTS, AND OTHER AREAS THAT HAVE BEEN DISTURBED OR DAMAGED BY CONSTRUCTION OPERATIONS SHALL BE SURFACED WITH TOPSOIL TO A DEPTH OF AT LEAST 4 INCHES. TOPSOIL SHALL BE OF A QUALITY AT LEAST EQUAL TO THE EXISTING TOPSOIL IN ADJACENT AREAS, FREE FROM TRASH, STONES, AND DEBRIS, AND WELL SUITED TO SUPPORT PLANT GROWTH.

B. USE OF GRADERS OR OTHER POWER EQUIPMENT WILL BE PERMITTED FOR FINAL GRADING AND DRESSING OF SLOPES, PROVIDED THE RESULT IS UNIFORM AND EQUIVALENT TO HAND WORK. ALL SURFACES SHALL BE GRADED TO SECURE EFFECTIVE DRAINAGE. UNLESS OTHERWISE INDICATED, A SLOPE OF AT LEAST 1 PERCENT SHALL BE PROVIDED.

C. FINAL GRADING AND SURFACING SHALL BE SMOOTH, EVEN, AND FREE FROM CLODS AND STONES LARGER THAN 1 INCH IN GREATEST DIMENSION, WEEDS, BRUSH, AND OTHER DEBRIS.

D. THE TOP PORTION OF BACKFILL BENEATH ESTABLISHED LAWN AREAS SHALL BE FINISHED WITH AT LEAST 12 INCHES OF TOPSOIL CORRESPONDING TO, OR BETTER THAN, THAT UNDERLYING ADJOINING LAWN AREAS.

E. THE DIRECTOR WILL CLARIFY RESTORATION OF OTHER MINOR ITEMS AS CONSTRUCTION PROCEEDS. SUCH ITEMS MUST BE RESTORED TO EQUAL OR EXCEED EXISTING CONDITIONS.

PROJECT: CITY OF BOULDER AND ZAYO JOINT BUILD

FINAL DESIGN

TITLE: RESTORATION DETAILS

Date: 9/10/2020

Engineer: JD

Drawn By: ZK

Revisions

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Sheet: 8 OF 21

File:

BOULDER, COLORADO
BOULDER COUNTY

CITY OF BOULDER STANDARD EROSION CONTROL NOTES:

A. TEMPORARY EROSION CONTROLS: ALL TEMPORARY EROSION CONTROL MEASURES FOR EROSION AND SEDIMENT CONTROL SHALL BE INSTALLED BEFORE ANY CONSTRUCTION ACTIVITIES TAKE PLACE.

B. SEDIMENT CONTROLS: CONTROL MEASURES FOR EROSION AND SEDIMENT CONTROL SHALL BE IMPLEMENTED TO PREVENT THE RELEASE OF SEDIMENT FROM CONSTRUCTION SITES. VEHICLE TRACKING OF SEDIMENT SHALL NOT BE ALLOWED TO ENTER THE STORMWATER UTILITY SYSTEM OR WATERS OF THE STATE. SEDIMENT SHALL NOT BE TRACKED ONTO PUBLIC STREETS AND, IF SO, SHALL BE IMMEDIATELY REMOVED.

C. WATER QUALITY IMPACTS: STORMWATER DISCHARGES FROM CONSTRUCTION ACTIVITIES SHALL NOT CAUSE OR THREATEN TO CAUSE POLLUTION, CONTAMINATION, OR DEGRADATION OF WATERS OF THE STATE.

D. WASTE CONTROLS: SOLID WASTE, INDUSTRIAL WASTE, YARD WASTE, AND ANY OTHER POLLUTANTS OR WASTE ON ANY CONSTRUCTION SITE SHALL BE CONTROLLED USING CONTROL MEASURES. WASTE AND/OR RECYCLING CONTAINERS SHALL BE PROVIDED AND MAINTAINED BY THE OWNER OR CONTRACTOR ON CONSTRUCTION SITES WHERE THERE IS THE POTENTIAL FOR RELEASE OF WASTE. UNCONTAINED WASTE THAT MAY BLOW, WASH, OR OTHERWISE BE RELEASED FROM THE SITE IS PROHIBITED. SANITARY WASTE FACILITIES SHALL BE PROVIDED AND MAINTAINED BY THE OWNER OR CONTRACTOR.

E. CONCRETE WASTE: READY-MIXED CONCRETE, OR ANY MATERIALS RESULTING FROM THE CLEANING OF VEHICLES OR EQUIPMENT CONTAINING OR USED IN TRANSPORTING OR APPLYING IT, SHALL BE CONTAINED WITH APPROPRIATE CONTROL MEASURES AND ULTIMATELY REMOVED FOR PROPER DISPOSAL. RELEASE OF THESE MATERIALS IS PROHIBITED.

F. CHEMICAL STORAGE: BULK STORAGE STRUCTURES FOR PETROLEUM PRODUCTS AND OTHER CHEMICALS SHALL HAVE ADEQUATE PROTECTION SO AS TO CONTAIN ALL SPILLS AND PREVENT ANY SPILLED MATERIAL FROM ENTERING THE STORMWATER UTILITY SYSTEM OR WATERS OF THE STATE.

G. SURFACE COVER TIMING: COVER SHALL BE APPLIED WITHIN 14 DAYS TO INACTIVE SOIL STOCKPILES AND SHALL BE MAINTAINED FOR STOCKPILES THAT ARE PROPOSED TO REMAIN IN PLACE LONGER THAN 30 CALENDAR DAYS.

H. PROJECT PHASING: ALL EARTH DISTURBANCES SHALL BE DESIGNED, CONSTRUCTED, AND COMPLETED TO LIMIT THE EXPOSED AREA OF ANY DISTURBED LAND TO THE SHORTEST POSSIBLE PERIOD OF TIME.

I. DUST CONTROLS: TECHNIQUES SHALL BE USED TO PREVENT DUST, SEDIMENT, OR DEBRIS FROM BLOWING OFF THE SITE.

J. MAINTENANCE: ANY DAMAGE OR REQUIRED MAINTENANCE TO TEMPORARY AND PERMANENT CONTROLS MEASURES SHALL BE REPAIRED OR REPLACED AS SOON AS POSSIBLE, IMMEDIATELY IN MOST CASES.

K. REMOVAL: ALL CONTROL MEASURES FOR EROSION AND SEDIMENT CONTROL 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.

L. RESPONSIBILITY: THE EROSION CONTROL PERMITTEE SHALL BE RESPONSIBLE FOR CONTINUED COMPLIANCE WITH THE REQUIREMENTS OF SECTION 7.13 OF THE CITY'S DESIGN AND CONSTRUCTION STANDARDS DURING CONSTRUCTION ACTIVITY ON THE SITE.

ADDITIONAL EROSION CONTROL NOTES:

1. DURING PERIODS OF WET WEATHER, ALL EXPOSED SOILS MUST BE COVERED AND TEMPORARY STABILIZATION OF THE SITE MUST OCCUR AT THE END OF EACH WORK DAY.

2. SEDIMENT CONTROLS MUST BE INSTALLED AND MAINTAINED ON ALL DOWN GRADIENT SIDES OF THE CONSTRUCTION SITE AT ALL TIMES DURING CONSTRUCTION. THEY MUST REMAIN IN PLACE UNTIL PERMANENT VEGETATION OR OTHER PERMANENT COVERING OF EXPOSED SOIL IS ESTABLISHED.

3. ALL ACTIVE INLETS MUST HAVE SEDIMENT CONTROLS INSTALLED AND MAINTAINED AT ALL TIMES DURING CONSTRUCTION. UNLESS OTHERWISE APPROVED, A SURFACE MOUNTED AND ATTACHABLE, U-SHAPED FILTER BAG IS REQUIRED FOR ALL CURB INLET CATCH BASINS.

4. FOR DIRECTIONAL BORING OPERATIONS, INSTALL SILT FENCING AS NEEDED AT ENTRY AND EXIT PITS TO CONTAIN SEDIMENT, SLURRY, AND WASTEWATER. USE A VACUUM TURCK OR TANKER TO RECOVER SLURRY FROM PITS AND SEEPAGES.

5. SEDIMENT MUST NOT BE INTENTIONALLY WASHED INTO STORM SEWERS, DRAINAGE WAYS, OR WATER BODIES.

6. SEDIMENT MUST BE REMOVED FROM BEHIND ALL SEDIMENT CONTROL MEASURES WHEN IT HAS REACHED A HEIGHT OF 1/3RD THE BARRIER HEIGHT, AND PRIOR TO THE CONTROL MEASURES REMOVAL.

7. ANY USE OF TOXIC OR OTHER HAZARDOUS MATERIALS MUST INCLUDE PROPER STORAGE, APPLICATION, AND DISPOSAL.

8. THE APPLICATION RATE OF FERTILIZERS USED TO REESTABLISH VEGETATION MUST FOLLOW MANUFACTURER'S RECOMMENDATIONS. NUTRIENT RELEASES FROM FERTILIZERS TO SURFACE WATERS MUST BE MINIMIZED. TIME RELEASE FERTILIZERS SHOULD BE USED AND CARE SHOULD BE MADE IN APPLICATION OF FERTILIZERS WITHIN ANY WATER WAY RIPARIAN ZONE.

9. OWNER OR DESIGNATED PERSON SHALL BE RESPONSIBLE FOR PROPER INSTALLATION AND MAINTENANCE OF ALL EROSION AND SEDIMENT CONTROL MEASURES, IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS.

10. PRIOR TO ANY LAND DISTURBING ACTIVITIES, PERIMETER SEDIMENT CONTROL AND INLET PROTECTION BMPs MUST BE INSTALLED. THESE BMPS MUST BE MAINTAINED FOR THE DURATION OF THE PROJECT.

11. ALL PUMPING OF SEDIMENT LADEN WATER MUST BE DISCHARGED OVER AN UNDISTURBED, PREFERABLY VEGETATED AREA, AND THROUGH A SEDIMENT CONTROL BMP (I.E. FILTER BAG).

12. THE ESC PLAN MUST BE KEPT ONSITE. ALL MEASURES SHOWN ON THE PLAN MUST BE INSTALLED PROPERLY TO ENSURE THAT SEDIMENT LADEN WATER DOES NOT ENTER A SURFACE WATER SYSTEM, ROADWAY, OR OTHER PROPERTIES.

13. THE ESC MEASURES SHOWN ON THIS PLAN ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, THESE MEASURES SHALL BE UPGRADED AS NEEDED TO MAINTAIN COMPLIANCE WITH ALL REGULATIONS.

14. WRITTEN ESC LOGS ARE SUGGESTED TO BE MAINTAINED ONSITE AND AVAILABLE TO INSPECTORS UPON REQUEST.

15. IN AREAS SUBJECT TO WIND EROSION, APPROPRIATE BMPS MUST BE USED WHICH MAY INCLUDE THE APPLICATION OF FINE WATER SPRAYING, PLASTIC SHEETING, MULCHING, OR OTHER APPROVED MEASURES.

PROJECT: CITY OF BOULDER AND ZAYO JOINT BUILD

FINAL DESIGN

TITLE: EROSION CONTROL PLAN

Date: 9/10/2020

Engineer: JD

Drawn By: ZK

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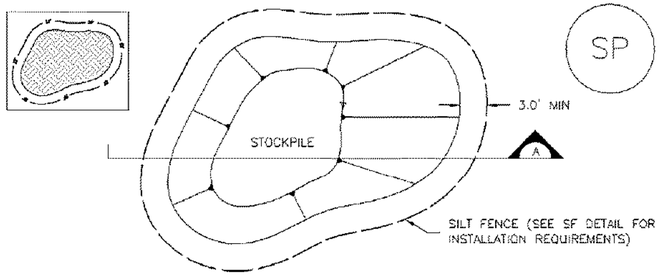
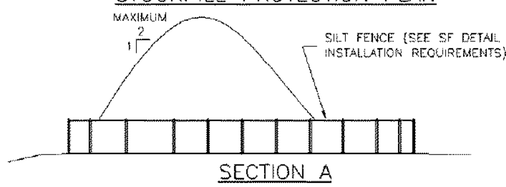
Sheet: 9 OF 21

File:

BOUNDER, COLORADO
BOULDER COUNTY



STOCKPILE PROTECTION PLAN



SECTION A

SP-1. STOCKPILE PROTECTION

STOCKPILE PROTECTION INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   -LOCATION OF STOCKPILES.
   -TYPE OF STOCKPILE PROTECTION.

2. INSTALL PERIMETER CONTROLS IN ACCORDANCE WITH THEIR RESPECTIVE DESIGN DETAILS. SILT FENCE IS SHOWN IN THE STOCKPILE PROTECTION DETAILS; HOWEVER, OTHER TYPES OF PERIMETER CONTROLS INCLUDING SEDIMENT CONTROL LOGS OR ROCK SOCKS MAY BE SUITABLE IN SOME CIRCUMSTANCES. CONSIDERATIONS FOR DETERMINING THE APPROPRIATE TYPE OF PERIMETER CONTROL FOR A STOCKPILE INCLUDE WHETHER THE STOCKPILE IS LOCATED ON A PERVIOUS OR IMPERVIOUS SURFACE, THE RELATIVE HEIGHTS OF THE PERIMETER CONTROL AND STOCKPILE, THE ABILITY OF THE PERIMETER CONTROL TO CONTAIN THE STOCKPILE WITHOUT FAILING IN THE EVENT THAT MATERIAL FROM THE STOCKPILE SHIFTS OR SLUMPS AGAINST THE PERIMETER, AND OTHER FACTORS.

3. STABILIZE THE STOCKPILE SURFACE WITH SURFACE ROUGHENING, TEMPORARY SEEDING AND MULCHING, EROSION CONTROL BLANKETS, OR SOIL BINDERS. SOILS STOCKPILED FOR AN EXTENDED PERIOD (TYPICALLY FOR MORE THAN 60 DAYS) SHOULD BE SEEDED AND MULCHED WITH A TEMPORARY GRASS COVER ONCE THE STOCKPILE IS PLACED (TYPICALLY WITHIN 7 DAYS). USE OF MULCH ONLY OR A SOIL BINDER IS ACCEPTABLE IF THE STOCKPILE WILL BE IN PLACE FOR A MORE LIMITED TIME PERIOD (TYPICALLY 30-60 DAYS).

4. FOR TEMPORARY STOCKPILES ON THE INTERIOR PORTION OF A CONSTRUCTION SITE, WHERE OTHER DOWNGRADIENT CONTROLS, INCLUDING PERIMETER CONTROL, ARE IN PLACE, STOCKPILE PERIMETER CONTROLS MAY NOT BE REQUIRED.

STOCKPILE PROTECTION MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

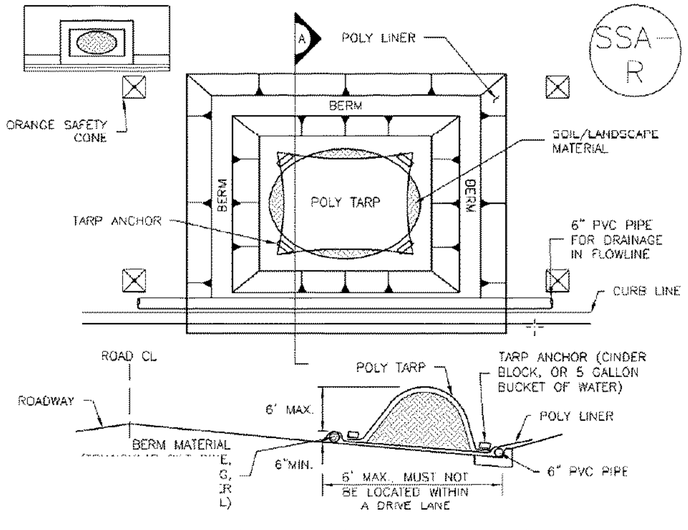
STOCKPILE PROTECTION MAINTENANCE NOTES

4. IF PERIMETER PROTECTION MUST BE MOVED TO ACCESS SOIL STOCKPILE, REPLACE PERIMETER CONTROLS BY THE END OF THE WORKDAY.

5. STOCKPILE PERIMETER CONTROLS CAN BE REMOVED ONCE ALL THE MATERIAL FROM THE STOCKPILE HAS BEEN USED.

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

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



ATERIALS STAGING IN ROADWAY

MATERIALS STAGING IN ROADWAYS INSTALLATION NOTES

1. SEE PLAN VIEW FOR
   -LOCATION OF MATERIAL STAGING AREA(S).
   -CONTRACTOR MAY ADJUST LOCATION AND SIZE OF STAGING AREA WITH APPROVAL FROM THE LOCAL JURISDICTION.

2. FEATURE MUST BE INSTALLED PRIOR TO EXCAVATION, EARTHWORK OR DELIVERY OF MATERIALS.

3. MATERIALS MUST BE STATIONED ON THE POLY LINER. ANY INCIDENTAL MATERIALS DEPOSITED ON PAVED SECTION OR ALONG CURB LINE MUST BE CLEANED UP PROMPTLY.

4. POLY LINER AND TARP COVER SHOULD BE OF SIGNIFICANT THICKNESS TO PREVENT DAMAGE OR LOSS OF INTEGRITY.

5. SAND BAGS MAY BE SUBSTITUTED TO ANCHOR THE COVER TARP OR PROVIDE BERMING UNDER THE BASE LINER.

6. FEATURE IS NOT INTENDED FOR USE WITH WET MATERIAL THAT WILL BE DRAINING AND/OR SPREADING OUT ON THE POLY LINER OR FOR DEMOLITION MATERIALS.

7. THIS FEATURE CAN BE USED FOR:
   -UTILITY REPAIRS.
   -WHEN OTHER STAGING LOCATIONS AND OPTIONS ARE LIMITED.
   -OTHER LIMITED APPLICATION AND SHORT DURATION STAGING.

MATERIALS STAGING IN ROADWAY MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. INSPECT PVC PIPE ALONG CURB LINE FOR CLOGGING AND DEBRIS. REMOVE OBSTRUCTIONS PROMPTLY.

5. CLEAN MATERIAL FROM PAVED SURFACES BY SWEEPING OR VACUUMING.

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

(DETAILS ADAPTED FROM AURORA, COLORADO)

PROJECT: CITY OF BOULDER AND ZAYO JOINT BUILD

FINAL DESIGN

TITLE: STOCKPILE MANAGEMENT PLAN

Date: 9/10/2020

Engineer: JD

Drawn By: ZK

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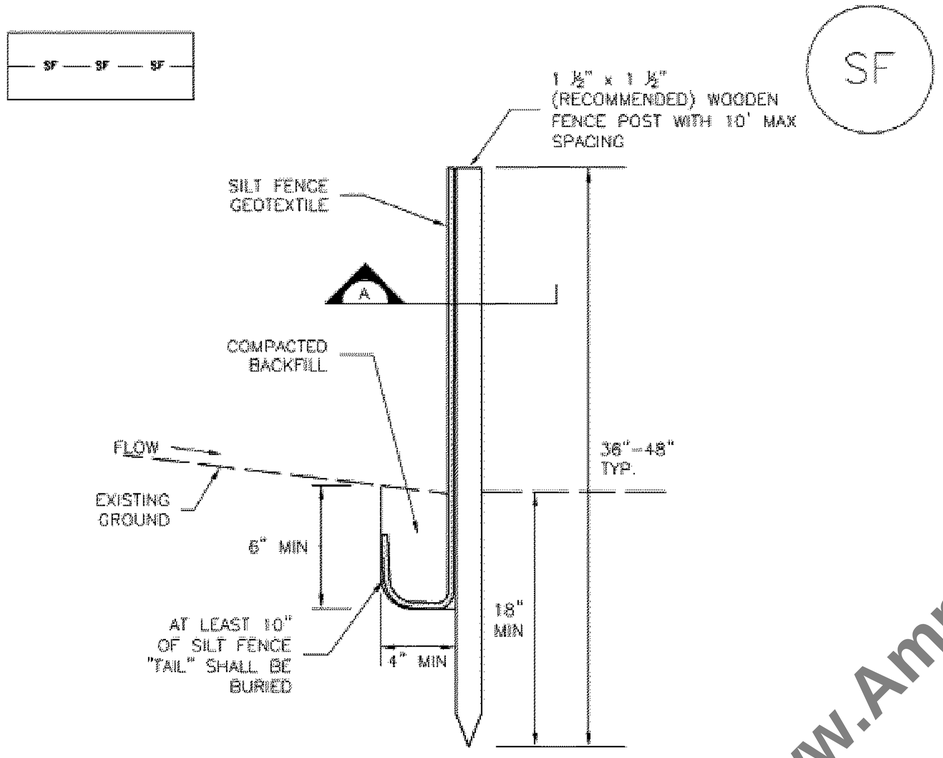
4/30/20	Plans-CoB Xing BIL-Rv.4	ZK
5/28/20	Plans-CoB Xing BIL-Rv.5	ZK
6/12/20	Plans-CoB Xing BIL-Rv.6	ZK
6/17/20	Plans-CoB Xing BIL-Rv.7	ZK
9/10/20	Plans-CoB Xing BIL-Rv.8	ZK

COLORADO LICENSED DURAK EVRIM ERCAN 04/01/2020 55714 PROFESSIONAL ENGINEER

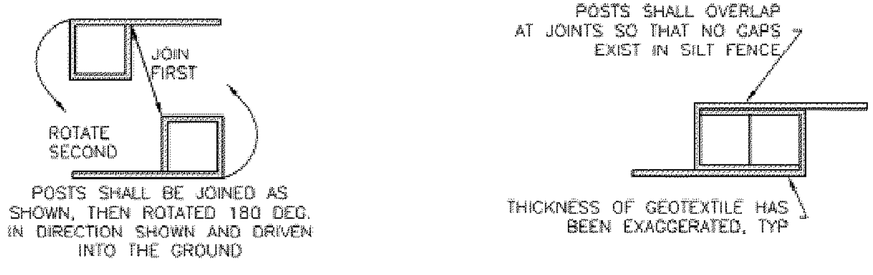
Sheet: 10 OF 21

File:

BOUNDER, COLORADO
BOULDER COUNTY



SILT FENCE



SECTION A

SF-1. SILT FENCE

SILT FENCE INSTALLATION NOTES

1. SILT FENCE MUST BE PLACED AWAY FROM THE TOE OF THE SLOPE TO ALLOW FOR WATER PONDING. SILT FENCE AT THE TOE OF A SLOPE SHOULD BE INSTALLED IN A FLAT LOCATION AT LEAST SEVERAL FEET (2-5 FT) FROM THE TOE OF THE SLOPE TO ALLOW ROOM FOR PONDING AND DEPOSITION.

2. A UNIFORM 6" X 4" ANCHOR TRENCH SHALL BE EXCAVATED USING TRENCHER OR SILT FENCE INSTALLATION DEVICE. NO ROAD GRADERS, BACKHOES, OR SIMILAR EQUIPMENT SHALL BE USED.

3. COMPACT ANCHOR TRENCH BY HAND WITH A "JUMPING JACK" OR BY WHEEL ROLLING. COMPACTION SHALL BE SUCH THAT SILT FENCE RESISTS BEING PULLED OUT OF ANCHOR TRENCH BY HAND.

4. SILT FENCE SHALL BE PULLED TIGHT AS IT IS ANCHORED TO THE STAKES. THERE SHOULD BE NO NOTICEABLE SAG BETWEEN STAKES AFTER IT HAS BEEN ANCHORED TO THE STAKES.

5. SILT FENCE FABRIC SHALL BE ANCHORED TO THE STAKES USING 1" HEAVY DUTY STAPLES OR NAILS WITH 1" HEADS. STAPLES AND NAILS SHOULD BE PLACED 3" ALONG THE FABRIC DOWN THE STAKE.

6. AT THE END OF A RUN OF SILT FENCE ALONG A CONTOUR, THE SILT FENCE SHOULD BE TURNED PERPENDICULAR TO THE CONTOUR TO CREATE A "J-HOOK." THE "J-HOOK" EXTENDING PERPENDICULAR TO THE CONTOUR SHOULD BE OF SUFFICIENT LENGTH TO KEEP RUNOFF FROM FLOWING AROUND THE END OF THE SILT FENCE (TYPICALLY 10' - 20').

7. SILT FENCE SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.

SILT FENCE MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. SEDIMENT ACCUMULATED UPSTREAM OF THE SILT FENCE SHALL BE REMOVED AS NEEDED TO MAINTAIN THE FUNCTIONALITY OF THE BMP, TYPICALLY WHEN DEPTH OF ACCUMULATED SEDIMENTS IS APPROXIMATELY 6".

5. REPAIR OR REPLACE SILT FENCE WHEN THERE ARE SIGNS OF WEAR, SUCH AS SAGGING, TEARING, OR COLLAPSE.

6. SILT FENCE IS TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND APPROVED BY THE LOCAL JURISDICTION, OR IS REPLACED BY AN EQUIVALENT PERIMETER SEDIMENT CONTROL BMP.

7. WHEN SILT FENCE IS REMOVED, ALL DISTURBED AREAS SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED AS APPROVED BY LOCAL JURISDICTION.

(DETAIL ADAPTED FROM TOWN OF PARKER, COLORADO AND CITY OF AURORA, NOT AVAILABLE IN AUTOCAD)

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

PROJECT: CITY OF BOULDER AND ZAYO JOINT BUILD

FINAL DESIGN

TITLE: SILT FENCE TYPICAL

Date: 9/10/2020

Engineer: JD

Drawn By: ZK

Revisions

Date	Description	Initial
4/9/20	Plans-CoB Xing BIL-Rv.0	ZK
4/16/20	Plans-CoB Xing BIL-Rv.1	ZK
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Sheet: 11 OF 21

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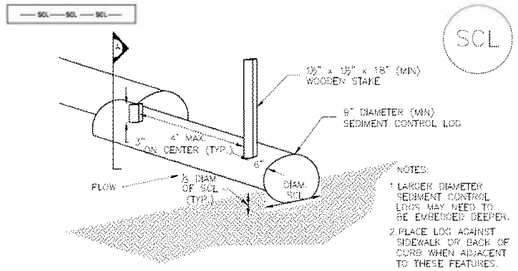
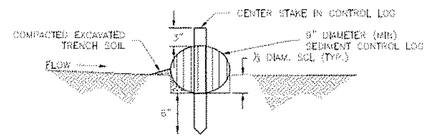
BOUNDER, COLORADO
BOULDER COUNTY



TRENCHED SEDIMENT CONTROL LOG



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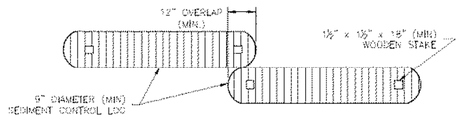
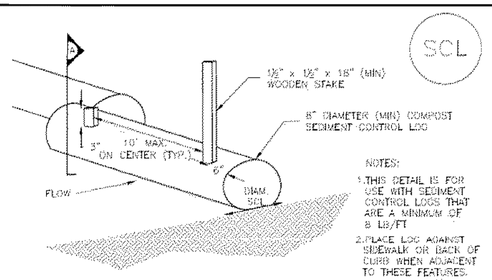
TRENCHED SEDIMENT CONTROL LOG

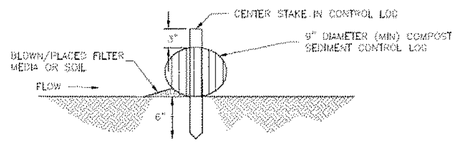


LOG JOINTS

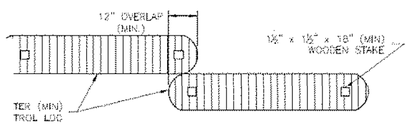
SCL-1, TRENCHED SEDIMENT CONTROL LOG



COMPOST SEDIMENT CONTROL LOG (WEIGHTED)



SECTION Ⓐ
COMPOST SEDIMENT CONTROL LOG



LOG JOINTS

COMPOST SEDIMENT CONTROL LOG (WEIGHTED)

SEDIMENT CONTROL LOG INSTALLATION NOTES

1. SEE PLAN VIEW FOR LOCATION AND LENGTH OF SEDIMENT CONTROL LOGS.

2. SEDIMENT CONTROL LOGS THAT ACT AS A PERIMETER CONTROL SHALL BE INSTALLED PRIOR TO ANY UPGRADIENT LAND-DISTURBING ACTIVITIES.

3. SEDIMENT CONTROL LOGS SHALL CONSIST OF STRAW, COMPOST, EXCELSIOR OR COCONUT FIBER, AND SHALL BE FREE OF ANY NOXIOUS WEED SEEDS OR DEFECTS INCLUDING RIPS, HOLES AND OBVIOUS WEAR.

4. SEDIMENT CONTROL LOGS MAY BE USED AS SMALL CHECK DAMS IN DITCHES AND SWALES. HOWEVER, THEY SHOULD NOT BE USED IN PERENNIAL STREAMS.

5. IT IS RECOMMENDED THAT SEDIMENT CONTROL LOGS BE TRENCHED INTO THE GROUND TO A DEPTH OF APPROXIMATELY ⅓ OF THE DIAMETER OF THE LOG. IF TRENCHING TO THIS DEPTH IS NOT FEASIBLE AND/OR DESIRABLE (SHORT TERM INSTALLATION WITH DESIRE NOT TO DAMAGE LANDSCAPE) A LESSER TRENCHING DEPTH MAY BE ACCEPTABLE WITH MORE ROBUST STAKING. COMPOST LOGS THAT ARE 8 LB/FT DO NOT NEED TO BE TRENCHED.

6. THE UPHILL SIDE OF THE SEDIMENT CONTROL LOG SHALL BE BACKFILLED WITH SOIL OR FILTER MATERIAL THAT IS FREE OF ROCKS AND DEBRIS. THE SOIL SHALL BE TIGHTLY COMPACTED INTO THE SHAPE OF A RIGHT TRIANGLE USING A SHOVEL OR WEIGHTED LAWN ROLLER OR BLOWN IN PLACE.

7. FOLLOW MANUFACTURERS' GUIDANCE FOR STAKING. IF MANUFACTURERS' INSTRUCTIONS DO NOT SPECIFY SPACING, STAKES SHALL BE PLACED ON 4' CENTERS AND EMBEDDED A MINIMUM OF 6" INTO THE GROUND. 3" OF THE STAKE SHALL PROTRUDE FROM THE TOP OF THE LOG. STAKES THAT ARE BROKEN PRIOR TO INSTALLATION SHALL BE REPLACED. COMPOST LOGS SHOULD BE STAKED 10' ON CENTER.

SEDIMENT CONTROL LOG MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. SEDIMENT ACCUMULATED UPSTREAM OF SEDIMENT CONTROL LOG SHALL BE REMOVED AS NEEDED TO MAINTAIN FUNCTIONALITY OF THE BMP, TYPICALLY WHEN DEPTH OF ACCUMULATED SEDIMENTS IS APPROXIMATELY ½ OF THE HEIGHT OF THE SEDIMENT CONTROL LOG.

5. SEDIMENT CONTROL LOG SHALL BE REMOVED AT THE END OF CONSTRUCTION.COMPOST FROM COMPOST LOGS MAY BE LEFT IN PLACE AS LONG AS BAGS ARE REMOVED AND THE AREA SEEDED. IF DISTURBED AREAS EXIST AFTER REMOVAL, THEY SHALL BE COVERED WITH TOP SOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE LOCAL JURISDICTION.

(DETAILS ADAPTED FROM TOWN OF PARKER, COLORADO, JEFFERSON COUNTY, COLORADO, DOUGLAS COUNTY, COLORADO, AND CITY OF AURORA, COLORADO, NOT AVAILABLE IN AUTOCAD)

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

PROJECT: CITY OF BOULDER AND ZAYO JOINT BUILD

FINAL DESIGN

TITLE: SEDIMENT CONTROL LOGSTYPICAL

Date: 9/10/2020

Engineer: JD

Drawn By: ZK

Revisions

Date	Description	Initial
4/9/20	Plans-CoB Xing BIL-Rv.0	ZK
4/16/20	Plans-CoB Xing BIL-Rv.1	ZK
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9/10/20	Plans-CoB Xing BIL-Rv.8	ZK

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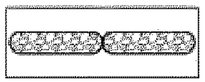
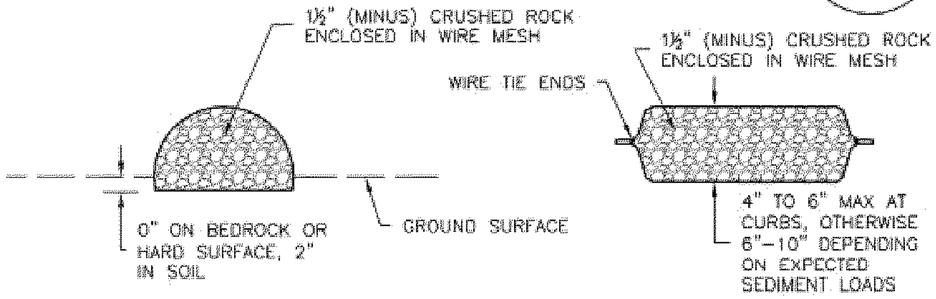
BOULDER COUNTY

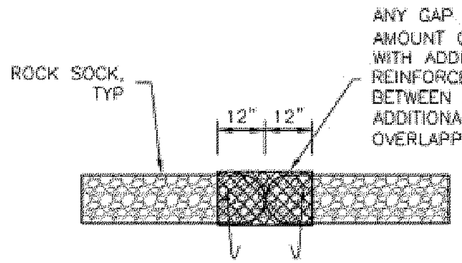


RS



ROCK SOCK SECTION

ROCK SOCK PLAN



ROCK SOCK JOINTING

GRADATION TABLE	
SIEVE SIZE	MASS PERCENT PASSING SQUARE MESH SIEVES
	NO. 4
2"	100
1½"	90 – 100
1"	20 – 55
¾"	0 – 15
⅜"	0 – 5
MATCHES SPECIFICATIONS FOR NO. 4 COARSE AGGREGATE FOR CONCRETE PER AASHTO M43. ALL ROCK SHALL BE FRACTURED FACE, ALL SIDES.	

ROCK SOCK INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   –LOCATION(S) OF ROCK SOCKS.

2. CRUSHED ROCK SHALL BE 1½" (MINUS) IN SIZE WITH A FRACTURED FACE (ALL SIDES) AND SHALL COMPLY WITH GRADATION SHOWN ON THIS SHEET (1½" MINUS).

3. WIRE MESH SHALL BE FABRICATED OF 10 GAGE POULTRY MESH, OR EQUIVALENT, WITH A MAXIMUM OPENING OF ½", RECOMMENDED MINIMUM ROLL WIDTH OF 48"

4. WIRE MESH SHALL BE SECURED USING "HOG RINGS" OR WIRE TIES AT 6" CENTERS ALONG ALL JOINTS AND AT 2" CENTERS ON ENDS OF SOCKS.

5. SOME MUNICIPALITIES MAY ALLOW THE USE OF FILTER FABRIC AS AN ALTERNATIVE TO WIRE FOR THE ROCK ENCLOSURE.

RS–1, ROCK SOCK PERIMETER CONTROL

ROCK SOCK MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. ROCK SOCKS SHALL BE REPLACED IF THEY BECOME HEAVILY SOILED, OR DAMAGED BEYOND REPAIR.

5. SEDIMENT ACCUMULATED UPSTREAM OF ROCK SOCKS SHALL BE REMOVED AS NEEDED TO MAINTAIN FUNCTIONALITY OF THE BMP, TYPICALLY WHEN DEPTH OF ACCUMULATED SEDIMENTS IS APPROXIMATELY ½ OF THE HEIGHT OF THE ROCK SOCK.

6. ROCK SOCKS ARE TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND APPROVED BY THE LOCAL JURISDICTION.

7. WHEN ROCK SOCKS ARE REMOVED, ALL DISTURBED AREAS SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED AS APPROVED BY LOCAL JURISDICTION.

(DETAIL ADAPTED FROM TOWN OF PARKER, COLORADO AND CITY OF AURORA, COLORADO, NOT AVAILABLE IN AUTOCAD)

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

NOTE: THE DETAILS INCLUDED WITH THIS FACT SHEET SHOW COMMONLY USED, CONVENTIONAL METHODS OF ROCK SOCK INSTALLATION IN THE DENVER METROPOLITAN AREA. THERE ARE MANY OTHER SIMILAR PROPRIETARY PRODUCTS ON THE MARKET. UDFCD NEITHER NDORSES NOR DISCOURAGES USE OF PROPRIETARY PROTECTION PRODUCTS; HOWEVER, IN THE EVENT PROPRIETARY METHODS ARE USED, THE APPROPRIATE DETAIL FROM THE MANUFACTURER MUST BE INCLUDED IN THE SWMP AND THE BMP MUST BE INSTALLED AND MAINTAINED AS SHOWN IN THE MANUFACTURER'S DETAILS.

PROJECT: CITY OF BOULDER AND ZAYO JOINT BUILD

FINAL DESIGN

TITLE: ROCK SOCK TYPICAL

Date: 9/10/2020

Engineer: JD

Drawn By: ZK

Revisions

Date	Description	Initial
4/9/20	Plans-CoB Xing BIL-Rv.0	ZK
4/16/20	Plans-CoB Xing BIL-Rv.1	ZK
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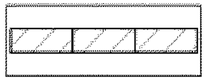
File:

BOULDER, COLORADO
BOULDER COUNTY



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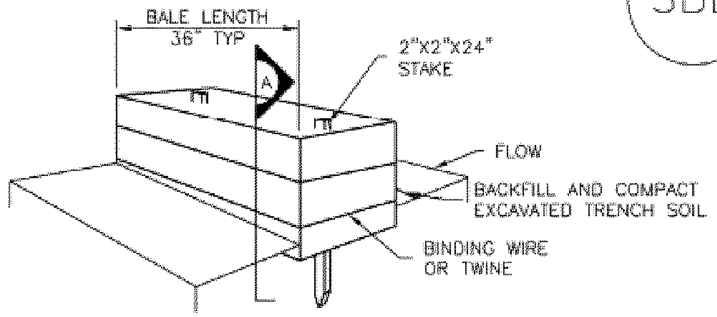
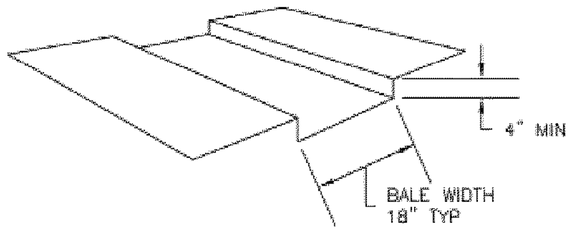
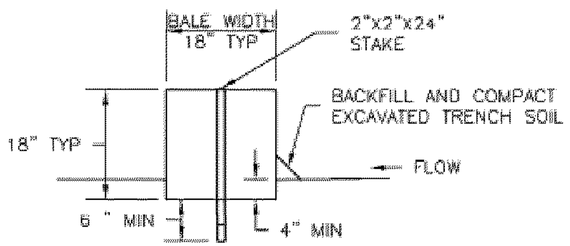


STRAW BALE



TRENCH FOR STRAW BALE



SECTION A

SBB–1. STRAW BALE

STRAW BALE INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   –LOCATION(S) OF STRAW BALES.

2. STRAW BALES SHALL CONSIST OF CERTIFIED WEED FREE STRAW OR HAY. LOCAL JURISDICTIONS MAY REQUIRE PROOF THAT BALES ARE WEED FREE.

3. STRAW BALES SHALL CONSIST OF APPROXIMATELY 5 CUBIC FEET OF STRAW OR HAY AND WEIGH NOT LESS THAN 30 POUNDS.

4. WHEN STRAW BALES ARE USED IN SERIES AS A BARRIER, THE END OF EACH BALE SHALL BE TIGHTLY ABUTTING ONE ANOTHER.

5. STRAW BALE DIMENSIONS SHALL BE APPROXIMATELY 36"X18"X18".

6. A UNIFORM ANCHOR TRENCH SHALL BE EXCAVATED TO A DEPTH OF 4". STRAW BALES SHALL BE PLACED SO THAT BINDING TWINE IS ENCOMPASSING THE VERTICAL SIDES OF THE BALE(S). ALL EXCAVATED SOIL SHALL BE PLACED ON THE UPHILL SIDE OF THE STRAW BALE(S) AND COMPACTED.

7. TWO (2) WOODEN STAKES SHALL BE USED TO HOLD EACH BALE IN PLACE. WOODEN STAKES SHALL BE 2"X2"X24". WOODEN STAKES SHALL BE DRIVEN 6" INTO THE GROUND.

STRAW BALE MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. STRAW BALES SHALL BE REPLACED IF THEY BECOME HEAVILY SOILED, ROTTEN, OR DAMAGED BEYOND REPAIR.

5. SEDIMENT ACCUMULATED UPSTREAM OF STRAW BALE BARRIER SHALL BE REMOVED AS NEEDED TO MAINTAIN FUNCTIONALITY OF THE BMP, TYPICALLY WHEN DEPTH OF ACCUMULATED SEDIMENTS IS APPROXIMATELY ¼ OF THE HEIGHT OF THE STRAW BALE BARRIER.

6. STRAW BALES ARE TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND APPROVED BY THE LOCAL JURISDICTION.

7. WHEN STRAW BALES ARE REMOVED, ALL DISTURBED AREAS SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED AS APPROVED BY LOCAL JURISDICTION.

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

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

PROJECT: CITY OF BOULDER AND ZAYO JOINT BUILD

FINAL DESIGN

TITLE: STRAW BALE BARRIER TYPICAL

Date: 9/10/2020

Engineer: JD

Drawn By: ZK

Revisions

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4/9/20	Plans-CoB Xing BIL-Rv.0	ZK
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File:

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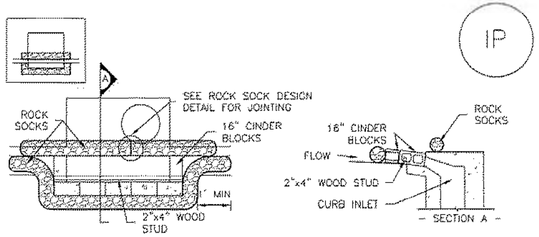
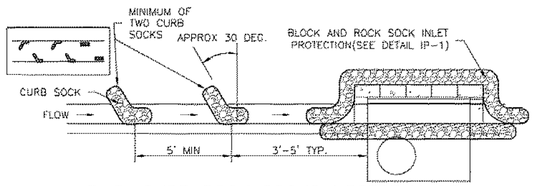
BOULDER COUNTY



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

BLOCK AND CURB SOCK INLET PROTECTION INSTALLATION NOTES

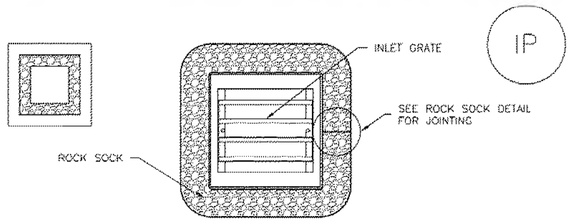
1. SEE ROCK SOCK DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.
2. CONCRETE "CINDER" BLOCKS SHALL BE LAID ON THEIR SIDES AROUND THE INLET IN A SINGLE ROW, ABUTTING ONE ANOTHER WITH THE OPEN END FACING AWAY FROM THE CURB.
3. GRAVEL BAGS SHALL BE PLACED AROUND CONCRETE BLOCKS, CLOSELY ABUTTING ONE ANOTHER AND JOINTED TOGETHER IN ACCORDANCE WITH ROCK SOCK DESIGN DETAIL.



IP-2. CURB ROCK SOCKS UPSTREAM OF INLET PROTECTION

CURB ROCK SOCK INLET PROTECTION INSTALLATION NOTES

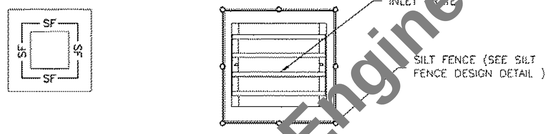
1. SEE ROCK SOCK DESIGN DETAIL INSTALLATION REQUIREMENTS.
2. PLACEMENT OF THE SOCK SHALL BE APPROXIMATELY 30 DEGREES FROM PERPENDICULAR IN THE OPPOSITE DIRECTION OF FLOW.
3. SOCKS ARE TO BE FLUSH WITH THE CURB AND SPACED A MINIMUM OF 5 FEET APART.
4. AT LEAST TWO CURB SOCKS IN SERIES ARE REQUIRED UPSTREAM OF ON-GRADE INLETS.



IP-3. ROCK SOCK SUMP/AREA INLET PROTECTION

ROCK SOCK SUMP/AREA INLET PROTECTION INSTALLATION NOTES

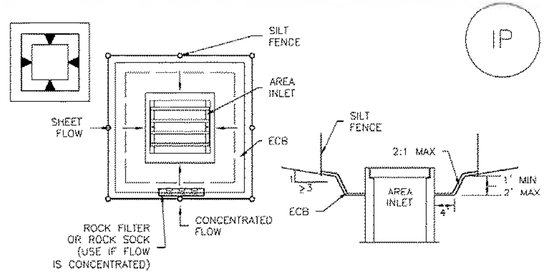
1. SEE ROCK SOCK DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.
2. STRAW WATTLES/SEDIMENT CONTROL LOGS MAY BE USED IN PLACE OF ROCK SOCKS FOR INLETS IN PERVIOUS AREAS. INSTALL PER SEDIMENT CONTROL LOG DETAIL.



IP-4. SILT FENCE FOR SUMP INLET PROTECTION

SILT FENCE INLET PROTECTION INSTALLATION NOTES

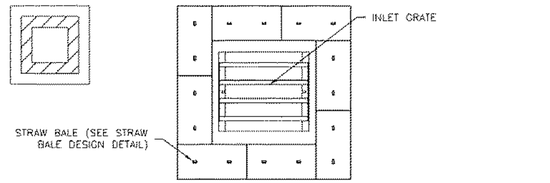
1. SEE SILT FENCE DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.
2. POSTS SHALL BE PLACED AT EACH CORNER OF THE INLET AND AROUND THE EDGES AT A MAXIMUM SPACING OF 3 FEET.
3. STRAW WATTLES/SEDIMENT CONTROL LOGS MAY BE USED IN PLACE OF SILT FENCE FOR INLETS IN PERVIOUS AREAS. INSTALL PER SEDIMENT CONTROL LOG DETAIL.



IP-5. OVEREXCAVATION INLET PROTECTION

OVEREXCAVATION INLET PROTECTION INSTALLATION NOTES

1. THIS FORM OF INLET PROTECTION IS PRIMARILY APPLICABLE FOR SITES THAT HAVE NOT YET REACHED FINAL GRADE AND SHOULD BE USED ONLY FOR INLETS WITH A RELATIVELY SMALL CONTRIBUTING DRAINAGE AREA.
2. WHEN USING FOR CONCENTRATED FLOWS, SHAPE BASIN IN 2:1 RATIO WITH LENGTH ORIENTED TOWARDS DIRECTION OF FLOW.
3. SEDIMENT MUST BE PERIODICALLY REMOVED FROM THE OVEREXCAVATED AREA.



IP-6. STRAW BALE FOR SUMP INLET PROTECTION

STRAW BALE BARRIER INLET PROTECTION INSTALLATION NOTES

1. SEE STRAW BALE DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.
2. BALES SHALL BE PLACED IN A SINGLE ROW AROUND THE INLET WITH ENDS OF BALES TIGHTLY ABUTTING ONE ANOTHER.

GENERAL INLET PROTECTION INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   - -LOCATION OF INLET PROTECTION.
   - -TYPE OF INLET PROTECTION (IP.1, IP.2, IP.3, IP.4, IP.5, IP.6)
2. INLET PROTECTION SHALL BE INSTALLED PROMPTLY AFTER INLET CONSTRUCTION OR PAVING IS COMPLETE (TYPICALLY WITHIN 48 HOURS). IF A RAINFALL/RUNOFF EVENT IS FORECAST, INSTALL INLET PROTECTION PRIOR TO ONSET OF EVENT.
3. MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

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

NOTE: THE DETAILS INCLUDED WITH THIS FACT SHEET SHOW COMMONLY USED, CONVENTIONAL METHODS OF INLET PROTECTION IN THE DENVER METROPOLITAN AREA. THERE ARE MANY PROPRIETARY INLET PROTECTION METHODS ON THE MARKET. UDFCD NEITHER ENDORSES NOR DISCOURAGES USE OF PROPRIETARY INLET PROTECTION; HOWEVER, IN THE EVENT
PRIETARY METHODS ARE USED, THE APPROPRIATE DETAIL FROM THE MANUFACTURER MUST INCLUDED IN THE SWMP AND THE BMP MUST BE INSTALLED AND MAINTAINED AS SHOWN HE MANUFACTURER'S DETAILS.

E: SOME MUNICIPALITIES DISCOURAGE OR PROHIBIT THE USE OF STRAW BALES FOR INLET TECTION. CHECK WITH LOCAL JURISDICTION TO DETERMINE IF STRAW BALE INLET TECTION IS ACCEPTABLE.

INLET PROTECTION MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
4. SEDIMENT ACCUMULATED UPSTREAM OF INLET PROTECTION SHALL BE REMOVED AS NECESSARY TO MAINTAIN BMP EFFECTIVENESS, TYPICALLY WHEN STORAGE VOLUME REACHES 50% OF CAPACITY, A DEPTH OF 6" WHEN SILT FENCE IS USED, OR ¼ OF THE HEIGHT FOR STRAW BALES.
5. INLET PROTECTION IS TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS PERMANENTLY STABILIZED, UNLESS THE LOCAL JURISDICTION APPROVES EARLIER REMOVAL OF INLET PROTECTION IN STREETS.
6. WHEN INLET PROTECTION AT AREA INLETS IS REMOVED, THE DISTURBED AREA SHALL BE COVERED WITH TOP SOIL, SEEDED AND MULCHED, OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE LOCAL JURISDICTION.

(DETAIL ADAPTED FROM TOWN OF PARKER, COLORADO AND CITY OF AURORA, COLORADO, NOT AVAILABLE IN AUTOCAD)

PROJECT: CITY OF BOULDER AND ZAYO JOINT BUILD

FINAL DESIGN

TITLE: INLET PROTECTION TYPICAL

Date: 9/10/2020

Engineer: JD

Drawn By: ZK

Revisions

Date	Description	Initial
4/9/20	Plans-CoB Xing BIL-Rv.0	ZK
4/16/20	Plans-CoB Xing BIL-Rv.1	ZK
4/21/20	Plans-CoB Xing BIL-Rv.2	ZK
4/28/20	Plans-CoB Xing BIL-Rv.3	ZK
4/30/20	Plans-CoB Xing BIL-Rv.4	ZK
5/28/20	Plans-CoB Xing BIL-Rv.5	ZK
6/12/20	Plans-CoB Xing BIL-Rv.6	ZK
6/17/20	Plans-CoB Xing BIL-Rv.7	ZK
9/10/20	Plans-CoB Xing BIL-Rv.8	ZK

COLORADO LICENSED
DIRAK EVRIM ERCAN
04/01/2020
55714
PROFESSIONAL ENGINEER

Sheet: 15 OF 21

File:

NOTES:

1) See profile, conduit and vault details on sheet 17
2) See notes and standard details on sheets 4-15
3) Contractor must follow all RTD requirements outlined in the RTD notes on sheet

CONTRACTOR TO INSTALL

BIL-67-NewBP1-C
1 x 2-INCH CITY OF BOULDER HDPE CONDUIT WITH 432CT FO AND
1 x 2-INCH CITY OF BOULDER HDPE CONDUIT LEFT VACANT

AND

BIL-92-NewBP3-C
2 x 1.25-INCH ZAYO HDPE CONDUITS LEFT VACANT

298'
Valmont Rd
Butte Mill Rd
RTD Tracks
±296' to Valmont Rd
RTD RAIL ROW
100'
50'
50'
48'
50'
50'
1'
Valmont Drive
91°
116'
±6153' to M338
RTD RAIL ROW
100'
50'
50'
RTD ROW
Butte Mille Rd
RTD ROW
Stazio Dr

0 50 100 200 Feet

OBSERVE ALL SAFETY PRECAUTIONS AND STANDARDS DURING CONSTRUCTION. OBSERVE ALL REQUIRED TRAFFIC CONTROL STANDARDS. OBSERVE ALL AREMA STANDARDS. MAINTAIN A MINIMUM 15 FOOT CLEARANCE BELOW RAILROAD TRACKS AT CENTERLINE. LOCATE ALL UNDERGROUND UTILITIES PRIOR TO INSTALLATION.

811 Know what's below. Call before you dig.

Legend

- H PROPOSED HANDHOLE
- ® PROPOSED RISER
- PROPOSED FIBER
- RAILROAD

N

CITY OF BOULDER

Valmont Rd and Stazio

LAT: 40.029376
LONG: -105.215641

ID NUMBER: 242120
MILE MARKER: N/A

BIL-67-NEWBP1-C
BIL-92-NEWBP3-C
PAGE 16 OF 21

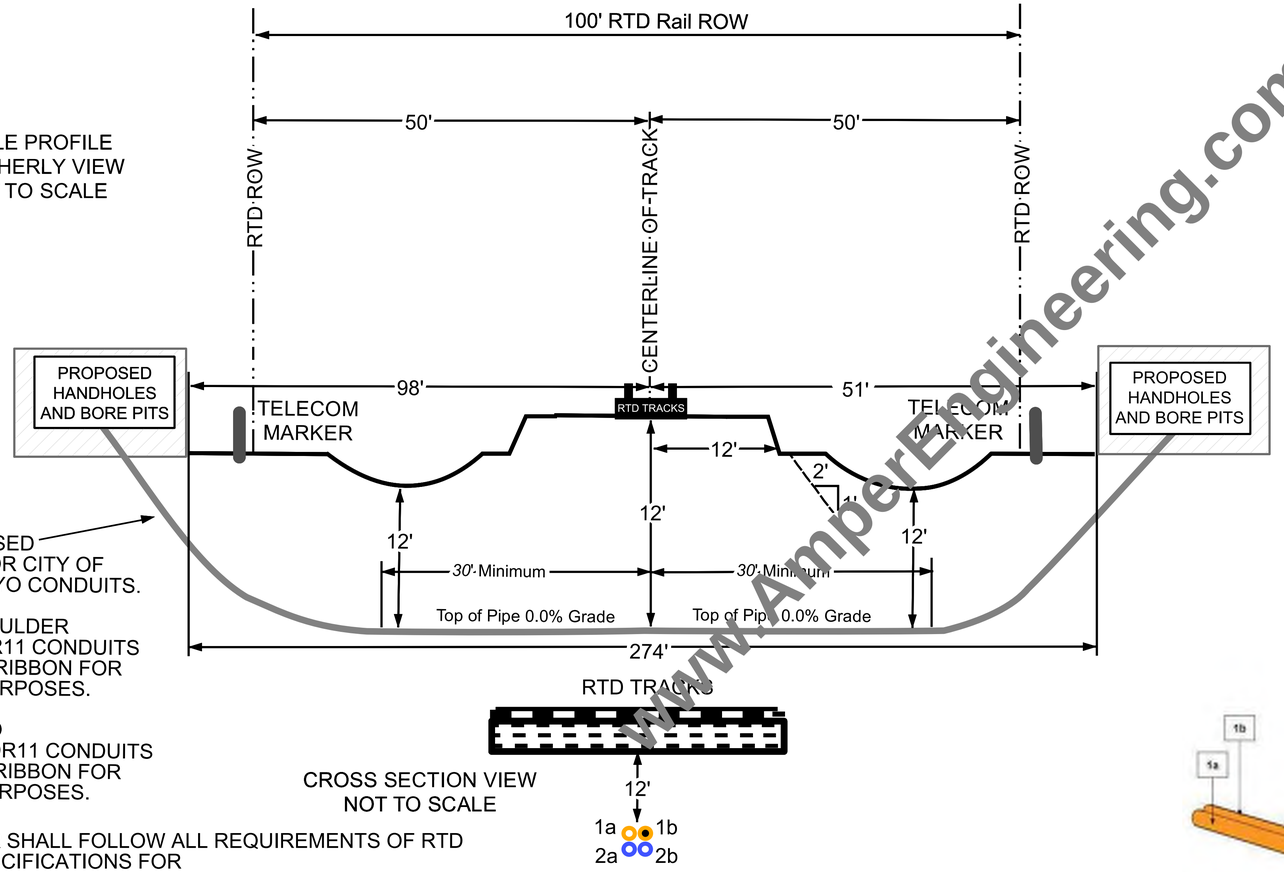
PERMIT DRAWING FOR:
CITY OF BOULDER / ZAYO
RTD RAILROAD
VALMONT RD AND STAZIO
BOULDER, CO
FACILITIES ARE LOCATED IN THE CITY OF BOULDER, BOULDER COUNTY, COLORADO

COLORADO LICENSED
DURAK EVRIM ERCAN
04/01/2026
55714
PROFESSIONAL ENGINEER

NOTES:

1) See construction plan on sheet 16.
2) See notes and standard details on sheets 4-15
3) Contractor must follow all RTD requirements outlined in the RTD notes on sheet 5

CABLE PROFILE
NORTHERLY VIEW
NOT TO SCALE



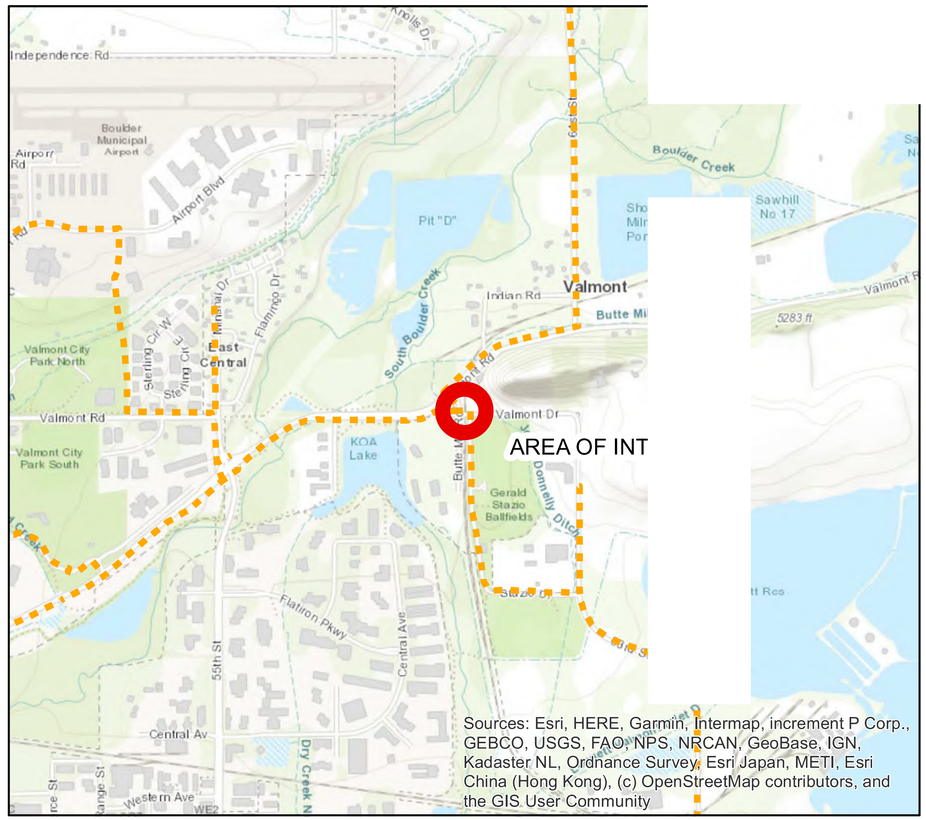
CITY OF BOULDER
TWO - 2"HDPE SDR11 CONDUITS
WITH METALLIC RIBBON FOR
LOCATING PURPOSES.

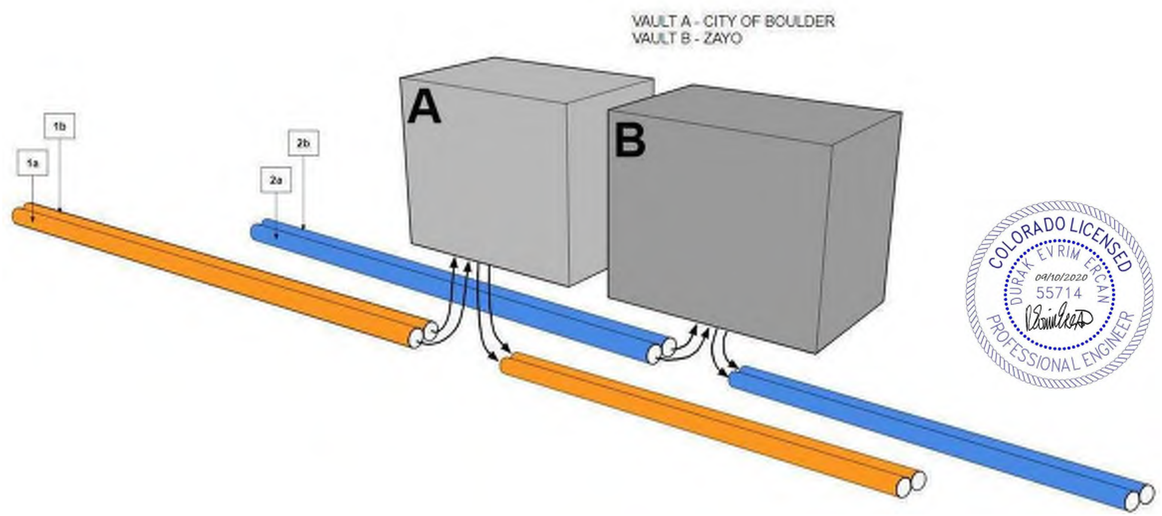
ZAYO
TWO - 1.25"HDPE SDR11 CONDUITS
WITH METALLIC RIBBON FOR
LOCATING PURPOSES.

CROSS SECTION VIEW
NOT TO SCALE

1) CONTRACTOR SHALL FOLLOW ALL REQUIREMENTS OF RTD GENERAL SPECIFICATIONS FOR SUB-GRADE AND ABOVE GRADE UTILITY CROSSINGS.
2) PIPELINE AND CROSSING TO BE INSTALLED AND MAINTANED IN ACCORDANCE WITH LAST APPROVED AMERICAN RAILWAY ENGINEERING AND MAINTENACNE OF WAY ASSOCIATION (AREMA 2020) SPECIFICATIONS FOR PIPLINE CONVEYING FLAMMABLE AND NON-FLAMMABLE SUBSTANCES.
3) BLASTING NOT PERMITED

Proposed				
	Owner	Size	Fiber Present	Permit Name
1a	City of Boulder	1 - 2" HDPE SDR11	Vacant	BIL-67-NewBP1-C
1b	City of Boulder	1 - 2" HDPE SDR11	1 - 432ct FO	BIL-67-NewBP1-C
2a	Zayo	1 - 1.25" HDPE SDR11	Vacant	BIL-92-NewBP3-C
2b	Zayo	1 - 1.25" HDPE SDR11	Vacant	BIL-92-NewBP3-C





COLORADO LICENSED
DURAK EVRIM ERCAN
04/01/2020
55714
PROFESSIONAL ENGINEER

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OBSERVE ALL SAFETY PRECAUTIONS AND STANDARDS DURING CONSTRUCTION. OBSERVE ALL REQUIRED TRAFFIC CONTROL STANDARDS. OBSERVE ALL AREMA STANDARDS.
MAINTAIN A MINIMUM 15 FOOT CLEARANCE BELOW RAILROAD TRACKS AT CENTERLINE.
LOCATE ALL UNDERGROUND UTILITIES PRIOR TO INSTALLATION.

Legend

- PROPOSED HANDHOLE
- PROPOSED RISER
- PROPOSED FIBER
- RAILROAD

N

CITY OF BOULDER

Valmont Rd and Stazio

LAT: 40.029376
LONG: -105.215641

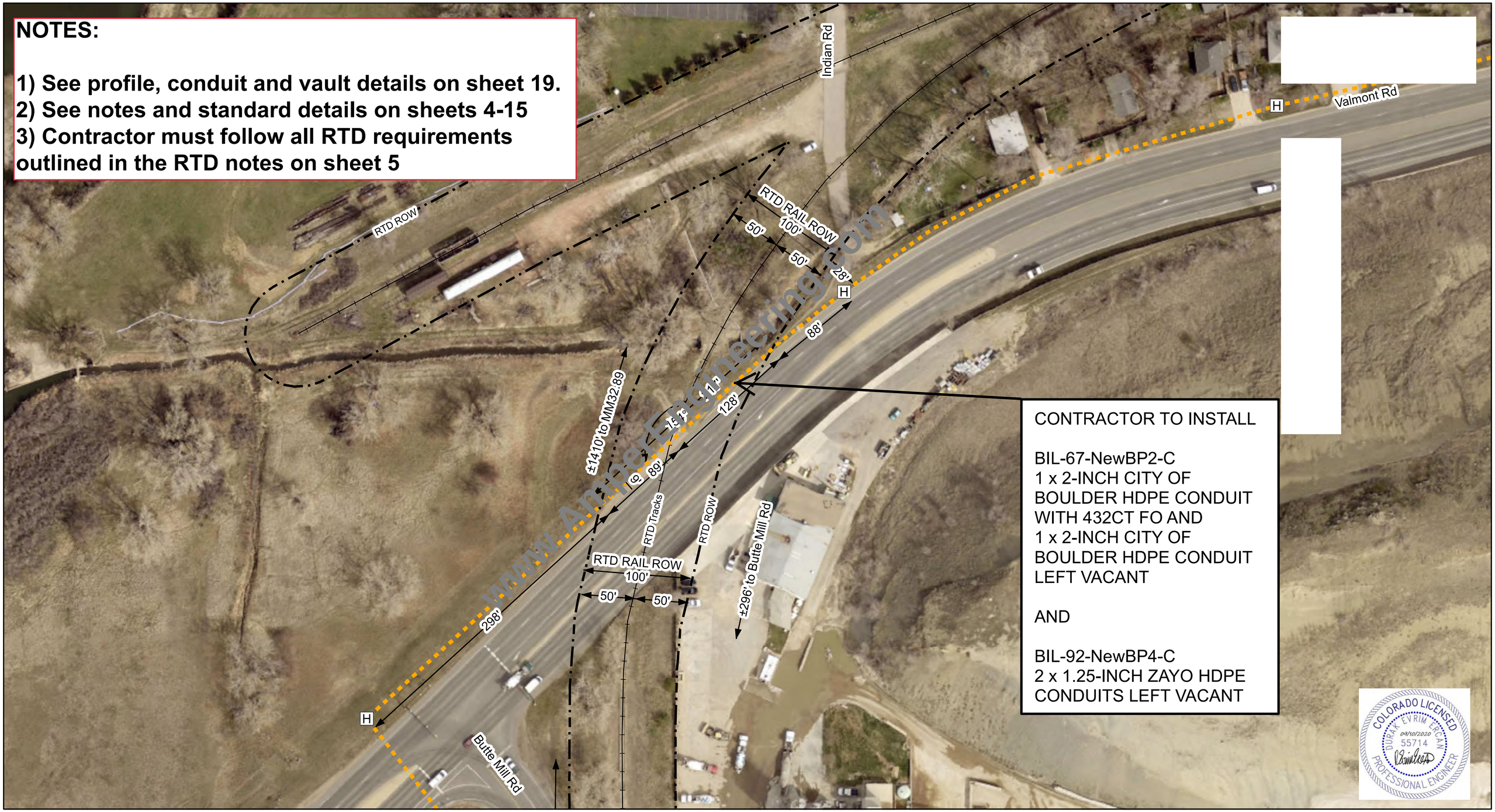
ID NUMBER: 242120
MILE MARKER: N/A

BIL-67-NEWBP1-C
BIL-92-NEWBP3-C
PAGE 17 OF 21

PERMIT DRAWING FOR:
CITY OF BOULDER / ZAYO
RTD RAILROAD
VALMONT RD AND STAZIO
BOULDER, CO
FACILITIES ARE LOCATED IN
THE CITY OF BOULDER,
BOULDER COUNTY,
COLORADO

NOTES:

1) See profile, conduit and vault details on sheet 19.
2) See notes and standard details on sheets 4-15
3) Contractor must follow all RTD requirements outlined in the RTD notes on sheet 5



CONTRACTOR TO INSTALL

BIL-67-NewBP2-C
1 x 2-INCH CITY OF BOULDER HDPE CONDUIT WITH 432CT FO AND
1 x 2-INCH CITY OF BOULDER HDPE CONDUIT LEFT VACANT

AND

BIL-92-NewBP4-C
2 x 1.25-INCH ZAYO HDPE CONDUITS LEFT VACANT

COLORADO LICENSED
DURAK EVRIM ERCAN
04/01/2020
55714
PROFESSIONAL ENGINEER

0 50 100 200 Feet

811 Know what's below. Call before you dig.

OBSERVE ALL SAFETY PRECAUTIONS AND STANDARDS DURING CONSTRUCTION. OBSERVE ALL REQUIRED TRAFFIC CONTROL STANDARDS. OBSERVE ALL AREMA STANDARDS. MAINTAIN A MINIMUM 15 FOOT CLEARANCE BELOW RAILROAD TRACKS AT CENTERLINE. LOCATE ALL UNDERGROUND UTILITIES PRIOR TO INSTALLATION.

Legend

- H PROPOSED HANDHOLE
- ® PROPOSED RISER
- PROPOSED FIBER
- RAILROAD

N

CITY OF BOULDER

Valmont Rd and Butte Mill Rd

LAT: 40.030698
LONG: -105.2155069

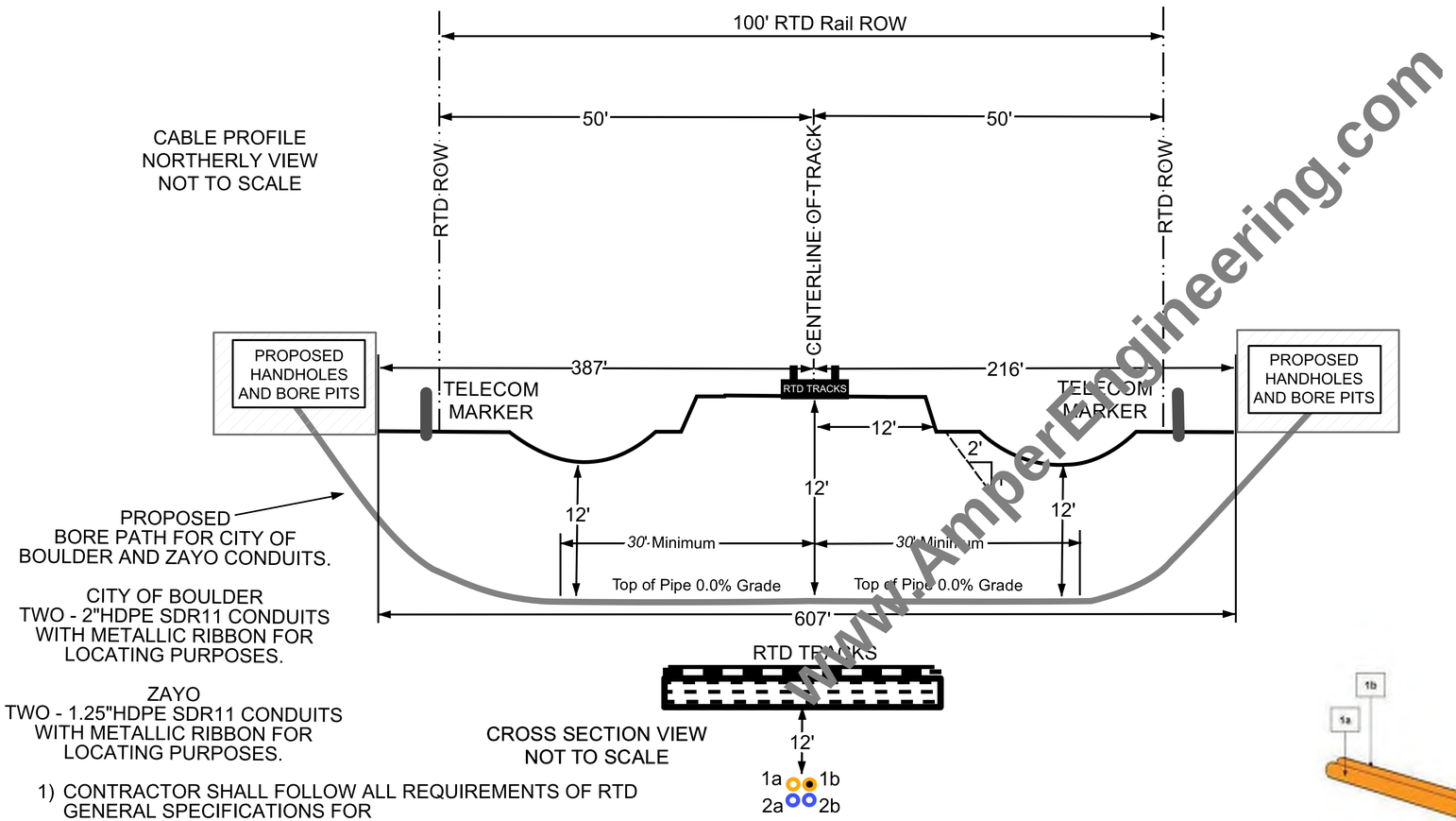
ID NUMBER: 242120
MILE MARKER: N/A

BIL-67-NEWBP2-C
BIL-92-NEWBP4-C

PERMIT DRAWING FOR:
CITY OF BOULDER / ZAYO
RTD RAILROAD
VALMONT RD AND STAZIO
BOULDER, CO
FACILITIES ARE LOCATED IN THE CITY OF BOULDER, BOULDER COUNTY, COLORADO

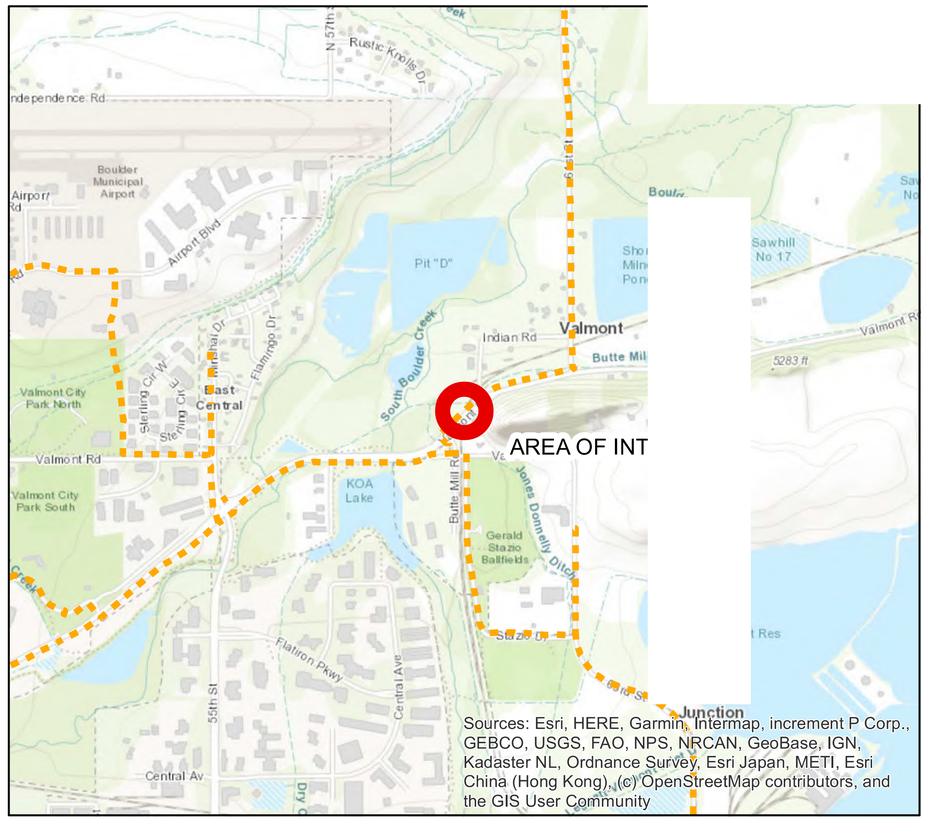
NOTES:

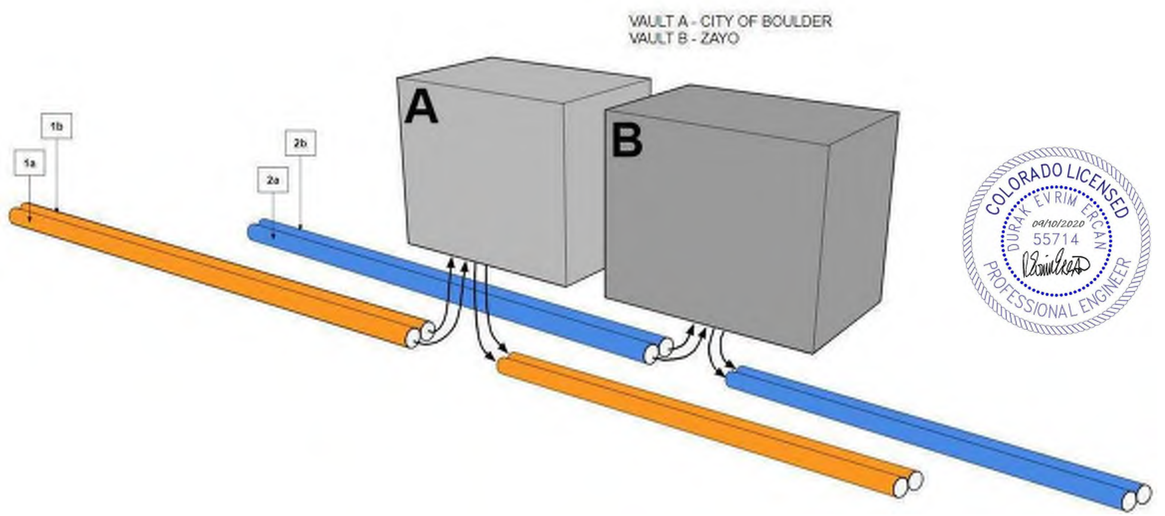
1) See construction plan on sheet 18.
2) See notes and standard details on sheets 4-15
3) Contractor must follow all RTD requirements outlined in the RTD notes on sheet 5



1) CONTRACTOR SHALL FOLLOW ALL REQUIREMENTS OF RTD GENERAL SPECIFICATIONS FOR SUB-GRADE AND ABOVE GRADE UTILITY CROSSINGS.
2) PIPELINE AND CROSSING TO BE INSTALLED AND MAINTANED IN ACCORDANCE WITH LAST APPROVED AMERICAN RAILWAY ENGINEERING AND MAINTENACNE OF WAY ASSOCIATION (AREMA 2020) SPECIFICATIONS FOR PIPLINE CONVEYING FLAMMABLE AND NON-FLAMMABLE SUBSTANCES.
3) BLASTING NOT PERMITED

Proposed				
	Owner	Size	Fiber Present	Permit Name
1a	City of Boulder	1 - 2" HDPE SDR11	Vacant	BIL-67-NewBP1-C
1b	City of Boulder	1 - 2" HDPE SDR11	1 - 432ct FO	BIL-67-NewBP1-C
2a	Zayo	1 - 1.25" HDPE SDR11	Vacant	BIL-92-NewBP3-C
2b	Zayo	1 - 1.25" HDPE SDR11	Vacant	BIL-92-NewBP3-C





COLORADO LICENSED
DURAK EVRIM ERCAN
PROFESSIONAL ENGINEER

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OBSERVE ALL SAFETY PRECAUTIONS AND STANDARDS DURING CONSTRUCTION. OBSERVE ALL REQUIRED TRAFFIC CONTROL STANDARDS. OBSERVE ALL AREMA STANDARDS.
MAINTAIN A MINIMUM 15 FOOT CLEARANCE BELOW RAILROAD TRACKS AT CENTERLINE.
LOCATE ALL UNDERGROUND UTILITIES PRIOR TO INSTALLATION.

Legend

- H PROPOSED HANDHOLE
- ® PROPOSED RISER
- PROPOSED FIBER
- RAILROAD

N

CITY OF BOULDER

Valmont Rd and Butte Mill Rd

LAT: 40.030698
LONG: -105.2155069

ID NUMBER: 242120
MILE MARKER: N/A

BIL-67-NEWBP2-C
BIL-92-NEWBP4-C
PAGE 19 OF 21

PERMIT DRAWING FOR:
CITY OF BOULDER / ZAYO
RTD RAILROAD
VALMONT RD AND STAZIO
BOULDER, CO
FACILITIES ARE LOCATED IN
THE CITY OF BOULDER,
BOULDER COUNTY,
COLORADO

NOTES:

1) See profile, conduit and vault details on sheet 21.
2) See notes and standard details on sheets 4-15
3) Contractor must follow all RTD requirements outlined in the RTD notes on sheet 5

0 50 100 200 Feet

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LOCATE ALL UNDERGROUND UTILITIES PRIOR TO INSTALLATION.

Legend

- H PROPOSED HANDHOLE
- Ⓡ PROPOSED RISER
- PROPOSED FIBER
- RAILROAD

N

CITY OF BOULDER

Valmont Rd and 61st St

LAT: 40.0326117
LONG: -105.2113118

ID NUMBER: 242130
MILE MARKER: N/A

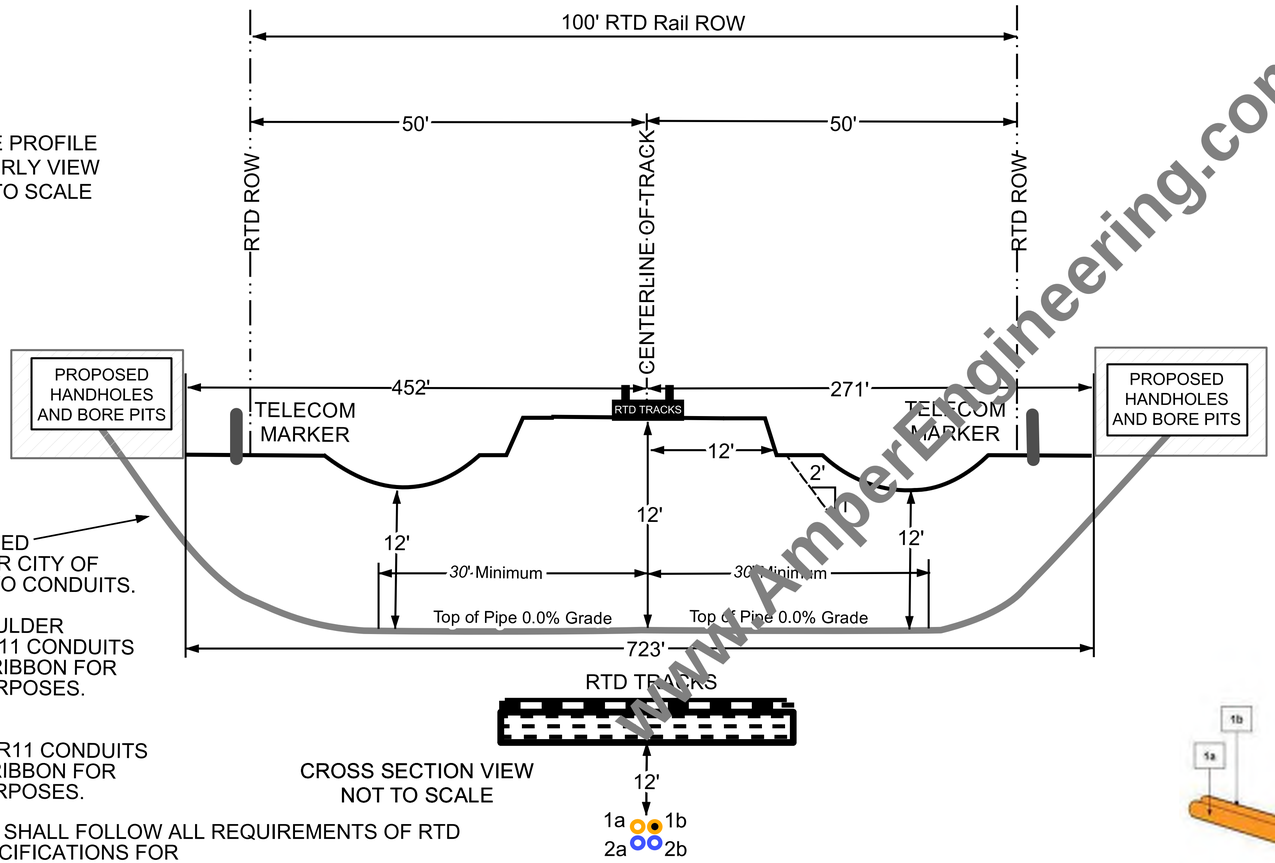
BIL-67-NEWBP3-C
BIL-92-NEWBP5-C

PERMIT DRAWING FOR:
CITY OF BOULDER / ZAYO
RTD RAILROAD
VALMONT RD AND STAZIO
BOULDER, CO
FACILITIES ARE LOCATED IN THE CITY OF BOULDER, BOULDER COUNTY, COLORADO

NOTES:

1) See construction plan on sheet 20.
2) See notes and standard details on sheets 4-15
3) Contractor must follow all RTD requirements outlined in the RTD notes on sheet 5

CABLE PROFILE
EASTERLY VIEW
NOT TO SCALE



PROPOSED
BORE PATH FOR CITY OF
BOULDER AND ZAYO CONDUITS.

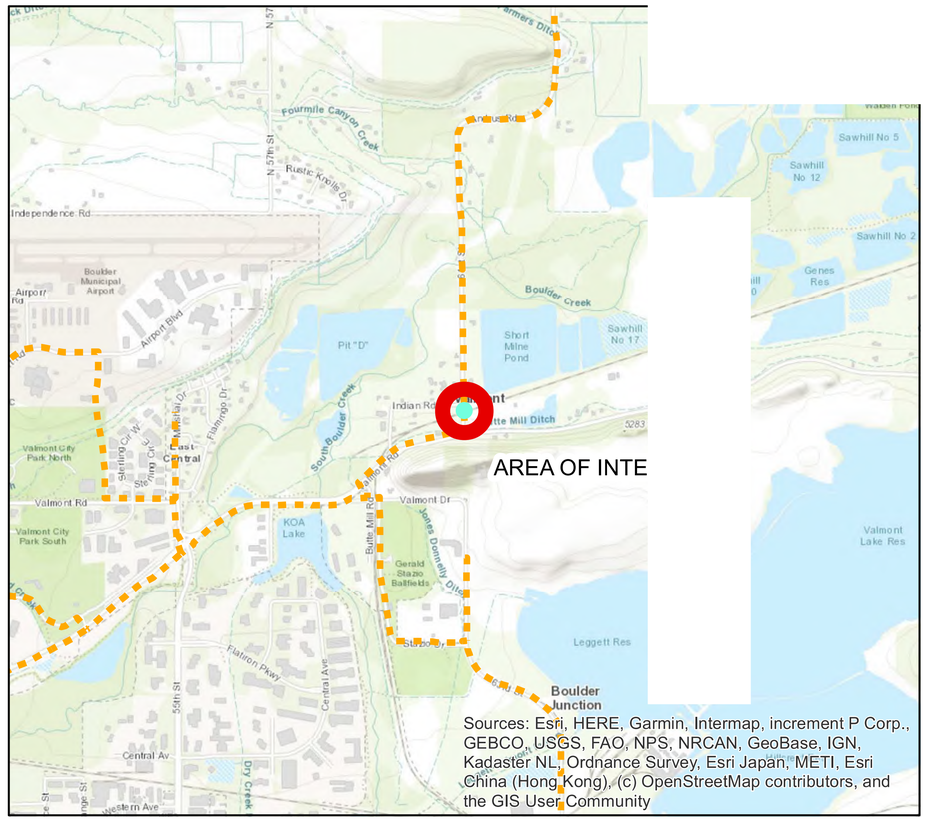
CITY OF BOULDER
TWO - 2"HDPE SDR11 CONDUITS
WITH METALLIC RIBBON FOR
LOCATING PURPOSES.

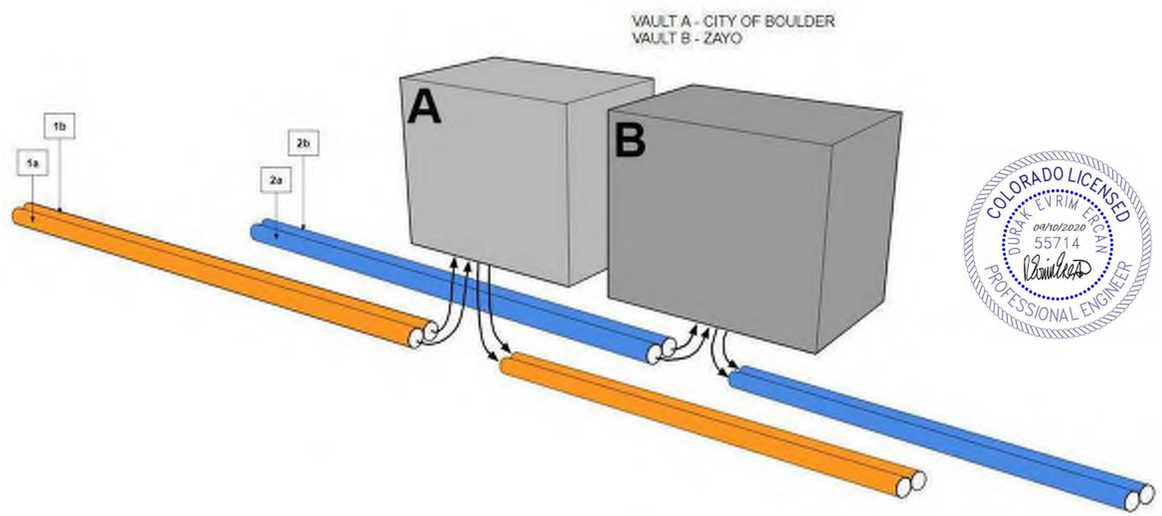
ZAYO
TWO - 1.25"HDPE SDR11 CONDUITS
WITH METALLIC RIBBON FOR
LOCATING PURPOSES.

CROSS SECTION VIEW
NOT TO SCALE

1) CONTRACTOR SHALL FOLLOW ALL REQUIREMENTS OF RTD GENERAL SPECIFICATIONS FOR SUB-GRADE AND ABOVE GRADE UTILITY CROSSINGS.
2) PIPELINE AND CROSSING TO BE INSTALLED AND MAINTANED IN ACCORDANCE WITH LAST APPROVED AMERICAN RAILWAY ENGINEERING AND MAINTENACNE OF WAY ASSOCIATION (AREMA 2020) SPECIFICATIONS FOR PIPLINE CONVEYING FLAMMABLE AND NON-FLAMMABLE SUBSTANCES.
3) BLASTING NOT PERMITED

Proposed				
	Owner	Size	Fiber Present	Permit Name
1a	City of Boulder	1 - 2" HDPE SDR11	Vacant	BIL-67-NewBP1-C
1b	City of Boulder	1 - 2" HDPE SDR11	1 - 432ct FO	BIL-67-NewBP1-C
2a	Zayo	1 - 1.25" HDPE SDR11	Vacant	BIL-92-NewBP3-C
2b	Zayo	1 - 1.25" HDPE SDR11	Vacant	BIL-92-NewBP3-C





COLORADO LICENSED
DURAK EVRIM ERDAL
04/10/2020
55714
PROFESSIONAL ENGINEER

Know what's below. Call before you dig.

OBSERVE ALL SAFETY PRECAUTIONS AND STANDARDS DURING CONSTRUCTION. OBSERVE ALL REQUIRED TRAFFIC CONTROL STANDARDS. OBSERVE ALL AREMA STANDARDS. MAINTAIN A MINIMUM 15 FOOT CLEARANCE BELOW RAILROAD TRACKS AT CENTERLINE. LOCATE ALL UNDERGROUND UTILITIES PRIOR TO INSTALLATION.

Legend

- H PROPOSED HANDHOLE
- Ⓡ PROPOSED RISER
- PROPOSED FIBER
- RAILROAD

N

CITY OF BOULDER

Valmont Rd and 61st St

LAT: 40.0326117
LONG: -105.2113118

ID NUMBER: 242130
MILE MARKER: N/A

BIL-67-NEWBP3-C
BIL-92-NEWBP5-C
PAGE 21 OF 21

PERMIT DRAWING FOR:
CITY OF BOULDER / ZAYO
RTD RAILROAD
VALMONT RD AND STAZIO
BOULDER, CO
FACILITIES ARE LOCATED IN
THE CITY OF BOULDER,
BOULDER COUNTY,
COLORADO