

# TOWN OF FAIRFAX DEPARTMENT OF PUBLIC WORKS

142 BOLINAS ROAD  
FAIRFAX, CALIFORNIA 94930  
PHONE: (415) 453-0291

## RETAINING WALL REPLACEMENT BERRY TRAIL AT TAMALPAIS DRIVE



VICINITY MAP  
(NO SCALE)



LOCATION MAP  
(NO SCALE)

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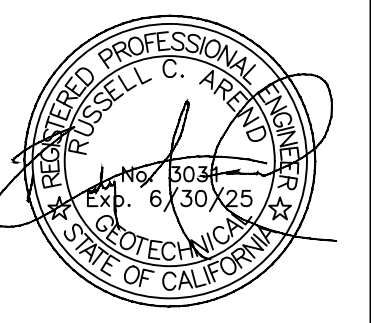
ISSUED FOR BIDDING	8/16/24	RCA

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**TITLE SHEET**  
Retaining Wall Replacement  
Berry Trail at Tamalpais Drive  
Fairfax, California  
Project No. 201.222

Designed <b>RKC/RCA</b>	SAS
Drawn <b>RKC/RCA</b>	
Checked <b>SAS</b>	



**SHEET**  
**1**

**GENERAL**

- ALL CONDITIONS AND DIMENSIONS SHOWN ON THE PLANS SHALL BE VERIFIED BY THE CONTRACTOR. ANY DISCREPANCIES THAT REQUIRE CLARIFICATION OR REVISIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER BEFORE STARTING WORK.
- THE CONTRACTOR SHALL POSSES A CLASS "A" LICENSE.
- THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, PROCEDURES, TECHNIQUES, SAFETY, AND SEQUENCE.
- CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT PRIOR TO START OF ANY CONSTRUCTION. CONTRACTOR SHALL NOTIFY ALL PUBLIC OR PRIVATE UTILITY COMPANIES IN ACCORDANCE WITH ALL APPLICABLE LAWS PRIOR TO COMMENCEMENT OF WORK NEAR EXISTING UTILITY LINES.
- CONTRACTOR SHALL BE RESPONSIBLE FOR THE VERIFICATION OF ALL EXISTING UTILITIES IN THE FIELD. ANY UTILITIES DAMAGED BY THE CONTRACTOR SHALL BE REPAIRED BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE.
- TOWN OF FAIRFAX ENCROACHMENT PERMIT IS REQUIRED FOR ALL WORK, INCLUDING STAGING OF MATERIALS AND EQUIPMENT IN THE TOWN'S RIGHT-OF-WAY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AN ENCROACHMENT PERMIT IN ACCORDANCE WITH THE PERMIT REQUIREMENTS.
- THE CONTRACTOR SHALL COORDINATE WITH ENGINEER TO ESTABLISH THE RETAINING WALL, SOLDIER PILE AND TIEBACK LAYOUTS PRIOR TO DRILLING AND SOLDIER PILE AND TIEBACK INSTALLATION.
- THE CONTRACTOR SHALL HAUL AWAY ALL UNUSED/EXCESS EXCAVATED MATERIAL OFF SITE FOR LEGAL DISPOSAL.
- NO CONSTRUCTION MATERIALS, EQUIPMENT, DEBRIS OR WASTE SHALL BE PLACED OR STORED WHERE IT MAY BE SUBJECT TO WIND OR RAIN EROSION AND DISPERSION.
- WORKMANSHIP TO BE PERFORMED IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS ALONG WITH 2023 CALTRANS STANDARD SPECIFICATIONS, TOWN OF FAIRFAX, MARIN WATER AND MARIN COUNTY STANDARDS AND GENERALLY ACCEPTED CONSTRUCTION PRACTICES.

**SURVEY NOTES**

- TOPOGRAPHIC INFORMATION IS BASED UPON A FIELD SURVEY PERFORMED BY CAPSTONE LAND SURVEYING, LLP ON DECEMBER 8, 2023.
- VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988.
- MAPPING OF BOUNDARY/PROPERTY LINES WAS NOT INCLUDED AS PART OF THE SURVEY.

**SPECIAL INSPECTIONS**

- SPECIAL INSPECTION SHALL BE PERFORMED BY MILLER PACIFIC AND/OR A QUALIFIED TESTING AND INSPECTION AGENCY DURING CONSTRUCTION, INCLUDING THE FOLLOWING:
  - SOLDIER PILES: INTERMITTENT OBSERVATION OF DRILLING. FINISHED SOLDIER PILE EXCAVATIONS SHALL BE OBSERVED PRIOR TO INSTALLING STEEL BEAM. STEEL BEAM SHALL BE OBSERVED PRIOR TO PLACEMENT IN DRILLED HOLE.
  - CONCRETE: INTERMITTENT OBSERVATION DURING PLACEMENT. IF REQUESTED BY THE ENGINEER, CONCRETE SHALL BE SAMPLED AND CYLINDERS SHALL BE CAST FOR STRENGTH TESTING IN CONFORMANCE WITH ASTM C39. A MINIMUM OF 1 CYLINDER SHALL BE TESTED AT THREE 7 DAYS AND A MINIMUM OF 3 CYLINDERS SHALL BE TESTED AT 28 DAYS.
  - GROUT: INTERMITTENT OBSERVATION DURING PLACEMENT. IF REQUESTED BY THE ENGINEER, GROUT SHALL BE SAMPLED AND CYLINDERS SHALL BE CAST FOR STRENGTH TESTING IN CONFORMANCE WITH ASTM C39. A MINIMUM OF 1 CYLINDER SHALL BE TESTED AT 3 DAYS AND A MINIMUM OF 3 CYLINDERS SHALL BE TESTED AT 28 DAYS
  - TIEBACKS: INTERMITTENT OBSERVATION OF DRILLING. FINISHED EXCAVATIONS SHALL BE OBSERVED PRIOR TO INSTALLING THREADBAR. THREAD BAR SHALL BE OBSERVED PRIOR TO PLACEMENT IN DRILLED HOLE. LOAD TESTING SHALL BE PERFORMED AS SPECIFIED HEREIN AND OBSERVED BY THE ENGINEER.
  - DRAINAGE: INTERMITTENT OBSERVATION OF DRAINAGE PANELS, PERMEABLE MATERIAL AND RELATED COMPONENTS INSTALLED FOR WALL DRAINAGE.
  - BACKFILL: INTERMITTENT OBSERVATION AND FIELD DENSITY TESTING OF COMPACTED BACKFILL.

**SOLDIER PILES**

- REFER TO TECHNICAL SPECIFICATION SECTION 2296 FOR ADDITIONAL REQUIREMENTS FOR SOLDIER PILE CONSTRUCTION.
- STEEL BEAMS FOR SOLDIER PILES SHALL BE ASTM A572, GRADE 50 OR APPROVED EQUAL.
- STEEL BEAMS SHALL BE PAINTED WITH TWO COATS OF BLACK COAL TAR EPOXY, CARBOLINE BITUMASTIC NO. 300-M OR APPROVED EQUAL. COAL TAR EPOXY COATING SHALL EXTEND 12 IN BELOW THE TOP OF CONCRETE ENCASEMENT.

**CONCRETE**

- ALL CONCRETE SHALL BE NORMAL WEIGHT AND READY-MIXED WITH A MAXIMUM WATER TO CEMENT RATIO OF 0.45.
- ALL AGGREGATE USED IN CONCRETE PRODUCTION SHALL CONFORM TO ASTM C33.
- ALL WATER USED IN CONCRETE PRODUCTION SHALL BE CLEAN POTABLE AND NOT DETRIMENTAL TO THE CONCRETE.
- READY-MIX CONCRETE SHALL BE MIXED AND DELIVERED IN ACCORDANCE WITH ASTM C94.
- CEMENT SHALL CONFORM TO ASTM C 150, TYPE II.
- CONCRETE FOR SOLDIER PILES SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 2,500 PSI AT 28 DAYS.
- CONCRETE FOR LAGGING SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI AT 28 DAYS.
- REBAR SHALL CONFORM TO ASTM A615, GRADE 60.

**TIEBACKS**

- REFER TO TECHNICAL SPECIFICATION 2286 FOR TIEBACK REQUIREMENTS.
- TIEBACKS SHALL BE DWIDAG STEEL THREAD BARS (OR APPROVED EQUIVALENT) AS DESIGNATED ON THE PLANS AND MANUFACTURED EXPRESSLY FOR USE AS TIEBACKS.
- GRADE 75 THREADBAR SHALL CONFORM TO ASTM A615  
GRADE 150 THREADBAR SHALL CONFORM TO ASTM 722
- BEARING PLATES AND HARDWARE SHALL CONFORM TO THE MANUFACTURER'S RECOMMENDATIONS AND APPLICABLE ASTM STANDARDS.
- CORROSION PROTECTION SHALL BE DOUBLE CORROSION PROTECTION AS RECOMMENDED BY THE MANUFACTURER AND AS SHOWN ON THE PLANS.
- CEMENT GROUT SHALL BE MADE OF PORTLAND CEMENT CONFORMING TO ASTM C 150 WITH A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI AT 28 DAYS AND WATER CEMENT RATIO BETWEEN 0.4 AND 0.5.
- LOAD TESTING SCHEDULE:  
(DL = DESIGN LOAD, CTL = CREEP TEST LOAD)
- PROOF TESTING SHALL BE PERFORMED ON ALL TIEBACKS.
- PROOF LOAD TEST:  
AL (0.05 DL), 0.25 DL, 0.50 DL, 0.75 DL, 1.00 DL, 1.33 DL (CTL)  
HOLD CTL FOR 10 MINUTES WITH DISPLACEMENT MEASUREMENTS AT 1, 2, 3, 4, 5, 6, AND 10 MINUTES. IF THE TOTAL MOVEMENT BETWEEN 1 AND 10 MINUTES EXCEEDS 0.04 IN, THE TEST LOAD SHALL BE HELD FOR AN ADDITIONAL 50 MINUTES WITH FURTHER DISPLACEMENT READINGS MADE AT 15, 20, 25, 30, 45, AND 60 MINUTES. THE TOTAL MOVEMENT WITHIN THE PERIOD OF 6 TO 60 MINUTES SHALL NOT EXCEED 0.08 IN.
- THE TIEBACK DISPLACEMENT SHALL BE MEASURED WITH A DIAL GAUGE CAPABLE OF ACCURATELY MEASURING DISPLACEMENT TO THE NEAREST 0.001 IN.

**WOOD**

- TIMBER LAGGING AND OTHER WOOD PRODUCTS SHALL BE DOUGLAS FIR NO. 1 OR BETTER. PRESERVATIVES AND TREATMENT SHALL COMPLY WITH AWPA STANDARD U1 FOR USE CATEGORY 4B.
- WHERE CUTTING OF LAGGING IS REQUIRED, PAINT CUT ENDS WITH COMPLIANT PRESERVATIVE.

**WALL DRAINAGE**

- PERMEABLE MATERIAL SHALL CONSIST OF CALTRANS CLASS 1 PERMEABLE MATERIAL. ENCASED IN FILTER FABRIC OR CLASS 2 PERMEABLE MATERIAL.
- FILTER FABRIC SHALL CONSIST OF MIRAFI 140N OR APPROVED EQUAL.
- DRAINAGE PIPE SHALL CONFORM TO ASTM D3034, SDR 35.

**EROSION & SEDIMENT CONTROL**

- EROSION AND SEDIMENT CONTROL MEASURES SHALL COMPLY WITH ALL REQUIREMENTS OUTLINED IN THE MARIN COUNTY STORMWATER POLLUTION PREVENTION PROGRAM (MCSTOPPP) MINIMUM CONTROL MEASURES FOR SMALL CONSTRUCTION PROJECTS AS OUTLINED IN THE MCSTOPPP CONSTRUCTION EROSION AND SEDIMENT CONTROL PLAN APPLICANT PACKAGE.
- ANY AREAS IN WHICH GROUND SURFACE AND VEGETATIVE COVER HAS BEEN DISTURBED BY CONSTRUCTION ACTIVITIES SHALL BE COVERED WITH A PRE-APPROVED SEED MIX AND BIODEGRADABLE EROSION CONTROL MATS UPON COMPLETION OF CONSTRUCTION.
- EROSION CONTROL MATS SHALL CONSIST OF TYPE SC150 BY NORTH AMERICAN GREEN (OR APPROVED EQUAL).

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**MPEG**

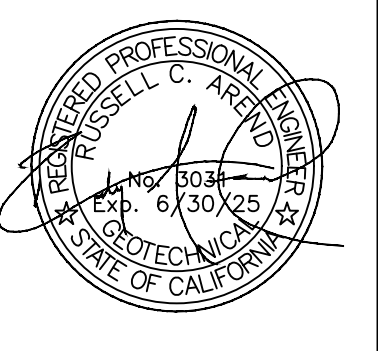
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Drawn	RKC/RCA
Checked	RKC/RCA
SAS	

**NOTES**

**Retaining Wall Replacement  
Berry Trail at Tamaipais Drive  
Fairfax, California**

Project No. 201.222



**SHEET**

**2**

Revisions

Description

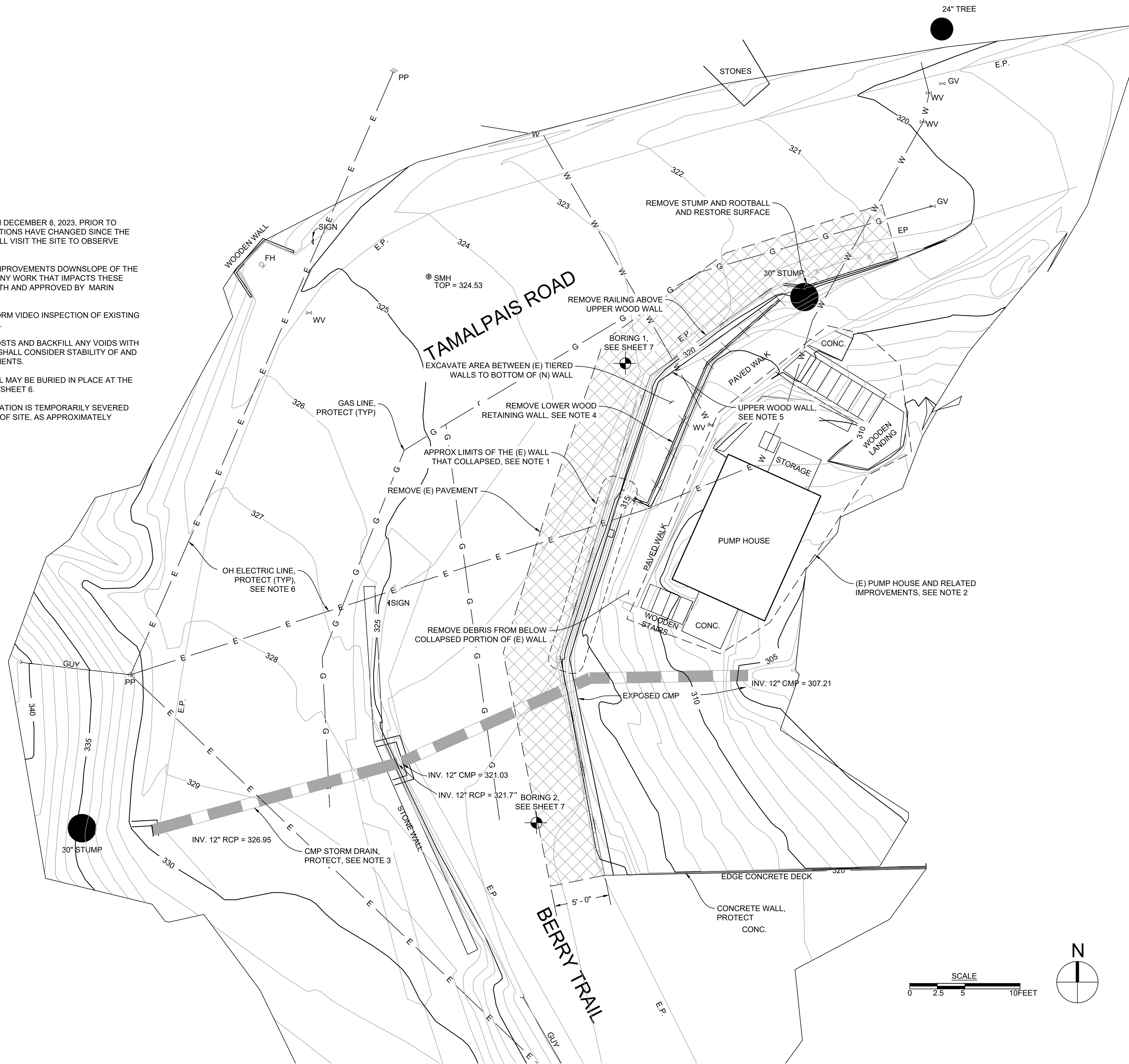
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Date

By

**NOTES**

1. TOPOGRAPHIC SURVEY WAS COMPLETED ON DECEMBER 8, 2023. PRIOR TO FAILURE OF THE EXISTING WALL. SITE CONDITIONS HAVE CHANGED SINCE THE SURVEY WAS COMPLETE. CONTRACTOR SHALL VISIT THE SITE TO OBSERVE CONDITIONS PRIOR TO BIDDING.
2. THE EXISTING PUMP HOUSE AND RELATED IMPROVEMENTS DOWNSLOPE OF THE PATHWAY SHALL BE PROTECTED IN PLACE. ANY WORK THAT IMPACTS THESE IMPROVEMENTS SHALL BE COORDINATED WITH AND APPROVED BY MARIN WATER.
3. CONTRACTOR SHALL CLEAN OUT AND PERFORM VIDEO INSPECTION OF EXISTING STORM DRAIN TO DOCUMENT ITS CONDITION.
4. CONTRACTOR SHALL REMOVE THE WOOD POSTS AND BACKFILL ANY VOIDS WITH GROUT. SEQUENCE OF THE WALL REMOVAL SHALL CONSIDER STABILITY OF AND POTENTIAL IMPACTS TO UPSLOPE IMPROVEMENTS.
5. THE EXISTING UPPER WOOD RETAINING WALL MAY BE BURIED IN PLACE AT THE CONTRACTOR'S OPTION. REFER TO DETAIL 1/SHEET 6.
6. OVERHEAD LINE THAT EXTENDS TO PUMP STATION IS TEMPORARILY SEVERED AND POLE WAS RELOCATED TO NORTH SIDE OF SITE, AS APPROXIMATELY SHOWN HEREIN.



**EXISTING CONDITIONS & DEMOLITION PLAN**  
(SCALE: 1" = 5'-0")

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**EXISTING CONDITIONS & DEMOLITION PLAN**

Retaining Wall Replacement  
Berry Trail at Tamalpais Drive  
Fairfax, California

Designed: RKC/RCA  
Drawn: RKC/RCA  
Checked: SAS

Project No. 201.222



**SHEET**

**3**

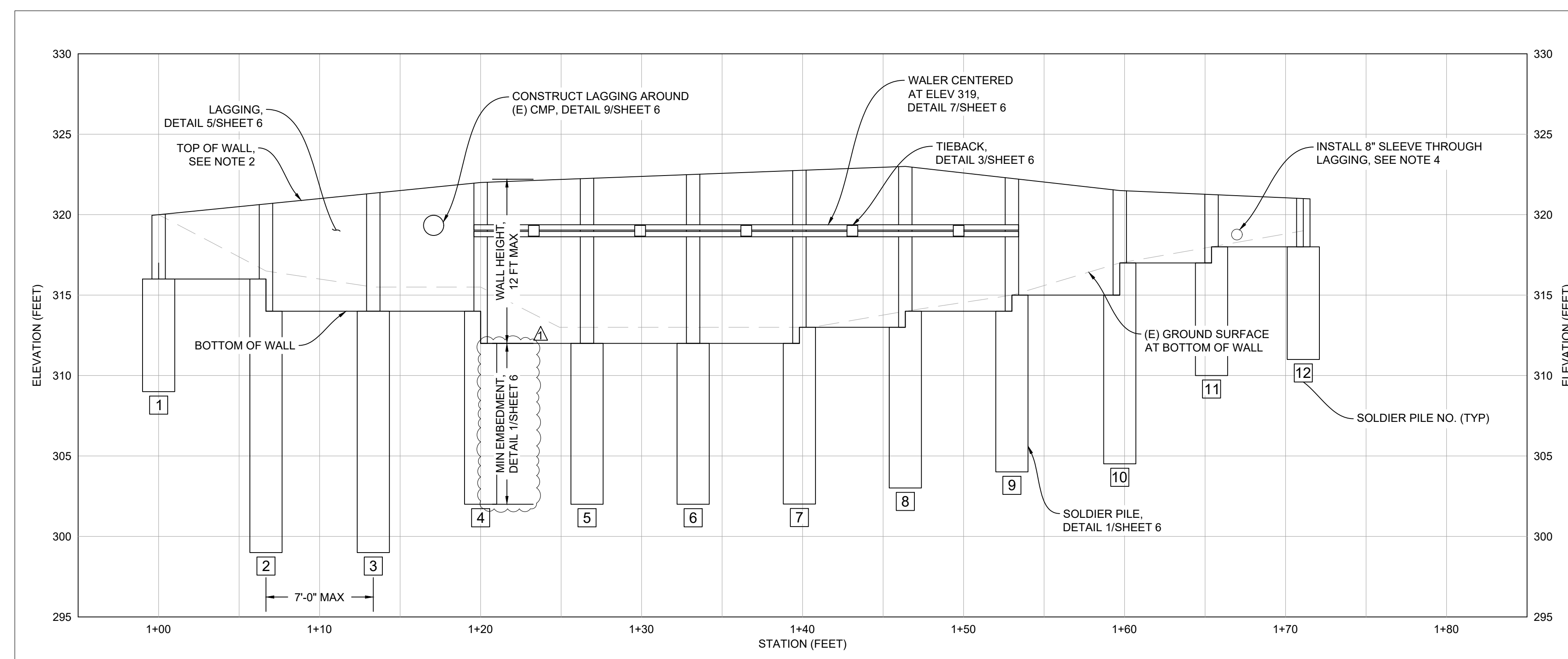
Revisions

**NOTES**

1. THE EXISTING UPPER WOOD RETAINING WALL MAY BE BURIED IN PLACE AT THE CONTRACTOR'S OPTION. REFER TO DETAIL 1/SHEET 6.
2. GUARDRAIL AND WALL RAILING ARE NOT SHOWN ON PLAN AND PROFILE FOR CLARITY. THESE WILL BE LOCATED ABOVE THE WALL FOR THE ENTIRE ALIGNMENT. REFER TO DETAIL 4/SHEET 6 FOR GUARDRAIL AND WALL RAILING INFORMATION.
3. NEW PAVEMENT SECTION TO CONSIST OF 3" OF ASPHALT OVER 6" OF AGGREGATE BASE COMPACTED TO 95% RC. SUBGRADE SHALL BE SCARIFIED, MOISTURE CONDITIONED AND COMPACTED TO 95% RC.
4. INSTALL SLEEVE THROUGH LAGGING FOR FUTURE UTILITY INSTALLATIONS. LOCATION SHOWN IS APPROXIMATE. FINAL LOCATION SHALL BE REVIEWED AND APPROVED BY MARIN WATER DURING CONSTRUCTION.



**RETAINING WALL PLAN**  
(SCALE: 1" = 5'-0")



**RETAINING WALL PROFILE**  
(SCALE: 1" = 5'-0")

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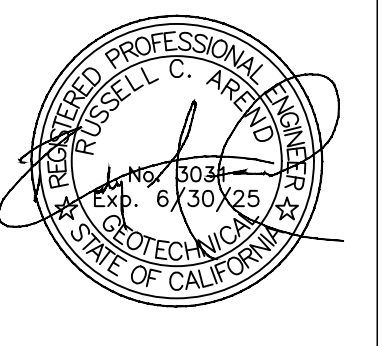
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**RETAINING WALL PLAN & PROFILE**

Retaining Wall Replacement  
Berry Trail at Tamalpais Drive  
Fairfax, California

Project No. 201.222

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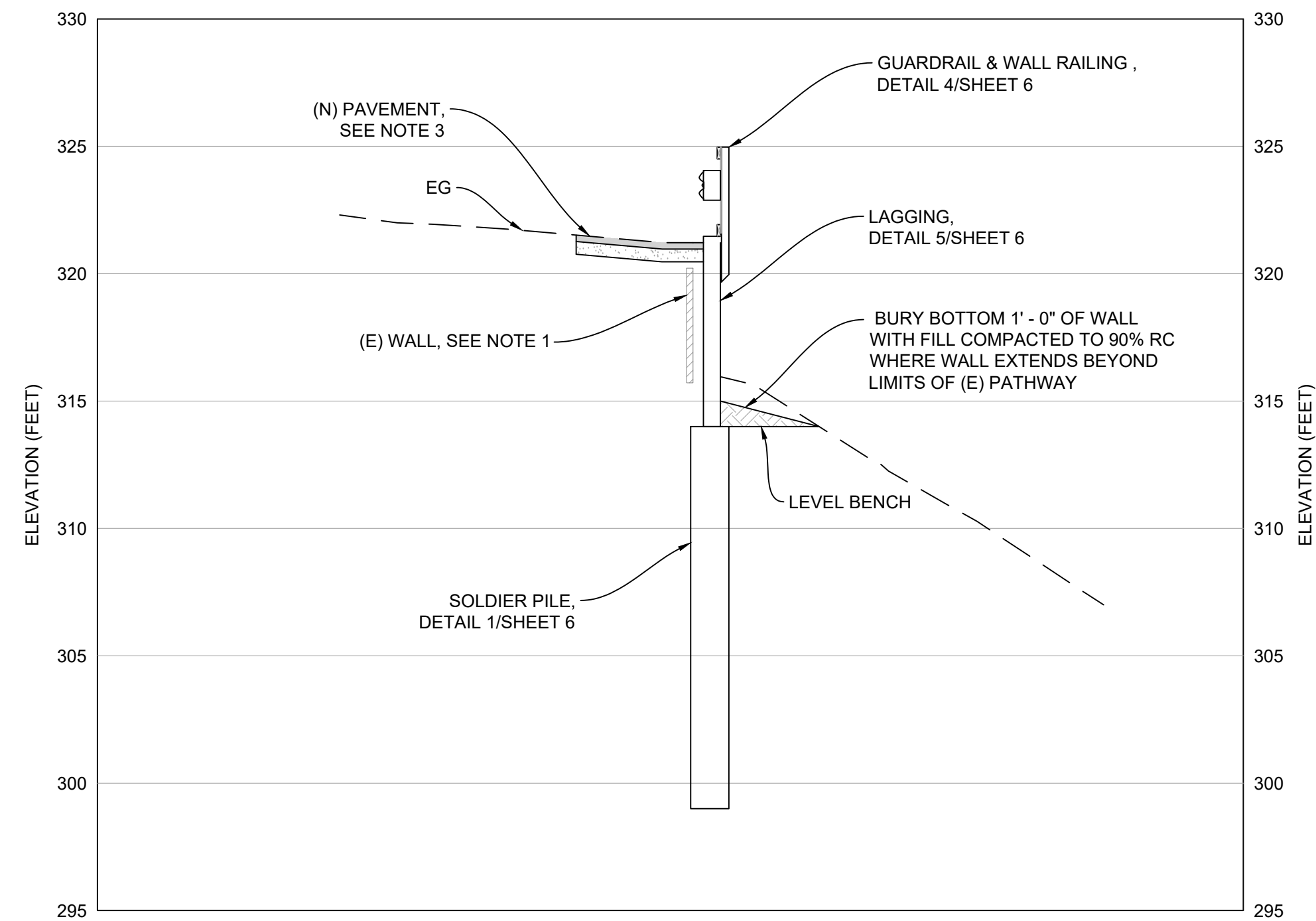


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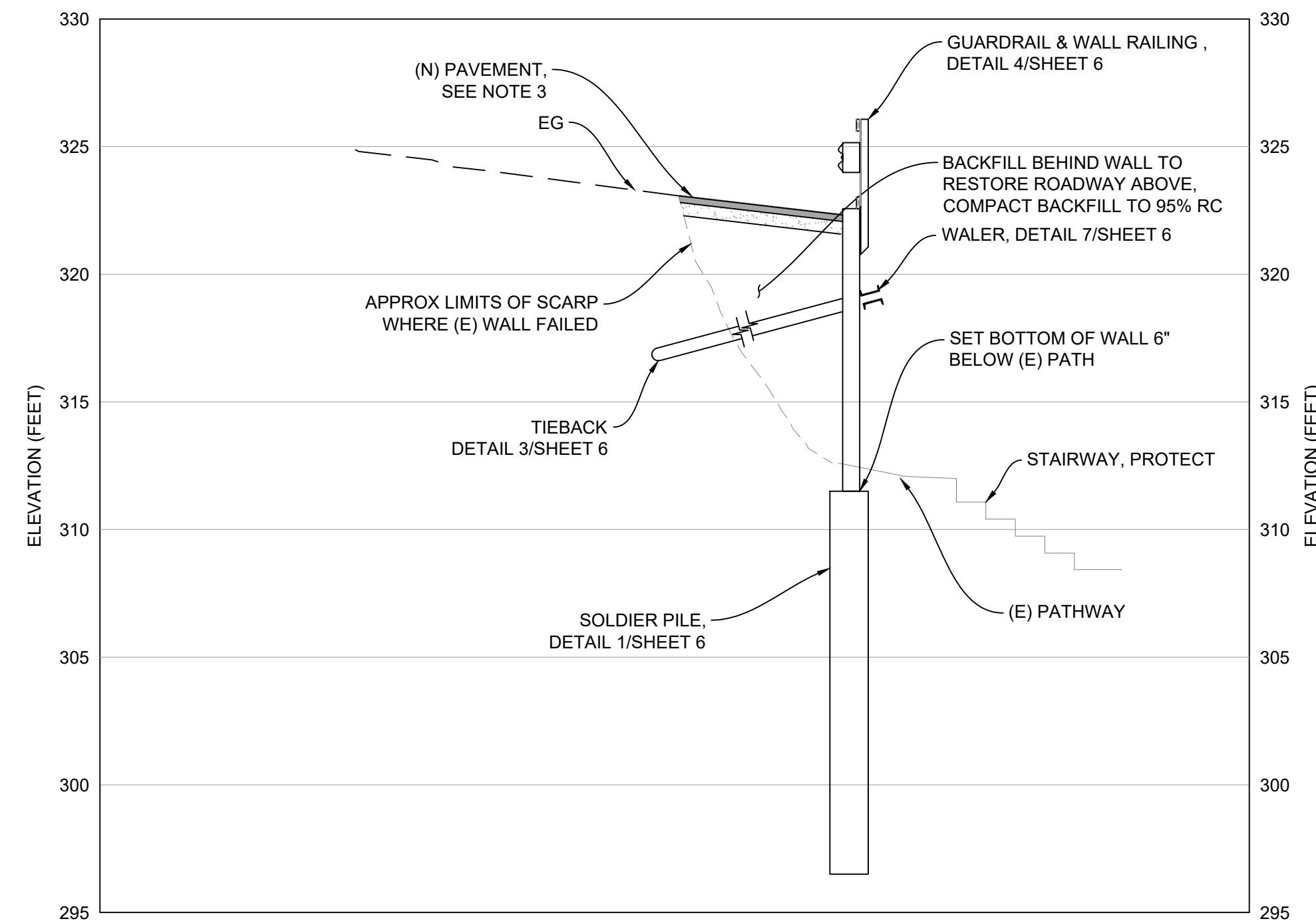
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**Revisions**

Description	Mark	Date	By
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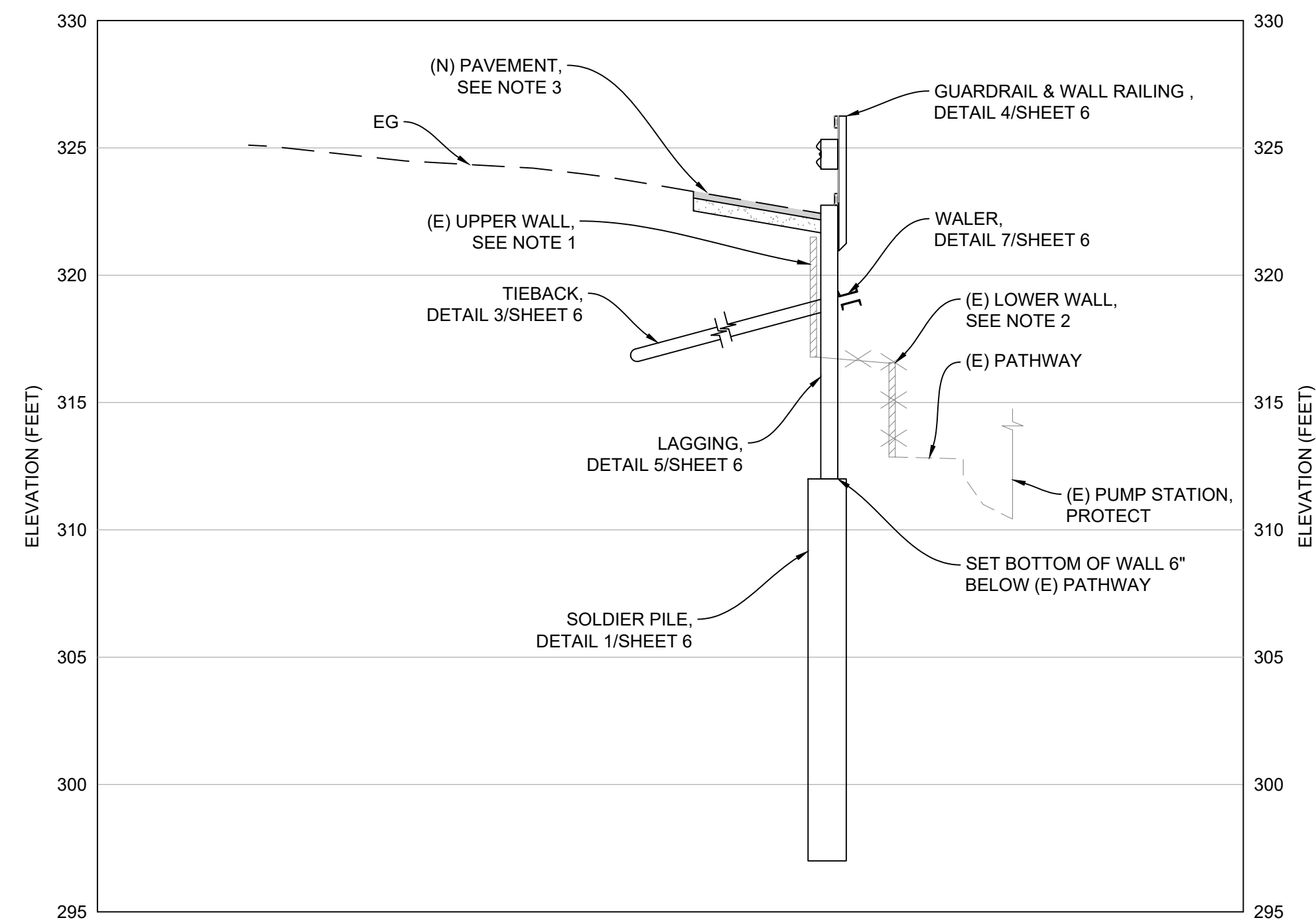
SECTION A - STATION 1+10  
(SCALE: 1" = 5'-0")



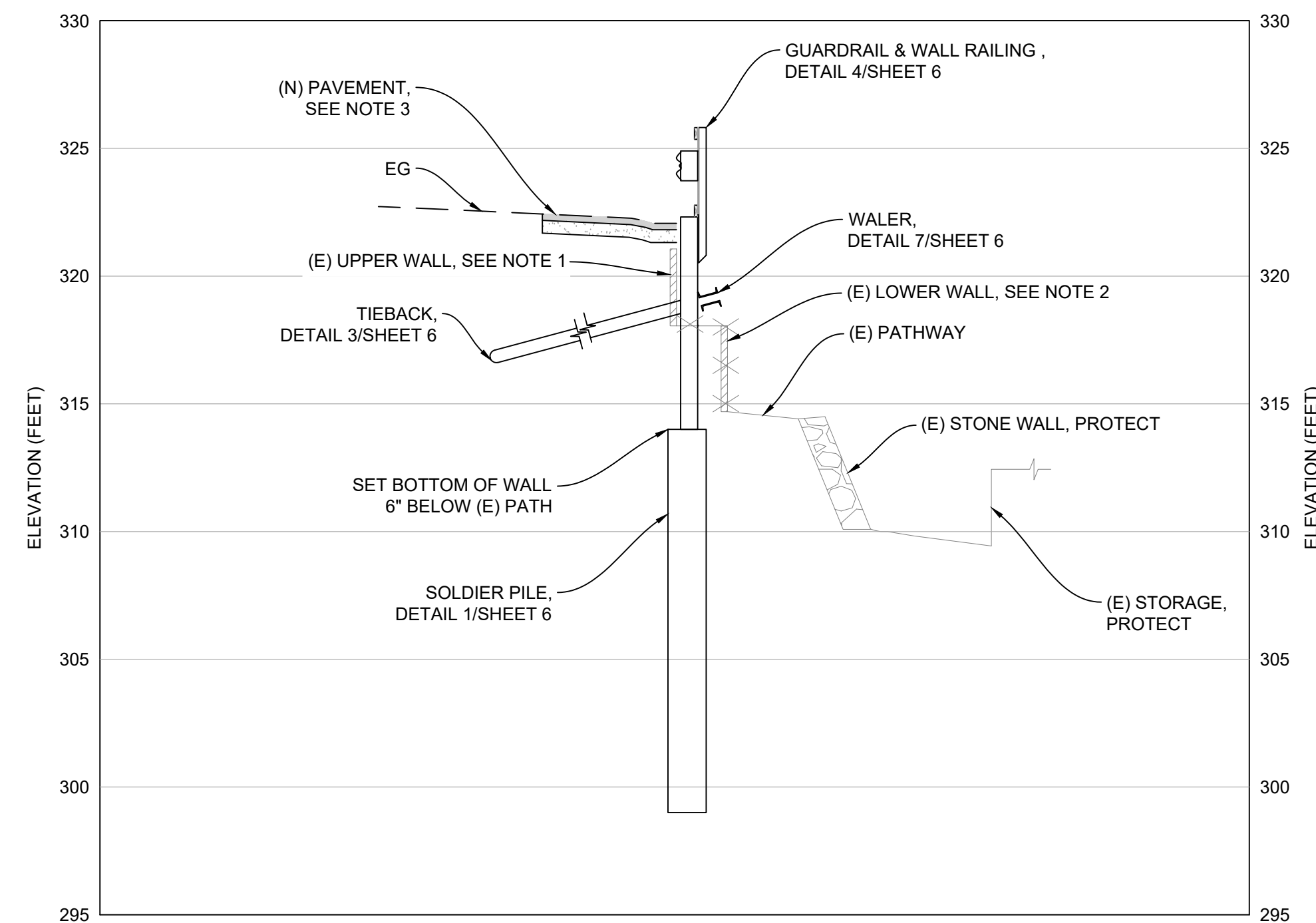
SECTION B - STATION 1+27  
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**NOTES**

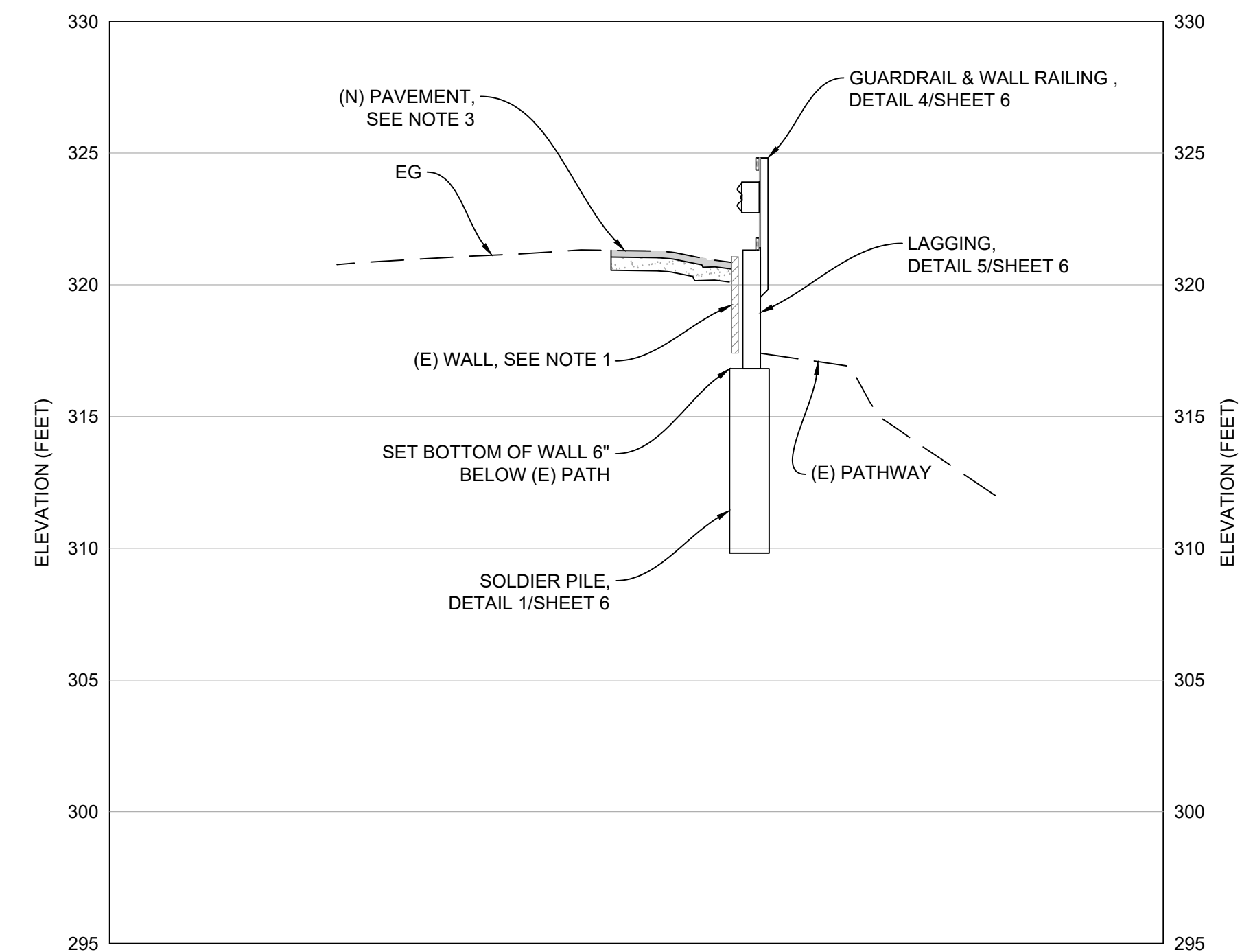
1. THE EXISTING UPPER WOOD RETAINING WALL MAY BE BURIED IN PLACE AT THE CONTRACTOR'S OPTION. REFER TO DETAIL 1/SHEET 6.
2. WHERE TIERED WALLS EXIST REMOVE LOWER WOOD WALL AND REGRADE AREA IN FRONT OF THE NEW WALL AS SHOWN ON THE RETAINING WALL PLAN ON SHEET 3.
3. NEW PAVEMENT SECTION TO CONSIST OF 3" OF ASPHALT OVER 6" OF AGGREGATE BASE COMPACTED TO 95% RC. SUBGRADE SHALL BE SCARIFIED, MOISTURE CONDITIONED AND COMPACTED TO 95% RC



SECTION C - STATION 1+40  
(SCALE: 1" = 5'-0")



SECTION D - STATION 1+52  
(SCALE: 1" = 5'-0")



SECTION E - STATION 1+65  
(SCALE: 1" = 5'-0")

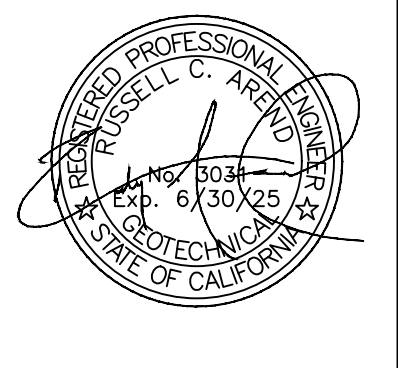
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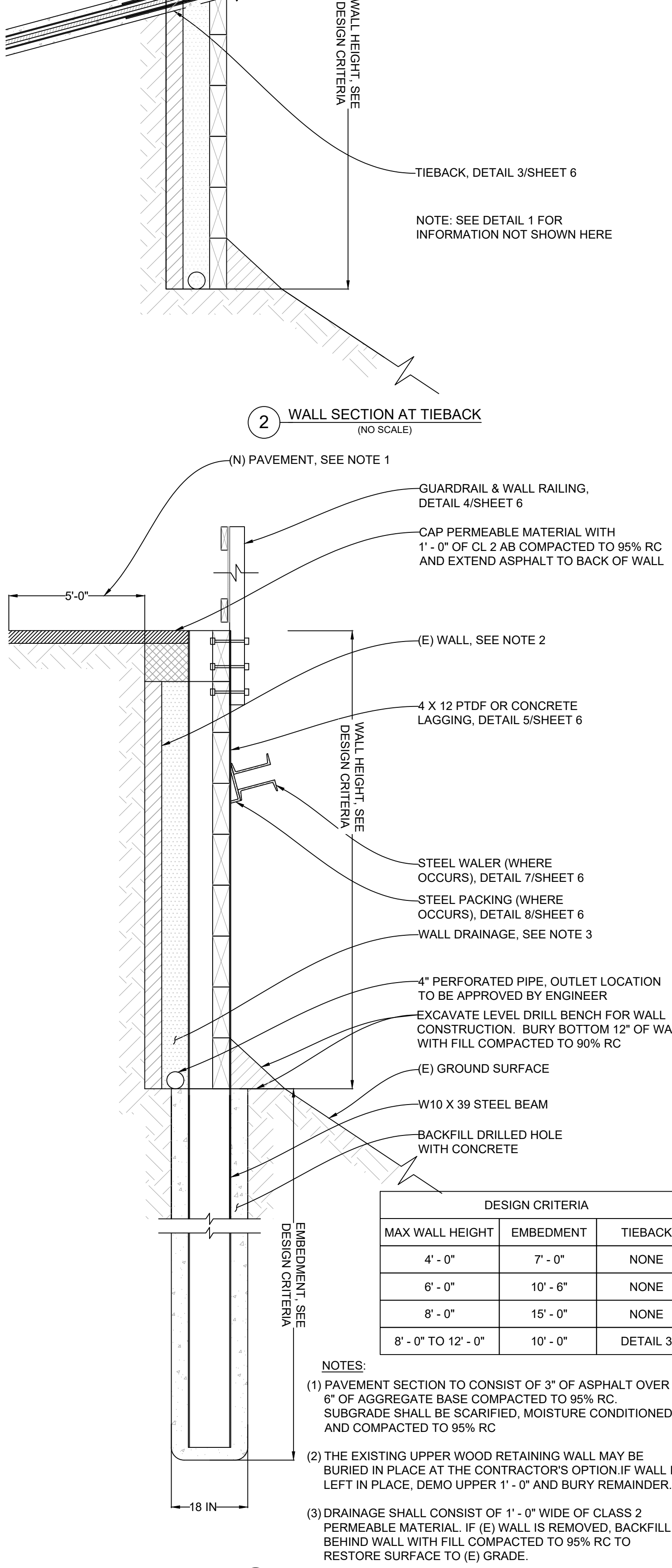
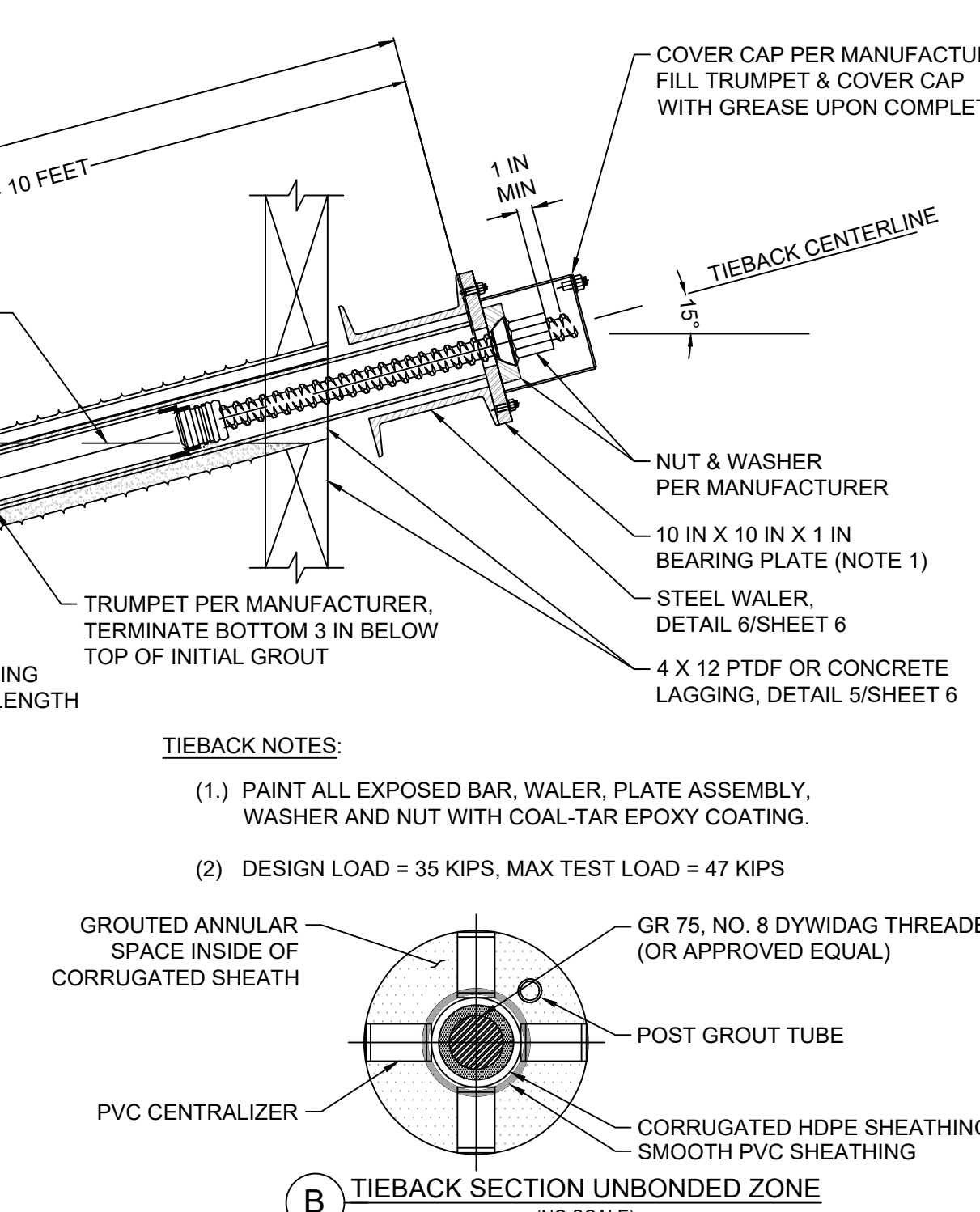
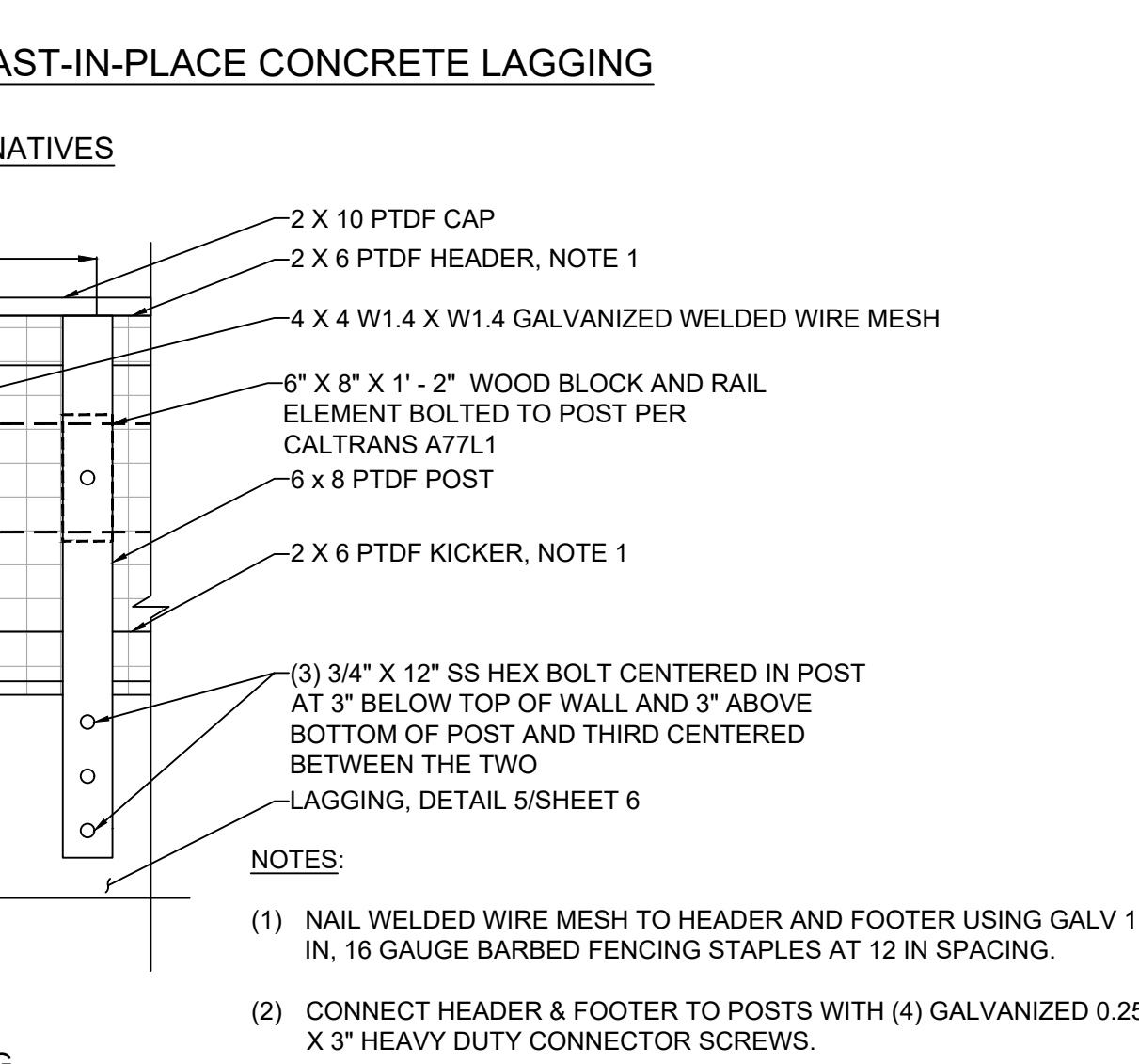
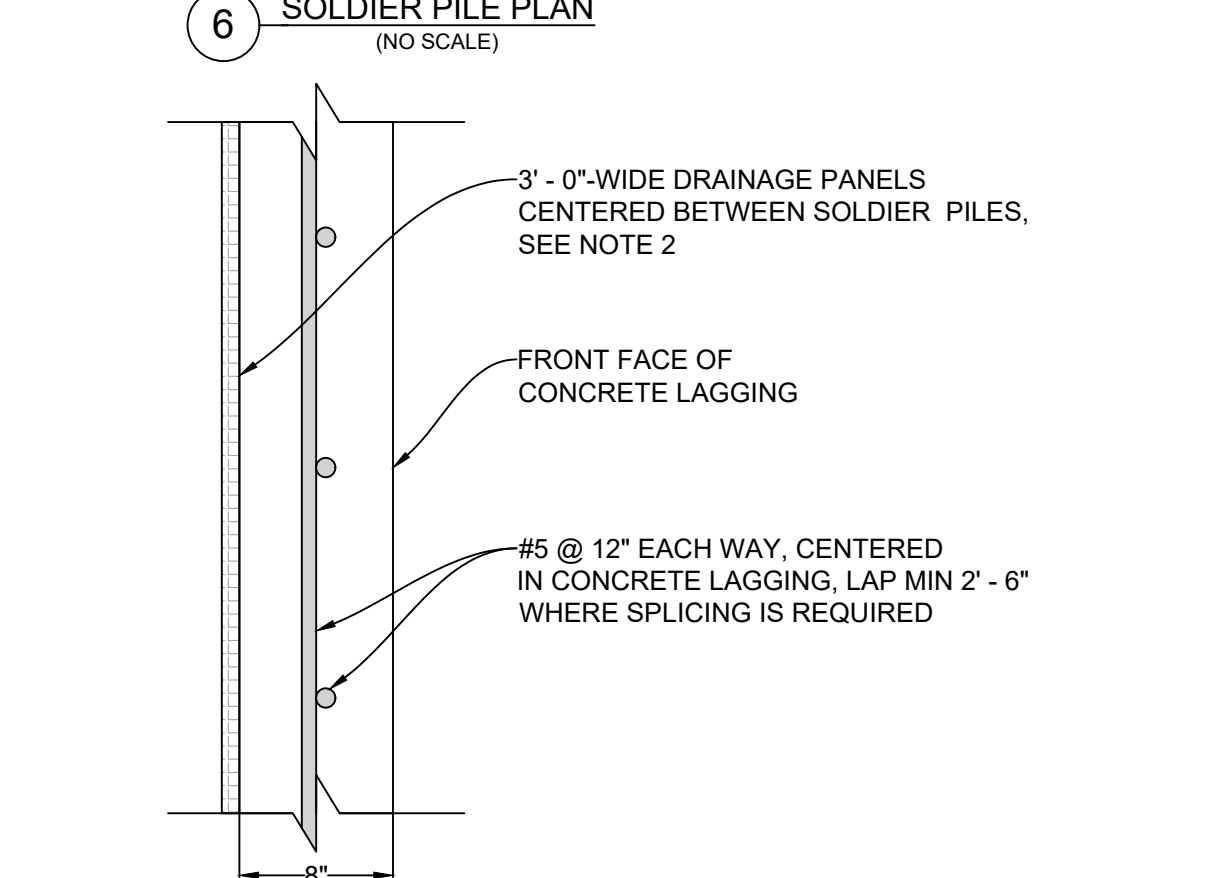
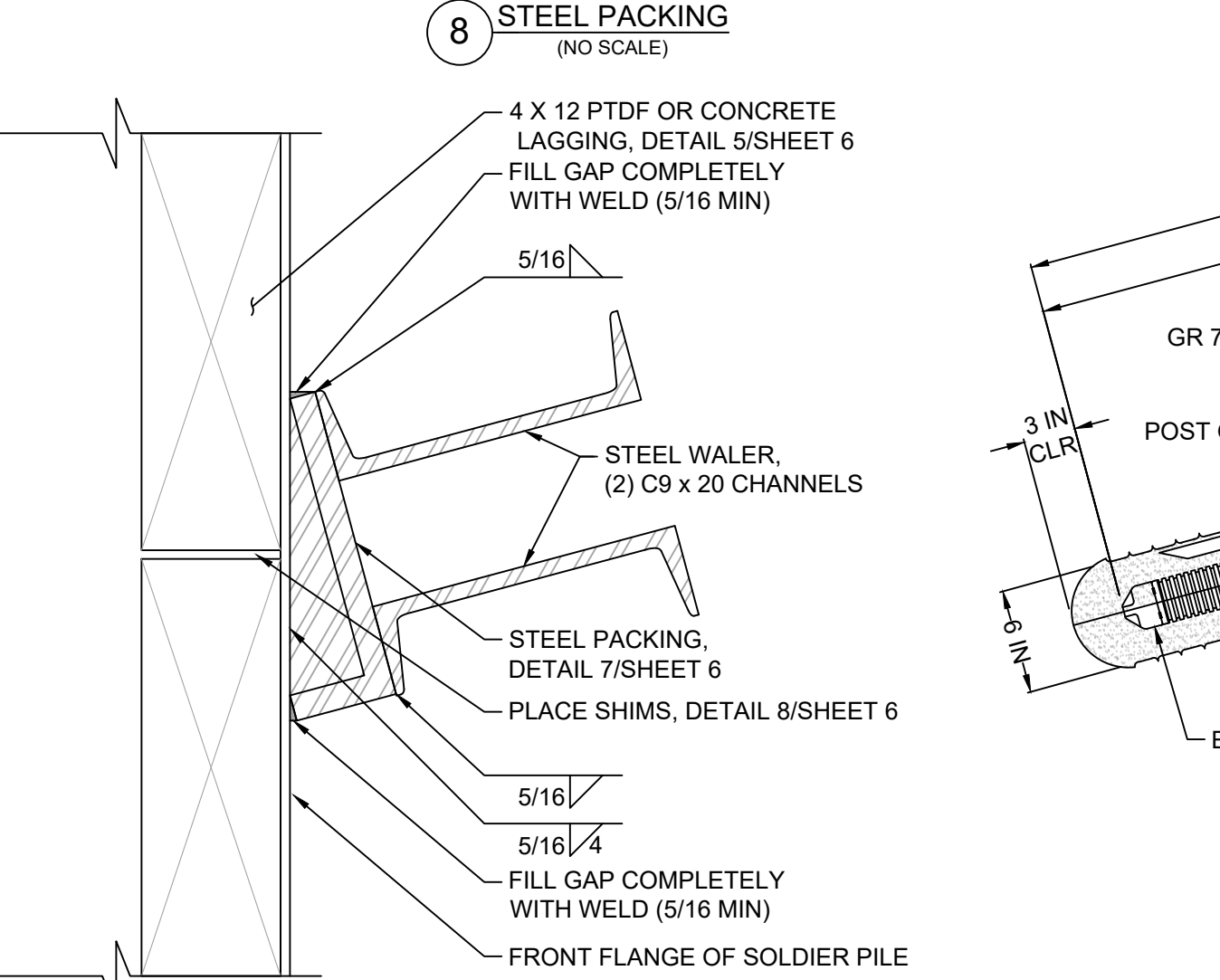
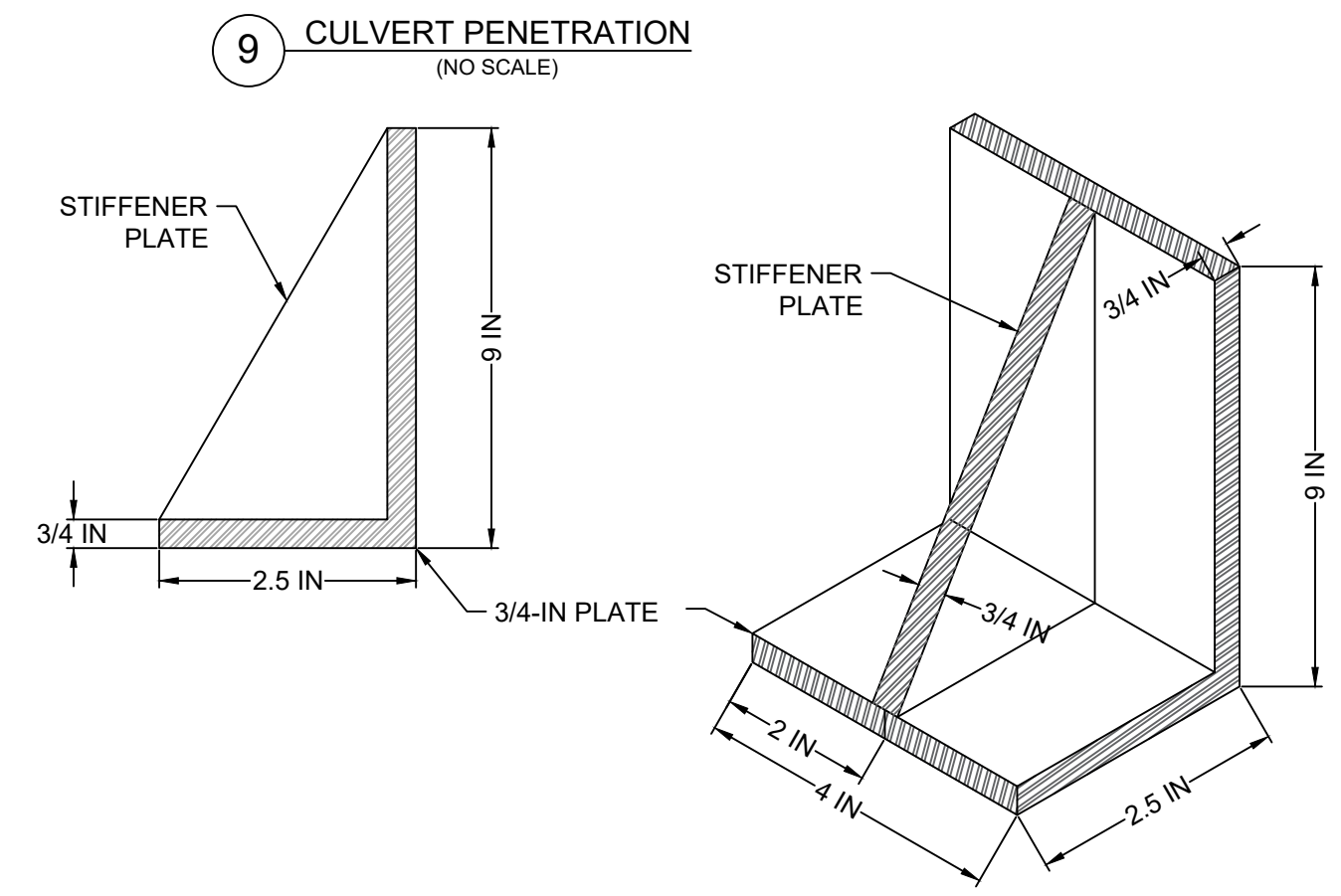
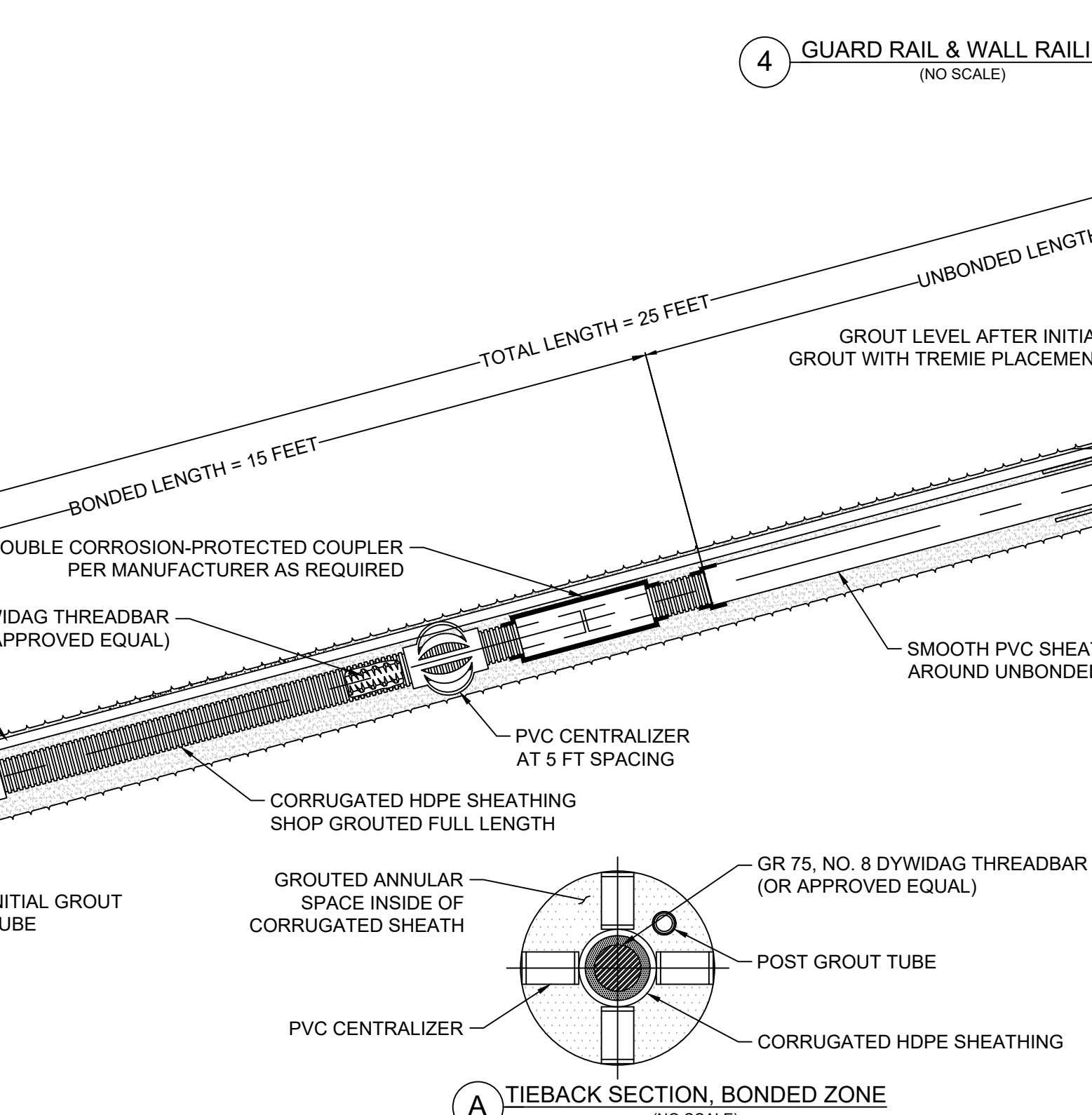
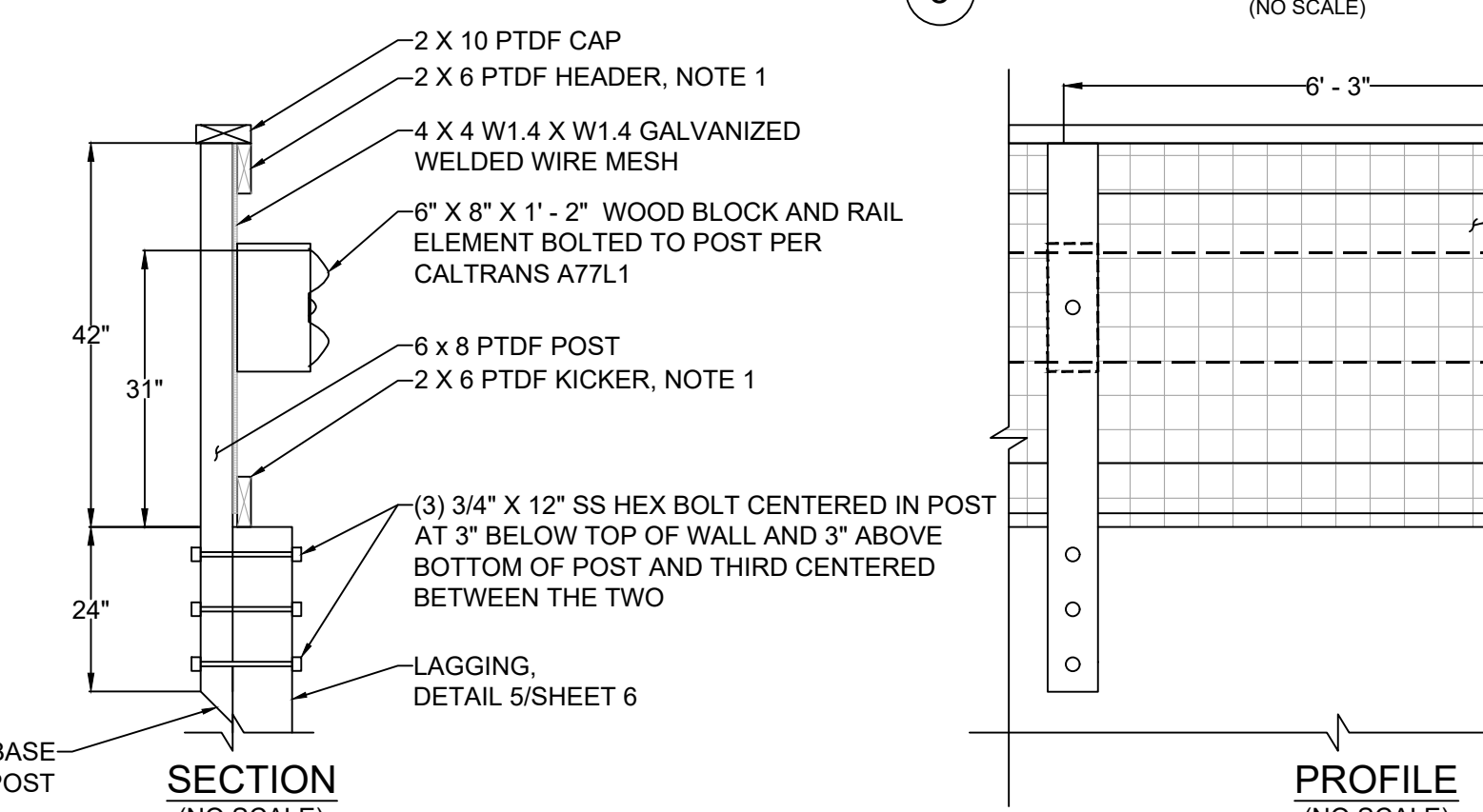
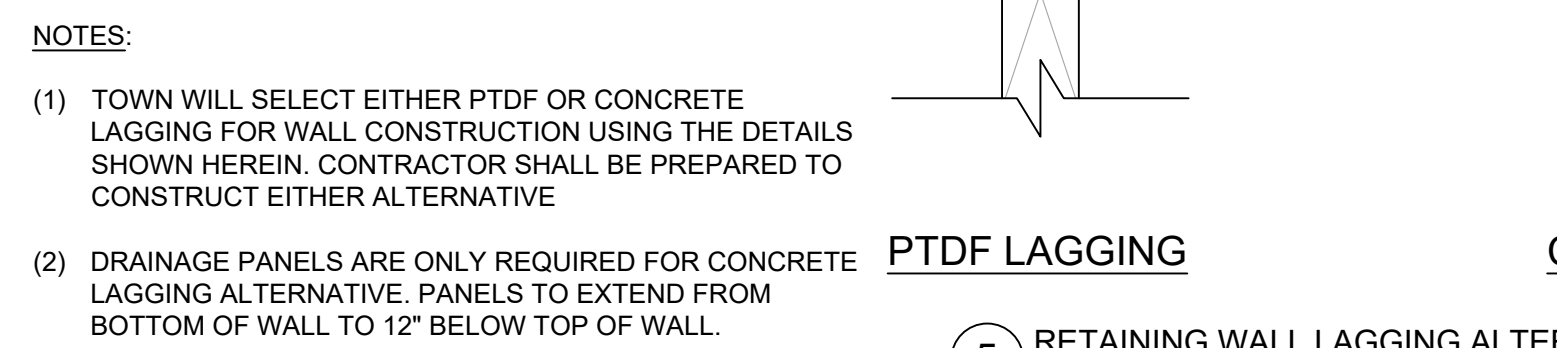
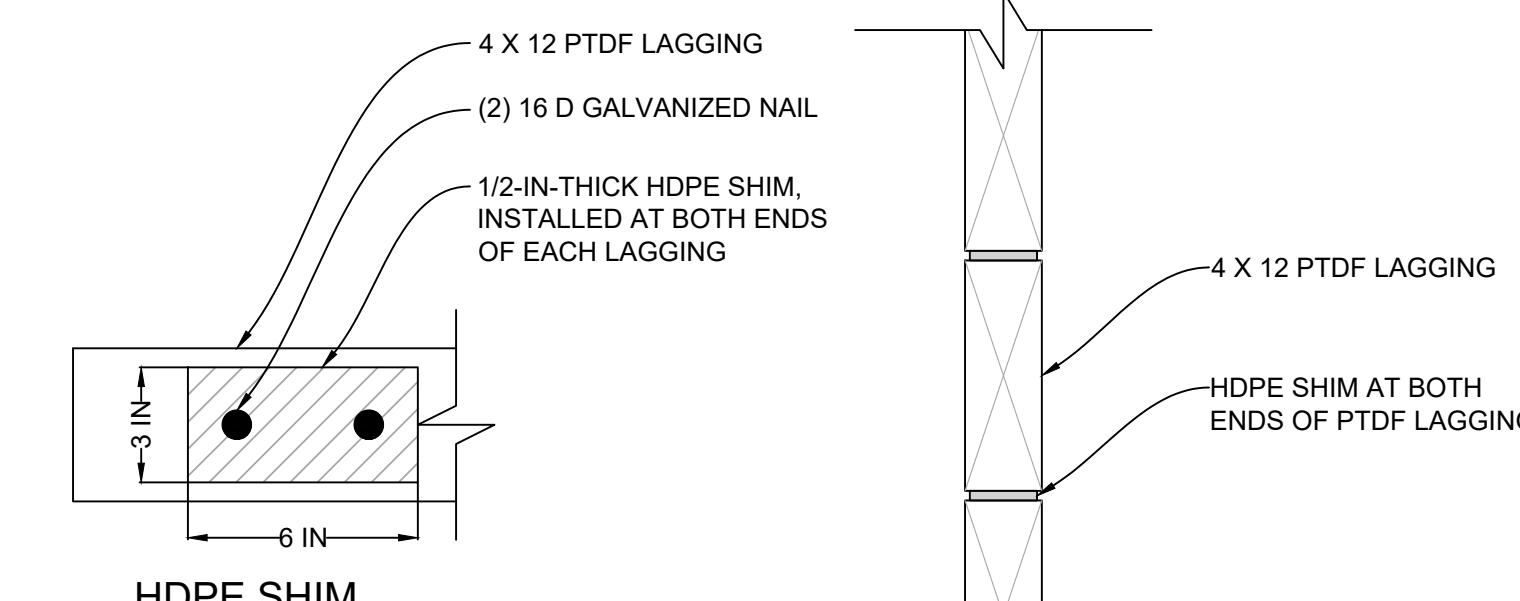
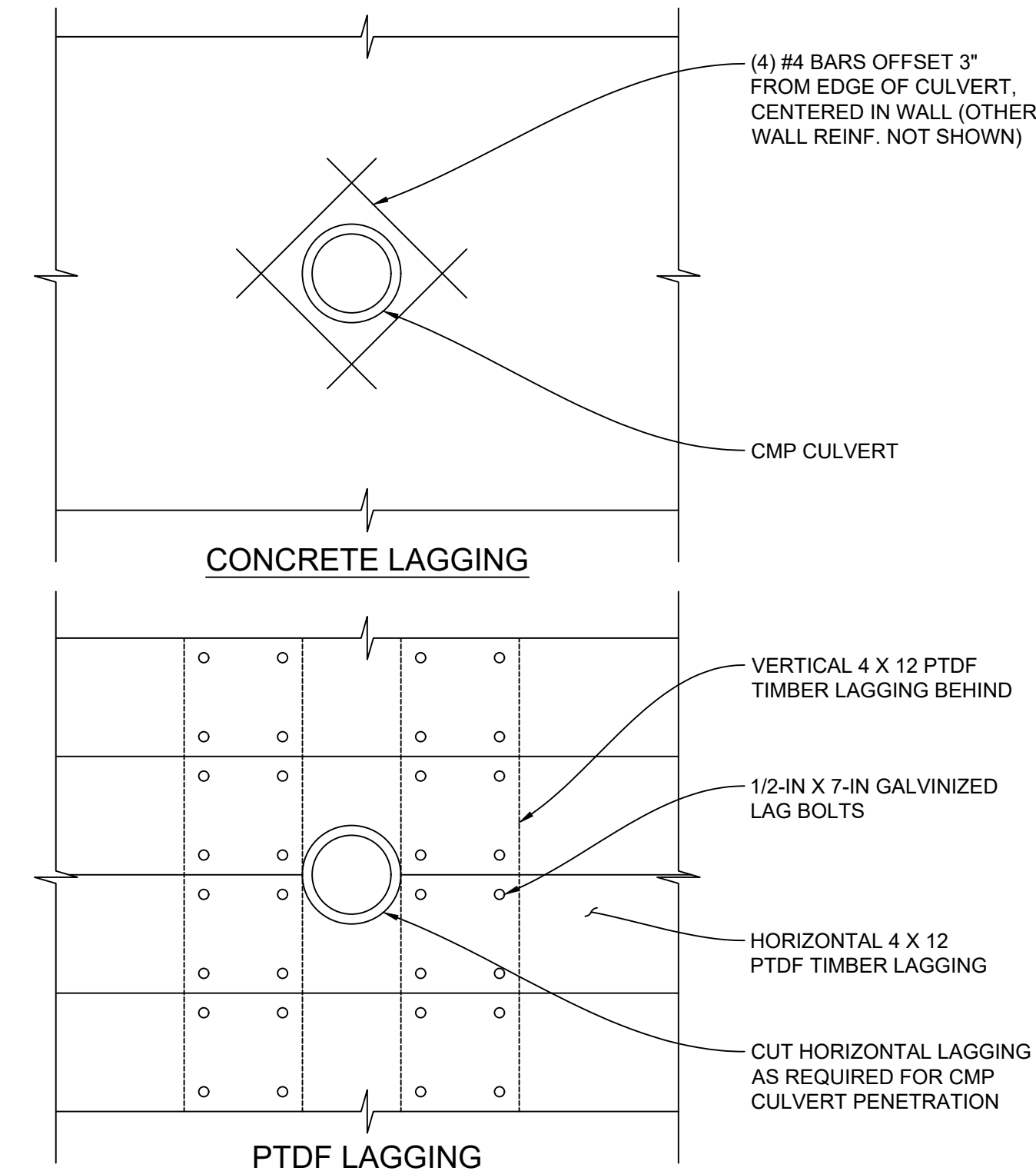


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**SECTIONS**  
Retaining Wall Replacement  
Berry Trail at Tamalpais Drive  
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SHEET  
**5**



**NOTES:**

- TOWN WILL SELECT EITHER PTDf OR CONCRETE LAGGING FOR WALL CONSTRUCTION USING THE DETAILS SHOWN HEREIN. CONTRACTOR SHALL BE PREPARED TO CONSTRUCT EITHER ALTERNATIVE
- DRAINAGE PANELS ARE ONLY REQUIRED FOR CONCRETE LAGGING ALTERNATIVE. PANELS TO EXTEND FROM BOTTOM OF WALL TO 12" BELOW TOP OF WALL.

**NOTES:**

- NAIL WELDED WIRE MESH TO HEADER AND FOOTER USING GALV 1 IN, 16 GAUGE BARBED FENCING STAPLES AT 12 IN SPACING.
- CONNECT HEADER & FOOTER TO POSTS WITH (4) GALVANIZED 0.25" X 3" HEAVY DUTY CONNECTOR SCREWS.

**TIEBACK NOTES:**

- PAINT ALL EXPOSED BAR, WALER, PLATE ASSEMBLY, WASHER AND NUT WITH COAL-TAR EPOXY COATING.
- DESIGN LOAD = 35 KIPS, MAX TEST LOAD = 47 KIPS

DESIGN CRITERIA		
MAX WALL HEIGHT	EMBEDMENT	TIEBACK
4' - 0"	7' - 0"	NONE
6' - 0"	10' - 6"	NONE
8' - 0"	15' - 0"	NONE
8' - 0" TO 12' - 0"	10' - 0"	DETAIL 3

**NOTES:**

- PAVEMENT SECTION TO CONSIST OF 3" OF ASPHALT OVER 6" OF AGGREGATE BASE COMPACTED TO 95% RC. SUBGRADE SHALL BE SCARIFIED, MOISTURE CONDITIONED AND COMPACTED TO 95% RC
- THE EXISTING UPPER WOOD RETAINING WALL MAY BE BURIED IN PLACE AT THE CONTRACTOR'S OPTION. IF WALL IS LEFT IN PLACE, DEMO UPPER 1' - 0" AND BURY REMAINDER.
- DRAINAGE SHALL CONSIST OF 1' - 0" WIDE OF CLASS 2 PERMEABLE MATERIAL. IF (E) WALL IS REMOVED, BACKFILL BEHIND WALL WITH FILL COMPACTED TO 95% RC TO RESTORE SURFACE TO (E) GRADE.

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By		

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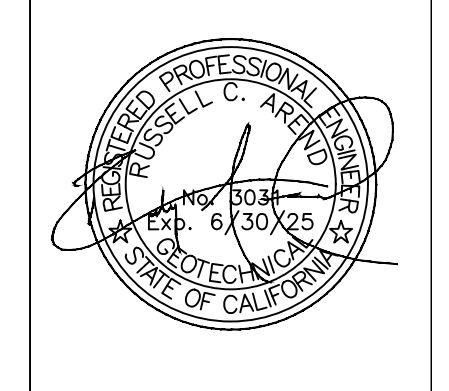
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**DETAILS**

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MAJOR DIVISIONS	SYMBOL	DESCRIPTION	
COARSE GRAINED SOILS over 50% sand and gravel	GW	Well-graded gravels or gravel-sand mixtures, little or no fines	
	GP	Poorly-graded gravels or gravel-sand mixtures, little or no fines	
	GRAVEL with fines	GM	Silty gravels, gravel-sand-silt mixtures
		GC	Clayey gravels, gravel-sand-clay mixtures
	CLEAN SAND	SW	Well-graded sands or gravelly sands, little or no fines
		SP	Poorly-graded sands or gravelly sands, little or no fines
SAND with fines	SM	Silty sands, sand-silt mixtures	
	SC	Clayey sands, sand-clay mixtures	
	FINE GRAINED SOILS over 50% silt and clay	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
CL		Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays	
OL		Organic silts and organic silt-clays of low plasticity	
SILT AND CLAY liquid limit >50%		MH	Inorganic silts, micaceous or diatomaceous fine sands or silts, elastic silts
	CH	Inorganic clays of high plasticity, fat clays	
	OH	Organic clays of medium to high plasticity	
HIGHLY ORGANIC SOILS	PT	Peat, muck, and other highly organic soils	
ROCK		Undifferentiated as to type or composition	

**KEY TO BORING AND TEST PIT SYMBOLS**

CLASSIFICATION TESTS		STRENGTH TESTS	
PI	PLASTICITY INDEX	UC	LABORATORY UNCONFINED COMPRESSION
LL	LIQUID LIMIT	TXCU	CONSOLIDATED UNDRAINED TRIAXIAL
SA	SIEVE ANALYSIS	TXJU	UNCONSOLIDATED UNDRAINED TRIAXIAL
HYD	HYDROMETER ANALYSIS	UC, CU, UU	1/2 Deviator Stress
P200	PERCENT PASSING NO. 200 SIEVE	DS (2.0)	DRAINED DIRECT SHEAR (NORMAL PRESSURE, ksf)
P4	PERCENT PASSING NO. 4 SIEVE	SAMPLER DRIVING RESISTANCE	
SAMPLER TYPE			
Modified California and Standard Penetration Test samplers are driven 18 inches with a 140-pound hammer falling 30 inches per blow. Blows for the initial 6-inch drive are recorded onto the logs. Blows for the final 12-inch drive are recorded onto the logs. Sampler refusal is defined as 50 blows during a 6-inch drive. Examples of blow records are as follows:			
■	MODIFIED CALIFORNIA	⊠	HAND SAMPLER
□	STANDARD PENETRATION TEST	⊠	ROCK CORE
▨	THIN-WALLED / FIXED PISTON	X	DISTURBED OR BULK SAMPLE
NOTE: Test boring and test pit logs are an interpretation of conditions encountered at the excavation location during the time of exploration. Subsurface rock, soil or water conditions may vary in different locations within the project site and with the passage of time. Boundaries between differing soil or rock descriptions are approximate and may indicate a gradual transition.		25 sampler driven 12 inches with 25 blows after initial 6-inch drive	
		85/7" sampler driven 7 inches with 85 blows after initial 6-inch drive	
		50/3" sampler driven 3 inches with 50 blows during initial 6-inch drive or beginning of final 12-inch drive	

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DEPTH		SAMPLE SYMBOL (4)	BORING 1		BLOWS / FOOT (1)	DRY UNIT WEIGHT (pcf) (2)	MOISTURE CONTENT (%)	SHEAR STRENGTH (psf) (3)	OTHER TEST DATA	OTHER TEST DATA
meters	feet		EQUIPMENT: Portable Hydraulic Drill Rig with 4-inch Solid Flight Auger	DATE: 6/6/24						
0	0		4.5" Asphalt Concrete over 6" Aggregate Base							
			Sandy GRAVEL (GM) light gray, dry to slightly moist, loose	9	91	4.3				
			Sandy SILT (ML) tan, slightly moist, soft to medium stiff, low to medium plasticity	5	110	16.3	500 UC			
			SANDSTONE tan, low hardness, weak, highly to completely weathered	8	100	7.1				
			SHALE gray and brown, low hardness, friable to weak, highly weathered	47	119	13.7				
			grades hard, dark gray							
				91	132	7.2				
			Water level encountered during drilling							
			Water level measured after drilling							

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DEPTH		SAMPLE SYMBOL (4)	BORING 2		BLOWS / FOOT (1)	DRY UNIT WEIGHT (pcf) (2)	MOISTURE CONTENT (%)	SHEAR STRENGTH (psf) (3)	OTHER TEST DATA	OTHER TEST DATA
meters	feet		EQUIPMENT: Portable Hydraulic Drill Rig with 4-inch Solid Flight Auger	DATE: 6/6/24						
0	0		6" Asphalt Concrete over 6" Aggregate Base							
			Sandy SILT (ML) dark gray-brown, slightly mottled red-orange, moist, stiff, low to medium plasticity	13	105	18.8	1225 UC			
			CLAY with Sand (CL) dark brown and gray mottled dark red-brown, moist, medium stiff, low plasticity	11	125	11.6	1025 UC	LL 31 PL 23 PI 8		
			SHALE dark gray, crushed, low hardness, friable to weak, completely weathered [Bedrock]	28	108	19.9				
			Boring terminated at 18.0 ft below ground surface No groundwater encountered	34	120	13.5				
				88/11"	132	9.9				
			Water level encountered during drilling							
			Water level measured after drilling							

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FRACTURING AND BEDDING		
<b>Fracture Classification</b>	<b>Spacing</b>	<b>Bedding Classification</b>
Crushed	less than 3/4 inch	Laminated
Intensely fractured	3/4 to 2-1/2 inches	Very thinly bedded
Closely fractured	2-1/2 to 8 inches	Thinly bedded
Moderately fractured	8 to 24 inches	Medium bedded
Widely fractured	2 to 6 feet	Thickly bedded
Very widely fractured	greater than 6 feet	Very thickly bedded

HARDNESS	
Low	Carved or gouged with a knife
Moderate	Easily scratched with a knife, friable
Hard	Difficult to scratch, knife scratch leaves dust trace
Very hard	Rock scratches metal

STRENGTH	
Friable	Crumbles by rubbing with fingers
Weak	Crumbles under light hammer blows
Moderate	Indentations <1/8 inch with moderate blow with pick end of rock hammer
Strong	Withstands few heavy hammer blows, yields large fragments
Very strong	Withstands many heavy hammer blows, yields dust, small fragments

WEATHERING	
Complete	Minerals decomposed to soil, but fabric and structure preserved
High	Rock decomposition, thorough discoloration, all fractures are extensively coated with clay, oxides or carbonates
Moderate	Fracture surfaces coated with weathering minerals, moderate or localized discoloration
Slight	A few stained fractures, slight discoloration, no mineral decomposition, no affect on cementation
Fresh	Rock unaffected by weathering, no change with depth, rings under hammer impact

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DEPTH		SAMPLE SYMBOL (4)	BORING 1 (CONTINUED)		BLOWS / FOOT (1)	DRY UNIT WEIGHT (pcf) (2)	MOISTURE CONTENT (%)	SHEAR STRENGTH (psf) (3)	OTHER TEST DATA	OTHER TEST DATA
meters	feet		EQUIPMENT: Portable Hydraulic Drill Rig with 4-inch Solid Flight Auger	DATE: 6/6/24						
			SHALE dark gray, hard, friable to weak, highly weathered	64	127	12.1	2300 UC			
			Boring terminated at 21.5 ft below ground surface Ground water measured at 21.0 ft upon completion of drilling							
			Water level encountered during drilling							
			Water level measured after drilling							

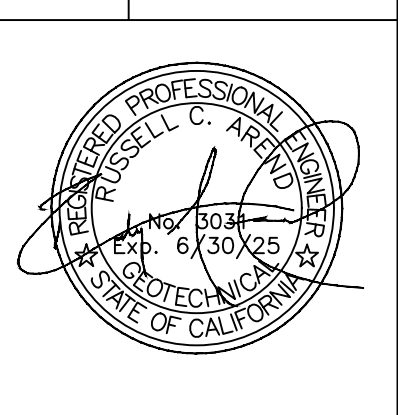
	504 Redwood Blvd. Suite 220 Novato, CA 94947 T 415 / 382-3444 F 415 / 382-3450 www.millerpac.com	<b>BORING LOG</b> Retaining Wall Replacement Berry Trail at Tamalpais Road Fairfax, California Project No. 201.222 Date: 8/16/2024		<b>A-4</b> FIGURE

ISSUED FOR BIDDING	DESCRIPTION	MARK	DATE	BY
8/16/24	RCA			


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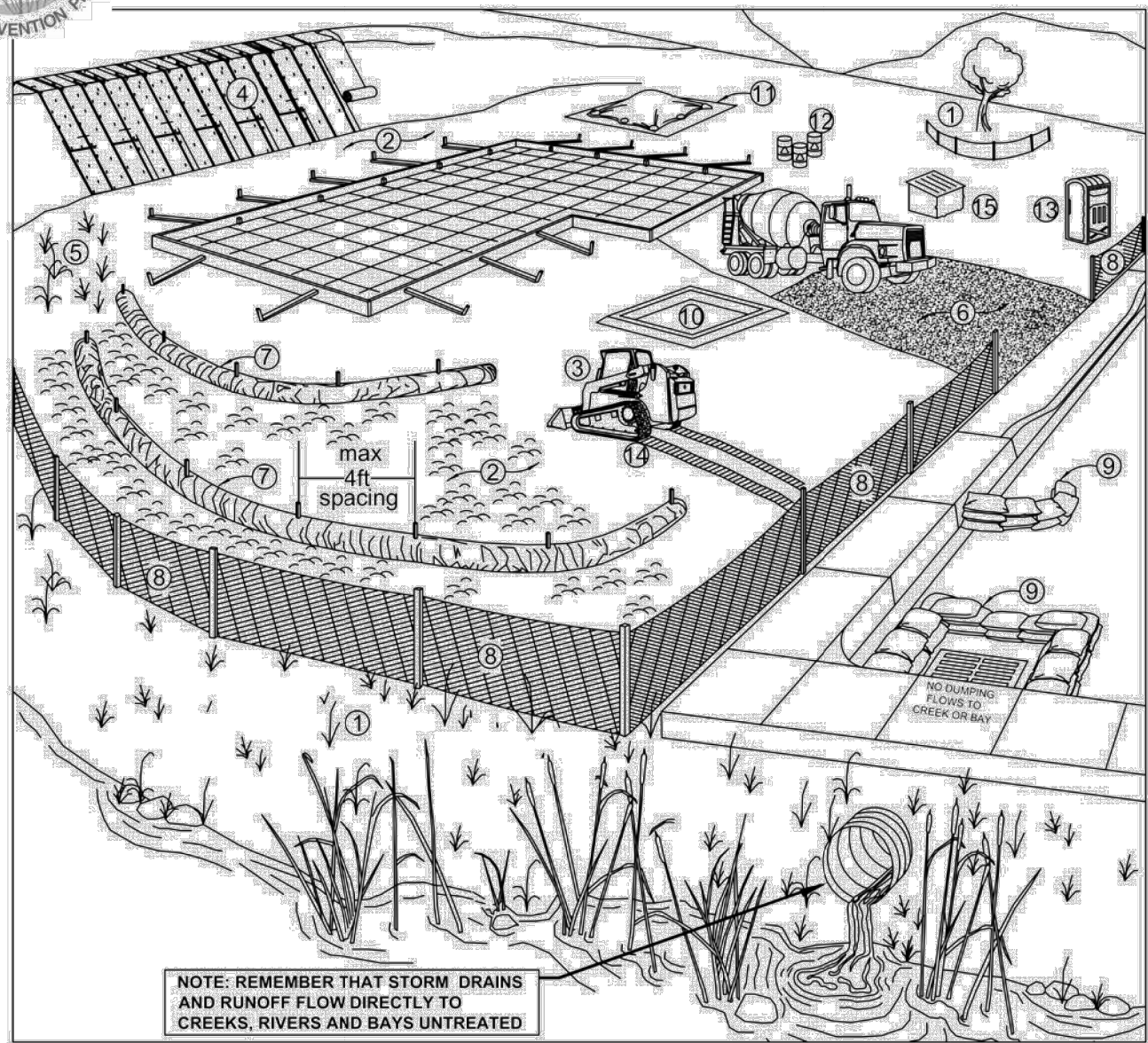
**BORING LOGS**  
 Retaining Wall Replacement  
 Berry Trail at Tamalpais Drive  
 Fairfax, California  
 Project No. 201.222



**SHEET**  
**7**



### Marin County Stormwater Pollution Prevention Program Minimum Control Measures For Small Construction Projects



**NOTE: REMEMBER THAT STORM DRAINS AND RUNOFF FLOW DIRECTLY TO CREEKS, RIVERS AND BAYS UNTREATED**

Erosion Controls	Sediment Controls	Good Housekeeping
NS Scheduling	6. Tracking Controls	10. Concrete Washout
1. Preserve Vegetation & Creek Set Backs	7. Fiber Rolls	11. Stockpile Management
2. Soil Cover	8. Silt Fence	12. Hazardous Material Management
3. Soil Preparation/ Roughening	9. Drain Inlet Protection	13. Sanitary Waste Management
4. Erosion Control Blankets	NS Trench Dewatering	14. Equipment and Vehicle Maintenance
5. Revegetation		15. Litter and Waste Management

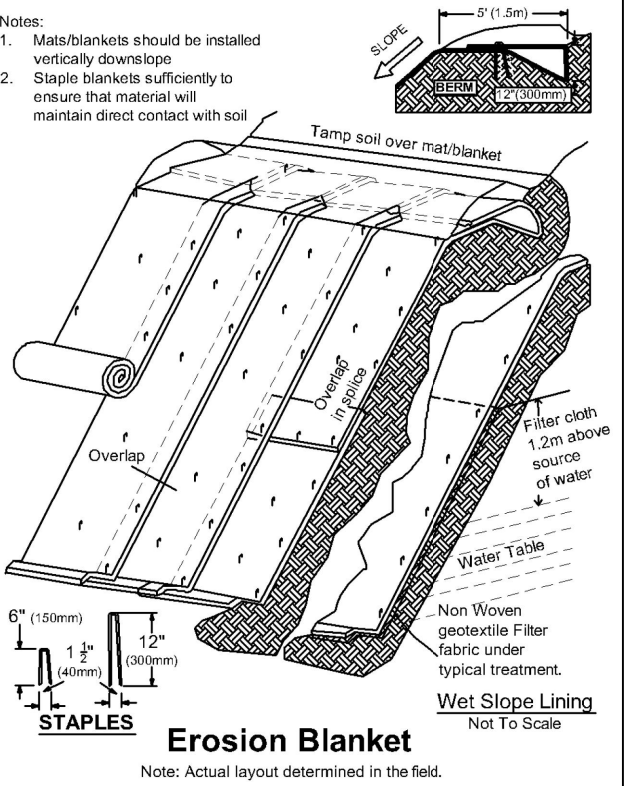
NS=not shown on graphic

**Note:** Select an effective combination of control measures from each category. Erosion Control, Sediment Control, and Good Housekeeping. Control measures shall be continually implemented and maintained throughout the project until activities are complete, disturbed areas are stabilized with permanent erosion controls, and the local agency has signed off on permits that may have been required for the project. Inspect and maintain the control measures before and after rain events, and as required by the local agency or state permit.

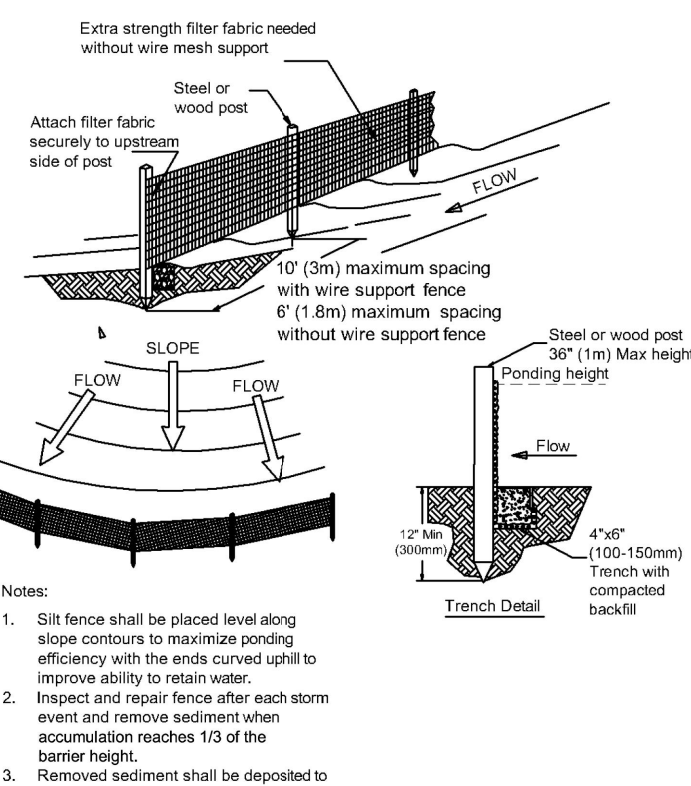
More detailed information on the BMPs can be found in the related California Stormwater Quality Association (CASQA) and California Department of Transportation (Caltrans) BMP Factsheets. CASQA factsheets are available by subscription in the *California Best Management Practices Handbook Portal: Construction* at <http://www.casqa.org>. Caltrans factsheets are available in the *Construction Site BMP Manual March 2003* at <http://www.dot.ca.gov/hq/constr/stormwater/manuals.htm>. Visit [www.mcstopp.org](http://www.mcstopp.org) for more information on construction site management and Erosion and Sediment Control Plans.

**If you require materials in alternative formats, please contact:  
415-473-4381 voice/TTY or [disabilityaccess@co.marin.ca.us](mailto:disabilityaccess@co.marin.ca.us)**

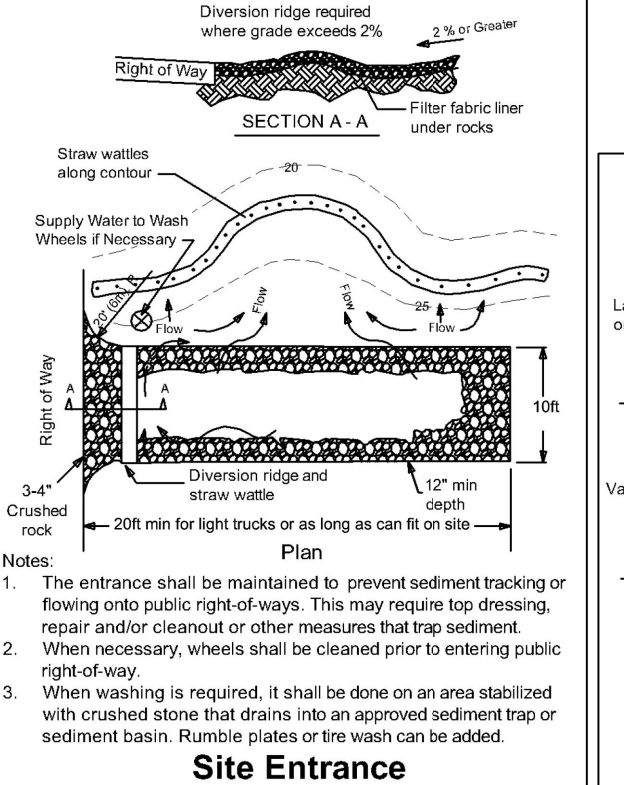
Control Measure	General Description
<b>Erosion Control Best Management Practices</b>	
N/A	<b>Scheduling</b> Plan the project and develop a schedule showing each phase of construction. Schedule construction activities to reduce erosion potential, such as scheduling ground disturbing activities during the summer and phasing projects to minimize the amount of area disturbed. For more info see the following factsheets: CASQA: EC-1; or Caltrans: SS-1.
1	<b>Preserve Existing Vegetation and Creek Setbacks</b> Preserve existing vegetation to the extent possible, especially along creek buffers. Show creek buffers on maps and identify areas to be preserved in the field with temporary fencing. Check with the local Planning and Public Works Departments for specific creek set back requirements. For more info see the following factsheets: CASQA: EC-2; or Caltrans: SS-2.
2	<b>Soil Cover</b> Cover exposed soil with straw mulch and tackifier (or equivalent). For more info see the following factsheets: CASQA: EC-3, EC-5, EC-6, EC-7, EC-8, EC-14, EC-16; or Caltrans: SS-4, SS-5, SS-6, SS-7, SS-8.
3	<b>Soil Preparation/ Roughening</b> Soil preparation is essential to vegetation establishment and BMP installation. It includes soil testing and amendments to promote vegetation growth as well as roughening surface soils by mechanical methods (decompacting, scarifying, stair stepping, etc.). For more info see the following factsheets: CASQA: EC-15.
4	<b>Erosion Control Blankets</b> Install erosion control blankets (or equivalent) on disturbed sites with 3:1 slopes or steeper. Use wildlife-friendly blankets made of biodegradable natural materials. Avoid using blankets made with plastic netting or fixed aperture netting. See: <a href="http://www.coastal.ca.gov/npa/Wildlife-Friendly_Products.pdf">http://www.coastal.ca.gov/npa/Wildlife-Friendly_Products.pdf</a> . For more info see the following factsheets: CASQA: EC-7; or Caltrans: SS-7.
5	<b>Revegetation</b> Re-vegetate areas of disturbed soil or vegetation as soon as practical. For more info see the following factsheets: CASQA: EC-4; or Caltrans: SS-4.
<b>Sediment Control Best Management Practices</b>	
6	<b>Tracking Controls</b> Stabilize site entrance to prevent tracking soil offsite. Inspect streets daily and sweep street as needed. Require vehicles and workers to use stabilized entrance. Place crushed rock 12-inches deep over a geotextile, using angular rock between 4 and 6-in. Make the entrance as long as can be accommodated on the site, ideally long enough for 2 revolutions of the maximum tire size (16-20 feet long for most light trucks). Make the entrance wide enough to accommodate the largest vehicle that will access the site, ideally 10 feet wide with sufficient radii for turning in and out of the site. Wheel washes may be needed where space is limited or where the site entrance and sweeping is not effective. For more info see the following factsheets: CASQA: TC-1, TC-2; or Caltrans: TC-3.
7	<b>Fiber Rolls</b> Use fiber rolls as a perimeter control measure, along contours of slopes, and around soil stockpiles. On slopes space rolls 10 to 20 feet apart (using closer spacing on steeper slopes). Install parallel to contour. If more than one roll is used in a row overlap roll do not abut. Hook end of roll upslope. Install rolls per either Type 1 (stake rolls into shallow trenches) or Type 2 (stake in front and behind roll and lash with rope). Use wildlife-friendly fiber rolls made of biodegradable natural materials. Avoid using fiber rolls made with plastic netting or fixed aperture netting. See: <a href="http://www.coastal.ca.gov/npa/Wildlife-Friendly_Products.pdf">http://www.coastal.ca.gov/npa/Wildlife-Friendly_Products.pdf</a> . Manufactured linear sediment control or compost socks can be used in lieu of fiber rolls. For more info see the following factsheets: CASQA: SE-5 (Type 1); SE-12, SE-13; or Caltrans: SC-5 (Type 1 and Type 2).
8	<b>Silt Fence</b> Use silt fence as a perimeter control measure, and around soil stockpiles. Install silt fence along contours. Key silt fence into the soil and stake. Do not use silt fence for concentrated water flows. Install fence at least 3 feet back from the slope to allow for sediment storage. Wire backed fence can be used for extra strength. Avoid installing silt fence on slopes because they are hard to maintain. Manufactured linear sediment control can be used in lieu of silt fences. For more info see the following factsheets: CASQA: SE-1; SE-12; or Caltrans: SC-1.
9	<b>Drain Inlet Protection</b> Use gravel bags, (or similar product) around drain inlets located both onsite and in gutter as a last line of defense. Bags should be made of a woven fabric resistant to photo-degradation filled with 0.5-1-in washed crushed rock. Do not use sand bags or silt fence fabric for drain inlet protection. For more info see the following factsheets: CASQA: SE-10; or Caltrans: SC-10.
N/A	<b>Trench Dewatering</b> Follow MCSTOPPP BMPs for trench dewatering. <a href="http://www.marincounty.org/deptslaw/divisions/mcstoppaqa/development--media/Files/Departments/PW/mcstoppaqa/development/TrenchingSWReqMCSSTOPPPFinal_0_9.pdf">http://www.marincounty.org/deptslaw/divisions/mcstoppaqa/development--media/Files/Departments/PW/mcstoppaqa/development/TrenchingSWReqMCSSTOPPPFinal_0_9.pdf</a> . For more info see the following factsheets: CASQA: NS-2; or Caltrans: NS-2.
<b>Good Housekeeping Best Management Practices</b>	
10	<b>Concrete Washout</b> Construct a lined concrete washout site away from storm drains, waterbodies, or other drainages. Ideally, place adjacent to stabilized entrance. Clean as needed and remove at end of project. For more info see the following factsheets: CASQA: WM-8; or Caltrans: WM-8.
11	<b>Stockpile Management</b> Cover all stockpiles and landscape material and berm properly with fiber rolls or sand bags. Keep behind the site perimeter control and away from waterbodies. For more info see the following factsheets: CASQA: WM-3; or Caltrans: WM-3.
12	<b>Hazardous Material Management</b> Hazardous materials must be kept in closed containers that are covered and within secondary containment; do not place containers directly on soil. For more info see the following factsheets: CASQA: WM-6; or Caltrans: WM-6.
13	<b>Sanitary Waste Management</b> Place portable toilets near stabilized site entrance, behind the curb and away from gutters, storm drain inlets, and waterbodies. Tie or stake portable toilets to prevent tipping and equip units with overflow pan/tray (most vendors provide these). For more info see the following factsheets: CASQA: WM-9; or Caltrans: WM-9.
14	<b>Equipment and Vehicle Maintenance</b> Prevent equipment fluid leaks onto ground by placing drip pans or plastic tarps under equipment. Immediately clean up any spills or drips. For more info see the following factsheets: CASQA: NS-8, NS-9, and NS-10; or Caltrans: NS-8, NS-9, and NS-10.
15	<b>Litter and Waste Management</b> Designate waste collection areas on site. Use watertight dumpsters and trash cans; inspect for leaks. Cover at the end of each work day and when it is raining or windy. Arrange for regular waste collection. Pick up site litter daily. For more info see the following factsheets: CASQA: WM-5; or Caltrans: WM-5.



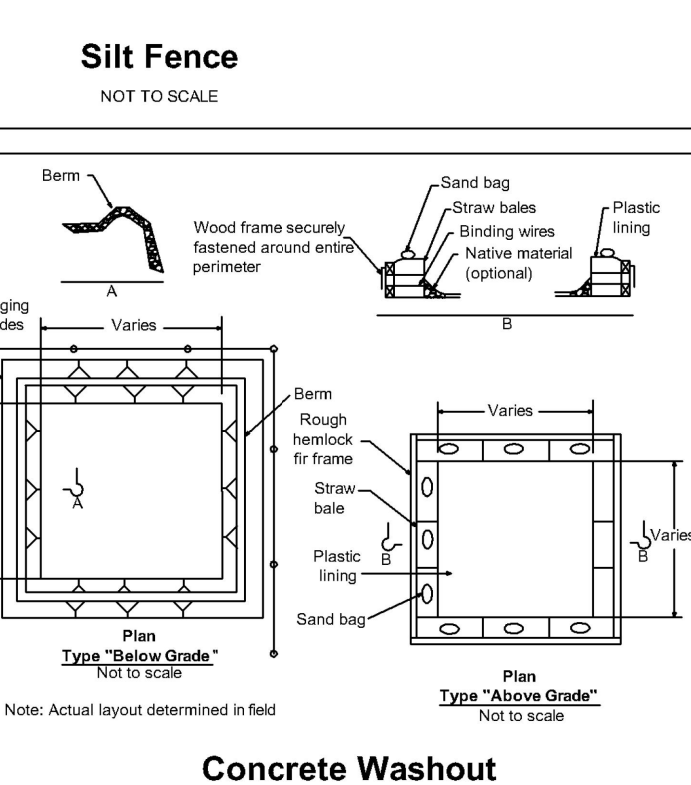
**Erosion Blanket**  
Note: Actual layout determined in the field.




**Silt Fence**  
NOT TO SCALE



**Site Entrance**



**Concrete Washout**



**Catch Basins with Gravel Bags**  
(Do not use sand bags near inlets)

ISSUED FOR BIDDING	8/16/24	RCA	By

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**EROSION & SEDIMENT CONTROL**

**Retaining Wall Replacement  
Berry Trail at Tamapais Drive  
Fairfax, California**

Project No. 201.222

Designed: **RKC/RCA**  
Drawn: **RKC/RCA**  
Checked: **SAS**

