

CONSTRUCTION DOCUMENTS

GRADING & EROSION CONTROL PLAN

CBP, F2-LOT #21 - CRACKERJACK MUD JACKING, INC

7315 McCLAIN POINT, COLORADO SPRINGS, CO



EL PASO COUNTY

COUNTY PLAN REVIEW IS PROVIDED ONLY FOR GENERAL CONFORMANCE WITH COUNTY DESIGN CRITERIA. THE COUNTY IS NOT RESPONSIBLE FOR THE ACCURACY AND ADEQUACY OF THE DESIGN, DIMENSIONS, AND/OR ELEVATIONS WHICH SHALL BE CONFIRMED AT THE JOB SITE. THE COUNTY THROUGH THE APPROVAL OF THIS DOCUMENT ASSUMES NO RESPONSIBILITY FOR COMPLETENESS AND/OR ACCURACY OF THIS DOCUMENT.

FILED IN ACCORDANCE WITH THE REQUIREMENTS OF THE EL PASO COUNTY LAND DEVELOPMENT CODE, DRAINAGE CRITERIA MANUAL, VOLUMES 1 AND 2, AND ENGINEERING CRITERIA MANUAL AS AMENDED.

IN ACCORDANCE WITH ECM SECTION 1.12, THESE CONSTRUCTION DOCUMENTS WILL BE VALID FOR CONSTRUCTION FOR A PERIOD OF 2 YEARS FROM THE DATE SIGNED BY THE EL PASO COUNTY ENGINEER. IF CONSTRUCTION HAS NOT STARTED WITHIN THOSE 2 YEARS, THE PLANS WILL NEED TO BE RESUBMITTED FOR APPROVAL, INCLUDING PAYMENT OF REVIEW FEES AT THE PLANNING AND COMMUNITY DEVELOPMENT DIRECTORS DISCRETION.

 JENNIFER IRVINE, P.E.
 COUNTY ENGINEER / ECM ADMINISTRATOR

DATE _____

OWNER'S STATEMENT

THE OWNER WILL COMPLY WITH THE REQUIREMENTS OF THE GRADING AND EROSION CONTROL PLAN.

NAME, TITLE _____
 BUSINESS NAME _____
 ADDRESS _____
 DATE _____

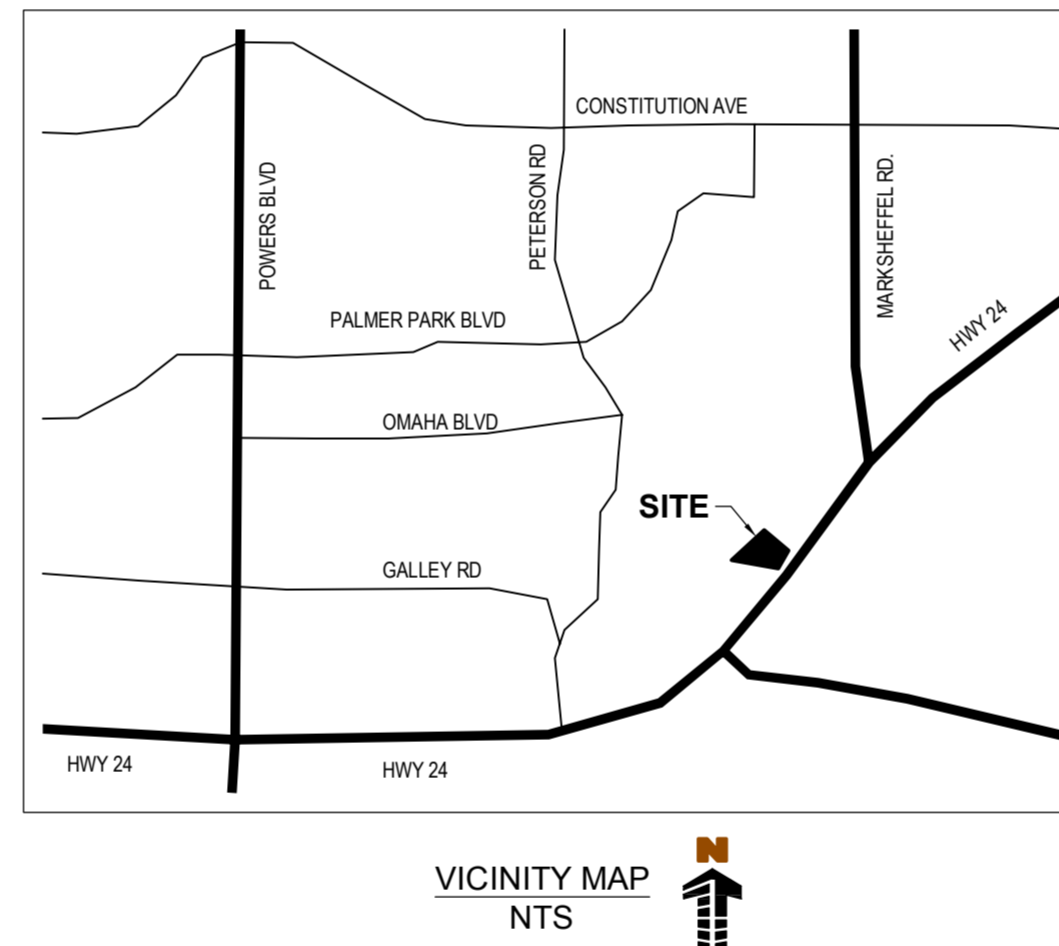
ENGINEER'S STATEMENT

THIS GRADING AND EROSION CONTROL PLAN WAS PREPARED UNDER MY DIRECTION AND SUPERVISION AND IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. SAID PLAN HAS BEEN PREPARED ACCORDING TO THE CRITERIA ESTABLISHED BY THE COUNTY FOR GRADING AND EROSION CONTROL PLANS. I ACCEPT RESPONSIBILITY FOR ANY LIABILITY CAUSED BY ANY NEGLIGENT ACTS, ERRORS OR OMISSIONS ON MY PART IN PREPARING THIS REPORT.

 TODD CARTWRIGHT, COLORADO P.E. NO. 33365

DATE _____

Unresolved:
Provide the actual
information.



LIST OF CONTACTS

EL PASO COUNTY PLANNING AND COMMUNITY DEVELOPMENT
 EL PASO COUNTY PCD
 2880 INTERNATIONAL CIRCLE, SUITE 110
 COLORADO SPRINGS, CO 80910
 TEL: (719) 520-6300
 CONTACT: _____
 EMAIL: _____

UTILITY REVIEW (ELECTRIC/GAS)
 COLORADO SPRINGS UTILITY
 1521 HANCOCK EXPRESSWAY
 COLORADO SPRINGS, CO 80903
 TEL: (719) 448-4800
 CONTACT: _____
 EMAIL: _____

APPLICANT/CONTRACTOR
 HAMMERS CONSTRUCTION, INC.
 1411 WOOLSEY HEIGHTS
 COLORADO SPRINGS, CO 80915
 TEL: (719) 570-1599
 CONTACT: YURY DYACHENKO
 EMAIL: YDYACHENKO@HAMMERSCONSTRUCTION.COM

ENGINEER
 GALLOWAY & COMPANY, INC.
 1755 TELSTAR DRIVE, SUITE 107
 COLORADO SPRINGS, COLORADO 80920
 TEL: (719) 900-7220
 CONTACT: TODD CARTWRIGHT, P.E.
 EMAIL: TODDCARTWRIGHT@GALLOWAYUS.COM

SURVEYOR
 GALLOWAY & COMPANY, INC.
 1755 TELSTAR DRIVE, SUITE 107
 COLORADO SPRINGS, COLORADO 80920
 TEL: (719) 900-7220
 CONTACT: LYLE BISSEGER
 EMAIL: LYLEBISSEGER@GALLOWAYUS.COM

CAUTION - NOTICE TO CONTRACTOR

- ALL UTILITY LOCATIONS SHOWN ARE BASED ON MAPS PROVIDED BY THE APPROPRIATE UTILITY COMPANY AND FIELD SURFACE EVIDENCE AT THE TIME OF SURVEY AND IS TO BE CONSIDERED AN APPROXIMATE LOCATION ONLY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE FIELD LOCATION OF ALL UTILITIES, PUBLIC OR PRIVATE, WHETHER SHOWN ON THE PLANS OR NOT, PRIOR TO CONSTRUCTION. REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO CONSTRUCTION.
- WHERE A PROPOSED UTILITY CROSSES AN EXISTING UTILITY, IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF SUCH EXISTING UTILITY, EITHER THROUGH POT-HOLING OR ALTERNATIVE METHOD. REPORT INFORMATION TO THE ENGINEER PRIOR TO CONSTRUCTION.



COPYRIGHT
 THESE PLANS ARE AN INSTRUMENT OF SERVICE AND ARE THE PROPERTY OF GALLOWAY, AND MAY NOT BE DUPLICATED, DISCLOSED, OR REPRODUCED WITHOUT THE WRITTEN CONSENT OF GALLOWAY. COPYRIGHTS AND INFRINGEMENTS WILL BE ENFORCED AND PROSECUTED.

CONSTRUCTION DOCUMENTS
 CRACKERJACK MUD JACKING INC.
 CBP, F2 - LOT #21
 7315 McCLAIN POINT
 COLORADO SPRINGS, CO

CIVIL SHEET INDEX	
SHEET NO.	DESCRIPTION
C0.0	GRADING COVER SHEET
C2.1	GRADING PLAN
C2.2	EROSION CONTROL PLAN
C2.3	EROSION CONTROL DETAILS
C2.4	EROSION CONTROL DETAILS
C2.5	RAIN GARDEN DETAILS

#	Date	Issue / Description	Init.
00	08/18/17	AGENCY SUBMITTAL	TAC
01	08/02/17	OWNER REVISIONS	TAC

Project No: HCl003.1
 Drawn By: RCG
 Checked By: TAC
 Date: AUGUST 2017

COVER SHEET

C0.0

H:\Hammers Construction Inc\CO, El Paso County - HCl000003.01 - Crackerjack\CADD\3_CDD\DWG\HC03_C0.0-Cover.dwg - Ryan Graham - 8/18/2017

GENERAL NOTES

1. CONTRACTOR TO VERIFY ALL UTILITY CONNECTIONS WITH POT HOLE LOCATION, SIZE, AND ELEVATION PRIOR TO CONSTRUCTION.

CHEROKEE METROPOLITAN DISTRICT

WATER AND SANITARY SEWER SYSTEM CONSTRUCTION NOTES

- 1. ALL MATERIALS AND WORKMANSHIP SHALL BE IN CONFORMANCE WITH CHEROKEE METROPOLITAN DISTRICT STANDARDS AND SPECIFICATIONS... 2. THE CONTRACTOR SHALL PROVIDE A TRAFFIC CONTROL PLAN IN ACCORDANCE WITH THE PROVISIONS OF THE APPLICABLE AGENCY HAVING JURISDICTION OVER THE ROADWAY WHICH MAY INCLUDE, BUT IS NOT LIMITED TO THE EL PASO COUNTY PUBLIC SERVICES DIVISION... 3. ALL STREET SURFACE RESTORATION SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE APPLICABLE AGENCY HAVING JURISDICTION OVER THE ROADWAY... 4. SHOP DRAWING SUBMITTALS SHALL BE MADE FOR ALL MATERIALS TO BE INCORPORATED INTO THIS PROJECT... 5. THE CONTRACTOR IS RESPONSIBLE TO INSURE THAT ALL WORK IS PERFORMED IN ACCORDANCE WITH APPLICABLE STANDARDS AND REGULATIONS AS SET FORTH BY THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA)... 6. THE CONTRACTOR IS TO UNDERTAKE HIS WORK IN ACCORDANCE WITH OSHA'S CONFINED SPACE ENTRY REQUIREMENTS... 7. THE SUBGRADE UNDERNEATH ALL STRUCTURES SHALL BE ADEQUATELY STABILIZED... 8. POSITIVE DRAINAGE SHALL BE PROVIDED AWAY FROM ALL STRUCTURES. FINAL GRADING IS SUBJECT TO REVIEW AND APPROVAL... 9. ALL WATER SYSTEM MAINS PIPE MATERIAL SHALL BE POLYVINYL CHLORIDE (PVC) CLASS 200 (OR-14) PER AWWA C-900 AND ASTM D241 SPECIFICATIONS... 10. ALL FITTINGS SHALL HAVE A MINIMUM PRESSURE RATING OF 250 PSI AND SHALL BE WRAPPED WITH A 3 MIL THICKNESS POLYETHYLENE MATERIAL PER AWWA STANDARD C105... 11. ALL WATER PIPES SHALL BE INSTALLED AT A MINIMUM DEPTH OF FIVE (5) FEET BELOW FINISHED GRADE... 12. ALL BENDS, TEE, FIRE HYDRANTS, BLOW-OFFS, AND PLUGS AT DEAD END MAINS SHALL BE INSTALLED WITH CONCRETE THROU-BLOCKS... 13. VALVE BOXES SHALL BE TYLER SLIP, TYPE 'C' CAST IRON VALVE BOX ASSEMBLY SERIES 6860 WITH NO. 160 OVAL BASE OR APPROVED EQUAL... 14. ALL WATER SYSTEM COMPONENTS SHALL BE FLUSHED AND CHLORINATED PER AWWA C601... 15. HYDROSTATIC TESTING: ALL WATER SYSTEM MAINS SHALL BE FIELD PRESSURE TESTED TO A MINIMUM OF 150 PSI OR 1 1/2 TIMES THE STATIC OPERATING PRESSURE... 16. ALL VALVES SHALL CONFORM TO OPEN LEFT CONVENTION PER CHEROKEE METROPOLITAN DISTRICT STANDARDS... 17. WHEN IT IS NECESSARY TO RAISE OR LOWER WATER MAINS AT OTHER UTILITY CROSSINGS THE CONTRACTOR SHALL INSURE A MINIMUM CLEARANCE OF 18" WHERE POSSIBLE BETWEEN THE OUTSIDE DIAMETERS OF PIPES... 18. WHILE CONSTRUCTING THE WATER AND WASTE WATER SYSTEM THE CONTRACTOR SHALL HAVE IN HIS POSSESSION AT LEAST ONE 'APPROVED FOR CONSTRUCTION' SET OF UPDATED PLANS AT ALL TIMES... 19. PRIOR TO TAPPING ANY EXISTING WATER MAIN THE CONTRACTOR SHALL SUBMIT AND RECEIVE APPROVAL FOR SAID TAP IN ACCORDANCE WITH THE CHEROKEE METROPOLITAN DISTRICT STANDARDS... 20. ALL NONMETALLIC PIPES SHALL HAVE A TRACER WIRE ATTACHED TO ITS TOP DURING CONSTRUCTION... 21. THE CONTRACTOR ASSUMES RESPONSIBILITY FOR THE PROTECTION OF ALL UTILITIES DURING THE WORK... 22. SANITARY SEWER PIPE SHALL CONFORM TO ASTM D3034 SDR35 PVC... 23. CONTRACTOR SHALL FIELD VERIFY LOCATION AND ELEVATION OF EXISTING INVERTS PRIOR TO INSTALLATION OF NEW SANITARY SEWER SYSTEM... 24. THE PIPELINE INSTALLATION SHALL GENERALLY BE UNDERTAKEN FROM THE DOWNHILL PORTION OF THE PROJECT PROCEEDING UPHILL... 25. ALL SANITARY SEWER MANHOLES, LIDS, BASES AND OTHER APPURTENANCES SHALL BE IN ACCORDANCE WITH (AWWA) COLORADO SPRINGS DETAILS STANDARD MANHOLE DETAIL '1'... 26. SANITARY SEWER SERVICE LINES SHALL BE LOCATED PER THE DETAIL ON THE UTILITY SERVICE PLAN, OR AT THE DIRECTION OF THE INSPECTOR... 27. FLAT TOP LIDS ON PRECAST CONCRETE MANHOLES ARE REQUIRED FOR ALL MANHOLES 5.0 FEET AND LESS IN DEPTH... 28. THE SANITARY SEWER PIPELINE SHALL BE INSTALLED IN STRAIGHT ALIGNMENTS BETWEEN MANHOLES... 29. THE CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE TO THE EXISTING WASTEWATER PIPELINES OR MANHOLES AS A RESULT OF THEIR CONSTRUCTION ACTIVITY... 30. ALL PIPELINES SHALL BE 'AS BUILT' SURVEYED AND 'AS BUILT' DRAWINGS SUBMITTED TO THE CHEROKEE METROPOLITAN DISTRICT FOR REVIEW AND ACCEPTANCE... 31. MANHOLE ENTRY PERMIT: THE CHEROKEE METROPOLITAN DISTRICT WILL AUTHORIZE THE CONTRACTOR TO ENTER DISTRICT OWNED MANHOLES... 32. OVER LOT GRADING AND STREET SUB GRADE MUST BE WITHIN ± ONE (1) FOOT PRIOR TO ANY UTILITY INSTALLATION... 33. TRACER WIRE IS TO BE INSTALLED WITH ALL SANITARY SEWER MAIN LINES AND SERVICES (FROM THE MAIN LINE TO THE BUILDING STRUCTURE) AS OUTLINED IN COMMENT #13... 34. MINIMUM DEPTH OF SANITARY SEWER IS 6 FEET OF COVER IF THIS MINIMUM CANNOT BE ACHIEVED DO TO SHALLOW SEWER STUB THEN THE FOLLOWING APPLIES: OTHER WISE THE SEWER SERVICE MUST HAVE 6 FEET OF COVER... 35. WATER SERVICE MUST BE OVER THE SEWER AT ALL TIMES... 36. ALL EXTERIOR SEWER CLEAN OUTS (CO) MUST HAVE A CAST IRON, TRAFFIC RATED COVER, OR EQUIVALENT WITH CONCRETE COLLAR... 37. SPECIFIC SIZE APPLICATION OF THE SAND/OIL AND OR GREASE TRAP TO BE DETERMINED BY CHEROKEE METRO DISTRICT... 38. UPON COMPLETION OF CONSTRUCTION AND PRIOR TO ACCEPTANCE BY THE DISTRICT, TWO (2) COPIES OF 'AS-CONSTRUCTED' PLANS AND TWO (2) SETS OF ELECTRONIC DATA FILES OF THE PLANS SHALL BE SUBMITTED TO THE DISTRICT FOR RECORD... 39. THE CONTRACTOR'S WARRANTY SHALL EXTEND FOR A TWO-YEAR PERIOD FROM THE DATE OF SUBSTANTIAL COMPLETION OF THE PROJECT.

CAUTION - NOTICE TO CONTRACTOR

- 1. ALL UTILITY LOCATIONS SHOWN ARE BASED ON MAPS PROVIDED BY THE APPROPRIATE UTILITY COMPANY AND FIELD SURFACE EVIDENCE AT THE TIME OF SURVEY AND IS TO BE CONSIDERED AN APPROXIMATE LOCATION ONLY... 2. WHERE A PROPOSED UTILITY CROSSES AN EXISTING UTILITY, IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF SUCH EXISTING UTILITY... 39. THE CONTRACTOR'S WARRANTY SHALL EXTEND FOR A TWO-YEAR PERIOD FROM THE DATE OF SUBSTANTIAL COMPLETION OF THE PROJECT.



GENERAL NOTES FOR PRELIMINARY UTILITY PLANS

PROPERTY OWNER(S) ACKNOWLEDGE AND AGREE TO THE FOLLOWING UPON APPROVAL OF PRELIMINARY UTILITY PLAN:

- 1. COLORADO SPRINGS UTILITIES (SPRINGS UTILITIES) SHALL MAKE THE FINAL DETERMINATION OF THE LOCATION OF ALL WATER, ELECTRIC AND GAS FACILITIES... 2. PROPERTY OWNER(S) (OWNER) ACKNOWLEDGES THAT THE CONNECTION AND/OR EXTENSION OF UTILITY SERVICES TO THE PROPERTY IDENTIFIED IN THIS PRELIMINARY UTILITY PLAN... 3. OWNER ACKNOWLEDGES RESPONSIBILITY FOR THE COSTS OF EXTENSIONS OR UTILITY SYSTEM IMPROVEMENTS THAT SPRINGS UTILITIES DETERMINES NECESSARY TO PROVIDE UTILITY SERVICES TO THE PROPERTY... 4. SPRINGS UTILITIES UTILITY SERVICES ARE AVAILABLE ON A 'FIRST-COME, FIRST-SERVED' BASIS... 5. THE RELOCATION OR ALTERATION OF ANY EXISTING UTILITY FACILITIES WITHIN THE PROPERTY WILL BE AT THE OWNER'S SOLE COST AND EXPENSE... 6. OWNER SHALL DEDICATE BY DEED AND/OR CONVEY BY RECORDED DOCUMENT... 7. OWNER MUST CONTACT SPRINGS UTILITIES FIELD ENGINEERING TO DETERMINE THE LOCATION OF ALL NATURAL GAS AND ELECTRIC METERS AND TRANSFORMERS... 8. IT SHALL NOT BE PERMISSIBLE FOR ANY PERSON TO MODIFY THE GRADE OF THE EARTH WITHIN ANY SPRINGS UTILITIES EASEMENT OR RIGHTS OF WAY WITHOUT THE WRITTEN APPROVAL OF SPRINGS UTILITIES... 9. SPRINGS UTILITIES APPROVAL OF THIS PRELIMINARY UTILITY PLAN SHALL NOT BE CONSTRUED AS A LIMITATION UPON THE AUTHORITY OF SPRINGS UTILITIES TO APPLY ITS STANDARDS... 10. SPRINGS UTILITIES APPROVAL OF THIS PRELIMINARY UTILITY PLAN SHALL NOT BE CONSTRUED AS A LIMITATION UPON THE AUTHORITY OF THE CITY OF COLORADO SPRINGS OR SPRINGS UTILITIES.

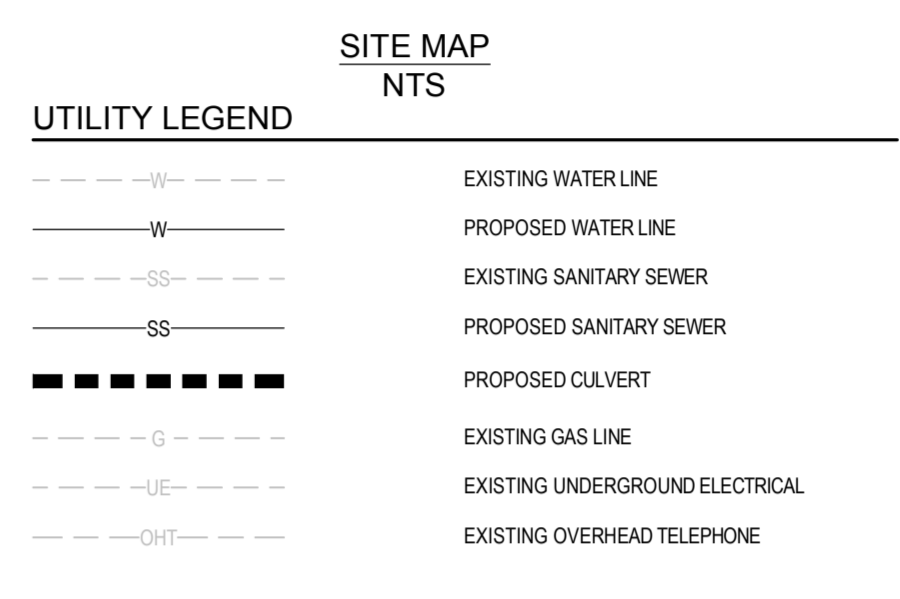
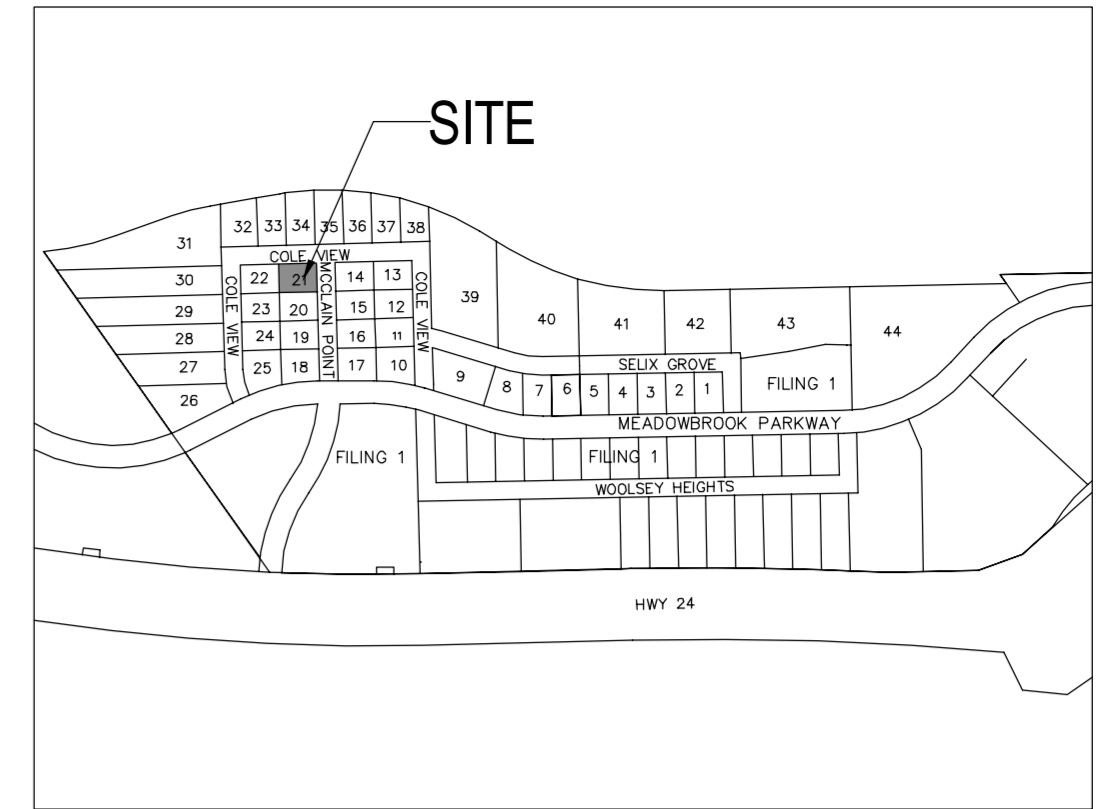
CIMARRON HILLS FIRE DEPARTMENT. ACCORDING TO THE MODELED CALCULATIONS REVIEWED BY THE GOVERNING WATER DISTRICT AND/OR COLORADO REGISTERED CIVIL ENGINEER/DESIGNER... FIRE DEPARTMENT SIGNATURE: DATE:

DESIGN PROFESSIONAL STATEMENT. THESE WATER/WASTEWATER PLANS WERE PREPARED UNDER MY DIRECT SUPERVISION IN ACCORDANCE WITH COLORADO SPRINGS UTILITIES CRITERIA... TODD CARTWRIGHT, COLORADO P.E. NO. 33365. DATE:

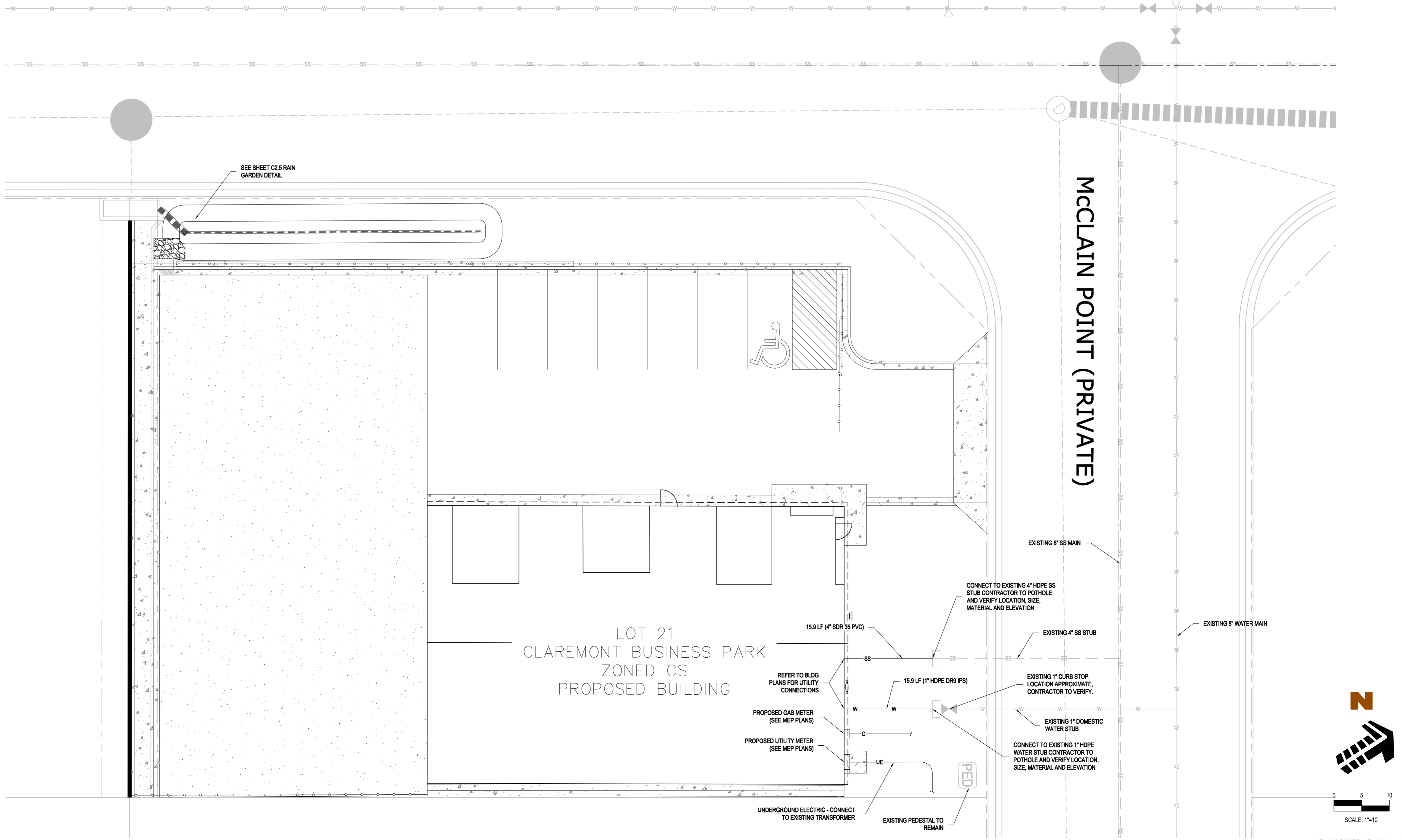
PRIVATE WATER MAIN EXTENSIONS. THE UNDERSIGNED OWNER/DEVELOPER AGREES THAT THE INSTALLATION OF THESE PROPOSED WATER FACILITIES WILL BE MADE IN ACCORDANCE WITH THE DISTRICTS SPECIFICATIONS... SIGNED: DATE: DBA: HAMMERS CONSTRUCTION ADDRESS: 1411 WOOLSEY HEIGHTS, COLORADO SPRINGS, CO 80915

WATER INSTALLATION CORROSION CONTROL REQUIREMENTS. REQUIRED, DESCRIBES AS FOLLOWS: PROVIDE CATHODIC PROTECTION & WRAP ALL METAL JOINTS, VALVES, PIPES AND HYDRANTS. WATER WASTEWATER PLAN APPROVAL. (CHEROKEE METROPOLITAN DISTRICT) DATE:

BUILDING DATA TABLE. Table with columns: BLDG., BLDG. TYPE, SQ.FT., FIRE WALL, SPRINKLER, FIRE FLOW REQ., MIN. # HYDRANTS, AVERAGE SPACING, MAX HOSE LAY LENGHT. Row 1: CRACKERJACK, 2B, 3,834, NO, NO, 1,500, 1, 500', 250'



COLE VIEW (PRIVATE ROAD)



Galloway Planning, Architecture, Engineering. 1755 Telstar Drive, Suite 107 Colorado Springs, Co 80920 719.900.7220 O www.gallowayUS.com

HAMMERS CONSTRUCTION QUALITY COMMERCIAL CONSTRUCTION SINCE 1983

COPYRIGHT THESE PLANS ARE AN INSTRUMENT OF SERVICE AND ARE THE PROPERTY OF GALLOWAY, AND MAY NOT BE DUPLICATED, DISCLOSED, OR REPRODUCED WITHOUT THE WRITTEN CONSENT OF GALLOWAY.

CONSTRUCTION DOCUMENTS CRACKERJACK MUD JACKING INC. CBP, F2 - LOT #21 7315 McCLAIN POINT COLORADO SPRINGS, CO

Revision table with columns: #, Date, Issue / Description, Init. Row 1: 00, 08/18/17, AGENCY SUBMITTAL, TAC. Row 2: 01, 08/02/17, OWNER REVISIONS, TAC.

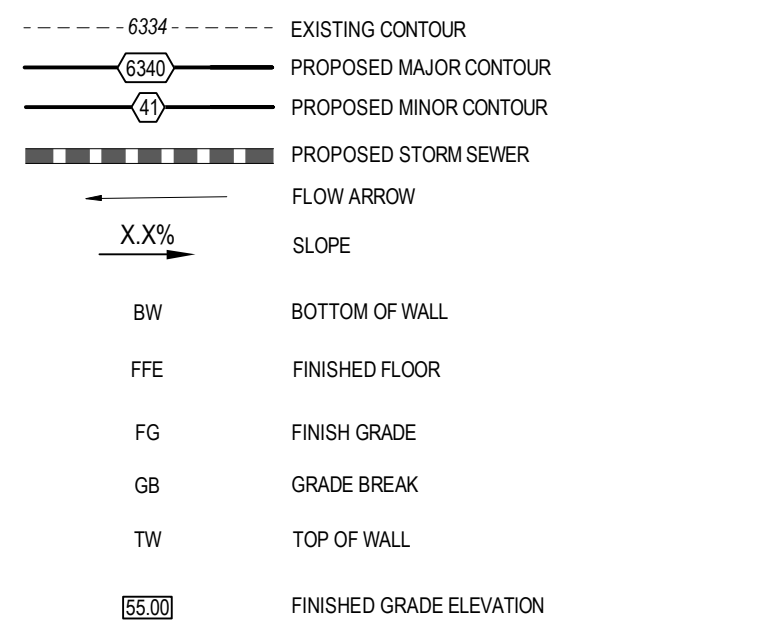
Project No: HCl003.1 Drawn By: RCG Checked By: TAC Date: AUGUST 2017

UTILITY SERVICE PLAN

C1.1

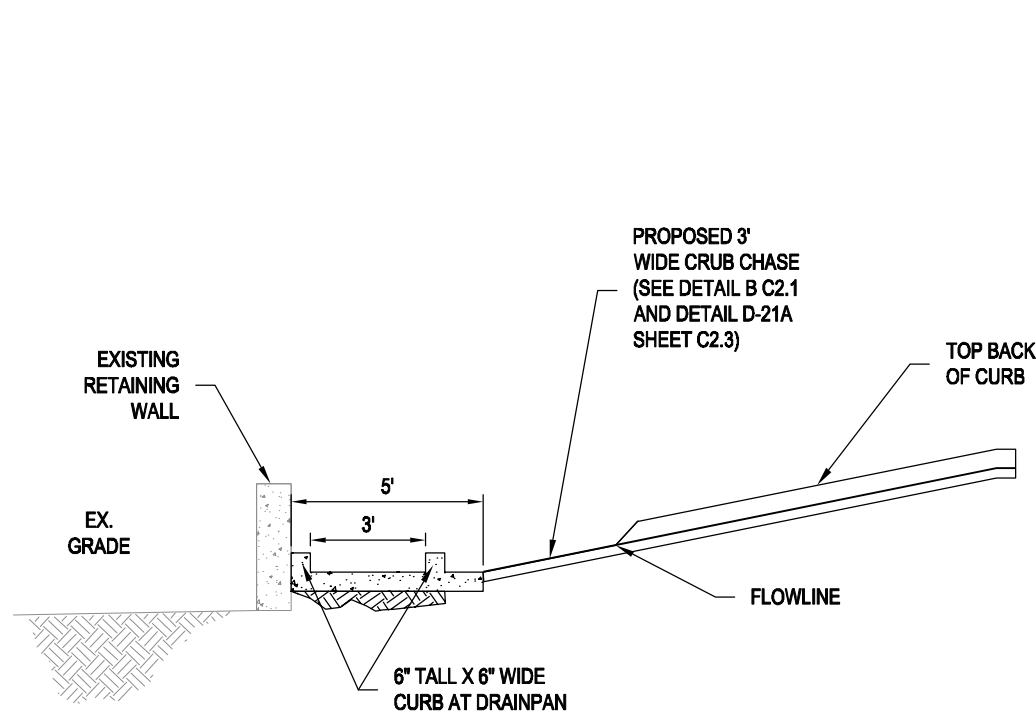
H:\Hammers Construction Inc\CO, El Paso County - HCl000003.01 - Crackerjack\CAD\DWG\HCl003_C1.1_USP.dwg - Ryan Graham - 8/18/2017

GRADING LEGEND

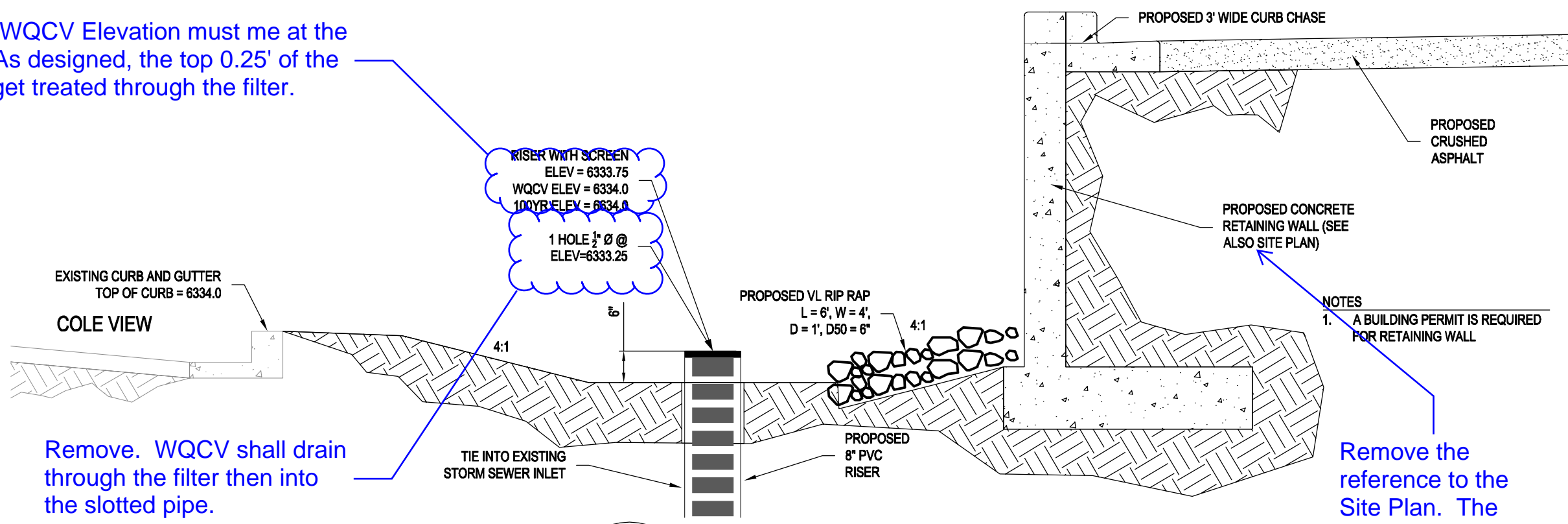


STANDARD GRADING NOTES (EL PASO COUNTY):

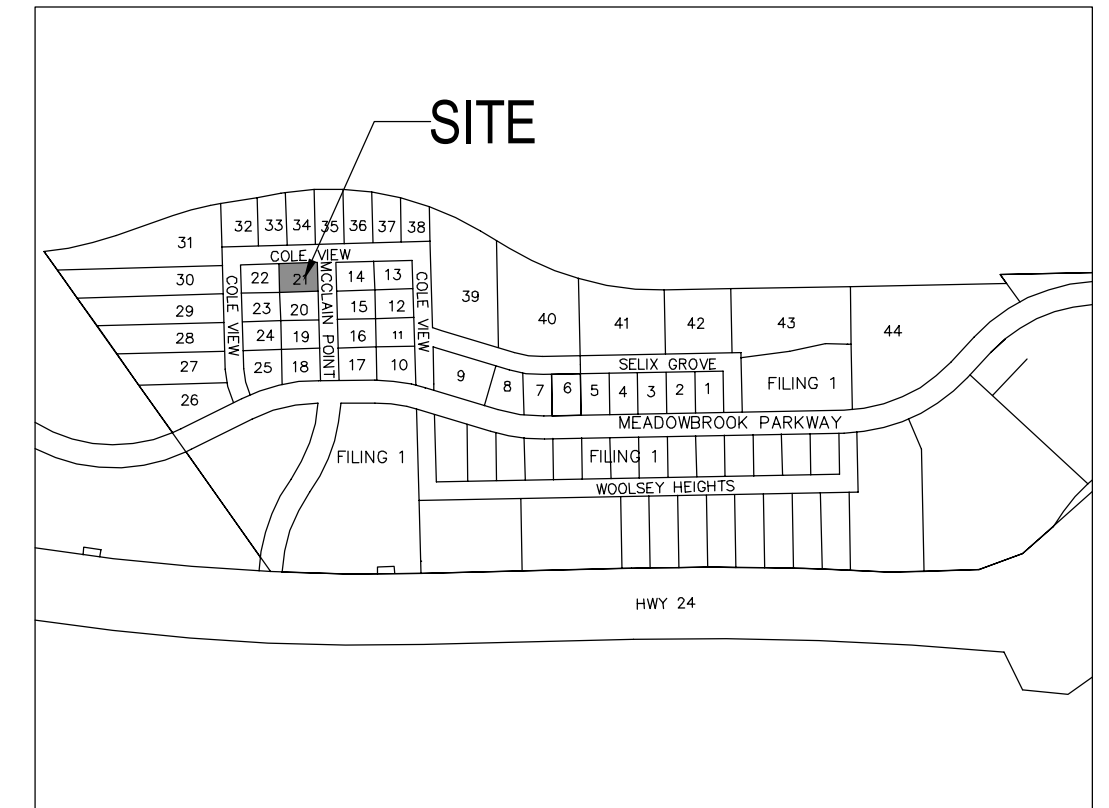
- CONSTRUCTION MAY NOT COMMENCE UNTIL A CONSTRUCTION PERMIT IS OBTAINED FROM PLANNING AND COMMUNITY DEVELOPMENT AND A PRECONSTRUCTION CONFERENCE IS HELD WITH PLANNING AND COMMUNITY DEVELOPMENT INSPECTORS.
- STORMWATER DISCHARGES FROM CONSTRUCTION SITES SHALL NOT CAUSE OR THREATEN TO CAUSE POLLUTION, CONTAMINATION, OR DEGRADATION OF STATE WATERS. ALL WORK AND EARTH DISTURBANCE SHALL BE DONE IN A MANNER THAT MINIMIZES POLLUTION OF ANY ON-SITE OR OFF-SITE WATERS, INCLUDING WETLANDS.
- NOTWITHSTANDING ANYTHING DEPICTED IN THESE PLANS IN WORDS OR GRAPHIC REPRESENTATION, ALL DESIGN AND CONSTRUCTION RELATED TO ROADS, STORM DRAINAGE AND EROSION CONTROL SHALL CONFORM TO THE STANDARDS AND REQUIREMENTS OF THE MOST RECENT VERSION OF THE RELEVANT ADOPTED EL PASO COUNTY STANDARDS, INCLUDING THE LAND DEVELOPMENT CODE, THE ENGINEERING CRITERIA MANUAL, THE DRAINAGE CRITERIA MANUAL, AND THE DRAINAGE CRITERIA MANUAL VOLUME 2. ANY DEVIATIONS TO REGULATIONS AND STANDARDS MUST BE REQUESTED, AND APPROVED, IN WRITING.
- A SEPARATE STORMWATER MANAGEMENT PLAN (SWMP) FOR THIS PROJECT SHALL BE COMPLETED AND AN EROSION AND STORMWATER QUALITY CONTROL PERMIT (ESQCP) ISSUED PRIOR TO COMMENCING CONSTRUCTION. DURING CONSTRUCTION THE SWMP IS THE RESPONSIBILITY OF THE DESIGNATED STORMWATER MANAGER, SHALL BE LOCATED ON SITE AT ALL TIMES AND SHALL BE KEPT UP TO DATE WITH WORK PROGRESS AND CHANGES IN THE FIELD.
- ONCE THE ESQCP HAS BEEN ISSUED, THE CONTRACTOR MAY INSTALL THE INITIAL STAGE EROSION AND SEDIMENT CONTROL BMPS AS INDICATED ON THE G.C. A PRECONSTRUCTION MEETING BETWEEN THE CONTRACTOR, ENGINEER, AND EL PASO COUNTY WILL BE HELD PRIOR TO ANY CONSTRUCTION. IT IS THE RESPONSIBILITY OF THE APPLICANT TO COORDINATE THE MEETING TIME AND PLACE WITH COUNTY OSD INSPECTION STAFF.
- SOIL EROSION CONTROL MEASURES FOR ALL SLOPES, CHANNELS, DITCHES, OR ANY DISTURBED LAND AREA SHALL BE COMPLETED WITHIN 21 CALENDAR DAYS AFTER FINAL GRADING, OR FINAL EARTH DISTURBANCE, HAS BEEN COMPLETED. DISTURBED AREAS AND STOCKPILES WHICH ARE NOT AT FINAL GRADE BUT WILL REMAIN DOMINANT FOR LONGER THAN 30 DAYS SHALL ALSO BE MULCHED WITHIN 21 DAYS AFTER INTERIM GRADING. AN AREA THAT IS GOING TO REMAIN IN AN INTERIM STATE FOR MORE THAN 60 DAYS SHALL ALSO BE SEED. ALL TEMPORARY SOIL EROSION CONTROL MEASURES AND BMPS SHALL BE MAINTAINED UNTIL PERMANENT SOIL EROSION CONTROL MEASURES ARE IMPLEMENTED AND ESTABLISHED.
- TEMPORARY SOIL EROSION CONTROL FACILITIES SHALL BE REMOVED AND EARTH DISTURBANCE AREAS GRADED AND STABILIZED WITH PERMANENT SOIL EROSION CONTROL MEASURES PURSUANT TO STANDARDS AND SPECIFICATION PRESCRIBED IN THE DCM VOLUME II AND THE ENGINEERING CRITERIA MANUAL (ECM) APPENDIX I.
- ALL PERSONS ENGAGED IN EARTH DISTURBANCE SHALL IMPLEMENT AND MAINTAIN ACCEPTABLE SOIL EROSION AND SEDIMENT CONTROL MEASURES INCLUDING BMPS IN CONFORMANCE WITH THE EROSION CONTROL TECHNICAL STANDARDS OF THE DRAINAGE CRITERIA MANUAL (DCM) VOLUME II AND IN ACCORDANCE WITH THE STORMWATER MANAGEMENT PLAN (SWMP).
- ALL TEMPORARY EROSION CONTROL FACILITIES INCLUDING BMPS AND ALL PERMANENT FACILITIES INTENDED TO CONTROL EROSION OF ANY EARTH DISTURBANCE OPERATIONS, SHALL BE INSTALLED AS DETERMINED BY THE APPROVED PLANS, THESWMP AND THE DCM VOLUME II AND MAINTAINED THROUGHOUT THE DURATION OF THE EARTH DISTURBANCE OPERATION. ANY EARTH DISTURBANCE SHALL BE CONDUCTED IN SUCH A MANNER SO AS TO EFFECTIVELY REDUCE ACCELERATED SOIL EROSION AND RESULTING SEDIMENTATION. ALL DISTURBANCES SHALL BE DESIGNED, CONSTRUCTED, AND COMPLETED SO THAT THE EXPOSED AREA OF ANY DISTURBED LAND SHALL BE LIMITED TO THE SHORTEST PRACTICAL PERIOD OF TIME.
- ANY TEMPORARY OR PERMANENT FACILITY DESIGNED AND CONSTRUCTED FOR THE CONVEYANCE OF STORMWATER, THROUGH, OR FROM THE EARTH DISTURBANCE AREA SHALL BE DESIGNED TO LIMIT THE DISCHARGE TO A NON-EROSIVE VELOCITY.
- CONCRETE WASH WATER SHALL BE CONTAINED AND DISPOSED OF IN ACCORDANCE WITH THE SWMP. NO WASH WATER SHALL BE DISCHARGED TO OR ALLOWED TO RUN OFF TO STATE WATERS, INCLUDING ANY SURFACE OR SUBSURFACE STORM DRAINAGE SYSTEM OR FACILITIES.
- EROSION CONTROL BLANKETING IS TO BE USED ON SLOPES STEEPER THAN 3:1.
- BUILDING, CONSTRUCTION, EXCAVATION, OR OTHER WASTE MATERIALS SHALL NOT BE TEMPORARILY PLACED OR STORED IN THE STREET, ALLEY, OR OTHER PUBLIC WAY, UNLESS IN ACCORDANCE WITH AN APPROVED TRAFFIC CONTROL PLAN. BMP'S MAY BE REQUIRED BY EL PASO COUNTY ENGINEERING IF DEEMED NECESSARY, BASED ON SPECIFIC CONDITIONS AND CIRCUMSTANCES.
- VEHICLE TRACKING OF SOILS AND CONSTRUCTION DEBRIS OFF-SITE SHALL BE MINIMIZED. MATERIALS TRACKED OFF-SITE SHALL BE CLEANED UP AND PROPERLY DISPOSED OF IMMEDIATELY.
- CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL WASTES FROM THE CONSTRUCTION SITE FOR DISPOSAL IN ACCORDANCE WITH LOCAL AND STATE REGULATORY REQUIREMENTS. NO CONSTRUCTION DEBRIS, TREE SLASH, BUILDING MATERIAL WASTES OR UNUSED BUILDING MATERIALS SHALL BE BURIED, DUMPED, OR DISCHARGED AT THE SITE.
- THE OWNER, SITE DEVELOPER, CONTRACTOR, AND/OR THEIR AUTHORIZED AGENTS SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL CONSTRUCTION DEBRIS, DIRT, TRASH, ROCK, SEDIMENT, AND SAND THAT MAY ACCUMULATE IN THE STORM SEWER OR OTHER DRAINAGE CONVEYANCE SYSTEM AND STORMWATER APURTENANCES AS A RESULT OF SITE DEVELOPMENT.
- THE QUANTITY OF MATERIALS STORED ON THE PROJECT SITE SHALL BE LIMITED, AS MUCH AS PRACTICAL, TO THAT QUANTITY REQUIRED TO PERFORM THE WORK IN AN ORDERLY MANNER. ALL MATERIALS STORED ON-SITE SHALL BE STORED IN A NEAT, ORDERLY MANNER, IN THEIR ORIGINAL CONTAINERS, WITH ORIGINAL MANUFACTURER'S LABELS.
- NO CHEMICALS ARE TO BE USED BY THE CONTRACTOR, WHICH HAVE THE POTENTIAL TO BE RELEASED IN STORMWATER UNLESS PERMISSION FOR THE USE OF A SPECIFIC CHEMICAL IS GRANTED IN WRITING BY THE ECOM ADMINISTRATOR. IN GRANTING THE USE OF SUCH CHEMICALS, SPECIAL CONDITIONS AND MONITORING MAY BE REQUIRED.
- 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 STATE WATERS, INCLUDING ANY SURFACE OR SUBSURFACE STORM DRAINAGE SYSTEM OR FACILITIES.
- NO PERSON SHALL CAUSE THE IMPEDIMENT OF STORMWATER FLOW IN THE FLOW LINE OF THE CURB AND GUTTER OR IN THE DITCHLINE.
- INDIVIDUALS SHALL COMPLY WITH THE "COLORADO WATER QUALITY CONTROL ACT" (TITLE 25, ARTICLE 8, CRS), AND THE "CLEAN WATER ACT" (33 USC 1324). IN ADDITION TO THE REQUIREMENTS INCLUDED IN THE DCM VOLUME II AND THE ECM APPENDIX I, ALL APPROPRIATE PERMITS MUST BE OBTAINED BY THE CONTRACTOR PRIOR TO CONSTRUCTION (NPDES, FLOODPLAIN, 404, FUGITIVE DUST, ETC.). IN THE EVENT OF CONFLICTS BETWEEN THESE REQUIREMENTS AND LAWS, RULES, OR REGULATIONS OF OTHER FEDERAL, STATE, OR COUNTY AGENCIES, THE MORE RESTRICTIVE LAWS, RULES, OR REGULATIONS SHALL APPLY.
- ALL CONSTRUCTION TRAFFIC MUST ENTER/EXIT THE SITE AT APPROVED CONSTRUCTION ACCESS POINTS.
- PRIOR TO ACTUAL CONSTRUCTION THE PERMITEE SHALL VERIFY THE LOCATION OF EXISTING UTILITIES.
- A WATER SOURCE SHALL BE AVAILABLE ON SITE DURING EARTHWORK OPERATIONS AND UTILIZED AS REQUIRED TO MINIMIZE DUST FROM EARTHWORK EQUIPMENT AND WIND.
- THE SOILS REPORT FOR THIS SITE HAS BEEN PREPARED BY TERRACON AND SHALL BE CONSIDERED A PART OF THESE PLANS.
- AT LEAST TEN DAYS PRIOR TO THE ANTICIPATED START OF CONSTRUCTION, FOR PROJECTS THAT WILL DISTURB 1 ACRE OR MORE, THE OWNER OR OPERATOR OF CONSTRUCTION ACTIVITY SHALL SUBMIT A PERMIT APPLICATION FOR STORMWATER DISCHARGE TO THE COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT, WATER QUALITY DIVISION. THE APPLICATION CONTAINS CERTIFICATION OF COMPLETION OF A STORMWATER MANAGEMENT PLAN (SWMP), OF WHICH THIS GRADING AND EROSION CONTROL PLAN MAY BE A PART. FOR INFORMATION OR APPLICATION MATERIALS CONTACT:
COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT
WATER QUALITY CONTROL DIVISION
WOOD - PERMITS
4300 CHERRY CREEK DRIVE SOUTH
DENVER, CO 80246-1530
ATTN: PERMITS UNIT



Riser screen and WQCV Elevation must be at the same elevation. As designed, the top 0.25' of the WQCV does not get treated through the filter.

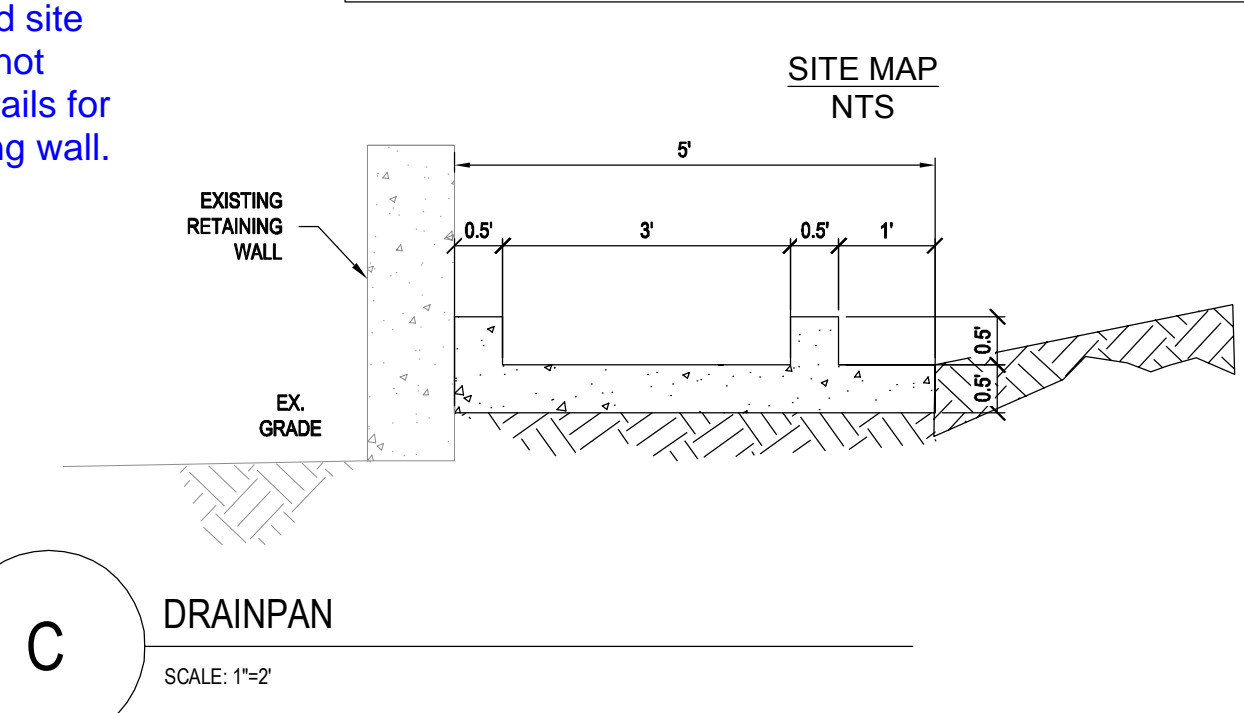


Remove the reference to the Site Plan. The resubmitted site plan does not include details for the retaining wall.



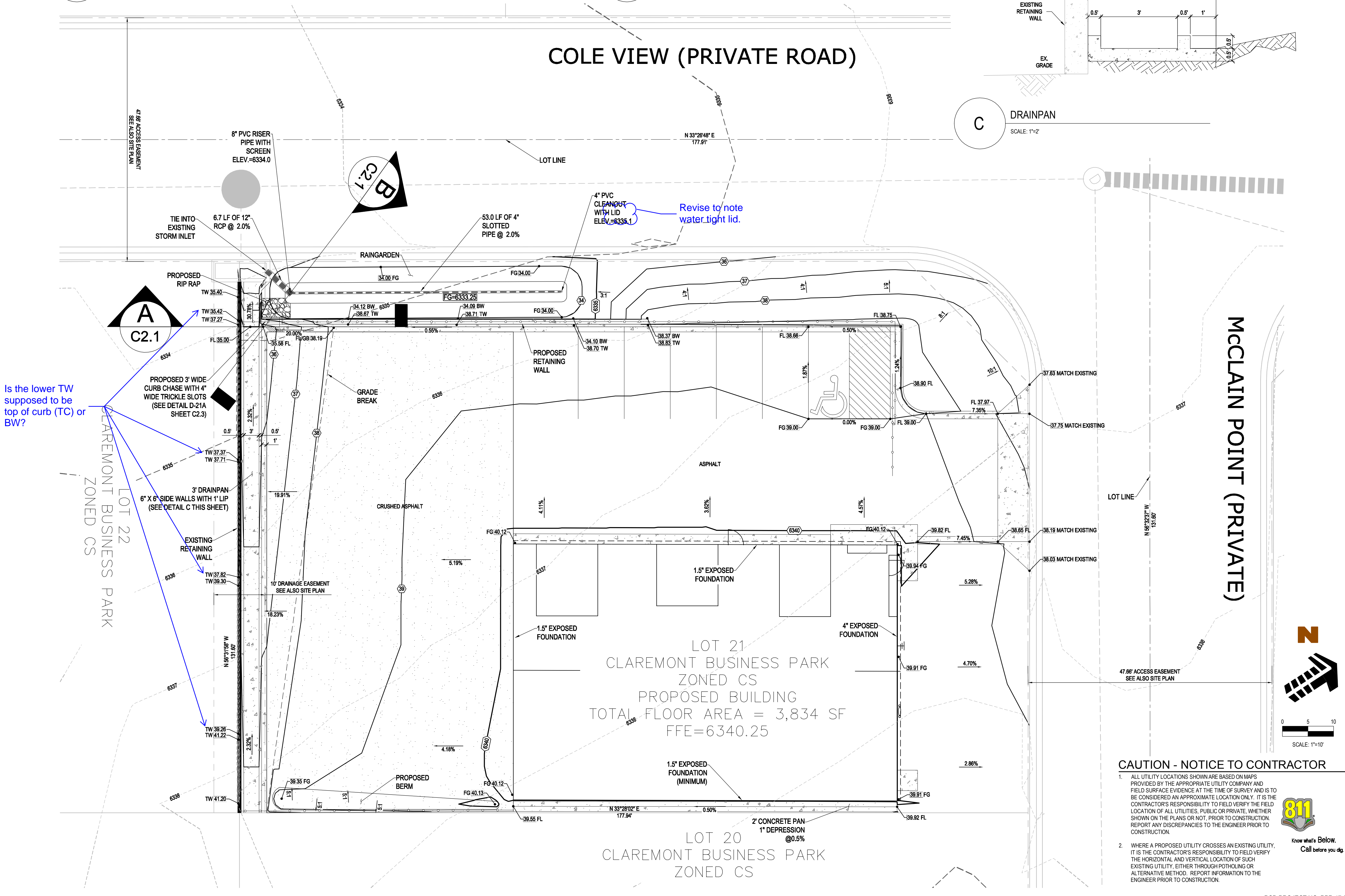
A DRAINPAN AT EXISTING RETAINING WALL
SCALE: 1"=5'

B RAIN GARDEN RISER PIPE AND RETAINING WALL
SCALE: 1"=2'



C DRAINPAN
SCALE: 1"=2'

COLE VIEW (PRIVATE ROAD)



Is the lower TW supposed to be top of curb (TC) or BW?

Revise to note water tight lid.

COPYRIGHT
THESE PLANS ARE AN INSTRUMENT OF SERVICE AND ARE THE PROPERTY OF GALLOWAY, AND MAY NOT BE DUPLICATED, DISCLOSED, OR REPRODUCED WITHOUT THE WRITTEN CONSENT OF GALLOWAY. COPYRIGHTS AND INFRINGEMENTS WILL BE ENFORCED AND PROSECUTED.

CONSTRUCTION DOCUMENTS
CRACKERJACK MUD JACKING INC.
CBP, F2 - LOT #21
7315 McCLAIN POINT
COLORADO SPRINGS, CO

#	Date	Issue / Description	Int.
00	08/18/17	AGENCY SUBMITTAL	TAC
01	08/02/17	OWNER REVISIONS	TAC

Project No: HCI003.1
Drawn By: RCG
Checked By: TAC
Date: AUGUST 2017

CAUTION - NOTICE TO CONTRACTOR

- ALL UTILITY LOCATIONS SHOWN ARE BASED ON MAPS PROVIDED BY THE APPROPRIATE UTILITY COMPANY AND FIELD SURFACE EVIDENCE AT THE TIME OF SURVEY AND IS TO BE CONSIDERED AN APPROXIMATE LOCATION ONLY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE FIELD LOCATION OF ALL UTILITIES, PUBLIC OR PRIVATE, WHETHER SHOWN ON THE PLANS OR NOT, PRIOR TO CONSTRUCTION. REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO CONSTRUCTION.
- WHERE A PROPOSED UTILITY CROSSES AN EXISTING UTILITY, IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF SUCH EXISTING UTILITY, EITHER THROUGH POHOLING OR ALTERNATIVE METHOD. REPORT INFORMATION TO THE ENGINEER PRIOR TO CONSTRUCTION.



GRADING PLAN

C2.1

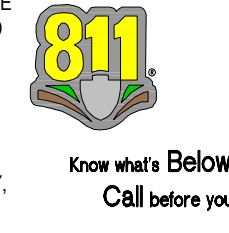
H:\Hammers Construction Inc\CO, El Paso County - HCI000003.01 - Crackerjack\CADD\3.CDD\WG\HC03_C2.2-EC.dwg - Todd Cartwright - 8/28/2017

EROSION CONTROL LEGEND

- 6352 --- EXISTING CONTOUR
- 6355 --- PROPOSED MAJOR CONTOUR
- - - - - PROPOSED MINOR CONTOUR
- -- -- -- PROPOSED STORM SEWER
- -- -- -- FLOW ARROW
- CWA CONCRETE WASHOUT
- IP INLET PROTECTION PER USDCM
- RS ROCK SOCK
- SF SILT FENCE
- SP SITE POSTING (CONTACTS AND PERMITS)
- VTC CONSTRUCTION VEHICLE ENTRY

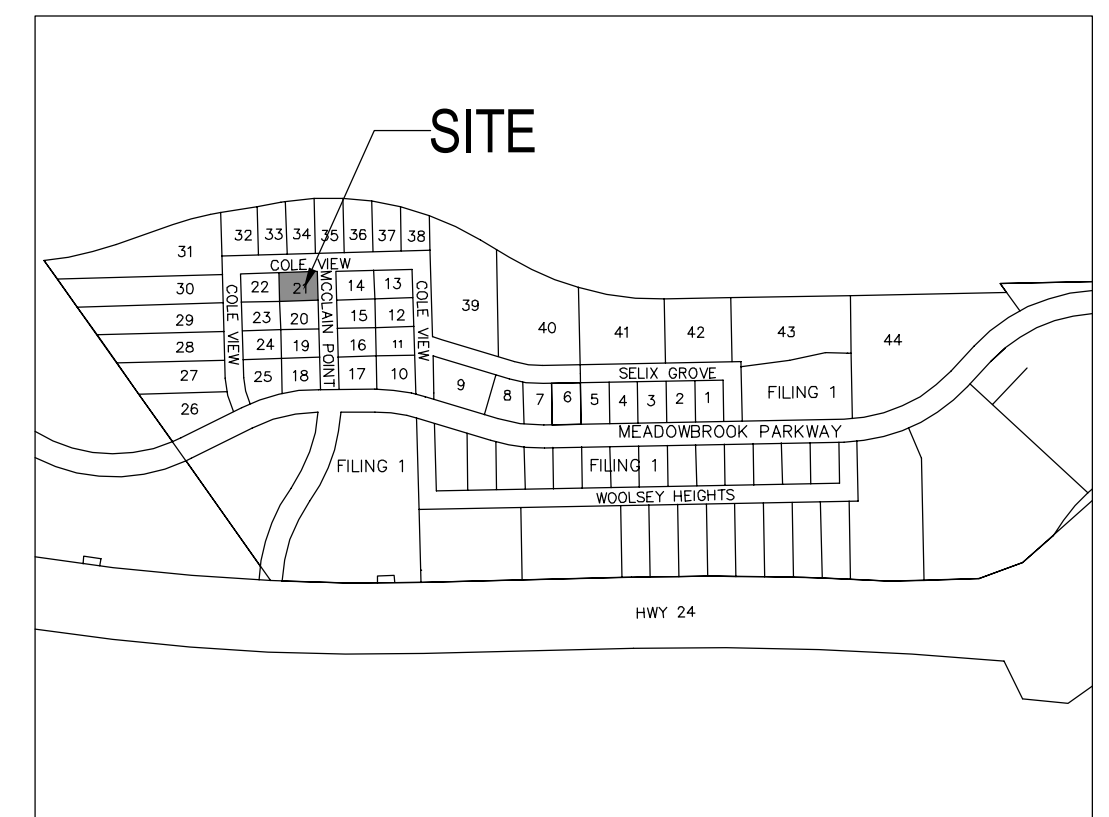
CAUTION - NOTICE TO CONTRACTOR

1. ALL UTILITY LOCATIONS SHOWN ARE BASED ON MAPS PROVIDED BY THE APPROPRIATE UTILITY COMPANY AND FIELD SURFACE EVIDENCE AT THE TIME OF SURVEY AND IS TO BE CONSIDERED AN APPROXIMATE LOCATION ONLY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE FIELD LOCATION OF ALL UTILITIES, PUBLIC OR PRIVATE, WHETHER SHOWN ON THE PLANS OR NOT, PRIOR TO CONSTRUCTION. REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO CONSTRUCTION.
2. WHERE A PROPOSED UTILITY CROSSES AN EXISTING UTILITY, IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF SUCH EXISTING UTILITY, EITHER THROUGH POT-HOLING OR ALTERNATIVE METHOD. REPORT INFORMATION TO THE ENGINEER PRIOR TO CONSTRUCTION.



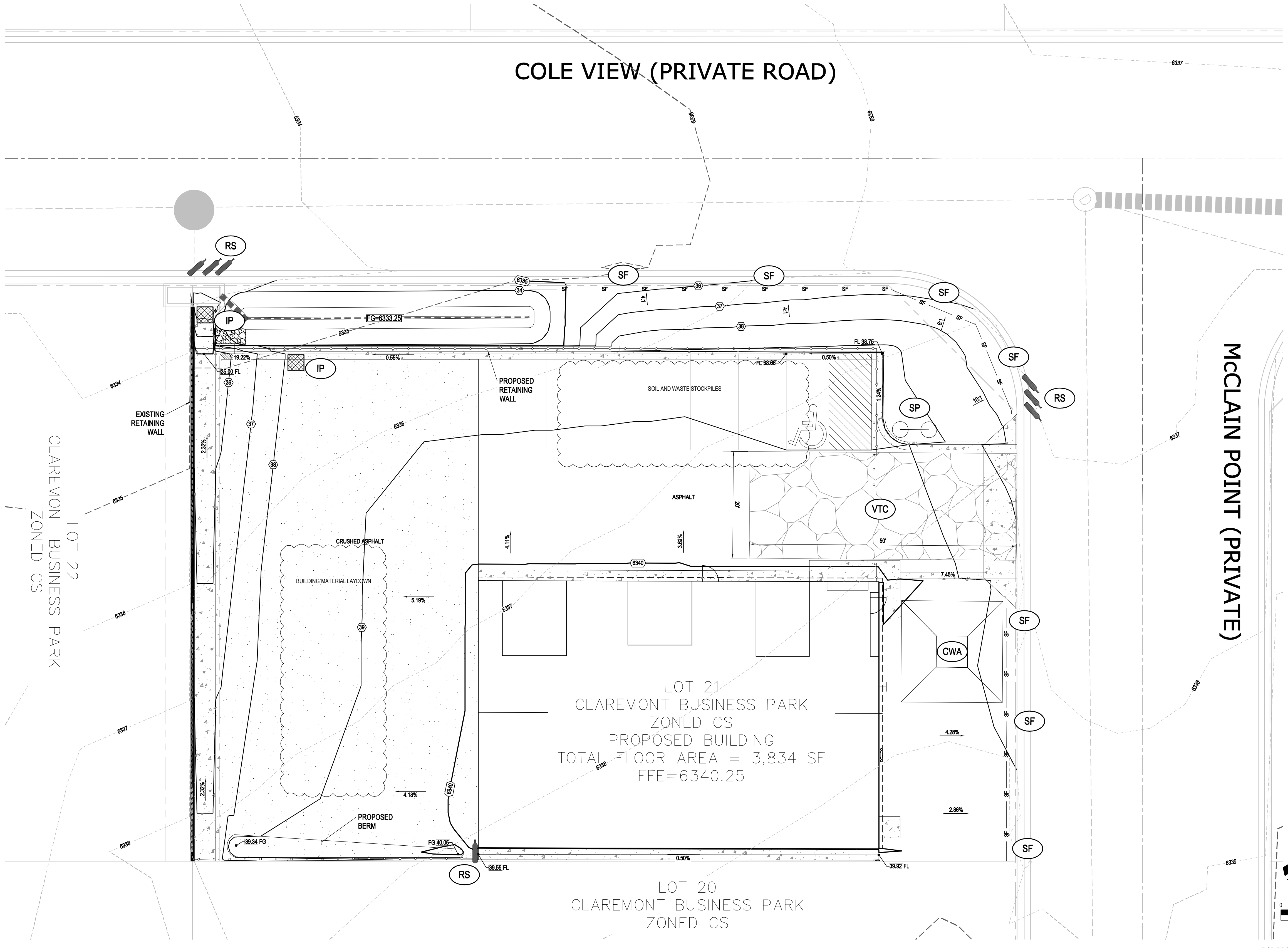
NOTES:

1. THERE WILL BE NO DEDICATED ASPHALT OR CONCRETE PATCH PLANTS LOCATED ON THE SITE.



Galloway
 Planning, Architecture, Engineering.
 1755 Telstar Drive, Suite 107
 Colorado Springs, CO 80920
 719.900.7220 O
 www.gallowayus.com
©2016 Galloway & Company, Inc. All Rights Reserved

HAMMERS CONSTRUCTION
QUALITY COMMERCIAL CONSTRUCTION SINCE 1983



COPYRIGHT
THESE PLANS ARE AN INSTRUMENT OF SERVICE AND ARE THE PROPERTY OF GALLOWAY, AND MAY NOT BE DUPLICATED, DISCLOSED, OR REPRODUCED WITHOUT THE WRITTEN CONSENT OF GALLOWAY. COPYRIGHTS AND INFRINGEMENTS WILL BE ENFORCED AND PROSECUTED.

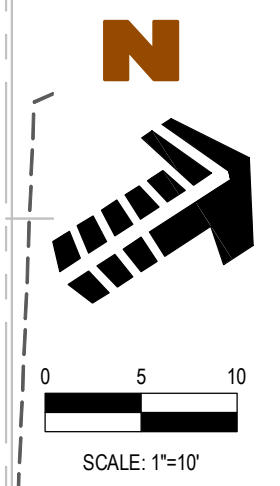
CONSTRUCTION DOCUMENTS
 CRACKERJACK MUD JACKING INC.
 CBP, F2 - LOT #21
 7315 McCLAIN POINT
 COLORADO SPRINGS, CO

#	Date	Issue / Description	Init.
00	08/18/17	AGENCY SUBMITTAL	TAC
01	08/02/17	OWNER REVISIONS	TAC

Project No: HCI003.1
 Drawn By: RCG
 Checked By: TAC
 Date: AUGUST 2017

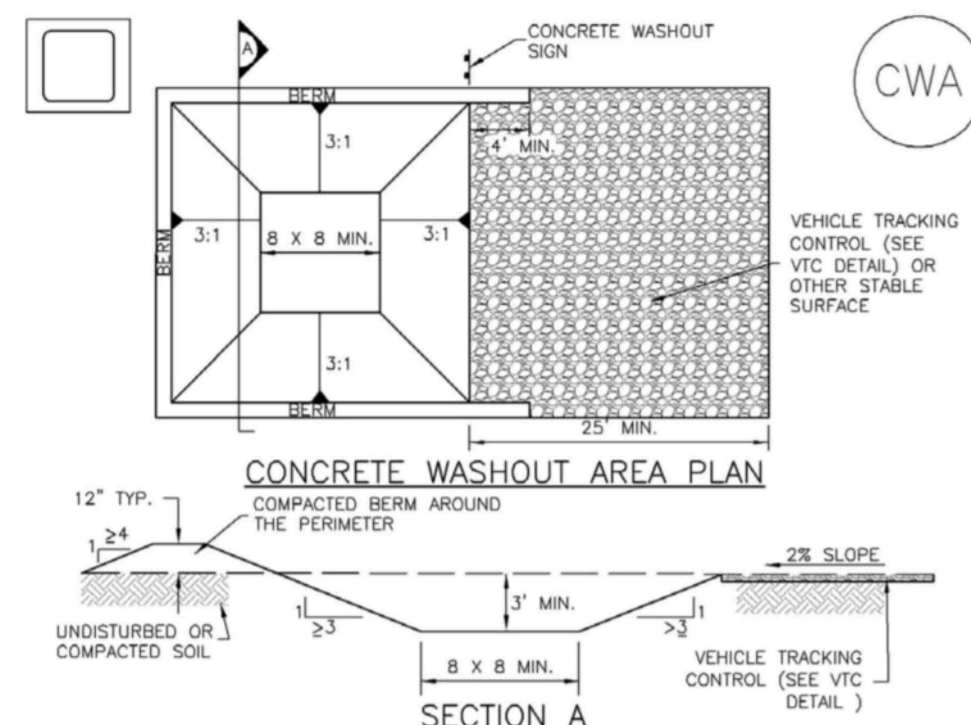
EROSION CONTROL PLAN

C2.2



PCD PROJECT NO. PPR-17-031

Concrete Washout Area (CWA) MM-1



CWA-1. CONCRETE WASHOUT AREA

CWA INSTALLATION NOTES

- SEE PLAN VIEW FOR: - CWA INSTALLATION LOCATION.
- DO NOT LOCATE AN UNLINED CWA WITHIN 40' OF ANY NATURAL DRAINAGE PATHWAY OR WATERBODY. DO NOT LOCATE WITHIN 100' OF ANY WELLS OR DRINKING WATER SOURCES. IF SITE CONSTRAINTS MAKE THIS INFEASIBLE, OR IF HIGHLY PERMEABLE SOILS EXIST ON SITE, THE CWA MUST BE INSTALLED WITH AN IMPERMEABLE LINER (18 MIL. THICKNESS) OR SURFACE STORAGE ALTERNATIVES USING PREFABRICATED CONCRETE WASHOUT DEVICES OR A LINED ABOVE GROUND STORAGE ARE SHOULD BE USED.
- THE CWA SHALL BE INSTALLED PRIOR TO CONCRETE PLACEMENT ON SITE.
- CWA SHALL INCLUDE A FLAT SUBSURFACE PIT THAT IS AT LEAST 8' BY 8' SLOPES LEADING OUT OF THE SUBSURFACE PIT SHALL BE 3:1 OR FLATTER. THE PIT SHALL BE AT LEAST 3' DEEP.
- BERM SURROUNDING SIDES AND BACK OF THE CWA SHALL HAVE MINIMUM HEIGHT OF 1'.
- VEHICLE TRACKING PAD SHALL BE SLOPED 2% TOWARDS THE CWA.
- SIGNS SHALL BE PLACED AT THE CONSTRUCTION ENTRANCE, AT THE CWA, AND ELSEWHERE AS NECESSARY TO CLEARLY INDICATE THE LOCATION OF THE CWA TO OPERATORS OF CONCRETE TRUCKS AND PUMP TRUCKS.
- USE EXCAVATED MATERIAL FOR PERIMETER BERM CONSTRUCTION.

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

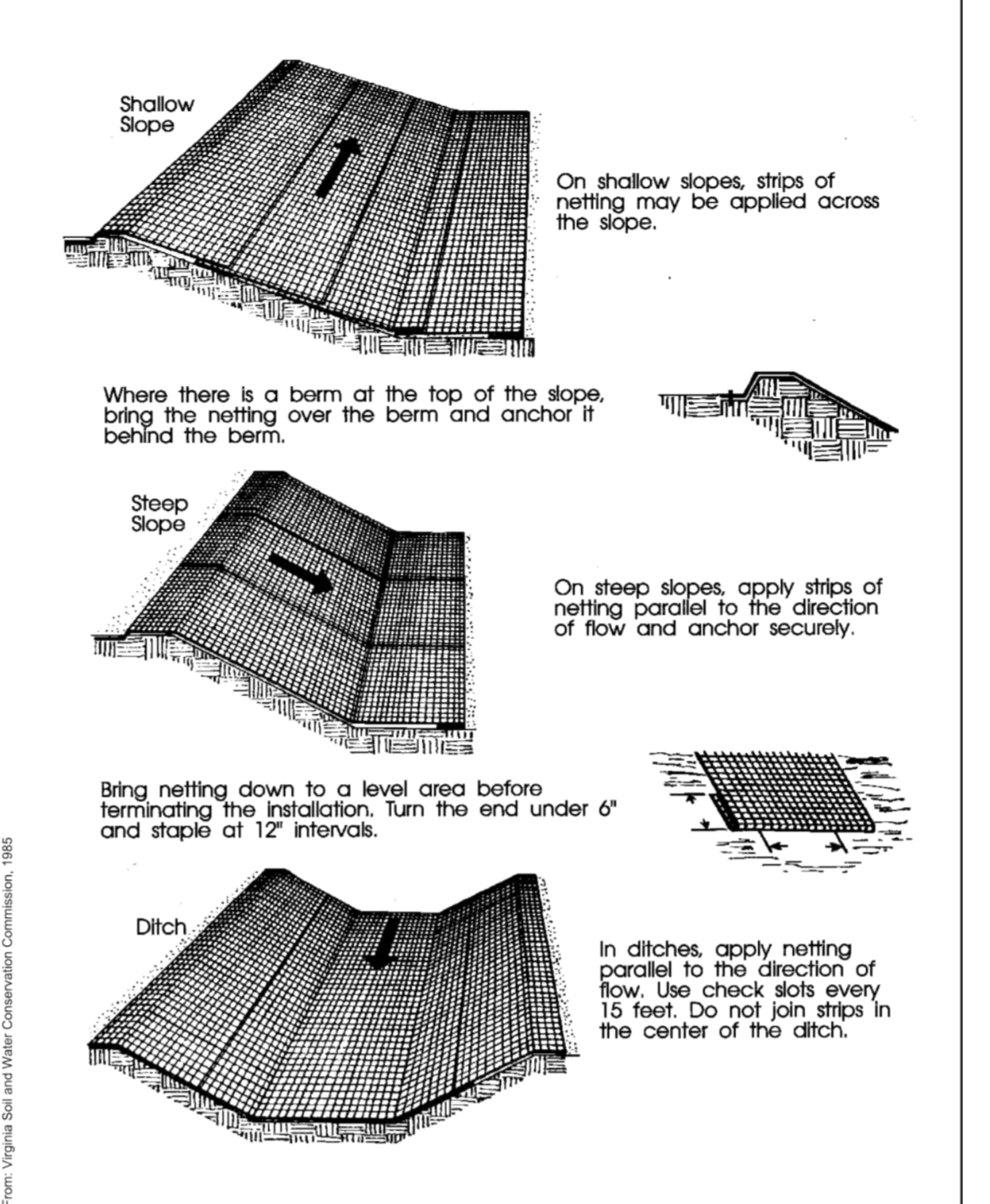
Concrete Washout Area (CWA) MM-1

CWA MAINTENANCE NOTES

- INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
 - FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
 - WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
 - THE CWA SHALL BE REPAIRED, CLEANED, OR ENLARGED AS NECESSARY TO MAINTAIN CAPACITY FOR CONCRETE WASTE. CONCRETE MATERIALS ACCUMULATED IN PIT, SHALL BE REMOVED ONCE THE MATERIALS HAVE REACHED A DEPTH OF 2'.
 - CONCRETE WASHOUT WATER, WASTED PIECES OF CONCRETE AND ALL OTHER DEBRIS IN THE SUBSURFACE PIT SHALL BE TRANSPORTED FROM THE JOB SITE IN A WATER-TIGHT CONTAINER AND DISPOSED OF PROPERLY.
 - THE CWA SHALL REMAIN IN PLACE UNTIL ALL CONCRETE FOR THE PROJECT IS PLACED.
 - WHEN THE CWA IS REMOVED, COVER THE DISTURBED AREA WITH TOP SOIL, SEED AND MULCH OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE LOCAL JURISDICTION.
- (DETAIL ADAPTED FROM DOUGLAS COUNTY, COLORADO AND THE CITY OF PARKER, COLORADO, NOT AVAILABLE IN AUTOCAD).
NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

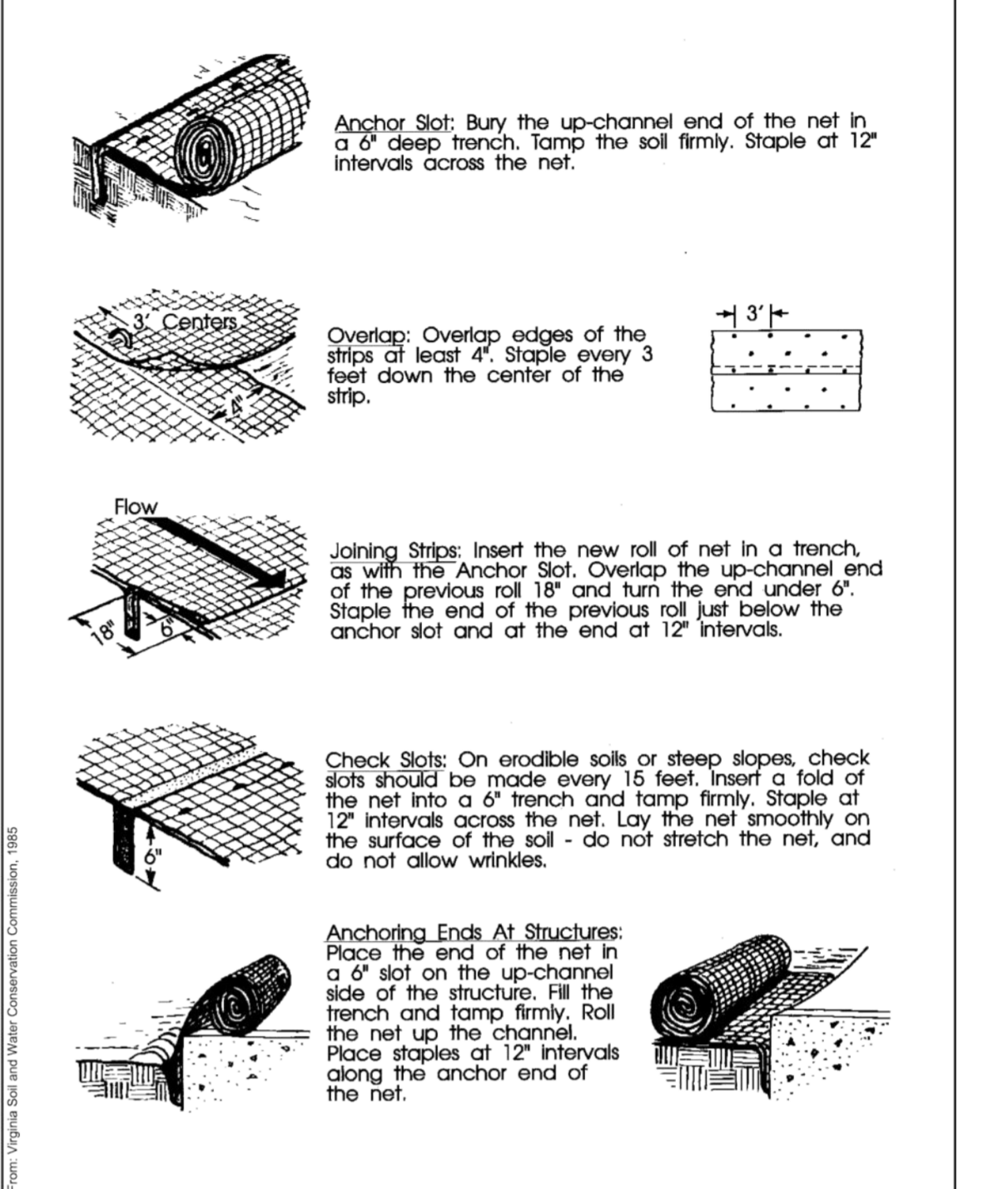
CWA-4 Urban Drainage and Flood Control District Urban Storm Drainage Criteria Manual Volume 3 November 2010

Erosion Control Blanket (ECB) MM-1



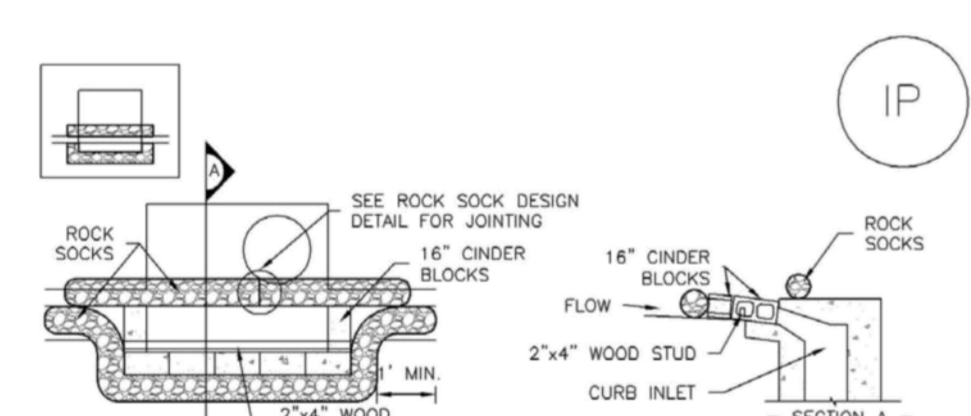
City of Colorado Springs Storm Water Quality Figure ECB-1 Erosion Control Blanket Application Examples
City of Colorado Springs Storm Water Quality Figure ECB-2 Erosion Control Blanket Installation Requirements

Erosion Control Blanket (ECB) MM-1



City of Colorado Springs Storm Water Quality Figure ECB-2 Erosion Control Blanket Installation Requirements

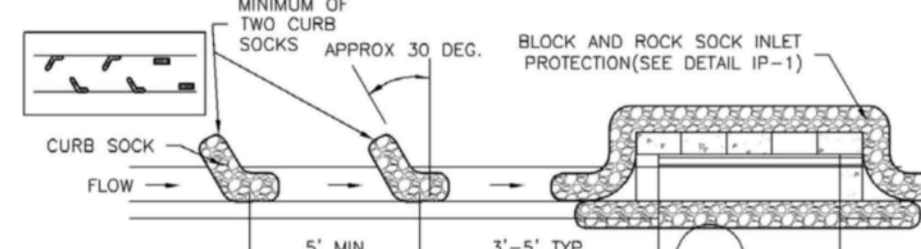
Inlet Protection (IP) SC-6



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

BLOCK AND CURB SOCK INLET PROTECTION INSTALLATION NOTES

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



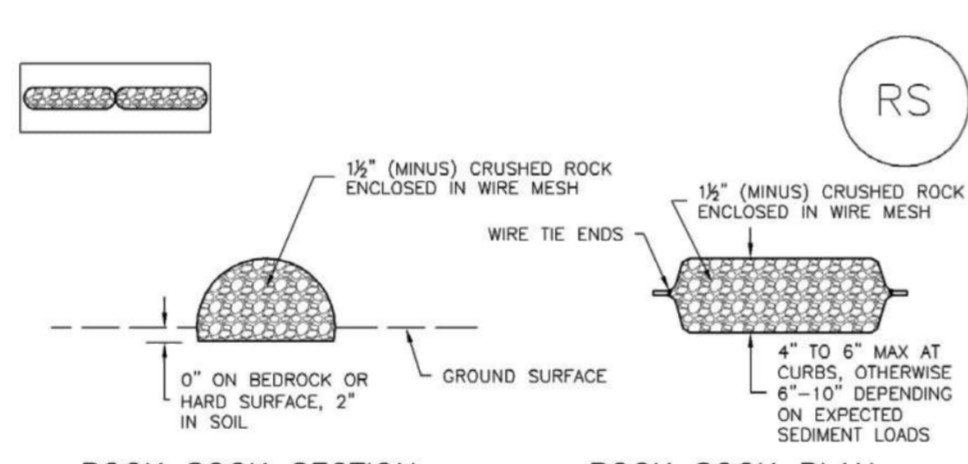
IP-2. CURB ROCK SOCKS UPSTREAM OF INLET PROTECTION

CURB ROCK SOCK INLET PROTECTION INSTALLATION NOTES

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

IP-4 Urban Drainage and Flood Control District Urban Storm Drainage Criteria Manual Volume 3 August 2013

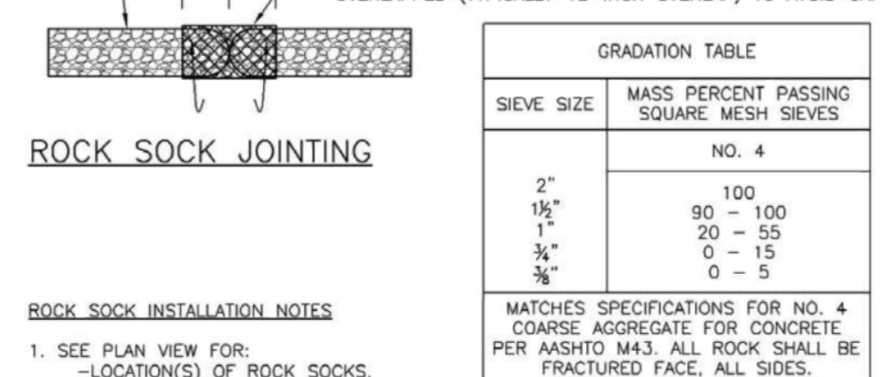
Rock Sock (RS) SC-5



RS-1. ROCK SOCK PERIMETER CONTROL

ROCK SOCK SECTION

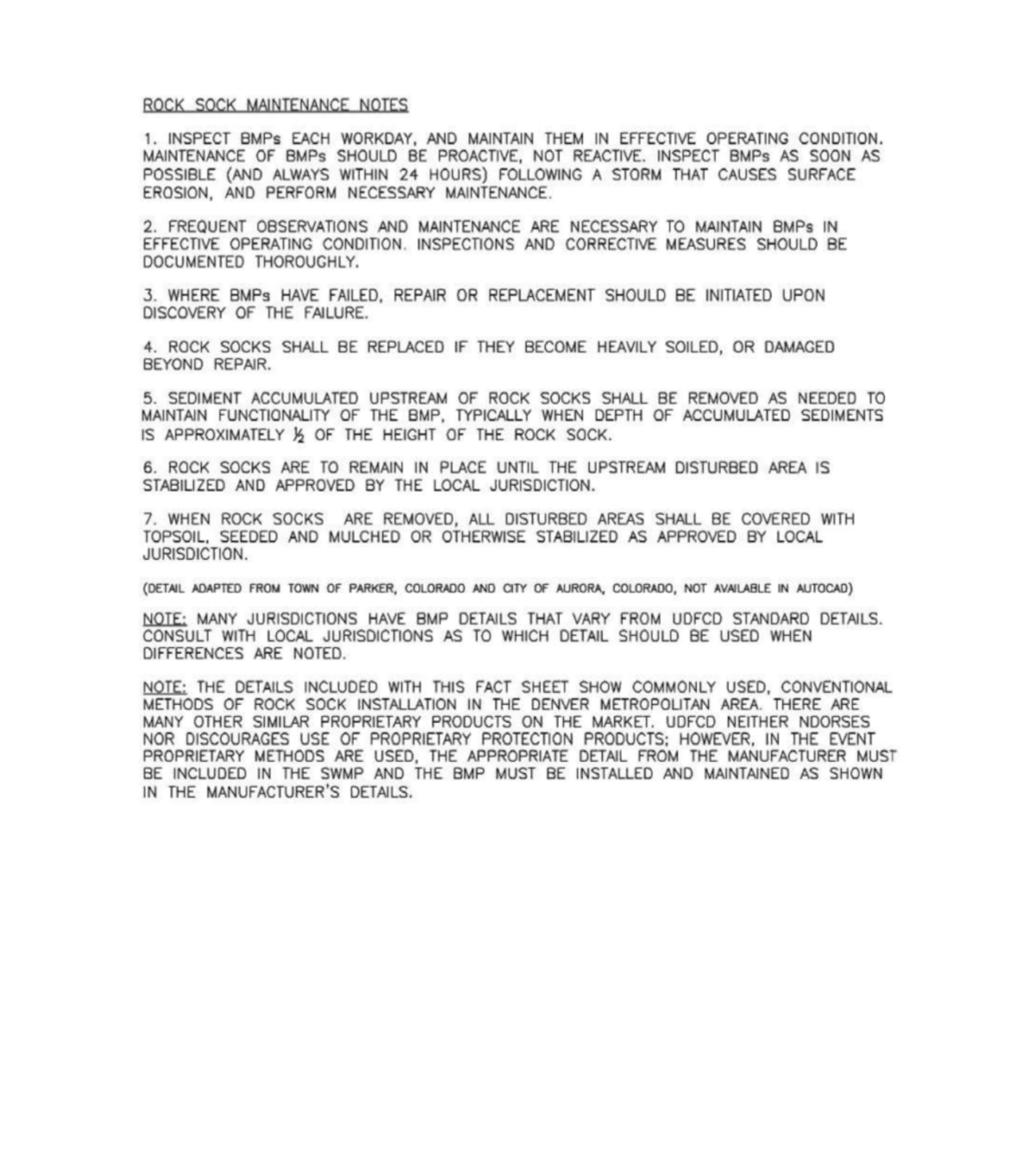
- SEE PLAN VIEW FOR: - LOCATION(S) OF ROCK SOCKS.
- CRUSHED ROCK SHALL BE 1/2" (MINUS) IN SIZE WITH A FRACTURED FACE (ALL SIDES) AND SHALL COMPLY WITH GRADATION SHOWN ON THIS SHEET (1/2" MINUS).
- WIRE MESH SHALL BE FABRICATED OF 10 GAGE POULTRY MESH, OR EQUIVALENT, WITH A MAXIMUM OPENING OF 2"; RECOMMENDED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



- ANY GAP AT JOINT SHALL BE FILLED WITH AN ADEQUATE AMOUNT OF 1/2" (MINUS) CRUSHED ROCK AND WRAPPED WITH ADDITIONAL WIRE MESH SECURED TO ENDS OF ROCK REINFORCED SOCK, AS AN ALTERNATIVE TO FILLING JOINTS BETWEEN ADJOINING ROCK SOCKS WITH CRUSHED ROCK AND ADDITIONAL WIRE WRAPPING, ROCK SOCKS CAN BE OVERLAPPED (TYPICALLY 12-INCH OVERLAP) TO AVOID CAPS.
- | SIEVE SIZE | MASS PERCENT PASSING SQUARE MESH SIEVES | NO. 4 |
|------------|---|-------|
| 2" | | 100 |
| 1 1/2" | 90 - 100 | |
| 1" | 20 - 55 | |
| 3/4" | 0 - 15 | |
| 1/2" | 0 - 5 | |
- MATCHES SPECIFICATIONS FOR NO. 4 COARSE AGGREGATE FOR CONCRETE PER AASHTO M-83. ALL ROCK SHALL BE FRACTURED FACE, ALL SIDES.
- ROCK SOCK INSTALLATION NOTES:

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

Rock Sock (RS) SC-5



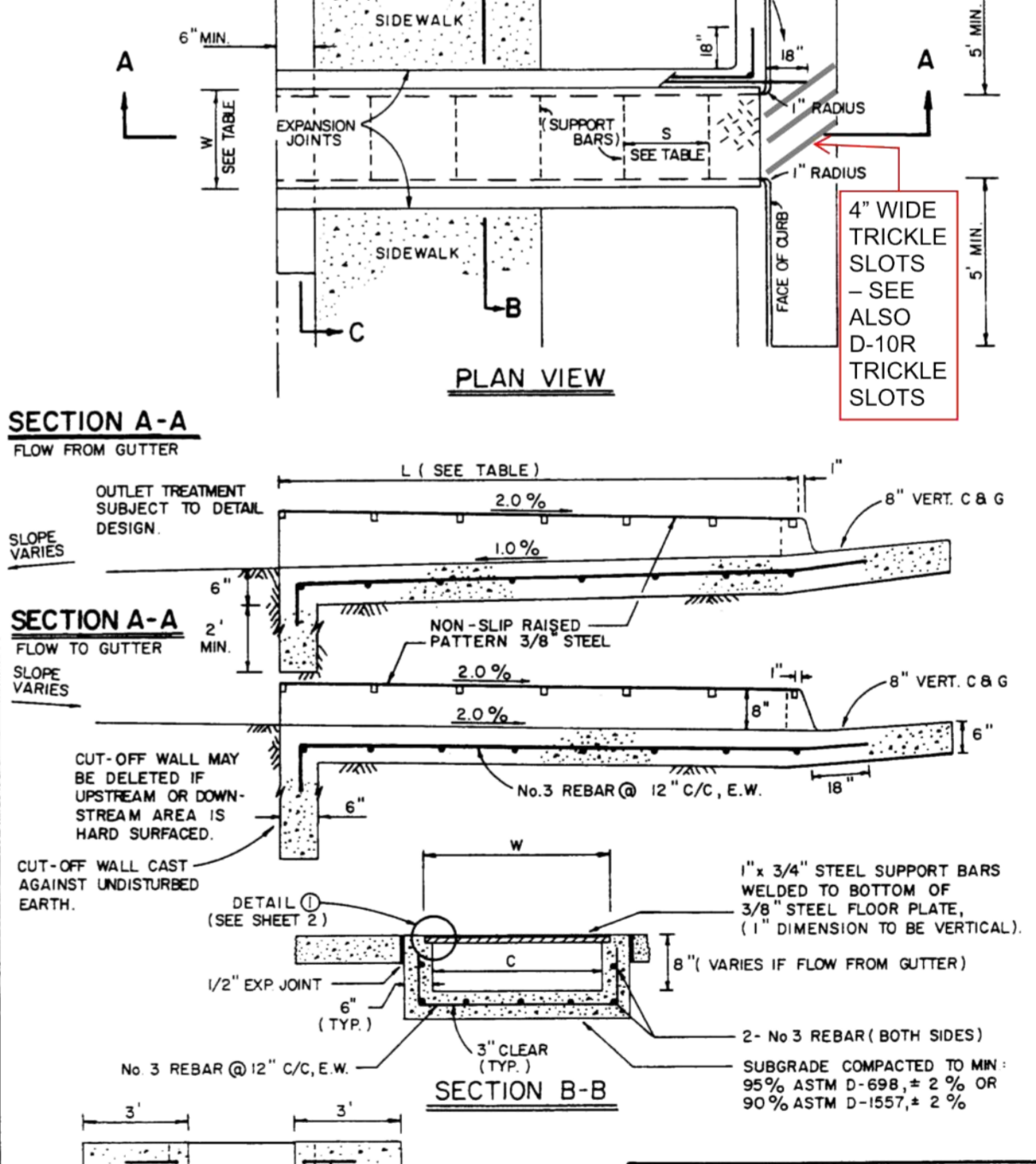
ROCK SOCK MAINTENANCE NOTES

- 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.
- 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.
- 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.

(DETAIL ADAPTED FROM TOWN OF PARKER, COLORADO AND CITY OF AURORA, COLORADO, NOT AVAILABLE IN AUTOCAD).
NOTE: THE DETAILS INCLUDED WITH THIS FACT SHEET SHOW COMMONLY USED, CONVENTIONAL METHODS OF ROCK SOCK INSTALLATION IN THE DENVER METROPOLITAN AREA. THERE ARE MANY OTHER SIMILAR PROPRIETARY PRODUCTS ON THE MARKET. UDFCD NEITHER ENDORSES NOR DISCOURAGES USE OF PROPRIETARY PROTECTION PRODUCTS. HOWEVER, IN THE EVENT PROPRIETARY METHODS ARE USED, THE APPROPRIATE DETAIL FROM THE MANUFACTURER MUST BE INCLUDED IN THE SWMP AND THE BMP MUST BE INSTALLED AND MAINTAINED AS SHOWN IN THE MANUFACTURER'S DETAILS.

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

Curb Opening Detail CITY OF COLORADO SPRINGS



CITY OF COLORADO SPRINGS CURB OPENING DETAIL
APPROVED BY: [Signature]
SCALE: NO SCALE DATE: JAN 89 DRAWN: PL-8 SHEET: D-214 OF 2

COPYRIGHT
THESE PLANS ARE AN INSTRUMENT OF SERVICE AND ARE THE PROPERTY OF GALLOWAY, AND MAY NOT BE DUPLICATED, DISCLOSED, OR REPRODUCED WITHOUT THE WRITTEN CONSENT OF GALLOWAY. COPYRIGHTS AND INFRINGEMENTS WILL BE ENFORCED AND PROSECUTED.

CONSTRUCTION DOCUMENTS
CRACKERJACK MUD JACKING INC.
CBP, F2 - LOT #21
7315 McCLAIN POINT
COLORADO SPRINGS, CO

#	Date	Issue / Description	Int.
00	08/18/17	AGENCY SUBMITTAL	TAC
01	08/02/17	OWNER REVISIONS	TAC

Project No: HCI003.1
Drawn By: RCG
Checked By: TAC
Date: AUGUST 2017

EROSION CONTROL DETAILS

C2.3



COPYRIGHT
THESE PLANS ARE AN INSTRUMENT OF SERVICE AND ARE THE PROPERTY OF GALLOWAY, AND MAY NOT BE DUPLICATED, DISCLOSED, OR REPRODUCED WITHOUT THE WRITTEN CONSENT OF GALLOWAY. COPYRIGHTS AND INFRINGEMENTS WILL BE ENFORCED AND PROSECUTED.

**CONSTRUCTION DOCUMENTS
CRACKERJACK MUD JACKING INC.
CBP, F2 - LOT #21**

**7315 McCLAIN POINT
COLORADO SPRINGS, CO**

#	Date	Issue / Description	Init.
00	08/18/17	AGENCY SUBMITTAL	TAC
01	08/02/17	OWNER REVISIONS	TAC

Project No:	HCl003.1
Drawn By:	RCG
Checked By:	TAC
Date:	AUGUST 2017

**EROSION CONTROL
DETAILS**

C2.4

Silt Fence (SF) SC-1 SF

INSTALLATION NOTES

- SILT FENCE MUST BE PLACED AWAY FROM THE TOE OF A 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.
- 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. COMPACTATION SHALL BE SUCH THAT SILT FENCE RESISTS BEING PULLED OUT OF ANCHOR TRENCH BY HAND.
- 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.
- 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 RUNOFF FROM FLOWING AROUND THE END OF THE SILT FENCE (TYPICALLY 10' - 20').
- SILT FENCE SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.

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 AND APPROVED BY THE LOCAL JURISDICTION, OR IS REPLACED BY AN EQUIVALENT PERIMETER SEDIMENT CONTROL BMP.
- WHEN SILT FENCE IS REMOVED, ALL DISTURBED AREAS SHALL BE COVERED WITH TOPSOIL, SEEDS, 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.

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

SC-1 Silt Fence (SF) SF

INSTALLATION NOTES

- SILT FENCE MUST BE PLACED AWAY FROM THE TOE OF A 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.
- 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. COMPACTATION SHALL BE SUCH THAT SILT FENCE RESISTS BEING PULLED OUT OF ANCHOR TRENCH BY HAND.
- 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.
- 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 RUNOFF FROM FLOWING AROUND THE END OF THE SILT FENCE (TYPICALLY 10' - 20').
- SILT FENCE SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.

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 AND APPROVED BY THE LOCAL JURISDICTION, OR IS REPLACED BY AN EQUIVALENT PERIMETER SEDIMENT CONTROL BMP.
- WHEN SILT FENCE IS REMOVED, ALL DISTURBED AREAS SHALL BE COVERED WITH TOPSOIL, SEEDS, 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.

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

Vehicle Tracking Control (VTC) SM-4 VTC

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 TRM)
- CONSTRUCTION MAT OR TRM STABILIZED CONSTRUCTION ENTRANCES ARE ONLY TO BE USED ON SHORT DURATION PROJECTS (TYPICALLY RANGING FROM A WEEK TO A MONTH) WHERE THERE WILL BE LIMITED VEHICULAR ACCESS.
- A STABILIZED CONSTRUCTION ENTRANCE/EXIT SHALL BE LOCATED AT ALL ACCESS POINTS WHERE VEHICLES ACCESS THE CONSTRUCTION SITE FROM PAVED, RIGHT-OF-WAYS.
- STABILIZED CONSTRUCTION ENTRANCE/EXIT SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.
- A NON-WOVEN GEOTEXTILE FABRIC SHALL BE PLACED UNDER THE STABILIZED CONSTRUCTION ENTRANCE/EXIT PRIOR TO THE PLACEMENT OF ROCK.
- UNLESS OTHERWISE SPECIFIED BY LOCAL JURISDICTION, ROCK SHALL CONSIST OF DOT SECT. #703, AASHTO #3 COARSE AGGREGATE OR 6" MINUS ROCK.

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.
- ROCK SHALL BE REAPPLIED OR REGRADED AS NECESSARY TO THE STABILIZED ENTRANCE/EXIT TO MAINTAIN A CONSISTENT DEPTH.
- SEDIMENT TRACKED ONTO PAVED ROADS IS TO BE REMOVED THROUGHOUT THE DAY AND AT THE END OF THE DAY BY SHOVELING OR SWEEPING. SEDIMENT MAY NOT BE WASHED DOWN STORM SEWER DRAINS.

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

(DETAILS ADAPTED FROM CITY OF BROOMFIELD, COLORADO, NOT AVAILABLE IN AUTOCAD)

VTC-1. AGGREGATE VEHICLE TRACKING CONTROL

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

SM-4 Vehicle Tracking Control (VTC) VTC

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 TRM)
- CONSTRUCTION MAT OR TRM STABILIZED CONSTRUCTION ENTRANCES ARE ONLY TO BE USED ON SHORT DURATION PROJECTS (TYPICALLY RANGING FROM A WEEK TO A MONTH) WHERE THERE WILL BE LIMITED VEHICULAR ACCESS.
- A STABILIZED CONSTRUCTION ENTRANCE/EXIT SHALL BE LOCATED AT ALL ACCESS POINTS WHERE VEHICLES ACCESS THE CONSTRUCTION SITE FROM PAVED, RIGHT-OF-WAYS.
- STABILIZED CONSTRUCTION ENTRANCE/EXIT SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.
- A NON-WOVEN GEOTEXTILE FABRIC SHALL BE PLACED UNDER THE STABILIZED CONSTRUCTION ENTRANCE/EXIT PRIOR TO THE PLACEMENT OF ROCK.
- UNLESS OTHERWISE SPECIFIED BY LOCAL JURISDICTION, ROCK SHALL CONSIST OF DOT SECT. #703, AASHTO #3 COARSE AGGREGATE OR 6" MINUS ROCK.

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.
- ROCK SHALL BE REAPPLIED OR REGRADED AS NECESSARY TO THE STABILIZED ENTRANCE/EXIT TO MAINTAIN A CONSISTENT DEPTH.
- SEDIMENT TRACKED ONTO PAVED ROADS IS TO BE REMOVED THROUGHOUT THE DAY AND AT THE END OF THE DAY BY SHOVELING OR SWEEPING. SEDIMENT MAY NOT BE WASHED DOWN STORM SEWER DRAINS.

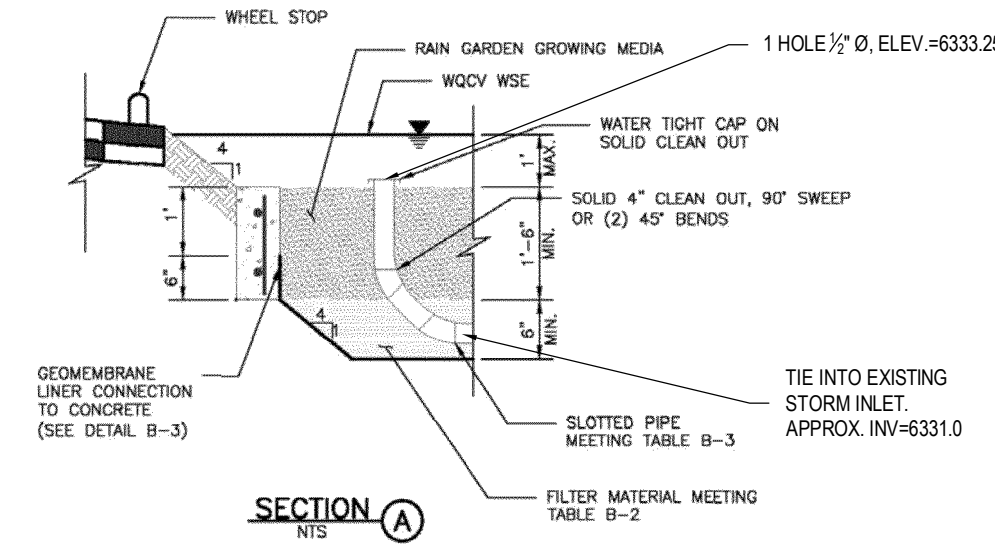
NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

(DETAILS ADAPTED FROM CITY OF BROOMFIELD, COLORADO, NOT AVAILABLE IN AUTOCAD)

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

T-3

Bioretention



B-16 Urban Drainage and Flood Control District
Urban Storm Drainage Criteria Manual Volume 3 November 2010

T-3

Bioretention

Table B-1. Class 1 Compost

Characteristic	Criteria
Minimum Stability Indicator (Respirometry)	Stable to Very Stable
Maturity Indicator Expressed as Ammonia N / Nitrate N Ratio	< 4
Maturity Indicator Expressed as Carbon to Nitrogen Ratio	< 12
Maturity Indicator Expressed as Percentage of Germination/Vigor	80+ / 80+
pH – Acceptable Range	6.0 – 8.4
Soluble Salts – Acceptable Range (1:5 by weight)	0 – 5 mmhos/cm
Testing and Test Report Submittal Requirement	Seal of Testing Assurance (STA)/Test Methods for the Examination of Composting and Compost (TMECC)
Chemical Contaminants	Equal or better than US EPA Class A Standard, 40 CFR 503.13, Tables 1 & 3 levels
Pathogens	Meet or exceed US EPA Class A standard, 40 CFR 503.32(a) levels

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

T-3

Bioretention

ensure that the pipe was not crushed or disconnected during construction.

Calculate the diameter of the orifice for a 12-hour drain time using Equation B-3 (Use a minimum orifice size of 3/8 inch to avoid clogging):

$$D_{12 \text{ hour drain time}} = \sqrt{\frac{V}{1414 y^{0.41}}} \quad \text{Equation B-3}$$

Where:

- D = orifice diameter (in)
- y = distance from the lowest elevation of the storage volume (i.e., surface of the filter) to the center of the orifice (ft)
- V = volume (WQCV or the portion of the WQCV in the rain garden) to drain in 12 hours (ft³)

In previous versions of this manual, UDFCD recommended that the underdrain be placed in an aggregate layer and that a geotextile (separator fabric) be placed between this aggregate and the growing medium. This version of the manual replaces that section with materials that, when used together, eliminate the need for a separator fabric.

The underdrain system should be placed within an 6-inch-thick section of CDOT Class C filter material meeting the gradation in Table B-2. Use slotted pipe that meets the slot dimensions provided in Table B-3.

Table B-2. Gradation Specifications for CDOT Class C Filter Material (Source: CDOT Table 703-7)

Sieve Size	Mass Percent Passing Square Mesh Sieves
19.0 mm (3/4")	100
4.75 mm (No. 4)	60 – 100
300 μm (No. 50)	10 – 30
150 μm (No. 100)	0 – 10
75 μm (No. 200)	0 – 3

B-8 Urban Drainage and Flood Control District
Urban Storm Drainage Criteria Manual Volume 3 November 2010

Bioretention

T-3

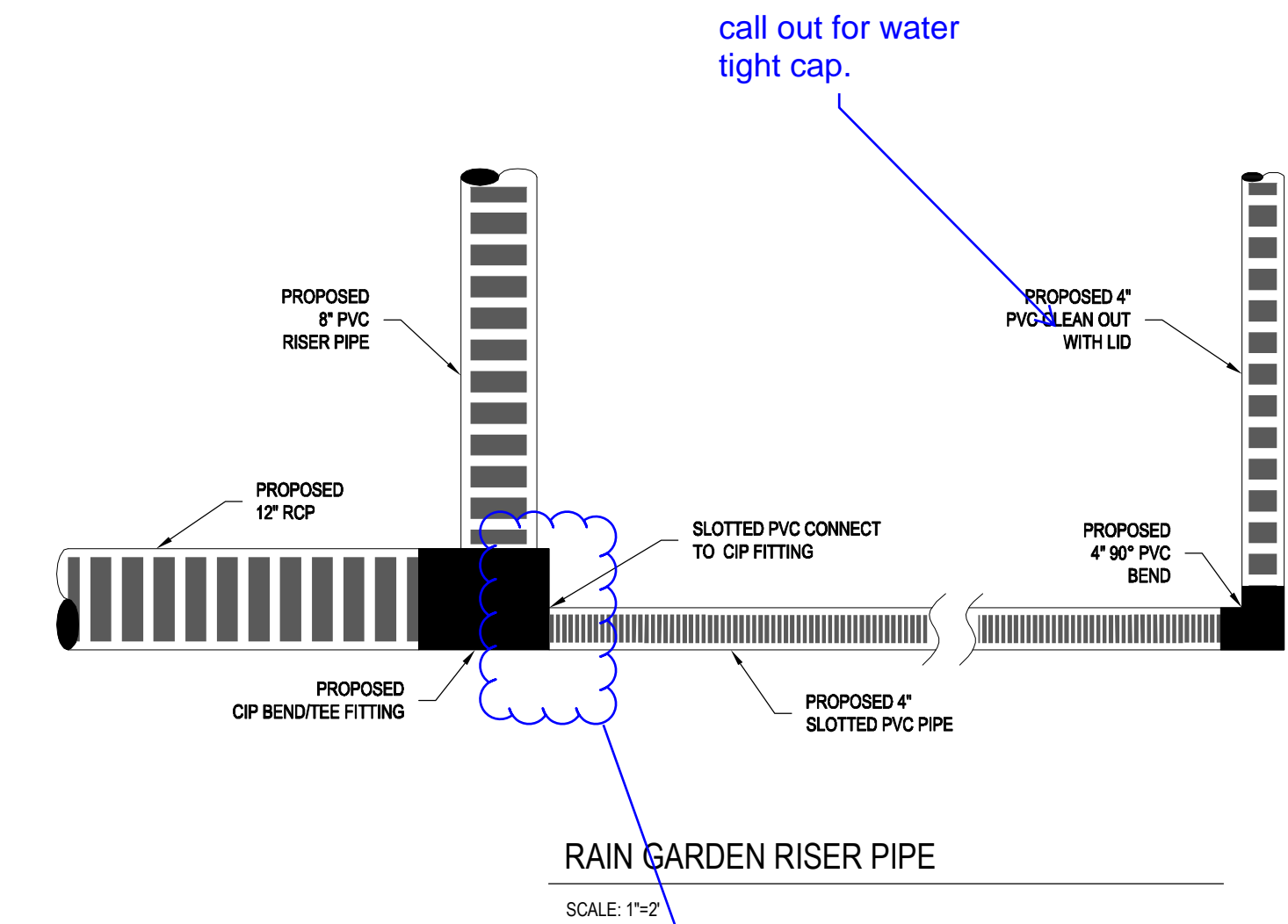
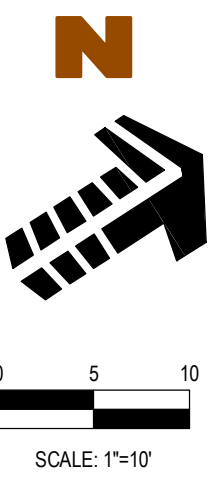
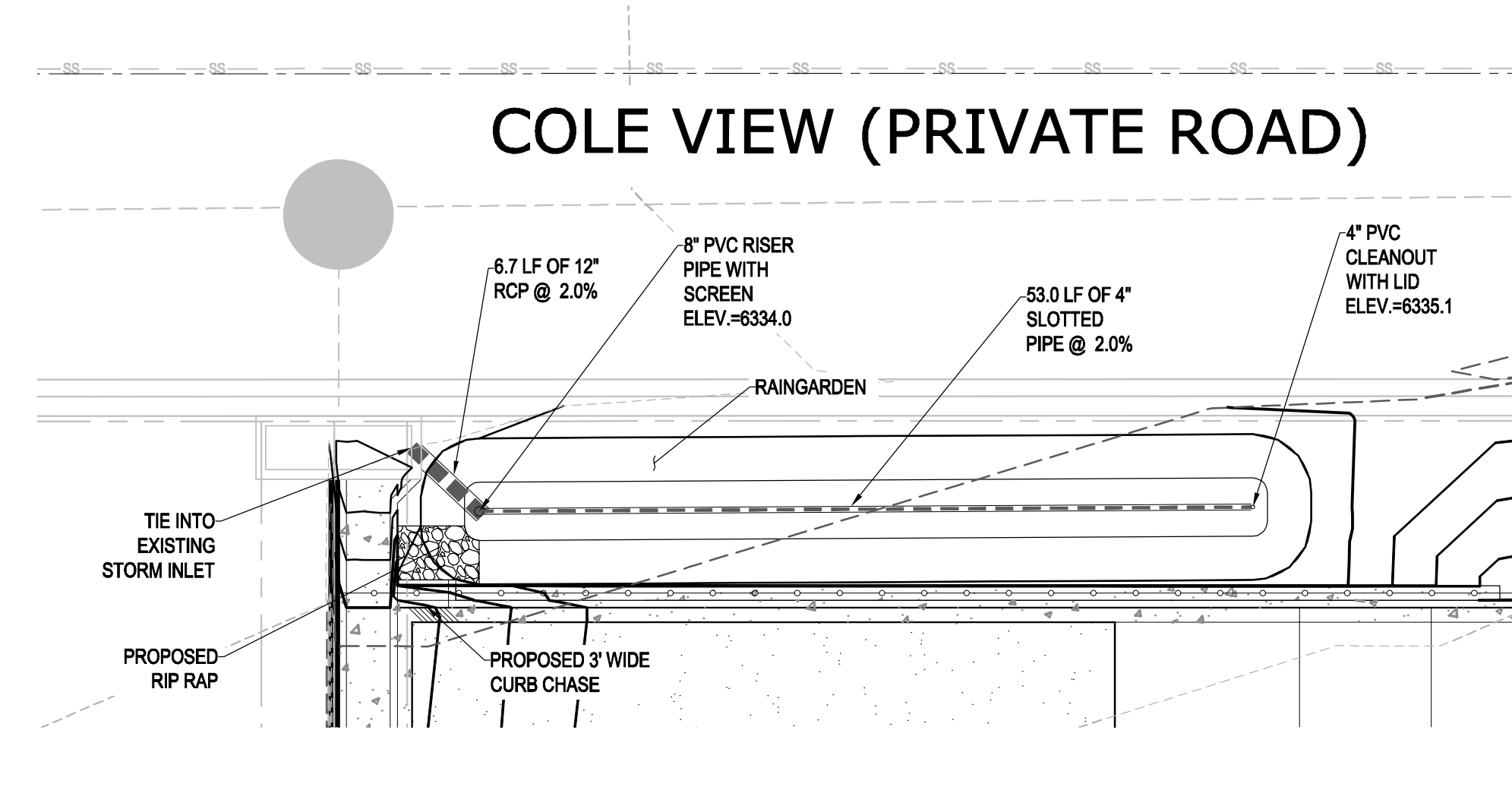
Table B-3. Dimensions for Slotted Pipe

Pipe Diameter	Slot Length ¹	Maximum Slot Width	Slot Centers ¹	Open Area ¹ (per foot)
4"	1-1/16"	0.032"	0.413"	1.90 in ²
6"	1-3/8"	0.032"	0.516"	1.98 in ²

¹ Some variation in these values is acceptable and is expected from various pipe manufacturers. Be aware that both increased slot length and decreased slot centers will be beneficial to hydraulics but detrimental to the structure of the pipe.

- Impermeable Geomembrane Liner and Geotextile Separator Fabric:** For no-infiltration sections, install a 30 mil (minimum) PVC geomembrane liner, per Table B-5, on the bottom and sides of the basin, extending up at least to the top of the underdrain layer. Provide at least 9 inches (12 inches if possible) of cover over the membrane where it is attached to the wall to protect the membrane from UV deterioration. The geomembrane should be field-seamed using a dual track welder, which allows for non-destructive testing of almost all field seams. A small amount of single track and/or adhesive seaming should be allowed in limited areas to seam around pipe perforations, to patch seams removed for destructive seam testing, and for limited repairs. The liner should be installed with slack to prevent tearing due to backfill, compaction, and settling. Place CDOT Class B geotextile separator fabric above the geomembrane to protect it from being punctured during the placement of the filter material above the liner. If the subgrade contains angular rocks or other material that could puncture the geomembrane, smooth-roll the surface to create a suitable surface. If smooth-rolling the surface does not provide a suitable surface, also place the separator fabric between the geomembrane and the underlying subgrade. This should only be done when necessary because fabric placed under the geomembrane can increase seepage losses through pinholes or other geomembrane defects. Connect the geomembrane to perimeter concrete walls around the basin perimeter, creating a watertight seal between the geomembrane and the walls using a continuous batten bar and anchor connection (see Figure B-3). Where the need for the impermeable membrane is not as critical, the membrane can be attached with a nitrile-based vinyl adhesive. Use watertight PVC boots for underdrain pipe penetrations through the liner (see Figure B-2).

November 2010 Urban Drainage and Flood Control District
Urban Storm Drainage Criteria Manual Volume 3 B-9



call out for water tight cap.

Per the drainage letter provide a restrictor at the end of the slotted PVC pipe with 1/2" diameter orifice for 12 hour drain time.

CAUTION - NOTICE TO CONTRACTOR

- ALL UTILITY LOCATIONS SHOWN ARE BASED ON MAPS PROVIDED BY THE APPROPRIATE UTILITY COMPANY AND FIELD SURFACE EVIDENCE AT THE TIME OF SURVEY AND IS TO BE CONSIDERED AN APPROXIMATE LOCATION ONLY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE FIELD LOCATION OF ALL UTILITIES, PUBLIC OR PRIVATE, WHETHER SHOWN ON THE PLANS OR NOT. PRIOR TO CONSTRUCTION, REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO CONSTRUCTION.
- WHERE A PROPOSED UTILITY CROSSES AN EXISTING UTILITY, IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF SUCH EXISTING UTILITY, EITHER THROUGH POT-HOLING OR ALTERNATIVE METHOD. REPORT INFORMATION TO THE ENGINEER PRIOR TO CONSTRUCTION.



COPYRIGHT
THESE PLANS ARE AN INSTRUMENT OF SERVICE AND ARE THE PROPERTY OF GALLOWAY, AND MAY NOT BE DUPLICATED, DISCLOSED, OR REPRODUCED WITHOUT THE WRITTEN CONSENT OF GALLOWAY. COPYRIGHTS AND INFRINGEMENTS WILL BE ENFORCED AND PROSECUTED.

CONSTRUCTION DOCUMENTS
CRACKERJACK MUD JACKING INC.
CBP, F2 - LOT #21
7315 McCLAIN POINT
COLORADO SPRINGS, CO

#	Date	Issue / Description	Init.
00	08/18/17	AGENCY SUBMITTAL	TAC
01	08/02/17	OWNER REVISIONS	TAC

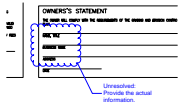
Project No: HCI003.1
Drawn By: RCG
Checked By: TAC
Date: AUGUST 2017

RAIN GARDEN
DETAIL

C2.5

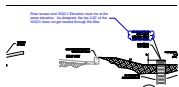
Markup Summary

Locked (8)



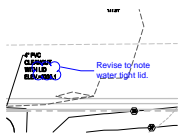
Subject: Cloud+
Page Label: 1
Lock: Locked
Status:
Checkmark: Unchecked
Author: dsdlaforce
Date: 9/12/2017 2:51:51 PM
Color: ■

Unresolved: Provide the actual information.



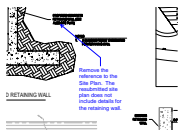
Subject: Cloud+
Page Label: 3
Lock: Locked
Status:
Checkmark: Unchecked
Author: dsdlaforce
Date: 9/12/2017 2:51:54 PM
Color: ■

Riser screen and WQCV Elevation must be at the same elevation. As designed, the top 0.25' of the WQCV does not get treated through the filter.



Subject: Cloud+
Page Label: 3
Lock: Locked
Status:
Checkmark: Unchecked
Author: dsdlaforce
Date: 9/12/2017 2:51:54 PM
Color: ■

Revise to note water tight lid.



Subject: Callout
Page Label: 3
Lock: Locked
Status:
Checkmark: Unchecked
Author: dsdlaforce
Date: 9/12/2017 2:51:55 PM
Color: ■

Remove the reference to the Site Plan. The resubmitted site plan does not include details for the retaining wall.



Subject: Cloud+
Page Label: 3
Lock: Locked
Status:
Checkmark: Unchecked
Author: dsdlaforce
Date: 9/12/2017 2:51:53 PM
Color: ■

Remove. WQCV shall drain through the filter then into the slotted pipe.



Subject: Callout
Page Label: 3
Lock: Locked
Status:
Checkmark: Unchecked
Author: dsdlaforce
Date: 9/12/2017 2:51:55 PM
Color: ■

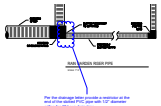
Is the lower TW supposed to be top of curb (TC) or BW?

call out for water
tight cap.



Subject: Callout
Page Label: 3
Lock: Locked
Status:
Checkmark: Unchecked
Author: dsdlaforce
Date: 9/12/2017 2:51:57 PM
Color: ■

call out for water tight cap.



Per the drainage letter provide a restrictor at the
end of the slotted PVC pipe with 1/2" diameter
orifice for 12 hour drain time.

Subject: Cloud+
Page Label: 3
Lock: Locked
Status:
Checkmark: Unchecked
Author: dsdlaforce
Date: 9/12/2017 2:51:56 PM
Color: ■

Per the drainage letter provide a restrictor at the
end of the slotted PVC pipe with 1/2" diameter
orifice for 12 hour drain time.