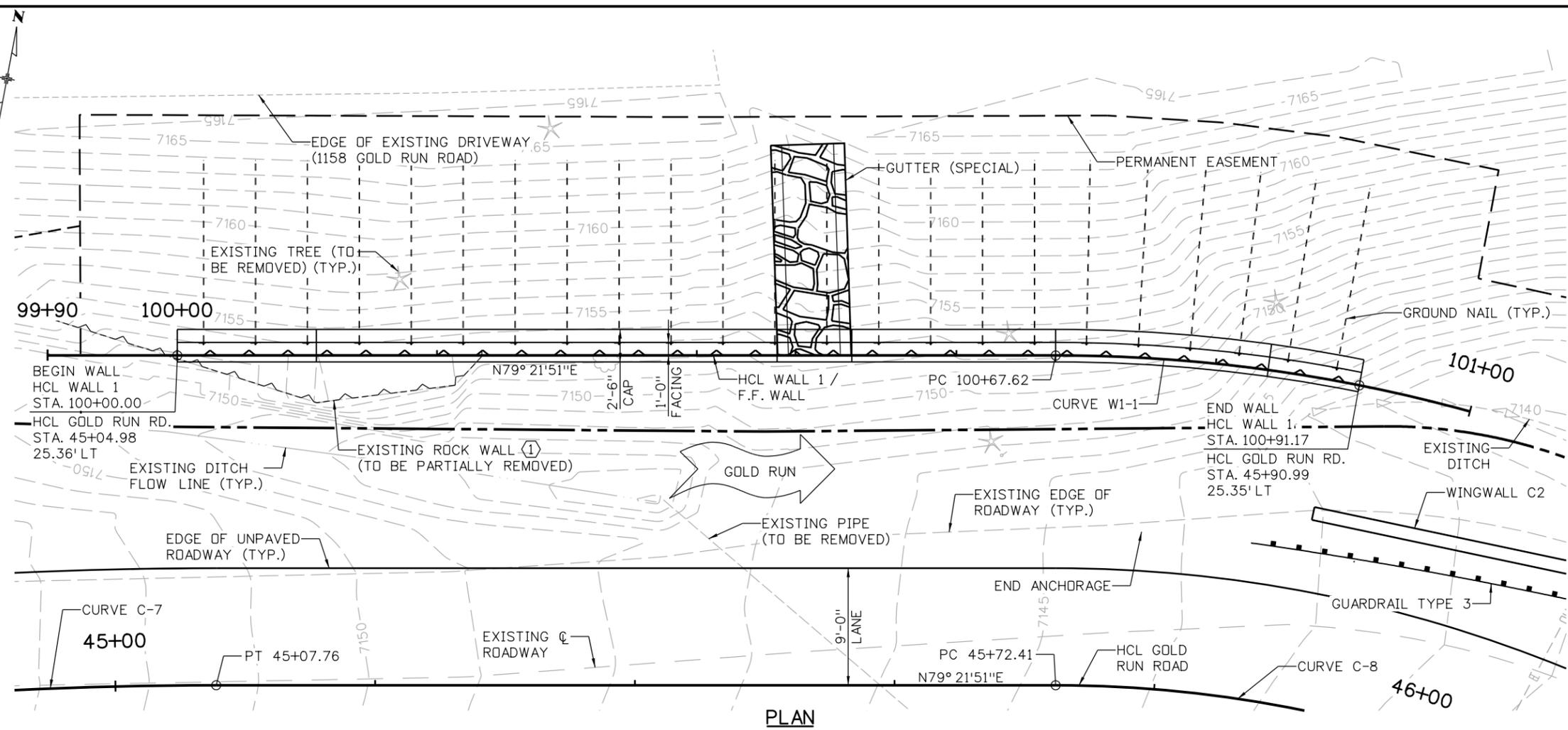


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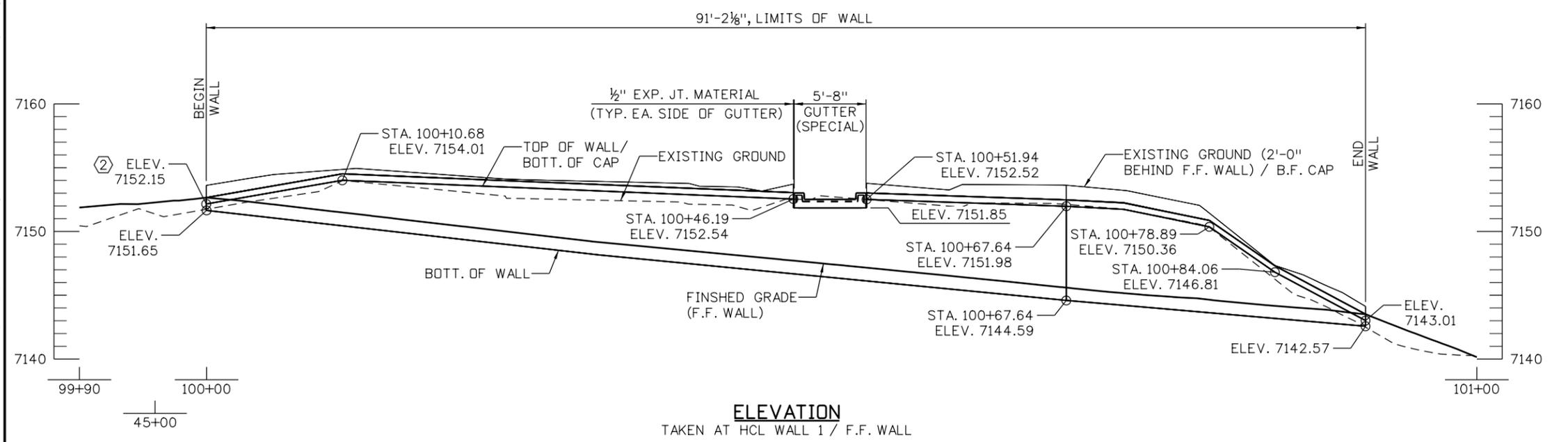


- NOTES:**
- FOR FINISHED GRADING, REMOVAL OF PIPE, GUTTER (SPECIAL), AND WINGWALL DETAILS, REFER TO DRAINAGE PLANS.
 - FOR REMOVALS, UTILITY, AND GUARDRAIL INFORMATION, REFER TO ROADWAY PLANS.
 - FOR ROADWAY GEOMETRICS, REFER TO ROADWAY PLANS.
 - GEOTECHNICAL INFORMATION AND RECOMMENDATIONS CAN BE FOUND IN THE DRAFT GEOTECHNICAL INVESTIGATION REPORT, 1602 GOLD RUN TO SALINA JUNCTION, BOULDER COUNTY, COLORADO, DATED JANUARY 13, 2016.
 - GROUND NAILS ARE GENERICALLY SHOWN. SEE GROUND NAIL LAYOUT FOR ACTUAL LOCATIONS.

- KEYNOTES:**
- EXISTING ROCK WALL TO BE REMOVED TO THE LIMITS OF WALL 1.
 - THE CONTRACTOR SHALL ADJUST THE TOP OF WALL TO MATCH INTO EXISTING WALL.

CURVE W1-1 DATA

Δ = 15° 22' 12" RT
 R = 120.35'
 L = 32.28'
 T = 16.24'
 PI 100+83.86
 N 263834.97
 E 32659.01



60% SET

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

| NO. | DATE | REVISION DESCRIPTION: |
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BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION

Michael Baker INTERNATIONAL

DESIGNED: DLT
 CAD: BMT
 CHECKED: []
 DATE: 2/5/2016

GOLD RUN ROAD
RETAINING WALL 1
GENERAL LAYOUT (1 OF 2)

PROJECT NO: 4043.9EPT12C38 SHEET NO: 139

DESIGN DATA:

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

DESIGN METHOD: LOAD AND RESISTANCE FACTOR DESIGN (LRFD)

SEISMIC ZONE 1

REINFORCED CONCRETE:

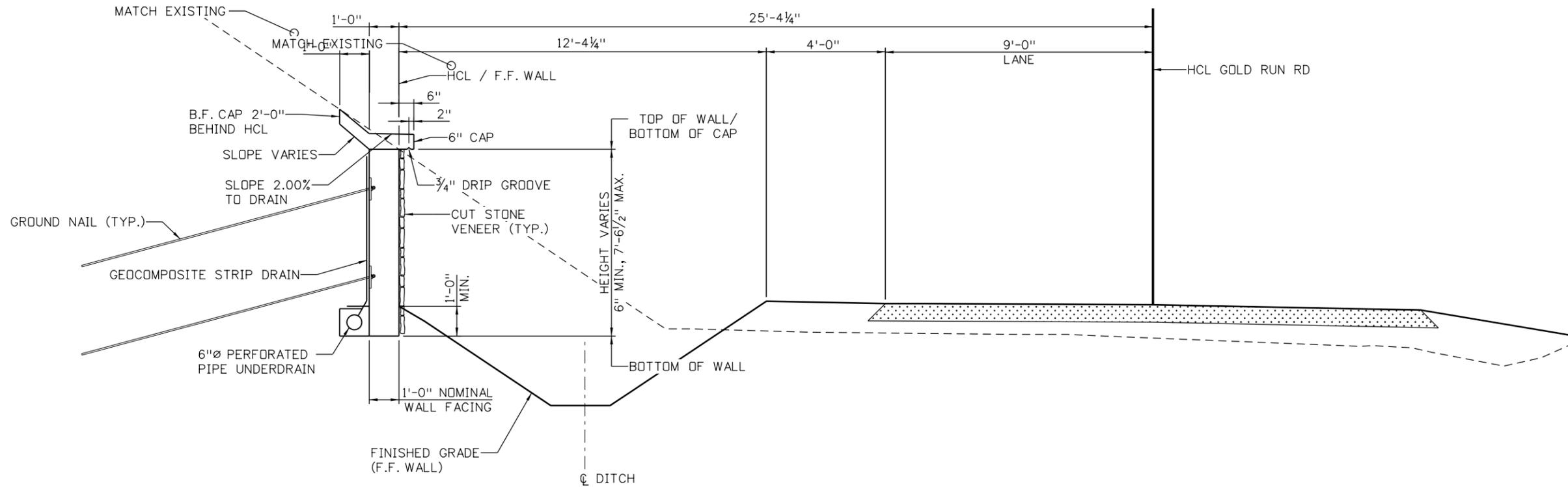
CLASS D CONCRETE: $f'_c = 4,500$ PSI
 REINFORCING STEEL: $f_y = 60,000$ PSI
 SEVERITY OF SULFATE EXPOSURE: CLASS 0

SOIL PROPERTIES:

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

NOTES:

- FOR FINISHED GRADING REFER TO DRAINAGE PLANS.
- FOR ARCHITECTURAL DETAILS, REFER TO CUT STONE VENEER DETAILS SHEET.
- THE CONTRACTOR SHALL NOT DISTURB THE EXISTING GROUND CONDITIONS EXCEPT AS NECESSARY TO INSTALL THE WALL FOUNDATION AND COMPLETE FINISHED GRADING.
- GEOTECHNICAL INFORMATION AND RECOMMENDATIONS CAN BE FOUND IN THE DRAFT GEOTECHNICAL INVESTIGATION REPORT, 1602 GOLD RUN TO SALINA JUNCTION, BOULDER COUNTY, COLORADO, DATED JANUARY 13, 2016.
- GROUND NAILS ARE GENERICALLY SHOWN.



TYPICAL SECTION

LOOKING AHEAD STATION



60% SET

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



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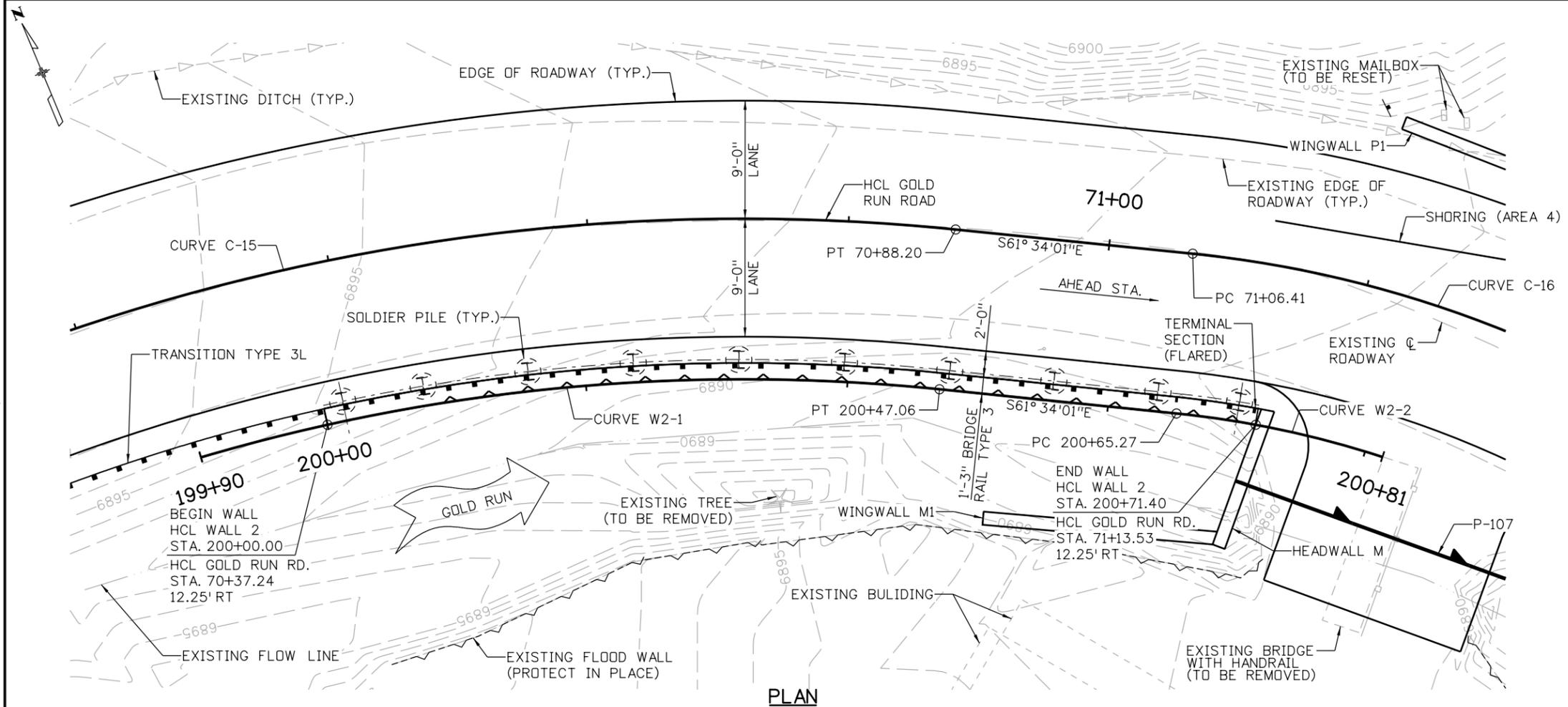
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ENGINEERING DIVISION
 Michael Baker INTERNATIONAL

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| DESIGNED: DLT | CAD: BMT | CHECKED: | DATE: 2/5/2016 |
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GOLD RUN ROAD
RETAINING WALL 1
GENERAL LAYOUT (2 OF 2)
 PROJECT NO: 4043.SEPT12C38 SHEET NO: 140

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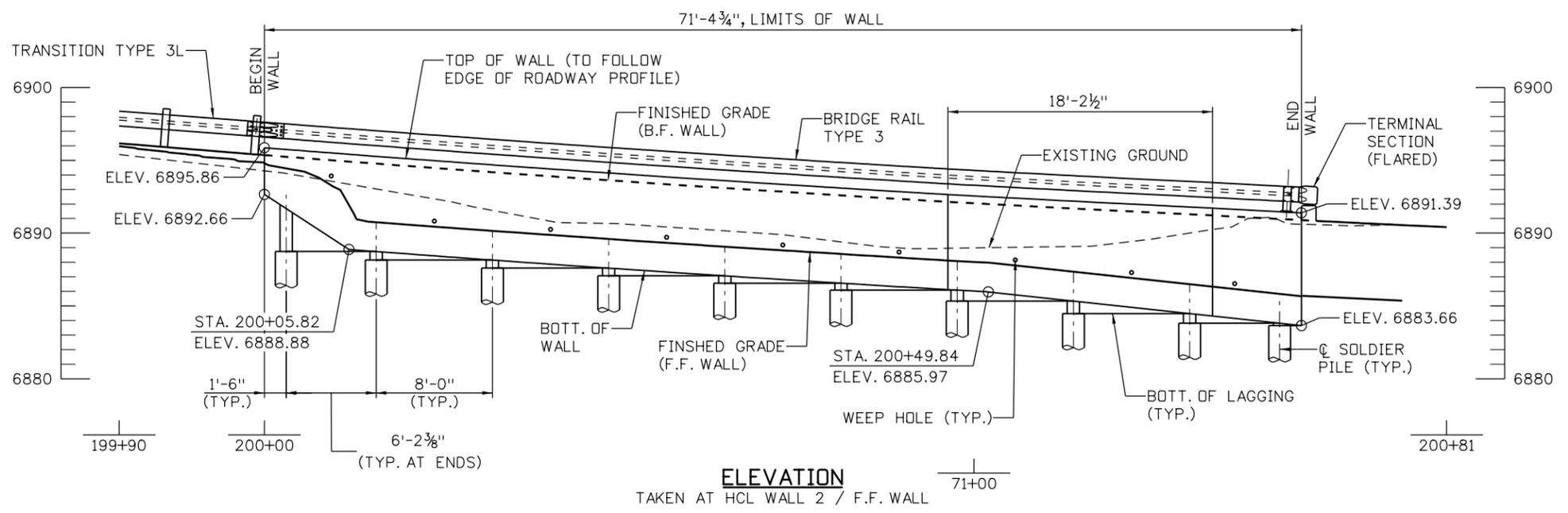
- NOTES:**
1. FOR FINISHED GRADING, REMOVAL OF PIPE, PIPE, HEADWALL, AND WINGWALL DETAILS, REFER TO DRAINAGE PLANS.
 2. FOR REMOVALS, RESETS, UTILITY, AND GUARDRAIL INFORMATION, REFER TO ROADWAY PLANS.
 3. FOR ROADWAY GEOMETRICS, REFER TO ROADWAY PLANS.
 4. CHANNEL CAPACITY WILL NEED TO BE REEVALUATED ONCE SURVEY CAN BE OBTAINED FOR THE EXISTING FLOOD WALL RECENTLY UNDER CONSTRUCTION. THIS MAY IMPACT WALL LIMITS AND CHANNEL GRADING.
 5. FOR SHORING (AREA 4), REFER TO DRAINAGE PLANS.
 6. GEOTECHNICAL INFORMATION AND RECOMMENDATIONS CAN BE FOUND IN THE DRAFT GEOTECHNICAL INVESTIGATION REPORT, 1602 GOLD RUN TO SALINA JUNCTION, BOULDER COUNTY, COLORADO, DATED JANUARY 13, 2016.

CURVE W2-1 DATA

Δ = 22°07'37" RT
 R = 147.75'
 L = 57.06'
 T = 28.89'
 PI = 200+18.89
 N = 263363.97
 E = 34796.46

CURVE W2-2 DATA

Δ = 12°11'37" RT
 R = 75.75'
 L = 16.12'
 T = 8.09'
 PI = 200+73.36
 N = 263337.69
 E = 34844.99

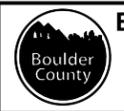


60% SET

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



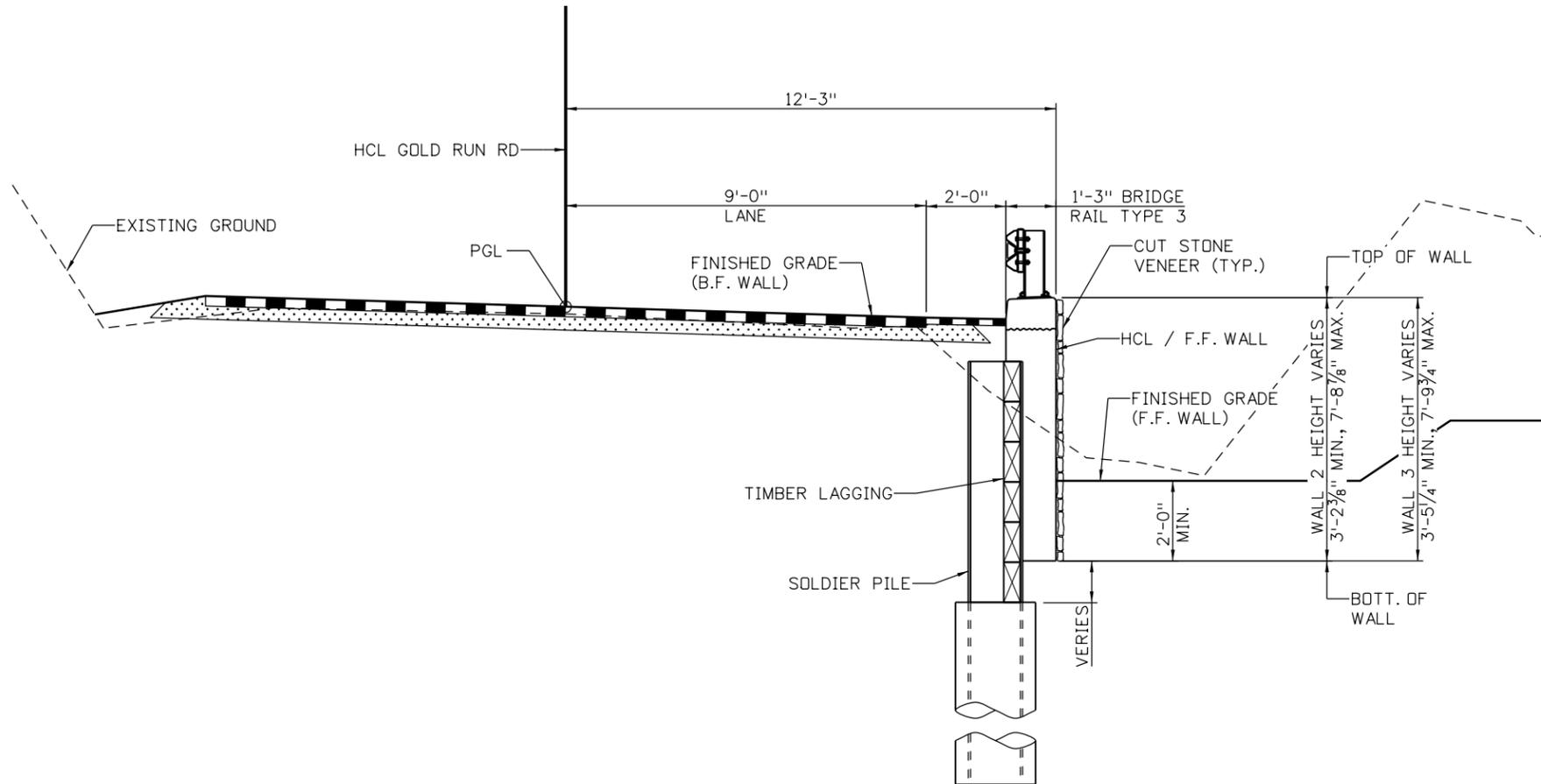
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BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION
 Michael Baker INTERNATIONAL
 DESIGNED: DLT CAD: BMT CHECKED: DATE: 2/5/2016

GOLD RUN ROAD
RETAINING WALL 2
GENERAL LAYOUT (1 OF 2)
 PROJECT NO: 4043.SEPT12C38 SHEET NO: 141

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WALL 2 & 3 TYPICAL SECTION

WALL 2 SHOWN, WALL 3 SIMILAR
LOOKING AHEAD ROADWAY STATION

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)
 DEAD LOAD: ASSUMES 225 LBS. PER LINEAR FT. FOR BRIDGE RAIL TYPE 3
 VEHICULAR COLLISION FORCE: TEST LEVEL 2 (TL-2)
 SEISMIC ZONE 1
 REINFORCED CONCRETE:

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

CAISSON CONCRETE: CLASS BZ CONCRETE: $f'_c = 4,000$
 SEVERITY OF SULFATE EXPOSURE: CLASS 0

CAISSON CASING: AASHTO M270 (AST) $f_y = 42,000$

SOIL PROPERTIES:
 ABOVE BOTTOM OF WALL:
 SOIL UNIT WEIGHT: 120 PCF
 SOIL FRICTION ANGLE: 32°
 ACTIVE HORIZONTAL PRESSURE COEFFICIENT WITH LEVEL BACKSLOPE: 0.238
 BELOW BOTTOM OF WALL:
 SOIL UNIT WEIGHT: 135 PCF
 SOIL FRICTION ANGLE: 38°
 ACTIVE HORIZONTAL PRESSURE COEFFICIENT WITH LEVEL BACKSLOPE: 0.283
 PASSIVE HORIZONTAL PRESSURE COEFFICIENT WITH LEVEL FORESLOPE: 1.290

NOTES:

- FOR FINISHED GRADING REFER TO DRAINAGE PLANS.
- FOR CUT STONE VENEER DETAILS, REFER TO ARCHITECTURAL DETAILS SHEET.
- THE CONTRACTOR SHALL NOT DISTURB THE EXISTING GROUND CONDITIONS EXCEPT AS NECESSARY TO INSTALL THE WALL FOUNDATION AND COMPLETE FINISHED GRADING.
- CHANNEL CAPACITY WILL NEED TO BE REEVALUATED ONCE SURVEY CAN BE OBTAINED FOR THE EXISTING FLOOD WALL RECENTLY UNDER CONSTRUCTION. THIS MAY IMPACT WALL LIMITS AND CHANNEL GRADING.
- GEOTECHNICAL INFORMATION AND RECOMMENDATIONS CAN BE FOUND IN THE DRAFT GEOTECHNICAL INVESTIGATION REPORT, 1602 GOLD RUN TO SALINA JUNCTION, BOULDER COUNTY, COLORADO, DATED JANUARY 13, 2016.

60% SET

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



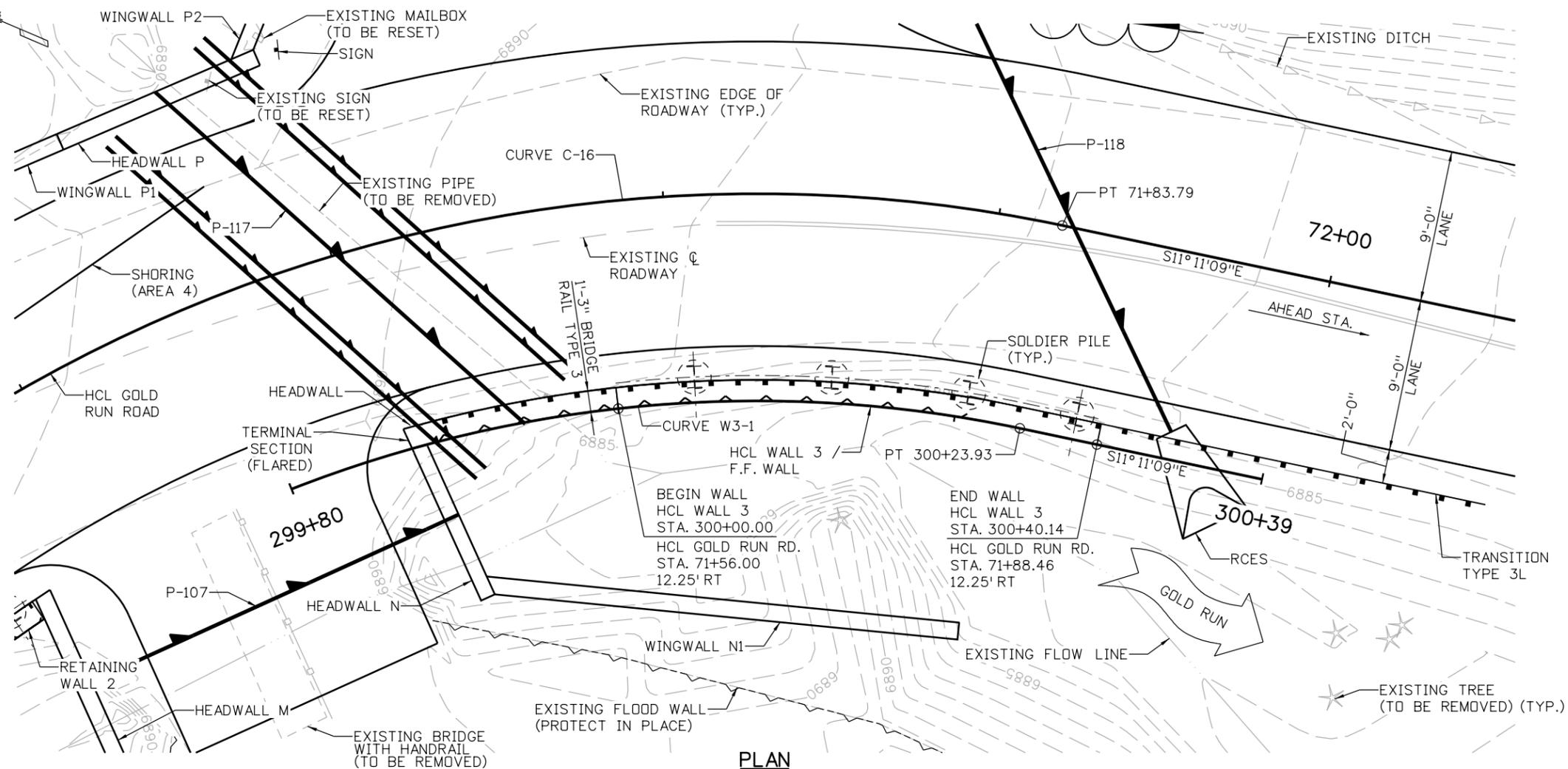
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BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION
 Michael Baker INTERNATIONAL
 DESIGNED: DLT
 CAD: BMT
 CHECKED: DATE: 2/5/2016

GOLD RUN ROAD
RETAINING WALL 2
GENERAL LAYOUT (2 OF 2)
 PROJECT NO: 4043.SEPT12C38 SHEET NO: 142

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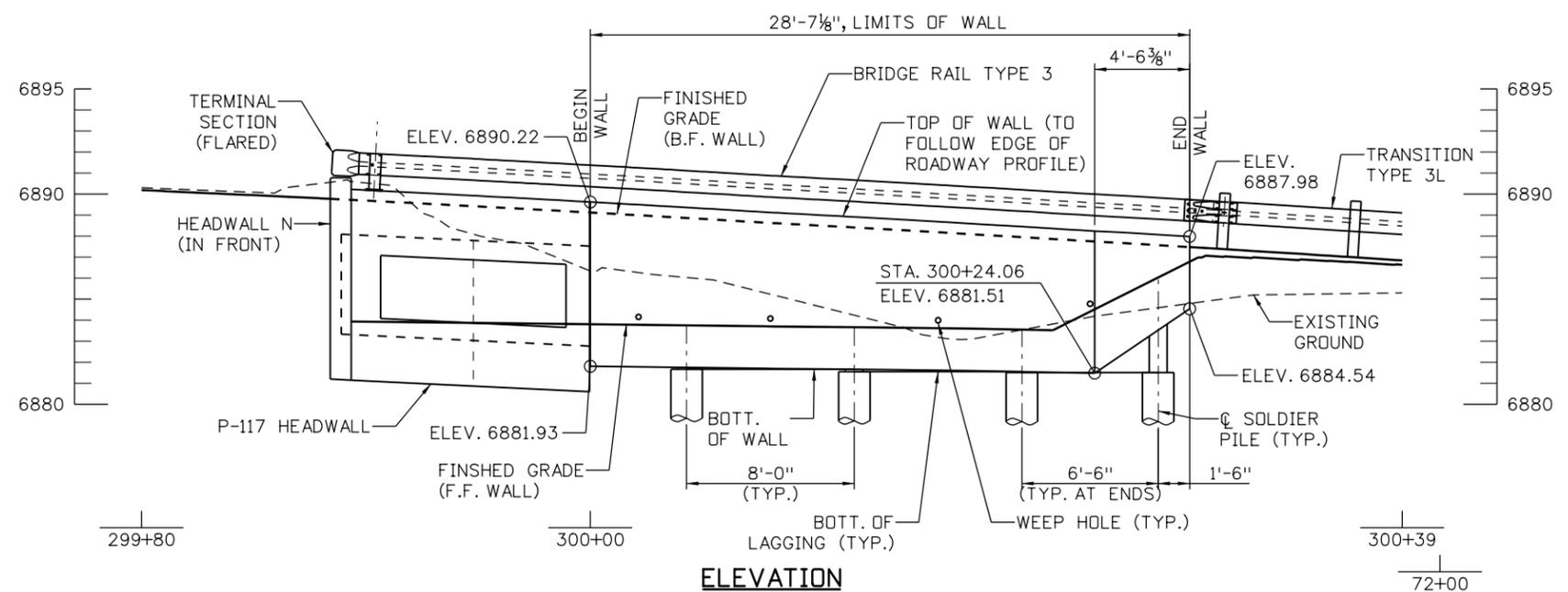
PLAN

NOTES:

1. FOR FINISHED GRADING, REMOVAL OF PIPE, PIPE, HEADWALL, AND WINGWALL DETAILS, REFER TO DRAINAGE PLANS.
2. FOR REMOVALS, RESETS, UTILITY, AND GUARDRAIL INFORMATION, REFER TO ROADWAY PLANS.
3. FOR ROADWAY GEOMETRICS, REFER TO ROADWAY PLANS.
4. CHANNEL CAPACITY WILL NEED TO BE REEVALUATED ONCE SURVEY CAN BE OBTAINED FOR THE EXISTING FLOOD WALL RECENTLY UNDER CONSTRUCTION. THIS MAY IMPACT WALL LIMITS AND CHANNEL GRADING.
5. FOR SHORING (AREA 4), REFER TO DRAINAGE PLANS.
6. GEOTECHNICAL INFORMATION AND RECOMMENDATIONS CAN BE FOUND IN THE DRAFT GEOTECHNICAL INVESTIGATION REPORT, 1602 GOLD RUN TO SALINA JUNCTION, BOULDER COUNTY, COLORADO, DATED JANUARY 13, 2016.
7. FOR TYPICAL SECTION DETAILS AND OTHER INFORMATION, REFER TO RETAINING WALL 2 GENERAL LAYOUT (2 OF 2).

CURVE W3-1 DATA

$\Delta = 33^\circ 13' 30''$ RT
 $R = 75.75'$
 $L = 43.93'$
 $T = 22.60'$
 $PI = 300+02.60$
 $N = 263311.79$
 $E = 34871.74$



ELEVATION

TAKEN AT HCL WALL 3 / F.F. WALL



60% SET

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



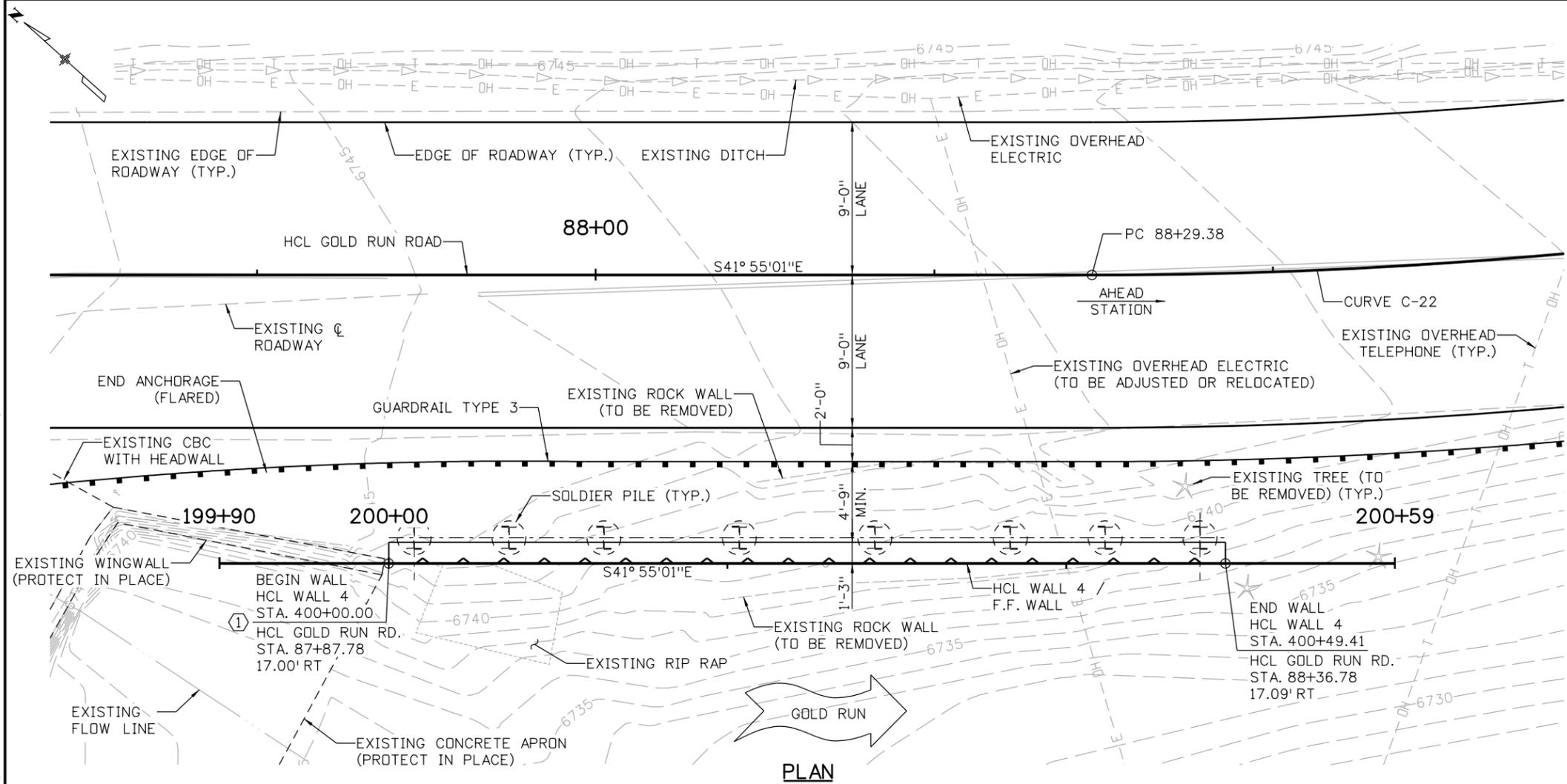
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BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION
 Michael Baker INTERNATIONAL
 DESIGNED: DLT CAD: BMT CHECKED: DATE: 2/5/2016

GOLD RUN ROAD
RETAINING WALL 3
GENERAL LAYOUT
 PROJECT NO: 4043.SEPT12C38 SHEET NO: 143

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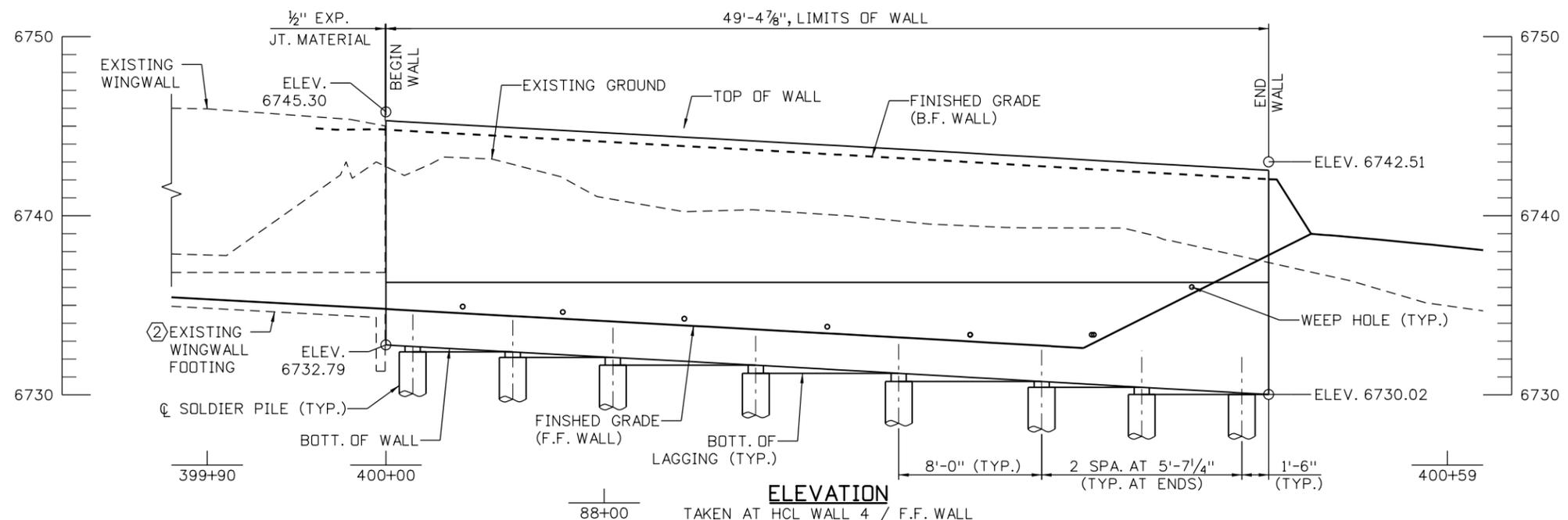
PLAN

NOTES:

1. FOR FINISHED GRADING, REFER TO DRAINAGE PLANS.
2. FOR REMOVALS, UTILITY, AND GUARDRAIL INFORMATION, REFER TO ROADWAY PLANS.
3. FOR ROADWAY GEOMETRICS, REFER TO ROADWAY PLANS.
4. GEOTECHNICAL INFORMATION AND RECOMMENDATIONS CAN BE FOUND IN THE DRAFT GEOTECHNICAL INVESTIGATION REPORT, 1602 GOLD RUN TO SALINA JUNCTION, BOULDER COUNTY, COLORADO, DATED JANUARY 13, 2016.

KEYNOTES:

- ① THE CONTRACTOR SHALL VERIFY THE LOCATION FOR THE END OF EXISTING WINGWALL AND ADJUST THE BEGIN WALL TO MATCH INTO THE EXISTING CONDITIONS.
- ② THE FOUNDATION TYPE AND LIMITS FOR THE EXISTING STRUCTURE ARE NOT SHOWN.



ELEVATION

TAKEN AT HCL WALL 4 / F.F. WALL



60% SET

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

| NO. | DATE | REVISION DESCRIPTION: |
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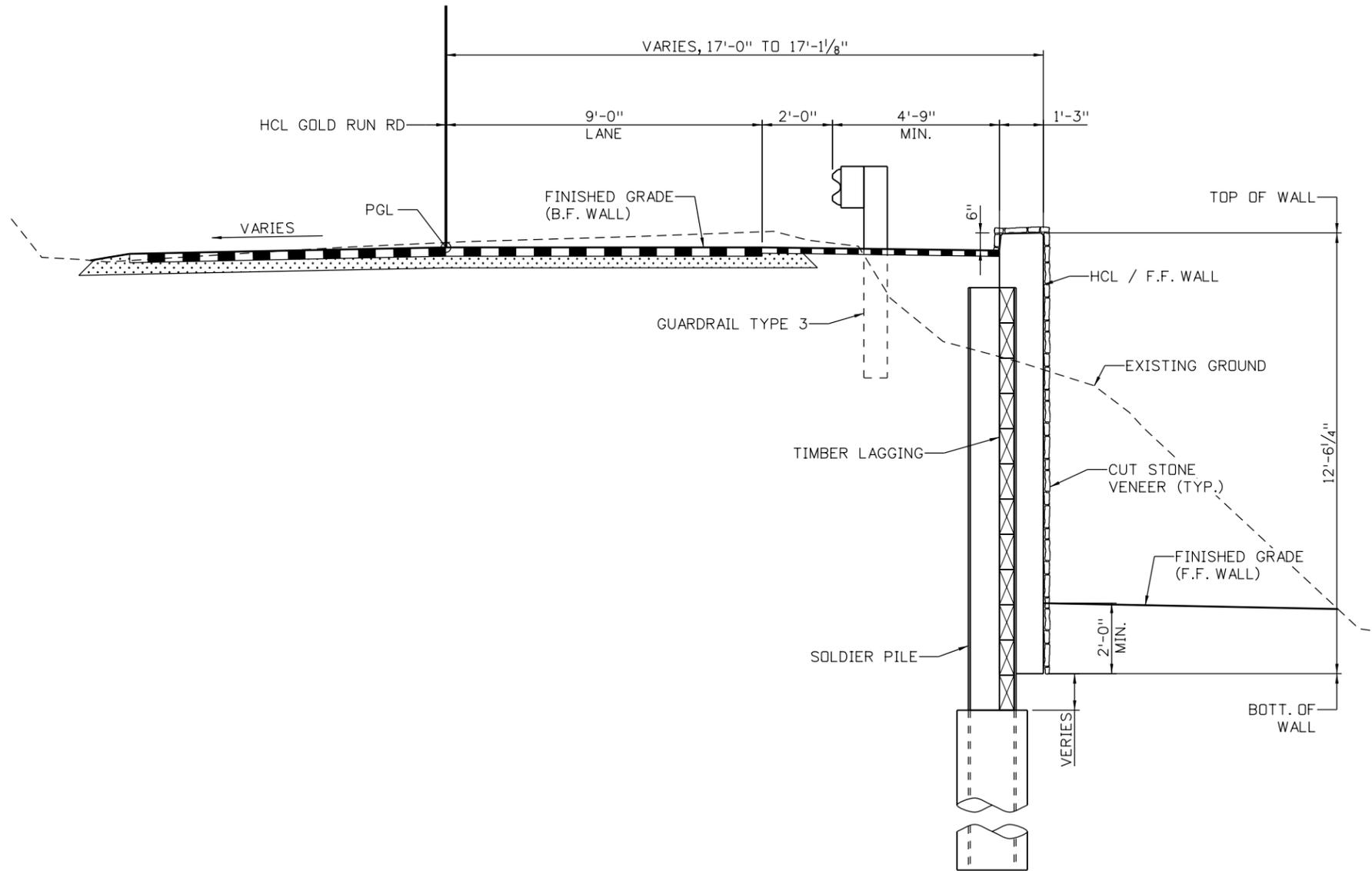
BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION
Michael Baker INTERNATIONAL

GOLD RUN ROAD
RETAINING WALL 4
GENERAL LAYOUT (1 OF 2)

DESIGNED: **DLT** CAD: **BMT** CHECKED: DATE: **2/5/2016**

PROJECT NO: 4043.SEPT12C38 SHEET NO: 144

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WALL 4 TYPICAL SECTION
LOOKING AHEAD ROADWAY STATION

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)
 DEAD LOAD: ASSUMES 225 LBS. PER LINEAR FT. FOR BRIDGE RAIL TYPE 3
 VEHICULAR COLLISION FORCE: TEST LEVEL 2 (TL-2)
 SEISMIC ZONE 1
 REINFORCED CONCRETE:

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

CAISSON CONCRETE: CLASS BZ CONCRETE: $f'_c = 4,000$
 SEVERITY OF SULFATE EXPOSURE: CLASS 0

CAISSON CASING: AASHTO M270 (ASTM A500 GRADE B) GRADE 42: $f_y = 42,000$

SOIL PROPERTIES:
 ABOVE BOTTOM OF WALL:
 SOIL UNIT WEIGHT: 120 PCF
 SOIL FRICTION ANGLE: 32°
 ACTIVE HORIZONTAL PRESSURE COEFFICIENT WITH LEVEL BACKSLOPE: 0.238
 BELOW BOTTOM OF WALL:
 SOIL UNIT WEIGHT: 135 PCF
 SOIL FRICTION ANGLE: 38°
 ACTIVE HORIZONTAL PRESSURE COEFFICIENT WITH LEVEL BACKSLOPE: 0.283
 PASSIVE HORIZONTAL PRESSURE COEFFICIENT WITH LEVEL FORESLOPE: 1.290

NOTES:

- FOR FINISHED GRADING REFER TO DRAINAGE PLANS.
- FOR CUT STONE VENEER DETAILS, REFER TO ARCHITECTURAL DETAILS SHEET.
- THE CONTRACTOR SHALL NOT DISTURB THE EXISTING GROUND CONDITIONS EXCEPT AS NECESSARY TO INSTALL THE WALL FOUNDATION AND COMPLETE FINISHED GRADING.
- GEOTECHNICAL INFORMATION AND RECOMMENDATIONS CAN BE FOUND IN THE DRAFT GEOTECHNICAL INVESTIGATION REPORT, 1602 GOLD RUN TO SALINA JUNCTION, BOULDER COUNTY, COLORADO, DATED JANUARY 13, 2016.

60% SET

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

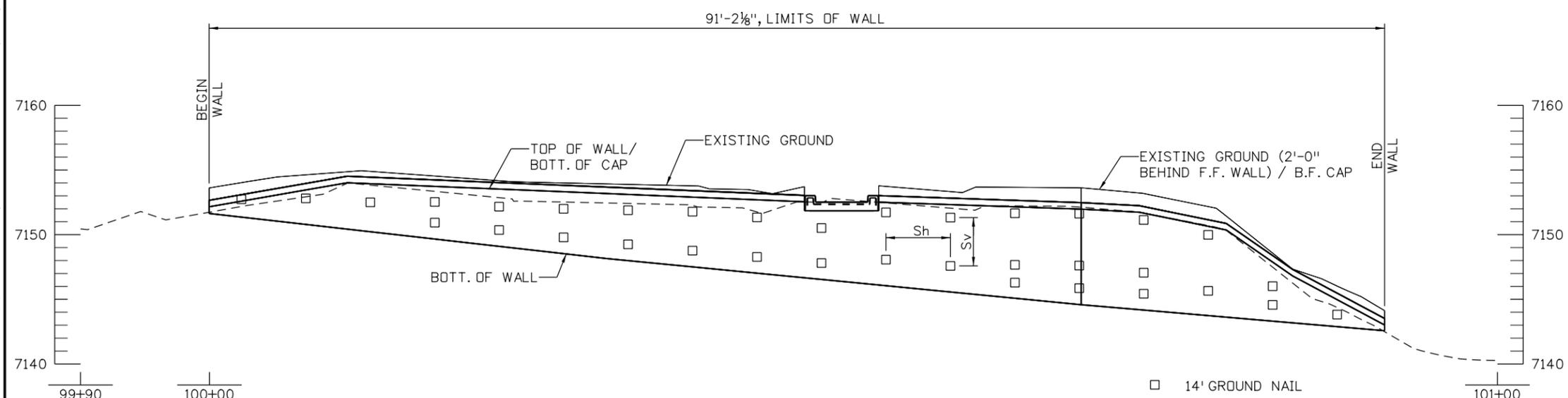
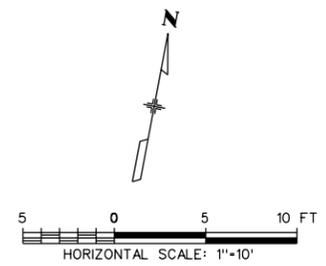
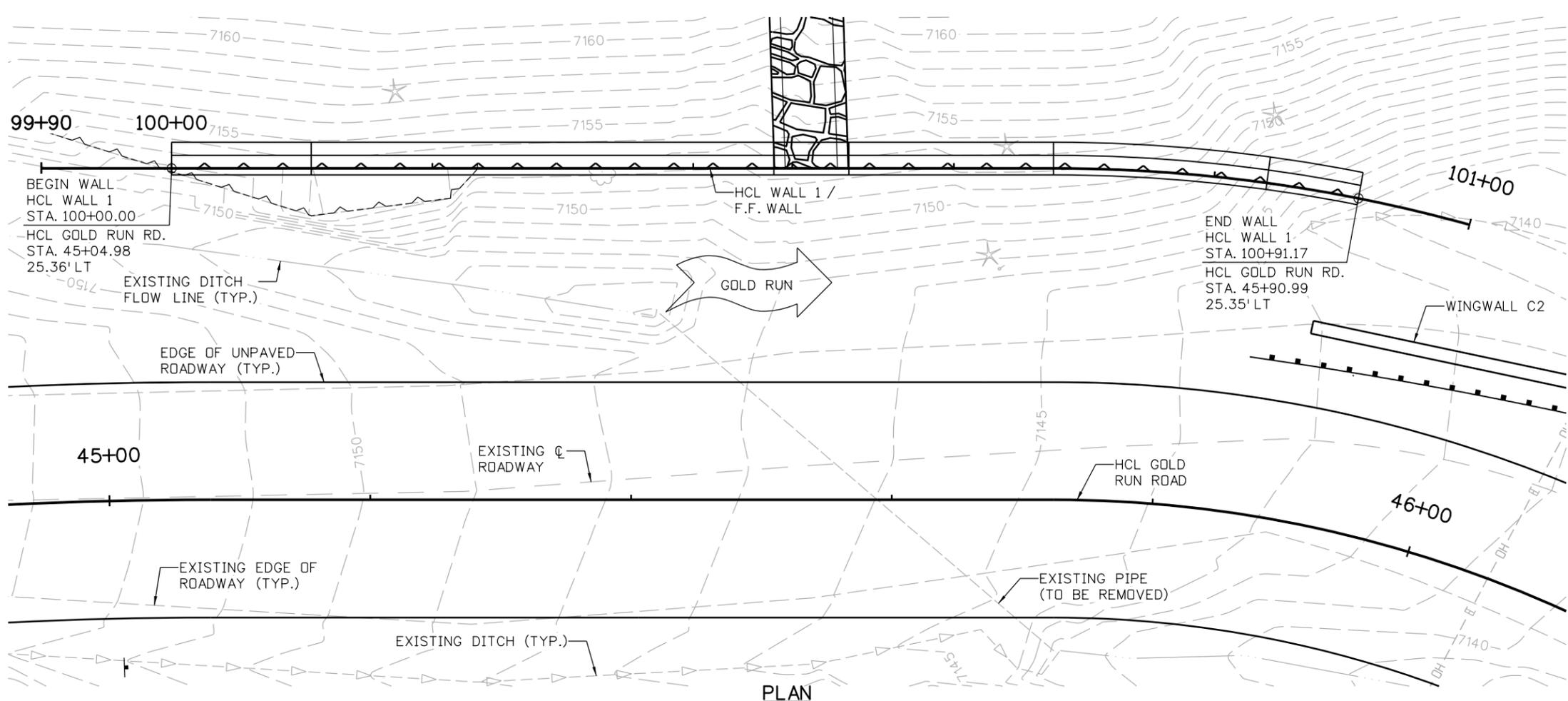


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ENGINEERING DIVISION
 Michael Baker INTERNATIONAL
 DESIGNED: DLT CAD: BMT CHECKED: DATE: 2/5/2016

GOLD RUN ROAD
RETAINING WALL 4
GENERAL LAYOUT (2 OF 2)
 PROJECT NO: 4043.SEPT12C38 SHEET NO: 145



- 14' GROUND NAIL
- Sv = GROUND NAIL VERTICAL SPACING
- Sh = GROUND NAIL HORIZONTAL SPACING
- Sv = 5'
- Sh = 4'

Mike Wolf 12:58:44 PM p:\v\DCPWAPP1\br.mbakercorp.com\p\prod\Documents\Projects\Lakewood\Office\Boulder_County_Emergency_Transportation\T02\05_Design\01_Geotech\138200_GNW_WALL_01.dgn

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Mike Wolf 1:26:20 PM p:\DCPW\APP\lbr.makercorp.com\pwwprod\Documents\Projects\Lakewood\Office\Boulder_County_Emergency_Transportation\T02\05_Design\01_Geotech\Gold Run_GNW_Notes.dgn

1.0 GENERAL NOTES

- 1.1 EXCEPT AS SHOWN IN THE PLANS, STRUCTURE EXCAVATION AND BACKFILL SHALL BE IN ACCORDANCE WITH M-206-1.
- 1.2 THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE STABILITY OF STRUCTURES, INCLUDING EXCAVATIONS, DURING CONSTRUCTION.
- 1.3 EXPANSION JOINT MATERIAL SHALL MEET AASHTO SPECIFICATION M213.
- 1.4 ALL REINFORCING STEEL SHALL BE EPOXY-COATED UNLESS OTHERWISE NOTED. (N) DENOTES NON-COATED REINFORCING STEEL.

2.0 DESIGN DATA

- 2.1 THE SOIL NAIL WALL HAS BEEN DESIGNED IN GENERAL ACCORDANCE WITH PROCEDURES CONTAINED IN THE FHWA "MANUAL FOR DESIGN AND CONSTRUCTION MONITORING OF SOIL NAIL WALLS", REPORT NO. FHWA-SA-96-069R, USING ALLOWABLE STRESS DESIGN.
- 2.2 REINFORCED CONCRETE:
CLASS D CONCRETE: f' = 4,500 psi
REINFORCING STEEL: fy = 60,000 psi
- 2.3 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" ON CENTER.

| BAR SIZE | #4 | #5 | #6 | #7 | #8 | #9 | #10 | #11 |
|--|-------|-------|-------|--------|-------|-------|--------|-------|
| SPLICE LENGTH FOR CLASS B AND CLASS D CONCRETE | 1'-3" | 1'-7" | 2'-5" | 2'-10" | 3'-8" | 4'-8" | 5'-11" | 7'-3" |

- 2.4 WHEN THE CONTRACTOR ELECTS TO SUBSTITUTE EPOXY COATED REINFORCEMENT FOR BLACK REINFORCING BARS, THE MINIMUM LAP SPLICE SHALL BE AS DESCRIBED ABOVE. 2.5 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 AND CLASS D CONCRETE | 1'-1" | 1'-4" | 1'-7" | 1'-11" | 2'-6" | 3'-1" | 3'-11" | 4'-10" |

THE ABOVE SPLICE LENGTHS SHALL BE INCREASED BY 20 PERCENT FOR 3 BAR BUNDLES AND 33 PERCENT FOR 4 BAR BUNDLES. THE ABOVE SPLICE LENGTHS MAY BE REDUCED BY 20% WHEN 3" OF CLEAR COVER EXISTS AND BAR SPACING IS 6" OR GREATER ON CENTER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE STABILITY OF THE STRUCTURE DURING CONSTRUCTION.

STATIONS, ELEVATIONS, AND DIMENSIONS CONTAINED IN THESE PLANS ARE FROM DATA PROVIDED BY MICHAEL BAKER CORP. THE CONTRACTOR SHALL VERIFY ALL DEPENDENT DIMENSIONS IN THE FIELD BEFORE ORDERING OR FABRICATING ANY MATERIAL.

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 811 AT LEAST 2 DAYS (NOT INCLUDING THE DAY OF NOTIFICATION) PRIOR TO ANY EXCAVATION OR OTHER EARTHWORK.

3.0 SOIL NAIL WALLS

- 3.1 SOIL NAILS - GRADE 75 THREADBAR OR EQUIVALENT IN ACCORDANCE WITH ASTM A615 AND EPOXY COATED IN ACCORDANCE WITH ASTM A775
FY=75,000 PSI
- 3.2 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=1,500 PSI MINIMUM 3 DAY
F'C=3,000 PSI MINIMUM 7 DAY
- 3.3 END HARDWARE - NUTS AND WASHERS SHALL BE IN ACCORDANCE WITH SOIL NAIL MANUFACTURER'S RECOMMENDATIONS. BEARING PLATE SHALL BE IN ACCORDANCE WITH ASTM A36, GRADE 36. EPOXY-COATED BEARING PLATE, NUTS AND WASHERS TO BE GALVANIZED AS SHOWN ON THE PLANS.
- 3.4 SHOTCRETE - SHOTCRETE MIX SHALL CONSIST OF TYPE II CEMENT IN ACCORDANCE WITH ASTM C150, POTABLE WATER AND NORMAL WEIGHT AGGREGATE IN ACCORDANCE WITH ASTM C33. ADMIXTURES, IF USED, SHOULD BE NON-CORROSIVE TO STEEL. AT SOME LOCATIONS GROUND MAY BE HIGHLY CORROSIVE AND TYPE II CEMENT WITH 20% OF TYPE F FLYASH MAY BE REQUIRED. CONTRACTOR MAY SUBMIT AN ALTERNATIVE IN SUCH SITUATIONS FOR APPROVAL PRIOR TO INSTALLATION.
F'C=4,500 PSI (28-DAY STRENGTH)
- 3.5 UNLESS OTHERWISE NOTED ON THE PLANS, MINIMUM COVER OF SHOTCRETE REINFORCEMENT AND NAIL END HARDWARE SHOULD BE AS FOLLOWS:
FACE EXPOSED TO WEATHER - 2"
FACE EXPOSED TO SOIL - 3"
- 3.6 WELDED WIRE MESH SHALL BE IN ACCORDANCE WITH ASTM A185.
FY=65,000 PSI
- 3.7 WALERS AND VERTICAL BEARING BARS SHALL BE IN ACCORDANCE WITH ASTM A615.
FY=60,000 PSI.
- 3.8 CENTRALIZERS SHOULD BE PLASTIC AND ATTACHED TO THE NAILS IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
- 3.9 STRIP DRAINS CONSIST OF 12" WIDE DIMPLED CORES WRAPPED IN GEOTEXTILE

4.0 SOIL NAIL WALL CONSTRUCTION SEQUENCE

- 4.1 EXCAVATE/INSTALL ONE LIFT AT A TIME TO A MAXIMUM DEPTH OF SIX (6) FEET. BOULDERS, COBBLES AND/OR BEDROCK MAY BE ENCOUNTERED AT ANY DEPTH OF THE EXCAVATION OR DRILLING. IN THE EVENT CUT HAS ALREADY BEEN EXCAVATED, EXCAVATION DEPTH REQUIREMENTS DO NOT APPLY. IF SLOUGHING GROUND CONDITIONS ARE ENCOUNTERED, SOIL NAILS MAY BE DRILLED AND INSTALLED THROUGH A TEMPORARY STABILIZING BERM AND/OR PLACEMENT OF A SACRIFICIAL REINFORCED SHOTCRETE FLASH COAT MAY BE USED TO TEMPORARILY STABILIZE EXCAVATION PRIOR TO DRILLING SOIL NAILS. CARE SHOULD BE TAKEN DURING INSTALLATION THAT NO GROUND IS LOST FROM BEHIND THE EXISTING SHOTCRETE.

- 4.2 INSTALL SOIL NAILS AT THE SPACINGS AND TO THE LENGTHS SHOWN ON THE PLANS. THE TOP ROW OF SOIL NAILS SHALL BE WITHIN 2.0 FEET OF THE TOP OF THE WALL. THE BOTTOM ROW OF NAILS SHALL BE WITHIN 2 FEET OF THE BOTTOM OF THE WALL. THE TOLERANCE FOR SOIL NAIL LOCATIONS SHALL BE 6 INCHES. TREMIE THE GROUT FROM THE BOTTOM OF THE HOLE UP. INJECTION BARS SHALL BE INSTALLED USING FINAL GROUT TO FLUSH DRILL HOLE WITH CONSTANT GROUT RETURN DURING INSTALLATION.
- 4.3 INSTALL STRIP DRAINS, WELDED WIRE MESH, WALERS AND VERTICAL BEARING BARS AS SHOWN ON THE PLANS. USE PLASTIC CHAIRS TO HOLD THE WELDED WIRE MESH AWAY FROM THE SOIL AS NECESSARY.
- 4.4 INSTALL SHOTCRETE TO THE MINIMUM THICKNESS SHOWN ON THE PLANS AND TO ATTAIN THE MINIMUM COVERAGE'S SPECIFIED HEREIN. GIVE SPECIAL ATTENTION TO FILLING THE VOID IN THE BORE HOLE ABOVE THE GROUT LINE UP TO THE SHOTCRETE LINE. COLD WEATHER PROTECTION MEASURES MAY BE NECESSARY.
- 4.5 INSTALL THE SOIL NAIL END HARDWARE AFTER THE INITIAL LAYER OF SHOTCRETE HAS BEEN INSTALLED. WHILE THE SHOTCRETE IS STILL WET, EMBED THE PLATE INTO THE SHOTCRETE SURFACE UNTIL THERE IS NO VOID BEHIND THE PLATE. HAND TIGHTEN THE NUT. APPLY ADDITIONAL SHOTCRETE LAYER TO ATTAIN MINIMUM COVERAGE FOR THE SOIL NAIL AND END HARDWARE AS INDICATED IN THESE NOTES.
- 4.6 ONCE THE GROUT AND SHOTCRETE OF THE CURRENT LIFT HAVE ATTAINED 50% OF THEIR SPECIFIC STRENGTHS, REPEAT CONSTRUCTION SEQUENCE TO THE BOTTOM OF THE WALL.

5.0 SOIL NAIL WALL DESIGN PARAMETERS

- 5.1 THE FOLLOWING STRENGTH PARAMETERS WERE ASSUMED FOR THE SUBSOILS BASED ON ESTIMATED VALUES FOR FIELD STRENGTH DATA. NO GEOTECHNICAL INVESTIGATION OR BORING DATA ARE AVAILABLE. FOR THIS REASON ALL OF THE SLOPES EVALUATED DURING SOIL NAIL WALL DESIGN ANALYSIS CONSIDERED A FULL VERTICAL HEIGHT OF SOIL ABOVE THE PROVIDED BEDROCK ELEVATION RATHER THAN A SOIL COVER THAT TAPERS UPSLOPE.

| | φ | c | γ | Qall |
|--------------------|-------|-------|-------|---------|
| | (DEG) | (PSF) | (PCF) | (lb/ft) |
| CLAYEY SAND/GRAVEL | 32 | 25 | 120 | 1130 |

- 5.2 NO GROUNDWATER TABLE WAS ASSUMED.

- 5.3 FACTORS OF SAFETY
BEARING CAPACITY - FS=2.5
OVERTURNING - ECCENTRICITY<=B/6
GLOBAL STABILITY - FS=1.35
PULLOUT - FS=2.0
TENDON YIELD REDUCTION FACTOR - y=0.55
FACING FLEXURE FACTOR - f=0.67
FACING PUNCHING FACTOR - f=0.67

φ ANGLE OF INTERNAL FRICTION
c COHESION
γ UNIT WEIGHT
Qall DESIGN SHEAR RESISTANCE BOND STRESS (ALLOWABLE)

6.0 SOIL NAIL WALL SPECIAL NOTES

- 6.1 THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING SLOPE STABILITY ABOVE AND BELOW THE SOIL NAIL WALL DURING CONSTRUCTION.
- 6.2 THE CONTRACTORS ARE RESPONSIBLE FOR FIELD LOCATING ALL NEARBY UTILITIES. CONFLICTING UTILITIES MAY REQUIRE SOIL NAIL WALL REDESIGN, AT ENGINEER'S DISCRETION.
- 6.3 ANALYSIS PERFORMED AND PLANS PROVIDED DO NOT ADDRESS THE STABILITY OF THE ENTIRE NATURAL SLOPE. THE AREAS ANALYZED ARE IN THE IMMEDIATE AREA OF THE SOIL NAIL WALL.
- 6.3 THE BOND STRENGTHS (Q) SHOWN ON THE PLANS ARE THE MINIMUM ASSUMED FOR DESIGN.
- 6.4 SOIL NAIL LENGTHS SHOWN ON THE PLANS ARE THE MINIMUM LENGTHS REQUIRED.
- 6.5 PRIOR TO BEGINNING EXCAVATION FOR THE SOIL NAIL WALL, THE CONTRACTOR SHALL:
 - 6.5.1 SURVEY THE LAYOUT LINE AND TOP OF WALL LINE.
 - 6.5.2 CONFIRM THE LINES, GRADES, AND EXCAVATION LIMITS SHOWN ON THE PLANS.
 - 6.5.3 THE CONTRACTOR SHALL MODIFY THE PLAN WALL PROFILES USING THE FIELD SURVEY INFORMATION AND SUBMIT TO THE ENGINEER FOR REVIEW AND APPROVAL.
 - 6.5.4 YEH AND ASSOCIATES IS NOT RESPONSIBLE FOR QUALITY CONTROL, QUALITY ASSURANCE, CHANGED CONDITIONS, PROBLEMS RESULTING FROM IMPROPER CONSTRUCTION TECHNIQUES, OR CONSTRUCTION SITE SAFETY.
 - 6.5.5 YEH AND ASSOCIATES IS NOT RESPONSIBLE FOR WALL LAYOUT OR WALL DIMENSIONS.

CALL UTILITY NOTIFICATION CENTER OF COLORADO
1-800-922-1987 or 811

CALL 3-BUSINESS DAYS (NOT INCLUDING INITIAL DAY OF CONTACT) IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

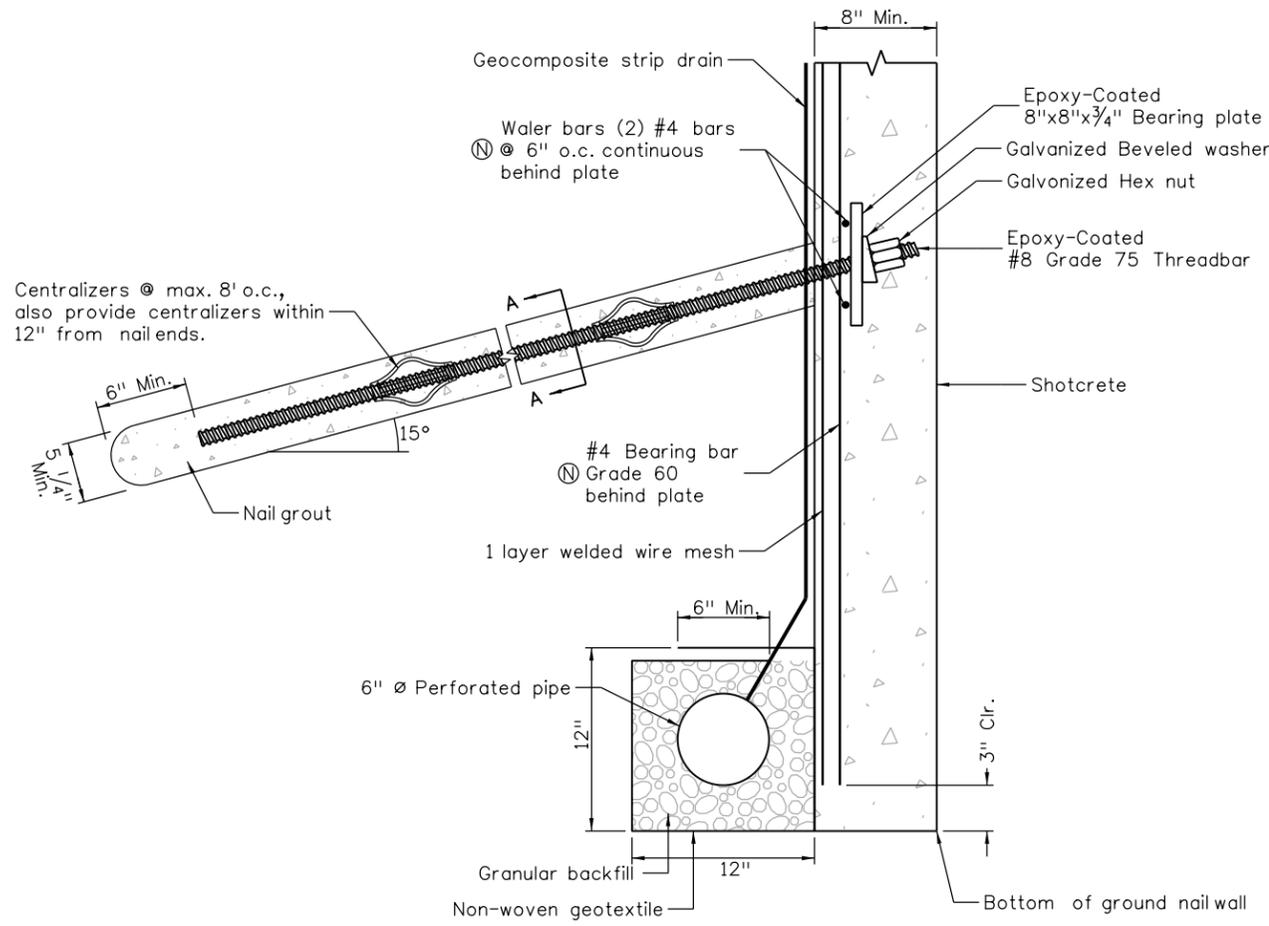
Know what's below.
Call before you dig.



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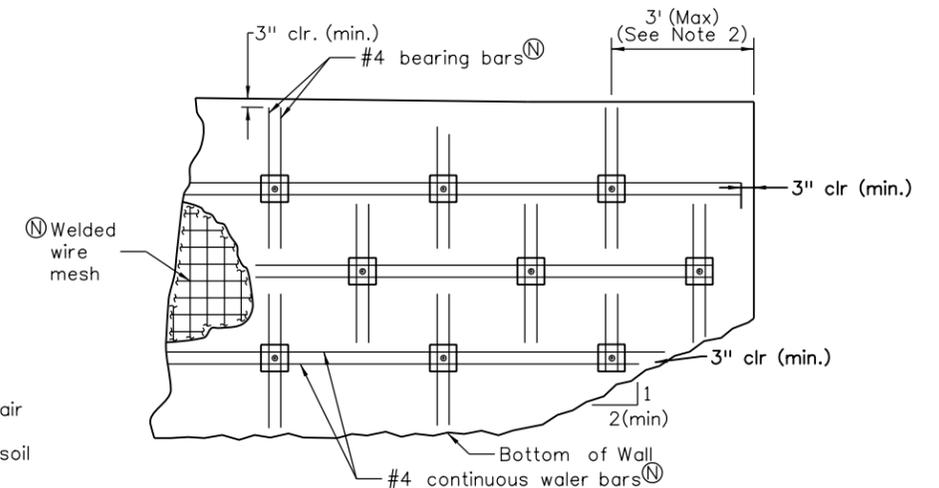


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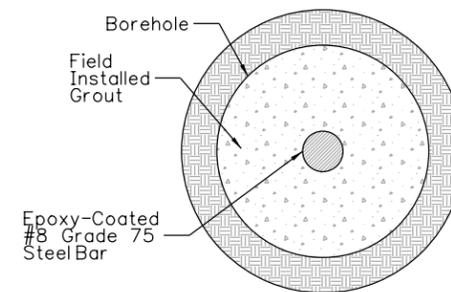


TYPICAL GROUND NAIL DETAIL
NTS

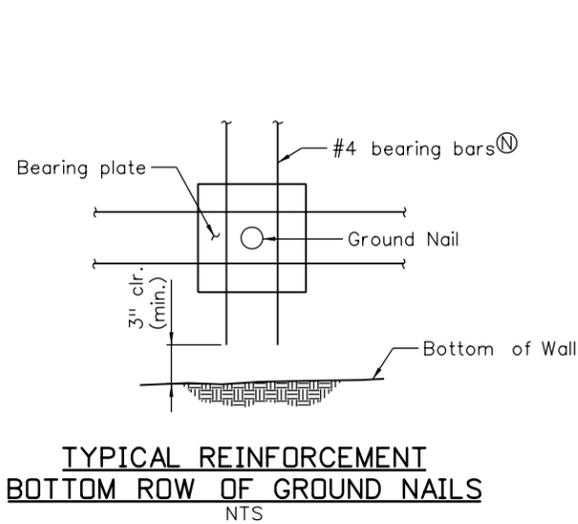
- Notes:
1. Reinforcement of the shotcrete facing shall be installed throughout the entire shotcrete facing, including the facing beyond the ground nails.
 2. Maximum edge distance of 3 ft for each row of ground nails at end of Wall.
 3. The minimum shotcrete thickness is 8 in. for Wall face with 4 in. minimum behind the bearing plate.
 4. (N) denotes non-coated reinforcing steel.
 5. 3" min. cover over nail end and hardware
 6. 2" min. cover on all reinforcing exposed to air
 7. 3" min. cover on all reinforcing exposed to soil



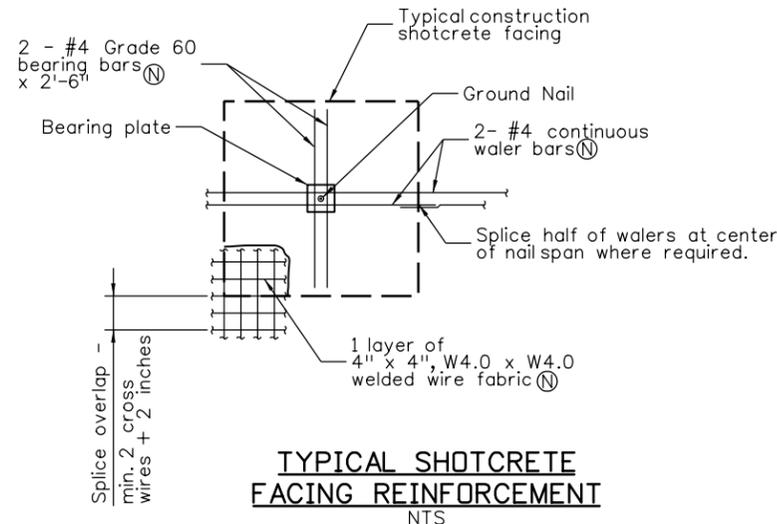
TYPICAL SHOTCRETE FACING REINFORCEMENT - END OF WALL (NOTE 1)
NTS



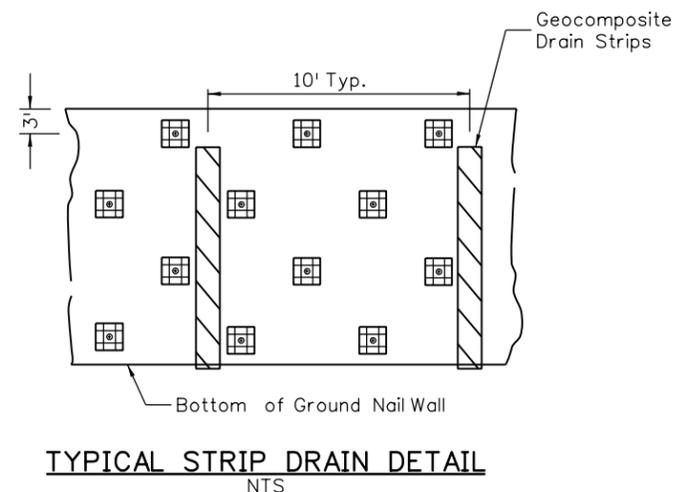
GROUND NAIL CROSS SECTION A-A'
NTS



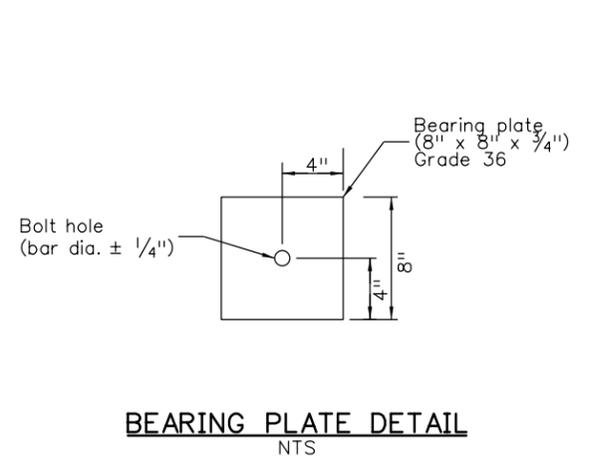
TYPICAL REINFORCEMENT BOTTOM ROW OF GROUND NAILS
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TYPICAL SHOTCRETE FACING REINFORCEMENT
NTS

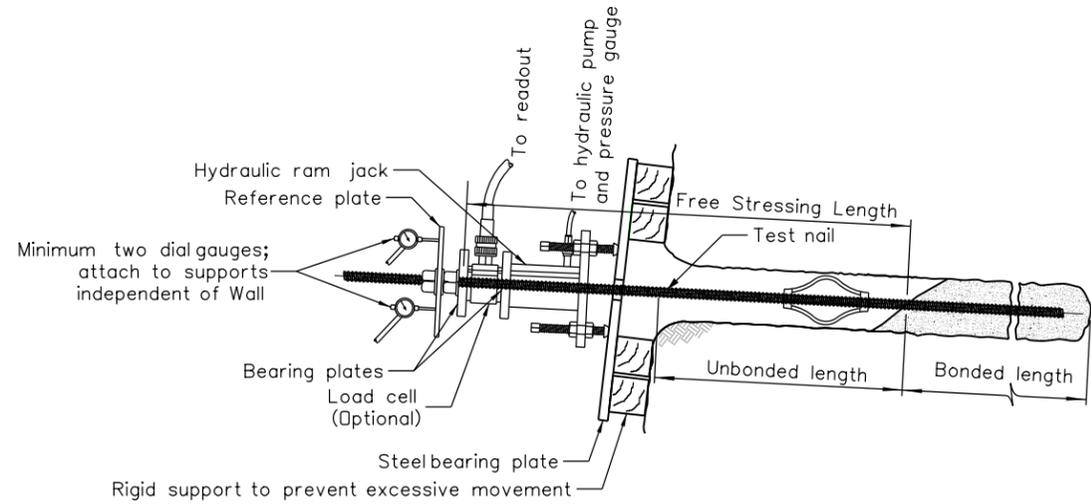


TYPICAL STRIP DRAIN DETAIL
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BEARING PLATE DETAIL
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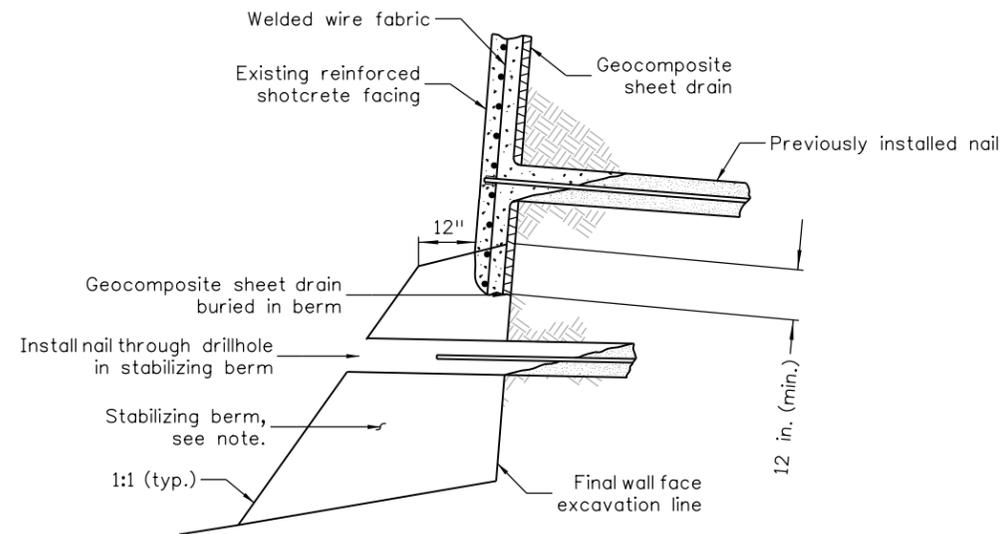
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TYPICAL GROUND NAIL TEST SETUP

GROUND NAIL TESTING NOTES:

1. See specifications for verification and proof test nail requirements,
2. Required ground nail allowable pullout resistance:
As shown on plans
3. The test support system (eg. cribbing, chairs, bearing plates, etc.) shall be sufficient to complete the test without excessive deflection or bearing failure.
4. A minimum of 2 verification tests are required for ground nail Walls. Additional verification tests may be required by the Engineer if ground conditions or construction methods change.
5. A minimum of 5% of the ground nails shall be proof-tested.

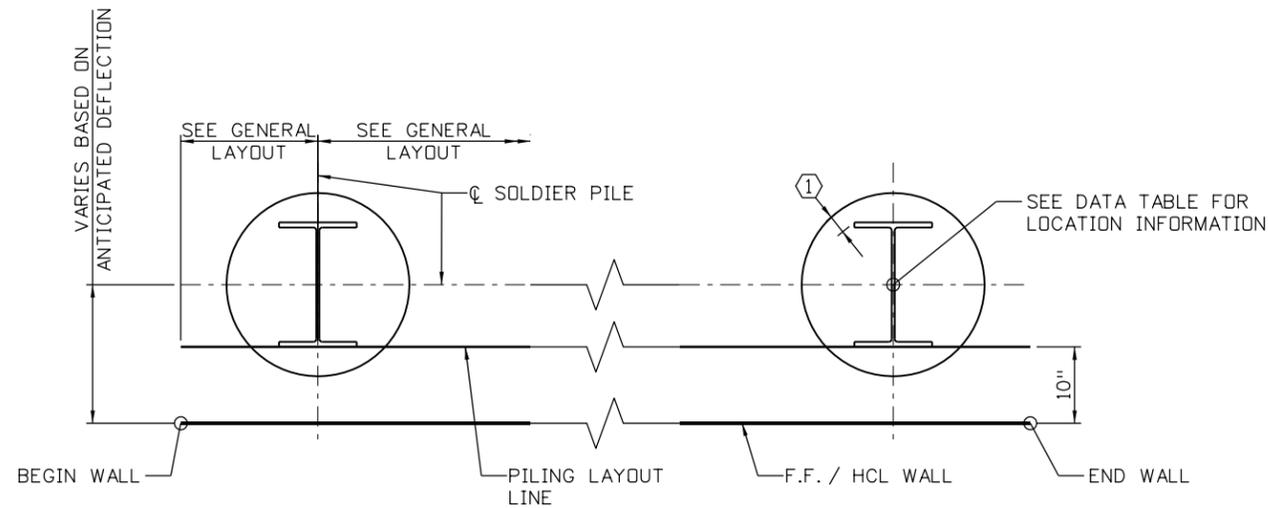


NAIL INSTALLATION THROUGH TEMPORARY STABILIZING BERM
(USE IN CASE OF SLOUGHING GROUND)

Note:
Excavate stabilizing berm to final wall face excavation line for shotcrete placement. Contractor shall carefully excavate stabilizing berm to avoid hitting ground nails buried in the berm.

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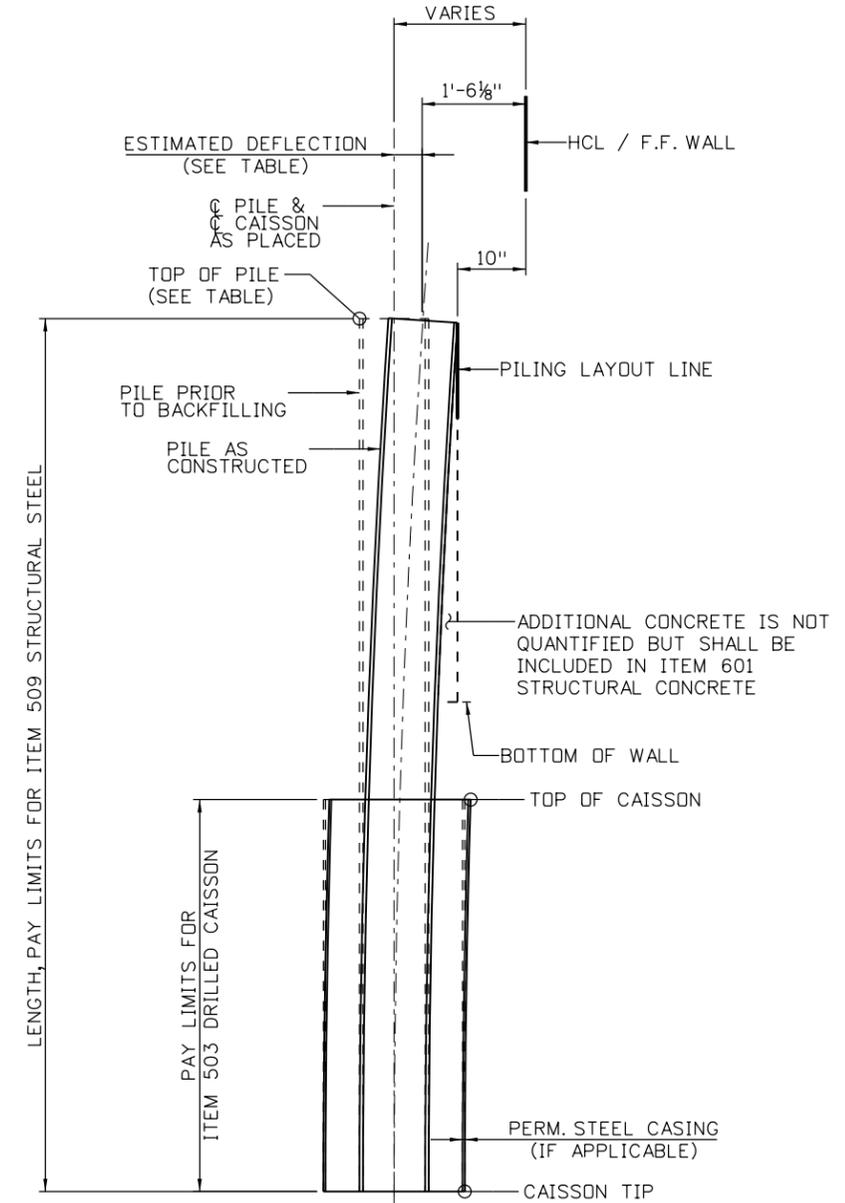
FOUNDATION LAYOUT - PLAN

NOTES:

1. ORIENT ϕ PILING WEB PERPENDICULAR TO F.F. WALL AS SHOWN.
2. TEMPORARY CASING MAY BE REQUIRED TO PREVENT CAVING OF GRANULAR SOILS AND/OR TO REDUCE TO INTRUSION OF GROUND WATER. TEMPORARY CASING AND DEWATERING SHALL BE INCLUDED IN ITEM 503 DRILLED CAISSON.
3. DRILLED CAISSON CONCRETE SHALL BE CONCRETE CLASS BZ.
4. PILING DATA TABLE HAS NOT BEEN DETERMINED AT THIS TIME.

KEYNOTES:

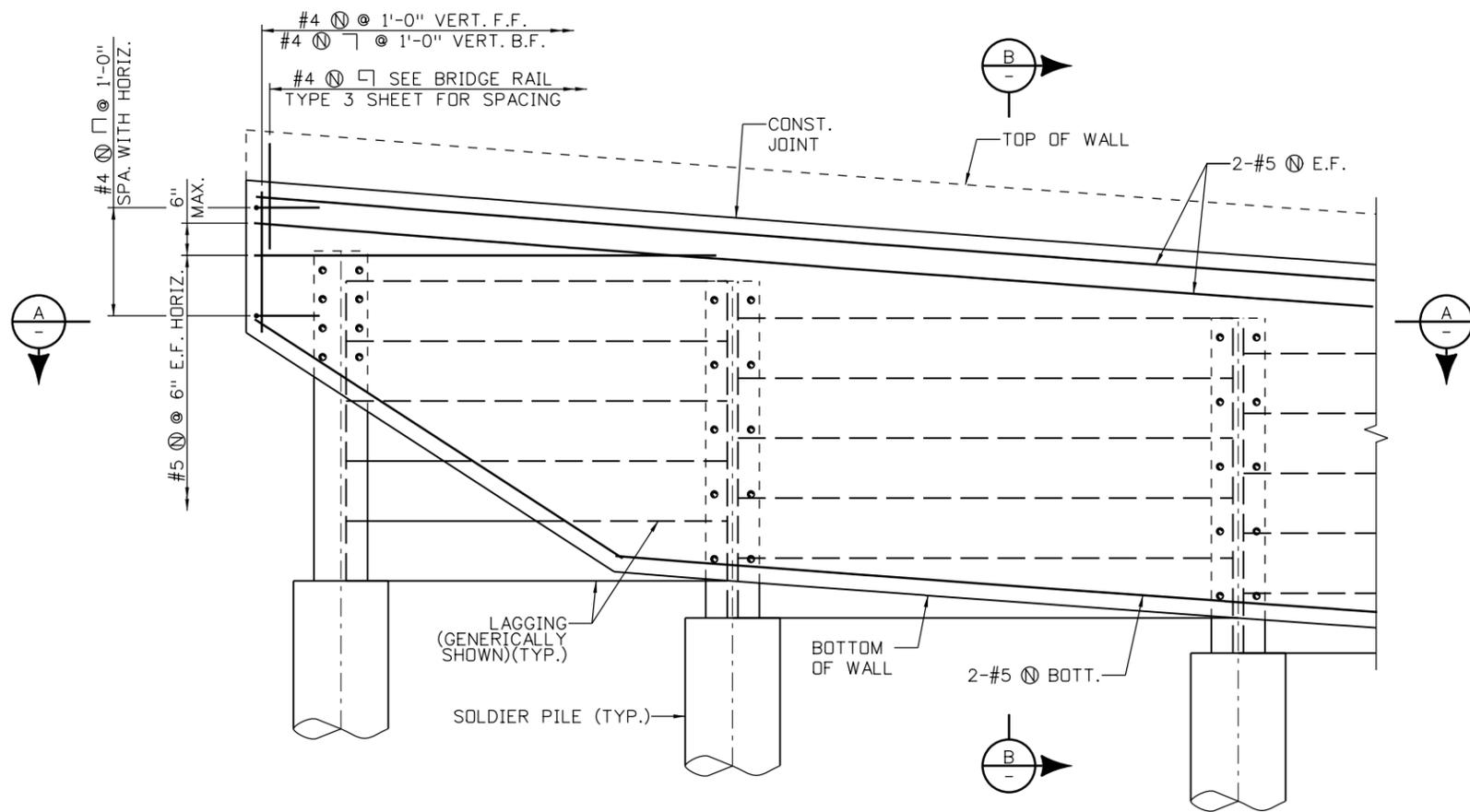
- ① 1 1/2" MINIMUM CLEAR.



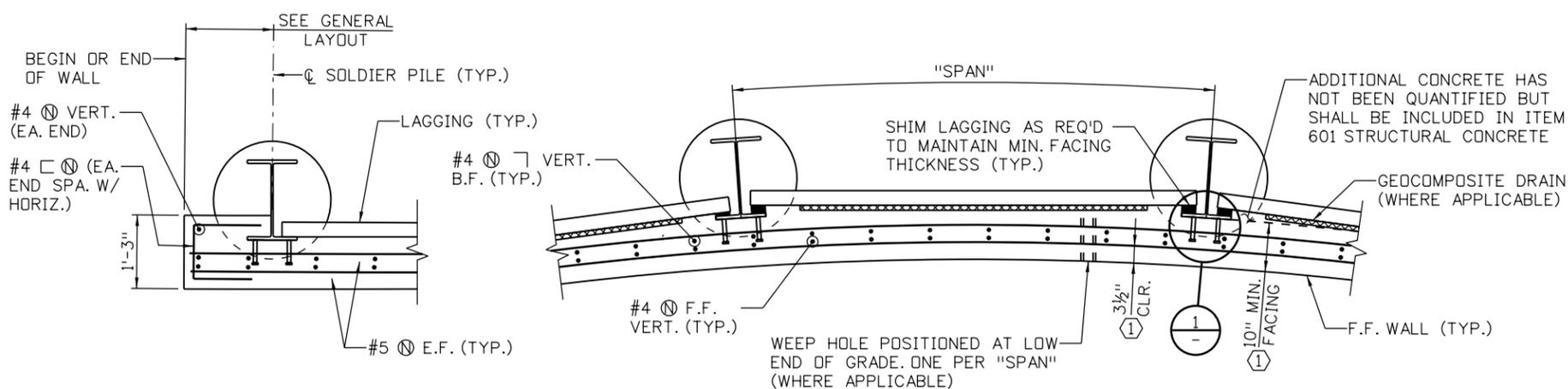
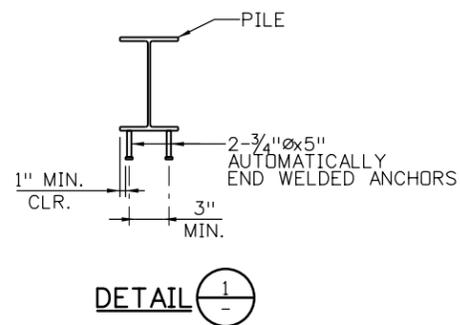
SOLDIER PILE DETAIL
N.T.S.

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| 60% SET | <small>CALL UTILITY NOTIFICATION CENTER OF COLORADO CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES</small> | NO. | DATE | REVISION DESCRIPTION: | BOULDER COUNTY TRANSPORTATION DEPARTMENT ENGINEERING DIVISION Michael Baker INTERNATIONAL | DESIGNED: | CAD: | CHECKED: | DATE: | GOLD RUN ROAD SOLDIER PILE WALL DETAILS (1 OF 2) <small>PROJECT NO: 4043.SEP12C38 SHEET NO: 150</small> |
| | | | | | | <small>DLT</small> <small>BMT</small> | <small>2/5/2016</small> | | | |

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PARTIAL ELEVATION
WALL 2 SHOWN, WALL 3 AND WALL 4 SIMILAR
WEEP HOLES NOT SHOWN



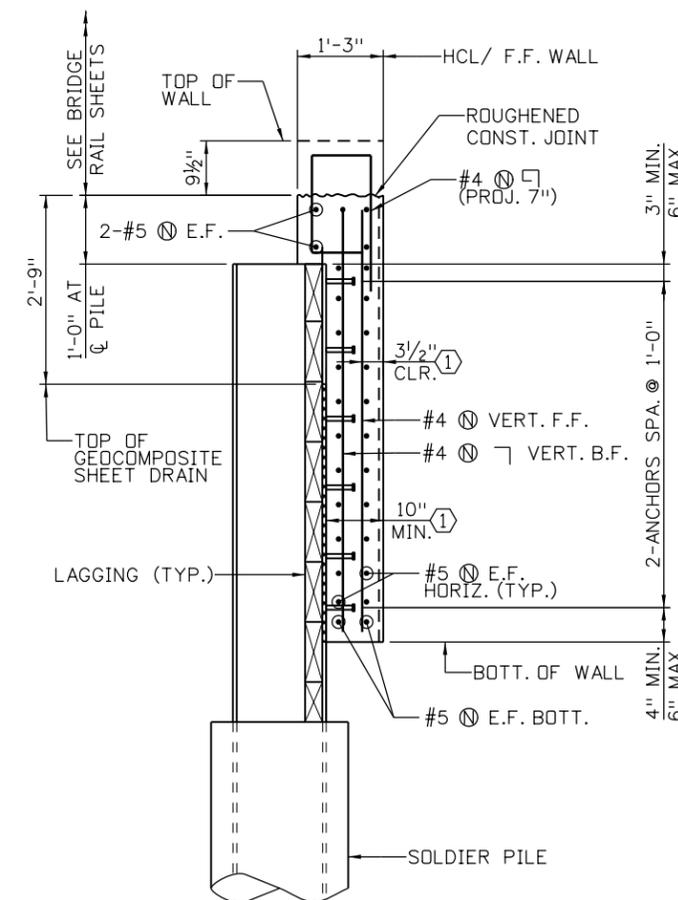
PARTIAL SECTION
WALL 2 SHOWN, OTHERS SIMILAR
FORMLINER DEPTH NOT SHOWN

NOTES:

1. FACING CONCRETE SHALL BE CONCRETE CLASS D.
2. WEEP HOLES AND GEOCOMPOSITE DRAIN ARE NOT REQUIRED WHERE RETAINED GRADE IS LESS THAN 6'-0".
3. WEEP HOLES SHALL BE 2 INCH DIAMETER PVC PIPE, POSITIONED ±3 INCHES ABOVE FINISHED GRADE (F.F.WALL). PROVIDE 1 INCH CLEAR TO REINFORCING.
3. ALL ELEMENTS ASSOCIATED WITH LAGGING, GEOCOMPOSITE SHEET DRAIN, AND PVC PIPE SHALL BE INCLUDED IN ITEM 601 CONCRETE CLASS D (WALL).
4. BRIDGE RAIL NOT SHOWN. FOR BRIDGE RAIL ANCHORAGE, REINFORCING AND OTHER DETAILS, SEE BRIDGE RAIL TYPE 3 SHEETS.
5. FOR ARCHITECTURAL DETAILS, REFER TO WALL GENERAL LAYOUT SHEETS.
6. LAGGING SHALL BE DESIGNED BY THE CONTRACTOR.
7. F.F. WALL SHALL BE PLUMB. SEE SOLDIER PILE DETAIL FOR ADDITIONAL CONCRETE QUANTITIES NOT SHOWN.

KEYNOTES:

- ① DIMENSION SHOWN TO F.F. WALL INCLUDES 1/2" FORMLINER.



TYPICAL SECTION
WEEP HOLES NOT SHOWN

60% SET

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



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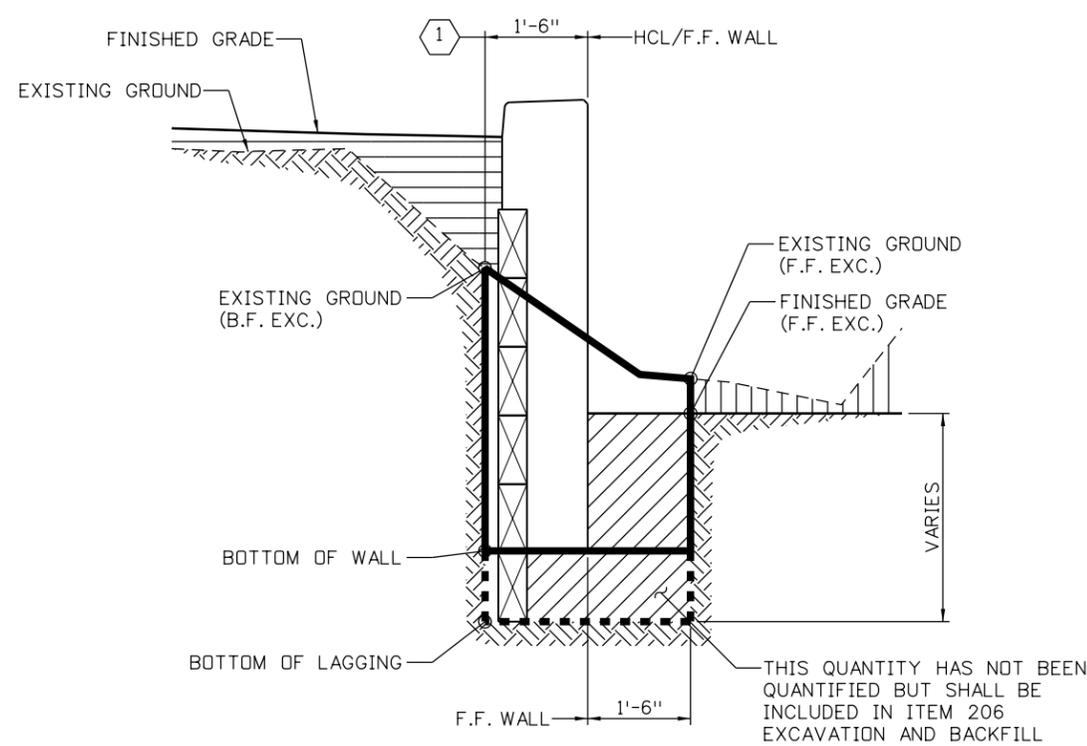


BOULDER COUNTY TRANSPORTATION DEPARTMENT
ENGINEERING DIVISION
Michael Baker INTERNATIONAL

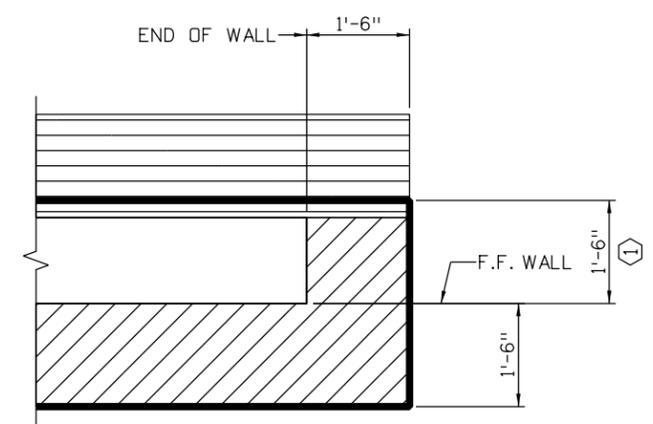
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GOLD RUN ROAD
SOLDIER PILE WALL DETAILS
(2 OF 2)
PROJECT NO: 4043.SEPT12C38 SHEET NO: 151

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TYPICAL SECTION BETWEEN CAISSONS
WALL 2 SHOWN, WALL 3 AND WALL 4 SIMILAR



PLAN - END OF RETAINING WALL DETAIL

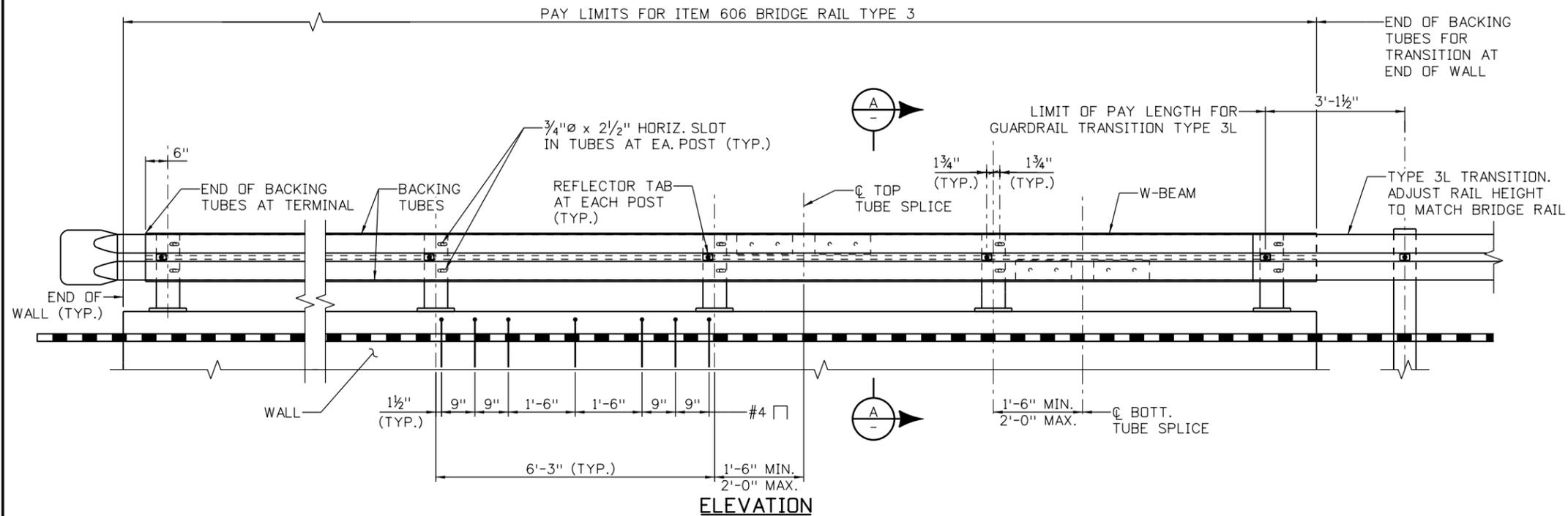
- NOTES:**
1. THIS SHEET GIVES THE MINIMUM EXTENT OF EARTHWORK. THE CONTRACTOR MAY ELECT TO EXTEND THE STRUCTURE EXCAVATION AND STRUCTURE BACKFILL BEYOND THE LIMITS SHOWN. ANY ADDITIONAL EXCAVATION BEHIND THE WALL SHALL BE BACKFILLED WITH STRUCTURE BACKFILL (FLOW-FILL). ANY ADDITIONAL EXCAVATION IN FRONT OF THE WALL SHALL BE BACKFILLED WITH STRUCTURE BACKFILL (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. EXCAVATION AND BACKFILL IN THE DRILLED HOLE OF THE CAISSON SHALL NOT BE PAID FOR SEPERATELY BUT INCLUDED IN ITEM 503 DRILLED CAISSON.
 3. FOR DRAINAGE DETAILS, SEE SOLDIER PILE WALL DETAILS (3 OF 3).

KEYNOTES:
① DIMENSION SHOWN IS USED FOR QUANTITY PURPOSES ONLY AND APPLIES FROM BEGINNING TO END OF WALL.

- LEGEND:**
- PAY LIMITS OF STRUCTURE EXCAVATION
 - LIMITS OF STRUCTURE BACKFILL (CLASS 2)
 - SEE ROADWAY PLANS
 - LIMITS OF UNCLASSIFIED EXCAVATION (SEE ROADWAY PLANS)
 - CONCRETE
 - EARTH

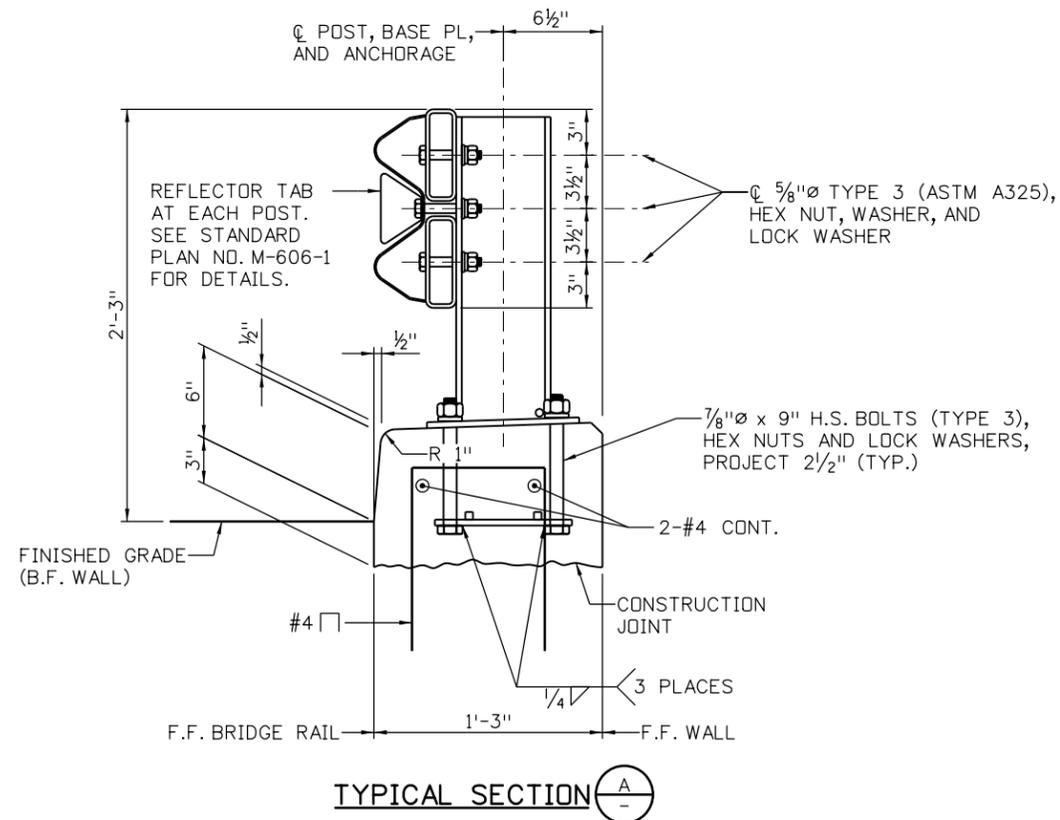
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| 60% SET | <p>CALL UTILITY NOTIFICATION CENTER OF COLORADO CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES</p> | NO. | DATE | REVISION DESCRIPTION: | <p>BOULDER COUNTY TRANSPORTATION DEPARTMENT ENGINEERING DIVISION</p> <p>Michael Baker INTERNATIONAL</p> | DESIGNED: | CAD: | CHECKED: | DATE: | <p>GOLD RUN ROAD SOLDIER PILE WALL EXCAVATION AND BACKFILL</p> <p>PROJECT NO: 4043.SEPT12C38 SHEET NO: 152</p> |
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INFORMATION ONLY

| DESCRIPTION | UNIT | PER LIN. FT. |
|-----------------------------|----------|--------------|
| STRUCTURAL STEEL | LB. | 45.4 |
| CONCRETE CLASS D | CU. YD. | 0.04 |
| REINFORCING STEEL | LB. | 4.8 |
| BRIDGE RAIL TYPE 3 - W BEAM | LIN. FT. | 1.0 |



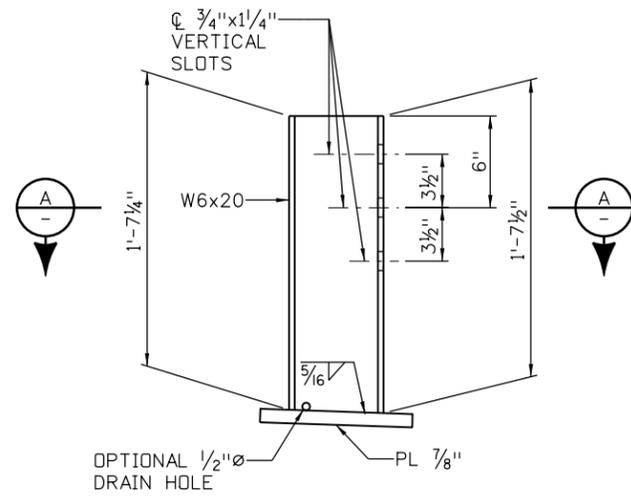
NOTES:

- ALL TUBES SHALL BE FABRICATED FROM ASTM A-500 GRADE B STEEL. ALL POSTS, BASE PLATES, AND ANCHOR BOLTS SHALL BE FABRICATED FROM ASTM A-36 STEEL. ALL SPLICES AND EXPANSION DEVICES FOR TUBES SHALL BE FABRICATED FROM ASTM A-572, GRADE 50 STEEL. THE ABOVE MATERIAL, W-BEAM, AND ALL ANCHOR BOLTS AND MISCELLANEOUS BOLTS, NUTS, AND WASHERS SHALL BE GALVANIZED AND POWDER COATED AFTER FABRICATION IN ACCORDANCE WITH SECTION 509 AND 606. CONCRETE, REINFORCING STEEL, AND STRUCTURAL STEEL ELEMENTS SHALL CONFORM TO THE REQUIREMENTS OF SECTIONS 601, 602, AND 509 RESPECTIVELY.
- POST ANCHORS, ENCASED IN CONCRETE, SHALL BE ASTM A36 STEEL, AND NEED NOT BE GALVANIZED.
- POSTS, POST ANCHORS, BASE PLATES, ANCHOR BOLTS, MISCELLANEOUS BOLTS, NUTS, WASHERS, TUBES, TUBE EXPANSION DEVICES, TUBE SPLICES, END PLATES, W-BEAM, W-BEAM EXPANSION DEVICES, CURB CONCRETE (CLASS D), AND CURB REINFORCING STEEL SHALL BE INCLUDED IN ITEM NO. 606 BRIDGE RAIL TYPE 3.
- THE BACKING TUBES SHALL BE SHOP BENT OR FABRICATED TO FIT HORIZONTAL CURVE WHEN THE RADIUS IS LESS THAN 1,500 FEET.
- TUBES SHALL BE CONTINUOUS OVER NO LESS THAN TWO POSTS. NO WELDED BUTT SPLICES WILL BE ALLOWED IN THE TUBE SECTIONS.
- POSTS SHALL BE PERPENDICULAR TO THE LONGITUDINAL ROADWAY GRADE.
- CONTRACTOR SHALL PROVIDE TERMINAL SECTION (FLARED) WHEN NO APPROACH GUARDRAIL IS USED WITH THE COST INCLUDED IN ITEM NO. 606 BRIDGE RAIL TYPE 3.
- FOR ADDITIONAL DETAILS, SEE STANDARD PLAN NO. M-606-1.
- PRIOR TO FABRICATION OF THIS ITEM, THREE SETS OF WORKING DRAWINGS WHICH COMPLY WITH THE REQUIREMENTS OF SECTION 105 SHALL BE SUBMITTED TO THE ENGINEER FOR INFORMATION ONLY.
- TERMINAL AND TRANSITION INCLUDED WITH ROADWAY QUANTITIES.

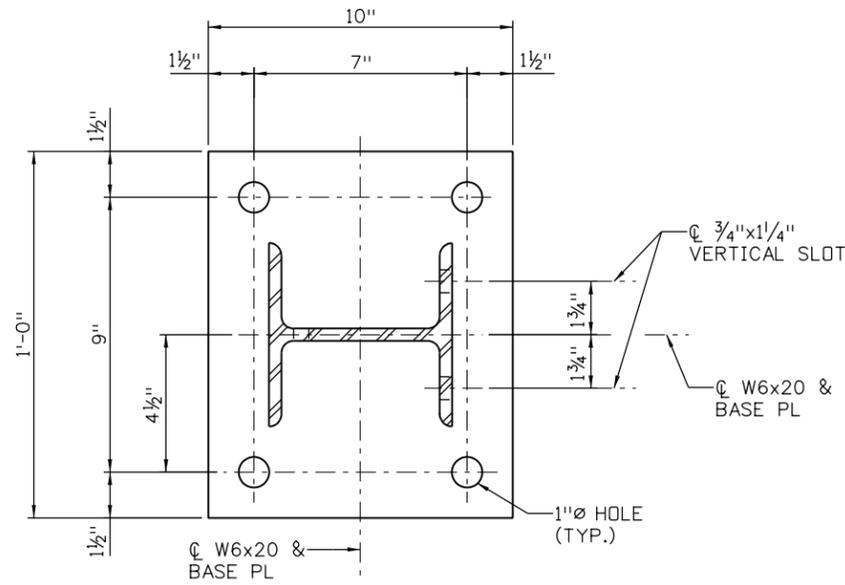
STRUCTURAL STEEL:
 AASHTO M 183 (ASTM A 36) $f_y = 36,000$ psi
 ASTM A 223 (ASTM A 572) GRADE 50 $f_y = 50,000$ psi
 COLD FORMED ASTM A 500 GRADE B $f_y = 46,000$ psi

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| 60% SET | <p>CALL UTILITY NOTIFICATION CENTER OF COLORADO CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES</p> | NO. | DATE | REVISION DESCRIPTION: | <p>BOULDER COUNTY TRANSPORTATION DEPARTMENT ENGINEERING DIVISION</p> <p>Michael Baker INTERNATIONAL</p> | DESIGNED: | CAD: | CHECKED: | DATE: | <p>GOLD RUN ROAD BRIDGE RAIL TYPE 3 (1 OF 2)</p> |
| | | REVISIONS: | | | | | DLT | BMT | | |

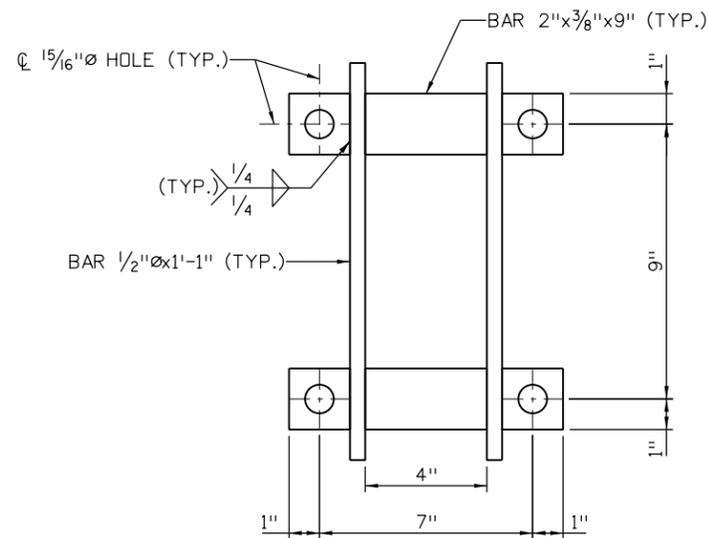
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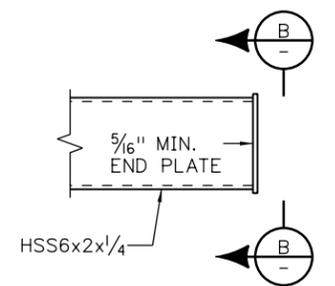
POST DETAIL



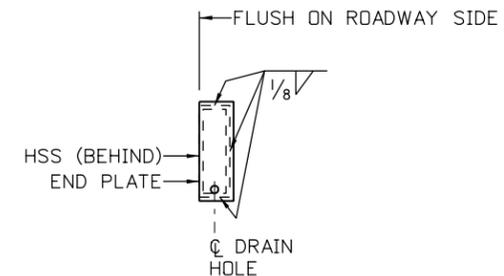
SECTION A-A



ANCHOR DETAIL

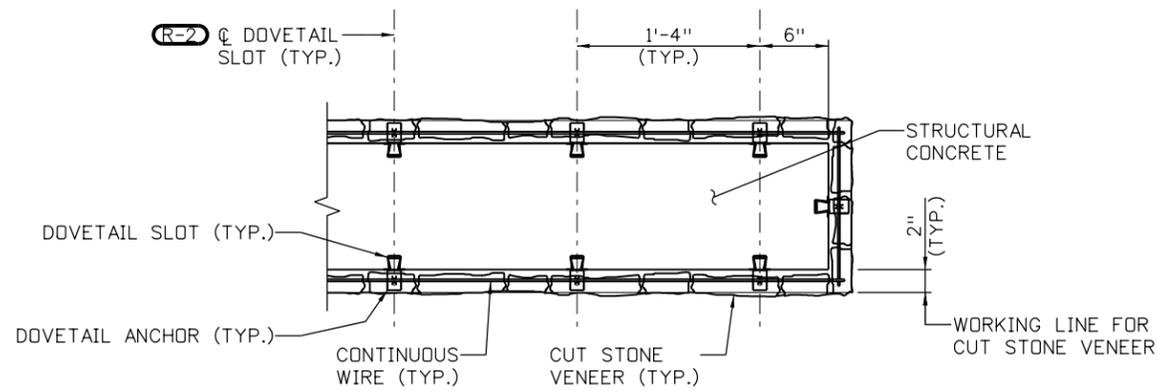


BACKING TUBE DETAIL

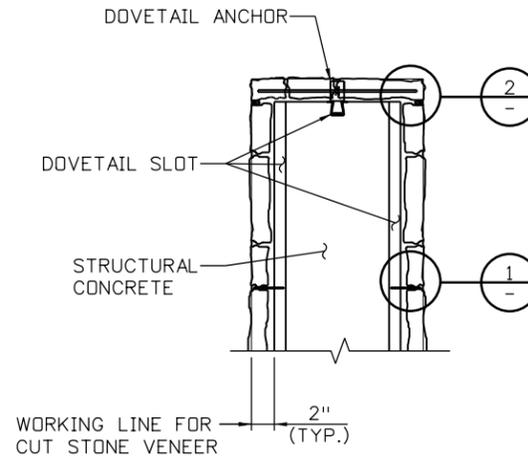


VIEW B-B

brett.terrell 3:50:50 PM pwr\DCPWAPP\lbr.mbakercorp.com\pwrprod\Documents\Projects\Lakewood\Office\Boulder_County_Emergency_Transportation\T02\08_Sheet_L_Files\06_Structures\DCN\138368_WALL_19.dgn



CUT STONE VENEER FACING ANCHOR PLAN DETAIL



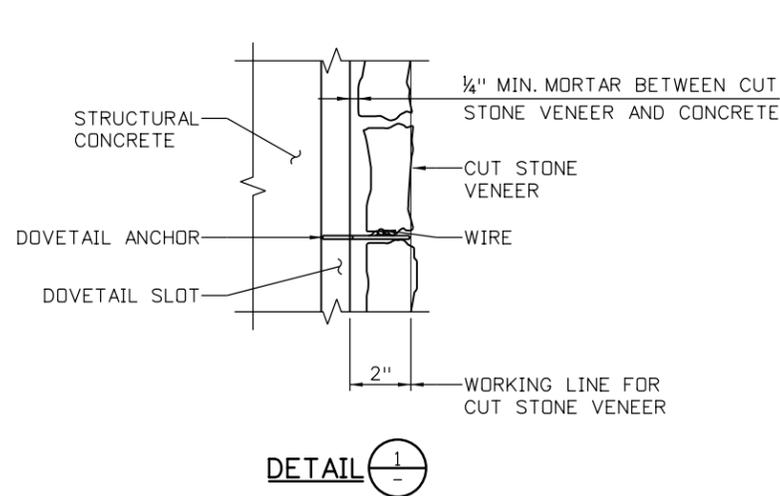
CUT STONE VENEER FACING ANCHOR ELEVATION DETAIL

NOTES:

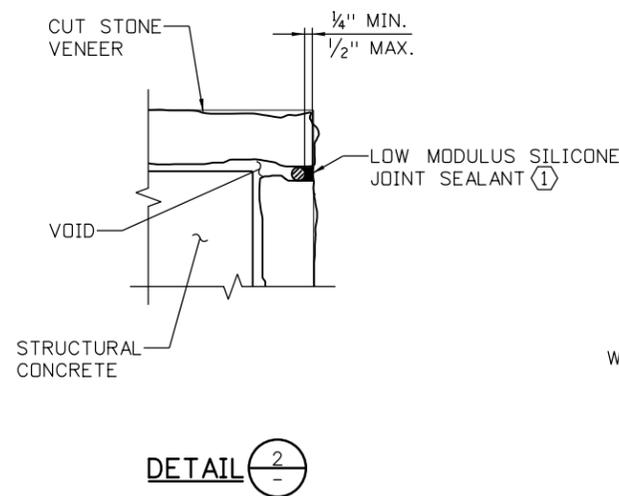
1. CUT STONE VENEER SHALL BE 2" NOMINAL THICKNESS, GENERALLY 8" SQUARE PIECES, IRREGULAR SHAPE, AS APPROVED BY THE ENGINEER. STONES SHALL BE PLACED A RANDOM PATTERN.
2. THE DOVETAIL SLOTS SHALL BE TYPE 305 AS MANUFACTURED BY HOHMANN & BARNARD, INC., OR AN APPROVED EQUAL. THEY SHALL BE 22 GAGE HOT-DIPPED 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:

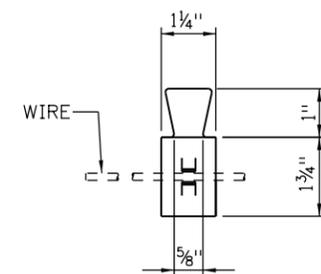
- ① TOOL SEALANT TO A ROUNDED SURFACE AND THE REQUIRED DIMENSIONS SHOWN. COLOR TO MATCH MORTAR JOINTS.



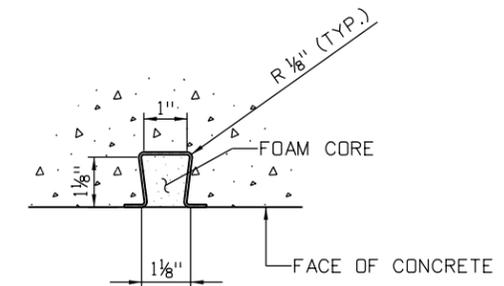
DETAIL 1



DETAIL 2



DOVETAIL ANCHOR AND WIRE



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

DOVETAIL ANCHOR AND SLOT PLAN DETAIL

60% SET

CALL UTILITY NOTIFICATION CENTER OF COLORADO

 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: DLT CAD: BMT CHECKED: DATE: 2/5/2016

GOLD RUN ROAD
CUT STONE VENEER DETAILS
 PROJECT NO: 4043.SEPT12C38 SHEET NO: 155