

EAST FORK JIMMY CAMP CREEK CHANNEL DESIGN
CREEKSIDE at LORSON RANCH FILING NO. 1

EL PASO COUNTY, COLORADO
PREPARED FOR LORSON DEVELOPMENT

GENERAL NOTES

- Profile design lines are based on centerline, as shown, unless otherwise noted.
- All new construction to conform to the specifications of El Paso County Department of Public Works. Any asphalt removed is to be replaced to meet the specifications of the El Paso County Public Works Department.
- For pavement design, curb and gutter, and sidewalks see individual plan and profile sheets. Pavement design to be based on Resistance Value 'R' derived from Hveem tests and are to be approved by the Engineering Division of the El Paso County Planning and Community Development prior to work above subgrade.
- At intersections, all curb returns will have 20-foot radius unless otherwise noted.
- All existing utilities have been shown according to the best available information. The contractor is responsible for field location and verification prior to beginning work. If it appears that there could be a conflict with any utilities, whether indicated on the plans or not, the contractor is to notify the engineer and owner immediately. The contractor is responsible for the protection and repair (if necessary) of all utilities..
- A Pre-Construction meeting shall be held with the El Paso County Planning and Community Development prior to any construction.
- Approved plans, Engineering Criteria Manual, etc. is required to be on-site at all times during construction..
- All necessary permits, such as SWMP, ESQCP, Fugitive Dust, Access, C.O.E. 404, etc. shall be obtained prior to construction.
- All handicap ramps to be per El Paso County Standard SD 2-40.
- The contractor shall coordinate locations and layout with the El Paso County Planning and Community Development on the placement of any pedestrian ramps prior to construction of the curb.
- Where appropriate, neatly saw cut all existing concrete and asphalt. Repair/replace all disturbed existing items with like materials and thicknesses.
- All disturbed areas shall be revegetated with native grasses within 21 days of excavation per Erosion Control Plan.
- The prepared Erosion/Sediment Control Plan is to be considered a part of these plans and its requirements adhered to during the construction of this project.
- All storm and sanitary sewer pipe lengths and slopes are figured from center of manhole or bend. Pipe lengths are given as a horizontal length.
- All storm sewer bedding to be per CDoT Standards.
- All storm sewer pipe shall be Class III B Wall unless otherwise shown on the storm sewer plan and profile sheets.
- All wyes and bends used in construction of storm sewer facilities shall be factory fabricated, unless approved by the El Paso County Planning and Community Development.
- Construction and materials used in all storm and sanitary sewer manholes shall be per specifications. Storm sewer radial deflections to be grouted or installed per manufacturer's recommendations.
- Storm sewer manholes sizes as follows unless otherwise shown:

18" thru 36" use 48" I.D. manhole

42" thru 48" use 60" I.D. manhole

54" thru 60" use 72" I.D. manhole

NOTE: Manhole sizes tabulated here shall be increased, if necessary, to accommodate incoming laterals.
- All horizontal stationing is based on the 'Face of Curb', unless otherwise shown.
- All vertical design and top of curb are based on the design point shown in the typical cross section.
- The curb line design point is located at the intersection of the face and top of curb for the Type III Standard 6-inch vertical curb. See typical street section for design point locations. .
- Vertical curb to be used between curb returns (CR) and at curb inlets. Transitions from ramp to vertical curb shall be 10-feet unless otherwise approved by the El Paso County Public Services Department. All other curb & gutter to be ramp curb & gutter.
- Cross pans to be per El Paso County Standard Detail SD 2-26.
- Contractor responsible for meeting all Widefield Water and Sanitation District criteria when connecting to existing stubs.
- Curb returns shall be straight graded from CR to CR unless otherwise noted.
- Inlets are Type 'R' inlets (CDOT STD M-604-12) unless otherwise noted.

BENCHMARK: Monument is located at the Northwest corner of the intersection of Powers Boulevard and Fontaine Street. The monument is a 3-inch aluminum cap (FIMS ID #206). Located 51.3 feet west of the west edge of asphalt of Powers Blvd and 65.5 feet north of the north edge of asphalt of Fontaine Street. Elevation=5897.89 feet (NGVD 1929, 1960 Adj.)
Basis of Bearing: All bearings used herein are based on an assumed bearing of N89°42'02" E, a distance of 1873.45 feet between the northeasterly corner of Pioneer Landing at Lorson Ranch Filing No. 1, as recorded under Reception No. 210713013 of the records of the El Paso County Clerk and Recorder, as monumented by a rebar and orange surveyors cap stamped "Rampart PLS 26965", from which the east one-quarter corner (E₁) of said section 14, as monumented by a 2-1/2" pipe with galvanized screw on cap only partially stamped.

EL PASO COUNTY STANDARD NOTES

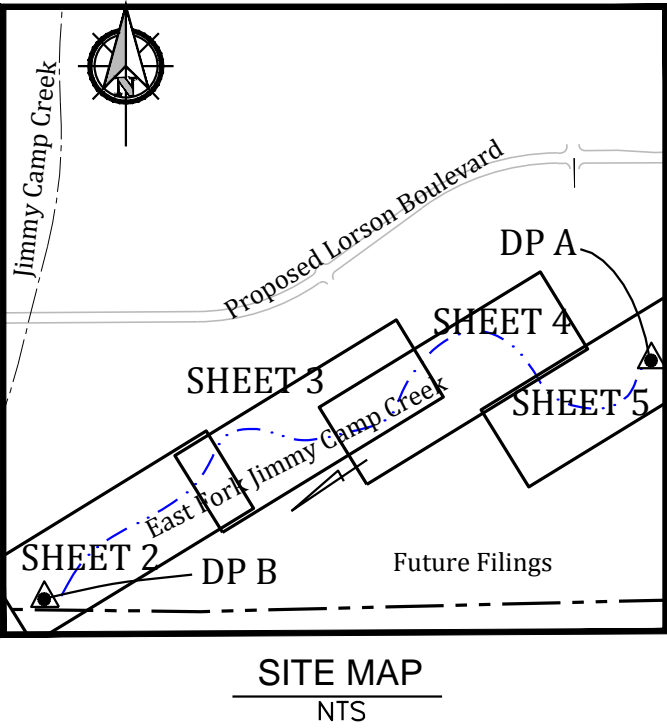
- All drainage and roadway construction shall meet the standards and specifications of the City of Colorado Springs/El Paso County Drainage Criteria Manual, Volumes 1 and 2, and the El Paso County Engineering Criteria Manual.
- Contractor shall be responsible for the notification and field notification of all existing utilities, whether shown on the plans or not, before beginning construction. Location of existing utilities shall be verified by the contractor prior to construction. Call 811 to contact the Utility Notification Center of Colorado (UNCC).
- Contractor shall keep a copy of these approved plans, the Grading and Erosion Control Plan, the Stormwater Management Plan (SWMP), the soils and geotechnical report, and the appropriate design and construction standards and specifications at the job site at all times, including the following:

a. El Paso County Engineering Criteria Manual (ECM)

b. City of Colorado Springs/El Paso County Drainage Criteria Manual, Volumes 1 and 2

c. Colorado Department of Transportation (CDOT) Standard Specifications for Road and Bridge Construction

d. CDOT M & S Standards
- 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 from regulations and standards must be requested, and approved, in writing. Any modifications necessary to meet criteria after-the-fact will be entirely the developer's responsibility to rectify.
- It is the design engineer's responsibility to accurately show existing conditions, both onsite and offsite, on the construction plans. Any modifications necessary due to conflicts, omissions, or changed conditions will be entirely the developer's responsibility to rectify.
- Contractor shall schedule a pre-construction meeting with El Paso County Planning and Community Development (PCD) - Inspections, prior to starting construction.
- It is the contractor's responsibility to understand the requirements of all jurisdictional agencies and to obtain all required permits, including but not limited to El Paso County Erosion and Stormwater Quality Control Permit (ESQCP), Regional Building Floodplain Development Permit, U.S. Army Corps of Engineers-issued 401 and/or 404 permits, and county and state fugitive dust permits.
- Contractor shall not deviate from the plans without first obtaining written approval from the design engineer and PCD. Contractor shall notify the design engineer immediately upon discovery of any errors or inconsistencies.
- All storm drain pipe shall be Class III RCP unless otherwise noted and approved by PCD.
- Contractor shall coordinate geotechnical testing per ECM standards. Pavement design shall be approved by El Paso County PCD prior to placement of curb and gutter and pavement.
- All construction traffic must enter/exit the site at approved construction access points.
- Sight visibility triangles as identified in the plans shall be provided at all intersections. Obstructions greater than 18 inches above flowline are not allowed within sight triangles.
- Signing and striping shall comply with El Paso County Department of Public Works and MUTCD criteria. [If applicable, additional signing and striping notes will be provided.]
- Contractor shall obtain any permits required by El Paso County Department of Public Works, including Work Within the Right-of-Way and Special Transport permits.
- The limits of construction shall remain within the property line unless otherwise noted. The owner/developer shall obtain written permission and easements, where required, from adjoining property owner(s) prior to any off-site disturbance, grading, or construction.



INDEX OF SHEETS

- | | |
|----|---|
| 1 | Cover Sheet |
| 2 | Plan and Profile - Sta 10+00 to Sta 22+00 |
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| 4 | Plan and Profile - Sta 35+00 to Sta 45+00 |
| 5 | Plan and Profile - Sta 45+00 to Sta 50+00 |
| 6 | Typical Sections and Details |
| 7 | Cross Sections |
| 8 | Grading and Erosion Control Plan |
| 9 | Grading and Erosion Control Plan |
| 10 | Grading and Erosion Control Plan |

STATEMENTS

Design Engineer's Statement:

These detailed plans and specifications were prepared under my direction and supervision. Said plans and specifications have been prepared according to the criteria established by the County for detailed roadway, drainage, grading and erosion control plans and specifications, and said plans and specifications are in conformity with applicable master drainage plans and master transportation plans. Said plans and specifications meet the purposes for which the particular roadway and drainage facilities are designed and are correct to the best of my knowledge and belief. I accept responsibility for any liability caused by any negligent acts, errors or omissions on my part in preparation of these detailed plans and specifications.

Richard N. Wray, P.E. #19310
For and on behalf of Kiowa Engineering Corp.

Date

Owner/Developer's Statement:

I, the owner/developer have read and will comply with all of the requirements specified in these detailed plans and specifications.

Jeff Mark
Lorson Development
212 N. Wahsatch Ave. Suite 301
Colorado Springs, Colorado 80903

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, 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

DEVELOPER:

Lorson Development
212 N. Wahsatch #301
Colorado Springs, CO
80903

PREPARED BY:

Kiowa
Engineering Corporation

1604 South 21st Street
Colorado Springs, Colorado 80904
[719] 630-7342

PCD FILE # CDR 192

ABBREVIATIONS

ASSY = ASSEMBLY	MIN. = MINIMUM
BNDY = BOUNDARY	NTS = NOT TO SCALE
BOP = BOTTOM OF PIPE	OD = OUTSIDE DIAMETER
CL = CENTERLINE	PC = POINT OF HORIZONTAL CURVATURE
CRA = CONCRETE REVERSE ANCHOR	PP = PROPOSED
CTRB = CONCRETE THRUST BLOCK	PT = POINT OF HORIZONTAL TANGENCY
CR = POINT OF CURB RETURN	PVC = POLY VINYL CHLORIDE PIPE
DIP = DUCTILE IRON PIPE	PVC = POINT OF VERTICAL CURVATURE
EL = ELEVATION	PVI = POINT OF VERTICAL INTERSECTION
ESMT = EASEMENT	PVT = POINT OF VERTICAL TANGENCY
EX. = EXISTING	RCB = REINFORCED CONCRETE BOX
FO = FACE OF CURB	RCP = REINFORCED CONCRETE PIPE
FES = FLARED END SECTION	ROW = RIGHT OF WAY
FLG = FLANGE	RT = RIGHT
FL = FLOWLINE	SHT = SHEET
GB = GRADE BREAK	SS = SANITARY SEWER
HP = HIGH POINT	STA = STATION
HORIZ = HORIZONTAL	STD = STANDARD
HYD = HYDRANT	TA = TOP OF ASPHALT
I.D. = INSIDE DIAMETER	TC = TOP OF CURB
LT = LEFT	TOP = TOP OF PIPE
LF = LINEAR FEET	TOR = TOP OF ROCK
LP = LOW POINT	TYP = TYPICAL
MAX = MAXIMUM	VC = VERTICAL CURVE
MH = MANHOLE	VERT = VERTICAL

SUMMARY OF DESIGN FLOWS (cfs)

Design Point	5yr	EPC FIS ⁽¹⁾			2014 DPBS		
		10yr	100yr		5yr	10yr	100yr
A	NR	2600	5200		100	1860	4530
B	NR	2800	5500		120	1900	4600



Know what's below.
Call before you dig.

Kiowa Project No. 18020
January 24, 2020

Engineering Review

02/24/2020 10:48:55 PM

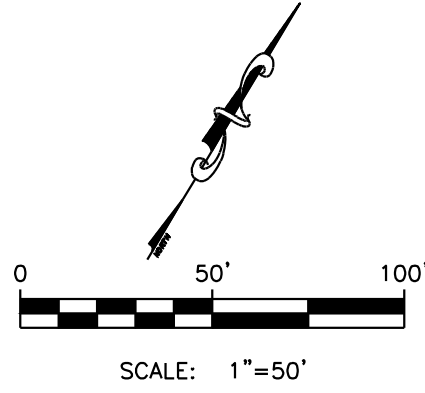
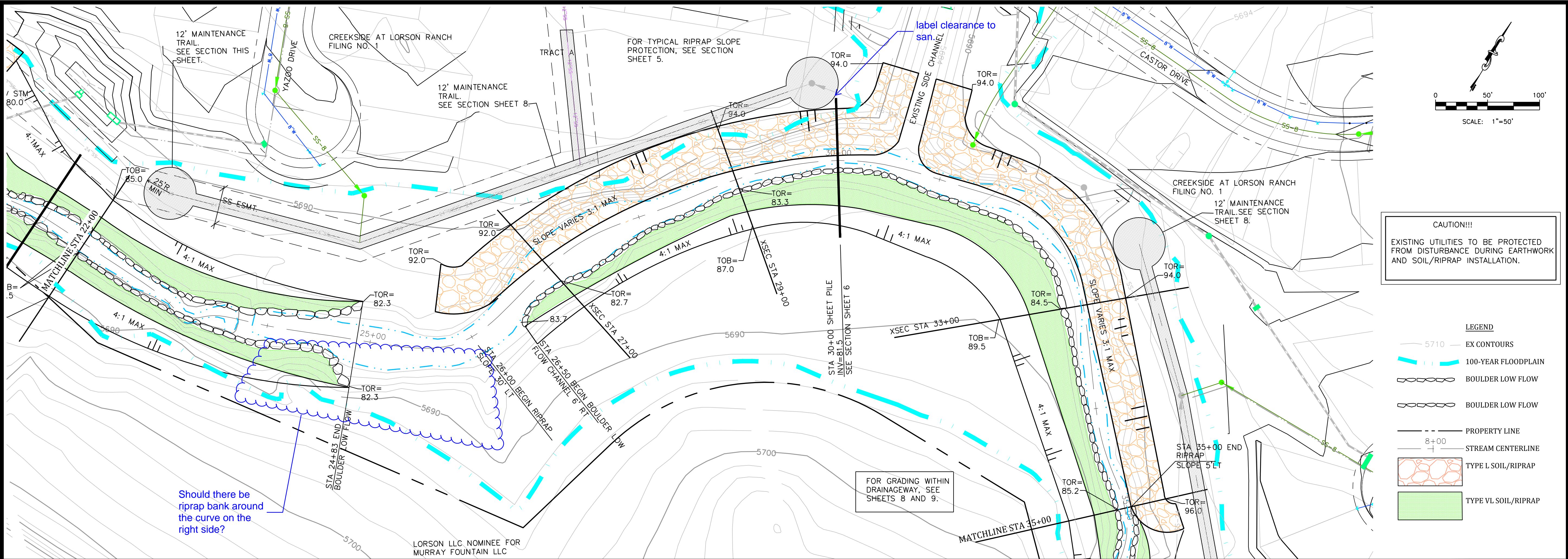
dsdrice

JeffRice@elpasoco.com

(719) 520-7877

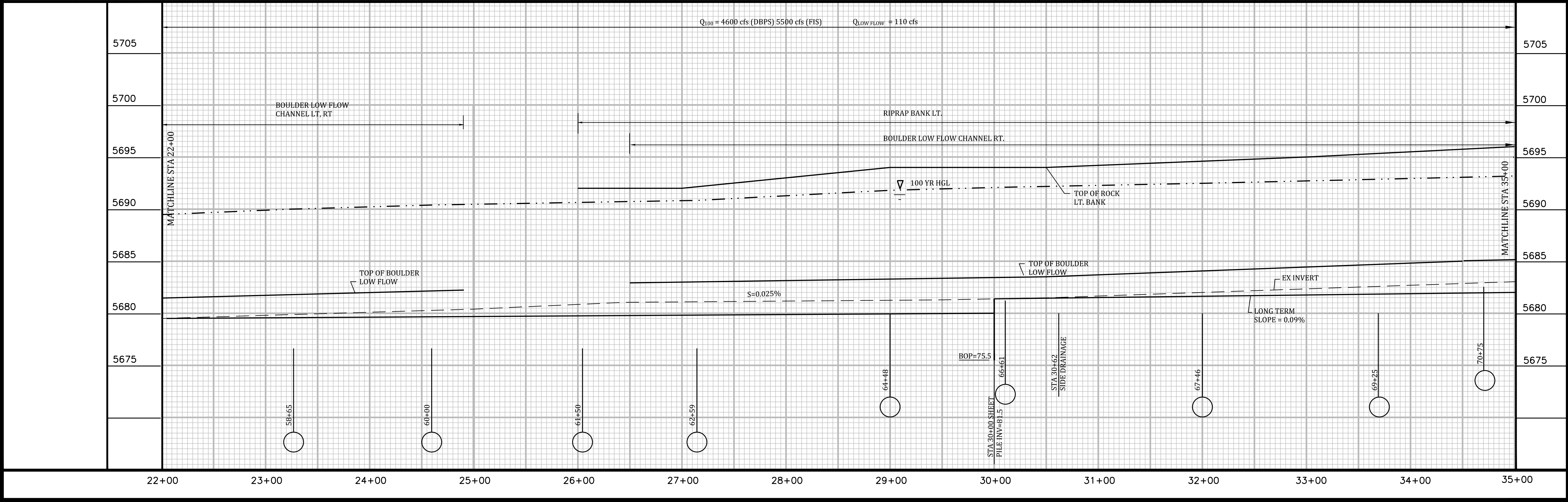
EPC Planning & Community
Development Department

See comment letter.



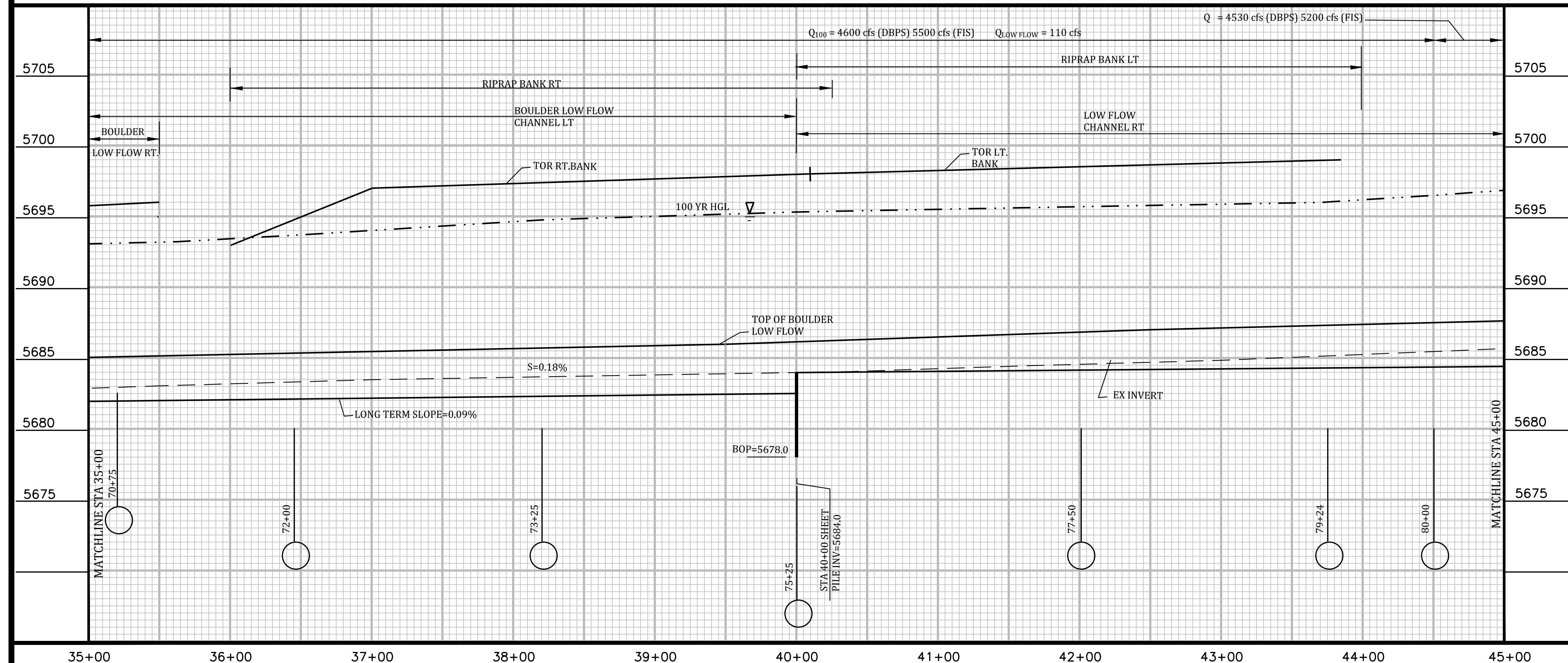
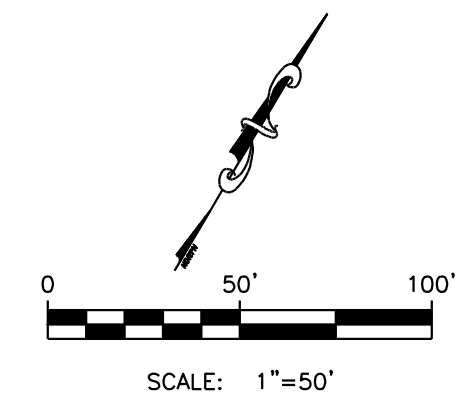
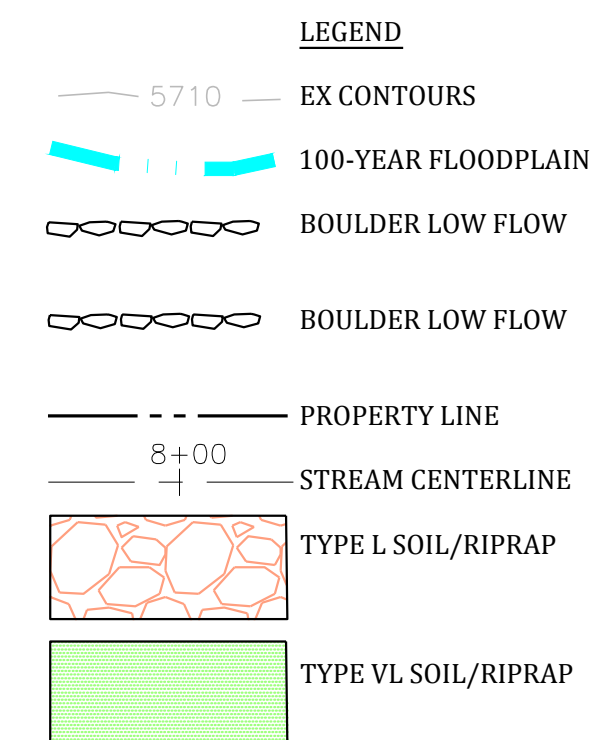
CAUTION!!!
EXISTING UTILITIES TO BE PROTECTED FROM DISTURBANCE DURING EARTHWORK AND SOIL/RIPRAP INSTALLATION.

- LEGEND
- 5710 EX CONTOURS
 - 100-YEAR FLOODPLAIN
 - BOULDER LOW FLOW
 - BOULDER LOW FLOW
 - PROPERTY LINE
 - 8+00 STREAM CENTERLINE
 - TYPE L SOIL/RIPRAP
 - TYPE VL SOIL/RIPRAP



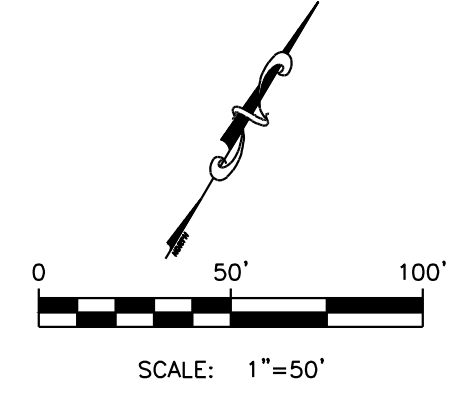
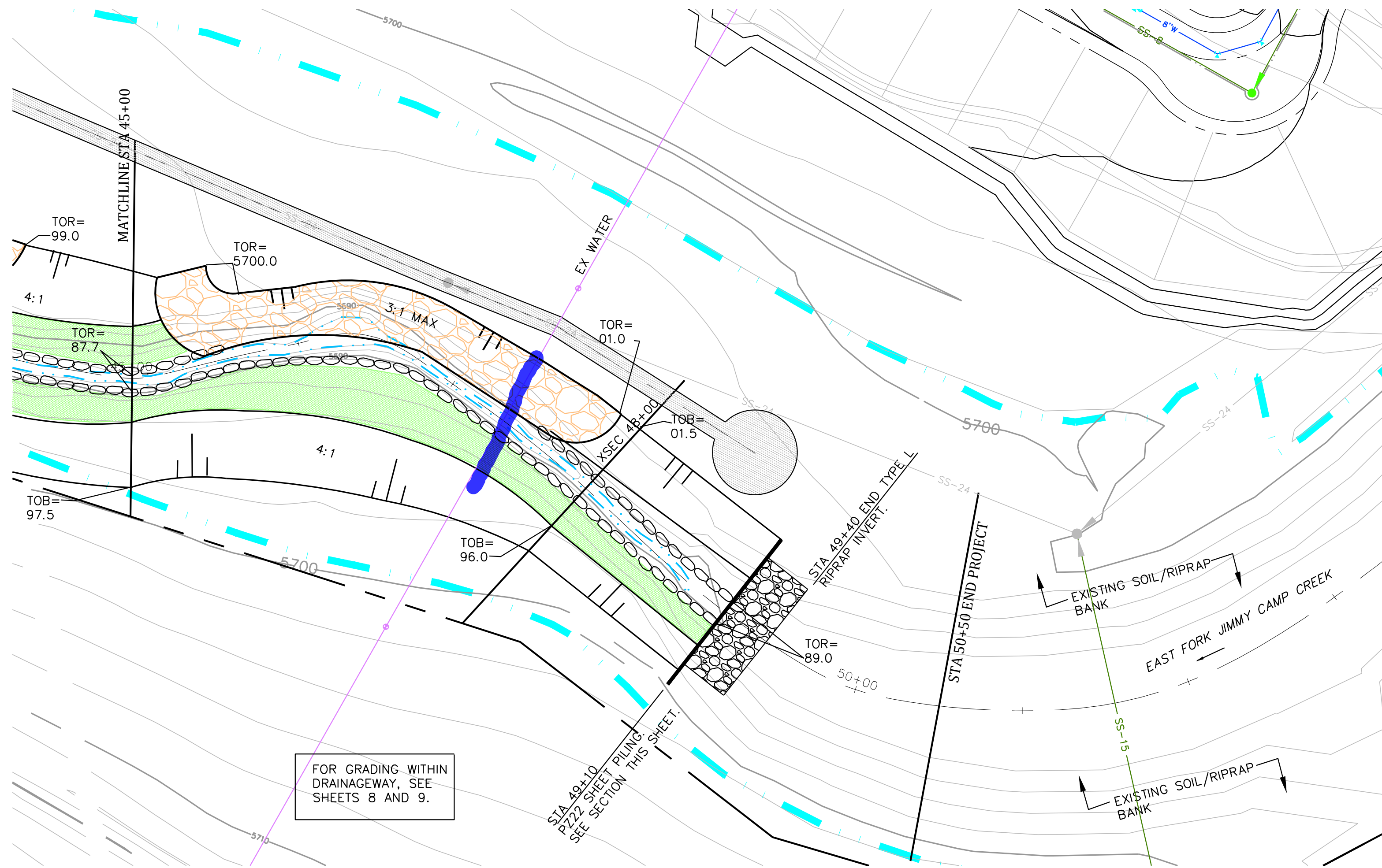
LORSON RANCH
CREEKSIDE DEVELOPMENT
EAST FORK JIMMY CAMP CREEK
CHANNEL PLAN AND PROFILE STA 22+00 TO STA 35+00
EL PASO COUNTY, COLORADO

Project No.:	18020
Date:	1/24/2020
Design:	RNW
Drawn:	EAK
Check:	RNW
Revisions:	



**LORSON RANCH
CREEKSIDE DEVELOPMENT
EAST FORK JIMMY CAMP CREEK
CHANNEL PLAN AND PROFILE STA 35+00 TO STA 45+00
EL PASO COUNTY, COLORADO**

Project No.: 18020
Date: 1/24/2020
Design: RNW
Drawn: EAK
Check: RNW
Revisions:



CAUTION!!!
EXISTING UTILITIES TO BE PROTECTED
FROM DISTURBANCE DURING EARTHWORK
AND SOIL/RIPRAP INSTALLATION.

- LEGEND
- 5710 EX CONTOURS
 - 100-YEAR FLOODPLAIN
 - BOULDER LOW FLOW
 - BOULDER LOW FLOW
 - PROPERTY LINE
 - 8+00 STREAM CENTERLINE
 - TYPE L SOIL/RIPRAP
 - TYPE VL SOIL/RIPRAP

FOR GRADING WITHIN
DRAINAGEWAY, SEE
SHEETS 8 AND 9.

STA 49+10
P222 SHEET PILING
SEE SECTION THIS
SHEET.

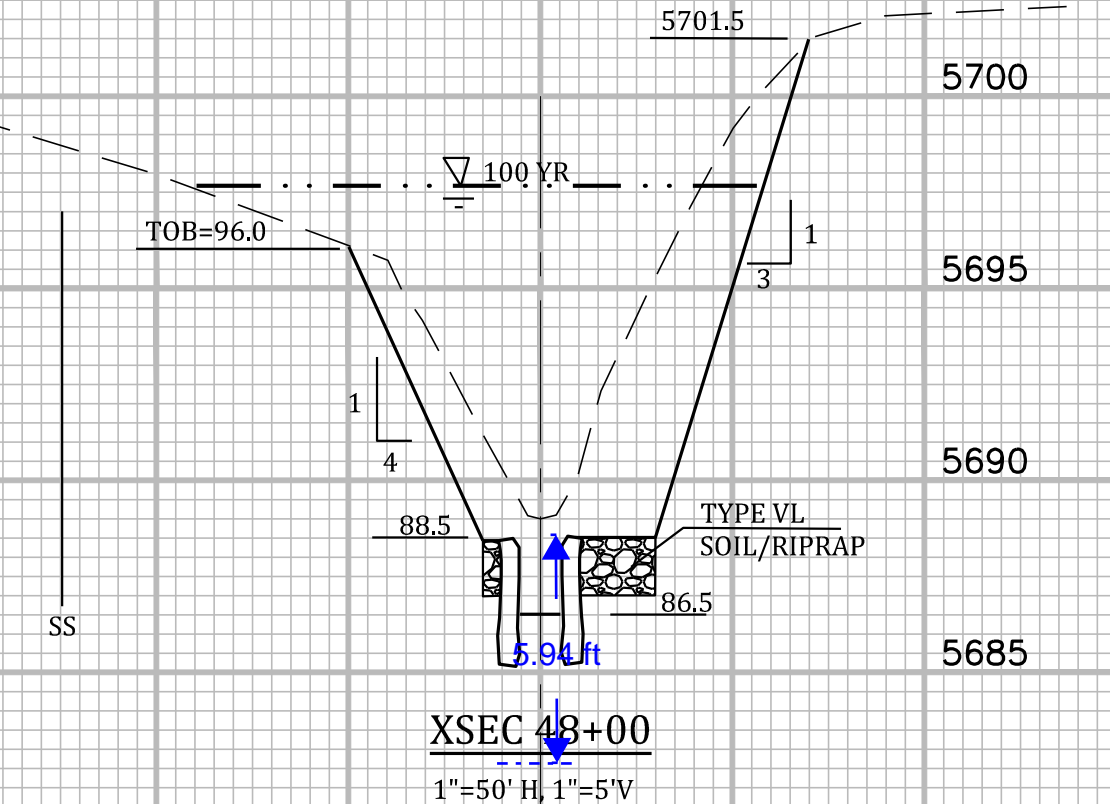
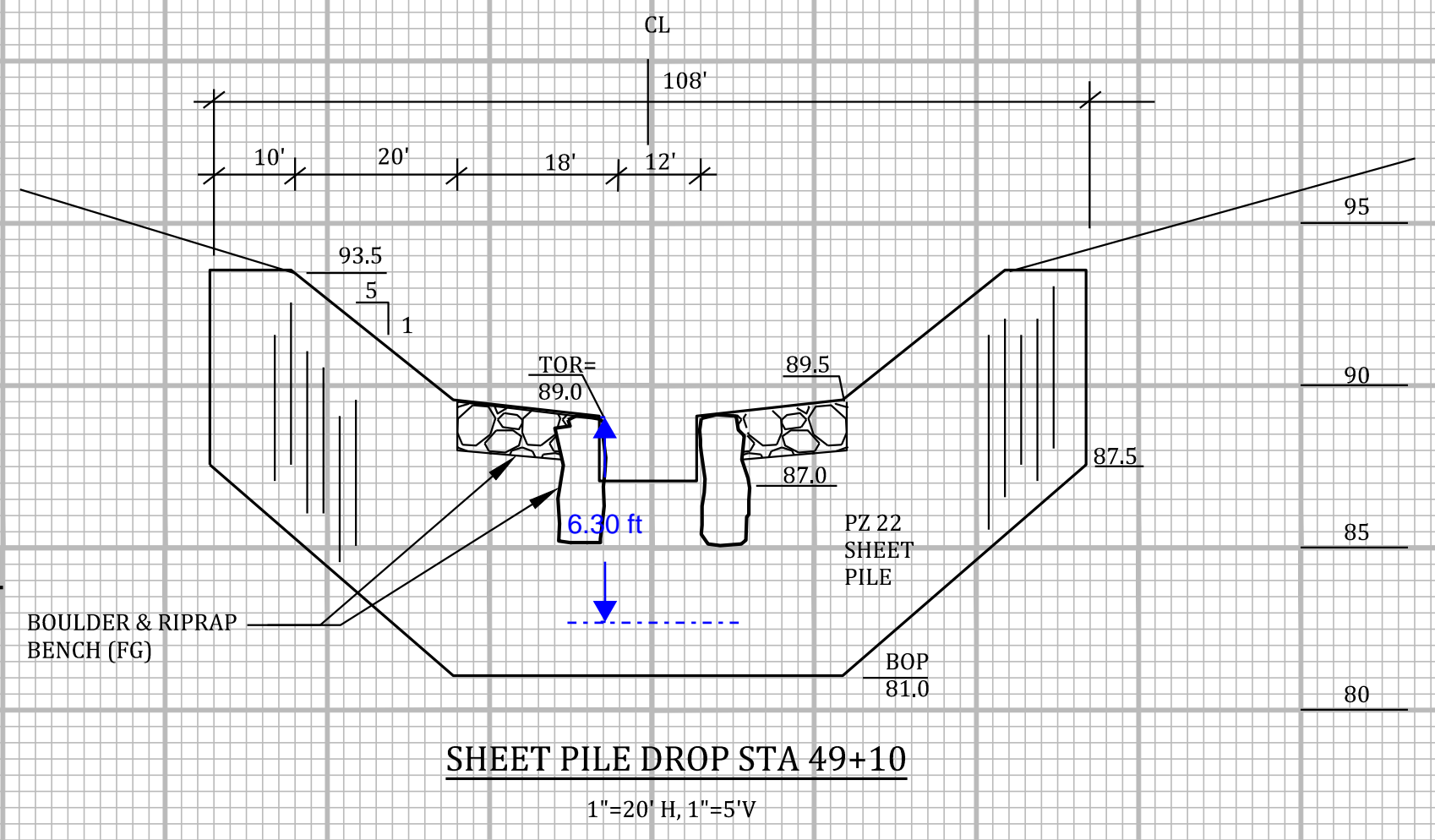
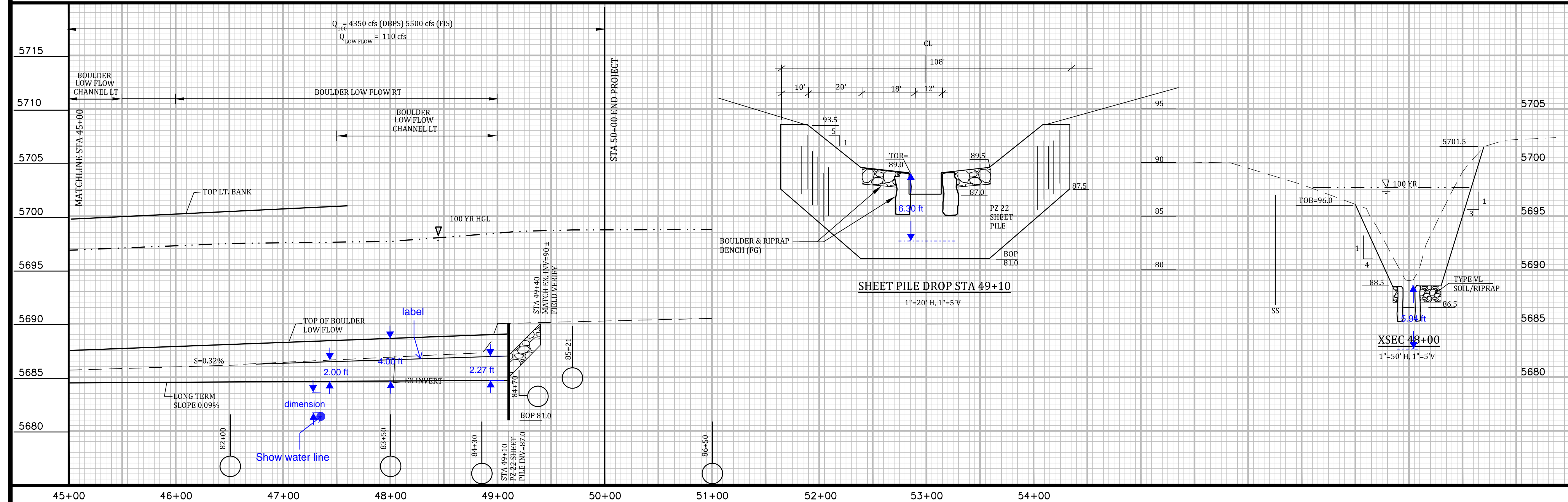
STA 49+40 END TYPE L
RIPRAP INVERT.

STA 50+50 END PROJECT

EXISTING SOIL/RIPRAP
BANK

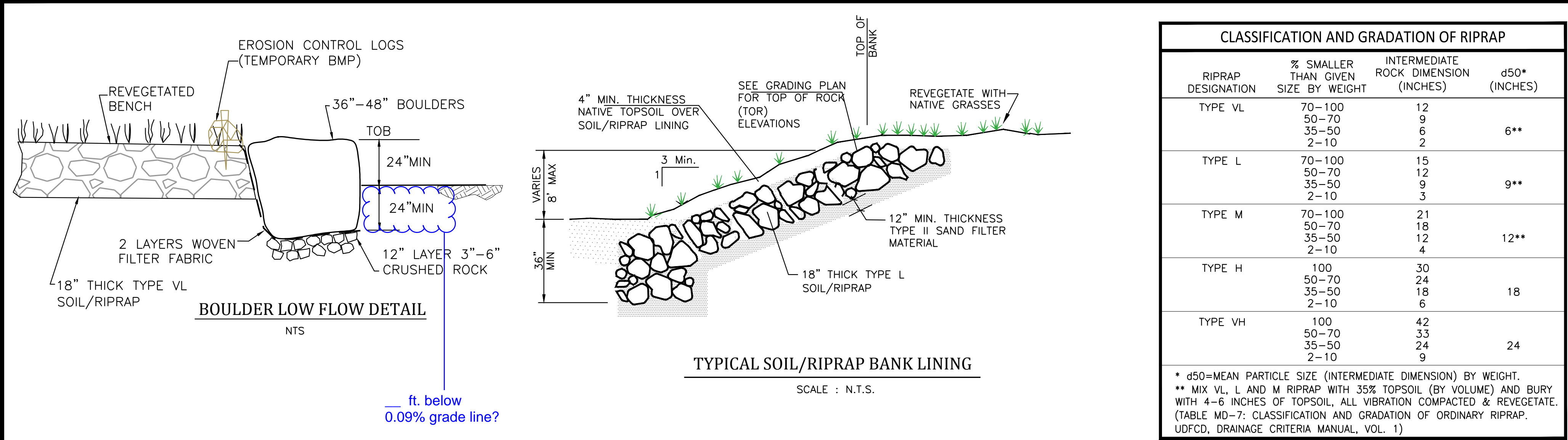
EAST FORK JIMMY CAMP CREEK

EXISTING SOIL/RIPRAP
BANK

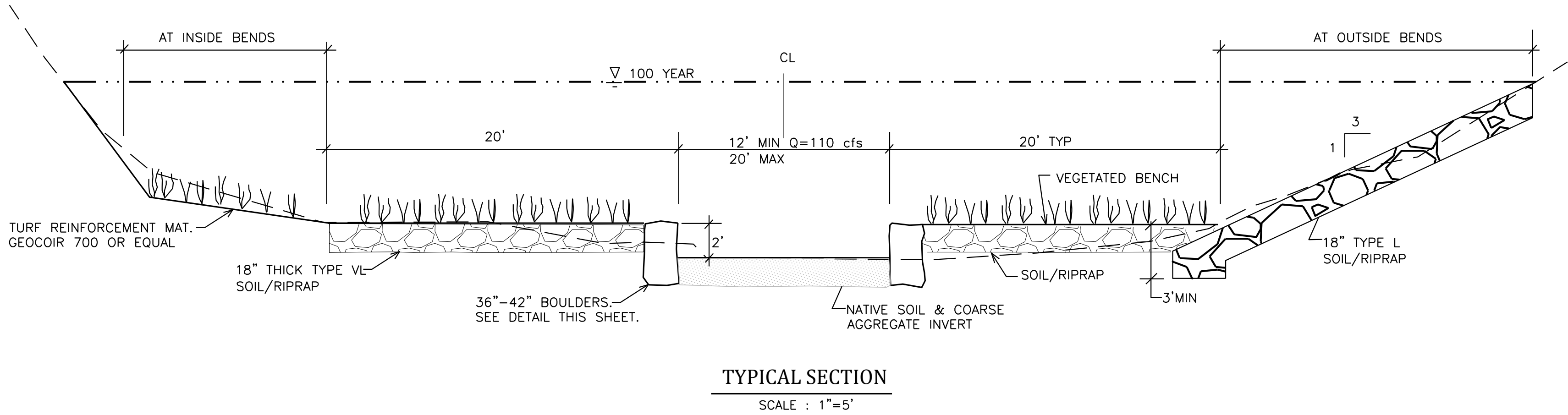


LORSON RANCH
CREEKSIDE DEVELOPMENT
EAST FORK JIMMY CAMP CREEK
CHANNEL PLAN AND PROFILE STA 45+00 TO 50+00
EL PASO COUNTY, COLORADO

Project No.:	18020
Date:	1/24/2020
Design:	RNW
Drawn:	EAK
Check:	RNW
Revisions:	



to address the potential for long-term degradation should the channel seek the 0.09 percent slope estimated in Reference 2. The boulders along the low flow channel will be situated so that the bottom of the boulder is at least two feet below the design invert shown on the profiles. Where the long-term



SOIL RIPRAP

THE SOIL MATERIAL SHALL BE NATIVE OR TOPSOIL AND MIXED WITH SIXTY FIVE PERCENT (65%) RIPRAP AND THIRTY FIVE PERCENT (35%) SOIL BY VOLUME.

SOIL RIPRAP SHALL CONSIST OF A UNIFORM MIXTURE OF SOIL AND RIPRAP WITHOUT VOIDS.

CONTRACTOR SHALL COOPERATE WITH ENGINEER IN OBTAINING AND PROVIDING SAMPLES OF ALL SPECIFIED MATERIALS.

CONTRACTOR SHALL SUBMIT CERTIFIED LABORATORY TEST CERTIFICATES FOR ALL ITEMS REQUIRED FOR SOIL RIPRAP.

RIPRAP USED SHALL BE THE TYPE DESIGNATED ON THE DRAWINGS AND SHALL CONFORM TO TABLE SHOWN TO THE RIGHT.

THE RIPRAP DESIGNATION AND TOTAL THICKNESS OF RIPRAP SHALL BE AS SHOWN ON THE DRAWINGS. THE MAXIMUM STONE SIZE SHALL NOT LARGER THAN THE THICKNESS OF THE RIPRAP.

NEITHER WIDTH NOR THICKNESS OF A SINGLE STONE OF RIPRAP SHALL BE LESS THAN ONE-THIRD ($\frac{1}{3}$) OF ITS LENGTH.

THE SPECIFIC GRAVITY OF THE RIPRAP SHALL BE TWO AND ONE-HALF (2.5) OR GREATER.

MINIMUM DENSITY FOR ACCEPTABLE RIPRAP SHALL BE ONE HUNDRED AND SIXTY FIVE (165) POUNDS PER CUBIC FOOT.

RIPRAP SPECIFIC GRAVITY SHALL BE ACCORDING TO THE BULK-SATURATED, SURFACE-DRY BASIS, IN ACCORDANCE WITH AASHTO T85.

THE RIPRAP SHALL HAVE A PERCENTAGE LOSS OF NOT MORE THAN FORTY PERCENT (40%) AFTER FIVE HUNDRED (500) REVOLUTIONS WHEN TESTED IN ACCORDANCE WITH AASHTO T96.

THE RIPRAP SHALL HAVE A PERCENTAGE LOSS OF NOT MORE THAN TEN (10%) AFTER FIVE (5) CYCLES WHEN TESTED IN ACCORDANCE WITH AASHTO T104 FOR LEDGE ROCK USING SODIUM SULFATE.

THE RIPRAP SHALL HAVE A PERCENTAGE LOSS OF NOT MORE THAN TEN PERCENT (10%) AFTER TWELVE (12) CYCLES OF FREEZING AND THAWING WHEN TESTED IN ACCORDANCE WITH AASHTO T103 FOR LEDGE ROCK, PROCEDURE A. ROCK SHALL BE FREE FROM CALCITE INTRUSIONS.

RUBBLE FOR USE AS SOIL/RIPRAP SHALL BE GRADED TO MEET THE EQUIVALENT ROCK RIPRAP GRADATION. RUBBLE PROPOSED FOR USE IN PLACE OF ROCK RIPRAP SHALL BE STOCKPILED FOR OBSERVATION BY THE ENGINEER PRIOR TO THE COMMENCEMENT OF THE WORK

GRADATION:

A. EACH LOAD OF RIPRAP SHALL BE REASONABLY WELL GRADED FROM THE SMALLEST TO THE LARGEST SIZE SPECIFIED.

B. STONES SMALLER THAN THE TWO TO TEN PERCENT (2%-10%) SIZE WILL NOT BE PERMITTED IN AN AMOUNT EXCEEDING TEN PERCENT (10%) BY WEIGHT OF EACH LOAD.

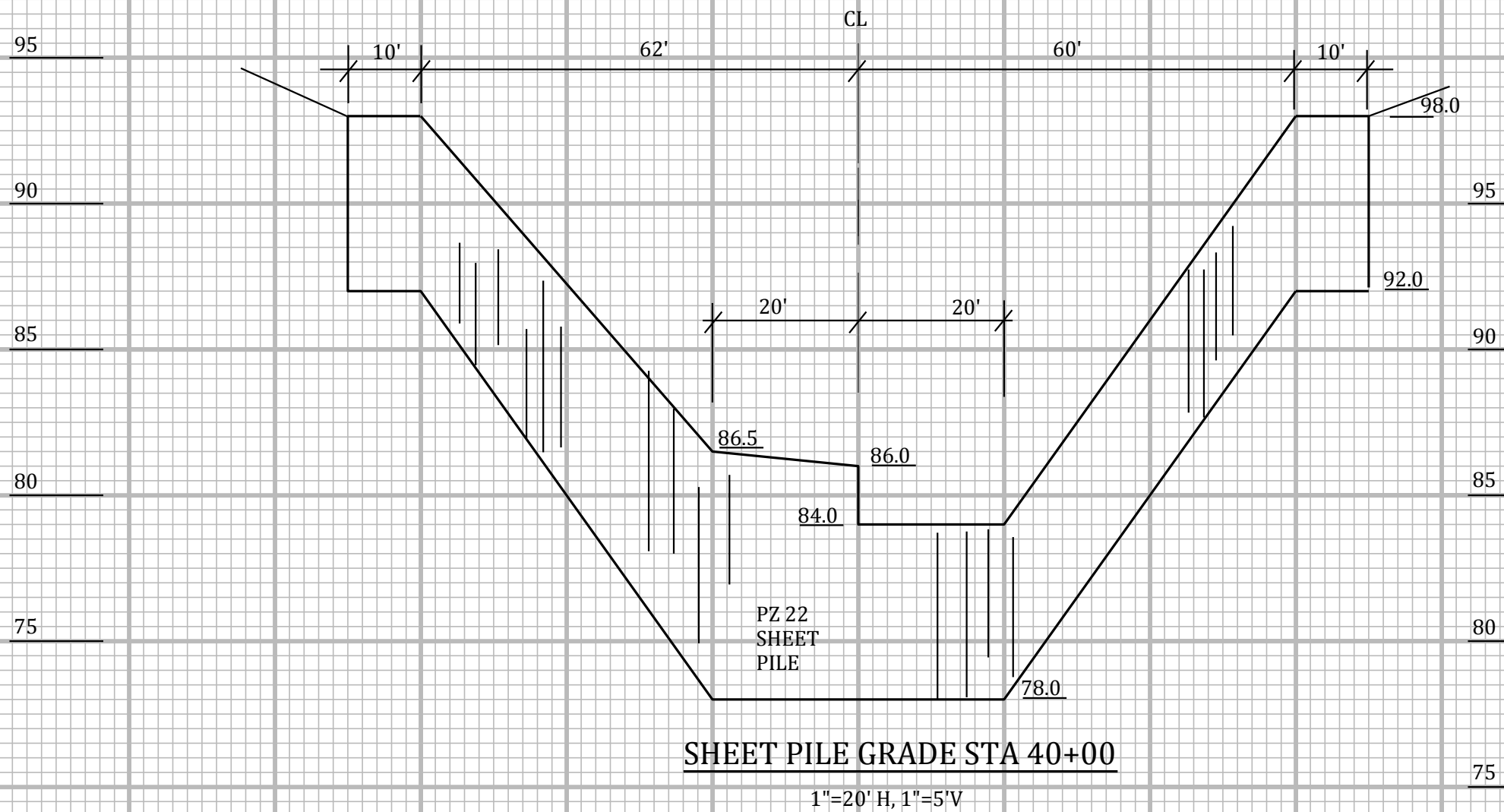
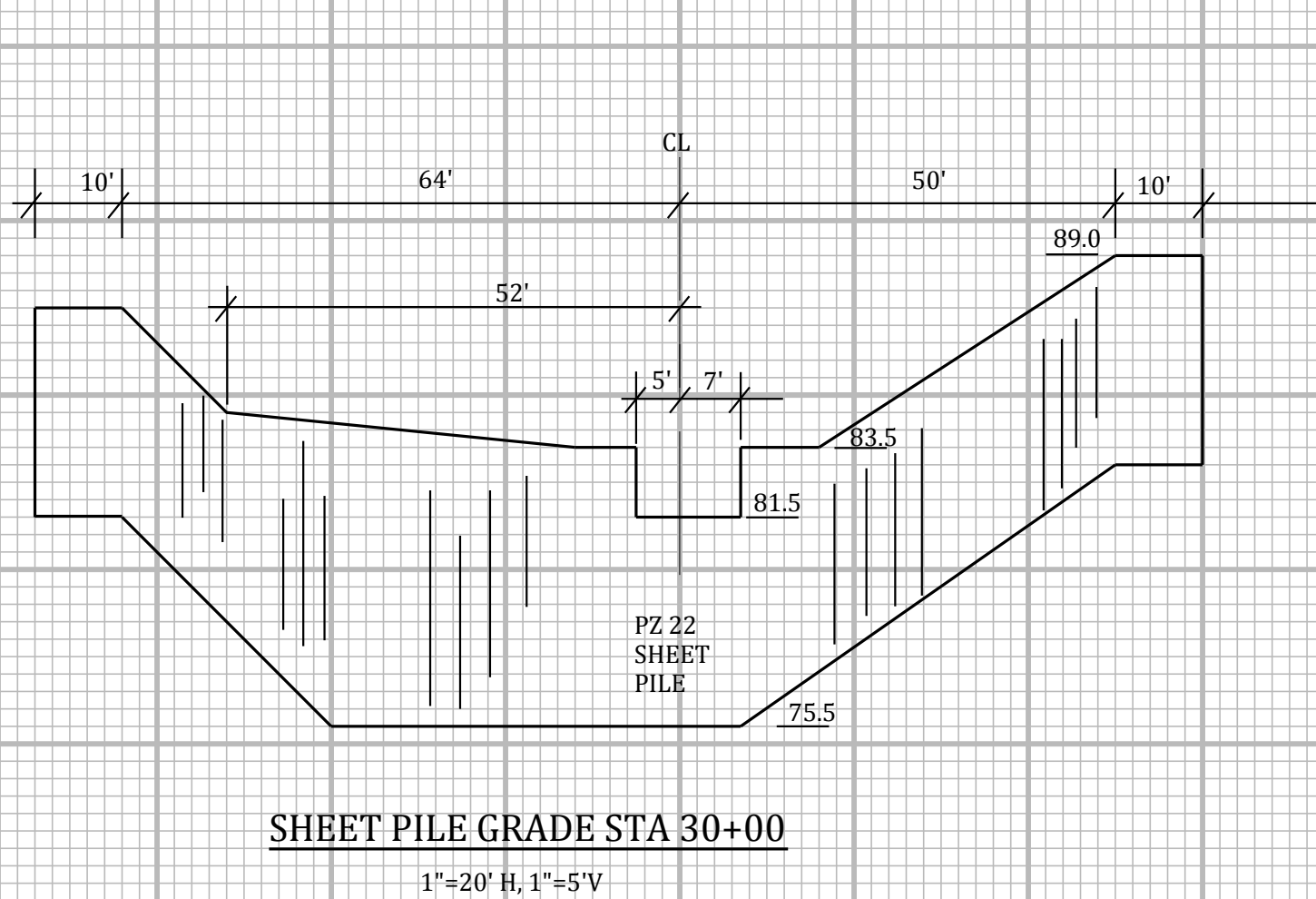
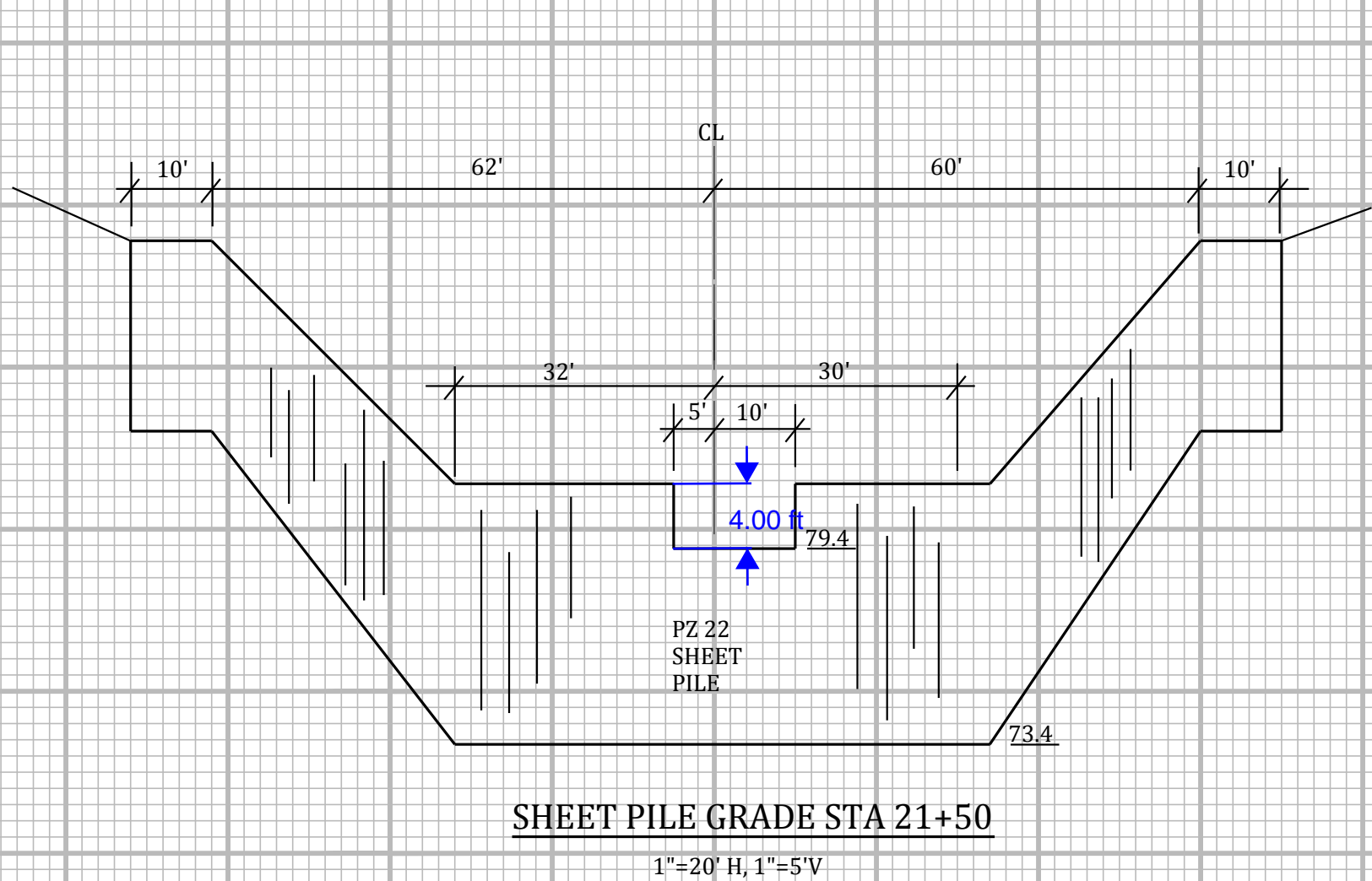
C. CONTROL OF GRADATION SHALL BE BY VISUAL INSPECTION. HOWEVER IN THE EVENT THE ENGINEER DETERMINES THE RIPRAP TO BE UNACCEPTABLE, THE ENGINEER SHALL PICK TWO (2) RANDOM TRUCKLOADS TO BE DUMPED AND CHECKED FOR GRADATION.

1) MECHANICAL EQUIPMENT AND LABOR NEEDED TO ASSIST IN CHECKING GRADATION SHALL BE PROVIDED BY THE CONTRACTOR AT NO ADDITIONAL COST.

BROKEN ASPHALT PAVEMENT SHALL NOT BE ACCEPTABLE FOR USE IN THE WORK.

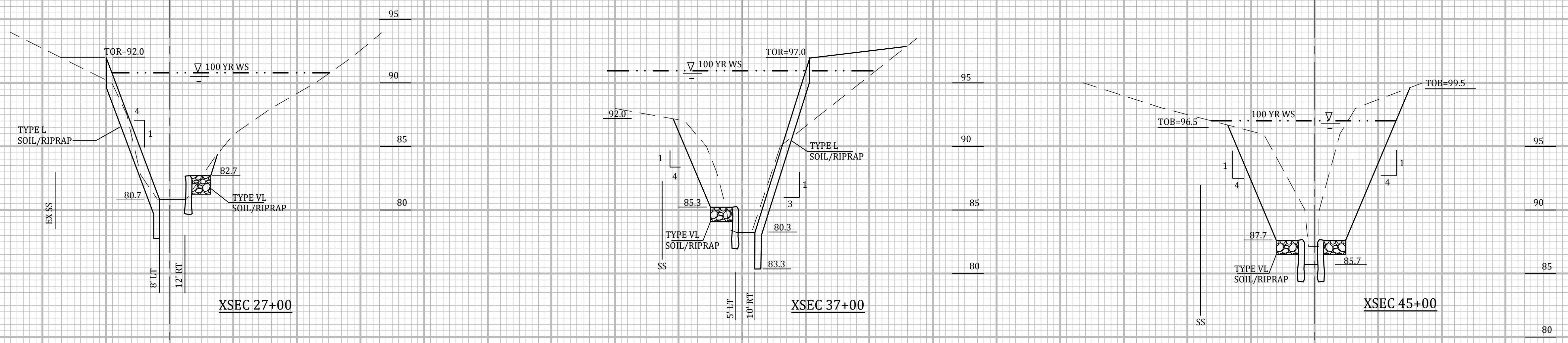
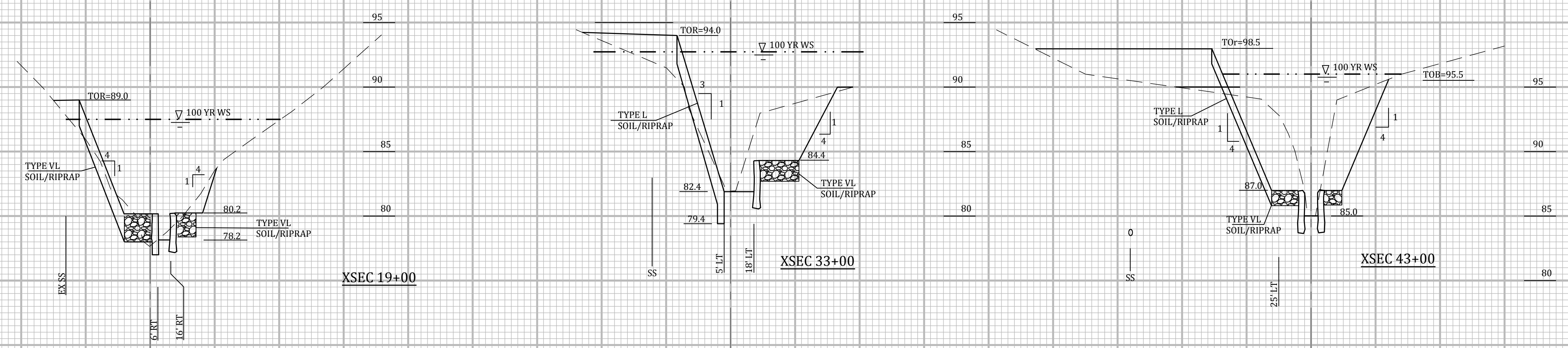
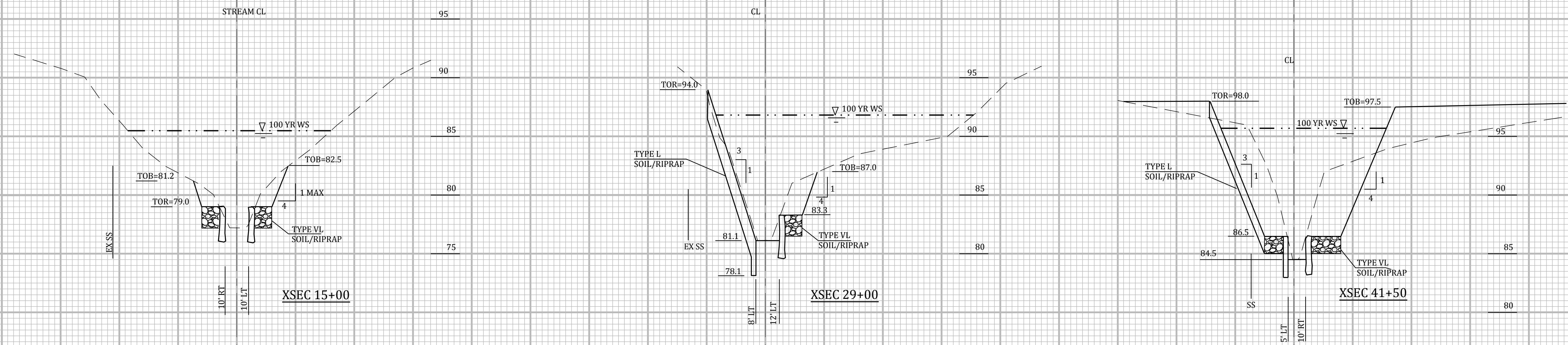
ROUNDED RIPRAP (RIVER ROCK) IS NOT ACCEPTABLE, UNLESS SPECIFICALLY DESIGNATED ON THE DRAWINGS.

CLASSIFICATION OF BOULDERS		
BOULDER CLASSIFICATION	NOMINAL SIZE AND RANGE IN SMALLEST DIMENSION OF INDIVIDUAL ROCK BOULDERS (INCHES)	MAXIMUM RATIO OF LARGEST TO SMALLEST ROCK DIMENSION OF INDIVIDUAL BOULDERS
B24	24 [22-26]	2.00 [44"-52" MAX.]
B30	30 [28-32]	2.00 [56"-64" MAX.]
B36	36 [34-38]	1.75 [60"-67" MAX.]
B42	42 [40-44]	1.65 [66"-73" MAX.]
B48	48 [45-51+]	1.50 [68"-77" MAX.]
(TABLE MD-8: CLASSIFICATION OF BOULDERS. UDFCD, DRAINAGE CRITERIA MANUAL, VOL. 1)		



LORSON RANCH
CREEKSIDE DEVELOPMENT
EAST FORK JIMMY CAMP CREEK
TYPICAL SECTIONS AND DETAILS
EL PASO COUNTY, COLORADO

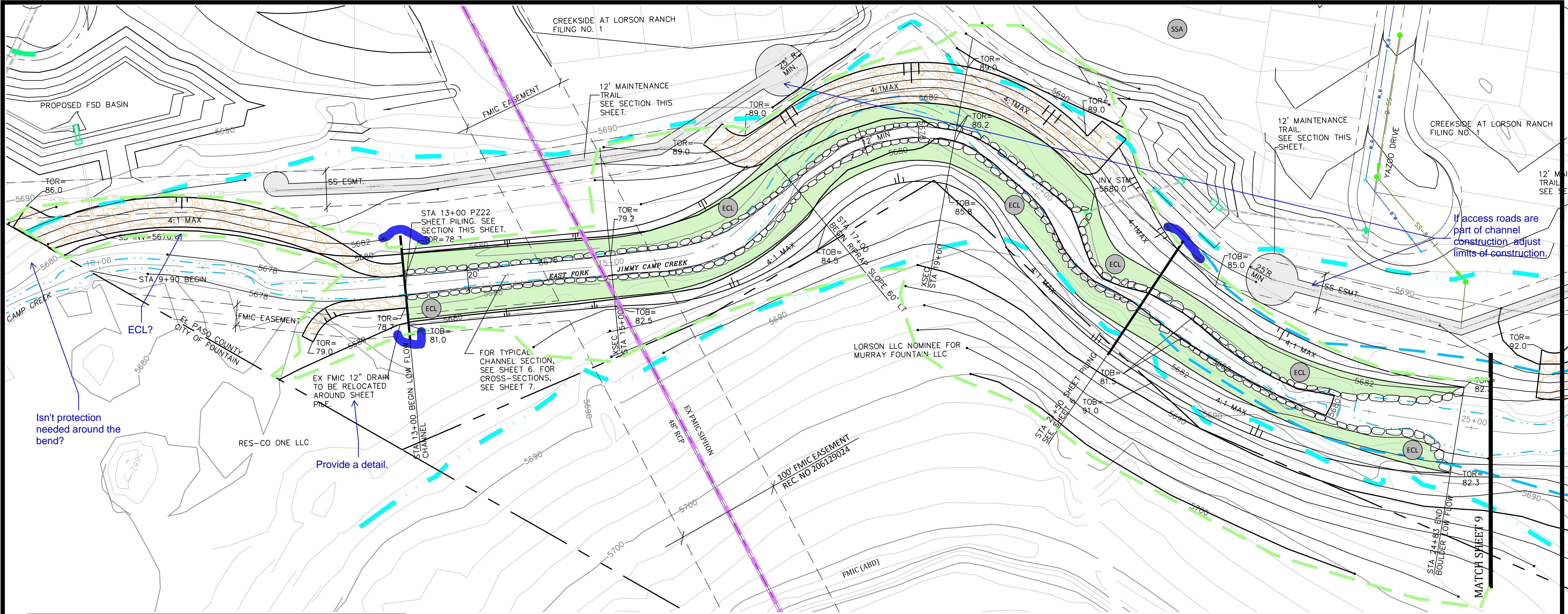
Project No:	18020
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Drawn:	EAK
Check:	RNW
Revisions:	



1"=50' H, 1"=5' V

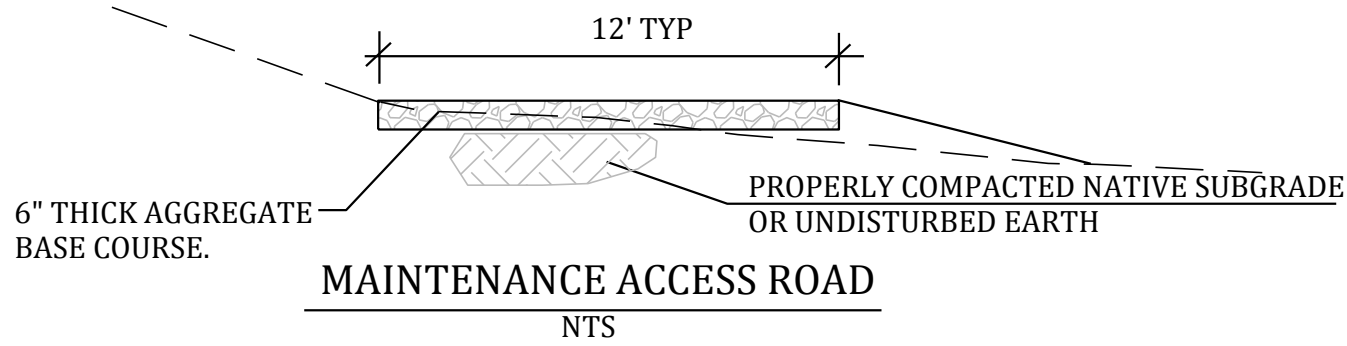
LORSON RANCH
CREEKSIDE DEVELOPMENT
EAST FORK JIMMY CAMP CREEK
CHANNEL PLAN AND PROFILE
EL PASO COUNTY, COLORADO

Project No.:	18020
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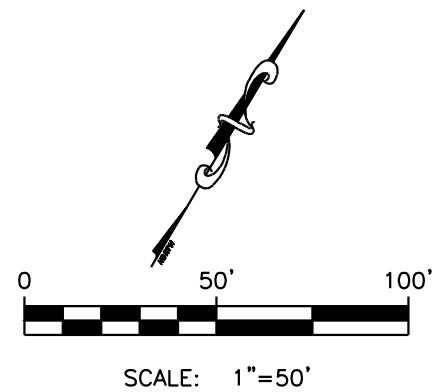


- PROJECT SPECIFIC GRADING AND EROSION CONTROL NOTES**
- All earthwork required of this construction shall be completed in accordance with all applicable sections of the Project Specifications and Soil Investigation Report (Geotechnical Report).
 - Rubbish including timber, concrete rubble, trees, brush, and asphalt shall not be backfilled adjacent to any of the structures or be in the placement of any unclassified fill. The Contractor shall be responsible for the removal and hauling of such materials to a suitable spoil area. Costs associated with the removal of such materials shall be paid for as documented in the Project Specifications.
 - Excess excavation shall become the property of the Contractor and shall be disposed of at the Contractor's expense. The cost of haulage and spoiling of excess excavated materials shall be paid for as documented in the Project Specifications.
 - Water shall be used as a dust palliative as required and shall be included in the cost for earthwork item(s). No separate payment will be made for dust control associated with the site construction.
 - The road grades shall be cleared of vegetation and the topsoil stockpiled for later use.
 - All grading shall be in conformance with the Geotechnical Report for the area.
 - Placement of fill for roadway embankments shall be completed in conformance with the Geotechnical Report.
 - Grading contours shown on this plan are to final grade.
 - Compaction under filled areas, including roadway and detention basin embankments, shall be 95 percent of the maximum Standard Proctor Density (ASTM D698) at two (2) percent of optimum moisture content.
 - No rubble or debris shall be placed in the backfill under any of the proposed buildings, streets, curb & gutter, sidewalk and drainage structures or within five (5) feet of a building footprint. Properly graded rubble may be used in some locations as specified and verified by the Geotechnical Engineer.
 - Contractor is responsible for reviewing the site prior to bidding to verify site conditions.
 - Contractor is responsible for providing erosion control measures as approved by the El Paso County PCD Engineering Division and as may be required by the El Paso County Inspector.
 - All slopes equal to or greater than 3:1 shall require anchored soil retention blanket (SRB), Geocoir 700 or equal.
 - The Developer is responsible for maintaining erosion control measures until a mature stage of vegetation is established.
 - All soils used for fill must be approved by a representative of the Geotechnical Engineer.
 - All natural ground to receive fill must be properly scarified, watered and compacted prior to placing fill.
 - The Contractor is solely responsible for the design, maintenance and operation of any required dewatering system. The Contractor shall perform such independent investigation as he deems necessary to satisfy himself as to the subsurface groundwater conditions and unstable soil conditions to be encountered throughout the construction. Contractor shall coordinate the dewatering system with El Paso County when associated with public facilities.
 - No fill shall be placed, spread or rolled while it is frozen, thawing or during unfavorable weather conditions. When the work is interrupted by heavy rain, fill operations shall not be resumed until a representative of the Geotechnical Engineer indicates that the moisture content and density of the previously placed fill are as specified. Fill surfaces may be scarified and recompacted after rainfall if necessary, to obtain proper moisture density relation.
 - Additional erosion control structures and/or grading may be required at the time of construction.
 - Sediment removal for erosion control facilities shall be performed continuously for proper function.
 - Base mapping was provided by Core Engineering. The date of the last survey update was January 2016.
 - Proposed Construction Schedule:
 - Begin Construction: pending
 - End Construction: pending
 - Total Site Area = 9.2 Acres
 - Area to be disturbed = 14.7 Acres (est.).
 - Existing 100-year runoff coefficient = 0.25
 - Proposed 100-year runoff coefficient = 0.25
 - Existing Hydrologic Soil Groups: B/C
 - (B ASCALON SANDY LOAM)
 - (C MANZANIST CLAY LOAM)
 - Site is currently undeveloped and covered with native grasses on mild to moderate steep slopes (1%-4%).
 - Site is located in the Jimmy Camp Creek Drainage Basin.

(contractor to measure and document percentage cover)



SEED MIX		
AREAS DISTURBED BY THE EARTHWORK SHALL BE PERMANENTLY REVEGETATED WITH NATIVE GRASSES. NATIVE SEED MIX FOR THIS PROJECT SHALL BE AS FOLLOWS:		
SPECIES		lbs/acre
WESTERN WHEAT GRASS	<i>Paspalum smithii</i>	3.0
SIDEOTS GRAMA	<i>Bouteloua curtipendula</i>	2.0
SLENDER WHEAT GRASS	<i>Elymus trachycaulus</i>	2.0
LITTLE BLUESTEM	<i>Schizachyrium scoparium</i>	2.0
BLUE GRAMA	<i>Bouteloua gracilis</i>	0.5
SWITCH GRASS	<i>Panicum virgatum</i>	2.0
JUNE GRASS	<i>Koeleria cristata</i>	0.5
SAND DROPSEED	<i>Sporobolus cryptandrus</i>	0.5
		12.5 lbs
SEEDING APPLICATION: DRILL SEED 1/4" TO 1/2" INTO TOPSOIL. IN AREAS INACCESSIBLE TO A DRILL, HAND BROADCAST AT DOUBLE THE RATE AND RAKE 1/4" TO 1/2" INTO THE TOPSOIL.		
MULCHING APPLICATION: 1-1/2 TONS NATIVE HAY PER ACRE, MECHANICALLY CRIMPED INTO THE TOPSOIL OR HYDROMULCH.		

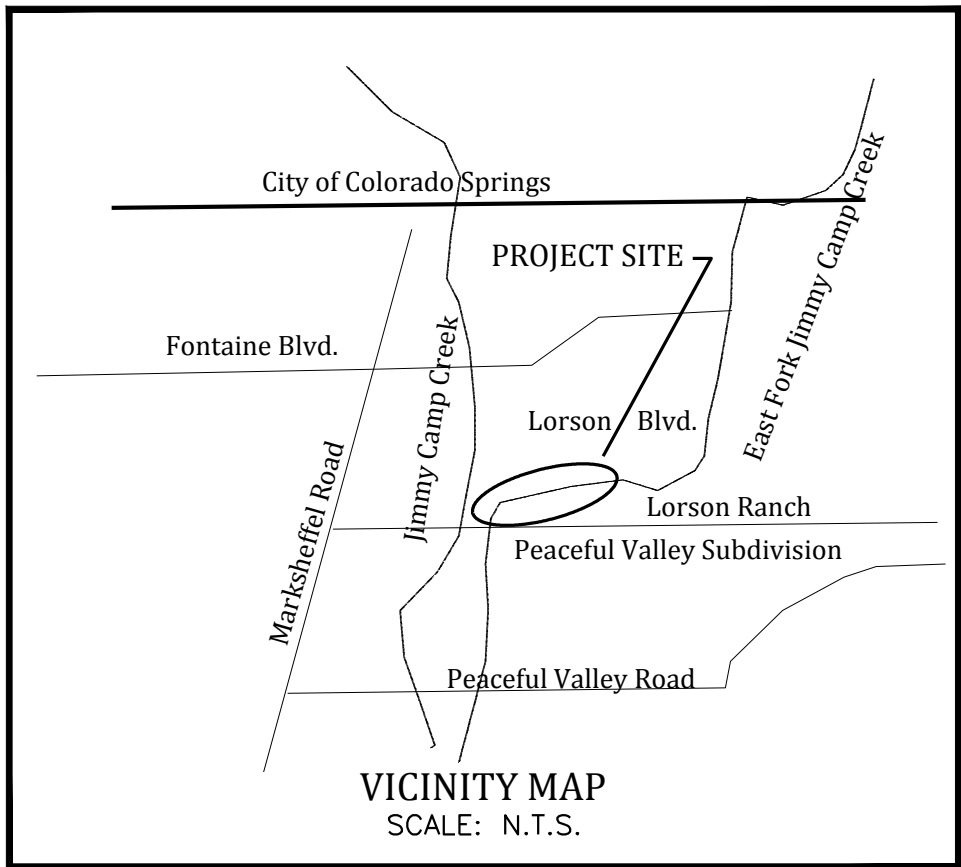


- NOTES:**
- CONTRACTOR TO IDENTIFY MATERIAL AND SOIL STOCKPILES AREA ON THE SWMP PRIOR TO THE COMMENCEMENT OF MOBILIZATION.
 - CONTRACTOR TO IDENTIFY STABILIZED STAGING AREA PRIOR TO THE COMMENCEMENT OF MOBILIZATION.

LEGEND

- SCL SEDIMENT CONTROL LOGS
- SSA STABILIZED STAGING AREA
- SM SEED AND MULCH
- TOR TOP OF SOIL/RIPRAP
- LIMITS OF GRADING & CONSTRUCTION
- TYPE L SOIL/RIPRAP
- TYPE VL SOIL/RIPRAP

Provide existing and proposed contours property lines, and all other linetypes and symbols used on the plan in the legend.



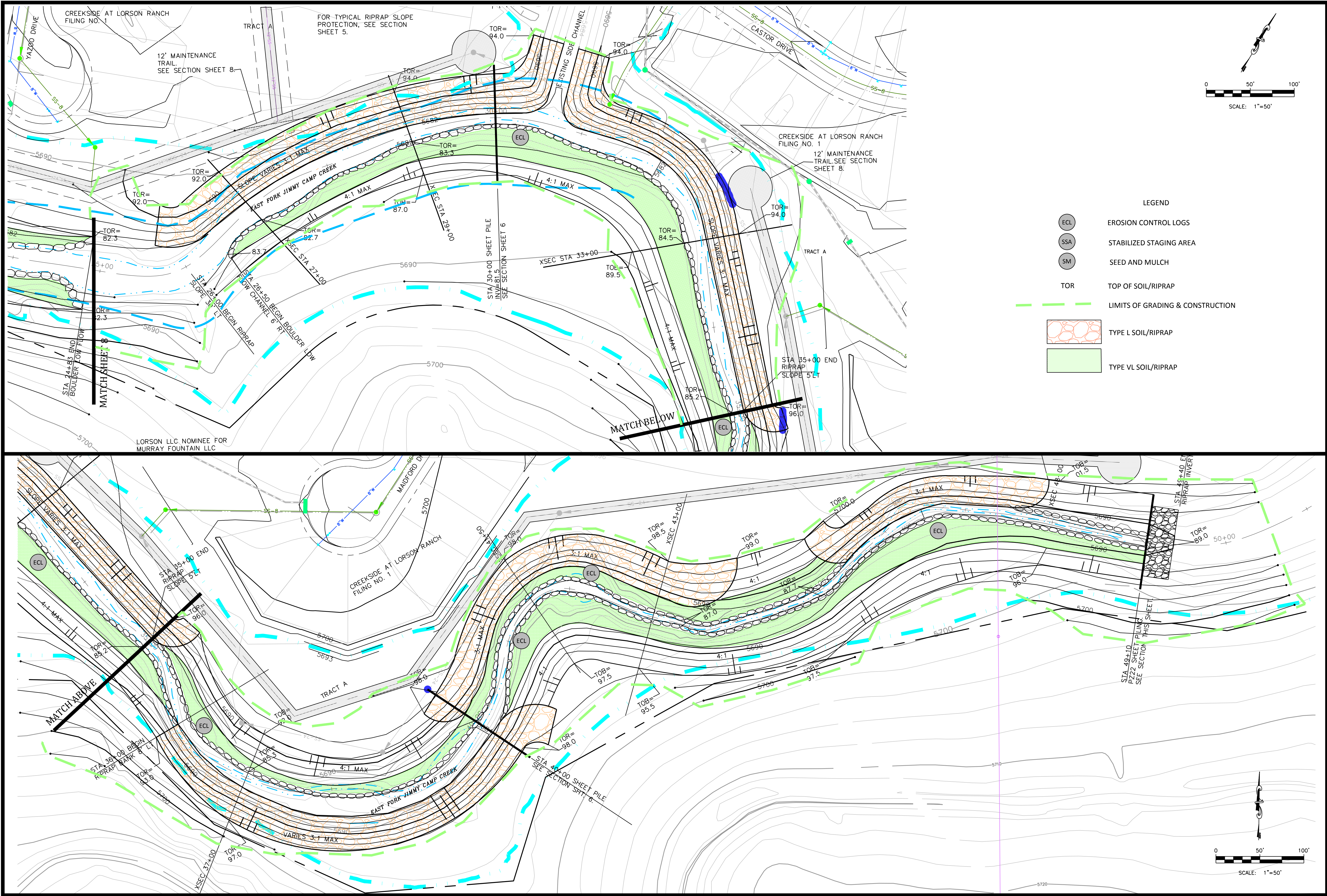
Kiowa
Engineering Corporation

1604 South 21st Street
Colorado Springs, Colorado 80904
(719) 630-7342

LORSON RANCH
CREEKSIDE DEVELOPMENT
EAST FORK JIMMY CAMP CREEK
GRADING AND EROSION CONTROL PLAN
EL PASO COUNTY, COLORADO

Project No.: 18020
Date: 1/24/2020
Design: RNW
Drawn: EAK
Check: RNW
Revisions:

8



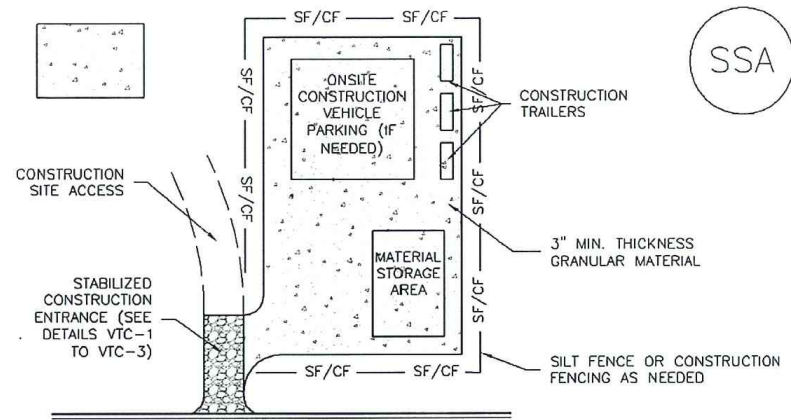
LORSON RANCH
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Project No.:	18020
Date:	1/24/2020
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Check:	RNW
Revisions:	

1. SEE PLAN VIEW FOR:
 - AREA OF SEEDING AND MULCHING.
 - TYPE OF SEED MIX
2. ALL BRANDS FURNISHED SHALL BE FREE FROM SUCH NOXIOUS WEEDS AS RUSSIAN OR CANADIAN THISTLE, COARSE FESCUE, EUROPEAN BINDWEED, JOHNSON GRASS, KNAW WEED AND LEAFY SPURGE.
3. THE SEEDER SHALL FURNISH TO THE CONTRACTOR A SIGNED STATEMENT CERTIFYING THAT THE SEED FURNISHED IS FROM A LOT THAT HAS BEEN TESTED BY A RECOGNIZED LABORATORY. SEED WHICH HAS BECOME VETLY OR OTHERWISE DAMAGED IN TRANSIT OR IN STORAGE WILL NOT BE ACCEPTABLE. SEED TICKETS SHALL BE PROVIDED TO REGULATING AGENCY UPON REQUEST.
4. DRILL SEEDING MIX SHALL CONFORM TO THE TABLE ON THE RIGHT.
5. THE SEEDING MIX MUST BE OF THE HIGHEST QUALITY AND MUST BE OF THE MAXIMUM PURITY AND GERMINATION PERCENTAGES SPECIFIED. THE SUBCONTRACTOR MUST COMPENSATE FOR A LESSER PERCENTAGE OF PURITY OR GERMINATION BY FURNISHING SUFFICIENT ADDITIONAL SEED TO EQUAL THE SPECIFIED PRODUCT. THE TAGS FROM THE SEED MIXES MUST BE SUPPLIED TO CONTRACTOR AND FORWARDED TO THE REGULATING AGENCY'S GESC INSPECTOR.
6. THE FORMULA USED FOR DETERMINING THE QUANTITY OF PURE LIVE SEED (PLS) SHALL BE (POUNDS OF SEED) X (PURITY % (GERMINATION) = POUNDS OF PURE LIVE SEED (PLS) OR PLS.
7. PERMANENT SEED MIX SHALL BE USED UNLESS OTHERWISE APPROVED BY THE REGULATING AGENCY.
8. ALL AREAS TO BE SEEDDED AND MULCHED SHALL HAVE NATIVE TOPSOIL OR APPROVED SOIL AMENDMENTS SPREAD TO A DEPTH OF AT LEAST 6 INCHES (LOOSE DEPTH). HARD ROADS AND OTHER COMPACTED AREAS SHALL BE LOOSENED TO A DEPTH OF 6 INCHES PRIOR TO SPREADING TOPSOIL.
9. SEED AT THE DEPTH OF THE LOOSELY LOOSENED TOPSOIL TO A DEPTH OF AT LEAST 6 INCHES PRIOR TO SEEDING. THE TOP 6 INCHES OF THE SEED BED SHALL BE FREE OF ROCKS GREATER THAN 4 INCHES AND SOIL CLODS GREATER THAN 2 INCHES. SEEDING OVER ANY COMPACTED AREAS THAT HAVEN'T BEEN THOROUGHLY LOOSENED SHALL BE REJECTED.
10. SEED TO BE ADDED TO THE MECHANICAL DRILL TO A DEPTH OF 1/4 INCH. ROW SPACING SHALL BE NO MORE THAN 6 INCHES. MATERIAL USED FOR MULCH SHALL CONSIST OF LONG-STEMMED STRAW. AT LEAST 50 PERCENT OF THE MULCH, BY WEIGHT, SHALL BE 10 INCHES OR MORE IN LENGTH. MULCH SHALL BE APPLIED AND MECHANICALLY ANCHORED TO A DEPTH OF AT LEAST 2 INCHES. MULCH SHALL BE APPLIED AT A RATE OF 400 LB. OF STRAW PER ACRE.
11. IF THE PERMITTEE DEMONSTRATES TO THE REGULATING AGENCY THAT IT IS NOT POSSIBLE TO DRILL SEED, SEED IS TO BE UNIFORMLY BROADCAST AT TWO TIMES THE DRILLED RATE, THEN LIGHTLY HARROWED TO PROVIDE A SEED DEPTH OF APPROXIMATELY 1/4 INCH, THEN ROLLED TO COMPACT, THEN MULCHED AS SPECIFIED ABOVE.
12. SEEDING AND MULCHING SHALL BE COMPLETED WITHIN 30 DAYS OF INITIAL EXPOSURE OR 7 DAYS AFTER GRADING IS SUBSTANTIALLY COMPLETE IN A GIVEN AREA (AS DEFINED BY THE REGULATING AGENCY). THIS MAY REQUIRE MULTIPLE MOBILIZATIONS FOR SEEDING AND MULCHING.
13. MULCH SHALL BE APPLIED WITHIN 24 HOURS OF SEEDING.
14. TACKIFIER SHOULD BE UTILIZED TO HELP WITH PLOW DISPLACEMENT.

1. SEEDED AND MULCHED AREAS SHALL BE INSPECTED FOR REQUIRED COVERAGE MONTHLY FOR A PERIOD OF TWO YEARS FOLLOWING INITIAL SEEDING. REPAIRS AND RE-SEEDING AND MULCHING SHALL BE UNDERTAKEN AFTER THE FIRST GROWING SEASON FOR ANY AREAS FAILING TO MEET THE REQUIRED COVERAGE.
2. REQUIRED COVERAGE FOR STANDARD, OPEN SPACE AND LOW GROWTH SEED MIXES SHALL BE DEFINED AS FOLLOWS:
 - a. 1 PLANT PER SQUARE FOOT WITH A MINIMUM HEIGHT OF 3 INCHES. THE 3 PLANTS PER SQUARE FOOT SHALL BE OF THE VARIETY AND SPECIES FOUND IN THE DOUGLAS COUNTY APPROVED MIX.
 - b. NO BARE AREAS LARGER THAN 4 SQUARE FEET (TWO FEET BY TWO FEET OR EQUIVALENT).
 - c. FREE OF ERODED AREAS.
 - d. FREE FROM INFESTATION OF NOXIOUS WEEDS IN ACCORDANCE WITH SECTION 6.4 OF THE GESC CRITERIA MANUAL.
3. REQUIRED COVERAGE FOR TURF GRASS AREAS SHALL BE DEFINED AS FOLLOWS:
 - a. AT LEAST 80% VEGETATIVE COVER OF GRASS SPECIES PLANTED.
 - b. NO BARE AREAS LARGER THAN 4 SQUARE FEET (TWO FEET BY TWO FEET OR EQUIVALENT).
 - c. FREE OF ERODED AREAS.
 - d. FREE FROM INFESTATION OF NOXIOUS WEEDS IN ACCORDANCE WITH SECTION 6.4 OF THE GESC CRITERIA MANUAL.
4. RESEEDING OF EROSION CONTROL AREAS SHALL BE TOP SOIL PRIOR TO RESEEDING. THE RESEEDING METHOD SHALL BE APPROVED BY THE COUNTY.

SM-6



STABILIZED STAGING AREA INSTALLATION NOTES

1. SEE PLAN VIEW FOR
-LOCATION OF STAGING AREA(S).
-CONTRACTOR MAY ADJUST LOCATION AND SIZE OF STAGING AREA WITH APPROVAL FROM THE LOCAL JURISDICTION.
2. STABILIZED STAGING AREA SHOULD BE APPROPRIATE FOR THE NEEDS OF THE SITE. OVERSIZING RESULTS IN A LARGER AREA TO STABILIZE FOLLOWING CONSTRUCTION.
3. STAGING AREA SHALL BE STABILIZED PRIOR TO OTHER OPERATIONS ON THE SITE.
4. THE STABILIZED STAGING AREA SHALL CONSIST OF A MINIMUM 3" THICK GRANULAR MATERIAL.
5. UNLESS OTHERWISE SPECIFIED BY LOCAL JURISDICTION, ROCK SHALL CONSIST OF OR SPEC. #703, MSMT#143 CEMENT AGGREGATE OR 6" (MINUS) ROCK.
6. ADDITIONAL PERMEABLE BMPs MAY BE REQUIRED INCLUDING BUT NOT LIMITED TO SLOPE AND CONSTRUCTION FENCING.

RESULTS

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
4. ROCK SHALL BE REPLACED OR REGRADED AS NECESSARY IF RUTTING OCCURS OR UNDERLYING SUBGRADE BECOMES EXPOSED.

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Urban Storm Drainage Criteria Manual Volume 3

Stabilized Staging Area (SSA)

STABILIZED STAGING AREA MAINTENANCE NOTES

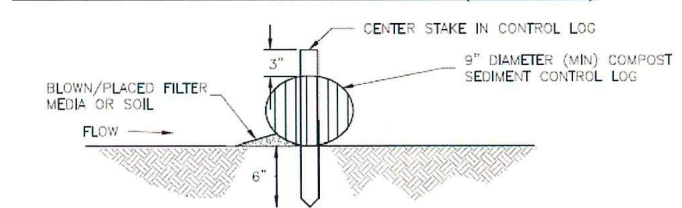
5. STABILIZED STAGING AREA SHALL BE ENLARGED IF NECESSARY TO CONTAIN PARKING, STORAGE, AND UNLOADING/LOADING OPERATIONS.
6. THE STABILIZED STAGING AREA SHALL BE REMOVED AT THE END OF CONSTRUCTION, THE GRANULAR MATERIAL SHALL BE REMOVED OR, IF APPROVED BY THE LOCAL JURISDICTION, REUSED ON SITE AND THE EXISTING GRASS, SOIL, AND VEGETATION SHALL BE RE-ESTABLISHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY LOCAL JURISDICTION.
- NOTE: MANY MUNICIPALITIES PROHIBIT THE USE OF RECYCLED CONCRETE AS GRANULAR MATERIAL FOR STABILIZED STAGING AREAS DUE TO DIFFICULTIES WITH RE-ESTABLISHMENT OF VEGETATION IN AREAS WHERE RECYCLED CONCRETE WAS PLACED.
- NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM USFO STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

(DETAILS ADAPTED FROM DOUGLAS COUNTY, COLORADO, NOT AVAILABLE IN AUTOCAD)

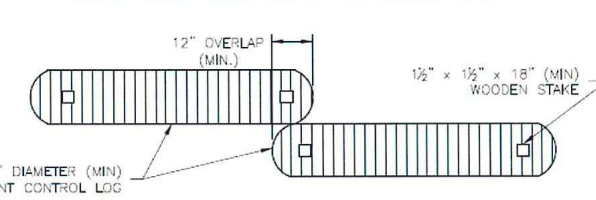
(DETAILS ADAPTED FROM DOUGLAS COUNTY, COLORADO, NOT AVAILABLE IN AUTOCAD)

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COMPOST SEDIMENT CONTROL LOG (WEIGHTED)



SECTION (A)
COMPOST SEDIMENT CONTROL LOG

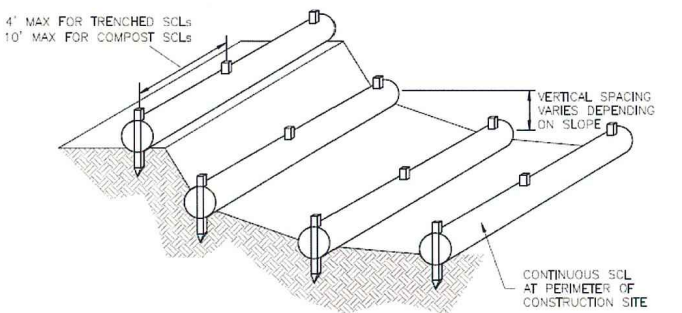


LOG JOINTS

SCL-2, COMPOST SEDIMENT CONTROL LOG (WEIGHTED)

SCL-4 Urban Drainage and Flood Control District November 2015
Urban Storm Drainage Criteria Manual Volume 3

SC-2



SCL-3. SEDIMENT CONTROL LOGS TO CONTROL
SLOPE LENGTH

November 2015 Urban Drainage and Flood Control District SCL
Urban Storm Drainage Criteria Manual Volume 3

Sediment Control Log (SCL)

SEDIMENT CONTROL LOG INSTALLATION NOTES

1. SEE PLAN VIEW FOR LOCATION AND LENGTH OF SEMENT CONTROL LOGS.
2. SEMENT CONTROL LOGS THAT ACT AS A PERIMETER CONTROL SHALL BE INSTALLED PRIOR TO THE START OF THE CONCRETE POUR.
3. SEMENT CONTROL LOGS SHALL CONSIST OF STEEL, CONCRETE, EXCELLENT OR COCONUT FIBER, AND SHALL BE FREE OF ANY NOXIOUS WEED SEEDS OR DEFECTS INCLUDING RIPS.
4. SEMENT CONTROL LOGS MAY BE USED AS SMALL CHECK DAMS IN OTHERS AND SLOPES; HOWEVER, THEY SHOULD NOT BE USED IN PERENNIAL STREAMS.
5. IF IT IS RECOMMENDED THAT SEMENT CONTROL LOGS BE TREACHED INTO THE GROUND TO RESIST THE FORCE OF WIND OR WAVES, THE TREACHING SHOULD BE TO A MINIMUM OF 18" DEPTH IS NOT FEASIBLE AND/OR DESIRABLE (SHORT TERM INSTALLATION WITH DESIRE NOT TO BE REMOVED). IF TREACHING IS NOT FEASIBLE, THE LOGS SHOULD BE ANCHORED TO THE SUBSTRATE USING RIVETS. STAKING CONTROL LOGS THAT ARE 8 LB/FT DO NOT NEED TO BE TREACHED.
6. THE UPHILL SIDE OF THE SEMENT CONTROL LOG SHALL BE BACKFILLED WITH SILL OR COARSE SAND OR GRAVEL. THE LOGS SHOULD BE PLACED ON A BED OF SAND OR GRAVEL COMPACTED INTO THE SHAPE OF A RIGHT TRIANGLE USING A SHOVEL, OR WHEELED LAWN MOWER.
7. FOLLOW MANUFACTURER'S GUARANTEE FOR STAKING. IF MANUFACTURER'S INSTRUCTIONS DO NOT SPECIFY STAKING, STAKES SHALL BE PLACED ON A 4" CENTER AND EMBEDDED A MINIMUM OF 12" INTO THE GROUND. IF THE STAKES ARE BROKEN PRIOR TO INSTALLATION SHALL BE REPLACED. COMPOST

SEDIMENT CONTROL LOG MAINTENANCE NOTES

1. INSPECT EMPS EACH MORNING, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF EMPS SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT EMPS AS SOON AS POSSIBLE AFTER A STORM, AND AFTER A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN EMPS IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE INITIATED IMMEDIATELY UPON DISCOVERY OF THE FOLLOWING:
 - a. WHERE EMPS HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
 - b. SEDIMENT ACCUMULATED UPSTREAM OF SEDIMENT CONTROL LOG SHALL BE REMOVED AS SOON AS PRACTICABLE. THE DEPTH OF THE MUD, TYPICALLY WHEN 20% OF ACCUMULATED SEDIMENTS IS APPROXIMATELY 1/2 OF THE HEIGHT OF THE SEDIMENT CONTROL LOG.
 - c. SEDIMENT CONTROL LOG SHALL BE REMOVED AT THE END OF CONSTRUCTION COMPLETION FROM COMPOST LOGS WILL BE LEFT IN PLACE AS LONG AS BAGS ARE REMOVED AND THE LOGS ARE NOT FULLY COVERED BY SOIL. LOGS SHOULD BE REMOVED FROM THE TOP SOIL SEEDBED AND MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE DISTRICT ENGINEER.

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.

SCL-6
Urban Drainage and Flood Control District
November 2015

Urban Storm Drainage Criteria Manual Volume 3

SSA-4

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

Standard Notes for El Paso County Grading and Erosion Control Plans

Revised 7/02/19

- [illegible]

5. Control measures must be installed prior to commencement of activities that could contribute pollutants to stormwater. Control measures for all slopes, channels, ditches, and disturbed land areas shall be installed immediately upon completion of the disturbance.
6. All temporary sediment and erosion control measures shall be maintained and remain in effective operating condition until permanent soil erosion control measures are implemented and final stabilization is established. All persons engaged in land disturbance activities shall assess the adequacy of control measures at the site and identify if changes to those control measures are needed to ensure the continued effective performance of the control measures. All changes to temporary sediment and erosion control measures must be incorporated into the Stormwater Management Plan.
7. Temporary stabilization shall be implemented on disturbed areas and stockpiles where ground disturbing construction activity has permanently ceased or temporarily ceased for longer than 14 days.
8. Final stabilization must be implemented at all applicable construction sites. Final stabilization is achieved when all ground disturbing activities are complete and all disturbed areas either have a uniform vegetative cover with individual plant density of 70 percent of pre-disturbance levels established or equivalent permanent alternative stabilization method is implemented. All temporary sediment and erosion control measures shall be removed upon final stabilization and before permit closure.
9. All permanent stormwater management facilities shall be installed as designed in the approved plans. Any proposed changes that affect the design or function of permanent stormwater management structures must be approved by the ECM Administrator prior to implementation.
10. Earth disturbances shall be conducted in such a manner so as to effectively minimize 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. Pre-existing vegetation shall be protected and maintained within 50 horizontal feet of a waters of the state unless shown to be infeasible and specifically requested and approved.

1. Compaction of soil must be prevented in areas designated for infiltration control measures or where final stabilization will be achieved by vegetative cover. Areas designated for infiltration control measures shall also be protected from sedimentation during construction until final stabilization is achieved. If compaction prevention is not feasible due to site constraints, all areas designated for infiltration and vegetation control measures must be loosened prior to installation of the control measure(s).
12. Any temporary or permanent facility designed and constructed for the conveyance of stormwater around, through, or from the earth disturbance area shall be a stabilized conveyance designed to minimize erosion and the discharge of sediment off site.
13. Concrete wash water shall be contained and disposed of in accordance with the SWMP. No wash water shall be discharged to or allowed to enter State Waters, including any surface or subsurface storm drainage system or facilities. Concrete washouts shall not be located in an area where shallow groundwater may be present, or within 50 feet of a surface water body, creek or stream.
14. During dewatering operations of uncontaminated ground water may be discharged on site, but shall not leave the site in the form of surface runoff unless an approved State dewatering permit is in place.
15. Erosion control blanketing or other protective covering shall be used on slopes steeper than 3:1.
16. 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 unexcavated building materials shall be buried, dumped, or discharged at the site.
17. 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. Control measures may be required by El Paso County Engineering if deemed necessary, based on specific conditions and circumstances.
18. Tracking of soils and construction debris off-site shall be minimized. Materials tracked off-site shall be cleaned up and properly disposed of immediately.
19. The owner/developer shall be responsible for the removal of all construction debris, dirt, trash, rock, sediment, soil, and sand that may accumulate in roads, storm drains and other drainage conveyance systems and stormwater outfall points as a result of site development.
20. 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 sequence. All materials stored on-site shall be stored in a neat, orderly manner, in their original containers, with original manufacturer's labels.

- [illegible]

Colorado Department of Public Health and Environment
Water Quality Control Division
WQCD - Permits
4300 Cherry Creek Drive South
Denver, CO 80246-1530
Attn: Permits Unit

**LORSON RANCH
CREEKSIDE DEVELOPMENT
EAST FORK JIMMY CAMP CREEK
EROSION CONTROL PLAN DETAILS
EL PASO COUNTY, COLORADO**

Kiowa
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1604 South 21st Street
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