GENERAL NOTES

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE COLORADO DEPARTMENT OF TRANSPORTATION 2011 STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION AND THE PROJECT SPECIAL PROVISIONS.

ALL WORK IN AND AROUND CREEKS, DITCHES, OR IRRIGATION CANALS SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 107 AND 108 OF THE PROJECT SPECIFICATIONS. REFER TO THESE SECTIONS FOR CONTROL OF WATER AND CONSTRUCTION LIMITATIONS.

STATIONS, ELEVATIONS, AND DIMENSIONS CONTAINED IN THESE PLANS ARE CALCULATED FROM A RECENT FIELD SURVEY. THE CONTRACTOR SHALL VERIFY ALL DEPENDENT DIMENSIONS IN THE FIELD BEFORE ORDERING OR FABRICATING ANY MATERIAL.

ALL LONGITUDINAL AND TRANSVERSE DIMENSIONS ARE MEASURED HORIZONTALLY AND DO NOT INCLUDE ANY CORRECTIONS FOR GRADE.

THE INFORMATION SHOWN ON THE 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 811 (1-800-922-1987) AT LEAST 3 DAYS (2 DAYS NOT INCLUDING THE DAY OF NOTIFICATION) PRIOR TO ANY EXCAVATION OR OTHER EARTHWORK.

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 BE PAID FOR BY ITEM 206 SHORING.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE STABILITY OF THE STRUCTURE DURING CONSTRUCTION.

EXCAVATION ACROSS FOUR MILE CANYON DRIVE WILL LIKELY REQUIRE BLASTING TO REACH INVERT ELEVATIONS OF THE PROPOSED CULVERT. SPECIAL PRECAUTIONS WILL BE REQUIRED TO CONTROL BLASTING AND MINMIZE IMPACTS TO NEIGHBORING RESIDENCES, WELLS AND INFRASTRUCTURE. A PRE-BLAST SURVEY OF THE STRUCTURES ADJACENT TO THE PROJECT AREA IS RECOMMENDED.

RETAINING WALL FOOTINGS AT OUTLET END OF GOLD RUN BOX CULVERT SHALL BE PLACED MONOLITHICALLY WITH TOEWALL OF CBC.

ACRONYMS AND ABBREVIATIONS CONFORM TO STANDARD PLAN NO. M-100-2, UNLESS OTHERWISE NOTED.

B.F. = BACK FACE F.F. = FRONT FACE PERP. = PERPENDICULAR
EMBED. = EMBEDMENT PAR. = PARALLEL

REINFORCED CONCRETE NOTES

A COLORED STRUCTURAL CONCRETE FINISH WILL BE REQUIRED, AS SHOWN ON THE PLANS, ON EXPOSED CONCRETE SURFACES. THESE FINISHES ARE TO BE SELECTED FROM TEST PANELS PROVIDED BY THE CONTRACTOR.

THE FINAL FINISH FOR THE SURFACES OF CURBS SHALL BE CLASS 2. ALL OTHER EXPOSED CONCRETE SURFACES SHALL RECEIVE A CLASS 1 FINAL FINISH TO ONE FOOT BELOW FINISHED GRADE, UNLESS NOTED OTHERWISE.

EXPOSED CONCRETE CORNERS SHALL BE CHAMFERED 3/4 INCH, UNLESS NOTED OTHERWISE.

EXPANSION JOINT MATERIAL SHALL MEET AASHTO SPECIFICATION M213.

ANY CONSTRUCTION JOINTS NOT SHOWN ON THE PLANS MAY BE CONSTRUCTED ONLY IF APPROVED IN WRITING BY THE ENGINEER.

ROUGHENED CONSTRUCTION JOINTS REQUIRE THE CONCRETE SURFACE TO BE EVENLY ROUGHENED TO A MINIMUM AMPLITUDE OF 1/4 INCH.

CONSTRUCTION JOINTS SHALL BE THOROUGHLY CLEANED BEFORE FRESH CONCRETE IS PLACED.

GRADE 60 REINFORCING STEEL IS REQUIRED.

ALL REINFORCING SHALL BE EPOXY COATED.

THE FOLLOWING TABLE GIVES THE MINIMUM LAP SPLICE LENGTH FOR REINFORCING BARS PLACED IN ACCORDANCE WITH SUBSECTION 602.06. THESE SPLICE LENGTHS SHALL BE INCREASED BY 25% FOR BARS SPACED AT LESS THAN 6 INCHES ON CENTER OR LESS THAN 3 INCHES OF LATERAL COVER.

REINFORCING BAR SIZE	#4	#5	#6	#7	#8	#9	#10	#11
3 BAR DIAMETERS (REFERENCE DIMENSION)	1 1/2"	1 7/8"	2 1/4"	2 5/8"	3"	3 3/8"	3 7/8"	4 1/4"
6 BAR DIAMETERS (REFERENCE DIMENSION)	3"	3 3/4"	4 1/2"	5 1/4"	6"	6 3/4"	7 5/8"	8 1/2"
EPOXY COATED REINFORCING BAR SIZE	#4	#5	#6	#7	#8	#9	#10	#11
CLASS B SPLICE (STAGGERED) LENGTH FOR f'c = 4,500 PSI CONCRETE	1'-7"	2'-0"	2'-5"	2'-10"	3'-8"	4'-8"	5'-11"	7'-3"
CLASS C SPLICE (UNSTAGGERED) LENGTH FOR f'c = 4,500 PSI CONCRETE	2'-1"	2'-7"	3'-1"	3'-8"	4'-9"	6'-1"	7'-8"	9'-5"
NON-EPOXY COATED REINFORCING BAR SIZE	#4 x	#5 x	#6 x	#7 x	#8 x	#9 x	#10 x	#11 x
CLASS B SPLICE (STAGGERED) LENGTH FOR f'c = 4,500 PSI CONCRETE	1'-4"	1'-8"	2'-0"	2'-4"	3'-1"	3'-10"	4'-11"	6'-0"
CLASS C SPLICE (UNSTAGGERED) LENGTH FOR f'c = 4,500 PSI CONCRETE	1'-9"	2'-2"	2'-7"	3'-1"	4'-0"	5'-1"	6'-5"	7'-10"

THESE SPLICE LENGTHS MAY BE DECREASED BY 20% IF BARS ARE NOT SPACED LESS THAN 6 INCHES ON CENTER AND HAVE 3 INCHES OR MORE OF COVER PROVIDED IN THE DIRECTION OF THE SPACING.

THESE SPLICE LENGTHS MAY BE DECREASED BY 25% IF BARS ARE ENCLOSED WITHIN A SPIRAL COMPOSED OF 1/4 INCH MINIMUM DIAMETER AND SPACED AT NO MORE THAN A 4 INCH PITCH.

THESE SPLICE LENGTHS SHALL BE INCREASED BY 20% FOR 3 BAR BUNDLES AND 33% FOR 4 BAR BUNDLES.

WHEN CONTRACTOR ELECTS TO SUBSTITUTE EPOXY COATED REINFORCEMENT FOR NON-EPOXY COATED REINFORCING BARS, THE MINIMUM LAP SPLICE SHALL BE FOR EPOXY COATED REINFORCEMENT.

INDEX OF DRAWINGS

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41-42	ARCHITECTURAL DETAILS
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46-47	ROCK ANCHOR WALL DETAILS
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54-55	BRIDGE RAIL TYPE 8 (SPECIAL)

STRUCTURE DESCRIPTIONS

GOLD RUN CBC:
- SINGLE CONCRETE BOX CULVERT
- UPPER FOURMILE CANYON DR./ GOLD RUN RD.

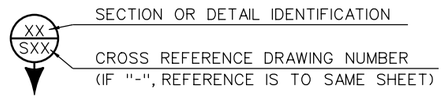
RETAINING WALL 1:
- ANCHORED WALL
- GOLD RUN CBC INLET RT.

RETAINING WALL 2:
- ANCHORED WALL
- GOLD RUN CBC INLET LT.

RETAINING WALL 3:
- CANTILEVER SEMI-GRAVITY WALL
- GOLD RUN CBC OUTLET LT.

RETAINING WALL 4:
- CANTILEVER SEMI-GRAVITY WALL
- GOLD RUN CBC OUTLET RT.

GOLD RUN MOMENT SLAB:
- MOMENT SLAB
- GOLD RUN RD. LT.
- BRIDGE RAIL TYPE 8 (SPECIAL)



CALL UTILITY NOTIFICATION CENTER OF COLORADO
811
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Michael Baker INTERNATIONAL

BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION

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SALINA JUNCTION
GENERAL INFORMATION (1 OF 2)

PROJECT NO: 4011.SEPT12C38 | SHEET NO: 31

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SUMMARY OF QUANTITIES

ITEM	DESCRIPTION	UNIT	CBC	RETAINING WALL 1	RETAINING WALL 2	RETAINING WALL 3	RETAINING WALL 4	MOMENT SLAB	TOTALS
206	STRUCTURE EXCAVATION (SPECIAL)	CY	521			158	228	63	970
206	STRUCTURE BACKFILL (FLOW-FILL)	CY	93						93
206	STRUCTURE BACKFILL (CLASS 1)	CY	87			71	144	2	304
206	STRUCTURE BACKFILL (CLASS 2)	CY				15	14		29
206	SHORING (AREA 1)	LS	1						1
206	SHORING (AREA 2)	LS	1						1
206	SHORING (AREA 3)	LS					1		1
211	ROCK ANCHOR	LF		90	130				220
211	DEWATERING	LS							1
403	HOT MIX ASPHALT (GRADING SX) (75)	TN						11	11
420	ASPHALT REINFORCEMENT GEOGRID	SY	130						130
507	CONCRETE SLOPE AND DITCH PAVING	CY	10.4						10.4
515	WATERPROOFING (MEMBRANE)	SY						65	65
601	CONCRETE CLASS D	CY						25.5	25.5
601	CONCRETE CLASS D (BOX CULVERT)	CY	139.3 (1)						139.3
601	CONCRETE CLASS D (WALL)	CY		5.5	8.7	24.5	48.1		86.8
601	CUT STONE VENEER	SF	279			297	537	236	1,349
601	STRUCTURAL CONCRETE COATING	SF	244					231	475
601	STRUCTURAL CONCRETE COATING (ANTI-GRAFFITI)	SF	244					231	475
602	REINFORCING STEEL (EPOXY COATED)	LB	28,604 (1)	666	1,036	4,281	8,894	3,850	47,331
606	BRIDGE RAIL TYPE 8 (SPECIAL)	LF	41					61	102
621	TEMPORARY STREAM CROSSING	LS							1

KEYNOTES:

(1) PER CDOT STANDARD PLAN NO. M-601-1, CBC TYPICAL SECTION QUANTITIES ARE 1.240 CY/FT CONCRETE AND 255 LB/FT REINFORCING STEEL. ADDITONAL REINFORCING STEEL REQUIRED FOR STAGED CONSTRUCTION HAS NOT BEEN CONSIDERED. SEE GOLD RUN CBC GENERAL LAYOUT FOR DETAILS.

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CALL UTILITY NOTIFICATION CENTER OF COLORADO
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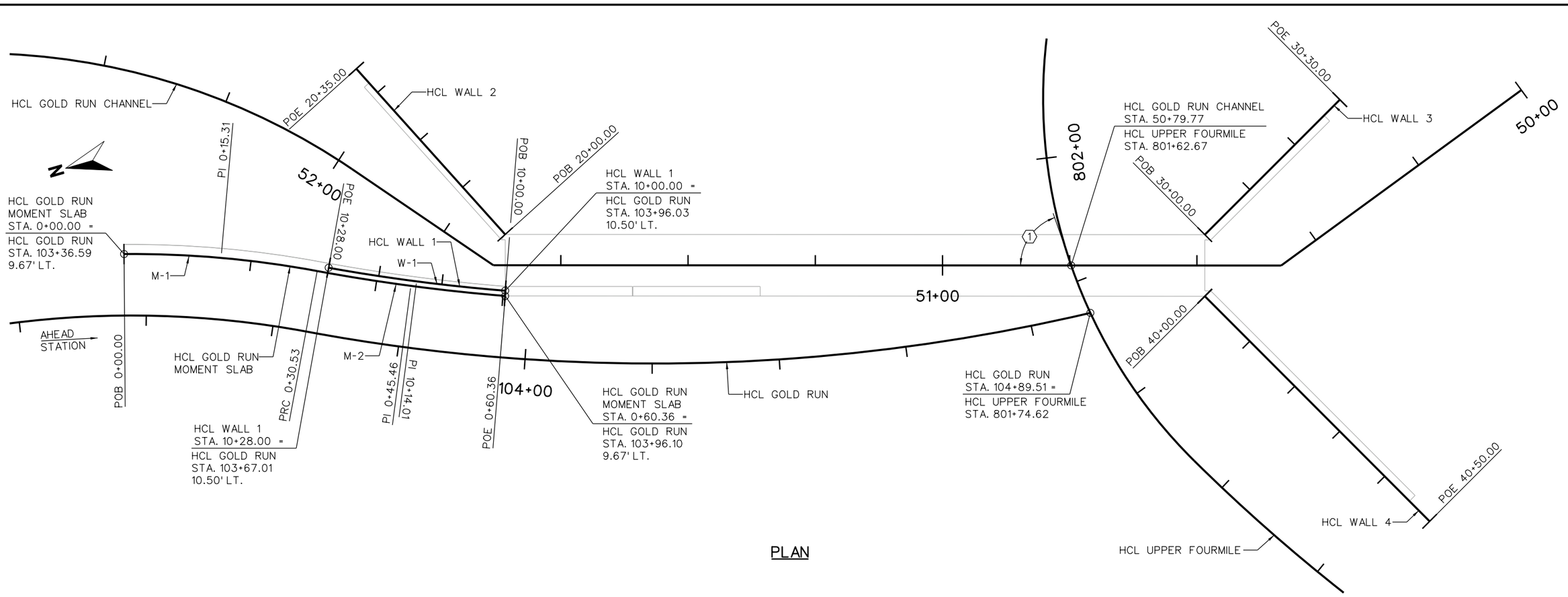
SALINA JUNCTION
GENERAL INFORMATION (2 OF 2)

PROJECT NO: 4011.SEPT12C38 | SHEET NO: 32



PLAN

HCL GOLD RUN MOMENT SLAB DATA TABLE

CURVE NUMBER	POINT TYPE	STATION	NORTHING	EASTING	BEARING	DISTANCE	RADIUS	LENGTH	DELTA
	POB/PC	0+00.00	261853.36	36879.75					
M-1	PI	0+15.31	261838.63	36875.59			159.67'	30.53'	10° 57'15" RT.
	PRC	0+30.53	261824.96	36868.70					
M-2	PI	0+45.46	261811.62	36861.99			290.33'	29.83'	5° 53'16" LT.
	PT/POE	0+60.36	261797.67	36856.68					

HCL WALL 1 DATA TABLE

CURVE NUMBER	POINT TYPE	STATION	NORTHING	EASTING	BEARING	DISTANCE	RADIUS	LENGTH	DELTA
	POB/PC	10+00.00	261797.43	36857.48					
W-1	PI	10+14.01	261810.53	36862.46			289.50'	28.00'	5° 32'30" RT.
	PT/POE	10+28.00	261823.08	36868.69					

HCL WALL 2 DATA TABLE

CURVE NUMBER	POINT TYPE	STATION	NORTHING	EASTING	BEARING	DISTANCE	RADIUS	LENGTH	DELTA
	POB	20+00.00	261794.96	36865.95					
					N64° 14'36"E	35.00'			
	POE	20+35.00	261810.17	36897.48					

HCL WALL 3 DATA TABLE

CURVE NUMBER	POINT TYPE	STATION	NORTHING	EASTING	BEARING	DISTANCE	RADIUS	LENGTH	DELTA
	POB	30+00.00	261689.35	36835.19					
					S28° 45'36"E	30.00'			
	POE	30+30.00	261663.05	36849.63					

HCL WALL 4 DATA TABLE

CURVE NUMBER	POINT TYPE	STATION	NORTHING	EASTING	BEARING	DISTANCE	RADIUS	LENGTH	DELTA
	POB	40+00.00	261692.05	36825.91					
					S61° 14'24"W	50.00'			
	POE	40+50.00	261668.00	36782.08					

NOTES:

1. FOR ROADWAY AND CHANNEL ALIGNMENT INFORMATION, REFER TO ROADWAY PLANS.

KEYNOTES:

(1) CBC SKEW IS 70° 51'47" TO TANGENT OF HCL UPPER FOURMILE.

SCALE: 1/16" = 1'-0"

CALL UTILITY NOTIFICATION CENTER OF COLORADO
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SALINA JUNCTION
GEOMETRIC LAYOUT STRUCTURES

PROJECT NO: 4011.SEPT12C38 | SHEET NO: 33

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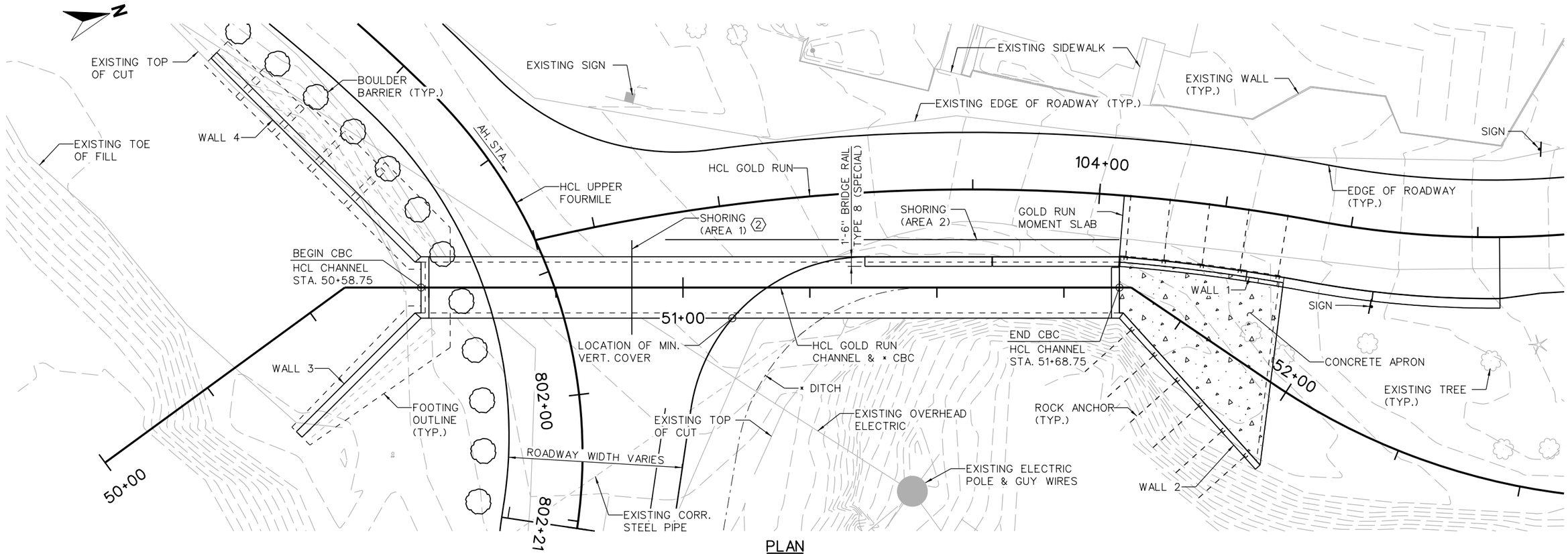
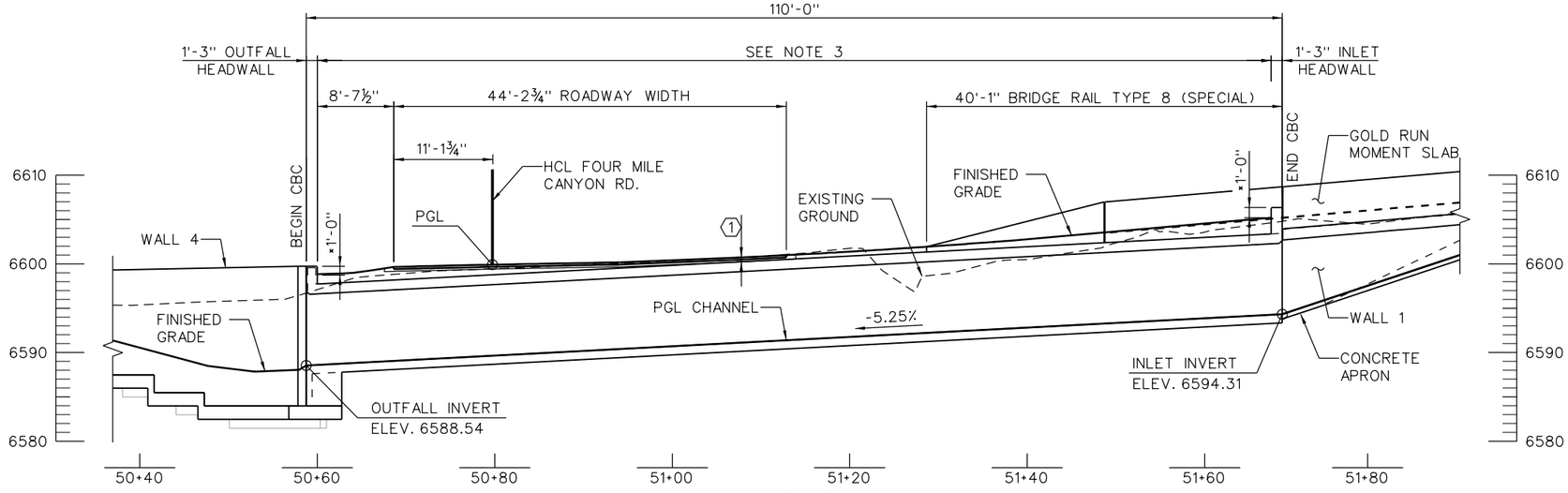


PLAN



ELEVATION

TAKEN ALONG HCL CHANNEL

SCALE: 1/16" = 1'-0"

CALL UTILITY NOTIFICATION CENTER OF COLORADO
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SALINA JUNCTION
GENERAL LAYOUT
GOLD RUN CBC (1 OF 2)

PROJECT NO: 4011.SEPT12C38 | SHEET NO: 34

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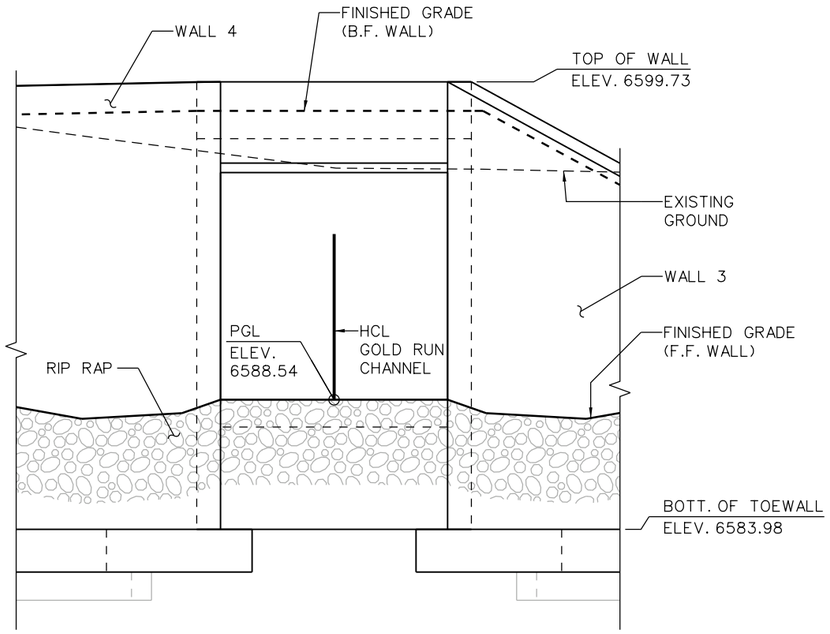
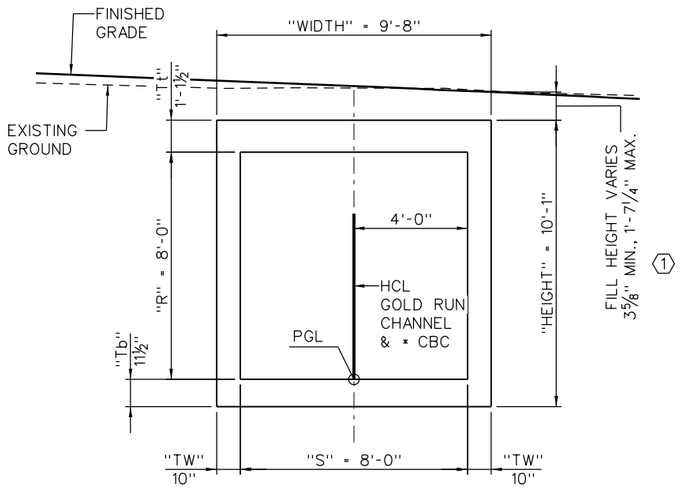


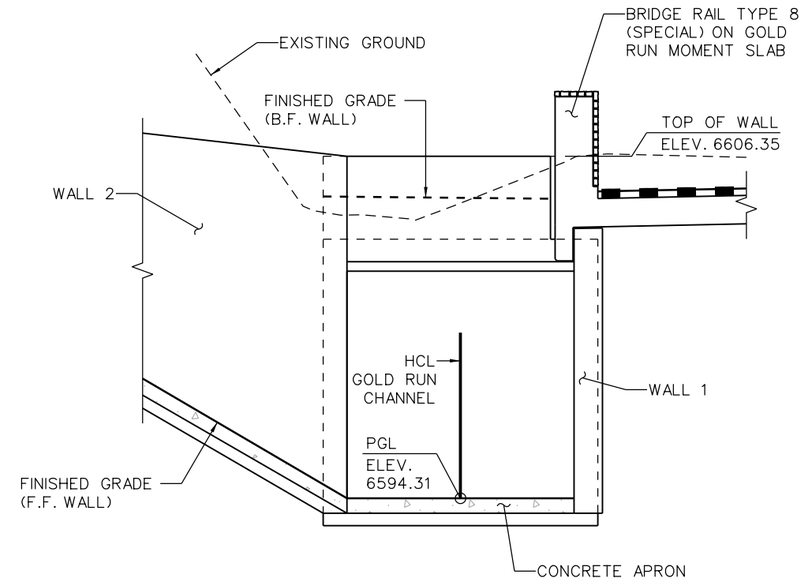
OUTLET ELEVATION

TAKEN ALONG F.F. HEADWALL
LOOKING AHEAD STATION ALONG HCL CHANNEL



TYPICAL SECTION

TAKEN PERPENDICULAR TO ⌖ CBC
LOOKING AHEAD STATION ALONG HCL CHANNEL



INLET ELEVATION

TAKEN ALONG F.F. HEADWALL
LOOKING BACK STATION ALONG HCL CHANNEL

NOTES:

1. PARAMETERS "Tt", "R", "Tb", "TW", "S", "WIDTH", AND "HEIGHT" ARE CONSISTENT WITH CDOT STANDARD PLAN NO. M-601-1.
2. "FILL HEIGHT ALLOWED" AS IDENTIFIED IN CDOT STANDARD PLAN NO. M-601-1 SHALL BE "LESS THAN 2 FT".
3. FOR CBC NOTES AND TYPICAL SECTION REINFORCING, REFER TO CDOT STANDARD PLAN NO. M-601-1.
4. MODERATE LEVEL OF DE-ICING SALTS ARE ANTICIPATED. ALL REINFORCING BARS IN THE TOP MAT OF THE TOP SLAB AND PROJECTIONS TO WITHIN 5 INCHES OF TOP SLAB SHALL BE EPOXY COATED.
5. ADJACENT WALLS SHALL BE TIED TO THE CBC ACCORDING TO THE DETAILS PRESENTED IN THESE PLANS.
6. FOR LIMITS OF CUT STONE VENEER AND OTHER AESTHETIC DETAILS, REFER TO ARCHITECTURAL DETAILS.
7. FOR ROADWAY ALIGNMENT DATA, GRADING DETAILS, TREE REMOVALS, SIGNAGE, AND UTILITY INFORMATION REFER TO ROADWAY PLANS.
8. FOR RIP RAP AND ASSOCIATED DETAILS, REFER TO DRAINAGE PLANS.
9. CONSTRUCTION PHASING MAY REQUIRE SHORING. SEE PHASING PLANS FOR ADDITIONAL INFORMAITON.
10. IF SHORING IS REQUIRED AND THE HEIGHT EXCEEDS 5 FEET ABOVE THE BASE OF THE EXCAVATION, SEALED SHORING DRAWINGS SHALL BE PROVIDED BY THE CONTRACTOR TO THE ENGINEER FOR INFORMATION ONLY IN ACCORDANCE WITH SECTION 206.
11. FOR CONCRETE APRON LIMITS, REFER TO DRAINAGE PLANS. FOR CONCRETE APRON DETAILS REFER TO CDOT STANDARD PLAN NO. M-601-20. APRON CONCRETE SHALL BE CONCRETE CLASS D AND IS QUANTIFIED AS ITEM 507 CONCRETE SLOPE AND DITCH PAVING. PLACE BOND BREAKER ALONG INTERFACE WITH WALL 1 AND 2.
12. GEOTECHNICAL INFORMATION AND RECOMMENDATIONS CAN BE FOUND IN THE GEOTECHNICAL REPORT PROVIDED BY YEH AND ASSOCIATES, FOURMILE CANYON DRIVE AND GOLD RUN, DATED 10-03-2014.

KEYNOTES:

1. FILL HEIGHTS SHOWN OVER ROADWAY.
2. ADDITIONAL CBC REINFORCING MAY BE REQUIRED AT CONSTRUCTION JOINTS FOR STAGED CONSTRUCTION, SEE STANDARD PLAN NO. M-601-1 FOR DETAILS.

DESIGN DATA:

AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SIXTH EDITION WITH INTERIMS THROUGH 2012

DESIGN METHOD: LOAD AND RESISTANCE FACTOR DESIGN (LRFD)

LIVE LOAD: HL-93 (DESIGN TRUCK OR DESIGN TANDEM, AND DESIGN LANE LOAD) OR COLORADO PERMIT VEHICLE

SEISMIC ZONE 1

REINFORCED CONCRETE:

CLASS D CONCRETE:	f'c = 4,500 PSI
REINFORCING STEEL:	fy = 60,000 PSI
SEVERITY OF SULFATE EXPOSURE:	CLASS 0

SOIL PROPERTIES:

STRUCTURE BACKFILL (CLASS 1):

SOIL UNIT WEIGHT:	135 PCF
SOIL FRICTION ANGLE:	34°

IN-SITU SOIL:

SOIL UNIT WEIGHT:	135 PCF
SOIL FRICTION ANGLE:	34°
COEFFICENT OF FRICITON:	0.54
SLIDING RESISTANCE FACTOR:	0.80
NOMINAL BEARING RESISTANCE:	6.20 KSF
BEARING RESISTANCE RESISTANCE FACTOR:	0.45

SCALE: 3/16" = 1'-0"

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SALINA JUNCTION
GENERAL LAYOUT
GOLD RUN CBC (2 OF 2)

PROJECT NO: 4011.SEPT12C38 | SHEET NO: 35

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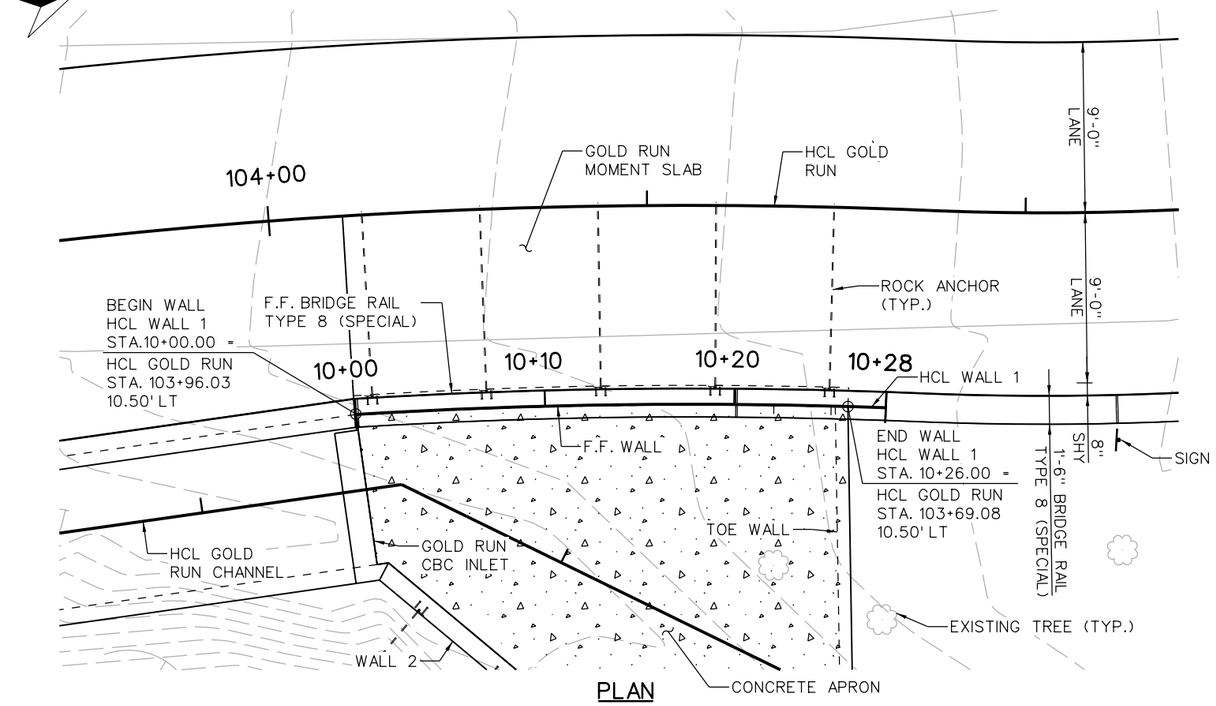
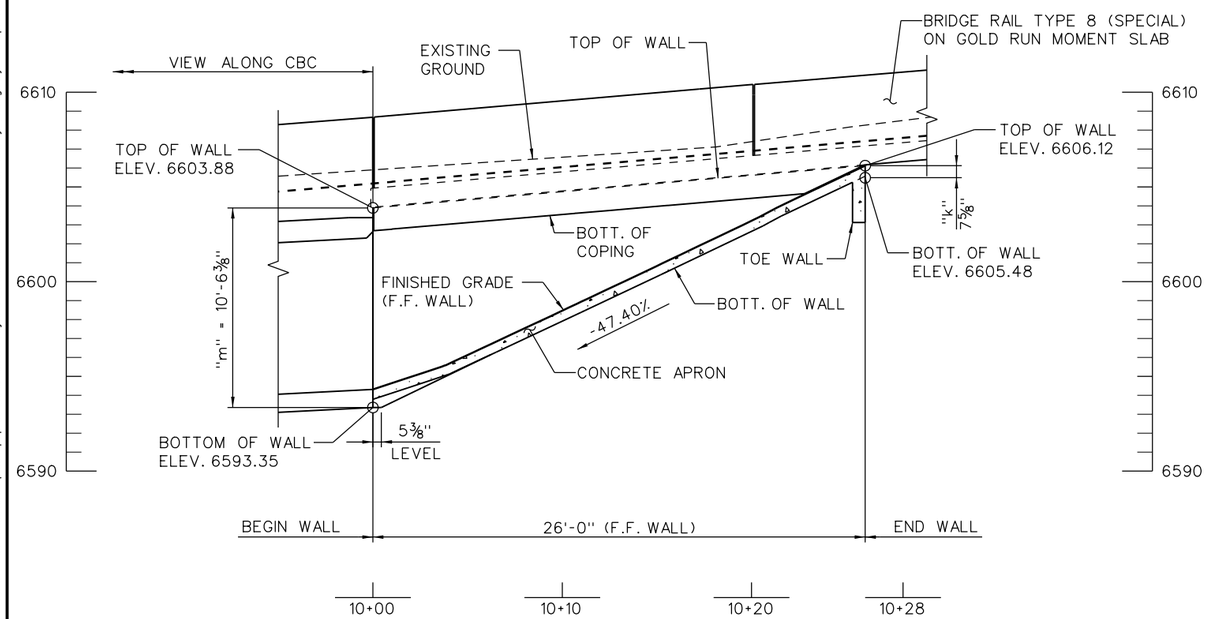


PLAN



ELEVATION

TAKEN ALONG HCL WALL 1

DESIGN DATA

AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SIXTH EDITION WITH INTERIMS THROUGH 2012

DESIGN METHOD: LOAD AND RESISTANCE FACTOR DESIGN (LRFD)

LIVE LOAD: HL-93 (DESIGN TRUCK OR DESIGN TANDEM, AND DESIGN LANE LOAD) OR COLORADO PERMIT VEHICLE

SEISMIC ZONE 1

REINFORCED CONCRETE:

CLASS D CONCRETE:	f'c = 4,500 PSI
REINFORCING STEEL:	fy = 60,000 PSI
SEVERITY OF SULFATE EXPOSURE:	CLASS 0

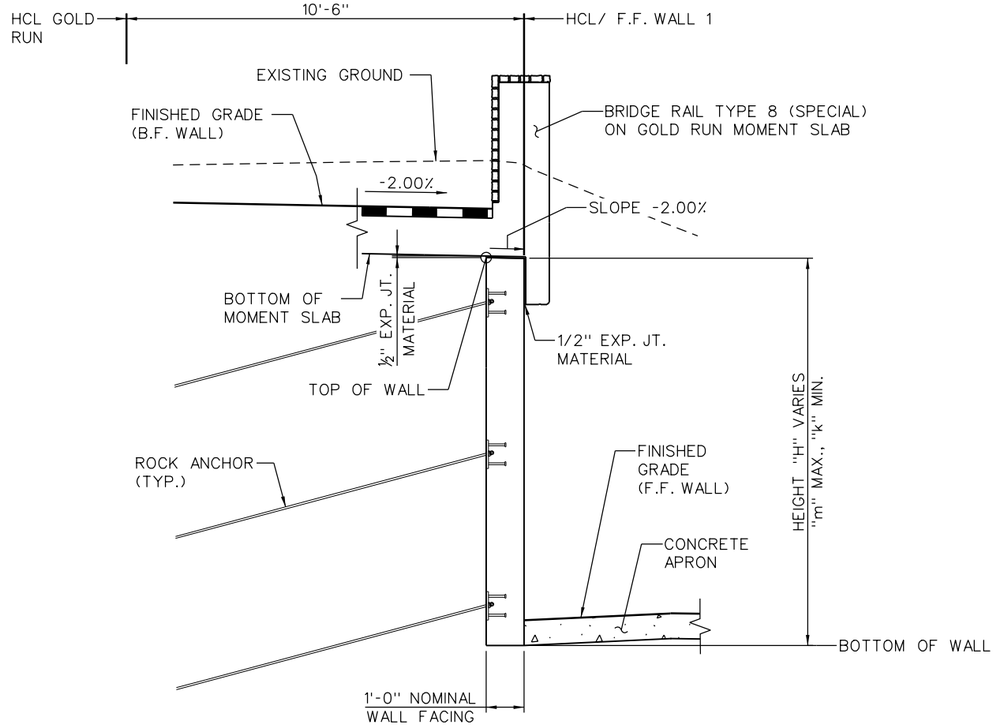
SOIL PROPERTIES:

ROCK:

SOIL UNIT WEIGHT:	145 PCF
SOIL COHESION:	5,000 PSF
SOIL FRICTION ANGLE:	38°

NOTES:

1. TOP OF WALL SHALL FOLLOW ROADWAY PROFILE.
2. FOR APRON INFORMATION, REFER TO GOLD RUN CBC GENERAL LAYOUT.
3. FOR ROADWAY ALIGNMENT, FINISHED GRADING, TREE REMOVALS AND UTILITY INFORMATION, REFER TO ROADWAY PLANS.
4. GEOTECHNICAL INFORMATION AND RECOMMENDATIONS CAN BE FOUND IN THE GEOTECHNICAL REPORT PROVIDED BY YEH AND ASSOCIATES, FOURMILE CANYON DRIVE AND GOLD RUN, DATED 10-03-2014.
5. BOTTOM OF WALL AND BOTTOM OF CONCRETE APRON ARE NOT COINCIDENT.



TYPICAL SECTION

SCALE = 2:1

LOOKING AHEAD STATION ALONG HCL WALL 1

SCALE: ⅛" = 1'-0"

CALL UTILITY NOTIFICATION CENTER OF COLORADO 811 CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

REVISIONS:	NO.	DATE	REVISION DESCRIPTION:

BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION

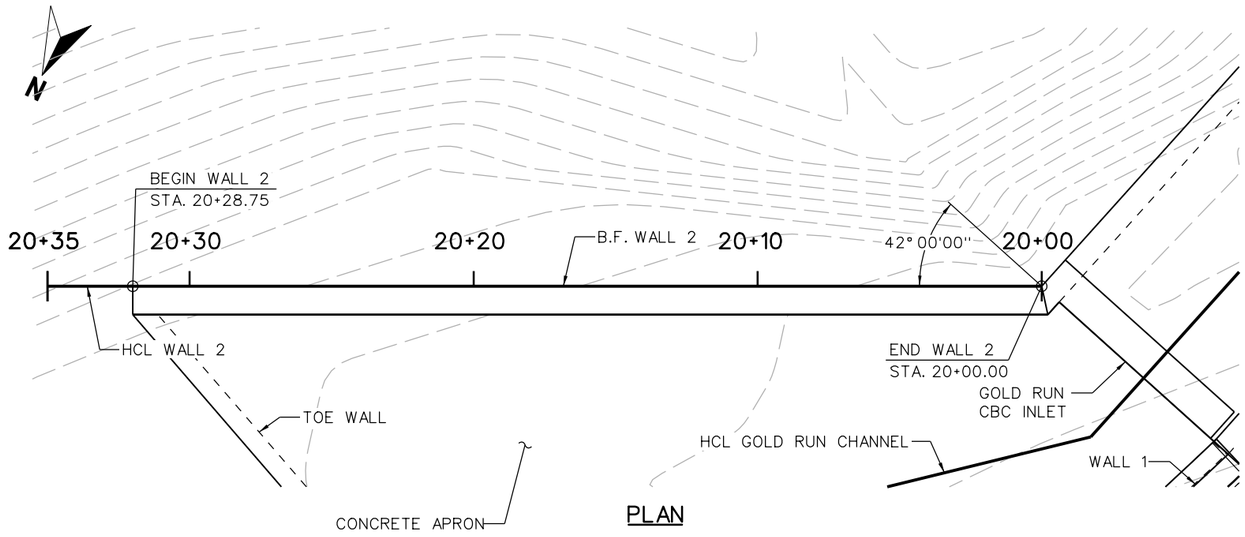
Michael Baker INTERNATIONAL

DESIGNED:	CAD:	CHECKED:	DATE:
DLT	BMT		03/13/2015

SALINA JUNCTION
GENERAL LAYOUT
RETAINING WALL 1

PROJECT NO: 4011.SEPT12C38 | SHEET NO: 36

nathan.girkins 1:51:44 PM pw:\\DCPWAPP1.bkr.mbakercorp.com:pwprod\Documents\Projects\Lakewood_Office\Boulder_County_Emergency_Transportation\T05\08_Sheet_Files\06_Structures\DGN\138601_CLVRT_06.dgn



PLAN

DESIGN DATA:

AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SIXTH EDITION WITH INTERIMS THROUGH 2012

DESIGN METHOD: LOAD AND RESISTANCE FACTOR DESIGN (LRFD)

LIVE LOAD: HL-93 (DESIGN TRUCK OR DESIGN TANDEM, AND DESIGN LANE LOAD) OR COLORADO PERMIT VEHICLE

SEISMIC ZONE 1

REINFORCED CONCRETE:

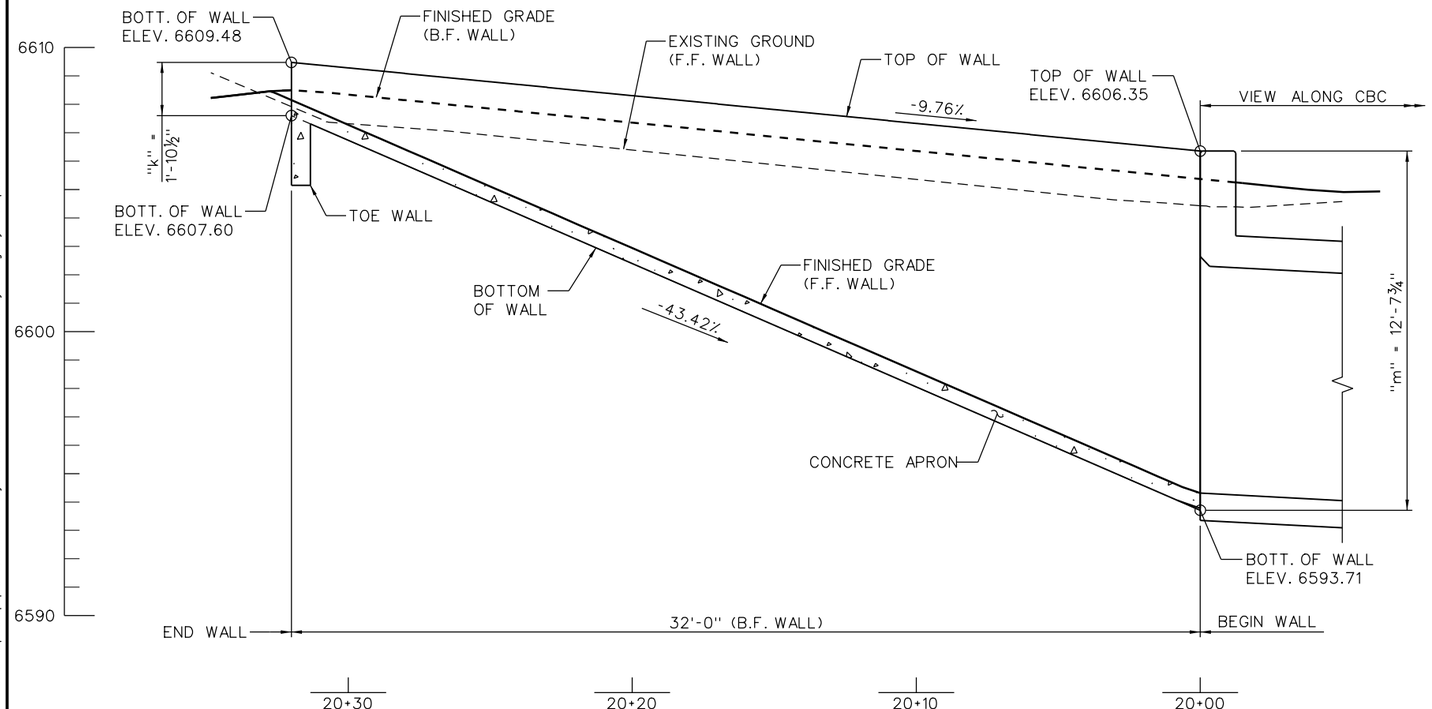
CLASS D CONCRETE:	f'c = 4,500 PSI
REINFORCING STEEL:	fy = 60,000 PSI
SEVERITY OF SULFATE EXPOSURE:	CLASS 0

SOIL PROPERTIES:
ROCK:

SOIL UNIT WEIGHT:	145 PCF
SOIL COHESION:	5,000 PSF
SOIL FRICTION ANGLE:	38°

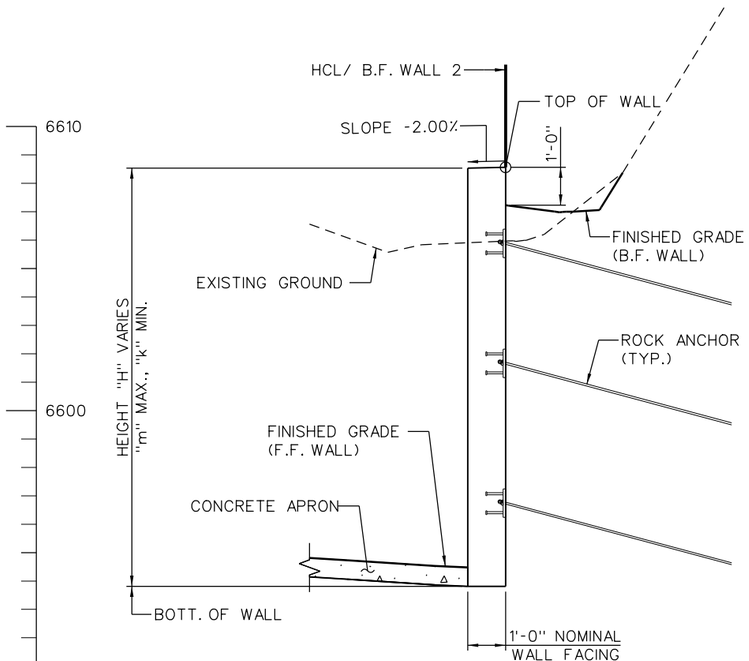
NOTES:

1. FOR APRON INFORMATION, REFER TO GOLD RUN CBC GENERAL LAYOUT.
2. FOR FINISHED GRADING AND UTILITY INFORMATION, REFER TO ROADWAY PLANS.
3. FOR LIMITS OF STRUCTURAL CONCRETE COATING AND OTHER AESTHETIC DETAILS, REFER TO ARCHITECTURAL DETAILS SHEET.
4. GEOTECHNICAL INFORMATION AND RECOMMENDATIONS CAN BE FOUND IN THE GEOTECHNICAL REPORT PROVIDED BY YEH AND ASSOCIATES, FOURMILE CANYON DRIVE AND GOLD RUN, DATED 10-03-2014.
5. BOTTOM OF WALL AND BOTTOM OF CONRETE APRON ARE NOT COINCIDENT.



ELEVATION

TAKEN ALONG HCL WALL 2



TYPICAL SECTION

SCALE : 1.33:1

LOOKING AHEAD STATION ALONG HCL WALL 2

SCALE: 3/16" = 1'-0"

CALL UTILITY NOTIFICATION CENTER OF COLORADO
811
CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

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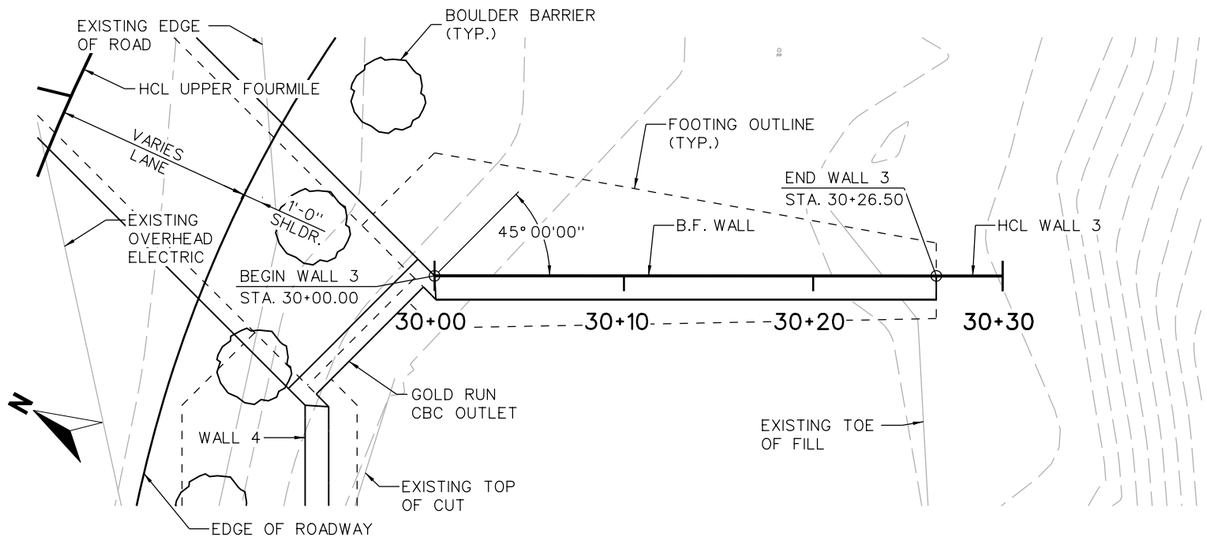
BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION
Michael Baker INTERNATIONAL

DESIGNED:	CAD:	CHECKED:	DATE:
DLT	BMT		7/31/2015

SALINA JUNCTION
GENERAL LAYOUT
RETAINING WALL 2

PROJECT NO: 4011.SEPT12C38 | SHEET NO: 37

nathan.girkins 15:49 PM pw:\\DCPWAPP1.bkr.mbakercorp.com:pwprod\Documents\Projects\Lakewood_Office\Boulder_County_Emergency_Transportation\T05\08_Sheet_Files\06_Structures\DGN\138601_CLVRT_07.dgn



PLAN

DESIGN DATA:

AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SIXTH EDITION WITH INTERIMS THROUGH 2012

DESIGN METHOD: LOAD AND RESISTANCE FACTOR DESIGN (LRFD)

LIVE LOAD: HL-93 (DESIGN TRUCK OR DESIGN TANDEM, AND DESIGN LANE LOAD) OR COLORADO PERMIT VEHICLE

SEISMIC ZONE 1

REINFORCED CONCRETE:

CLASS D CONCRETE:	f'c = 4,500 PSI
REINFORCING STEEL:	fy = 60,000 PSI
SEVERITY OF SULFATE EXPOSURE:	CLASS 0

SOIL PROPERTIES:

STRUCTURE BACKFILL (CLASS 1):

SOIL UNIT WEIGHT:	135 PCF
SOIL FRICTION ANGLE:	34°

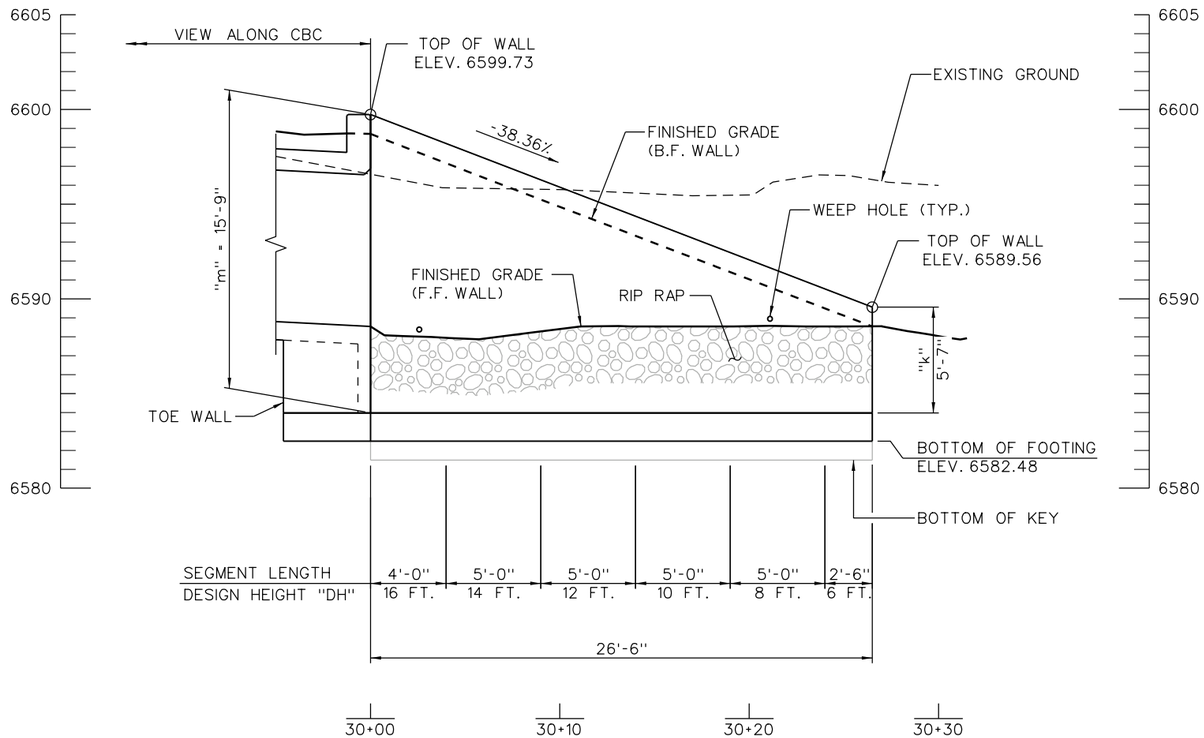
IN-SITU SOIL:

PASSIVE PRESSURE RESISTANCE FACTOR:	0.55
COEFFICENT OF FRICTION:	0.67
SLIDING RESISTANCE FACTOR:	0.80
BEARING RESISTANCE FACTOR:	0.45

NOTES:

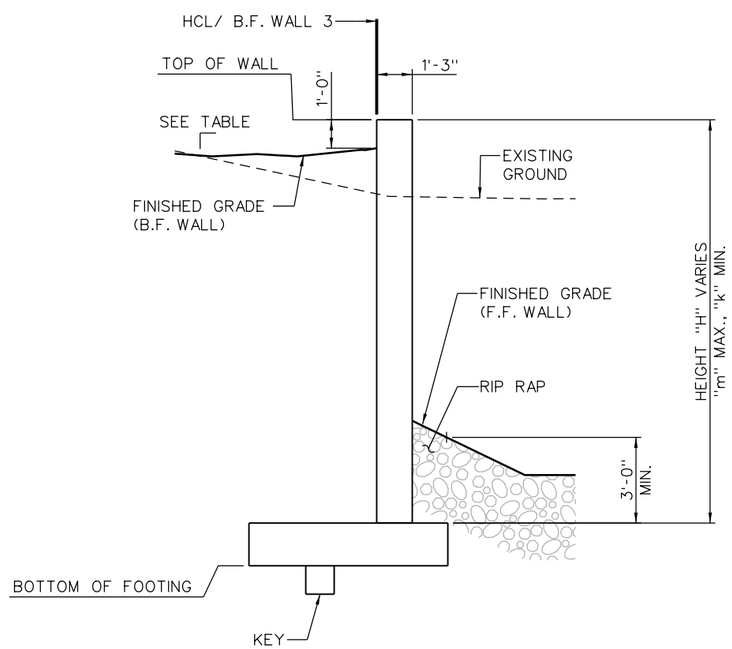
1. FOR RIP RAP AND ASSOCIATED DETAILS, REFER TO DRAINAGE PLANS.
2. FOR FINISHED GRADING AND UTILITY INFORMATION, REFER TO ROADWAY PLANS.
3. FOR LIMITS OF CUT STONE VENEER AND OTHER AESTHETIC DETAILS, REFER TO ARCHITECTURAL DETAILS.
4. GEOTECHNICAL INFORMATION AND RECOMMENDATIONS CAN BE FOUND IN THE GEOTECHNICAL REPORT PROVIDED BY YEH AND ASSOCIATES, FOURMILE CANYON DRIVE AND GOLD RUN, DATED 10-03-2014.
5. WEEP HOLES GENERICALLY SHOWN. SEE EXCAVATION AND BACKFILL FOR DETAILS.

APPROXIMATE GRADING TABLE		
WALL STATION RANGE		BACKSLOPE
30+00.00	30+10.00	LEVEL
30+10.00	30+26.50	2:1



ELEVATION

TAKEN ALONG HCL WALL 3



TYPICAL SECTION

SCALE = 1.5:1

LOOKING AHEAD STATION ALONG HCL WALL 3

SCALE: 1/8" = 1'-0"

CALL UTILITY NOTIFICATION CENTER OF COLORADO 811 CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

REVISIONS: NO.	DATE	REVISION DESCRIPTION:

Boulder County — Michael Baker INTERNATIONAL

BOULDER COUNTY TRANSPORTATION DEPARTMENT ENGINEERING DIVISION

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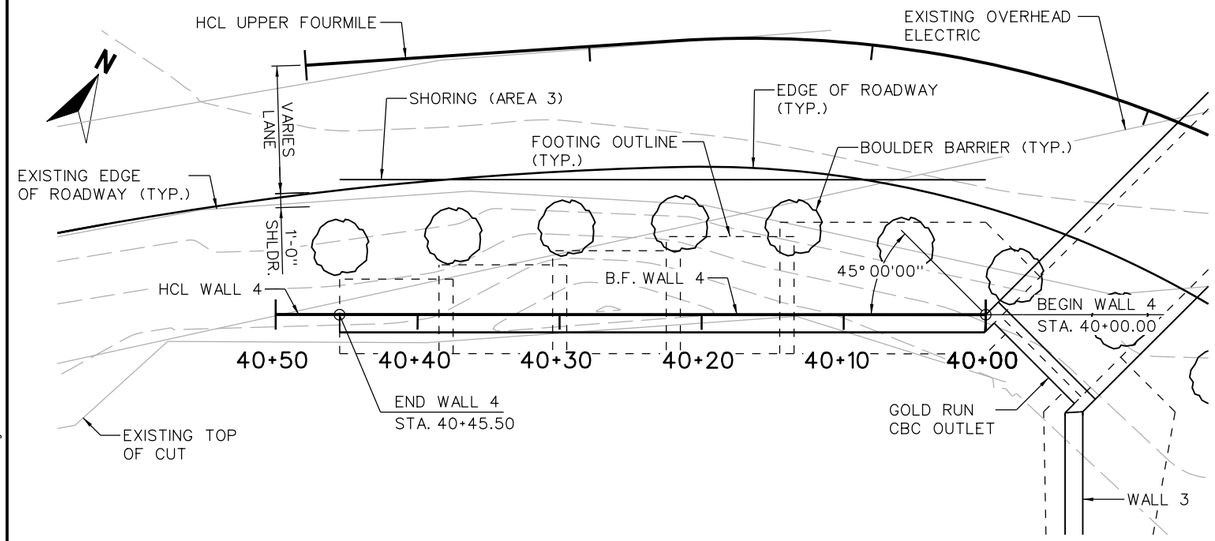
DLT	BMT		03/13/2015

SALINA JUNCTION

GENERAL LAYOUT RETAINING WALL 3

PROJECT NO: 4011.SEPT12C38 | SHEET NO: 38

nathan.girkins 1:51:54 PM pw:\\DCPWAPP1.bkr.mbakercorp.com:pwprod\Documents\Projects\Lakewood_Office\Boulder_County_Emergency_Transportation\T05\08_Sheet_Files\06_Structures\DGN\138601_CLVRT_08.dgn



PLAN

DESIGN DATA:

AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SIXTH EDITION WITH INTERIMS THROUGH 2012

DESIGN METHOD: LOAD AND RESISTANCE FACTOR DESIGN (LRFD)

LIVE LOAD: HL-93 (DESIGN TRUCK OR DESIGN TANDEM, AND DESIGN LANE LOAD) OR COLORADO PERMIT VEHICLE

SEISMIC ZONE 1

REINFORCED CONCRETE:

CLASS D CONCRETE:	f'c = 4,500 PSI
REINFORCING STEEL:	fy = 60,000 PSI
SEVERITY OF SULFATE EXPOSURE:	CLASS 0

SOIL PROPERTIES:

STRUCTURE BACKFILL (CLASS 1):

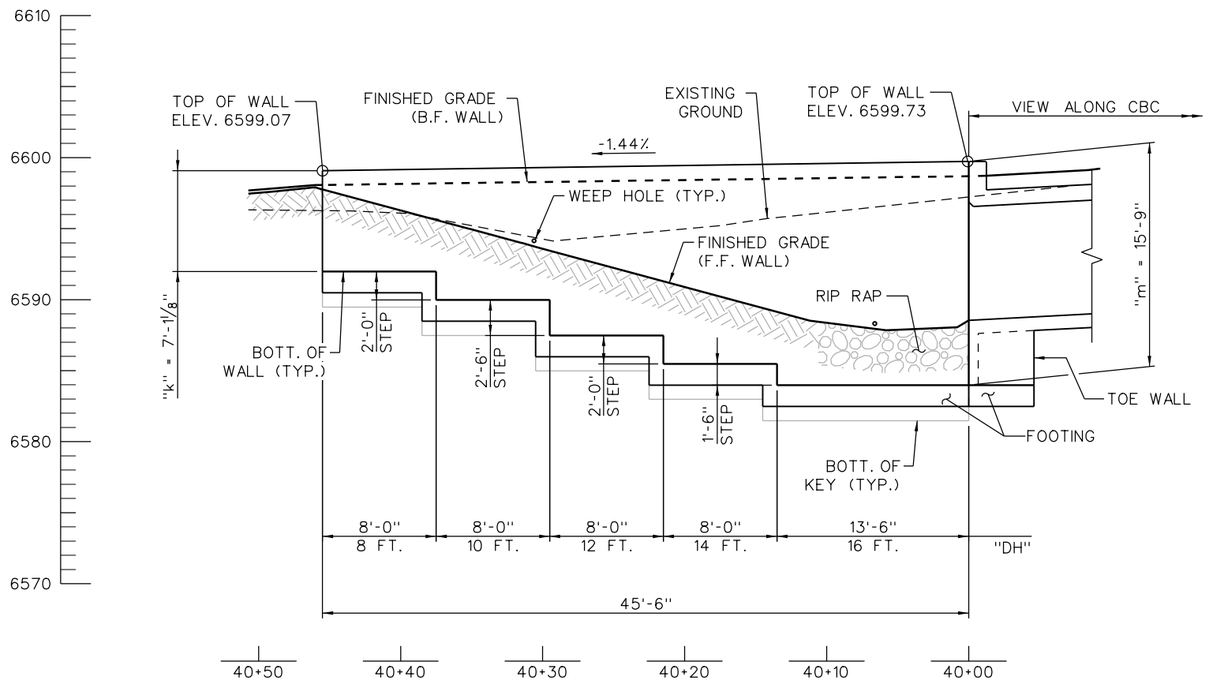
SOIL UNIT WEIGHT:	135 PCF
SOIL FRICTION ANGLE:	34°

IN-SITU SOIL:

PASSIVE PRESSURE RESISTANCE FACTOR:	0.55
COEFFICENT OF FRICTION:	0.67
SLIDING RESISTANCE FACTOR:	0.80
BEARING RESISTANCE FACTOR:	0.45

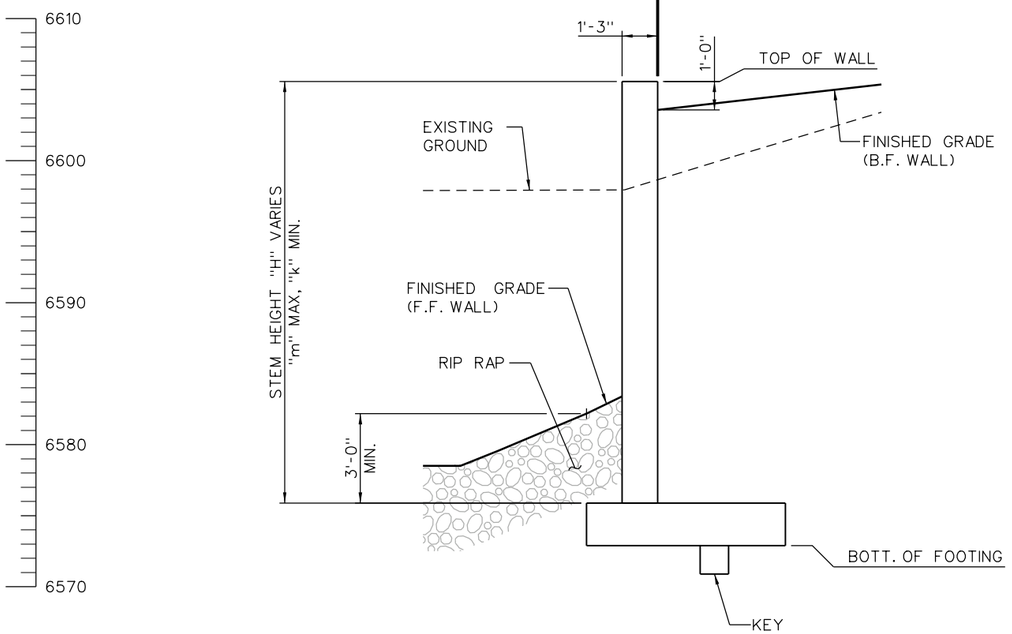
NOTES:

1. FOR RIP RAP AND ASSOCIATED DETAILS, REFER TO DRAINAGE PLANS.
2. FOR FINISHED GRADING AND UTILITY INFORMATION, REFER TO ROADWAY PLANS.
3. FOR LIMITS OF CUT STONE VENEER AND OTHER AESTHETIC DETAILS, REFER TO ARCHITECTURAL DETAILS.
4. GEOTECHNICAL INFORMATION AND RECOMMENDATIONS CAN BE FOUND IN THE GEOTECHNICAL REPORT PROVIDED BY YEH AND ASSOCIATES, FOURMILE CANYON DRIVE AND GOLD RUN, DATED 10-03-2014.
5. CONSTRUCTION PHASING MAY REQUIRE SHORING. SEE PHASING PLANS FOR ADDITIONAL INFORMATION.
6. IF SHORING IS REQUIRED AND THE HEIGHT EXCEEDS 5 FEET ABOVE THE BASE OF EXCAVATION, SEALED SHORING DRAWINGS SHALL BE PROVIDED BY THE CONTRACTOR TO THE ENGINEER FOR INFORMATION ONLY IN ACCORDANCE WITH SECTION 206.
7. WEEP HOLES GENERICALLY SHOWN. SEE EXCAVATION AND BACKFILL FOR DETAILS.



ELEVATION

TAKEN ALONG HCL WALL 4



TYPCAL SECTION

SCALE = 2:1

LOOKING AHEAD STATION ALONG HCL WALL 4

SCALE: 3/32" = 1'-0"

CALL UTILITY NOTIFICATION CENTER OF COLORADO 811
CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

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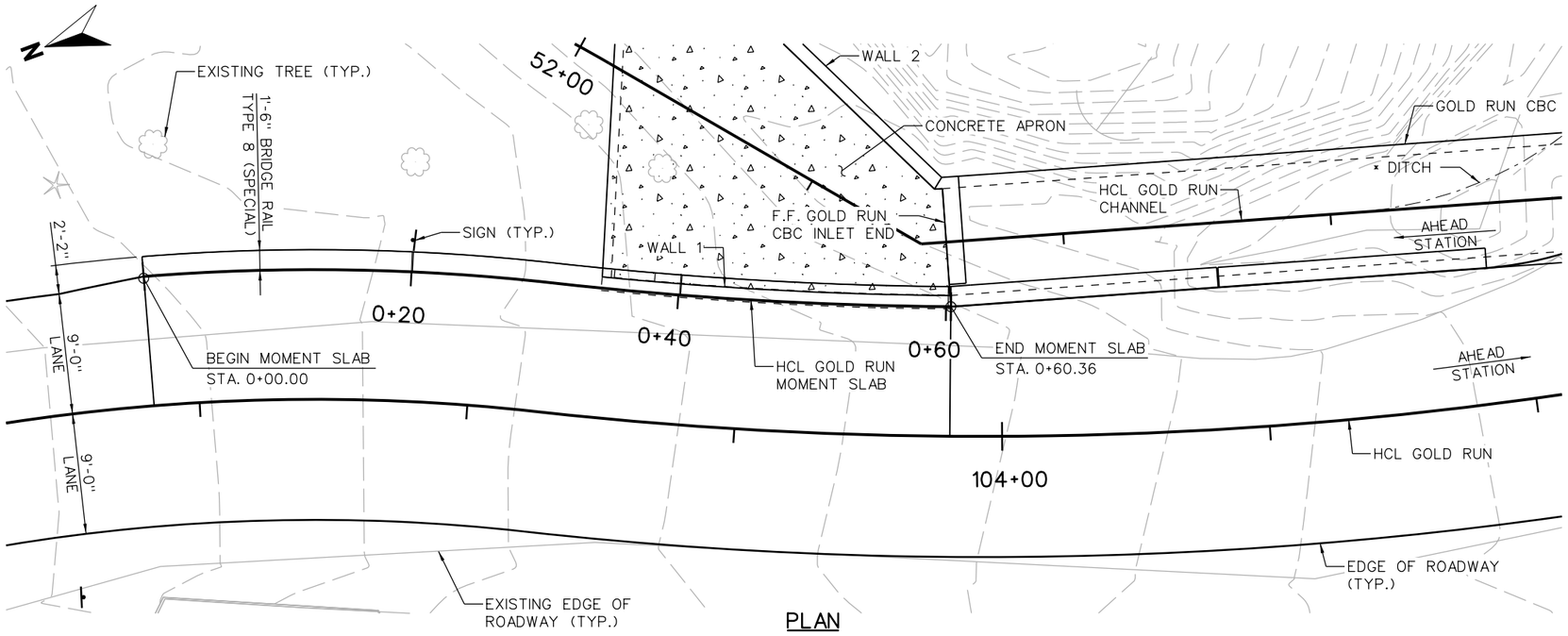
BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION
Michael Baker INTERNATIONAL

DESIGNED:	CAD:	CHECKED:	DATE:
DLT	BMT		7/31/2015

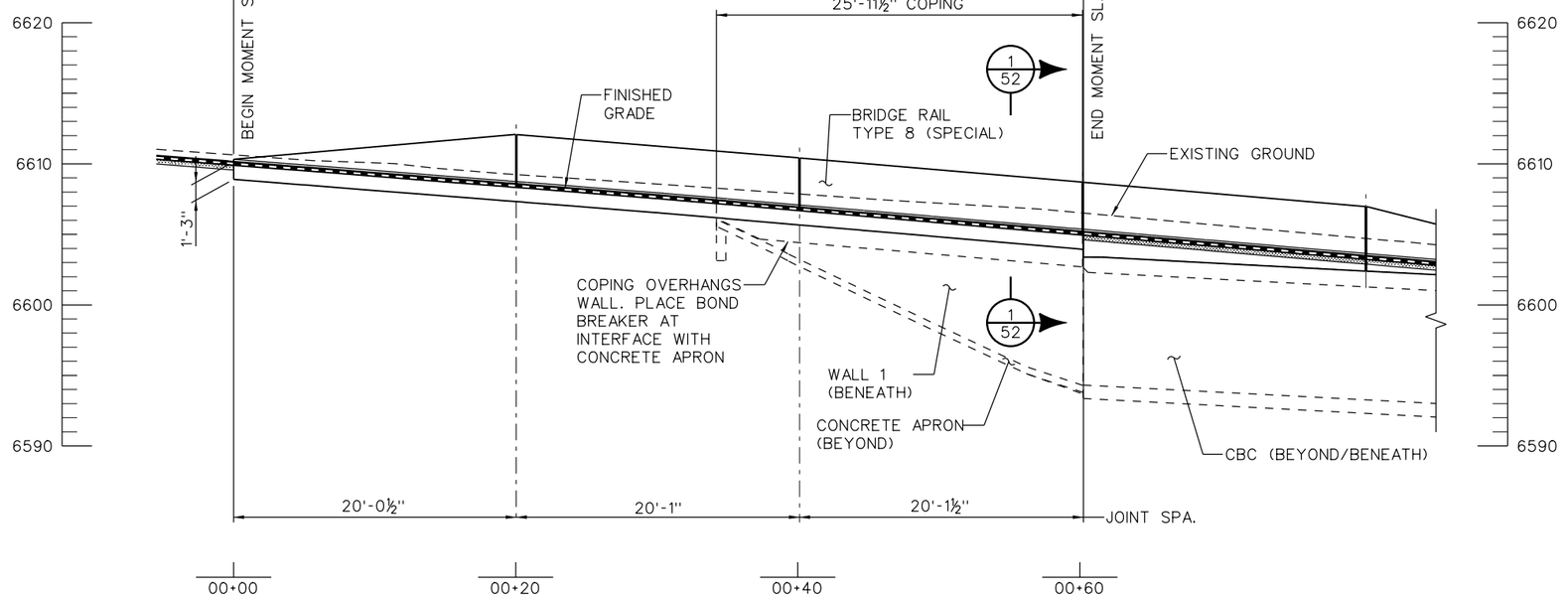
SALINA JUNCTION
GENERAL LAYOUT
RETAINING WALL 4

PROJECT NO: 4011.SEPT12C38 | SHEET NO: 39

nathan.gr'kins 1:51:59 PM pw:\\DCPWAPP1.bkr.mbakercorp.com:pwprod\Documents\Projects\Lakewood_Office\Boulder_County_Emergency_Transportation\T05\08_Sheet_Files\06_Structures\DGN\138601_CLVRT_09.dgn



PLAN



DEVELOPED ELEVATION

TAKEN AT F.F. BRIDGE RAIL

DESIGN DATA:

AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SIXTH EDITION WITH INTERIMS THROUGH 2012

DESIGN METHOD: LOAD AND RESISTANCE FACTOR DESIGN (LRFD)

LIVE LOAD: HL-93 (DESIGN TRUCK OR DESIGN TANDEM, AND DESIGN LANE LOAD) OR COLORADO PERMIT

SEISMIC ZONE 1

REINFORCED CONCRETE:

CLASS D CONCRETE:	f'c = 4,500 PSI
REINFORCING STEEL:	fy = 60,000 PSI
SEVERITY OF SULFATE EXPOSURE:	CLASS 0

SOIL PROPERTIES:

STRUCTURE BACKFILL (CLASS 1):

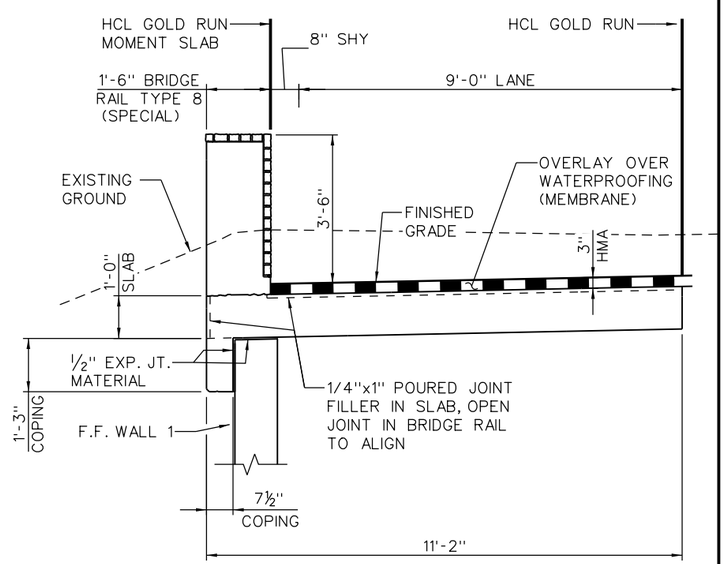
SOIL UNIT WEIGHT:	135 PCF
SOIL FRICTION ANGLE:	34°

IN-SITU SOIL:

COEFFICENT OF FRICTION:	0.67
SLIDING RESISTANCE FACTOR:	0.80
BEARING RESISTANCE FACTOR	0.45

NOTES:

1. FOR ROADWAY ALIGNMENT DATA, GRADING DETAILS, TREE REMOVALS, AND SIGNAGE, REFER TO ROADWAY PLANS.
2. FOR LIMITS OF CUT STONE VENEER, CONCRETE COATING AND OTHER AESTHETIC DETAILS, REFER TO ARCHITECTURAL DETAILS.
3. GEOTECHNICAL INFORMATION AND RECOMMENDATIONS CAN BE FOUND IN THE GEOTECHNICAL REPORT PROVIDED BY YEH AND ASSOCIATES, FOUR MILE CANYON DRIVE AND GOLD RUN, DATED 10-03-2014.
4. FOR CONCRETE APRON INFORMATION, REFER TO GOLD RUN CBC GENERAL LAYOUT.
5. OVERLAY SHALL BE HOT MIX ASPHALT (GRADING SX) (75).



TYPICAL SECTION

SCALE = 3:1

SCALE: 3/32" = 1'-0"

CALL UTILITY NOTIFICATION CENTER OF COLORADO 811 CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

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Boulder County | Michael Baker INTERNATIONAL

BOULDER COUNTY TRANSPORTATION DEPARTMENT ENGINEERING DIVISION

DESIGNED:	CAD:	CHECKED:	DATE:
DLT	BMT		10/3/2015

SALINA JUNCTION

GENERAL LAYOUT GOLD RUN MOMENT SLAB

PROJECT NO: 4011.SEPT12C38 | SHEET NO: 40

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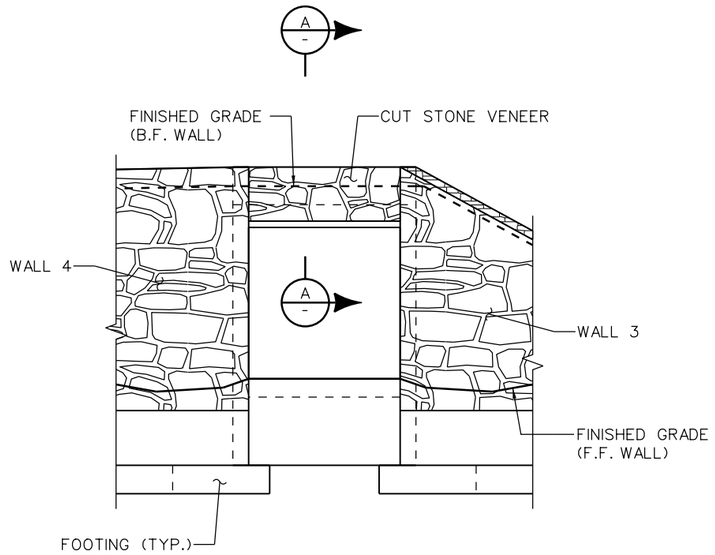
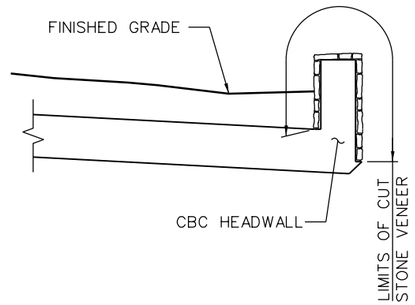


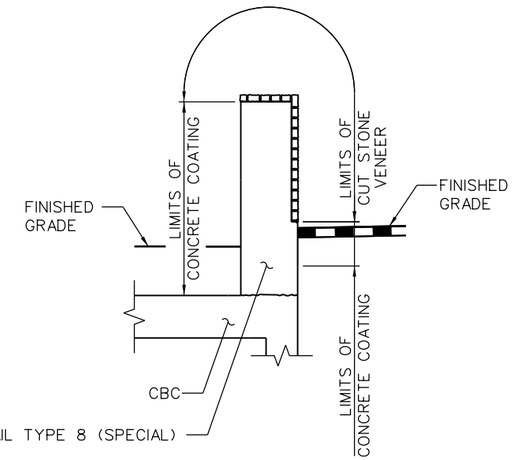
OUTLET CBC HEADWALL ELEVATION

NOTES:

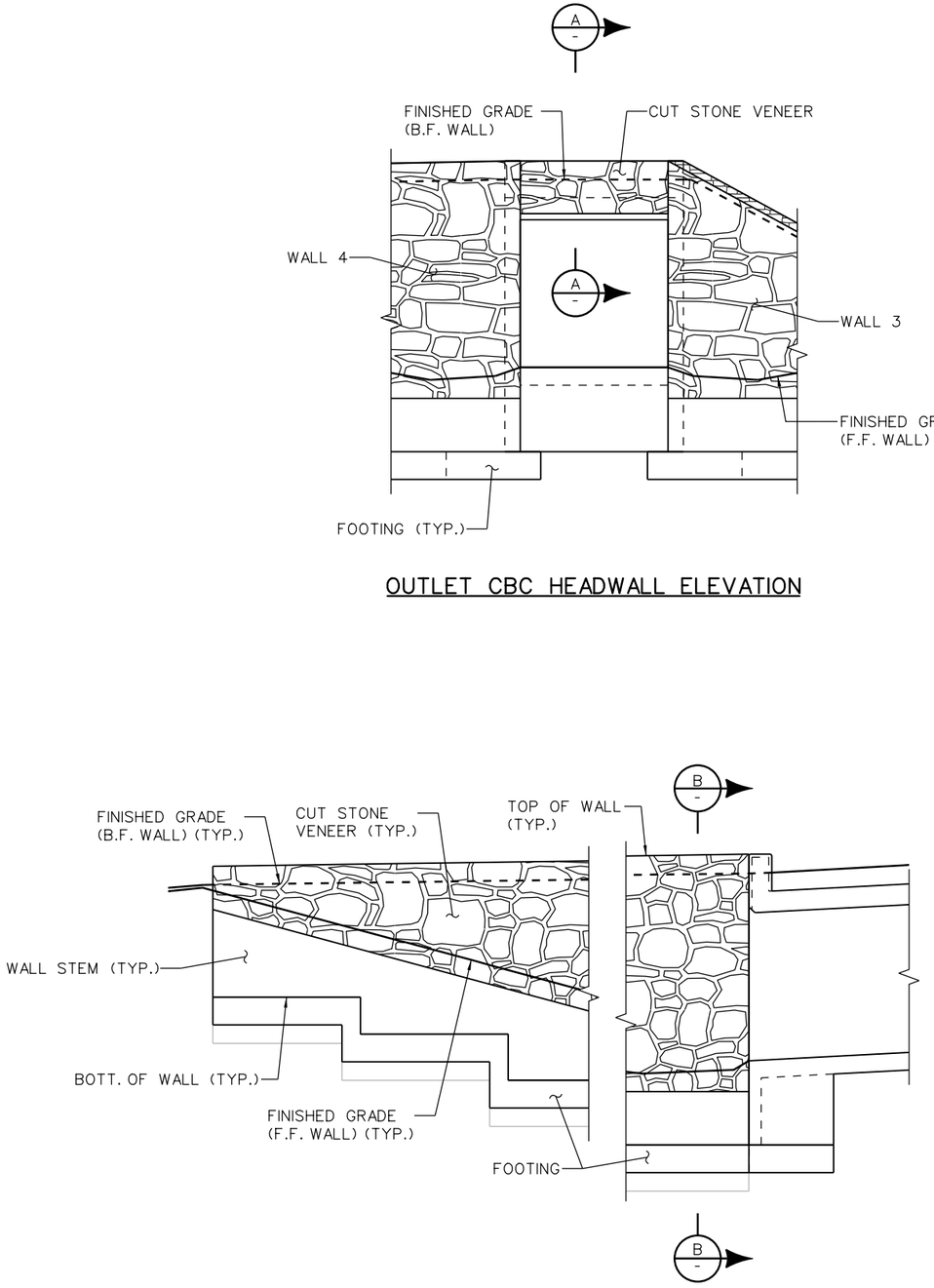
1. FINISHES SHOWN SHALL EXTEND TO 1'-0" MIN. BELOW FINISHED GRADE UNLESS NOTED OTHERWISE.



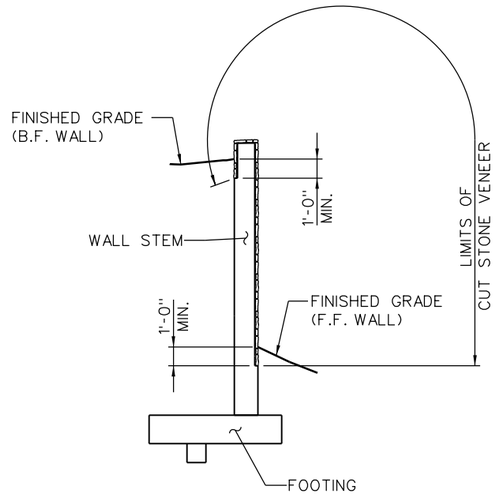
SECTION A
SCALE = 2:1



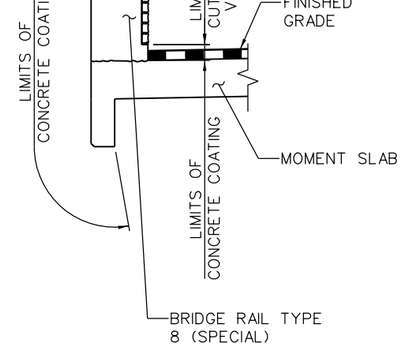
PANEL AND TRANSITION TYPICAL SECTION ON CBC
SCALE = 2:1



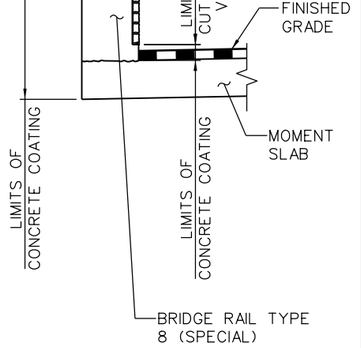
OUTLET SPREAD FOOTING WALL ELEVATION
WALL 4 SHOWN, WALL 3 SIMILAR



SECTION B



PANEL TYPICAL SECTION
SCALE = 2:1



TRANSITION TYPICAL SECTION
SCALE = 2:1

GOLD RUN MOMENT SLAB

SCALE: 1/8" = 1'-0"

CALL UTILITY NOTIFICATION CENTER OF COLORADO
811
CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

REVISIONS:	NO.	DATE	REVISION DESCRIPTION:

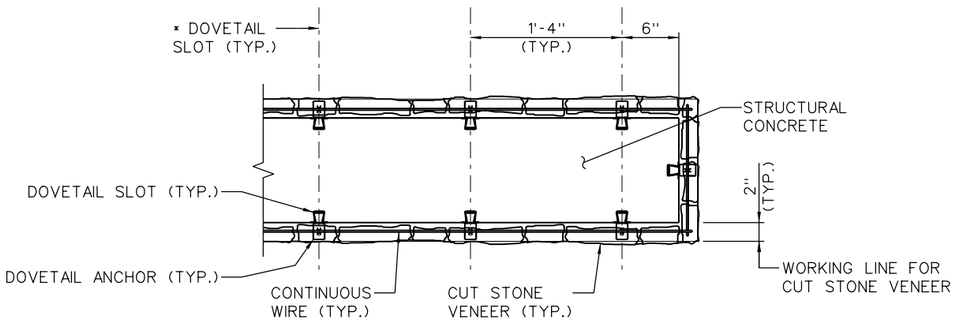
BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION
Michael Baker INTERNATIONAL

DESIGNED:	CAD:	CHECKED:	DATE:
DLT	BMT		03/13/2015

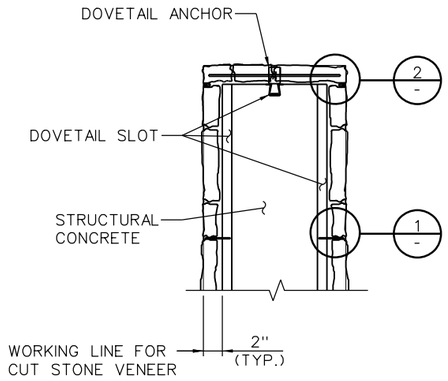
SALINA JUNCTION
ARCHITECTURAL DETAILS
(1 OF 2)

PROJECT NO: 4011.SEPT12C38 | SHEET NO: 41

nathon.girkins 1:52:10 PM pw:\\DCPWAPP1.bkr.mbakercorp.com:pwprod\Documents\Projects\Lakewood_Office\Boulder_County_Emergency_Transportation\105\08_Sheet_Files\06_Structures\DGN\138601_CLVRT_11.dgn



CUT STONE VENEER FACING ANCHOR PLAN DETAIL



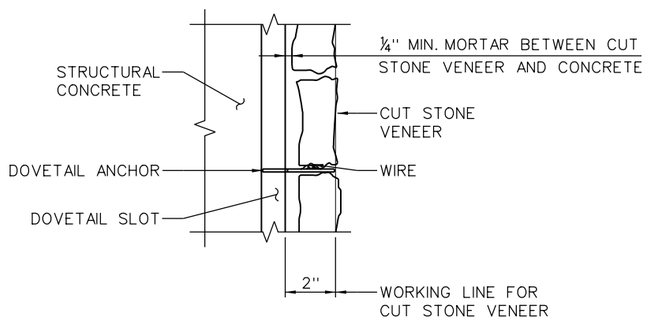
CUT STONE VENEER FACING ANCHOR ELEVATION DETAIL

NOTES:

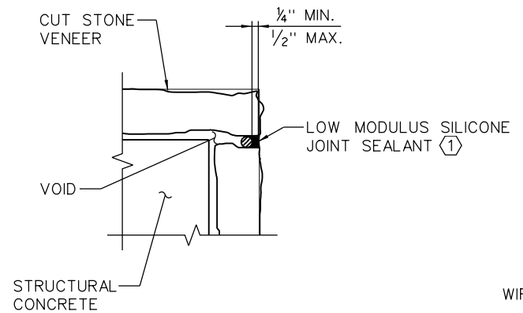
1. CUT STONE VENEER SHALL BE 2" NOMINAL THICKNESS, GENERALLY 8" SQUARE PIECES, IRREGULAR SHAPE, AS APPROVED BY THE ENGINEER. STONES SHALL BE PLACED A RANDOM PATTERN.
2. THE DOVETAIL SLOTS SHALL BE TYPE 305 AS MANUFACTURED BY HOHMANN & BARNARD, INC., OR AN APPROVED EQUAL. THEY SHALL BE 22 GAGE HOT-DIPPED GALVANIZED STEEL, FILLED WITH FOAM AND WITH A THROAT OPENING WIDTH OF 5/8".
3. THE DOVETAIL ANCHORS SHALL BE 303 SV - SEISMIC-NOTCH AS MANUFACTURED BY HOHMANN & BARNARD, INC., OR AN APPROVED EQUAL. MATERIAL FOR DOVETAIL ANCHORS SHALL BE 3/32" THICK HOT-DIPPED GALVANIZED STEEL.
4. CONCRETE SURFACES SHALL BE PREPARED IN ACCORDANCE WITH SUPPLIER'S RECOMMENDATION PRIOR TO INSTALLATION OF CUT STONE VENEER.
5. ALL WORK NECESSARY FOR THE INSTALLATION OF CUT STONE VENEER, INCLUDING SURFACE PREPARATION, DOVETAIL SLOTS, WIRE TIES, STONE, MORTAR AND MISC. HARDWARE, SHALL BE INCLUDED IN ITEM 601 CUT STONE VENEER.
6. CUT STONE VENEER SHALL BE "COLORADO BUFF" SANDSTONE OR APPROVED EQUAL.
7. MORTAR JOINTS SHALL BE 1/2" MAXIMUM THICKNESS UNLESS SHOWN OTHERWISE.
8. CUT STONE VENEER SHALL BE ANCHORED TO THE WALL CONCRETE BY MEANS OF WIRE TIES PLACED IN DOVETAIL SLOTS, AS SHOWN. ALTERNATIVE METHODS OF ANCHORING THE STONE VENEER MAY BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
9. WIRE SHALL BE 9 GAGE PLAIN COLD-DRAWN STEEL WIRE CONFORMING TO ASTM A82. WIRE SHALL BE MILL GALVANIZED CONFORMING TO ASTM A153.
10. REINFORCING STEEL IN STRUCTURAL CONCRETE NOT SHOWN.

KEYNOTES:

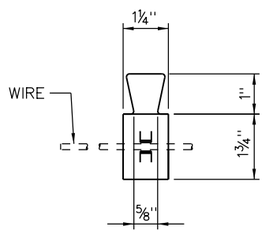
(1) TOOL SEALANT TO A ROUNDED SURFACE AND THE REQUIRED DIMENSIONS SHOWN. COLOR TO MATCH MORTAR JOINTS.



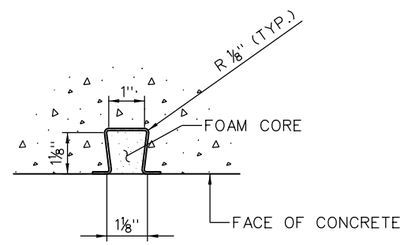
DETAIL 1/-
SCALE = 2.66:1



DETAIL 2/-
SCALE = 2.66:1



DOVETAIL ANCHOR AND WIRE



DOVETAIL SLOT
(DUR-O-WAL D/A 100 OR EQUIV.)

DOVETAIL ANCHOR AND SLOT PLAN DETAIL
SCALE = 4:1

SCALE: ¾" = 1'-0"

CALL UTILITY NOTIFICATION CENTER OF COLORADO 811
CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

REVISIONS:	NO.	DATE	REVISION DESCRIPTION:

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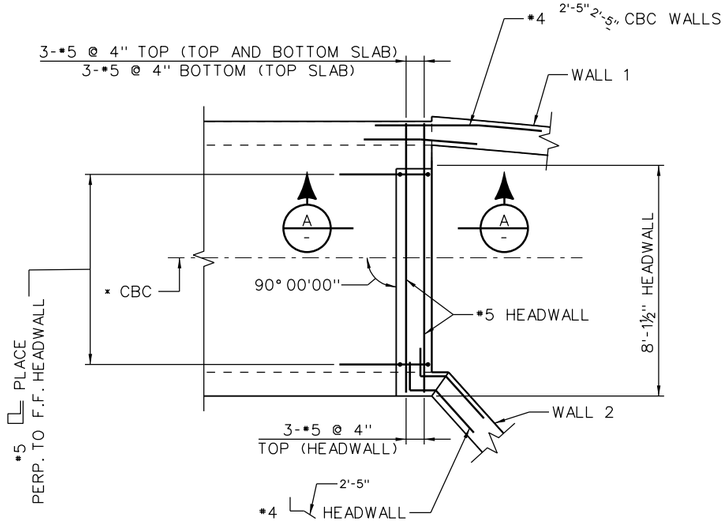
BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION

DESIGNED:	CAD:	CHECKED:	DATE:
DLT	BMT		03/13/2015

SALINA JUNCTION
ARCHITECTURAL DETAILS (2 OF 2)

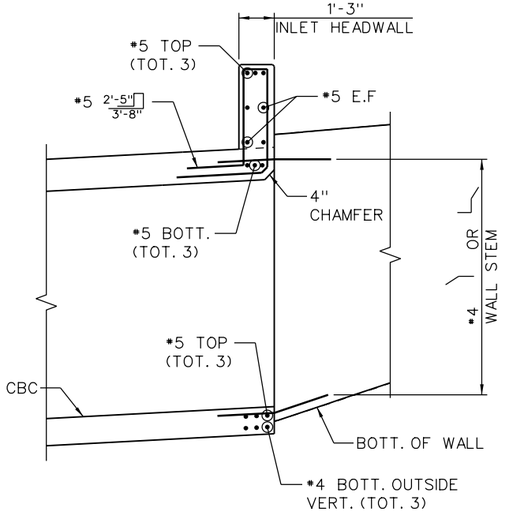
PROJECT NO: 4011.SEPT12C38 | SHEET NO: 42

nathan.gr'kins 1:52:15 PM p:w:\\DCPWAPP1.bkr.mbakercorp.com\pwprod\Documents\Projects\Lakewood_Office\Boulder_County_Emergency_Transportation\T05\08_Sheet_Files\06_Structures\DGN\138601_CLVRT_12.dgn

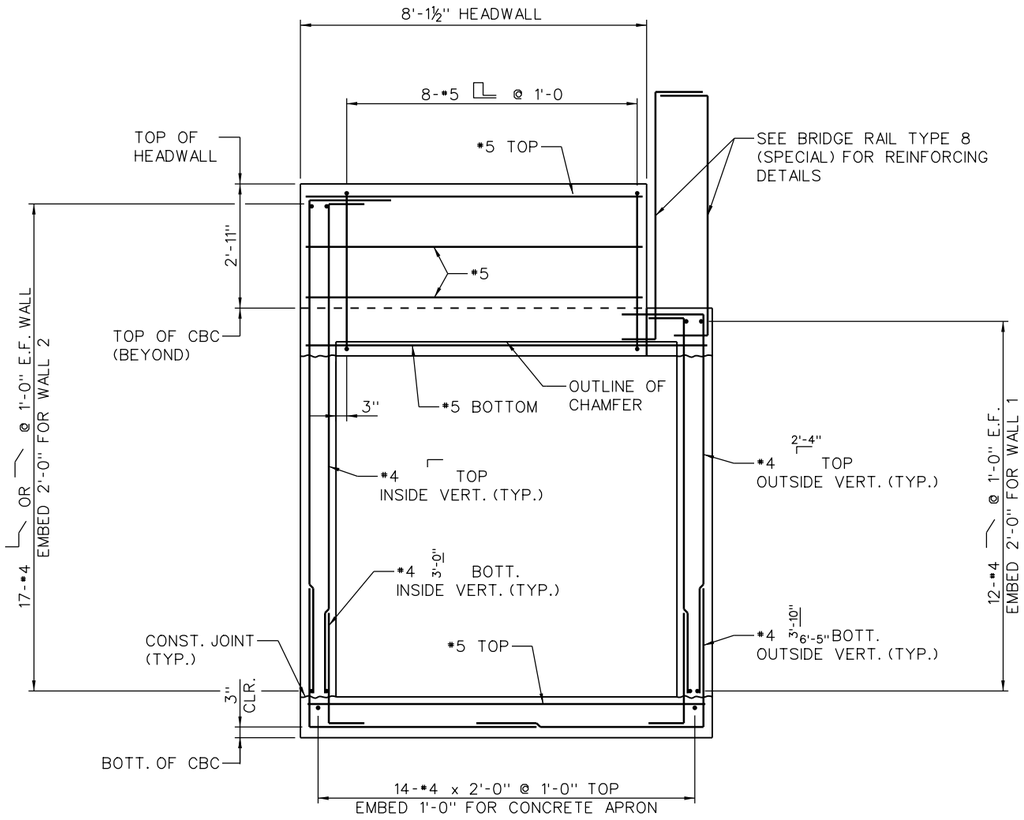


HEADWALL PLAN

GOLD RUN MOMENT SLAB NOT SHOWN



SECTION A



ELEVATION

SCALE = 1.5:1

TAKEN AT F.F. HEADWALL

HEADWALL AND WALL STEM PROJECTING REINFORCEMENT NOT SHOWN

SPA. VERT. AND CORNER REINF. W/ #5 HORIZ. (TOP AND BOTTOM SLAB)

NOTES:

1. FOR TYPICAL CBC REINFORCING NOT SHOWN, SEE CDOT STANDARD PLAN NO. M-601-1.
2. FOR CONCRETE APRON DETAILS, REFER TO CDOT STANDARD PLAN NO. M-601-20.

SCALE: 3/16" = 1'-0"

CALL UTILITY NOTIFICATION CENTER OF COLORADO
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CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

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BOULDER COUNTY TRANSPORTATION DEPARTMENT
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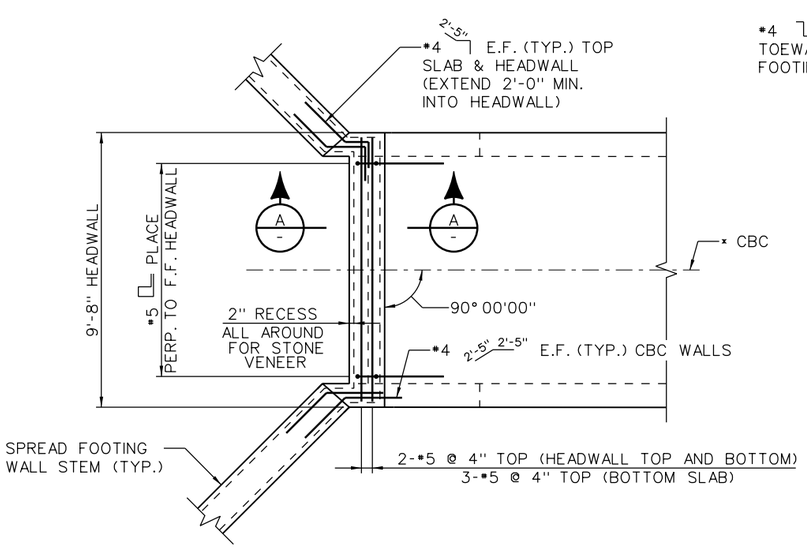
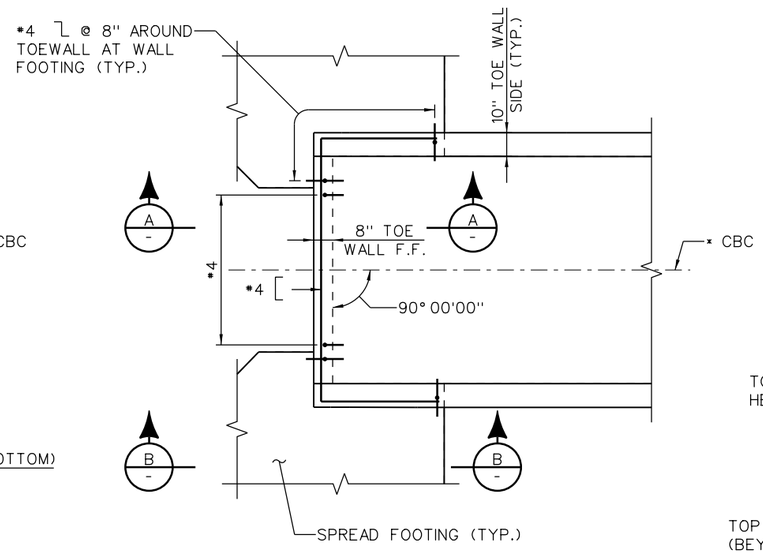
SALINA JUNCTION
GOLD RUN CBC
INLET END DETAILS

PROJECT NO: 4011.SEPT12C38 | SHEET NO: 43

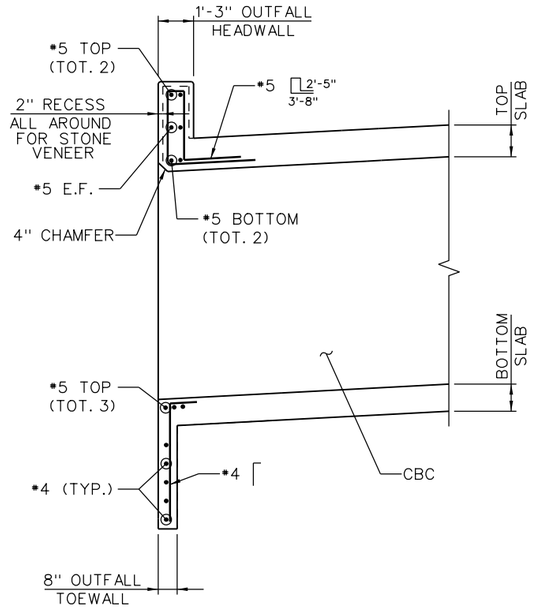
nathan.girkins 1:52:19 PM pw:\\DCPWAPP1.bkr.mbakercorp.com:pwprod\Documents\Projects\Lakewood_Office\Boulder_County_Emergency_Transportation\T05\08_Sheet_Files\06_Structures\DGN\138601_CLVRT_13.dgn



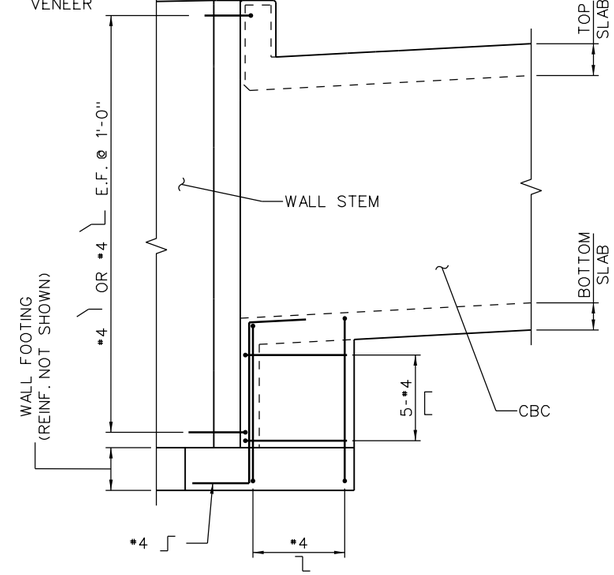
HEADWALL PLAN
FOUNDATION NOT SHOWN



TOE WALL PLAN
WALL STEMS AND REINF. NOT SHOWN

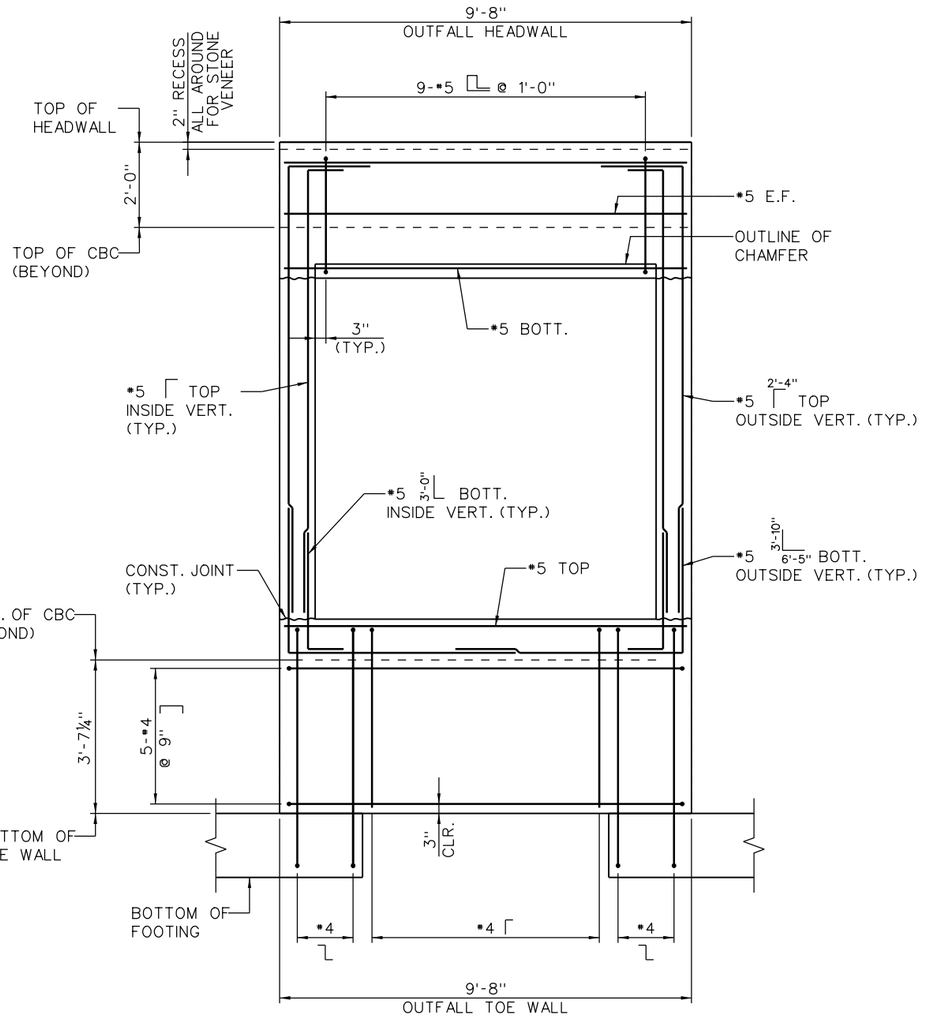


SECTION A



VIEW B

NOTES:
1. FOR TYPICAL CBC REINFORCING NOT SHOWN, SEE CDOT STANDARD PLAN NO. M-601-1.
2. EMBEDDED ELEMENTS FOR CUT STONE VENEER AND OTHER AESTHETIC DETAILS NOT SHOWN, REFER TO ARCHITECTURAL DETAILS.



ELEVATION
SCALE = 1.5:1
TAKEN AT F.F. HEADWALL
PROJECTING REINFORCING NOT SHOWN
SPA. VERT. AND CORNER REINF. W/ *5 HORIZ. (TOP AND BOTTOM SLAB)

SCALE: 3/16" = 1'-0"

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SALINA JUNCTION
GOLD RUN CBC OUTLET END DETAILS

PROJECT NO: 4011.SEPT12C38 | SHEET NO: 44

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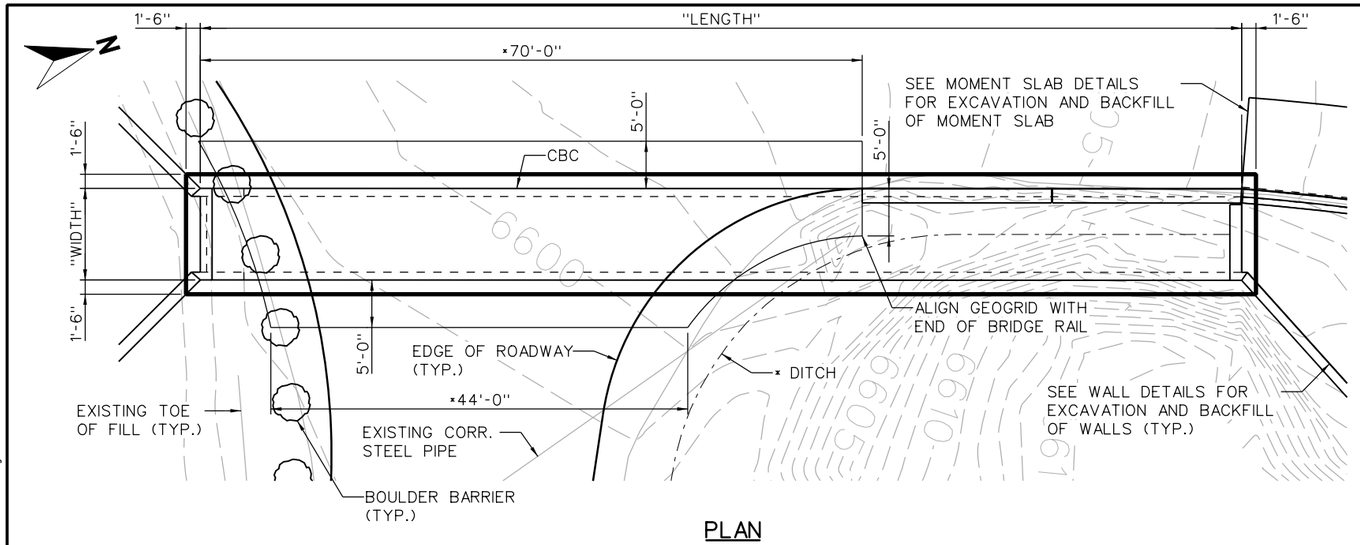
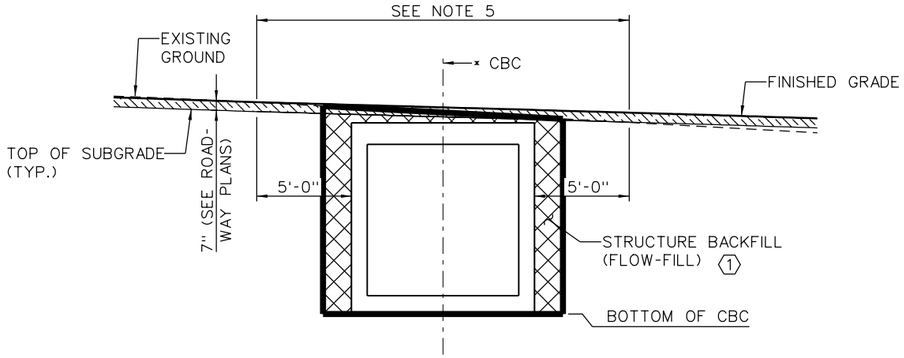
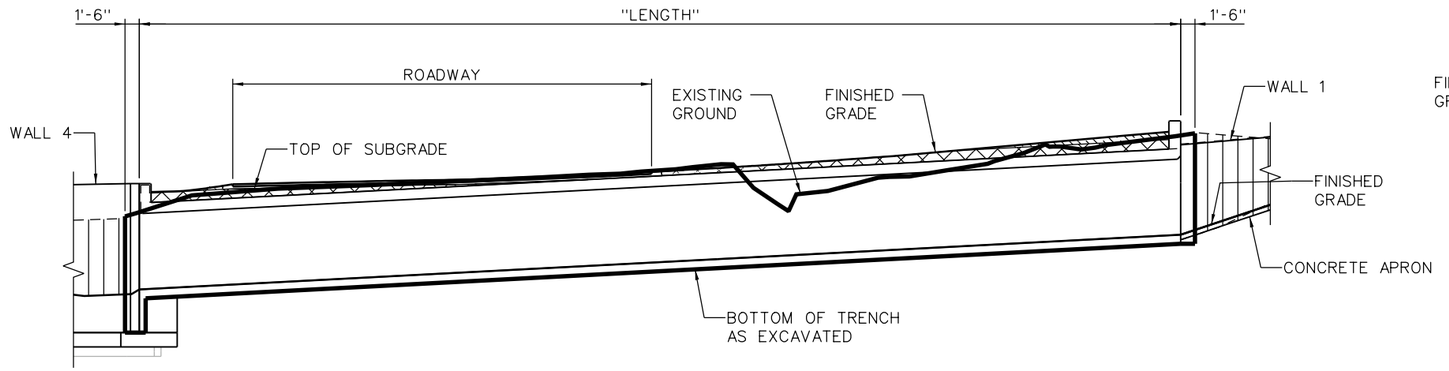


PLAN



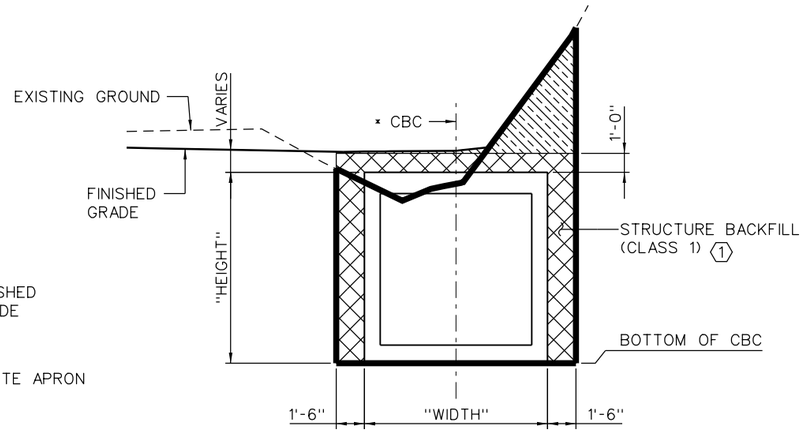
TYPICAL SECTION AT ROADWAY

SAME AS TYPICAL SECTION OUTSIDE OF ROADWAY EXCEPT AS SHOWN
SCALE 2:1



ELEVATION

TAKEN ALONG × CBC
GOLD RUN MOMENT SLAB NOT SHOWN



TYPICAL SECTION OUTSIDE OF ROADWAY

TAKEN PERPENDICULAR TO × CBC
LOOKING AHEAD STATION ALONG CHANNEL
SCALE 2:1

LEGEND

- STRUCTURE EXCAVATION LIMITS
- STRUCTURE BACKFILL (CLASS 1) OR FLOW-FILL AS NOTED
- UNCLASSIFIED EXCAVATION LIMITS (SEE ROADWAY PLANS)
- SEE ROADWAY PLANS
- GEOGRID LIMITS (5' FROM EDGE OF CBC/ROADWAY AS SHOWN)

KEYNOTES:

1. CBC SHALL BE BACKFILLED WITH STRUCTURE BACKFILL (FLOW-FILL) BENEATH THE ROADWAY PAVEMENT. CBC MAY BE BACKFILLED WITH EITHER STRUCTURE BACKFILL (FLOW-FILL) OR STRUCTURE BACKFILL (CLASS 1) OTHERWISE.

NOTES:

1. STRUCTURES LOCATED IN ROCK SHALL BE POURED OUT TO UNDISTURBED ROCK WITHOUT FORMING IN CONFORMANCE WITH SUBSECTION 601.09.
2. CBC MAY BE PLACED ON EXISTING NATURAL SANDS, WEATHERED BEDROCK, OR PROPERLY PLACED AND COMPACTED STRUCTURE BACKFILL (CLASS 1) OR FLOWFILL. LOOSE, DISTRURBED SOILS SHOULD BE REMOVED OR REPLACED WITH COMPACTED FILL OR FLOWFILL.
3. BEDROCK MAY BE ENCOUNTERED NEAR THE SURFACE OF EXISTING GROUND. SEE THE GEOTECHNICAL REPORT FOR ADDITIONAL DETAILS REGARDING ANTICIPATED SUBSURFACE CONDITIONS.
4. DEWATERING MAY BE REQUIRED AND HAS BEEN QUANTIFIED AS A STRUCTURES' QUANTITY. DEWATERING SHALL BE IN ACCORDANCE WITH SECTION 211.
5. PLACE GEOGRID BENEATH ABC.
6. SEE ROADWAY PLANS FOR BOULDER BARRIER DETAILS.

SCALE: 1/16" = 1'-0"

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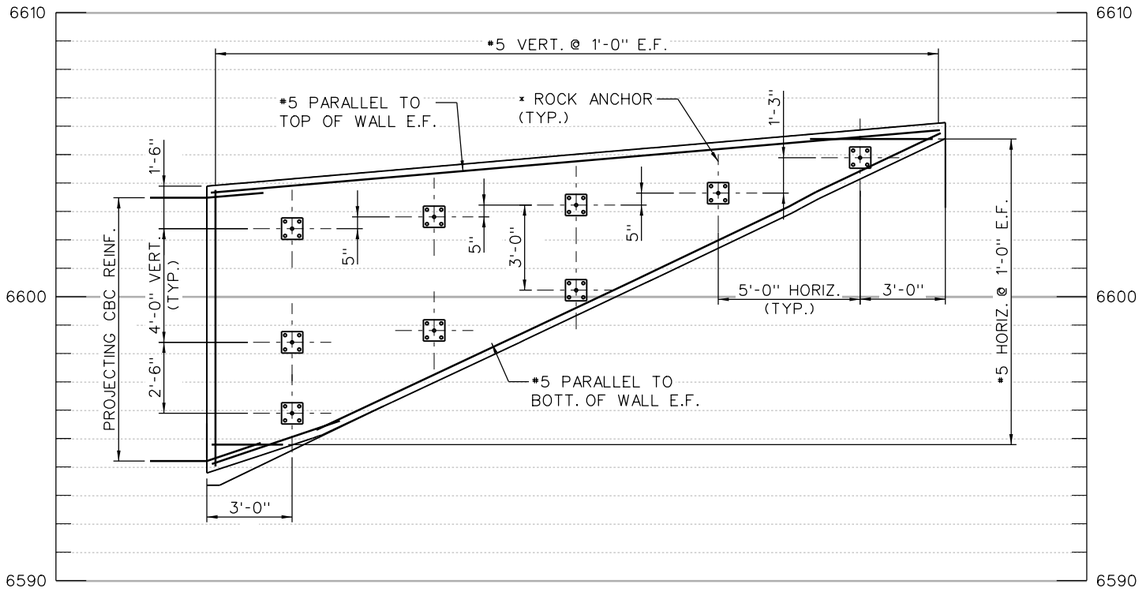
ENGINEERING DIVISION
Boulder County
Michael Baker INTERNATIONAL

DESIGNED:	CAD:	CHECKED:	DATE:
DLT	BMT		7/31/2015

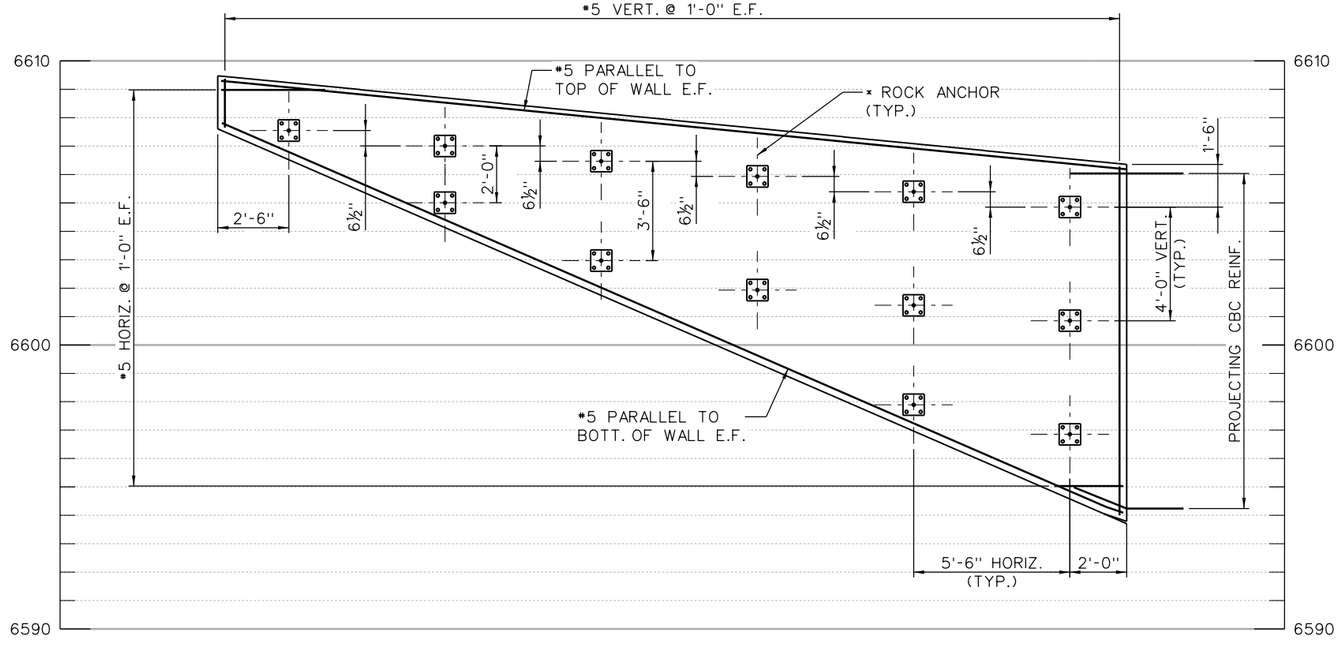
SALINA JUNCTION
GOLD RUN CBC
EXCAVATION AND BACKFILL

PROJECT NO: 4011.SEPT12C38 | SHEET NO: 45

nathan.girkins 1:52:29 PM pw:\\DCPWAPP1.bkr.mbakercorp.com:pwprod\Documents\Projects\Lakewood_Office\Boulder_County_Emergency_Transportation\T05\08_Sheet_Files\06_Structures\DGN\138601_CLVRT_15.dgn



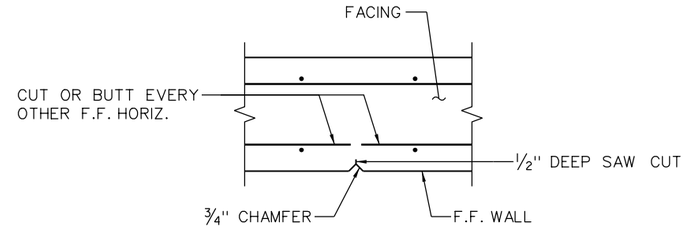
WALL 1 ELEVATION



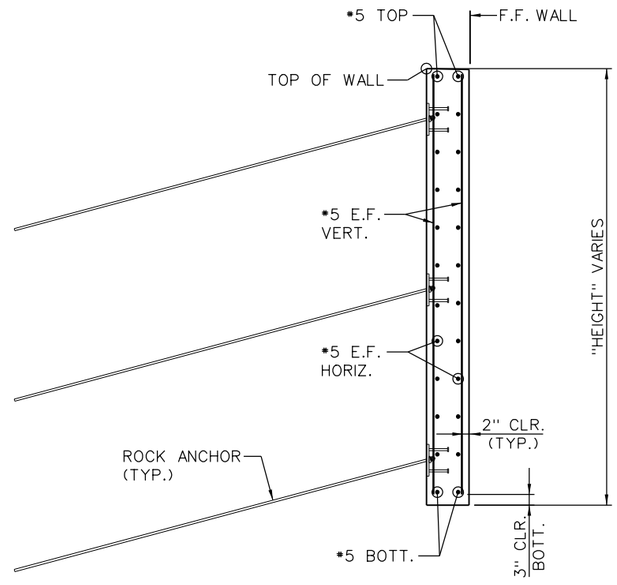
WALL 2 ELEVATION

NOTES:

1. FOR DETERMINATION OF SPLICE LENGTHS, REFER TO GENERAL INFORMATION SHEET.
2. PROVIDE A WEAKEND PLANE AT APPROXIMATELY HALF THE LENGTH OF WALL 1 AND 2.



WEAKEND PLANE PLAN



TYPICAL SECTION

SCALE = 1.5:1

SCALE: ¾" = 1'-0"

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DLT	BMT		03/13/2015

SALINA JUNCTION
ROCK ANCHOR WALL DETAILS (1 OF 2)

PROJECT NO: 4011.SEPT12C38 | SHEET NO: 46

nathan.gir'kins 1:52:34 PM pw:\\DCPWAPP1.bkr.mbakercorp.com:pwprod\Documents\Projects\Lakewood_Office\Boulder_County_Emergency_Transportation\T05\08_Sheet_Files\06_Structures\DGN\138601_CLVRT_16.dgn

1.0 GENERAL NOTES FOR ROCK DOWEL

1.1 Contractor to verify quantities prior to ordering. Quantities provided for information only.

1.2 It is assumed that the dowels will be bonded in rock, if this is found not be true (e.g., rock pockets are encountered) during drilling or otherwise, the Engineer shall be informed immediately and reevaluation of the design shall be performed.

1.3 The existing rock face shall be prepared such that:
- Each of the bearing plates is provided uniform bearing in accordance with the specifications.
- Each bearing plate may be located appropriately in plane with one another as required by the wall layout.
- If over excavation occurs, shotcrete may be applied (in accordance with the specifications) to the rock surface to properly locate the bearing plates after installation of the Rock Dowels. In this case the bearing plates shall be "wet set" in the shotcrete.

2.0 ROCK DOWEL WALL

2.1 Rock Dowel - Grade 75 thread bar or equivalent in accordance with ASTM A615 and epoxy coated in accordance with ASTM A775 as shown on the drawings.
FY=75,000 psi

2.2 Grout - Grout may be neat-cement or with sand, with Type II cement in accordance with ASTM C150. Water-cement ratio should be between 0.4 and 0.6 and should develop the following strengths at the specified cure periods.
f'c=3,000 psi minimum per specifications.

2.3 End Hardware - Nuts and washers shall be in accordance with ground nail manufacturers recommendations. Bearing plate shall be in accordance with ASTM A36, Grade 36.

2.4 Unless otherwise noted on the plans, minimum cover of nail end hardware should be as follows:
Face exposed to weather - 2"

2.5 Centralizers should be plastic and attached to the nails in accordance with the manufacturers recommendations and specifications.

3.0 INSTALLATION CONSTRUCTION SEQUENCE

3.1 The Engineer will mark locations and orientations of the rock reinforcement in the field based on the quantities and general locations provided in the plans.

3.2 Rock Dowel to be grouted in one phase. Grout shall be tremied from bottom of top of hole.

3.3 End hardware shall be installed (in accordance with the specifications) after grout has reached the specified strength.

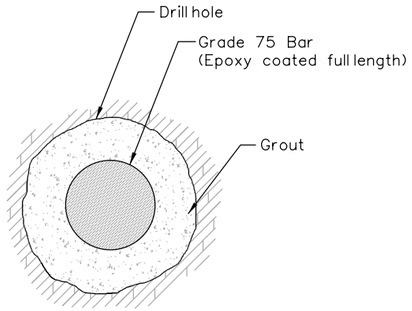
3.4 Exposed rock shall be cleaned and scaled of loose material prior to casting concrete face.

4.0 DESIGN ASSUMPTIONS

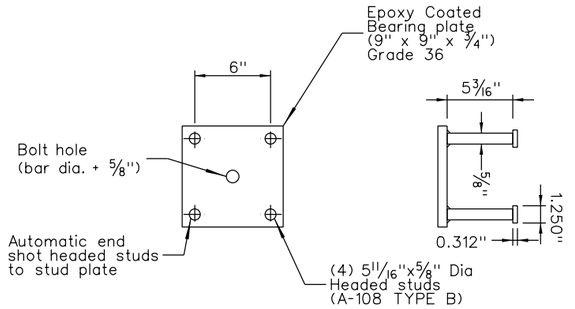
4.1 The design assumes the Rock Dowel will be in rock with an ultimate bond stress of 12 ksf.

4.2 The Test Load (TL) for the Rock Dowel will be 15 kips or as directed by the Engineer. A minimum of five (5) percent of the Rock Dowel shall have a lift-off test. Not less than two(2) bars shall be tested per wall.

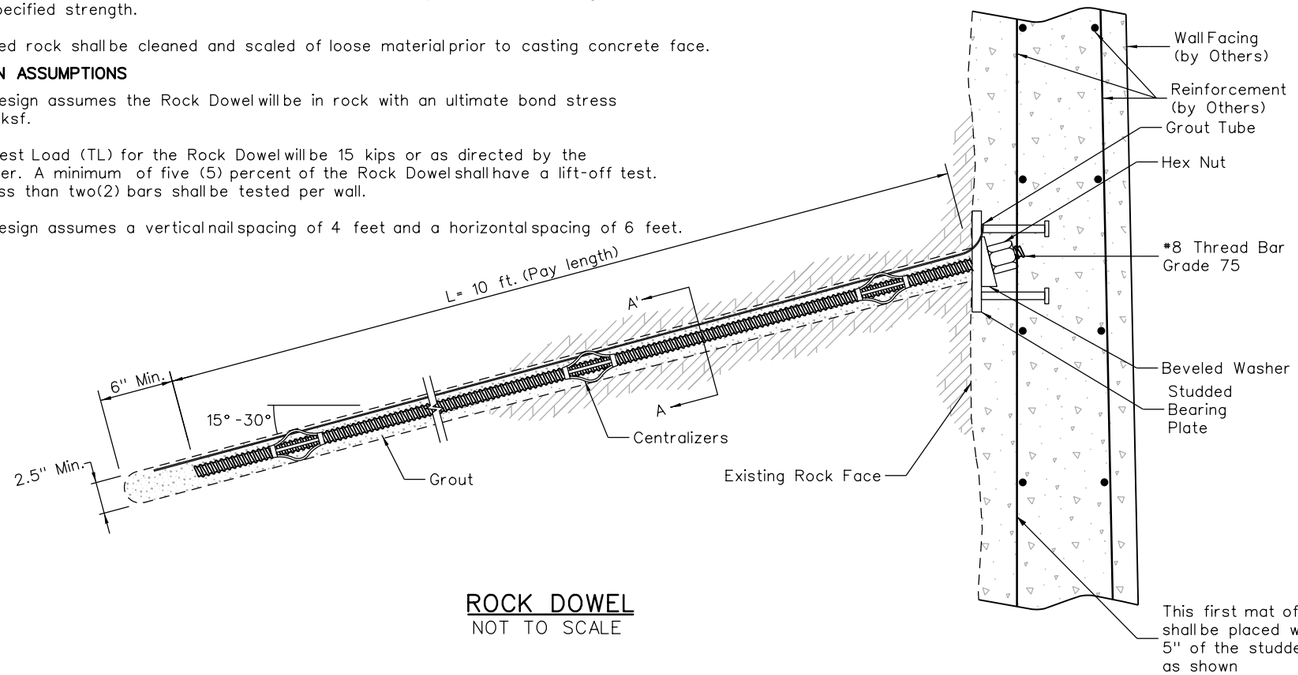
4.3 The design assumes a vertical nail spacing of 4 feet and a horizontal spacing of 6 feet.



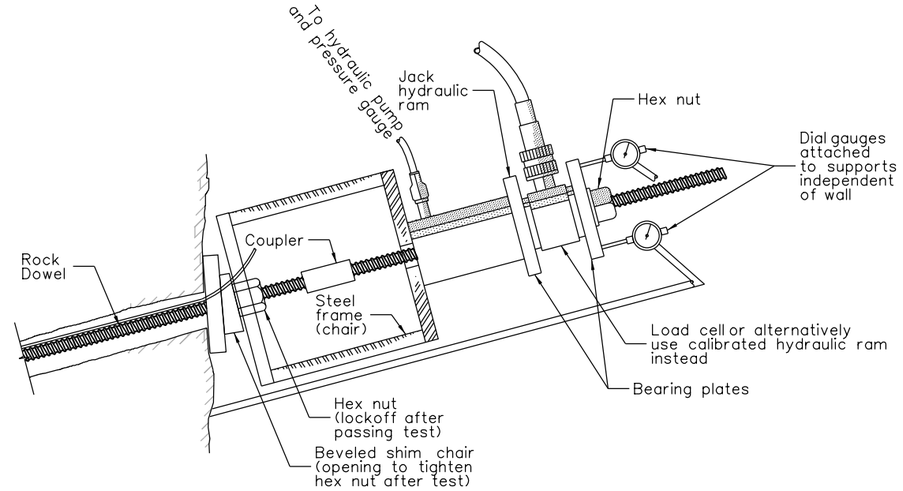
BONDED LENGTH CROSS SECTION A-A'
NOT TO SCALE



BEARING PLATE DETAIL
NOT TO SCALE



ROCK DOWEL
NOT TO SCALE



ROCK DOWEL TESTING DETAIL (TYP.)
NOT TO SCALE

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Yeh and Associates, Inc.
Consulting Engineers & Scientists

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SALINA JUNCTION
ROCK ANCHOR DETAILS
DETAILS (2 OF 2)

PROJECT NO: 4011.SEPT12C38 | SHEET NO: 47

GOLD RUN CBC OUTLET SPREAD FOOTING RETAINING WALL SCHEDULE								
PARAMETER	DESCRIPTION	UNIT	DESIGN HEIGHT "DH" (FEET)					
			6	8	10	12	14	16
"C" BARS	FOOTING PROJECTED VERT. REINFORCING ALONG B.F. STEM	* @ SPA.	*5 @ 12"	*6 @ 12"	*7 @ 12"	*6 @ 6"	*7 @ 6"	*9 @ 6"
"D" BARS	FOOTING TOP TRANS. REINFORCING	* @ SPA.	*5 @ 12"	*5 @ 12"	*5 @ 12"	*5 @ 6"	*6 @ 6"	*8 @ 6"
"E" BARS	FOOTING BOTTOM TRANS. REINFORCING	* @ SPA.	*5 @ 12"	*5 @ 12"	*6 @ 12"	*5 @ 6"	*6 @ 6"	*7 @ 6"

FOR INFORMATION ONLY

APPROXIMATE QUANTITIES							
DESCRIPTION	UNIT	DESIGN HEIGHT "DH" (FEET)					
		6	8	10	12	14	16
		PER LIN. FT.					
CONCRETE	CY	0.56	0.70	0.85	1.00	1.14	1.29
REINFORCING STEEL	LB	58	78	104	147	202	326 ⟨2⟩

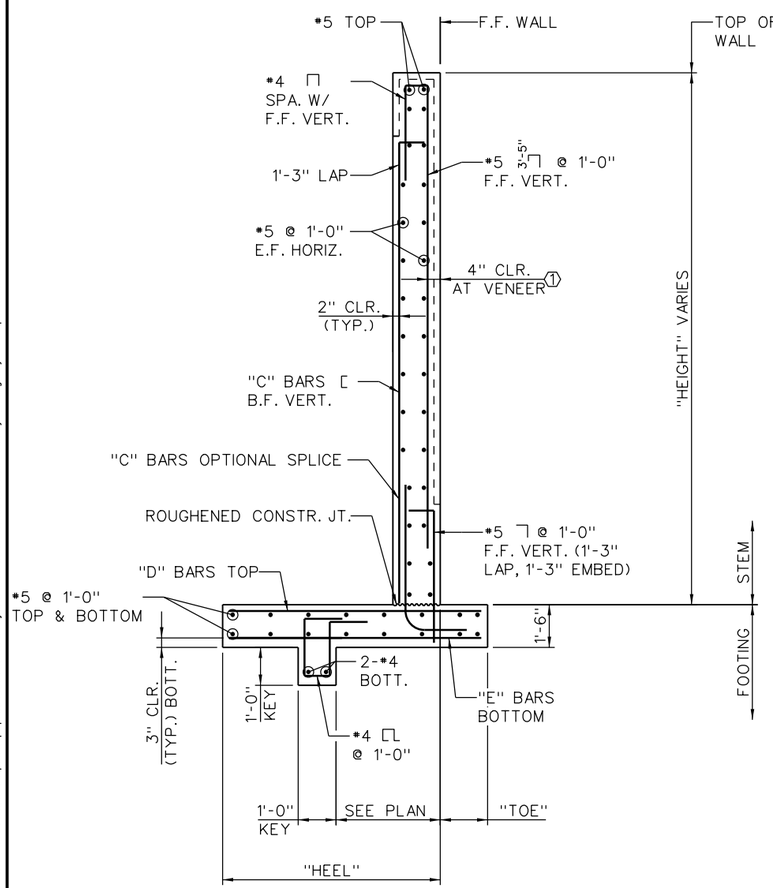
NOTES:

1. FOOTING AND STEM CONCRETE SHALL BE CONCRETE CLASS D (WALL).
2. EMBEDDED ELEMENTS FOR CUT STONE VENEER AND OTHER AESTHETIC DETAILS NOT SHOWN, REFER TO ARCHITECTURAL DETAILS.
3. FOR DETERMINATION OF SPLICE LENGTHS, REFER TO GENERAL INFORMATION.
4. FOR WEEP HOLE, DRAINAGE DETAILS, EXCAVATION LIMITS AND OTHER ASSOCIATED DETAILS REFER TO EXCAVATION AND BACKFILL.
5. SHIFT REINFORCING TO ACCOMMODATE WEEP HOLES. PLACE REINFORCING 1.5 INCHES CLEAR OF WEEP HOLES.

KEYNOTES:

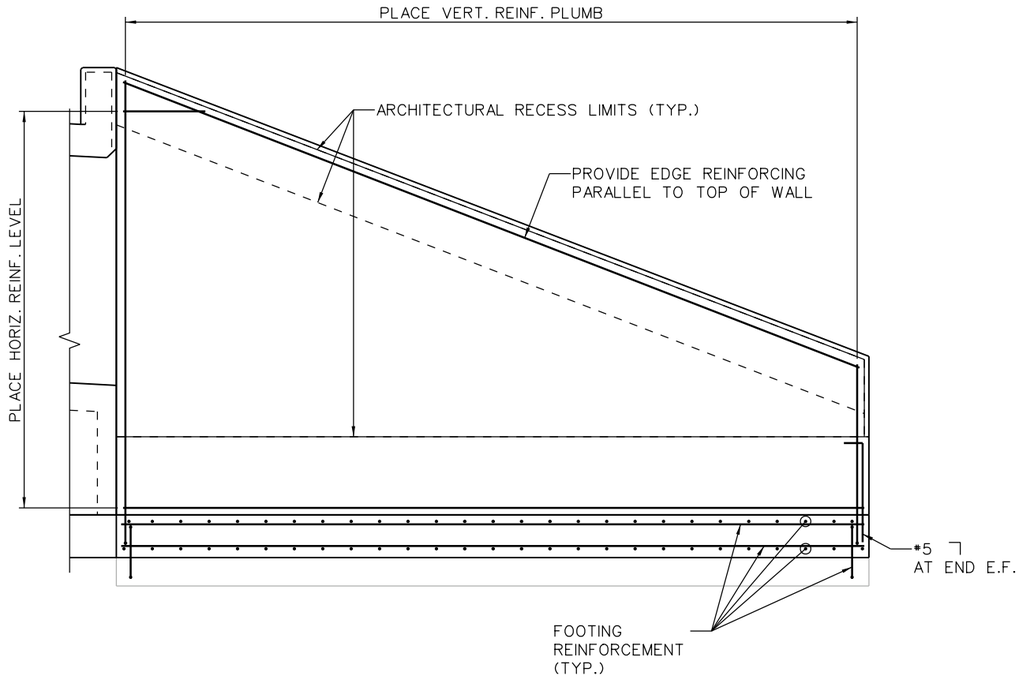
⟨1⟩ DIMENSION SHOWN TO F.F. WALL.

⟨2⟩ CLASS B OPTIONAL SPLICE CONSIDERED FOR QUANTITY PURPOSES.



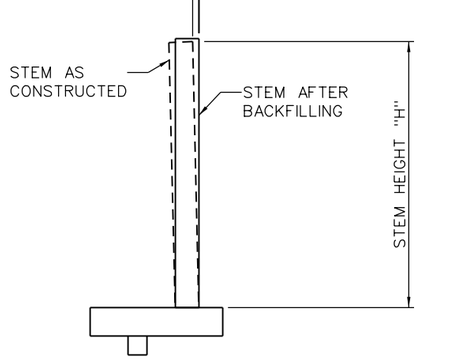
TYPICAL SECTION

SCALE = 1.33:1
WEEP HOLE NOT SHOWN



TYPICAL ELEVATION

WALL 3 SHOWN, WALL 4 SIMILAR. FOR RECESS DIMENSIONS, SEE ARCHITECTURAL DETAILS.
WEEP HOLES NOT SHOWN



STEM OFFSET DETAIL

OFFSET SHOWN IS AN ESTIMATE.
ACTUAL DEFLECTION MAY VARY DEPENDING ON BACKFILL EQUIPMENT AND PROCEDURE.

SCALE: 3/16" = 1'-0"

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ENGINEERING DIVISION

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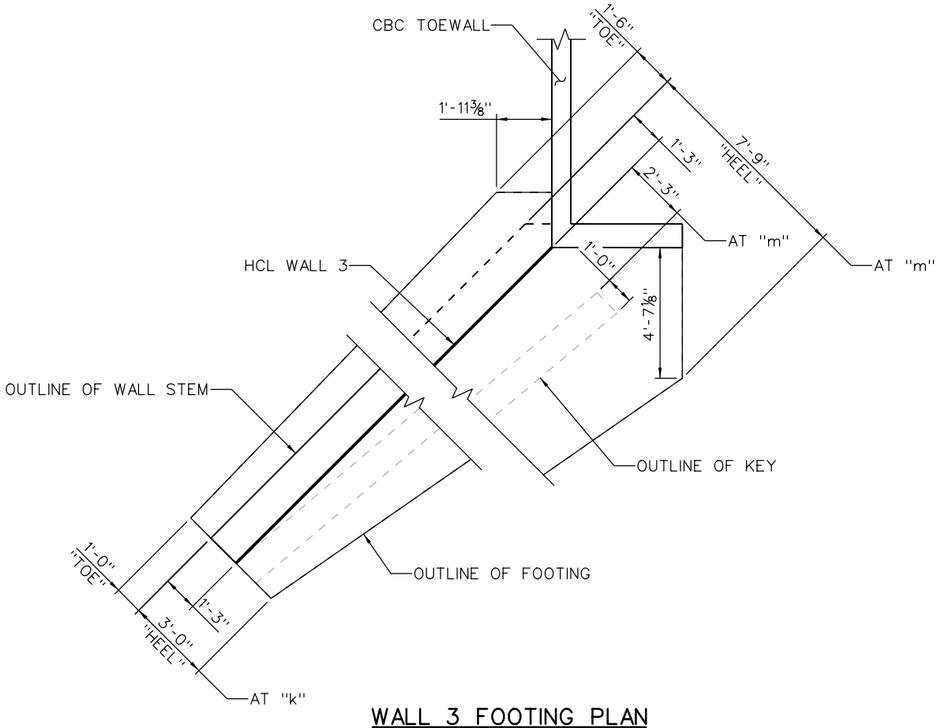
SALINA JUNCTION
SPREAD FOOTING WALL DETAILS (1 OF 3)

PROJECT NO: 4011.SEPT12C38 | SHEET NO: 48

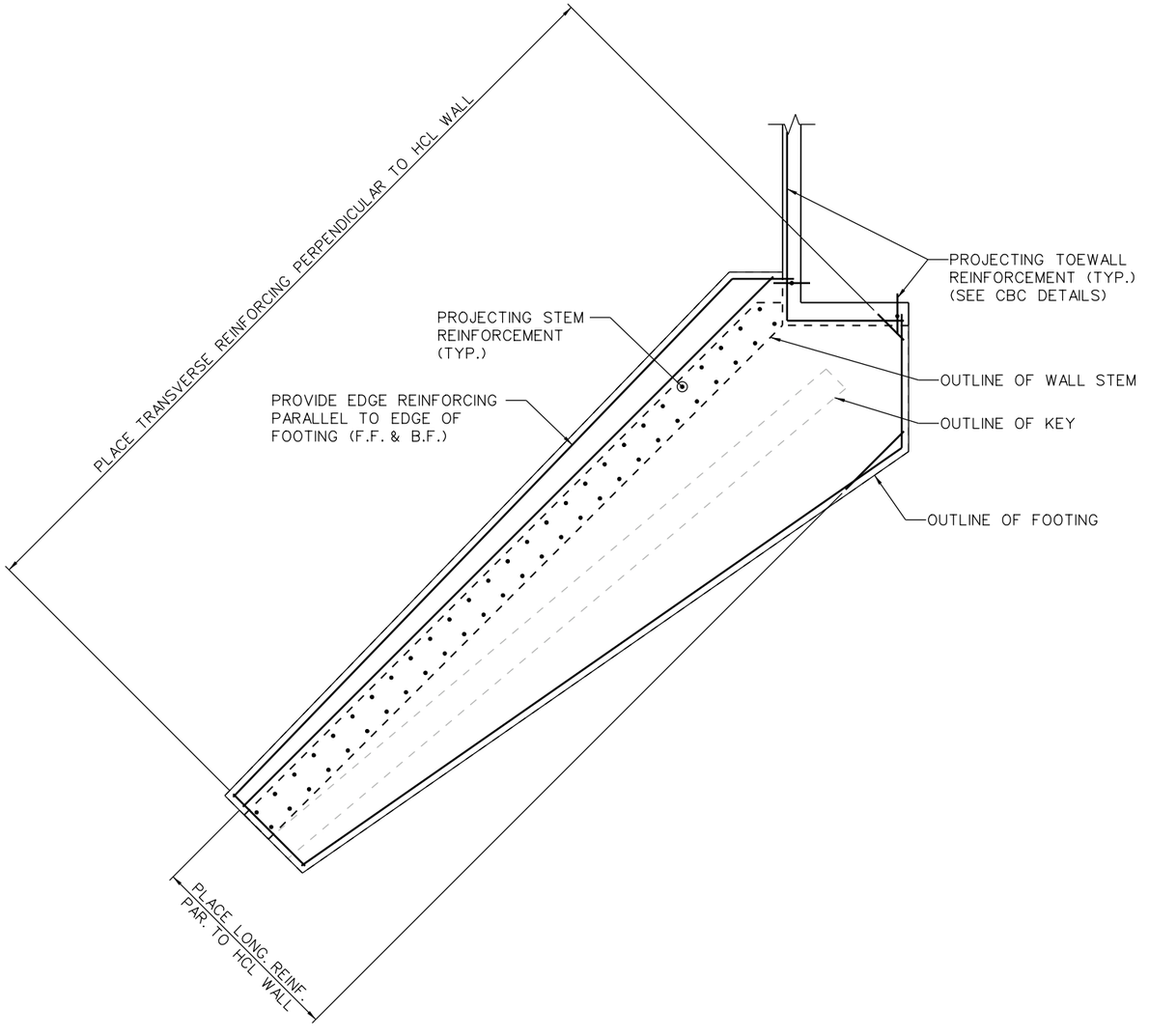
nathan.girkins 1:52:44 PM pw:\\DCPWAPP1.bkr.mbakercorp.com:pwprod\Documents\Projects\Lakewood_Office\Boulder_County_Emergency_Transportation\T05\08_Sheet_Files\06_Structures\DGN\138601_CLVRT_18.dgn

NOTES:

1. KEY REINFORCING NOT SHOWN. SEE TYPICAL SECTION.



WALL 3 FOOTING PLAN



WALL 3 FOOTING REINFORCEMENT PLAN

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SCALE: 3/16" = 1'-0"

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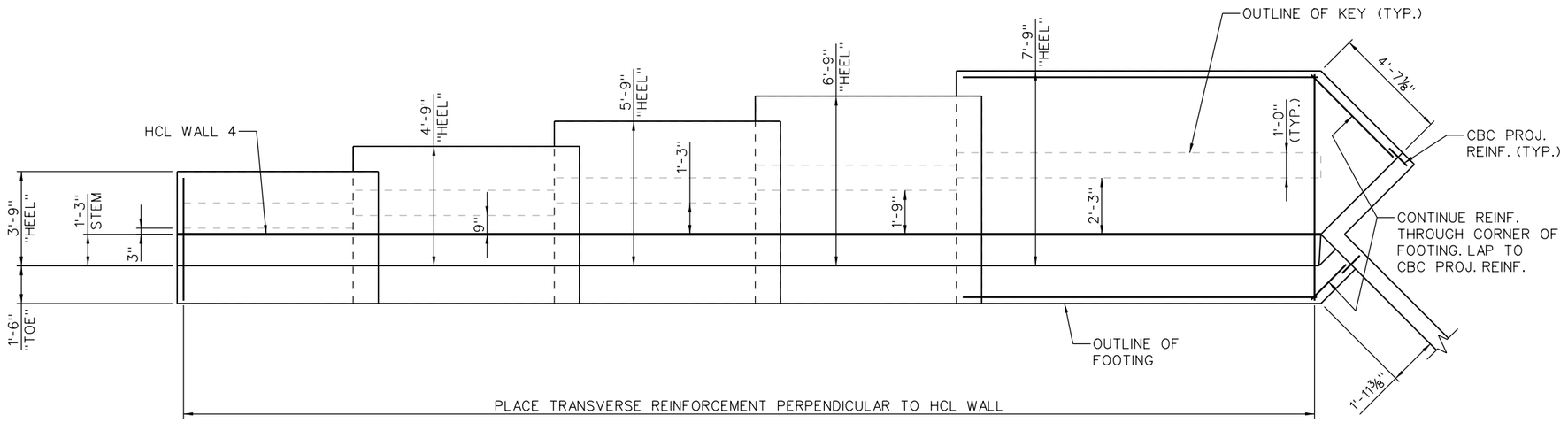
SALINA JUNCTION
SPREAD FOOTING WALL DETAILS (2 OF 3)

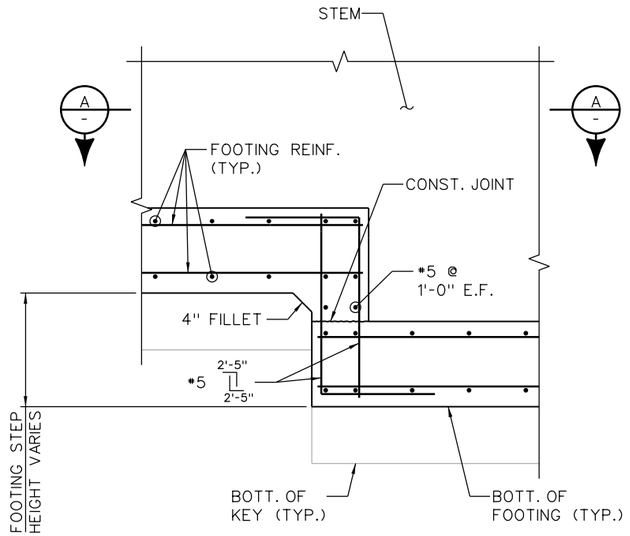
PROJECT NO: 4011.SEPT12C38 | SHEET NO: 49

KEYNOTES:

(1) THE CONCRETE AND REINFORCING REQUIRED FOR THE FILLET HAVE NOT BEEN QUANTIFIED BUT SHALL BE INCLUDED IN ITEM 601 CONCRETE CLASS D (WALL).

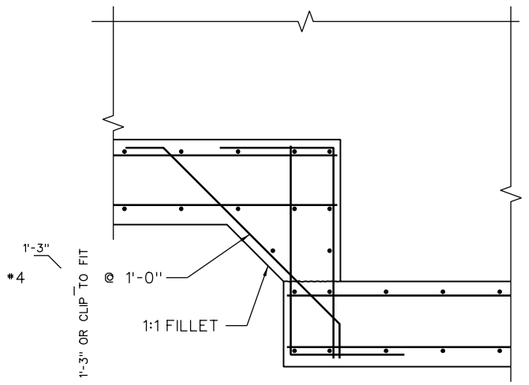


WALL 4 FOOTING PLAN



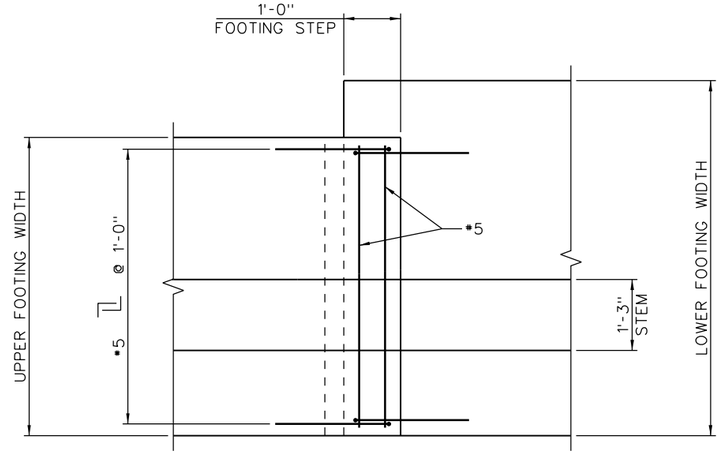
TYPICAL FOOTING STEP DETAIL

SCALE = 2:1
STEM AND SHEAR KEY REINFORCING NOT SHOWN



ALTERNATE FOOTING STEP DETAIL (1)

SCALE = 2:1
SAME AS FOOTING STEP DETAIL EXCEPT AS SHOWN
FOOTING KEY NOT SHOWN



VIEW (A)

TYPICAL
SCALE = 2:1
FOOTING AND STEM REINF. NOT SHOWN
FOOTING KEY NOT SHOWN

SCALE: 3/16" = 1'-0"

CALL UTILITY NOTIFICATION CENTER OF COLORADO
811
CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

REVISIONS:	NO.	DATE	REVISION DESCRIPTION:

Boulder County
Michael Baker INTERNATIONAL

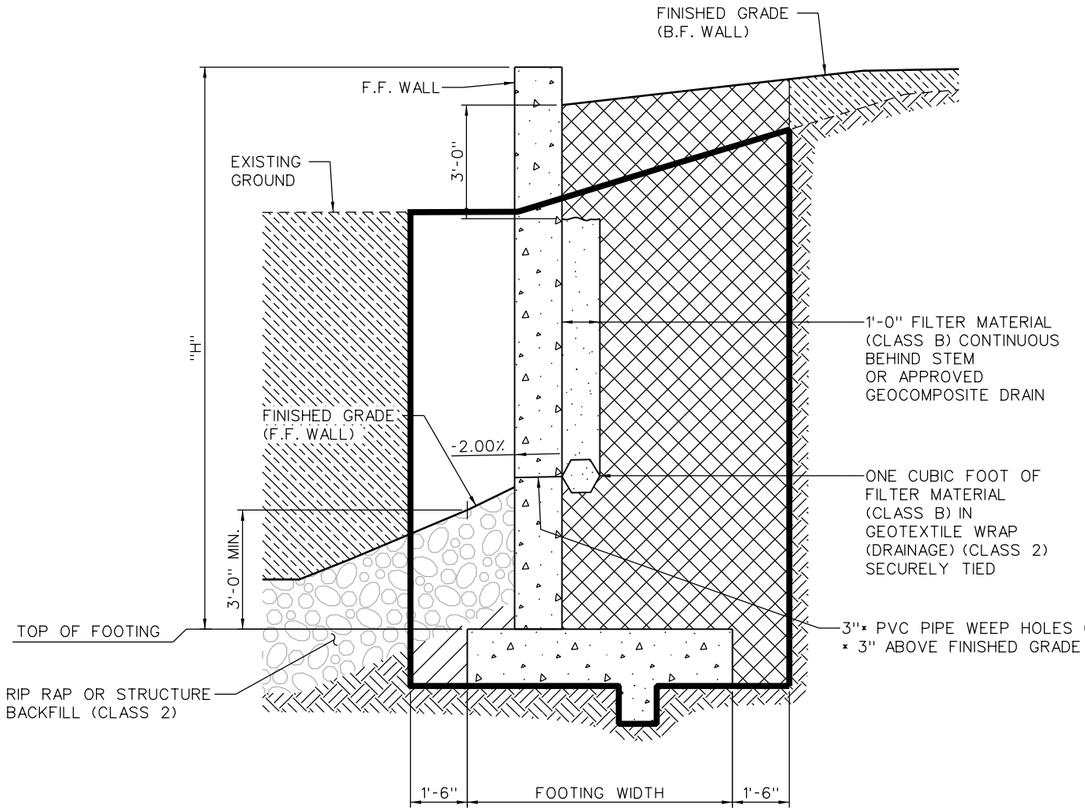
BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION

DESIGNED:	CAD:	CHECKED:	DATE:
DLT	BMT		7/3/2015

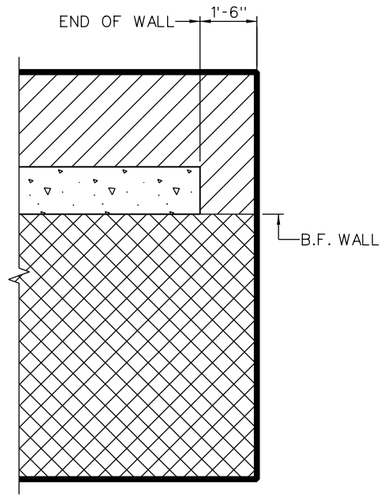
SALINA JUNCTION
SPREAD FOOTING WALL DETAILS (3 OF 3)

PROJECT NO: 4011.SEPT12C38 | SHEET NO: 50

nathan.girkins 1:52:54 PM pw:\\DCPWAPP1.bkr.mbakercorp.com:pwprod\Documents\Projects\Lakewood_Office\Boulder_County_Emergency_Transportation\T05\08_Sheet_Files\06_Structures\DGN\138601_CLVRT_20.dgn



TYPICAL SECTION



PARTIAL PLAN
TAKEN AT TOP OF FOOTING

NOTES:

1. THIS SHEET GIVES THE MINIMUM EXTENT OF EARTHWORK. THE CONTRACTOR MAY ELECT TO EXTEND THE STRUCTURE EXCAVATION AND STRUCTURE BACKFILL BEYOND THE LIMITS SHOWN. ANY ADDITIONAL EXCAVATION BEHIND THE WALL SHALL BE BACKFILLED WITH STRUCTURE BACKFILL (CLASS 1). ANY ADDITIONAL EXCAVATION IN FRONT OF THE WALL MAY BE BACKFILLED WITH EITHER STRUCTURE BACKFILL CLASS 1 OR CLASS 2. ANY ADDITIONAL EXCAVATION OR BACKFILL BEYOND THE LIMITS SHOWN ON THIS SHEET WILL BE BOURNE BY THE CONTRACTOR AND WILL NOT BE MEASURED OR PAID FOR.
2. CARE SHALL BE TAKEN WHEN EXCAVATING FOR SPREAD FOOTING FOUNDATIONS TO AVOID DISTURBING THE SUPPORTING MATERIALS. SPREAD FOOTINGS SHALL BE PLACED ON ON A COMBINATION OF BEDROCK, EMBANKMENT, AND/OR GRANULAR SOIL. VISUAL INSPECTION OF THE FOUNDATION MATERIAL BY THE GEOTECHNICAL ENGINEER OR REPRESENTATIVE IS RECOMMENDED TO THE PROJECT ENGINEER TO ENSURE ADEQUATE FOUNDATION SUPPORT.
3. SOFT SOILS SHOULD BE OVER-EXCAVATED TO A DEPTH OF 3 FEET OVER THE AREA OF THE SPREAD FOOTING EXTENDED BY 8 INCHES AROUND THE PERIMETER. THIS EXCAVATION MAY BE BACKFILLED WITH PROPERLY COMPACTED STRUCTURE BACKFILL (CLASS 1) PER SECTION 206.03 OR A SELF-COMPACTING BACKFILL MATERIAL SUCH AS AASHTO M43 SIZE 2 OR FLOW-FILL. THIS WORK HAS NOT BEEN QUANTIFIED BUT SHALL BE INCLUDED IN THE WORK.
4. STRUCTURE FOOTINGS LOCATED IN ROCK SHALL BE POURED OUT TO UNDISTURBED ROCK WITHOUT FORMING IN CONFORMANCE WITH SUBSECTION 601.09(b).
5. FOR FINISHED GRADE, REFER TO ROADWAY PLANS.
6. DRAINAGE NOT REQUIERED WHEN "H" IS ≤ 7'-0".
7. PVC PIPE, FILTER MATERIAL AND OTHER ASSOCIATED DRAINAGE ELEMENTS SHALL BE INCLUDED WITH ITEM 206 STRUCTURE BACKFILL (CLASS 1).
8. WALL 4 SHOWN, WALL 3 SIMILAR.

LEGEND:

- CONCRETE
- LIMITS OF STRUCTURE EXCAVATION
- LIMITS OF STRUCTURE BACKFILL (CLASS 1)
- LIMITS OF STRUCTURE BACKFILL (CLASS 2)
- SEE ROADWAY PLANS
- UNCLASSIFIED EXCAVATION LIMITS (QUANTIFIED WITH ROADWAY PLANS)
- EARTH
- RIP RAP (QUANTIFIED WITH DRAINAGE PLANS)

FOR INFORMATION ONLY

MAXIMUM BEARING PRESSURE TABLE (STRENGTH LIMIT STATE)

LOCATION	UNIT	DESIGN HEIGHT "DH" (FEET)					
		6	8	10	12	14	16
WALL 3	KSF	1.50	2.25	3.25	4.00	3.50	4.00
WALL 4	KSF	-	2.25	3.00	3.50	4.25	4.50

SCALE: ¼" = 1'-0"

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REVISIONS:	NO.	DATE	REVISION DESCRIPTION:

Boulder County
Michael Baker INTERNATIONAL

BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION

DESIGNED:	CAD:	CHECKED:	DATE:
DLT	BMT		7/3/2015

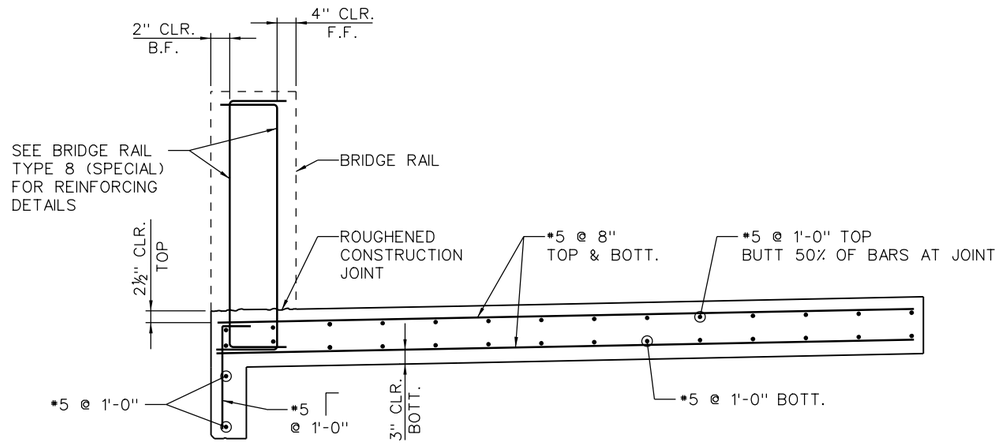
SALINA JUNCTION
SPREAD FOOTING WALL EXCAVATION AND BACKFILL

PROJECT NO: 4011.SEPT12C38 | SHEET NO: 51

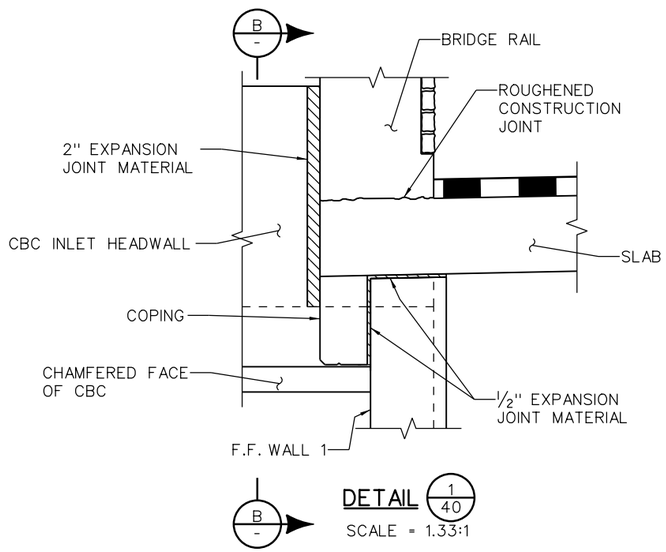
nathan.girkins 1:52:58 PM pw:\\DCPWAPP1.bkr.mbakercorp.com:pwprod\Documents\Projects\Lakewood_Office\Boulder_County_Emergency_Transportation\T05\08_Sheet_Files\06_Structures\DGN\138601_CLVRT_21.dgn

NOTES:

1. MOMENT SLAB CONCRETE SHALL BE CONCRETE CLASS D.
2. POLYSTRENE AND EXPANSION JOINT MATERIAL WILL NOT BE PAID FOR SEPERATELY BUT INCLUDED IN ITEM 601 CONCRETE CLASS D.

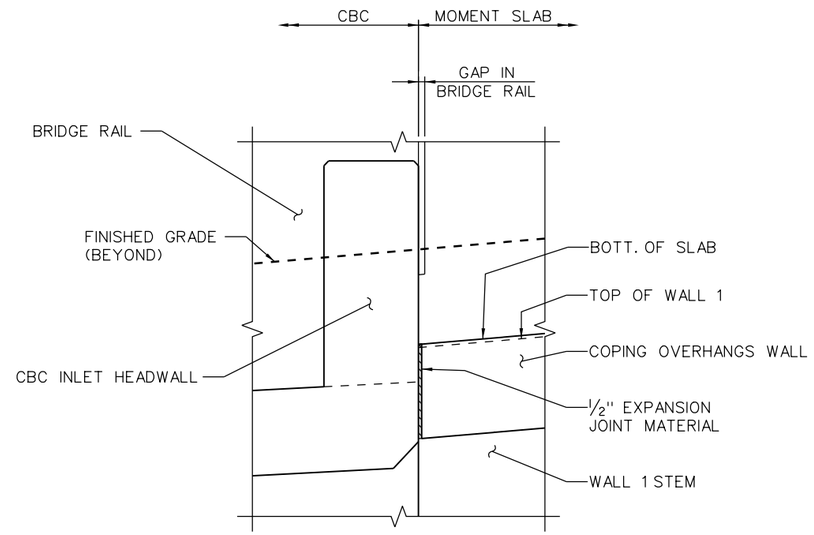


TYPICAL SECTION



DETAIL 1/40

SCALE = 1.33:1



SECTION B/-

SCALE = 1.33:1

SCALE: ⅜" = 1'-0"

CALL UTILITY NOTIFICATION CENTER OF COLORADO 811
CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

REVISIONS:	NO.	DATE	REVISION DESCRIPTION:

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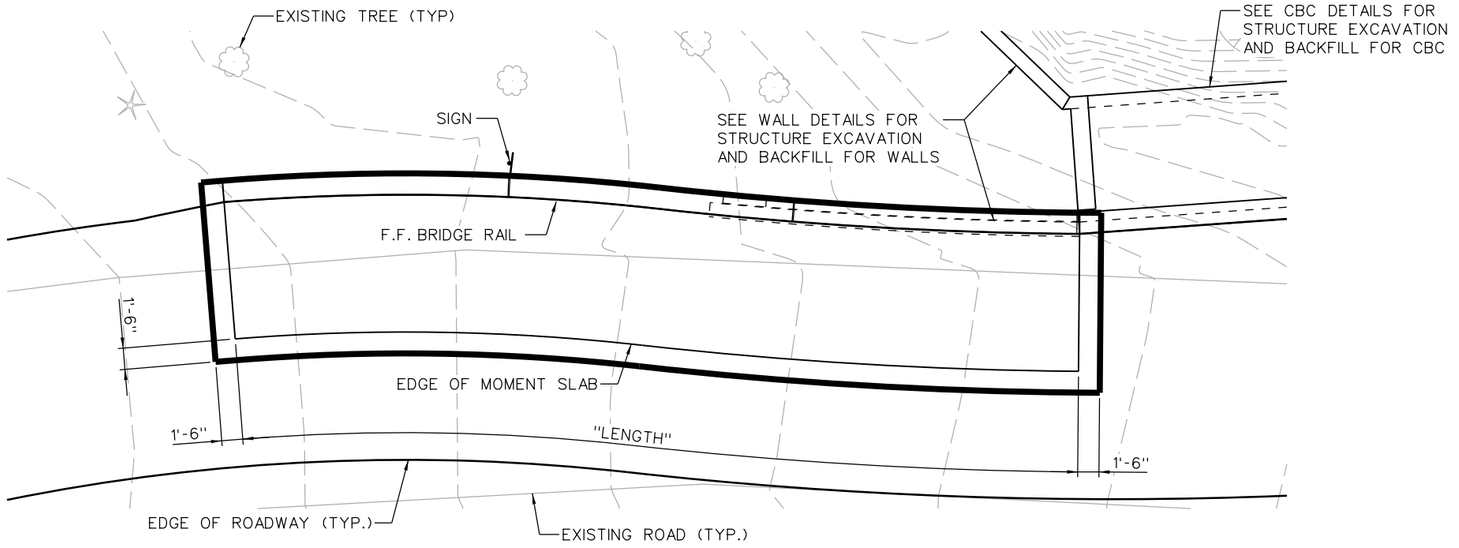
ENGINEERING DIVISION
Michael Baker INTERNATIONAL

DESIGNED:	CAD:	CHECKED:	DATE:
DLT	BMT		7/3/2015

SALINA JUNCTION
GOLD RUN MOMENT SLAB DETAILS

PROJECT NO: 4011.SEPT12C38 | SHEET NO: 52

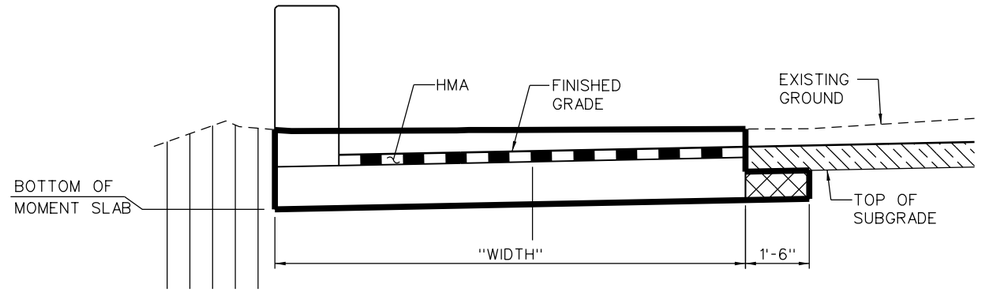
nathan.girkins 1:53:03 PM pw:\\DCPWAPP1.bkr.mbakercorp.com:pwprod\Documents\Projects\Lakewood_Office\Boulder_County_Emergency_Transportation\T05\08_Sheet_Files\06_Structures\DGN\138601_CLVRT_22.dgn



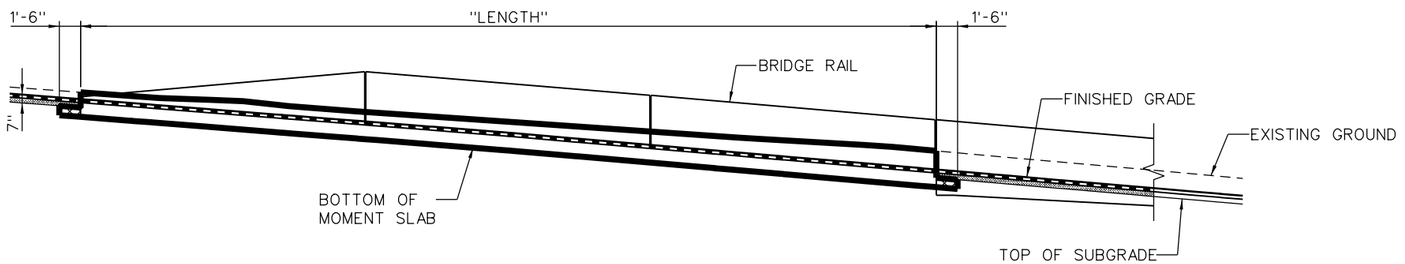
PLAN
HMA NOT SHOWN

NOTES:
1. STRUCTURES LOCATED IN ROCK SHALL BE POURED OUT TO UNDISTURBED ROCK WITHOUT FORMING IN CONFORMANCE WITH SUBSECTION 601.09.

LEGEND
- LIMITS OF MEASUREMENT FOR STRUCTURE EXCAVATION
- STRUCTURE BACKFILL (CLASS 1)
- UNCLASSIFIED EXCAVATION LIMITS (SEE ROADWAY PLANS)
- SEE ROADWAY PLANS



TYPICAL SECTION
SCALE = 3:1
TAKEN PERPENDICULAR TO F.F. BRIDGE RAIL



DEVELOPED ELEVATION
TAKEN ALONG F.F. BRIDGE RAIL

SCALE: 3/32" = 1'-0"

CALL UTILITY NOTIFICATION CENTER OF COLORADO
811
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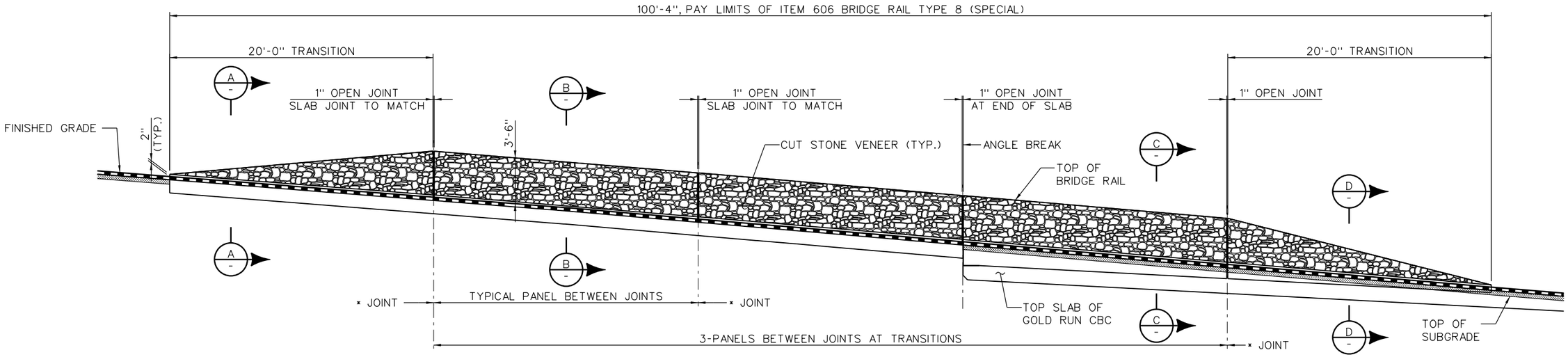
ENGINEERING DIVISION
Boulder County
Michael Baker INTERNATIONAL

DESIGNED:	CAD:	CHECKED:	DATE:
DLT	BMT		7/3/2015

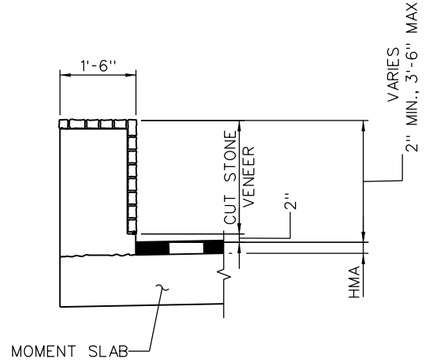
SALINA JUNCTION
GOLD RUN MOMENT SLAB EXCAVATION & BACKFILL

PROJECT NO: 4011.SEPT12C38 | SHEET NO: 53

nathan.girkins 1:53:08 PM pw:\\DCPWAPP1.bkr.mbakercorp.com:pwprod\Documents\Projects\Lakewood_Office\Boulder_County_Emergency_Transportation\T05\08_Sheet_Files\06_Structures\DGN\138601_CLVRT_23.dgn

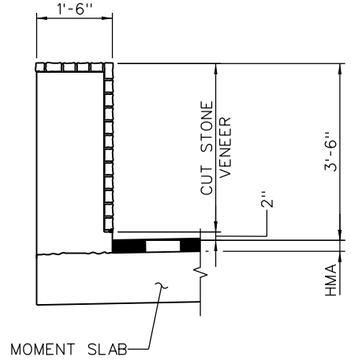


ELEVATION



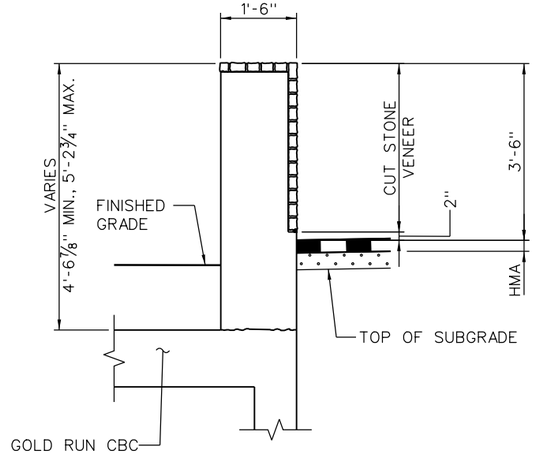
TRANSITION TYPICAL SECTION (A)

SCALE = 2.66:1



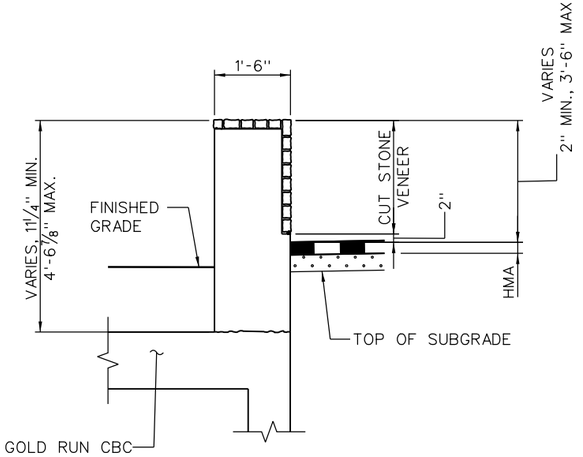
PANEL TYPICAL SECTION (B)

SCALE = 2.66:1



PANEL TYPICAL SECTION ON CBC (C)

SCALE = 2.66:1



TRANSITION TYPICAL SECTION ON CBC (D)

SCALE = 2.66:1

SCALE: ⅛" = 1'-0"

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Michael Baker INTERNATIONAL

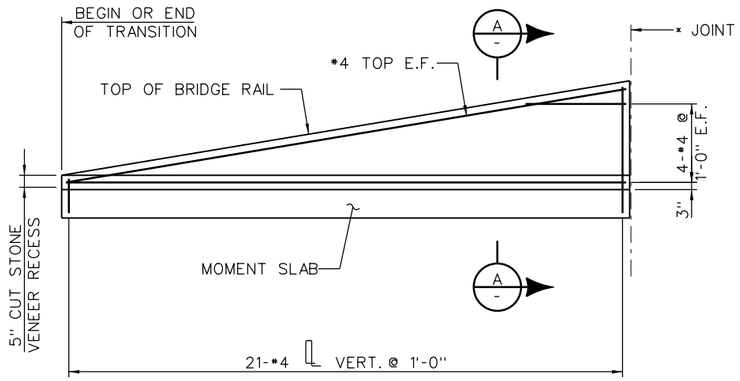
BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION

DESIGNED:	CAD:	CHECKED:	DATE:
DLT	BMT		7/31/2015

SALINA JUNCTION
BRIDGE RAIL TYPE 8 (SPECIAL) (1 OF 2)

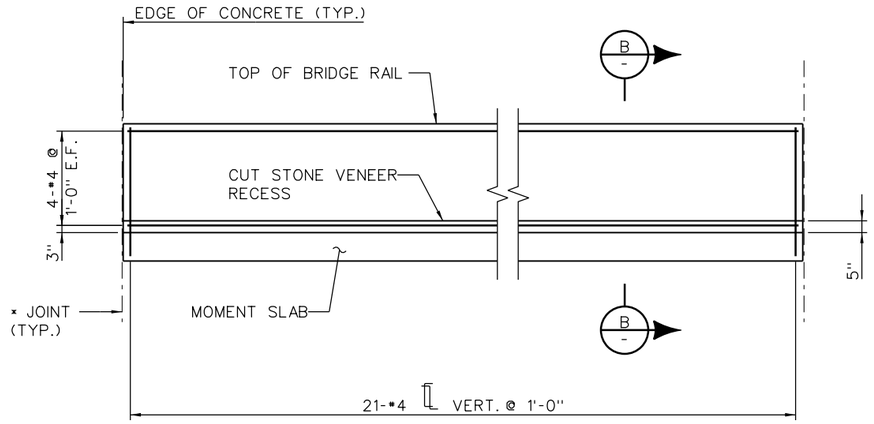
PROJECT NO: 4011.SEPT12C38 | SHEET NO: 54

nathan.gir kins 1:53:13 PM pw:\\DCPWAPP1.bkr.mbakercorp.com:pwprod\Documents\Projects\Lakewood_Office\Boulder_County_Emergency_Transportation\T05\08_Sheet_Files\06_Structures\DGN\138601_CLVRT_24.dgn



TYPICAL TRANSITION ELEVATION

TAKEN AT F.F. BRIDGE RAIL
CUT STONE VENEER NOT SHOWN

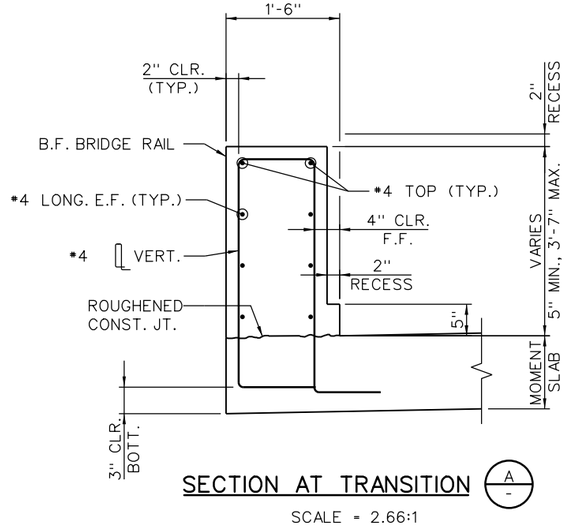


TYPICAL PANEL ELEVATION

TAKEN AT F.F. BRIDGE RAIL
CUT STONE VENEER NOT SHOWN

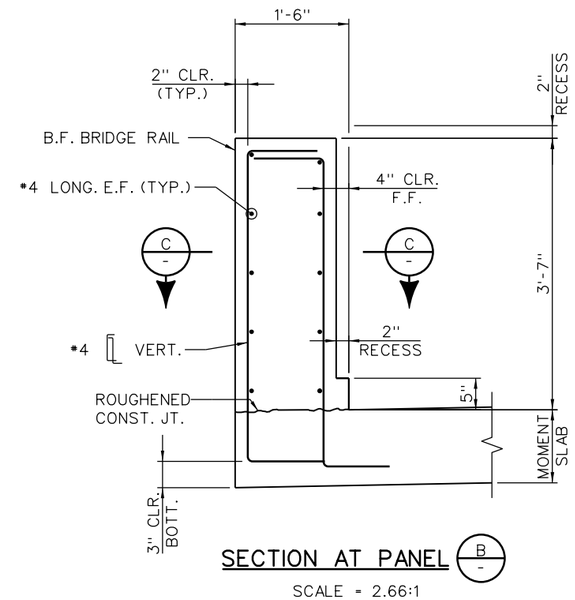
NOTES:

1. BRIDGE RAIL CONCRETE SHALL BE CONCRETE CLASS D.
2. BRIDGE RAIL SHALL BE CONSTRUCTED PLUMB.
3. BACKFILL ADJACENT STRUCTURES BEFORE BRIDGE RAIL IS PLACED.
4. LONGITUDINAL REINFORCEMENT SHALL BE TERMINATED AT ALL JOINTS.
5. EMBEDDED ELEMENTS FOR CUT STONE VENEER AND OTHER AESTHETIC DETAILS NOT SHOWN, REFER TO ARCHITECTURAL DETAILS.
6. PAYMENT WILL BE MADE UNDER ITEM 606 BRIDGE RAIL FOR CONCRETE AND REINFORCING STEEL.
7. PRIOR TO FABRICATION, WORKING DRAWINGS WHICH COMPLY WITH THE REQUIREMENTS OF SECTION 105, SHALL BE SUBMITTED FOR INFORMATION ONLY.
8. BRIDGE RAIL ON MOMENT SLAB SHOWN. BRIDGE RAIL ON CBC SIMILAR.



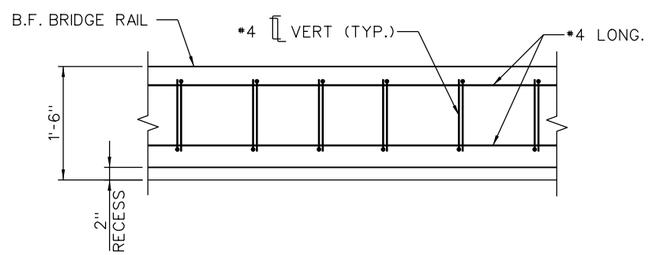
SECTION AT TRANSITION (A)

SCALE = 2.66:1



SECTION AT PANEL (B)

SCALE = 2.66:1



SECTION (C)

SCALE = 2.66:1

TYPICAL TRANSTION APPROXIMATE QUANTITIES

(FOR INFORMATION ONLY)

DESCRIPTION	UNIT	PER LINEAR FT.
CONCRETE CLASS D	CY	0.12
REINFORCING STEEL (EPOXY COATED)	LB	9.6

TYPICAL PANEL APPROXIMATE QUANTITIES

(FOR INFORMATION ONLY)

DESCRIPTION	UNIT	PER LINEAR FT.
CONCRETE CLASS D	CY	0.21
REINFORCING STEEL (EPOXY COATED)	LB	11.4

SCALE: 3/16" = 1'-0"

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Boulder County
Michael Baker INTERNATIONAL

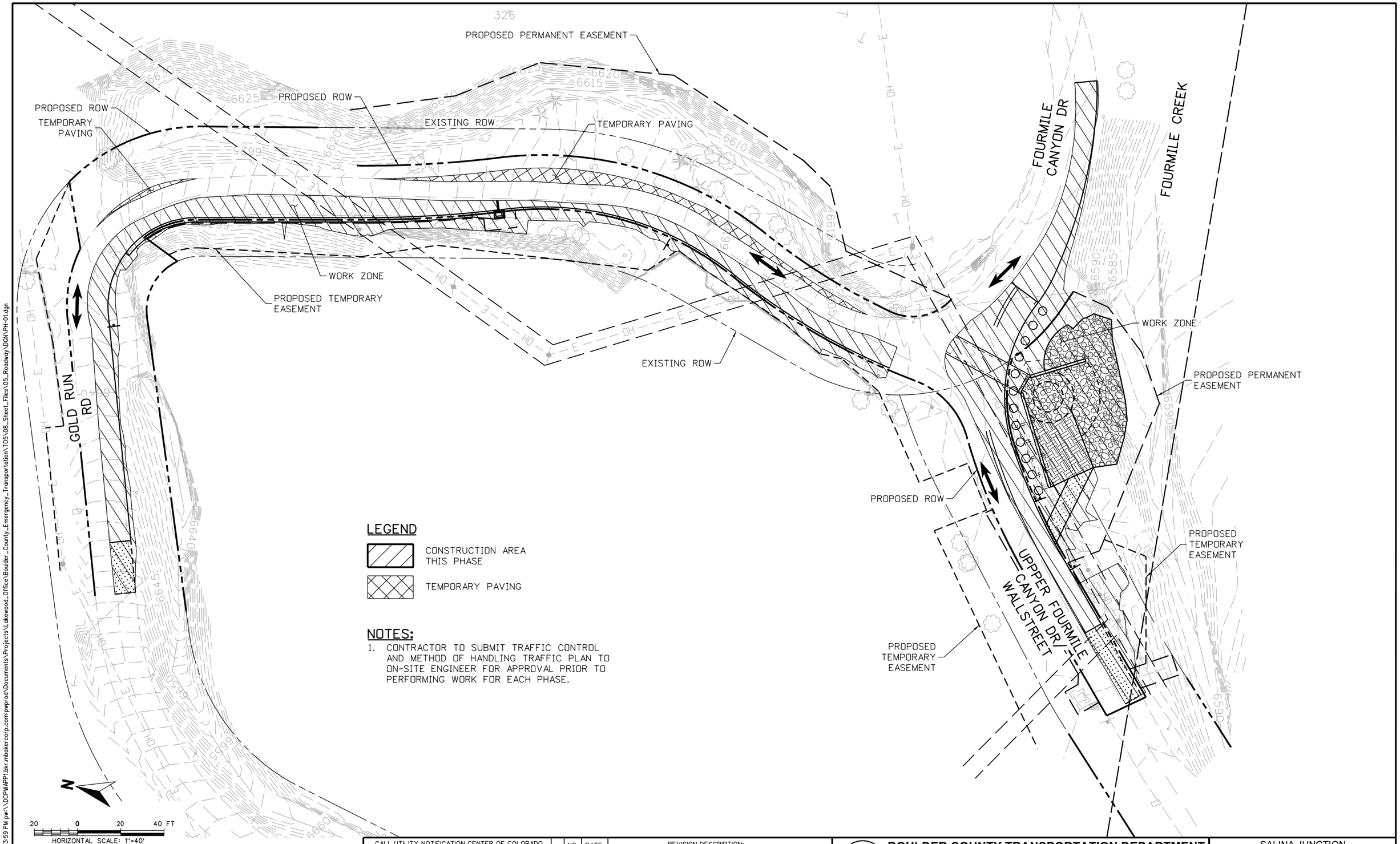
BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION

DESIGNED:	CAD:	CHECKED:	DATE:
DLT	BMT		03/13/2015

SALINA JUNCTION
BRIDGE RAIL TYPE 8 (SPECIAL) (2 OF 2)

PROJECT NO: 4011.SEPT12C38 | SHEET NO: 55

nathon.gr kins 1:53:18 PM pw:\\DCPWAPP1.bkr.mbakercorp.com:pwprod\Documents\Projects\Lakewood_Office\Boulder_County_Emergency_Transportation\T05\08_Sheet_Files\06_Structures\DGN\138601_CLVRT_25.dgn



LEGEND

- CONSTRUCTION AREA THIS PHASE
- TEMPORARY PAVING

NOTES:

1. CONTRACTOR TO SUBMIT TRAFFIC CONTROL AND METHOD OF HANDLING TRAFFIC PLAN TO ON-SITE ENGINEER FOR APPROVAL PRIOR TO PERFORMING WORK FOR EACH PHASE.

CALL UTILITY NOTIFICATION CENTER OF COLORADO
811
CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

REVISIONS:	NO.	DATE	REVISION DESCRIPTION:

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BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION

DESIGNED:	CAD:	CHECKED:	DATE:
RGK	RGK	JPZ	07/31/15

SALINA JUNCTION
SUGGESTED CONSTRUCTION PHASE 1

PROJECT NO: 4011.SEPT12C38 | SHEET NO: 56

mary.monks 2:13:59 PM pw:\\DCPWAPP1.bkr.mbakercorp.com:pwprod\Documents\Projects\Lakewood_Office\Boulder_County_Emergency_Transportation\TO5\08_Sheet_Files\05_Roadway\DGN\PH-01.dgn

PROPOSED PERMANENT EASEMENT

EXISTING ROW

PROPOSED ROW

PROPOSED ROW

WORK ZONE

FOURMILE CANYON DR

FOURMILE CREEK

PROPOSED TEMPORARY EASEMENT

EXISTING ROW

GOLD RUN RD

PROPOSED PERMANENT EASEMENT

PROPOSED ROW

PROPOSED TEMPORARY EASEMENT

PROPOSED TEMPORARY EASEMENT

UPPER FOURMILE CANYON DR/ WALLSTREET

LEGEND

- CONSTRUCTION AREA THIS PHASE
- INTERMEDIATE CONSTRUCTION AREA (TO BE COMPLETED PRIOR TO PHASE 2 CONSTRUCTION)
- COMPLETED CONSTRUCTION FROM PRIOR PHASES

NOTES:

1. CONTRACTOR TO SUBMIT TRAFFIC CONTROL AND METHOD OF HANDLING TRAFFIC PLAN TO ON-SITE ENGINEER FOR APPROVAL PRIOR TO PERFORMING WORK FOR EACH PHASE.
2. CONTRACTOR TO COORDINATE EASTERN TIE-IN WITH FOURMILE CANYON DR TEMPORARY PAVING TO ENSURE SMOOTH TRANSITION BETWEEN PROJECT LIMITS.

N

20 0 20 40 FT

HORIZONTAL SCALE: 1"=40'

CALL UTILITY NOTIFICATION CENTER OF COLORADO

811

CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

REVISIONS:	NO.	DATE	REVISION DESCRIPTION:

Boulder County

BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION

Michael Baker INTERNATIONAL

DESIGNED:	CAD:	CHECKED:	DATE:
RGK	RGK	JPZ	07/31/15

SALINA JUNCTION
SUGGESTED CONSTRUCTION PHASE 2

PROJECT NO: 4011.SEPT12C38 | SHEET NO: 57

mary.monks 2:43:38 PM pw:\\DCPWAPP1.bkr.mbakercorp.com:pwprod\Documents\Projects\Lakewood_Office\Boulder_County_Emergency_Transportation\T05\08_Sheet_Files\05_Roadway\DGN\PH-02.dgn