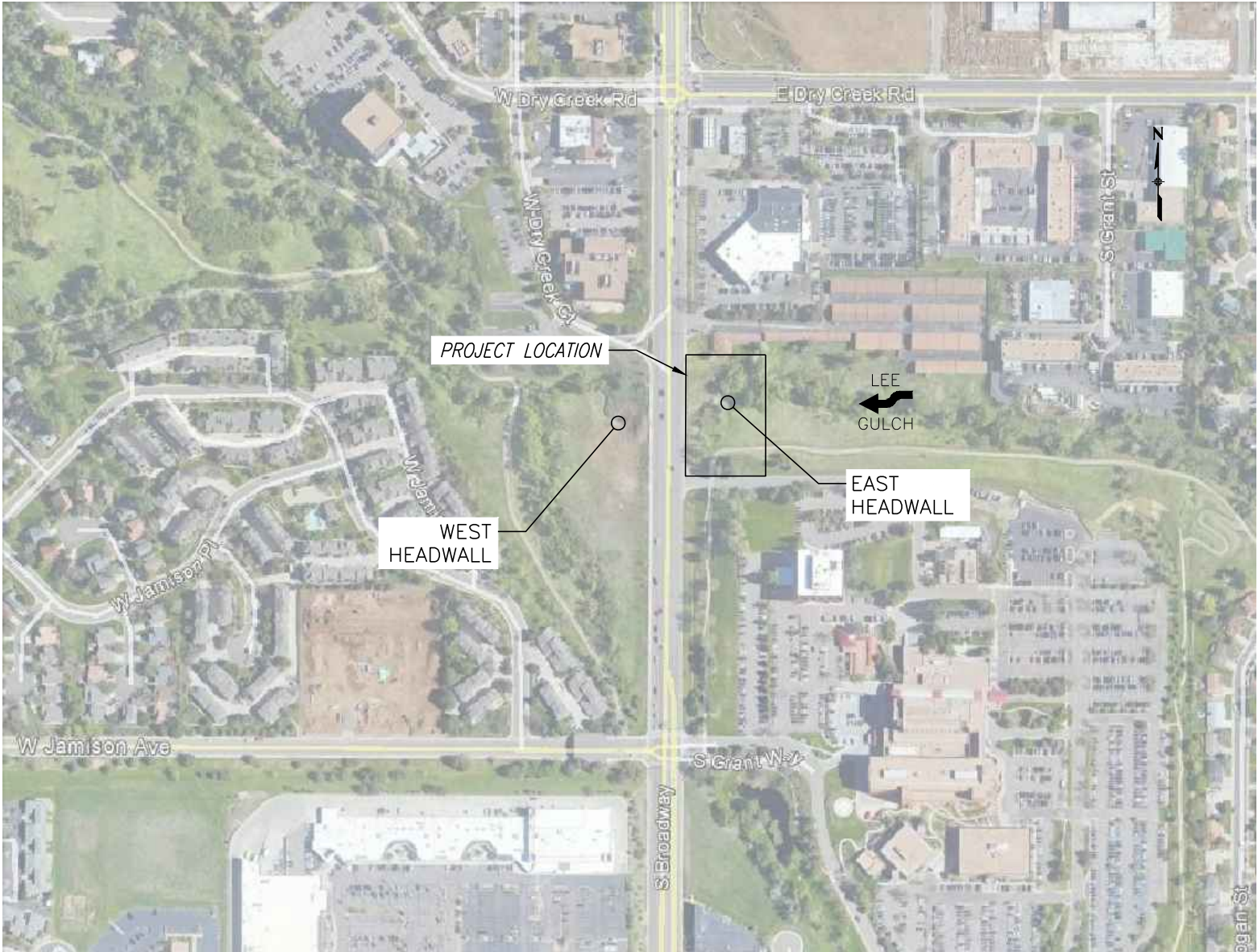


CITY OF LITTLETON, COLORADO
PUBLIC WORKS

EAST HEADWALL CONSTRUCTION AND EROSION CONTROL
LEE GULCH UNDER S. BROADWAY



PROJECT VICINITY MAP
SCALE : 1"=400'

INDEX OF SHEETS

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Littleton, Colorado 80120
303-795-3863



Alfred Benesch & Company
7979 E. Tufts Avenue, Suite 800
Denver, Colorado 80237
303-771-6868 Job No. 151496.00.4

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CITY OF LITTLETON LEE GULCH EAST HEADWALL TITLE SHEET			
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Sheet Subset:	Title	Subset	Sheets: 1 of 1

Project No./Code	
BENESCH#151597.00	
Sheet Number	01

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M-216-1	<input type="checkbox"/>	SOIL RETENTION COVERING (2 SHEETS) (NEW ON JULY 16, 2015)	34-38
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M-601-2	<input type="checkbox"/>	DOUBLE CONCRETE BOX CULVERT (2 SHEETS) (REVISED ON NOVEMBER 25, 2015)....	42-43
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M-603-1	<input type="checkbox"/>	METAL PIPE (4 SHEETS) (REVISED ON OCTOBER 02, 2014)	50-53
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COLORADO
DEPARTMENT OF TRANSPORTATION

M&S STANDARDS PLANS LIST

July 04, 2012

Revised on July 16, 2018

ALL OF THE M&S STANDARD PLANS, AS SUPPLEMENTED AND REVISED, APPLY TO THIS PROJECT WHEN USED BY DESIGNATED PAY ITEM OR SUBSIDIARY ITEM.

NEW OR REVISED STANDARD PLAN SHEETS APPLICABLE TO THIS PROJECT, INDICATED BY A MARKED BOX ☒ WILL BE ATTACHED TO THE PLANS.



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S-614-40	<input type="checkbox"/>	TYPICAL TRAFFIC SIGNAL INSTALLATION DETAILS (5 SHEETS) (REVISED ON JUNE 17, 2016)	184-188
S-614-40A	<input type="checkbox"/>	ALTERNATIVE TRAFFIC SIGNAL INSTALLATION DETAILS (4 SHEETS) (REVISED ON JUNE 17, 2016)	189-192
S-614-41	<input type="checkbox"/>	TEMPORARY SPAN WIRE SIGNALS (REVISED ON APRIL 2, 2015)	193
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S-614-50	<input type="checkbox"/>	STATIC SIGN MONOTUBE STRUCTURES (12 SHEETS) (REVISED ON JUNE 17, 2016)	208-219
S-614-60	<input type="checkbox"/>	DYNAMIC SIGN MONOTUBE STRUCTURES (14 SHEETS) (REVISED ON JUNE 17, 2016)	220-233
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S-630-2	<input type="checkbox"/>	BARRICADES, DRUMS, CONCRETE BARRIERS (TEMP) AND VERTICAL PANELS (REVISED ON JUNE 23, 2016)	259
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CONTRACT ITEM NO.	CONTRACT ITEM	UNIT	HEADWALLS								PROJECT TOTALS	
			PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.	PLAN	AS CONST.
201-00000	CLEARING AND GRUBBING	LS	1								1	
202-00027	REMOVAL OF GROUTED RIPRAP	SY	122								122	
206-00000	UNCLASSIFIED STRUCTURE EXCAVATION	CY	836								836	
206-00100	STRUCTURE BACKFILL (CLASS 1)	CY	836								836	
206-00510	FILTER MATERIAL (CLASS A)	CY	10								10	
207-00205	TOPSOIL	CY	26								26	
208-00002	EROSION LOG TYPE 1 (12 INCH)	LF	163								163	
208-00070	VEHICLE TRACKING PAD	EA	1								1	
208-00035	AGGREGATE BAGS TYPE 1	LF	5								5	
208-00045	CONCRETE WASHOUT STRUCTURE	EA	1								1	
208-00400	WATER CONTROL	LS	1								1	
208-00520	TEMPORARY STREAM CROSSING	EA	1								1	
208-00207	EROSION CONTROL MANAGEMENT	DAY	10								10	
212-00006	SEEDING (NATIVE)	ACRE	0.11								0.11	
213-00004	MULCHING (WEED FREE STRAW)	ACRE	0.09								0.09	
213-00061	MULCH TACKIFIER	LB	279								279	
216-00201	SOIL RETENTION BLANKET(STRAW-COCONUT) (100% BIODEGRADABLE CLASS 1)	SY	278								278	
506-00031	GROUTED BOULDERS (24-INCH) (SPECIAL)	SY	77								77	
506-00212	RIPRAP (12 INCH)	CY	20								20	
506-00010	RIPRAP (12 INCH VOID FILLED) (SPECIAL)	CY	53								53	
601-03000	CONCRETE CLASS D	CY	64								64	
602-00000	REINFORCING STEEL	CY	7,768								7,768	
602-00020	REINFORCING STEEL (EPOXY COATED)	CY	125								125	
620-00020	SANITARY FACILITY	EA	1								1	
621-00411	STRUCTURE TEMPORARY ACCESS ROAD AND STABILIZED STAGING AREA	LS	1								1	
626-00000	MOBILIZATION	LS	1								1	
625-00000	CONSTRUCTION SURVEYING	LS	1								1	
630-00000	TRAFFIC CONTROL	LS	1								1	

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Creation Date:	11/26/2018	Initials:	NSB	<input type="text"/>						No Revisions:						BENESCH#151597.00	
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GENERAL NOTES

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE STABILITY OF THE STRUCTURES, SLOPES, AND ROADWAYS DURING CONSTRUCTION.
2. DIMENSIONS CONTAINED IN THESE PLANS ARE CALCULATED FROM A RECENT SURVEY. THE CONTRACTOR SHALL VERIFY ALL DEPENDANT DIMENSIONS IN THE FIELD BEFORE ORDERING OR FABRICATING ANY MATERIAL.
3. EXCEPT AS SHOWN IN THE PLANS, STRUCTURE EXCAVATION AND BACKFILL SHALL BE IN ACCORDANCE WITH M-206-1 FOR CAST-IN-PLACE RETAINING WALLS.
4. STRUCTURE EXCAVATION AND BACKFILL SHALL BE AS SHOWN ON THE PLANS, EXCEPT SHORING MAY BE REQUIRED FOR EXCAVATION ADJACENT TO THE EXISTING ROADWAY. TEMPORARY EXCAVATION SUPPORT SHALL NOT BE PAID FOR BUT SHALL BE INCLUDED IN THE WORK.
5. EXPANSION JOINT MATERIAL SHALL MEET AASHTO SPECIFICATION M213.
6. A COLORED STRUCTURAL CONCRETE COATING FINISH WILL BE REQUIRED, AS SHOWN ON THE PLANS, ON EXPOSED CONCRETE SURFACES. THE COLOR SHALL BE DESERT TAN, EQUIVALENT TO FEDERAL STANDARD 595C COLOR NO. 20400, AND IS TO BE SELECTED FROM TEST PANELS PROVIDED BY THE CONTRACTOR.
7. ALL EXPOSED CONCRETE SURFACES SHALL RECEIVE A CLASS 1 FINAL FINISH TO ONE FOOT BELOW THE GROUND LINE.
8. ALL BOLTS SHALL BE 7/8" DIAMETER, HIGH STRENGTH, UNLESS OTHERWISE NOTED.
9. GRADE 60 REINFORCING STEEL IS REQUIRED.
10. ALL REINFORCING STEEL SHALL BE NON-COATED UNLESS OTHERWISE NOTED.
11. E DENOTES EPOXY COATED REINFORCING STEEL.
12. CONCRETE SULFATE EXPOSURE IS CLASS 0
13. WHERE GALVANIZED METALS ARE DAMAGED IN THE FIELD (DUE TO WELDING OR OTHER CIRCUMSTANCES) THE GALVANIZING SHALL BE REPAIRED IN ACCORDANCE WITH ASTM A 780 USING A SPRAY ON COLD GALVANIZING COMPOUND. THE COMPOUND SHALL HAVE A METALLIC ZINC CONTENT OF 95% BY WEIGHT IN DRY FILM, A SOLIDS CONTENT OF 52% BY VOLUME AND SHALL BE APPLIED 1.5 MILS DRY FILM THICKNESS PER COAT WITH TWO COATS APPLIED. REPAIRING GALVANIZED METALS SHALL NOT BE PAID FOR SEPARATELY.
14. THE FOLLOWING TABLE GIVES THE MINIMUM LAP SPLICE LENGTH FOR EPOXY COATED REINFORCING BARS PLACED IN ACCORDANCE WITH SUBSECTION 602.06,. THESE SPLICE LENGTHS SHALL BE INCREASED BY 25% FOR BARS SPACED AT LESS THAN 6" ON CENTER.

BAR SIZE	#4	#5	#6	#7	#8	#9	#10	#11
SPLICE LENGTH FOR CLASS B&D CONCRETE	1'-3"	1'-6"	2'-5"	2'-10"	3'-9"	4'-8"	5'-11"	7'-4"
15. WHEN THE CONTRACTOR ELECTS TO SUBSTITUTE EPOXY COATED REINFORCEMENT FOR BLACK REINFORCING BARS, THE MINIMUM LAP SPLICE SHALL BE AS DESCRIBED ABOVE.
16. THE FOLLOWING TABLE GIVES THE MINIMUM LAP SPLICE LENGTH FOR BLACK REINFORCING BARS PLACED IN ACCORDANCE WITH SUBSECTION 602.06. THESE SPLICE LENGTHS SHALL BE INCREASED BY 25% FOR BARS SPACED AT LESS THAN 6" ON CENTER.

BAR SIZE	#4	#5	#6	#7	#8	#9	#10	#11
SPLICE LENGTH FOR CLASS B&D CONCRETE	1'-1"	1'-4"	1'-7"	1'-11"	2'-6"	3'-2"	4'-0"	4'-11"
17. THE ABOVE SPLICE LENGTHS SHALL BE INCREASED BY 20 PERCENT FOR 3 BAR BUNDLES
18. AND 33 PERCENT FOR 4 BAR BUNDLES.
19. THE ABOVE SPLICE LENGTHS MAY BE REDUCED BY 20% WHEN 3" OF CLEAR COVER EXISTS AND BAR SPACING IS 6" OR GREATER ON CENTER.
- E.F. = EACH FACE
F.F. = FAR FACE
N.F. = NEAR FACE
B.F. = BACK FACE
C.L. = CENTERLINE
P.G. = PROFILE GRADE
20. THE INFORMATION SHOWN ON THESE PLANS CONCERNING THE TYPE AND LOCATION OF UNDERGROUND UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL INCLUSIVE. THE CONTRACTOR IS RESPONSIBLE FOR MAKING HIS OWN DETERMINATION AS TO THE TYPE AND LOCATION OF UNDERGROUND UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO. THE CONTRACTOR SHALL CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO AT 1-800-922-1987 AT LEAST 2 DAYS (NOT INCLUDING THE DAY OF NOTIFICATION) PRIOR TO ANY EXCAVATION OR OTHER EARTHWORK.

DESIGN DATA

AASHTO, 17TH EDITION AASHTO STANDARD SPECIFICATION WITH CURRENT INTERIMS

DESIGN METHOD: LOAD FACTOR DESIGN

SOIL PARAMETERS: ASSUMES Ø = 34' FOR STRUCTURE BACKFILL (CLASS 1)
ASSUMES Ø = 30' FOR ONSITE SOILS
ASSUMES SOIL DENSITY = 120 PCF
ASSUMES ALLOWABLE BEARING PRESSURE = 2000 PSF

REINFORCED CONCRETE:

CLASS D CONCRETE: F'C = 4,500 PSI
REINFORCING STEEL: FY = 60,000 PSI

STRUCTURAL STEEL: AASHTO M270 (ASTM A709) GRADE 36 FY = 36,000 PSI.
AASHTO M270 (ASTM A709) GRADE 50 FY = 50,000 PSI.

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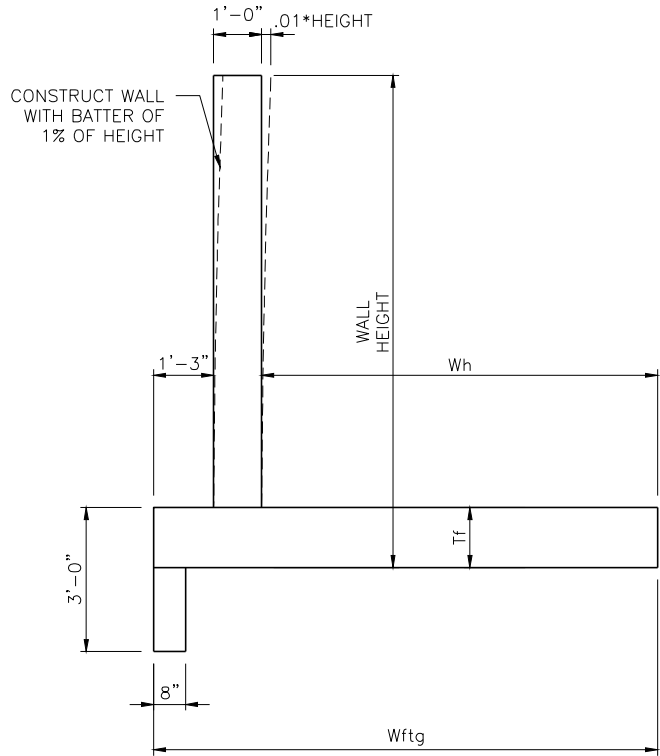
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Public Works
2255 W. Berry Ave.
Littleton, Colorado 80120
303-795-3863

benesch

Alfred Benesch & Company
7979 E. Tufts Avenue, Suite 800
Denver, Colorado 80237
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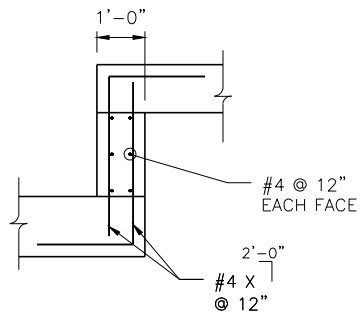


WALL GEOMETRY

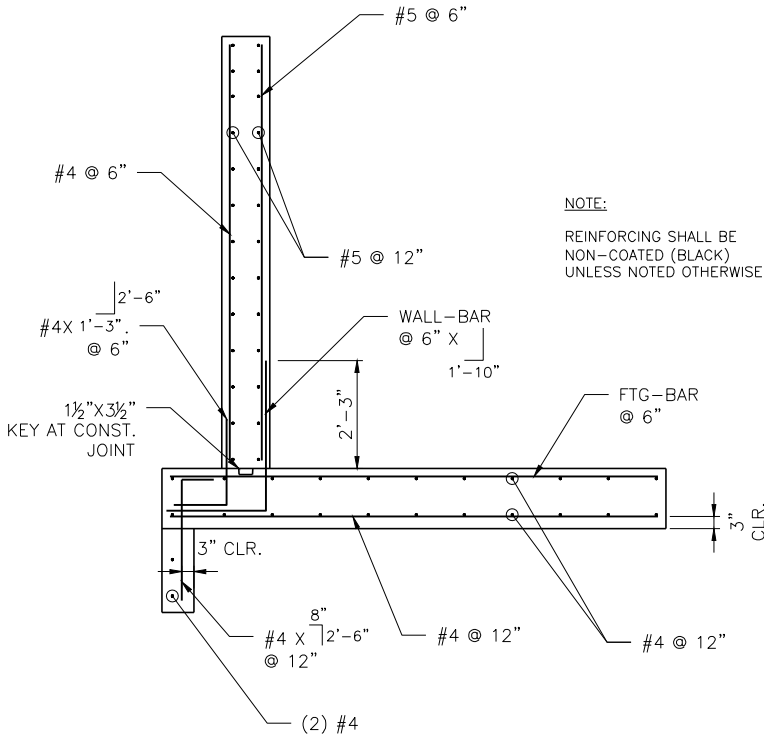
DESIGN TABLE

MAX. WALL HEIGHT	10'-3"	8'-0"	6'-3"
WIDTH FOOTING (Wftg)	10'-6"	6'-3"	5'-3"
WIDTH HEEL (Wh)	8'-3"	4'-0"	3'-0"
THICKNESS FOOTING (Tf)	1'-3"	1'-0"	1'-0"
FOOTING REBAR (FTG-BAR)	#8	#5	#5
WALL REBAR (WALL-BAR)	#6	#5	#5

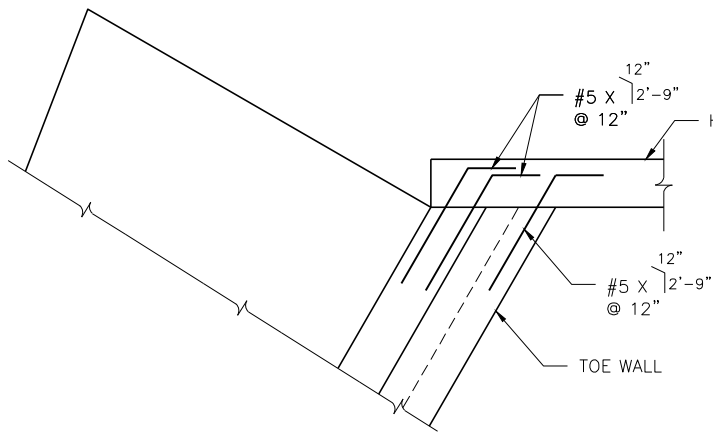
WHERE WALL HEIGHT VARIES WITHIN A WINGWALL, USE THE FOOTING THICKNESS AND FOOTING REBAR FOR THE MAXIMUM HEIGHT.



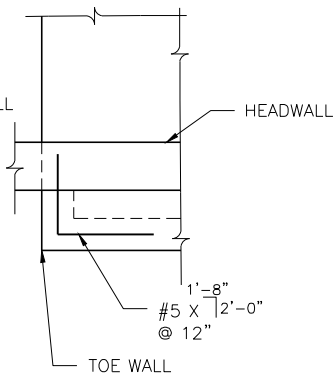
FOOTING STEP



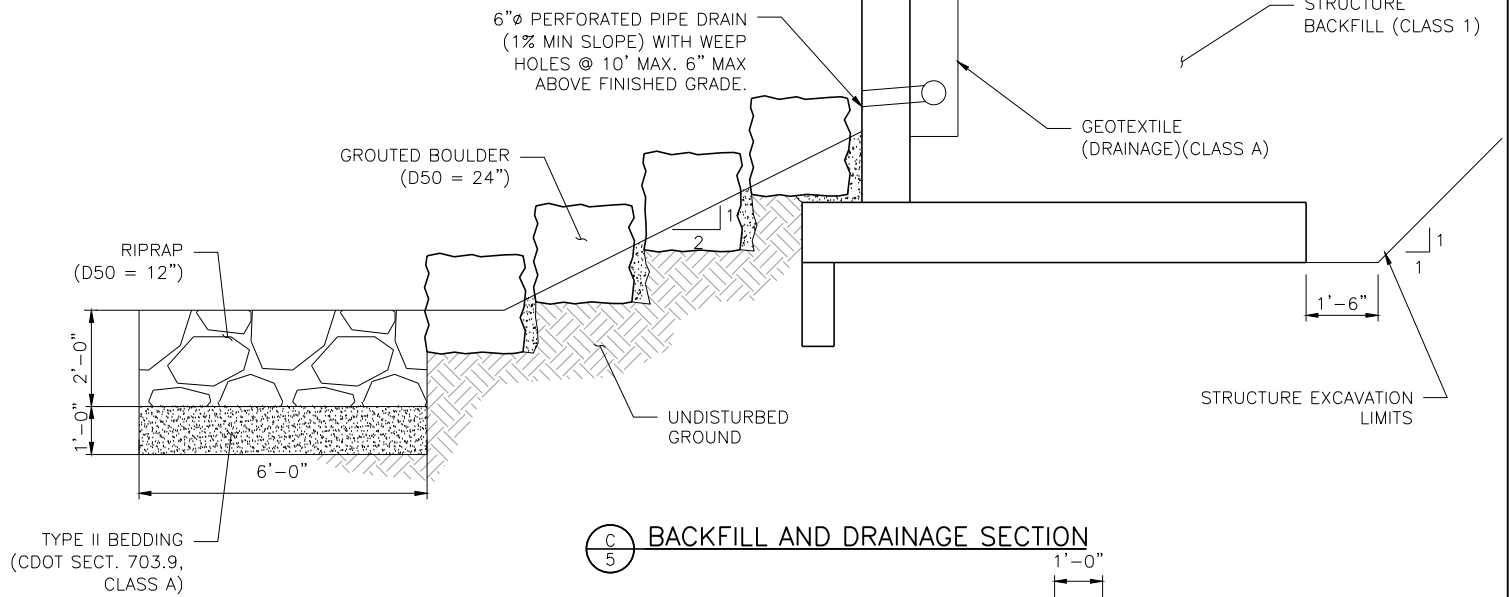
WALL REINFORCING



WINGWALL CONNECTION



TOE WALL CONNECTION



HEADWALL SECTION

NOTE:
DRAIN PIPE SHALL BE RUN TO DAYLIGHT. BEYOND WALL PIPE SHALL BE NON-PERFORATED. COST FOR DRAIN PIPE, WEEP HOLES, FILTER MATERIAL AND GEOTEXTILE SHALL NOT BE PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN STRUCTURE BACKFILL (CLASS 1)

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Sheet Revisions			

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303-795-3863

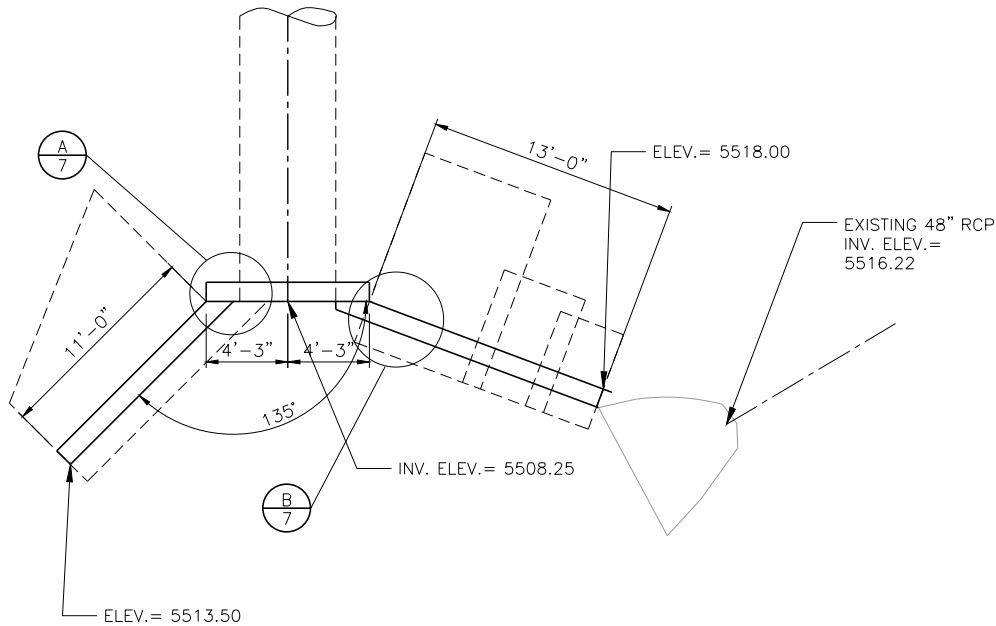
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Alfred Benesch & Company
7979 E. Tufts Avenue, Suite 800
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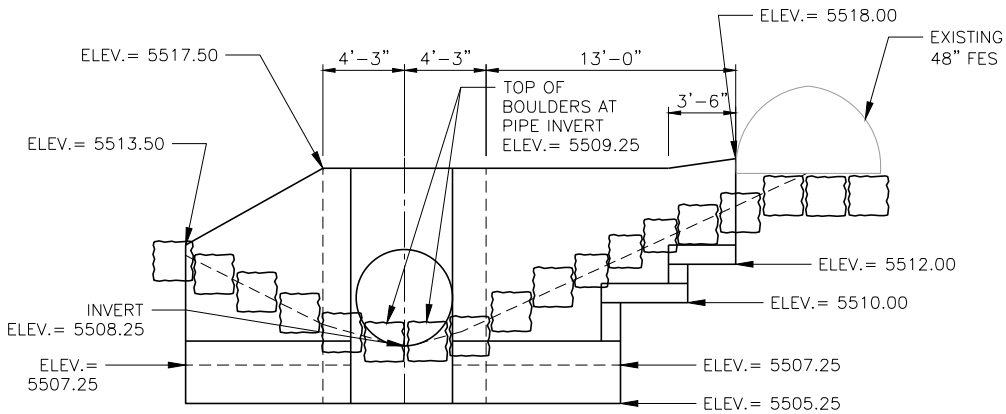
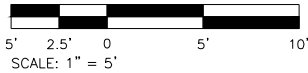
CITY OF LITTLETON LEE GULCH EAST HEADWALL DETAILS (1 OF 2)			
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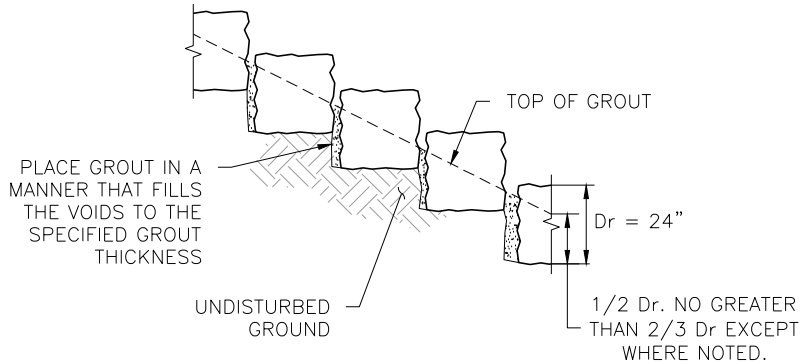
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EAST HEADWALL LAYOUT



HEADWALL ELEVATION



GROUTED BOULDER PLACEMENT DETAIL

BOULDER PLACEMENT NOTES

1. PLACE BOULDERS WITH THE REQUIRED BOULDER HEIGHT VERTICAL. PLACE BOULDERS AS TIGHTLY AS POSSIBLE (WITHOUT TOUCHING) WHILE PROVIDING ENOUGH ROOM BETWEEN THEM TO THOROUGHLY VIBRATE THE GROUT AND TO ENSURE NO GAPS IN THE GROUT. THE SMALL DIMENSION OF A 2"x4" BOARD CAN BE USED AS A GUIDE TO CHECK MINIMUM SPACING. EXCEPTION: ALONG CHANNEL CENTERLINE PROVIDE 6" MIN. OPENING BETWEEN BOULDERS TO ALLOW FOR FREE DRAINING CHANNEL.
2. BEFORE GROUTING, CLEAN ALL DIRT AND MATERIAL FROM ROCK THAT COULD PREVENT THE GROUT FROM BINDING TO THE ROCK. KEEP BOULDERS FROM TOUCHING. AVOID SLIDING BOULDERS AGAINST SUBGRADE TO PROPERLY POSITION.

MATERIAL SPECIFICATIONS

1. ALL GROUT SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH EQUAL TO 3200 PSI.
2. ONE CUBIC YARD OF GROUT SHALL HAVE A MINIMUM OF SIX (6) SACKS OF TYPE II PORTLAND CEMENT.
3. A MAXIMUM OF 25% TYPE F FLY ASH MAY BE SUBSTITUTED FOR THE PORTLAND CEMENT.
4. THE AGGREGATE SHALL BE COMPRISED OF 70% NATURAL SAND (FINES) AND 30% 3/8-INCH ROCK (COARSE).
5. THE GROUT SLUMP SHALL BE BETWEEN 4-INCHES AND 6-INCHES.
6. AIR ENTRAINMENT SHALL BE BETWEEN 5.5% AND 7.5%.
7. TO CONTROL SHRINKAGE AND CRACKING, 1.5 POUNDS OF FIBERMESH, OR EQUIVALENT, SHALL BE USED PER CUBIC YARD OF GROUT.
8. COLOR ADDITIVE IN REQUIRED AMOUNTS SHALL BE USED WHEN SO SPECIFIED CONTACT.

GROUT PLACEMENT SPECIFICATIONS

1. SPECIAL PROCEDURES SHALL BE REQUIRED FOR GROUT PLACEMENT WHEN THE AIR TEMPERATURES ARE LESS THAN 40° F OR GREATER THAN 90° F. CONTRACTOR SHALL OBTAIN PRIOR APPROVAL FROM THE DESIGN ENGINEER OF THE PROCEDURES TO BE USED FOR PROTECTING THE GROUT.
2. GROUT SHALL BE DELIVERED BY MEANS OF LOW PRESSURE (LESS THAN 10 PSI) GROUT PUMP USING A 2-INCH DIAMETER (MAXIMUM) NOZZLE.
3. FULL DEPTH PENETRATION OF THE GROUT INTO THE BOULDER VOIDS SHALL BE ACHIEVED BY INJECTING GROUT STARTING WITH THE NOZZLE NEAR THE BOTTOM AND RAISING IT AS THE GROUT FILLS, WHILE VIBRATING GROUT INTO PLACE USING A PENCIL VIBRATOR.
4. ALL GROUT BETWEEN BOULDERS SHALL BE TREATED WITH A BROOM FINISH.
5. AFTER GROUT PLACEMENT, EXPOSED BOULDER FACES SHALL BE CLEANED AND FREE OF GROUT.
6. ALL FINISHED GROUT SURFACES SHALL BE SPRAYED WITH A CLEAR LIQUID MEMBRANE CURING COMPOUND AS SPECIFIED IN ASTM C309.

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CITY OF LITTLETON
LEE GULCH EAST HEADWALL
DETAILS (2 OF 2)

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Sheet Number 08

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STANDARD NOTES FOR GRADING AND STORMWATER MANAGEMENT PLANS:

1. THE CONTRACTOR IS RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF ALL BEST MANAGEMENT PRACTICES (BMPS) FOR EROSION AND SEDIMENT CONTROL, EVEN IF SPECIFIC TASKS MAY BE DESIGNATED TO OTHERS SUCH AS SUB-CONTRACTORS OR SITE OPERATORS.
2. THE CITY MAY REQUIRE THAT THE CONTRACTOR PROVIDE ADDITIONAL EROSION OR SEDIMENT CONTROL MEASURES SHOULD UNFORESEEN WATER OR WIND EROSION PROBLEMS OCCUR OR SHOULD THE DESIGNED AND/OR IMPLEMENTED STORMWATER MANAGEMENT PLAN (SWMP) AND BEST MANAGEMENT PRACTICES (BMPS) NOT FUNCTION AS INTENDED.
3. ALL BMPS SHOWN ON THE APPROVED SWMP PLAN SHALL BE INSTALLED PROPERLY PRIOR TO THE START OF GRADING OR SOIL DISTURBANCE ON THE SITE. THESE BMPS SHALL BE INSPECTED AND APPROVED BY A CITY REPRESENTATIVE PRIOR TO START OF ANY SOIL DISTURBANCE. BMPS SHALL BE INSPECTED, CLEANED AND MAINTAINED BY THE OWNER OR THEIR DESIGNEE AS NEEDED. INSPECTION REPORTS EVERY 14 DAYS AND AFTER STORM EVENTS ARE REQUIRED FOR DISTURBANCE AREAS OF 1 ACRE OR LARGER, AND MAY BE REQUIRED FOR SMALLER SITES AS DETERMINED BY THE CITY. THE CITY RESERVES THE RIGHT TO REQUIRE THE OWNER OR DESIGNEE TO FURNISH COPIES OF INSPECTION REPORTS OR OTHER STORMWATER MANAGEMENT DOCUMENTS AT ANY TIME. BMPS REMOVED TO ACCOMMODATE CONSTRUCTION PHASING, INCLUDING CLEARING AND GRUBBING, UTILITIES, ROADS, VERTICAL CONSTRUCTION, FINAL GRADING, AND STABILIZATION, SHALL HAVE REDUNDANT DOWNSLOPE BMPS IN PLACE TO ENSURE ADEQUATE EROSION AND SEDIMENT CONTROL.
4. THE BMPS ARE TO REMAIN IN-PLACE AND OPERATIONAL UNTIL ALL SITE PAVING, PERMANENT LANDSCAPING, OR ADEQUATE GRASS COVER ESTABLISHMENT IS COMPLETED. ADEQUATE VEGETATION COVER IS CONSIDERED TO BE A UNIFORM VEGETATIVE COVER WITH A STEM DENSITY OF AT LEAST 70% OF THE PRE-EXISTING CONDITION. TEMPORARY IRRIGATION MAY BE NECESSARY TO ESTABLISH PLANT GROWTH. ADEQUATE VEGETATIVE COVER WILL BE DETERMINED BY CITY STAFF WITH AN ON-SITE INSPECTION.
5. ALL SOIL AREAS DISTURBED SHALL BE GRADED, SEEDED, AND MULCHED OR OTHERWISE VEGETATED OR COVERED, TO STABILIZE THE GROUND SURFACE WITHIN 30 DAYS OF THE COMPLETION OF GRADING OPERATIONS. THE CITY SHALL APPROVE THE SEED MIX AND RATE OF APPLICATION PRIOR TO SEEDING THE AREA. IF DISTURBED SOIL AREAS ARE TO BE LEFT DORMANT FOR OVER 30 DAYS, A TEMPORARY STABILIZING COVER IS REQUIRED, AS APPROVED BY THE CITY.
6. AFTER THE SITE HAS BEEN STABILIZED OR VEGETATION ESTABLISHED, THE CONTRACTOR SHALL REMOVE ALL BMPS AND CLEAN ANY STORM SEWERS WHERE CONSTRUCTION SEDIMENT MAY HAVE DEPOSITED. IT MAY ALSO BE NECESSARY TO PERIODICALLY CLEAN THE PUBLIC STORM SEWERS AND DOWN GRADIENT PROPERTIES DURING THE DEVELOPMENT OF THE SITE.
7. THE CONTRACTOR IS RESPONSIBLE TO CLEAN ALL PUBLIC STREETS AND SIDEWALKS WHERE SEDIMENT OR MUD IS TRACKED ONTO THE PAVED SURFACE. THE CONTRACTOR MAY BE REQUIRED TO CLEAN THE PUBLIC WAY IMMEDIATELY OR WITHOUT DELAY UPON BEING NOTIFIED BY THE CITY.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTATION AND FIELD UPDATES/CHANGES TO THE STORM WATER MANAGEMENT PLAN (SWMP) THAT INCLUDES THE PLAN VIEW LAYOUT AND INSTALLATION DETAILS OF APPROPRIATE CONTROL MEASURES, AND MAINTENANCE PROCEDURES. IN ADDITION THE CONTRACTOR SHALL UPDATE THE SWMP TO ADDRESS, AT A MINIMUM:

•CONCRETE MIXER TRUCK WASH WATER DISPOSAL AREAS;

•SPILL PROTECTION FOR PETROLEUM PRODUCTS AND OTHER CHEMICALS, INCLUDING VEHICLE FUELING AND POTENTIALLY HAZARDOUS MATERIALS;

•PROHIBITION OF CHEMICALS ADDED TO STORM WATER;

•BUILDING MATERIAL WASTE AND OTHER TRASH DISPOSAL AND ITS TEMPORARY CONTAINMENT;

•PROVISIONS TO INSTALL AND MAINTAIN REDUNDANT BMPS TO ACCOMMODATE CONSTRUCTION PHASING, INCLUDING BUT NOT LIMITED TO CLEARING AND GRUBBING, UTILITIES, ROADS, VERTICAL CONSTRUCTION, FINAL GRADING AND STABILIZATION;
9. IF THE CONTRACTOR FAILS TO IMPLEMENT ANY OF THE PROVISIONS OF THE SWMP AND IGNORES THE CITY’S VERBAL OR WRITTEN REQUEST FOR IMMEDIATE REMEDY,

THE CITY MAY MAKE ARRANGEMENTS OR HIRE A PRIVATE CONTRACTOR TO CLEAN THE PUBLIC WAYS AND BILL THE CONTRACTOR DIRECTLY FOR THE ACTUAL COST OF SUCH CLEANUP PLUS A \$300 ADMINISTRATIVE FEE.

10. THE CITY MAY ISSUE A “STOP WORK” ORDER TO STOP ANY PERMITTED SITE CONSTRUCTION WORK FROM PROCEEDING UNTIL THE BMPS PROVIDED ON THE SWMP AND APPROVED PLANS ARE INSTALLED, IMPLEMENTED AS INTENDED, OR UNTIL CORRECTIVE MEASURES ARE TAKEN AND ANY NECESSARY CLEANUP IS PERFORMED. SUCH DELAYS WILL NOT INCREASE THE OVERALL TIME OF THE APPROVED CONTRACT.
11. THE CONTRACTOR MAY NOT UTILIZE THE PUBLIC STREET AS A STAGING AREA FOR THE TEMPORARY STORAGE OF BUILDING MATERIALS, EXCAVATED MATERIALS OR CONSTRUCTION EQUIPMENT, EXCEPT AS APPROVED BY THE CITY. USE OF OFFSITE PRIVATE PROPERTY FOR STAGING MAY BE SUBJECT TO REVIEW BY THE LITTLETON PLANNING DEPARTMENT.
12. FOR ALL SITES DISTURBING ONE (1) OR MORE ACRES, THE STATE OF COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT (CDPHE) REQUIRES A GENERAL PERMIT ENTITLED “STORMWATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITY.” A COPY OF THAT PERMIT SHALL BE SUBMITTED TO THE CITY OF LITTLETON ENGINEERING DIVISION PRIOR TO THE ISSUANCE OF ANY GRADING, DEMOLITION, FOUNDATION OR BUILDING PERMIT BY THE CITY.
13. AN AIR POLLUTANT EMISSION NOTICE CONSTRUCTION PERMIT ISSUED BY CDPHE, AIR POLLUTION CONTROL DIVISION IS REQUIRED FOR ALL SITES LARGER THAN 25 ACRES OR FOR THOSE AREAS WHICH TAKE MORE THAN SIX MONTHS TO REACH COMPLETION. A COPY OF THAT PERMIT SHALL BE SUBMITTED TO THE CITY OF LITTLETON ENGINEERING DIVISION PRIOR TO THE ISSUANCE OF ANY GRADING, DEMOLITION, FOUNDATION OR BUILDING PERMIT.
14. A CONSTRUCTION DEWATERING DISCHARGE PERMIT SHALL BE OBTAINED FROM CDPHE PRIOR TO PUMPING OF ANY SURFACE OR SUB-SURFACE WATER INTO ANY CITY PUBLIC WAY OR STORM DRAINAGE SYSTEM. ADEQUATE SEDIMENT CONTROL BMPS SHALL BE REQUIRED AT THE PUMP’S INLET AND OUTLET.

EROSION CONTROL NOTES:

1. ALL EROSION CONTROL DEVICES AND BMP’S SHALL BE MAINTAINED IN ACCORDANCE WITH SUBSECTION 208.04.
2. CONSTRUCTION FENCING SHALL NOT BE PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN THE WORK.
3. GEOTEXTILE SEPARATOR FILTER FABRIC SHALL BE APPLIED TO THE ROADBED OF THE TEMPORARY ACCESS ROAD, VEHICLE TRACKING PADS, TEMPORARY STREAM CROSSING, ROCK CHECK DAM, AND THE STABILIZED STAGING AREA.
4. EROSION CONTROL LOGS ARE TO BE INSTALLED AT END OF PROJECT AS PART OF FINAL STABILIZATION TASKS.
5. SEEDING SHALL BE COMPLETED ACCORDING TO THE SCHEDULE IN SECTION 212.03.
6. ALL AREAS TO BE SEEDED AND MULCHED SHALL HAVE NATIVE TOP SOIL OR APPROVED SOIL AMENDMENTS SPREAD TO A DEPTH OF AT LEAST 6 INCHES (LOOSE DEPTH). HAUL ROADS AND OTHER COMPACTED AREAS SHALL BE LOOSENED TO A DEPT OF 6 INCHES PRIOR TO SPREADING TOPSOIL.
7. SOIL IS TO BE THOROUGHLY LOOSENED TO A DEPTH OF 6 INCHES PRIOR TO SEEDING. THE TOP 6 INCHES OF THE SEED BED SHALL BE GENERALLY 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.
8. MULCH SHALL BE WEED FREE HAY. MULCH TACKIFIER SHALL BE USED TO STABILIZE MULCH.
9. SEED AND MULCHED AREAS SHALL BE ACCEPTED UNDER THE FOLLOWING CONDITIONS:

9.1. 70% OF THE EXISTING / PRE-CONSTRUCTION CONDITION

9.2. FREE OF ERODED AREAS

9.3. FREE FROM INFESTATION OF NOXIOUS WEEDS.
10. RILL AND GULLY EROSION SHALL BE FILLED WITH TOPSOIL PRIOR TO RESEEDING.

11. ALL AREAS WITH EROSION CONTROL BLANKET SHALL BE SEEDED BEFORE COVERING COMPACTED SOIL WITH BLANKET. BLANKET SHALL BE CLASS 1, 100% BIODEGRADABLE STRAW/COCONUT.
12. STABILIZED STAGING AREA FOR PARKING, STORAGE, LOADING, AND UNLOADING SHALL BE STABILIZED WITH 3” MIN. THICKNESS CDOT CLASS 4 AGGREGATE.
13. REMOVAL OF TEMPORARY ACCESS SURFACES IS INCLUDED IN THE WORK AND SHALL NOT BE PAID FOR SEPARATELY.
14. DEWATERING PLAN SHALL BE ACCORDANCE WITH THE CITY OF LITTLETON WATER QUALITY REQUIREMENTS. THIS WORK IS INCLUDED IN THE WORK AND SHALL NOT BE PAID FOR SEPARATELY.
15. WATER MUST BE DIVERTED SUCH THAT ALL CONSTRUCTION RELATING TO CEMENT RELATED ACTIVITIES OCCUR “IN THE DRY” WITH NO WATER FLOWING THROUGH ACTIVE CONSTRUCTION AREA.
16. CONTRACTOR SHALL SUBMIT WATER CONTROL PLAN FOR REVIEW AND APPROVAL BY THE ENGINEER TEN (10) DAYS PRIOR TO IMPLEMENTATION IN ACCORDANCE WITH SUBSECTION 105.02.
17. THE WATER CONTROL PLAN SHALL INCLUDE THE FOLLOWING:

18.1 METHOD STATEMENT ADDRESSING ALL REQUIREMENTS INCLUDING COPIES OF RELEVANT PERMITS REQUIRED FOR STREAM DIVERSION

18.2 PLANS AND DESIGN CALCULATIONS, SEALED AND SIGNED BY A PROFESSIONAL ENGINEER REGISTERED TO THE STATE OF COLORADO SUPPORTING THE DIVERSION PLAN INCLUDING BUT NOT LIMITED TO:

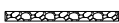

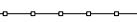









- A) METHOD FOR DETERMINING DESIGN FLOW,
- B) SURFACE WATER PROFILING AND CONVEYANCE CALCULATIONS, AND
- C) PHASING PLANS.

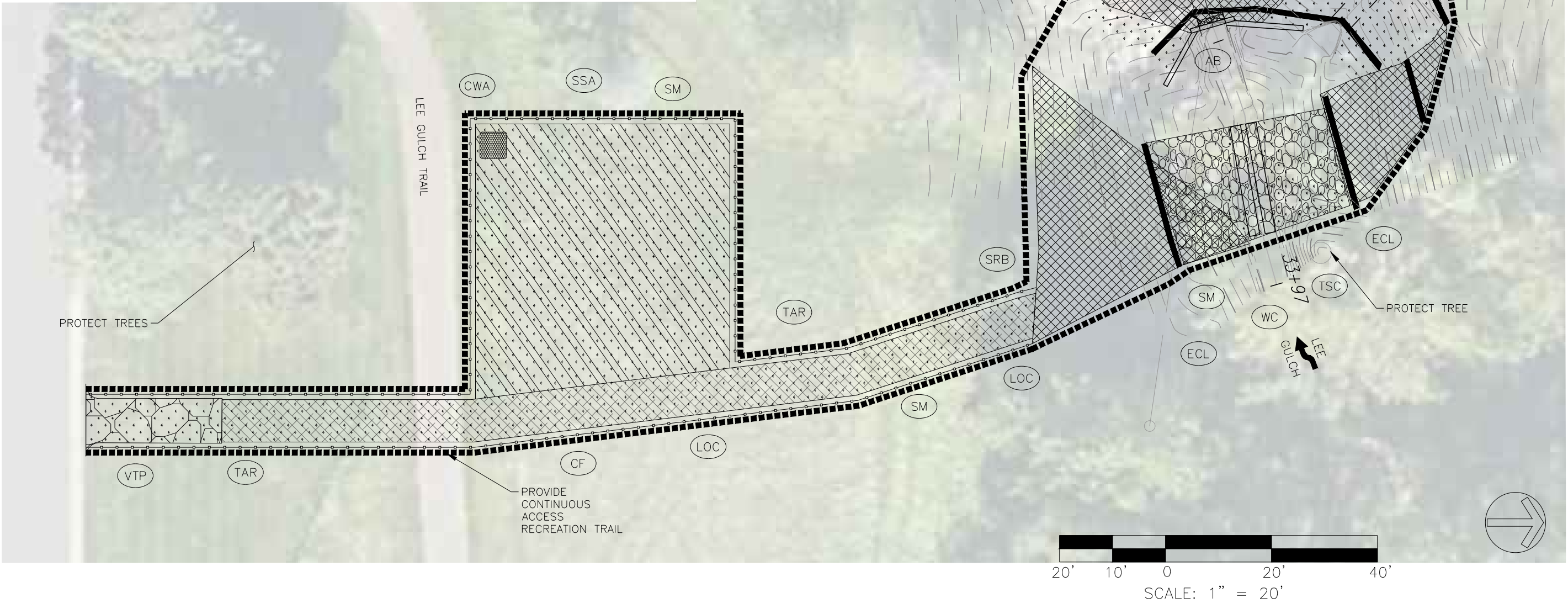
SEEDING MIX				
SPECIES	VARIETY	WEIGHT % OF MIX	(DRILLED PLANTING) PLS LBS/ACRE	(BROADCAST) PLS LBS/ACRE
STREAMBANK WHEATGRASS	SODAR	30	3	6
WESTERN WHEATGRASS	ARRIBA OR BARTON	30	3	6
SIDEOATS GRAMMA	–	20	2	4
BLUE GRAMMA	–	15	1.0	3
BUFFALO GRASS (TREATED)	–	5	5	0.9
TOTAL		100	10 LBS/ACRE	19.9 LBS/ACRE

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BMP LEGEND

	(AB)	AGGREGATE BAG		(TAR)	TEMPORARY ACCESS ROAD
	(CF)	CONSTRUCTION FENCE		(VTP)	VEHICLE TRACKING PAD
	(CWA)	CONCRETE WASHOUT AREA		(WC)	DENOTES WATER CONTROL PLAN-CONTRACTOR TO PROVIDE MEANS OF DIVERTING LEE GULCH FLOWS AROUND WORK ZONE AS NEEDED. DEWATERING SHALL NOT BE PAID FOR SEPARATELY BUT WILL BE INCLUDED IN THE WORK.
	(SRB)	SOIL RETENTION BLANKET AND SEEDING		(LOC)	LIMITS OF CONSTRUCTION
	(ECL)	EROSION CONTROL LOG		(TSC)	TEMPORARY STREAM CROSSING - PAID FOR AS 1 EACH, SHALL INCLUDE PLACEMENT AND REMOVAL OF RIPRAP, AGGREGATE BASE COURSE, GEOTEXTILE, AND CMP
	(SM)	SEEDING AND MULCHING			
	(SSA)	STABILIZED STAGING AREA			



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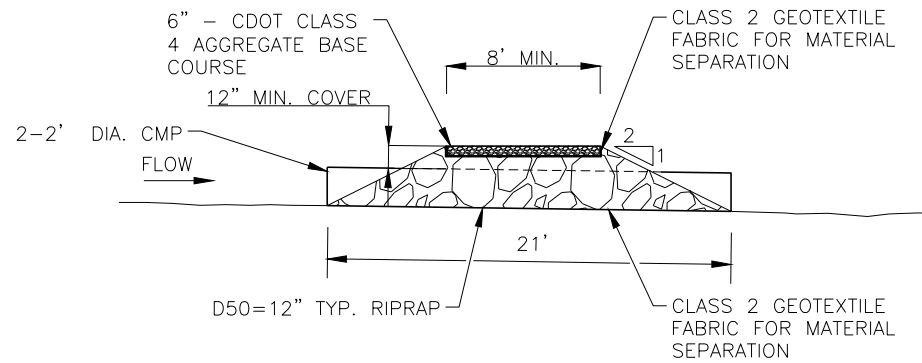
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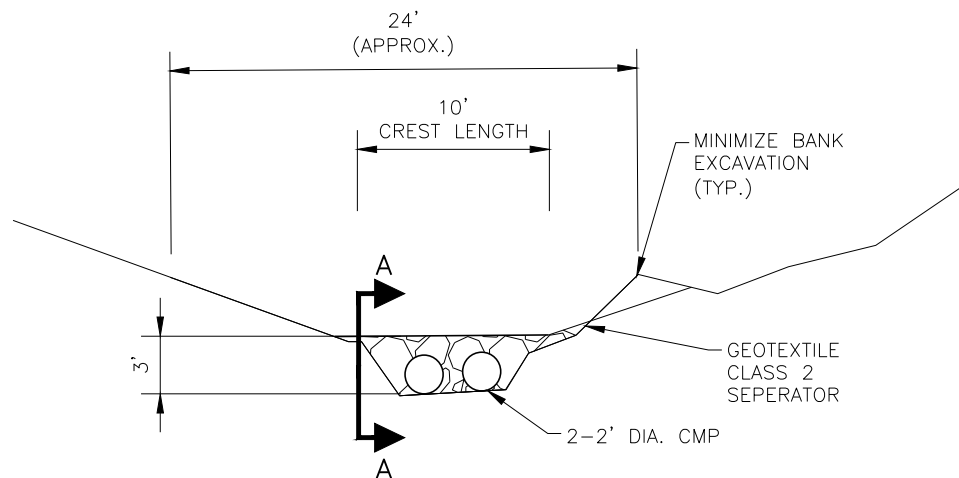
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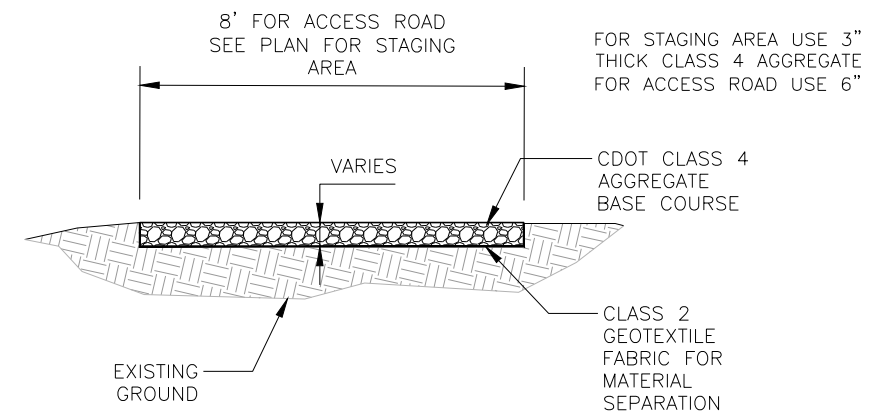
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TEMPORARY STREAM CROSSING
SECTION A
(NTS)



EAST CULVERT CROSS SECTION
LOOKING DOWNSTREAM
(NTS)



TEMPORARY ACCESS ROAD AND
STABILIZED STAGING AREA
(NTS)

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CITY OF LITTLETON
LEE GULCH EAST HEADWALL
EROSION CONTROL DETAILS

Designer: NSB

Detailer: NSB

Sheet Subset: ECPL

Structure Numbers



Subset Sheets: 3 of 3

Project No./Code

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Sheet Number 11



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