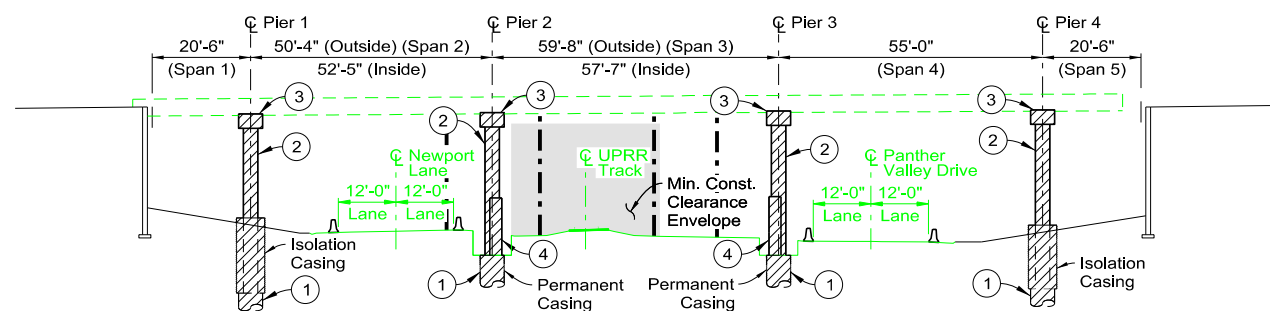


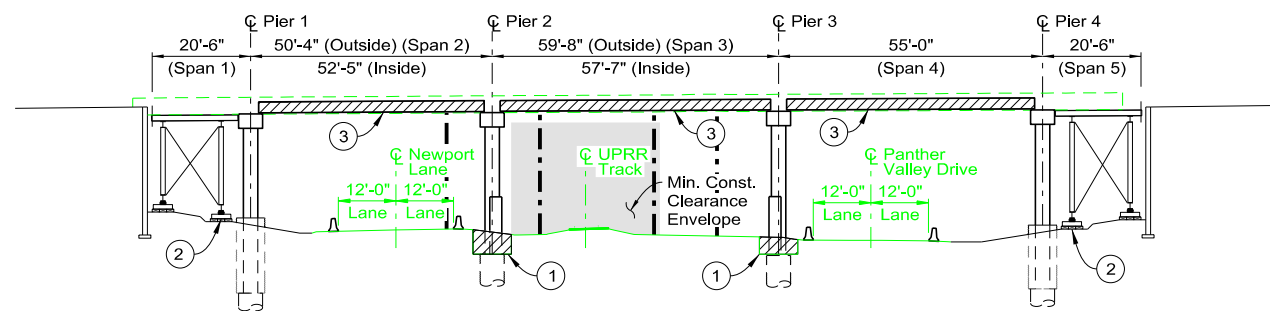
### STAGE 1

1. Remove barrier rail, overhang, and portion of approach slab from existing structure. See Sheet B107 for construction phasing and Sheet B108 for limits of removal.
2. Excavate fill slopes and construct MSE walls adjacent to Piers 1 and 4. See MSE Wall Sheets MSE10 & MSE11 for details.
3. Install shoring systems as approved by UPRR. Excavate soil adjacent to Piers 2 & 3 columns to facilitate construction of Railroad crashwalls and new drilled shafts and columns at Piers 2 & 3. For limits of excavation see Sheet B105. For shoring requirements see Sheets B104C & B104D and refer to "UPRR and BNSF Guidelines for Temporary Shoring".



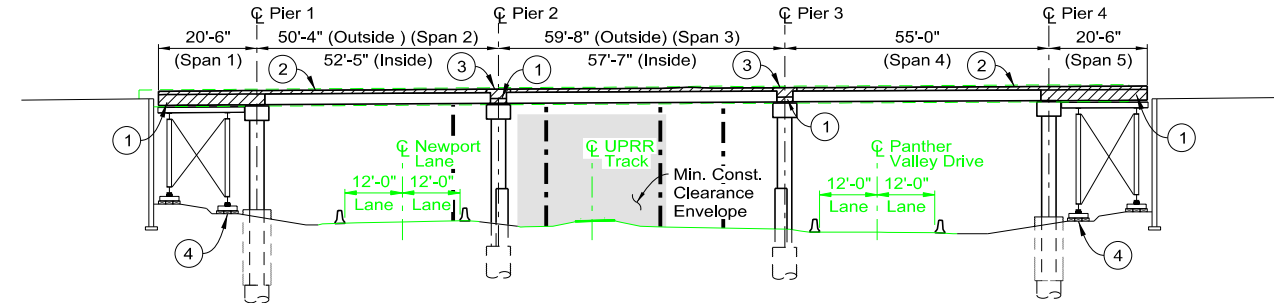
### STAGE 2

1. Construct drilled shaft foundations at Piers 1, 2, 3, & 4.
2. Construct columns at Piers 1, 2, 3, & 4.
3. Construct pier caps at Piers 1, 2, 3, & 4.
4. Construct Railroad crashwalls at Piers 2 & 3.



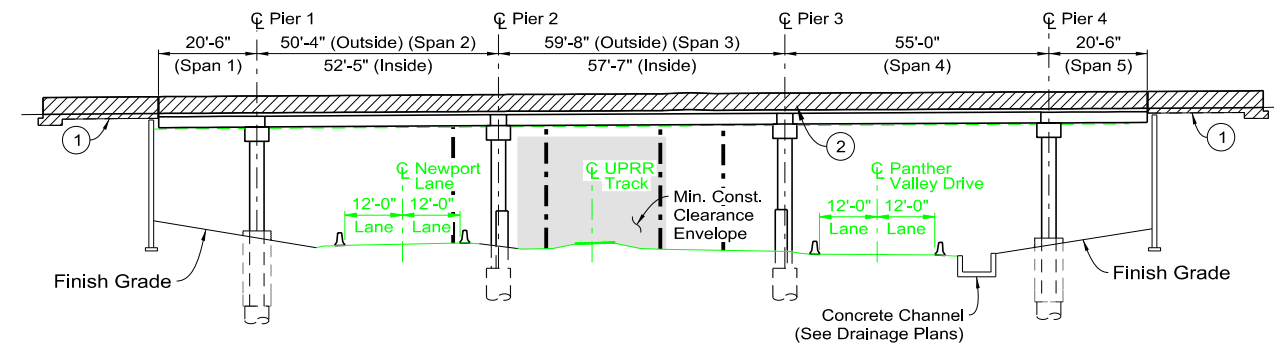
### STAGE 3

1. Remove installed shoring and back fill soil adjacent to columns at Piers 2 & 3 after constructing Railroad crashwalls.
2. Erect falsework to support CIP Spans 1 & 5
3. Erect precast girders at Spans 2, 3, & 4.



### STAGE 4

1. Construct CIP soffits, webs, and diaphragms for Spans 1 & 5 and partial diaphragm closures at Piers 2 & 3.
2. Construct CIP deck for all spans, excluding diaphragm closures at Piers 2 & 3.
3. Place diaphragm closures at Piers 2 & 3 after CIP deck curing is complete but no sooner than 10 days after CIP deck concrete placement.
4. Remove falsework per the requirements of 502.03.12 of the Standard Specifications.




### STAGE 5

1. Construct approach slabs at Begin and End Bridge.
2. Construct bridge rail.
3. Construct deck closure pour; wait a minimum of 30 days after release of falsework before placing closure pour. For closure reinforcing, see typical sections on Sheets B122-B123.

### NOTES

1. Refer to Section 108.04, Limitations of Operations, of the Special Provisions for requirements related to maintenance of traffic.
2. See Sheet B135 for concrete placement schedule and classification.
3. All demolition within the Railroad right-of-way and/ or demolition that may impact the Railroad tracks or operations shall comply with the Railroad demolition requirements. For limits of Railroad right-of-way see Sheet B104A, Railroad Coordination Plan.
4. Any shoring system that may impact the Railroad operations and/or supports Railroad embankments shall be designed and constructed per "UPRR and BNSF Guidelines for Temporary Shoring".

### LEGEND

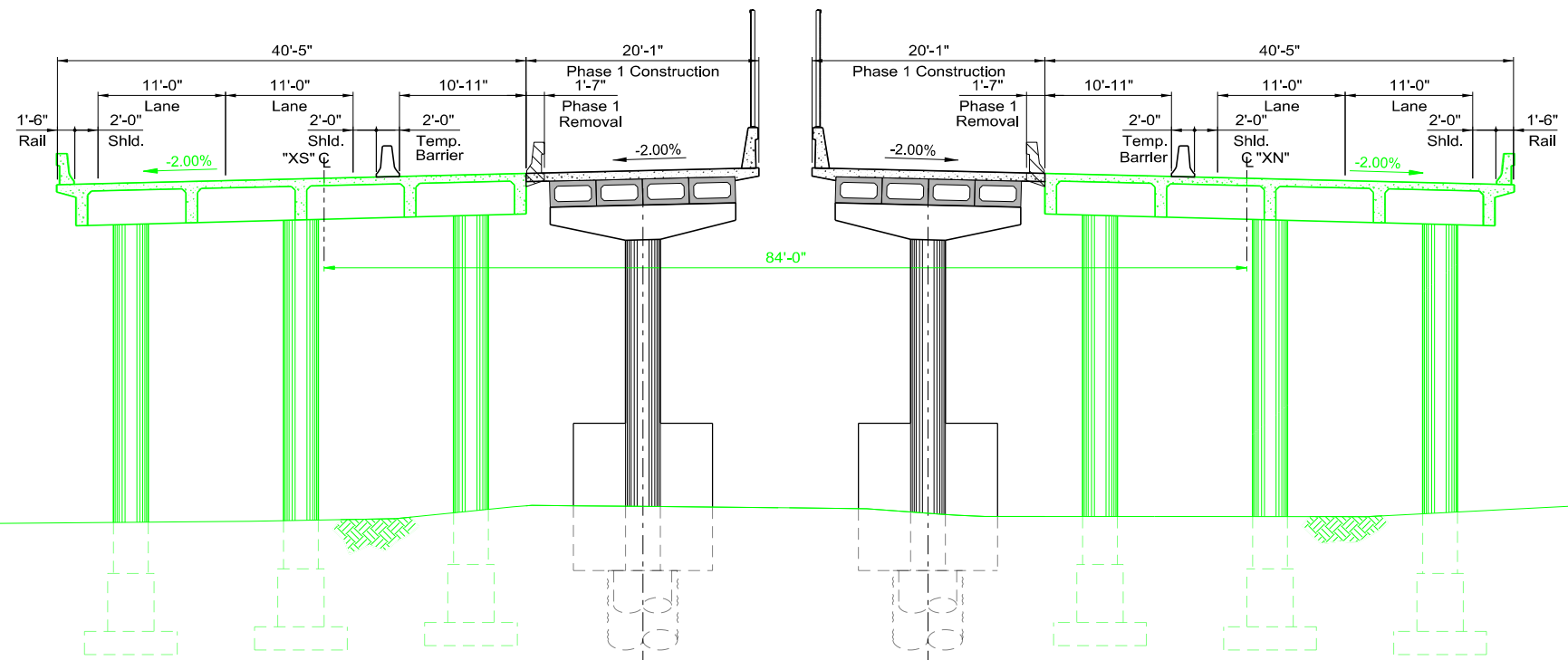
 To be constructed this stage

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**BRIDGE  
CONSTRUCTION  
SEQUENCE**



G-1092 N&S

STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B107



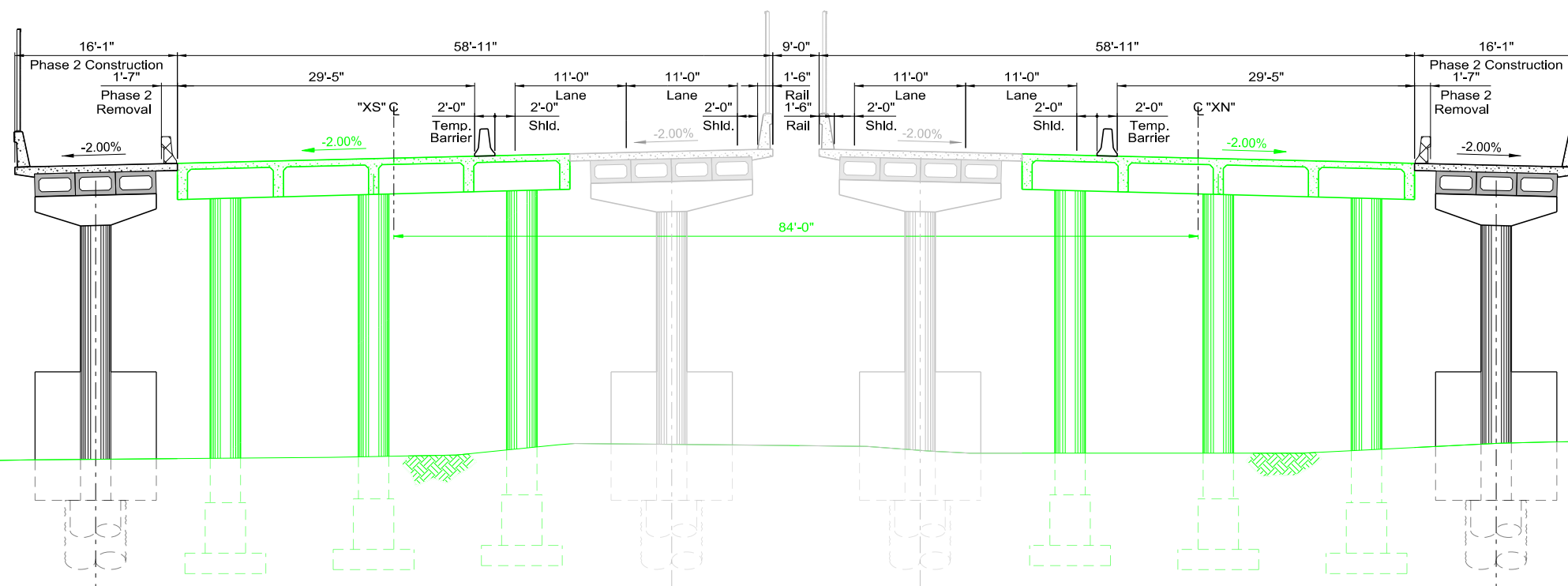
**SECTION - PHASE 1**  
LOOKING AHEAD ON LINE  
NORMAL TO ALIGNMENT

**LEGEND**

-  Phase 1 - Limits of Removal
-  Phase 2 - Limits of Removal

**NOTES**

1. Phasing shown is conceptual. Refer to Traffic Control plans and Contract Special Provisions for limitations and phasing requirements.
2. For phasing requirements to facilitate MSE wall construction, see Retaining Wall plans.



**SECTION - PHASE 2**  
LOOKING AHEAD ON LINE  
NORMAL TO ALIGNMENT

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

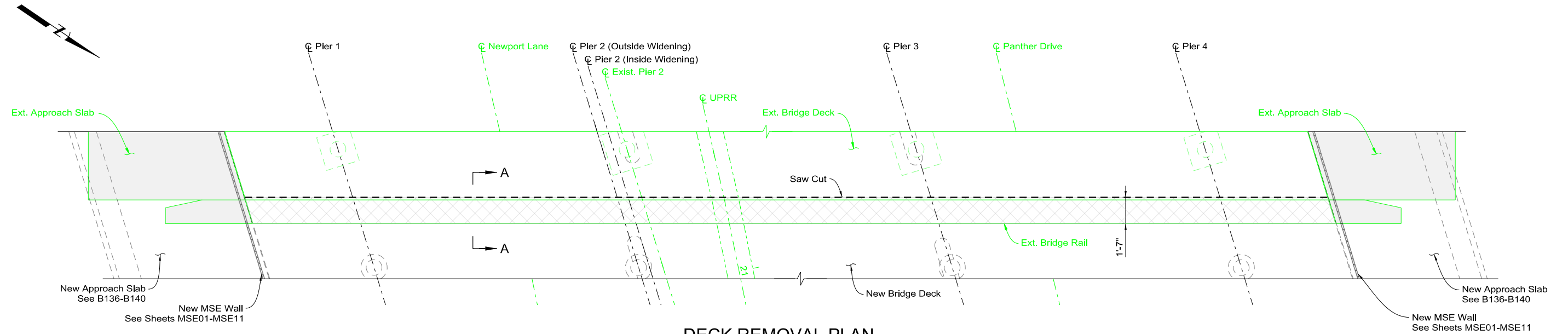
**BRIDGE  
CONSTRUCTION  
PHASES 1 & 2**

G-1092 N&S

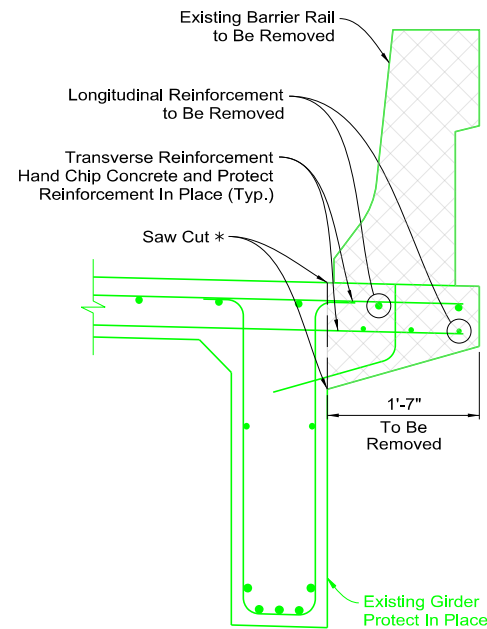
DATE : 1/26/2023



STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B108





**DECK REMOVAL PLAN**  
EAST SIDE OF NORTHBOUND STRUCTURE SHOWN.  
OTHER DECK REMOVALS SIMILAR



**SECTION A-A**  
OVER SUPERSTRUCTURE

\* - Saw cut top and bottom to 1" max depth. Existing reinforcing to remain in place and undamaged.

**LEGEND**

-  Limits of Bridge Deck and Bridge Rail Removal
-  Approach Slab and Rail Removal See MSE Wall Sheets

**NOTES**

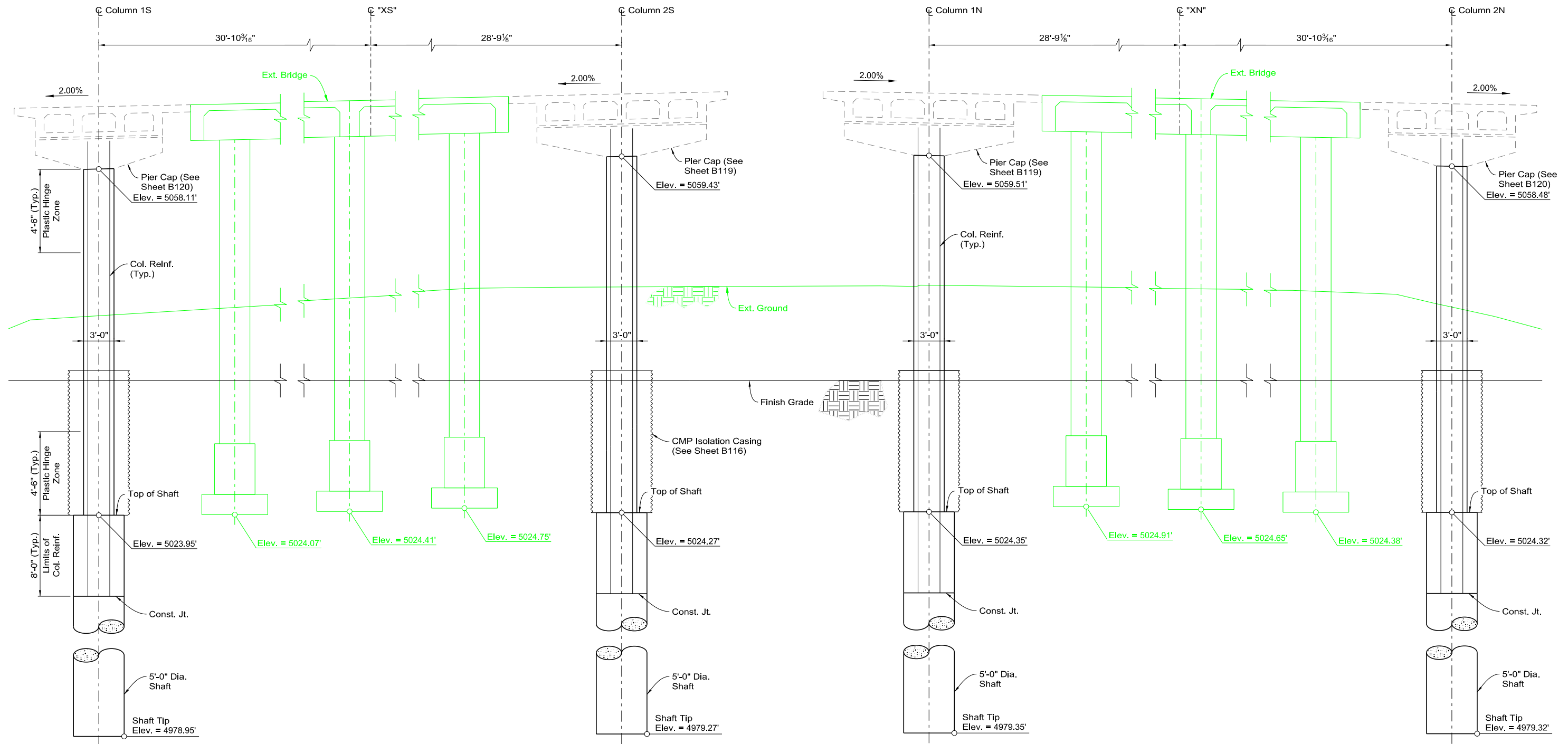
1. All demolition within the Railroad right-of-way and/or demolition that may impact the Railroad tracks or operations shall comply with the Railroad demolition requirements.
2. Protect reinforcing steel that is to remain during concrete removal. Blast clean all existing reinforcing steel exposed after concrete removal operations. Notify Engineer if reinforcing to remain is damaged during removal.
3. Dimensions of existing elements shown are based on as built plans unless otherwise noted. Actual field dimension may vary, no additional compensation will be made for removal of elements with dimensions inconsistent with those shown herein.

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**REMOVAL  
DETAILS**

G-1092 N&S

STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B109



**ELEVATION PIER 1**  
LOOKING AHEAD ON LINE  
ALONG SKEW

**NOTES**

- Elevations noted taken through centerline of shaft/column.
- Lap splices in longitudinal column reinforcing not permitted.
- For pier cap details, see Sheets B119-B121.
- For column/shaft details not shown, see Sheets B113-B115.

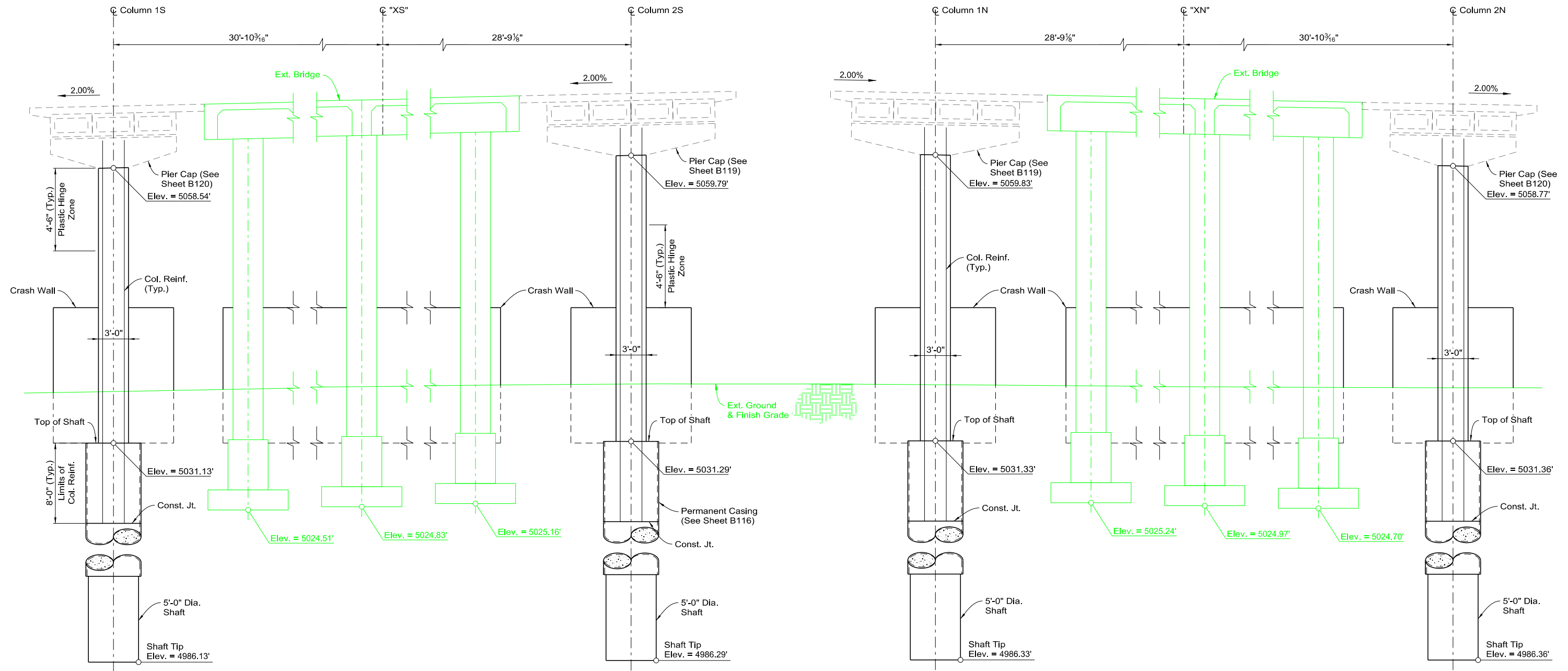
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**PIER 1 ELEVATION**

G-1092 N&S

DATE : 1/26/2023

STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B110



**ELEVATION PIER 2**  
LOOKING AHEAD ON LINE  
ALONG SKEW

**NOTES**

1. Elevations noted taken through centerline of shaft/column.
2. Lap splices in longitudinal column reinforcing not permitted.
3. For pier cap details, see Sheets B119-B121.
4. For column/shaft details not shown, see Sheets B113-B115.
5. For crashwall details, see Sheet B117.

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

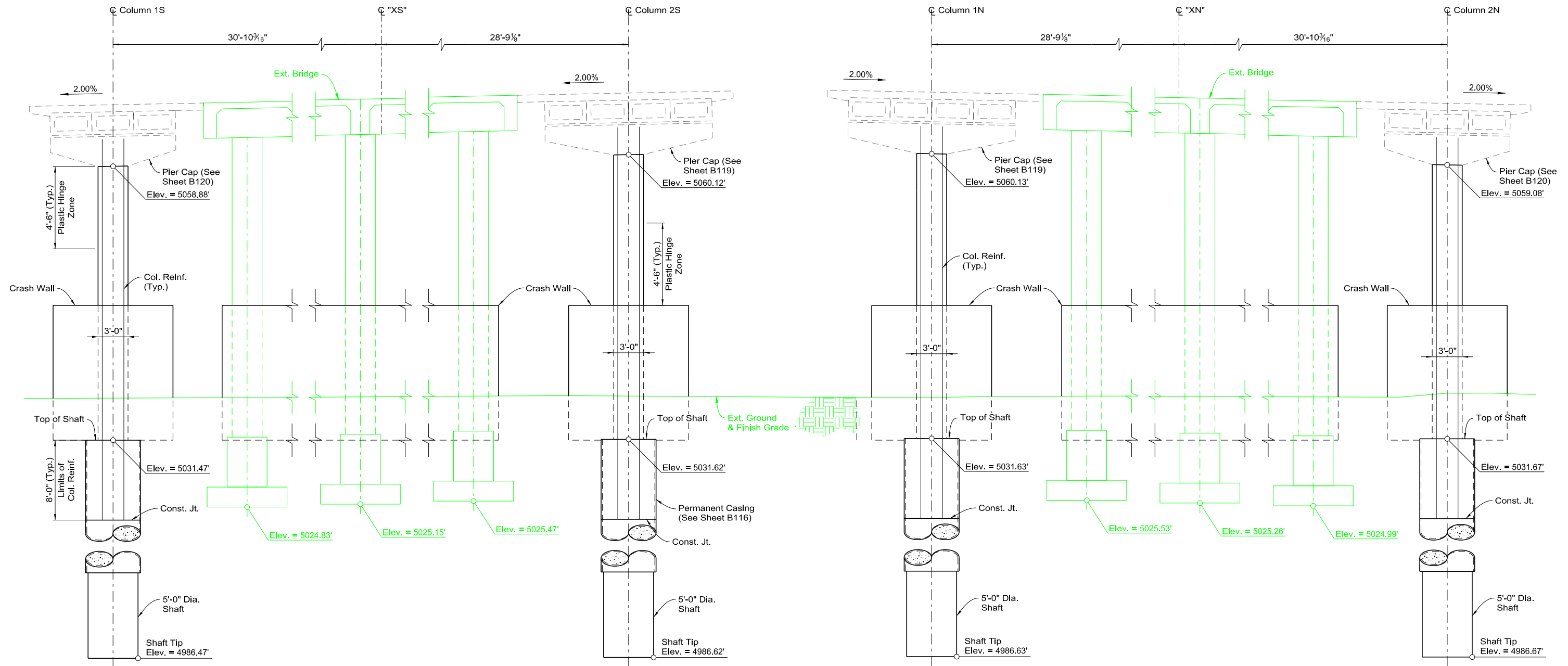
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**PIER 2 ELEVATION**

**G-1092 N&S**

DATE : 1/26/2023

STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B111



**ELEVATION PIER 3**  
LOOKING AHEAD ON LINE  
ALONG SKEW

**NOTES**

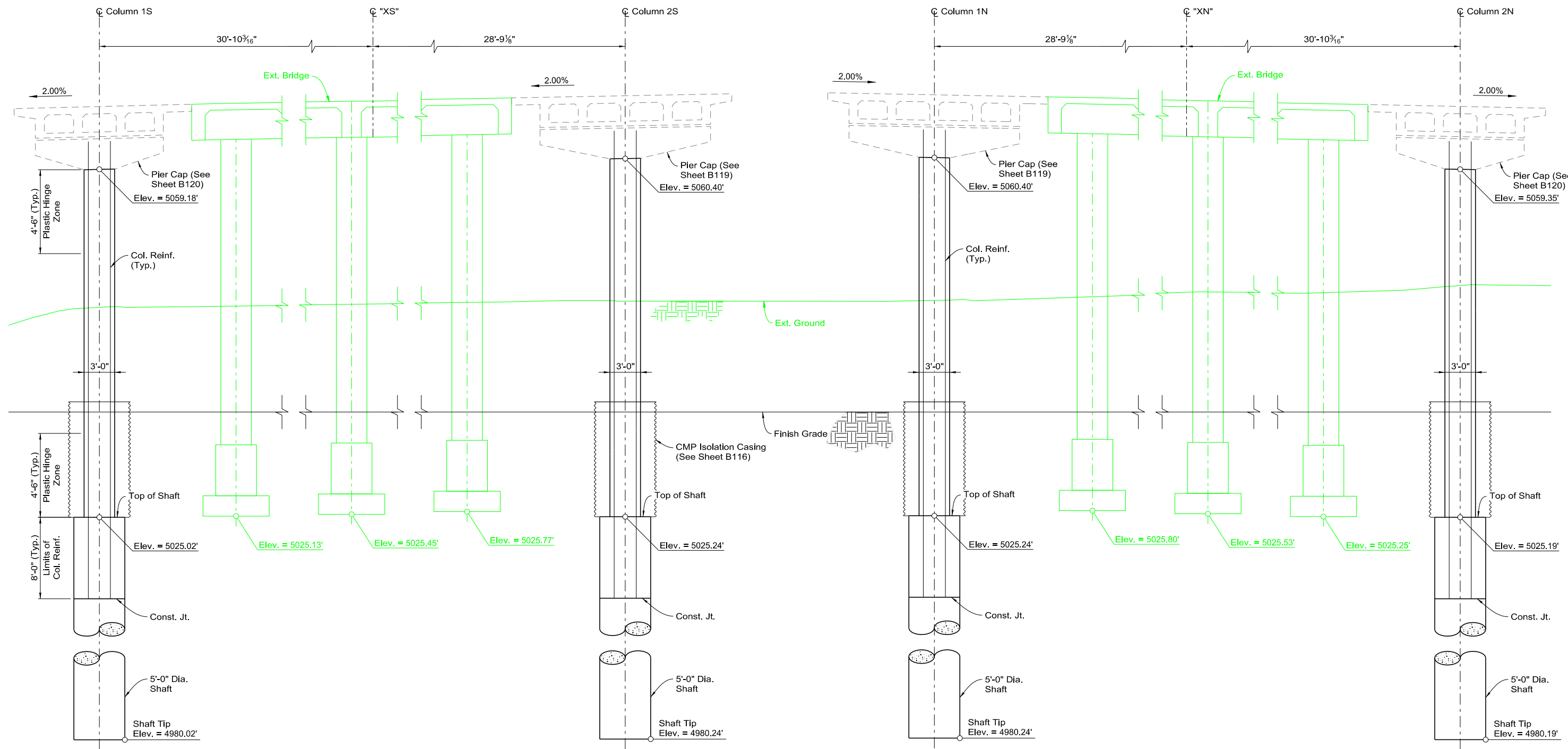
1. Elevations noted taken through centerline of shaft/column.
2. Lap splices in longitudinal column reinforcing not permitted.
3. For pier cap details, see Sheets B119-B121.
4. For column/shaft details not shown, see Sheet B113-B115.
5. For crashwall details, see Sheet B117.

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**PIER 3 ELEVATION**

G-1092 N&S

STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B112



**ELEVATION PIER 4**  
LOOKING AHEAD ON LINE  
ALONG SKEW

**NOTES**

1. Elevations noted taken through centerline of shaft/column.
2. Lap splices in longitudinal column reinforcing not permitted.
3. For pier cap details, see Sheets B119-B121.
4. For column/shaft details not shown, see Sheets B113-B115.

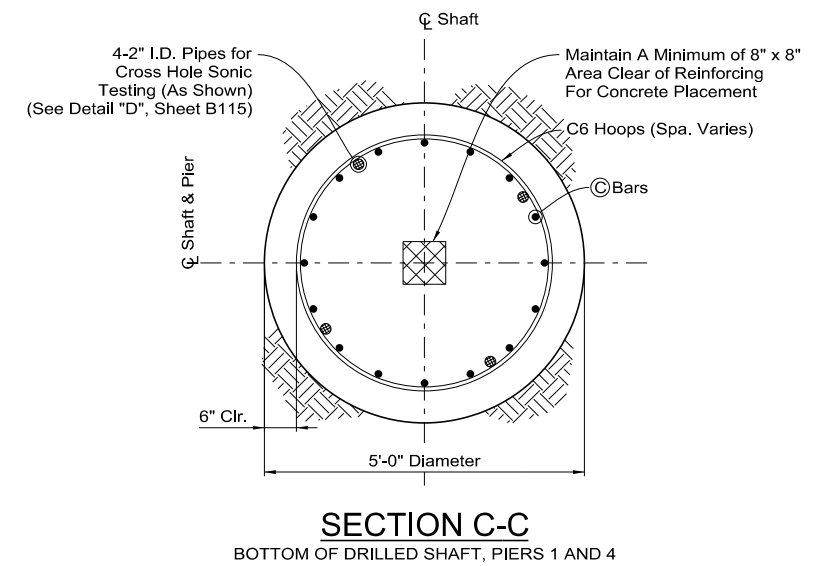
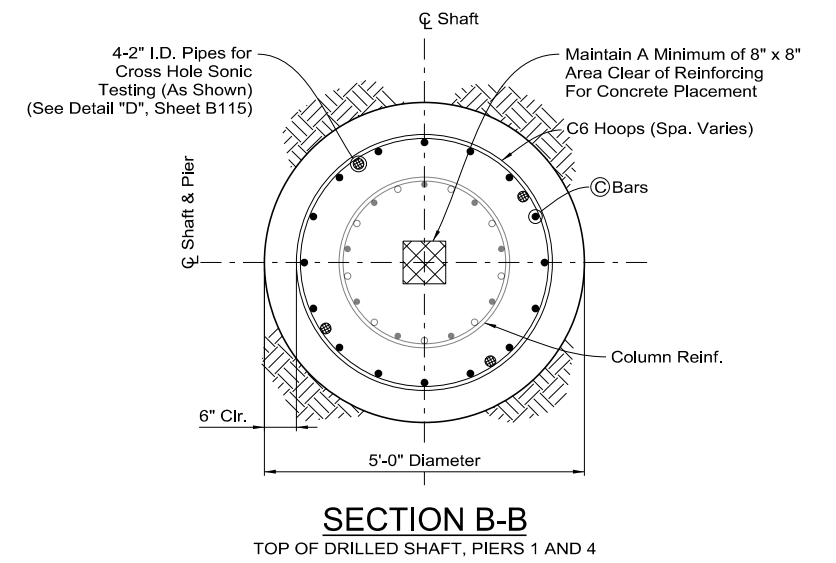
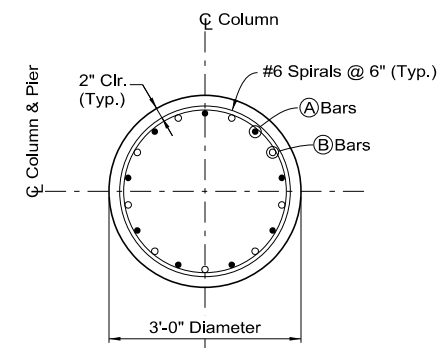
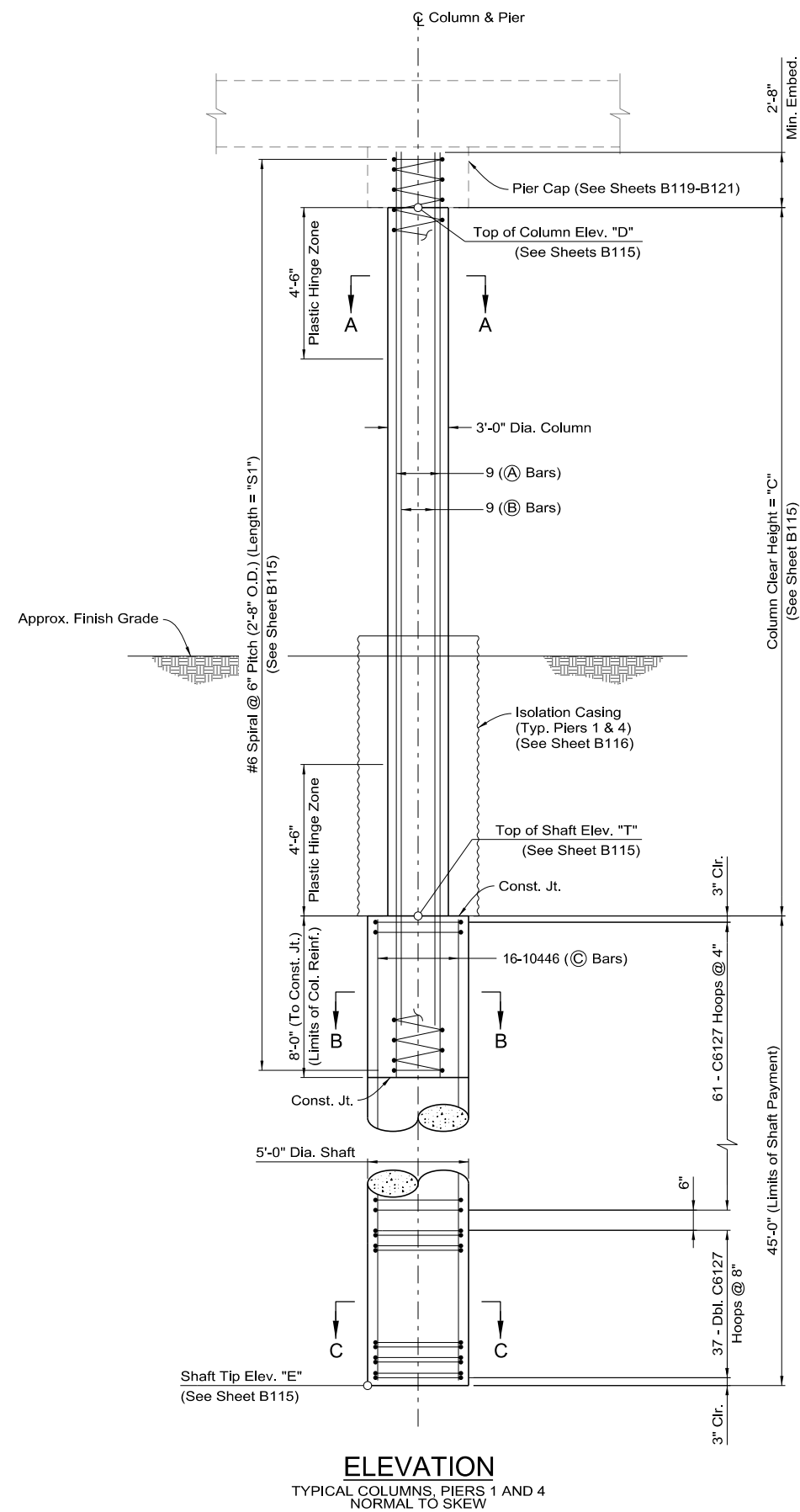
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**PIER 4 ELEVATION**

G-1092 N&S

DATE : 1/26/2023

STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B113



**NOTES**

1. Elevations noted taken through centerline of shaft/column.
2. Lap splices in longitudinal column reinforcing not permitted.
3. For pier cap details, see Sheets B119-B121.
4. For column/shaft details not shown, see Sheet B115.
5. For isolation casing details, see Sheet B116.
6. Roughen construction joints to 1/4" amplitude. Thoroughly clean the surface of debris and laitance.

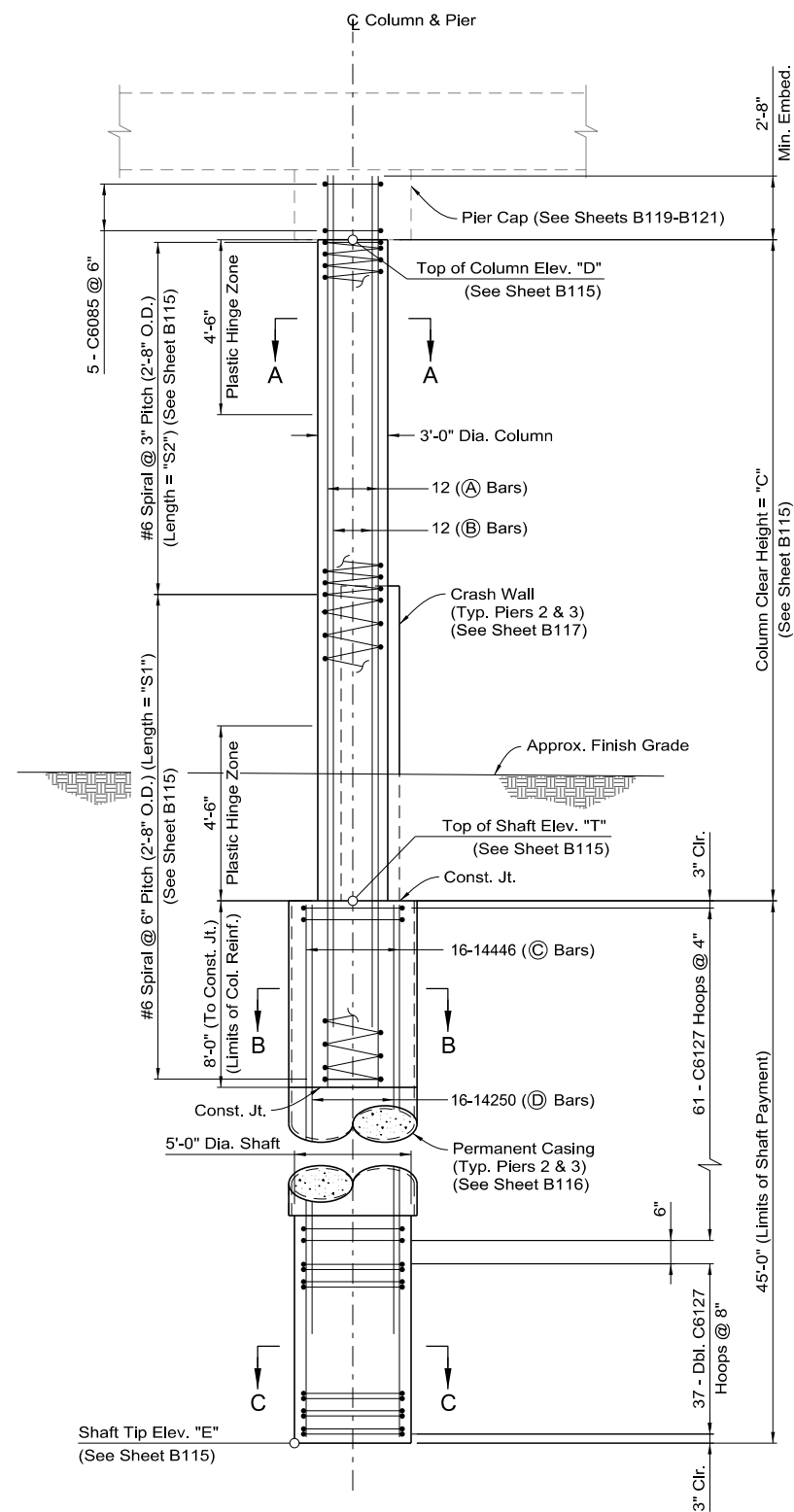
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**COLUMN AND DRILLED  
SHAFT  
REINFORCING**

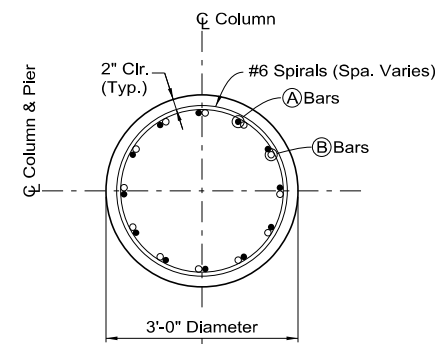
1 OF 3 G-1092 N&S



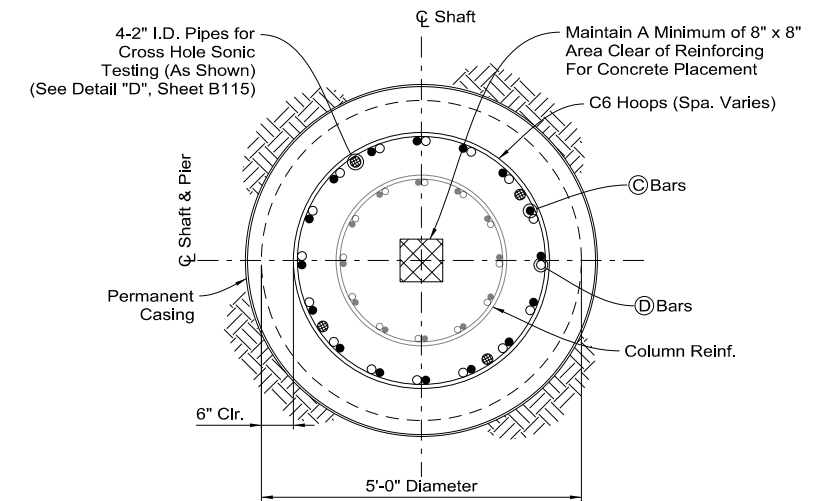
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B114



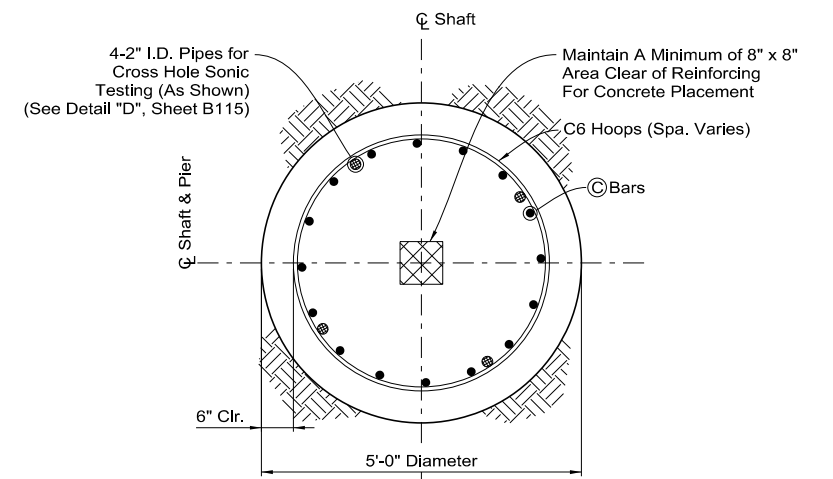
**ELEVATION**  
TYPICAL COLUMNS, PIERS 2 AND 3  
NORMAL TO SKEW



**SECTION A-A**  
TYPICAL COLUMN SECTION, PIERS 2 AND 3



**SECTION B-B**  
TOP OF DRILLED SHAFT, PIERS 2 AND 3



**SECTION C-C**  
BOTTOM OF DRILLED SHAFT, PIERS 2 AND 3

**NOTES**

1. Elevations noted taken through centerline of shaft/column.
2. Lap splices in longitudinal column reinforcing not permitted.
3. For pier cap details, see Sheets B119-B121.
4. For column/shaft details not shown, see Sheet B115.
5. For permanent casing requirements, see Sheet B116.
6. See Sheet B117 for Crash Wall reinforcing not shown for clarity.
7. Roughen construction joints to 1/4" amplitude. Thoroughly clean the surface of debris and laitance.

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**COLUMN AND DRILLED  
SHAFT  
REINFORCING**

2 OF 3 G-1092 N&S

### COLUMN REINFORCING TABLE

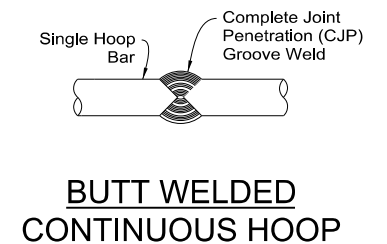
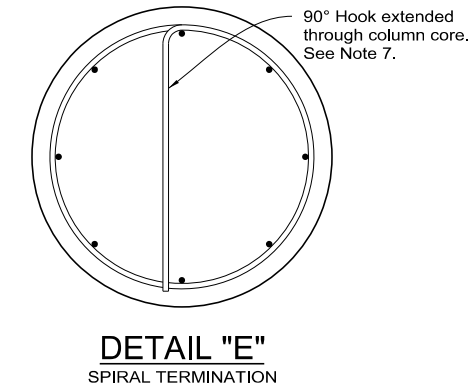
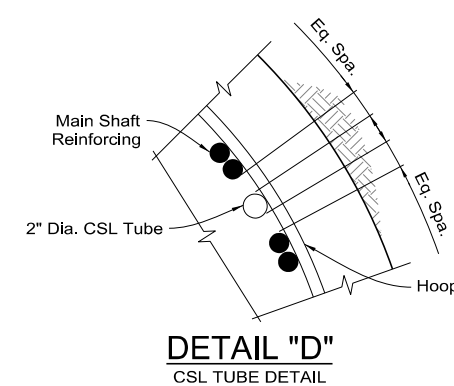
Location	Column	Column Clear Height "C"	Top of Column Elev. "D"	Top of Shaft Elev. "T"	"A" Bars	"B" Bars	Length of Spiral "S1"	Length of Spiral "S2"
PIER 1	1S	34.17'	5058.11'	5023.95'	9-84410	9-8425	779'-6"	----
	2S	35.17'	5059.43'	5024.27'	9-84510	9-8435	796'-4"	----
	1N	35.17'	5059.51'	5024.35'	9-84510	9-8435	796'-4"	----
	2N	34.17'	5058.48'	5024.32'	9-84410	9-8425	779'-6"	----
PIER 2	1S	27.42'	5058.54'	5031.13'	12-8381	12-8358	387'-10"	506'-1"
	2S	28.50'	5059.79'	5031.29'	12-8392	12-8369	387'-10"	542'-5"
	1N	28.50'	5059.83'	5031.33'	12-8392	12-8369	387'-10"	542'-5"
	2N	27.42'	5058.77'	5031.36'	12-8381	12-8358	387'-10"	506'-1"
PIER 3	1S	27.42'	5058.88'	5031.47'	12-8381	12-8358	387'-10"	506'-1"
	2S	28.50'	5060.12'	5031.62'	12-8392	12-8369	387'-10"	542'-5"
	1N	28.50'	5060.13'	5031.63'	12-8392	12-8369	387'-10"	542'-5"
	2N	27.42'	5059.08'	5031.67'	12-8381	12-8358	387'-10"	506'-1"
PIER 4	1S	34.17'	5059.18'	5025.02'	9-84410	9-8425	779'-6"	----
	2S	35.17'	5060.40'	5025.24'	9-84510	9-8435	796'-4"	----
	1N	35.17'	5060.40'	5025.24'	9-84510	9-8435	796'-4"	----
	2N	34.17'	5059.35'	5025.19'	9-84410	9-8425	779'-6"	----

### NOTES

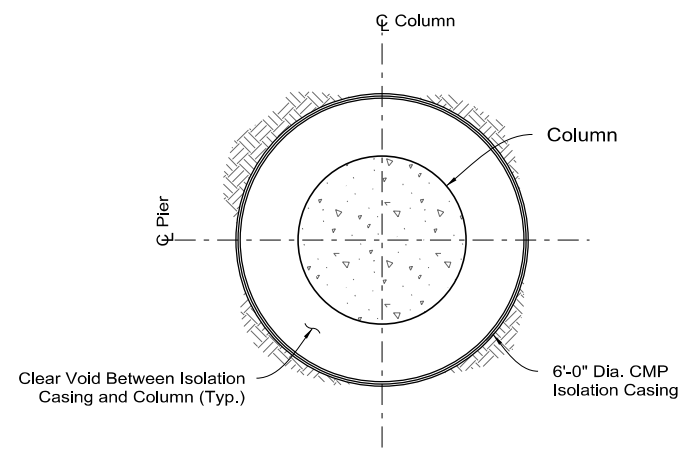
- Elevations noted taken through centerline of shaft/column.
- Lap splices in longitudinal column reinforcing not allowed.
- Construction joints in column are not allowed in the upper and lower 4'-6" of the column length.
- For column/shaft details not shown, see Sheets B113 & B114.
- For pier cap details, see Sheets B119-B121.
- Hoop reinforcing shall be butt welded with a Complete Joint Penetration Groove Weld (CJP) (see detail). Rotate location of butt welds a minimum of 90° between adjacent hoops/bundles. Where welded hoops are bundled, stagger butt welds within each bundle a minimum of 1'-0".
- Splicing of spiral reinforcing is not permitted within the designated plastic hinge regions. Spiral may be discontinuous at the bottom of pier cap. Spirals shall terminate with an extra turn with 1/2 the specified pitch in addition to a 90° hook around longitudinal reinforcing, extended through the column core (See Detail "E").
- For aesthetic treatments to the columns, see Landscape & Aesthetic Plans.
- Lap splices in longitudinal shaft reinforcing not allowed except where noted. Mechanical couplers are not permissible in longitudinal shaft reinforcing.
- Roughen construction joints to 1/4" amplitude. Thoroughly clean the surface of debris and laitance.
- Concrete for drilled shafts shall be Class "S" conforming to Section 509 of the Standard Specifications.
- All shaft reinforcing included in the cost of Drilled Shaft Foundation.
- CSL tubes shall be installed per Detail "D". For additional CSL details and requirements, refer to Standard Specifications Section 509.03.14.

### DRILLED SHAFT ELEVATION TABLE

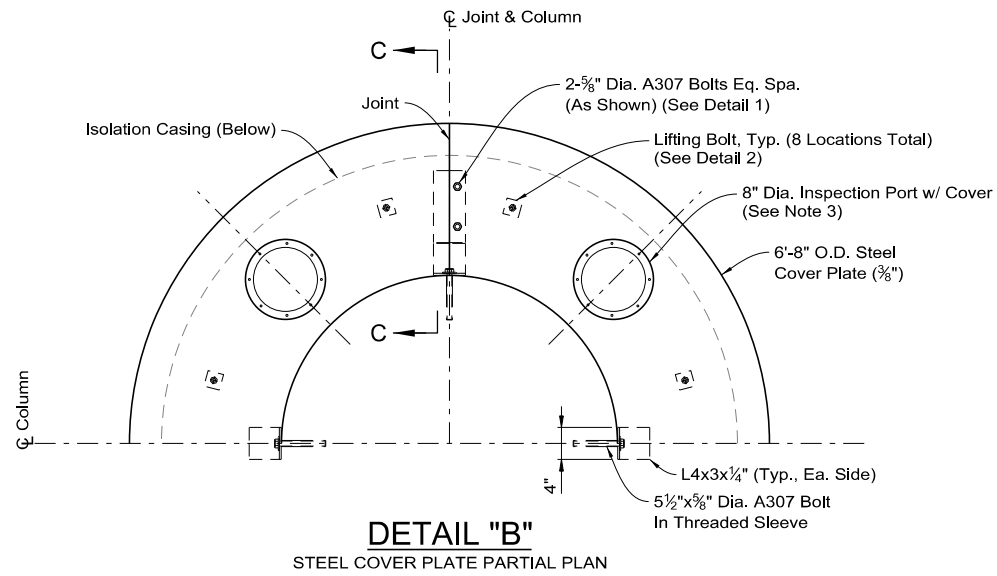
Location	Column	Shaft Length "L"	Top of Shaft Elev. "T"	Shaft Tip Elev. "E"
PIER 1	1S	45.00'	5023.95'	4978.95'
	2S	45.00'	5024.27'	4979.27'
	1N	45.00'	5024.35'	4979.35'
	2N	45.00'	5024.32'	4979.32'
PIER 2	1S	45.00'	5031.13'	4986.13'
	2S	45.00'	5031.29'	4986.29'
	1N	45.00'	5031.33'	4986.33'
	2N	45.00'	5031.36'	4986.36'
PIER 3	1S	45.00'	5031.47'	4986.47'
	2S	45.00'	5031.62'	4986.62'
	1N	45.00'	5031.63'	4986.63'
	2N	45.00'	5031.67'	4986.67'
PIER 4	1S	45.00'	5025.02'	4980.02'
	2S	45.00'	5025.24'	4980.24'
	1N	45.00'	5025.24'	4980.24'
	2N	45.00'	5025.19'	4980.19'



STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B116

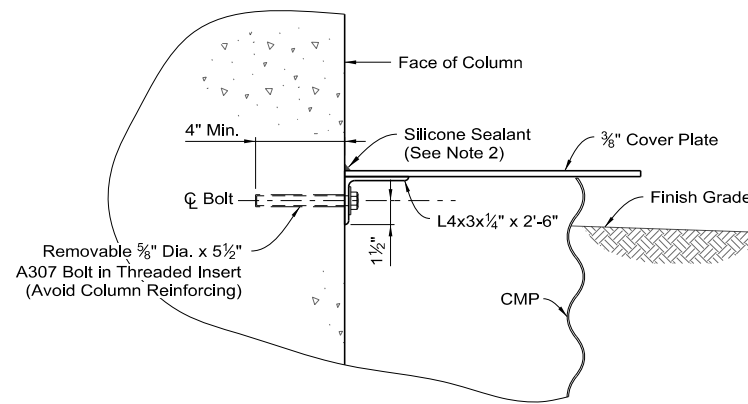


**SECTION A-A**

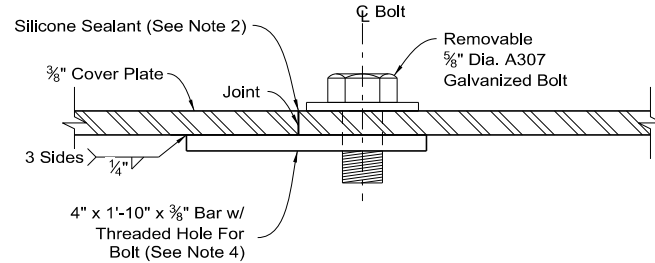


**DETAIL "B"**

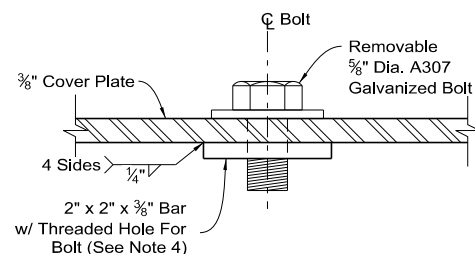
STEEL COVER PLATE PARTIAL PLAN



**SECTION C-C**



**DETAIL 1**



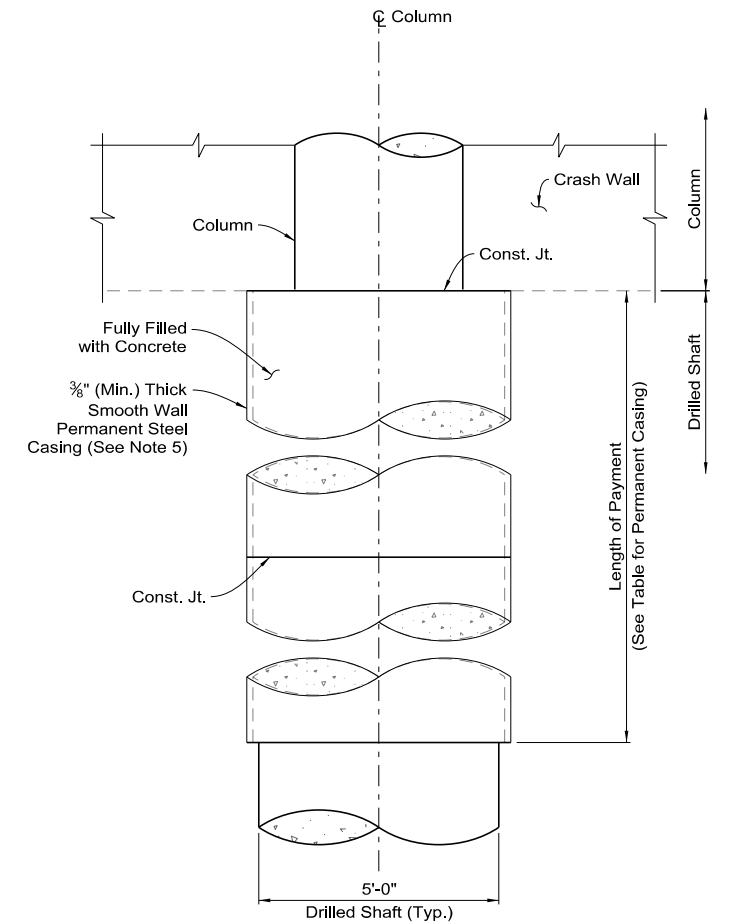
**DETAIL 2**

**COVER PLATE NOTES**

1. Steel material for cover plate assembly shall be AASHTO M270 Grade 36. Steel cover assembly shall be galvanized after fabrication.
2. Fabricate removable steel cover assembly in two sections as shown. Seal joints and joint between column and cover plate with silicone sealant after installation.
3. Provide 8" diameter opening in each quadrant of cover plate for inspection. Cover opening using 1/4" steel plate installed with removable screws or bolts. Provide continuous neoprene gasket around opening.
4. Threaded holes to receive lifting bolts. Bolts are removable allowing attachment of hardware for lifting assemblies or the insertion of threaded eye bolt.

**CASING NOTES**

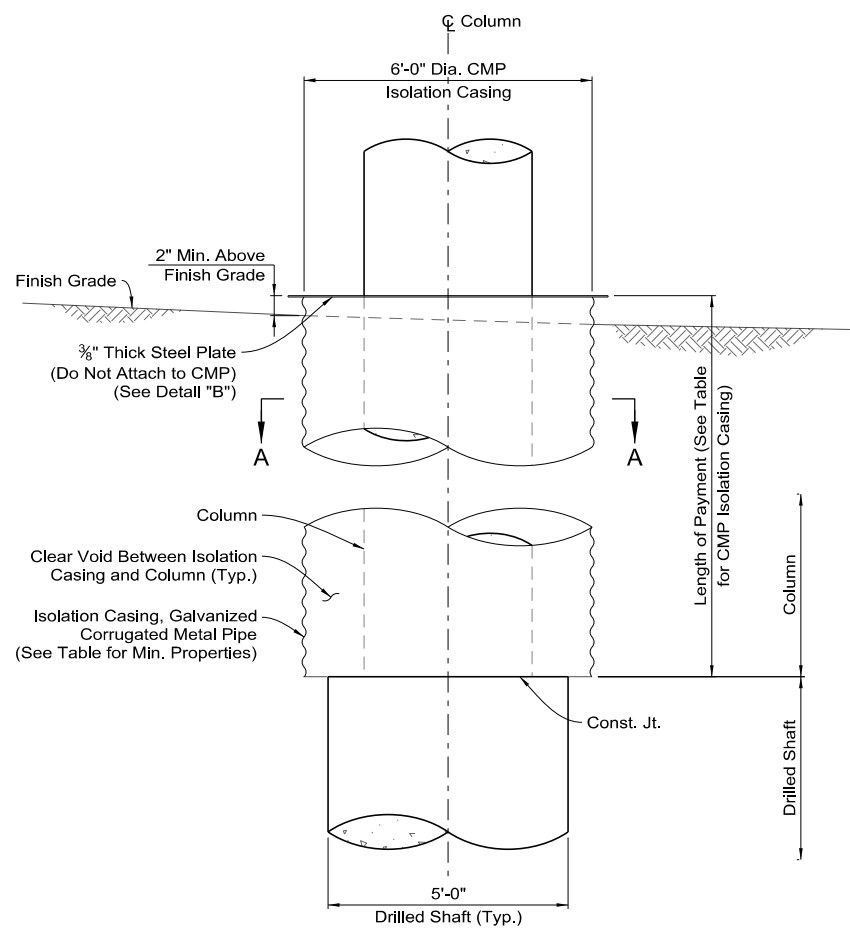
1. Steel for isolation casing CMP shall be AASHTO M36. CMP shall be galvanized.
2. Back fill shall be brought up uniformly around isolation casing.
3. Isolation Casing and Top Plate shall be paid for under Bid Item 506 0110 "Structural Steel".
4. All metal used in anchoring CMP to shaft shall be galvanized.
5. Where indicated in the plans, permanent casings shall be installed to protect the railroad track against cave-in, subsidence, and/or displacement of the surrounding ground while constructing the drilled shaft foundations. Permanent casings shall be smooth walled with a minimum wall thickness of 3/8". Material shall conform to the requirements of ASTM A252 Grade 2 (or better). Permanent casings may be oversized relative to the drilled shafts in accordance with 509.03.08 of the Standard Specifications.
6. Refer to section 509.03.08 of the Contract Special Provisions for additional requirements for the installation of the permanent casings.
7. Prior to commencement of work on Piers 2 and 3 drilled foundations, the Contractor shall submit, for Railroad approval, an installation plan. This submittal shall include but not be limited to installation means and methods, casing dimensions and material specification, as well as relevant design calculations.



**ELEVATION**  
PERMANENT CASING

**DESIGN CASING LENGTHS**

	Location	Casing Length
PIER 1	1S	13' - 7"
	2S	14' - 0"
	1N	14' - 2"
	2N	14' - 8"
PIER 2	1S	16' - 2"
	2S	16' - 4"
	1N	16' - 4"
	2N	16' - 4"
PIER 3	1S	16' - 6"
	2S	16' - 7"
	1N	16' - 8"
	2N	16' - 8"
PIER 4	1S	12' - 4"
	2S	12' - 3"
	1N	12' - 4"
	2N	12' - 6"



**ELEVATION**  
ISOLATION CASING

**MINIMUM CMP PROPERTIES**

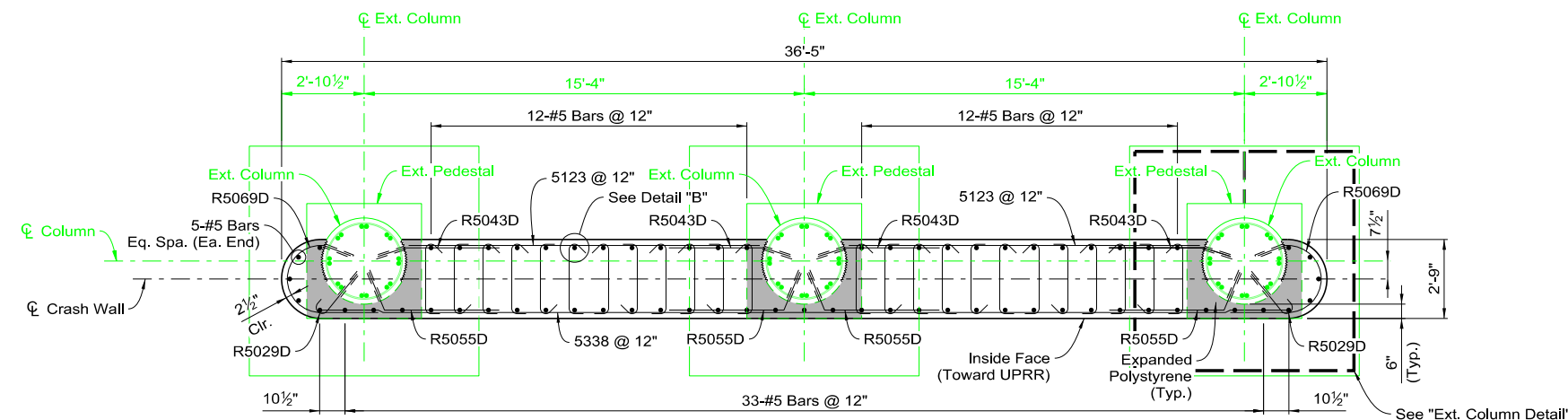
Property	Dimension
Thickness	0.1090 in
Area	1.390 in <sup>2</sup> /ft
Radius of Gyration	0.3677 in
Moment of Inertia	0.0156 in <sup>4</sup> /in
Diameter	72 in

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

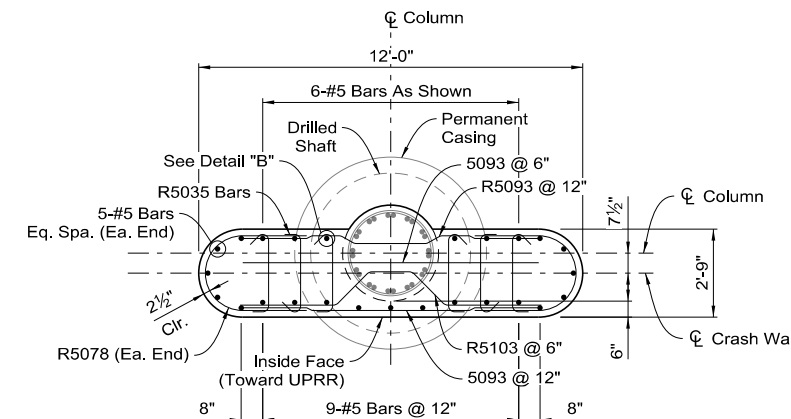
**ISOLATION AND  
PERMANENT  
CASING DETAILS**

G-1092 N&S

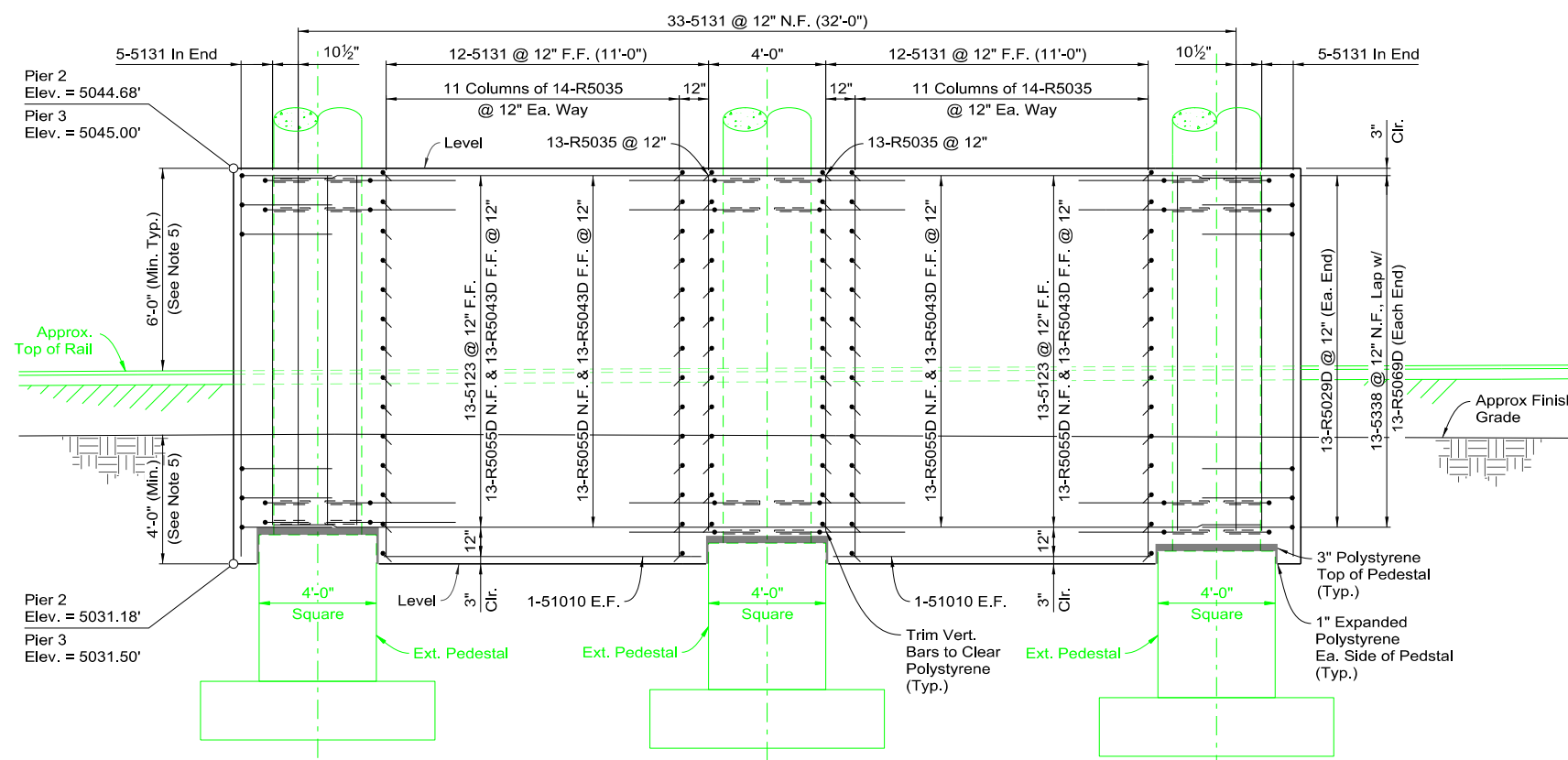
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B117



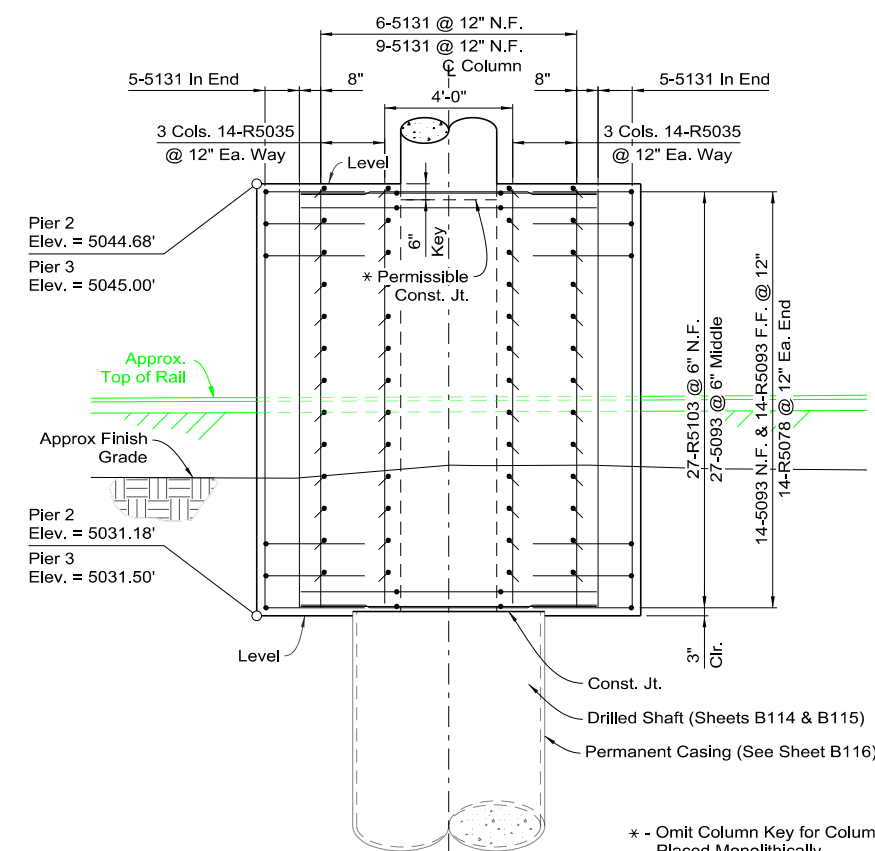
**PLAN**  
EXISTING COLUMNS



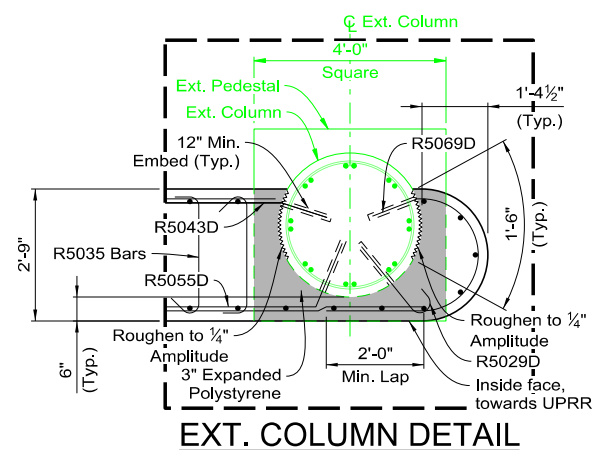
**PLAN**  
NEW COLUMNS



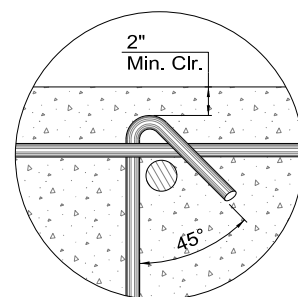
**ELEVATION**  
EXISTING COLUMNS



**ELEVATION**  
NEW COLUMNS



**EXT. COLUMN DETAIL**



**DETAIL "B"**

**MINIMUM BAR LAP**  
#5 Bar to #5 Bar = 24"

**NOTES**

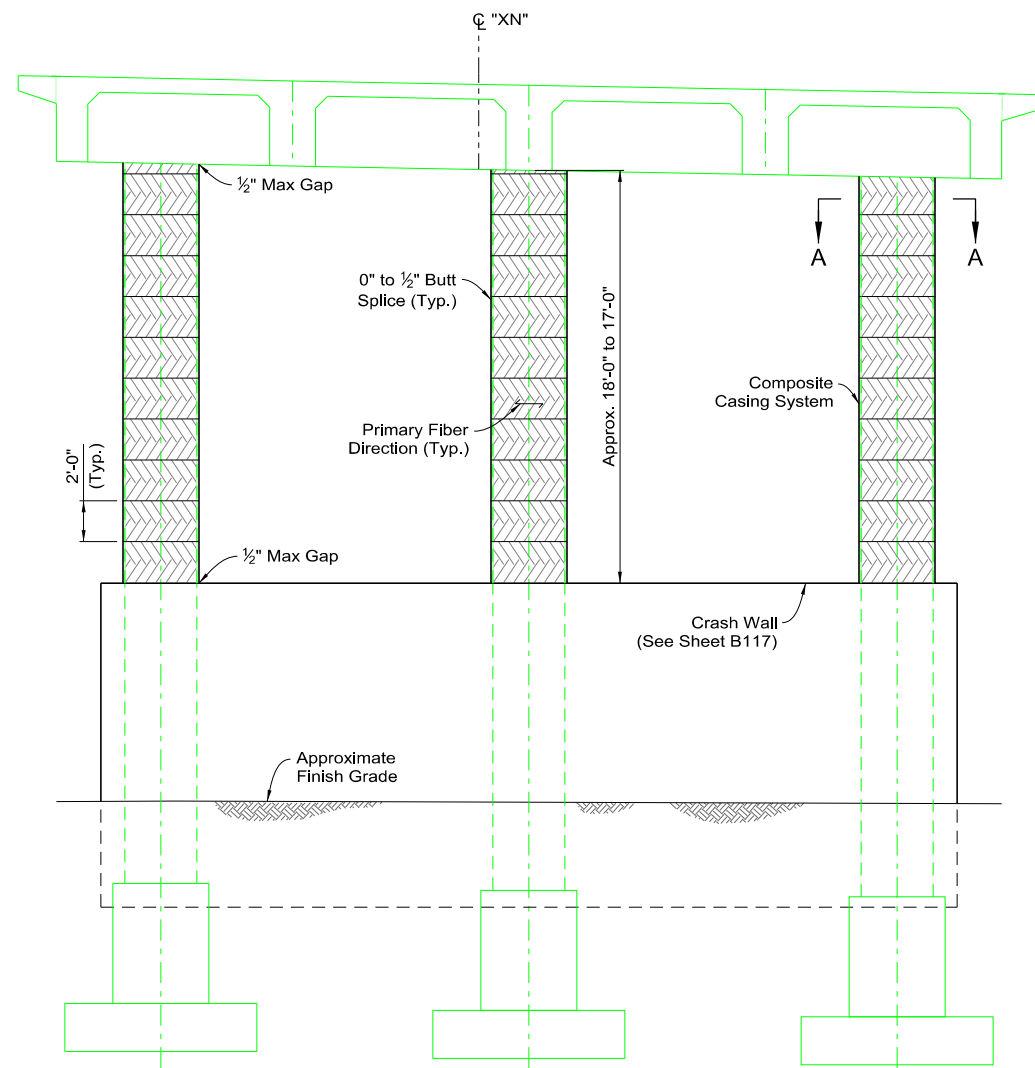
1. Alternate 135° & 90° hooks on all cross ties.
2. Roughen construction joints to 1/4" amplitude. Thoroughly clean the surface of debris and laitance.
3. For column reinforcing not shown, see Sheet B114.
4. Bottom of crashwall should be located a minimum of 4" below the top of the lowest footing pedestal in each pier line. Elevations shown are based on original as-built plans and will required field verification.
5. Top of crashwall shall be located minimum 6'-0" from top of rail. Bottom of crashwall shall be located minimum 4'-0" from finish grade.

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

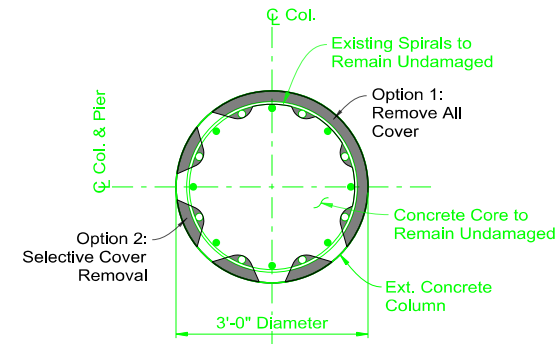
**CRASH WALL  
DETAILS**

G-1092 N&S

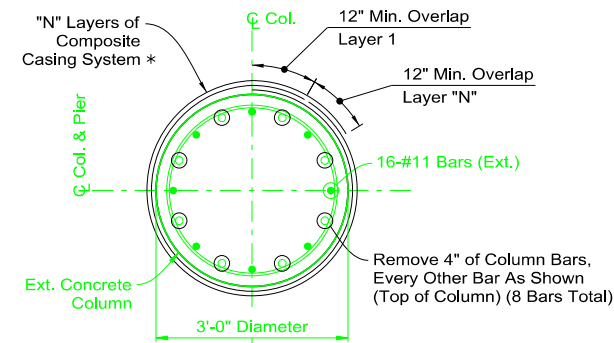
DATE : 1/26/2023



**PIER 2 & 3 COMPOSITE CASING**  
LOOKING AHEAD ON LINE, ALONG SKEW  
(NB Pier 3 Shown, SB Similar)

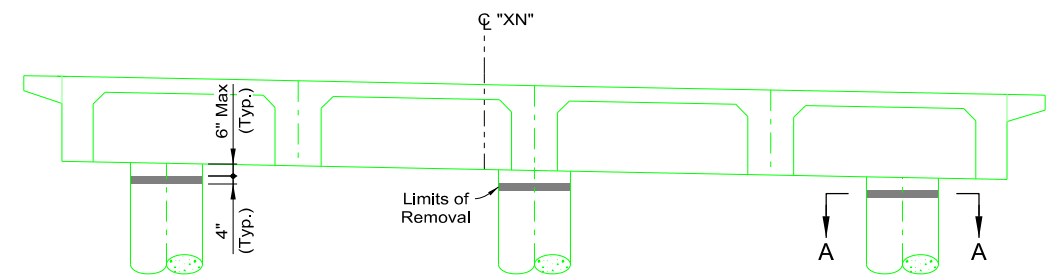


**SECTION A-A**  
CONCRETE REMOVALS

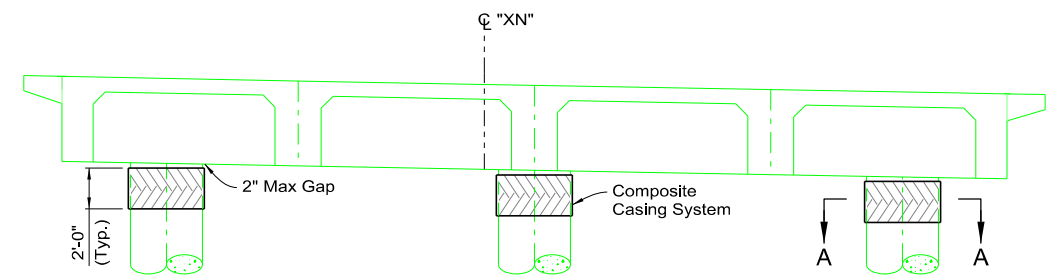


\* - See Special Provisions For Materials

**SECTION A-A**  
TYPICAL COLUMN SECTION



**TYPICAL PIER REMOVALS**  
LOOKING AHEAD ON LINE, ALONG SKEW  
(NB Pier Shown, SB Similar)



**PIER 1 & 4 COMPOSITE CASING**  
LOOKING AHEAD ON LINE, ALONG SKEW  
(NB Pier Shown, SB Similar)

**NOTES**

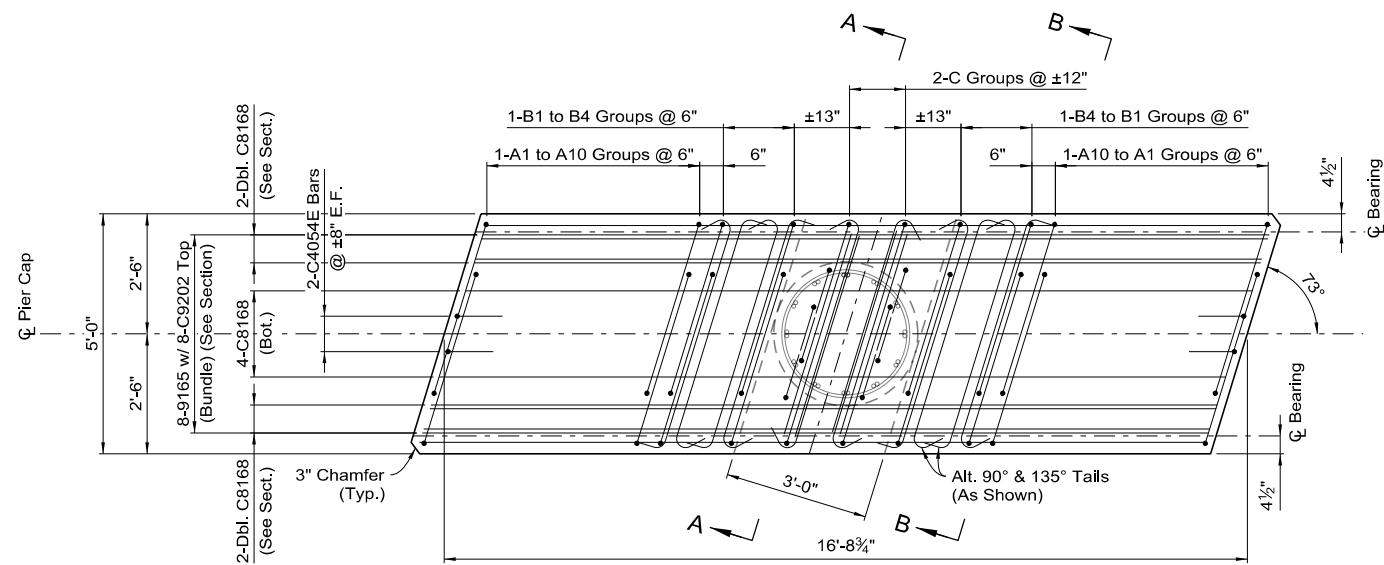
- For all existing columns, chip concrete to the depth of longitudinal reinforcing and cut reinforcing as specified in the plans. Contractor shall exercise care to avoid unintentionally damaging or cutting transverse reinforcement or unspecified longitudinal bars.
- A flame torch may not be used to cut the selected column bars. The bars shall be cut to remove a 4-inch segment at the top of each column as shown in the Typical Pier Removals detail.
- After cutting column bars and patching the concrete, install composite casings as specified in the "Composite Casing Table". Each section shall be wrapped using continuous fabric not less than 2'-0" in height. All wraps shall be terminated a minimum of 12-inches past the starting point of the initial wrap. Subsequent wraps shall be started (Butted) at the ending point of the last wrap. See Section 502.03.25 of the Contract Special Provisions for requirements for the Seismic Retrofit of Columns.
- Composite casing system shall satisfy the stiffness requirements shown in the "Column Casing Table".
- The number of layers "N" was designed assuming the use of carbon composite casing. Glass composite casing may be substituted for carbon composite casing at the Contractor's option, provided the stiffness requirements shown in the "Composite Casing Table" are met.
- All cut edges of casing shall be sealed with epoxy.

**COMPOSITE CASING TABLE**

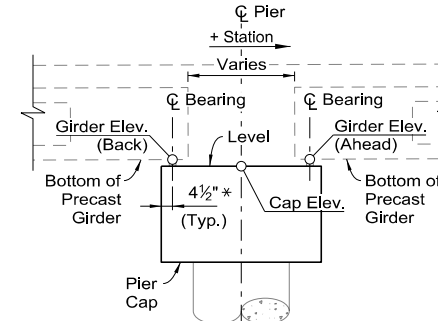
Location	"N"	Min. E x A (kips/in. width)	Height (Full or Top Only)	No. Columns (per Pier Line)	
PIER 1	NB	1	476	Top	3
	SB	1	476	Top	3
PIER 2	NB	2	952	Full	3
	SB	2	952	Full	3
PIER 3	NB	2	952	Full	3
	SB	2	952	Full	3
PIER 4	NB	1	476	Top	3
	SB	1	476	Top	3

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION  
**COLUMN SEISMIC  
RETROFIT DETAILS**

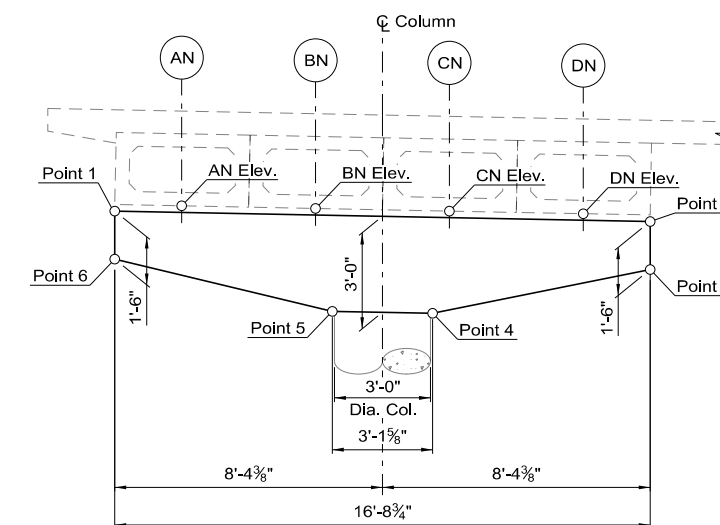
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B119



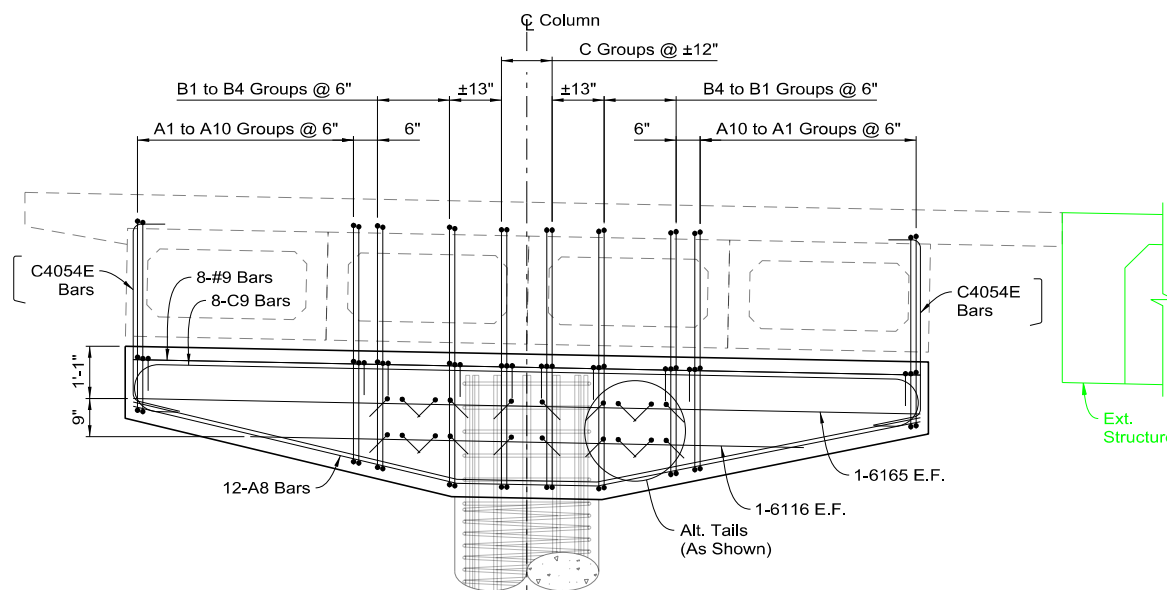
**PLAN**  
(G-1092N Shown, G-1092S Similar)



**ELEVATION DETAIL**  
\* - Normal to Pier Centerline



**PIER CAP DIMENSIONS**  
LOOKING AHEAD ON LINE, ALONG SKEW  
(G-1092N Shown, G-1092S Similar)



**ELEVATION**  
LOOKING AHEAD ON LINE, ALONG SKEW  
(G-1092N Shown, G-1092S Similar)

**PRECAST GIRDER ELEVATION TABLE**

North Bound	Direction	AN	BN	CN	DN
Pier 1	Ahead	5062.87'	5062.80'	5062.73'	5062.66'
	Back	5063.20'	5063.12'	5063.05'	5062.97'
Pier 2	Ahead	5063.20'	5063.12'	5063.05'	5062.97'
	Back	5063.50'	5063.42'	5063.35'	5063.27'
Pier 3	Ahead	5063.50'	5063.42'	5063.35'	5063.27'
	Back	5063.77'	5063.69'	5063.62'	5063.54'
South Bound	Direction	DS	ES	FS	GS
Pier 1	Ahead	5062.54'	5062.64'	5062.73'	5062.82'
	Back	5062.91'	5063.00'	5063.09'	5063.18'
Pier 2	Ahead	5062.91'	5063.00'	5063.09'	5063.18'
	Back	5063.24'	5063.33'	5063.42'	5063.50'
Pier 3	Ahead	5063.24'	5063.33'	5063.42'	5063.50'
	Back	5063.53'	5063.61'	5063.70'	5063.78'

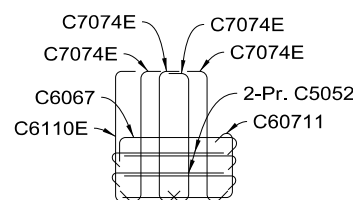
**PIER CAP ELEVATION TABLE**

North Bound	Pt. 1	Pt. 2	Pt. 3	Pt. 4	Pt. 5	Pt. 6
Pier 1	5062.66'	5062.37'	5060.87'	5059.49'	5059.54'	5061.16'
Pier 2	5062.98'	5062.68'	5061.18'	5059.81'	5059.86'	5061.48'
Pier 3	5063.28'	5062.99'	5061.49'	5060.11'	5060.16'	5061.78'
Pier 4	5063.55'	5063.26'	5061.76'	5060.38'	5060.43'	5062.05'
South Bound	Pt. 1	Pt. 2	Pt. 3	Pt. 4	Pt. 5	Pt. 6
Pier 1	5062.25'	5062.62'	5061.12'	5059.47'	5059.40'	5060.75'
Pier 2	5062.62'	5062.97'	5061.47'	5059.83'	5059.76'	5061.12'
Pier 3	5062.95'	5063.30'	5061.80'	5060.16'	5060.09'	5061.45'
Pier 4	5063.23'	5063.57'	5062.07'	5060.44'	5060.37'	5061.73'

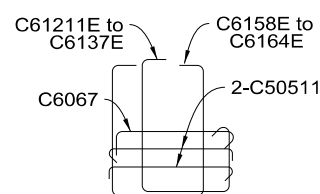
**NOTES**

- Alternate 135° & 90° hooks on all cross ties.
- For pier cap/column reinforcing threading plan, see Sheet B121.
- Dimensions shown are measured along length of pier cap.
- Vertical reinforcement is to be placed parallel to alignment.
- For Sections A-A and B-B, see Sheet B121.
- Pier cap elevations provided are taken along centerline of cap.

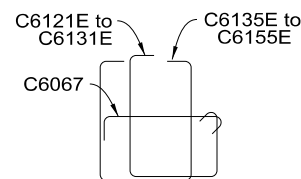
**BAR GROUPS: PIERS 1 & 4**



- C Group**  
1-C60711  
1-C6110E  
1-C6067  
4-C7074E  
4-C5052

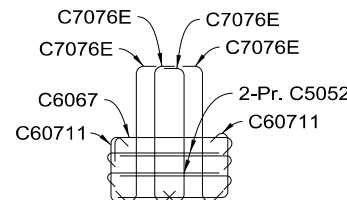


- B1 to B4 Groups**  
1 Sets C61211E to C6137E @ 6"  
(4 Bars/Set)(4 Bars Total)  
1 Sets C6158E to C6164E @ 6"  
(4 Bars/Set)(4 Bars Total)  
1-C6067  
2-C50511

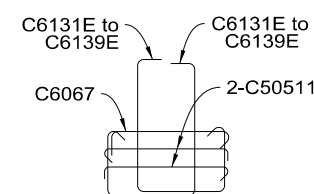


- A1 to A10 Groups**  
1 Sets C6121E to C6131E @ 6"  
(10 Bars/Set)(10 Bars Total)  
1 Sets C6135E to C6155E @ 6"  
(10 Bars/Set)(10 Bars Total)  
1-C6067

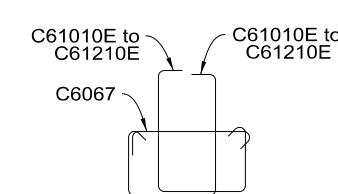
**BAR GROUPS: PIERS 2 & 3**



- C Group**  
2-C60711  
1-C6067  
4-C7076E  
4-C5052



- B1 to B4 Groups**  
2 Sets C6131E to C6139E @ 6"  
(4 Bars/Set)(8 Bars Total)  
1-C6067  
2-C50511



- A1 to A10 Groups**  
2 Sets C61010E to C61210E @ 6"  
(10 Bars/Set)(20 Bars Total)  
1-C6067

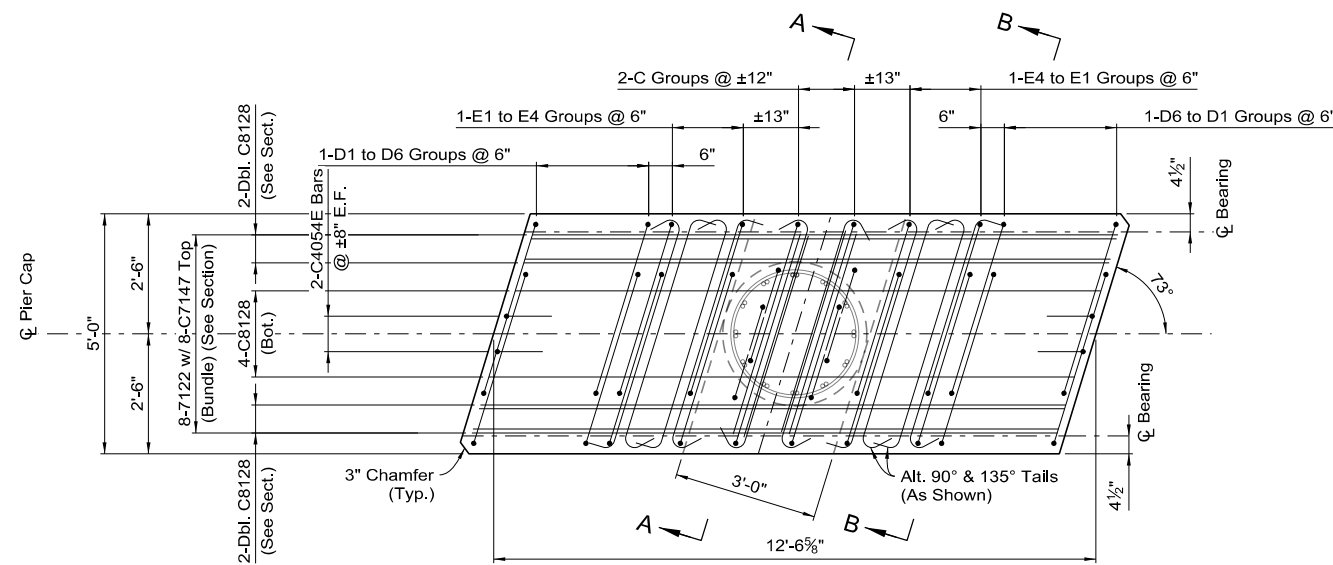
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**INSIDE WIDENING  
PIER CAP  
REINFORCING**

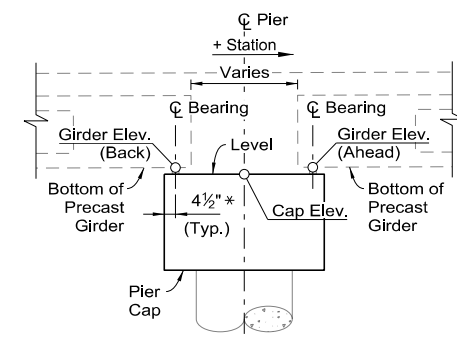
**G-1092 N&S**



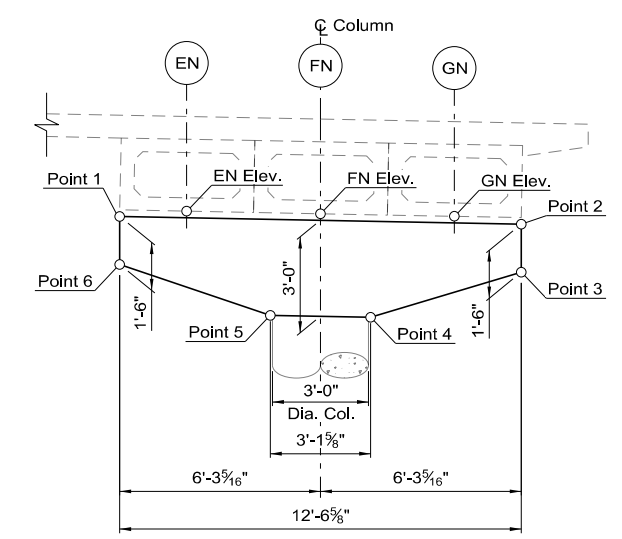
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B120



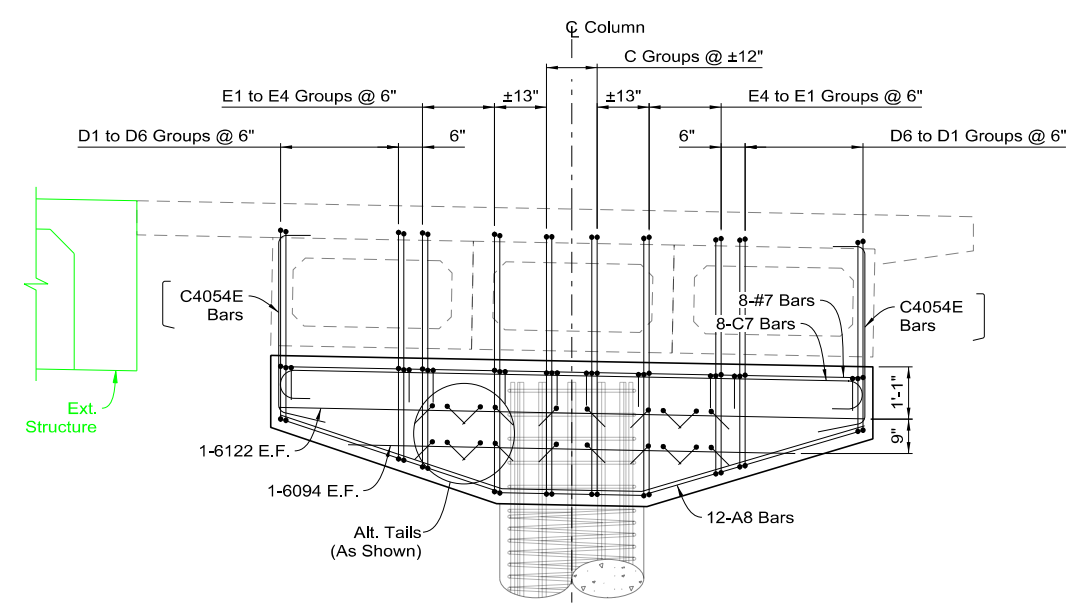
**PLAN**  
(G-1092N Shown, G-1092S Similar)



**ELEVATION DETAIL**  
\* - Normal to Pier Centerline



**PIER CAP DIMENSIONS**  
LOOKING AHEAD ON LINE, ALONG SKEW  
(G-1092N Shown, G-1092S Similar)



**ELEVATION**  
LOOKING AHEAD ON LINE, ALONG SKEW  
(G-1092N Shown, G-1092S Similar)

**PRECAST GIRDER ELEVATION TABLE**

North Bound	Direction	EN	FN	GN
Pier 1	Ahead	5061.81'	5061.73'	5061.66'
	Back	5062.10'	5062.02'	5061.95'
Pier 2	Ahead	5062.10'	5062.02'	5061.95'
	Back	5062.41'	5062.33'	5062.26'
Pier 3	Ahead	5062.41'	5062.33'	5062.26'
	Back	5062.68'	5062.60'	5062.53'

South Bound	Direction	AS	BS	CS
Pier 1	Ahead	5061.27'	5061.36'	5061.46'
	Back	5061.71'	5061.79'	5061.88'
Pier 2	Ahead	5061.71'	5061.79'	5061.88'
	Back	5062.05'	5062.13'	5062.22'
Pier 3	Ahead	5062.05'	5062.13'	5062.22'
	Back	5062.35'	5062.43'	5062.52'

**PIER CAP ELEVATION TABLE**

North Bound	Pt. 1	Pt. 2	Pt. 3	Pt. 4	Pt. 5	Pt. 6
Pier 1	5061.59'	5061.38'	5059.88'	5058.46'	5058.51'	5060.09'
Pier 2	5061.89'	5061.66'	5060.16'	5058.75'	5058.80'	5060.39'
Pier 3	5062.20'	5061.97'	5060.47'	5059.06'	5059.11'	5060.70'
Pier 4	5062.47'	5062.24'	5060.74'	5059.33'	5059.38'	5060.97'

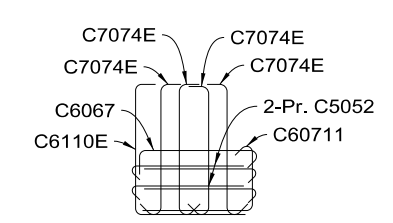
  

South Bound	Pt. 1	Pt. 2	Pt. 3	Pt. 4	Pt. 5	Pt. 6
Pier 1	5060.97'	5061.25'	5059.75'	5058.15'	5058.08'	5059.47'
Pier 2	5061.41'	5061.68'	5060.18'	5058.58'	5058.51'	5059.91'
Pier 3	5061.75'	5062.01'	5060.51'	5058.92'	5058.85'	5060.25'
Pier 4	5062.06'	5062.31'	5060.81'	5059.22'	5059.15'	5060.56'

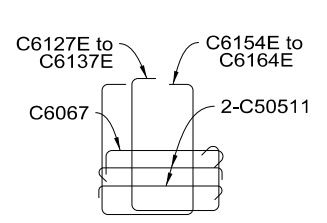
**NOTES**

- Alternate 135° & 90° hooks on all cross ties.
- For pier cap/column reinforcing threading plan, see Sheet B121.
- Dimensions shown are measured along length of pier cap.
- Vertical reinforcement is to be placed parallel to alignment.
- For Sections A-A and B-B, see Sheet B121.
- Pier cap elevations provided are taken along centerline of cap.

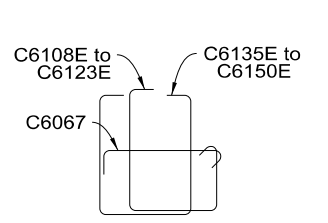
**BAR GROUPS: PIERS 1 & 4**



**C Group**  
1-C60711  
1-C6110E  
1-C6067  
4-C7074E  
4-C5052

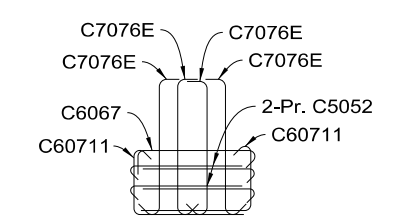


**E1 to E4 Groups**  
1 Sets C6127E to C6137E @ 6"  
(4 Bars/Set)(4 Bars Total)  
1 Sets C6154E to C6164E @ 6"  
(4 Bars/Set)(4 Bars Total)  
1-C6067  
2-C50511

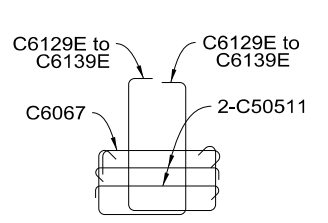


**D1 to D6 Groups**  
1 Sets C6108E to C6123E @ 6"  
(6 Bars/Set)(6 Bars Total)  
1 Sets C6135E to C6150E @ 6"  
(6 Bars/Set)(6 Bars Total)  
1-C6067

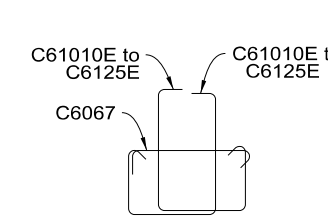
**BAR GROUPS: PIERS 2 & 3**



**C Group**  
2-C60711  
1-C6067  
4-C7076E  
4-C5052



**E1 to E4 Groups**  
2 Sets C6129E to C6139E @ 6"  
(4 Bars/Set)(8 Bars Total)  
1-C6067  
2-C50511



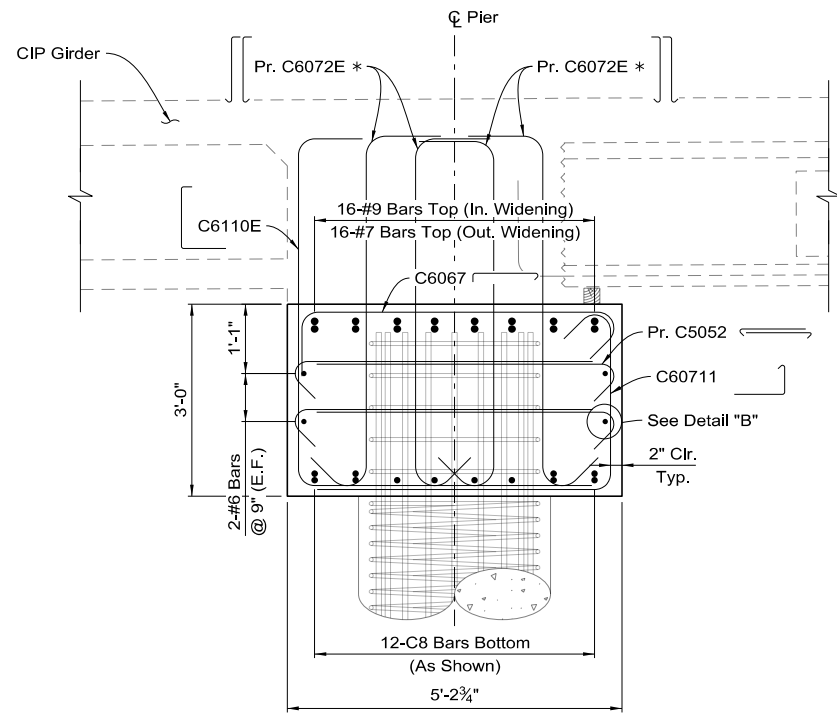
**D1 to D6 Groups**  
2 Sets C61010E to C6125E @ 6"  
(6 Bars/Set)(12 Bars Total)  
1-C6067

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION  
**OUTSIDE WIDENING  
PIER CAP  
REINFORCING**

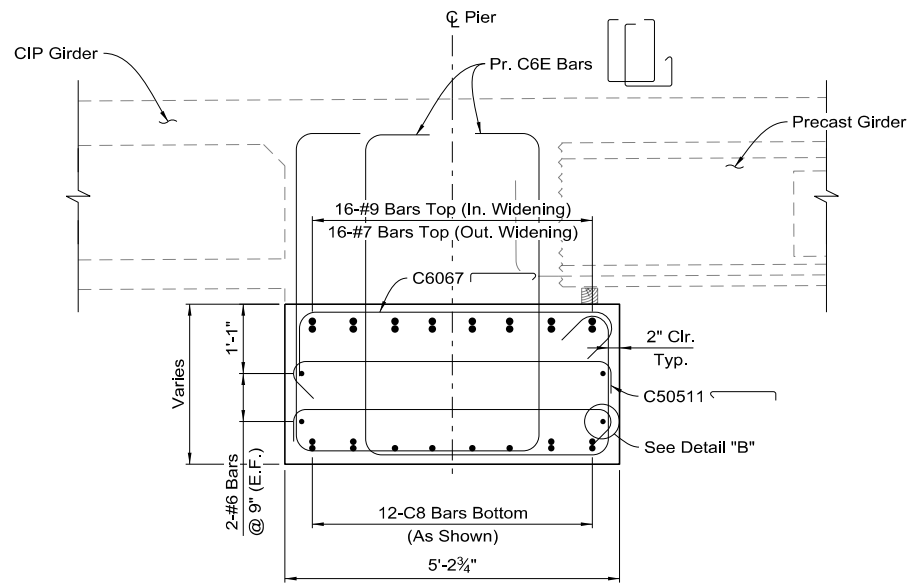
**G-1092 N&S**

DATE : 1/26/2023

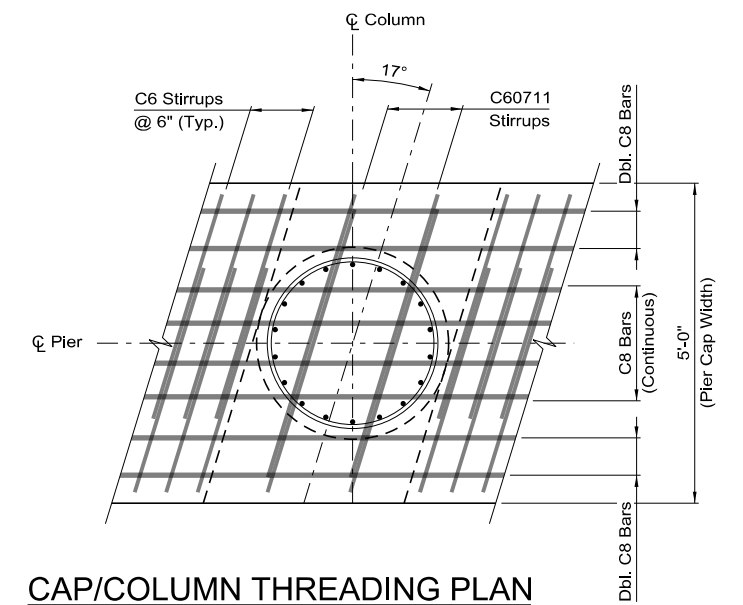
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B121



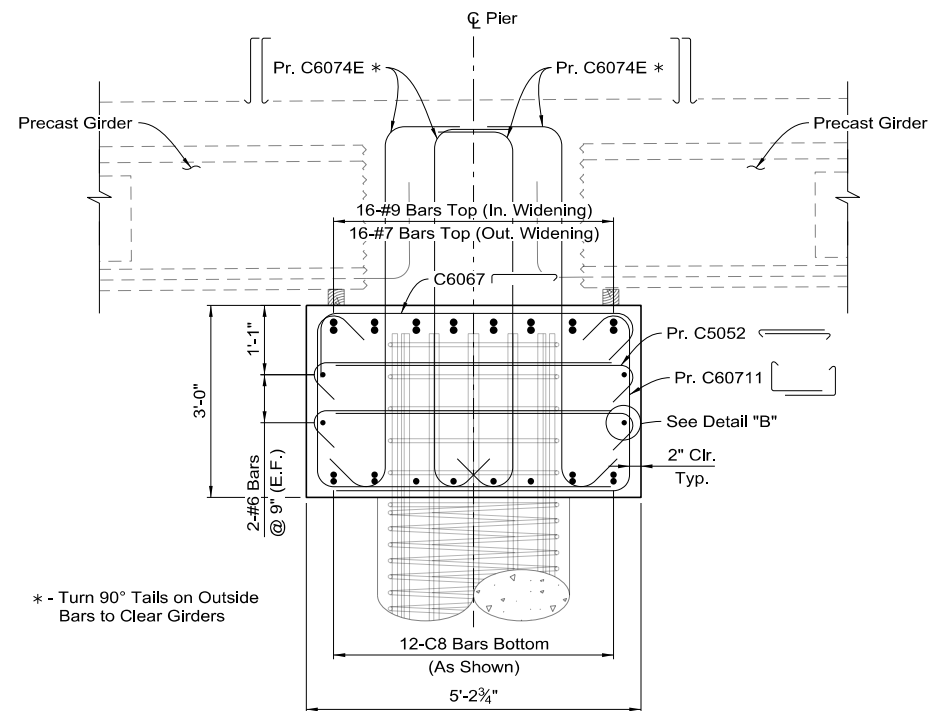
**SECTION A-A**  
PIERS 1 AND 4 - THROUGH COLUMN  
PARALLEL TO ALIGNMENT



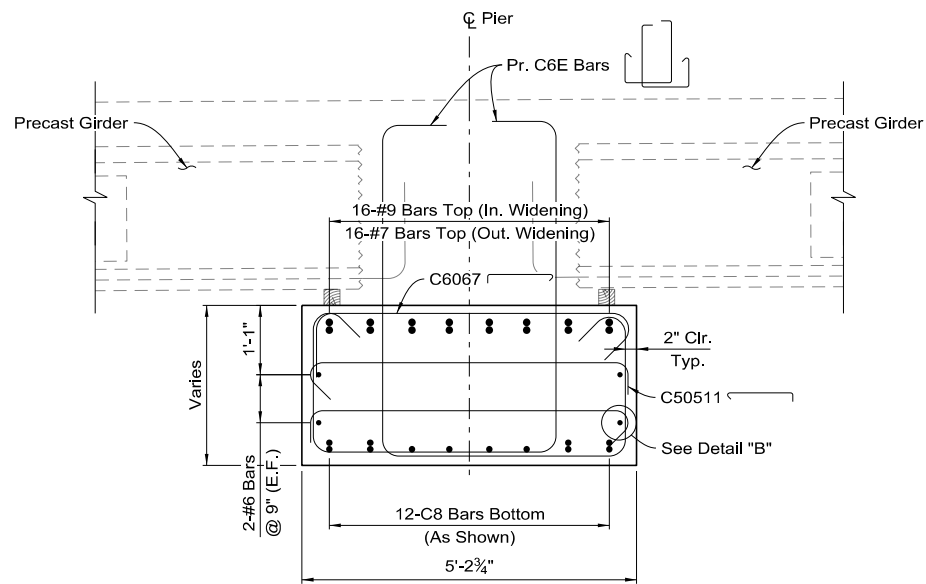
**SECTION B-B**  
PIERS 1 AND 4 - TYPICAL SECTION  
PARALLEL TO ALIGNMENT



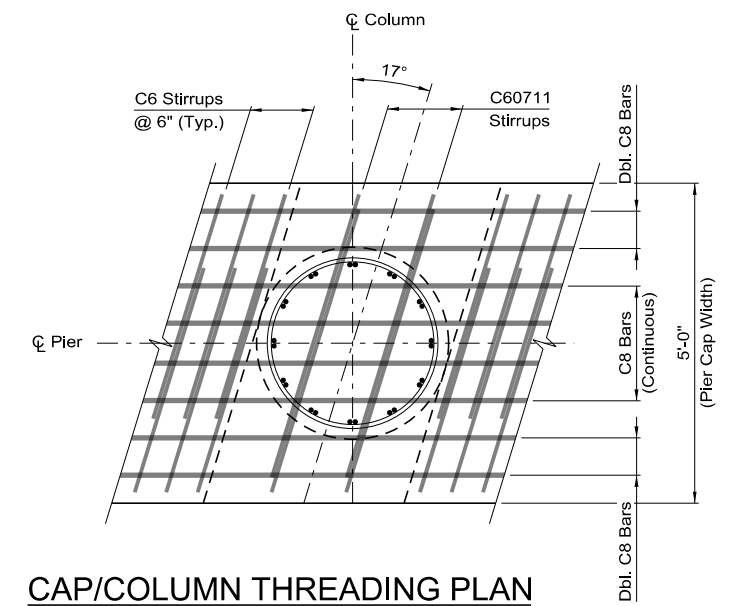
**CAP/COLUMN THREADING PLAN**  
PIERS 1 AND 4



**SECTION A-A**  
PIERS 2 AND 3 - THROUGH COLUMN  
PARALLEL TO ALIGNMENT

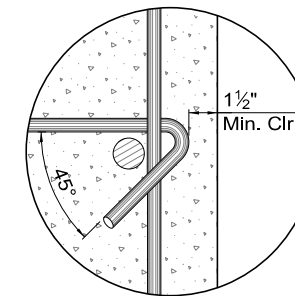


**SECTION B-B**  
PIERS 2 AND 3 - TYPICAL SECTION  
PARALLEL TO ALIGNMENT



**CAP/COLUMN THREADING PLAN**  
PIERS 2 AND 3

\* - Turn 90° Tails on Outside Bars to Clear Girders



**DETAIL "B"**

**NOTES**

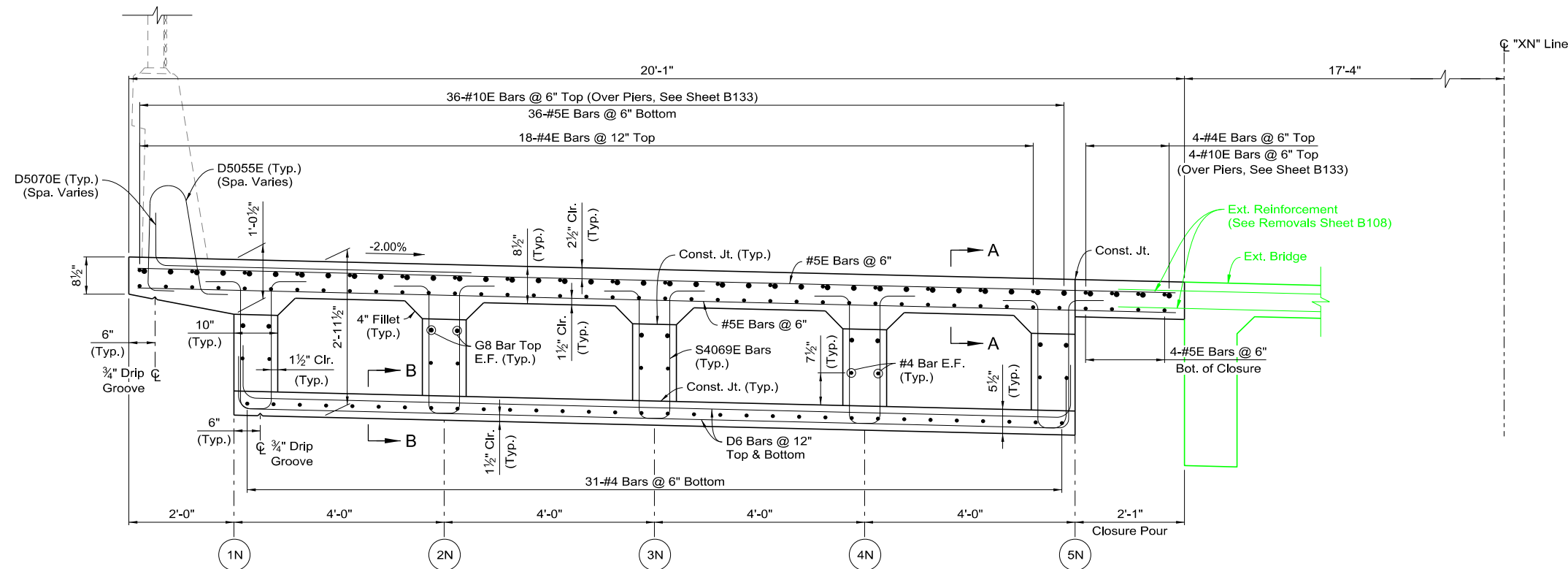
1. Alternate 135° & 90° hooks on all cross-ties.

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**PIER CAP DETAILS**

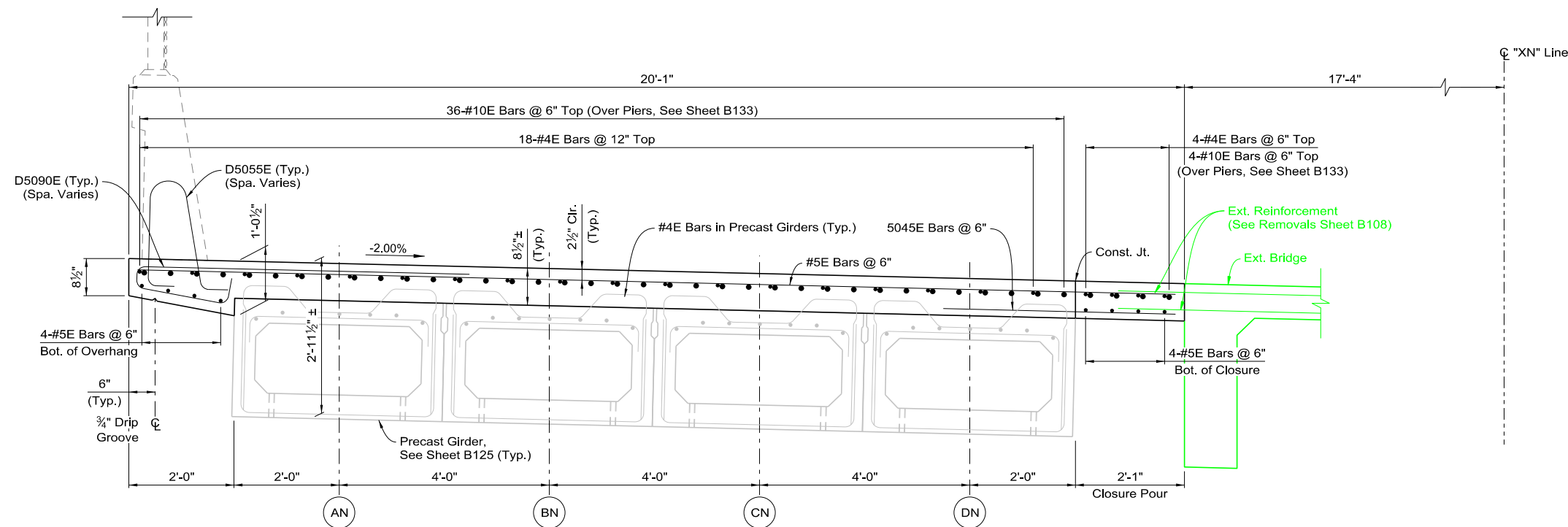
G-1092 N&S

STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B122



**TYPICAL INTERIOR WIDENING CIP SECTION**

LOOKING AHEAD ON LINE  
NORMAL TO ALIGNMENT



**TYPICAL INTERIOR WIDENING PRECAST SECTION**

LOOKING AHEAD ON LINE  
NORMAL TO ALIGNMENT

**NOTES**

1. For precast girder reinforcing, see Sheet B126.
2. For Sect. A-A and B-B, see Sheet B123.

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

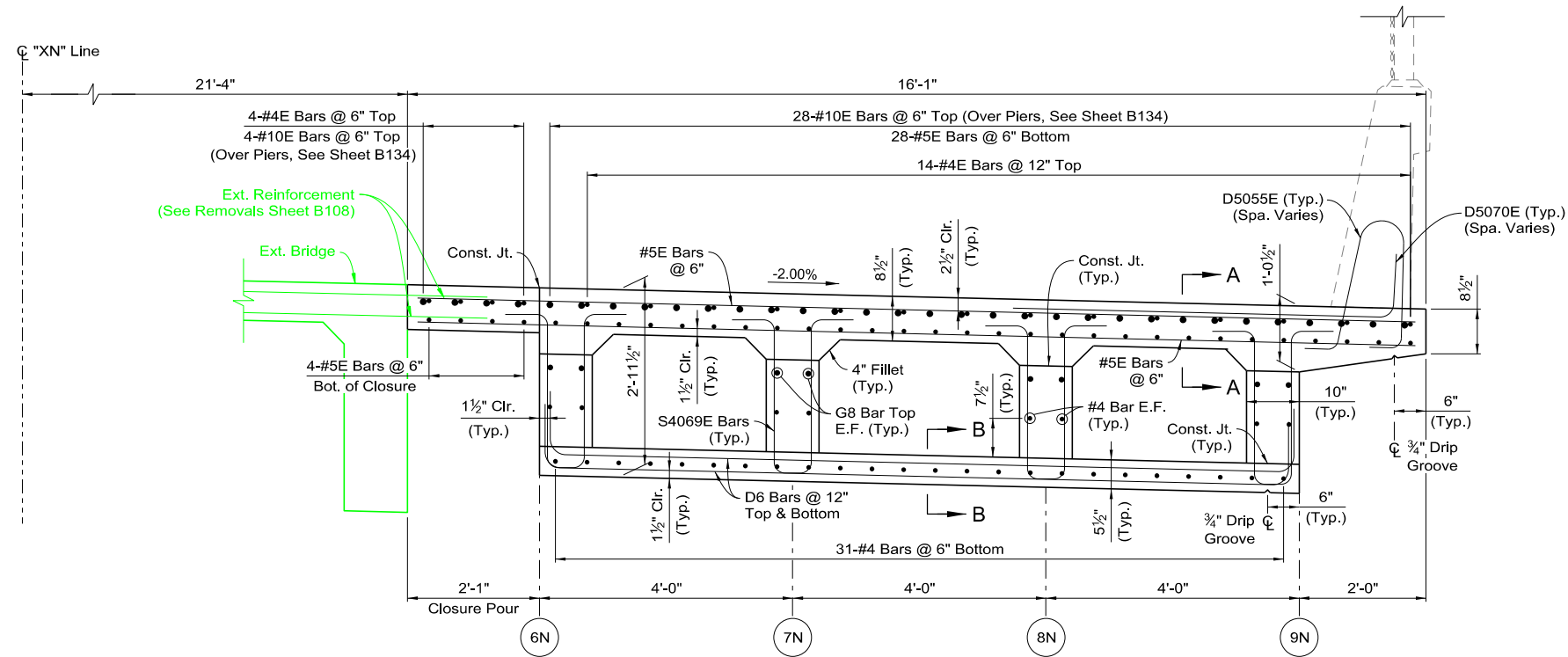
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**TYPICAL SECTION  
INSIDE WIDENING**

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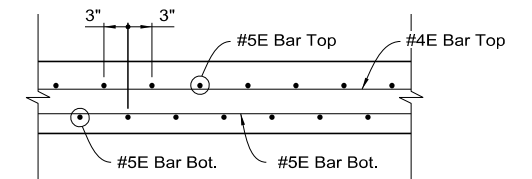
G-1092 N&S

STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B123

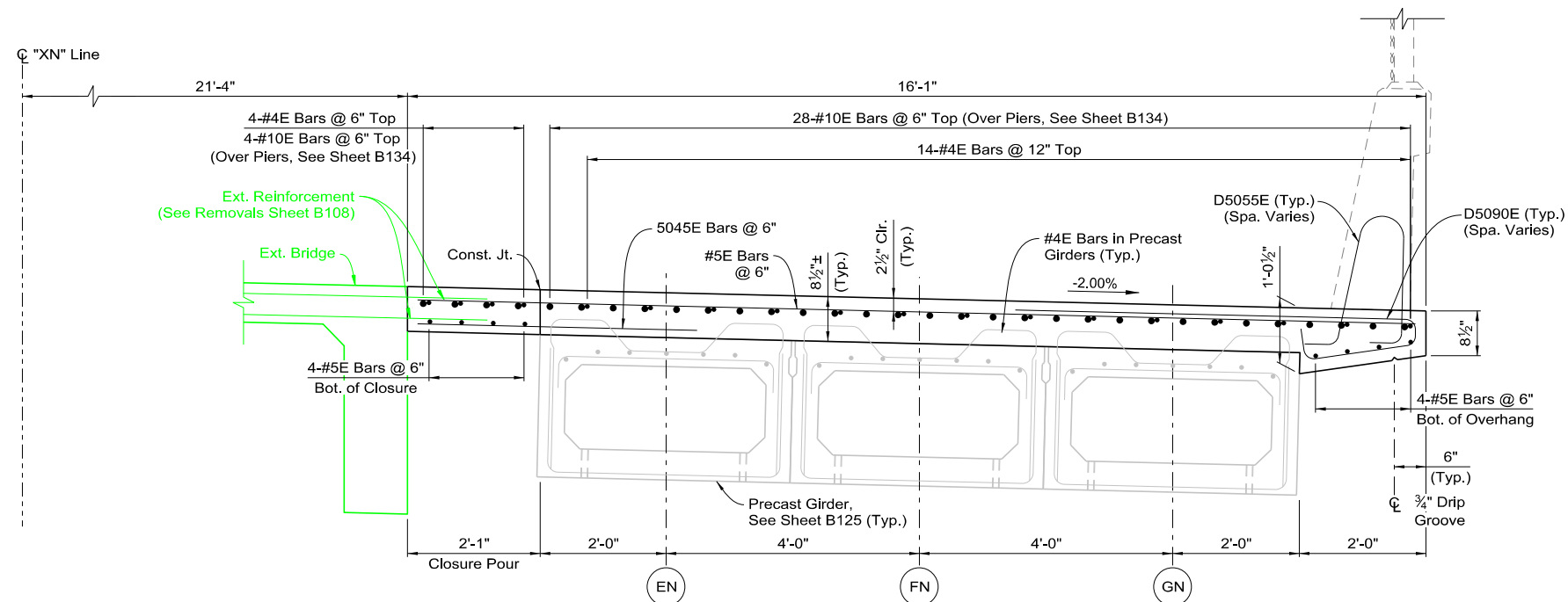


**TYPICAL EXTERIOR WIDENING CIP SECTION**

LOOKING AHEAD ON LINE  
NORMAL TO ALIGNMENT

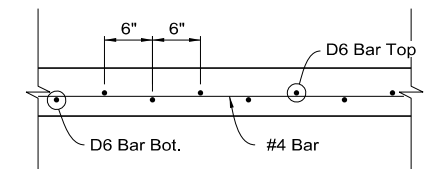


**SECTION A-A**  
TYPICAL SOFFIT SECTION



**TYPICAL EXTERIOR WIDENING PRECAST SECTION**

LOOKING AHEAD ON LINE  
NORMAL TO ALIGNMENT



**SECTION B-B**  
TYPICAL SOFFIT SECTION

**NOTES**

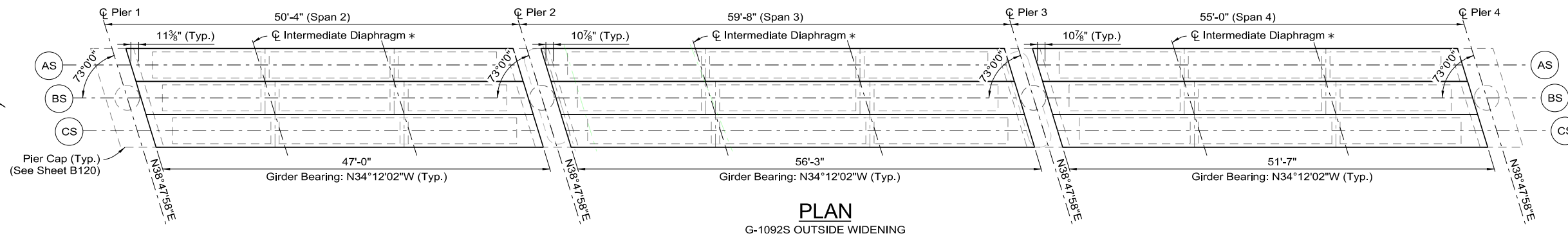
- For precast girder reinforcing, see Sheet B126.

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

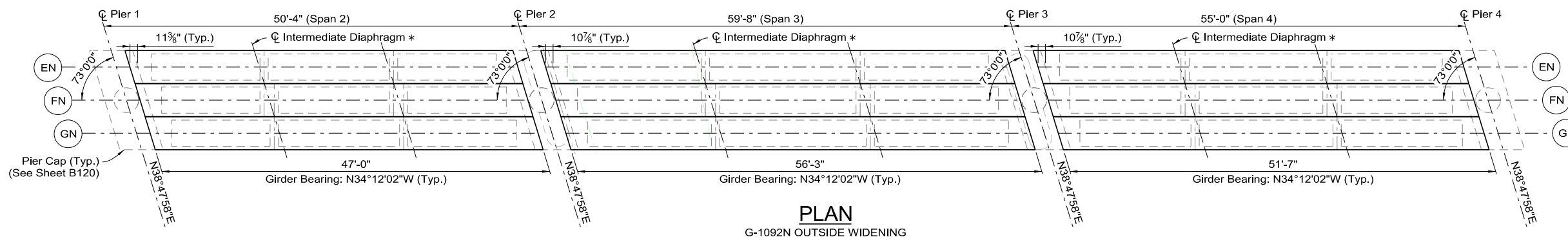
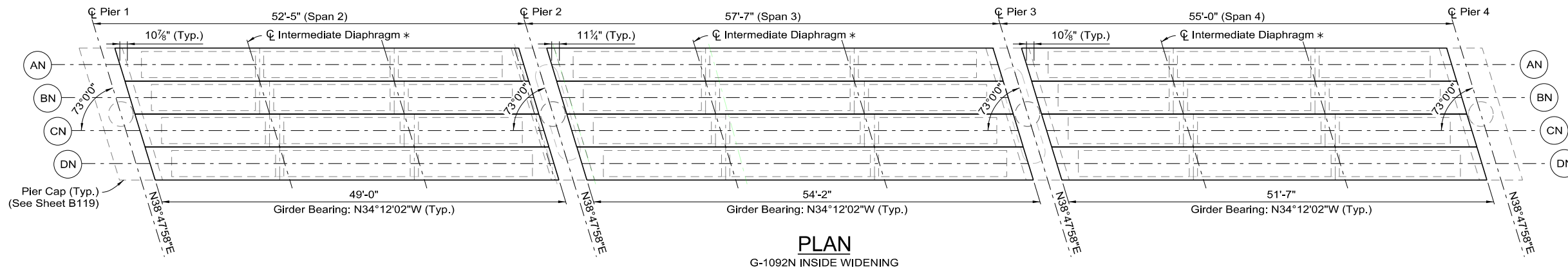
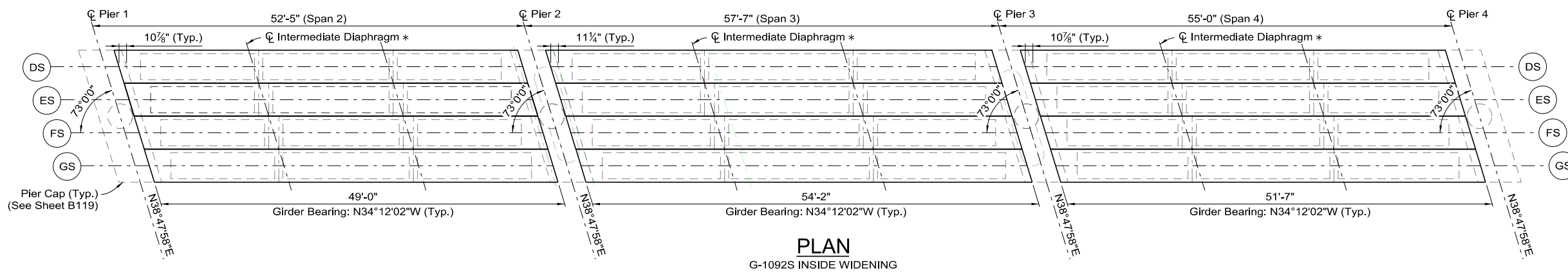
**TYPICAL SECTION  
OUTSIDE WIDENING**

G-1092 N&S

STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B124



\* - For Intermediate Diaphragm and Tie Rod Details See Sheet B127.



**NOTES**

1. All dimensions are horizontal.
2. For girder bearing line details and dimensions not shown, see Sheets B119-B120.
3. For precast girder details, see Sheets B125-B126.

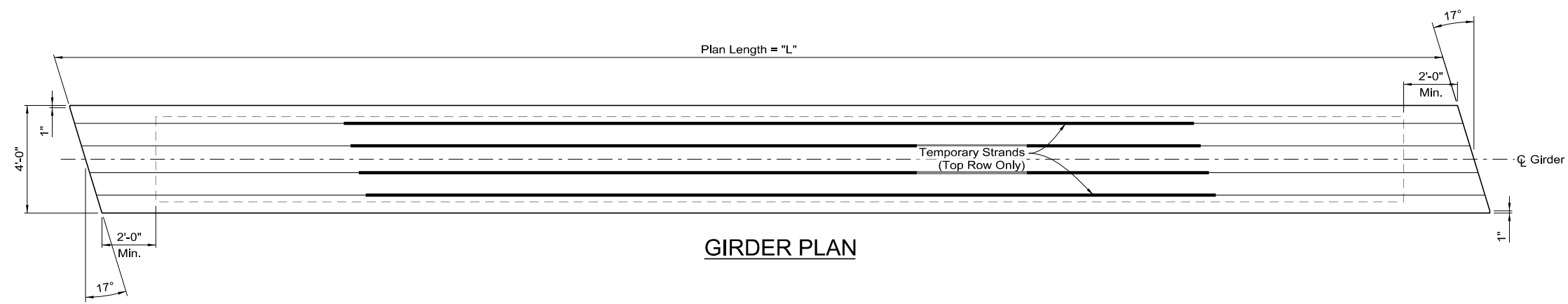
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**PRECAST GIRDER  
FRAMING PLAN**

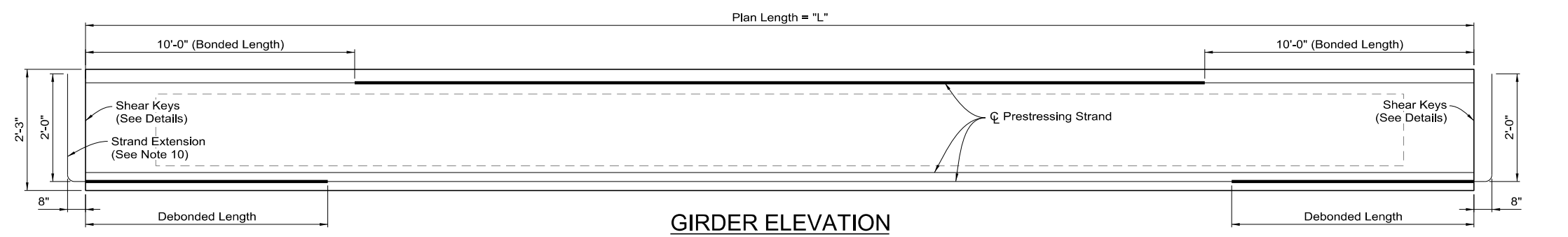
**G-1092 N&S**

DATE : 1/26/2023

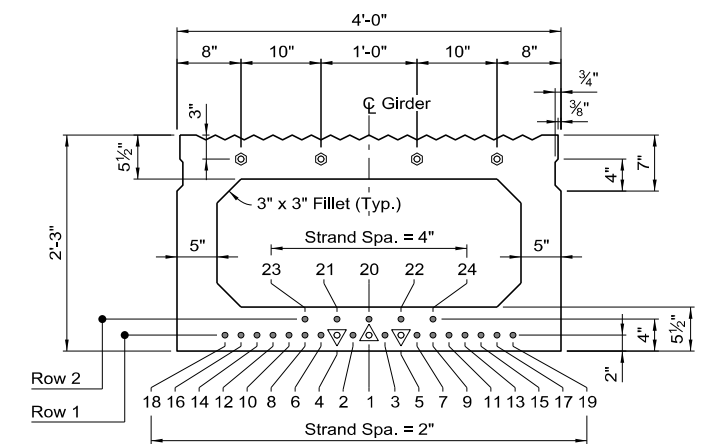
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B125



**GIRDER PLAN**



**GIRDER ELEVATION**

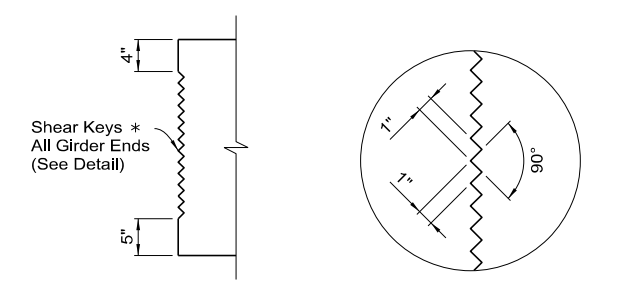


**TYPICAL SECTION**

- STRAND LEGEND:**
- - Fully bonded strand
  - ⊙ - Temporary strand
  - △ - First debonded strand
  - ▽ - Second set debonded strands

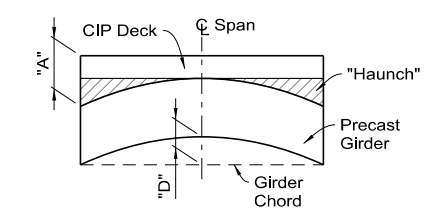
**GIRDER SCHEDULE**

Span	Box Beam	Box Beam Type	Plan Length "L"	Min. Concrete Compressive Strength		Row 1		Row 2		Total Permanent Strands			Temporary Strands		Strand Extension (Number of Strands)		Midspan Vertical Deflection	
				f <sub>ci</sub> (ksi)	f <sub>c</sub> (ksi)	Number of Strands	No. Debonded Strands & Debond Length	Number of Strands	No. Debonded Strands & Debond Length	Number of Strands	Jacking Force (kips)	Prestressed Force After All Losses (kips)	Number of Strands	Jacking Force (kips)	End 1	End 2	Lower Bound, D40 (in.)	Upper Bound, D120 (in.)
NB-2	AN, BN, CN, DN	48" x 27"	49'-0"	4.8	7.5	19	1 @ 6'	---	---	19	835	667	4	176	4	4	0.74	1.76
NB-3	AN, BN, CN, DN	48" x 27"	54'-2"	4.8	7.5	19	1 @ 6'-0", 2 @ 3'-0"	3	---	22	967	772	4	176	4	4	0.99	2.37
NB-4	All	48" x 27"	51'-7"	4.8	7.5	19	1 @ 6'-0", 2 @ 3'-0"	3	---	22	967	772	4	176	4	4	0.95	2.26
NB-2	EN, FN, GN	48" x 27"	47'-0"	4.8	7.5	17	---	---	---	17	747	597	4	176	4	4	0.60	1.41
NB-3	EN, FN, GN	48" x 27"	56'-3"	4.8	7.5	19	1 @ 9'-0", 2 @ 6'-0"	5	---	24	1055	843	4	176	4	4	1.14	2.74
SB-2	DS, ES, FS, GS	48" x 27"	49'-0"	4.8	7.5	19	1 @ 6'	---	---	19	835	667	4	176	4	4	0.74	1.76
SB-3	DS, ES, FS, GS	48" x 27"	54'-2"	4.8	7.5	19	1 @ 6'-0", 2 @ 3'-0"	3	---	22	967	772	4	176	4	4	0.99	2.37
SB-4	All	48" x 27"	51'-7"	4.8	7.5	19	1 @ 6'-0", 2 @ 3'-0"	3	---	22	967	772	4	176	4	4	0.95	2.26
SB-2	AS, BS, CS	48" x 27"	47'-0"	4.8	7.5	17	---	---	---	17	747	597	4	176	4	4	0.60	1.41
SB-3	AS, BS, CS	48" x 27"	56'-3"	4.8	7.5	19	1 @ 9'-0", 2 @ 6'-0"	5	---	24	1055	843	4	176	4	4	1.14	2.74



**ELEVATION SHEAR KEY DETAIL**

\* - Terminate Shear Keys 1" from Exterior Face of Girder



**GIRDER CAMBER DETAIL**

**NOTES**

- Plan length shall be increased as necessary to compensate for shortening due to prestress, creep, and shrinkage.
- Prestressing strand shall be 0.6" diameter low relaxation strand conforming to AASHTO M203 Grade 270. Each strand shall be jacked to 202.5 ksi. Strands shall be symmetrical about the girder centerline. Exterior strands in each row shall be fully bonded.
- Debonded strands shall be debonded at each girder end for the indicated length, parallel to the girder centerline. Debonded strands shall be symmetrically placed about the girder centerline. Debonded lengths of pairs of strands that are symmetrically positioned about the girder centerline shall be equal. Position debonded strands so that there is a minimum of one bonded strand between adjacent debonded strands.
- Temporary strands shall only be placed in the top row. Provide a 2" x 6" x 3" deep expanded polystyrene blockout. Remove the polystyrene just prior to cutting the temporary strands and prevent moisture from entering the blockout.
- All lifting embedments are to be designed by the Contractor in accordance with the Standard Specifications.
- Dimension "A" represents the deck thickness at the supports, as shown in the Girder Camber Detail and the Typical Sections on Sheets B122 & B123. Deck thickness over the precast girders will vary and depends on the age of the girders at time of erection. Mid span girder deflections "D40" and "D120" represent the upper and lower bound girder deflections at girder age 40 days and 120 days after prestressing release, respectively. Precast girder screed cambers are shown on Sheet B135.
- In addition to the requirements of Section 503.03.09, the Contractor shall check, record, and submit the vertical deflection (camber) of each girder at the following times: (Initial) Upon removal of the girder from the casting bed, (Shipment) within 14 days prior to shipment, and (Erection) after girder erection and prior to equalization. At a minimum, survey data shall be taken at each girder end and at midspan. If the vertical deflection measured for the erection check is not between the lower "D" and upper "D" bounds shown on the plans, submit to the Bridge Engineer a plan for corrective action.
- Contractor is responsible for analysis and evaluation of girder stability during construction, including shipping and erection.
- All dimensions are horizontal. Fabricator must correct for vertical grade.
- Extend number of bottom row strands as shown for ends of girders as detailed in the Girder Schedule. Cut all other strands flush. Offset extended strands between adjacent spans. Fabricator to select and show extended strands in shop drawings.
- Strand shall be installed symmetrically about the girder centerline. Refer to incremental strand position numbers shown in the Typical Section when locating strands for each row. Where strand debonding is indicated in the Girder Schedule, locate debonded strands in strand positions 1, 4, and 5 as indicated in the Typical Section and symmetrically about the girder centerline.
- Temporary strands shall be cut after girder is erected and before deck is placed.

DATE : 1/26/2023

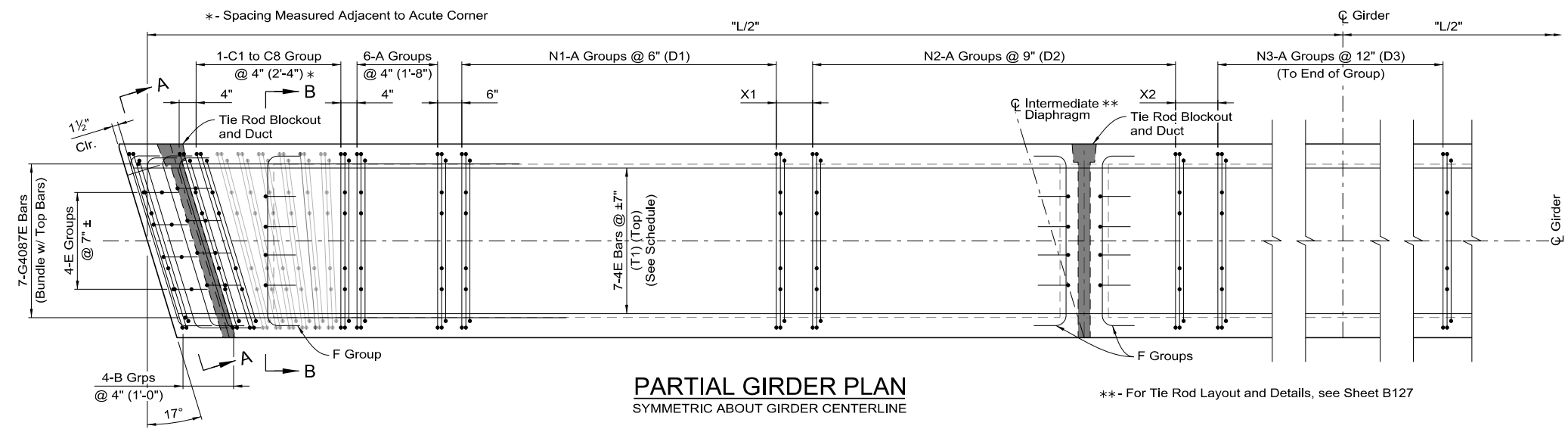
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**PRECAST GIRDER  
PRESTRESSING  
DETAILS**

**G-1092 N&S**

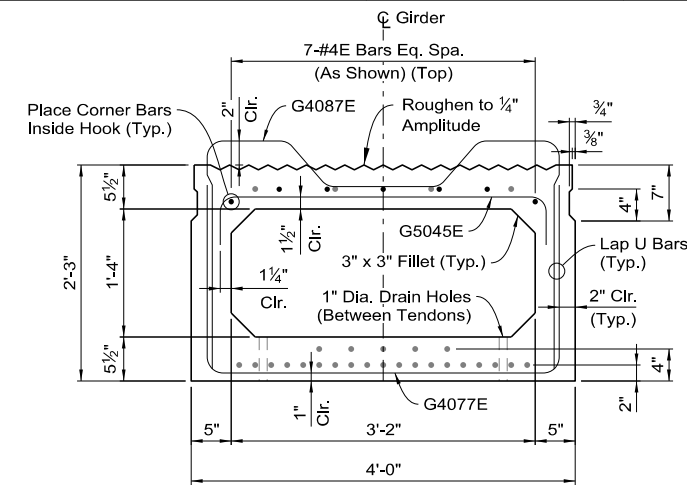


STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B126

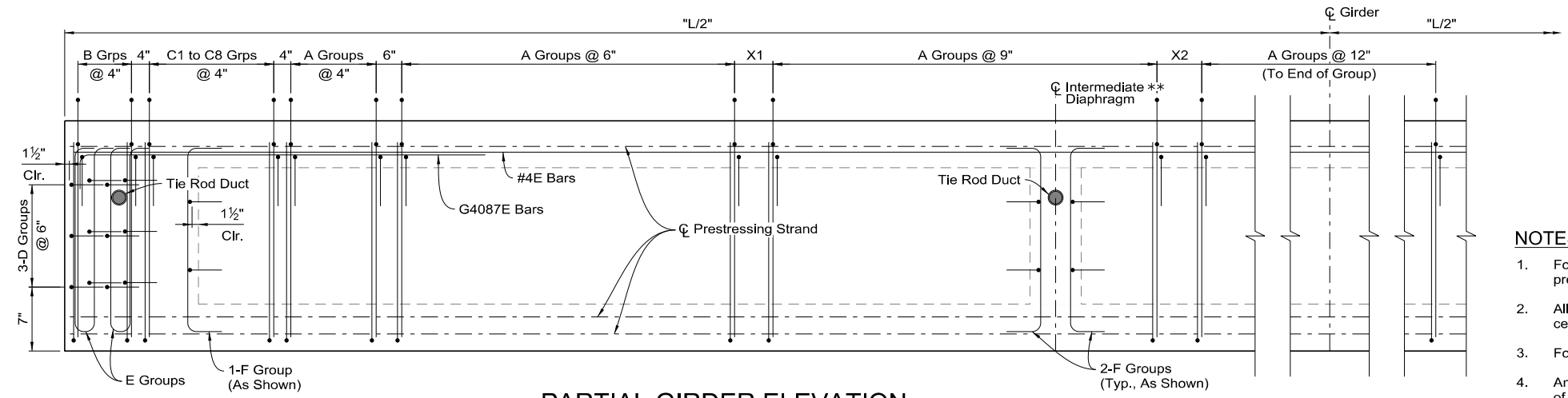


**PARTIAL GIRDER PLAN**  
SYMMETRIC ABOUT GIRDER CENTERLINE

\*\* - For Tie Rod Layout and Details, see Sheet B127



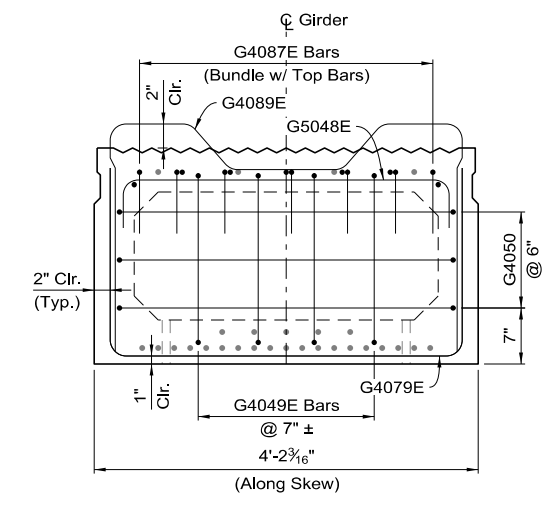
**TYPICAL SECTION**



**PARTIAL GIRDER ELEVATION**  
SYMMETRIC ABOUT GIRDER CENTERLINE

**NOTES**

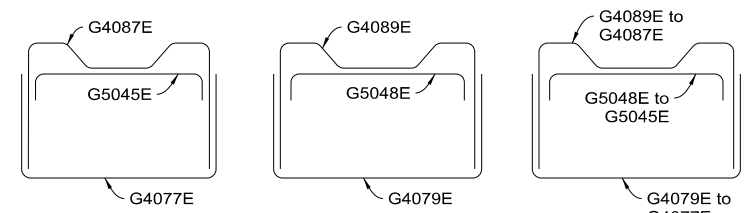
1. For intermediate diaphragm locations, see precast girder framing plan (Sheet B124).
2. All transverse bar spacing is along girder centerline.
3. For typical section, see Sheets B122-B123.
4. Any reinforcing interfering with the location of the transverse tie rod ducts may be adjusted with the approval of the Engineer. Where requested, install additional reinforcing groups to maintain the minimum spacing as shown on the plans.
5. For blockouts at intermediate diaphragms not shown, see Tie Rod Details (Sheet B127).



**SECTION A-A**  
THROUGH END DIAPHRAGM

**REINFORCING SCHEDULE**

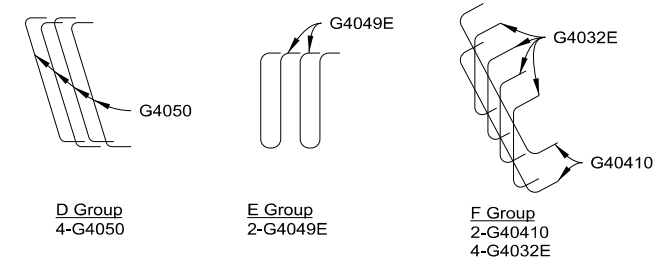
Span	Box Beam Type	Box Beam Type	Plan Length "L"	Top Reinforcement (T1)	A Groups @ 6" (Mirror About Centerline)			A Groups @ 9" (Mirror about Centerline)			A Groups @ 12" (to End of Group)	
					No. Groups (N1)	Group Dist. (D1)	End Space (X1)	No. Groups (N2)	Group Dist. (D2)	End Space (X2)	No. Groups (N3)	Group Dist. (D3)
NB-2	AN, BN, CN, DN	48" x 27"	49'-0"	4488E	12	5'-6"	9"	10	6'-9"	12"	9	8'-0"
NB-3	AN, BN, CN, DN	48" x 27"	54'-2"	45310E	12	5'-6"	9"	13	9'-0"	10"	10	9'-0"
NB-4	All	48" x 27"	51'-7"	4513E	12	5'-6"	9"	8	5'-3"	10"	15	13'-11"
NB-2	EN, FN, GN	48" x 27"	47'-0"	4468E	12	5'-6"	9"	8	5'-3"	12"	10	9'-0"
NB-3	EN, FN, GN	48" x 27"	56'-3"	45511E	14	6'-6"	9"	11	7'-6"	10 1/2"	13	12'-0"
SB-2	DS, ES, FS, GS	48" x 27"	49'-0"	4488E	12	5'-6"	9"	10	6'-9"	12"	9	8'-0"
SB-3	DS, ES, FS, GS	48" x 27"	49'-0"	45310E	12	5'-6"	9"	13	9'-0"	10"	10	9'-0"
SB-4	All	48" x 27"	49'-0"	4513E	12	5'-6"	9"	8	5'-3"	10"	15	13'-11"
SB-2	AS, BS, CS	48" x 27"	49'-0"	4468E	12	5'-6"	9"	8	5'-3"	12"	10	9'-0"
SB-3	AS, BS, CS	48" x 27"	49'-0"	45511E	14	6'-6"	9"	11	7'-6"	10 1/2"	13	12'-0"



**A Group**  
1-G4087E  
1-G5045E  
1-G4077E

**B Group**  
1-G4089E  
1-G5047E  
1-G4079E

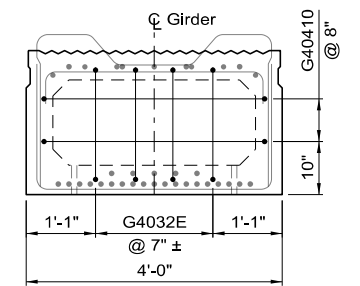
**C1 to C8 Group**  
1 Set-G4089E to G4087E (8 Bars/Set)  
1 Set-G5048E to G5045E (8 Bars/Set)  
1 Set-G4079E to G4077E (8 Bars/Set)



**D Group**  
4-G4050

**E Group**  
2-G4049E

**F Group**  
2-G40410  
4-G4032E



**SECTION B-B**  
AT DIAPHRAGM FACE

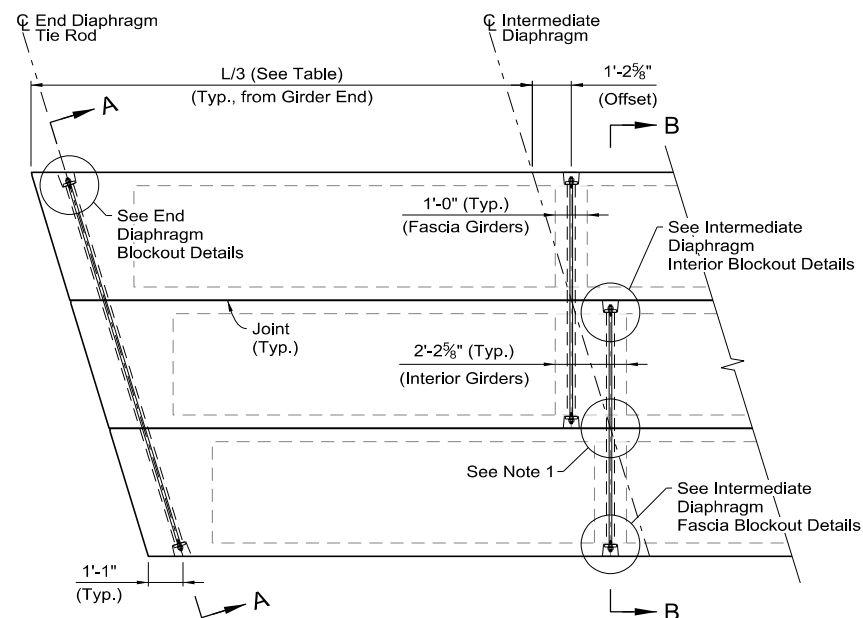
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**PRECAST GIRDER  
REINFORCING**

G-1092 N&S

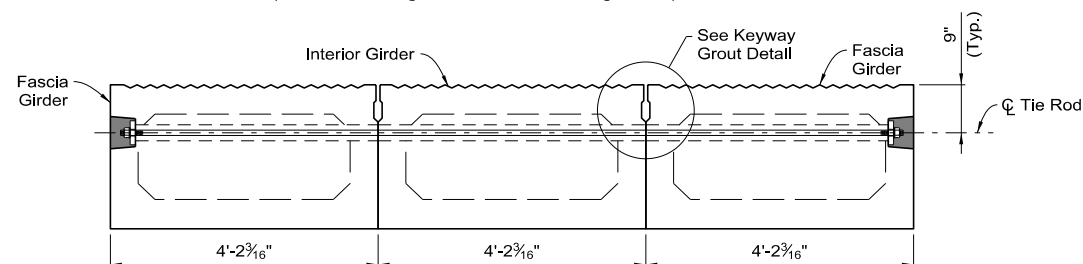
DATE : 1/26/2023

STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B127



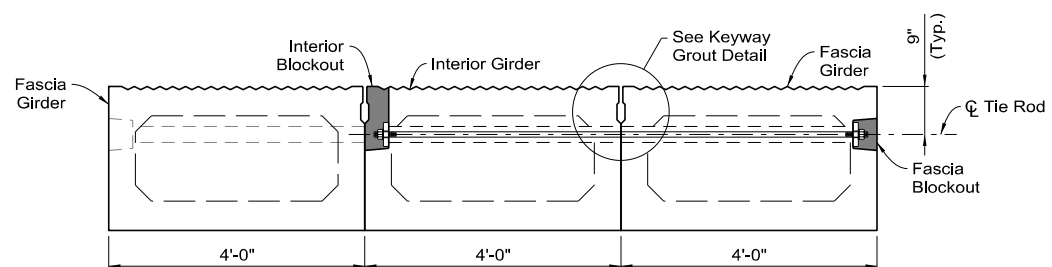
**PARTIAL PLAN**

INTERMEDIATE DIAPHRAGM AND TIE BAR LAYOUT  
(Outside Widening Shown, Inside Widening Similar)



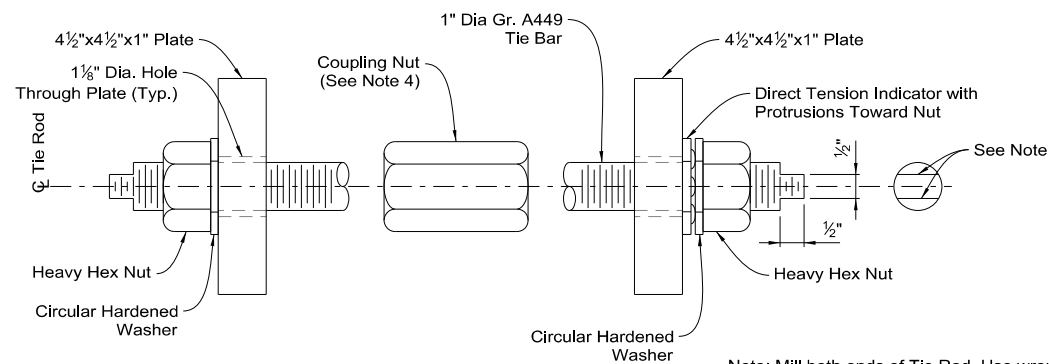
**SECTION A-A**

THROUGH END DIAPHRAGM



**SECTION B-B**

THROUGH INTERMEDIATE DIAPHRAGM

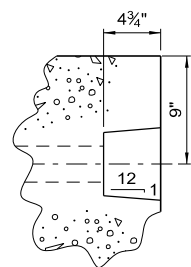


**TIE ROD DETAILS**

Note: Mill both ends of Tie Rod. Use wrench to prevent tie rod turning when tensioning.

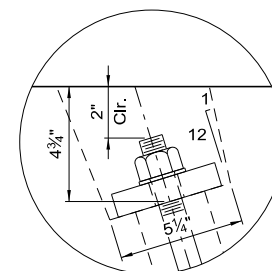
**INTERMEDIATE DIAPHRAGM LAYOUT**

Span	Box Beam	Box Beam Type	Plan Length "L"	L/3
NB-2	AN, BN, CN, DN	48" x 27"	49'-0"	16'-4"
NB-3	AN, BN, CN, DN	48" x 27"	54'-2"	18'-1/2"
NB-4	All	48" x 27"	51'-7"	17'-2 1/2"
NB-2	EN, FN, GN	48" x 27"	47'-0"	15'-8"
NB-3	EN, FN, GN	48" x 27"	56'-3"	18'-9"
SB-2	DS, ES, FS, GS	48" x 27"	49'-0"	16'-4"
SB-3	DS, ES, FS, GS	48" x 27"	54'-2"	18'-1/2"
SB-4	All	48" x 27"	51'-7"	17'-2 1/2"
SB-2	AS, BS, CS	48" x 27"	47'-0"	15'-8"
SB-3	AS, BS, CS	48" x 27"	56'-3"	18'-9"



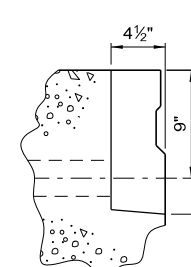
**FASCIA BLOCKOUT**

END DIAPHRAGM



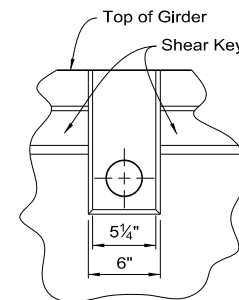
**TIE ROD CLEARANCE**

END DIAPHRAGM



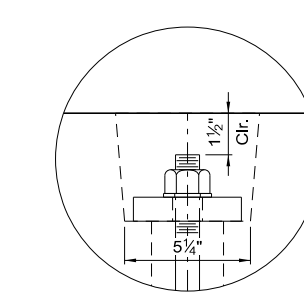
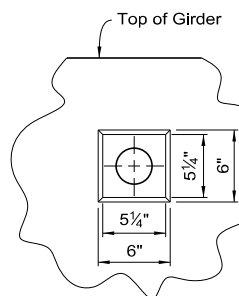
**INTERIOR BLOCKOUT**

INTERMEDIATE DIAPHRAGM



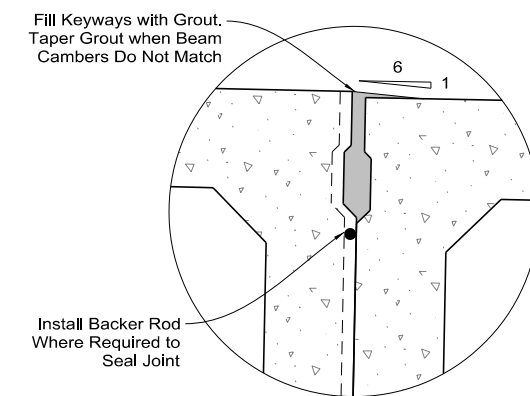
**FASCIA BLOCKOUT**

INTERMEDIATE DIAPHRAGM



**TIE ROD CLEARANCE**

INTERMEDIATE DIAPHRAGM



**KEYWAY GROUT DETAIL**

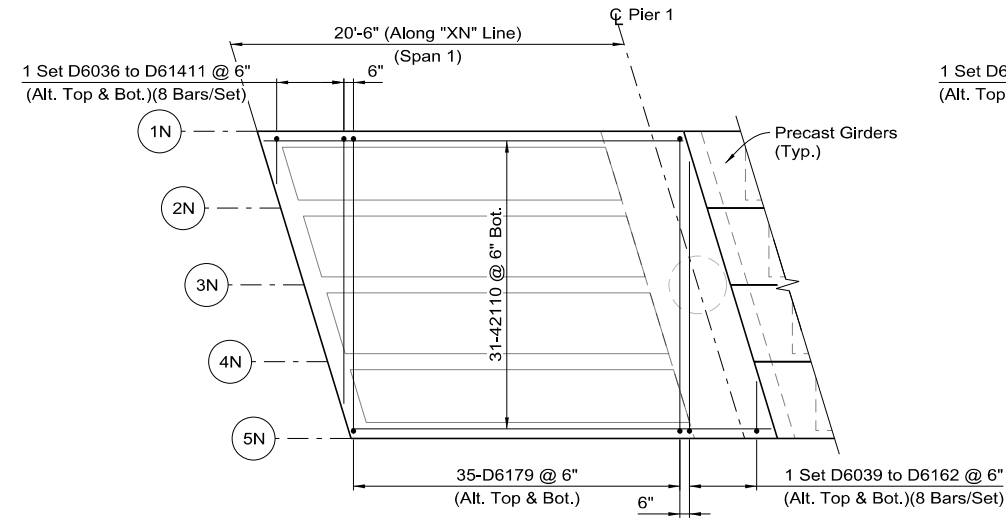
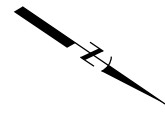
**NOTES**

- Intermediate diaphragm tie rods intersect the centerline of the intermediate diaphragm at the joint between each pair of girders being connected. Adjacent tie rods shall be offset by the dimension shown in the partial plan to maintain this criteria.
- Installation of intermediate diaphragm tie rods shall commence upon the erection of the second adjacent box beam in the current span and proceed after each subsequent box beam is erected in that span. End diaphragm tie rods shall be installed after the last beam in that span is erected.
- Transverse tie rods shall be 1" diameter high strength rod conforming to ASTM A449. Heavy hex nuts shall conform to ASTM A563. Hardened washers shall conform to ASTM F436. Bearing plates shall conform to ASTM A36. Direct Tension Indicators (DTIs) shall conform to ASTM F959. Hot-dip galvanize all tie rod components after fabrication, excluding DTIs. Tie rods and all associated hardware will be paid for under Bid Item 506 0110 "Structural Steel".
- For interior widenings, if previous construction phases interfere with the placement of the end diaphragm tie rods, the Contractor may use one coupling nut per tie rod location to aid in construction. Coupling nuts shall conform to ASTM A563 and be galvanized after fabrication. The Contractor shall install the coupling nut so the tie rods entering the nut from each end meet in the middle of the nut. Coupling nuts, if chosen for use, shall be considered incidental to the tie rod installation.
- Tighten all transverse tie rods to approximately one half the specified tension before proceeding with final tensioning. Tension all tie rods to a minimum of 51.0 kips as indicated by the DTI.
- After girder erection and all tie rod tensioning is complete, fill tie rod blockouts and keyways with an approved high strength grout conforming to Section 503.02.03 (Nonshrink Grout) of the Standard Specifications. Keyway and blockout grout shall be considered incidental to tie rod installation (No Direct Payment).
- After placement of keyway grout, no additional load may be placed on the girders until the grout has reached a compressive strength of 2000 psi.
- At no time prior to completion of the bridge deck curing operation shall any equipment or vehicles be placed on the structure without approval of the Bridge Engineer.

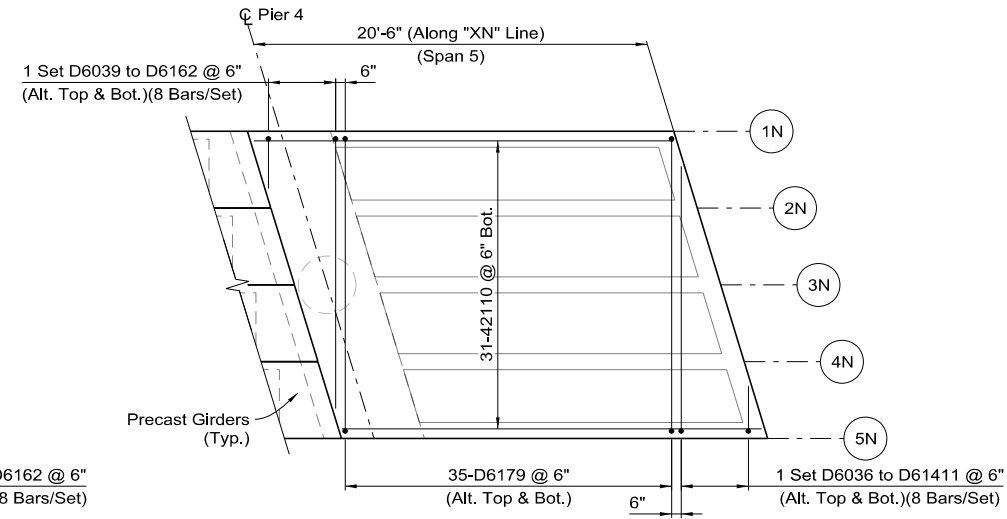
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**TIE ROD DETAILS**

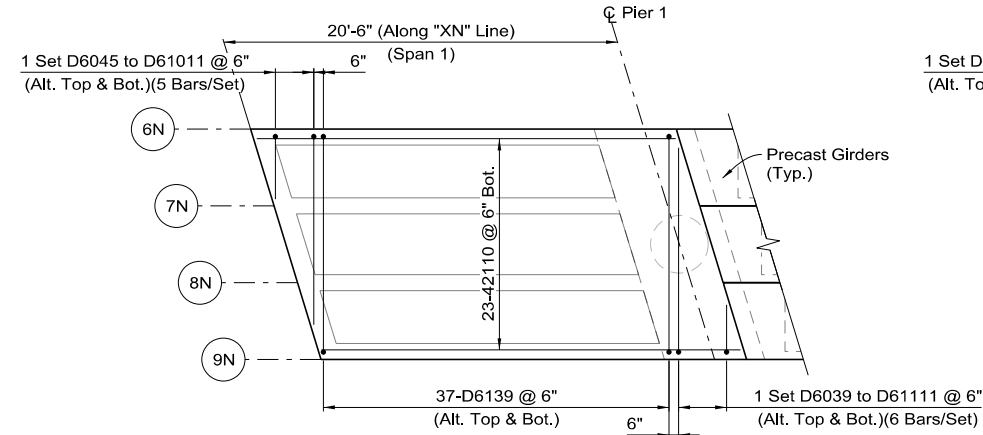
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B128



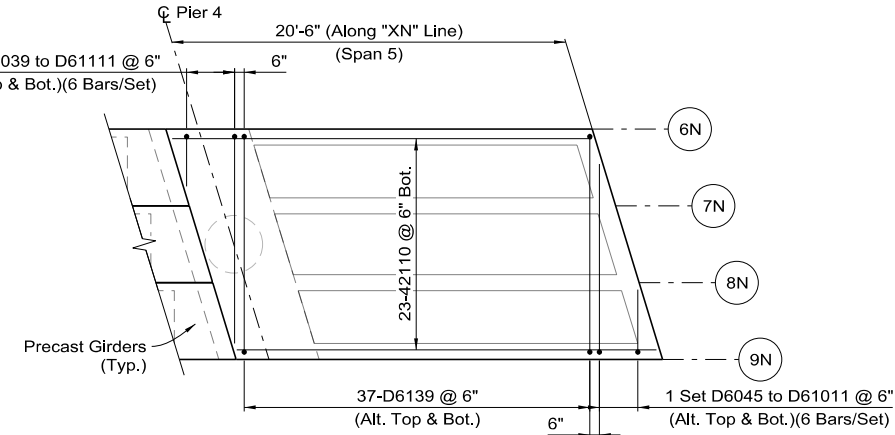
**PLAN**  
INSIDE WIDENING  
(Span 1)



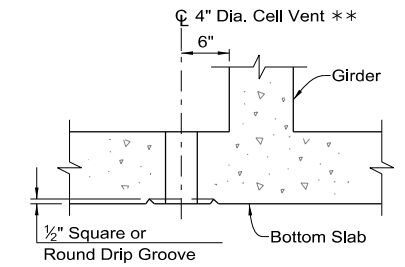
**PLAN**  
INSIDE WIDENING  
(Span 5)



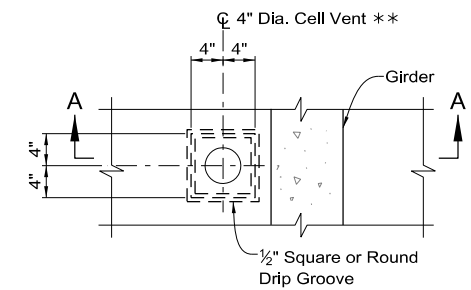
**PLAN**  
OUTSIDE WIDENING  
(Span 1)



**PLAN**  
OUTSIDE WIDENING  
(Span 5)



**SECTION A-A**



**PLAN**

\*\* - 4" cell vent in bottom slab. A minimum of two cell vents in each cell between girders. One vent to be located at low point of cell. The other vent to be located at the opposite end of cell 18" from face of end diaphragm or pier cap.

**CELL VENT DETAILS**

**NOTES**

1. For typical sections see Sheets B122-B123.
2. Girder numbering is for CIP spans only. For precast girders see Framing Plan, Sheet B124.

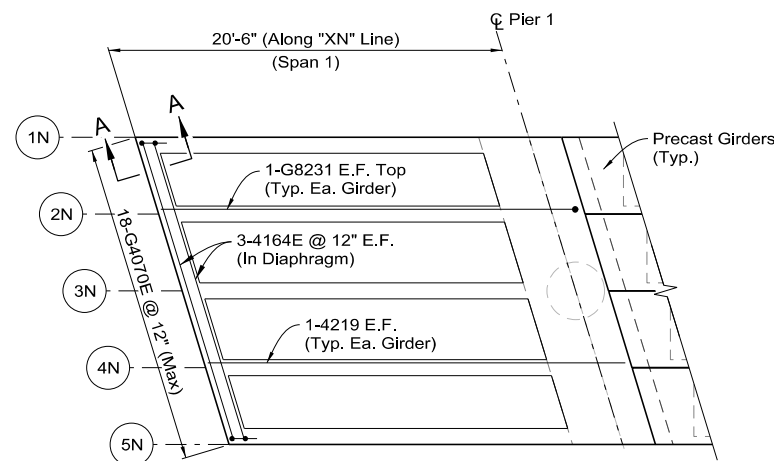
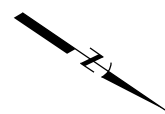
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**CIP SOFFIT  
REINFORCING**

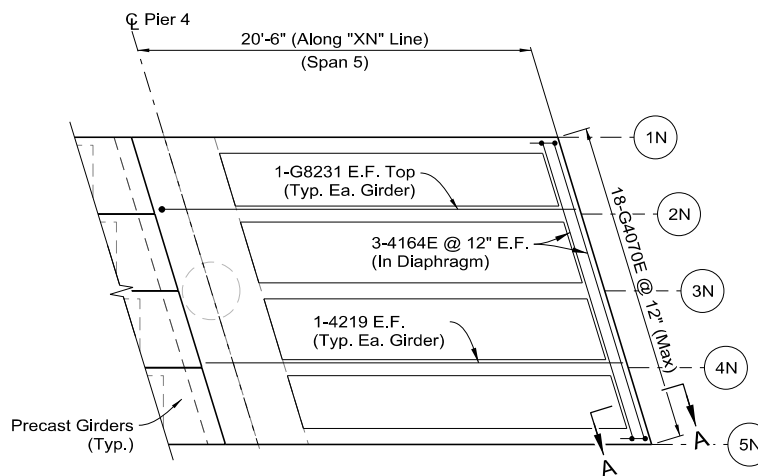
G-1092 N&S

DATE : 1/26/2023

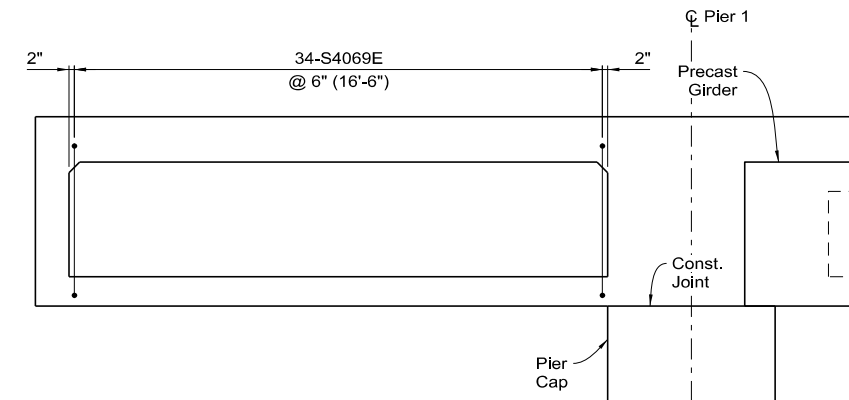
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B129



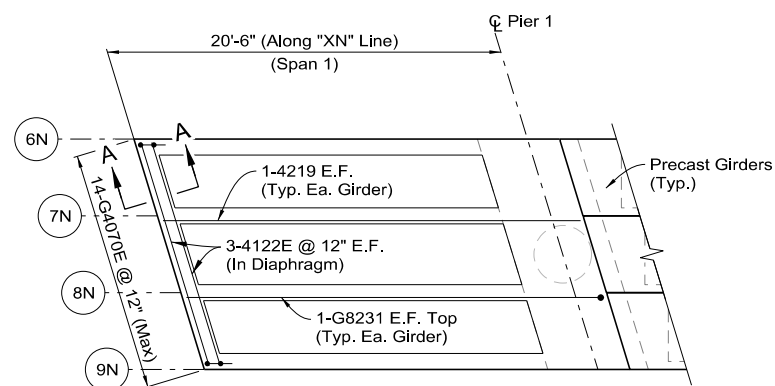
**PLAN**  
INSIDE WIDENING  
(Span 1)



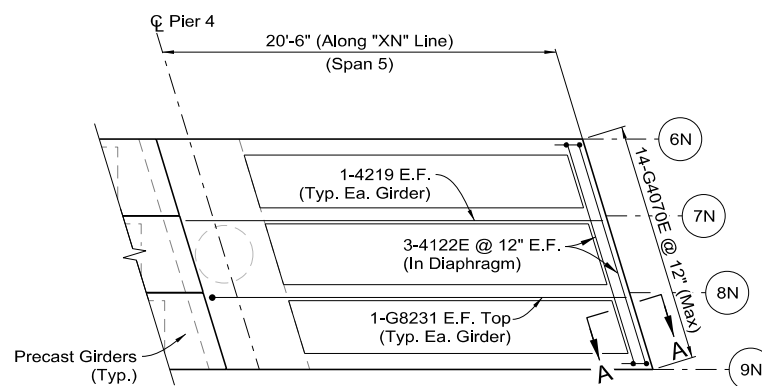
**PLAN**  
INSIDE WIDENING  
(Span 5)



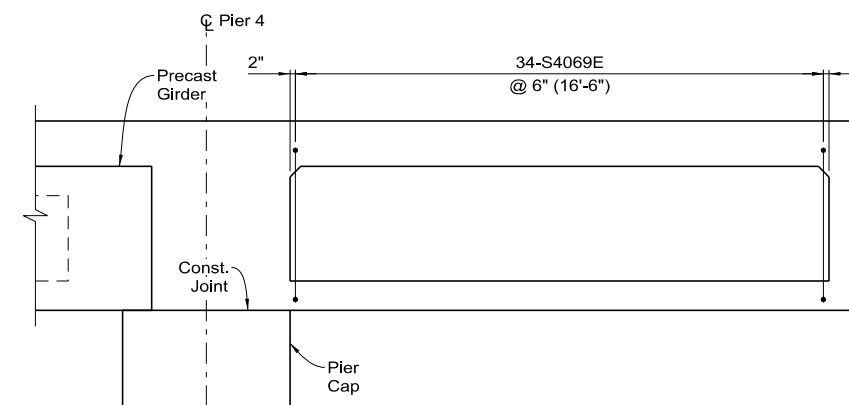
**GIRDER ELEVATION**  
SPAN 1



**PLAN**  
OUTSIDE WIDENING  
(Span 1)



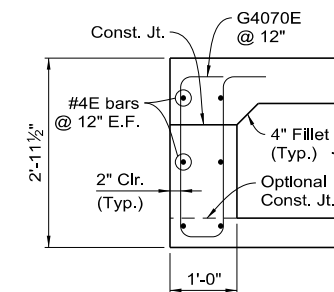
**PLAN**  
OUTSIDE WIDENING  
(Span 5)



**GIRDER ELEVATION**  
SPAN 5

**NOTES**

1. For typical sections see Sheets B122-B123.
2. Girder numbering is for CIP spans only. For precast girders see Framing Plan, Sheet B124.
3. Northbound shown, Southbound similar.



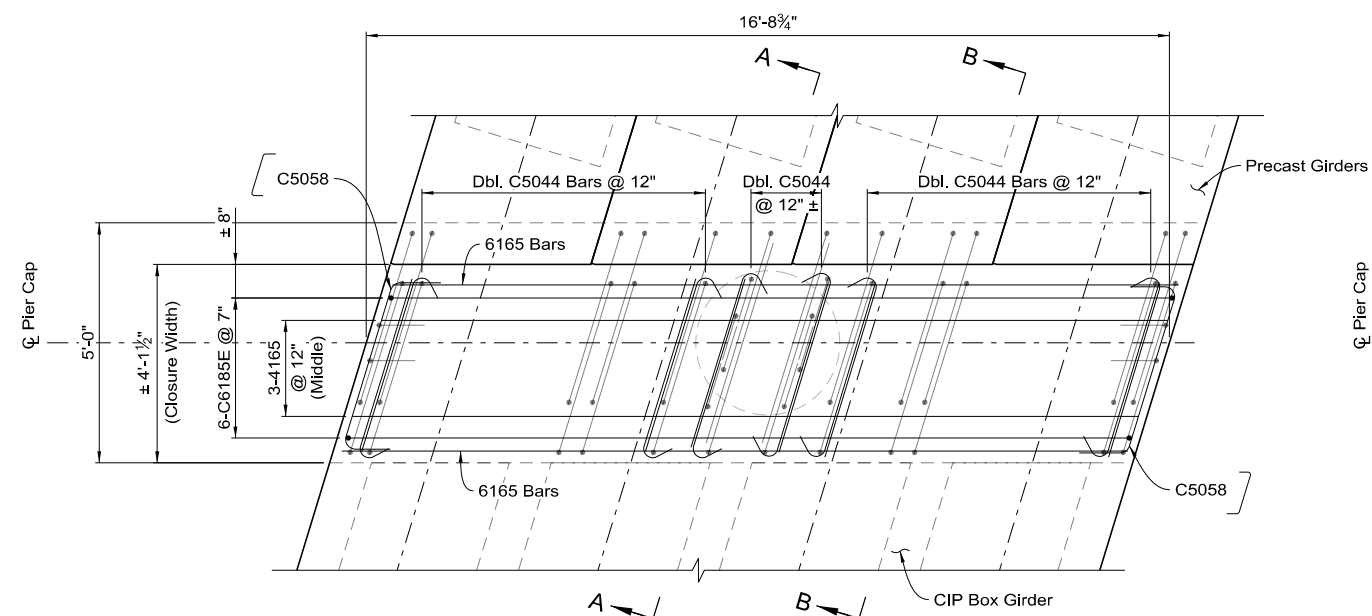
**SECTION A-A**  
THROUGH END DIAPHRAGM

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

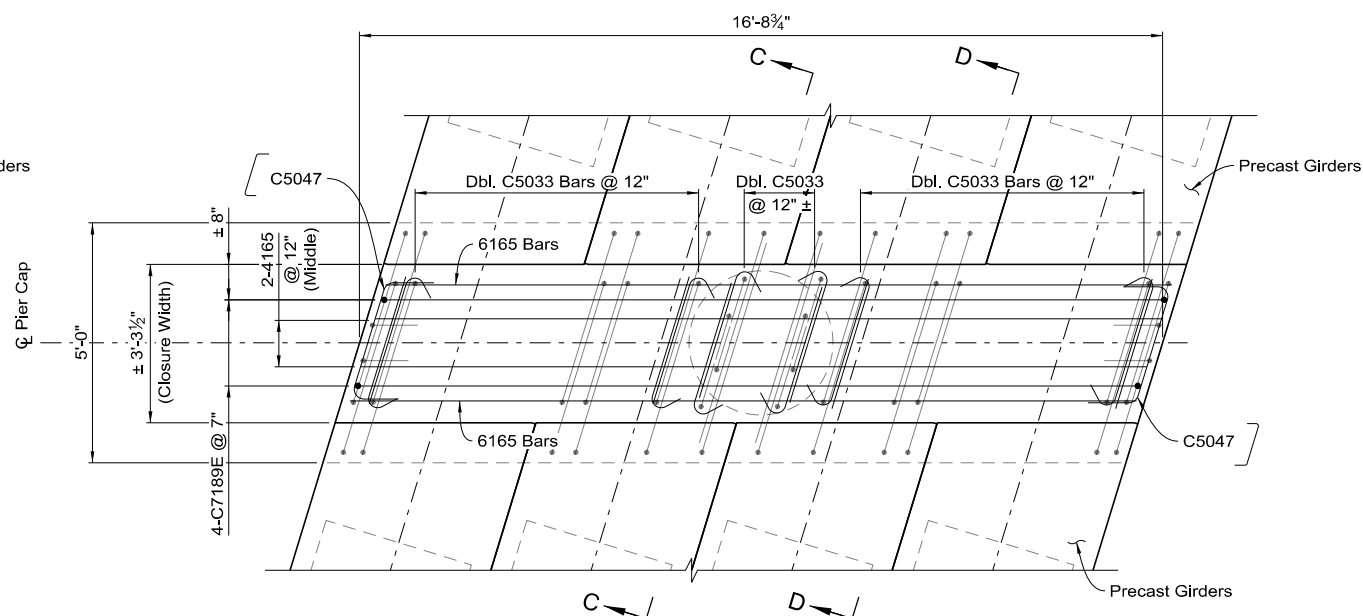
**CIP GIRDER  
REINFORCING**

**G-1092 N&S**

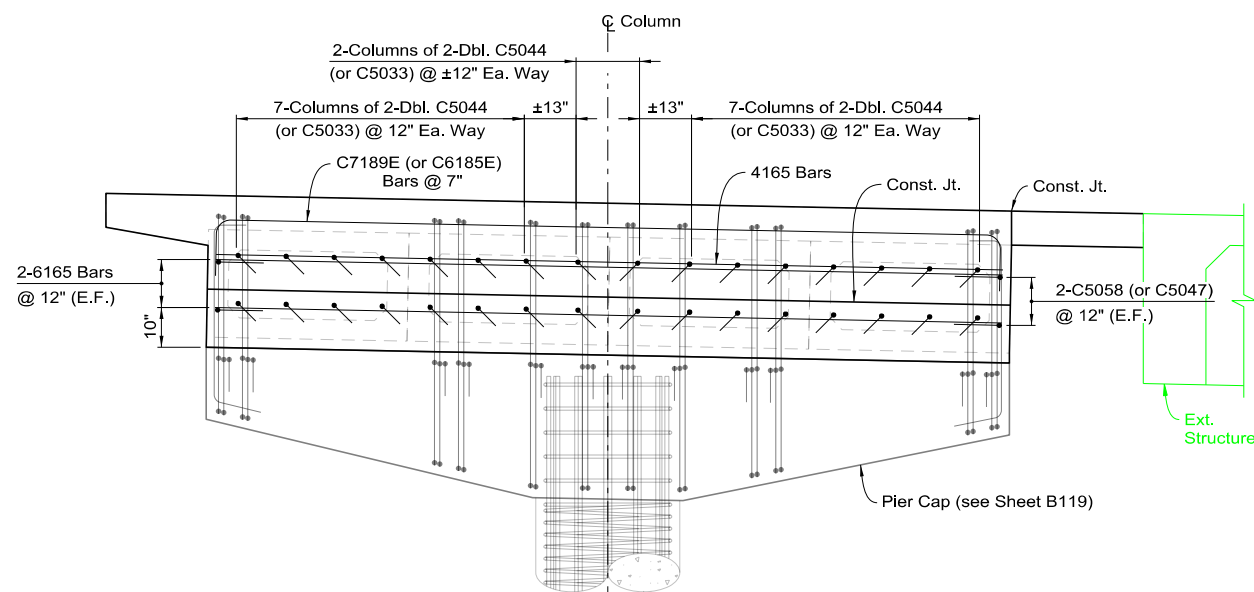
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B130



**PLAN - PIERS 1 & 4**  
 LOOKING AHEAD ON LINE, ALONG SKEW  
 (G-1092N Shown, G-1092S Similar)



**PLAN - PIERS 2 & 3**  
 LOOKING AHEAD ON LINE, ALONG SKEW  
 (G-1092N Shown, G-1092S Similar)



**ELEVATION**  
 LOOKING AHEAD ON LINE, ALONG SKEW  
 (G-1092N Shown, G-1092S Similar)

**NOTES**

1. Dimensions shown are measured along length of pier cap.
2. For Sections A-A, B-B, C-C and D-D, see Sheet B132.
3. Deck reinforcing steel not shown for clarity.
4. Double C5044 bars to match spacing of vertical C6 or C7 bars in pier cap.

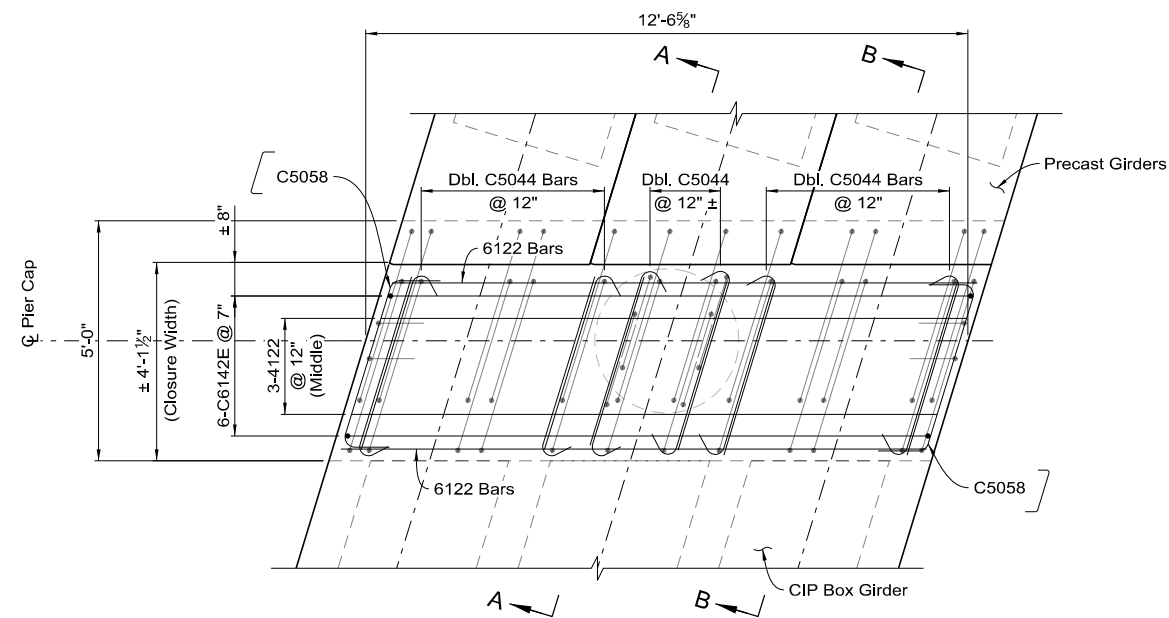
STATE OF NEVADA  
 DEPARTMENT OF TRANSPORTATION

**INSIDE WIDENING  
 PIER CLOSURE  
 REINFORCING**

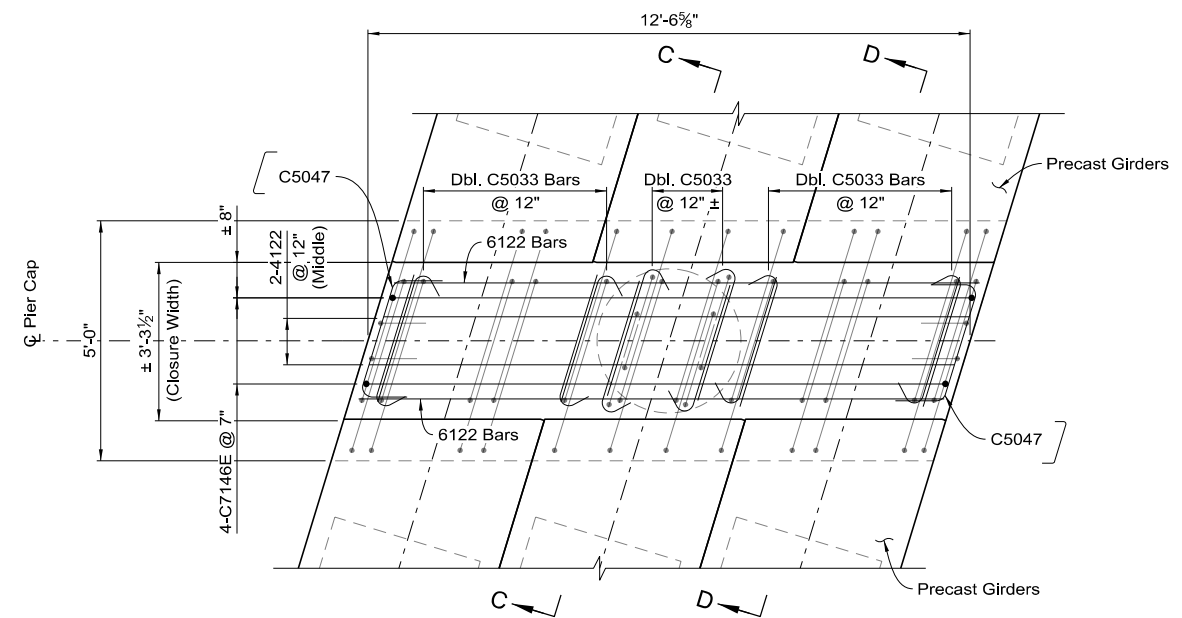
**G-1092 N&S**

DATE : 1/26/2023

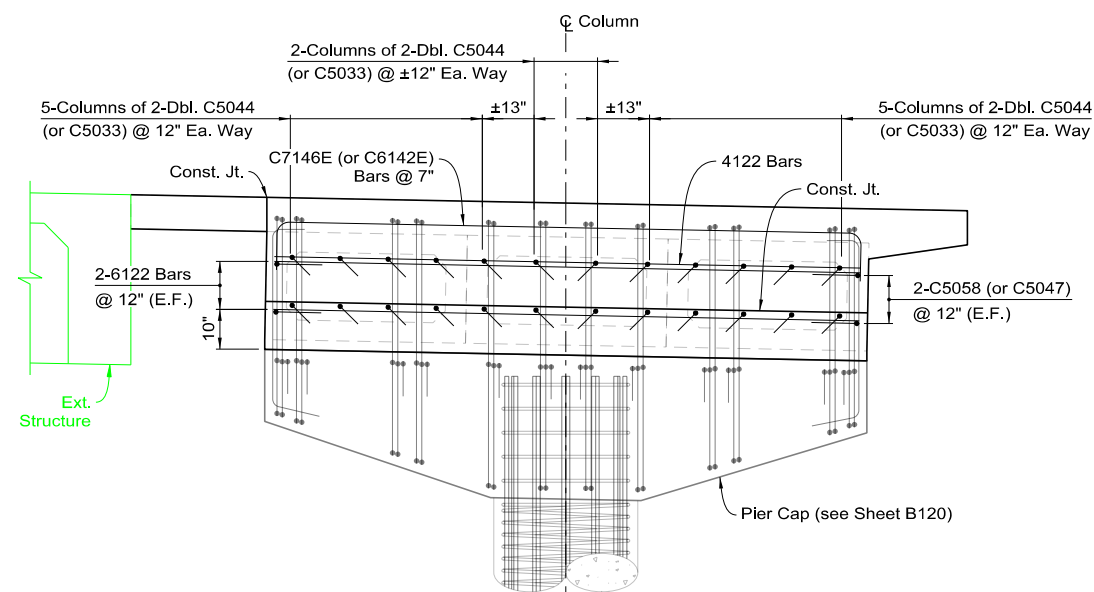
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B131



**PLAN - PIERS 1 & 4**  
 LOOKING AHEAD ON LINE, ALONG SKEW  
 (G-1092N Shown, G-1092S Similar)



**PLAN - PIERS 2 & 3**  
 LOOKING AHEAD ON LINE, ALONG SKEW  
 (G-1092N Shown, G-1092S Similar)



**ELEVATION**  
 LOOKING AHEAD ON LINE, ALONG SKEW  
 (G-1092N Shown, G-1092S Similar)

**NOTES**

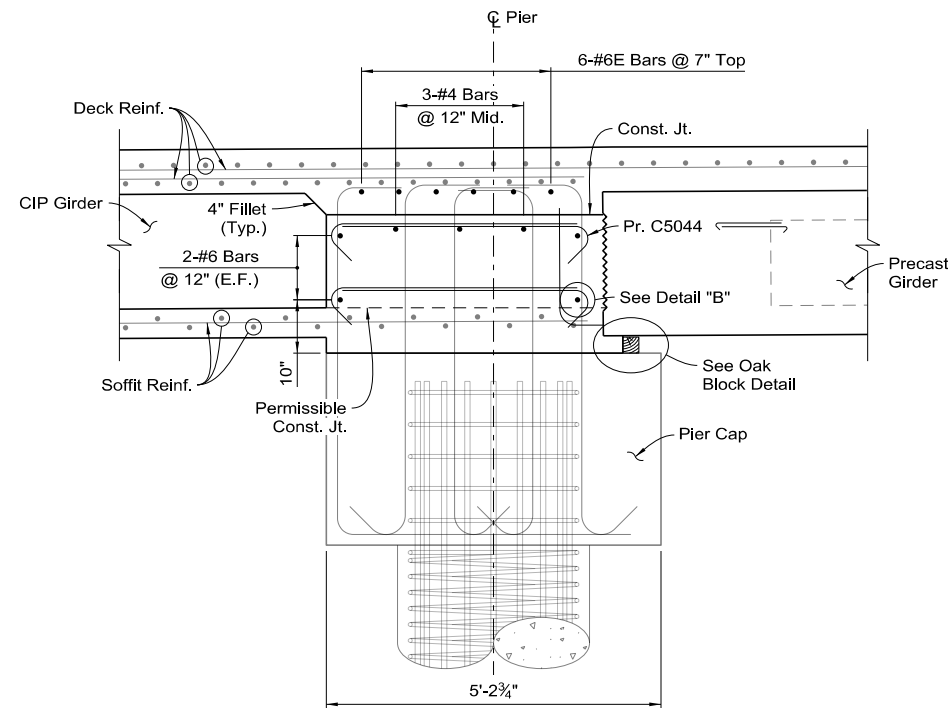
1. Dimensions shown are measured along length of pier cap.
2. For Sections A-A, B-B, C-C and D-D, see Sheet B132.
3. Deck reinforcing steel not shown for clarity.
4. Double C5044 (or C5033) bars to match spacing of vertical C6 or C7 bars in pier cap.

STATE OF NEVADA  
 DEPARTMENT OF TRANSPORTATION  
**OUTSIDE WIDENING  
 PIER CLOSURE  
 REINFORCING**

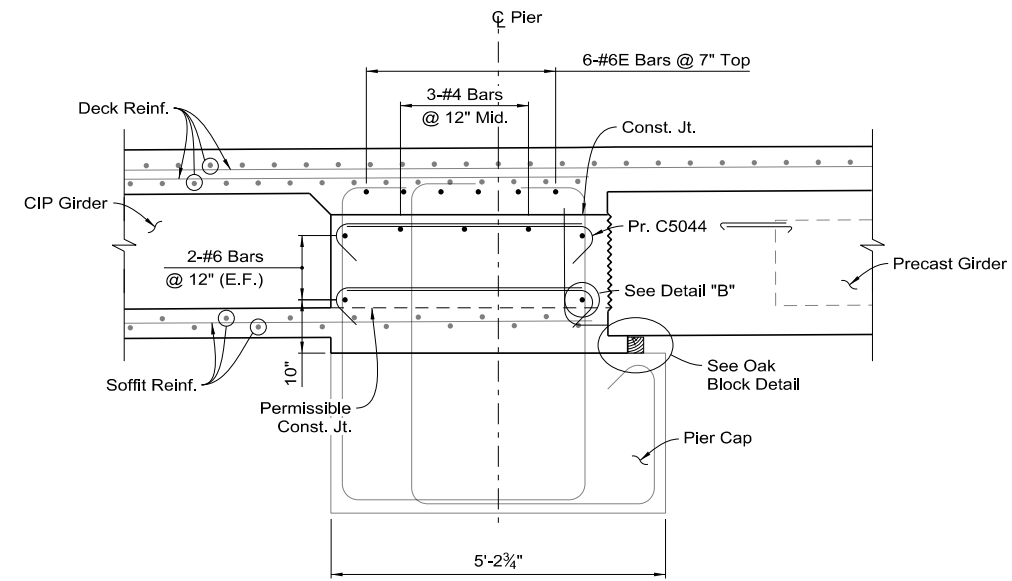
G-1092 N&S



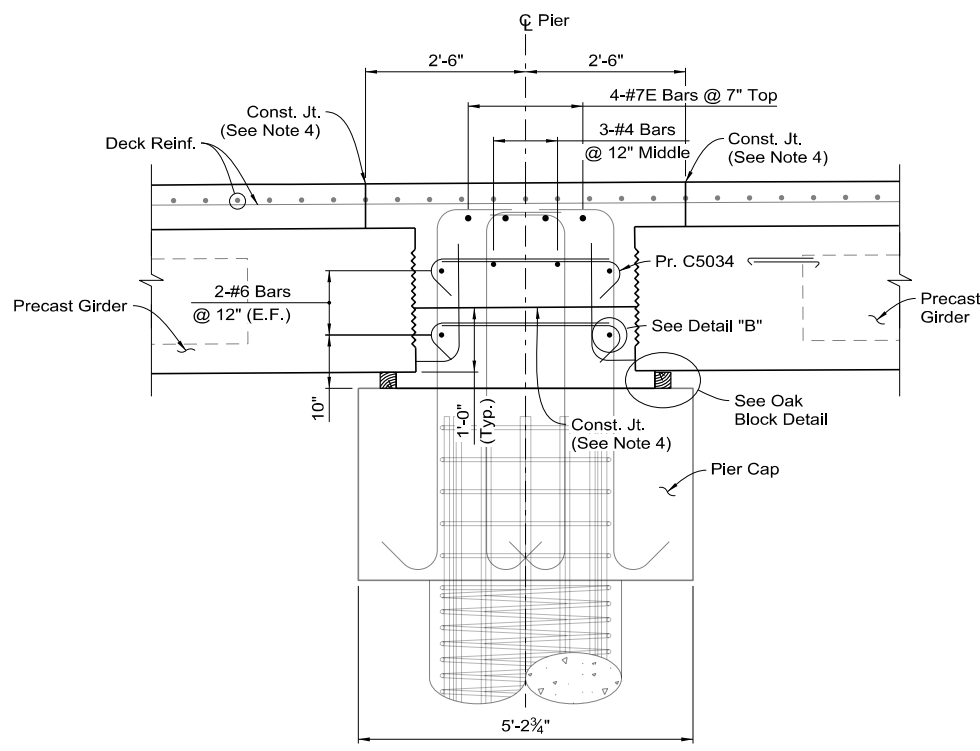
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B132



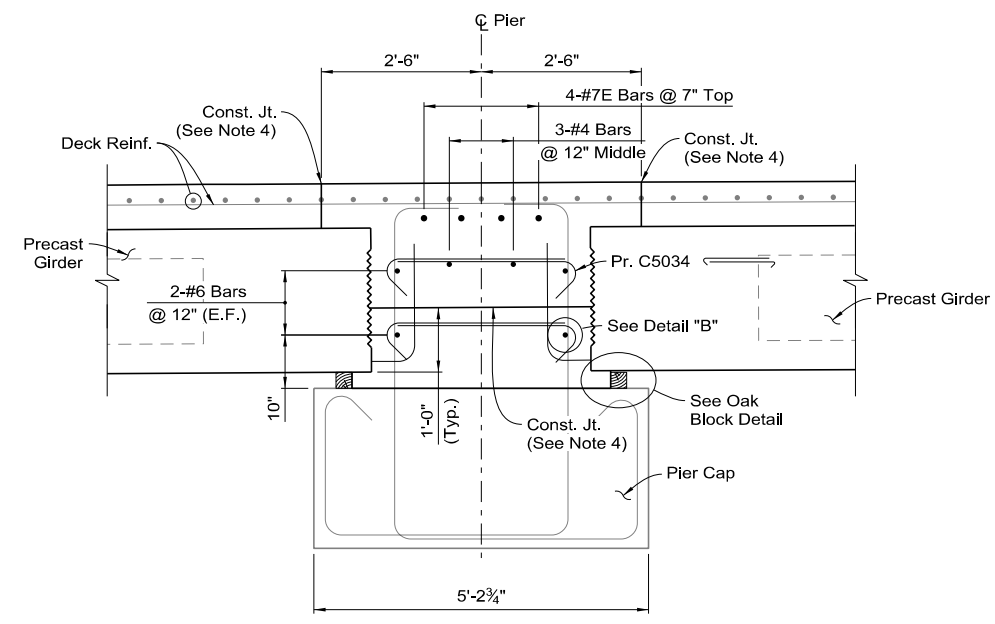
**SECTION A-A**  
PIERS 1 & 4 - THROUGH COLUMN  
PARALLEL TO ALIGNMENT



**SECTION B-B**  
PIERS 1 & 4 - TYPICAL SECTION  
PARALLEL TO ALIGNMENT



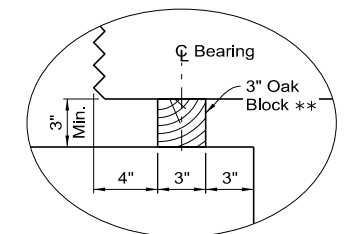
**SECTION C-C**  
PIERS 2 & 3 - THROUGH COLUMN  
PARALLEL TO ALIGNMENT



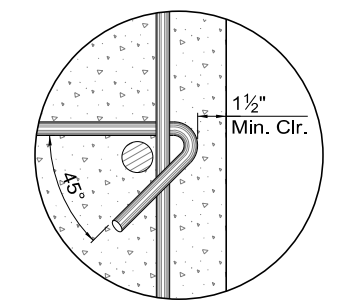
**SECTION D-D**  
PIERS 2 & 3 - TYPICAL SECTION  
PARALLEL TO ALIGNMENT

**NOTES**

- Oak blocks shall be placed parallel to Pier Caps. Dimensions shown are normal to Pier Caps. Maintain no less than 3" clear under precast girder ends. Contractor shall maintain stability of Precast Girders on Pier Caps during all construction operations. If Oak Block aspect ratios exceed 1:1 additional shoring may be required. No direct payment for oak blocks.
- Roughen all construction joints to 1/4" amplitude.
- For Pier Cap reinforcing not shown, see Sheet B121.
- For concrete placement schedule, see Sheet B135.



**OAK BLOCK DETAIL**  
\*\* - See Note 1



**DETAIL "E"**

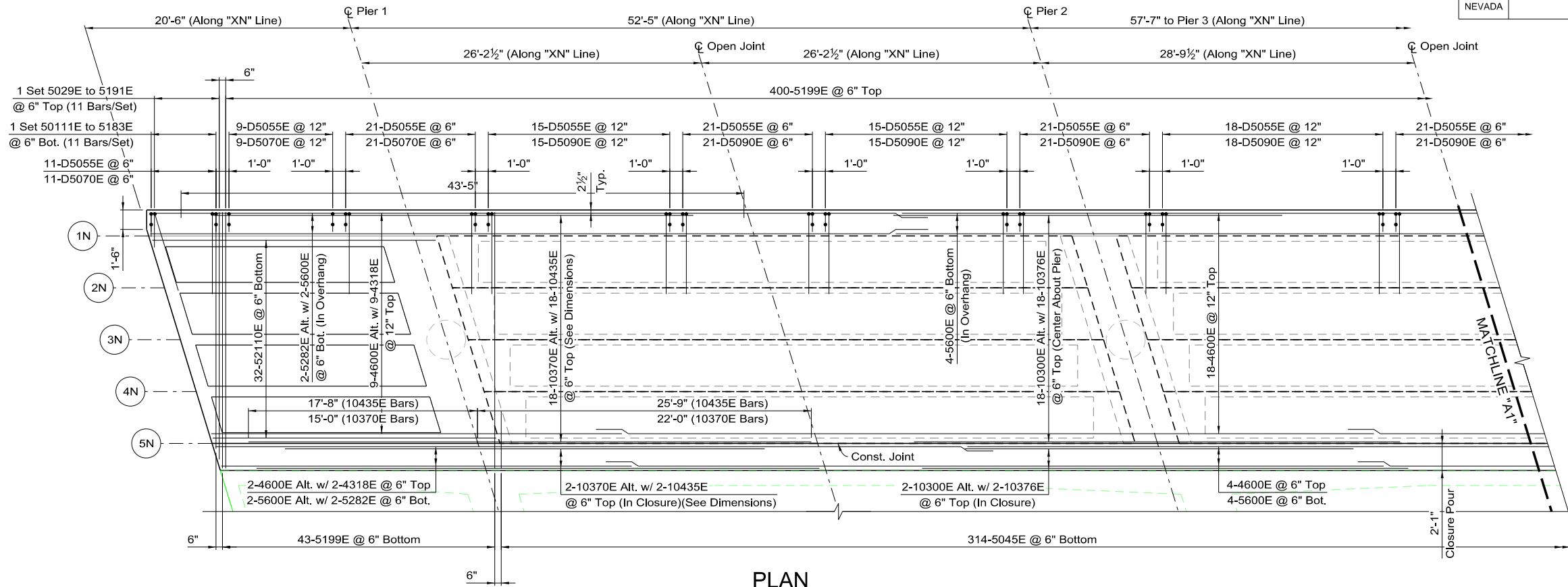
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**PIER CAP  
CLOSURE DETAILS**

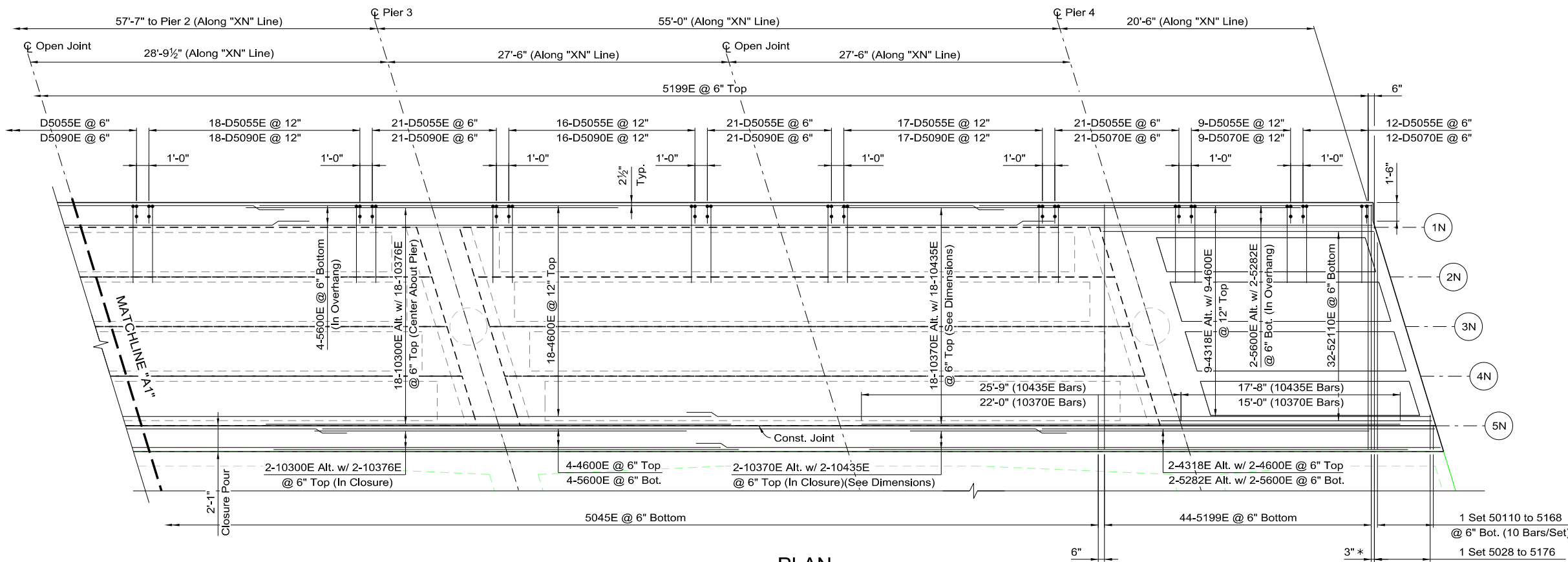
G-1092 N&S

DATE : 1/26/2023

STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B133



PLAN



PLAN

**NOTES**

1. All dimensions along "XN" Line unless otherwise noted.
2. Reinforcing shown for Northbound widenings, Southbound widenings similar.
3. For typical sections, see Sheet B122.
4. Girder numbering is for CIP spans only. For precast girders see Framing Plan, Sheet B124.
5. All #10 negative moment reinforcing is symmetric about the CL of the Pier except at Pier 1 and Pier 4; for these piers see dimensions showing reinforcing layout.
6. Concrete for the closure pour may not be placed until the falsework has been released. For limitations on the release of falsework refer to Section 502.03.12 of the Standard Specifications.

**MINIMUM BAR LAP**  
 #4E Bar to #4E Bar = 24"  
 #5E Bar to #5E Bar = 30"

\*- Use 3" staggered offset between top and bottom reinforcing. See Section A-A Sheet B123 for detail.

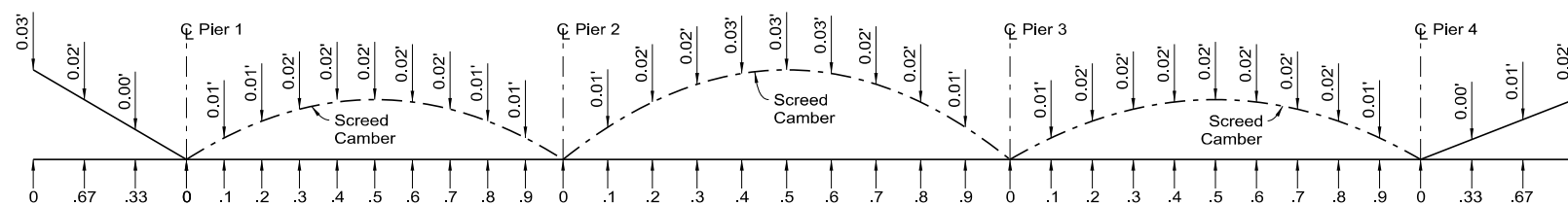
STATE OF NEVADA  
 DEPARTMENT OF TRANSPORTATION

**INSIDE WIDENING  
 CIP DECK  
 REINFORCING**

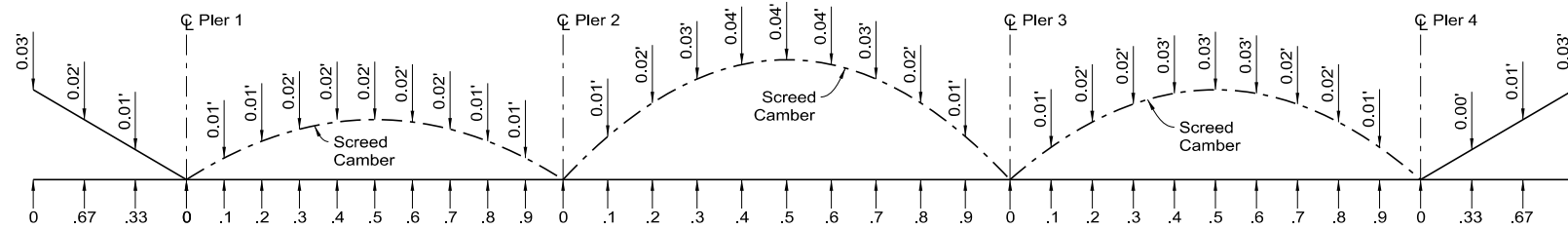
G-1092 N&S



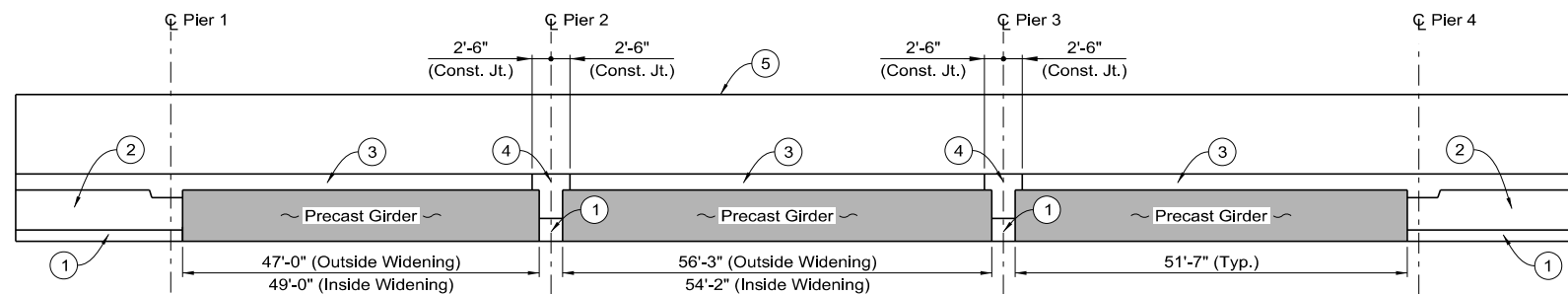
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B135



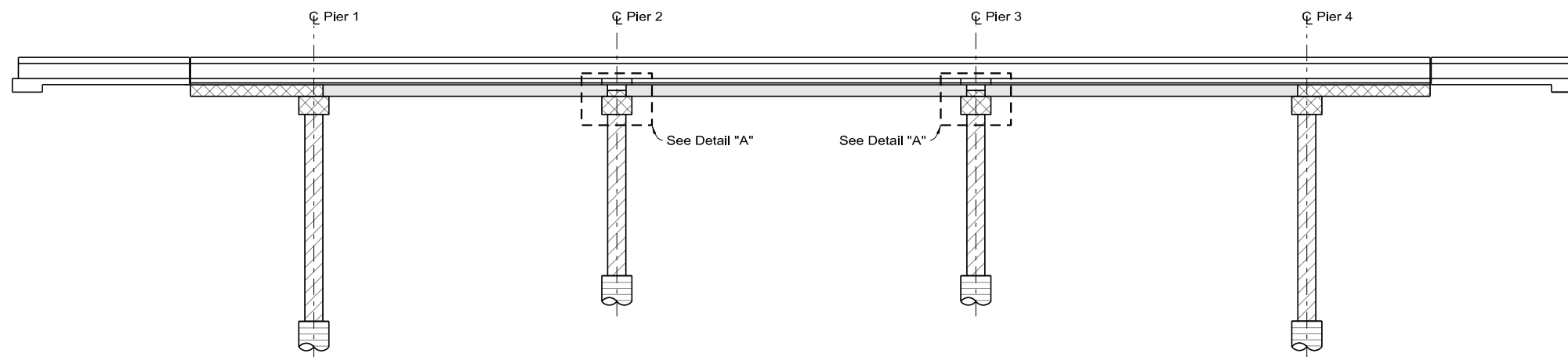
**CAMBER DIAGRAM**  
INTERIOR WIDENING



**CAMBER DIAGRAM**  
EXTERIOR WIDENING



**CONCRETE PLACEMENT SCHEDULE**



**CONCRETE CLASSIFICATION DIAGRAM**

**CAMBER NOTES**

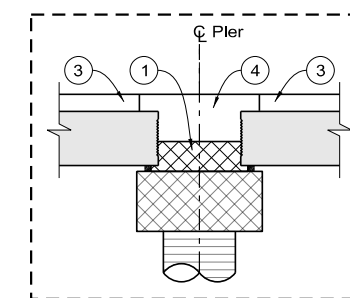
- A. For precast girder camber due to dead load and prestressing, see Girder Schedule, Sheet B125.
- B. Screed camber represents the average of the precast girder deflections due to the weight of the wet concrete deck and bridge rail. Add screed camber to the finish grade to compensate for downward deflection due to the dead loads described above.

**PLACEMENT SCHEDULE NOTES**

- A. Place soffit and partial pier closures in regions ① after erection of precast girders.
- B. Place webs, pier closures and diaphragms as indicated in regions ②.
- C. Top slab concrete ③ shall be placed separately from girders. There shall be no transverse construction joints in the top slab except where shown in the plans.
- D. Place pier and top slab closures as indicated in regions ④.
- E. Do not place Barrier Rails ⑤ until falsework is released.

**CONCRETE CLASSIFICATION LEGEND**

- Approach Slab, Top Deck Slab, and Bridge Rail:  
Class EA Modified  $f_c=4.5$  ksi @ 28 Days
- Columns:  
Class DA Modified  $f_c=4.5$  ksi @ 28 Days
- Bottom Slab, Webs, Diaphragms, and Pier Caps:  
Class DA Modified  $f_c=4.5$  ksi @ 28 Days
- Drilled Shafts:  
Class SA Modified  $f_c=4.5$  ksi @ 28 Days
- Precast Girders:  
Class PAA  $f_c=7.5$  ksi @ 28 Days  
Entrained Air = 4%-7%

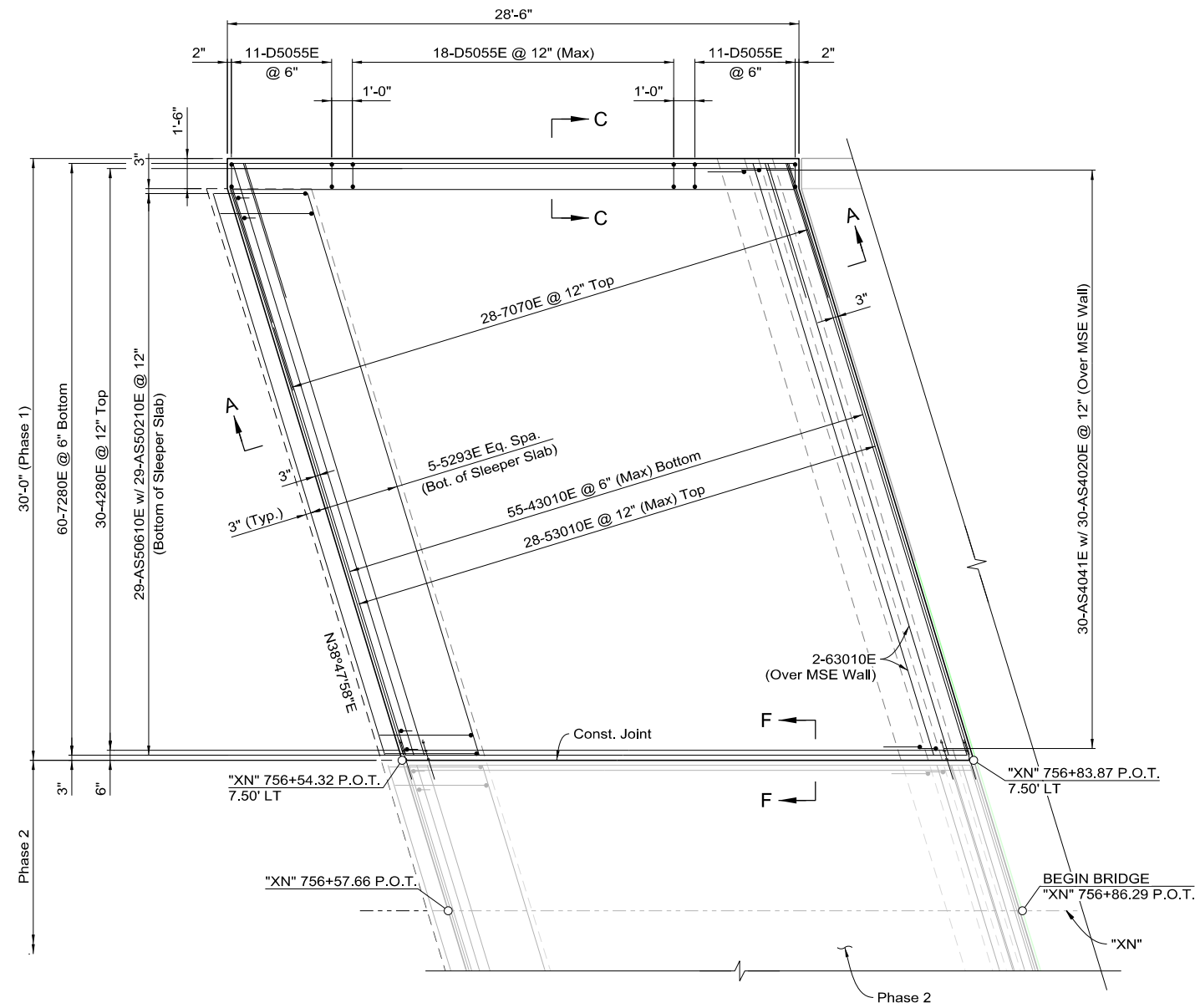


**DETAIL "A"**  
CONCRETE CLASSIFICATION AND PLACEMENT SCHEDULE  
(Piers 2 and 3)

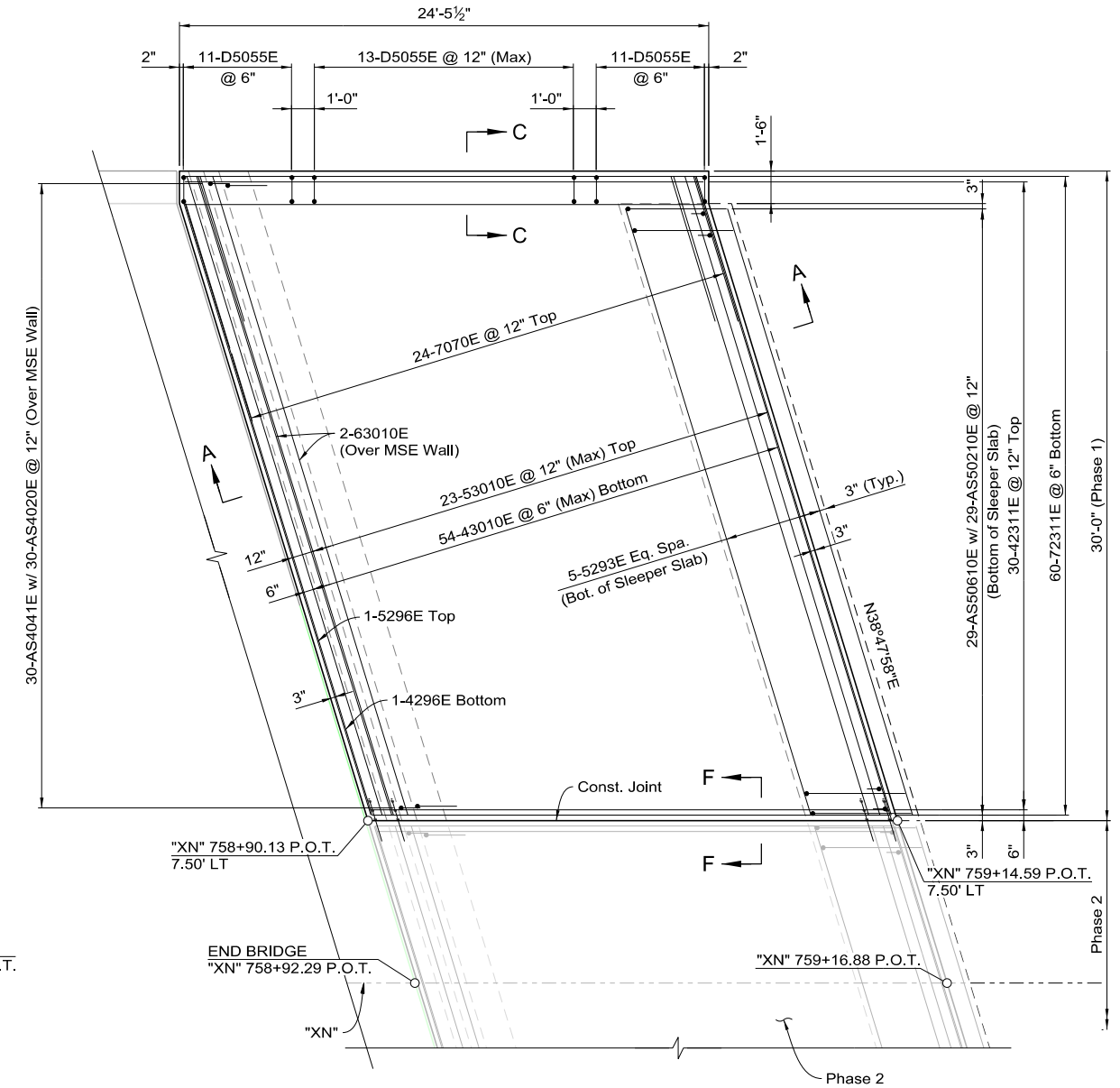
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION  
**CAMBER AND  
CONCRETE PLACEMENT  
DIAGRAMS**

G-1092 N&S

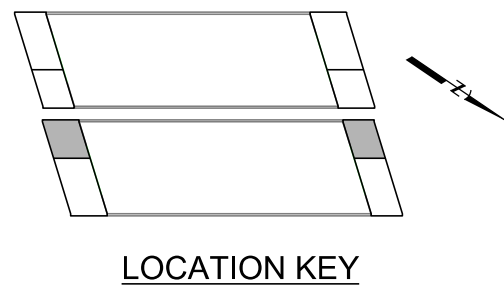
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B136



**PLAN**  
NB, BEGIN BRIDGE



**PLAN**  
NB, END BRIDGE



**LOCATION KEY**

**NOTES**

- All dimensions along "XN" line unless otherwise noted.
- For Expansion Joint Details, see Sheet B144.

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

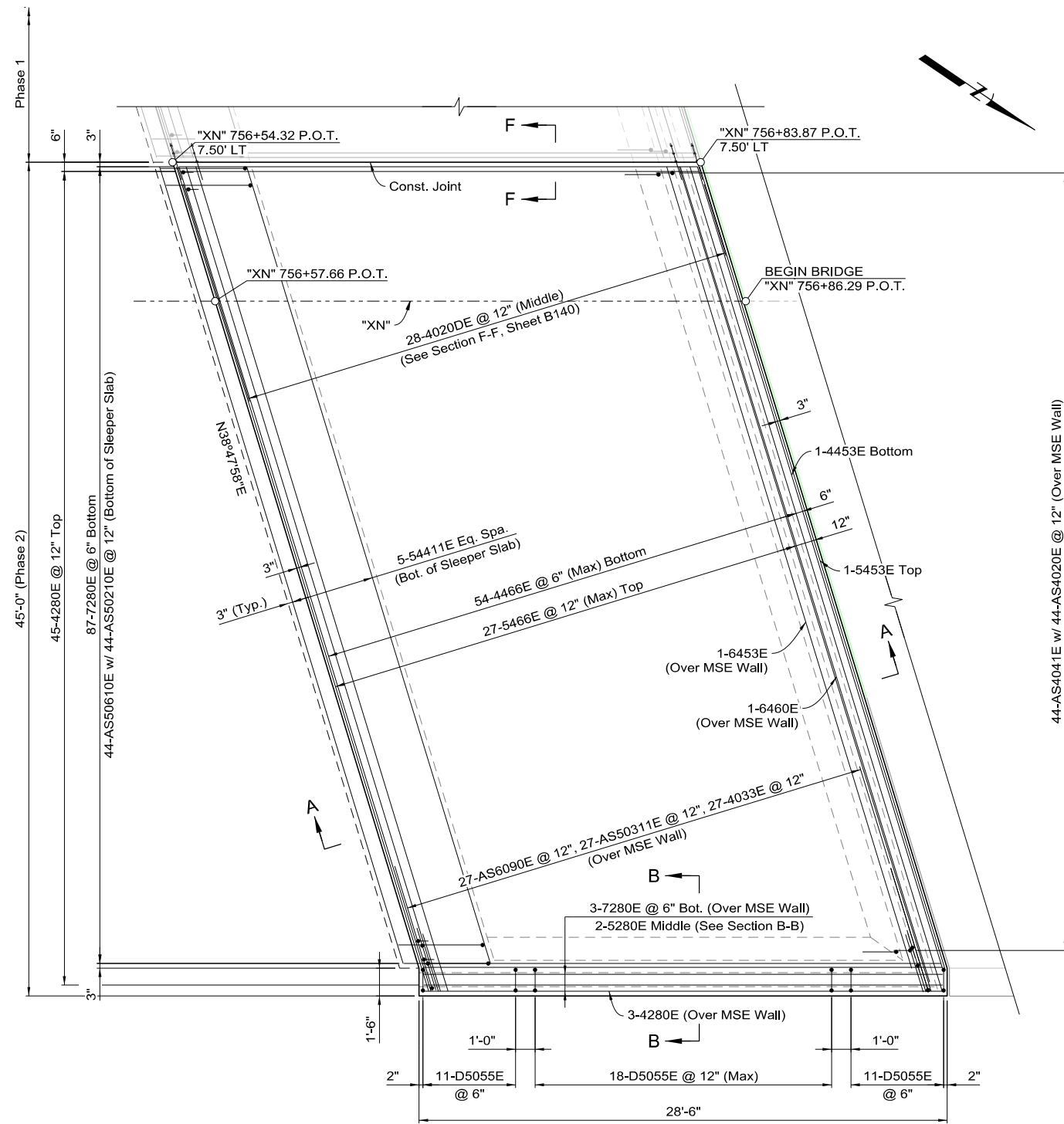
**NB PHASE 1  
APPROACH SLAB  
REPLACEMENT**

G-1092 N&S

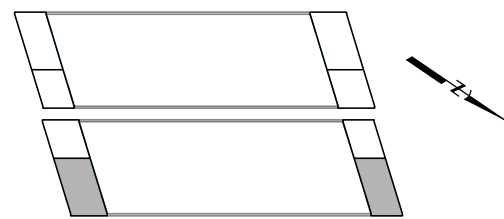




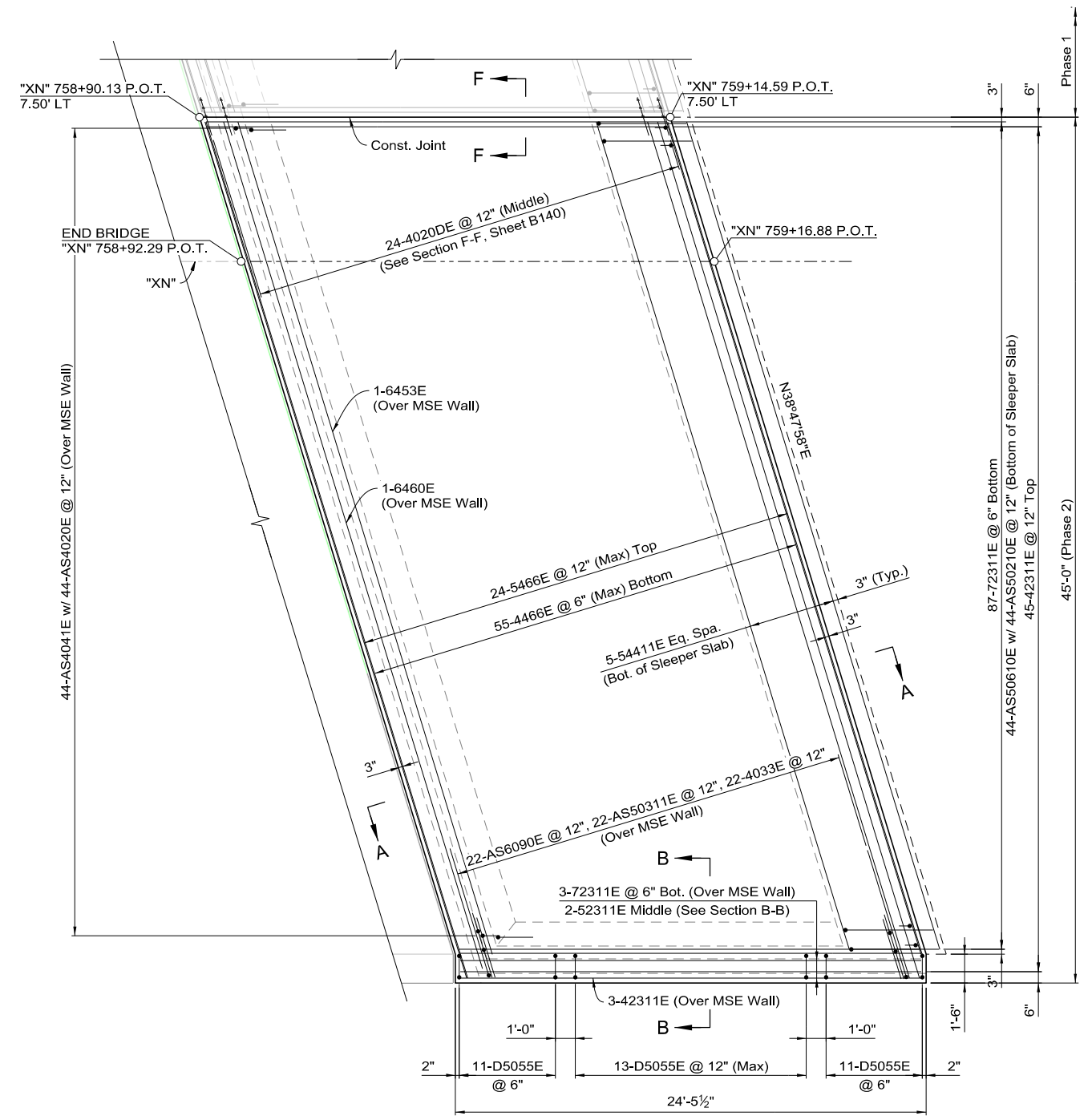
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B138



**PLAN**  
NB, BEGIN BRIDGE



**LOCATION KEY**



**PLAN**  
NB, END BRIDGE

**NOTES**

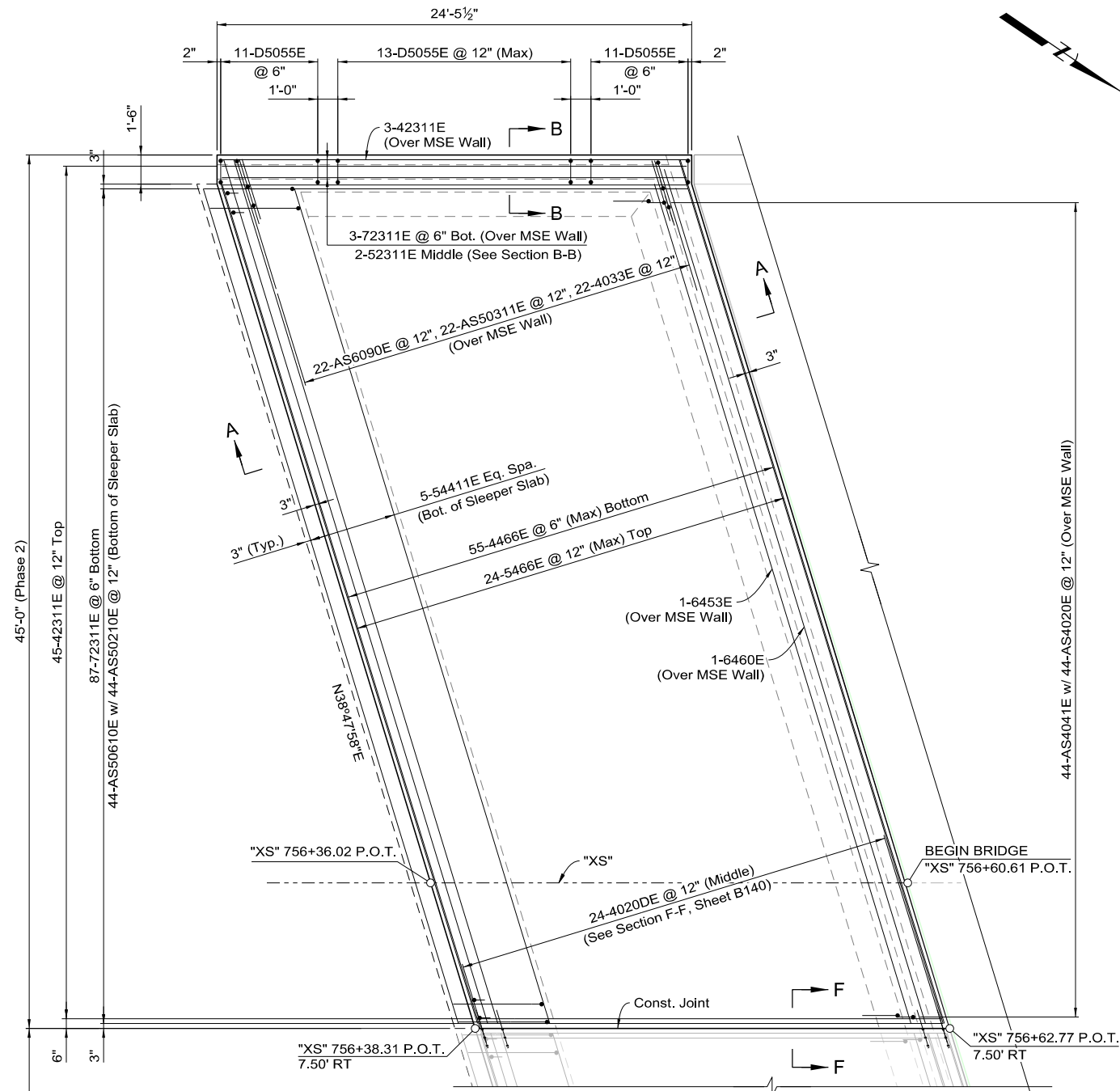
- All dimensions along "XN" line unless otherwise noted.
- For Expansion Joint Details, see Sheet B144.

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

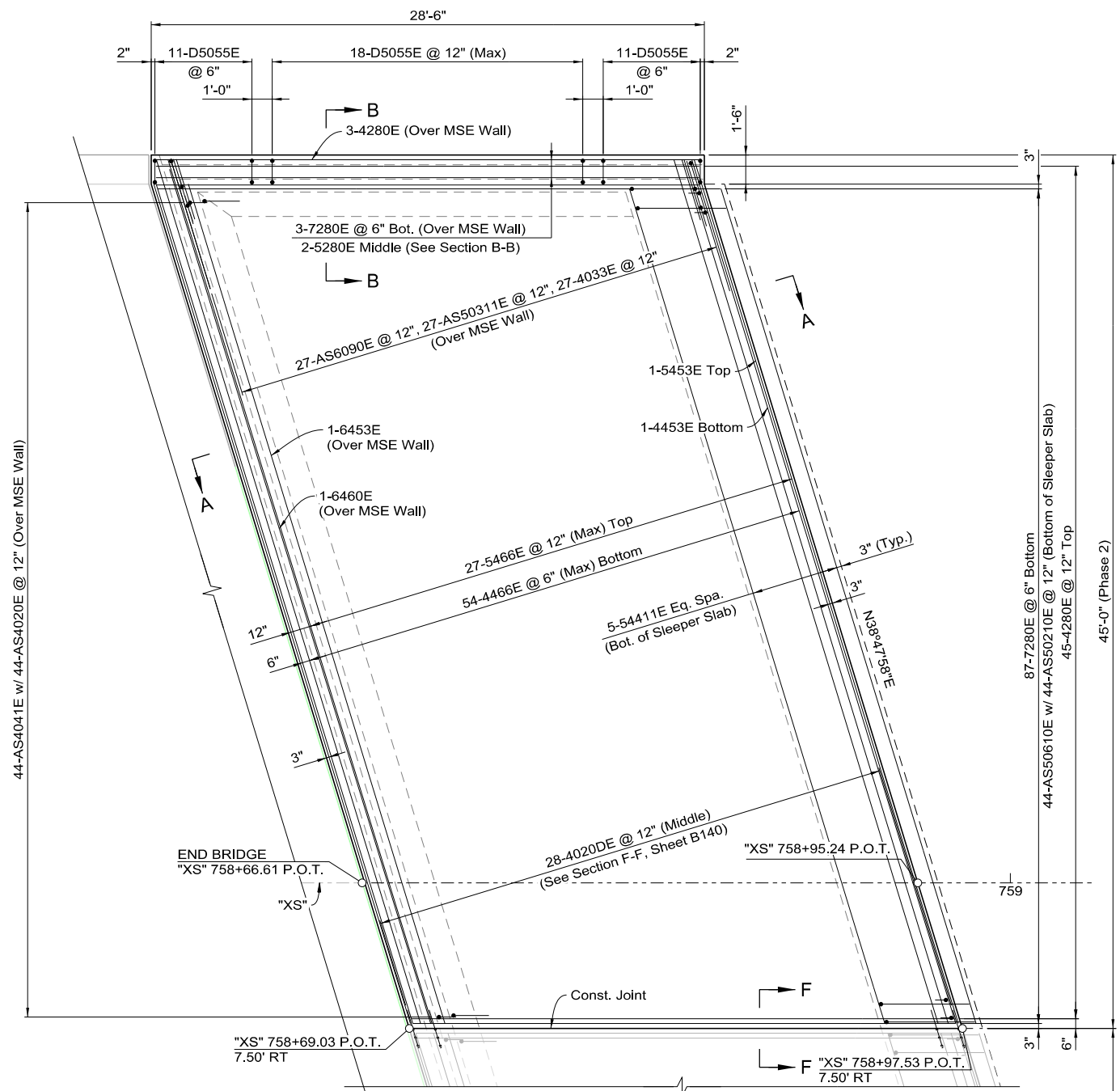
**NB PHASE 2  
APPROACH SLAB  
REPLACEMENT**

G-1092 N&S

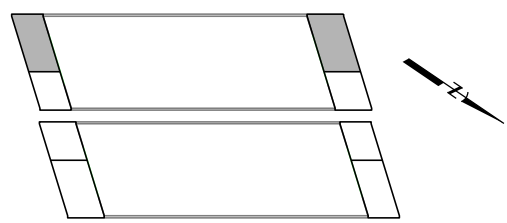
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B139



**PLAN**  
SB, BEGIN BRIDGE



**PLAN**  
SB, END BRIDGE



**LOCATION KEY**

- NOTES**
- All dimensions along "XS" line unless otherwise noted.
  - For Expansion Joint Details, see Sheet B144.

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

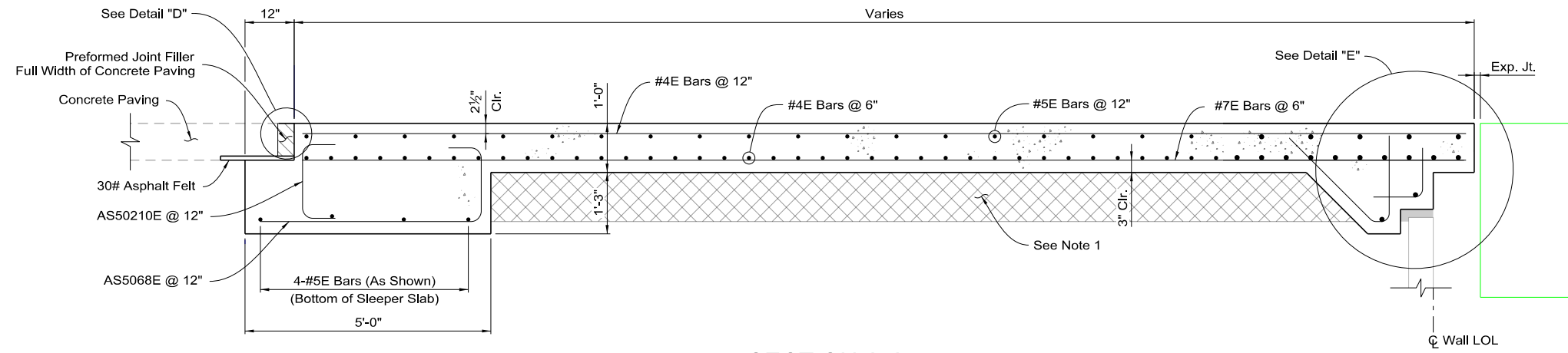
**SB PHASE 2  
APPROACH SLAB  
REPLACEMENT**

**G-1092 N&S**

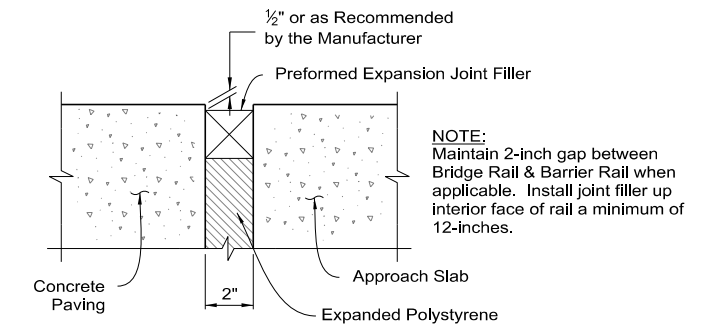
DATE : 1/26/2023



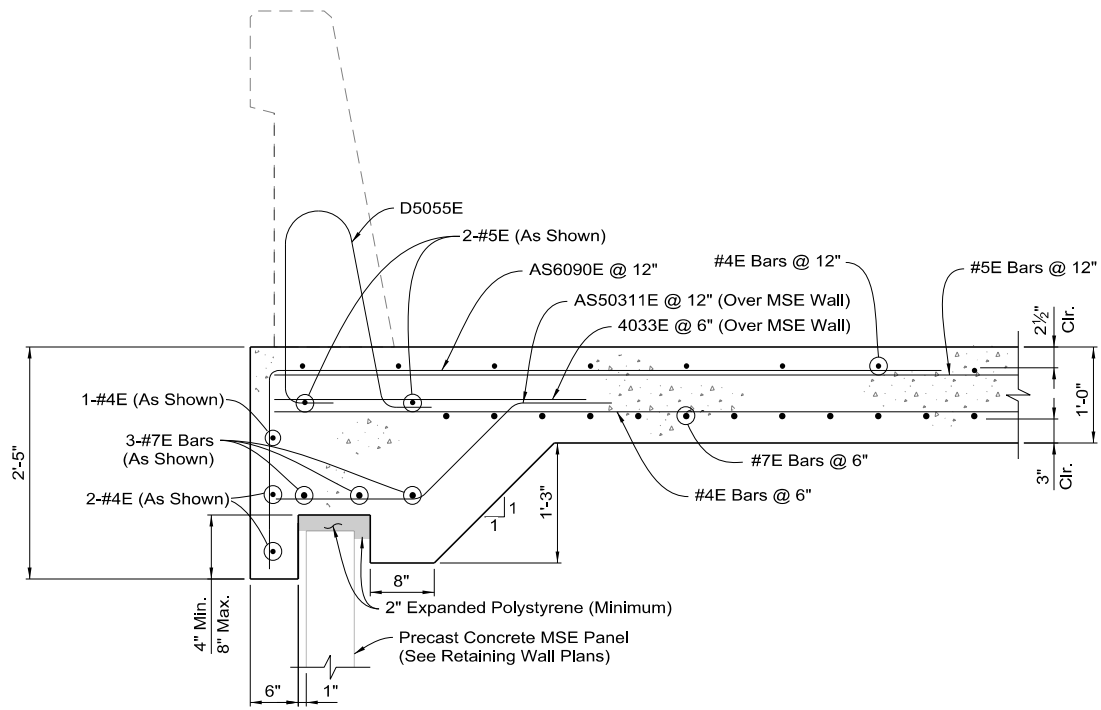
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B140



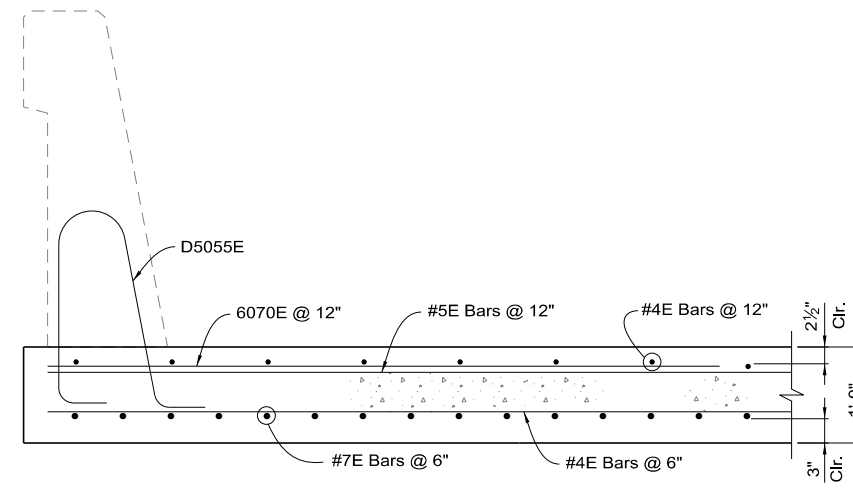
**SECTION A-A**  
CONCRETE PAVING



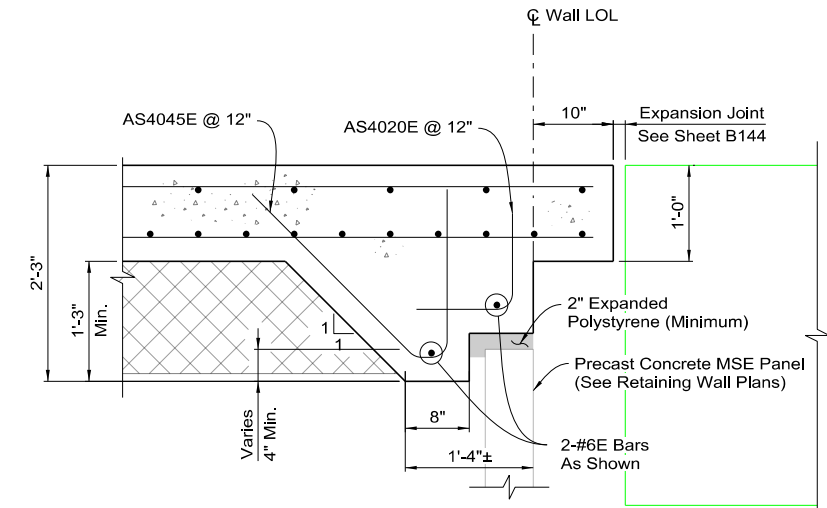
**DETAIL 'D'**  
CONCRETE PAVING



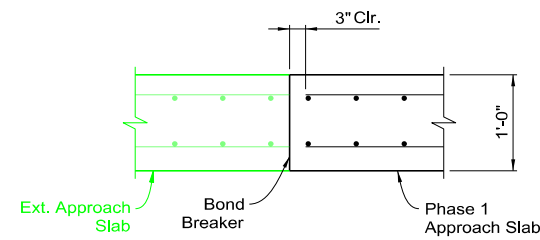
**SECTION B-B**  
SLEEPER SLAB/WINGWALL



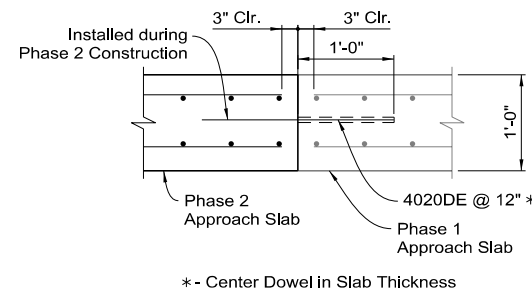
**SECTION C-C**  
OVER SUBGRADE



**DETAIL 'E'**  
APPROACH SLAB COPING  
NORMAL TO WALL



**SECTION F-F**  
PHASE 1



**SECTION F-F**  
PHASE 2

**NOTES**

1. Fill material under approach slabs shall be a 12" layer of granular backfill compacted to not less than 95% of the maximum density in accordance with subsection 207.03.01 of the Standard Specifications.
2. For expansion joint details, see Sheet B144.

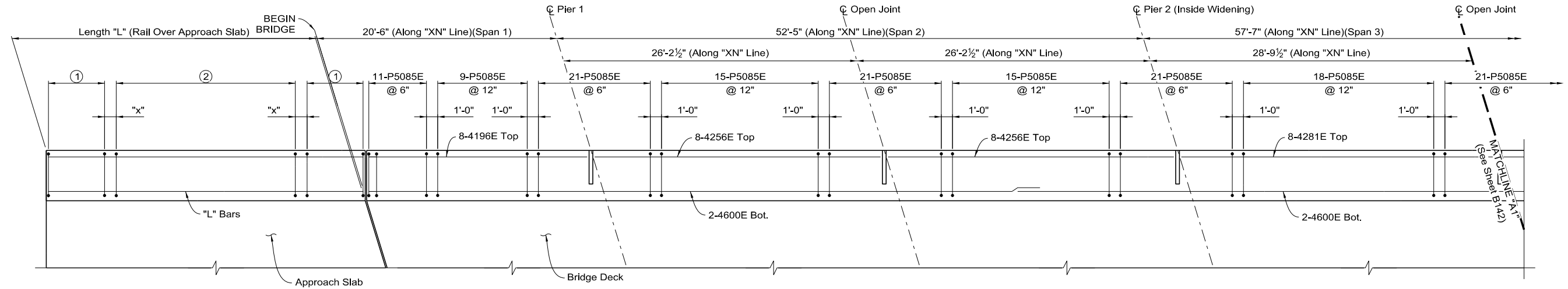
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**APPROACH SLAB  
SECTIONS AND  
DETAILS**

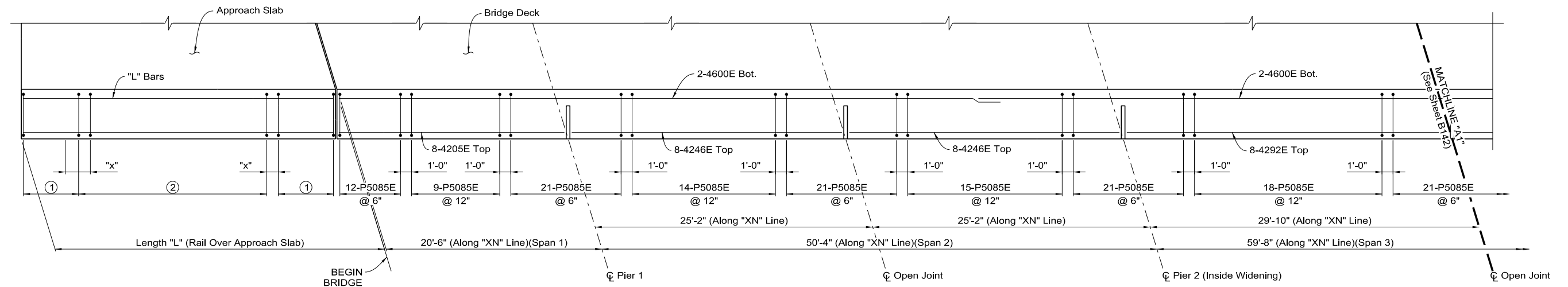
G-1092 N&S

DATE : 1/26/2023

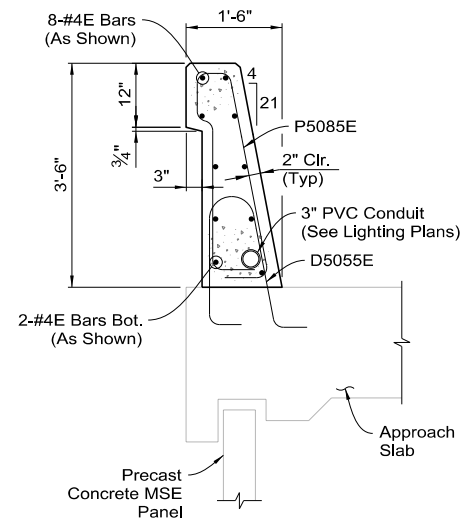
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B141



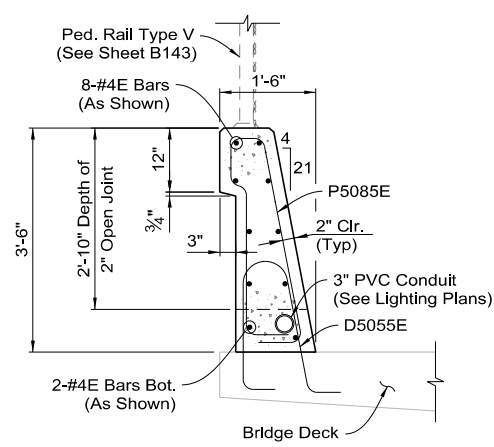
**INSIDE RAIL PLAN**



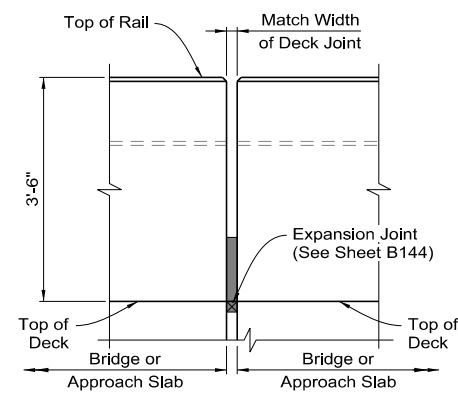
**OUTSIDE RAIL PLAN**



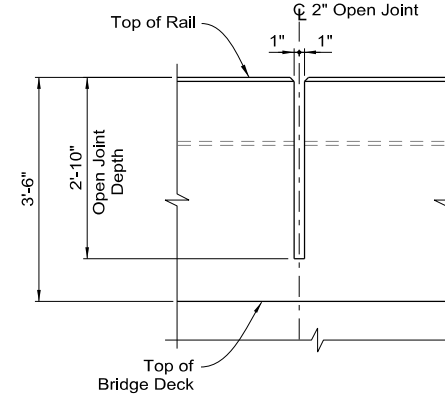
**SECTION A-A**  
TYPICAL APPROACH SLAB



**SECTION B-B**  
TYPICAL SUPERSTRUCTURE



**EXPANSION JOINT DETAIL**



**2" OPEN JOINT DETAIL**

**NOTES**

1. All dimensions along "XN" or "XS" line unless otherwise noted.
2. Reinforcing shown for Northbound widening. Southbound widening similar. Reinforcing is identical unless otherwise noted.
3. Match P5085E Bars with D5055E Bars in Deck.

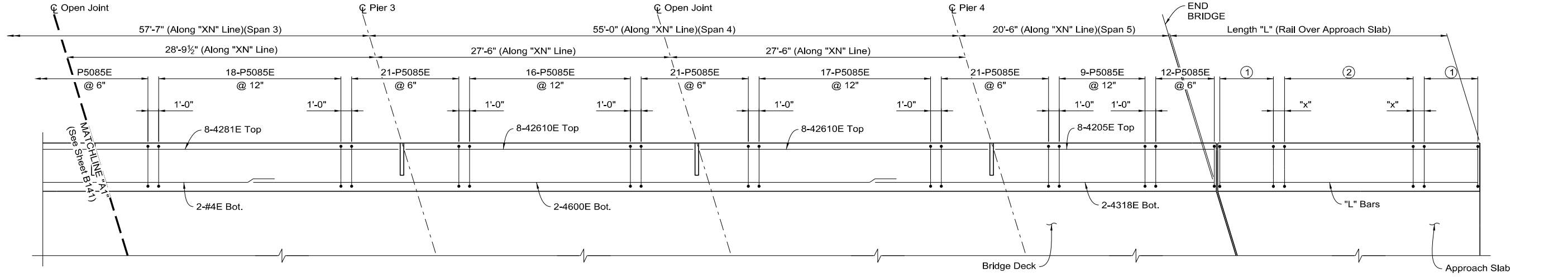
MINIMUM BAR LAP  
#4E Bar to #4E Bar = 24"

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

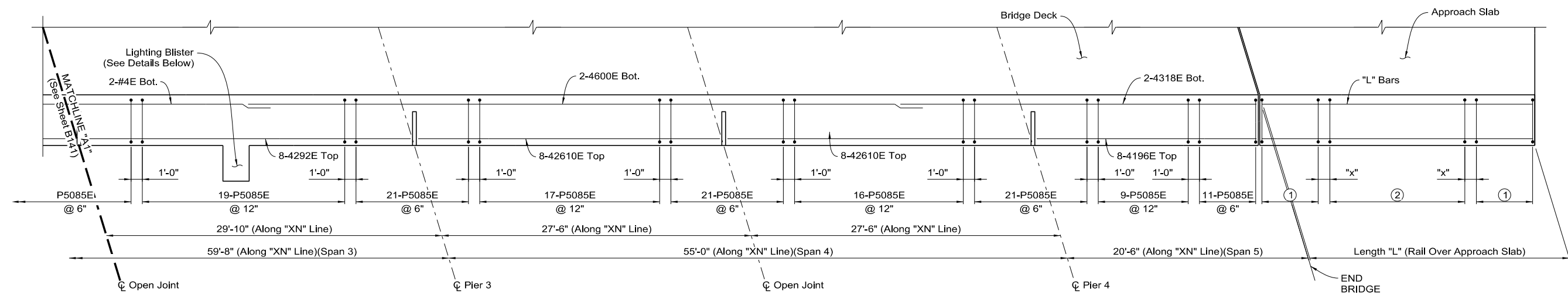
**BRIDGE RAIL  
SPANS 1, 2, AND 3**

G-1092 N&S

DATE : 1/26/2023



**INSIDE RAIL PLAN**



**OUTSIDE RAIL PLAN**

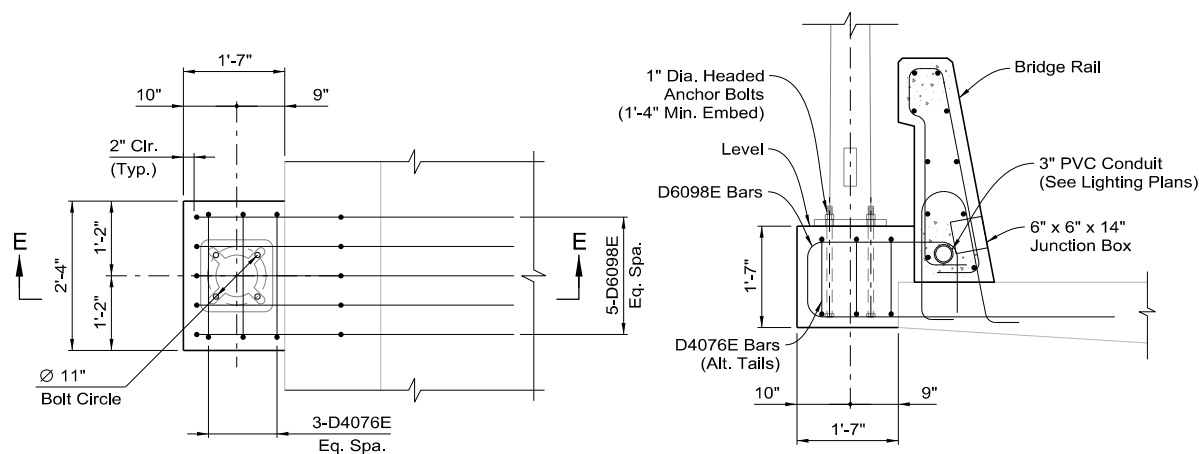
**MINIMUM BAR LAP**  
#4E Bar to #4E Bar = 24"

**BRIDGE RAIL NOTES**

- All dimensions along "XN" or "XS" line unless otherwise noted.
- Reinforcing shown for Northbound widening. Southbound widening similar. Reinforcing is identical unless otherwise noted.
- Match P5085E Bars with D5055E Bars in Deck.
- For all sections, see Sheet B141.

**LIGHTING BLISTER NOTES**

- Provide 4 ASTM F1554 Grade 36 Headed Anchors, 8-ASTM A563 Nuts and 4-ASTM F436 hardened steel washers for each pole.
- All hardware shall be galvanized per ASTM A-153.
- Threads may be cut or rolled, bolts shall be galvanized after threads are formed. Each bolt shall be provided with minimum 6" threaded length.
- Horizontal barrier rail reinforcing in conflict with the junction box shall be relocated equally on either side of the junction box.
- Hardware is considered incidental to the installation of the pole (Bid Item 623 1445, see Lighting Plans).



**LIGTHING BLISTER PLAN**

**SECTION E-E**

**BRIDGE RAIL REINFORCING TABLE**

Location		Length "L"	①	"x"	②	"L" Bars	
NB	Outside	Begin Bridge	28'-6"	11-P5085E @ 6"	1'-0"	18-P5085E @ 12"	10-4281E
		End Bridge	24'-5½"	11-P5085E @ 6"	1'-0"	13-P5085E @ 12"	10-4241E
	Inside	Begin Bridge	28'-6"	11-P5085E @ 6"	1'-0"	18-P5085E @ 12"	10-4281E
		End Bridge	24'-5½"	11-P5085E @ 6"	1'-0"	13-P5085E @ 12"	10-4241E
SB	Inside	Begin Bridge	24'-5½"	11-P5085E @ 6"	1'-0"	13-P5085E @ 12"	10-4241E
		End Bridge	28'-6"	11-P5085E @ 6"	1'-0"	18-P5085E @ 12"	10-4281E
	Outside	Begin Bridge	24'-5½"	11-P5085E @ 6"	1'-0"	13-P5085E @ 12"	10-4241E
		End Bridge	28'-6"	11-P5085E @ 6"	1'-0"	18-P5085E @ 12"	10-4281E

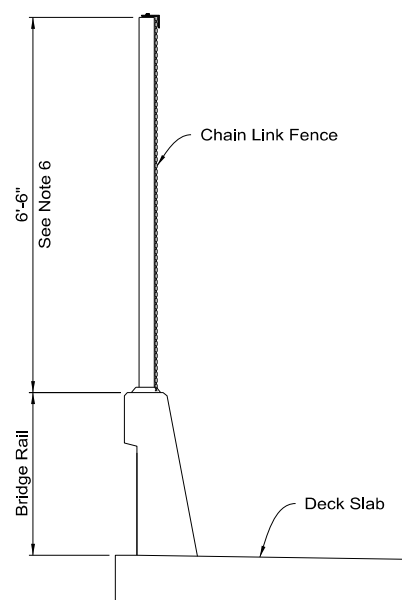
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**BRIDGE RAIL  
SPANS 3, 4, AND 5**

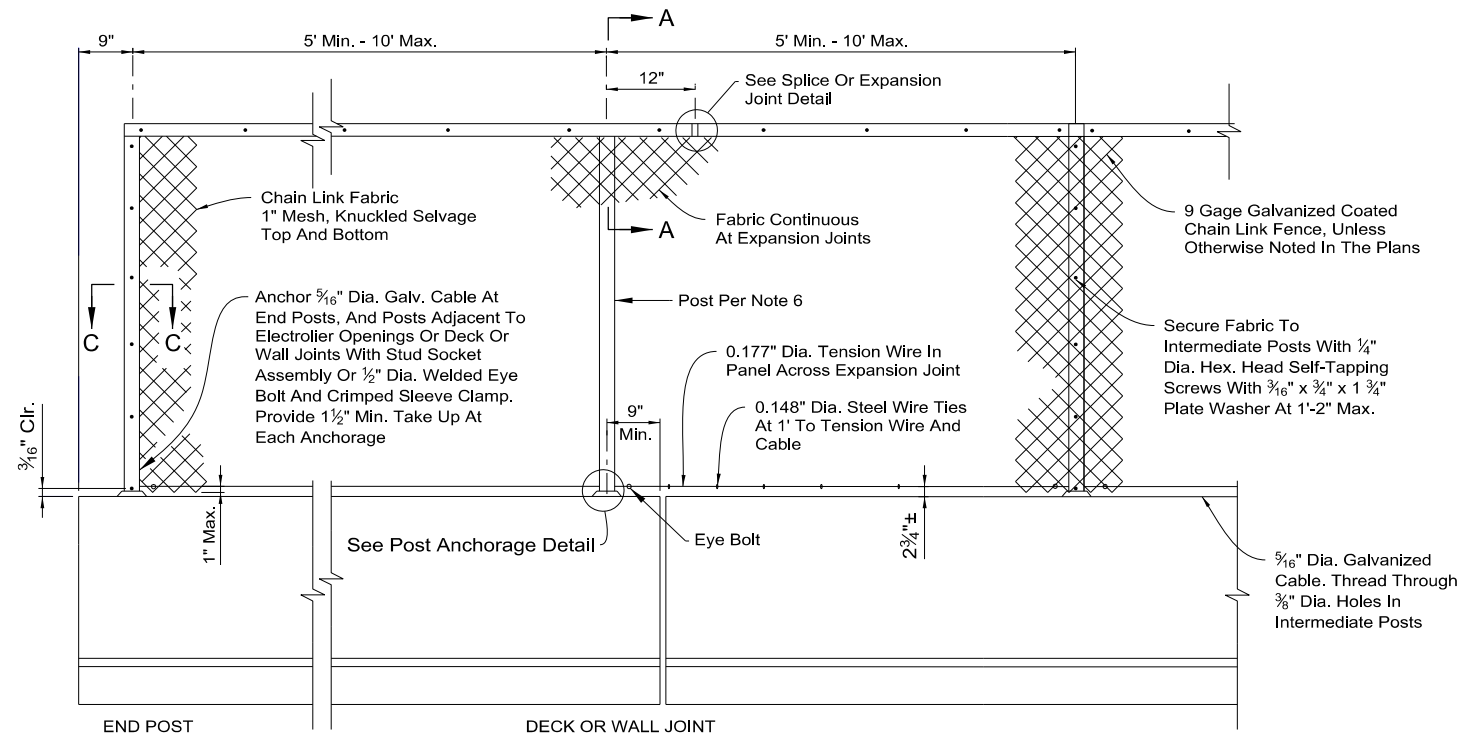
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B143

**NOTES**

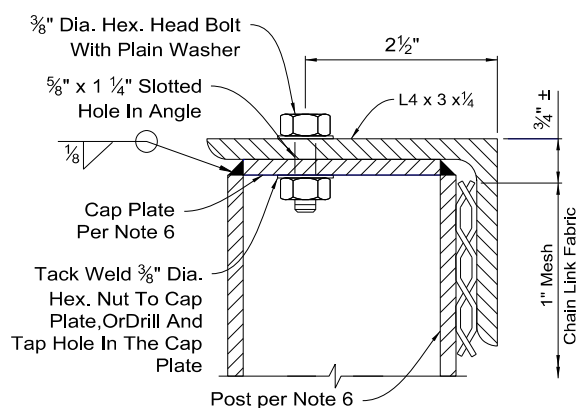
1. Posts shall be vertical.
2. Railing shall conform to horizontal and vertical alignment. Horizontal angle may be on 10'-0" chords.
3. Horizontal angle shall be continuous over not less than two intermediate posts, except that a shorter length is permitted at expansion joints, and others rail discontinuities.
4. When rail is on slope, place fabric parallel to slope.
5. Expansion joint same dimension as expansion joint in deck or wall. Increase slotted hole length and splice bar length correspondingly.
6. For posts, use HSS 3 x 2 x 3/8. Cap plate to be same thickness as the post used.
7. Railing assembly, except chain link fabric, to be galvanized after fabrication, unless otherwise noted in the plans.



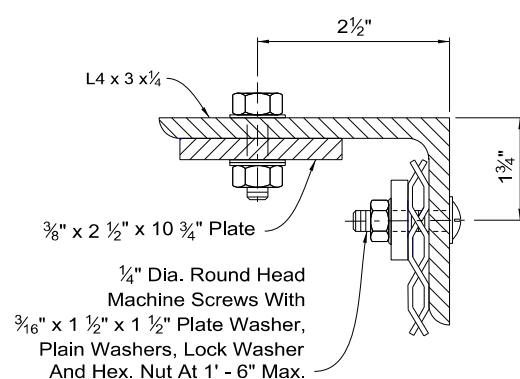
**TYPICAL SECTION**



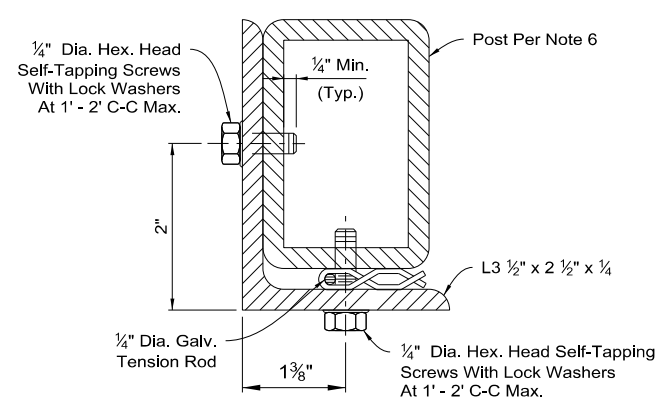
**ELEVATION**



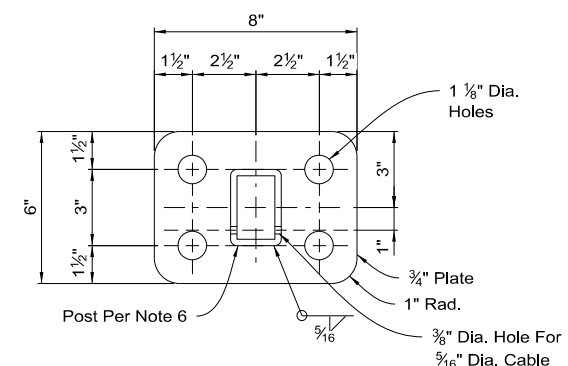
**SECTION A-A**



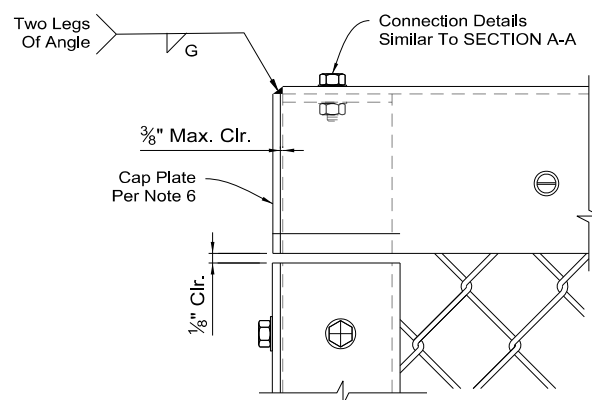
**SECTION B-B**



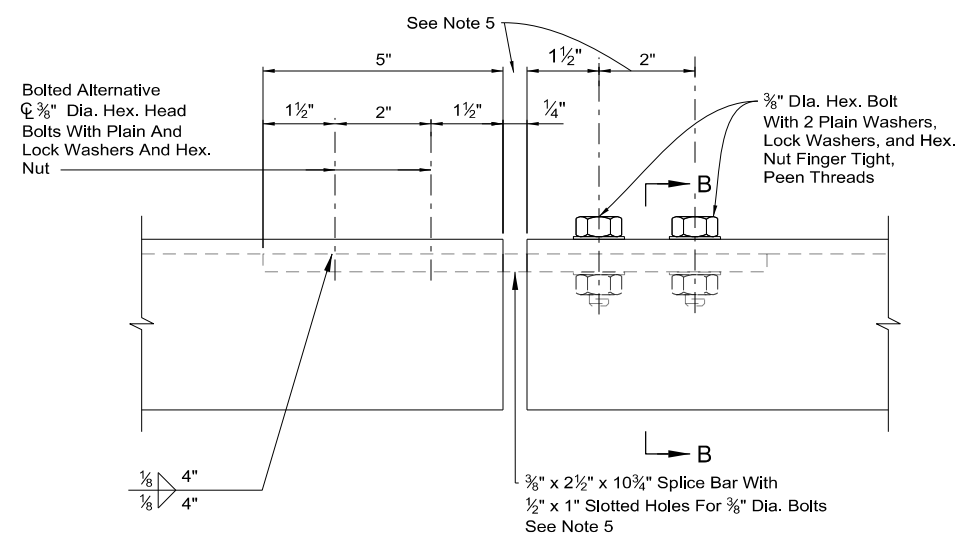
**SECTION C-C**



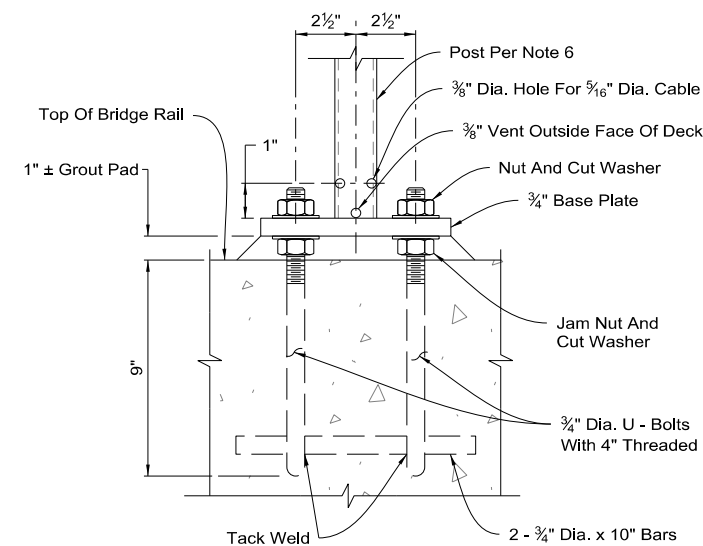
**BASE PLATE**



**END POST ELEVATION**



**SPLICE OR EXPANSION JOINT DETAIL**



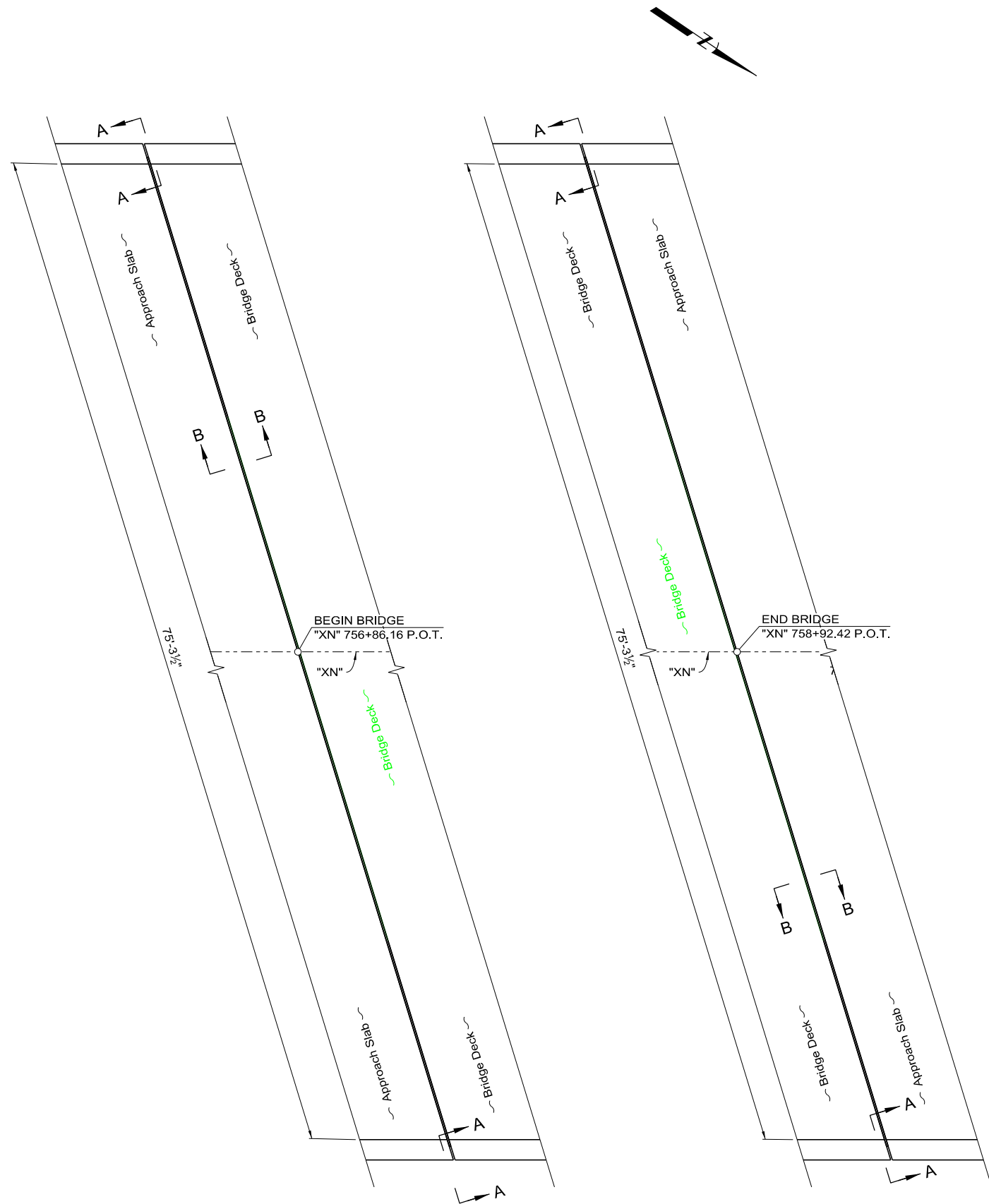
**POST ANCHORAGE DETAIL**

DATE : 1/26/2023

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**PEDESTRIAN  
RAIL  
DETAILS**

G-1092 N&S

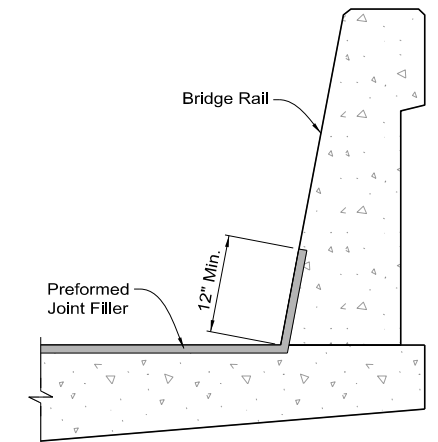


**PLAN**  
NORTHBOUND BEGIN BRIDGE  
SOUTHBOUND SIMILAR

**PLAN**  
NORTHBOUND END BRIDGE  
SOUTHBOUND SIMILAR

**NOTES**

1. Prefomed expansion joint material shall be sized larger than measured joint opening at time of installation. Refer to joint manufacturer's product data sheets for temperature/movement table.
2. Contractor to submit proposed prefomed expansion joint material for Engineer review and approval. Refer to Section 502.03.13 of the Standard Specifications and the NDOT Qualified Products List.
3. Joint manufacturer's installation instructions shall be followed.

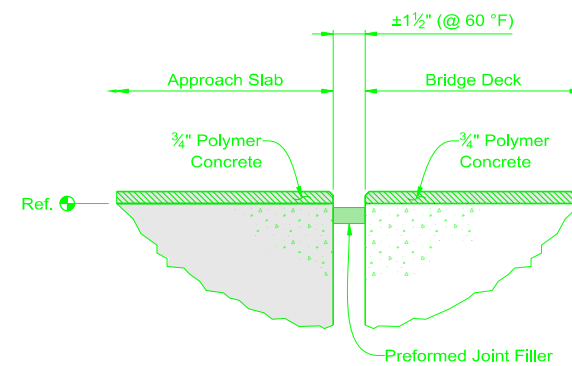


**SECTION A-A**  
WIDENED STRUCTURE

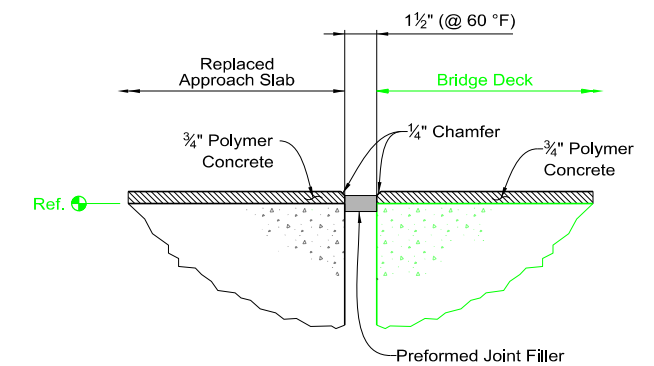
**JOINT INFORMATION**

Location	Movement Rating (MRL)	Movement Rating (MRT)	Min Gap (in)	Max Gap (in)	Temperature Adjustment Factor, "Tadj"
Begin Bridge	3/4"	1/4"	1 1/8"	1 7/8"	-1/16" per 10°F above 60°F +1/16" per 10°F below 60°F
End Bridge	3/4"	1/4"	1 1/8"	1 1/8"	-1/16" per 10°F above 60°F +1/16" per 10°F below 60°F

Movement is closing (-) and opening (+)  
MRL is longitudinal movement rating (perpendicular to joint). MRT is transverse movement rating (parallel to joint)  
Temperature Movement is from 60 °F for a temperature range of 0 °F to 80 °F



**SECTION B-B**  
EXISTING



**SECTION B-B**  
MODIFIED  
(Widened Portion Similar)

Note: Verify joint width prior to ordering joint filler material.

**LEGEND**

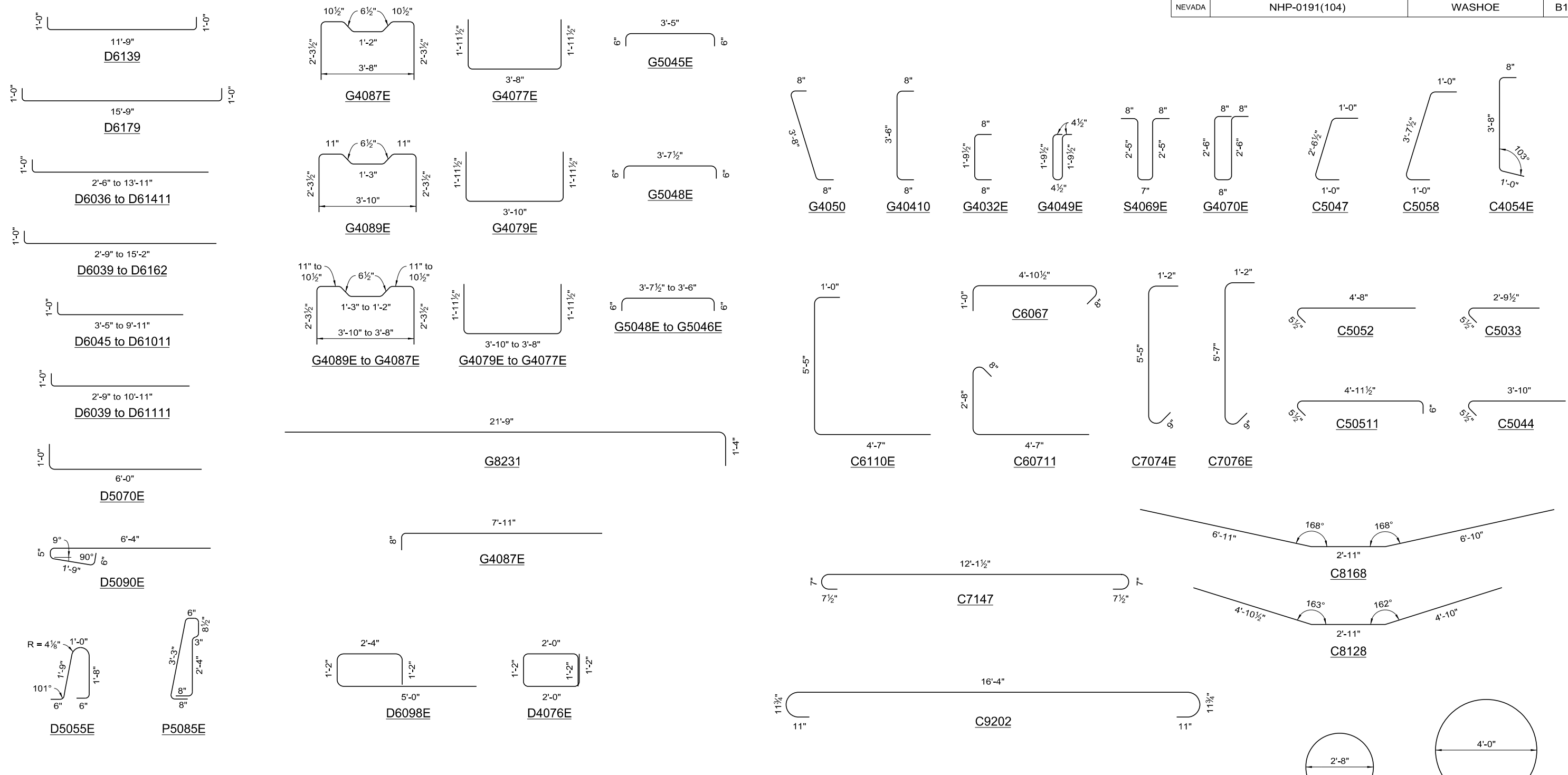
Limits of Removal

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

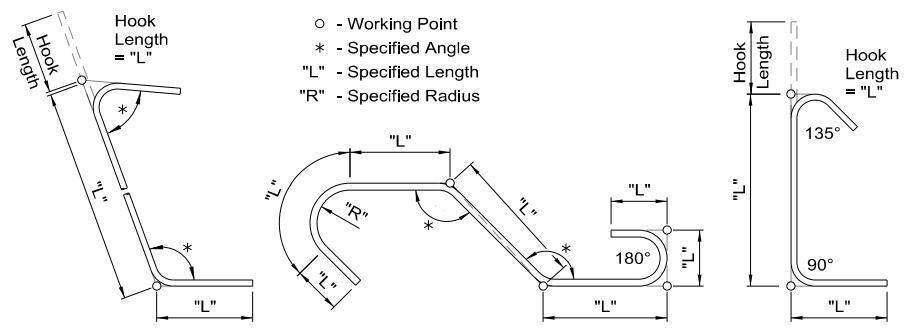
**EXPANSION  
JOINT  
DETAILS**

G-1092 N&S

STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B145



- - Working Point
- \* - Specified Angle
- "L" - Specified Length
- "R" - Specified Radius



**BENT BAR MEASUREMENT DETAILS**

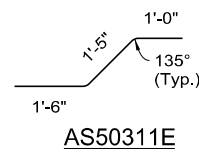
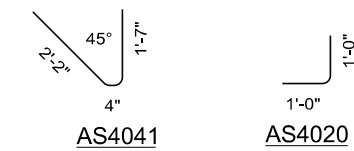
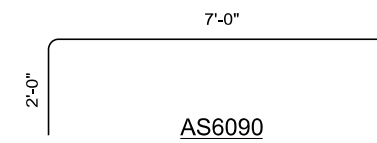
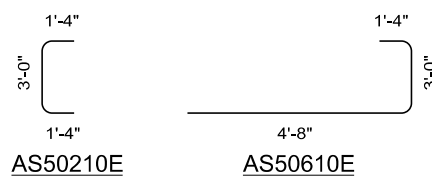
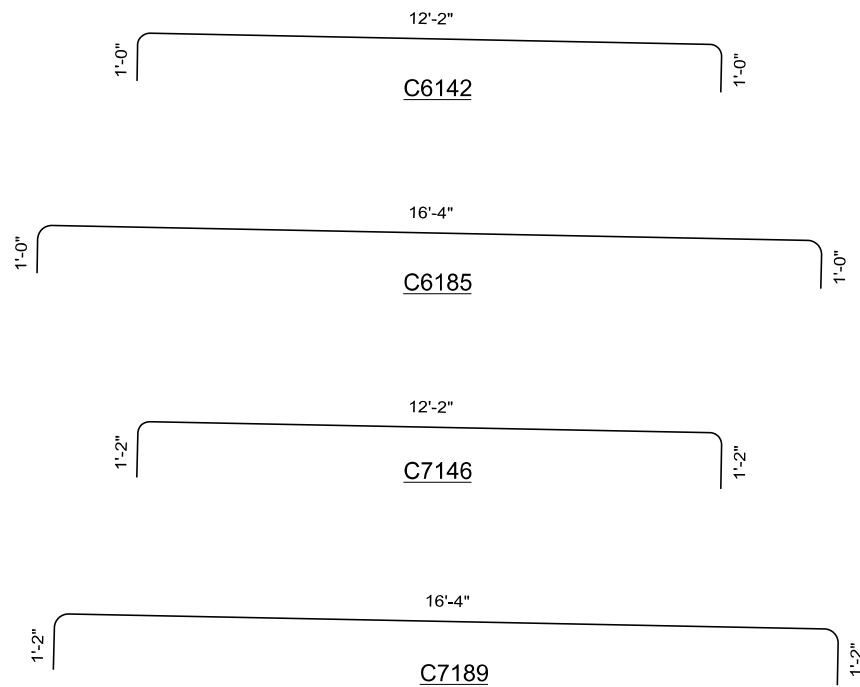
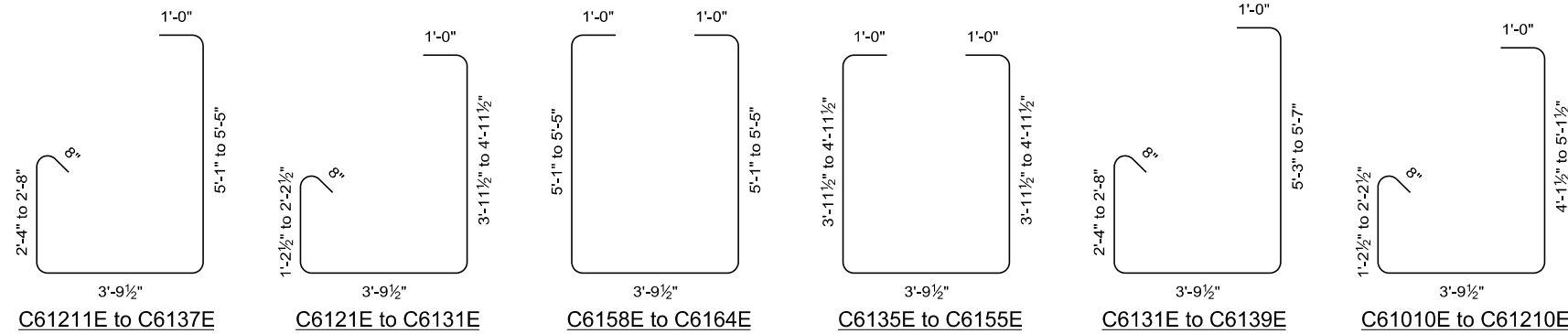
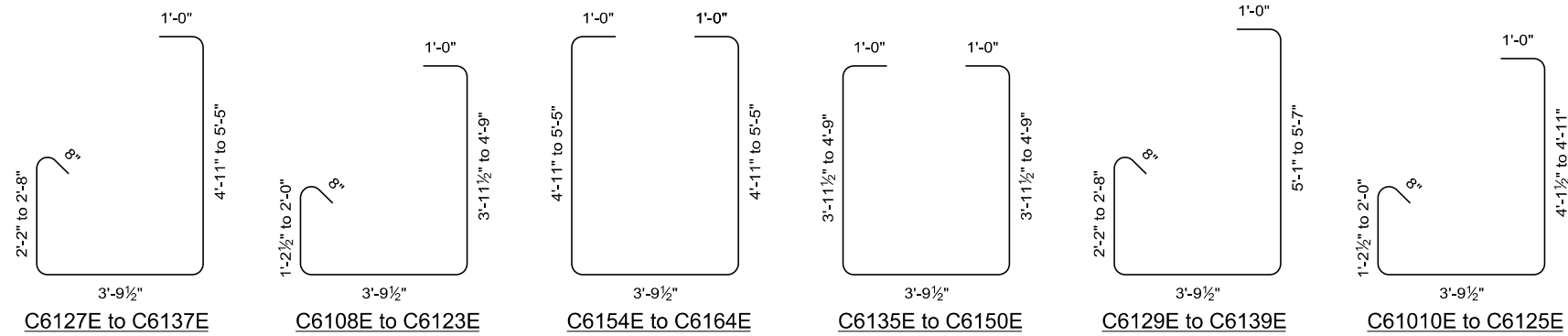
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**BENT BARS**

1 of 2 G-1092 N&S

DATE : 1/26/2023

STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B146



DATE : 1/26/2023

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

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**BENT BARS**

2 of 2 **G-1092 N&S**

G-1092 N

**PIER 1 & 4 - COLUMN 1N**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
8435	8	43' - 5"	9	1,043.30 lb.
84510	8	45' - 10"	9	1,101.38 lb.
SP 67964	6	796' - 4"	1	1,196.09 lb.

SUB-TOTAL  
Reinforcing Steel 3,341.00 lb.  
Class DA Concrete, Modified (Major) (Structures) 9.21 C.Y.

**PIER 1 & 4 - COLUMN 2N**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
8425	8	42' - 5"	9	1,019.27 lb.
84410	8	44' - 10"	9	1,077.35 lb.
SP 67796	6	779' - 6"	1	1,170.81 lb.

SUB-TOTAL  
Reinforcing Steel 3,268.00 lb.  
Class DA Concrete, Modified (Major) (Structures) 8.95 C.Y.

**PIER 2 & 3 - COLUMN 1N**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
8369	8	36' - 9"	12	1,177.47 lb.
8392	8	39' - 2"	12	1,254.90 lb.
C 6085	6	8' - 5"	5	63.21 lb.
SP 638710	6	387' - 10"	1	582.53 lb.
SP 65425	6	542' - 5"	1	814.71 lb.

SUB-TOTAL  
Reinforcing Steel 3,893.00 lb.  
Class DA Concrete, Modified (Major) (Structures) 7.46 C.Y.

**PIER 2 & 3 - COLUMN 2N**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
8358	8	35' - 8"	12	1,142.76 lb.
8381	8	38' - 1"	12	1,220.19 lb.
C 6085	6	8' - 5"	5	63.21 lb.
SP 638710	6	387' - 10"	1	582.53 lb.
SP 65061	6	506' - 1"	1	760.14 lb.

SUB-TOTAL  
Reinforcing Steel 3,769.00 lb.  
Class DA Concrete, Modified (Major) (Structures) 7.18 C.Y.

**CRASH WALL - EXISTING COLUMNS**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
51010	5	10' - 10"	4	45.20 lb.
5123	5	12' - 3"	26	332.20 lb.
5131	5	13' - 1"	67	914.28 lb.
5338	5	33' - 8"	13	456.49 lb.
R 5035	5	3' - 5"	334	1,190.24 lb.
R 5029D	5	2' - 9"	26	74.57 lb.
R 5043D	5	4' - 3"	52	230.50 lb.
R 5055D	5	5' - 5"	52	293.78 lb.
R 5069D	5	6' - 9"	26	183.05 lb.

SUB-TOTAL  
Reinforcing Steel 2,939.00 lb.  
Reinforcing Steel (Doweled) 782.00 lb.  
Class DA Concrete, Modified (Major) (Structures) 40.73 C.Y.

**CRASH WALL - NEW COLUMNS**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
5093	5	9' - 3"	41	395.56 lb.
5131	5	13' - 1"	25	341.15 lb.
R 5035	5	3' - 5"	84	299.34 lb.
R 5078	5	7' - 8"	28	223.90 lb.
R 5093	5	9' - 3"	14	135.07 lb.
R 5103	5	10' - 3"	27	288.65 lb.

SUB-TOTAL  
Reinforcing Steel 1,684.00 lb.  
Class DA Concrete, Modified (Major) (Structures) 12.85 C.Y.

**PIER CAP - INSIDE WIDENING - PIERS 1 & 4**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT	
6116	6	11' - 6"	2	34.55 lb.	
6165	6	16' - 5"	2	49.32 lb.	
9165	9	16' - 5"	8	446.53 lb.	
C 4054E	4	5' - 4"	4	14.25 lb.	
C 5052	5	5' - 2"	8	43.11 lb.	
C 50511	5	5' - 11"	16	98.74 lb.	
C 6067	6	6' - 7"	30	296.65 lb.	
C 60711	6	7' - 11"	2	23.78 lb.	
C 6110E	6	11' - 0"	2	33.04 lb.	
C 7074E	7	7' - 4"	8	119.91 lb.	
C 8168	8	16' - 8"	12	534.00 lb.	
C 9202	9	20' - 2"	8	548.53 lb.	
2 Set	C61211E	to	C6137E	4 Bars/Set	159.21 lb.
2 Set	C6121E	to	C6131E	10 Bars/Set	378.00 lb.
2 Set	C61315E	to	C6155E	10 Bars/Set	445.59 lb.
2 Set	C6158E	to	C6164E	4 Bars/Set	192.26 lb.

SUB-TOTAL  
Reinforcing Steel 2,076.00 lb.  
Reinforcing Steel (Epoxy Coated) 1,343.00 lb.  
Class DA Concrete, Modified (Major) (Structures) 7.08 C.Y.

**PIER CAP - INSIDE WIDENING - PIERS 2 & 3**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT	
6116	6	11' - 6"	2	34.55 lb.	
6165	6	16' - 5"	2	49.32 lb.	
9165	9	16' - 5"	8	446.53 lb.	
C 4054E	4	5' - 4"	4	14.25 lb.	
C 5052	5	5' - 2"	8	43.11 lb.	
C 50511	5	5' - 11"	16	98.74 lb.	
C 6067	6	6' - 7"	30	296.65 lb.	
C 60711	6	7' - 11"	4	47.56 lb.	
C 7076E	7	7' - 6"	8	122.64 lb.	
C 8168	8	16' - 8"	12	534.00 lb.	
C 9202	9	20' - 2"	8	548.53 lb.	
4 Set	C61010E	to	C61210E	10 Bars/Set	710.95 lb.
4 Set	C6131E	to	C6139E	4 Bars/Set	322.43 lb.

SUB-TOTAL  
Reinforcing Steel 2,099.00 lb.  
Reinforcing Steel (Epoxy Coated) 1,171.00 lb.  
Class DA Concrete, Modified (Major) (Structures) 7.08 C.Y.

**PIER CAP - OUTSIDE WIDENING - PIERS 1 & 4**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT	
6094	6	9' - 4"	2	28.04 lb.	
6122	6	12' - 2"	2	36.55 lb.	
7122	7	12' - 2"	8	198.95 lb.	
C 4054E	4	5' - 4"	4	14.25 lb.	
C 5052	5	5' - 2"	8	43.11 lb.	
C 50511	5	5' - 11"	16	98.74 lb.	
C 6067	6	6' - 7"	22	217.54 lb.	
C 60711	6	7' - 11"	2	23.78 lb.	
C 6110E	6	11' - 0"	2	33.04 lb.	
C 7074E	7	7' - 4"	8	119.91 lb.	
C 7147	7	14' - 7"	8	238.47 lb.	
C 8128	8	12' - 8"	12	405.84 lb.	
2 Set	C6108E	to	C6123E	6 Bars/Set	206.53 lb.
2 Set	C6127E	to	C6137E	4 Bars/Set	157.21 lb.
2 Set	C6135E	to	C6150E	6 Bars/Set	256.09 lb.
2 Set	C6154E	to	C6164E	4 Bars/Set	190.25 lb.

SUB-TOTAL  
Reinforcing Steel 1,292.00 lb.  
Reinforcing Steel (Epoxy Coated) 978.00 lb.  
Class DA Concrete, Modified (Major) (Structures) 5.42 C.Y.

**PIER CAP - OUTSIDE WIDENING - PIERS 2 & 3**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT	
6094	6	9' - 4"	2	28.04 lb.	
6122	6	12' - 2"	2	36.55 lb.	
7122	7	12' - 2"	8	198.95 lb.	
C 4054E	4	5' - 4"	4	14.25 lb.	
C 5052	5	5' - 2"	8	43.11 lb.	
C 50511	5	5' - 11"	16	98.74 lb.	
C 6067	6	6' - 7"	22	217.54 lb.	
C 60711	6	7' - 11"	4	47.56 lb.	
C 7076E	7	7' - 6"	8	122.64 lb.	
C 7147	7	14' - 7"	8	238.47 lb.	
C 8128	8	12' - 8"	12	405.84 lb.	
2 Set	C61010E	to	C6125E	6 Bars/Set	209.53 lb.
2 Set	C6129E	to	C6139E	4 Bars/Set	159.21 lb.

SUB-TOTAL  
Reinforcing Steel 1,315.00 lb.  
Reinforcing Steel (Epoxy Coated) 506.00 lb.  
Class DA Concrete, Modified (Major) (Structures) 5.42 C.Y.

**BOTTOM SLAB - INSIDE WIDENING**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT	
42110	4	21' - 10"	62	904.25 lb.	
D 6179	6	17' - 9"	70	1,866.24 lb.	
2 Set	D6036	to	D61411	8 Bars/Set	221.29 lb.
2 Set	D6039	to	D6162	8 Bars/Set	239.32 lb.

SUB-TOTAL  
Reinforcing Steel 3,232.00 lb.  
Class DA Concrete, Modified (Major) (Structures) 12.06 C.Y.

**BOTTOM SLAB - OUTSIDE WIDENING**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT	
42110	4	21' - 10"	46	670.89 lb.	
D 6139	6	13' - 9"	74	1,528.29 lb.	
2 Set	D6039	to	D61111	6 Bars/Set	141.19 lb.
2 Set	D6045	to	D61011	5 Bars/Set	115.15 lb.

SUB-TOTAL  
Reinforcing Steel 2,456.00 lb.  
Class DA Concrete, Modified (Major) (Structures) 9.05 C.Y.

**WEBS & END DIAPHRAGMS - INSIDE WIDENING**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
4164E	4	16' - 4"	12	130.93 lb.
4219	4	21' - 9"	20	290.58 lb.
S 4069E	4	6' - 9"	340	1,533.06 lb.
G 4070E	4	7' - 0"	36	168.34 lb.
G 8231	8	23' - 1"	20	1,232.65 lb.

SUB-TOTAL  
Reinforcing Steel 1,524.00 lb.  
Reinforcing Steel (Epoxy Coated) 1,833.00 lb.  
Class DA Concrete, Modified (Major) (Structures) 9.51 C.Y.

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

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QUANTITIES

1 of 5 G-1092 N



**WEBS & END DIAPHRAGMS - OUTSIDE WIDENING**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
4122E	4	12' - 2"	12	97.53 lb.
4219	4	21' - 9"	16	232.46 lb.
S 4069E	4	6' - 9"	272	1,226.45 lb.
G 4070E	4	7' - 0"	28	130.93 lb.
G 8231	8	23' - 1"	16	986.12 lb.
SUB-TOTAL				
Reinforcing Steel				1,219.00 lb.
Reinforcing Steel (Epoxy Coated)				1,455.00 lb.
Class DA Concrete, Modified (Major) (Structures)				7.14 C.Y.

**PIER CLOSURE - INSIDE WIDENING - PIERS 1 & 4**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
4165	4	16' - 5"	3	32.90 lb.
6165	6	16' - 5"	4	98.63 lb.
C 5044	5	4' - 4"	64	289.26 lb.
C 5058	5	5' - 8"	4	23.64 lb.
C 6185E	6	18' - 5"	6	165.97 lb.
SUB-TOTAL				
Reinforcing Steel				445.00 lb.
Reinforcing Steel (Epoxy Coated)				166.00 lb.
Class DA Concrete, Modified (Major) (Structures)				8.20 C.Y.

**PIER CLOSURE - INSIDE WIDENING - PIERS 2 & 3**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
4165	4	16' - 5"	2	21.93 lb.
6165	6	16' - 5"	4	98.63 lb.
C 5033	5	3' - 3"	64	216.94 lb.
C 5047	5	4' - 7"	4	19.12 lb.
C 7189E	7	18' - 9"	4	153.30 lb.
SUB-TOTAL				
Reinforcing Steel				357.00 lb.
Reinforcing Steel (Epoxy Coated)				154.00 lb.
Class DA Concrete, Modified (Major) (Structures)				2.04 C.Y.
Class EA Concrete, Modified (Major)				5.76 C.Y.

**PIER CLOSURE - OUTSIDE WIDENING - PIERS 1 & 4**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
4122	4	12' - 2"	3	24.38 lb.
6122	6	12' - 2"	4	73.10 lb.
C 5044	5	4' - 4"	48	216.94 lb.
C 5058	5	5' - 8"	4	23.64 lb.
C 6142E	6	14' - 2"	6	127.67 lb.
SUB-TOTAL				
Reinforcing Steel				339.00 lb.
Reinforcing Steel (Epoxy Coated)				128.00 lb.
Class DA Concrete, Modified (Major) (Structures)				6.15 C.Y.

**PIER CLOSURE - OUTSIDE WIDENING - PIERS 2 & 3**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
4122	4	12' - 2"	2	16.25 lb.
6122	6	12' - 2"	4	73.10 lb.
C 5033	5	3' - 3"	48	162.71 lb.
C 5047	5	4' - 7"	4	19.12 lb.
C 7146E	7	14' - 6"	4	118.55 lb.
SUB-TOTAL				
Reinforcing Steel				272.00 lb.
Reinforcing Steel (Epoxy Coated)				119.00 lb.
Class DA Concrete, Modified (Major) (Structures)				1.53 C.Y.
Class EA Concrete, Modified (Major)				4.48 C.Y.

**TOP SLAB - INSIDE WIDENING**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
4318	4	31' - 8"	22	465.37 lb.
4600E	4	60' - 0"	66	2,645.28 lb.
5045E	5	4' - 5"	314	1,446.47 lb.
5199E	5	19' - 9"	487	10,031.83 lb.
52110E	5	21' - 10"	64	1,457.42 lb.
5282E	5	28' - 2"	8	235.02 lb.
5600E	5	60' - 0"	24	1,501.92 lb.
10300E	10	30' - 0"	40	5,163.60 lb.
10370E	10	37' - 0"	40	6,368.44 lb.
10376E	10	37' - 6"	40	6,454.50 lb.
10435E	10	43' - 5"	40	7,472.88 lb.
D 5055E	5	5' - 5"	287	1,621.43 lb.
D 5070E	5	7' - 0"	83	605.98 lb.
D 5090E	5	9' - 0"	204	1,914.95 lb.
1 Set 50110E	to	5168E	10 Bars/Set	96.48 lb.
1 Set 50111E	to	5183E	11 Bars/Set	115.69 lb.
1 Set 5028E	to	5176E	10 Bars/Set	105.17 lb.
1 Set 5029E	to	5191E	11 Bars/Set	125.25 lb.
SUB-TOTAL				
Reinforcing Steel (Epoxy Coated)				47,828.00 lb.
Class EA Concrete, Modified (Major)				111.79 C.Y.

**TOP SLAB - OUTSIDE WIDENING**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
4318E	4	31' - 8"	18	380.76 lb.
4600E	4	60' - 0"	54	2,164.32 lb.
5045E	5	4' - 5"	316	1,455.68 lb.
5159E	5	15' - 9"	489	8,032.93 lb.
52110E	5	21' - 10"	48	1,093.06 lb.
5282E	5	28' - 2"	8	235.02 lb.
5600E	5	60' - 0"	24	1,501.92 lb.
10300E	10	30' - 0"	32	4,130.88 lb.
10370E	10	37' - 0"	32	5,094.75 lb.
10376E	10	37' - 6"	32	5,163.60 lb.
10435E	10	43' - 5"	32	5,978.30 lb.
D 5055E	5	5' - 5"	288	1,627.08 lb.
D 5070E	5	7' - 0"	83	605.98 lb.
D 5090E	5	9' - 0"	205	1,924.34 lb.
1 Set 5018E	to	5131E	8 Bars/Set	61.54 lb.
1 Set 5024E	to	5155E	9 Bars/Set	83.31 lb.
1 Set 5025E	to	51310E	8 Bars/Set	67.80 lb.
1 Set 5033E	to	5178E	8 Bars/Set	87.26 lb.
SUB-TOTAL				
Reinforcing Steel (Epoxy Coated)				39,689.00 lb.
Class EA Concrete, Modified (Major)				90.13 C.Y.

**APPROACH SLAB - PHASE 1 - BEGIN BRIDGE**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
4280E	4	28' - 0"	30	561.12 lb.
43010E	4	30' - 10"	55	1,132.82 lb.
5293E	5	29' - 3"	5	152.54 lb.
53010E	5	30' - 10"	28	900.46 lb.
63010E	6	30' - 10"	2	92.62 lb.
7070E	7	7' - 0"	28	400.62 lb.
7280E	7	28' - 0"	60	3,433.92 lb.
AS 4020E	4	2' - 0"	30	40.08 lb.
AS 4041E	4	4' - 1"	30	81.83 lb.
AS 50210E	5	2' - 10"	29	85.70 lb.
AS 50610E	5	6' - 10"	29	206.69 lb.
D 5055E	5	5' - 5"	40	225.98 lb.
SUB-TOTAL				
Reinforcing Steel (Epoxy Coated)				7,315.00 lb.
Class EA Concrete, Modified (Major)				39.85 C.Y.

**APPROACH SLAB - PHASE 2 - BEGIN BRIDGE**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
42311E	4	23' - 11"	30	479.29 lb.
4296E	4	29' - 6"	1	19.71 lb.
43010E	4	30' - 10"	54	1,112.22 lb.
5293E	5	29' - 3"	5	152.54 lb.
5296E	5	29' - 6"	1	30.77 lb.
53010E	5	30' - 10"	23	739.66 lb.
63010E	6	30' - 10"	2	92.62 lb.
7070E	7	7' - 0"	24	343.39 lb.
72311E	7	23' - 11"	60	2,933.14 lb.
AS 4020E	4	2' - 0"	30	40.08 lb.
AS 4041E	4	4' - 1"	30	81.83 lb.
AS 50210E	5	2' - 10"	29	85.70 lb.
AS 50610E	5	6' - 10"	29	206.69 lb.
D 5055E	5	5' - 5"	35	197.74 lb.
SUB-TOTAL				
Reinforcing Steel (Epoxy Coated)				6,516.00 lb.
Class EA Concrete, Modified (Major)				35.56 C.Y.

**APPROACH SLAB - PHASE 2 - BEGIN BRIDGE**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
4020DE	4	2' - 0"	28	37.41 lb.
4033E	4	3' - 3"	27	58.62 lb.
4280E	4	28' - 0"	48	897.79 lb.
4466E	4	46' - 6"	54	1,677.35 lb.
4453E	4	45' - 3"	1	30.23 lb.
5280E	5	28' - 0"	2	58.41 lb.
54411E	5	44' - 11"	5	234.24 lb.
5446E	5	44' - 6"	27	1,253.16 lb.
5453E	5	45' - 3"	1	47.20 lb.
6453E	6	45' - 3"	1	67.97 lb.
6460E	6	46' - 0"	1	69.09 lb.
7280E	7	28' - 0"	90	5,150.88 lb.
AS 4020E	4	2' - 0"	44	58.78 lb.
AS 4041E	4	4' - 1"	44	120.02 lb.
AS 50210E	5	2' - 10"	44	130.03 lb.
AS 50610E	5	6' - 10"	44	313.60 lb.
AS 50311E	5	3' - 11"	27	110.30 lb.
AS 6090E	6	9' - 0"	27	364.99 lb.
D 5055E	5	5' - 5"	40	225.98 lb.
SUB-TOTAL				
Reinforcing Steel (Epoxy Coated)				10,869.00 lb.
Reinforcing Steel (Epoxy Coated)(Doweled)				38.00 lb.
Class EA Concrete, Modified (Major)				62.83 C.Y.

DATE : 1/26/2023

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

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QUANTITIES

2 of 5 G-1092 N

**APPROACH SLAB - PHASE 2 - END BRIDGE**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
4020DE	4	2' - 0"	24	32.06 lb.
4033E	4	3' - 3"	22	47.76 lb.
42311E	4	23' - 11"	48	766.86 lb.
4466E	4	46' - 6"	55	1,708.41 lb.
52311E	5	23' - 11"	2	49.89 lb.
54411E	5	44' - 11"	5	234.24 lb.
5446E	5	44' - 6"	24	1,113.92 lb.
6453E	6	45' - 3"	1	67.97 lb.
6460E	6	46' - 0"	1	69.09 lb.
72311E	7	23' - 11"	90	4,399.71 lb.
AS 4020E	4	2' - 0"	44	58.78 lb.
AS 4041E	4	4' - 1"	44	120.02 lb.
AS 50210E	5	2' - 10"	44	130.03 lb.
AS 50610E	5	6' - 10"	44	313.60 lb.
AS 50311E	5	3' - 11"	22	89.87 lb.
AS 6090E	6	9' - 0"	22	297.40 lb.
D 5055E	5	5' - 5"	35	197.74 lb.

SUB-TOTAL  
 Reinforcing Steel (Epoxy Coated) 9,666.00 lb.  
 Reinforcing Steel (Epoxy Coated)(Doweled) 33.00 lb.  
 Class EA Concrete, Modified (Major) 55.95 C.Y.

**BRIDGE RAIL - INSIDE WIDENING**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
4196E	4	19' - 6"	8	104.21 lb.
4205E	4	20' - 5"	8	109.11 lb.
4241E	4	24' - 1"	10	160.88 lb.
4256E	4	25' - 6"	16	272.54 lb.
42610E	4	26' - 10"	16	286.79 lb.
4281E	4	28' - 1"	16	300.15 lb.
4294E	4	29' - 4"	10	195.95 lb.
4318E	4	31' - 8"	2	42.31 lb.
4600E	4	60' - 0"	6	240.48 lb.
P 5085E	5	8' - 5"	362	3,177.85 lb.

SUB-TOTAL  
 Reinforcing Steel (Epoxy Coated) 4,891.00 lb.  
 Class EA Concrete, Modified (Major) 33.24 C.Y.

**BRIDGE RAIL - OUTSIDE WIDENING**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
4196E	4	19' - 6"	8	104.21 lb.
4205E	4	20' - 5"	8	109.11 lb.
4241E	4	24' - 1"	10	160.88 lb.
4246E	4	24' - 6"	16	261.86 lb.
42610E	4	26' - 10"	16	286.79 lb.
4281E	4	28' - 1"	10	187.60 lb.
4292E	4	29' - 2"	16	311.73 lb.
4318E	4	31' - 8"	2	42.31 lb.
4600E	4	60' - 0"	6	240.48 lb.
D 4076E	4	7' - 6"	3	15.03 lb.
P 5085E	5	8' - 5"	362	3,177.85 lb.
D 6098E	6	9' - 8"	5	72.60 lb.

SUB-TOTAL  
 Reinforcing Steel (Epoxy Coated) 4,971.00 lb.  
 Class EA Concrete, Modified (Major) 33.24 C.Y.

**NORTHBOUND TOTALS**

Reinforcing Steel 65,977.00 lb.  
 Reinforcing Steel (Epoxy Coated) 144,092.00 lb.  
 Reinforcing Steel (Doweled) 1,564.00 lb.  
 Class DA Concrete, Modified (Major) (Structures) 322.02 C.Y.  
 Class EA Concrete, Modified (Major) 483.10 C.Y.

**G-1092 S**

**PIER 1 & 4 - COLUMN 1N**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
8435	8	43' - 5"	9	1,043.30 lb.
84510	8	45' - 10"	9	1,101.38 lb.
SP 67964	6	796' - 4"	1	1,196.09 lb.

SUB-TOTAL  
 Reinforcing Steel 3,341.00 lb.  
 Class DA Concrete, Modified (Major) (Structures) 9.21 C.Y.

**PIER 1 & 4 - COLUMN 2N**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
8425	8	42' - 5"	9	1,019.27 lb.
84410	8	44' - 10"	9	1,077.35 lb.
SP 67796	6	779' - 6"	1	1,170.81 lb.

SUB-TOTAL  
 Reinforcing Steel 3,268.00 lb.  
 Class DA Concrete, Modified (Major) (Structures) 8.95 C.Y.

**PIER 2 & 3 - COLUMN 1N**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
8369	8	36' - 9"	12	1,177.47 lb.
8392	8	39' - 2"	12	1,254.90 lb.
C 6085	6	8' - 5"	5	63.21 lb.
SP 638710	6	387' - 10"	1	582.53 lb.
SP 65425	6	542' - 5"	1	814.71 lb.

SUB-TOTAL  
 Reinforcing Steel 3,893.00 lb.  
 Class DA Concrete, Modified (Major) (Structures) 7.46 C.Y.

**PIER 2 & 3 - COLUMN 2N**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
8358	8	35' - 8"	12	1,142.76 lb.
8381	8	38' - 1"	12	1,220.19 lb.
C 6085	6	8' - 5"	5	63.21 lb.
SP 638710	6	387' - 10"	1	582.53 lb.
SP 65061	6	506' - 1"	1	760.14 lb.

SUB-TOTAL  
 Reinforcing Steel 3,769.00 lb.  
 Class DA Concrete, Modified (Major) (Structures) 7.18 C.Y.

**CRASH WALL - EXISTING COLUMNS**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
51010	5	10' - 10"	4	45.20 lb.
5123	5	12' - 3"	26	332.20 lb.
5131	5	13' - 1"	67	914.28 lb.
5338	5	33' - 8"	13	456.49 lb.
R 5035	5	3' - 5"	334	1,190.24 lb.
R 5029D	5	2' - 9"	26	74.57 lb.
R 5043D	5	4' - 3"	52	230.50 lb.
R 5055D	5	5' - 5"	52	293.78 lb.
R 5069D	5	6' - 9"	26	183.05 lb.

SUB-TOTAL  
 Reinforcing Steel 2,939.00 lb.  
 Reinforcing Steel (Doweled) 782.00 lb.  
 Class DA Concrete, Modified (Major) (Structures) 40.73 C.Y.

**CRASH WALL - NEW COLUMNS**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
5093	5	9' - 3"	41	395.56 lb.
5131	5	13' - 1"	25	341.15 lb.
R 5035	5	3' - 5"	84	299.34 lb.
R 5078	5	7' - 8"	28	223.90 lb.
R 5093	5	9' - 3"	14	135.07 lb.
R 5103	5	10' - 3"	27	288.65 lb.

SUB-TOTAL  
 Reinforcing Steel 1,684.00 lb.  
 Class DA Concrete, Modified (Major) (Structures) 12.85 C.Y.

**PIER CAP - INSIDE WIDENING - PIERS 1 & 4**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
6116	6	11' - 6"	2	34.55 lb.
6165	6	16' - 5"	2	49.32 lb.
9165	9	16' - 5"	8	446.53 lb.
C 4054E	4	5' - 4"	4	14.25 lb.
C 5052	5	5' - 2"	8	43.11 lb.
C 50511	5	5' - 11"	16	98.74 lb.
C 6067	6	6' - 7"	30	296.65 lb.
C 60711	6	7' - 11"	2	23.78 lb.
C 6110E	6	11' - 0"	2	33.04 lb.
C 7074E	7	7' - 4"	8	119.91 lb.
C 8168	8	16' - 8"	12	534.00 lb.
C 9202	9	20' - 2"	8	548.53 lb.
2 Set C61211E	to	C6137E	4 Bars/Set	159.21 lb.
2 Set C6121E	to	C6131E	10 Bars/Set	378.00 lb.
2 Set C61315E	to	C6155E	10 Bars/Set	445.59 lb.
2 Set C6158E	to	C6164E	4 Bars/Set	192.26 lb.

SUB-TOTAL  
 Reinforcing Steel 2,076.00 lb.  
 Reinforcing Steel (Epoxy Coated) 1,343.00 lb.  
 Class DA Concrete, Modified (Major) (Structures) 7.08 C.Y.

**PIER CAP - INSIDE WIDENING - PIERS 2 & 3**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
6116	6	11' - 6"	2	34.55 lb.
6165	6	16' - 5"	2	49.32 lb.
9165	9	16' - 5"	8	446.53 lb.
C 4054E	4	5' - 4"	4	14.25 lb.
C 5052	5	5' - 2"	8	43.11 lb.
C 50511	5	5' - 11"	16	98.74 lb.
C 6067	6	6' - 7"	30	296.65 lb.
C 60711	6	7' - 11"	4	47.56 lb.
C 7076E	7	7' - 6"	8	122.64 lb.
C 8168	8	16' - 8"	12	534.00 lb.
C 9202	9	20' - 2"	8	548.53 lb.
4 Set C61010E	to	C61210E	10 Bars/Set	710.95 lb.
4 Set C6131E	to	C6139E	4 Bars/Set	322.43 lb.

SUB-TOTAL  
 Reinforcing Steel 2,099.00 lb.  
 Reinforcing Steel (Epoxy Coated) 1,171.00 lb.  
 Class DA Concrete, Modified (Major) (Structures) 7.08 C.Y.

**PIER CAP - OUTSIDE WIDENING - PIERS 1 & 4**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
6094	6	9' - 4"	2	28.04 lb.
6122	6	12' - 2"	2	36.55 lb.
7122	7	12' - 2"	8	198.95 lb.
C 4054E	4	5' - 4"	4	14.25 lb.
C 5052	5	5' - 2"	8	43.11 lb.
C 50511	5	5' - 11"	16	98.74 lb.
C 6067	6	6' - 7"	22	217.54 lb.
C 60711	6	7' - 11"	2	23.78 lb.
C 6110E	6	11' - 0"	2	33.04 lb.
C 7074E	7	7' - 4"	8	119.91 lb.
C 7147	7	14' - 7"	8	238.47 lb.
C 8128	8	12' - 8"	12	405.84 lb.
2 Set C6108E	to	C6123E	6 Bars/Set	206.53 lb.
2 Set C6127E	to	C6137E	4 Bars/Set	157.21 lb.
2 Set C6135E	to	C6150E	6 Bars/Set	256.09 lb.
2 Set C6154E	to	C6164E	4 Bars/Set	190.25 lb.

SUB-TOTAL  
 Reinforcing Steel 1,292.00 lb.  
 Reinforcing Steel (Epoxy Coated) 978.00 lb.  
 Class DA Concrete, Modified (Major) (Structures) 5.42 C.Y.

STATE OF NEVADA  
 DEPARTMENT OF TRANSPORTATION

**QUANTITIES**

**PIER CAP - OUTSIDE WIDENING - PIERS 2 & 3**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT	
6094	6	9' - 4"	2	28.04 lb.	
6122	6	12' - 2"	2	36.55 lb.	
7122	7	12' - 2"	8	198.95 lb.	
C 4054E	4	5' - 4"	4	14.25 lb.	
C 5052	5	5' - 2"	8	43.11 lb.	
C 50511	5	5' - 11"	16	98.74 lb.	
C 6067	6	6' - 7"	22	217.54 lb.	
C 60711	6	7' - 11"	4	47.56 lb.	
C 7076E	7	7' - 6"	8	122.64 lb.	
C 7147	7	14' - 7"	8	238.47 lb.	
C 8128	8	12' - 8"	12	405.84 lb.	
2 Set	C61010E	to	C6125E	6 Bars/Set	209.53 lb.
2 Set	C6129E	to	C6139E	4 Bars/Set	159.21 lb.

SUB-TOTAL  
 Reinforcing Steel 1,315.00 lb.  
 Reinforcing Steel (Epoxy Coated) 506.00 lb.  
 Class DA Concrete, Modified (Major) (Structures) 5.42 C.Y.

**BOTTOM SLAB - INSIDE WIDENING**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT	
42110	4	21' - 10"	62	904.25 lb.	
D 6179	6	17' - 9"	70	1,866.24 lb.	
2 Set	D6036	to	D61411	8 Bars/Set	221.29 lb.
2 Set	D6039	to	D6162	8 Bars/Set	239.32 lb.

SUB-TOTAL  
 Reinforcing Steel 3,232.00 lb.  
 Class DA Concrete, Modified (Major) (Structures) 12.06 C.Y.

**BOTTOM SLAB - OUTSIDE WIDENING**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT	
42110	4	21' - 10"	46	670.89 lb.	
D 6139	6	13' - 9"	74	1,528.29 lb.	
2 Set	D6039	to	D61111	6 Bars/Set	141.19 lb.
2 Set	D6045	to	D61011	5 Bars/Set	115.15 lb.

SUB-TOTAL  
 Reinforcing Steel 2,456.00 lb.  
 Class DA Concrete, Modified (Major) (Structures) 9.05 C.Y.

**WEBS & END DIAPHRAGMS - INSIDE WIDENING**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
4164E	4	16' - 4"	12	130.93 lb.
4219	4	21' - 9"	20	290.58 lb.
S 4069E	4	6' - 9"	340	1,533.06 lb.
G 4070E	4	7' - 0"	36	168.34 lb.
G 8231	8	23' - 1"	20	1,232.65 lb.

SUB-TOTAL  
 Reinforcing Steel 1,524.00 lb.  
 Reinforcing Steel (Epoxy Coated) 1,833.00 lb.  
 Class DA Concrete, Modified (Major) (Structures) 9.51 C.Y.

**WEBS & END DIAPHRAGMS - OUTSIDE WIDENING**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
4122E	4	12' - 2"	12	97.53 lb.
4219	4	21' - 9"	16	232.46 lb.
S 4069E	4	6' - 9"	272	1,226.45 lb.
G 4070E	4	7' - 0"	28	130.93 lb.
G 8231	8	23' - 1"	16	986.12 lb.

SUB-TOTAL  
 Reinforcing Steel 1,219.00 lb.  
 Reinforcing Steel (Epoxy Coated) 1,455.00 lb.  
 Class DA Concrete, Modified (Major) (Structures) 7.14 C.Y.

**PIER CLOSURE - INSIDE WIDENING - PIERS 1 & 4**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
4165	4	16' - 5"	3	32.90 lb.
6165	6	16' - 5"	4	98.63 lb.
C 5044	5	4' - 4"	64	289.26 lb.
C 5058	5	5' - 8"	4	23.64 lb.
C 6185E	6	18' - 5"	6	165.97 lb.

SUB-TOTAL  
 Reinforcing Steel 445.00 lb.  
 Reinforcing Steel (Epoxy Coated) 166.00 lb.  
 Class DA Concrete, Modified (Major) (Structures) 8.20 C.Y.

**PIER CLOSURE - INSIDE WIDENING - PIERS 2 & 3**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
4165	4	16' - 5"	2	21.93 lb.
6165	6	16' - 5"	4	98.63 lb.
C 5033	5	3' - 3"	64	216.94 lb.
C 5047	5	4' - 7"	4	19.12 lb.
C 7189E	7	18' - 9"	4	153.30 lb.

SUB-TOTAL  
 Reinforcing Steel 357.00 lb.  
 Reinforcing Steel (Epoxy Coated) 154.00 lb.  
 Class DA Concrete, Modified (Major) (Structures) 2.04 C.Y.  
 Class EA Concrete, Modified (Major) 5.76 C.Y.

**PIER CLOSURE - OUTSIDE WIDENING - PIERS 1 & 4**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
4122	4	12' - 2"	3	24.38 lb.
6122	6	12' - 2"	4	73.10 lb.
C 5044	5	4' - 4"	48	216.94 lb.
C 5058	5	5' - 8"	4	23.64 lb.
C 6142E	6	14' - 2"	6	127.67 lb.

SUB-TOTAL  
 Reinforcing Steel 339.00 lb.  
 Reinforcing Steel (Epoxy Coated) 128.00 lb.  
 Class DA Concrete, Modified (Major) (Structures) 6.15 C.Y.

**PIER CLOSURE - OUTSIDE WIDENING - PIERS 2 & 3**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
4122	4	12' - 2"	2	16.25 lb.
6122	6	12' - 2"	4	73.10 lb.
C 5033	5	3' - 3"	48	162.71 lb.
C 5047	5	4' - 7"	4	19.12 lb.
C 7146E	7	14' - 6"	4	118.55 lb.

SUB-TOTAL  
 Reinforcing Steel 272.00 lb.  
 Reinforcing Steel (Epoxy Coated) 119.00 lb.  
 Class DA Concrete, Modified (Major) (Structures) 1.53 C.Y.  
 Class EA Concrete, Modified (Major) 4.48 C.Y.

**TOP SLAB - INSIDE WIDENING**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT	
4318E	4	31' - 8"	22	465.37 lb.	
4600E	4	60' - 0"	66	2,645.28 lb.	
5045E	5	4' - 5"	314	1,446.47 lb.	
5199E	5	19' - 9"	487	10,031.83 lb.	
52110E	5	21' - 10"	64	1,457.42 lb.	
5282E	5	28' - 2"	8	235.02 lb.	
5600E	5	60' - 0"	24	1,501.92 lb.	
10300E	10	30' - 0"	40	5,163.60 lb.	
10370E	10	37' - 0"	40	6,368.44 lb.	
10376E	10	37' - 6"	40	6,454.50 lb.	
10435E	10	43' - 5"	40	7,472.88 lb.	
D 5055E	5	5' - 5"	287	1,621.43 lb.	
D 5070E	5	7' - 0"	83	605.98 lb.	
D 5090E	5	9' - 0"	204	1,914.95 lb.	
1 Set	50110E	to	5168E	10 Bars/Set	96.48 lb.
1 Set	50111E	to	5183E	11 Bars/Set	115.69 lb.
1 Set	5028E	to	5176E	10 Bars/Set	105.17 lb.
1 Set	5029E	to	5191E	11 Bars/Set	125.25 lb.

SUB-TOTAL  
 Reinforcing Steel (Epoxy Coated) 47,828.00 lb.  
 Class EA Concrete, Modified (Major) 111.79 C.Y.

**TOP SLAB - OUTSIDE WIDENING**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT	
4318E	4	31' - 8"	18	380.76 lb.	
4600E	4	60' - 0"	54	2,164.32 lb.	
5045E	5	4' - 5"	316	1,455.68 lb.	
5159E	5	15' - 9"	489	8,032.93 lb.	
52110E	5	21' - 10"	48	1,093.06 lb.	
5282E	5	28' - 2"	8	235.02 lb.	
5600E	5	60' - 0"	24	1,501.92 lb.	
10300E	10	30' - 0"	32	4,130.88 lb.	
10370E	10	37' - 0"	32	5,094.75 lb.	
10376E	10	37' - 6"	32	5,163.60 lb.	
10435E	10	43' - 5"	32	5,978.30 lb.	
D 5055E	5	5' - 5"	288	1,627.08 lb.	
D 5070E	5	7' - 0"	83	605.98 lb.	
D 5090E	5	9' - 0"	205	1,924.34 lb.	
1 Set	5018E	to	5131E	8 Bars/Set	61.54 lb.
1 Set	5024E	to	5155E	9 Bars/Set	83.31 lb.
1 Set	5025E	to	51310E	8 Bars/Set	67.80 lb.
1 Set	5033E	to	5178E	8 Bars/Set	87.26 lb.

SUB-TOTAL  
 Reinforcing Steel (Epoxy Coated) 39,689.00 lb.  
 Class EA Concrete, Modified (Major) 90.13 C.Y.

**APPROACH SLAB - PHASE 1 - BEGIN BRIDGE**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
42311E	4	23' - 11"	30	479.29 lb.
4296E	4	29' - 6"	1	19.71 lb.
43010E	4	30' - 10"	54	1,112.22 lb.
5293E	5	29' - 3"	5	152.54 lb.
5296E	5	29' - 6"	1	30.77 lb.
53010E	5	30' - 10"	23	739.66 lb.
63010E	6	30' - 10"	2	92.62 lb.
7070E	7	7' - 0"	24	343.39 lb.
72311E	7	23' - 11"	60	2,933.14 lb.
AS 4020E	4	2' - 0"	30	40.08 lb.
AS 4041E	4	4' - 1"	30	81.83 lb.
AS 50210E	5	2' - 10"	29	85.70 lb.
AS 50610E	5	6' - 10"	29	206.69 lb.
D 5055E	5	5' - 5"	35	197.74 lb.

SUB-TOTAL  
 Reinforcing Steel (Epoxy Coated) 6,516.00 lb.  
 Class EA Concrete, Modified (Major) 35.56 C.Y.

**APPROACH SLAB - PHASE 1 - END BRIDGE**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
4280E	4	28' - 0"	30	561.12 lb.
43010E	4	30' - 10"	55	1,132.82 lb.
5293E	5	29' - 3"	5	152.54 lb.
53010E	5	30' - 10"	28	900.46 lb.
63010E	6	30' - 10"	2	92.62 lb.
7070E	7	7' - 0"	28	400.62 lb.
7280E	7	28' - 0"	60	3,433.92 lb.
AS 4020E	4	2' - 0"	30	40.08 lb.
AS 4041E	4	4' - 1"	30	81.83 lb.
AS 50210E	5	2' - 10"	29	85.70 lb.
AS 50610E	5	6' - 10"	29	206.69 lb.
D 5055E	5	5' - 5"	40	225.98 lb.

SUB-TOTAL  
 Reinforcing Steel (Epoxy Coated) 7,315.00 lb.  
 Class EA Concrete, Modified (Major) 39.85 C.Y.

STATE OF NEVADA  
 DEPARTMENT OF TRANSPORTATION

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**QUANTITIES**

4 of 5 G-1092 S

DATE : 1/26/2023

**APPROACH SLAB - PHASE 2 - BEGIN BRIDGE**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
4020DE	4	2' - 0"	24	32.06 lb.
4033E	4	3' - 3"	22	47.76 lb.
42311E	4	23' - 11"	48	766.86 lb.
4466E	4	46' - 6"	55	1,708.41 lb.
52311E	5	23' - 11"	2	49.89 lb.
54411E	5	44' - 11"	5	234.24 lb.
5446E	5	44' - 6"	24	1,113.92 lb.
6453E	6	45' - 3"	1	67.97 lb.
6460E	6	46' - 0"	1	69.09 lb.
72311E	7	23' - 11"	90	4,399.71 lb.
AS 4020E	4	2' - 0"	44	58.78 lb.
AS 4041E	4	4' - 1"	44	120.02 lb.
AS 50210E	5	2' - 10"	44	130.03 lb.
AS 50610E	5	6' - 10"	44	313.60 lb.
AS 50311E	5	3' - 11"	22	89.87 lb.
AS 6090E	6	9' - 0"	22	297.40 lb.
D 5055E	5	5' - 5"	35	197.74 lb.

SUB-TOTAL  
 Reinforcing Steel (Epoxy Coated) 9,666.00 lb.  
 Reinforcing Steel (Epoxy Coated)(Doweled) 33.00 lb.  
 Class EA Concrete, Modified (Major) 55.95 C.Y.

**APPROACH SLAB - PHASE 2 - END BRIDGE**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
4020DE	4	2' - 0"	28	37.41 lb.
4033E	4	3' - 3"	27	58.62 lb.
4280E	4	28' - 0"	48	897.79 lb.
4466E	4	46' - 6"	54	1,677.35 lb.
4453E	4	45' - 3"	1	30.23 lb.
5280E	5	28' - 0"	2	58.41 lb.
54411E	5	44' - 11"	5	234.24 lb.
5446E	5	44' - 6"	27	1,253.16 lb.
5453E	5	45' - 3"	1	47.20 lb.
6453E	6	45' - 3"	1	67.97 lb.
6460E	6	46' - 0"	1	69.09 lb.
7280E	7	28' - 0"	90	5,150.88 lb.
AS 4020E	4	2' - 0"	44	58.78 lb.
AS 4041E	4	4' - 1"	44	120.02 lb.
AS 50210E	5	2' - 10"	44	130.03 lb.
AS 50610E	5	6' - 10"	44	313.60 lb.
AS 50311E	5	3' - 11"	27	110.30 lb.
AS 6090E	6	9' - 0"	27	364.99 lb.
D 5055E	5	5' - 5"	40	225.98 lb.

SUB-TOTAL  
 Reinforcing Steel (Epoxy Coated) 10,869.00 lb.  
 Reinforcing Steel (Epoxy Coated)(Doweled) 38.00 C.Y.  
 Class EA Concrete, Modified (Major) 62.83 C.Y.

**BRIDGE RAIL - INSIDE WIDENING**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
4196E	4	19' - 6"	8	104.21 lb.
4205E	4	20' - 5"	8	109.11 lb.
4241E	4	24' - 1"	10	160.88 lb.
4256E	4	25' - 6"	16	272.54 lb.
42610E	4	26' - 10"	16	286.79 lb.
4281E	4	28' - 1"	16	300.15 lb.
4294E	4	29' - 4"	10	195.95 lb.
4318E	4	31' - 8"	2	42.31 lb.
4600E	4	60' - 0"	6	240.48 lb.
P 5085E	5	8' - 5"	362	3,177.85 lb.

SUB-TOTAL  
 Reinforcing Steel (Epoxy Coated) 4,891.00 lb.  
 Class EA Concrete, Modified (Major) 33.40 C.Y.

**BRIDGE RAIL - OUTSIDE WIDENING**

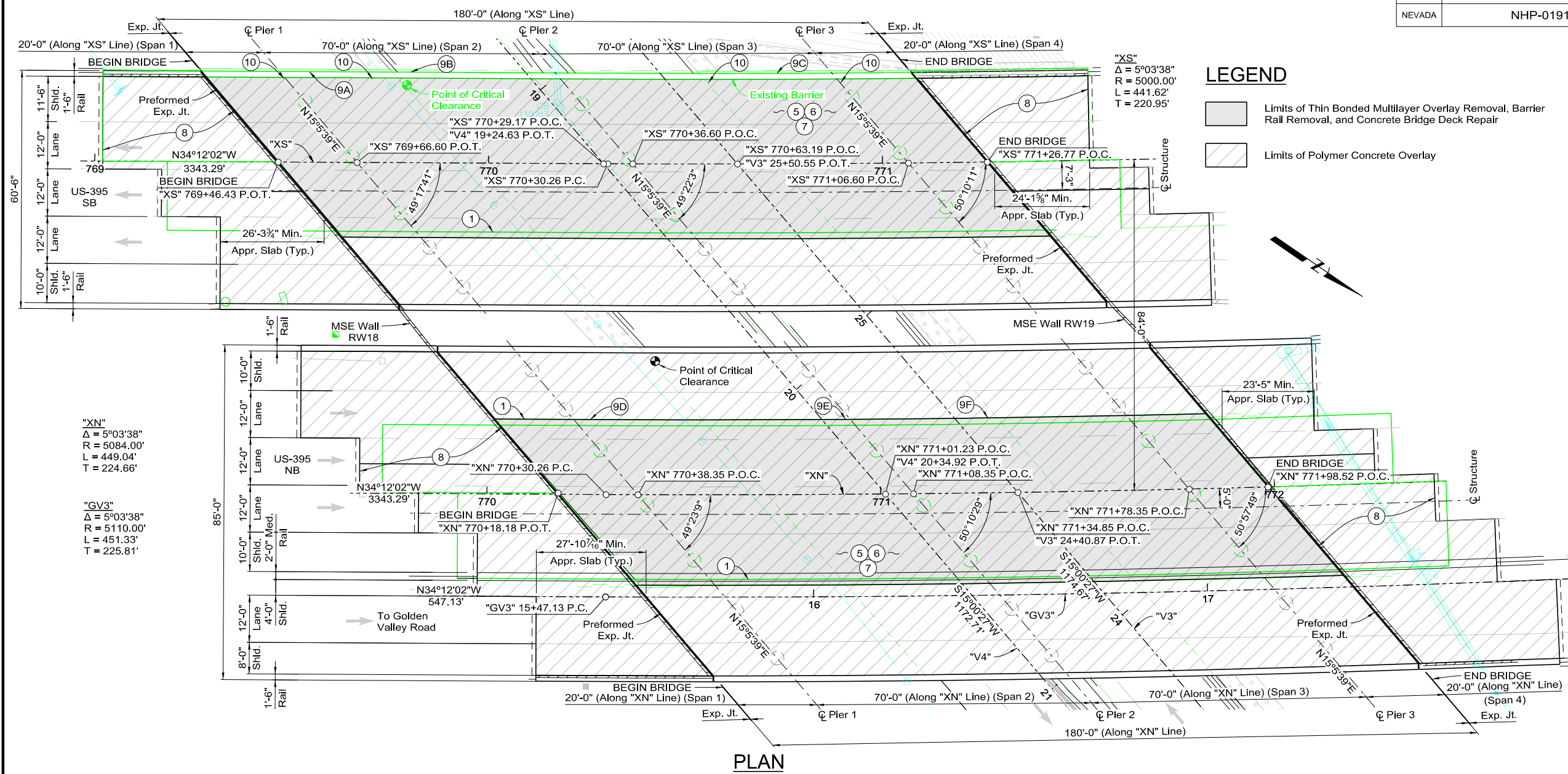
BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
4196E	4	19' - 6"	8	104.21 lb.
4205E	4	20' - 5"	8	109.11 lb.
4241E	4	24' - 1"	10	160.88 lb.
4246E	4	24' - 6"	16	261.86 lb.
42610E	4	26' - 10"	16	286.79 lb.
4281E	4	28' - 1"	10	187.60 lb.
4292E	4	29' - 2"	16	311.73 lb.
4318E	4	31' - 8"	2	42.31 lb.
4600E	4	60' - 0"	6	240.48 lb.
P 5085E	5	8' - 5"	362	3,177.85 lb.

SUB-TOTAL  
 Reinforcing Steel (Epoxy Coated) 4,883.00 lb.  
 Class EA Concrete, Modified (Major) 33.76 C.Y.

**SOUTHBOUND TOTALS**

Reinforcing Steel 65,977.00 lb.  
 Reinforcing Steel (Epoxy Coated) 144,075.00 lb.  
 Reinforcing Steel (Doweled) 1,564.00 lb.  
 Class DA Concrete, Modified (Major) (Structures) 322.02 C.Y.  
 Class EA Concrete, Modified (Major) 483.77 C.Y.

STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B200



PLAN

**LEGEND**

- Limits of Thin Bonded Multilayer Overlay Removal, Barrier Rail Removal, and Concrete Bridge Deck Repair
- Limits of Polymer Concrete Overlay

**DESCRIPTION OF WORK**

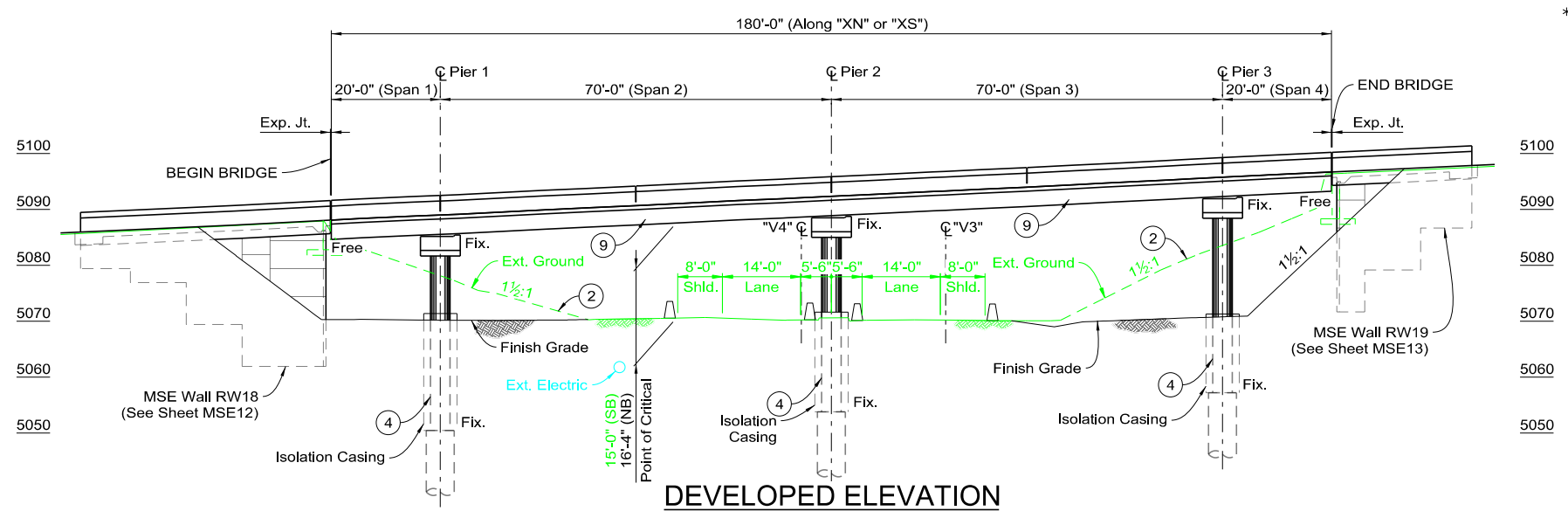
- 1 Remove existing barrier rail, and overhang (Bid Item 202 0125). See Sheet B208 for removal limits and details.
- 2 Remove existing concrete slope paving, abutments, wingwalls, and approach slabs. Construct MSE walls. See MSE wall plans for details and quantities. See Landscape & Aesthetic Plans for new slope treatment.
- 3 Construct bridge widenings; see Sheet B206 for construction sequencing.
- 4 After MSE wall construction, perform localized excavation at existing columns from finish grade to level of footings. Install isolation casings and backfill all columns to final grade. See Sheet B205 for details. Retrofit all columns (Bid Item 502 0450) See details on Sheet B215):
  - A. Chip concrete to depth of longitudinal rebar and cut specified bars
  - B. Patch exposed reinforcing steel.
  - C. Where specified, wrap columns with composite casing.
- 5 Remove existing composite overlay (Bid Item 202 0120). Care shall be taken to protect existing concrete bridge deck from damage.
- 6 Repair existing concrete bridge deck (Bid Item 502 0360). Remove damaged concrete to such depth that sound concrete is exposed over the entire repair area. Blast clean any exposed reinforcing steel. Prepare repair areas and patch per 502.03.15. Submit proposed patch material for review 30 days prior to start of deck repair.
- 7 Bridge deck and approach slab preparation and polymer concrete overlay placement.
  - A. Prepare bridge deck and approach slabs in accordance with the manufacturer's recommendations (Bid Item 496 0130).
  - B. Place polyester based overlay system for a total depth of approximately 3/4" on bridge deck and 1/2" on approach slabs (Bid Item 496 0130, 496 0160, & 496 0170).
- 8 Expansion joint replacement.
  - A. Remove existing asphalt plug expansion joints (Bid Item 202 0160).
  - B. Install new 2-inch preformed joint filler at abutments per manufacturer's specifications and as shown in detail on Sheet B241 (Bid Item 502 2000).
  - C. Install new 2-inch preformed joint filler between approach slabs and roadway per manufacturer's specifications and as shown in detail on Sheet B241 (Bid Item 502 2000).
- 9 Concrete superstructure repair (Bid Item 502 0380). Remove damaged concrete to such a depth that sound concrete is exposed over the entire repair area. Blast clean any exposed reinforcing steel. Prepare repair areas and patch per 502.03.15 at the following locations:
  - A. I-1093S, Span 1 west side: adjacent to Col. 1 and approx. 8' from Col. 1
  - B. I-1093S, Span 2 west side: midpoint of span
  - C. I-1093S, Span 3 west side: approx. 10' from Col. 3
  - D. I-1093N, Span 1 west side: adjacent to Col. 1
  - E. I-1093N, Span 2 west side: adjacent to Col. 2
  - F. I-1093N, Span 3 west side: midpoint of span
- 10 Drill/ream a hole that completely removes bleeder pipe and any unsound concrete. Roughen the inside surface of drilled/reamed hole and apply a bonding agent to the concrete face per grout manufacturer's recommendations. Fill hole with non-shrink grout. Plugging of bleeder pipes shall be incidental to Bid Item 502 0360, "Concrete Bridge Deck Repair".

"XN"  
 $\Delta = 5^{\circ}03'38"$   
 $R = 5084.00'$   
 $L = 449.04'$   
 $T = 224.66'$

"GV3"  
 $\Delta = 5^{\circ}03'38"$   
 $R = 5110.00'$   
 $L = 451.33'$   
 $T = 225.81'$

\*\* - All utility locations are approximate and are for coordination purposes only. All utilities are to be field located prior to start of construction and protected in place unless noted otherwise in plans.

Note: See Sheet B204 for Roadway Profiles



DEVELOPED ELEVATION

<b>GEOTECHNICAL DESIGN DIVISION</b>	
DESIGNED BY:	GEORGE HELGERSON
PRINCIPAL:	KYLE JERMSTAD
<b>STRUCTURAL DESIGN DIVISION</b>	
DESIGNED BY:	TIFFANY CARR
DRAWN BY:	ANNA CLOSE
PRINCIPAL:	MICHAEL TAYLOR

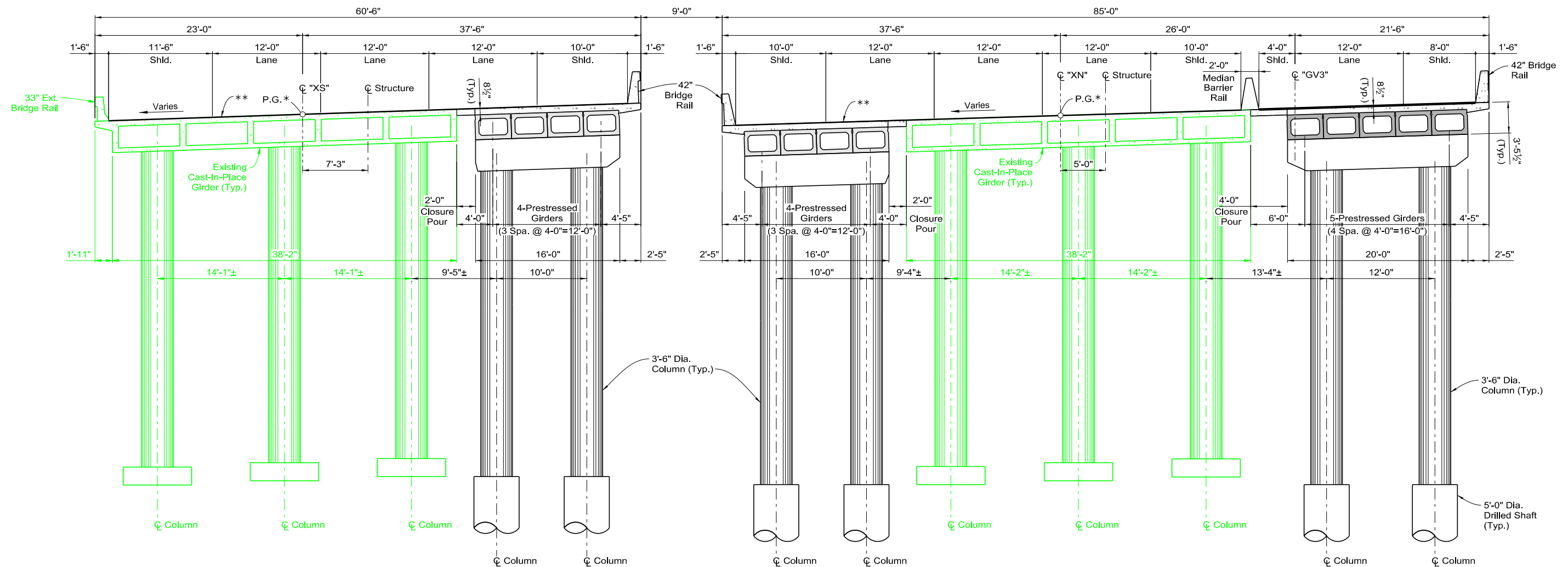
ORIGINAL CONTRACT: 1286  
 MODIFIED CONTRACTS: 1513,2032,2325,2983,3272

STATE OF NEVADA DEPARTMENT OF TRANSPORTATION
<b>US 395 - WA 30.31 PANTHER VALLEY INTERCHANGE</b>
<b>I-1093 N&amp;S</b>

DATE : 1/26/2023

STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B201

\* - Riding surface of Bridge Deck and Approach Slabs  $\frac{3}{4}$ " above Profile Grade.  
 \*\* -  $\frac{3}{4}$ " Polymer Concrete Overlay (See Sheet B202, Note 18)



**TYPICAL SECTION**  
 LOOKING AHEAD ON LINE  
 NORMAL TO ALIGNMENT  
 (THROUGH PIER 2)

STATE OF NEVADA  
 DEPARTMENT OF TRANSPORTATION

**TYPICAL  
 SECTION**

I-1093 N&S

DATE : 1/26/2023

STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B202

## GENERAL NOTES

- Design Specifications: AASHTO "LRFD Bridge Design Specifications" Eighth Edition 2017, AASHTO "Guide Specifications for LRFD Seismic Bridge Design" Second Edition 2011, with interims through 2015, and "NDOT Structures Manual" 2008, with interims through 2019, Seismic Retrofit designed in accordance with FHWA "Seismic Retrofitting Manual for Highway Structures: Part 1 Bridges" 2006.
- Construction Specifications: State of Nevada Department of Transportation "Standard Specifications for Road and Bridge Construction, 2014" except as noted below and in The Special Provisions of this Contract.
- Dead Load: In accordance with Specifications with an allowance of 38 psf for future wearing surface and 12 psf for stay-in-place deck formwork.
- Live Load: AASHTO HL-93 Loading. Overload design based on California "Standard Permit Design Vehicles" (Maximum Overload P-13 Truck). Deck Design based on the Equivalent Strip Method with a 40.0 kip axle.
- Seismic Load: PGA Coefficient = 0.50g, Short Period Coefficient (Ss) = 1.25g, Long Period Coefficient (S1) = 0.50g, Site Class C Soil Profile (SDC D).  $\gamma_{ms} = 0.25$ .
- Concrete: See Concrete Placement Schedule and Diagram for concrete class and compressive strengths.
- Reinforcing Steel: All reinforcing steel shall be ASTM A706. Reinforcing steel for precast girders may be A615 or A706. Dimensions relating to bar spacing are center to center. Bending dimensions are from out to out of the bars. Bar sizes three (3) to nine (9) are indicated by the first number of the mark; ten (10) or larger by the first two numbers. Bar marks with a letter prefix indicate a bent bar. Bar marks with a "D" suffix indicate a doweled bar. Bar marks ending with either the letter "E" or "ED" indicate that the bar shall be epoxy coated the length of the bar. Sizes four (4) and five (5), when considered as bars to control temperature, shrinkage, and distribution stresses by the Engineer, may be adjusted upon concurrence and approval of the Engineer.
- Doweled reinforcing steel: Reinforcing to be doweled in the existing concrete shall be epoxied in drilled holes with a maximum diameter equal to the bar diameter plus  $\frac{1}{4}$ ". Holes shall be cleaned with oil free compressed air after drilling. Care shall be taken to avoid damaging existing reinforcing. Minimum embedment shall be 12" unless shown otherwise.
- Foundations: Piers shall be on drilled shaft foundations. For factored axial resistance, refer to Geotechnical Report from NewFields titled "Geotechnical Design Report, Phase 1B: US395 North Valleys, Washoe County, Nevada" dated February 2020.
- Camber: Camber shall be as shown on the Plans.
- Barrier Rail: Designed for TL-4.
- Construction Type Code: x271.
- Concrete construction joints designated as a "Permissible Joint" or as an "Optional Construction Joint" may be incorporated into the construction at the Contractor's option. Joints designated as a "Construction Joint" are considered mandatory and shall be incorporated into the construction unless otherwise approved in writing by the Bridge Design Engineer.
- Elevations and roadway profile information in these plans are approximate and are based on Contract 1286, adjusted to the survey datum for this project. Contractor to verify profile and elevations prior to construction to ensure a smooth roadway profile between new bridge deck and existing roadway. Any discrepancies shall be brought to the attention of the Engineer prior to construction.
- All dimensions are measured at 60 °F unless noted otherwise.
- Verification of Existing Conditions: Before ordering materials or commencing work on any item which may be affected by the dimensions or elevations of the existing structure, the Contractor shall field verify those dimensions and elevations and shall notify the Engineer of any field measured dimensions or elevations which deviate substantially from these plans prior to commencing the work. No direct payment will be made for field measurements.
- All exposed concrete surfaces of new and existing structures (excluding bridge deck) to receive stain or surface treatments as specified in the Landscape & Aesthetic Plans (Bid Item 212 0045). Finishes to extend one foot minimum below surface grade.
- Install  $\frac{3}{4}$ " polymer concrete overlay to bridge deck and approach slabs. Polymer concrete shall be installed from face of rail to face of rail. Refer to Section 496 of the Contract Special Provisions.

## SHEET INDEX

SHEET	DESCRIPTION
B200	US 395 - WA 30.31 Panther Valley Interchange
B201	Typical Section
B202	General Notes and Quantities
B203	Geometrics
B204	Vertical Profiles
B205	Excavation and Backfill
B206	Bridge Construction Sequence
B207	Bridge Construction Phases
B208	Removal Details
B209	Pier 1 Elevation
B210	Pier 2 Elevation
B211	Pier 3 Elevation
B212	Column and Drilled Shaft Reinforcing
B213	Isolation Casing Details, 1 of 2
B214	Isolation Casing Details, 2 of 2
B215	Column Seismic Retrofit Details
B216	Inside Widening Pier Cap Reinforcing
B217	Outside Widening Pier Cap Reinforcing
B218	Pier Cap Details
B219	Typical Section Inside Widening
B220	Typical Section Outside Widening
B221	Precast Girder Framing Plan
B222	Precast Girder Prestressing Details
B223	Precast Girder Reinforcing
B224	Tie Rod Details
B225	CIP Soffit Reinforcing
B226	CIP Girder Reinforcing
B227	Inside Widening Pier Closure Reinforcing
B228	Outside Widening Pier Closure Reinforcing
B229	Pier Cap Closure Details
B230	Inside Widening CIP Deck Reinforcing
B231	Outside Widening CIP Deck Reinforcing
B232	Camber and Concrete Placement Diagrams
B233	NB Phase 1 Approach Slab Replacement
B234	SB Phase 1 Approach Slab Replacement
B235	NB Phase 2 Approach Slab Replacement
B236	SB Phase 2 Approach Slab Replacement
B237	Approach Slab Sections and Details
B238	Bridge Rail Spans 1 and 2
B239	Bridge Rail Spans 3 and 4
B240	Bridge Rail Details
B241	Expansion Joint Details
B242	Bent Bars, 1 of 2
B243	Bent Bars, 2 of 2
B244	Quantities, 1 of 5
B245	Quantities, 2 of 5
B246	Quantities, 3 of 5
B247	Quantities, 4 of 5
B248	Quantities, 5 of 5

## QUANTITIES

ITEM NO.	ITEM DESCRIPTION	UNIT	NB	SB	QUANTITY
202 0120	REMOVAL OF PORTION OF BRIDGE DECK	SOYD	780	780	1,560
202 0125	REMOVAL OF PORTION OF BRIDGE	LS	1	1	1
202 0160	REMOVAL OF EXPANSION JOINTS	LINFT	194	195	389
206 0110	STRUCTURE EXCAVATION	CUYD	510	527	1,037
207 0110	GRANULAR BACKFILL	CUYD	405	419	824
496 0130	BRIDGE DECK PREPARATION AND CONCRETE PLACEMENT	SOYD	2,351	1,601	3,951
496 0160	POLYMER CONCRETE AGGREGATE	POUND	165,277	112,559	277,836
496 0170	POLYMER CONCRETE RESIN	POUND	23,139	15,758	38,897
502 0360	CONCRETE BRIDGE DECK REPAIR	FA	1	1	1
502 0380	CONCRETE SUPERSTRUCTURE REPAIR	FA	1	1	1
502 0450	SEISMIC RETROFIT OF COLUMNS	LS	1	1	1
502 0881	CLASS DA CONCRETE, MODIFIED (MAJOR) (STRUCTURES)	CUYD	355	163	518
502 1010	CLASS EA CONCRETE, MODIFIED (MAJOR)	CUYD	695	365	1,060
502 1950	BRIDGE DECK CURING COMPOUND	GAL	162	112	274
502 2000	PREFORMED JOINT FILLER (2-INCH)	LINFT	387	275	662
503 0480	66-FOOT PRECAST CONCRETE MEMBERS	EACH	18	8	26
505 0100	REINFORCING STEEL	POUND	91,651	43,845	135,496
505 0120	REINFORCING STEEL (EPOXY COATED)	POUND	199,717	100,078	299,795
505 0130	REINFORCING STEEL (EPOXY COATED) (DOWELED)	POUND	280	93	373
506 0110	STRUCTURAL STEEL	POUND	41,175	28,913	70,088
509 0170	DRILLED SHAFT FOUNDATION (60-INCH)	LINFT	480	240	720

## ABBREVIATIONS

Alt.	Alternate
Brg.	Bearing
Bot.	Bottom
C.G.	Center of Gravity
C.G.S.	Center of Gravity of Steel
CIP	Cast In Place
Clr.	Clear
CMP	Corrugated Metal Pipe
Col.	Column
Const. Jt.	Construction Joint
Dbl.	Double
Dia.	Diameter
Dim.	Dimension
Ea.	Each
E.F.	Each Face
Elev.	Elevation
EQ. Spa.	Equal Space
E.S.	Each Side
Exp.	Expansion
Ext.	Existing/Exterior
E.W.	Each Way
F.F.	Far Face
Fix.	Fixed
Galv.	Galvanized
I.D.	Inner Diameter
Int.	Interior/Intermediate
Jt.	Joint
LOL	Layout Line
Max.	Maximum
Min.	Minimum
N.F.	Near Face
O.D.	Outer Diameter
Opt.	Optional
P.G.	Profile Grade
Pr.	Pair
P.S.	Prestressing
PT	Post-Tensioning
Sect.	Section
Shld.	Shoulder
Spa.	Space
Spa. Var.	Spacing Varies
Sq.	Square
Typ.	Typical

## STANDARD BAR LAPS

Bar Size	Uncoated (in)	Epoxy Coated (in)
#4	20	24
#5	24	30
#6	30	34
#7	38	45
#8	48	57
#9	60	72
#10	74	88
#11	90	108

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

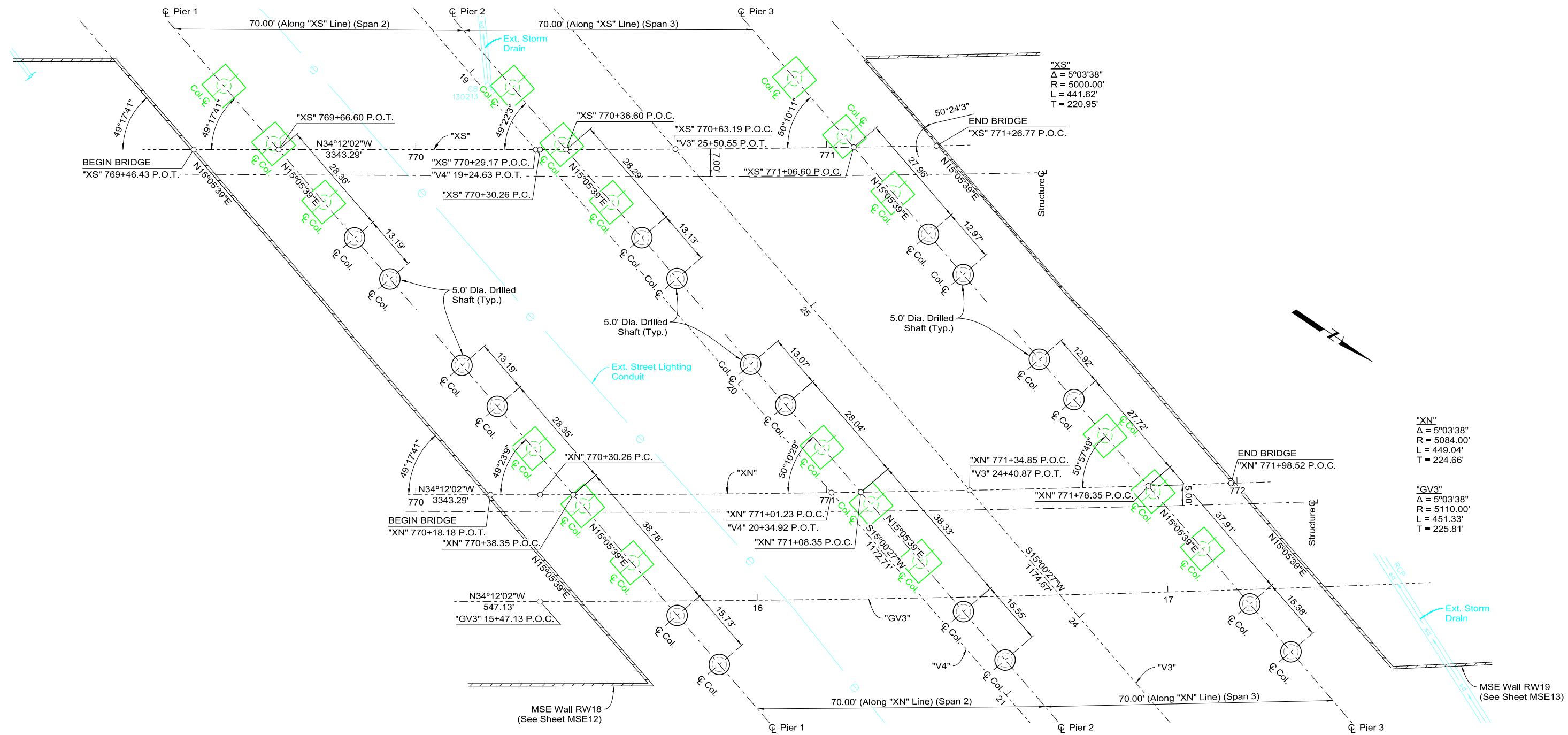
## GENERAL NOTES AND QUANTITIES

I-1093 N&S



STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B203

\*\* - All utility locations are approximate and are for coordination purposes only. All utilities are to be field located prior to start of construction and protected in place unless noted otherwise in plans.



**GEOMETRICS**

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

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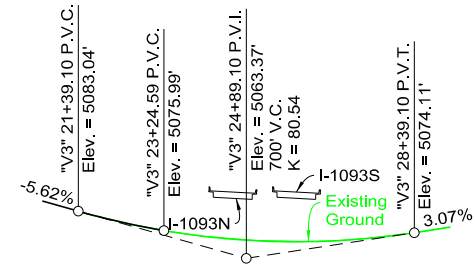
**GEOMETRICS**

I-1093 N&S

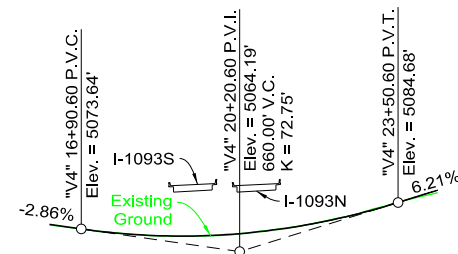
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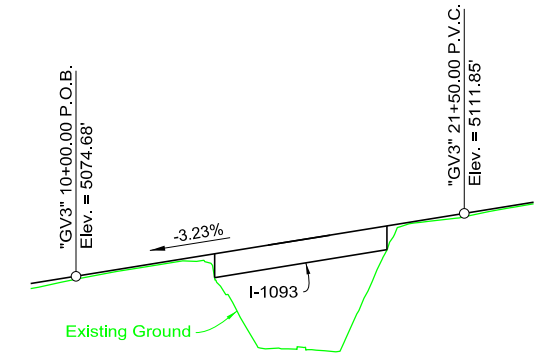
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NEVADA	NHP-0191(104)	WASHOE	B204



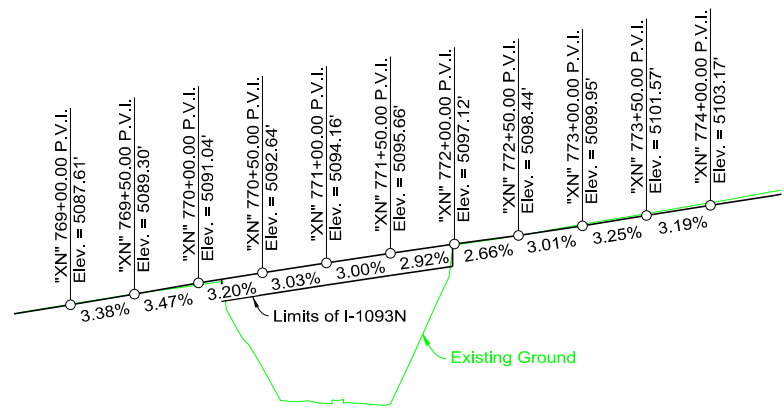
**"V3" PROFILE**



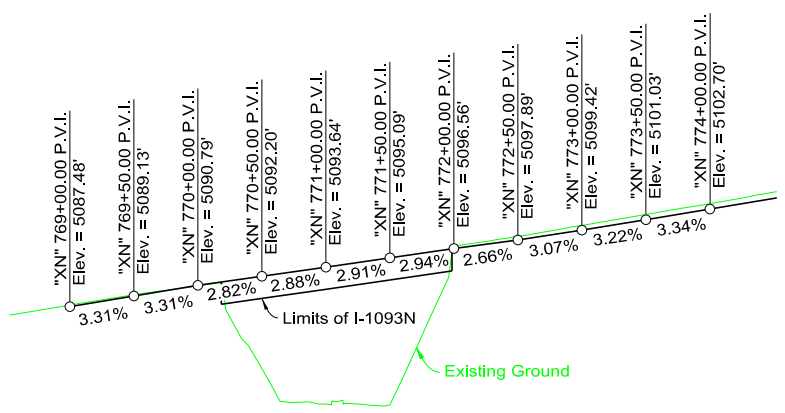
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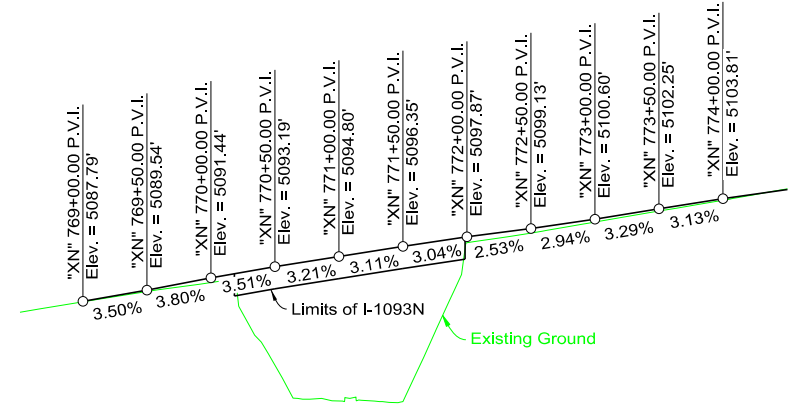
**"GV3" PROFILE**



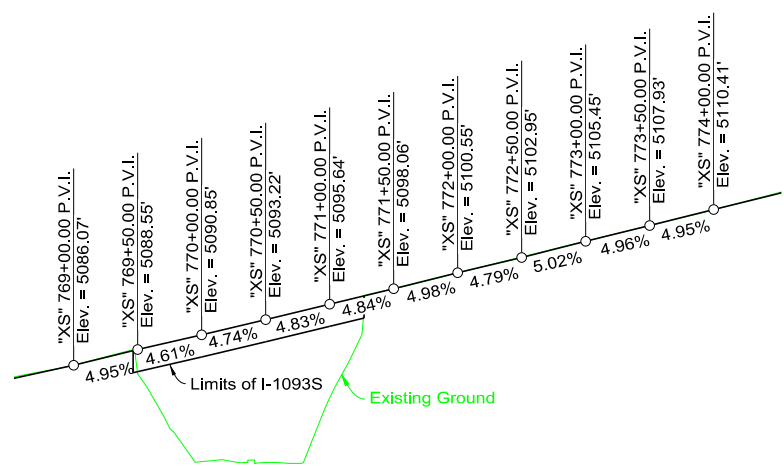
**"XN" PROFILE**



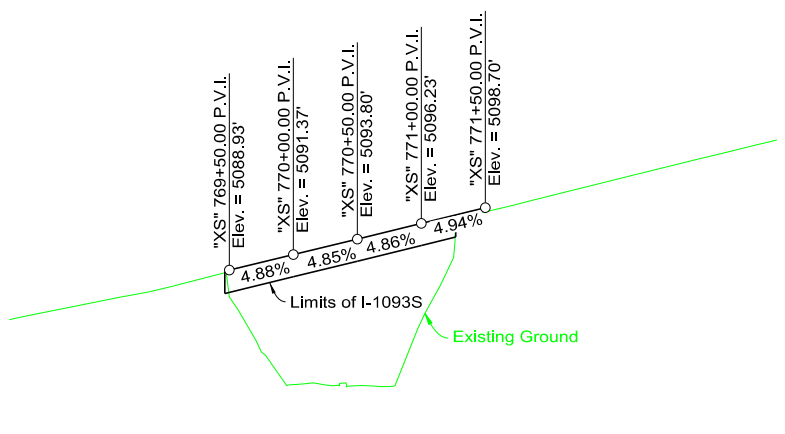
**"XN" PROFILE, 17.08' LEFT**



**"XN" PROFILE, 21.08' RIGHT**



**"XS" PROFILE**



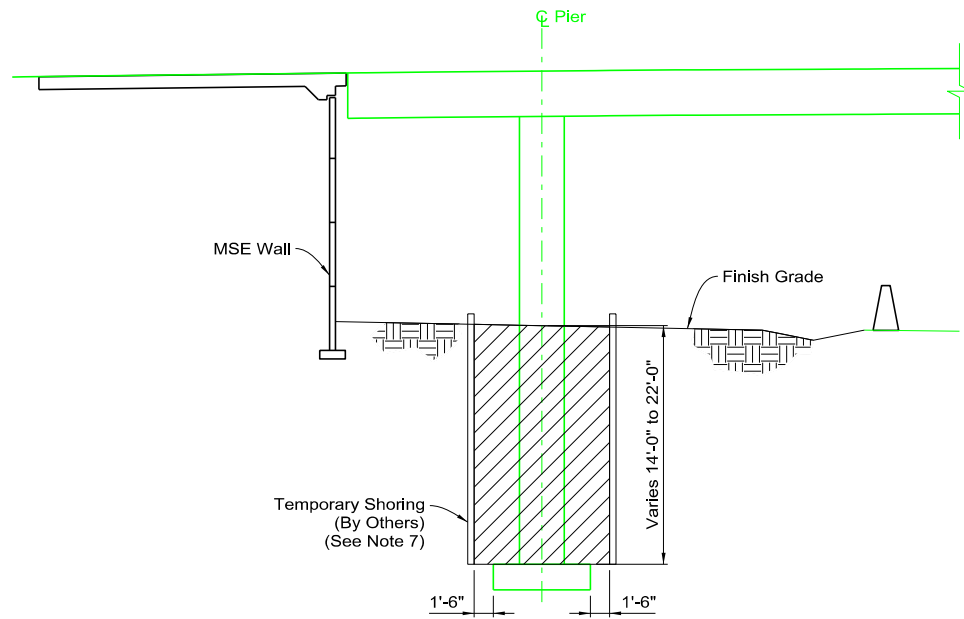
**"XS" PROFILE, 17.08' RIGHT**

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

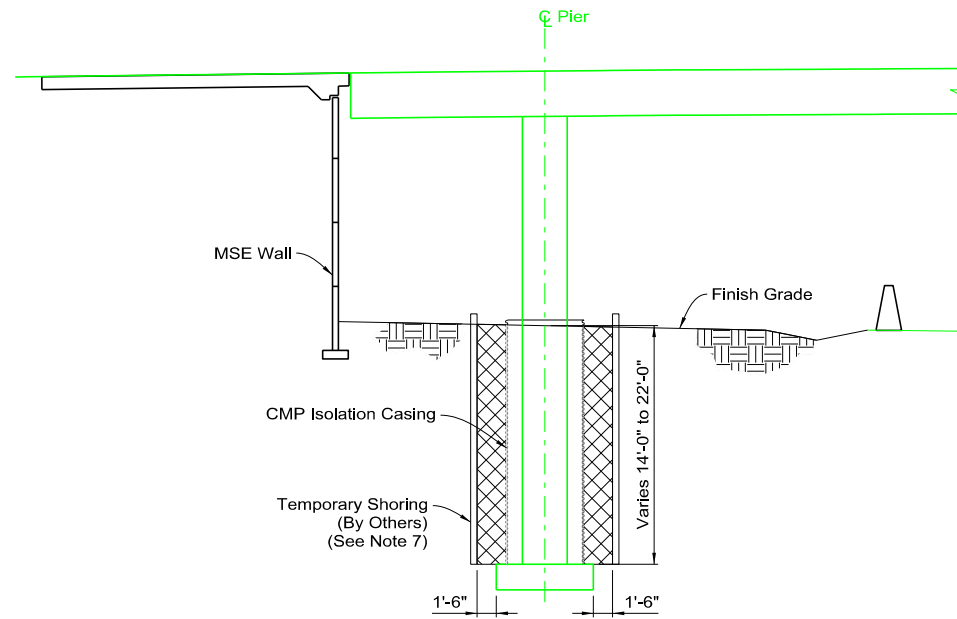
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**VERTICAL PROFILES**

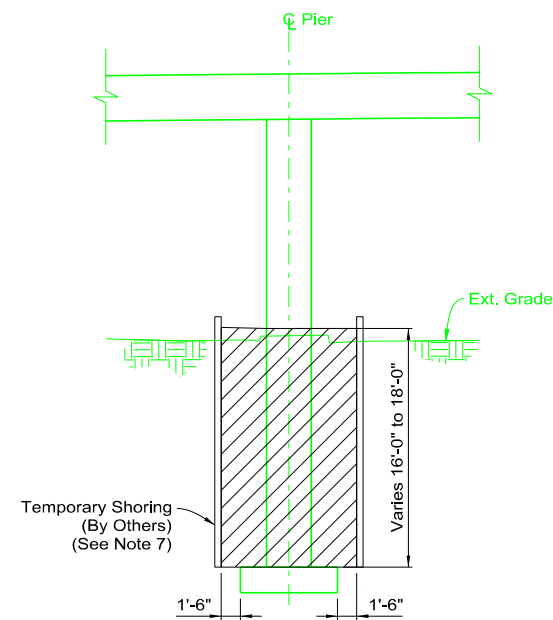
**I-1093 N&S**



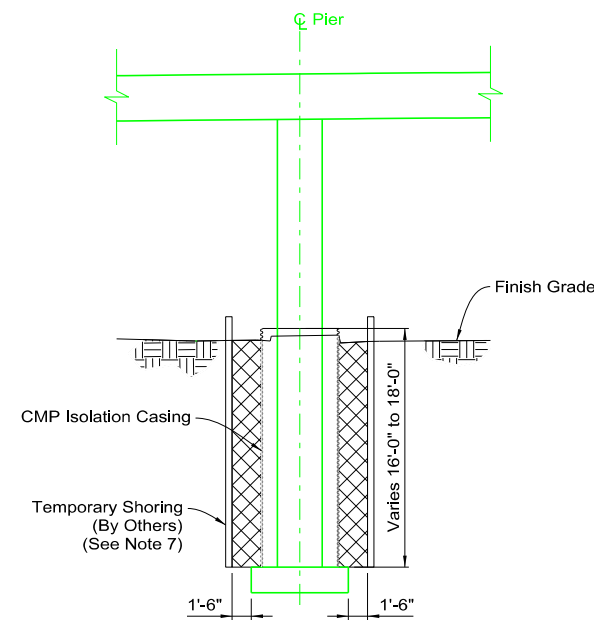
**COLUMN EXCAVATION SCHEMATIC**  
PIER 1 & 3  
(Existing Columns Only)



**COLUMN BACKFILL SCHEMATIC**  
PIER 1 & 3  
(Existing Columns Only)



**COLUMN EXCAVATION SCHEMATIC**  
PIER 2  
(Existing Columns Only)



**COLUMN BACKFILL SCHEMATIC**  
PIER 2  
(Existing Columns Only)



**NOTES**

1. Trenches more than 4'-0" deep shall be shored, laid back to at least the angle of repose for existing field conditions, or some other means of protection shall be provided.
2. If hazardous field conditions indicate ground movement may be expected, trenches less than 4'-0" deep shall also be protected as indicated in Note 1.
3. For the purpose of payment, structure excavation and backfill quantities are based on these drawings and no additional payment will be made for shoring.
4. Trench excavation shoring shall conform to OSHA Regulations 29 CFR Part 1926, Subpart P.
5. The quantity of structure excavation and backfill measured for payment shall be the number of cubic yards calculated minus any duplication of limits which overlap.
6. The limits of structure excavation and backfill shown herein shall be used for the method of measurement and payment only. There shall be no additional compensation for any additional excavation or backfill required for excavations to meet OSHA regulations.
7. All temporary shoring will be the responsibility of the Contractor. Submit plans, working drawings, and calculations for temporary shoring for approval. The shoring plans and calculations shall be prepared and stamped by a Professional Engineer registered in the State of Nevada.
8. Excavatable slurry (Class A) may be used in lieu of granular backfill around existing columns at no additional cost to the Department. 28-day compressive strength shall be limited to 100 psi. See subsection 207.02.02 of the Standard Specifications for requirements.

**EARTHWORK SUMMARY**

Quantity (Cu. Yd.)	Pier 1	Pier 2	Pier 3
NB Structure Excavation	191	168	151
NB Granular Backfill	151	134	120
SB Structure Excavation	211	173	143
SB Granular Backfill	168	138	113

**LEGEND**

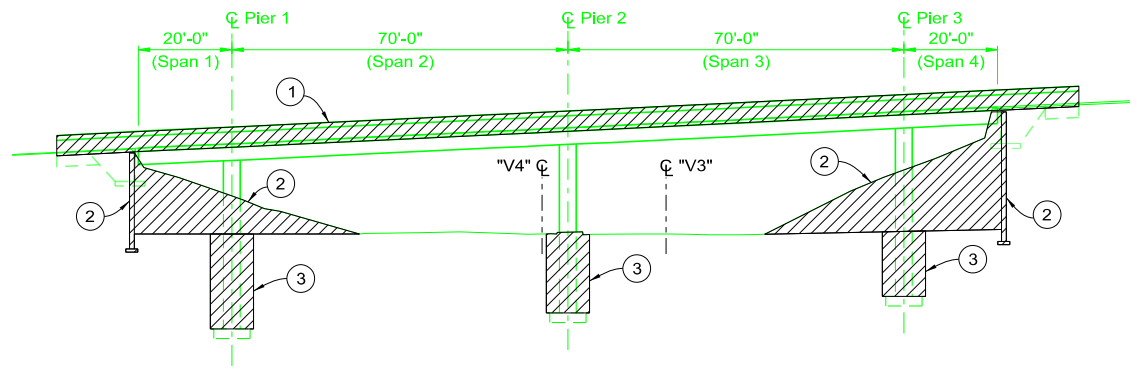
-  Structure Excavation
-  Granular Backfill

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**EXCAVATION  
AND  
BACKFILL**

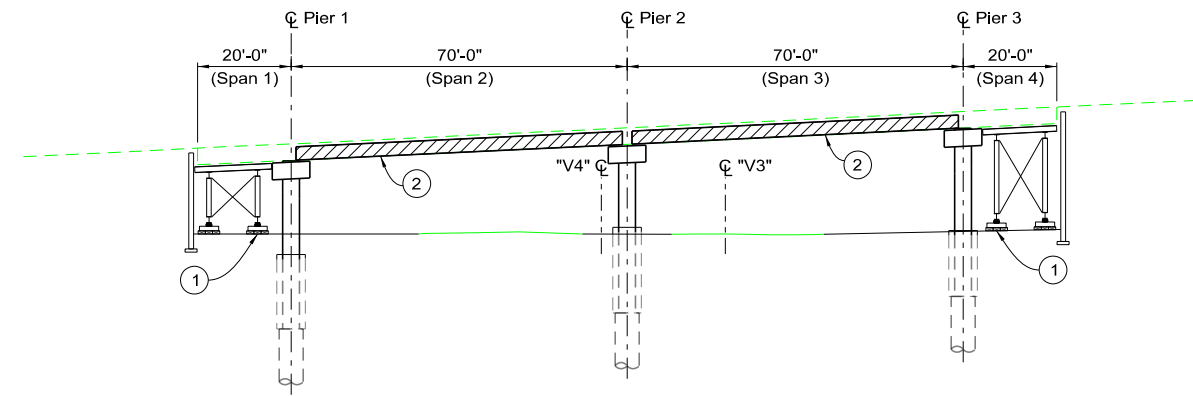
I-1093 N&S

STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B206



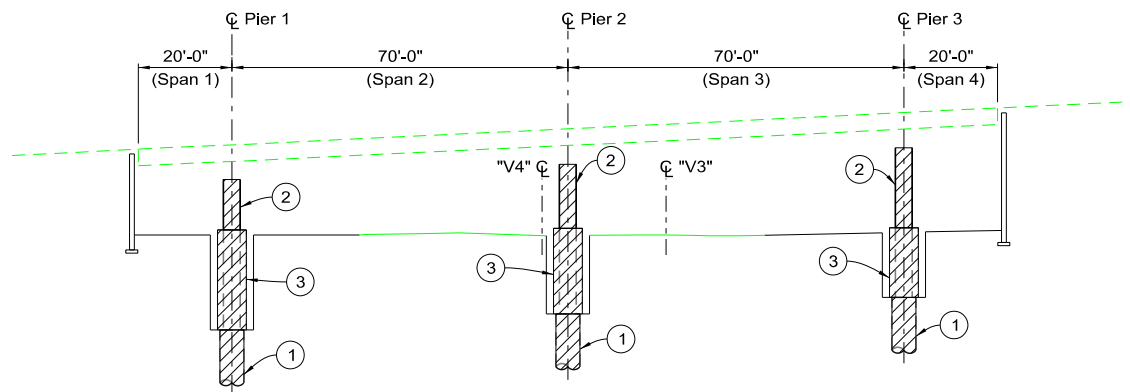
### STAGE 1

1. Remove barrier rail and overhang from existing structure. See Sheet B207 for construction phasing and Sheet B208 for limits of removal.
2. Excavate fill slopes and construct MSE walls adjacent to Piers 1 & 3. See MSE Wall Sheets MSE03 and MSE04 for details.
3. Excavate soil adjacent to existing columns at Piers 1, 2, & 3 (see Sheet B205).



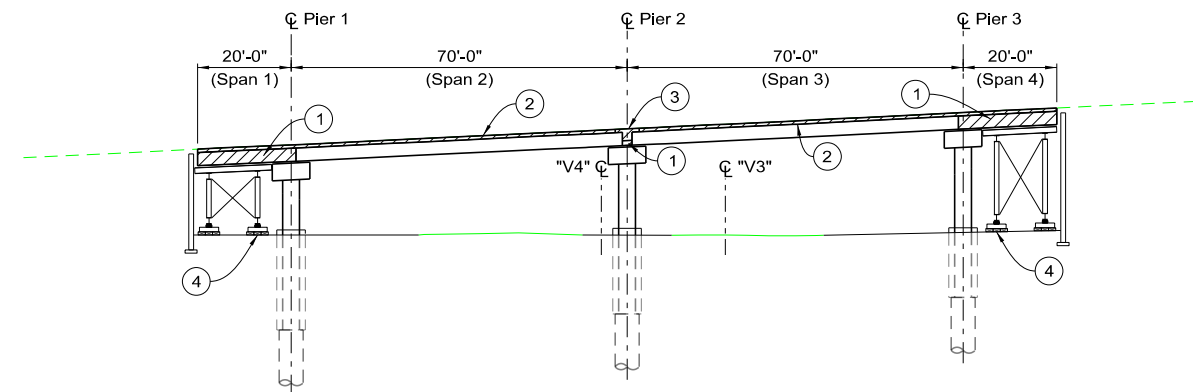
### STAGE 4

1. Erect falsework to support CIP Spans 1 & 4.
2. Erect precast girders at Spans 2 & 3.



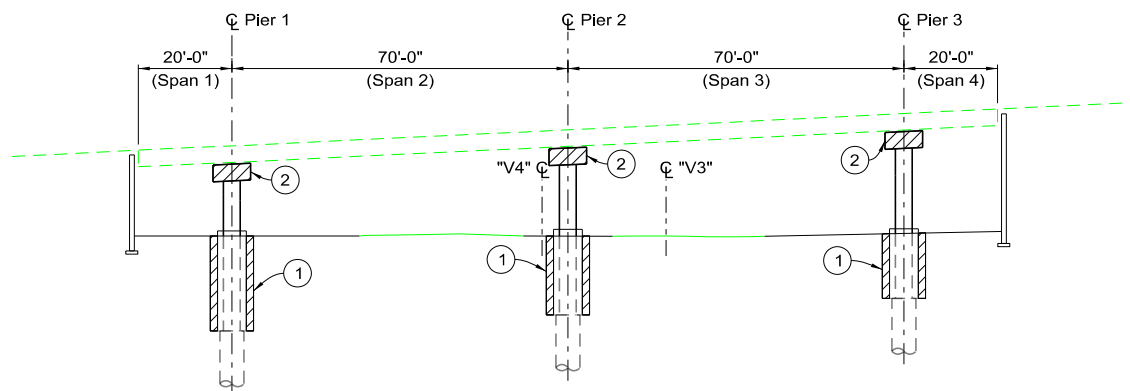
### STAGE 2

1. Construct drilled shaft foundations at Piers 1, 2, & 3.
2. Construct columns at Piers 1, 2, & 3.
3. Install isolation casings at existing and new columns at Piers 1, 2, & 3.



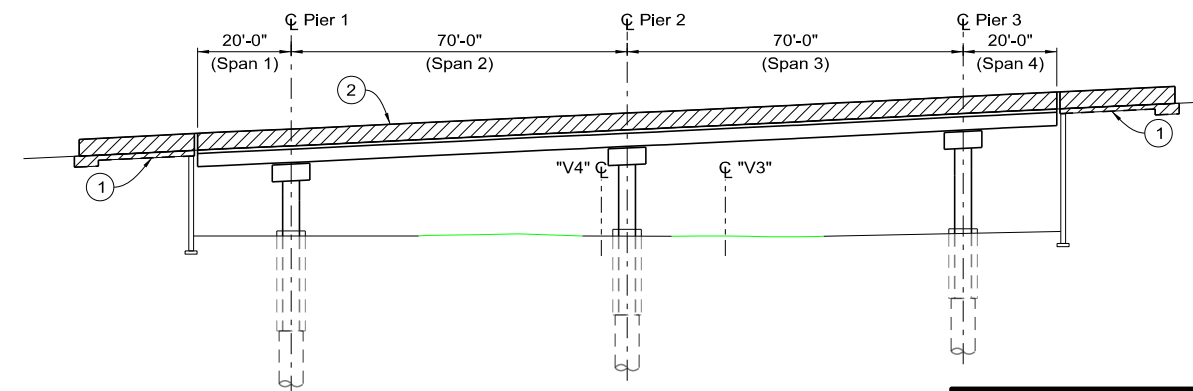
### STAGE 5

1. Construct CIP soffits, webs, and diaphragms for Spans 1 & 4 and partial diaphragm closure at Pier 2.
2. Construct CIP deck for all spans, excluding diaphragm closure at Pier 2.
3. Place diaphragm closure at Pier 2 after CIP deck curing is complete but no sooner than 10 days after CIP deck concrete placement.
4. Remove falsework per the requirements of 502.03.12 of the Standard Specifications.



### STAGE 3

1. Backfill soil adjacent to Piers 1, 2, & 3.
2. Construct pier caps at Piers 1, 2, & 3.




### STAGE 6

1. Construct approach slabs at Begin and End Bridge.
2. Construct bridge rail.
3. Construct deck closure pour; wait a minimum of 30 days after release of falsework before placing closure pour. For closure reinforcing, see typical sections on Sheets B219 - B220.

#### NOTES:

1. Refer to Section 108.04, Limitations of Operations, of the Special Provisions for requirements related to maintenance of traffic.

#### LEGEND

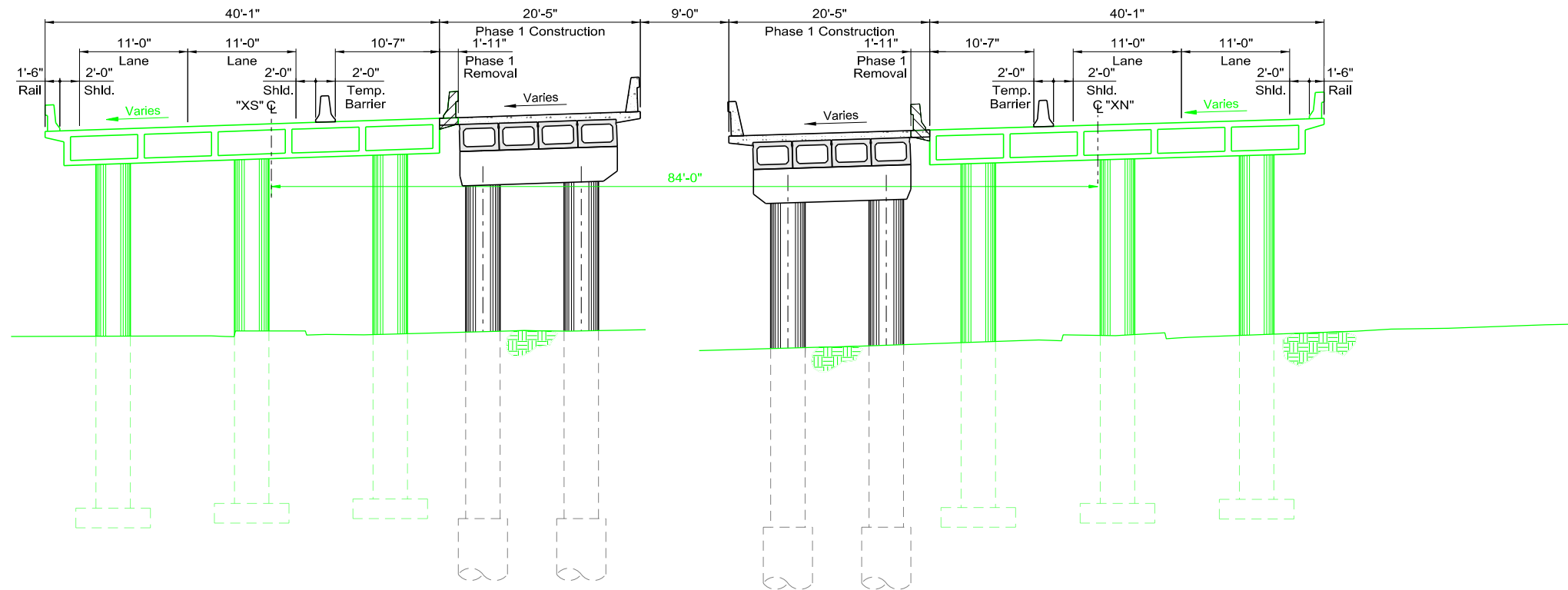
 To be constructed this stage

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

## BRIDGE CONSTRUCTION SEQUENCE

I-1093 N&S



STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B207



**SECTION - PHASE 1**

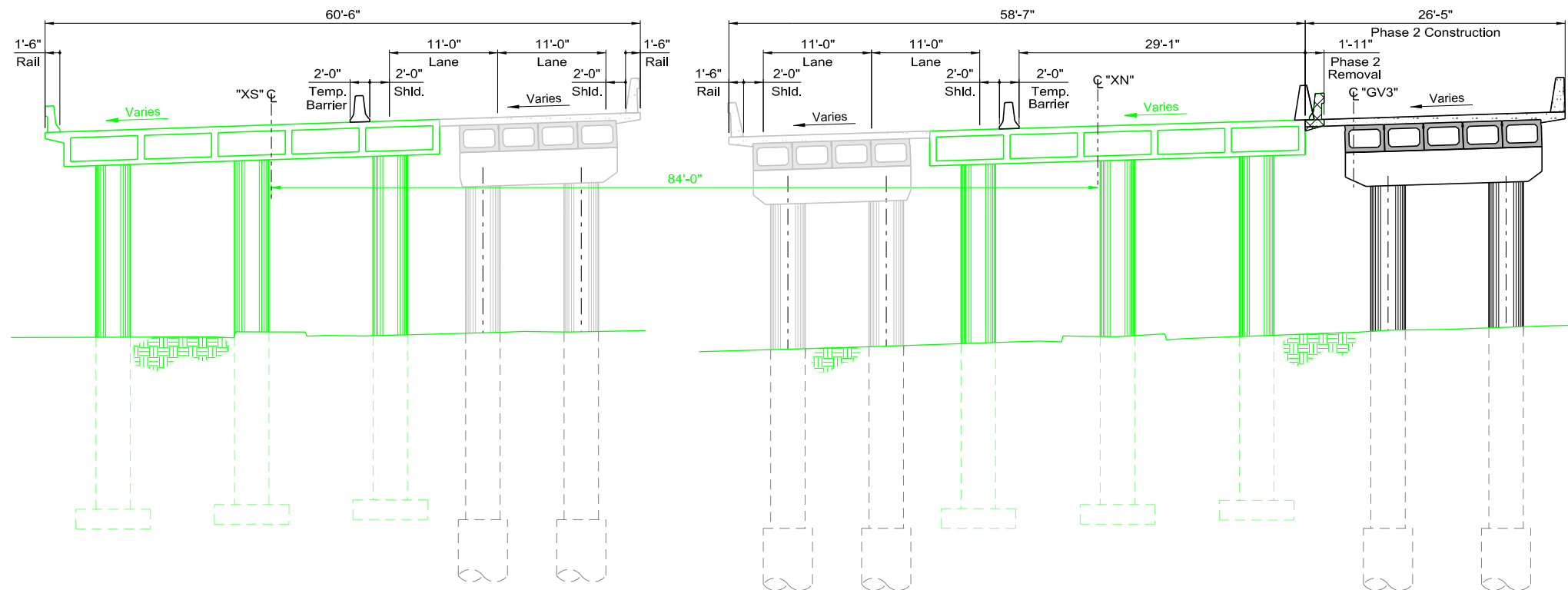
LOOKING AHEAD ON LINE  
NORMAL TO ALIGNMENT

**LEGEND**

-  Phase 1 - Limits of Removal
-  Phase 2 - Limits of Removal

**NOTES**

1. Phasing shown is conceptual. Refer to Traffic Control plans and Contract Special Provisions for limitations and phasing requirements.
2. For phasing requirements to facilitate MSE wall construction, see Retaining Wall plans.



**SECTION - PHASE 2**

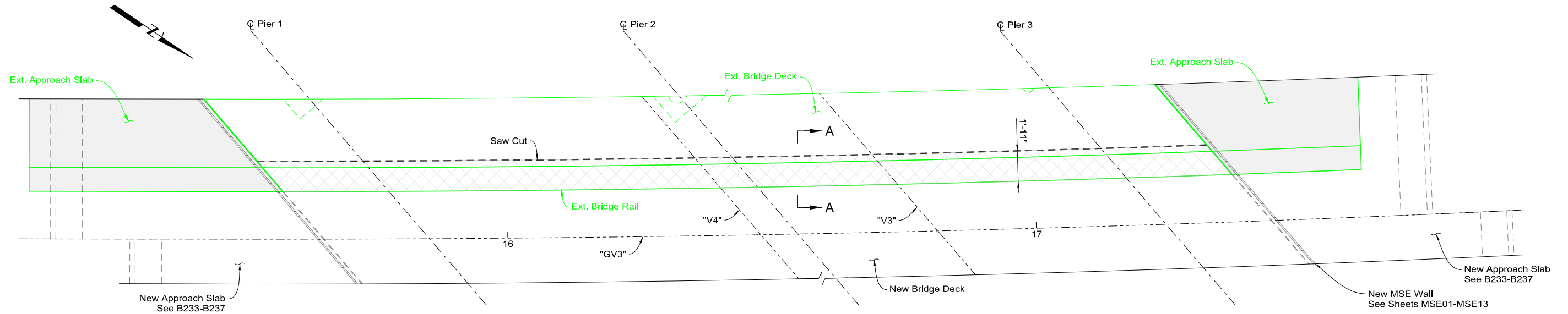
LOOKING AHEAD ON LINE  
NORMAL TO ALIGNMENT

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

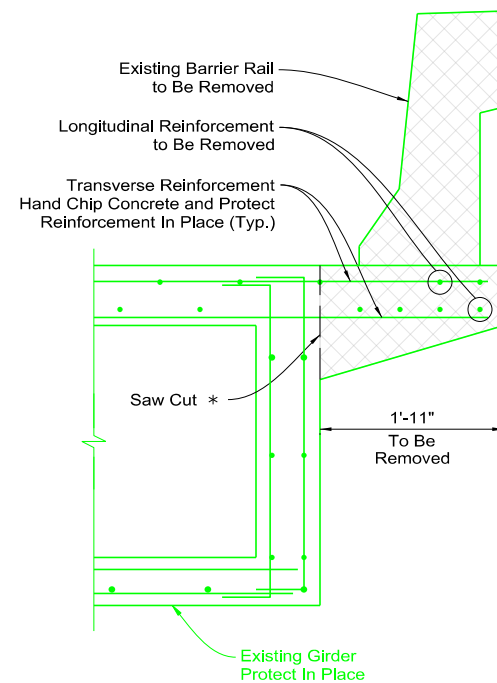
**BRIDGE  
CONSTRUCTION  
PHASES 1 & 2**

I-1093 N&S

STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B208





**DECK REMOVAL PLAN**  
 EAST SIDE OF NORTHBOUND STRUCTURE SHOWN.  
 OTHER DECK REMOVALS SIMILAR



**SECTION A-A**  
 OVER SUPERSTRUCTURE

\* - Saw cut top and bottom to 1" max depth. Existing reinforcing to remain in place and undamaged.

**LEGEND**

-  Limits of Bridge Deck and Bridge Rail Removal
-  Approach Slab and Rail Removal See MSE Wall Sheets

**NOTES**

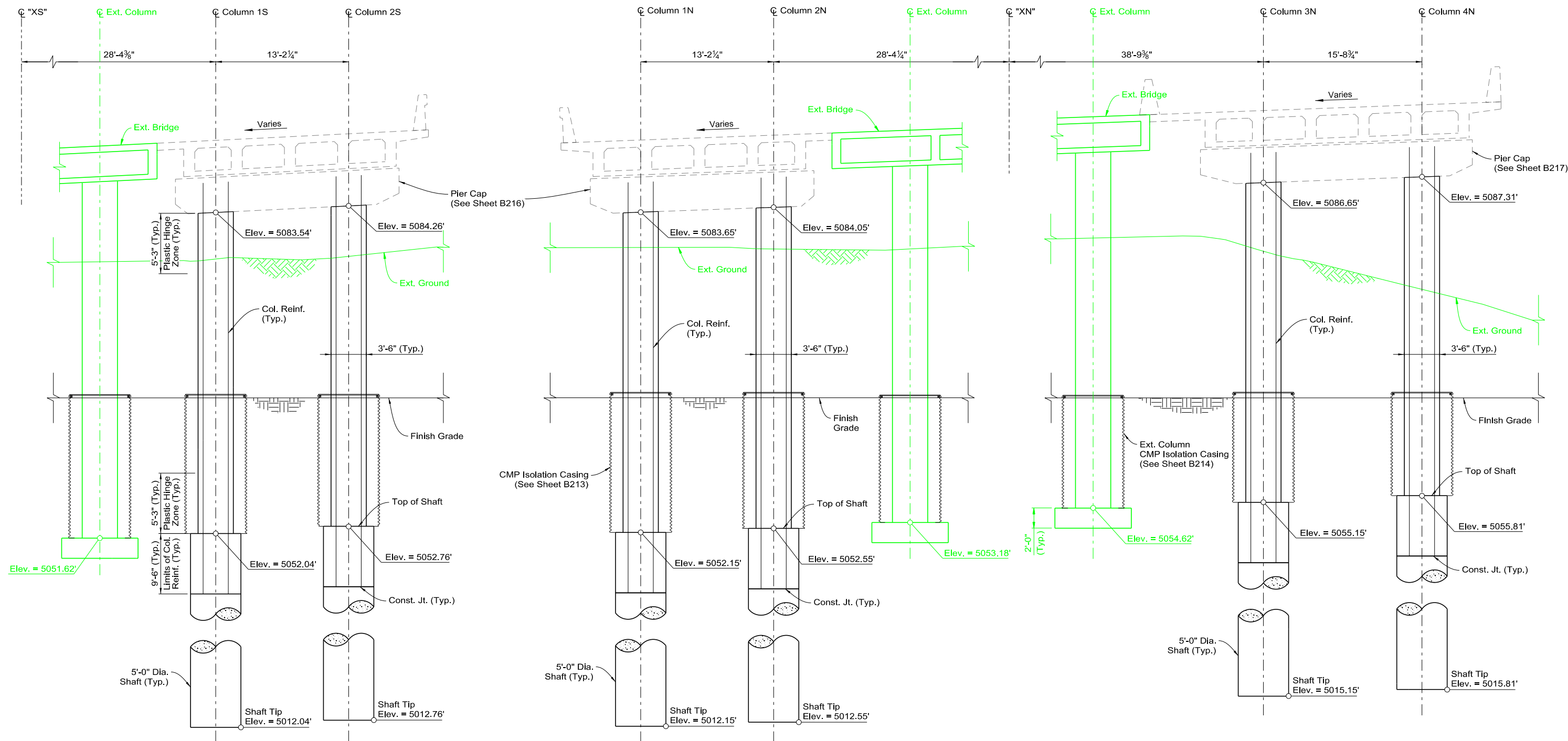
1. Protect reinforcing steel that is to remain during concrete removal. Sand blast clean all existing reinforcing steel exposed after concrete removal operations. Notify Engineer if reinforcing to remain is damaged during removal.
2. Dimensions of existing elements shown are based on as built plans unless otherwise noted. Actual field dimensions may vary, no additional compensation will be made for removal of elements with dimensions inconsistent with those shown herein.

STATE OF NEVADA  
 DEPARTMENT OF TRANSPORTATION

**REMOVAL  
 DETAILS**

I-1093 N&S

STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B209



**ELEVATION PIER 1**  
LOOKING AHEAD ON LINE  
ALONG SKEW

**NOTES**

1. Elevations noted taken through centerline of shaft/column.
2. Lap splices in longitudinal column reinforcing not permitted.
3. For pier cap details, see Sheet B218.
4. For column/shaft details not shown, see Sheet B212.

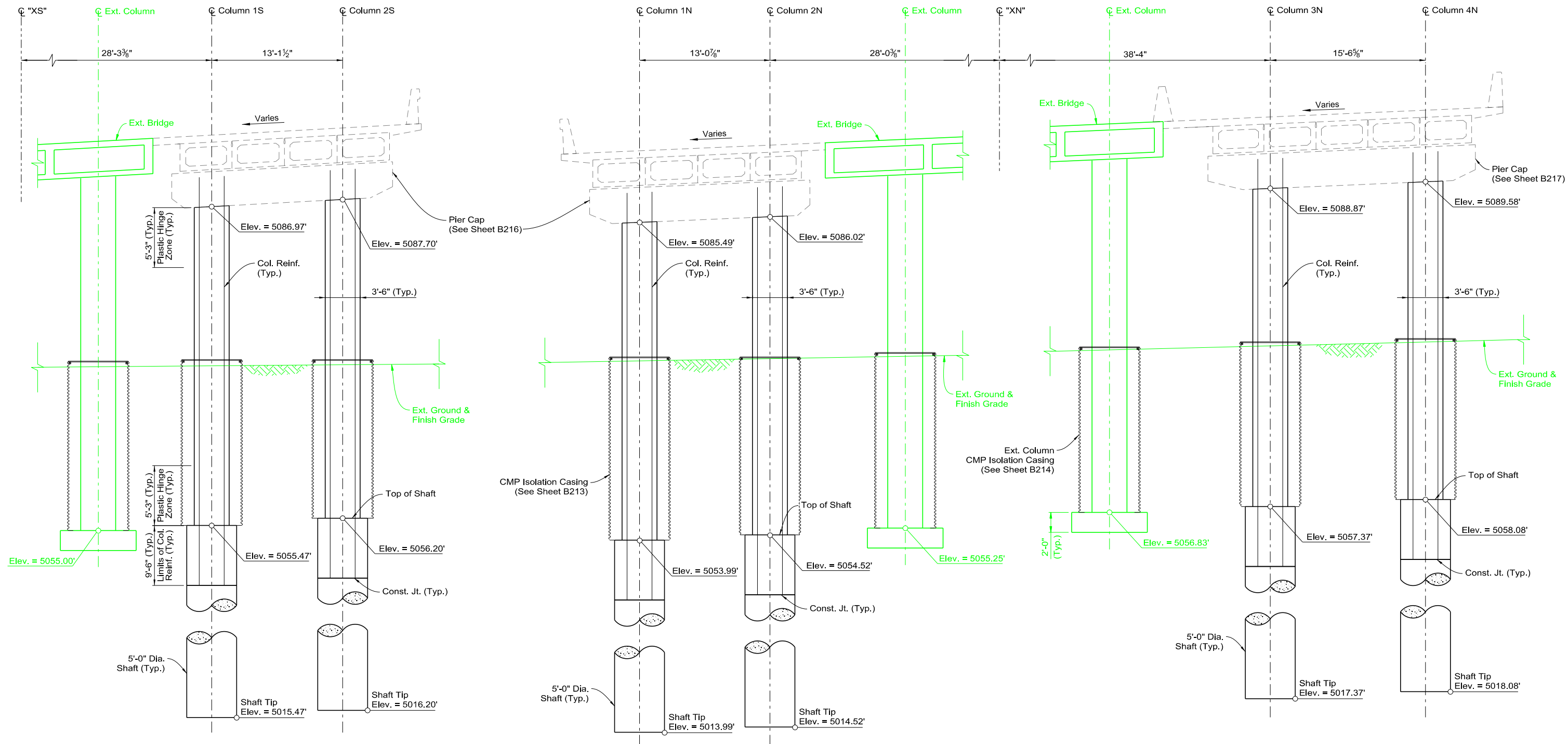
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**PIER 1 ELEVATION**

I-1093 N&S

DATE : 1/26/2023

STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B210



**ELEVATION PIER 2**  
LOOKING AHEAD ON LINE  
ALONG SKEW

**NOTES**

1. Elevations noted taken through centerline of shaft/column.
2. Lap splices in longitudinal column reinforcing not permitted.
3. For pier cap details, see Sheet B218.
4. For column/shaft details not shown, see Sheet B212.

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

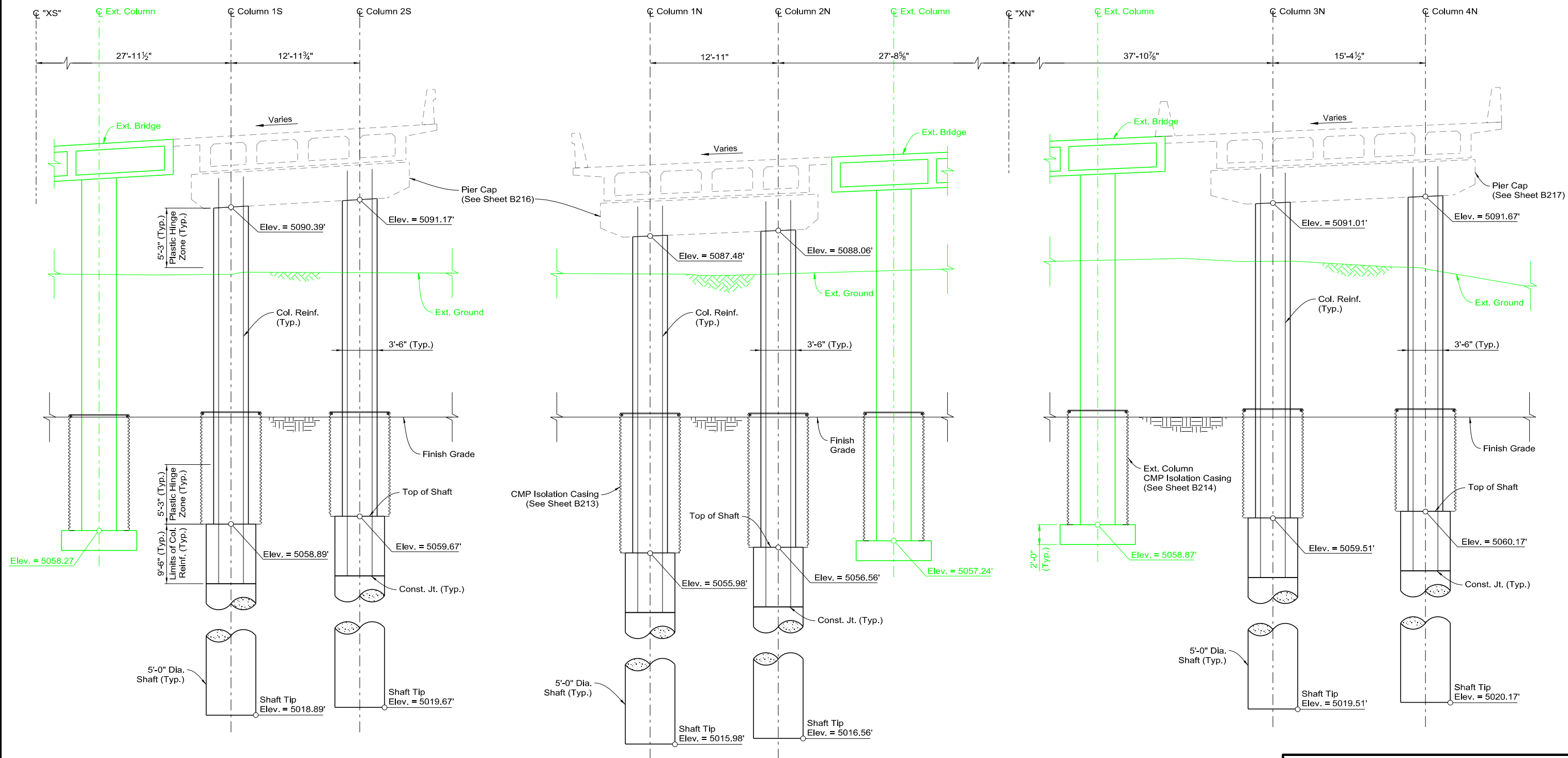
**PIER 2 ELEVATION**

I-1093 N&S

DATE : 1/26/2023



STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B211



**ELEVATION PIER 3**  
LOOKING AHEAD ON LINE  
ALONG SKEW

**NOTES**

1. Elevations noted taken through centerline of shaft/column.
2. Lap splices in longitudinal column reinforcing not permitted.
3. For pier cap details, see Sheet B218.
4. For column/shaft details not shown, see Sheet B212.

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

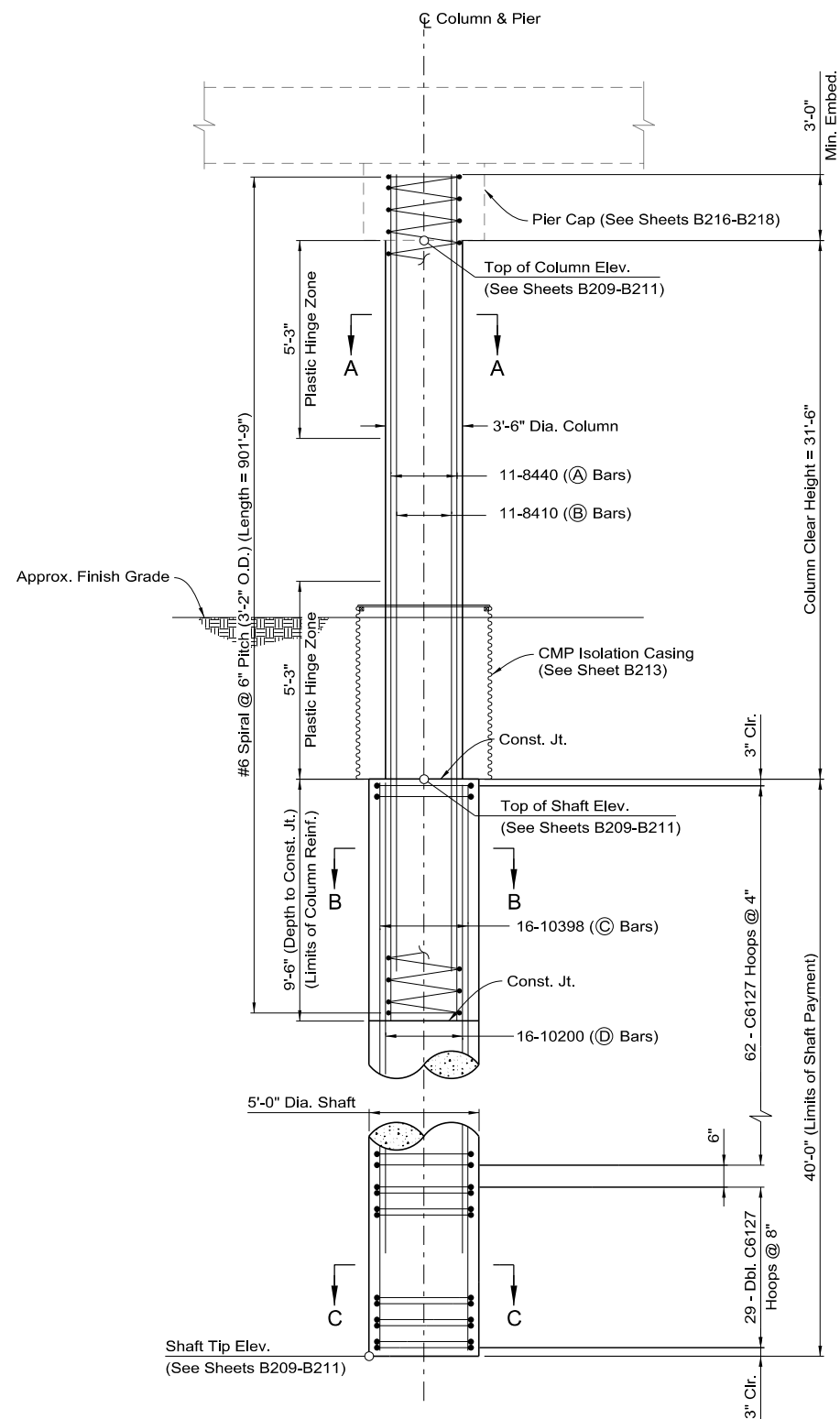
**PIER 3 ELEVATION**

I-1093 N&S

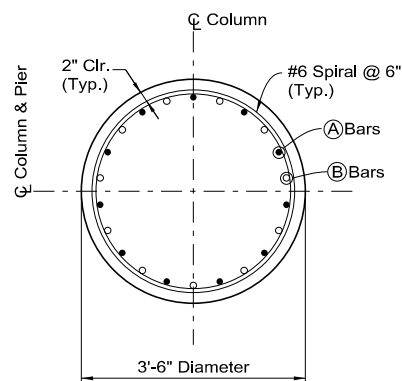
DATE : 1/26/2023



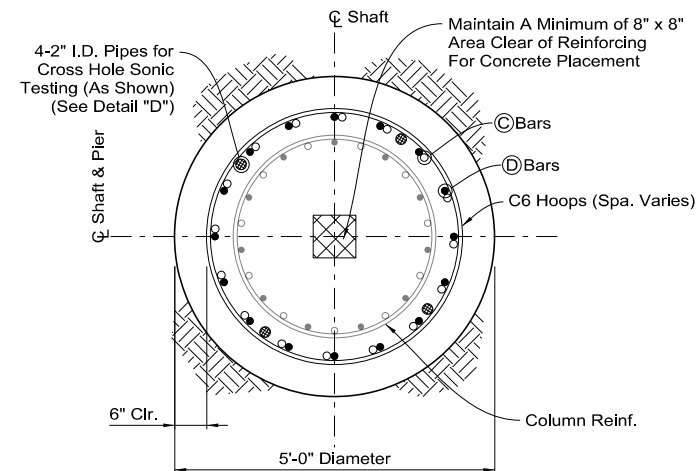
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B212



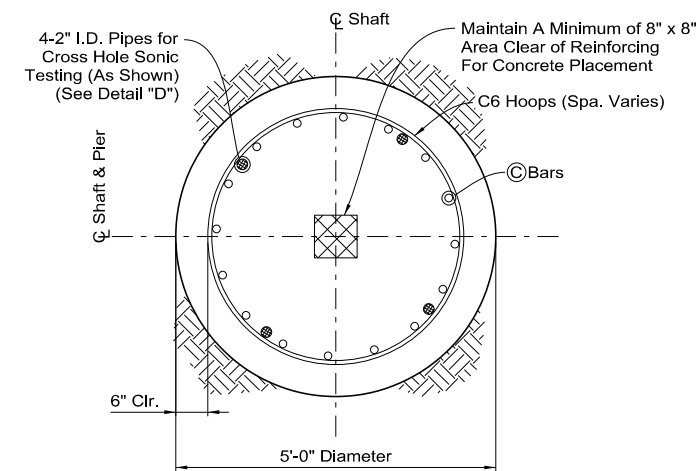
**ELEVATION**  
TYPICAL, ALL COLUMNS  
NORMAL TO SKEW



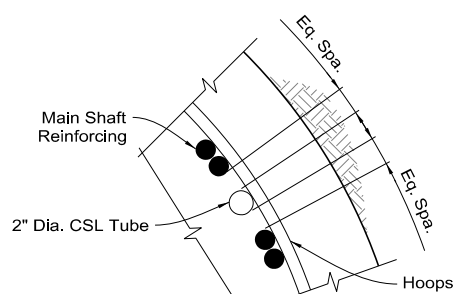
**SECTION A-A**  
TYPICAL COLUMN SECTION



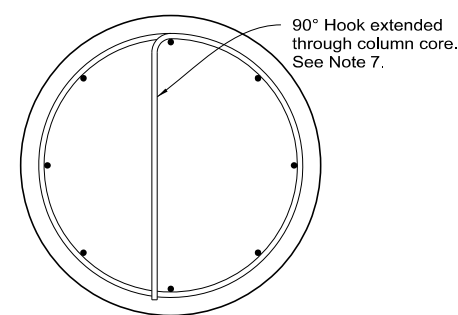
**SECTION B-B**  
TOP OF DRILLED SHAFT



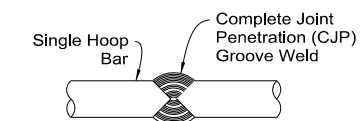
**SECTION C-C**  
BOTTOM OF DRILLED SHAFT



**DETAIL "D"**  
CSL TUBE DETAIL



**DETAIL "E"**  
SPIRAL TERMINATION

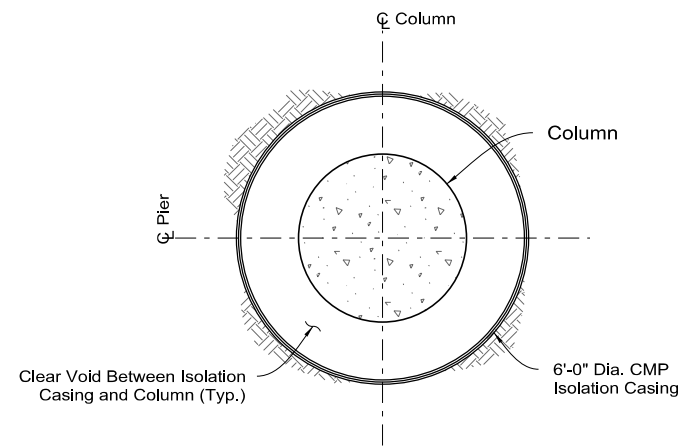


**BUTT WELDED  
CONTINUOUS HOOP**

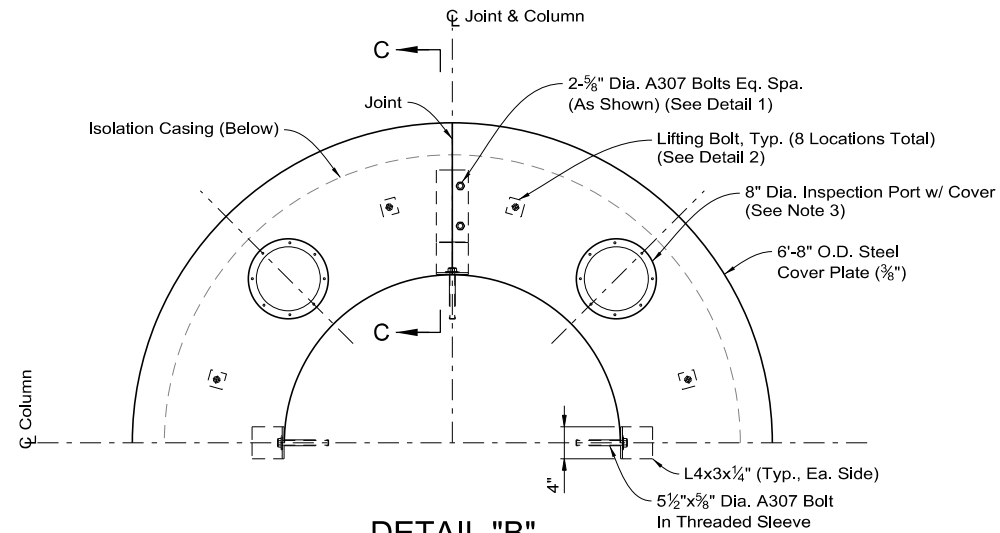
**NOTES**

- Elevations noted taken through centerline of shaft/column.
- Lap splices in longitudinal column reinforcing not permitted.
- Construction joints in column are not allowed in the upper and lower 6'-0" of the column length.
- For pier cap details, see Sheet B216-B218.
- Hoop reinforcing shall be butt welded with a Complete Joint Penetration Groove Weld (CJP) (see detail). Rotate location of butt welds a minimum of 90° between adjacent hoops/bundles. Where welded hoops are bundled, stagger butt welds within each bundle a minimum of 1'-0".
- Splicing of spiral reinforcing is not permitted within the designated plastic hinge regions. Spiral may be discontinuous at the bottom of pier cap. Spirals shall terminate with an extra turn with 1/2 the specified pitch in addition to a 90° hook around longitudinal reinforcing, extended through column core (See Detail "E").
- For aesthetic treatments to the columns, see Landscape & Aesthetic Plans.
- Lap splices in longitudinal shaft reinforcing not allowed except where noted. Mechanical couplers are not permissible in longitudinal shaft reinforcing.
- Roughen construction joints to 1/4" amplitude. Thoroughly clean the surface of debris and laitance.
- Concrete for drilled shafts shall be Class "S" conforming to Section 509 of the Standard Specifications.
- All shaft reinforcing included in the cost of Drilled Shaft Foundation.
- CSL tubes shall be installed per Detail "D". For additional CSL details and requirements, refer to Standard Specifications Section 509.03.14.

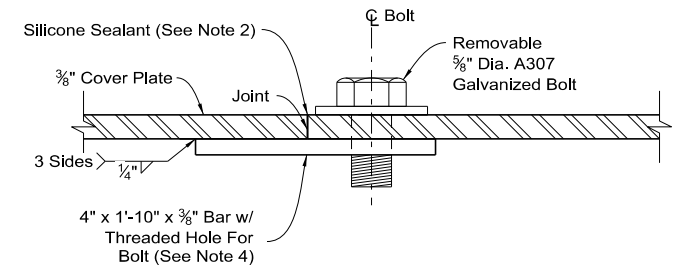
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION  
**COLUMN AND DRILLED  
SHAFT  
REINFORCING**  
I-1093 N&S



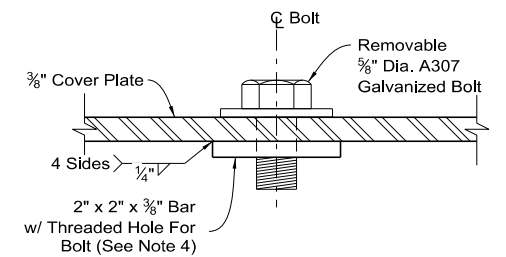
**SECTION A-A**



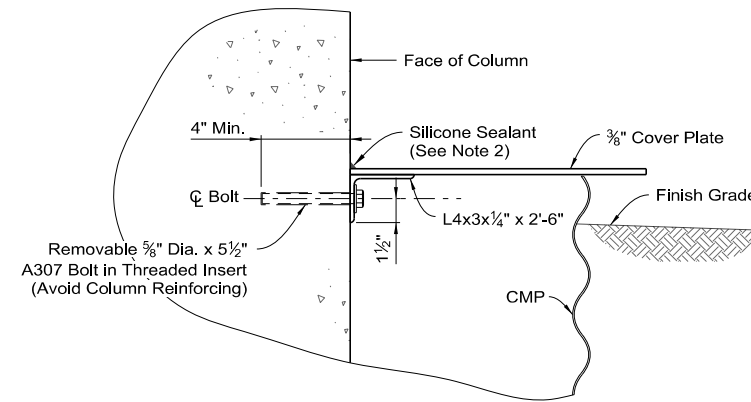
**DETAIL "B"**  
STEEL COVER PLATE PARTIAL PLAN



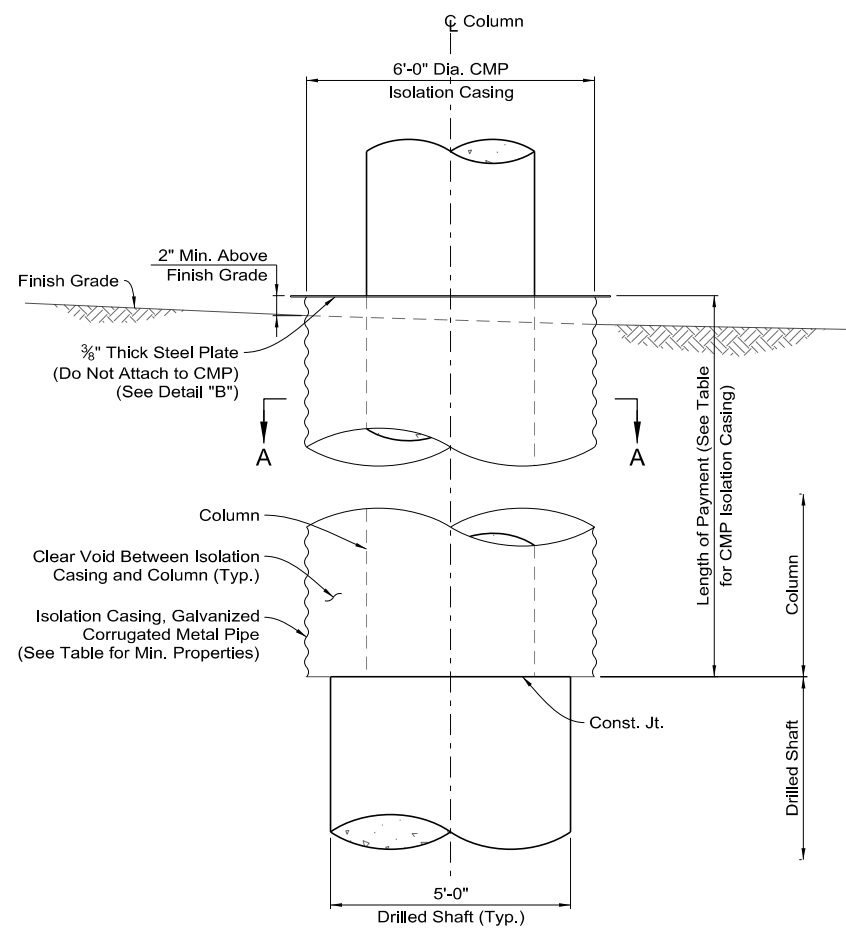
**DETAIL 1**



**DETAIL 2**



**SECTION C-C**



**ELEVATION**

**COVER PLATE NOTES**

- Steel material for cover plate assembly shall be AASHTO M270 Grade 36. Steel cover assembly shall be galvanized after fabrication.
- Fabricate removable steel cover assembly in two sections as shown. Seal joints and joint between column and cover plate with silicone sealant after installation.
- Provide 8" diameter opening in each quadrant of cover plate for inspection. Cover opening using 1/4" steel plate installed with removable screws or bolts. Provide continuous neoprene gasket around opening.
- Threaded holes to receive lifting bolts. Bolts are removable allowing attachment of hardware for lifting assemblies or the insertion of threaded eye bolt.

**MINIMUM CMP PROPERTIES**

Property	Dimension
Thickness	0.1090 in
Area	1.390 in <sup>2</sup> /ft
Radius of Gyration	0.3677 in
Moment of Inertia	0.0156 in <sup>4</sup> /in
Diameter	72 in

**DESIGN ISOLATION CASING LENGTHS**

I-1093N	Length		
	Pier 1	Pier 2	Pier 3
Col. 1N	20'-1"	18'-0"	16'-5"
Col. 2N	19'-11"	17'-8"	16'-1"
Col. 3N	18'-2"	16'-3"	14'-3"
Col. 4N	17'-9"	15'-11"	13'-10"

\* - See B209-B211 for new column locations

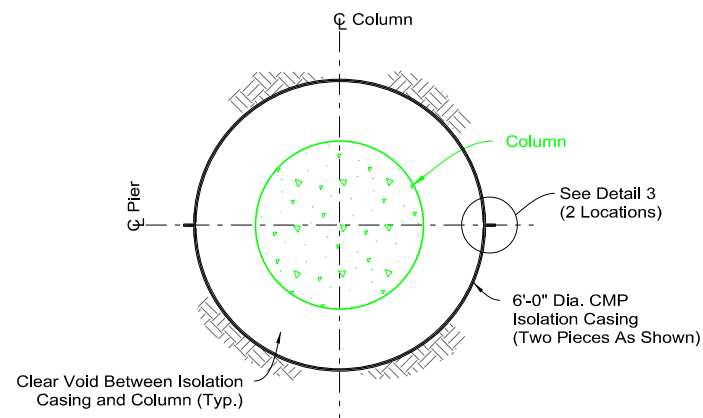
I-1093S	Length		
	Pier 1	Pier 2	Pier 3
Col. 1S	19'-10"	16'-1"	12'-11"
Col. 2S	19'-2"	15'-5"	12'-3"

**CASING NOTES**

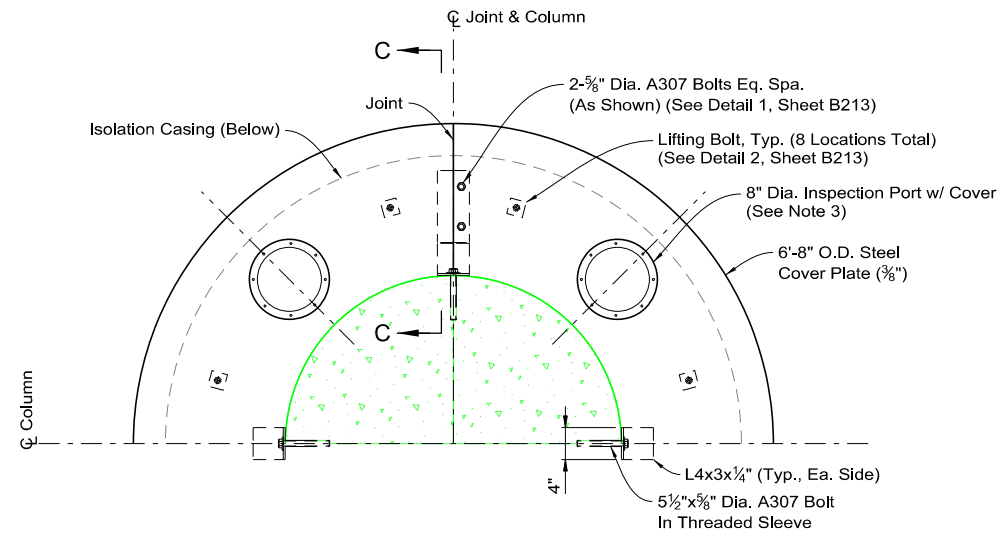
- Steel for isolation casing CMP shall be AASHTO M36. CMP shall be galvanized.
- Backfill shall be brought up uniformly around isolation casing.
- Isolation Casing and Top Plate shall be paid for under Bid Item 506 0110 "Structural Steel".
- All metal used in anchoring CMP to shaft shall be galvanized.

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

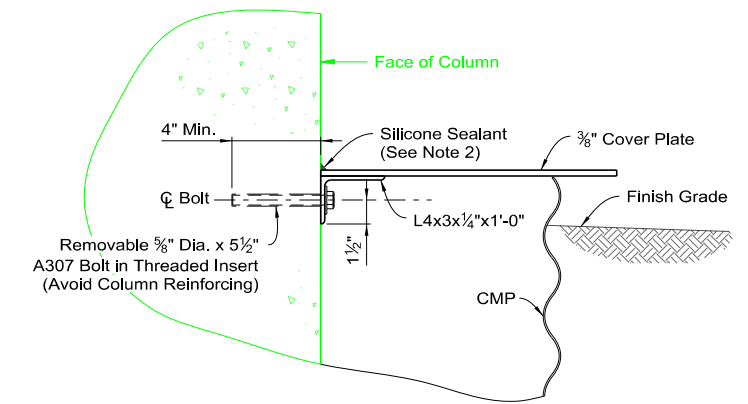
**ISOLATION CASING DETAILS**



SECTION A-A



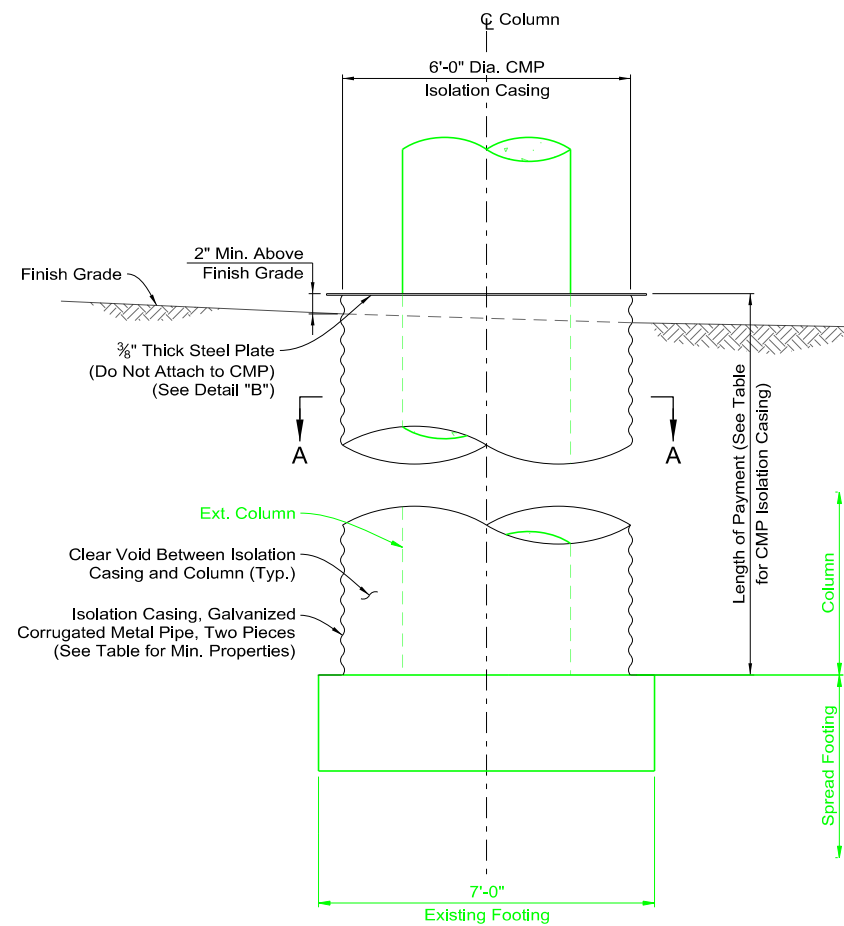
DETAIL "B"  
STEEL COVER PLATE PARTIAL PLAN



SECTION C-C

**COVER PLATE NOTES**

- Steel material for cover plate assembly shall be AASHTO M270 Grade 36. Steel cover assembly shall be galvanized after fabrication.
- Fabricate removable steel cover assembly in two sections as shown. Seal joints and joint between column and cover plate with silicone sealant after installation.
- Provide 8" diameter opening in each quadrant of cover plate for inspection. Cover opening using 1/4" steel plate installed with removable screws or bolts. Provide continuous neoprene gasket around opening.
- Threaded holes to receive lifting bolts. Bolts are removable allowing attachment of hardware for lifting assemblies or the insertion of threaded eye bolt.



ELEVATION

**MINIMUM CMP PROPERTIES**

Property	Dimension
Thickness	0.1090 in
Area	1.390 in <sup>2</sup> /ft
Radius of Gyration	0.3677 in
Moment of Inertia	0.0156 in <sup>4</sup> /in
Diameter	72 in

**DESIGN ISOLATION CASING LENGTHS**

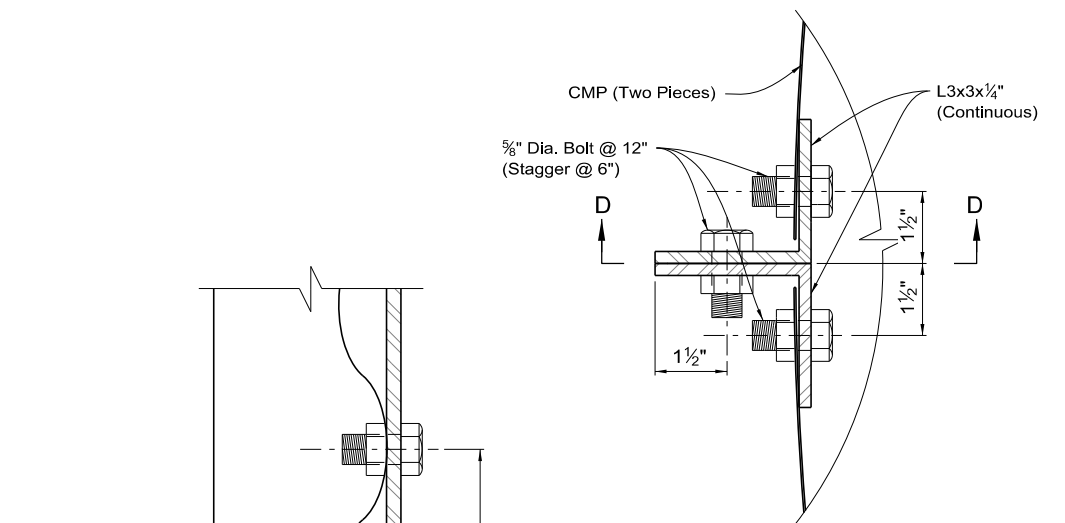
I-1093N	Length		
	Pier 1	Pier 2	Pier 3
Col. 1 Ext.	19'-5"	17'-2"	15'-7"
Col. 2 Ext.	19'-0"	16'-9"	15'-1"
Col. 3 Ext.	18'-6"	16'-5"	14'-6"

\* - See B215 for existing column locations

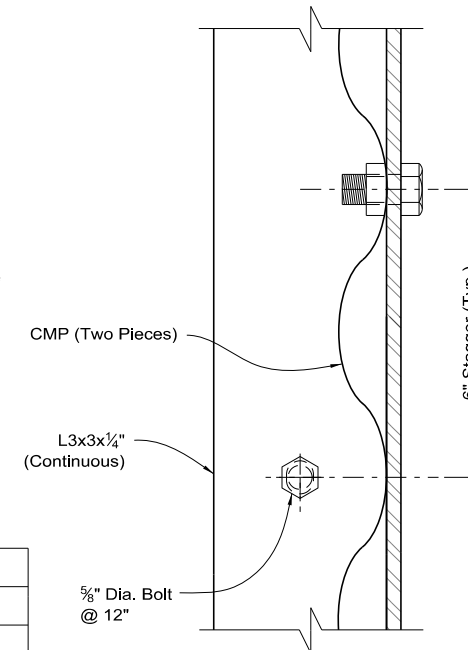
**CASING NOTES**

- Steel for isolation casing CMP shall be AASHTO M36. CMP shall be galvanized.
- Backfill shall be brought up uniformly around isolation casing.
- Isolation Casing and Top Plate shall be paid for under Bid Item 506 0110 "Structural Steel".
- All metal used in anchoring CMP to shaft shall be galvanized.

I-1093S	Length		
	Pier 1	Pier 2	Pier 3
Col. 1 Ext.	21'-10"	18'-0"	15'-1"
Col. 2 Ext.	21'-0"	17'-4"	14'-3"
Col. 3 Ext.	20'-2"	16'-5"	13'-4"



DETAIL 3



SECTION D-D

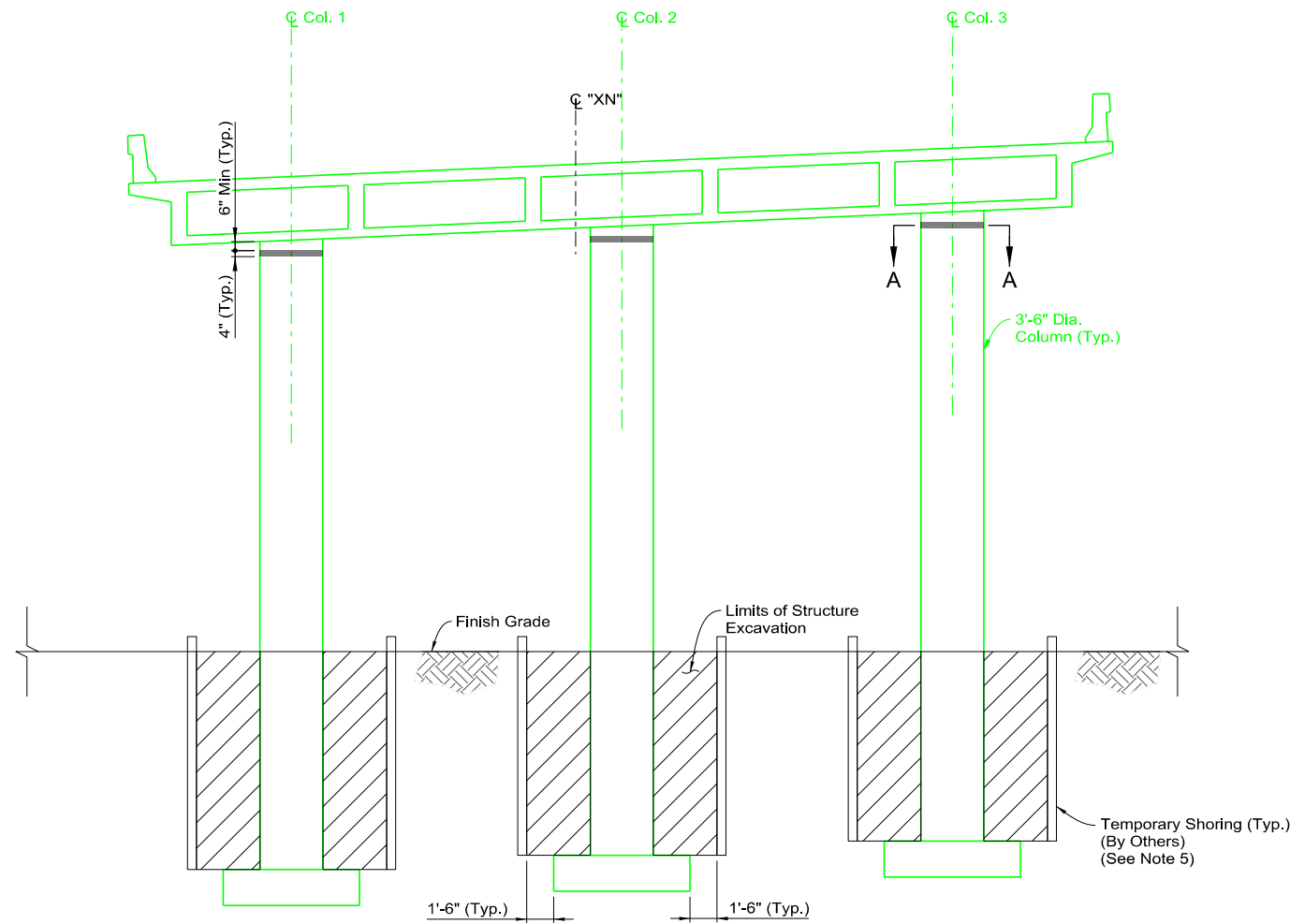
**CONNECTION ANGLE NOTES**

- Steel material for connection angles shall be AASHTO M270 Grade 36. Angles shall be galvanized after fabrication.
- Bolts shall be ASTM A307 bolts. Bolts shall be galvanized.

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

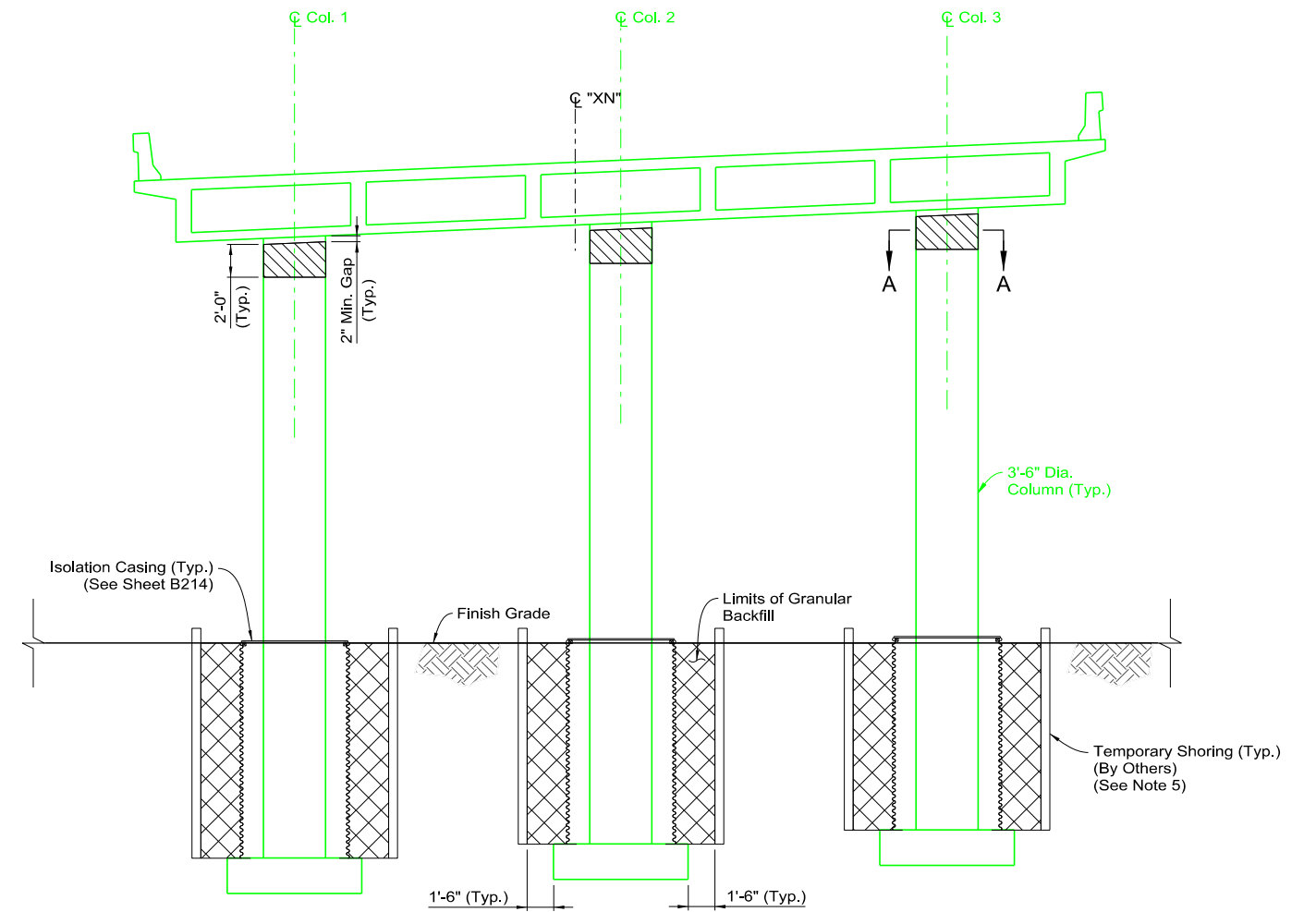
**ISOLATION CASING DETAILS**

STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B215



### TYPICAL PIER REMOVALS

LOOKING AHEAD ON LINE, ALONG SKEW  
(I-1093N Pier 1 Shown, All Other Piers Similar)



### FINAL CONDITION

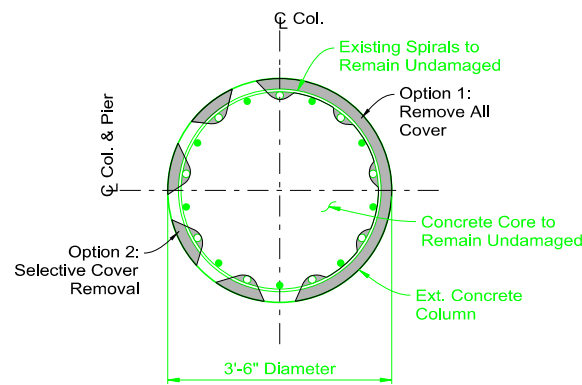
LOOKING AHEAD ON LINE, ALONG SKEW  
(I-1093N Pier 1 Shown, All Other Piers Similar)

#### NOTES

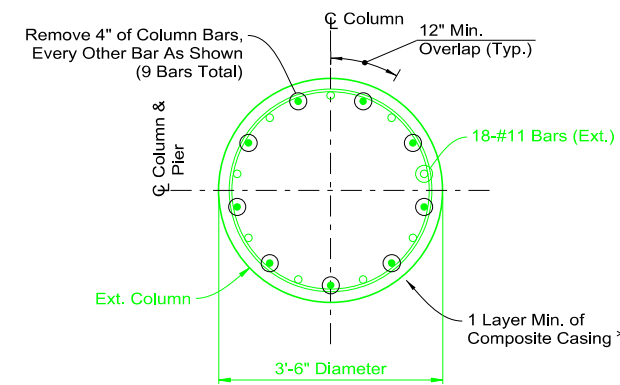
- For all existing columns, chip concrete to the depth of longitudinal reinforcing and cut reinforcing as specified in the plans. Contractor shall exercise care to avoid unintentionally damaging or cutting transverse reinforcement or unspecified longitudinal bars.
- A flame torch may not be used to cut the selected column bars. The bars shall be cut to remove a 4" segment at the top of each column within the limits of the composite casing as shown in Typical Pier Removals detail.
- After cutting the column bars and patching the concrete, each patched section shall be wrapped using continuous fabric not less than 2'-0" in height. All wraps shall be terminated a minimum of 12" past the starting point of the initial wrap. Refer to Special Provisions Section 502.03.25 for requirements for the Seismic Retrofit of Columns. Install a composite casing that satisfies the following stiffness requirement:  
 $Min. E \times A = 476 \text{ kips/in width}$
- All cut edges shall be sealed with epoxy.
- See notes on Sheet B205 for requirements for excavation, backfill, and temporary shoring.

#### LEGEND

- Structure Excavation
- Granular Backfill
- Limits of Removal of Concrete and Select Column Bars
- Limits of Composite Casing



SECTION A-A  
CONCRETE REMOVALS

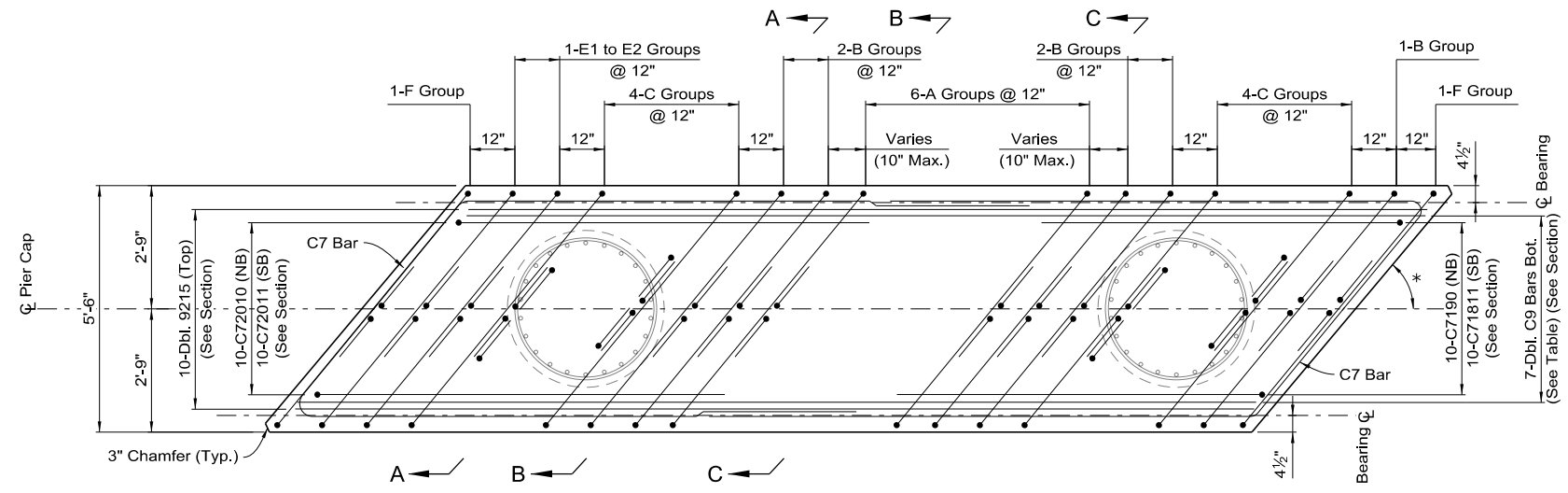


SECTION A-A  
TYPICAL COLUMN SECTION

\* - See Special Provisions for materials.

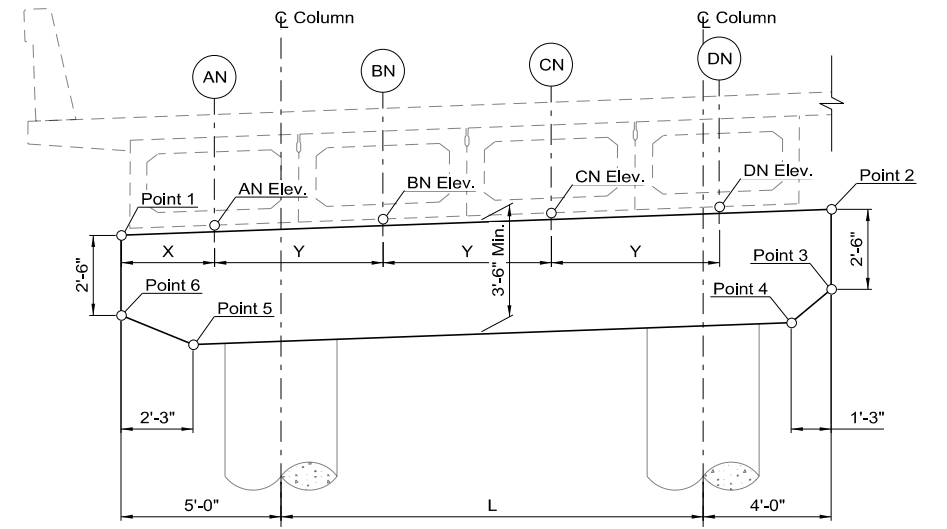
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION  
**COLUMN SEISMIC  
RETROFIT DETAILS**

STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B216



**PLAN**

\* -49° 55' 26" (NB)  
49° 37' 34" (SB)



**PIER CAP DIMENSIONS**  
LOOKING AHEAD ON LINE  
ALONG SKEW  
(I-1093N Shown, I-1093S Similar)

Location	I-1093S "L"	I-1093N "L"	C9 Bars
Pier 1	13'-2 1/4"	13'-2 1/4"	7-C9223, 7-C9221
Pier 2	13'-1 1/2"	13'-0 7/8"	7-C9221, 7-C92111
Pier 3	12'-11 1/4"	12'-11"	7-C92111, 7-C9219

**PIER CAP ELEVATION TABLE**

Location	Direction	Pt. 1	Pt. 2	Pt. 3	Pt. 4	Pt. 5	Pt. 6
Pier 1S	Back	5086.66'	5087.86'	5085.36'	5084.23'	5083.22'	5084.16'
	Ahead	5087.01'	5088.24'	5085.74'	5084.61'	5083.58'	5084.51'
Pier 2S	Back	5090.07'	5091.31'	5088.81'	5087.69'	5086.64'	5087.57'
	Ahead	5090.42'	5091.65'	5089.15'	5088.02'	5086.99'	5087.92'
Pier 3S	Back	5093.47'	5094.78'	5092.28'	5091.15'	5090.04'	5090.97'
	Ahead	5093.83'	5095.14'	5092.64'	5091.51'	5090.40'	5091.33'

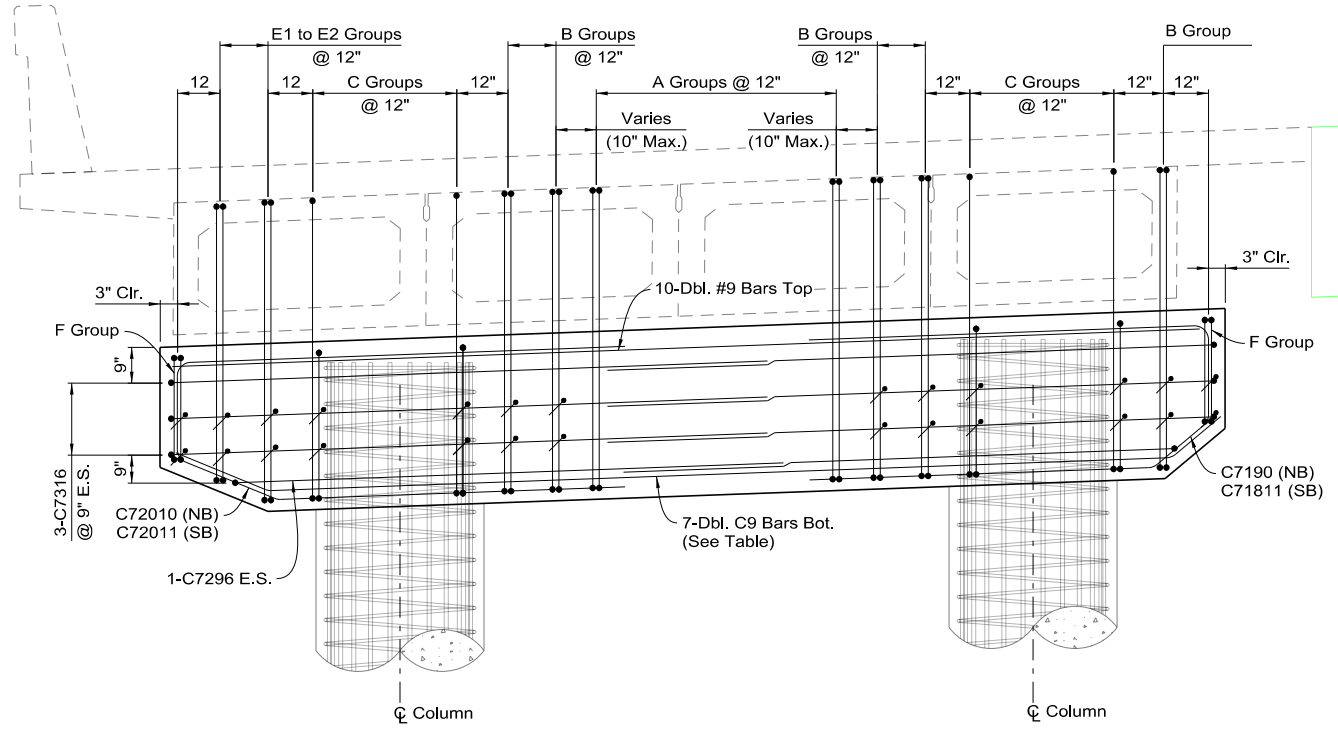
Location	Direction	Pt. 1	Pt. 2	Pt. 3	Pt. 4	Pt. 5	Pt. 6
Pier 1N	Back	5086.92'	5087.58'	5085.08'	5084.04'	5083.48'	5084.42'
	Ahead	5087.09'	5087.78'	5085.28'	5084.24'	5083.65'	5084.59'
Pier 2N	Back	5088.69'	5089.58'	5087.08'	5086.03'	5085.28'	5086.19'
	Ahead	5088.89'	5089.79'	5087.29'	5086.24'	5085.48'	5086.39'
Pier 3N	Back	5090.66'	5091.62'	5089.12'	5088.07'	5087.26'	5088.16'
	Ahead	5090.87'	5091.84'	5089.34'	5088.28'	5087.47'	5088.37'

**PRECAST GIRDER ELEVATION TABLE**

Location	Direction	"X"*	"Y"	AS	BS	CS	DS
Pier 1S	Ahead	2'-10 1/4"	5'-3 1/4"	5087.45'	5087.74'	5088.03'	5088.33'
	Back	2'-11 1/4"	5'-3 1/4"	5090.51'	5090.81'	5091.10'	5091.40'
Pier 2S	Ahead	2'-11 1/8"	5'-2 5/8"	5090.86'	5091.16'	5091.45'	5091.74'
	Back	2'-10"	5'-2 5/8"	5093.93'	5094.24'	5094.55'	5094.86'

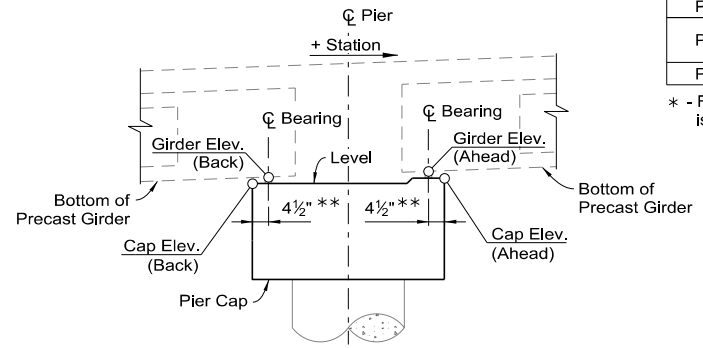
Location	Direction	"X"*	"Y"	AN	BN	CN	DN
Pier 1N	Ahead	3'-0 3/4"	5'-3 1/8"	5087.43'	5087.58'	5087.75'	5087.91'
	Back	2'-10 3/4"	5'-3 1/8"	5089.06'	5089.27'	5089.48'	5089.69'
Pier 2N	Ahead	2'-10 1/8"	5'-2 1/2"	5089.26'	5089.46'	5089.68'	5089.89'
	Back	3'-1 1/8"	5'-2 1/2"	5091.04'	5091.27'	5091.50'	5091.73'

\* - For I-1093S, "X" is measured from edge of cap to CL of Girder DS; for I-1093N, "X" is measured from edge of cap to CL of Girder AN



**ELEVATION**

LOOKING AHEAD ON LINE  
ALONG SKEW  
(I-1093N Shown, I-1093S Similar)



**ELEVATION DETAIL**

\*\* - Measured normal to CL Pier

**NOTES**

1. Alternate 135° & 90° hooks on all cross ties.
2. For pier cap/column reinforcing threading plan, see Sheet B218.
3. Dimensions shown are measured along length of pier cap.
4. Vertical reinforcement is to be placed parallel to alignment.
5. For Sections A-A, B-B, and C-C, see Sheet B218.
6. Pier cap elevations provided are taken along outside edges of cap.
7. Column spiral may be discontinuous at bottom of pier cap to facilitate reinforcement placement in cap; see Note 7 on Sheet B212.

MINIMUM BAR LAP  
#7 Bar to #7 Bar = 38"

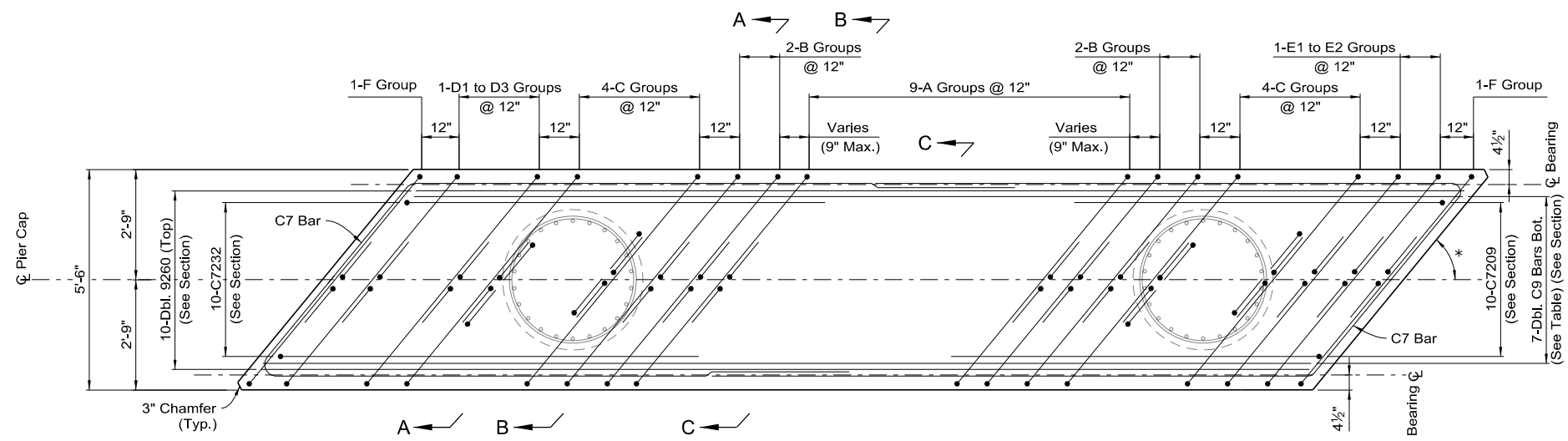
DATE : 1/26/2023

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**INSIDE WIDENING  
PIER CAP  
REINFORCING**

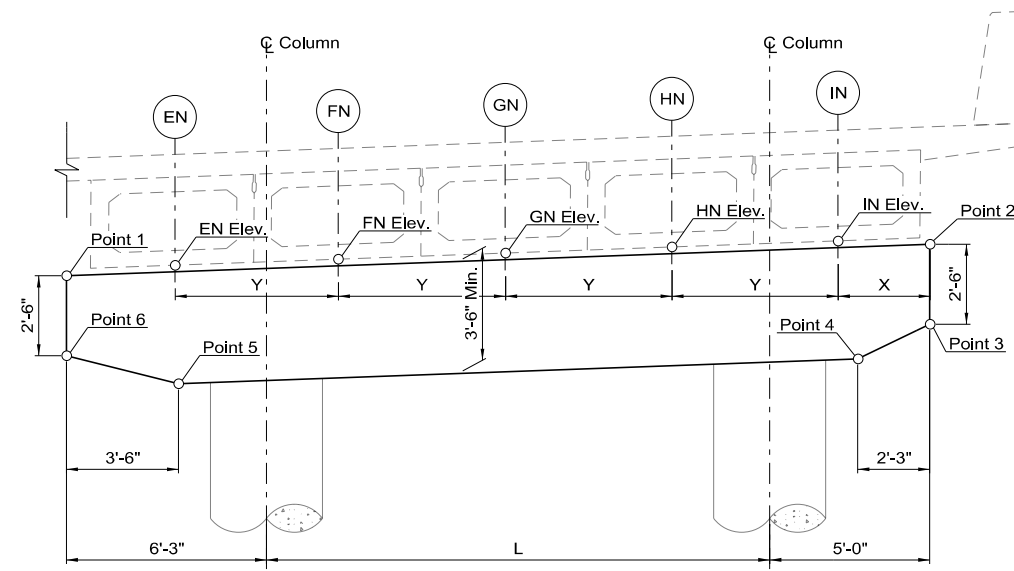
**I-1093 N&S**

STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B217



**PLAN**

\* - 50° 30' 19"



**PIER CAP DIMENSIONS**

LOOKING AHEAD ON LINE ALONG SKEW

Location	I-1093N "L"	C9 Bars
Pier 1	15'-8 3/4"	7-C9268, 7-C9266
Pier 2	15'-6 5/8"	7-C9266, 7-C9264
Pier 3	15'-4 1/2"	7-C9264, 7-C9262

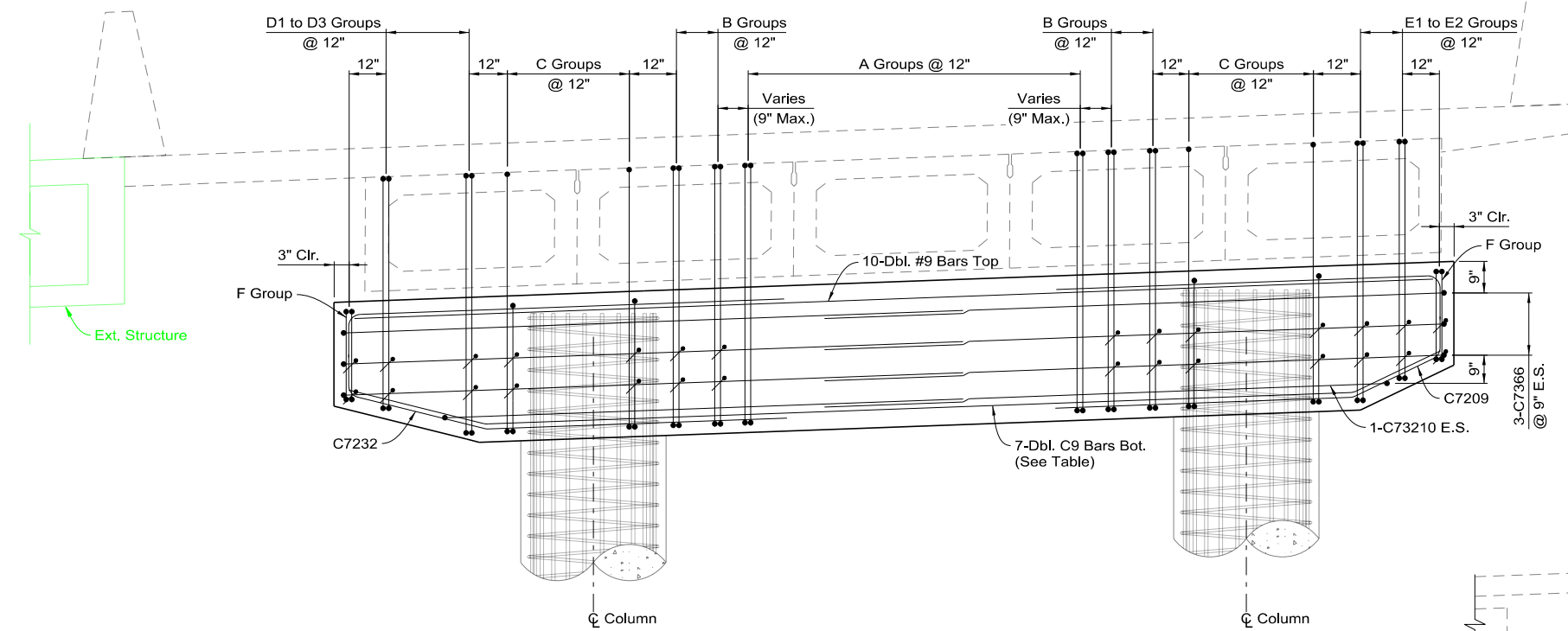
**PIER CAP ELEVATION TABLE**

Location	Direction	Pt. 1	Pt. 2	Pt. 3	Pt. 4	Pt. 5	Pt. 6
Pier 1	Back	5089.77'	5090.91'	5088.41'	5087.31'	5086.41'	5087.27'
	Ahead	5090.00'	5091.15'	5088.65'	5087.55'	5086.65'	5087.50'
Pier 2	Back	5091.99'	5093.19'	5090.69'	5089.59'	5088.64'	5089.49'
	Ahead	5092.21'	5093.42'	5090.92'	5089.81'	5088.86'	5089.71'
Pier 3	Back	5094.12'	5095.30'	5092.80'	5091.70'	5090.79'	5091.62'
	Ahead	5094.33'	5095.46'	5092.96'	5091.87'	5090.98'	5091.83'

**PRECAST GIRDER ELEVATION TABLE**

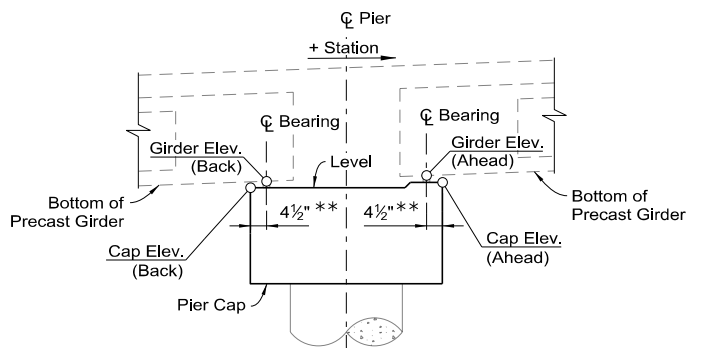
Location	Direction	"X"*	"Y"	EN	FN	GN	HN	IN
Pier 1	Ahead	2'-9 5/8"	5'-2 1/2"	5090.39'	5090.61'	5090.83'	5091.05'	5091.28'
	Back	2'-11 1/8"	5'-2 1/2"	5092.37'	5092.60'	5092.83'	5093.07'	5093.30'
Pier 2	Ahead	2'-11 1/4"	5'-1 3/4"	5092.60'	5092.83'	5093.06'	5093.30'	5093.53'
	Back	2'-10 5/8"	5'-1 3/4"	5094.52'	5094.76'	5094.98'	5095.20'	5095.42'

\* - "X" is measured from edge of cap to CL of Girder IN



**ELEVATION**

LOOKING AHEAD ON LINE ALONG SKEW



**ELEVATION DETAIL**

\*\* - Measured normal to CL Pier

MINIMUM BAR LAP  
#7 Bar to #7 Bar = 38"

**NOTES**

1. Alternate 135° & 90° hooks on all cross ties.
2. For pier cap/column reinforcing threading plan, see Sheet B218.
3. Dimensions shown are measured along length of pier cap.
4. Vertical reinforcement is to be placed parallel to alignment.
5. For Sections A-A, B-B, and C-C, see Sheet B218.
6. Pier cap elevations provided are taken along outside edges of cap.
7. Column spiral may be discontinuous at bottom of pier cap to facilitate reinforcement placement in cap; see Note 7 on Sheet B212.

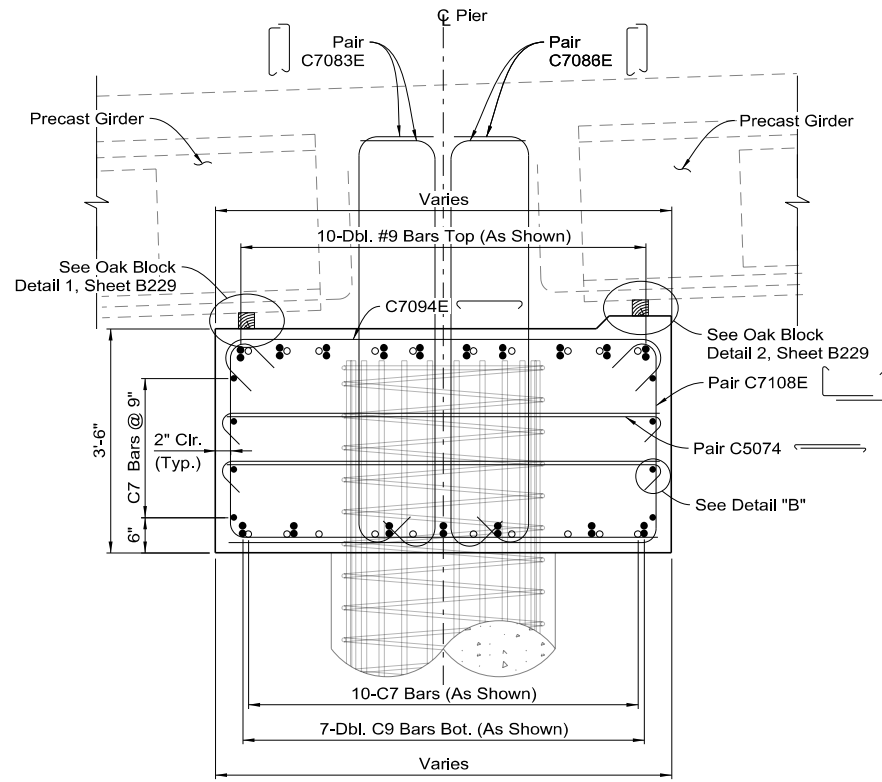
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**OUTSIDE WIDENING  
PIER CAP  
REINFORCING**

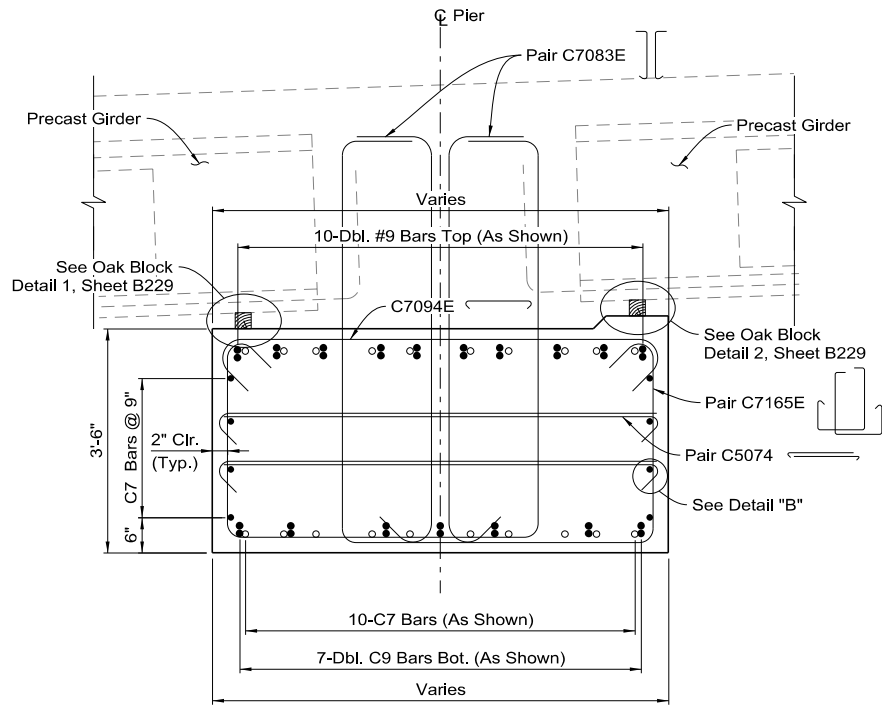
I-1093 N

DATE : 1/26/2023

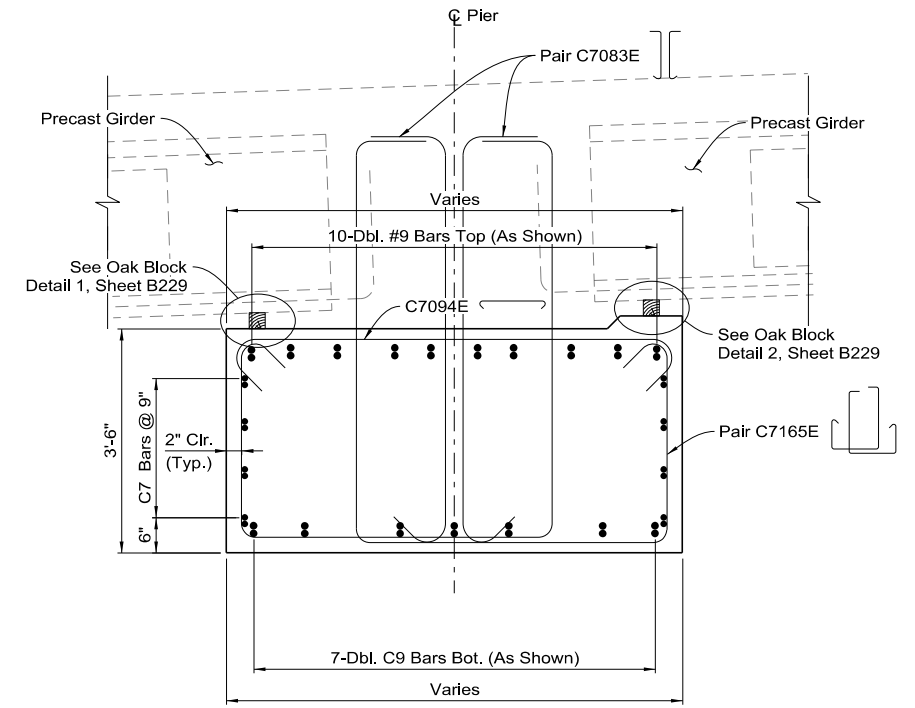
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B218



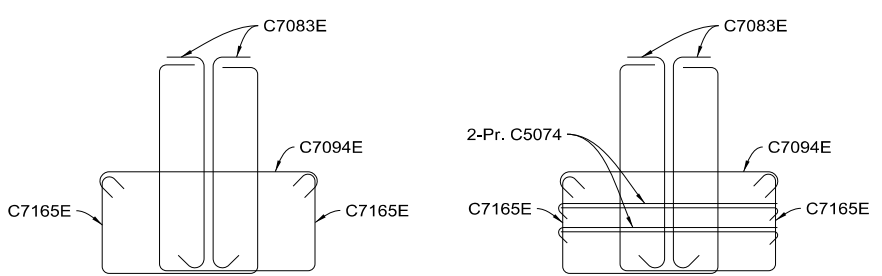
**SECTION A-A**  
THROUGH COLUMN, PARALLEL TO ALIGNMENT  
(Pier 2 Shown, Piers 1 & 3 Similar)



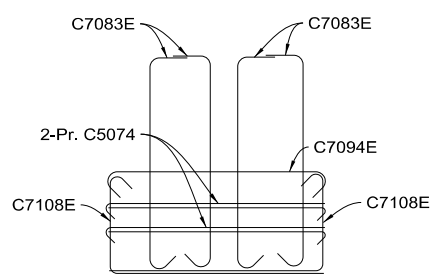
**SECTION B-B**  
ADJACENT TO COLUMN, PARALLEL TO ALIGNMENT  
(Pier 2 Shown, Piers 1 & 3)



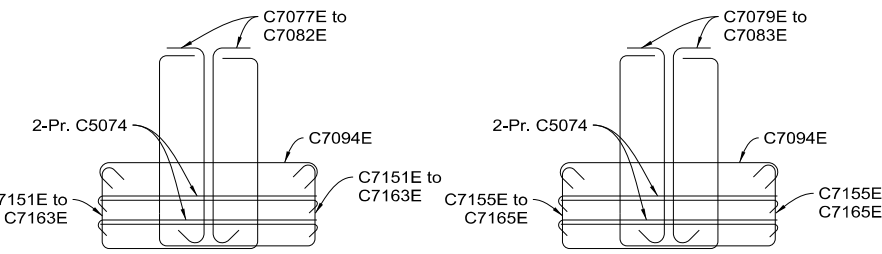
**SECTION C-C**  
TYPICAL SECTION, PARALLEL TO ALIGNMENT  
(Pier 2 Shown, Piers 1 & 3 Similar)



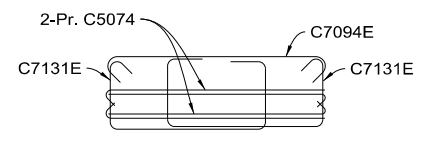
- A Group**  
2-C7165E  
2-C7083E  
1-C7094E
- B Group**  
2-C7165E  
2-C7083E  
1-C7094E  
2-Pair C5074 (4 Bars Total)



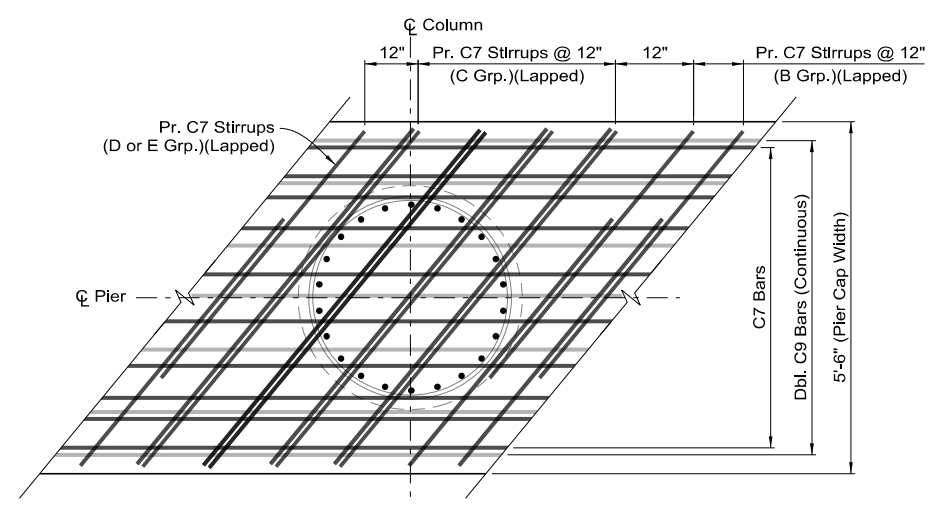
- C Group**  
2-C7108E  
4-C7083E  
1-C7094E  
2-Pair C5074 (4 Bars Total)



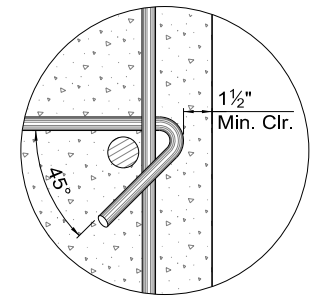
- D1-D3 Groups**  
2-Sets C7151E to C7163E @ 12"  
(3 Bars/Set) (6 Bars Total)  
2-Sets C7077E to C7082E @ 12"  
(3 Bars/Set) (6 Bars Total)  
1-C7094E  
2-Pair C5074 (4 Bars Total)
- E1-E2 Groups**  
2-Sets C7155E to C7165E @ 12"  
(2 Bars/Set) (4 Bars Total)  
2-Sets C7079E to C7083E @ 12"  
(2 Bars/Set) (4 Bars Total)  
1-C7094E  
2-Pair C5074 (4 Bars Total)



- F Group**  
2-C7131E  
1-C7094E  
2-Pair C5074 (4 Bars Total)



**CAP/COLUMN THREADING PLAN**



**DETAIL "B"**

- NOTES**
- Alternate 135° & 90° hooks on all cross-ties.

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

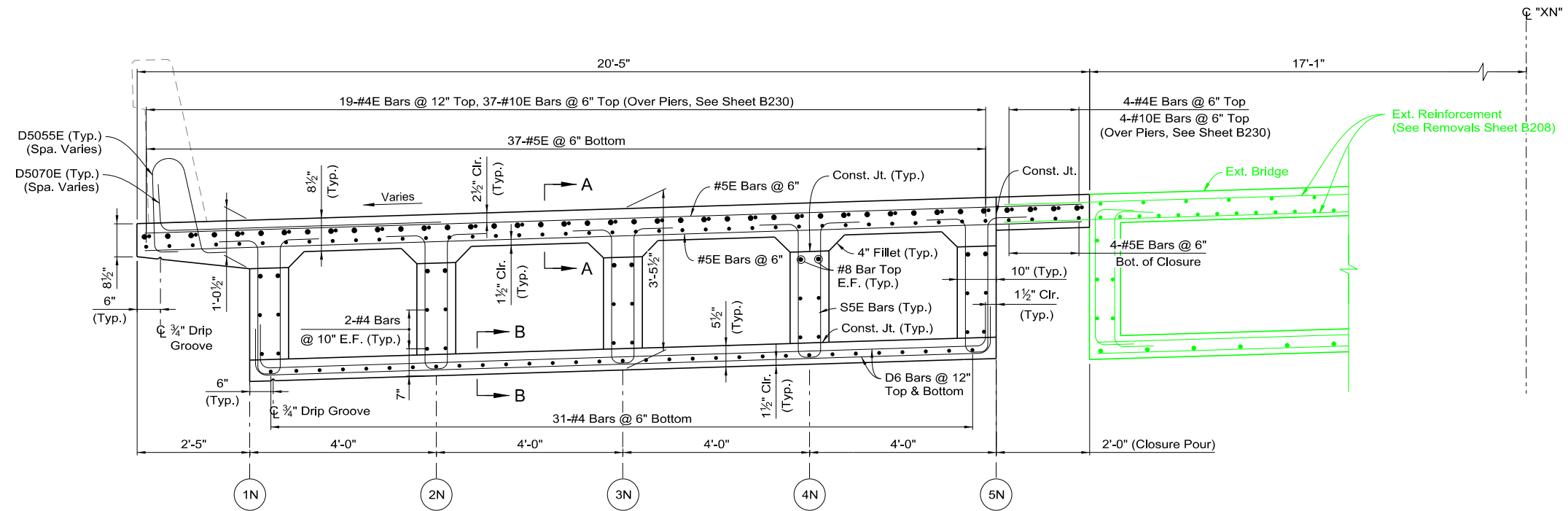
**PIER CAP DETAILS**

I-1093 N&S

DATE : 1/26/2023

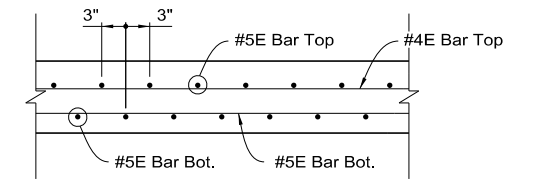


STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B219

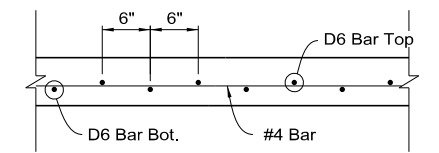


**TYPICAL CIP SECTION**

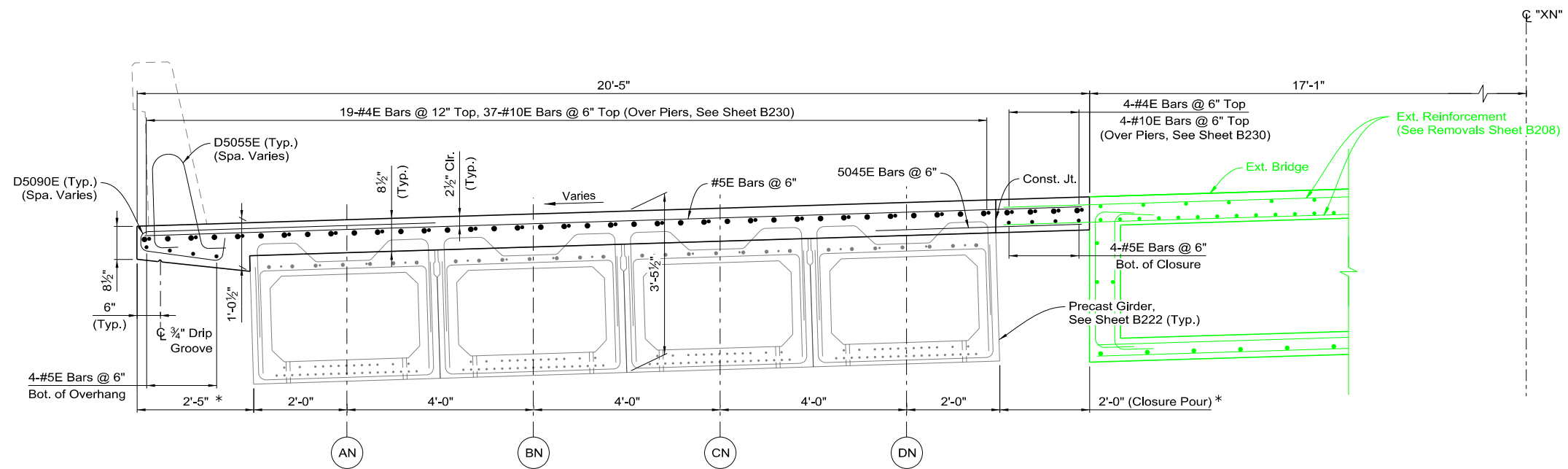
LOOKING AHEAD ON LINE  
NORMAL TO ALIGNMENT  
(I-1093N Shown, I-1093S Similar)



**SECTION A-A**  
TYPICAL DECK SECTION



**SECTION B-B**  
TYPICAL SOFFIT SECTION



**TYPICAL PRECAST SECTION**

LOOKING AHEAD ON LINE  
NORMAL TO ALIGNMENT  
(I-1093N Shown, I-1093S Similar)

\* - Width varies (chorded precast girders)

**NOTES**

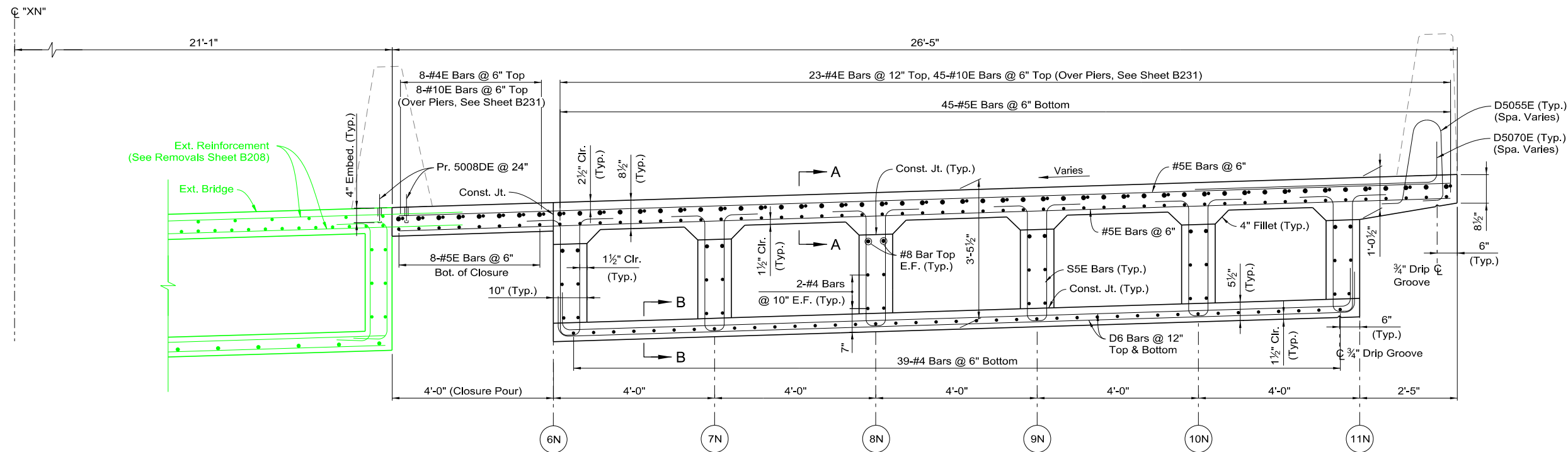
1. For precast girder reinforcing, see Sheet B223.

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

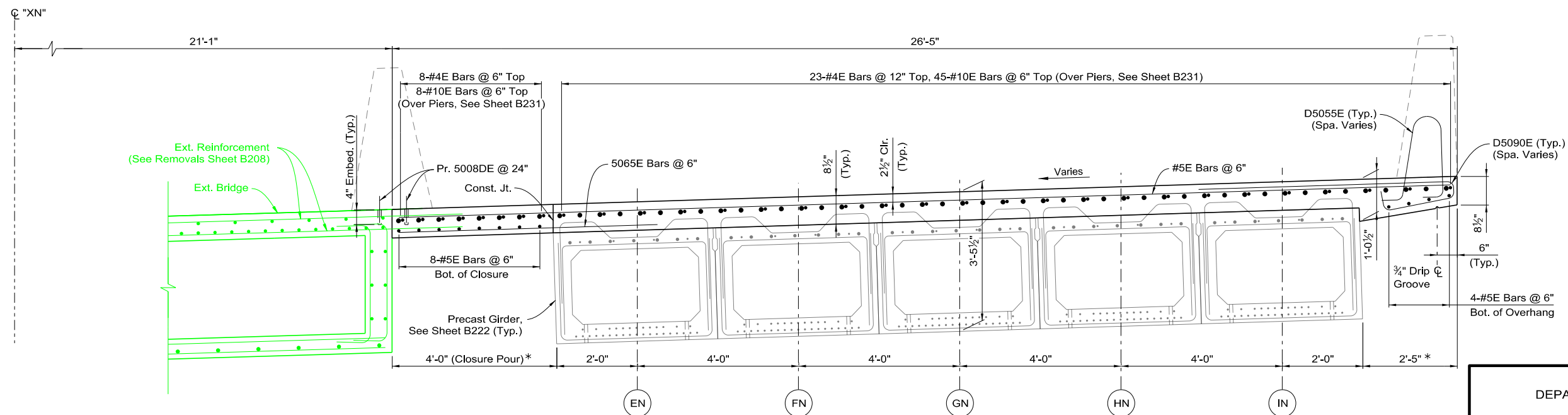
**TYPICAL SECTION  
INSIDE WIDENING**



STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B220



**TYPICAL CIP SECTION**  
LOOKING AHEAD ON LINE  
NORMAL TO ALIGNMENT



**TYPICAL PRECAST SECTION**  
LOOKING AHEAD ON LINE  
NORMAL TO ALIGNMENT

\* - Width varies (chorded precast girders)

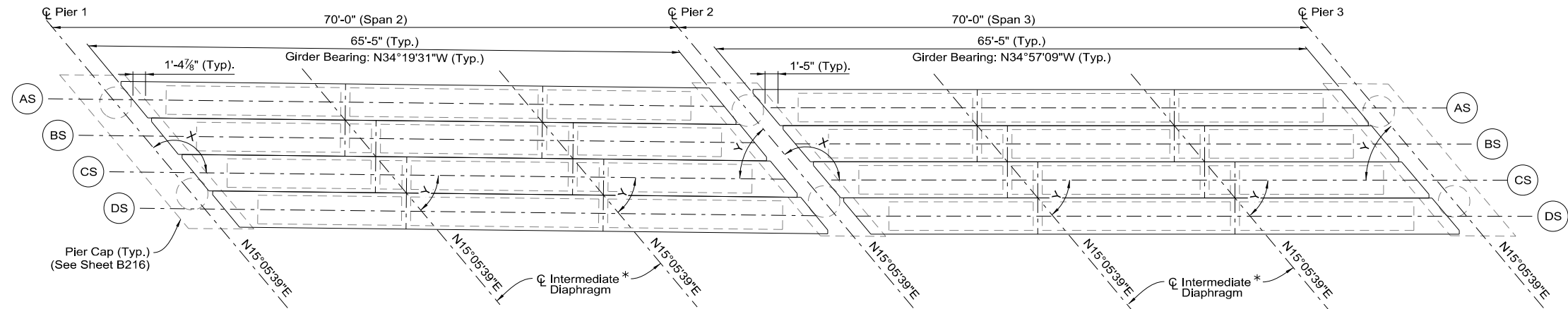
**NOTES**

1. For precast girder reinforcing, see Sheet B223.
2. For Sect. A-A and B-B, see Sheet B219.

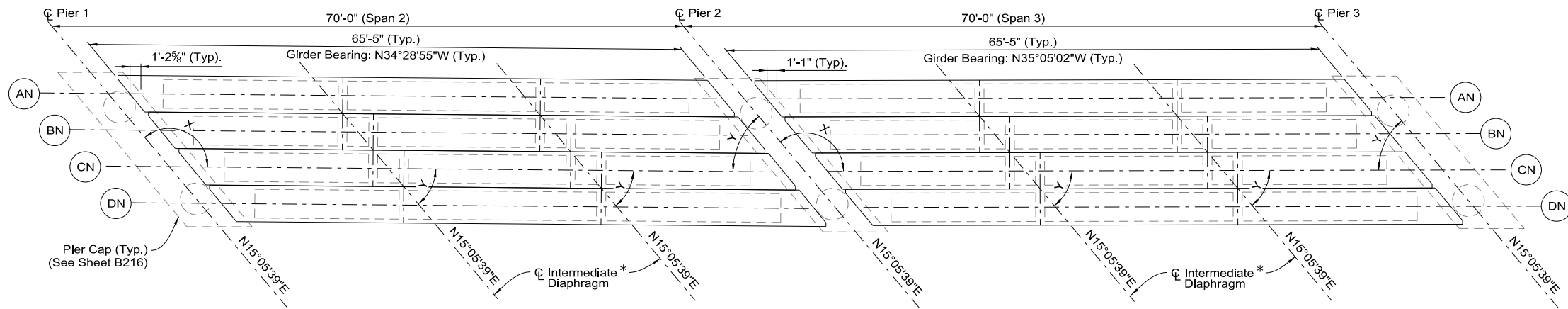
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**TYPICAL SECTION  
OUTSIDE WIDENING**

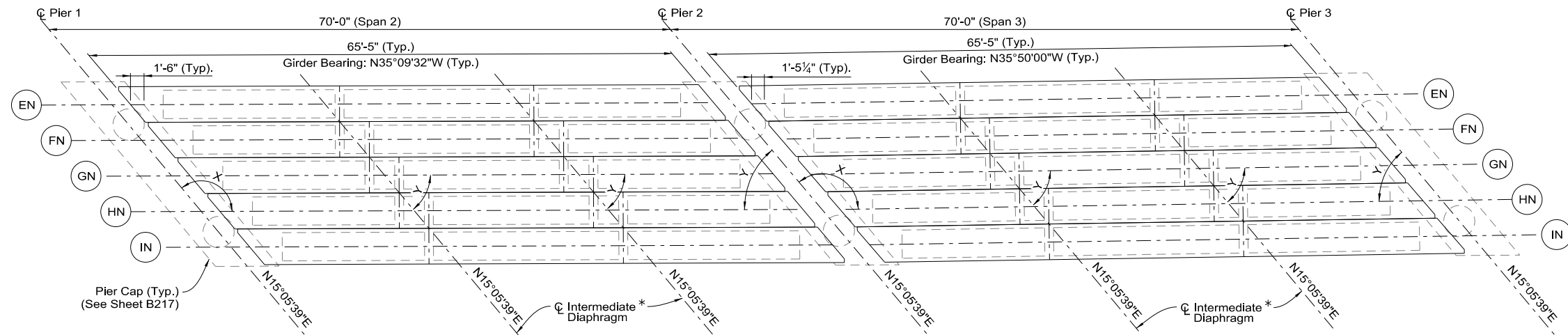
\* - For Intermediate Diaphragm and Tie Rod Details See Sheet B224.



**PLAN**  
I-1093S INSIDE WIDENING



**PLAN**  
I-1093N INSIDE WIDENING



**PLAN**  
I-1093N OUTSIDE WIDENING

Location	I-1093S Inside		I-1093N Inside		I-1093N Outside	
	X	Y	X	Y	X	Y
Span 2	130°34'50"	49°25'10"	130°25'25"	49°34'35"	129°44'49"	50°15'11"
Span 3	129°57'12"	50°02'48"	129°49'18"	50°10'42"	129°04'20"	50°55'40"

Note: X and Y angles are typical for each girder in a span.

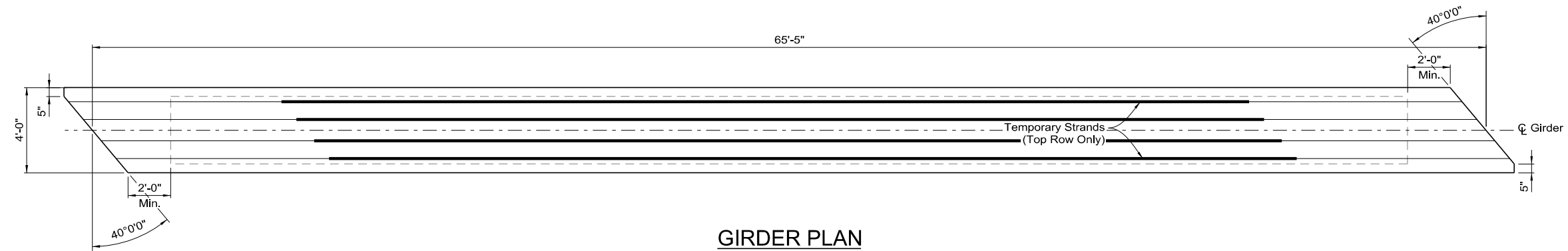
**NOTES**

- All dimensions are horizontal.
- For girder bearing line details and dimensions not shown, see Sheet B216-B217.
- For precast girder details, see Sheet B222-B223.

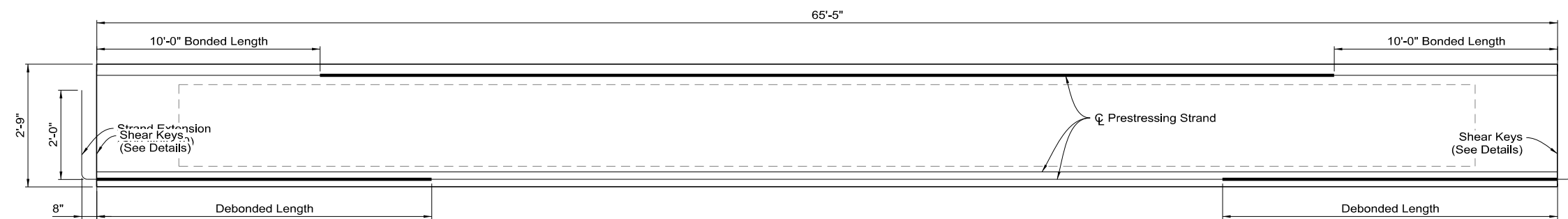
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**PRECAST GIRDER  
FRAMING PLAN**

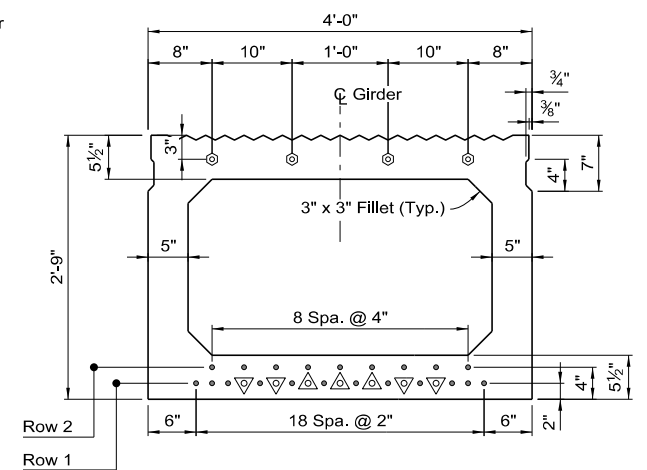
I-1093 N&S



**GIRDER PLAN**



**GIRDER ELEVATION**



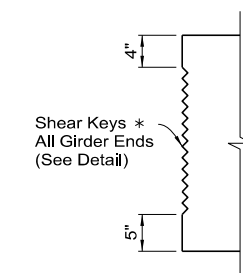
**TYPICAL SECTION**

**STRAND DEBONDING LEGEND**

- - Fully bonded strands
- ⊙ - Temporary strands
- ▲ - Strands debonded 17'-0" from end of beam
- ▼ - Strands debonded 14'-0" from end of beam

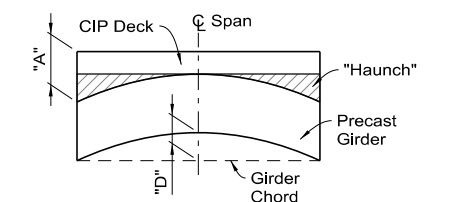
**GIRDER SCHEDULE**

Span	Box Beam	Box Beam Type	Plan Length	Min. Concrete Compressive Strength		Temporary		Straight		Prestressed Force After All Losses	Strand Extension (Number of Strands)		Midspan Vertical Deflection	
				f'ci (ksi)	f'c (ksi)	Number of Strands	Jacking Force (kips)	Number of Strands	Jacking Force (kips)		End 1	End 2	Lower Bound, D40 (in.)	Upper Bound, D120 (in.)
NB2	AN, BN, CN, DN	48" x 33"	65'-5"	6.5	7.5	4	176	28	1230	1041	4	4	1.10	2.54
NB3	AN, BN, CN, DN	48" x 33"	65'-5"	6.5	7.5	4	176	28	1230	1041	4	4	1.10	2.54
NB2	EN, FN, GN, HN, IN	48" x 33"	65'-5"	6.5	7.5	4	176	28	1230	1041	4	4	1.11	2.55
NB3	EN, FN, GN, HN, IN	48" x 33"	65'-5"	6.5	7.5	4	176	28	1230	1041	4	4	1.11	2.55
SB2	All	48" x 33"	65'-5"	6.5	7.5	4	176	28	1230	1041	4	4	1.10	2.54
SB3	All	48" x 33"	65'-5"	6.5	7.5	4	176	28	1230	1041	4	4	1.10	2.54



**ELEVATION GIRDER END SHEAR KEYS**

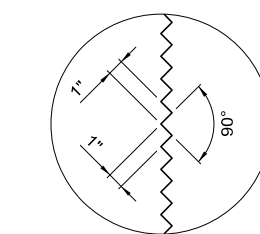
\* - Terminate Shear Keys 1" from Exterior Face of Girder



**GIRDER CAMBER DETAIL**

**NOTES**

1. Plan length shall be increased as necessary to compensate for shortening due to prestress, creep, and shrinkage.
2. Prestressing strand shall be 0.6" diameter low relaxation strand conforming to AASHTO M203 Grade 270. Each strand shall be jacked to 202.5 ksi. Strands shall be symmetrical about the girder centerline. Exterior strands in each row shall be fully bonded.
3. Debonded strands shall be debonded at each girder end for the indicated length, parallel to the girder centerline. Debonded strands shall be symmetrically placed about the girder centerline. Debonded lengths of pairs of strands that are symmetrically positioned about the girder centerline shall be equal. Position debonded strands so that there is a minimum of one bonded strand between adjacent debonded strands.
4. Temporary strands shall only be placed in the top row. Provide a 2" x 6" x 3" deep expanded polystyrene blockout. Remove the polystyrene just prior to cutting the temporary strands and prevent moisture from entering the blockout.
5. All lifting embedments are to be designed by the Contractor in accordance with the Standard Specifications.
6. Dimension "A" represents the deck thickness at the supports, as shown in the Girder Camber Detail and the Typical Sections on Sheets B219 & B220. Deck thickness over the precast girders will vary and depends on the age of the girders at time of erection. Mid span girder deflections "D40" and "D120" represent the upper and lower bound girder deflections at girder age 40 days and 120 days after prestressing release, respectively. Precast girder screed cambers are shown on Sheet B232.
7. In addition to the requirements of Section 503.03.09, the Contractor shall check, record, and submit the vertical deflection (camber) of each girder at the following times: (Initial) Upon removal of the girder from the casting bed, (Shipment) within 14 days prior to shipment, and (Erection) after girder erection and prior to equalization. At a minimum, survey data shall be taken at each girder end and at midspan. If the vertical deflection measured for the erection check is not between the lower "D" and upper "D" bounds shown on the plans, submit to the Bridge Engineer a plan for corrective action.
8. Contractor is responsible for analysis and evaluation of girder stability during construction, including shipping and erection.
9. All dimensions are horizontal. Fabricator must correct for vertical grade.
10. Extend number of bottom row strands as shown for ends of girders as detailed in the Girder Schedule. Cut all other strands flush. Offset extended strands between adjacent spans. Fabricator to select and show extended strands in shop drawings.
11. Temporary strands shall be cut after girder is erected and before deck is placed.



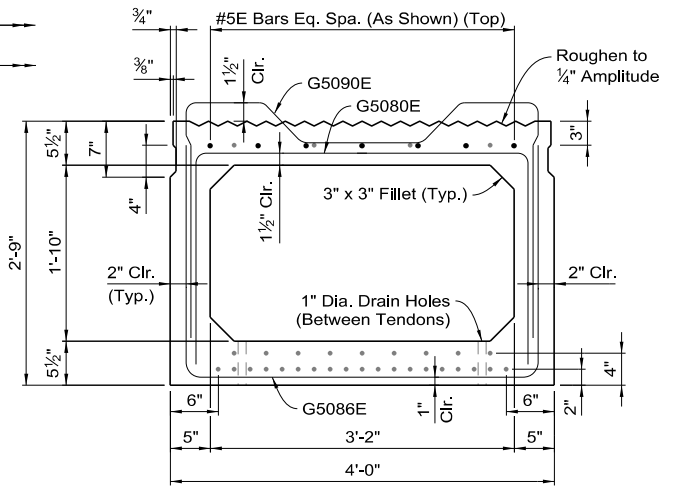
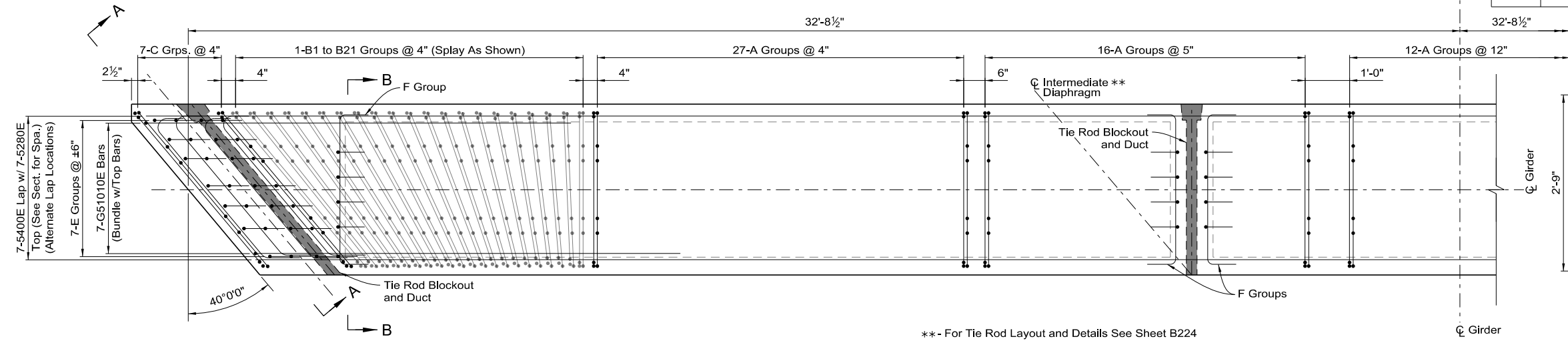
**SHEAR KEY DETAIL**

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**PRECAST GIRDER  
PRESTRESSING  
DETAILS**

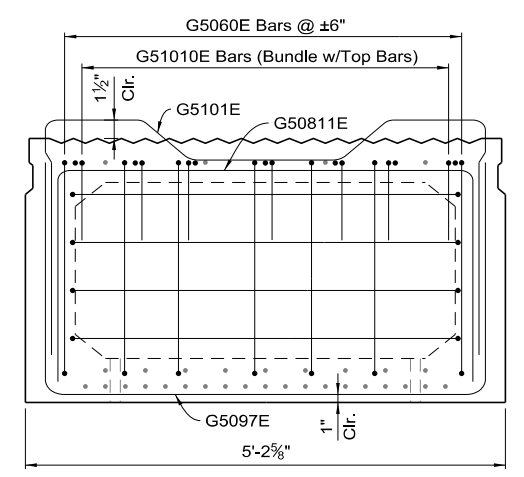
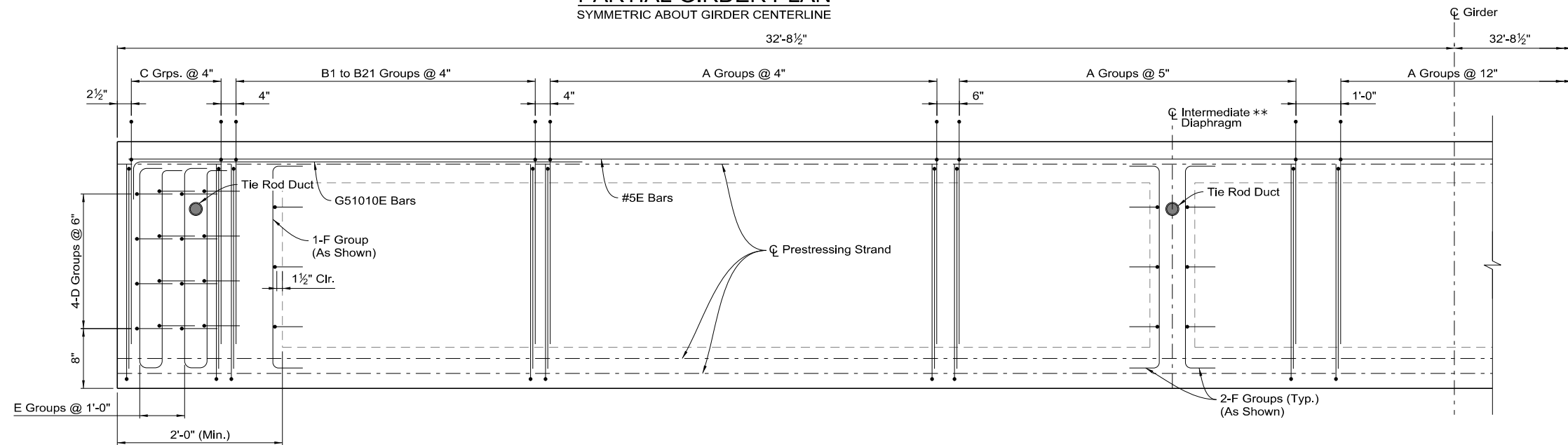
I-1093 N&S

STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B223



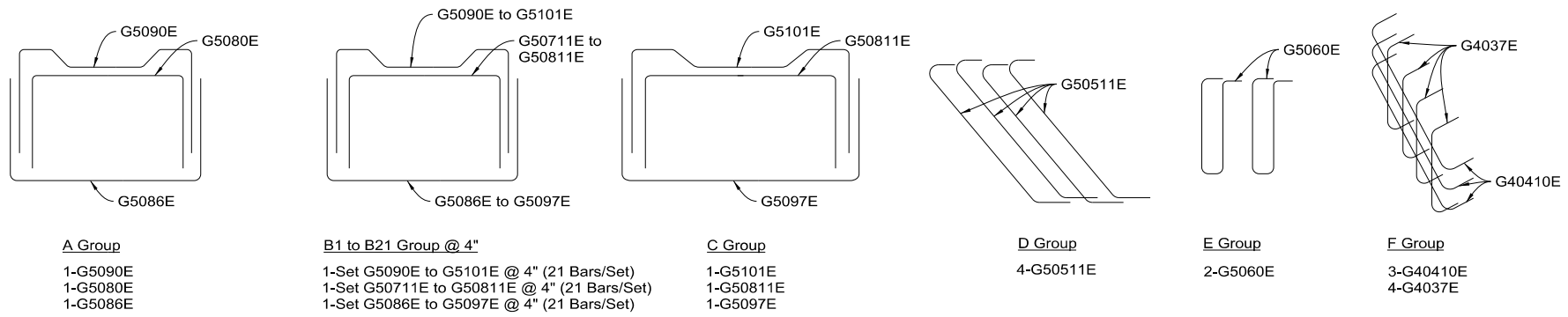
**PARTIAL GIRDER PLAN**  
SYMMETRIC ABOUT GIRDER CENTERLINE

**TYPICAL SECTION**



**PARTIAL GIRDER ELEVATION**  
SYMMETRIC ABOUT GIRDER CENTERLINE

**SECTION A-A**  
THROUGH END DIAPHRAGM



**A Group**  
1-G5090E  
1-G5080E  
1-G5086E

**B1 to B21 Group @ 4"**  
1-Set G5090E to G5101E @ 4" (21 Bars/Set)  
1-Set G50711E to G50811E @ 4" (21 Bars/Set)  
1-Set G5086E to G5097E @ 4" (21 Bars/Set)

**C Group**  
1-G5101E  
1-G50811E  
1-G5097E

**D Group**  
4-G50511E

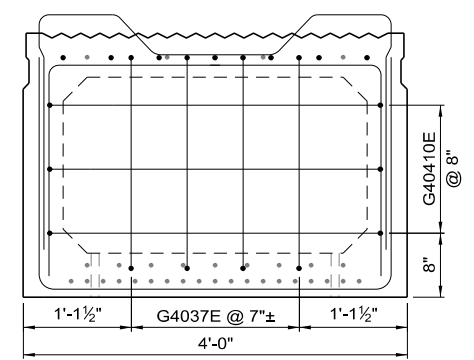
**E Group**  
2-G5060E

**F Group**  
3-G40410E  
4-G4037E

**MINIMUM BAR LAP**  
#5E Bar to #5E Bar = 30"

**NOTES**

1. For intermediate diaphragm locations, see precast girder framing plan (Sheet B221).
2. All transverse bar spacing is along girder centerline.
3. For typical section, see Sheet B219-B220.
4. Any reinforcing interfering with the location of the transverse tie rod ducts may be adjusted with the approval of the Engineer. Where required, install additional reinforcing groups to maintain the minimum spacing as shown on the plans.
5. For blockouts at intermediate diaphragms not shown, see Tie Rod Details (Sheet B224).



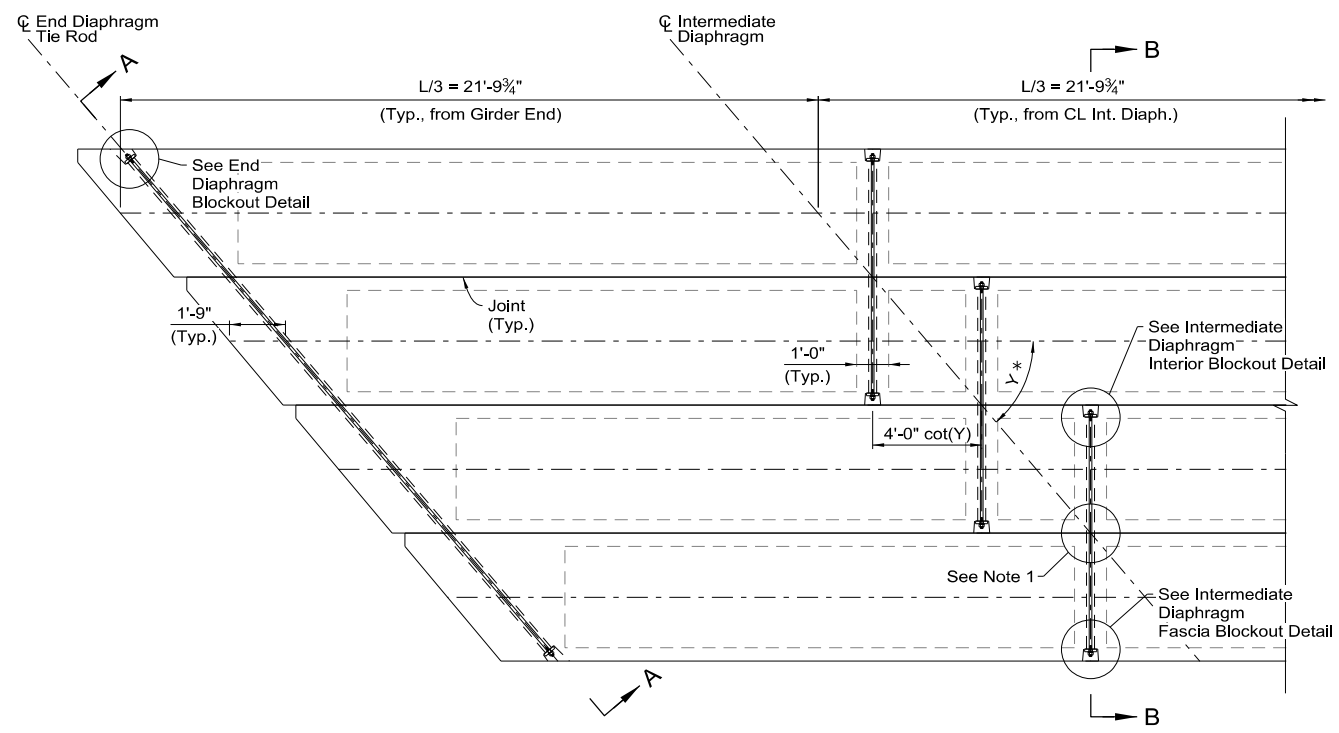
**SECTION B-B**  
AT DIAPHRAGM FACE

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION  
**PRECAST GIRDER  
REINFORCING**

DATE : 1/26/2023

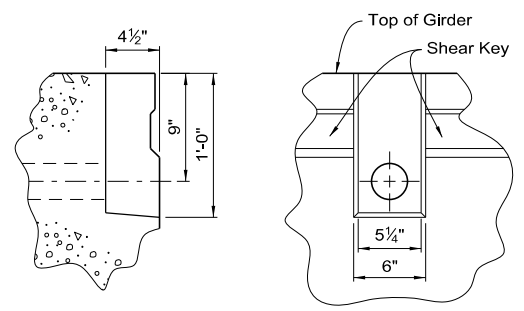
I-1093 N&S

STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B224

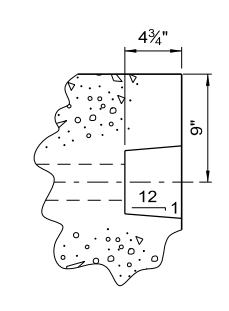


\* - For angle Y, see Table on Sheet B221

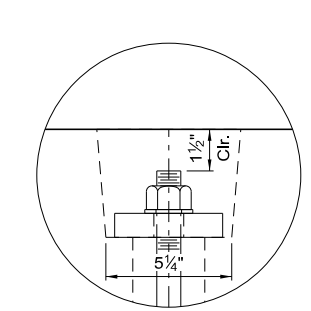
**PARTIAL PLAN**  
INTERMEDIATE DIAPHRAGM AND TIE BAR LAYOUT  
(Inside Widening Shown, Outside Widening Similar)



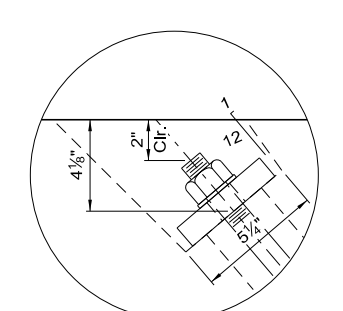
**INTERIOR BLOCKOUT**  
INTERMEDIATE DIAPHRAGM



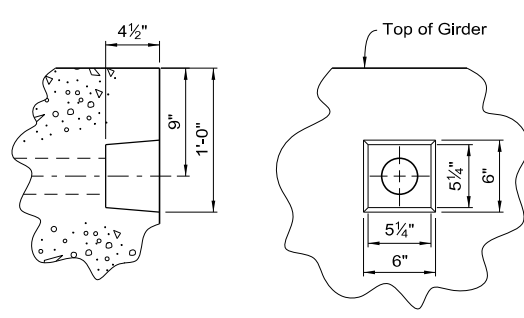
**FASCIA BLOCKOUT**  
END DIAPHRAGM



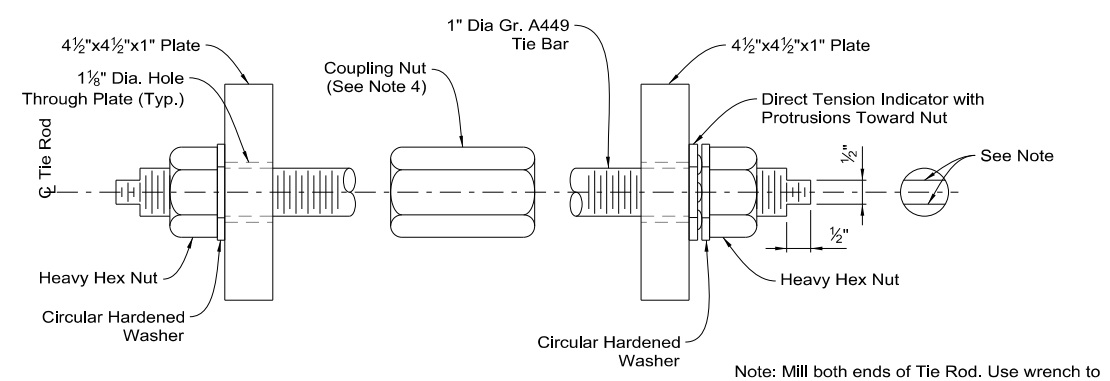
**TIE ROD CLEARANCE**  
INTERMEDIATE DIAPHRAGM



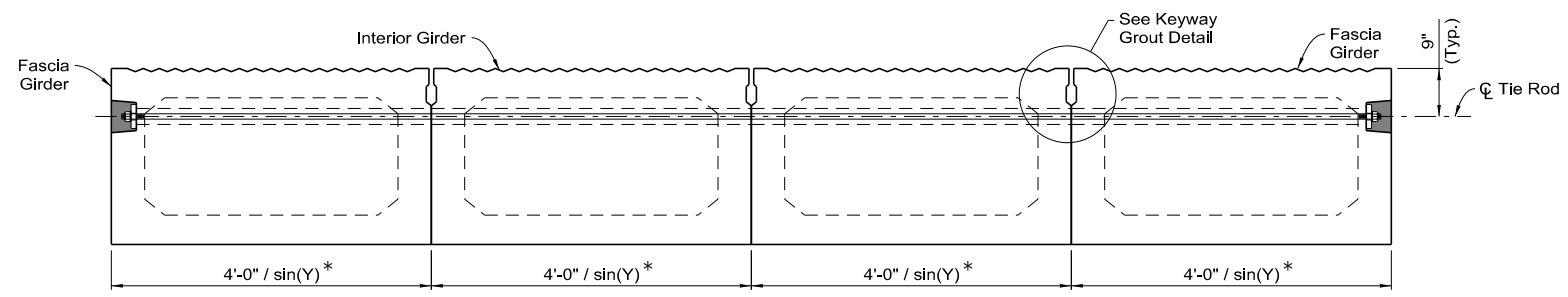
**TIE ROD CLEARANCE**  
END DIAPHRAGM



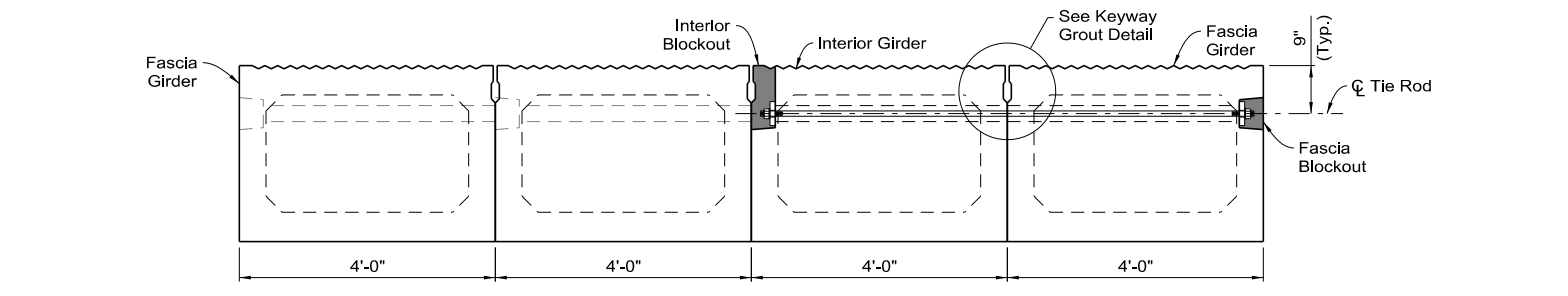
**FASCIA BLOCKOUT**  
INTERMEDIATE DIAPHRAGM



**TIE ROD DETAILS**



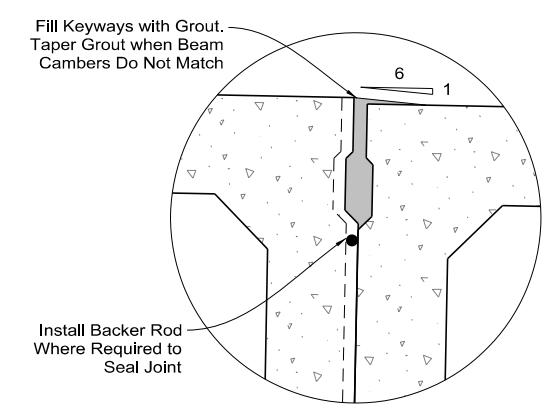
**SECTION A-A**  
THROUGH END DIAPHRAGM



**SECTION B-B**  
THROUGH INTERMEDIATE DIAPHRAGM

**NOTES**

- Intermediate diaphragm tie rods intersect the centerline of the intermediate diaphragm at the joint between each pair of girders being connected. Adjacent tie rods shall be offset by the dimension shown in the partial plan to maintain this criteria.
- Installation of intermediate diaphragm tie rods shall commence upon the erection of the second adjacent box beam in the current span and proceed after each subsequent box beam is erected in that span. End diaphragm tie rods shall be installed after the last beam in that span is erected.
- Transverse Tie Rods shall be 1" diameter high strength rod conforming to ASTM A449. Heavy hex nuts shall conform to ASTM A563. Hardened washers shall conform to ASTM F436. Bearing plates shall conform to ASTM A36. Direct Tension Indicators (DTIs) shall conform to ASTM F959. Hot-dip galvanize all tie rod components after fabrication, excluding DTIs. Tie rods and all associated hardware will be paid for under Bid Item 506 0110 "Structural Steel".
- For interior widenings, if previous construction phases interfere with the placement of the End Diaphragm Tie Rods, the Contractor may use one coupling nut per tie rod location to aid in construction. Coupling nuts shall conform to ASTM A563 and be galvanized after fabrication. The Contractor shall install the coupling nut so the tie rods entering the nut from each end meet in the middle of the nut. Coupling nuts, if chosen for use, shall be considered incidental to the tie rod installation.
- Tighten all transverse tie rods to approximately one half the specified tension before proceeding with final tensioning. Tension all tie rods to a minimum of 51.0 kips as indicated by the DTI.
- After girder erection and all tie rod tensioning is complete, fill tie rod blockouts and keyways with an approved high strength grout conforming to Section 503.02.03 (Nonshrink Grout) of the Standard Specifications. Keyway and blockout grout shall be considered incidental to tie rod installation (No Direct Payment).
- After placement of keyway grout, no additional load may be placed on the girders until the grout has reached a compressive strength of 2000 psi.
- At no time prior to completion of the bridge deck curing operation shall any equipment or vehicles be placed on the structure without approval of the Bridge Engineer.



**KEYWAY GROUT DETAIL**

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

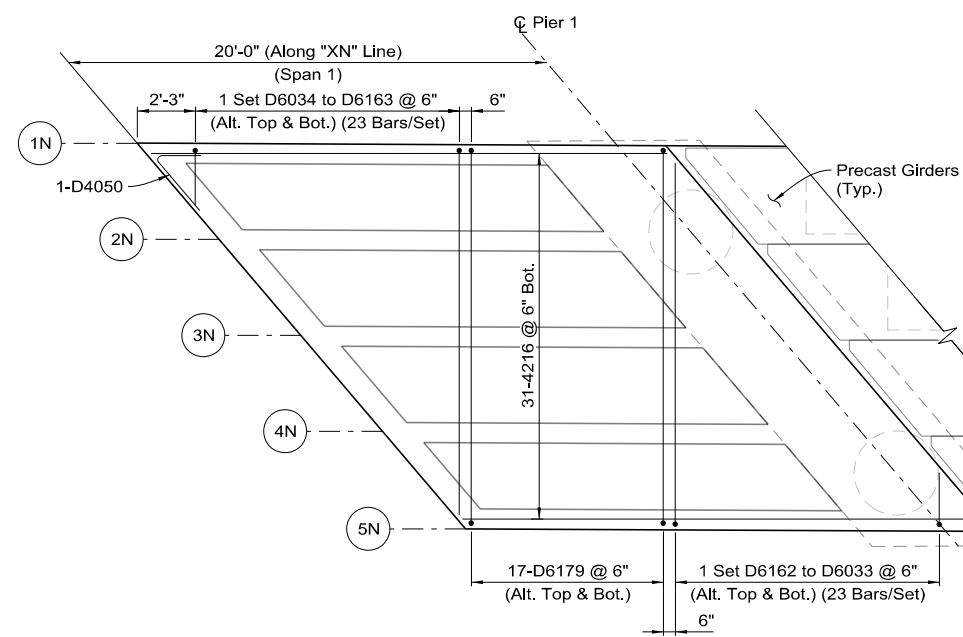
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**TIE ROD DETAILS**

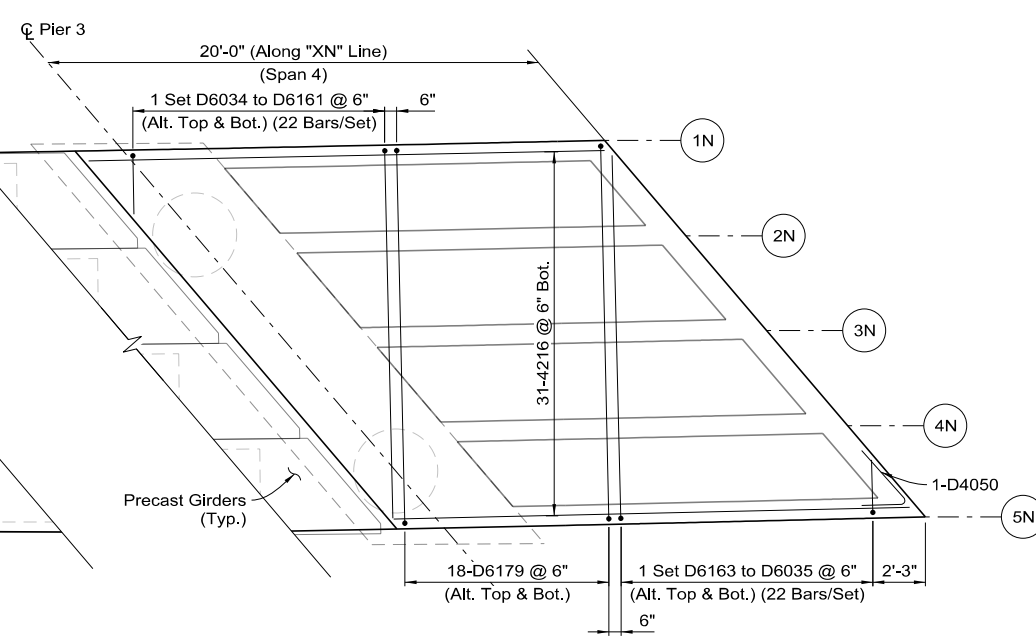
I-1093 N&S

DATE : 1/26/2023

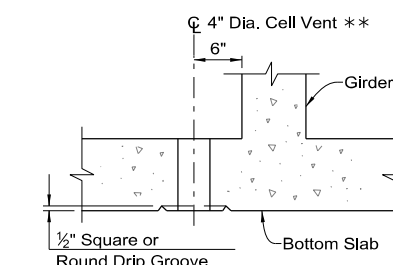
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B225



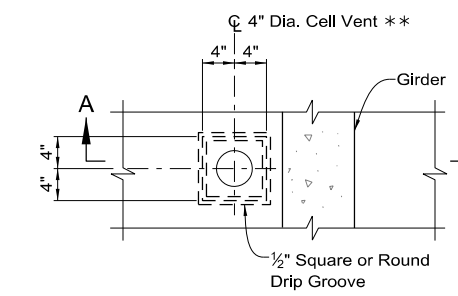
**PLAN**  
INSIDE WIDENING, SPAN 1  
(1-1093N Shown, I-1093S Similar)



**PLAN**  
INSIDE WIDENING, SPAN 4  
(1-1093N Shown, I-1093S Similar)



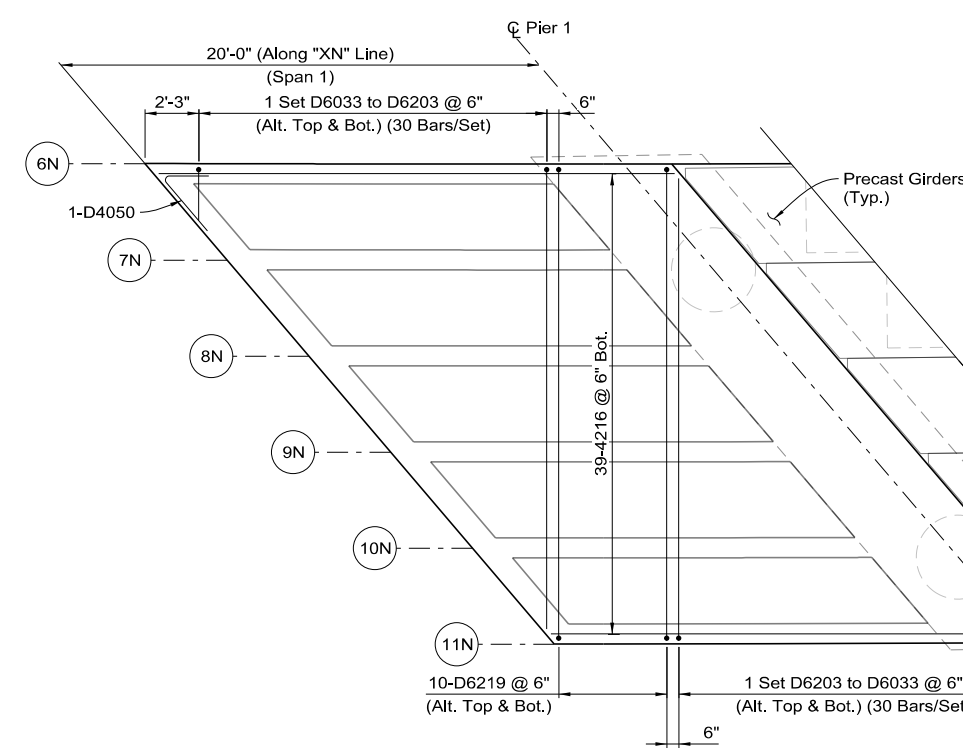
**SECTION A-A**



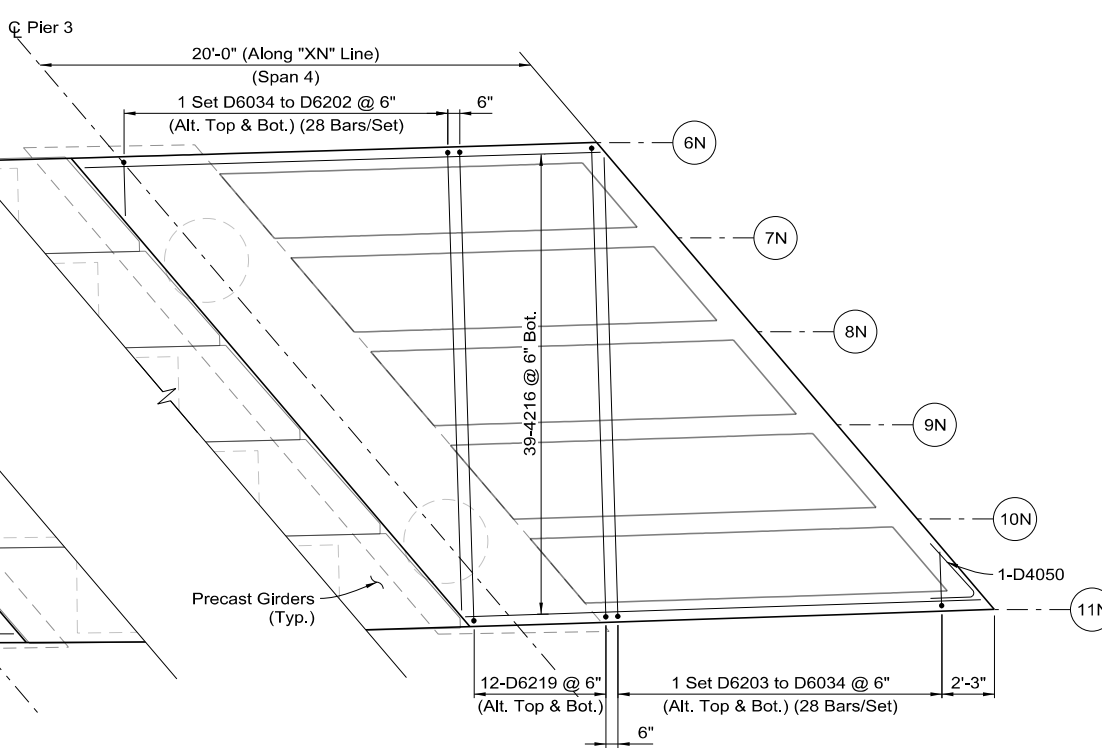
**PLAN**

\*\* - 4" cell vent in bottom slab. A minimum of two cell vents in each cell between girders. One vent to be located at low point of cell. The other vent to be located at the opposite end of cell 18" from face of end diaphragm or pier cap.

**CELL VENT DETAILS**



**PLAN**  
OUTSIDE WIDENING, SPAN 1



**PLAN**  
OUTSIDE WIDENING, SPAN 4

- NOTES**
- For typical sections see Sheets B219 and B220.
  - Girder numbering is for CIP spans only. For precast girders see Framing Plan, Sheet B221.

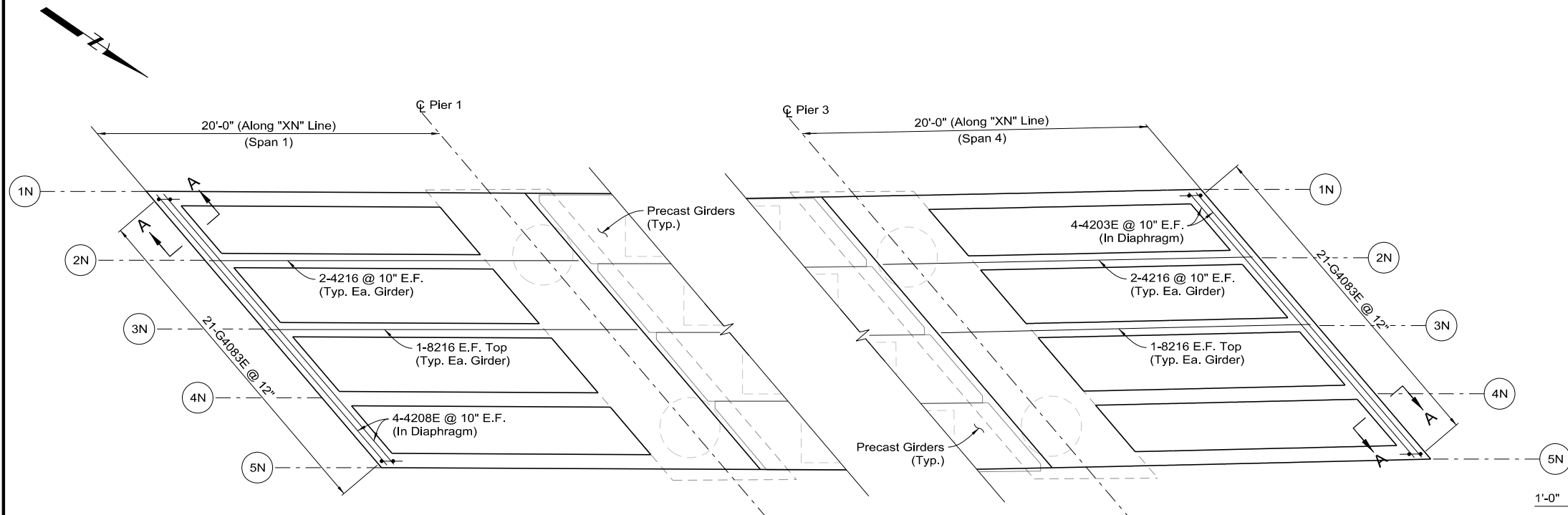
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**CIP SOFFIT  
REINFORCING**

**I-1093 N&S**

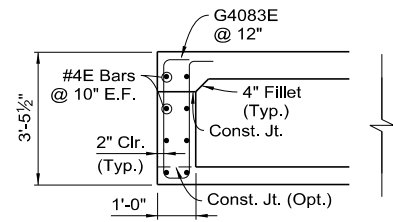
DATE : 1/26/2023

STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B226

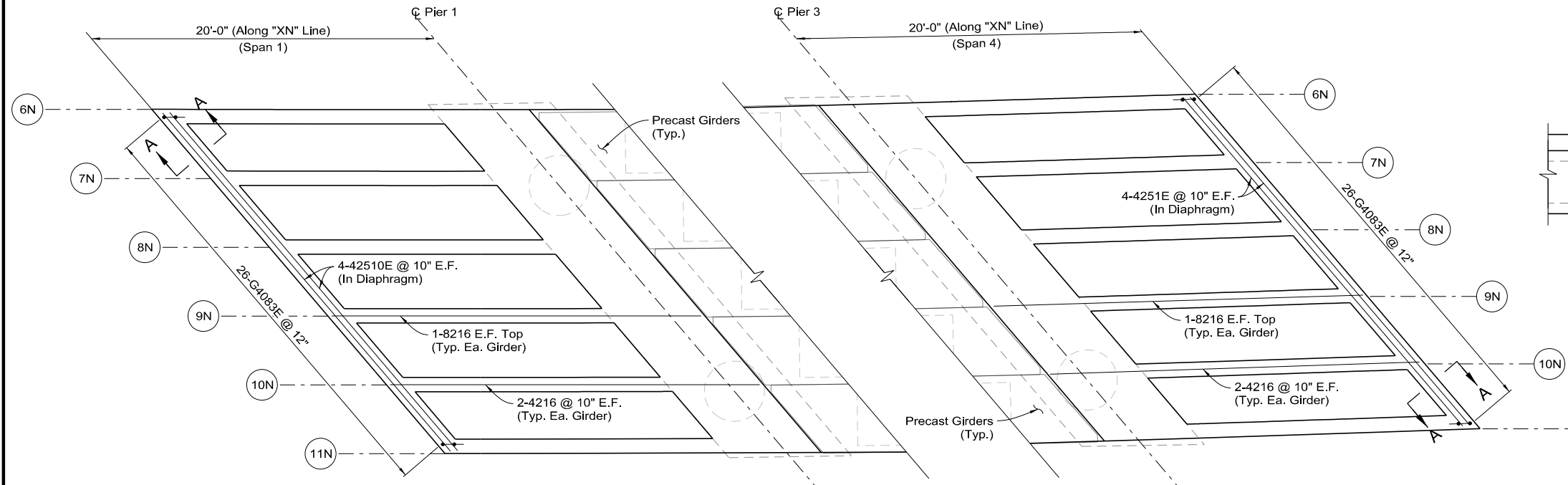


**PLAN**  
INSIDE WIDENING, SPAN 1  
(I-1093N Shown, I-1093S Similar)

**PLAN**  
INSIDE WIDENING, SPAN 4  
(I-1093N Shown, I-1093S Similar)

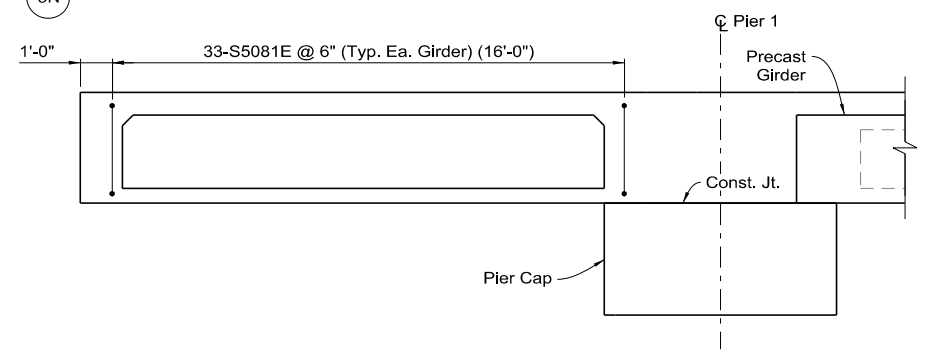


**SECTION A-A**  
THROUGH END DIAPHRAGM

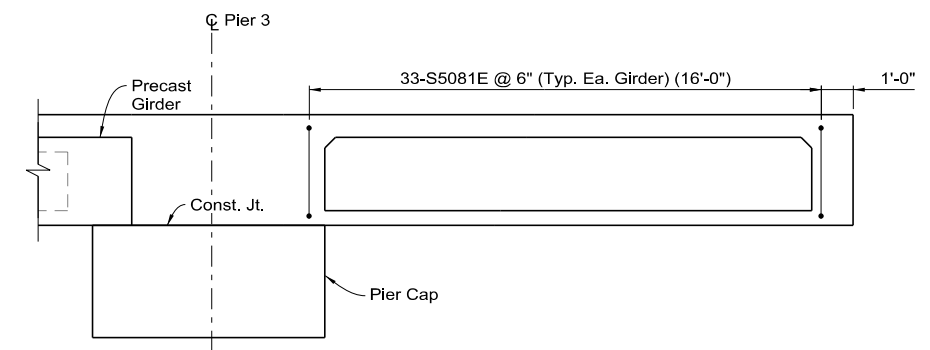


**PLAN**  
OUTSIDE WIDENING, SPAN 1

**PLAN**  
OUTSIDE WIDENING, SPAN 4



**GIRDER ELEVATION**  
SPAN 1



**GIRDER ELEVATION**  
SPAN 4

- NOTES**
- For typical sections see Sheets B219 and B220.
  - Girder numbering is for CIP spans only. For precast girders see Framing Plan, Sheet B221.
  - All dimensions along "XN" or "XS" line.

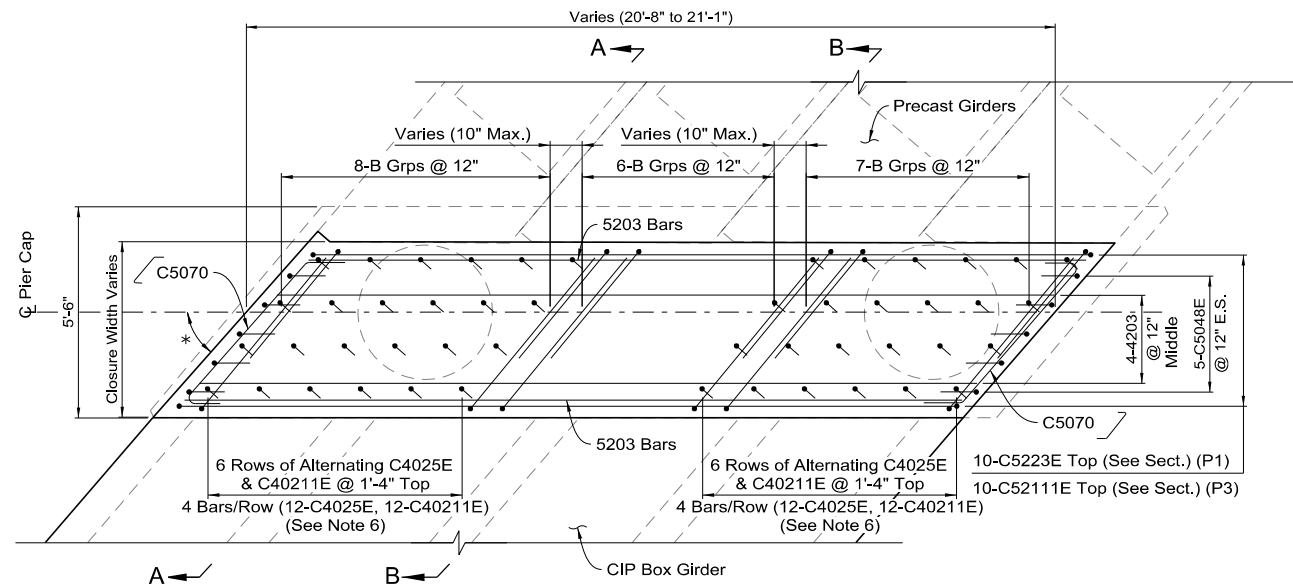
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**CIP GIRDER  
REINFORCING**

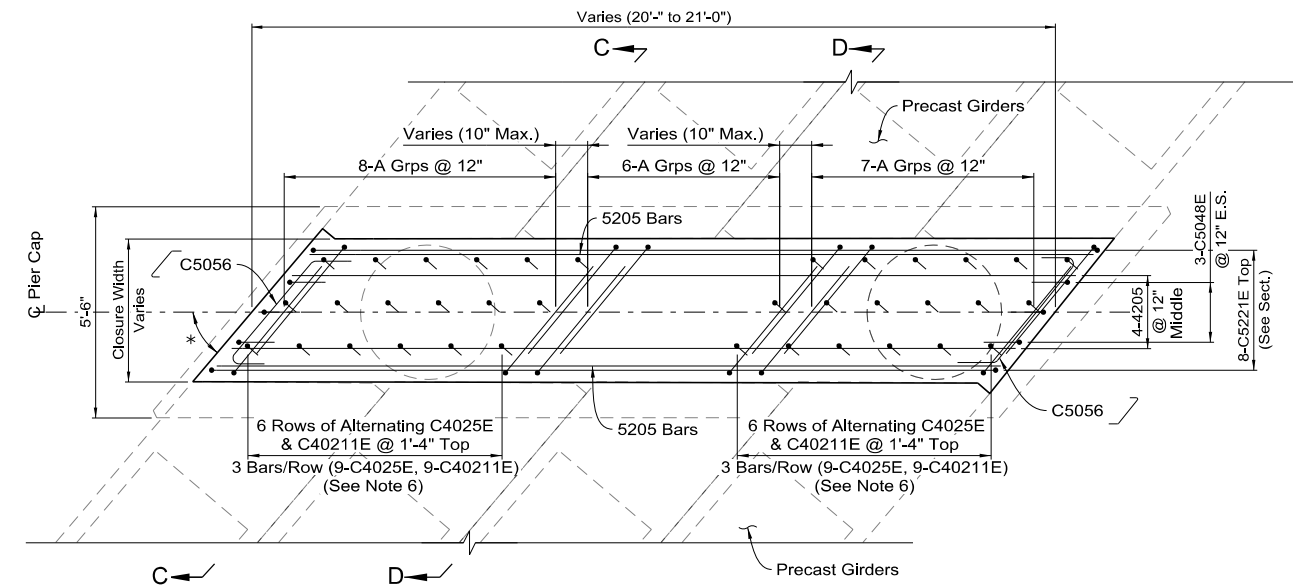
I-1093 N&S

DATE : 1/26/2023

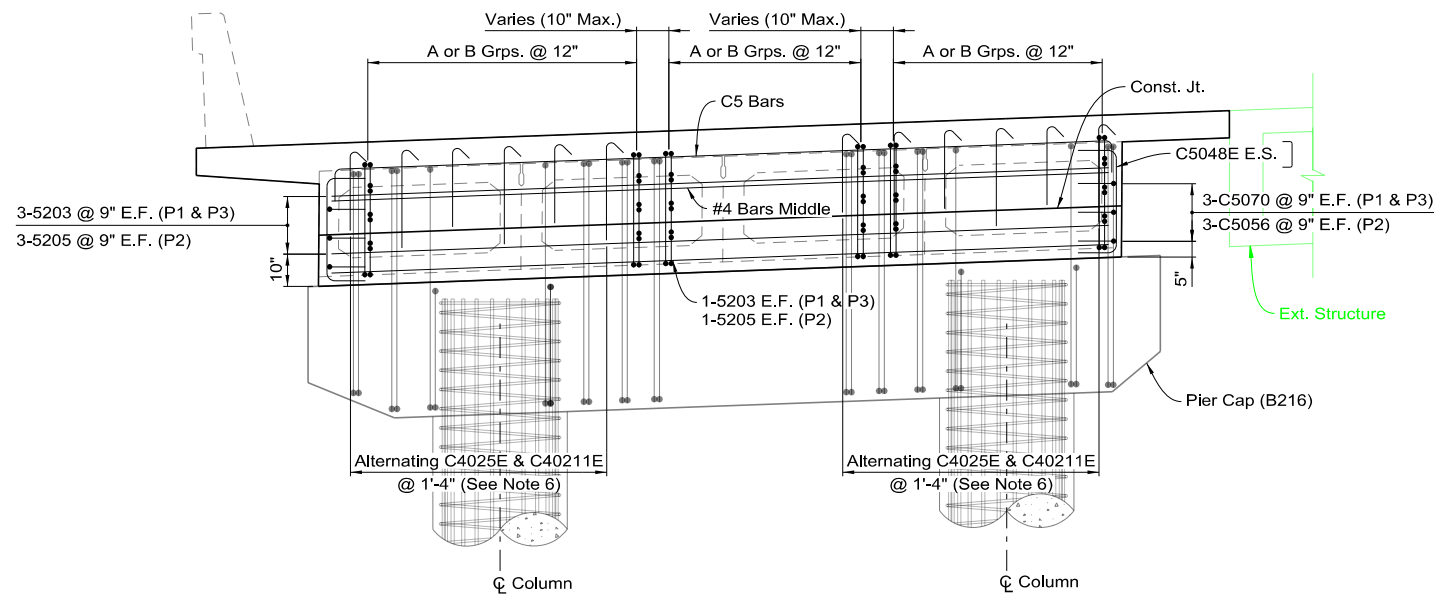
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B227



**PLAN**  
PIER 1 AND PIER 3



**PLAN**  
PIER 2



**ELEVATION**  
LOOKING AHEAD ON LINE, ALONG SKEW  
(I-1093N Shown, I-1093S Similar)

\* - 49° 55' 26" (NB)  
49° 37' 34" (SB)

**MINIMUM BAR LAP**  
#5 Bar to #5 Bar = 24"

**NOTES**

1. Dimensions shown are measured along length of pier cap.
2. For Sections A-A, B-B, C-C, and D-D, see Sheet B229.
3. Deck reinforcing steel not shown for clarity.
4. Bar Groups A & B to match spacing of vertical C7 bars in pier cap.
5. Vertical reinforcement is to be placed parallel to alignment.
6. Hook vertical J-bars around the longitudinal top deck reinforcement.

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

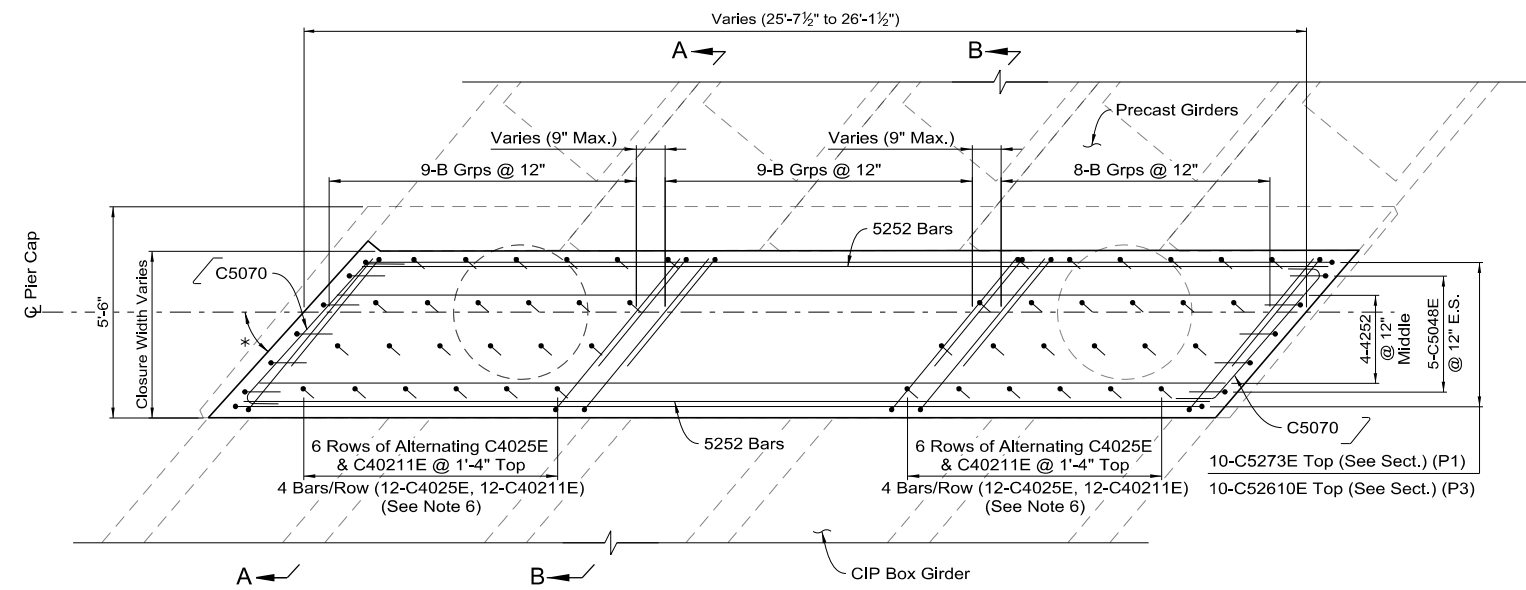
**INSIDE WIDENING  
PIER CLOSURE  
REINFORCING**

I-1093 N&S

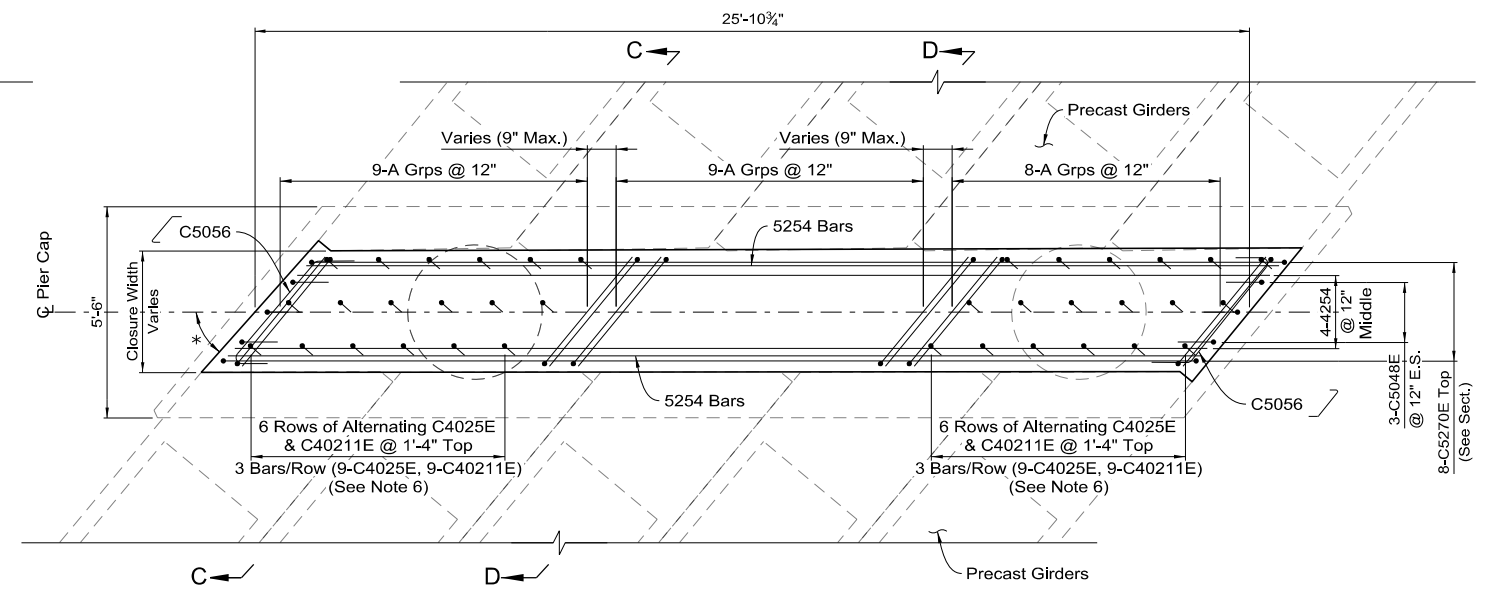
DATE : 1/26/2023



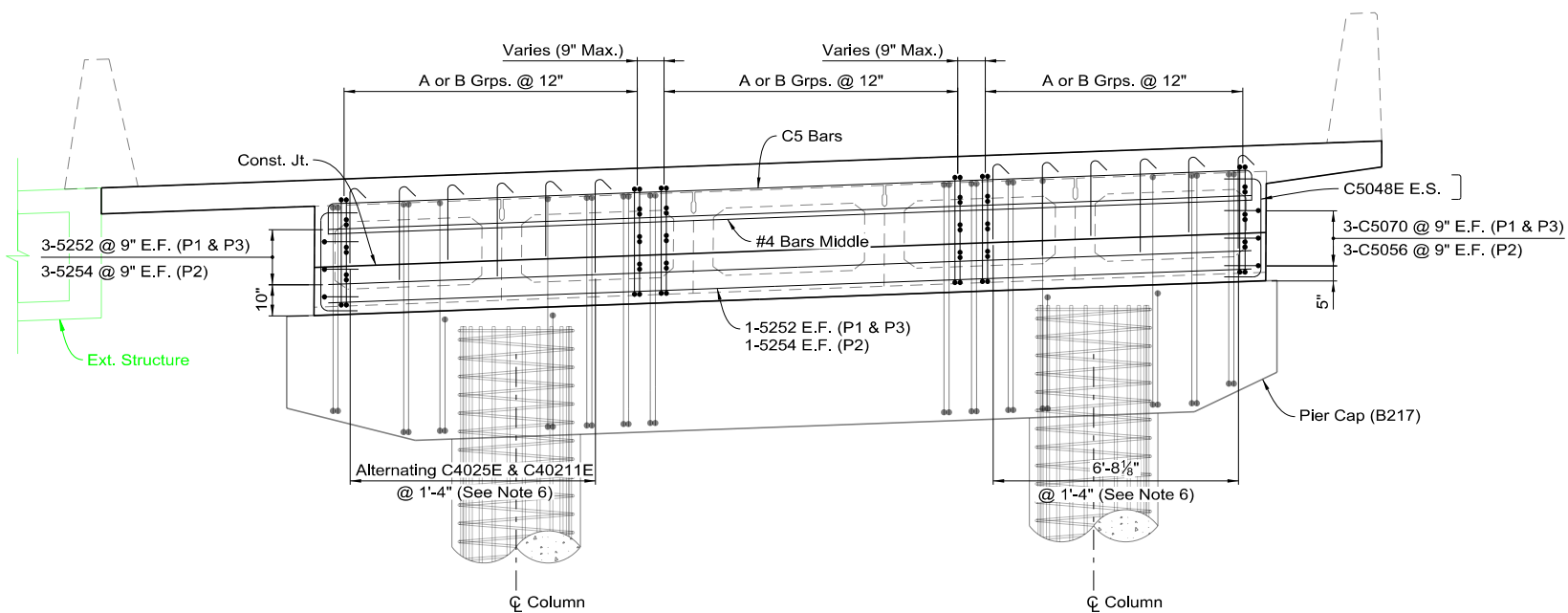
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B228



**PLAN**  
PIER 1 AND PIER 3



**PLAN**  
PIER 2



**ELEVATION**  
LOOKING AHEAD ON LINE  
ALONG SKEW

\* - 50° 30' 19"

MINIMUM BAR LAP  
#5 Bar to #5 Bar = 24"

**NOTES**

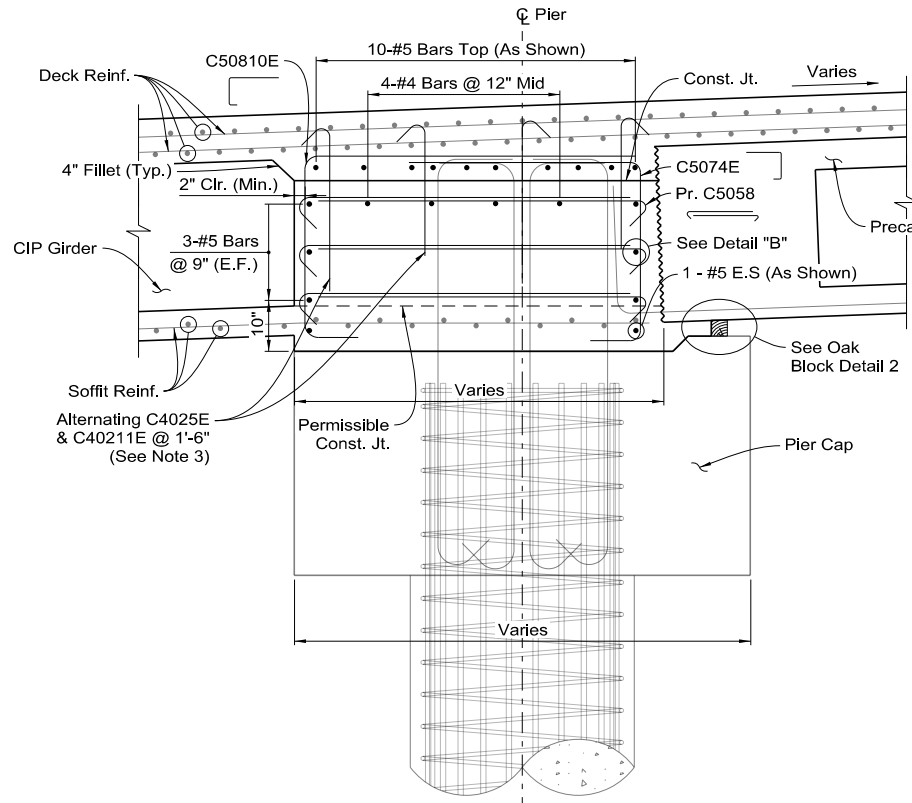
1. Dimensions shown are measured along length of pier cap.
2. For Sections A-A, B-B, C-C, and D-D, see Sheet B229.
3. Deck reinforcing steel not shown for clarity.
4. Bar Groups A & B to match spacing of vertical C7 bars in pier cap.
5. Vertical reinforcement is to be placed parallel to alignment.
6. Hook vertical J-bars around the longitudinal top deck reinforcement.

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

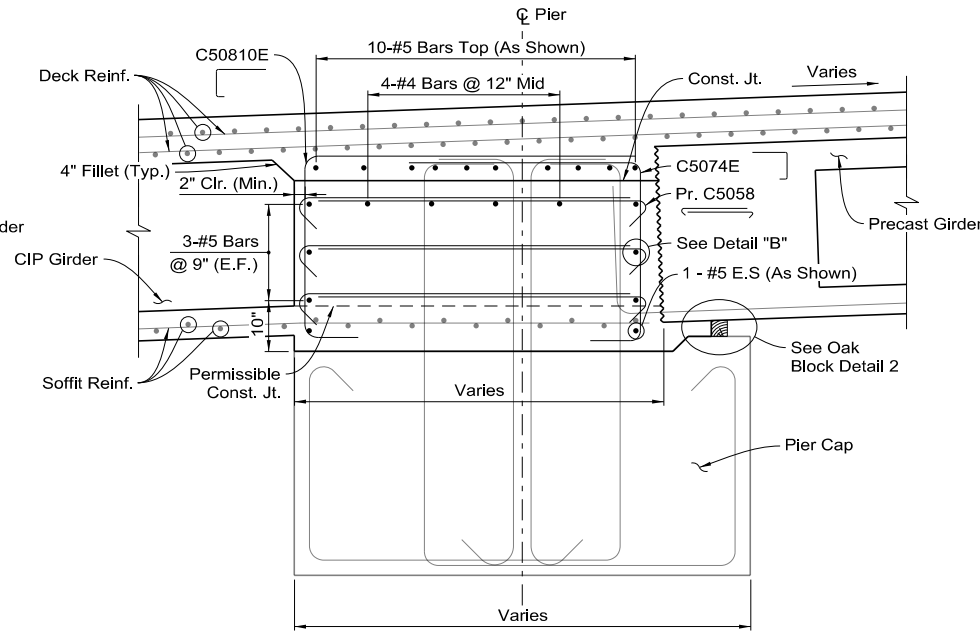
**OUTSIDE WIDENING  
PIER CLOSURE  
REINFORCING**

I-1093 N

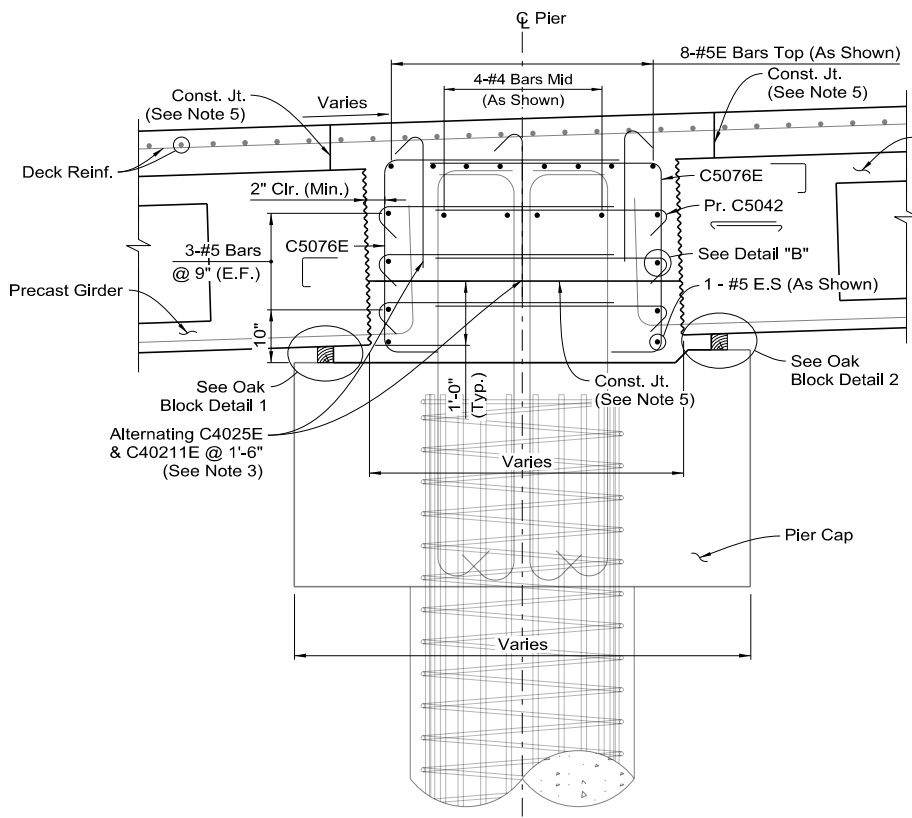
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B229



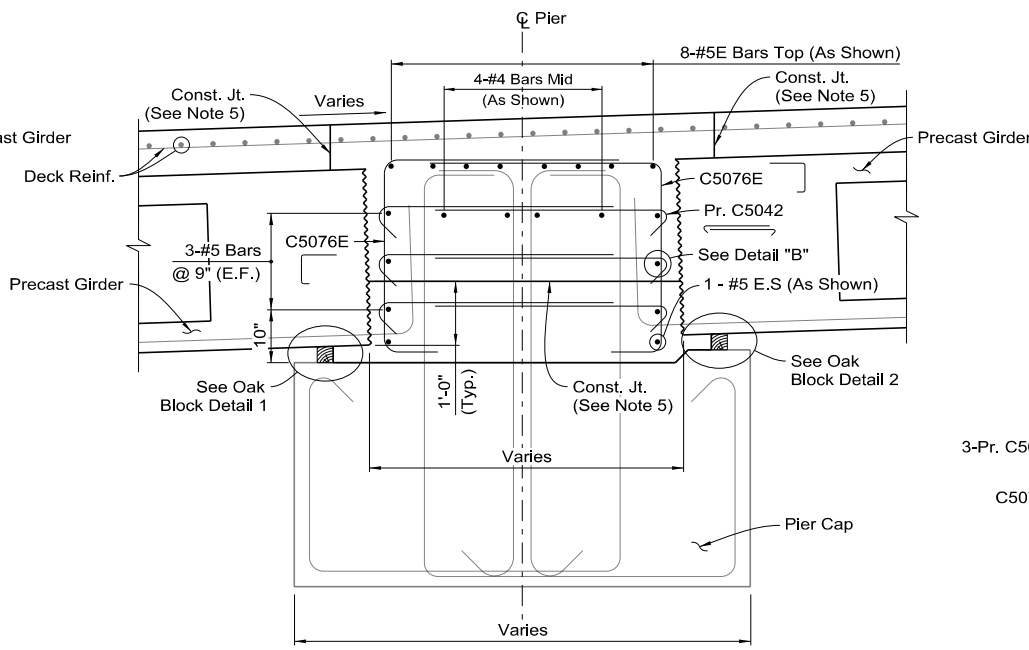
**SECTION A-A**  
PIERS 1 AND 3 - THROUGH COLUMN  
PARALLEL TO ALIGNMENT



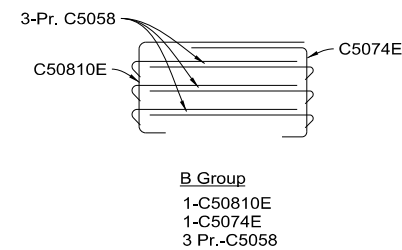
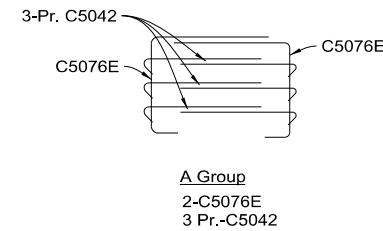
**SECTION B-B**  
PIERS 1 AND 3 - TYPICAL SECTION  
PARALLEL TO ALIGNMENT



**SECTION C-C**  
PIER 2 - THROUGH COLUMN  
PARALLEL TO ALIGNMENT

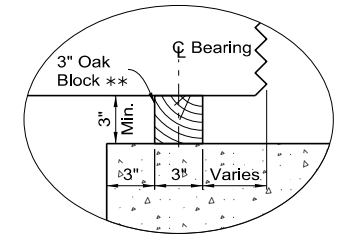


**SECTION D-D**  
PIER 2 - TYPICAL SECTION  
PARALLEL TO ALIGNMENT

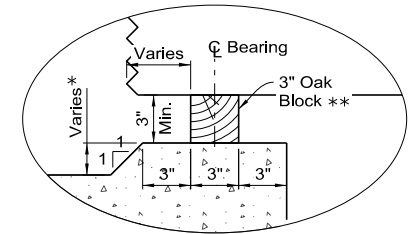


**NOTES**

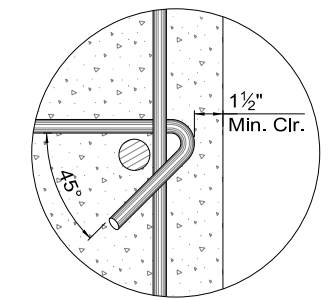
- Oak blocks shall be placed parallel to Pier Caps. Dimensions shown are normal to Pier Caps. Maintain no less than 3" clear under precast girder ends. Contractor shall maintain stability of Precast Girders on Pier Caps during all construction operations. If Oak Block aspect ratios exceed 1:1 additional shoring may be required. No direct payment for oak blocks.
- Roughen all construction joints to 1/4" amplitude.
- Hook vertical J-bars around the longitudinal top deck reinforcement.
- For Pier Cap reinforcing not shown, see Sheet B218.
- For concrete placement schedule, see Sheet B232.



**OAK BLOCK DETAIL 1**  
\*\* - See Note 1



**OAK BLOCK DETAIL 2**  
\* - See Pier Cap Elevation Tables (Sheet B216-B217)  
\*\* - See Note 1

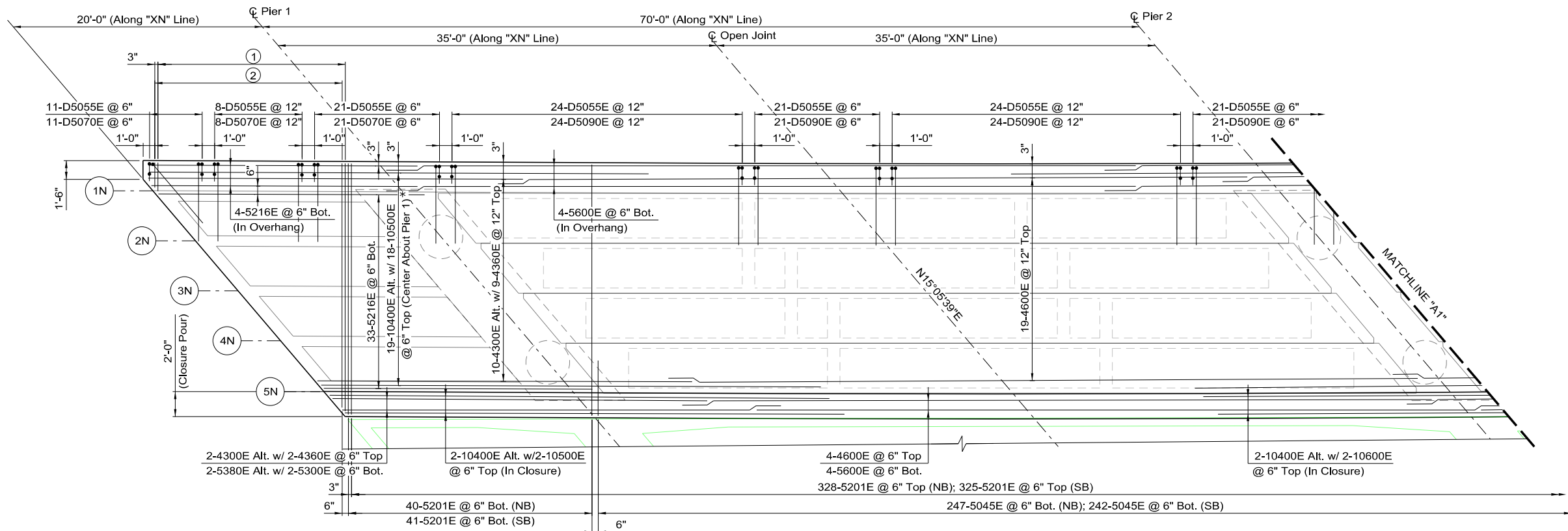


**DETAIL "B"**

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

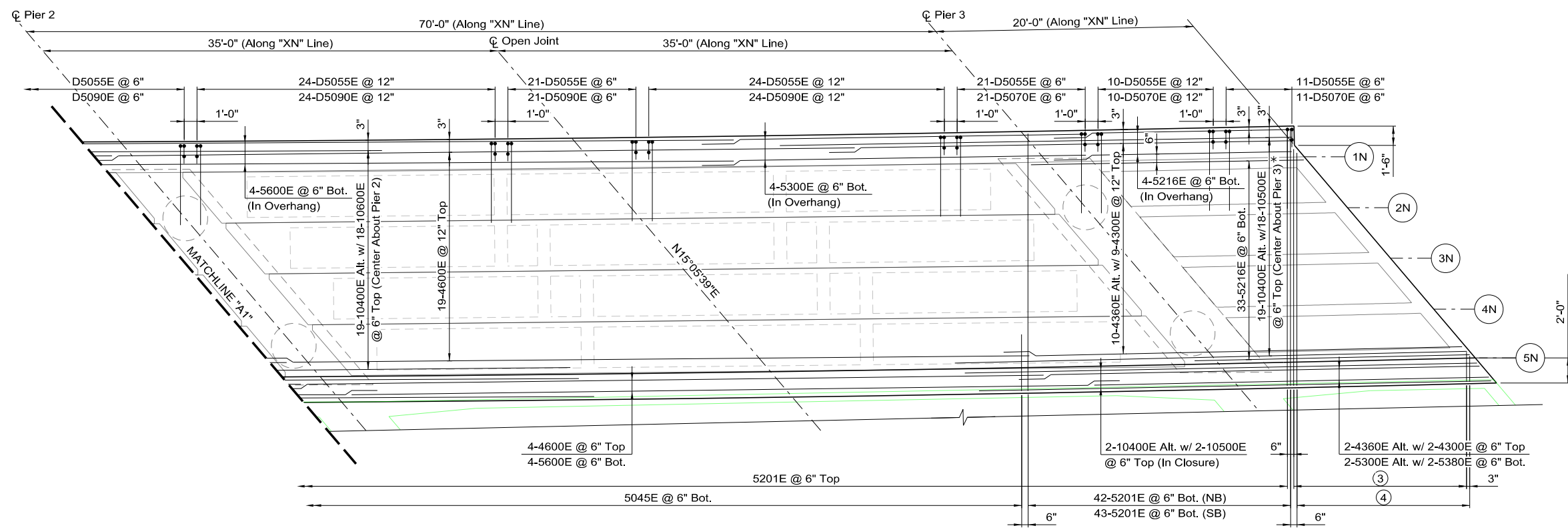
**PIER CAP  
CLOSURE DETAILS**

STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B230



PLAN

- ① - 1 Set 5023E to 51910E @ 6" Top (31 Bars/Set) (NB)  
1 Set 5023E to 5188E @ 6" Top (29 Bars/Set) (SB)
- ② - 1 Set 5020E to 5196E @ 6" Bot. (31 Bars/Set) (NB)  
1 Set 5020E to 5184E @ 6" Bot. (29 Bars/Set) (SB)
- ③ - 1 Set 5185E to 5023E @ 6" Top (28 Bars/Set) (NB)  
1 Set 5201E to 5023E @ 6" Top (31 Bars/Set) (SB)
- ④ - 1 Set 5182E to 5020E @ 6" Bot. (28 Bars/Set) (NB)  
1 Set 51911E to 5020E @ 6" Bot. (31 Bars/Set) (SB)



PLAN

NOTES

1. All dimensions along "XN" line unless otherwise noted.
2. Reinforcing shown for Northbound widening. Southbound widening similar. Reinforcing is identical unless otherwise noted.
3. For typical sections see Sheet B219.
4. Transverse bar spacing noted is at structure centerline.
5. Girder numbering is for CIP spans only. For precast girders see Framing Plan, Sheet B221.
6. Concrete for the closure pour may not be placed until the falsework has been released. For limitations on the release of falsework refer to Section 502.03.12 of the Standard Specifications.

\* - 10500E bars to extend 30'-0" into Span 1/Span 3

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

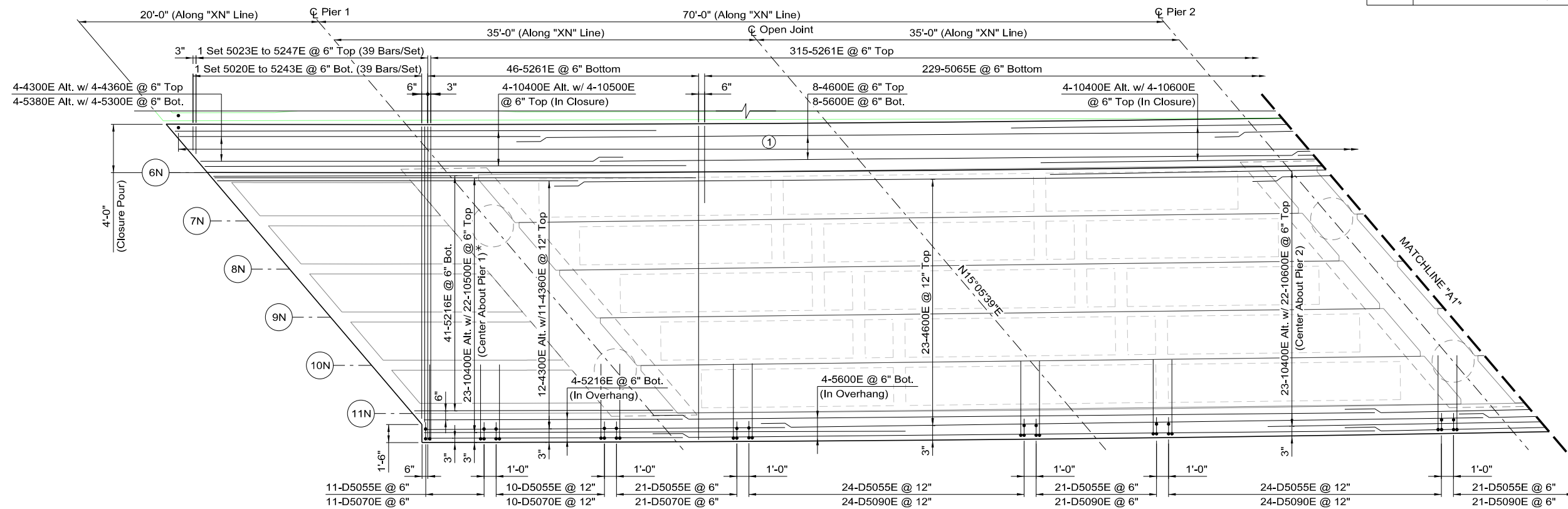
INSIDE WIDENING  
CIP DECK  
REINFORCING

I-1093 N&S

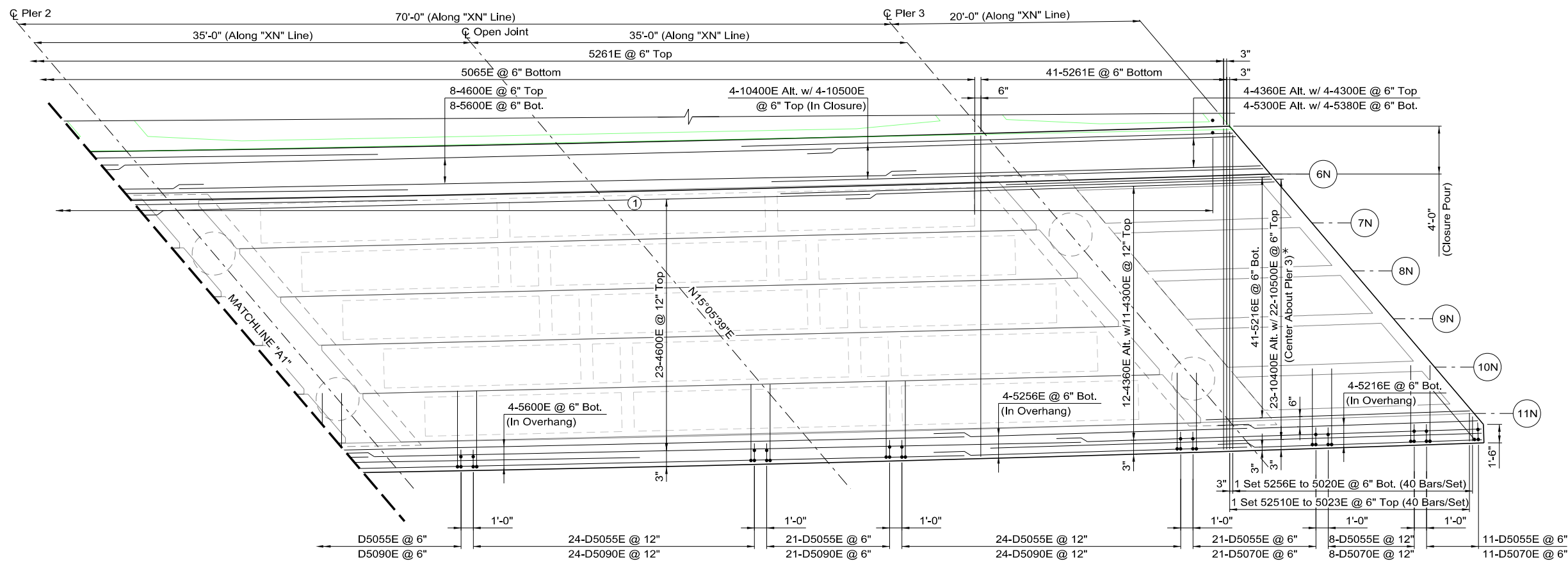
DATE : 1/26/2023

MINIMUM BAR LAP  
#4E Bar to #4E Bar = 24"  
#5E Bar to #5E Bar = 30"

STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B231



PLAN



PLAN

NOTES

1. All dimensions along "XN" line unless otherwise noted.
2. For typical sections see Sheet B220.
3. Transverse bar spacing noted is at structure centerline.
4. Girder numbering is for CIP spans only. For precast girders see Framing Plan, Sheet B221.
5. Concrete for the closure pour may not be placed until the falsework has been released. For limitations on the release of falsework refer to Section 502.03.12 of the Standard Specifications.

\* - 10500E bars to extend 30'-0" into Span 1/Span 3

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**OUTSIDE WIDENING  
CIP DECK  
REINFORCING**

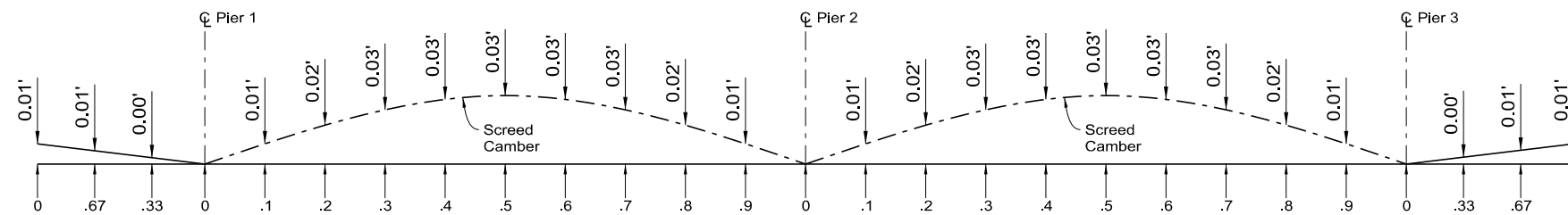
I-1093 N

MINIMUM BAR LAP  
#4E Bar to #4E Bar = 24"  
#5E Bar to #5E Bar = 30"

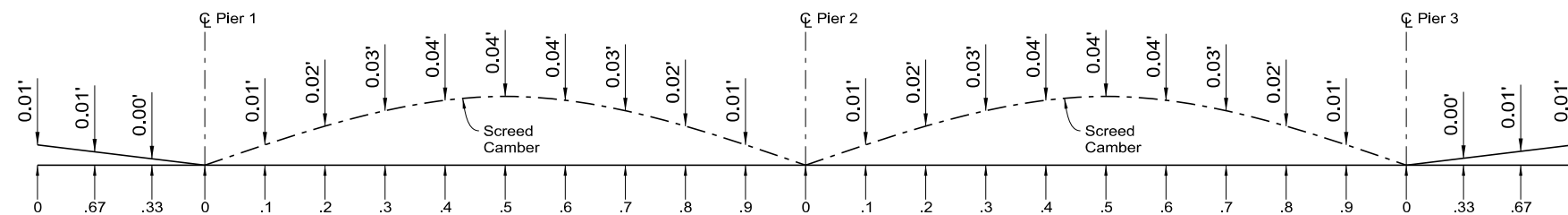
① - Pr. 5008DE dowel bars @ 24" (see rail sheets B238-B240). Contractor has option to install bars in new deck section before deck pour, instead of doweling.

DATE : 1/26/2023

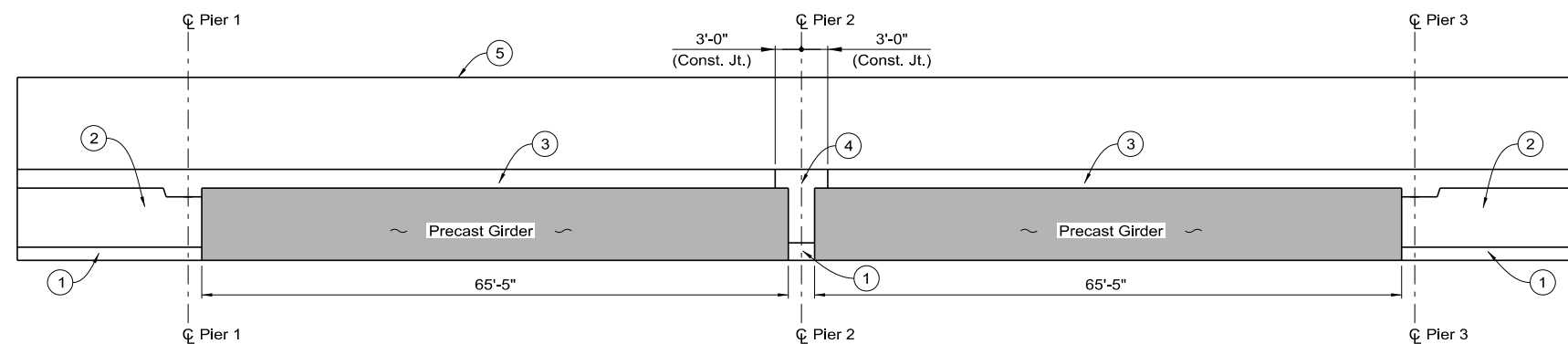
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B232



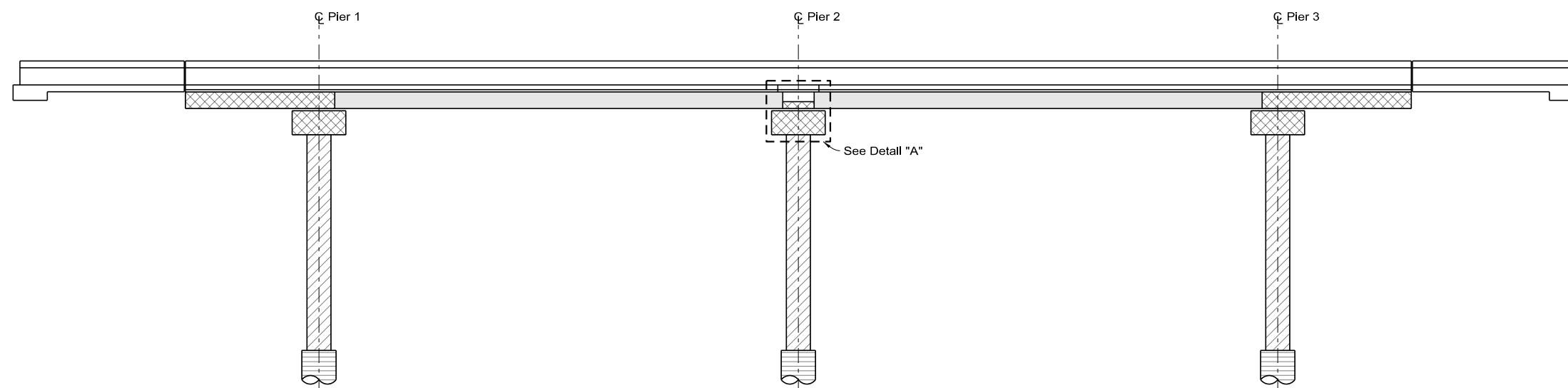
**CAMBER DIAGRAM**  
INTERIOR WIDENING



**CAMBER DIAGRAM**  
EXTERIOR WIDENING



**CONCRETE PLACEMENT SCHEDULE**



**CONCRETE CLASSIFICATION DIAGRAM**

**CAMBER NOTES**

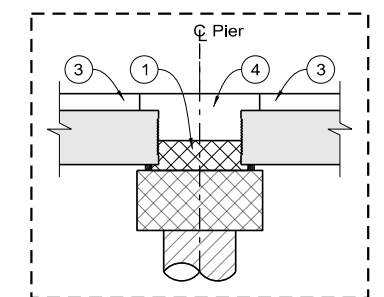
- A. For precast girder camber due to dead load and prestressing, see Girder Schedule, Sheet B222.
- B. Screed camber represents the average of the precast girder deflections due to the weight of the wet concrete deck and bridge rail. Add screed camber to the finish grade to compensate for downward deflection due to the dead loads described above.

**PLACEMENT SCHEDULE NOTES**

- A. Place soffit and partial pier closure in regions ① after erection of precast girders.
- B. Place webs, pier closures and diaphragms as indicated in regions ②.
- C. Top slab concrete ③ shall be placed separately from girders. There shall be no transverse construction joints in the top slab except where shown in the plans.
- D. Place pier and top slab closures as indicated in region ④.
- E. Do not place Barrier Rails ⑤ until falsework is released.

**CONCRETE CLASSIFICATION LEGEND**

- Approach Slab, Top Deck Slab, and Bridge Rail: Class EA Modified  $f'_c=4.5$  ksi @ 28 Days
- Columns: Class DA Modified  $f'_c=4.5$  ksi @ 28 Days
- Bottom Slab, Webs, Diaphragms, and Pier Caps: Class DA Modified  $f'_c=4.5$  ksi @ 28 Days
- Drilled Shafts: Class SA Modified  $f'_c=4.5$  ksi @ 28 Days
- Precast Girders: Class PAA  $f'_c=7.5$  ksi @ 28 Days  
Entrained Air = 4%-7%

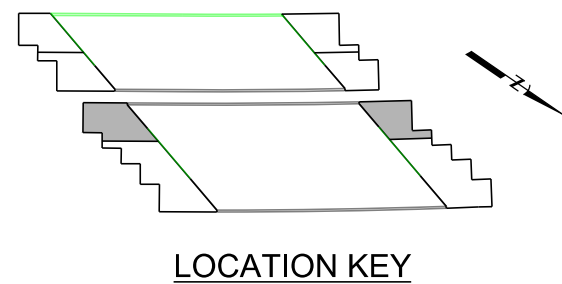
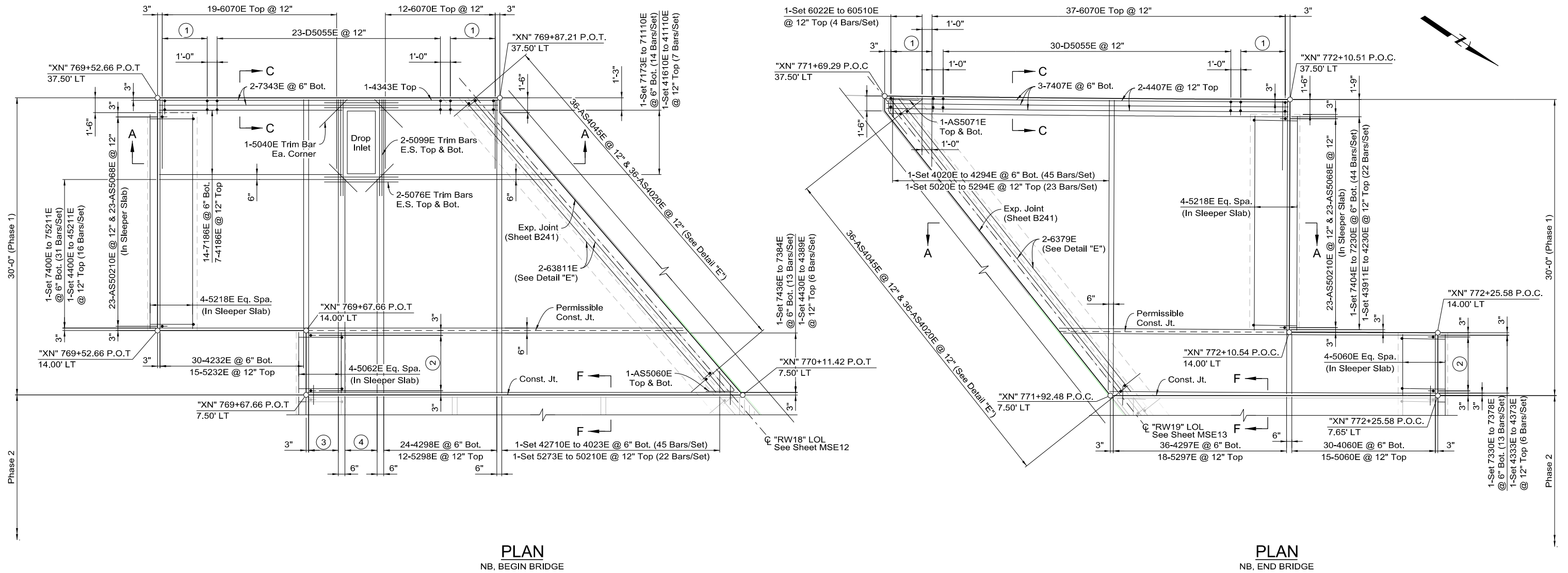


**DETAIL "A"**  
CONCRETE CLASSIFICATION AND PLACEMENT SCHEDULE  
(Pier 2)

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION  
**CAMBER AND  
CONCRETE PLACEMENT  
DIAGRAMS**

I-1093 N&S

STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B233



- ① 11-D5055E @ 6"
- ② 6-AS50210E @ 12" & 6-AS5068E @ 12"
- ③ 7-4298E @ 6" Bot. & 4-5298E @ 12" Top
- ④ 8-4218E @ 6" Bot. & 4-5218E @ 12" Top

**NOTES**

1. All dimensions along "XN" line unless otherwise noted.
2. For Expansion Joint Details, see Sheet B241.
3. Trim bars shall be 2" clear of drop inlet. Any trim bars near the edge of approach slab shall be placed 2" clear from the edge.
4. Location of drop inlet is approximate. For actual location, refer to Drainage Sheets.

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

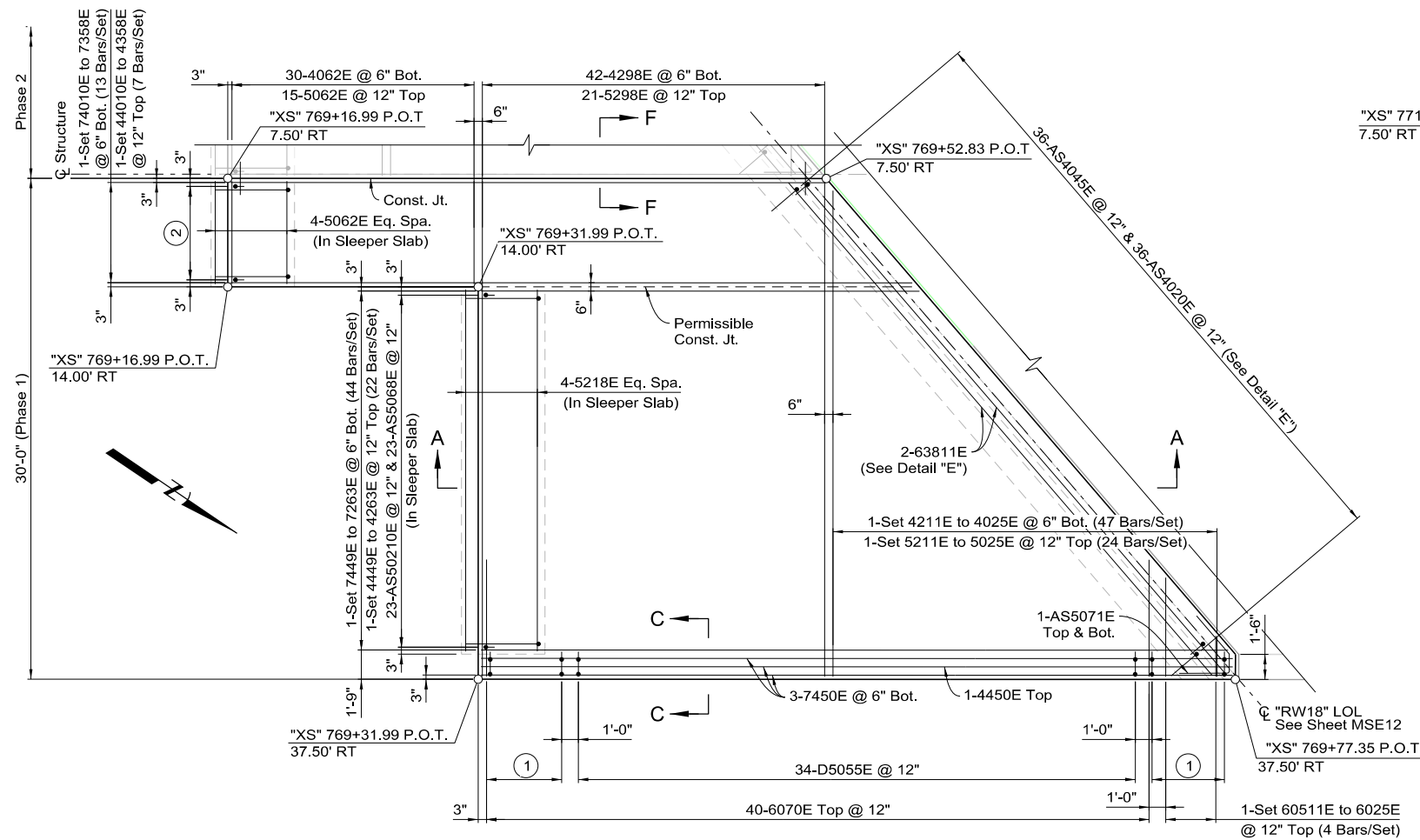
**NB PHASE 1  
APPROACH SLAB  
REPLACEMENT**

I-1093 N

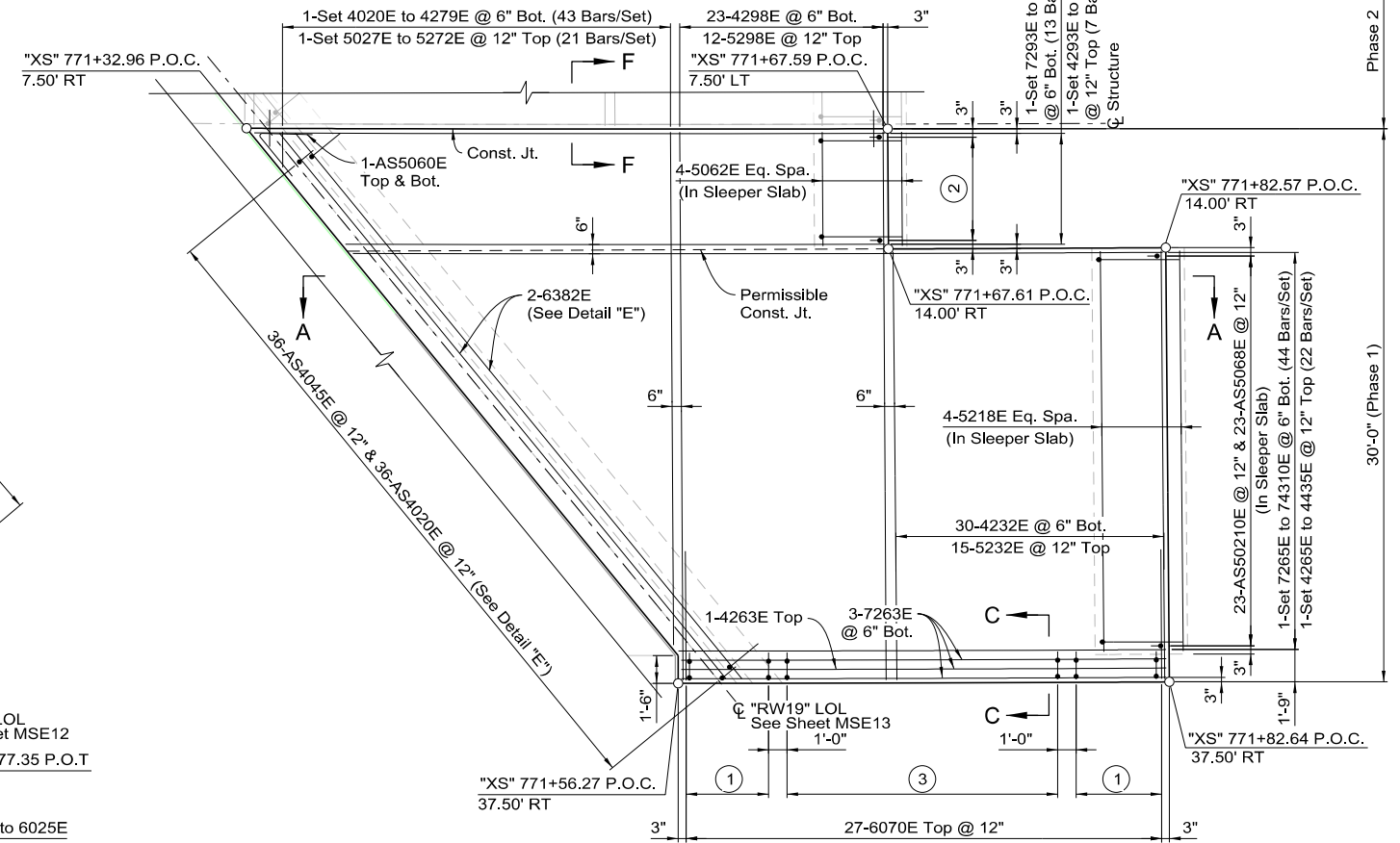
DATE : 1/26/2023



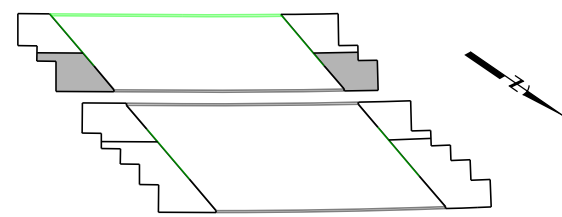
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B234



**PLAN**  
SB, BEGIN BRIDGE



**PLAN**  
SB, END BRIDGE



**LOCATION KEY**

- ① 11-D5055E @ 6"
- ② 6-AS50210E @ 12" & 6-AS5068E @ 12"
- ③ 15-D5055E @ 6"

**NOTES**

1. All dimensions along "XS" line unless otherwise noted.
2. For Expansion Joint Details, see Sheet B241.

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**SB PHASE 1  
APPROACH SLAB  
REPLACEMENT**

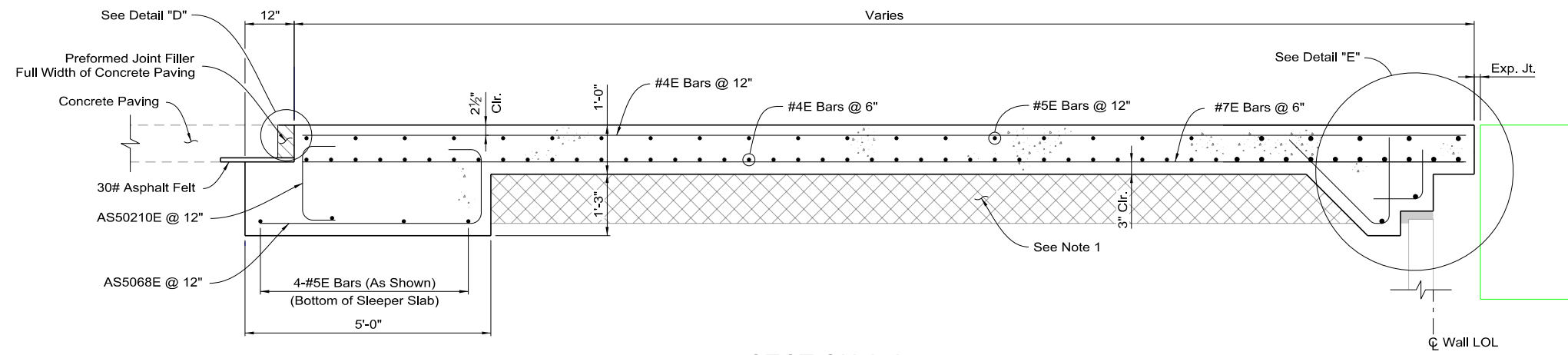
I-1093 S



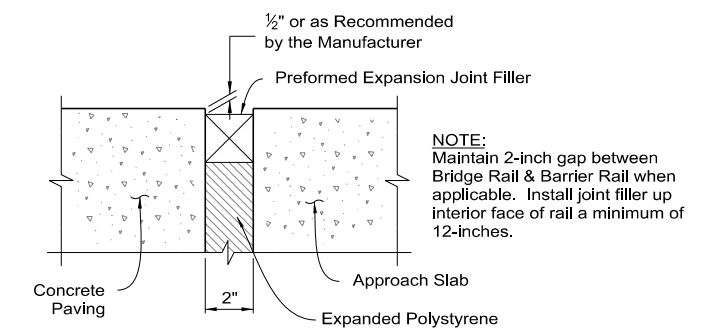




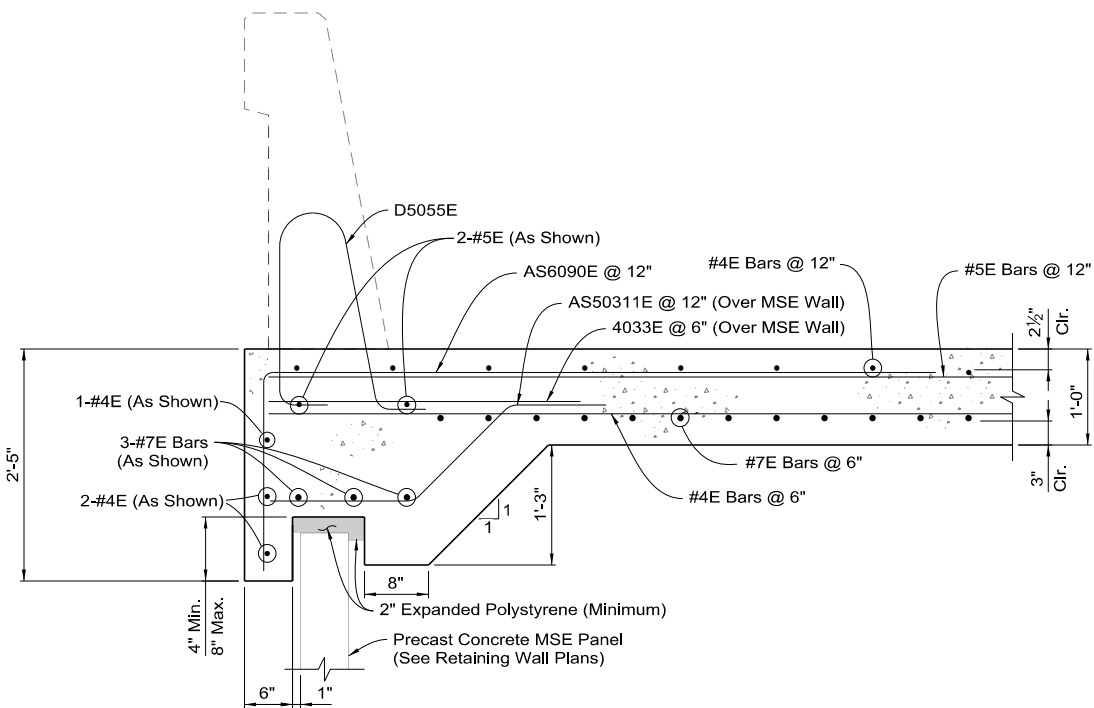
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B237



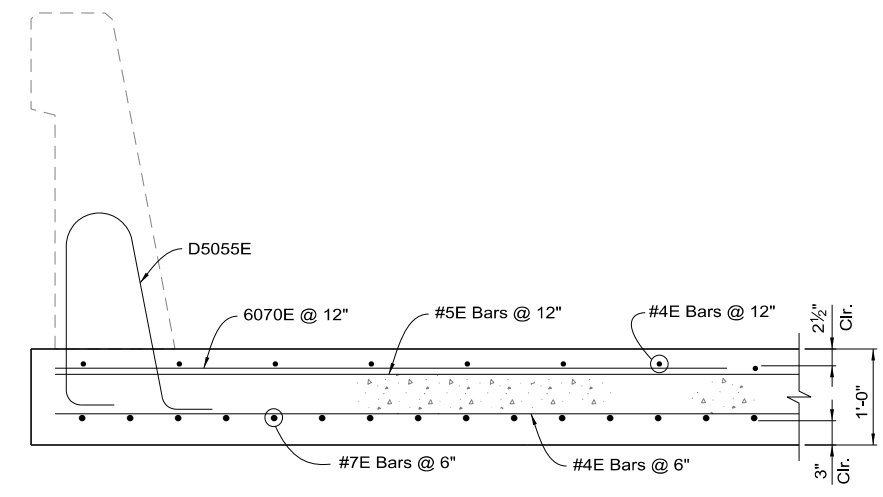
**SECTION A-A**  
CONCRETE PAVING



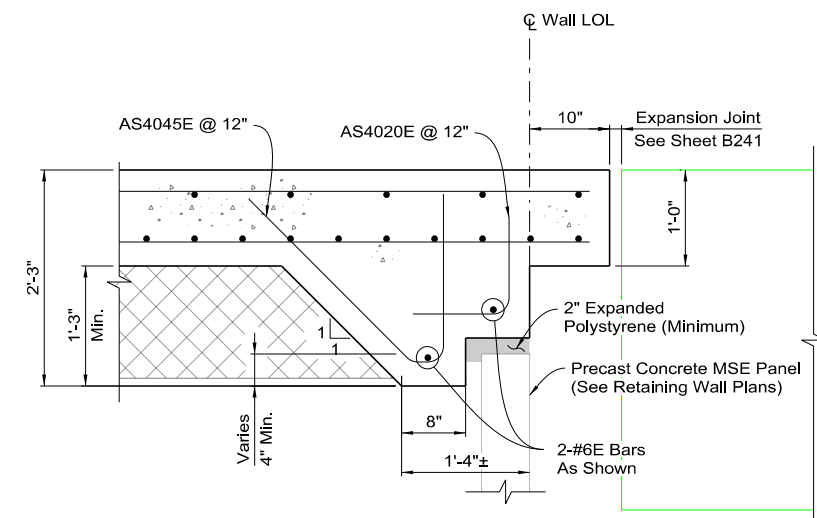
**DETAIL "D"**  
CONCRETE PAVING



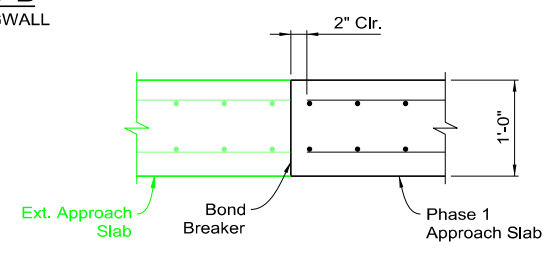
**SECTION B-B**  
SLEEPER SLAB/WINGWALL



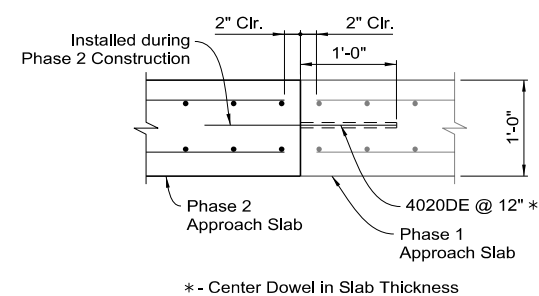
**SECTION C-C**  
OVER SUBGRADE



**DETAIL "E"**  
APPROACH SLAB COPING  
NORMAL TO WALL



**SECTION F-F**  
PHASE 1



**SECTION F-F**  
PHASE 2

**NOTES**

1. Fill material under approach slabs shall be a 12" layer of granular backfill compacted to not less than 95% of the maximum density in accordance with subsection 207.03.01 of the Standard Specifications.
2. For expansion joint details, see Sheet B241.

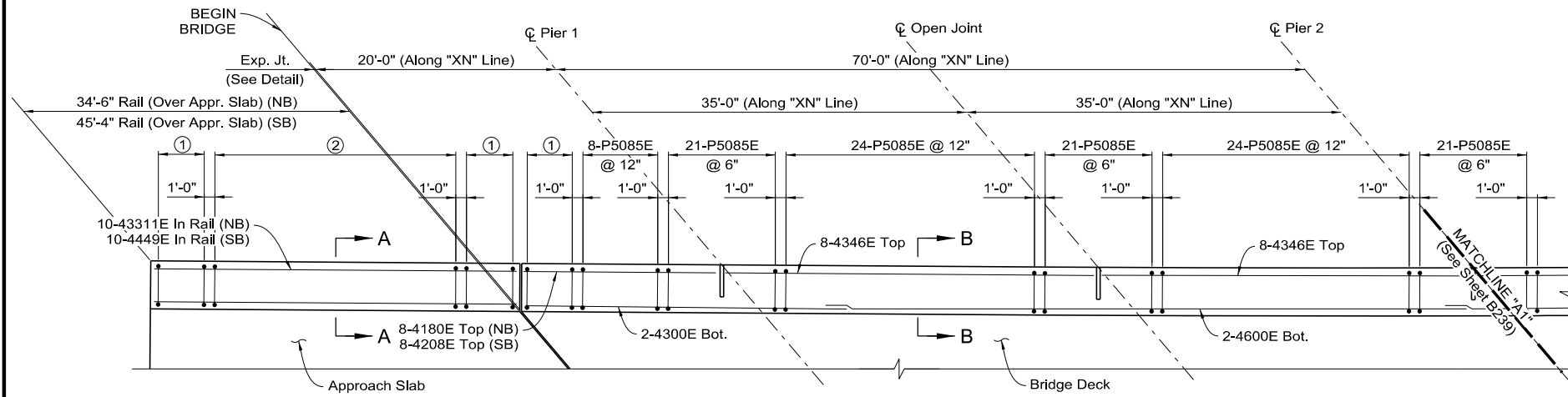
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**APPROACH SLAB  
SECTIONS AND  
DETAILS**

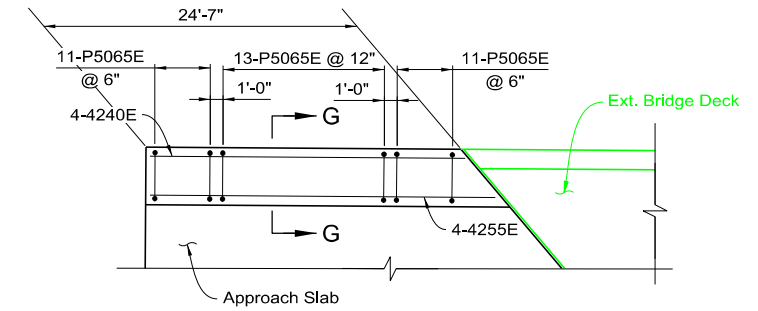
I-1093 N&S

DATE : 1/26/2023

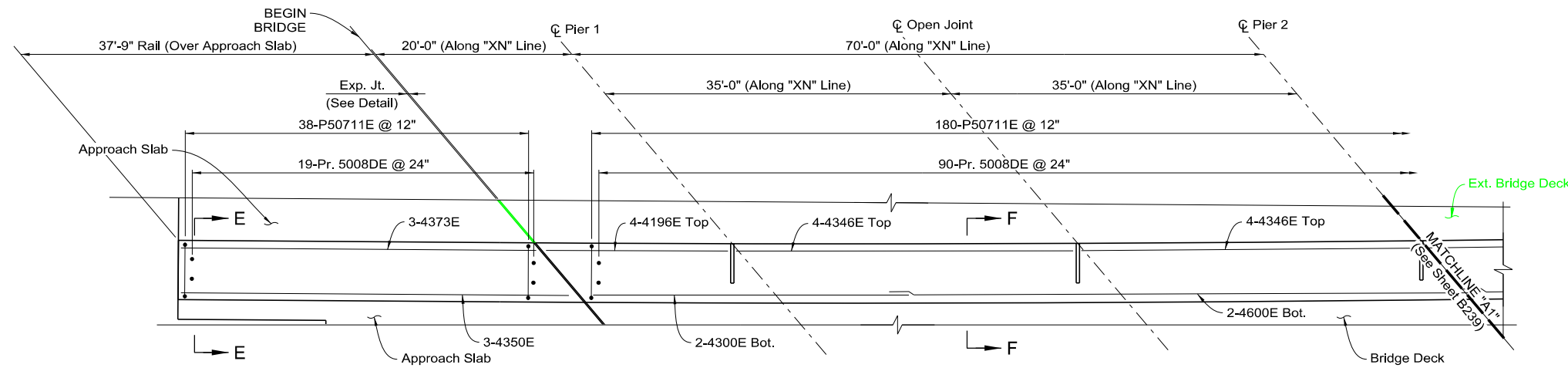
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B238



**INSIDE RAIL PLAN**  
I-1093N AND I-1093S



**OUTSIDE RAIL PLAN**  
I-1093S, APPROACH SLAB 1

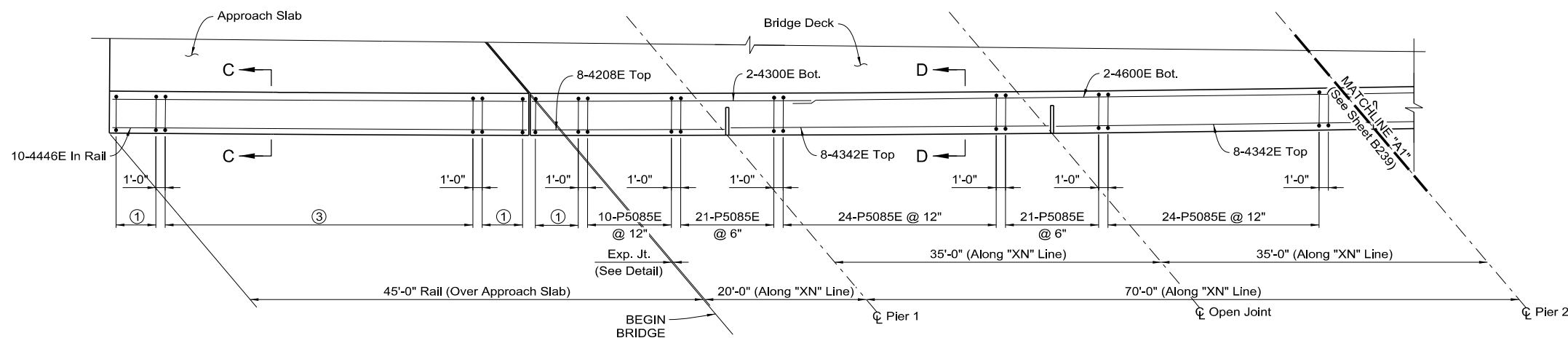


**MIDDLE RAIL PLAN**  
I-1093N

- ① 11-P5085E @ 6"
- ② 23-P5085E @ 12" (NB); 34-P5085E @ 12" (SB)
- ③ 34-P5085E @ 12"

**NOTES**

1. All dimensions along "XN" or "XS" line unless otherwise noted.
2. Reinforcing shown for Northbound widening. Southbound widening similar. Reinforcing is identical unless otherwise noted.
3. Match P5085E Bars with D5055E Bars in Deck.
4. For all sections, see Sheet B240.
5. For aesthetic treatments to bridge rail, see Landscape & Aesthetics plans.



**OUTSIDE RAIL PLAN**  
I-1093N

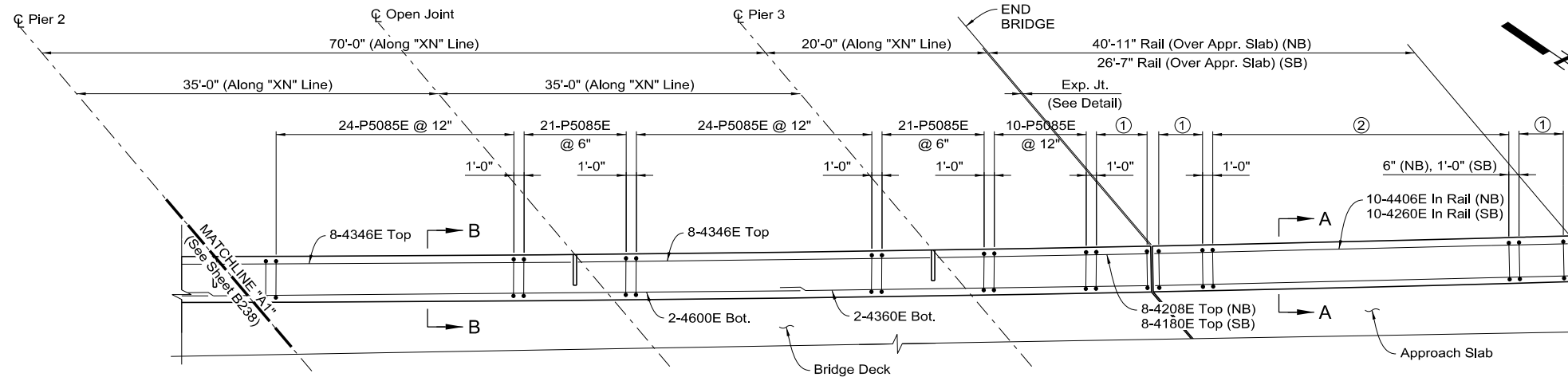
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**BRIDGE RAIL  
SPANS 1 AND 2**

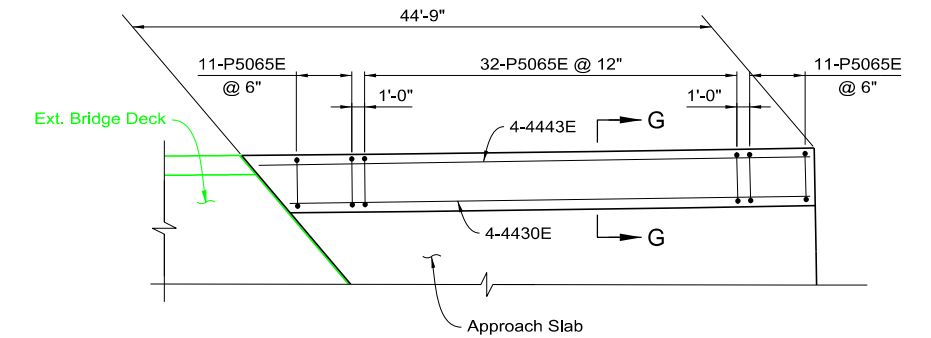
I-1093 N&S

DATE : 1/26/2023

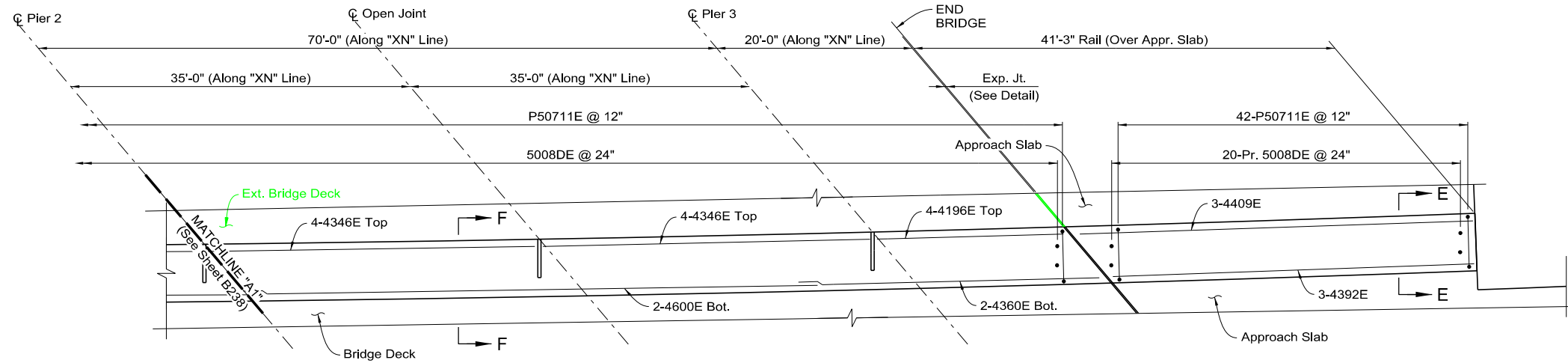
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B239



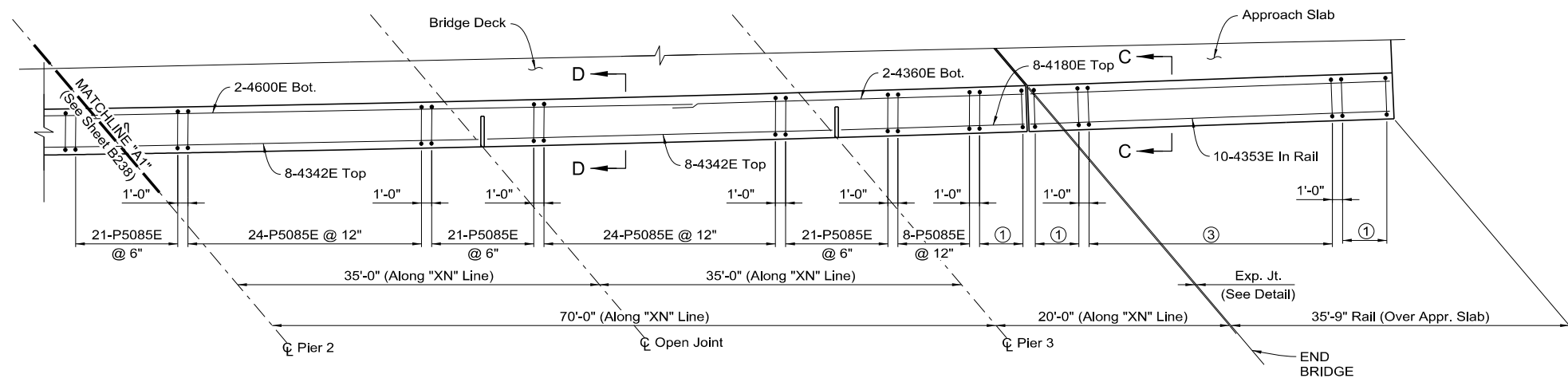
**INSIDE RAIL PLAN**  
I-1093N AND I-1093S



**OUTSIDE RAIL PLAN**  
I-1093S, APPROACH SLAB 2



**MIDDLE RAIL PLAN**  
I-1093N



**OUTSIDE RAIL PLAN**  
I-1093N

- ① 11-P5085E @ 6"
- ② 30-P5085E @ 12" (NB); 15-P5085E @ 12" (SB)
- ③ 24-P5085E @ 12"

**NOTES**

1. All dimensions along "XN" or "XS" line unless otherwise noted.
2. Reinforcing shown for Northbound widening. Southbound widening similar. Reinforcing is identical unless otherwise noted.
3. Match P5085E Bars with D5055E Bars in Deck.
4. For all sections, see Sheet B240.
5. For aesthetic treatments to bridge rail, see Landscape & Aesthetics plans.

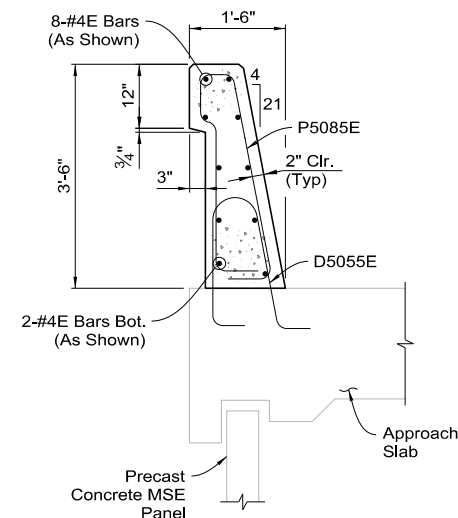
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**BRIDGE RAIL  
SPANS 3 AND 4**

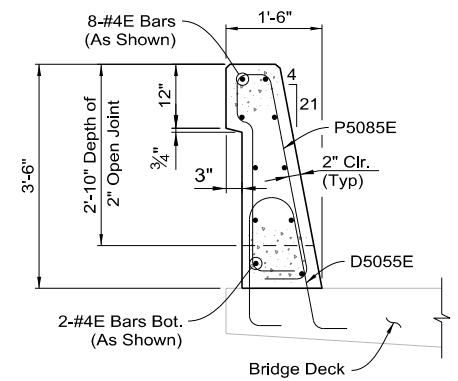
I-1093 N&S



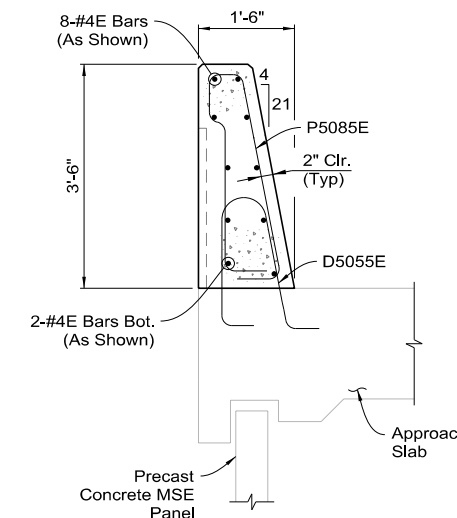
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B240



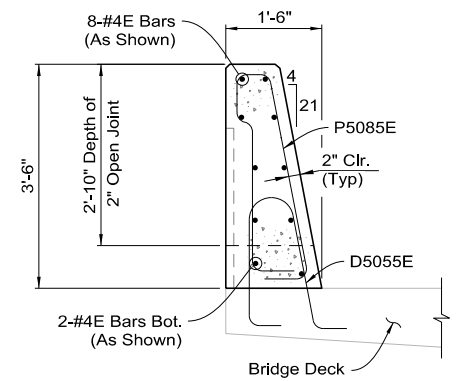
**SECTION A-A**  
TYPICAL APPROACH SLAB, INSIDE WIDENING



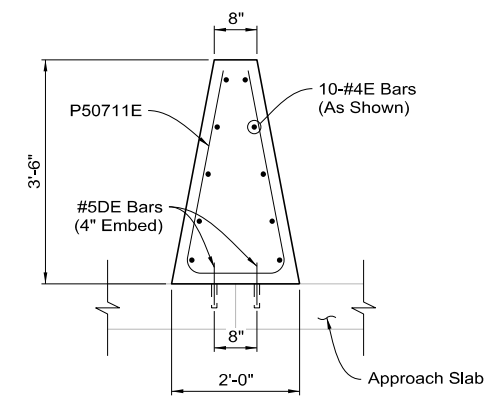
**SECTION B-B**  
TYPICAL SUPERSTRUCTURE, INSIDE WIDENING



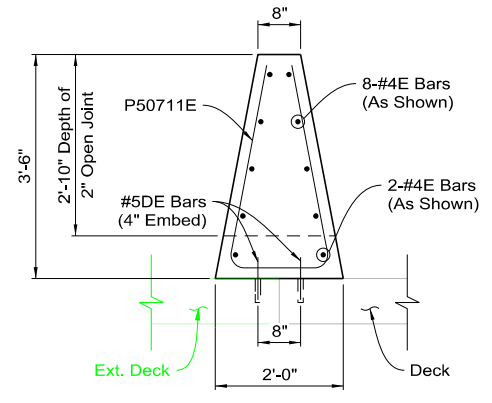
**SECTION C-C**  
TYPICAL APPROACH SLAB, OUTSIDE WIDENING



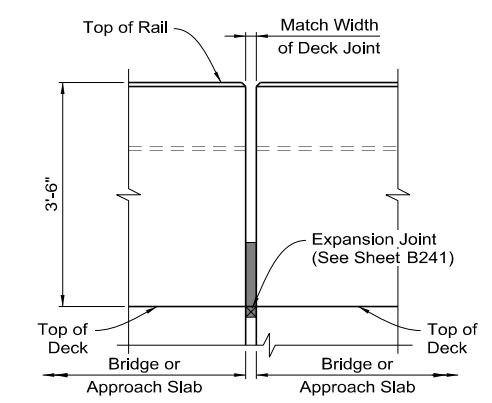
**SECTION D-D**  
TYPICAL SUPERSTRUCTURE, OUTSIDE WIDENING



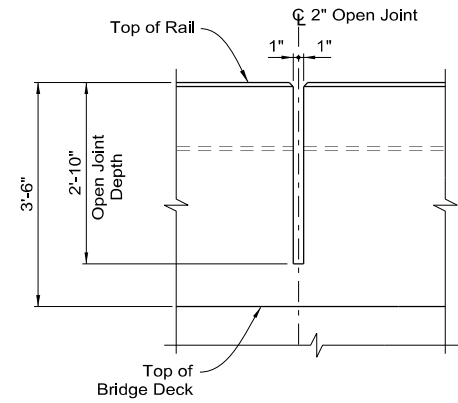
**SECTION E-E**  
TYPICAL APPROACH SLAB



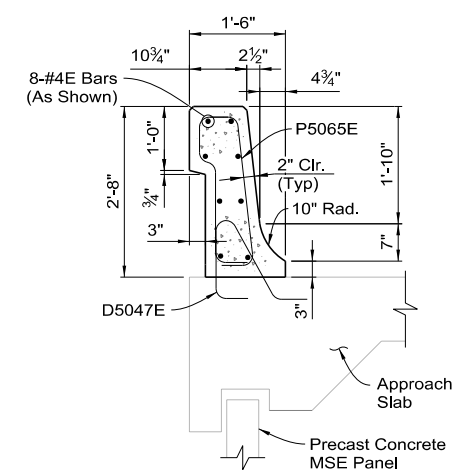
**SECTION F-F**  
TYPICAL SUPERSTRUCTURE



**EXPANSION JOINT DETAIL**



**2" OPEN JOINT DETAIL**



**SECTION G-G**  
TYPICAL APPROACH SLAB

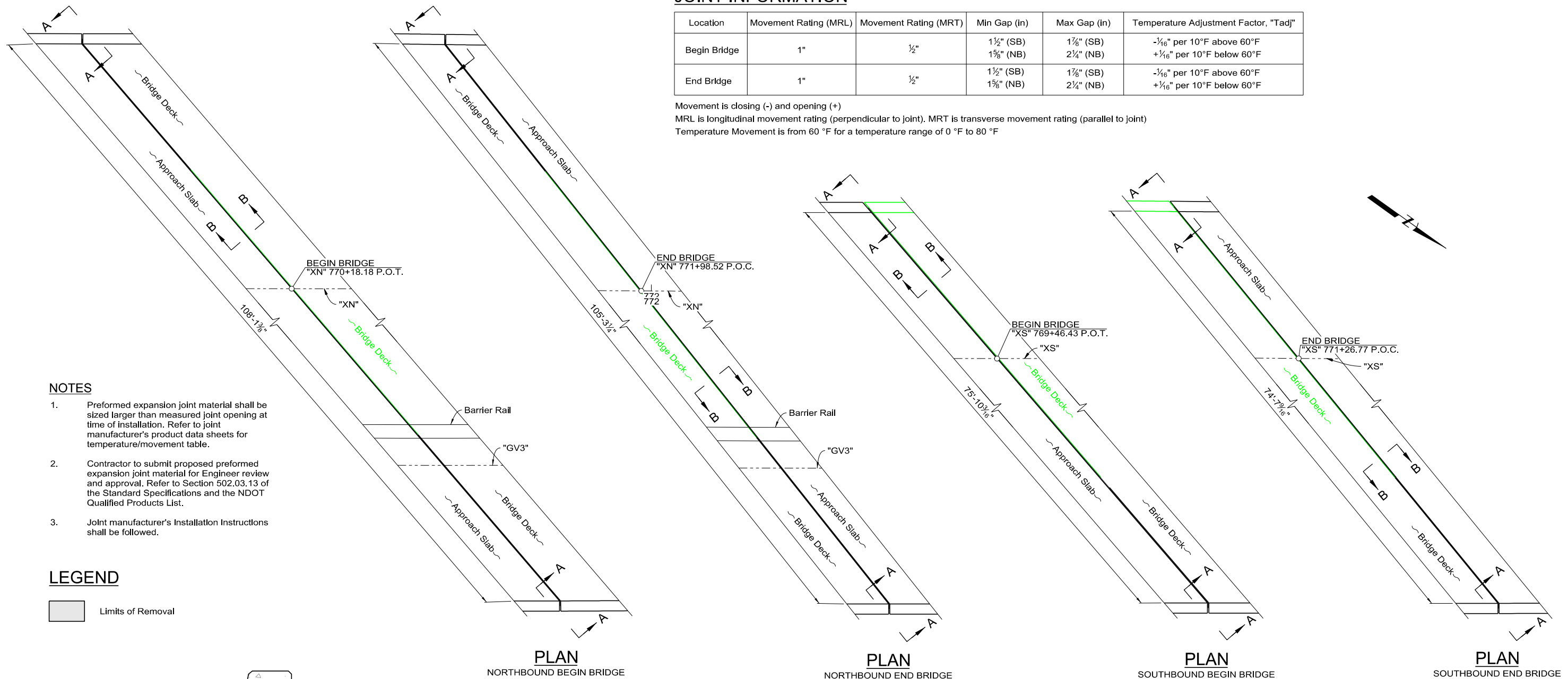
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION  
**BRIDGE RAIL  
DETAILS**  
I-1093 N&S

DATE : 1/26/2023

### JOINT INFORMATION

Location	Movement Rating (MRL)	Movement Rating (MRT)	Min Gap (in)	Max Gap (in)	Temperature Adjustment Factor, "Tadj"
Begin Bridge	1"	½"	1½" (SB) 1⅝" (NB)	1⅞" (SB) 2¼" (NB)	-¼" per 10°F above 60°F +¼" per 10°F below 60°F
End Bridge	1"	½"	1½" (SB) 1⅝" (NB)	1⅞" (SB) 2¼" (NB)	-¼" per 10°F above 60°F +¼" per 10°F below 60°F

Movement is closing (-) and opening (+)  
MRL is longitudinal movement rating (perpendicular to joint). MRT is transverse movement rating (parallel to joint)  
Temperature Movement is from 60 °F for a temperature range of 0 °F to 80 °F

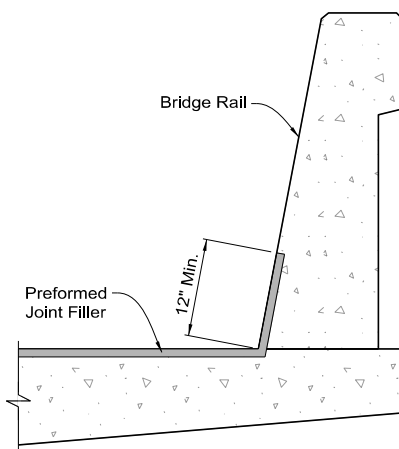


### NOTES

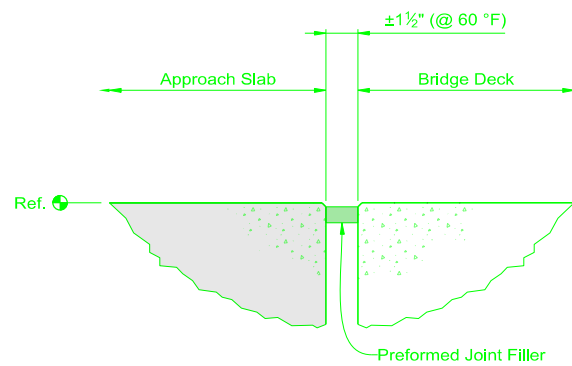
1. Prefomed expansion joint material shall be sized larger than measured joint opening at time of installation. Refer to joint manufacturer's product data sheets for temperature/movement table.
2. Contractor to submit proposed prefomed expansion joint material for Engineer review and approval. Refer to Section 502.03.13 of the Standard Specifications and the NDOT Qualified Products List.
3. Joint manufacturer's Installation Instructions shall be followed.

### LEGEND

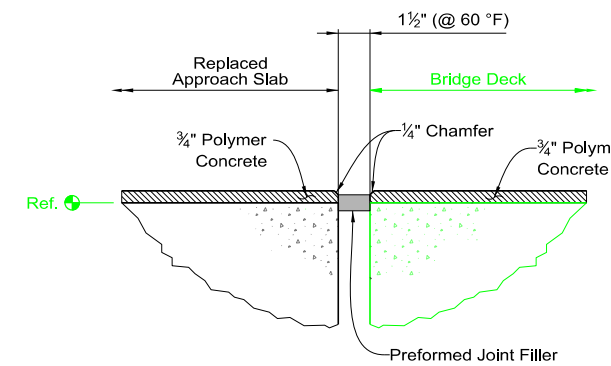
Limits of Removal



SECTION A-A



SECTION B-B  
EXISTING



Note: Verify joint width prior to ordering joint filler material.

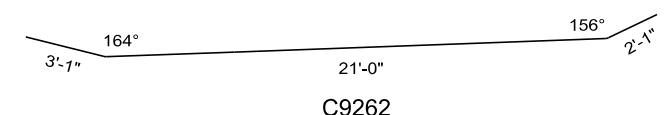
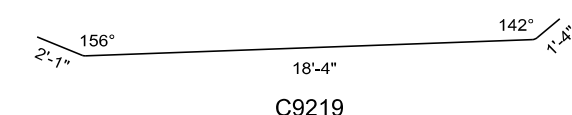
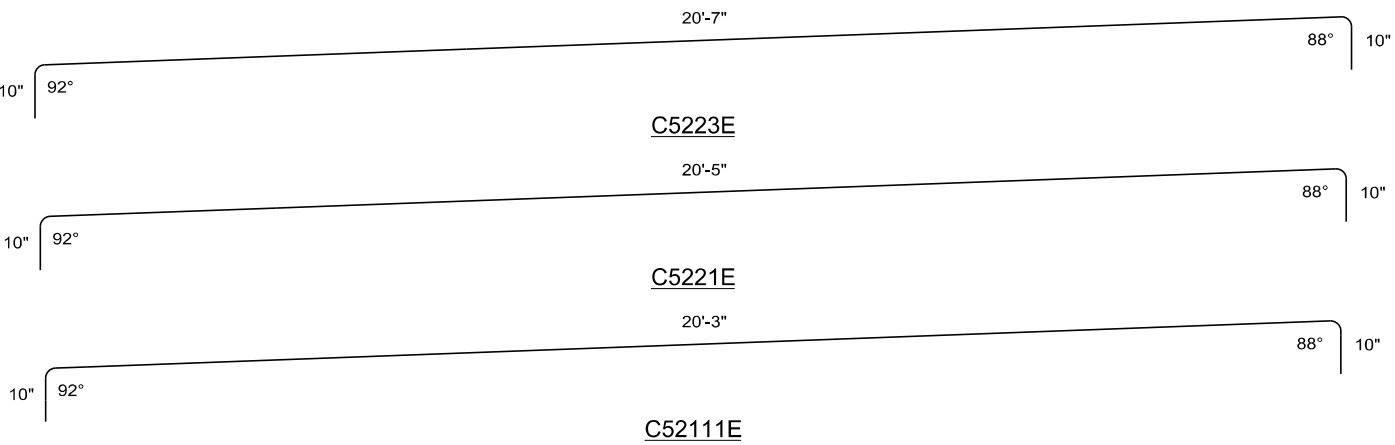
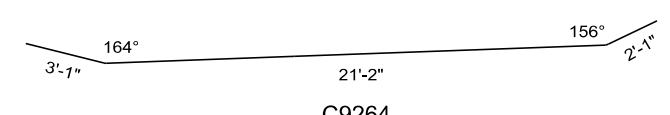
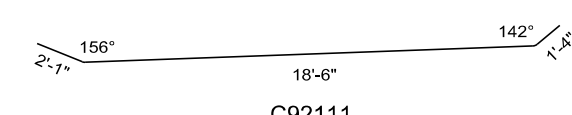
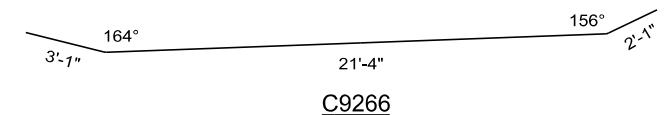
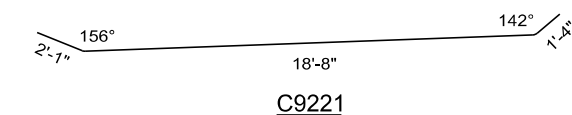
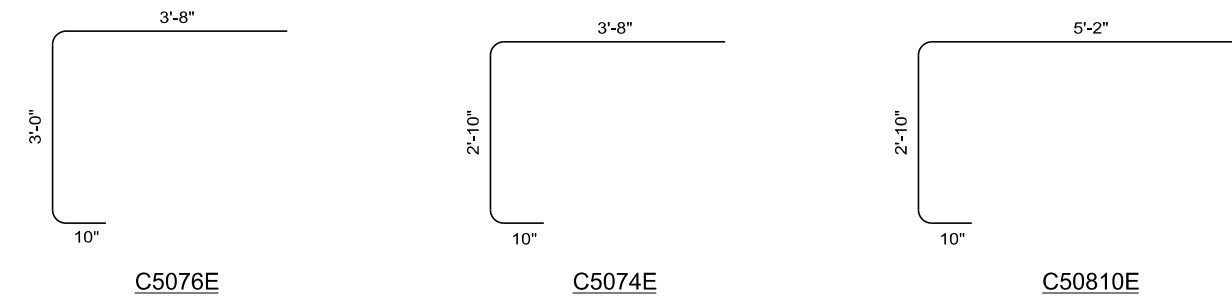
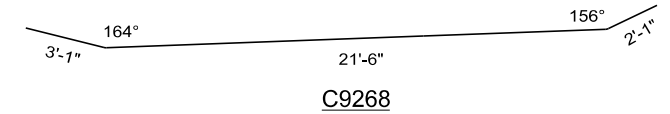
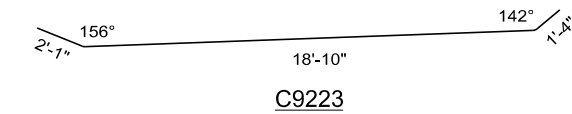
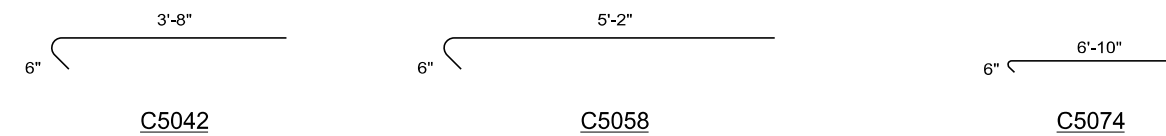
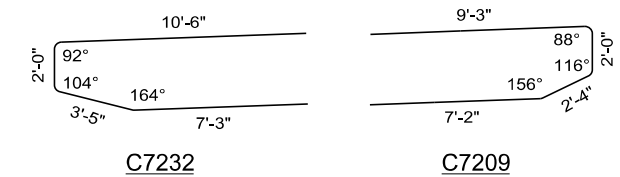
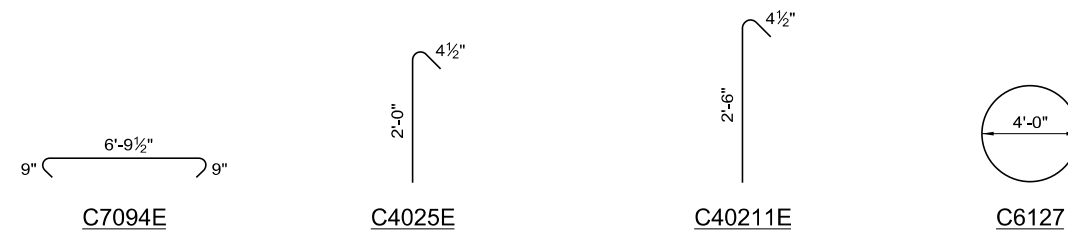
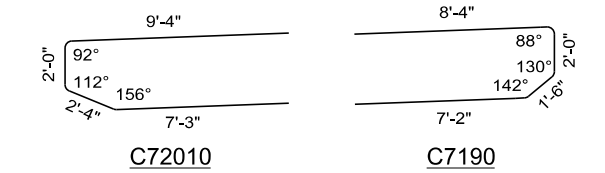
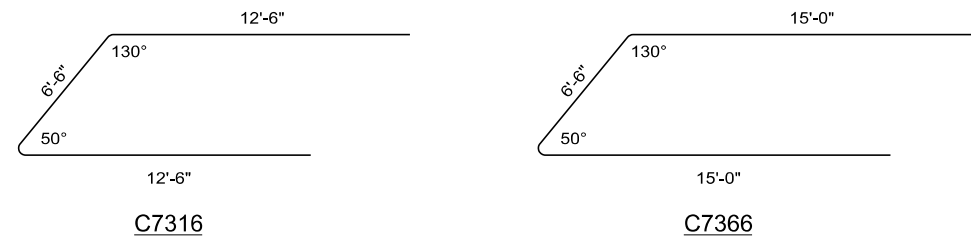
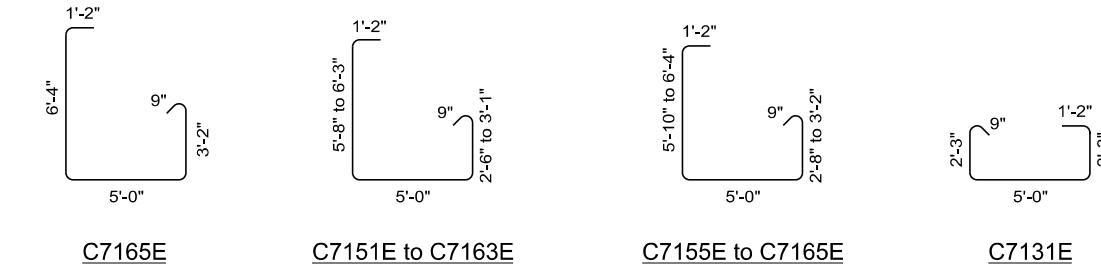
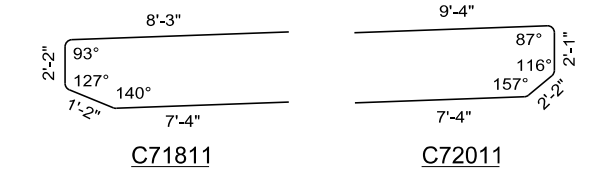
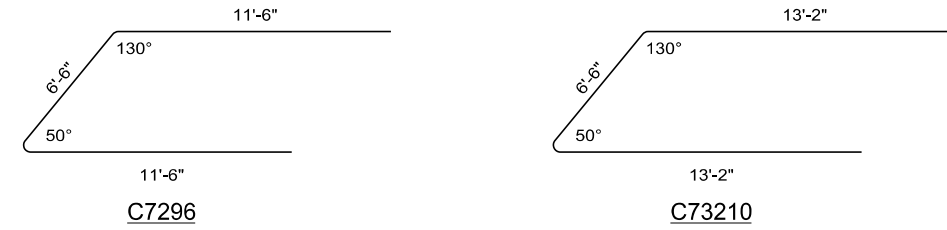
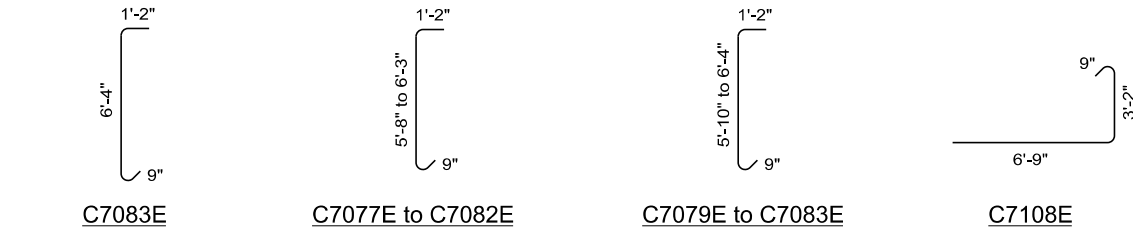
SECTION B-B  
MODIFIED  
(Widened Portion Similar)

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

## EXPANSION JOINT DETAILS



STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B242



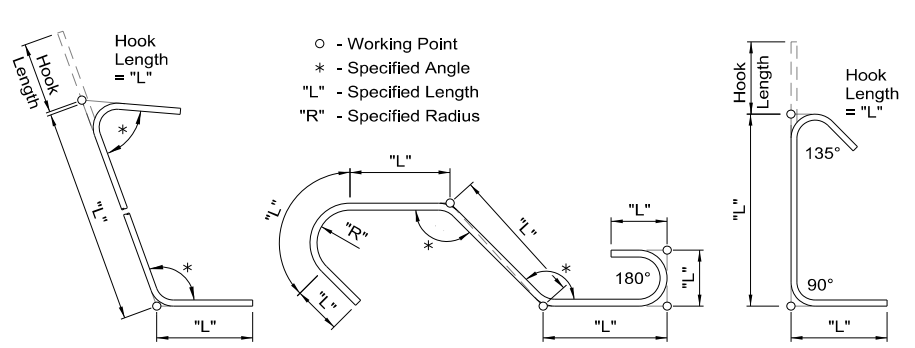
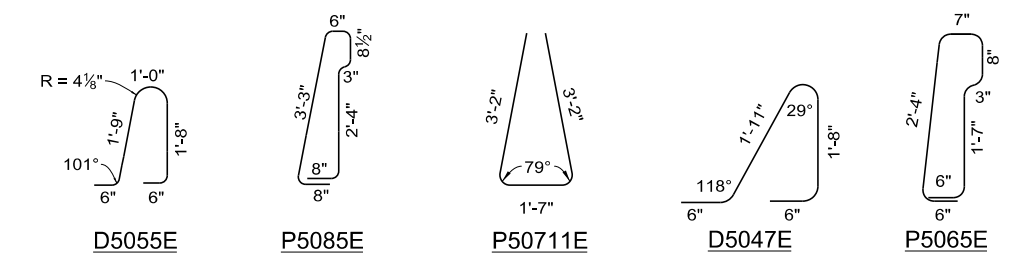
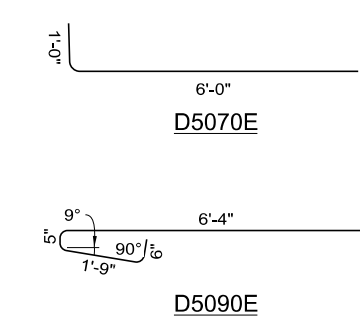
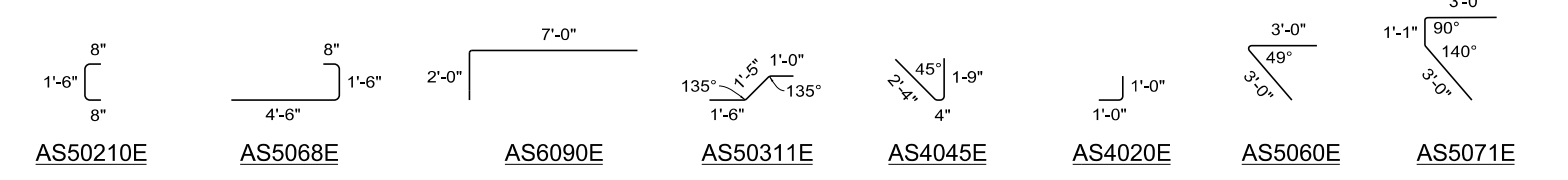
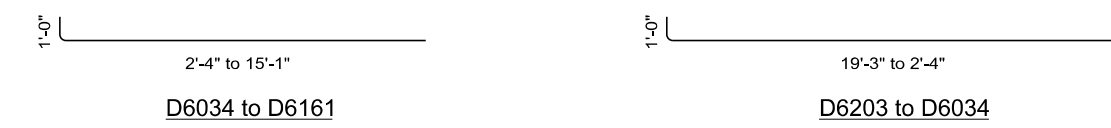
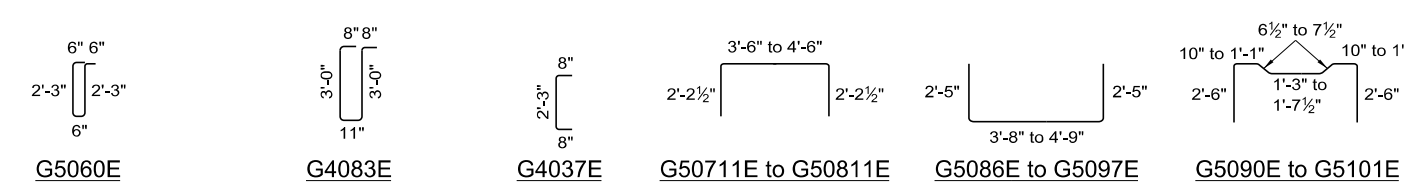
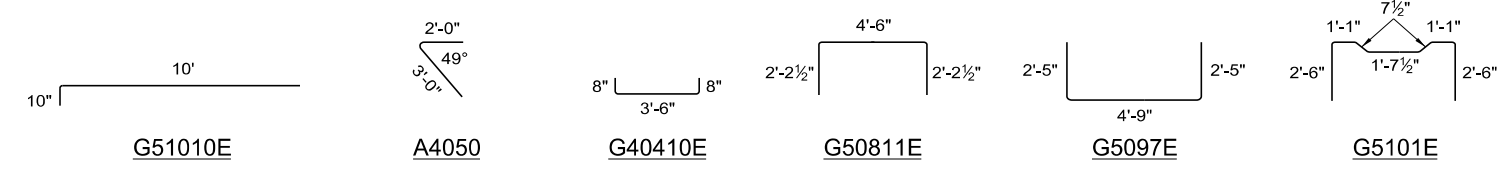
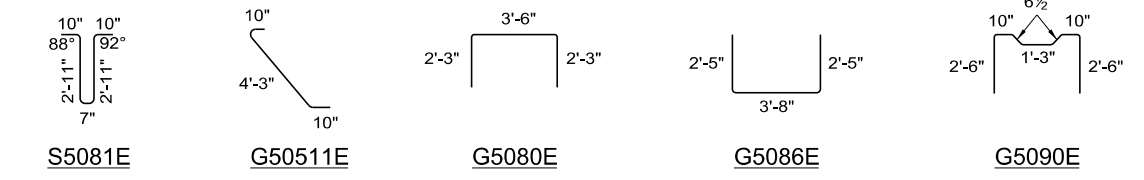
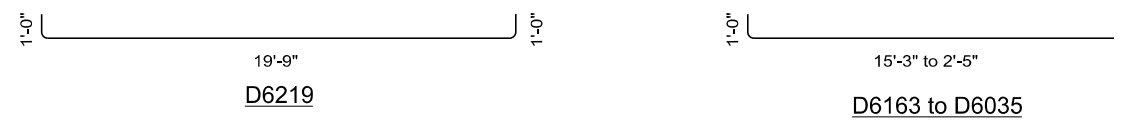
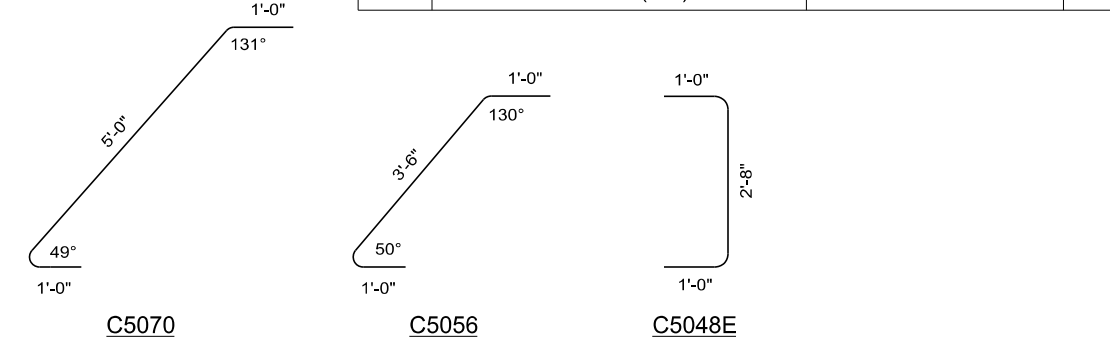
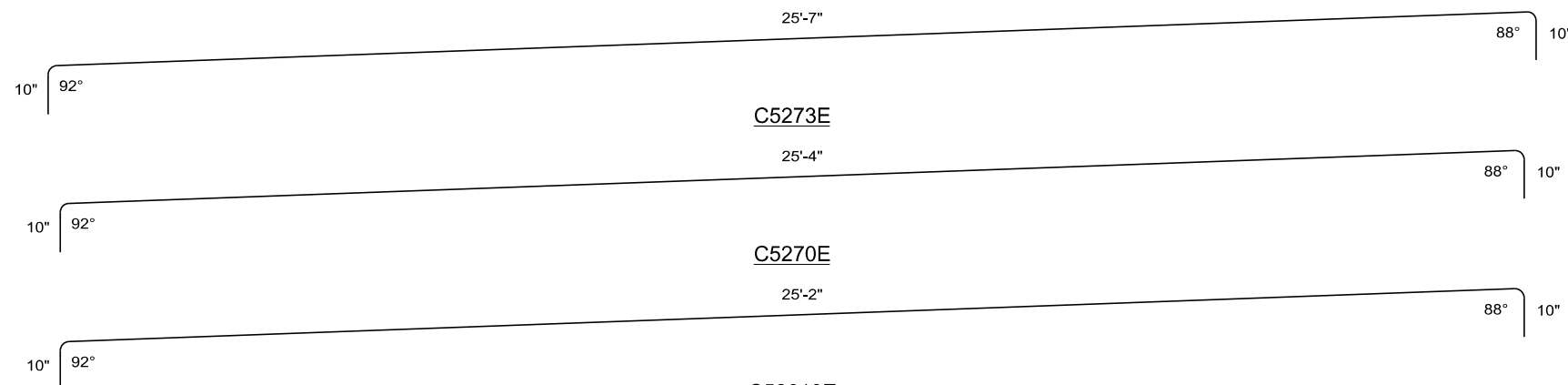
DATE : 1/26/2023

STATE OF NEVADA  
 DEPARTMENT OF TRANSPORTATION  


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**BENT BARS**  
 1 OF 2 I-1093 N&S

STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B243



**BENT BAR MEASUREMENT DETAILS**

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

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**BENT BARS**

2 of 2 I-1093 N&S

DATE : 1/26/2023

**I-1093N**

**PIER 1 COLUMNS**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
8410	8	41' - 0"	44	4,816.68 lb.
8440	8	44' - 0"	44	5,169.12 lb.
SP 69019	6	901 - 9"	4	5,417.71 lb.

SUB-TOTAL  
 Reinforcing Steel 15,404.00 lb.  
 Class DA Concrete, Modified (Major) (Structures) 44.90 C.Y.

**PIER 2 COLUMNS**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
8410	8	41' - 0"	44	4,816.68 lb.
8440	8	44' - 0"	44	5,169.12 lb.
SP 69019	6	901 - 9"	4	5,417.71 lb.

SUB-TOTAL  
 Reinforcing Steel 15,404.00 lb.  
 Class DA Concrete, Modified (Major) (Structures) 44.90 C.Y.

**PIER 3 COLUMNS**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
8410	8	41' - 0"	44	4,816.68 lb.
8440	8	44' - 0"	44	5,169.12 lb.
SP 69019	6	901 - 9"	4	5,417.71 lb.

SUB-TOTAL  
 Reinforcing Steel 15,404.00 lb.  
 Class DA Concrete, Modified (Major) (Structures) 44.90 C.Y.

**PIER 1 CAP**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
9215	9	21' - 5"	20	1,456.33 lb.
9260	9	26' - 0"	20	1,768.00 lb.
C 5074	5	7' - 4"	144	1,101.41 lb.
C 7083E	7	8' - 3"	112	1,888.66 lb.
C 7094E	7	9' - 4"	51	972.94 lb.
C 7108E	7	10' - 8"	32	697.69 lb.
C 7131E	7	13' - 1"	8	213.94 lb.
C 7165E	7	16' - 5"	48	1,610.67 lb.
C 7190	7	19' - 0"	10	388.36 lb.
C 7209	7	20' - 9"	10	424.13 lb.
C 72010	7	20' - 10"	10	425.83 lb.
C 7232	7	23' - 2"	10	473.53 lb.
C 7296	7	29' - 6"	2	120.60 lb.
C 7316	7	31' - 6"	6	386.32 lb.
C 73210	7	32' - 10"	2	134.22 lb.
C 7366	7	36' - 6"	6	447.64 lb.
C 9221	9	22' - 1"	7	525.58 lb.
C 9223	9	22' - 3"	7	529.55 lb.
C 9264	9	26' - 6"	7	630.70 lb.
C 9268	9	26' - 8"	7	634.67 lb.
2 Set	C7077E	to C7082E	3 Bars/Set	96.58 lb.
4 Set	C7079E	to C7083E	2 Bars/Set	130.82 lb.
2 Set	C7151E	to C7163E	3 Bars/Set	192.14 lb.
4 Set	C7155E	to C7165E	2 Bars/Set	260.27 lb.

SUB-TOTAL  
 Reinforcing Steel 9,447.00 lb.  
 Reinforcing Steel (Epoxy Coated) 6,064.00 lb.  
 Class DA Concrete, Modified (Major) (Structures) 33.90 C.Y.

**PIER 2 CAP**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
9215	9	21' - 5"	20	1,456.33 lb.
9260	9	26' - 0"	20	1,768.00 lb.
C 5074	5	7' - 4"	144	1,101.41 lb.
C 7083E	7	8' - 3"	112	1,888.66 lb.
C 7094E	7	9' - 4"	51	972.94 lb.
C 7108E	7	10' - 8"	32	697.69 lb.
C 7131E	7	13' - 1"	8	213.94 lb.
C 7165E	7	16' - 5"	48	1,610.67 lb.
C 7190	7	19' - 0"	10	388.36 lb.
C 7209	7	20' - 9"	10	424.13 lb.
C 72010	7	20' - 10"	10	425.83 lb.
C 7232	7	23' - 2"	10	473.53 lb.
C 7296	7	29' - 6"	2	120.60 lb.
C 7316	7	31' - 6"	6	386.32 lb.
C 73210	7	32' - 10"	2	134.22 lb.
C 7366	7	36' - 6"	6	447.64 lb.
C 92111	9	21' - 11"	7	521.62 lb.
C 9221	9	22' - 1"	7	525.58 lb.
C 9264	9	26' - 4"	7	626.73 lb.
C 9266	9	26' - 6"	7	630.70 lb.
2 Set	C7077E	to C7082E	3 Bars/Set	96.58 lb.
4 Set	C7079E	to C7083E	2 Bars/Set	130.82 lb.
2 Set	C7151E	to C7163E	3 Bars/Set	192.14 lb.
4 Set	C7155E	to C7165E	2 Bars/Set	260.27 lb.

SUB-TOTAL  
 Reinforcing Steel 9,431.00 lb.  
 Reinforcing Steel (Epoxy Coated) 6,064.00 lb.  
 Class DA Concrete, Modified (Major) (Structures) 33.90 C.Y.

**PIER 3 CAP**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
9215	9	21' - 5"	20	1,456.33 lb.
9260	9	26' - 0"	20	1,768.00 lb.
C 5074	5	7' - 4"	144	1,101.41 lb.
C 7083E	7	8' - 3"	112	1,888.66 lb.
C 7094E	7	9' - 4"	51	972.94 lb.
C 7108E	7	10' - 8"	32	697.69 lb.
C 7131E	7	13' - 1"	8	213.94 lb.
C 7165E	7	16' - 5"	48	1,610.67 lb.
C 7190	7	19' - 0"	10	388.36 lb.
C 7209	7	20' - 9"	10	424.13 lb.
C 72010	7	20' - 10"	10	425.83 lb.
C 7232	7	23' - 2"	10	473.53 lb.
C 7296	7	29' - 6"	2	120.60 lb.
C 7316	7	31' - 6"	6	386.32 lb.
C 73210	7	32' - 10"	2	134.22 lb.
C 7366	7	36' - 6"	6	447.64 lb.
C 9219	9	21' - 9"	7	517.65 lb.
C 92111	9	21' - 11"	7	521.62 lb.
C 9262	9	26' - 2"	7	622.77 lb.
C 9264	9	26' - 4"	7	626.73 lb.
2 Set	C7077E	to C7082E	3 Bars/Set	96.58 lb.
4 Set	C7079E	to C7083E	2 Bars/Set	130.82 lb.
2 Set	C7151E	to C7163E	3 Bars/Set	192.14 lb.
4 Set	C7155E	to C7165E	2 Bars/Set	260.27 lb.

SUB-TOTAL  
 Reinforcing Steel 9,416.00 lb.  
 Reinforcing Steel (Epoxy Coated) 6,064.00 lb.  
 Class DA Concrete, Modified (Major) (Structures) 33.90 C.Y.

**BOTTOM SLAB - INSIDE WIDENING**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
4216	4	21' - 6"	62	890.44 lb.
D 4050	4	5' - 0"	2	6.68 lb.
D 6179	6	17' - 9"	35	933.12 lb.
1 Set	D6033	to D6162	23 Bars/Set	335.38 lb.
1 Set	D6034	to D6161	22 Bars/Set	320.80 lb.
1 Set	D6034	to D6163	23 Bars/Set	338.26 lb.
1 Set	D6035	to D6163	22 Bars/Set	324.93 lb.

SUB-TOTAL  
 Reinforcing Steel 3,150.00 lb.  
 Class DA Concrete, Modified (Major) (Structures) 12.11 C.Y.

**BOTTOM SLAB - OUTSIDE WIDENING**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
4216	4	21' - 6"	78	1,120.24 lb.
D 4050	4	5' - 0"	2	6.68 lb.
D 6219	6	21' - 9"	22	718.71 lb.
2 Set	D6033	to D6203	30 Bars/Set	1,058.91 lb.
1 Set	D6034	to D6202	28 Bars/Set	494.16 lb.
1 Set	D6034	to D6203	28 Bars/Set	495.91 lb.

SUB-TOTAL  
 Reinforcing Steel 3,895.00 lb.  
 Class DA Concrete, Modified (Major) (Structures) 15.14 C.Y.

**WEBS & INTERMEDIATE DIAPHRAGMS - INSIDE WIDENING**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
4203E	4	20' - 3"	8	108.22 lb.
4208E	4	20' - 8"	8	110.44 lb.
4216	4	21' - 6"	40	574.48 lb.
8216	8	21' - 6"	20	1,148.10 lb.
G 4083E	4	8' - 3"	42	231.46 lb.
S 5081E	5	8' - 1"	330	2,782.20 lb.

SUB-TOTAL  
 Reinforcing Steel 1,723.00 lb.  
 Reinforcing Steel (Epoxy Coated) 3,233.00 lb.  
 Class DA Concrete, Modified (Major) (Structures) 15.11 C.Y.

**WEBS & INTERMEDIATE DIAPHRAGMS - OUTSIDE WIDENING**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
4251E	4	25' - 1"	8	134.05 lb.
42510E	4	25' - 10"	8	138.05 lb.
4216	4	21' - 6"	48	689.38 lb.
8216	8	21' - 6"	24	1,377.72 lb.
G 4083E	4	8' - 3"	52	286.57 lb.
S 5081E	5	8' - 1"	396	3,338.64 lb.

SUB-TOTAL  
 Reinforcing Steel 2,068.00 lb.  
 Reinforcing Steel (Epoxy Coated) 3,898.00 lb.  
 Class DA Concrete, Modified (Major) (Structures) 18.27 C.Y.

**PIER CAP 1 CLOSURES**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
4203	4	20' - 3"	4	54.11 lb.
4252	4	25' - 2"	4	67.25 lb.
5203	5	20' - 3"	8	168.97 lb.
5252	5	25' - 2"	8	209.99 lb.
C 4025E	4	2' - 5"	48	77.49 lb.
C 40211E	4	2' - 11"	48	93.52 lb.
C 5048E	5	4' - 8"	20	97.35 lb.
C 5058	5	5' - 8"	282	1,666.71 lb.
C 5070	5	7' - 0"	12	87.61 lb.
C 5074E	5	7' - 4"	47	359.49 lb.
C 50810E	5	8' - 10"	47	433.02 lb.
C 5223E	5	22' - 3"	10	232.07 lb.
C 5273E	5	27' - 3"	10	284.22 lb.

SUB-TOTAL  
 Reinforcing Steel 2,255.00 lb.  
 Reinforcing Steel (Epoxy Coated) 1,578.00 lb.  
 Class DA Concrete, Modified (Major) (Structures) 20.57 C.Y.

STATE OF NEVADA  
 DEPARTMENT OF TRANSPORTATION

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**QUANTITIES**

1 OF 5 I-1093 N

DATE : 1/26/2023

**PIER CAP 2 CLOSURES**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
4205	4	20' - 5"	4	54.55 lb.
4254	4	25' - 4"	4	67.69 lb.
5205	5	20' - 5"	8	170.36 lb.
5254	5	25' - 4"	8	211.38 lb.
C 4025E	4	2' - 5"	36	58.12 lb.
C 40211E	4	2' - 11"	36	70.14 lb.
C 5042	5	4' - 2"	282	1,225.53 lb.
C 5048E	5	4' - 8"	12	58.41 lb.
C 5056	5	5' - 6"	12	68.84 lb.
C 5076E	5	7' - 6"	94	735.32 lb.
C 5221E	5	22' - 1"	8	184.26 lb.
C 5270E	5	27' - 0"	8	225.29 lb.
SUB-TOTAL				
Reinforcing Steel				1,799.00 lb.
Reinforcing Steel (Epoxy Coated)				1,332.00 lb.
Class DA Concrete, Modified (Major) (Structures)				7.43 C.Y.
Class EA Concrete, Modified (Major)				17.78 C.Y.

**PIER CAP 3 CLOSURES**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
4203	4	20' - 3"	4	54.11 lb.
4252	4	25' - 2"	4	67.25 lb.
5203	5	20' - 3"	8	168.97 lb.
5252	5	25' - 2"	8	209.99 lb.
C 4025E	4	2' - 5"	48	77.49 lb.
C 40211E	4	2' - 11"	48	93.52 lb.
C 5048E	5	4' - 8"	20	97.35 lb.
C 5058	5	5' - 8"	282	1,666.71 lb.
C 5070	5	7' - 0"	12	87.61 lb.
C 5074E	5	7' - 4"	47	359.49 lb.
C 50810E	5	8' - 10"	47	433.02 lb.
C 52111E	5	21' - 11"	10	228.59 lb.
C 52610E	5	26' - 10"	10	279.87 lb.
SUB-TOTAL				
Reinforcing Steel				2,255.00 lb.
Reinforcing Steel (Epoxy Coated)				1,570.00 lb.
Class DA Concrete, Modified (Major) (Structures)				29.74 C.Y.

**TOP SLAB - INSIDE WIDENING**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
4300E	4	30' - 0"	23	460.92 lb.
4360E	4	36' - 0"	23	553.10 lb.
4600E	4	60' - 0"	46	1,843.68 lb.
5045E	5	4' - 5"	247	1,137.83 lb.
5201E	5	20' - 1"	410	8,588.24 lb.
5216E	5	21' - 6"	74	1,659.41 lb.
5300E	5	30' - 0"	8	250.32 lb.
5380E	5	38' - 0"	4	158.54 lb.
5600E	5	60' - 0"	16	1,001.28 lb.
10400E	10	40' - 0"	63	10,843.56 lb.
10500E	10	50' - 0"	40	8,606.00 lb.
10600E	10	60' - 0"	20	5,163.60 lb.
D 5055E	5	5' - 5"	241	1,361.55 lb.
D 5070E	5	7' - 0"	82	598.68 lb.
D 5090E	5	9' - 0"	159	1,492.53 lb.
1 Set	5020E	to 5196E	31 Bars/Set	347.58 lb.
1 Set	5023E	to 51910E	31 Bars/Set	357.01 lb.
1 Set	5182E	to 5020E	28 Bars/Set	294.47 lb.
1 Set	5185E	to 5023E	28 Bars/Set	301.77 lb.
SUB-TOTAL				
Reinforcing Steel (Epoxy Coated)				45,021.00 lb.
Class EA Concrete, Modified (Major)				107.30 C.Y.

**TOP SLAB - OUTSIDE WIDENING**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
4300E	4	30' - 0"	31	621.24 lb.
4360E	4	36' - 0"	31	745.49 lb.
4600E	4	60' - 0"	62	2,484.96 lb.
5065E	5	6' - 5"	229	1,532.60 lb.
5216E	5	21' - 6"	90	2,018.21 lb.
5256E	5	25' - 6"	4	106.39 lb.
5261E	5	26' - 1"	402	10,936.38 lb.
5300E	5	30' - 0"	8	250.32 lb.
5380E	5	38' - 0"	8	317.07 lb.
5600E	5	60' - 0"	24	1,501.92 lb.
10400E	10	40' - 0"	81	13,941.72 lb.
10500E	10	50' - 0"	52	11,187.80 lb.
10600E	10	60' - 0"	26	6,712.68 lb.
D 5055E	5	5' - 5"	241	1,361.55 lb.
D 5070E	5	7' - 0"	82	598.68 lb.
D 5090E	5	9' - 0"	159	1,492.53 lb.
1 Set	5020E	to 5243E	39 Bars/Set	533.89 lb.
1 Set	5023E	to 5247E	39 Bars/Set	545.75 lb.
1 Set	5256E	to 5020E	40 Bars/Set	573.65 lb.
1 Set	52510E	to 5023E	40 Bars/Set	585.82 lb.
SUB-TOTAL				
Reinforcing Steel (Epoxy Coated)				58,049.00 lb.
Class EA Concrete, Modified (Major)				137.50 C.Y.

**APPROACH SLAB-PHASE 1-BEGIN BRIDGE**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
4186E	4	18' - 6"	7	86.51 lb.
4218E	4	21' - 8"	8	115.79 lb.
4232E	4	23' - 2"	30	464.26 lb.
4298E	4	29' - 8"	31	614.34 lb.
4343E	4	34' - 3"	1	22.88 lb.
5040E	5	4' - 0"	4	16.69 lb.
5062E	5	6' - 2"	4	25.73 lb.
5076E	5	7' - 6"	8	62.58 lb.
5099E	5	9' - 9"	8	81.35 lb.
5218E	5	21' - 8"	4	90.39 lb.
5232E	5	23' - 2"	15	362.44 lb.
5298E	5	29' - 8"	16	495.08 lb.
6070E	6	7' - 0"	31	325.93 lb.
63811E	6	38' - 11"	2	116.91 lb.
7186E	7	18' - 6"	14	529.40 lb.
7343E	7	34' - 3"	2	140.01 lb.
AS 4020E	4	2' - 0"	36	48.10 lb.
AS 4045E	4	4' - 5"	36	106.21 lb.
AS 50210E	5	2' - 10"	29	85.70 lb.
D 5055E	5	5' - 5"	45	254.23 lb.
AS 5060E	5	6' - 0"	2	12.52 lb.
AS 5068E	5	6' - 8"	29	201.65 lb.
1 Set	41610E	to 41110E	7 Bars/Set	67.02 lb.
1 Set	42710E	to 4023E	45 Bars/Set	452.15 lb.
1 Set	4430E	to 4389E	6 Bars/Set	163.83 lb.
1 Set	4400E	to 45211E	16 Bars/Set	496.55 lb.
1 Set	5273E	to 50210E	22 Bars/Set	345.15 lb.
1 Set	7173E	to 71110E	14 Bars/Set	416.12 lb.
1 Set	7400E	to 75211E	31 Bars/Set	2,943.79 lb.
1 Set	7436E	to 7384E	13 Bars/Set	1,087.24 lb.
SUB-TOTAL				
Reinforcing Steel (Epoxy Coated)				10,231.00 lb.
Class EA Concrete, Modified (Major)				57.62 C.Y.

**APPROACH SLAB-PHASE 1-END BRIDGE**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
4060E	4	6' - 0"	30	120.24 lb.
4297E	4	29' - 7"	36	711.42 lb.
4407E	4	40' - 7"	2	54.22 lb.
5060E	5	6' - 0"	19	118.90 lb.
5218E	5	21' - 8"	4	90.39 lb.
5297E	5	29' - 7"	18	555.40 lb.
6070E	6	7' - 0"	37	389.02 lb.
6379E	6	37' - 9"	2	113.40 lb.
7407E	7	40' - 7"	3	248.86 lb.
AS 4020E	4	2' - 0"	36	48.10 lb.
AS 4045E	4	4' - 5"	36	106.21 lb.
AS 50210E	5	2' - 10"	29	85.70 lb.
D 5055E	5	5' - 5"	52	293.78 lb.
AS 5068E	5	6' - 8"	29	201.65 lb.
AS 5071E	5	7' - 1"	2	14.78 lb.
1 Set	4020E	to 4294E	45 Bars/Set	470.94 lb.
1 Set	4333E	to 4373E	6 Bars/Set	141.28 lb.
1 Set	43911E	to 4230E	22 Bars/Set	462.31 lb.
1 Set	5020E	to 5294E	23 Bars/Set	375.83 lb.
1 Set	6022E	to 60510E	4 Bars/Set	24.03 lb.
1 Set	7330E	to 7378E	13 Bars/Set	938.88 lb.
1 Set	7404E	to 7230E	44 Bars/Set	2,847.97 lb.

SUB-TOTAL  
Reinforcing Steel (Epoxy Coated) 8,414.00 lb.  
Class EA Concrete, Modified (Major) 47.67 C.Y.

**APPROACH SLAB-PHASE 2-BEGIN BRIDGE**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
4033E	4	3' - 3"	86	186.71 lb.
4052E	4	5' - 2"	30	103.54 lb.
4172E	4	17' - 2"	30	344.02 lb.
4323E	4	32' - 3"	1	21.54 lb.
43210E	4	32' - 10"	1	21.93 lb.
4332E	4	33' - 2"	28	620.35 lb.
4448E	4	44' - 8"	3	89.51 lb.
5052E	5	5' - 2"	19	102.39 lb.
5118E	5	11' - 8"	4	48.67 lb.
5158E	5	15' - 8"	4	65.36 lb.
5172E	5	17' - 2"	15	268.57 lb.
5198E	5	19' - 8"	4	82.05 lb.
5323E	5	32' - 3"	1	33.64 lb.
5332E	5	33' - 2"	14	484.30 lb.
5448E	5	44' - 8"	2	93.17 lb.
6145E	6	14' - 5"	2	43.31 lb.
6600E	6	60' - 0"	2	180.24 lb.
7448E	7	44' - 8"	3	273.90 lb.
4020DE	4	2' - 0"	43	57.45 lb.
AS 4020E	4	2' - 0"	68	90.85 lb.
AS 4045E	4	4' - 5"	68	200.62 lb.
AS 50210E	5	2' - 10"	57	168.44 lb.
AS 50311E	5	3' - 11"	44	179.74 lb.
D 5055E	5	5' - 5"	56	316.38 lb.
AS 5068E	5	6' - 8"	57	396.34 lb.
AS 5071E	5	7' - 1"	2	14.78 lb.
AS 6090E	6	9' - 0"	40	540.72 lb.
1 Set	4423E	to 4294E	16 Bars/Set	382.54 lb.
1 Set	4436E	to 4340E	12 Bars/Set	310.62 lb.
1 Set	4448E	to 4282E	21 Bars/Set	510.85 lb.
1 Set	4482E	to 44311E	6 Bars/Set	184.54 lb.
1 Set	4532E	to 4020E	89 Bars/Set	1,639.88 lb.
1 Set	5528E	to 5027E	44 Bars/Set	1,267.77 lb.
1 Set	7423E	to 72811E	32 Bars/Set	2,327.43 lb.
1 Set	7436E	to 7338E	24 Bars/Set	1,892.74 lb.
1 Set	7440E	to 7279E	39 Bars/Set	2,859.81 lb.
1 Set	7482E	to 74311E	11 Bars/Set	1,035.20 lb.
1 Set	AS60711E	to AS6045E	4 Bars/Set	37.05 lb.

SUB-TOTAL  
Reinforcing Steel (Epoxy Coated) 17,420.00 lb.  
Reinforcing Steel (Epoxy Coated)(Doweled) 58.00 lb.  
Class EA Concrete, Modified (Major) 102.22 C.Y.

**APPROACH SLAB-PHASE 2-END BRIDGE**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
4033E	4	3' - 3"	79	171.51 lb.
4213E	4	21' - 3"	30	425.85 lb.
4355E	4	35' - 5"	3	70.98 lb.
4372E	4	37' - 2"	30	744.82 lb.
4492E	4	49' - 2"	11	361.28 lb.
5052E	5	5' - 2"	4	21.56 lb.
5118E	5	11' - 8"	4	48.67 lb.
5158E	5	15' - 8"	4	65.36 lb.
5198E	5	19' - 8"	4	82.05 lb.
5213E	5	21' - 3"	15	332.46 lb.
5355E	5	35' - 5"	2	73.88 lb.
5372E	5	37' - 2"	15	581.47 lb.
5492E	5	49' - 2"	6	307.69 lb.
6123E	6	12' - 3"	2	36.80 lb.
6600E	6	60' - 0"	2	180.24 lb.
7355E	7	35' - 5"	3	217.18 lb.
4020DE	4	2' - 0"	31	41.42 lb.
AS 4020E	4	2' - 0"	68	90.85 lb.
AS 4045E	4	4' - 5"	68	200.62 lb.
AS 50210E	5	2' - 10"	57	168.44 lb.
AS 50311E	5	3' - 11"	36	147.06 lb.
D 5055E	5	5' - 5"	46	259.88 lb.
AS 5060E	5	6' - 0"	2	12.52 lb.
AS 5068E	5	6' - 8"	57	396.34 lb.
AS 6090E	6	9' - 0"	36	486.65 lb.
1 Set	4026E	to 44011E	62 Bars/Set	899.07 lb.
1 Set	4255E	to 4506E	20 Bars/Set	507.12 lb.
1 Set	4285E	to 4326E	6 Bars/Set	122.08 lb.
1 Set	4340E	to 4428E	12 Bars/Set	307.28 lb.
1 Set	4360E	to 4475E	19 Bars/Set	529.36 lb.
1 Set	4364E	to 4482E	16 Bars/Set	451.57 lb.
1 Set	5032E	to 54011E	31 Bars/Set	712.67 lb.
1 Set	5368E	to 5469E	9 Bars/Set	391.52 lb.
1 Set	7285E	to 7326E	11 Bars/Set	684.83 lb.
1 Set	7340E	to 7431E	24 Bars/Set	1,890.70 lb.
1 Set	7360E	to 75010E	39 Bars/Set	3,461.00 lb.
1 Set	7364E	to 7487E	32 Bars/Set	2,777.11 lb.

SUB-TOTAL  
Reinforcing Steel (Epoxy Coated) 18,219.00 lb.  
Reinforcing Steel (Epoxy Coated)(Doweled) 42.00 lb.  
Class EA Concrete, Modified (Major) 107.09 C.Y.

**BRIDGE RAIL - INSIDE WIDENING**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
4180E	4	18' - 0"	16	192.38 lb.
4300E	4	30' - 0"	2	40.08 lb.
43311E	4	33' - 11"	10	226.56 lb.
4346E	4	34' - 6"	32	737.47 lb.
4360E	4	36' - 0"	2	48.10 lb.
4406E	4	40' - 6"	10	270.54 lb.
4600E	4	60' - 0"	4	160.32 lb.
P 5085E	5	8' - 5"	338	2,967.16 lb.

SUB-TOTAL  
Reinforcing Steel (Epoxy Coated) 4,643.00 lb.  
Class EA Concrete, Modified (Major) 32.75 C.Y.

**BRIDGE RAIL - OUTSIDE WIDENING**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
4196E	4	19' - 6"	8	104.21 lb.
4208E	4	20' - 8"	16	220.89 lb.
4353E	4	35' - 3"	10	235.47 lb.
4300E	4	30' - 0"	4	80.16 lb.
4342E	4	34' - 2"	32	730.35 lb.
4346E	4	34' - 6"	16	368.74 lb.
4350E	4	35' - 0"	3	70.14 lb.
4360E	4	36' - 0"	4	96.19 lb.
4373E	4	37' - 3"	3	74.65 lb.
4392E	4	39' - 2"	3	78.49 lb.
4446E	4	44' - 6"	10	297.26 lb.
4409E	4	40' - 9"	3	81.66 lb.
4600E	4	60' - 0"	8	320.64 lb.
5008DE	5	0' - 8"	258	179.40 lb.
P 50711E	5	7' - 11"	260	2,146.84 lb.
P 5085E	5	8' - 5"	343	3,011.05 lb.

SUB-TOTAL  
Reinforcing Steel (Epoxy Coated) 7,917.00 lb.  
Reinforcing Steel (Epoxy Coated)(Doweled) 180.00 lb.  
Class EA Concrete, Modified (Major) 84.16 C.Y.

**TOTALS**

Reinforcing Steel 91,651.00 lb.  
Reinforcing Steel (Epoxy Coated) 199,717.00 lb.  
Reinforcing Steel (Epoxy Coated)(Doweled) 280.00 lb.  
Class DA Concrete, Modified (Major) (Structures) 354.77 C.Y.  
Class EA Concrete, Modified (Major) 694.09 C.Y.

DATE : 1/26/2023

**I-1093S**

**PIER 1 COLUMNS**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
8410	8	41' - 0"	22	2,408.34 lb.
8440	8	44' - 0"	22	2,584.56 lb.
SP 69019	6	901 - 9"	2	2,708.86 lb.
SUB-TOTAL				
Reinforcing Steel				7,702.00 lb.
Class DA Concrete, Modified (Major) (Structures)				22.45 C.Y.

**PIER 2 COLUMNS**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
8410	8	41' - 0"	22	2,408.34 lb.
8440	8	44' - 0"	22	2,584.56 lb.
SP 69019	6	901 - 9"	2	2,708.86 lb.
SUB-TOTAL				
Reinforcing Steel				7,702.00 lb.
Class DA Concrete, Modified (Major) (Structures)				22.45 C.Y.

**PIER 3 COLUMNS**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
8410	8	41' - 0"	22	2,408.34 lb.
8440	8	44' - 0"	22	2,584.56 lb.
SP 69019	6	901 - 9"	2	2,708.86 lb.
SUB-TOTAL				
Reinforcing Steel				7,702.00 lb.
Class DA Concrete, Modified (Major) (Structures)				22.45 C.Y.

**PIER 1 CAP**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT	
9215	9	21' - 5"	20	1,456.33 lb.	
C 5074	5	7' - 4"	68	520.11 lb.	
C 7083E	7	8' - 3"	54	910.60 lb.	
C 7094E	7	9' - 4"	23	438.78 lb.	
C 7108E	7	10' - 8"	16	348.84 lb.	
C 7131E	7	13' - 1"	4	106.97 lb.	
C 7165E	7	16' - 5"	22	738.22 lb.	
C 71811	7	18' - 11"	10	386.66 lb.	
C 72011	7	20' - 11"	10	427.54 lb.	
C 7296	7	29' - 6"	2	120.60 lb.	
C 7316	7	31' - 6"	6	386.32 lb.	
C 9221	9	22' - 1"	7	525.58 lb.	
C 9223	9	22' - 3"	7	529.55 lb.	
2 Set	C7079E	to	C7083E	2 Bars/Set	65.41 lb.
2 Set	C7155E	to	C7165E	2 Bars/Set	130.13 lb.
SUB-TOTAL					
Reinforcing Steel				4,353.00 lb.	
Reinforcing Steel (Epoxy Coated)				2,739.00 lb.	
Class DA Concrete, Modified (Major) (Structures)				15.42 C.Y.	

**PIER 2 CAP**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT	
9215	9	21' - 5"	20	1,456.33 lb.	
C 5074	5	7' - 4"	68	520.11 lb.	
C 7083E	7	8' - 3"	54	910.60 lb.	
C 7094E	7	9' - 4"	23	438.78 lb.	
C 7108E	7	10' - 8"	16	348.84 lb.	
C 7131E	7	13' - 1"	4	106.97 lb.	
C 7165E	7	16' - 5"	22	738.22 lb.	
C 71811	7	18' - 11"	10	386.66 lb.	
C 72011	7	20' - 11"	10	427.54 lb.	
C 7296	7	29' - 6"	2	120.60 lb.	
C 7316	7	31' - 6"	6	386.32 lb.	
C 92111	9	21' - 11"	7	521.62 lb.	
C 9221	9	22' - 1"	7	525.58 lb.	
2 Set	C7079E	to	C7083E	2 Bars/Set	65.41 lb.
2 Set	C7155E	to	C7165E	2 Bars/Set	130.13 lb.
SUB-TOTAL					
Reinforcing Steel				4,345.00 lb.	
Reinforcing Steel (Epoxy Coated)				2,739.00 lb.	
Class DA Concrete, Modified (Major) (Structures)				15.42 C.Y.	

**PIER 3 CAP**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT	
9215	9	21' - 5"	20	1,456.33 lb.	
C 5074	5	7' - 4"	68	520.11 lb.	
C 7083E	7	8' - 3"	54	910.60 lb.	
C 7094E	7	9' - 4"	23	438.78 lb.	
C 7108E	7	10' - 8"	16	348.84 lb.	
C 7131E	7	13' - 1"	4	106.97 lb.	
C 7165E	7	16' - 5"	22	738.22 lb.	
C 71811	7	18' - 11"	10	386.66 lb.	
C 72011	7	20' - 11"	10	427.54 lb.	
C 7296	7	29' - 6"	2	120.60 lb.	
C 7316	7	31' - 6"	6	386.32 lb.	
C 9219	9	21' - 9"	7	517.65 lb.	
C 92111	9	21' - 11"	7	521.62 lb.	
2 Set	C7079E	to	C7083E	2 Bars/Set	65.41 lb.
2 Set	C7155E	to	C7165E	2 Bars/Set	130.13 lb.
SUB-TOTAL					
Reinforcing Steel				4,337.00 lb.	
Reinforcing Steel (Epoxy Coated)				2,739.00 lb.	
Class DA Concrete, Modified (Major) (Structures)				15.42 C.Y.	

**BOTTOM SLAB**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT	
4216	4	21' - 6"	62	890.44 lb.	
D 4050	4	5' - 0"	2	6.68 lb.	
D 6179	6	17' - 9"	35	933.12 lb.	
1 Set	D6033	to	D6162	23 Bars/Set	335.38 lb.
1 Set	D6034	to	D6161	22 Bars/Set	320.80 lb.
1 Set	D6034	to	D6163	23 Bars/Set	338.26 lb.
1 Set	D6035	to	D6163	22 Bars/Set	324.93 lb.
SUB-TOTAL					
Reinforcing Steel				3,150.00 lb.	
Class DA Concrete, Modified (Major) (Structures)				12.11 C.Y.	

**WEBS & INTERMEDIATE DIAPHRAGMS**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
4203E	4	20' - 3"	8	108.22 lb.
4208E	4	20' - 8"	8	110.44 lb.
4216	4	21' - 6"	40	574.48 lb.
8216	8	21' - 6"	20	1,148.10 lb.
G 4083E	4	8' - 3"	42	231.46 lb.
S 5081E	5	8' - 1"	330	2,782.20 lb.
SUB-TOTAL				
Reinforcing Steel				1,723.00 lb.
Reinforcing Steel (Epoxy Coated)				3,233.00 lb.
Class DA Concrete, Modified (Major) (Structures)				15.12 C.Y.

**PIER CAP 1 CLOSURE**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
4203	4	20' - 3"	4	54.11 lb.
5203	5	20' - 3"	8	168.97 lb.
C 4025E	4	2' - 5"	24	38.74 lb.
C 40211E	4	2' - 11"	24	46.76 lb.
C 5048E	5	4' - 8"	10	48.67 lb.
C 5058	5	5' - 8"	126	744.70 lb.
C 5070	5	7' - 0"	6	43.81 lb.
C 5074E	5	7' - 4"	21	160.62 lb.
C 50810E	5	8' - 10"	21	193.48 lb.
C 5223E	5	22' - 3"	10	232.07 lb.
SUB-TOTAL				
Reinforcing Steel				1,012.00 lb.
Reinforcing Steel (Epoxy Coated)				721.00 lb.
Class DA Concrete, Modified (Major) (Structures)				9.20 lb.

**PIER CAP 2 CLOSURE**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
4205	4	20' - 5"	4	54.55 lb.
5205	5	20' - 5"	8	170.36 lb.
C 4025E	4	2' - 5"	18	29.06 lb.
C 40211E	4	2' - 11"	18	35.07 lb.
C 5042	5	4' - 2"	126	547.58 lb.
C 5048E	5	4' - 8"	6	29.20 lb.
C 5056	5	5' - 6"	6	34.42 lb.
C 5076E	5	7' - 6"	42	328.55 lb.
C 5221E	5	22' - 1"	8	184.26 lb.
SUB-TOTAL				
Reinforcing Steel				807.00 lb.
Reinforcing Steel (Epoxy Coated)				607.00 lb.
Class DA Concrete, Modified (Major) (Structures)				3.24 lb.
Class EA Concrete, Modified (Major)				7.75 lb.

**PIER CAP 3 CLOSURE**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
4203	4	20' - 3"	4	54.11 lb.
5203	5	20' - 3"	8	168.97 lb.
C 4025E	4	2' - 5"	24	38.74 lb.
C 40211E	4	2' - 11"	24	46.76 lb.
C 5048E	5	4' - 8"	10	48.67 lb.
C 5058	5	5' - 8"	126	744.70 lb.
C 5070	5	7' - 0"	6	43.81 lb.
C 5074E	5	7' - 4"	21	160.62 lb.
C 50810E	5	8' - 10"	21	193.48 lb.
C 52111E	5	21' - 11"	10	228.59 lb.
SUB-TOTAL				
Reinforcing Steel				1,012.00 lb.
Reinforcing Steel (Epoxy Coated)				717.00 lb.
Class DA Concrete, Modified (Major) (Structures)				8.88 C.Y.

**TOP SLAB**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT	
4300E	4	30' - 0"	23	460.92 lb.	
4360E	4	36' - 0"	23	553.10 lb.	
4600E	4	60' - 0"	46	1,843.68 lb.	
5045E	5	4' - 5"	242	1,114.79 lb.	
5201E	5	20' - 1"	409	8,567.29 lb.	
5216E	5	21' - 6"	74	1,659.41 lb.	
5300E	5	30' - 0"	8	250.32 lb.	
5380E	5	38' - 0"	4	158.54 lb.	
5600E	5	60' - 0"	16	1,001.28 lb.	
10400E	10	40' - 0"	63	10,843.56 lb.	
10500E	10	50' - 0"	40	8,606.00 lb.	
10600E	10	60' - 0"	20	5,163.60 lb.	
D 5055E	5	5' - 5"	241	1,361.55 lb.	
D 5070E	5	7' - 0"	82	598.68 lb.	
D 5090E	5	9' - 0"	159	1,492.53 lb.	
1 Set	5020E	to	5184E	29 Bars/Set	307.51 lb.
1 Set	5023E	to	5188E	29 Bars/Set	316.33 lb.
1 Set	51911E	to	5020E	31 Bars/Set	354.32 lb.
1 Set	5201E	to	5023E	31 Bars/Set	361.05 lb.
SUB-TOTAL					
Reinforcing Steel (Epoxy Coated)				45,015.00 lb.	
Class EA Concrete, Modified (Major)				107.30 C.Y.	

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

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QUANTITIES

4 OF 5 I-1093 S

DATE : 1/26/2023

**APPROACH SLAB-PHASE 1-BEGIN BRIDGE**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
4062E	4	6' - 2"	30	123.58 lb.
4298E	4	29' - 8"	42	832.33 lb.
4450E	4	45' - 0"	1	30.06 lb.
5062E	5	6' - 2"	19	122.20 lb.
5218E	5	21' - 8"	4	90.39 lb.
5298E	5	29' - 8"	21	649.79 lb.
6070E	6	7' - 0"	40	420.56 lb.
63811E	6	38' - 11"	2	116.91 lb.
7450E	7	45' - 0"	3	275.94 lb.
AS 4020E	4	2' - 0"	36	48.10 lb.
AS 4045E	4	4' - 5"	36	106.21 lb.
AS 50210E	5	2' - 10"	29	85.70 lb.
D 5055E	5	5' - 5"	56	316.38 lb.
AS 5068E	5	6' - 8"	29	201.65 lb.
AS 5071E	5	7' - 1"	2	14.78 lb.
1 Set	4211E	to 4025E	47 Bars/Set	368.90 lb.
1 Set	44010E	to 4358E	7 Bars/Set	178.86 lb.
1 Set	4449E	to 4263E	22 Bars/Set	521.71 lb.
1 Set	5211E	to 5025E	24 Bars/Set	294.13 lb.
1 Set	60511E	to 6025E	4 Bars/Set	25.03 lb.
1 Set	74010E	to 7358E	13 Bars/Set	1,016.38 lb.
1 Set	7449E	to 7263E	44 Bars/Set	3,192.73 lb.
SUB-TOTAL				
Reinforcing Steel (Epoxy Coated)				9,033.00 lb.
Class EA Concrete, Modified (Major)				51.86 C.Y.

**APPROACH SLAB-PHASE 1-END BRIDGE**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
4232E	4	23' - 2"	30	464.26 lb.
4263E	4	26' - 3"	1	17.54 lb.
4298E	4	29' - 8"	23	455.80 lb.
5062E	5	6' - 2"	4	25.73 lb.
5218E	5	21' - 8"	4	90.39 lb.
5232E	5	23' - 2"	15	362.44 lb.
5298E	5	29' - 8"	12	371.31 lb.
6070E	6	7' - 0"	27	283.88 lb.
6382E	6	38' - 2"	2	114.65 lb.
7263E	7	26' - 3"	3	160.97 lb.
AS 4020E	4	2' - 0"	36	48.10 lb.
AS 4045E	4	4' - 5"	36	106.21 lb.
AS 50210E	5	2' - 10"	29	85.70 lb.
D 5055E	5	5' - 5"	37	209.03 lb.
AS 5060E	5	6' - 0"	2	12.52 lb.
AS 5068E	5	6' - 8"	29	201.65 lb.
1 Set	4020E	to 4279E	43 Bars/Set	427.27 lb.
1 Set	4265E	to 4435E	22 Bars/Set	513.14 lb.
1 Set	4293E	to 4341E	7 Bars/Set	148.07 lb.
1 Set	5027E	to 5272E	21 Bars/Set	325.81 lb.
1 Set	7265E	to 74310E	44 Bars/Set	3,159.00 lb.
1 Set	7293E	to 7341E	13 Bars/Set	841.45 lb.
SUB-TOTAL				
Reinforcing Steel (Epoxy Coated)				8,425.00 lb.
Class EA Concrete, Modified (Major)				48.85 C.Y.

**APPROACH SLAB-PHASE 2-BEGIN BRIDGE**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
4033E	4	3' - 3"	49	106.38 lb.
4245E	4	24' - 5"	3	48.93 lb.
4248E	4	24' - 8"	30	494.32 lb.
4302E	4	30' - 2"	19	382.88 lb.
5052E	5	5' - 2"	4	21.56 lb.
5232E	5	23' - 2"	4	96.65 lb.
5248E	5	24' - 8"	15	385.91 lb.
5302E	5	30' - 2"	10	314.64 lb.
6392E	6	39' - 2"	2	117.66 lb.
4020DE	4	2' - 0"	35	46.76 lb.
AS 4020E	4	2' - 0"	36	48.10 lb.
AS 4045E	4	4' - 5"	36	106.21 lb.
AS 50210E	5	2' - 10"	30	88.66 lb.
AS 50311E	5	3' - 11"	25	102.13 lb.
D 5055E	5	5' - 5"	35	197.74 lb.
AS 5060E	5	6' - 0"	2	12.52 lb.
AS 5068E	5	6' - 8"	30	208.60 lb.
AS 6090E	6	9' - 0"	25	337.95 lb.
1 Set	42911E	to 4020E	49 Bars/Set	522.35 lb.
1 Set	4353E	to 43011E	6 Bars/Set	132.60 lb.
1 Set	4451E	to 4245E	25 Bars/Set	580.33 lb.
1 Set	5259E	to 5249E	2 Bars/Set	52.67 lb.
1 Set	5294E	to 5027E	24 Bars/Set	399.47 lb.
1 Set	7259E	to 7249E	3 Bars/Set	154.83 lb.
1 Set	7353E	to 73011E	11 Bars/Set	743.85 lb.
1 Set	7456E	to 7262E	46 Bars/Set	3,369.19 lb.
SUB-TOTAL				
Reinforcing Steel (Epoxy Coated)				9,027.00 lb.
Reinforcing Steel (Epoxy Coated)(Doweled)				47.00 lb.
Class EA Concrete, Modified (Major)				61.99 C.Y.

**APPROACH SLAB-PHASE 2-END BRIDGE**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
4033E	4	3' - 3"	83	180.19 lb.
4052E	4	5' - 2"	30	103.54 lb.
4302E	4	30' - 2"	39	785.90 lb.
4442E	4	44' - 2"	3	88.51 lb.
5052E	5	5' - 2"	19	102.39 lb.
5232E	5	23' - 2"	4	96.65 lb.
5302E	5	30' - 2"	20	629.28 lb.
6390E	6	39' - 0"	2	117.16 lb.
4020DE	4	2' - 0"	34	45.42 lb.
AS 4020E	4	2' - 0"	36	48.10 lb.
AS 4045E	4	4' - 5"	36	106.21 lb.
AS 50210E	5	2' - 10"	30	88.66 lb.
AS 50311E	5	3' - 11"	42	171.57 lb.
D 5055E	5	5' - 5"	54	305.08 lb.
AS 5060E	5	6' - 0"	2	12.52 lb.
AS 5068E	5	6' - 8"	30	208.60 lb.
AS 6090E	6	9' - 0"	39	527.20 lb.
1 Set	4020E	to 42911E	47 Bars/Set	501.03 lb.
1 Set	4245E	to 4442E	25 Bars/Set	572.67 lb.
1 Set	4346E	to 4387E	6 Bars/Set	146.46 lb.
1 Set	5027E	to 5294E	23 Bars/Set	382.82 lb.
1 Set	54311E	to 54411E	2 Bars/Set	92.65 lb.
1 Set	7240E	to 7426E	46 Bars/Set	3,126.30 lb.
1 Set	7346E	to 7387E	11 Bars/Set	821.60 lb.
1 Set	74311E	to 74411E	3 Bars/Set	272.36 lb.
1 Set	AS6042E	to AS60710E	4 Bars/Set	36.05 lb.
SUB-TOTAL				
Reinforcing Steel (Epoxy Coated)				9,524.00 lb.
Reinforcing Steel (Epoxy Coated)(Doweled)				46.00 lb.
Class EA Concrete, Modified (Major)				54.93 C.Y.

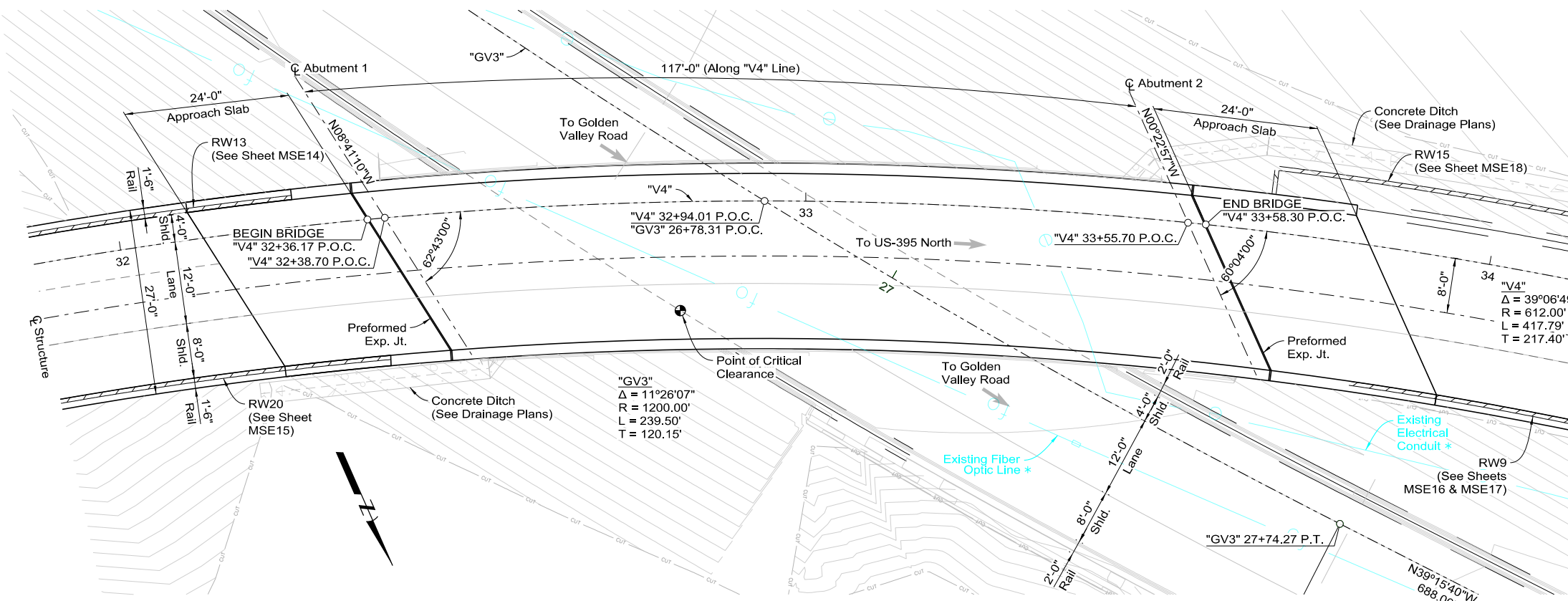
**BRIDGE RAIL**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
4180E	4	18' - 0"	8	96.19 lb.
4208E	4	20' - 8"	8	110.44 lb.
4240E	4	24' - 0"	4	64.13 lb.
4255E	4	25' - 5"	4	67.91 lb.
4260E	4	26' - 0"	10	173.68 lb.
4300E	4	30' - 0"	2	40.08 lb.
4346E	4	34' - 6"	32	737.47 lb.
4360E	4	36' - 0"	2	48.10 lb.
4430E	4	43' - 0"	4	114.90 lb.
4443E	4	44' - 3"	4	118.24 lb.
4449E	4	44' - 9"	10	298.93 lb.
4600E	4	60' - 0"	4	160.32 lb.
P 5065E	5	6' - 5"	89	595.64 lb.
P 5085E	5	8' - 5"	334	2,932.05 lb.

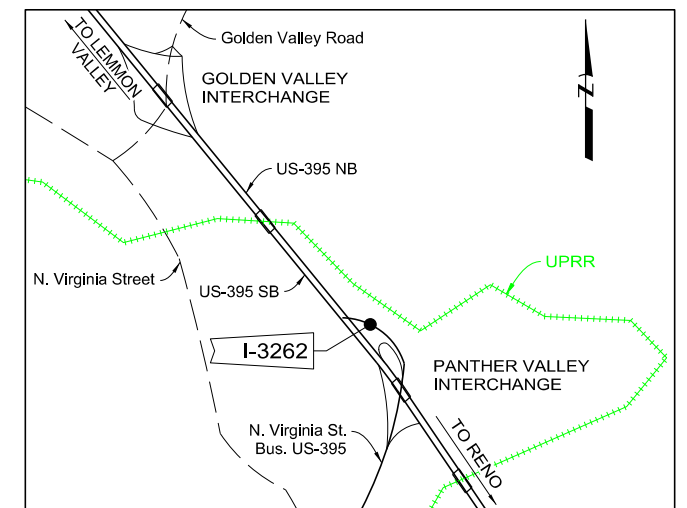
SUB-TOTAL		
Reinforcing Steel (Epoxy Coated)		5,559.00 lb.
Class EA Concrete, Modified (Major)		31.97 C.Y.

TOTALS		
Reinforcing Steel		43,845.00 lb.
Reinforcing Steel (Epoxy Coated)		100,078.00 lb.
Reinforcing Steel (Epoxy Coated)(Doweled)		93.00 lb.
Class DA Concrete, Modified (Major) (Structures)		162.16 C.Y.
Class EA Concrete, Modified (Major)		364.64 C.Y.

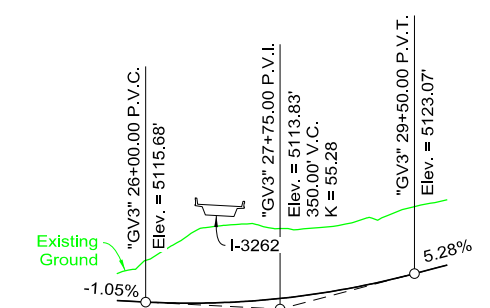
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B300



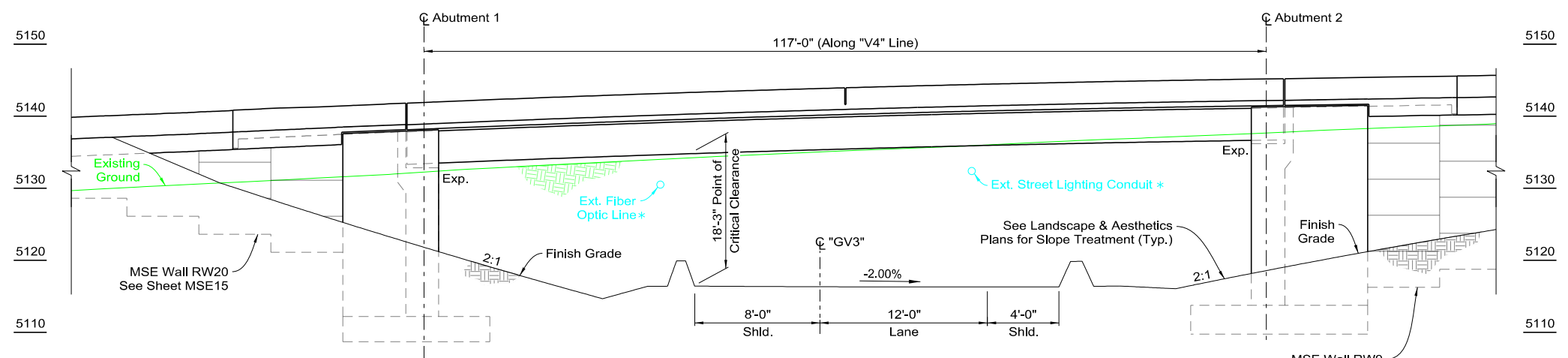
PLAN



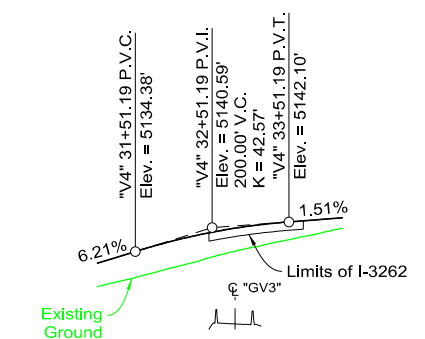
LOCATION SKETCH



"GV3" PROFILE



DEVELOPED ELEVATION



"V4" PROFILE

GEOTECHNICAL DESIGN DIVISION	
DESIGNED BY:	GEORGE HELGERSON
PRINCIPAL:	KYLE JERMSTAD
STRUCTURAL DESIGN DIVISION	
DESIGNED BY:	VIXUONG HONG/TIFFANY CARR
DRAWN BY:	ANNA CLOSE
PRINCIPAL:	MICHAEL TAYLOR

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**VIRGINIA ST. NB ON-RAMP  
OVER NB GOLDEN  
VALLEY OFF-RAMP**

I-3262

\* - All utility locations are approximate and are for coordination purposes only. All utilities are to be field located prior to start of construction and protected in place unless noted otherwise in plans.



STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B301

## GENERAL NOTES

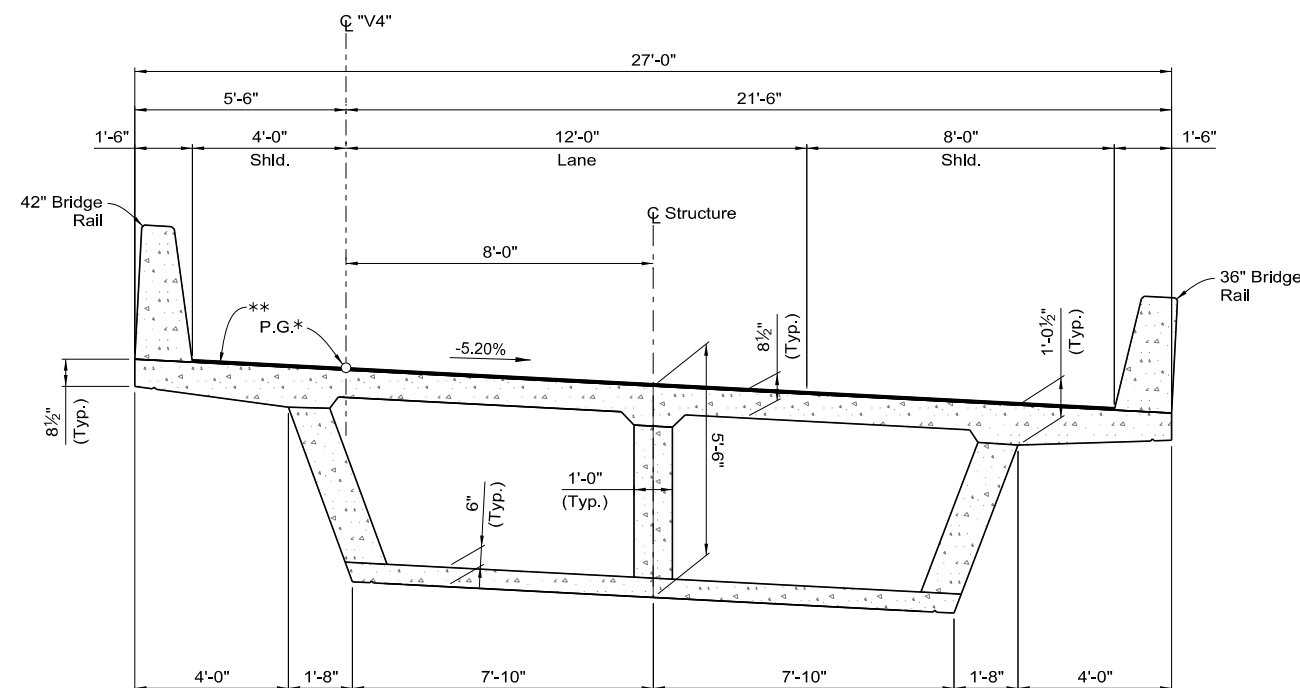
- Design Specifications: AASHTO "LRFD Bridge Design Specifications" Eighth Edition 2017, AASHTO "Guide Specifications for LRFD Seismic Bridge Design" Second Edition 2011, with interims through 2015, and "NDOT Structures Manual" 2008, with interims through 2019.
- Construction Specifications: State of Nevada Department of Transportation "Standard Specifications for Road and Bridge Construction, 2014" except as noted below and in The Special Provisions of this Contract.
- Dead Load: In accordance with Specifications with an allowance of 38 psf for future wearing surface and 12 psf for stay-in-place deck formwork.
- Live Load: AASHTO HL-93 Loading. Overload design based on California "Standard Permit Design Vehicles" (Maximum Overload P-13 Truck). Deck Design based on the Equivalent Strip Method with a 40.0 kip axle.
- Seismic Load: PGA Coefficient = 0.50g, Short Period Coefficient (S<sub>s</sub>) = 1.25g, Long Period Coefficient (S<sub>1</sub>) = 0.50g, Site Class C Soil Profile (SDC D). γ<sub>w</sub> = 0.25.
- Concrete: See Post-Tensioning Notes and Concrete Placement Schedule and Diagram for concrete class and compressive strengths.
- Reinforcing Steel: All reinforcing steel to be ASTM A706. Dimensions relating to bar spacing are center to center. Bending dimensions are from out to out of the bars. Bar sizes three (3) to nine (9) are indicated by the first number of the mark; ten (10) or larger by the first two numbers. Bar marks with a letter prefix indicate a bent bar. Bar marks ending with either the letter "E" indicate that the bar shall be epoxy coated the length of the bar. Sizes four (4) and five (5), when considered as bars to control temperature, shrinkage, and distribution stresses by the Engineer, may be adjusted upon concurrence and approval of the Engineer.
- Foundations: Abutments shall be on spread footings. Refer to Geotechnical Report from NewFields titled "Geotechnical Design Report, Phase 1B: US395 North Valleys, Washoe County, Nevada" dated February 2020.
- Camber: Camber shall be as shown on the Plans.
- Barrier Rail: Designed for TL-4.
- Construction Type Code: x281.
- Concrete construction joints designated as a "Permissible Joint" or as an "Optional Construction Joint" may be incorporated into the construction at the Contractor's option. Joints designated as a "Construction Joint" are considered mandatory and shall be incorporated into the construction unless otherwise approved in writing by the Bridge Design Engineer.
- All dimensions are measured at 60 °F unless noted otherwise.
- All exposed concrete surfaces (excluding bridge deck) to receive stain or surface treatments as specified in the Landscape & Aesthetic Plans (Bid Item 212 0045). Finishes to extend one foot minimum below surface grade.
- For Superelevation Diagrams, see Roadway Plans.
- Install ¾" polymer concrete overlay to bridge deck and approach slabs. Polymer concrete shall be installed from face of rail to face of rail. Refer to Section 496 of the Contract Special Provisions.

\* - Riding surface of Bridge Deck and Approach Slabs matches Profile Grade (top of ¾" polymer overlay).

\*\* - ¾" Polymer Concrete Overlay (See Note 16.)

## STANDARD BAR LAPS

Bar Size	Uncoated (in)	Epoxy Coated (in)
#4	20	24
#5	24	30
#6	30	34
#7	38	45
#8	48	57
#9	60	72
#10	74	88
#11	90	108



## TYPICAL SECTION

LOOKING AHEAD ON LINE  
NORMAL TO ALIGNMENT

## ABBREVIATIONS

Alt.	Alternate
Brg.	Bearing
Bot.	Bottom
C.G.	Center of Gravity
C.G.S.	Center of Gravity of Steel
Clr.	Clear
CMP	Corrugated Metal Pipe
Col.	Column
Const. Jt.	Construction Joint
Dbl.	Double
Dia.	Diameter
Dim.	Dimension
Ea.	Each
E.F.	Each Face
Elev.	Elevation
EQ. Spa.	Equal Space
E.S.	Each Side
Exp.	Expansion
Ext.	Existing/Exterior
E.W.	Each Way
F.F.	Far Face
Fix.	Fixed
Galv.	Galvanized
I.D.	Inner Diameter
Int.	Interior/Intermediate
Jt.	Joint
LOL	Layout Line
Max.	Maximum
Min.	Minimum
N.F.	Near Face
O.D.	Outer Diameter
Opt.	Optional
P.G.	Profile Grade
Pr.	Pair
P.S.	Prestressing
PT	Post-Tensioning
Sect.	Section
Shld.	Shoulder
Spa.	Space
Spa. Var.	Spacing Varies
Sq.	Square
Typ.	Typical

## SHEET INDEX

SHEET	DESCRIPTION
B300	Virginia Street On-Ramp over US 395 South Off-Ramp
B301	General Notes and Quantities
B302	Geometrics, Excavation and Backfill
B303	Abutment 1 Footing Reinforcing
B304	Abutment 2 Footing Reinforcing
B305	Abutment 1 Reinforcing
B306	Abutment 2 Reinforcing
B307	Abutment Shear Key Reinforcing
B308	Wingwall 1 Reinforcing
B309	Wingwall 2 Reinforcing
B310	Wingwall 3 Reinforcing
B311	Wingwall 4 Reinforcing
B312	Elastomeric Bearing Pad Details
B313	Typical Section
B314	Soffit Reinforcing
B315	Girder Reinforcing Plan
B316	Girder Reinforcing Elevation
B317	End Diaphragm Reinforcing
B318	End Diaphragm Details
B319	Deck Reinforcing
B320	Post-Tensioning, Camber, and Concrete Placement Schedule
B321	Approach Slab Reinforcing
B322	Approach Slab Details
B323	Bridge Rail Details
B324	Expansion Joint Details
B325	Bent Bars, 1 of 2
B326	Bent Bars, 2 of 2
B327	Quantities, 1 of 2
B328	Quantities, 2 of 2

## QUANTITIES

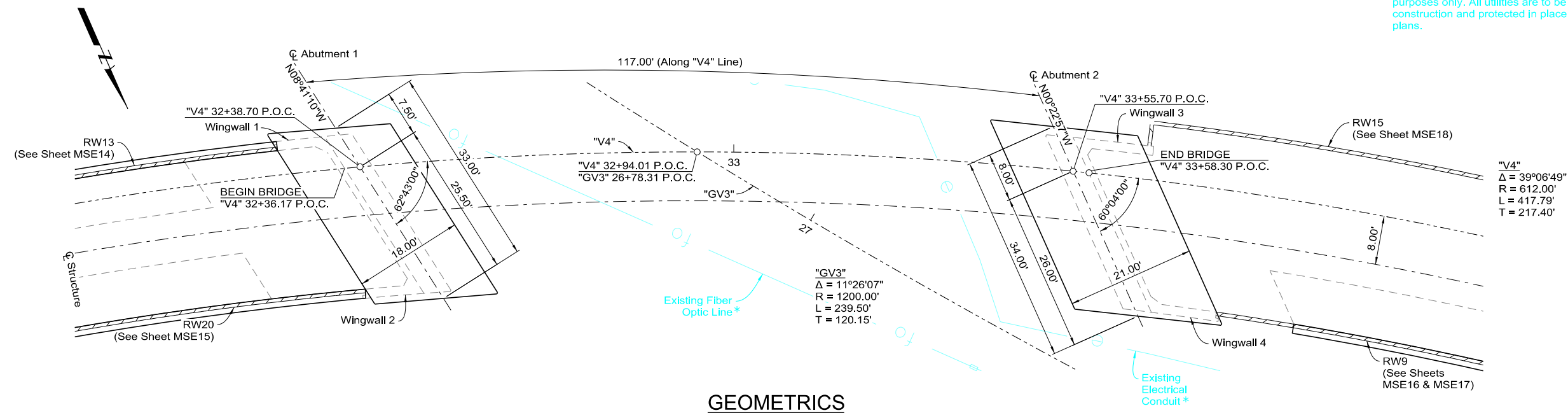
ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY
206 0110	STRUCTURE EXCAVATION	CUYD	782
207 0110	GRANULAR BACKFILL	CUYD	464
496 0130	BRIDGE DECK PREPARATION AND CONCRETE PLACEMENT	SQYD	449
496 0160	POLYMER CONCRETE AGGREGATE	POUND	31,519
496 0170	POLYMER CONCRETE RESIN	POUND	4,413
502 0530	LAMINATED ELASTOMERIC BEARING PAD	EACH	8
502 0881	CLASS DA CONCRETE, MODIFIED (MAJOR) (STRUCTURES)	CUYD	589
502 1010	CLASS EA CONCRETE, MODIFIED (MAJOR)	CUYD	202
502 1950	BRIDGE DECK CURING COMPOUND	GAL	34
502 1980	PREFORMED JOINT FILLER, (1-INCH)	LINFT	59
503 0130	PRESTRESSING CAST-IN-PLACE CONCRETE	LS	1
505 0100	REINFORCING STEEL	POUND	102,366
505 0120	REINFORCING STEEL (EPOXY COATED)	POUND	70,960
506 0110	STRUCTURAL STEEL	POUND	335

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GENERAL NOTES  
AND  
QUANTITIES

I-3262

\* - All utility locations are approximate and are for coordination purposes only. All utilities are to be field located prior to start of construction and protected in place unless noted otherwise in plans.

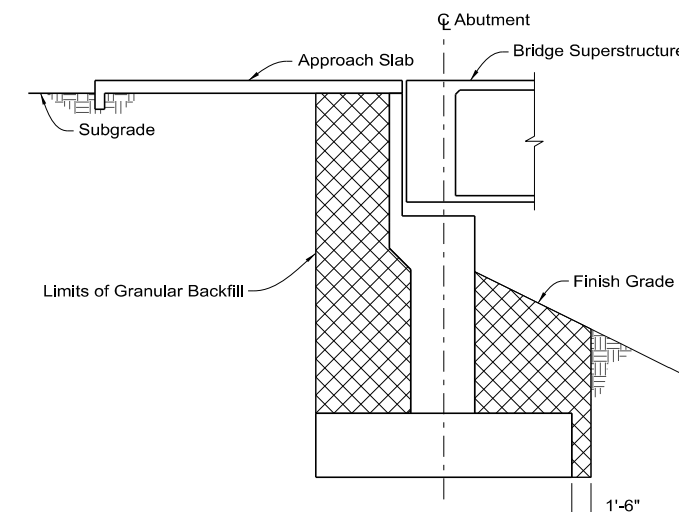
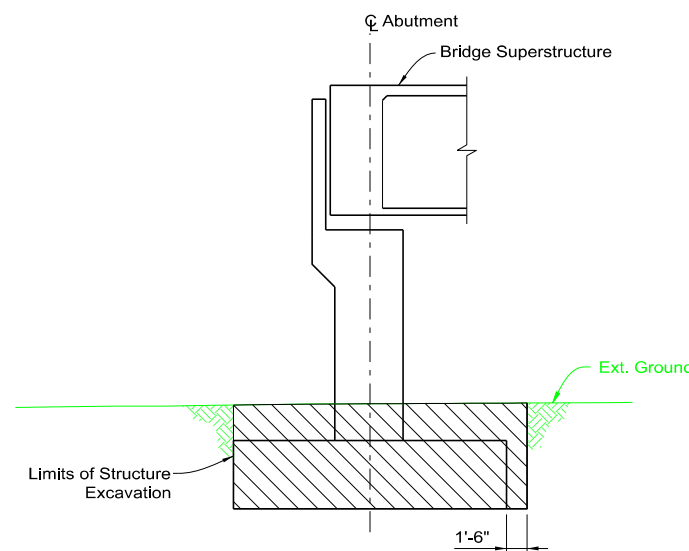


### EARTHWORK SUMMARY

Quantity	Abutment 1	Abutment 2
Structure Excavation (Cu. Yd.)	323	459
Granular Backfill (Cu. Yd.)	190	274

### NOTES

- Trenches more than 4'-0" deep shall be shored, laid back to at least the angle of repose for existing field conditions, or some other means of protection shall be provided.
- If hazardous field conditions exist indicate ground movement may be expected, trenches less than 4'-0" deep shall also be protected as indicated in Note 1.
- For the purpose of payment, structure excavation and backfill quantities are based on these drawings and no additional payment will be made for shoring.
- Trench excavation shoring shall conform to OSHA Regulations 29 CFR Part 1926, Subpart P.
- The quantity of structure excavation and backfill measured for payment shall be the number of cubic yards calculated minus any duplication of limits which overlap.
- The limits of structure excavation and backfill shown herein shall be used for the method of measurement and payment only. There shall be no additional compensation for any additional excavation or backfill required for excavations to meet OSHA regulations.



### LEGEND

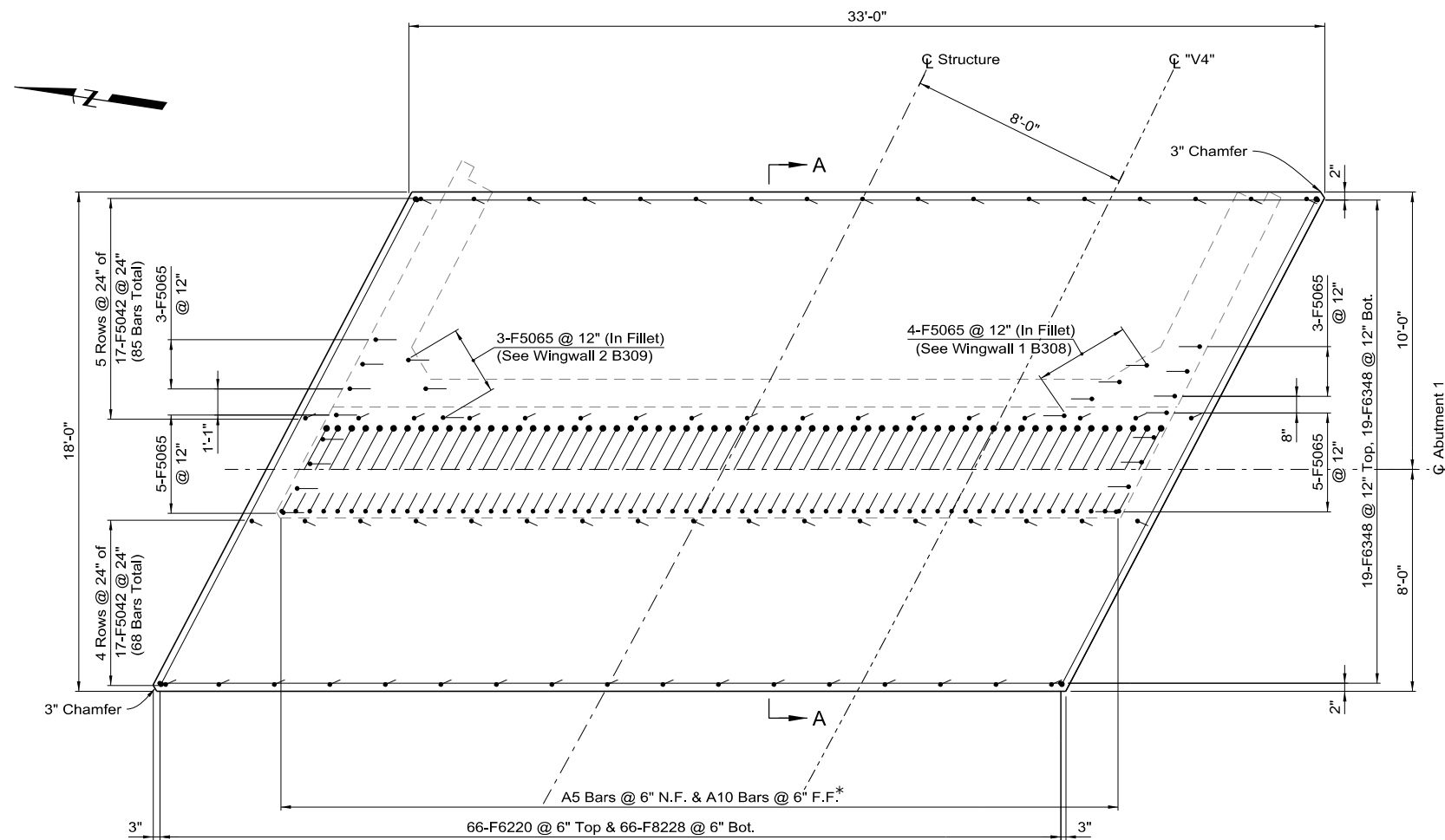
- Granular Backfill
- Structure Excavation

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 DEPARTMENT OF TRANSPORTATION

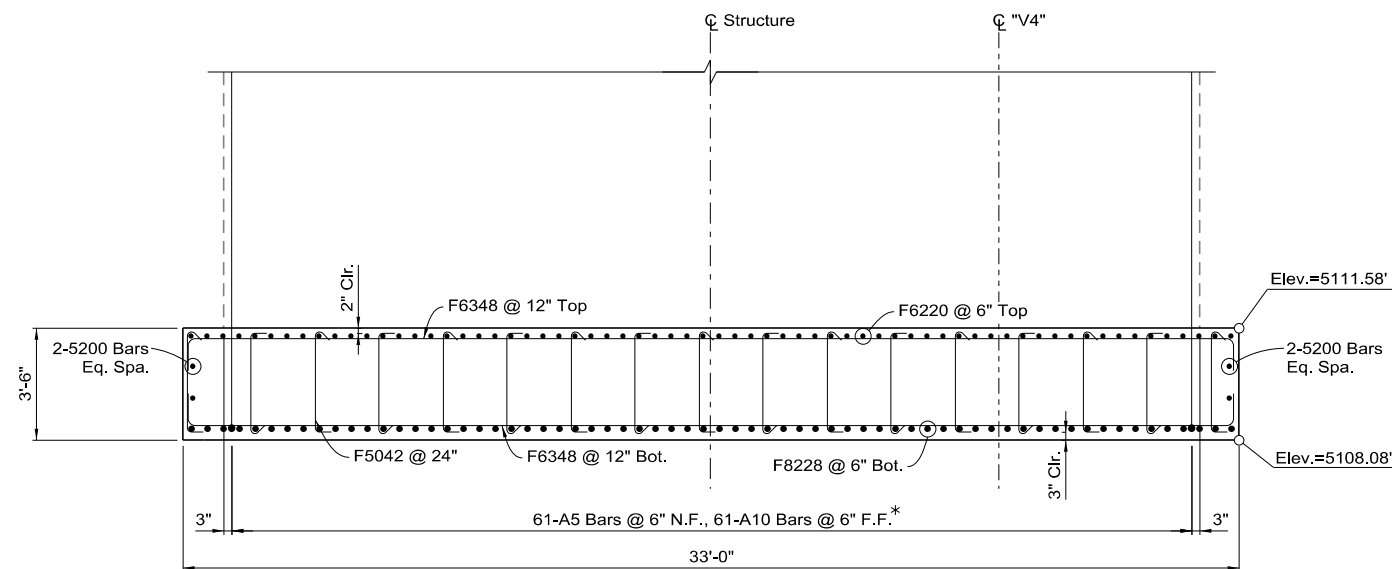
**GEOMETRICS,  
 EXCAVATION AND  
 BACKFILL**

I-3262

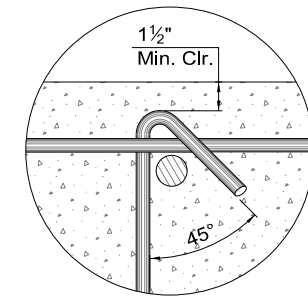
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B303



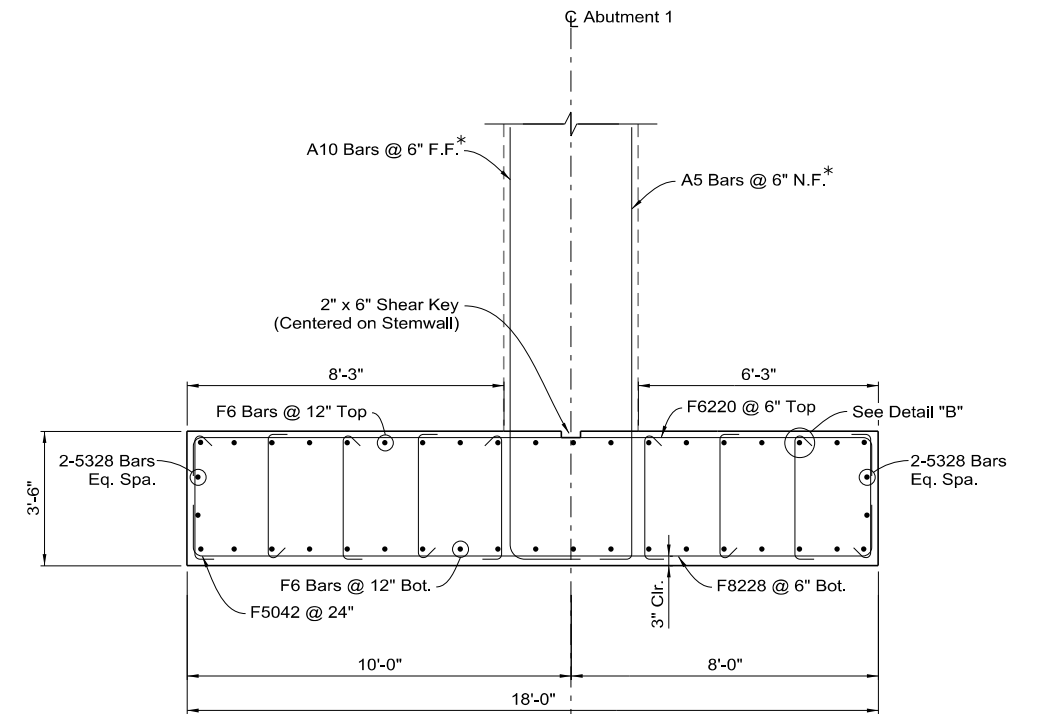
**PLAN**



**ELEVATION**  
LOOKING BACK ON LINE  
ALONG SKEW



**DETAIL "B"**



**SECTION A-A**

\*-See Sheet B305 for A5 and A10 Bars

**NOTES**

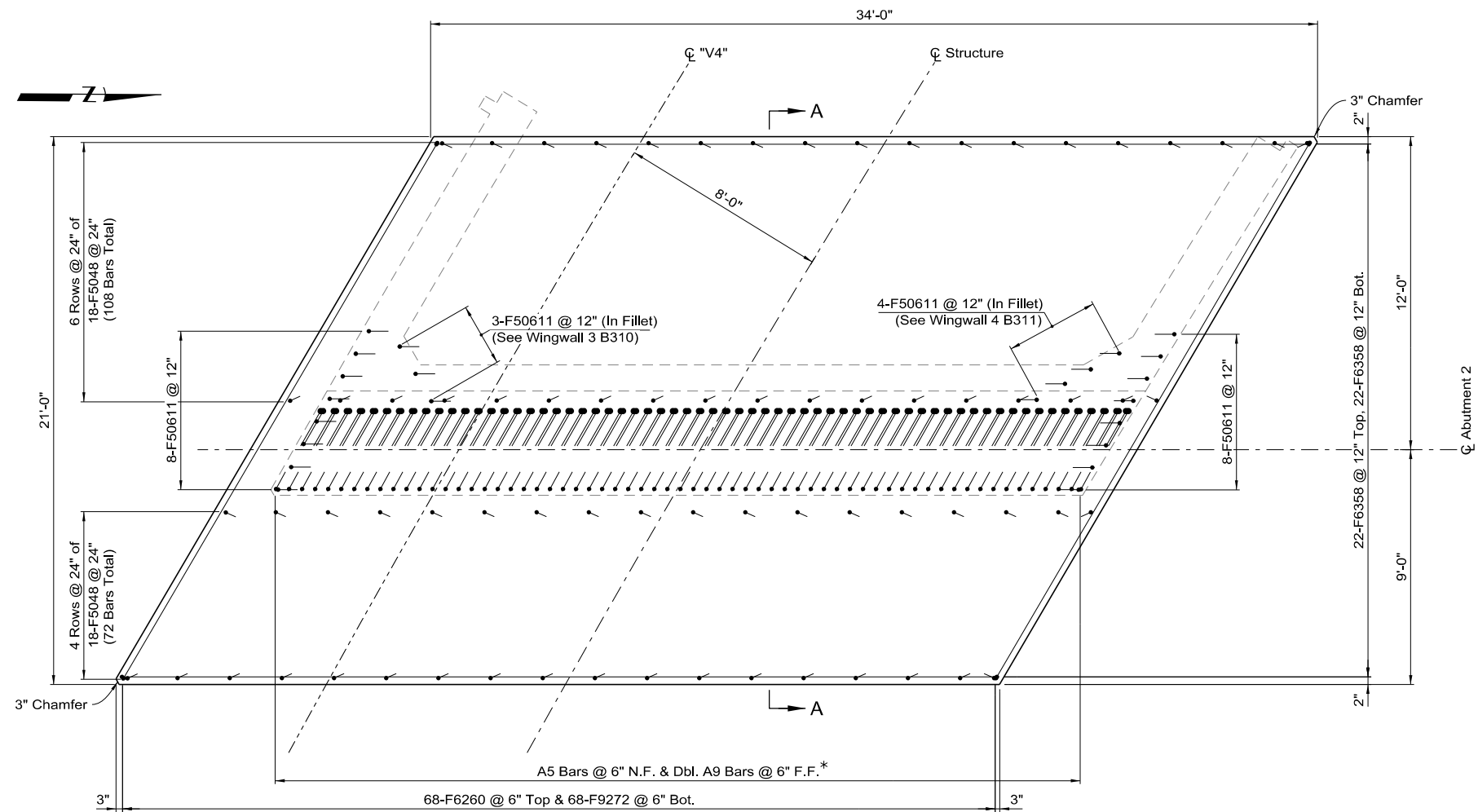
1. Alternate 135° and 90° hooks on F5042 Bars.
2. For abutment reinforcing not shown, see Sheet B305.

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

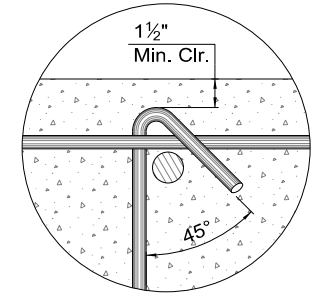
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FOOTING  
REINFORCING**

I-3262

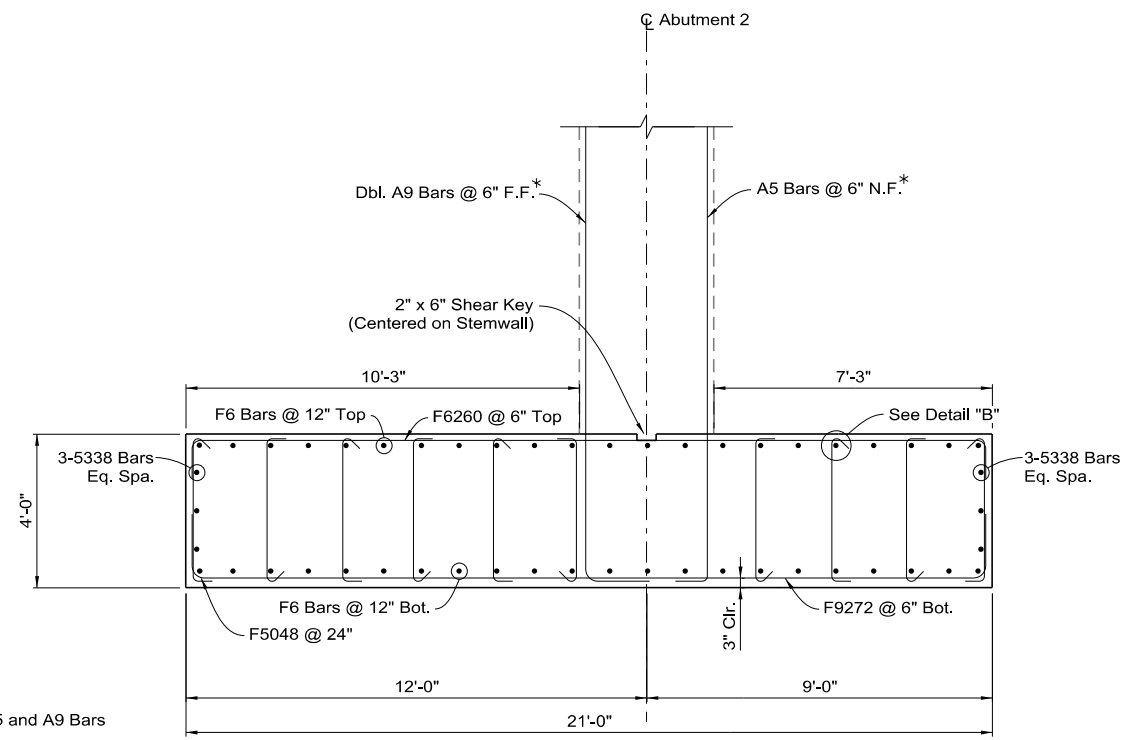
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NEVADA	NHP-0191(104)	WASHOE	B304



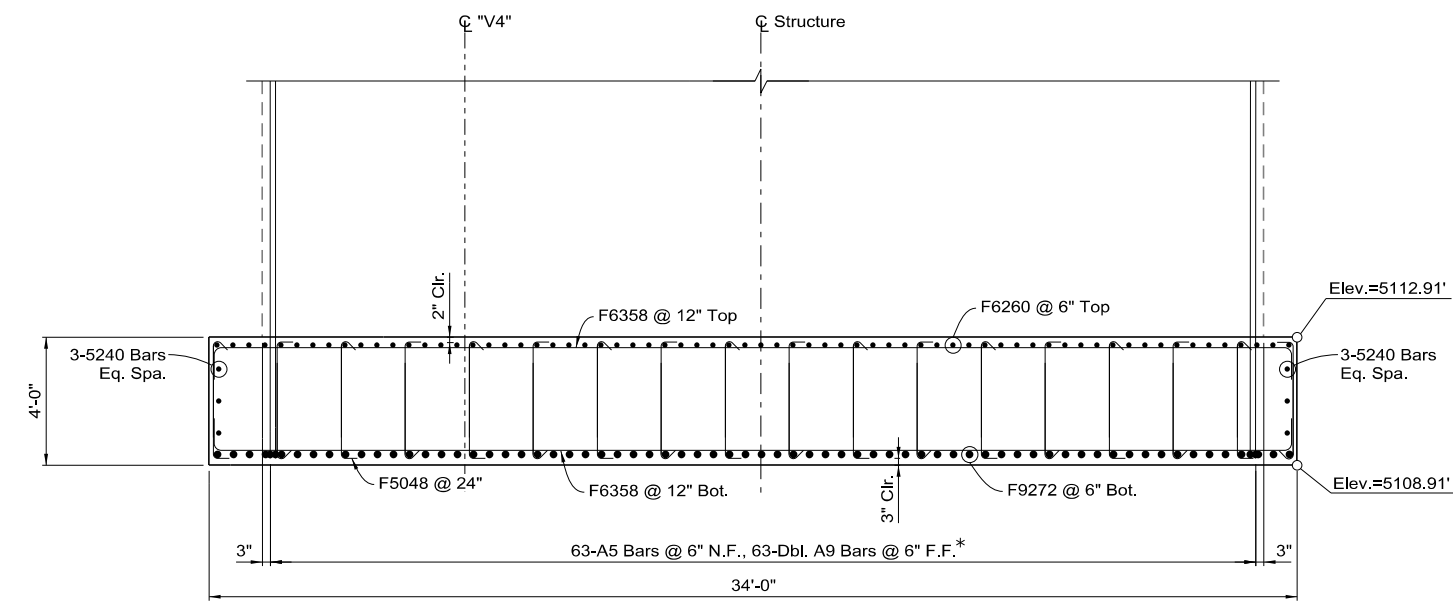
**PLAN**



**DETAIL "B"**



**SECTION A-A**



**ELEVATION**  
LOOKING AHEAD ON LINE  
ALONG SKEW

\*-See Sheet B306 for A5 and A9 Bars

**NOTES**

1. Alternate 135° and 90° hooks on F5048 Bars.
2. For abutment reinforcing not shown, see Sheet B306.

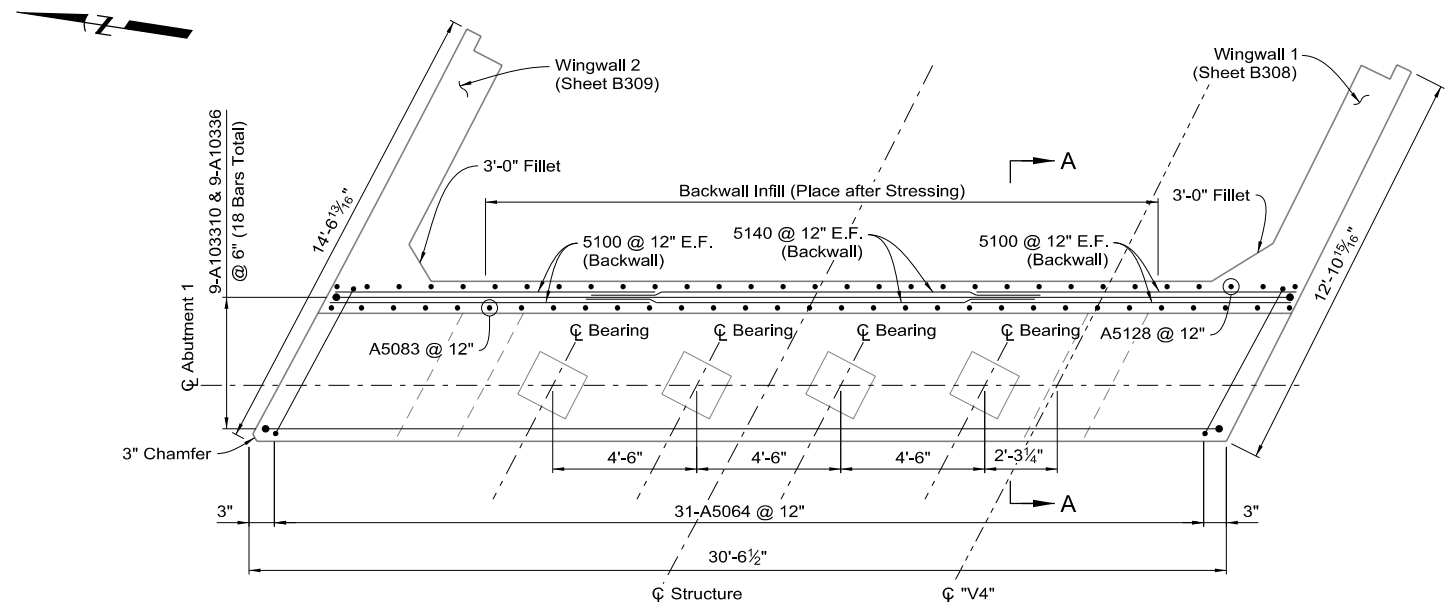
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**ABUTMENT 2  
FOOTING  
REINFORCING**

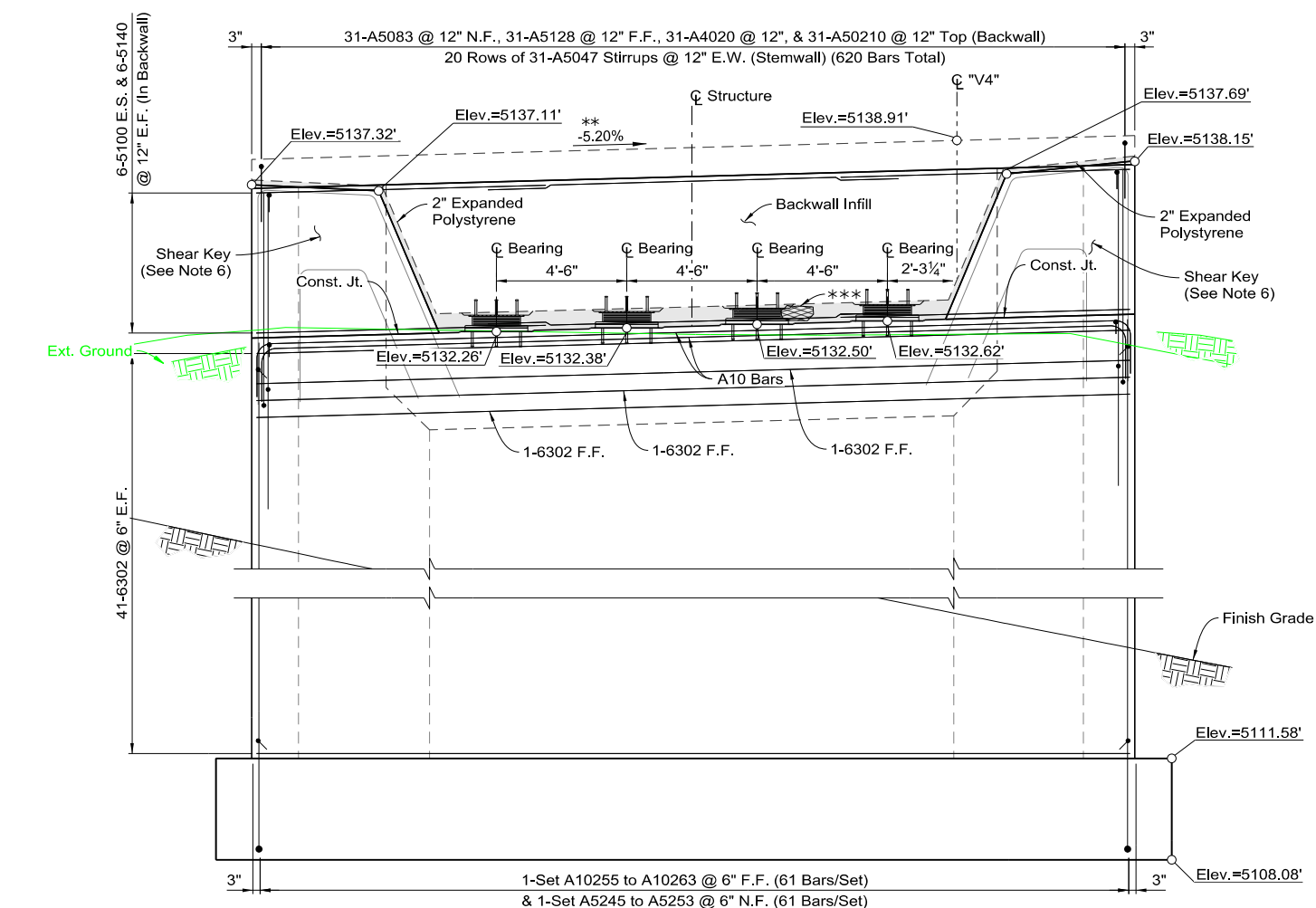
DATE : 1/26/2023

I-3262

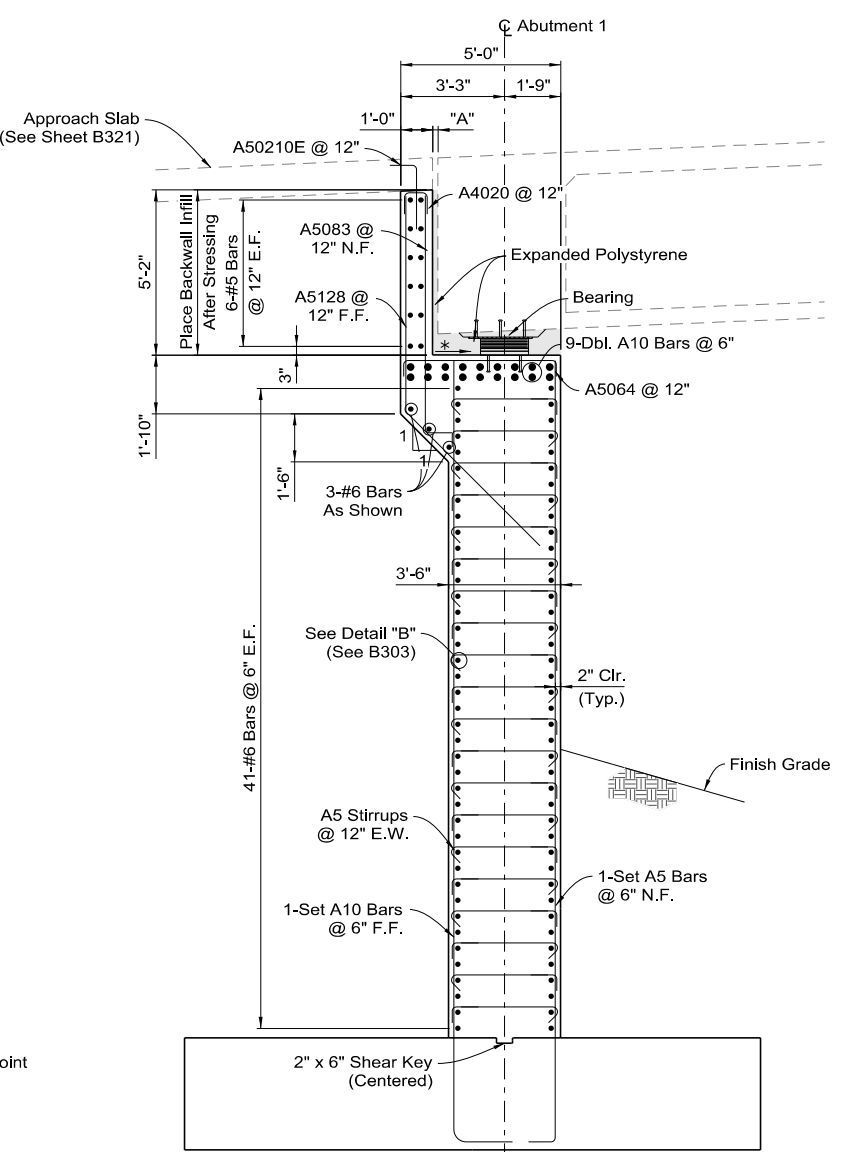
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NEVADA	NHP-0191(104)	WASHOE	B305



**PLAN**

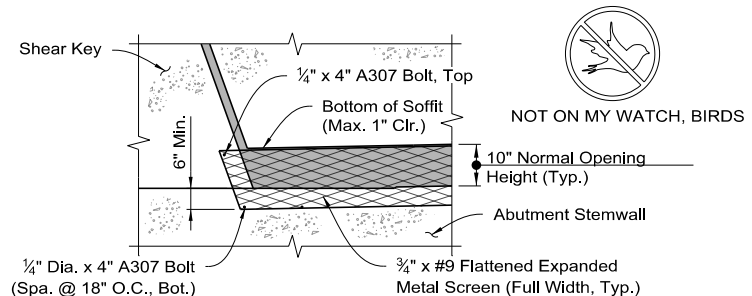


**ELEVATION**  
LOOKING BACK ON LINE



**SECTION A-A**

- NOTES**
- Elevation and dimensions taken at centerline of abutment/bearing.
  - Provide level bearing recess per Sheet B312.
  - For abutment bearings, see Sheet B312.
  - For aesthetic treatments to abutment, see Landscape Improvement Plans.
  - See Sheet B324 for Dimension "A" (expansion joint opening).
  - For shear key reinforcing and details, including reinforcing across construction joint, see Sheet B307.
  - Provide weepholes at 25'-0" on center. For details, see Standard Plan Sheet CW-5.
  - Metal screening to be paid for under Bid Item 506 0110 "Structural Steel".
  - Paint screening to match surrounding concrete per Landscape Improvement Plans.



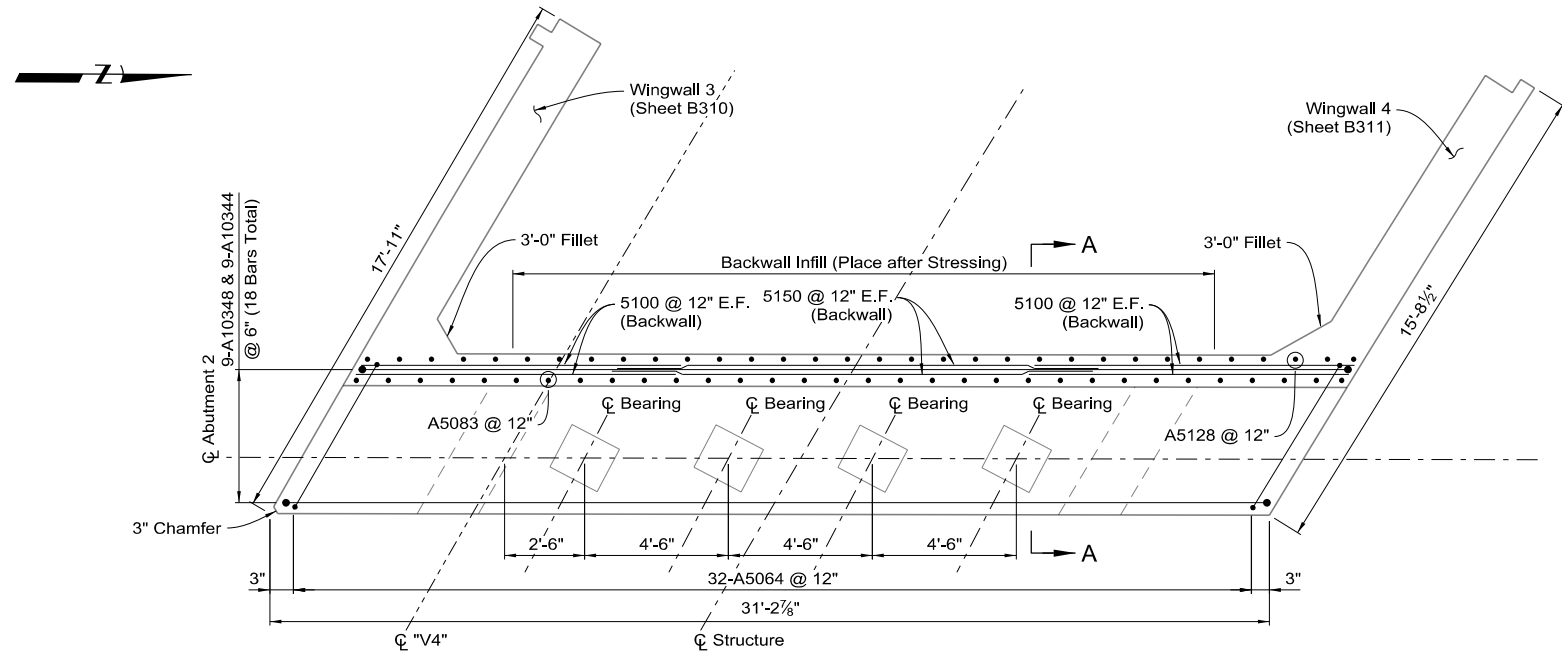
**DETAIL "C"**  
AVIAN DETERRENT SCREENING DETAIL

MINIMUM BAR LAP  
#5 Bar to #5 Bar = 24"

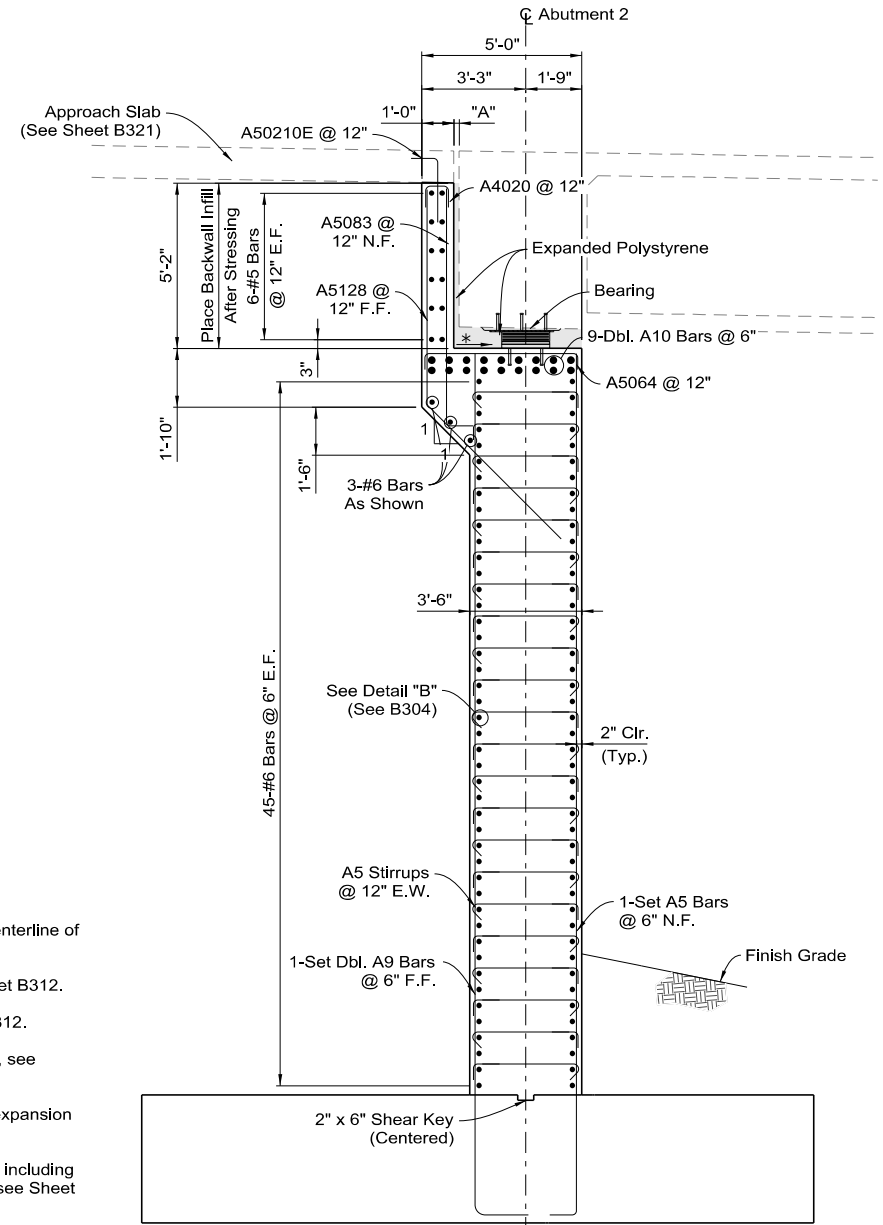
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION  
**ABUTMENT 1  
REINFORCING**

\*\* -5.20% cross slope is measured normal to alignment  
\*\*\* -See Detail "C"

STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B306



**PLAN**

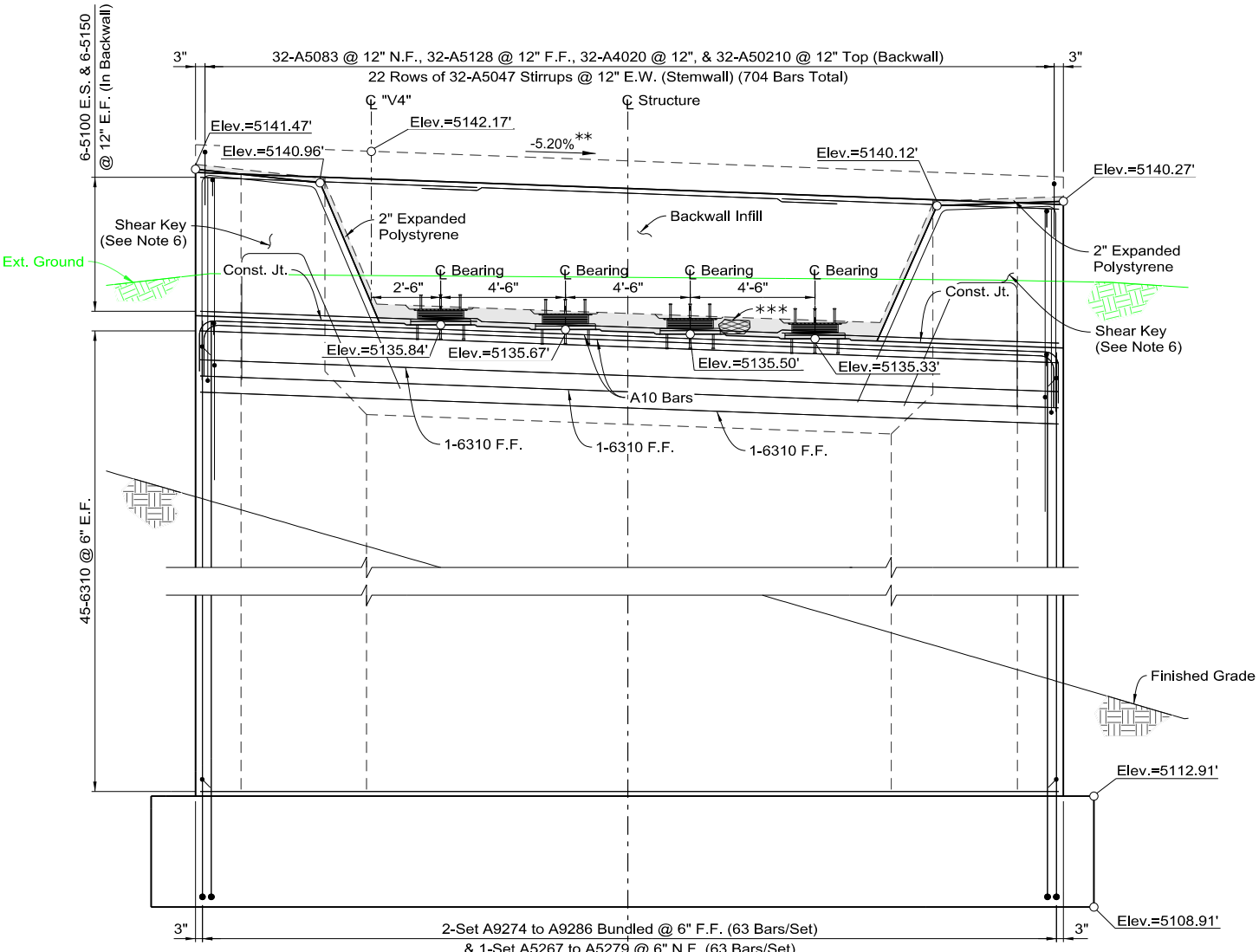


**SECTION A-A**

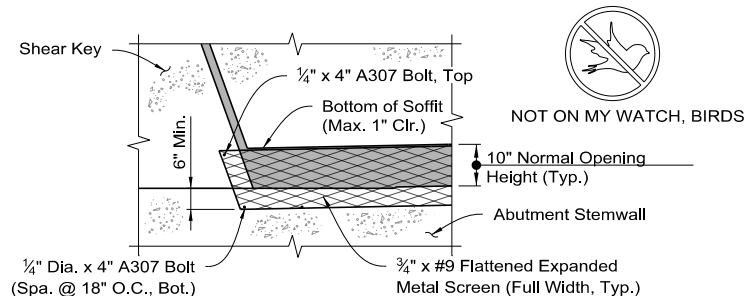
**NOTES**

- Elevation and dimensions taken at centerline of abutment/bearing.
- Provide level bearing recess per Sheet B312.
- For abutment bearings, see Sheet B312.
- For aesthetic treatments to abutment, see Landscape Improvement Plans.
- See Sheet B324 for Dimension "A" (expansion joint opening).
- For shear key reinforcing and details, including reinforcing across construction joint, see Sheet B307.
- Provide weepholes at 25'-0" on center. For details, see Standard Plan Sheet CW-5.
- Metal screening to be paid for under Bid Item 506 0110 "Structural Steel".
- Paint screening to match surrounding concrete per Landscape Improvement Plans.

\*-Provide 1% slope on abutment seat for drainage



**ELEVATION**  
LOOKING AHEAD ON LINE



**DETAIL "C"**  
AVIAN DETERRENT SCREENING DETAIL

MINIMUM BAR LAP  
#5 Bar to #5 Bar = 24"

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

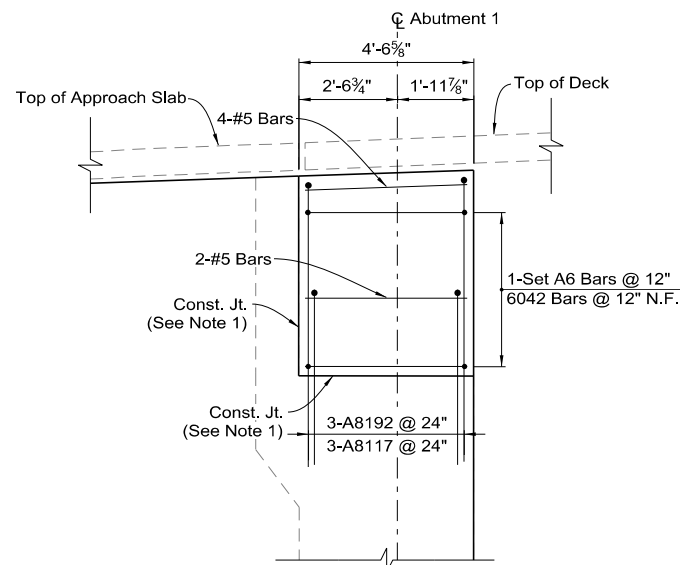
**ABUTMENT 2  
REINFORCING**

I-3262

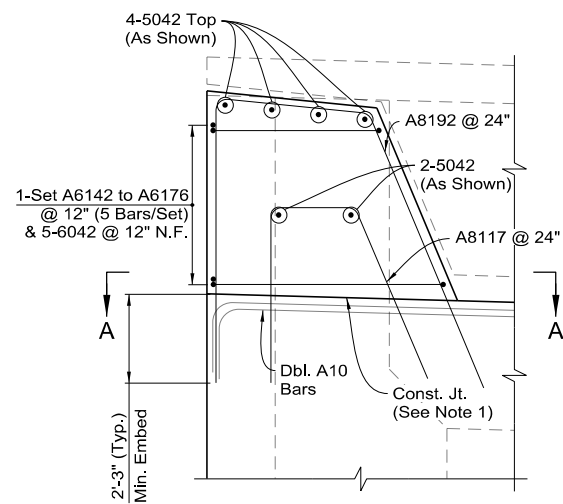
DATE : 1/26/2023

\*\* -5.20% cross slope is measured normal to alignment  
\*\*\* -See Detail "C"

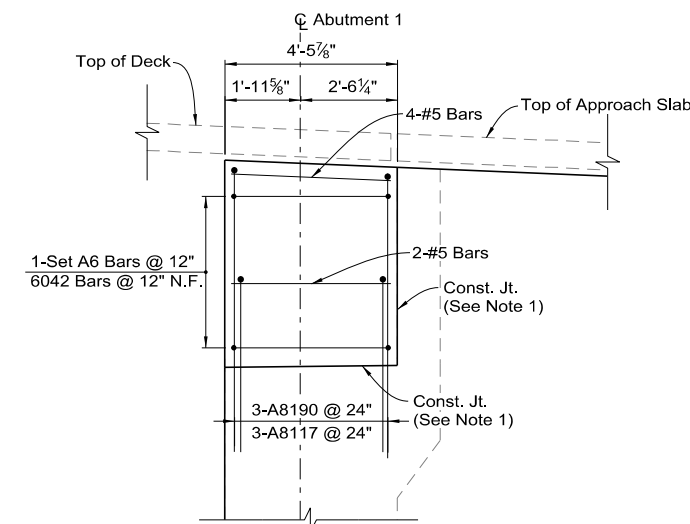
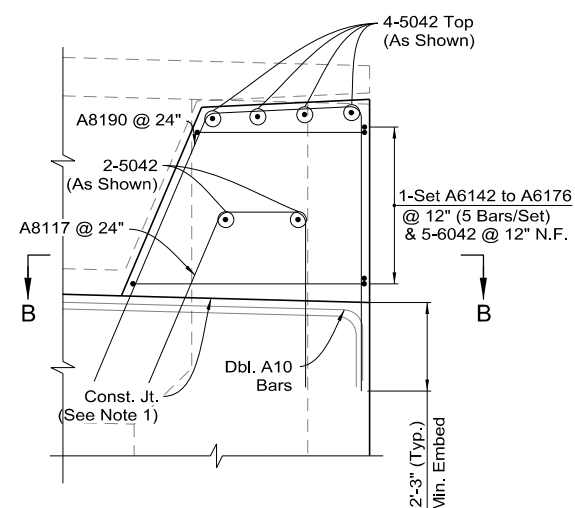
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NEVADA	NHP-0191(104)	WASHOE	B307



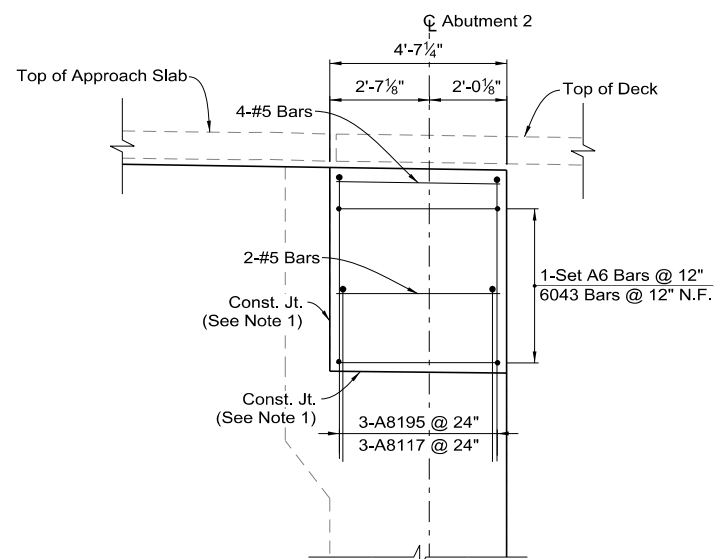
**ELEVATION**  
RIGHT SHEAR KEY  
WINGWALL 2



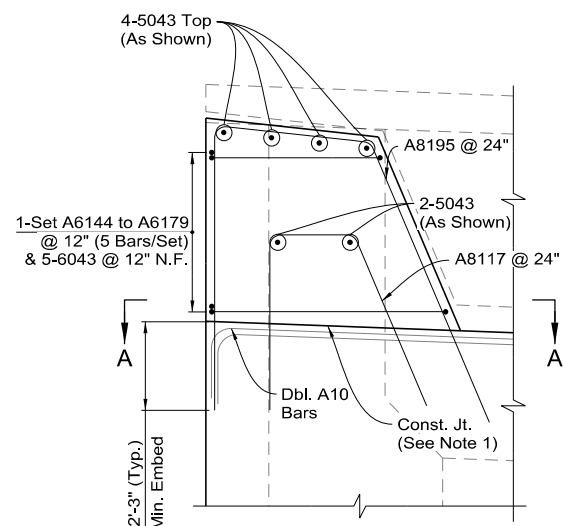
**ELEVATION**  
ABUTMENT 1  
LOOKING BACK ON LINE



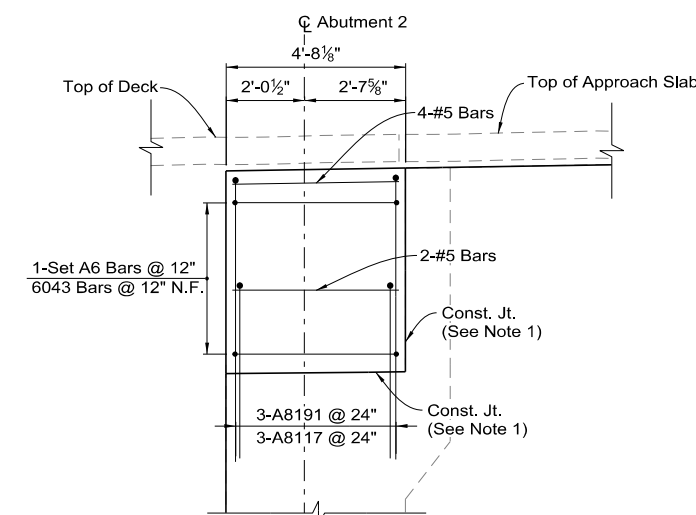
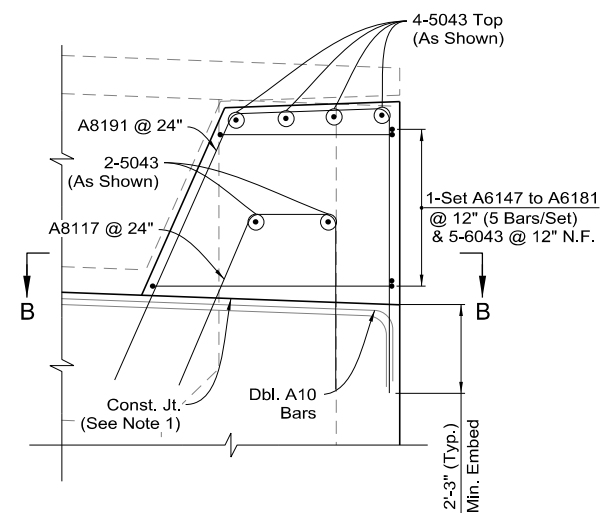
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LEFT SHEAR KEY  
WINGWALL 1



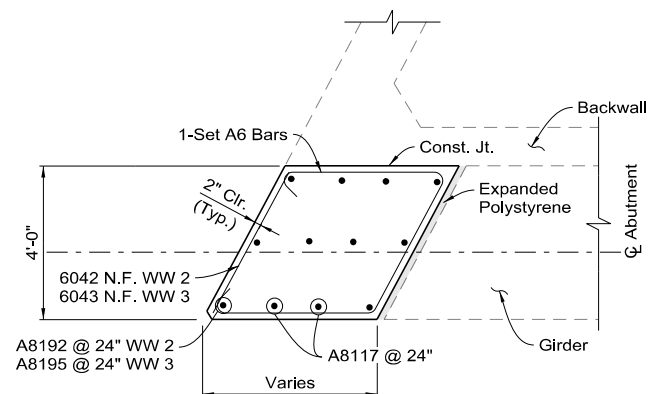
**ELEVATION**  
LEFT SHEAR KEY  
WINGWALL 3



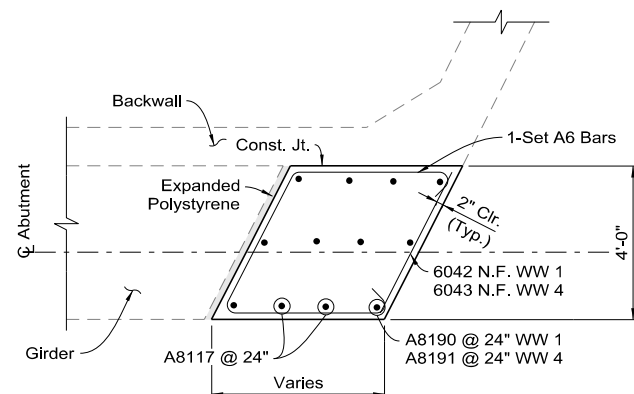
**ELEVATION**  
ABUTMENT 2  
LOOKING AHEAD ON LINE



**ELEVATION**  
RIGHT SHEAR KEY  
WINGWALL 4



**SECTION A-A**  
WINGWALL 2, WINGWALL 3



**SECTION B-B**  
WINGWALL 1, WINGWALL 4

**NOTES**

1. Shear keys shall be placed separately from wingwalls and backwall. Horizontal construction joints between shear key and stemwall shall be intentionally roughened to 1/4" amplitude.
2. For preformed joint filler details between shear key and girders, see Sheet B312.
3. For dimensions and elevations not shown, see Abutment Details (Sheets B305-B306).
4. Shear keys shall be placed prior to casting superstructure.

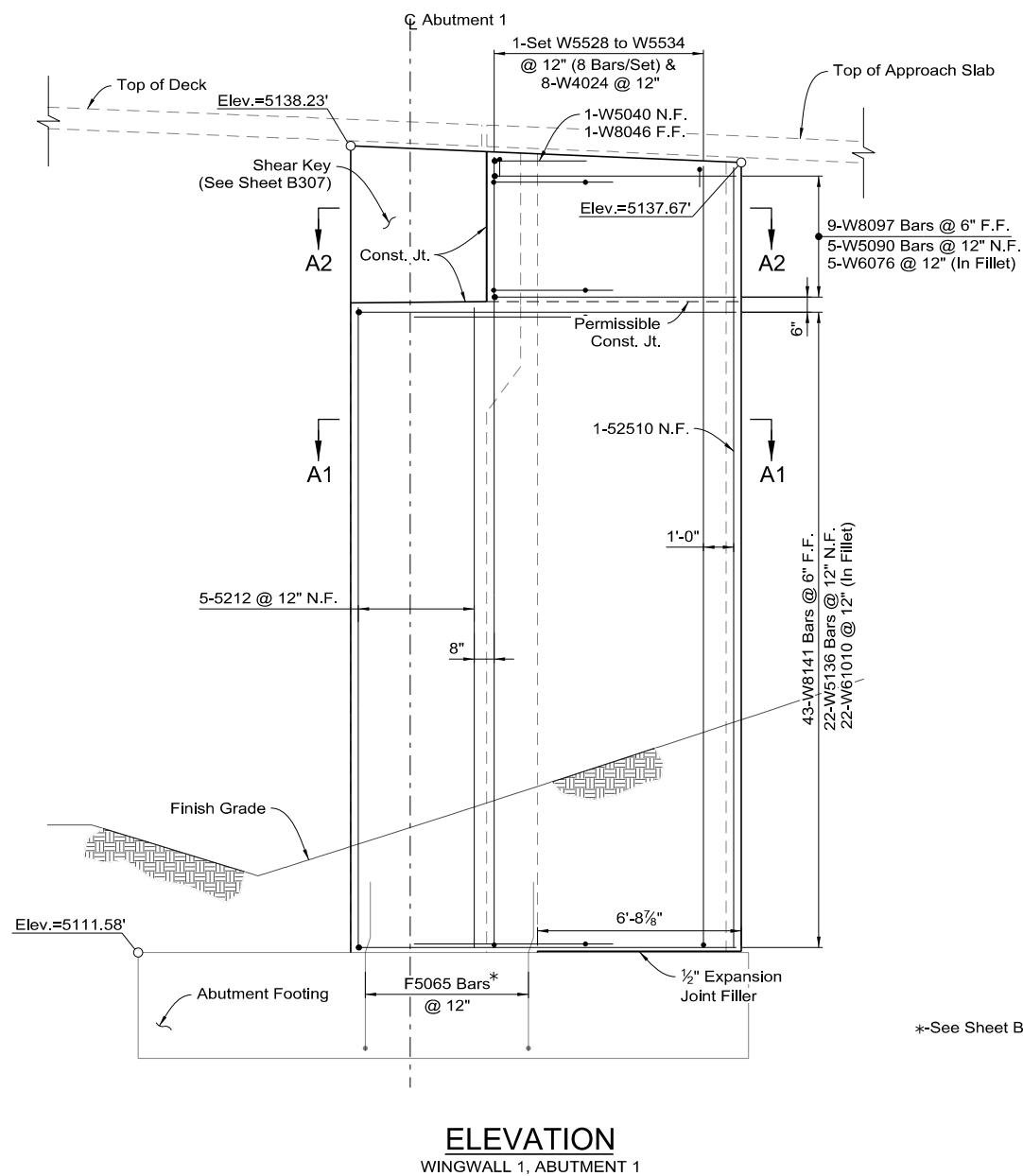
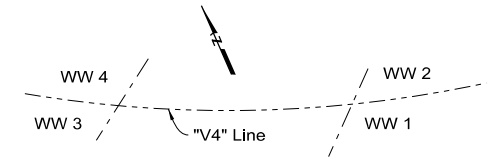
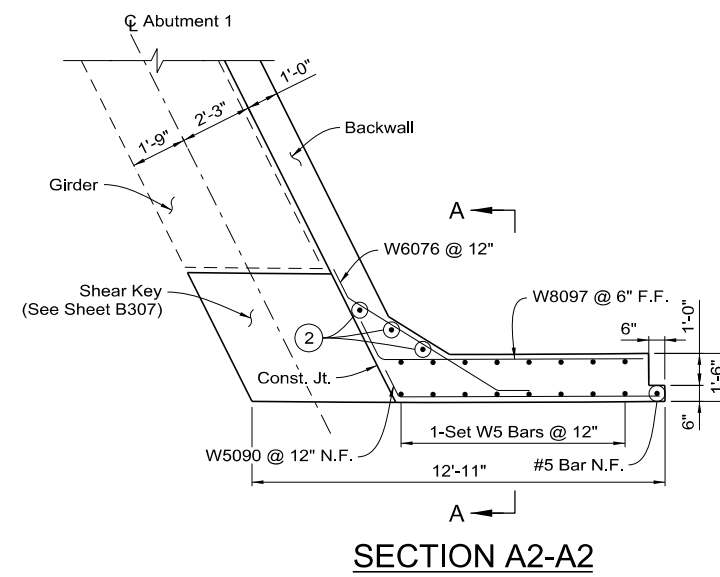
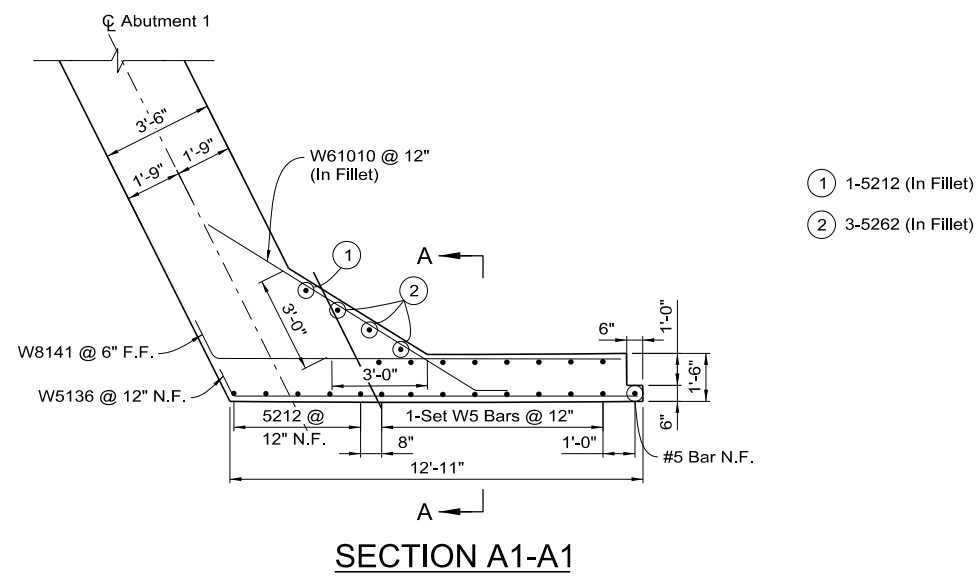
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**ABUTMENT  
SHEAR KEY  
REINFORCING**

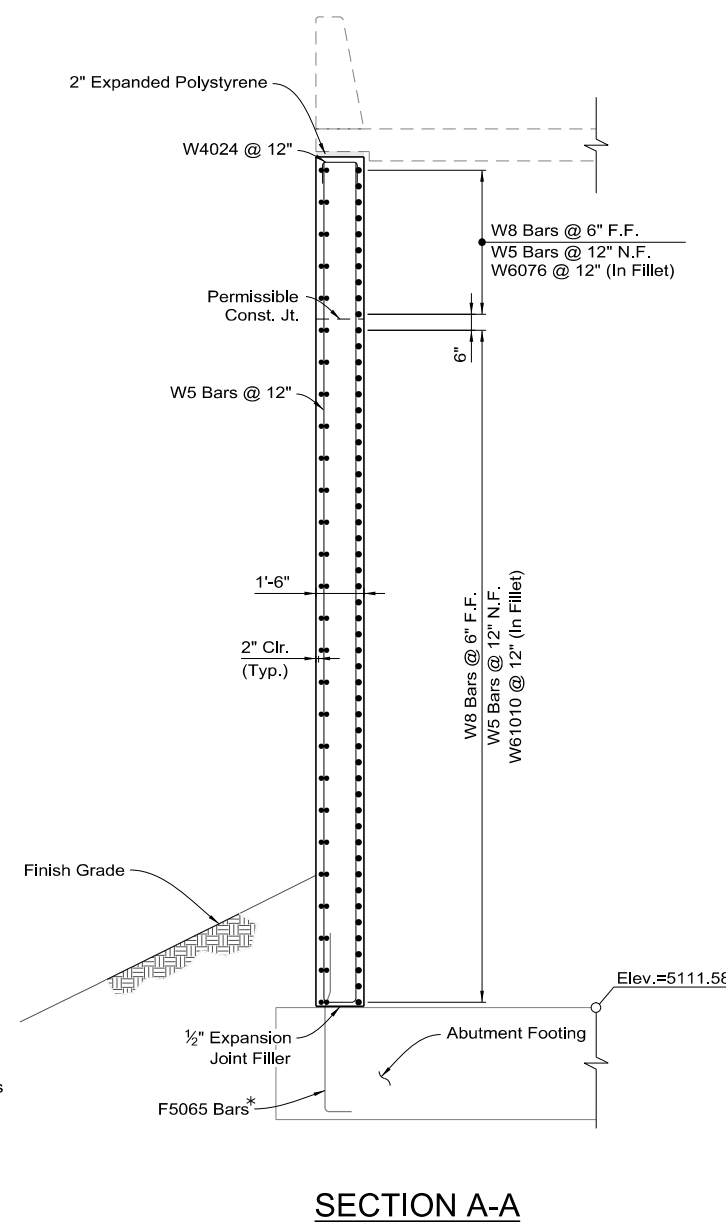
I-3262



STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B308



\*-See Sheet B303 for F5065 Bars



NOTES

1. For aesthetic treatments to wingwall, see Landscape Improvement Plans.
2. Elevations taken at outside face of wingwall.
3. For abutment details, see Sheet B305.
4. Wingwall reinforcing extending into abutment stemwall shall be placed prior to casting abutment.

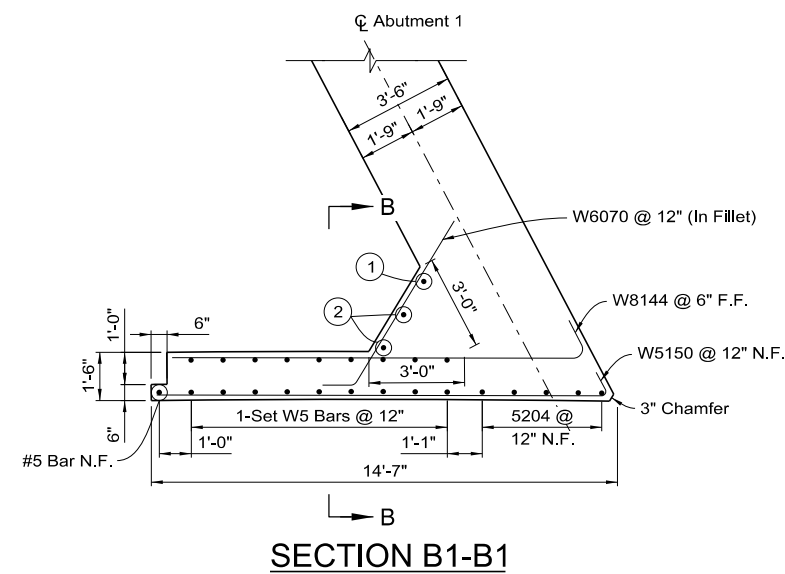
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

WINGWALL 1  
REINFORCING

DATE : 1/26/2023

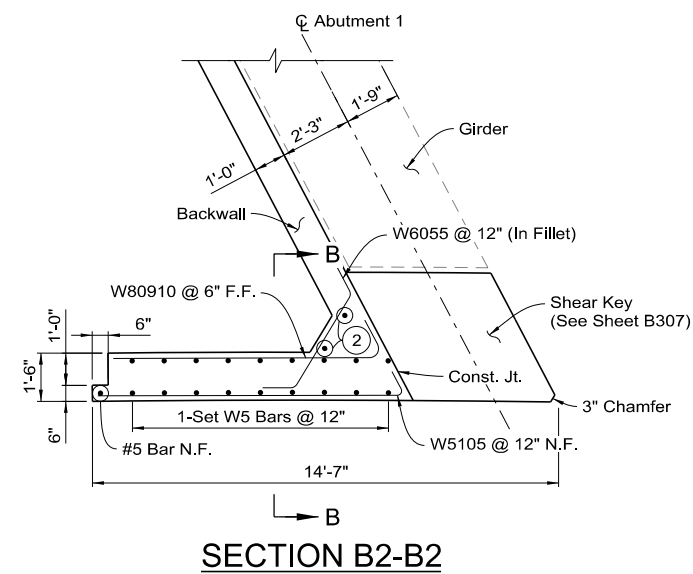
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NEVADA	NHP-0191(104)	WASHOE	B309

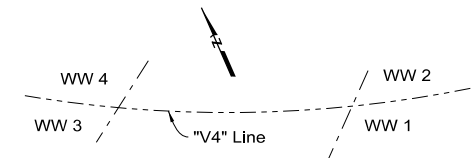


**SECTION B1-B1**

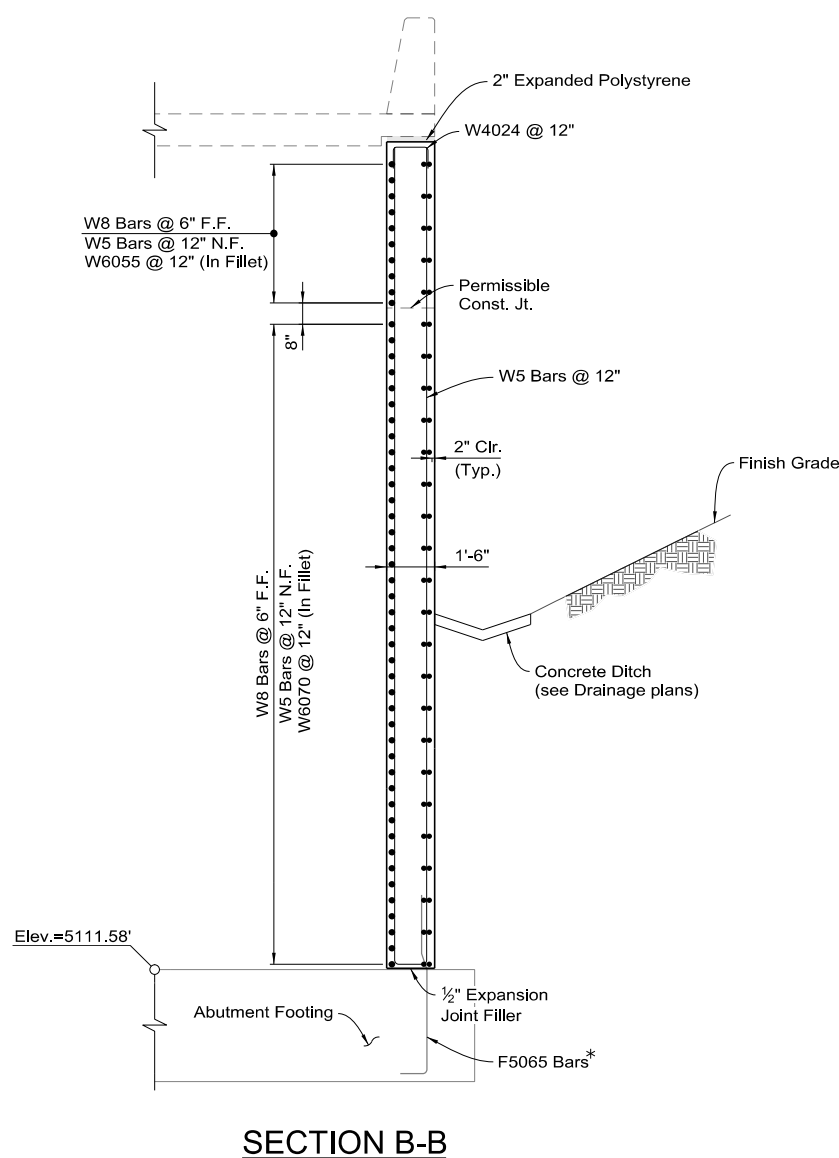
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- ② 2-5255 (In Fillet)



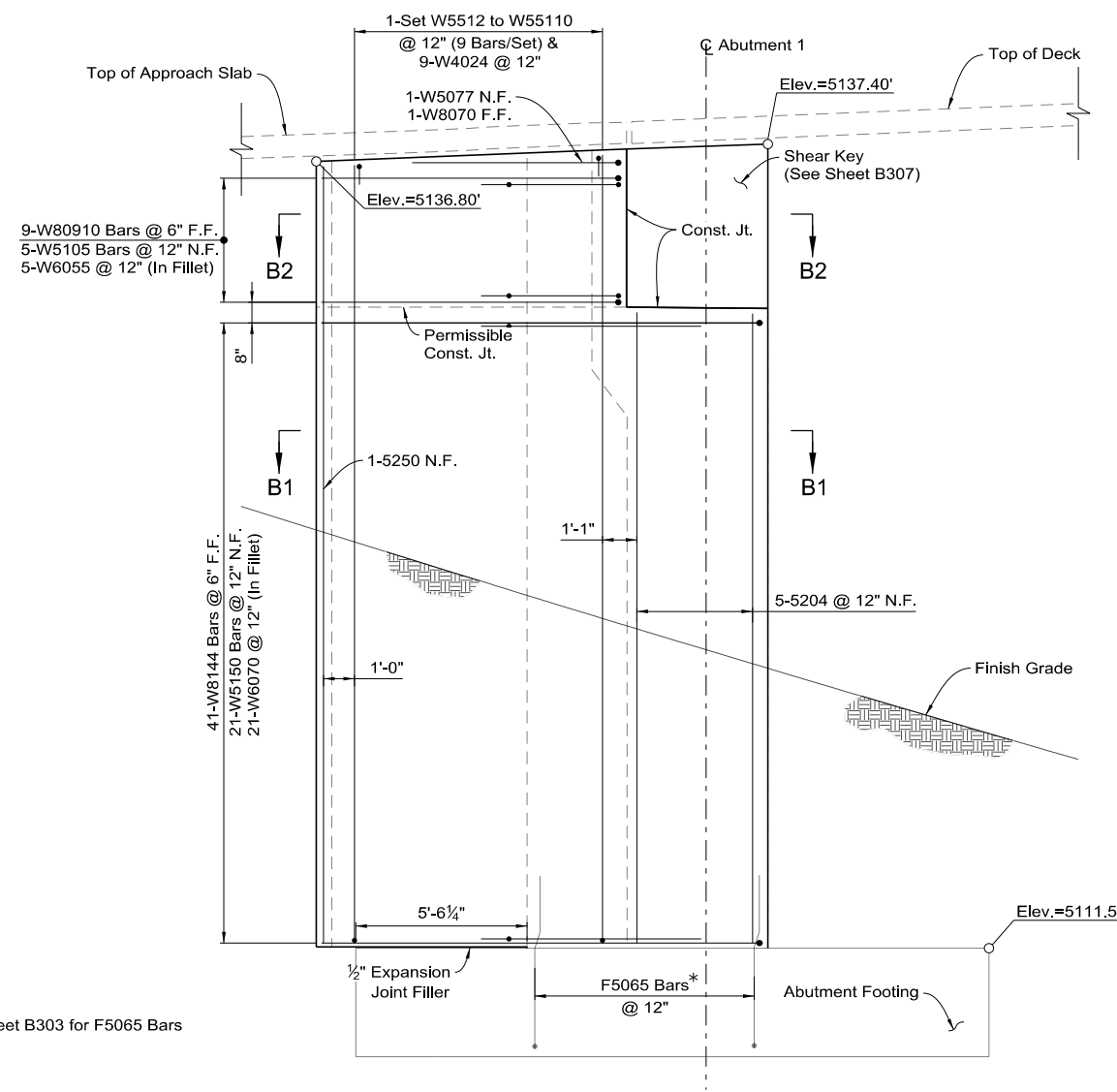
**SECTION B2-B2**



**WINGWALL LOCATION PLAN**



**SECTION B-B**



**ELEVATION**  
WINGWALL 2, ABUTMENT 1

\*-See Sheet B303 for F5065 Bars

**NOTES**

1. For aesthetic treatments to wingwall, see Landscape Improvement Plans.
2. Elevations taken at outside face of wingwall.
3. For abutment details, see Sheet B305.
4. Wingwall reinforcing extending into abutment stemwall shall be placed prior to casting abutment.

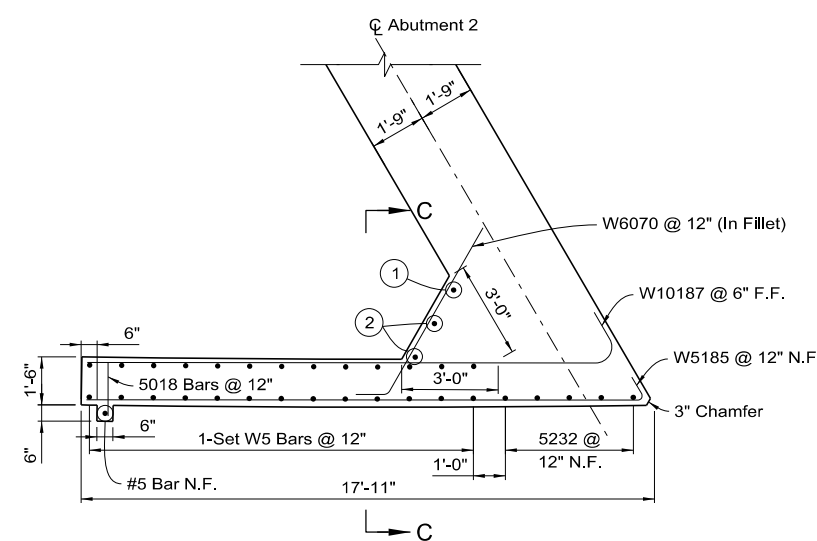
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**WINGWALL 2  
REINFORCING**

DATE : 1/26/2023

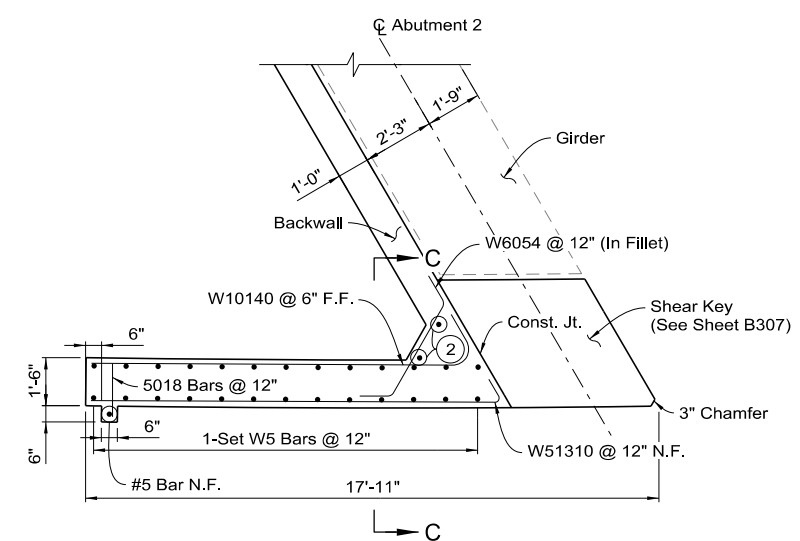
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STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B310

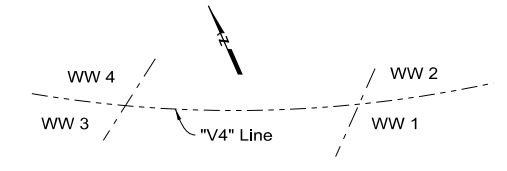


SECTION C1-C1

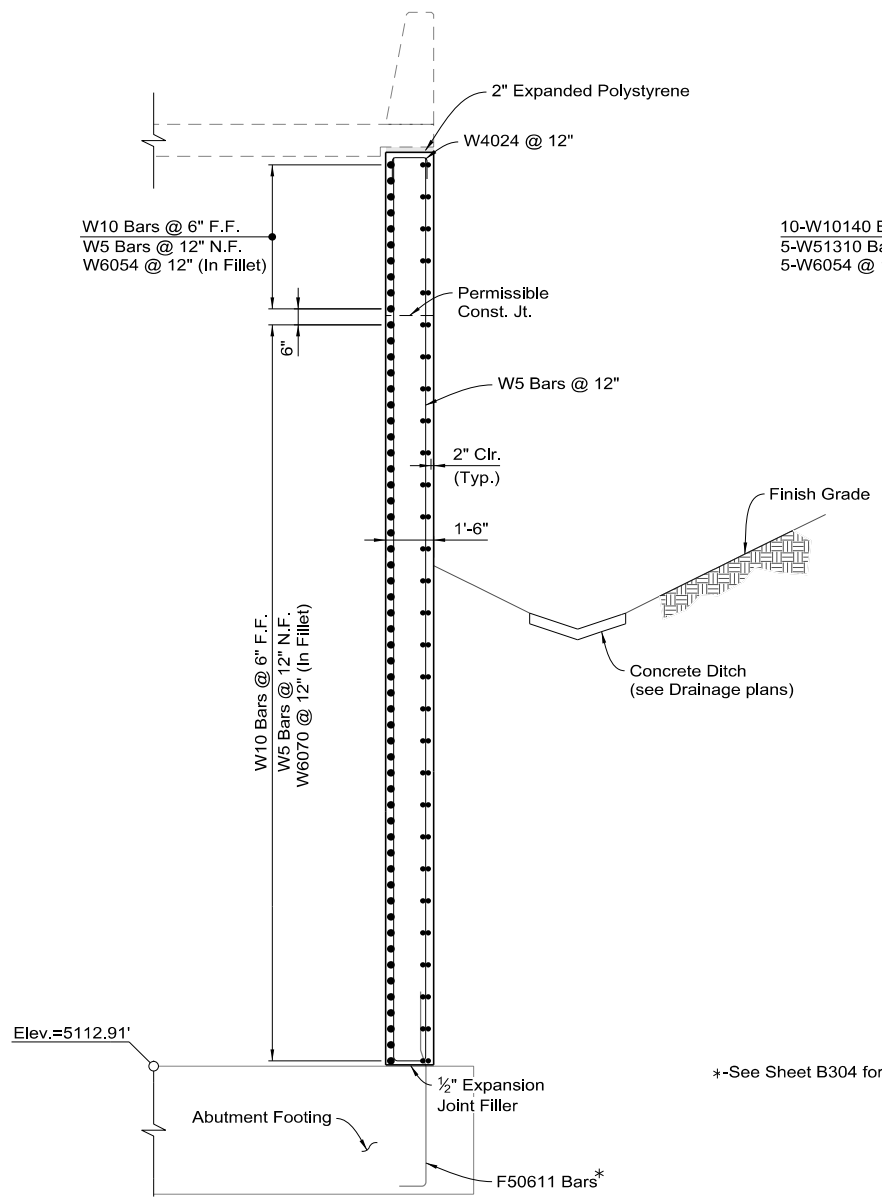
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- ② 2-5284 (In Fillet)



SECTION C2-C2

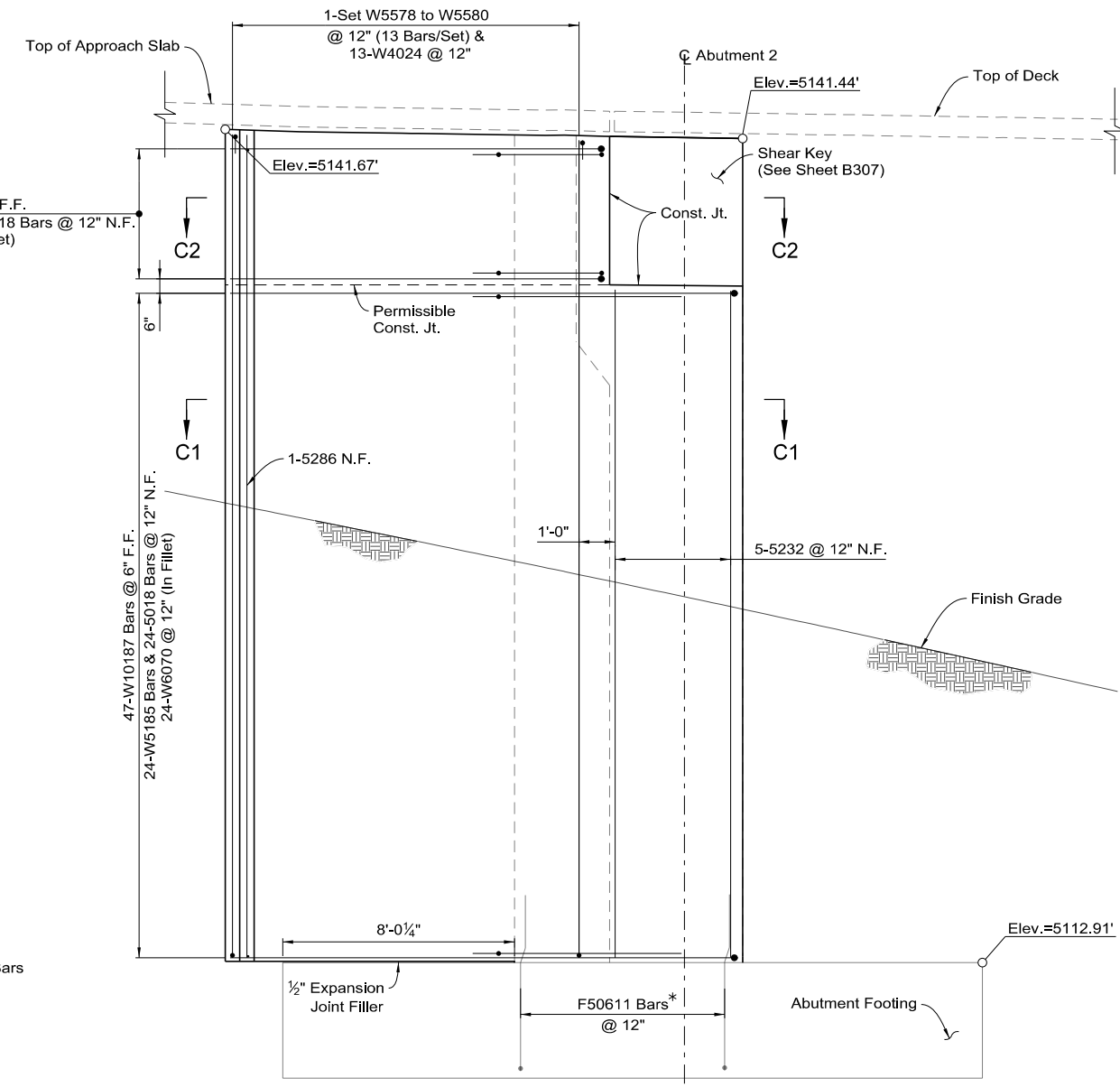


WINGWALL LOCATION PLAN



SECTION C-C

\*-See Sheet B304 for F50611 Bars



ELEVATION  
WINGWALL 3, ABUTMENT 2

NOTES

1. For aesthetic treatments to wingwall, see Landscape Improvement Plans.
2. Elevations taken at outside face of wingwall.
3. For abutment details, see Sheet B306.
4. Wingwall reinforcing extending into abutment stemwall shall be placed prior to casting abutment.

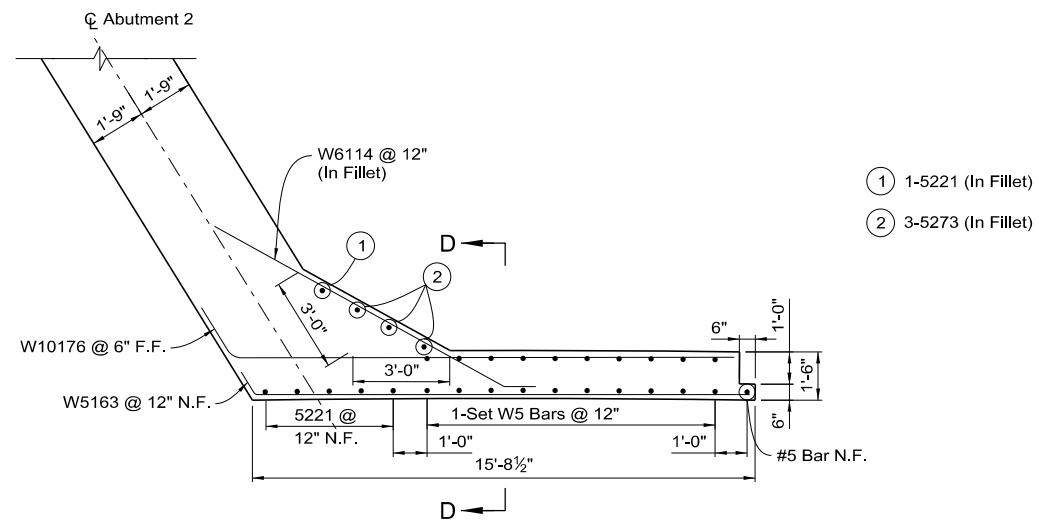
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

WINGWALL 3  
REINFORCING

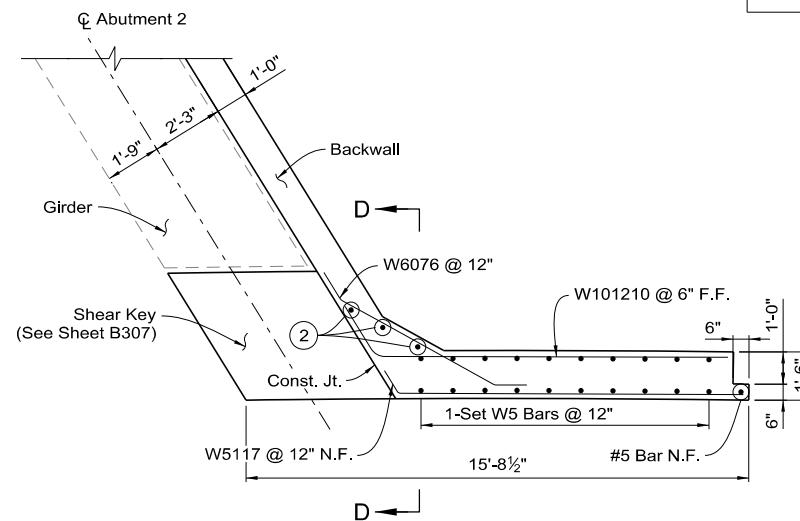
DATE : 1/26/2023

I-3262

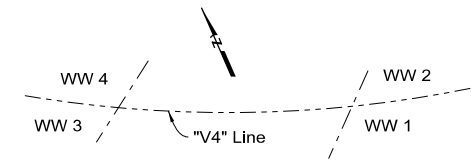
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B311



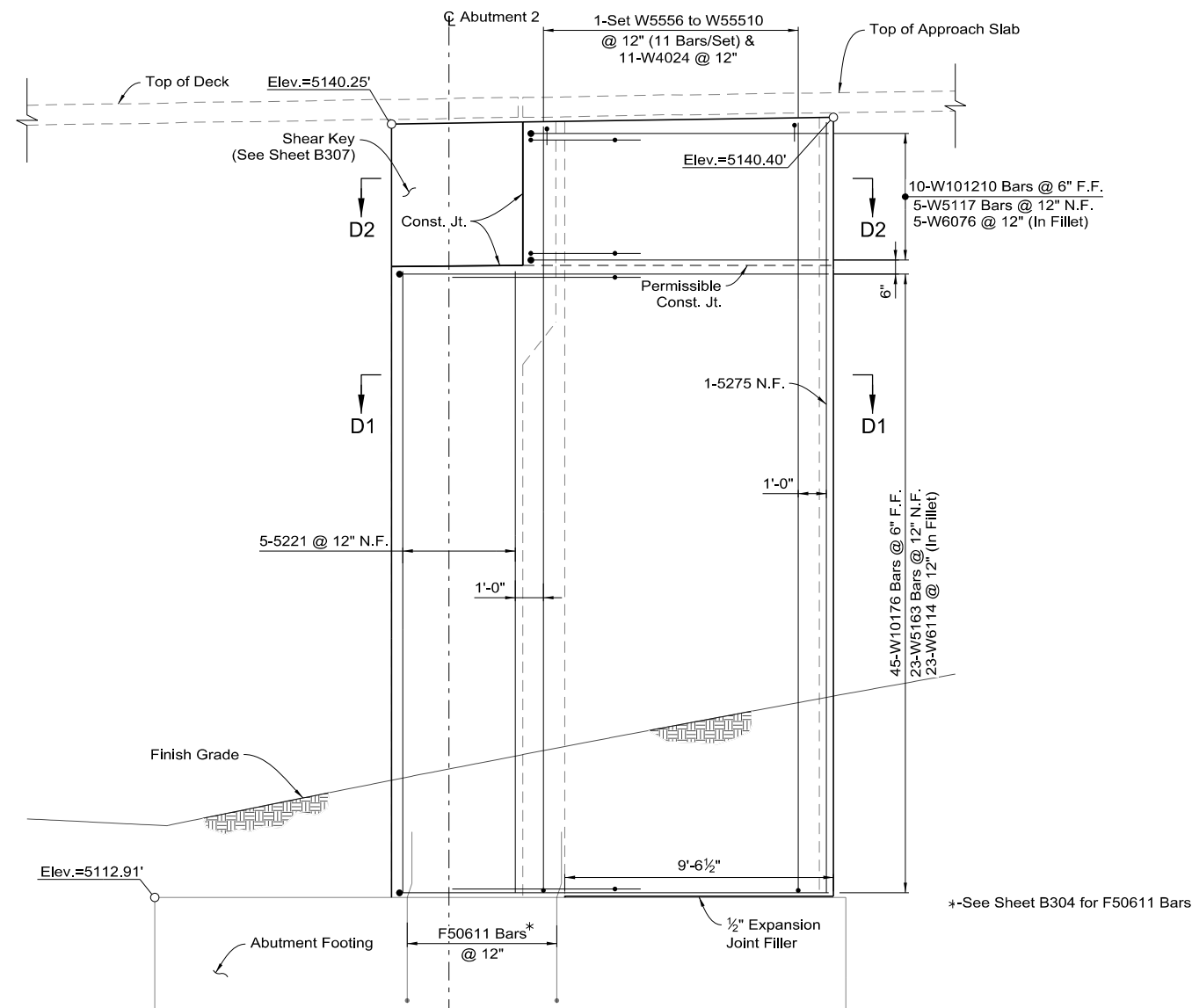
SECTION D1-D1



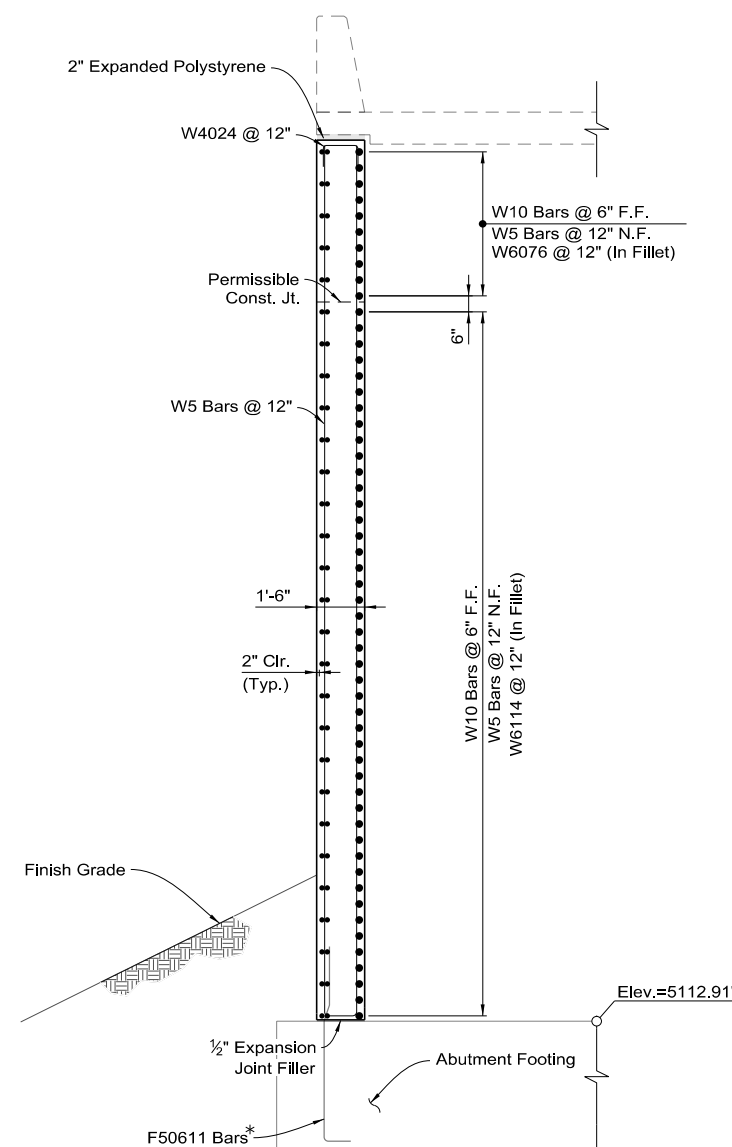
SECTION D2-D2



WINGWALL LOCATION PLAN



ELEVATION  
WINGWALL 4, ABUTMENT 2



SECTION D-D

NOTES

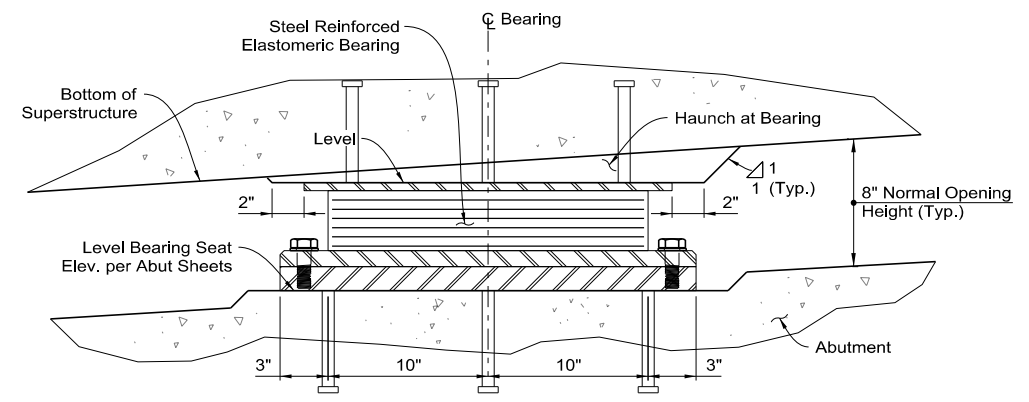
- For aesthetic treatments to wingwall, see Landscape Improvement Plans.
- Elevations taken at outside face of wingwall.
- For abutment details, see Sheet B306.
- Wingwall reinforcing extending into abutment stemwall shall be placed prior to casting abutment.

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

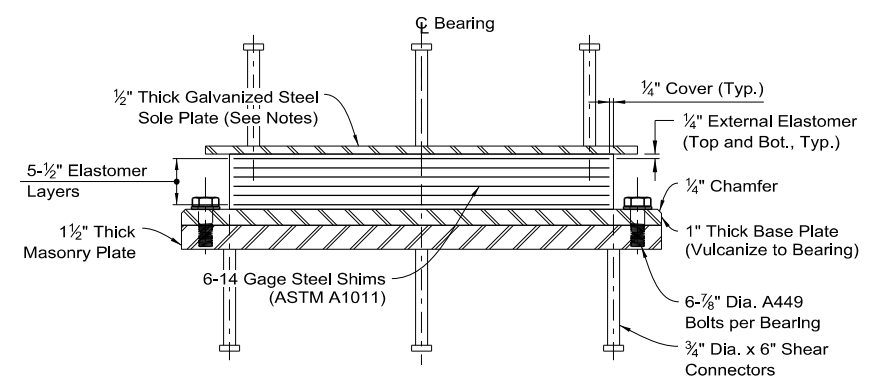
**WINGWALL 4  
REINFORCING**

I-3262

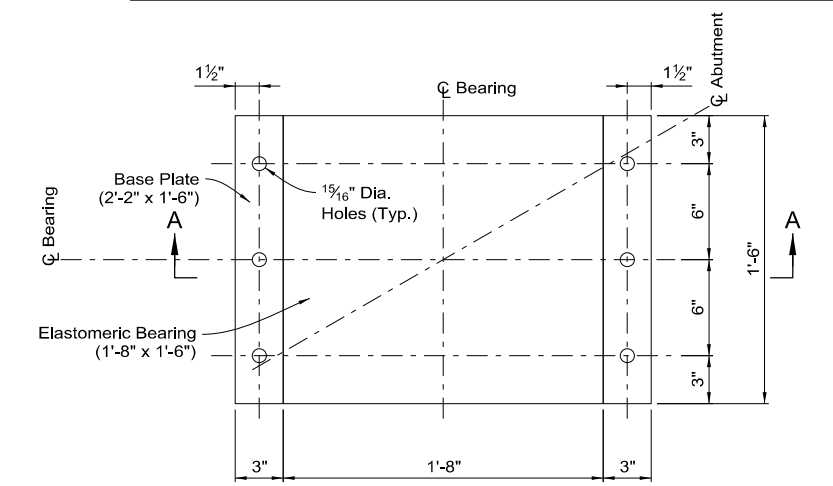
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B312



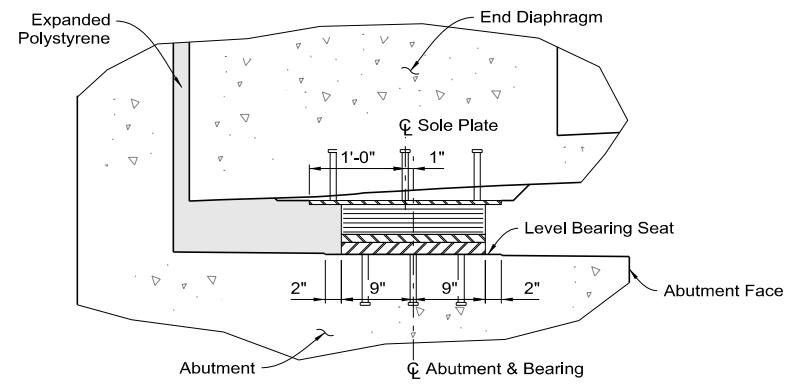
**HAUNCH DETAIL**



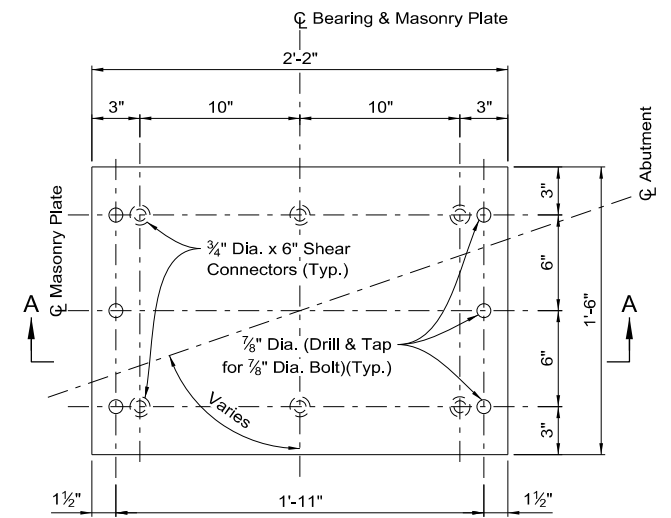
**SECTION A-A**



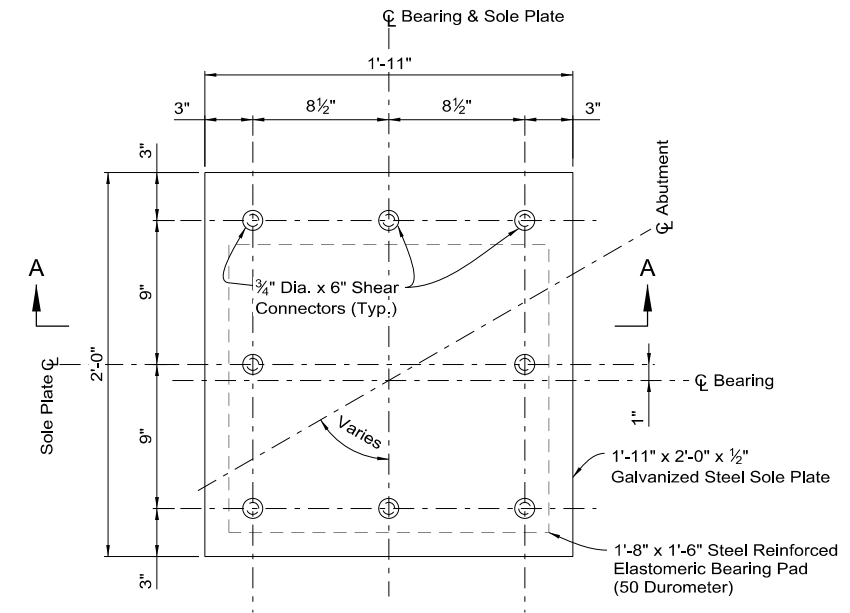
**BEARING PLAN**  
BEARING AND BASE PLATE



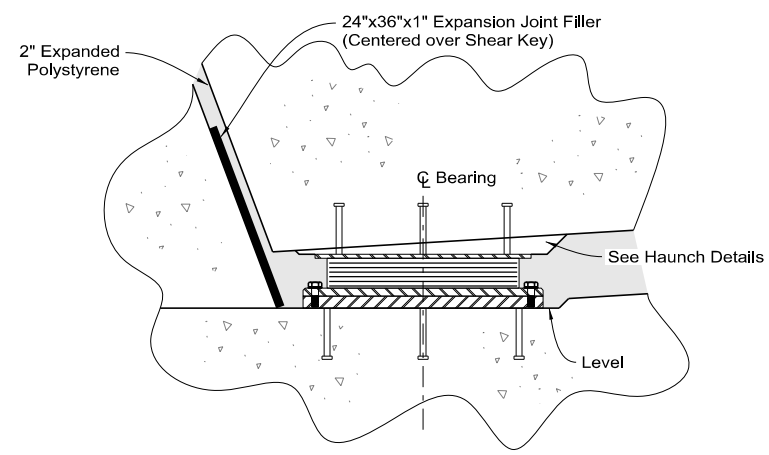
**SIDE ELEVATION**



**MASONRY PLATE PLAN**



**SOLE PLATE PLAN**



**EXPANSION JOINT FILLER DETAIL**

**NOTES**

- Bearing pad to be oriented along girder axis.
- Elastomer used in elastomeric bearings shall have a durometer hardness of 50.
- Lubricate the top of the elastomeric bearing with silicone grease satisfying Society of Automotive Engineers Specification SAE-AS8660.
- External steel plates shall conform to ASTM A709 and shall be Grade 36 unless otherwise specified in the Contract Documents. External steel plates shall be incidental to Bid Item 502 0530 "Laminated Elastomeric Bearing Pad".
- The galvanized steel sole plate shall be incidental to Bid Item 502 0530 "Laminated Elastomeric Bearing Pad".

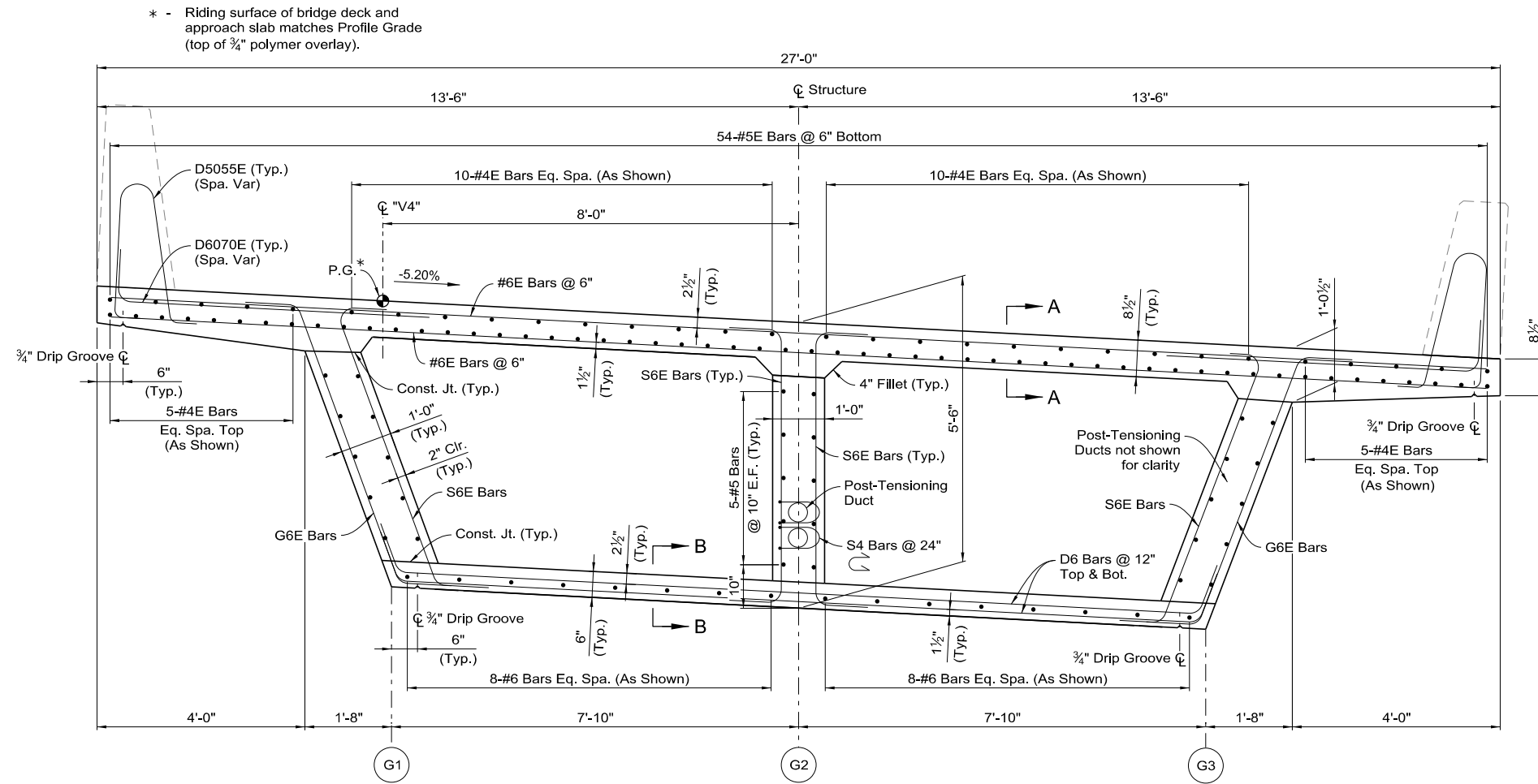
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**ELASTOMERIC  
BEARING PAD  
DETAILS**

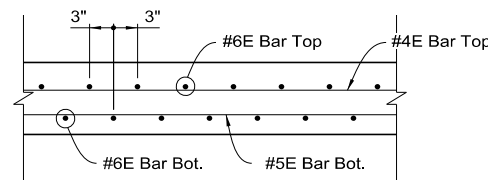
**I-3262**

DATE : 1/26/2023

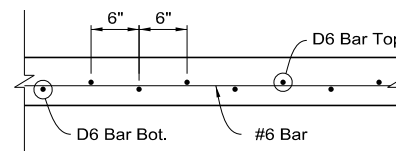
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B313



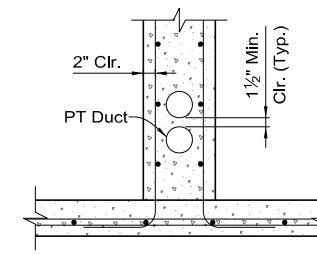
**TYPICAL SECTION**  
 LOOKING AHEAD ON LINE  
 NORMAL TO ALIGNMENT



**SECTION A-A**  
 TYPICAL DECK SECTION



**SECTION B-B**  
 TYPICAL SOFFIT SECTION

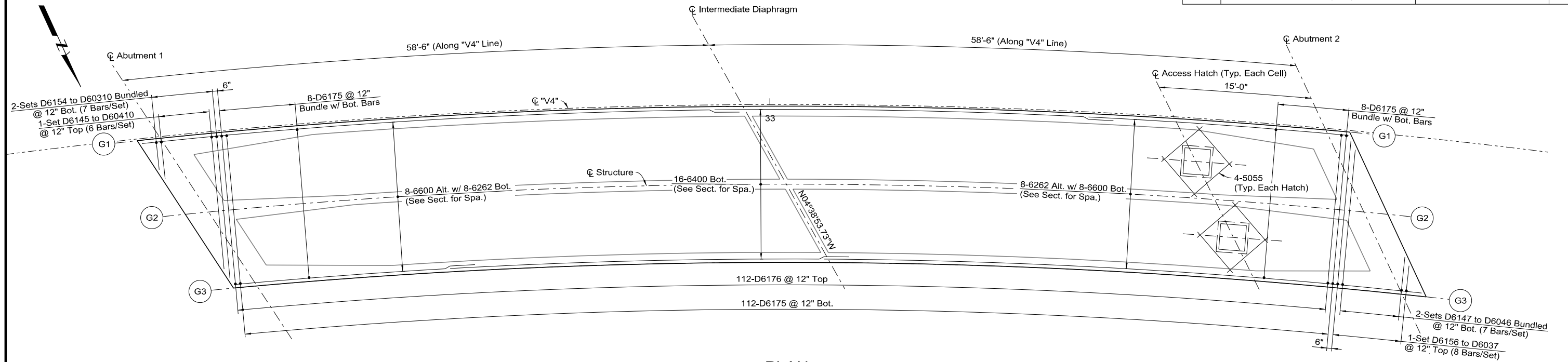


**DUCT CLEARANCE DETAIL**

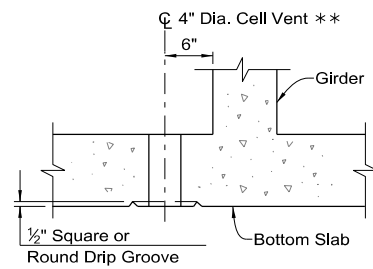
STATE OF NEVADA  
 DEPARTMENT OF TRANSPORTATION

**TYPICAL SECTION**

STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B314



PLAN

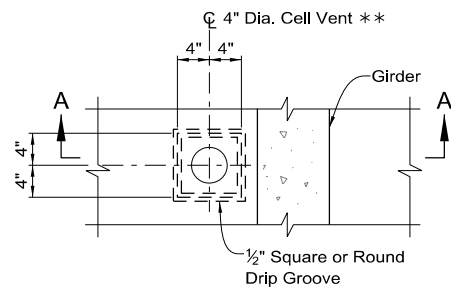


SECTION A-A

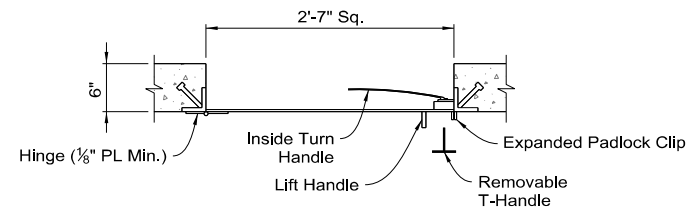
MINIMUM BAR LAP  
#6 Bar to #6 Bar = 30"

NOTES

1. All dimensions along "V4" line unless otherwise noted
2. Transverse bar spacing noted is at structure centerline.
3. For Typical Section, see Sheet B313.
4. For underdeck lighting details, see Lighting Plans.



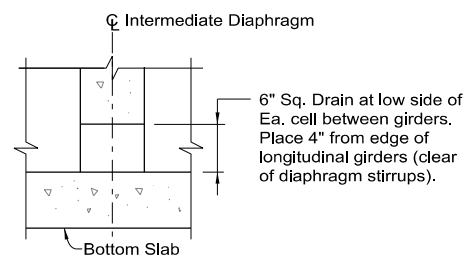
PLAN



SECTION A-A

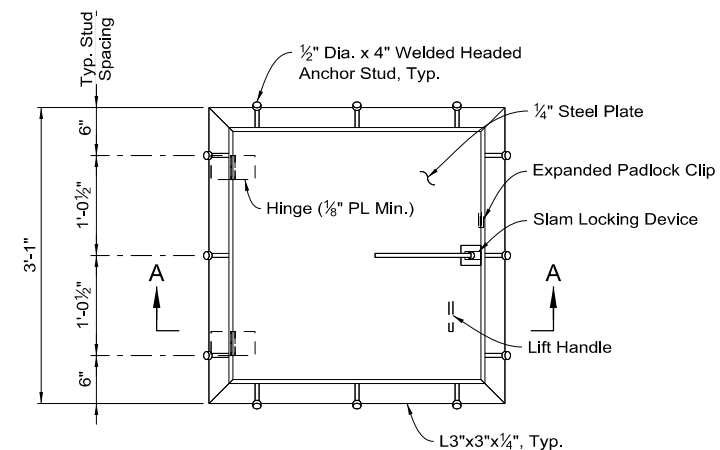
ACCESS HATCH NOTES

1. Cut longitudinal and transverse reinforcing 2" clear from frame.
2. Place as shown on typical bottom slab reinforcing plan.
3. All steel to be ASTM A36.
4. All bolts to be A307.
5. Paint assembly, except shear studs, to match the color of the surrounding concrete.
6. All field welds to be 1/8" fillet welds, (all common surfaces).
7. All steel for access hatches shall be paid for under Bid Item 506 0110 "Structural Steel".



CELL VENT DETAILS

\*\* - 4" cell vent in bottom slab. A minimum of two cell vents in each cell between girders. One vent to be located at low point of cell. The other vent to be located at the opposite end of cell 18" from face of abutment or intermediate diaphragm.



PLAN

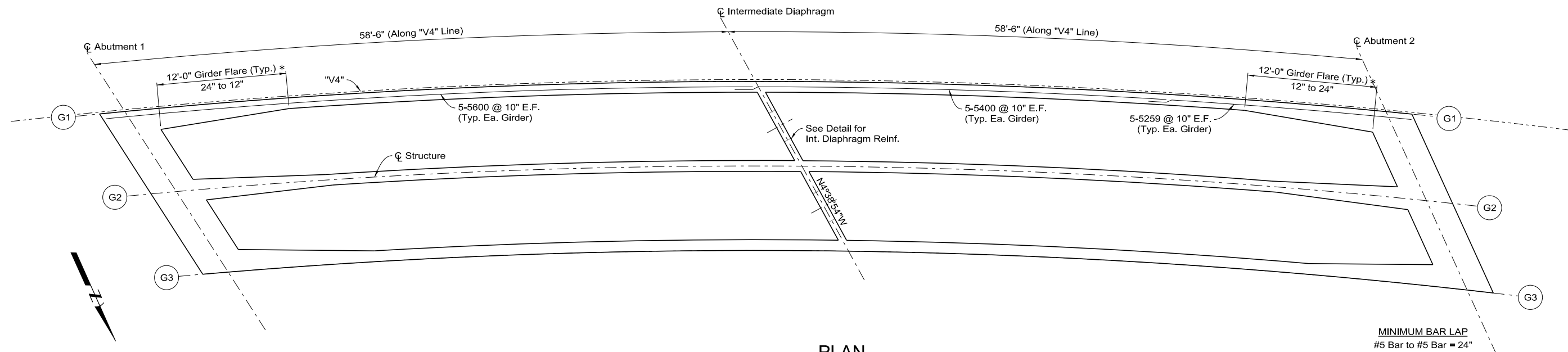
ACCESS HATCH DETAIL

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

SOFFIT  
REINFORCING



STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B315

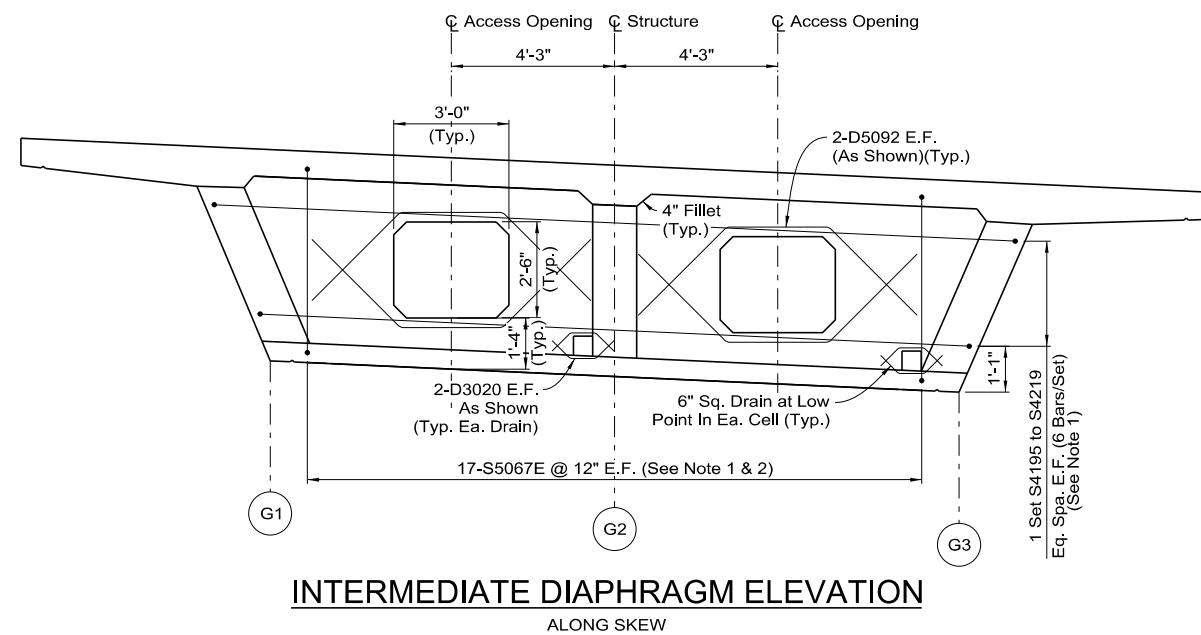


**PLAN**

For reinforcing not shown, see Sheet B316

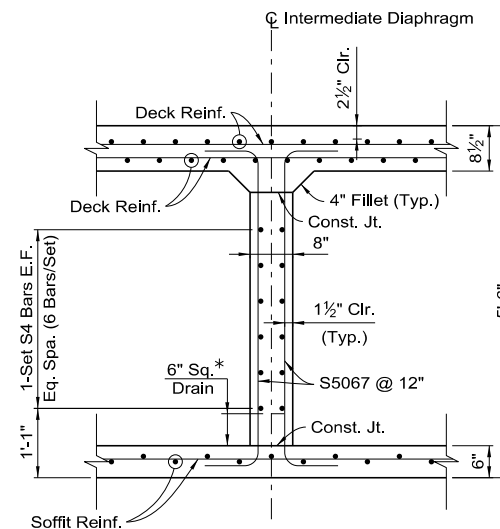
MINIMUM BAR LAP  
#5 Bar to #5 Bar = 24"

\* - Girder flare to be measured along "V4" line



**INTERMEDIATE DIAPHRAGM ELEVATION**

ALONG SKEW



**TYPICAL DIAPHRAGM SECTION**

\* - For cell vent details, see Sheet B314.

**NOTES**

1. Field cut reinforcing 2" clear from access openings.
2. Align tails on S5 bars to be parallel to alignment.
3. For Typical Section see Sheet B313.

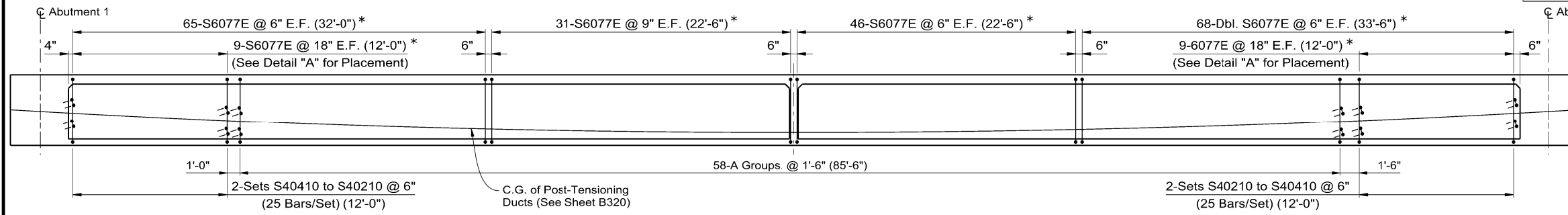
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**GIRDER  
REINFORCING  
PLAN**

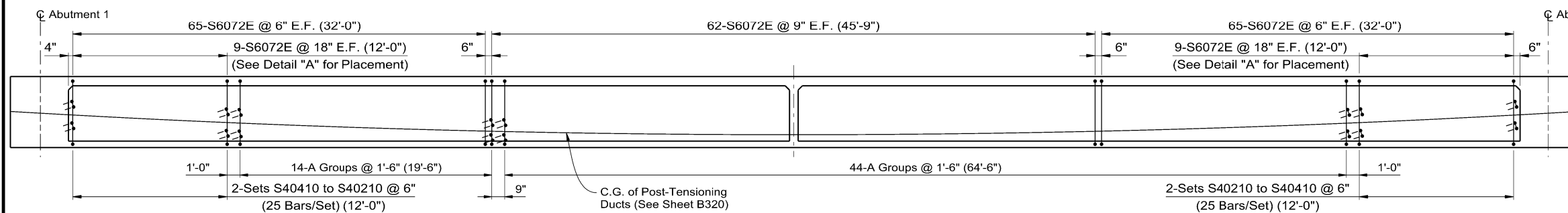
I-3262

DATE : 1/26/2023

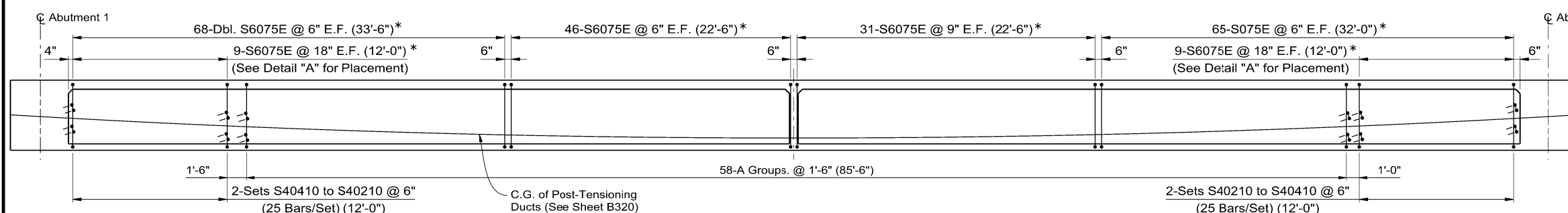
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B316



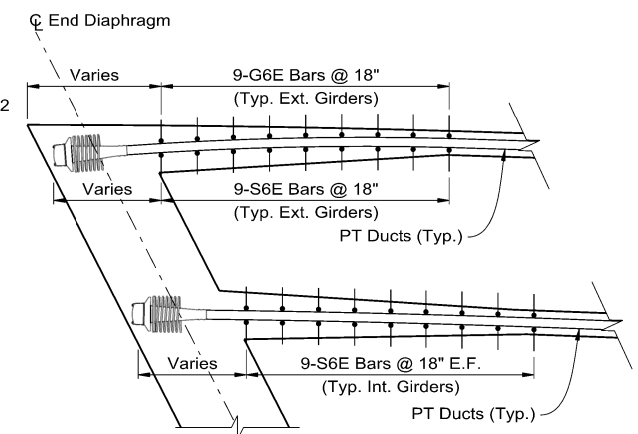
**GIRDER 1 ELEVATION**



**GIRDER 2 ELEVATION**



**GIRDER 3 ELEVATION**



**DETAIL "A"**  
GIRDER REINFORCING IN FLARES

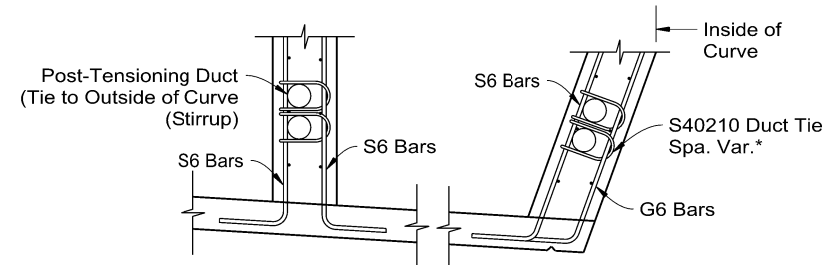
**NOTES**

- Detail "A" stirrups used to support post-tensioning ducts in girder flares.

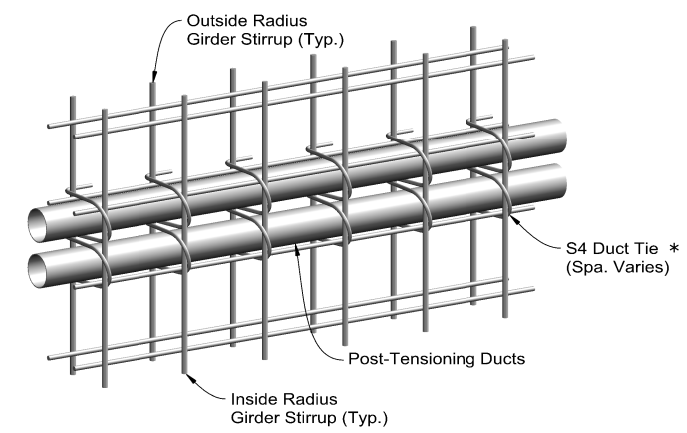
**NOTES:**

- All reinforcing spacing taken at centerline of Structure.
- All dimensions along "V4" line unless noted otherwise.
- In Girder 3 flare regions, orient closed end of duct tie to be toward interior of cell. All other duct ties shall follow Detail "B".

For Typical Section, See Sheet B313

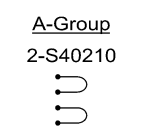


**DETAIL "B"**



**DUCT TIE DETAIL**

\* - Duct ties shall engage vertical stirrups



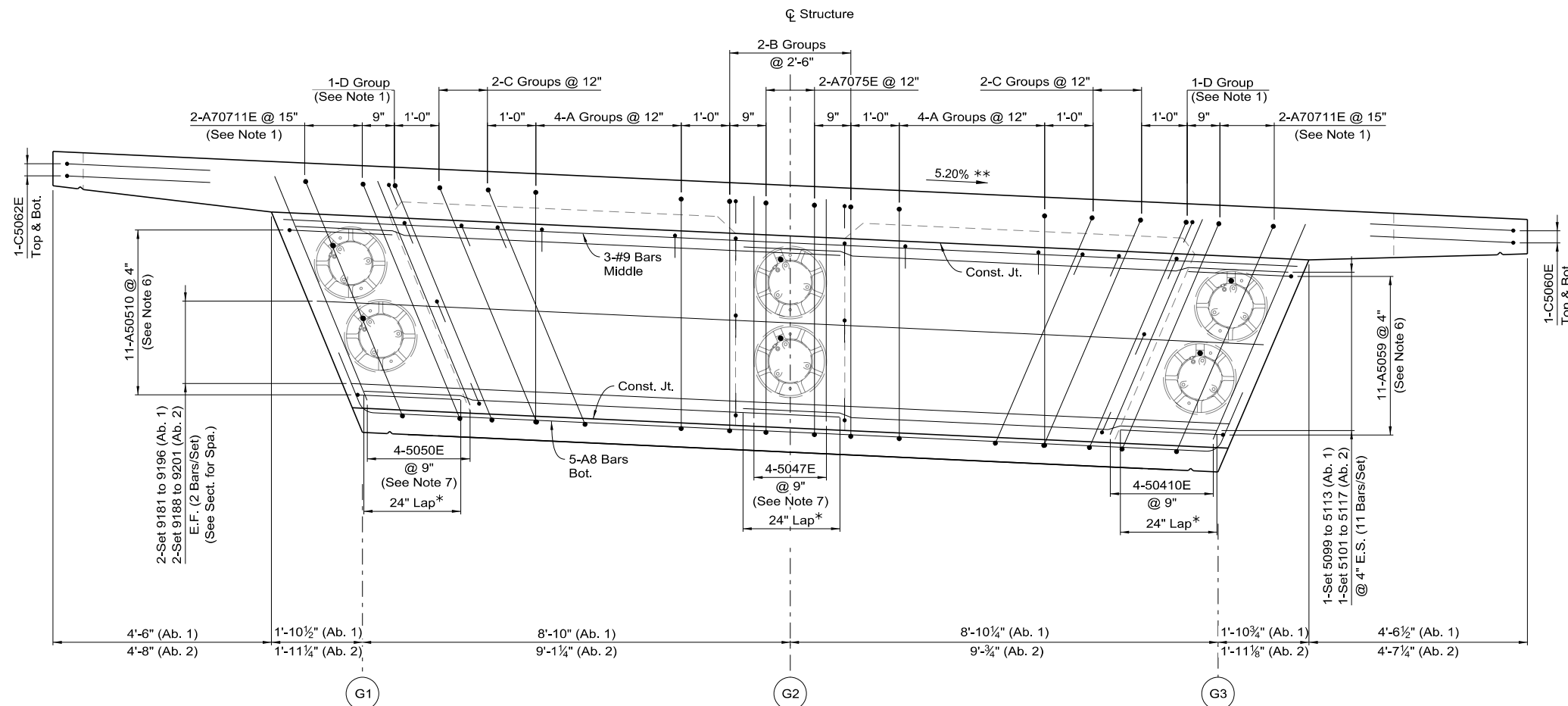
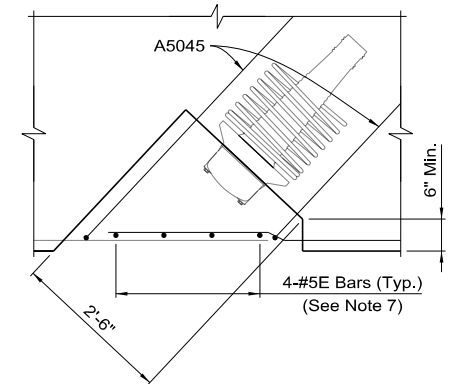
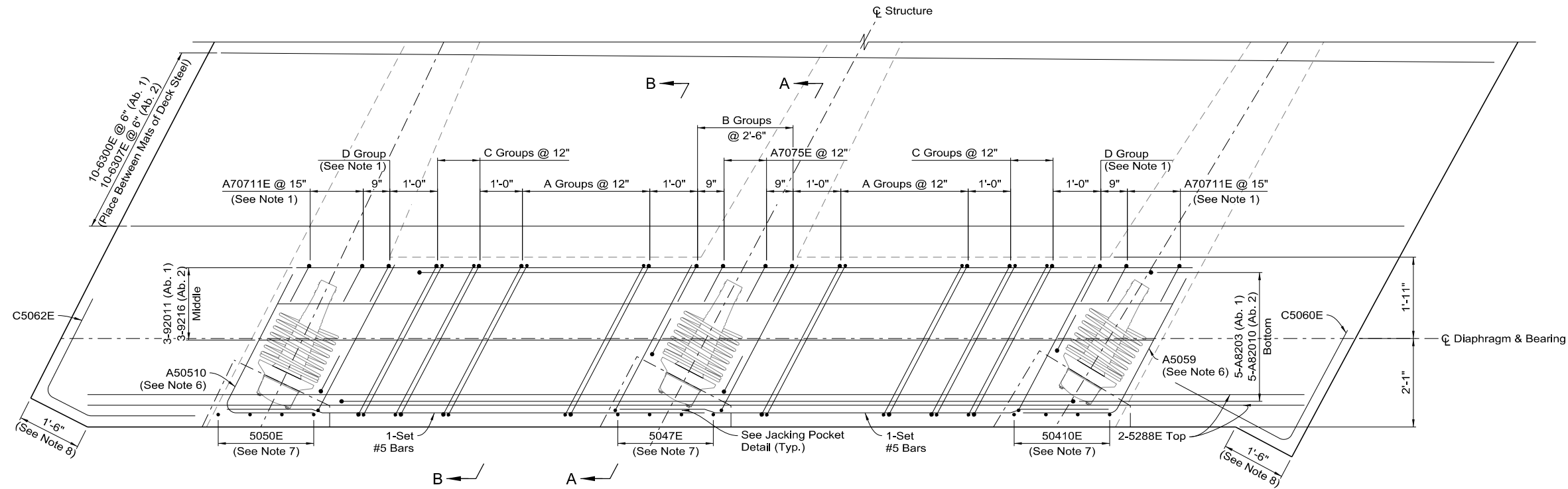
- \* S6E Bar Interior Face
- G6E Bar Exterior Face

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**GIRDER REINFORCING ELEVATION**

DATE : 1/26/2023

STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B317



- NOTES**
1. Bars to be adjusted to avoid conflict with post-tensioning anchorage, for approval by Bridge Engineer.
  2. For grillage reinforcing not shown, see Sheet B318.
  3. For Expansion Joint Details, see Sheet B324.
  4. Bearings not shown for clarity. See Sheet B312.
  5. For haunch reinforcing not shown, see Sheet B318.
  6. Field bend bars after post-tensioning.
  7. Place bars after post-tensioning.
  8. Clip overhang corners normal to edge of deck.

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**END DIAPHRAGM  
REINFORCING**

I-3262

DATE : 1/26/2023

For Sections A-A, B-B, and Bar Group Definitions, See Sheet B318.

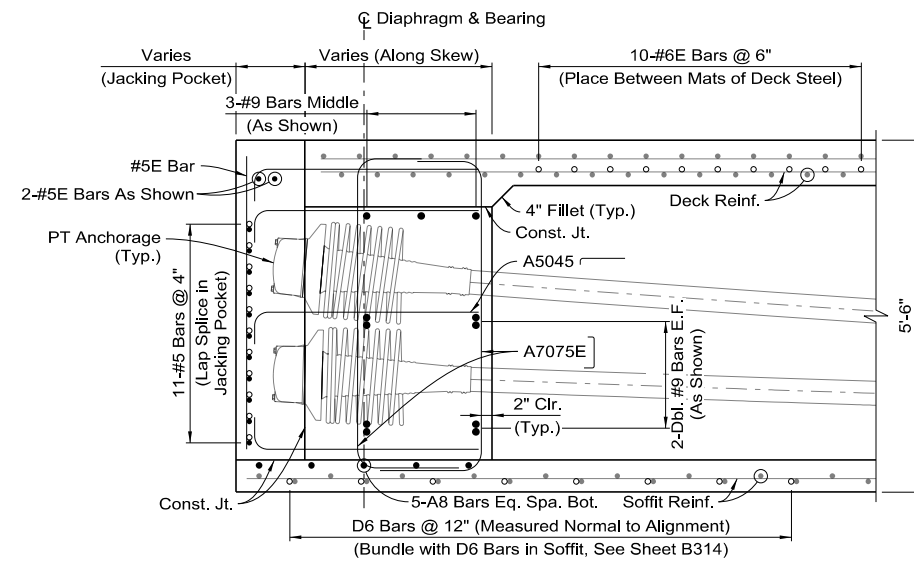
LOOKING AHEAD ON LINE, ALONG SKEW  
(Abut. 1 Shown, Abut. 2 Opposite Hand)

MINIMUM BAR LAP  
#5 Bar to #5 Bar = 30"

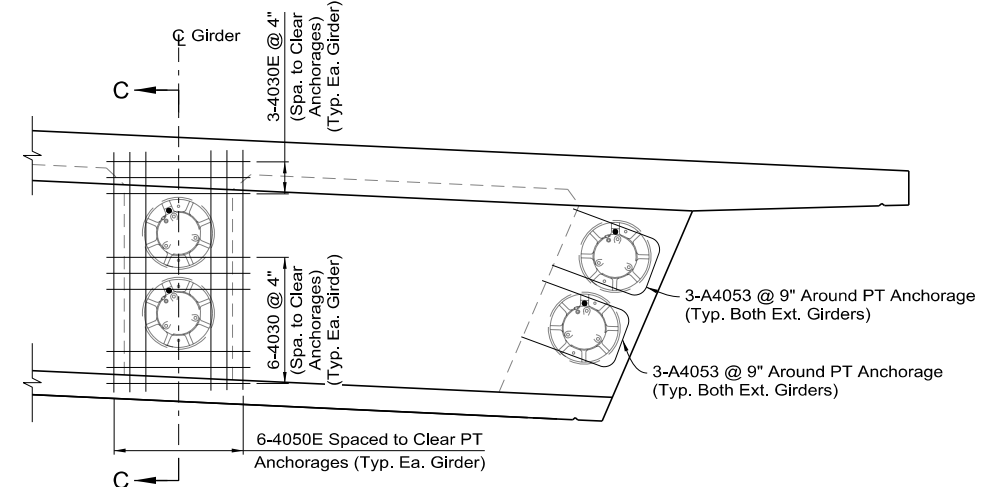
\* - Lap spliced bars in jacking pocket may be field bent to avoid conflict with post-tensioning operations

\*\* - Measured normal to alignment

STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B318



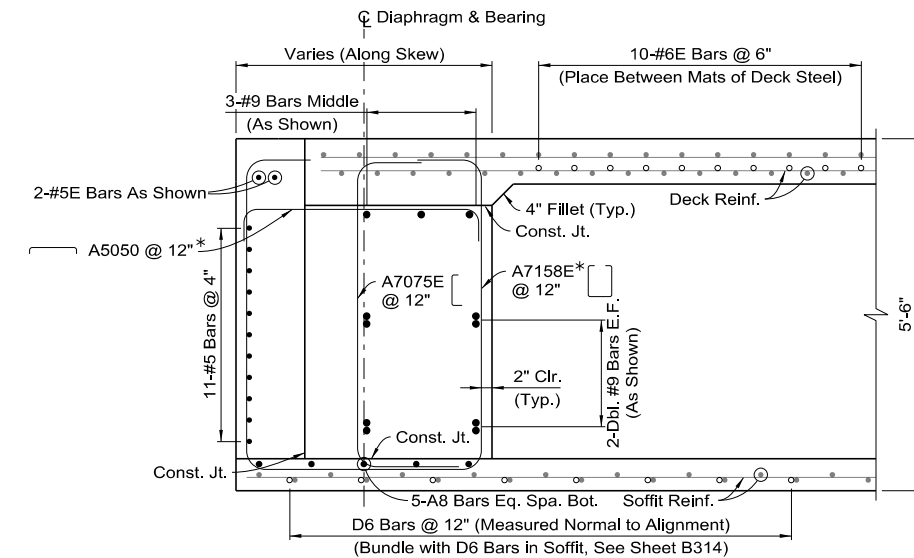
**SECTION A-A**  
SECTION THROUGH JACKING POCKET  
PARALLEL TO ALIGNMENT



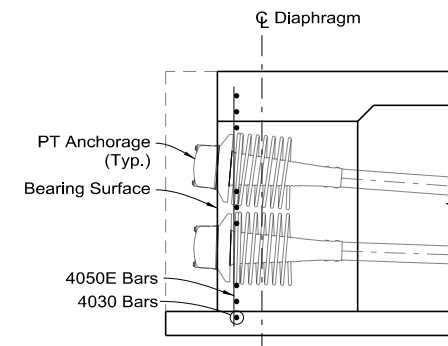
**GRILLAGE REINFORCEMENT DETAIL**

**GRILLAGE NOTES**

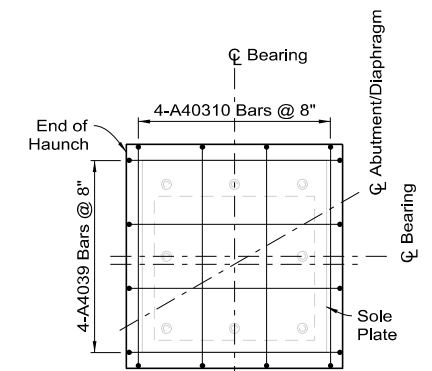
1. Bars to be included under Bid Item 503 0130 "Prestressing Cast-In-Place Concrete".
2. Contractor to include grillage reinforcing on post-tensioning shop drawings.



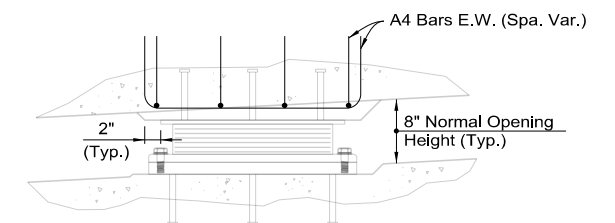
**SECTION B-B**  
SECTION THROUGH CELL  
PARALLEL TO ALIGNMENT



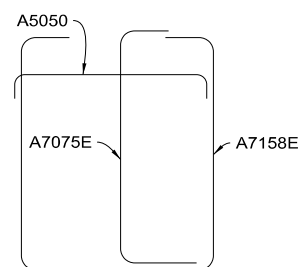
**SECTION C-C**



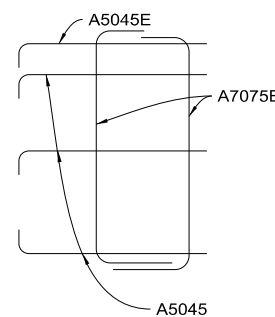
**HAUNCH PLAN**  
TYPICAL EACH BEARING



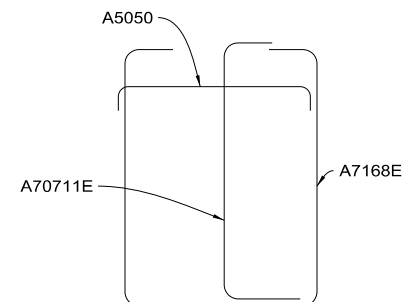
**HAUNCH ELEVATION**



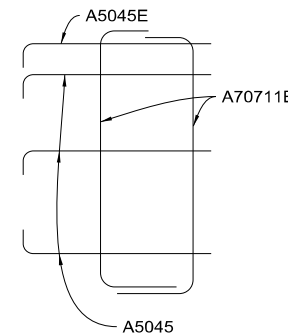
**A Group**  
1-A7158E\*  
1-A7075E  
1-A5050\*



**B Group**  
2-A7075E  
3-A5045  
1-A5045E



**C Group**  
1-A7168E\*  
1-A70711E  
1-A5050\*



**D Group**  
2-A70711E  
3-A5045  
1-A5045E

**NOTES**

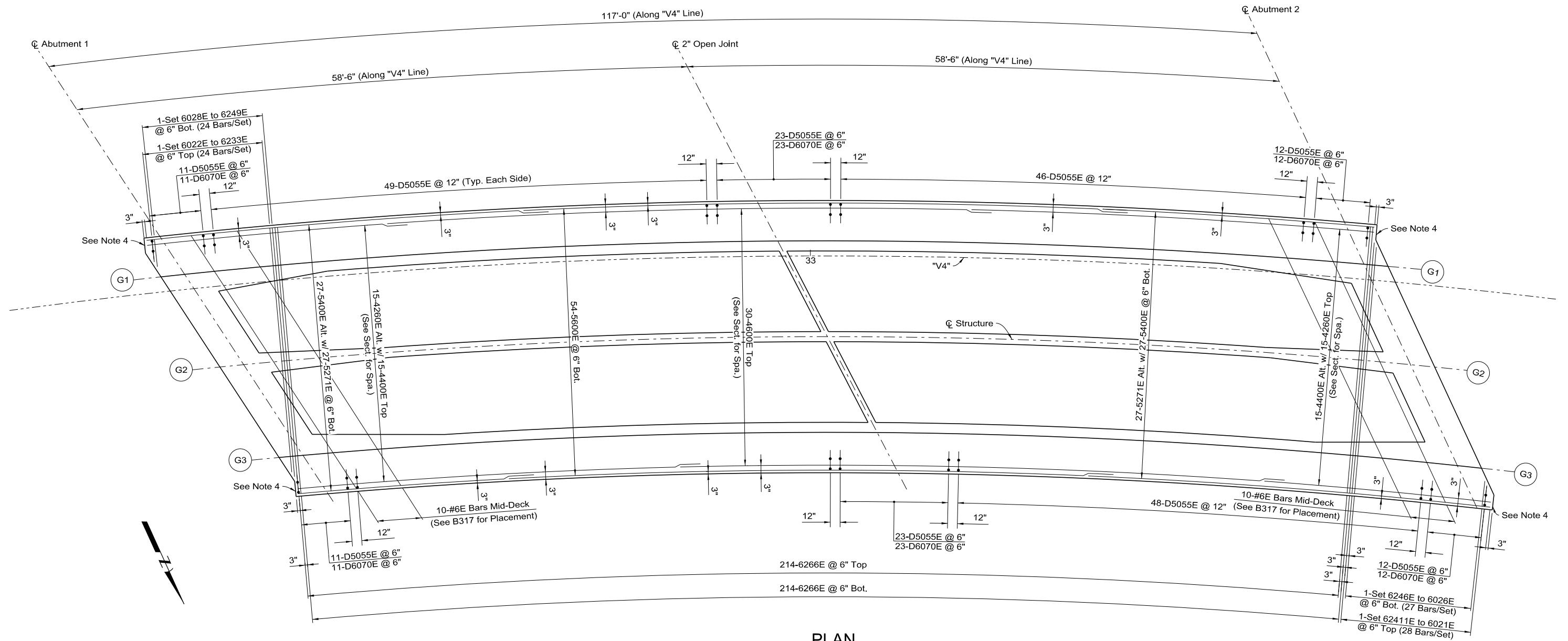
1. Reinforcing adjacent to post-tensioning anchorage to be adjusted to avoid conflict, for approval by Bridge Engineer.
2. Elastomeric bearings not shown for clarity.

\* - At Abut. 2, substitute A7158E bars for A7159E bars, A7168E bars for A7169E bars, and A5050 bars for A5051 bars.

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**END DIAPHRAGM  
DETAILS**

STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B319



**PLAN**

**MINIMUM BAR LAP**  
 #4E Bar to #4E Bar = 24"  
 #5E Bar to #5E Bar = 30"

**NOTES**

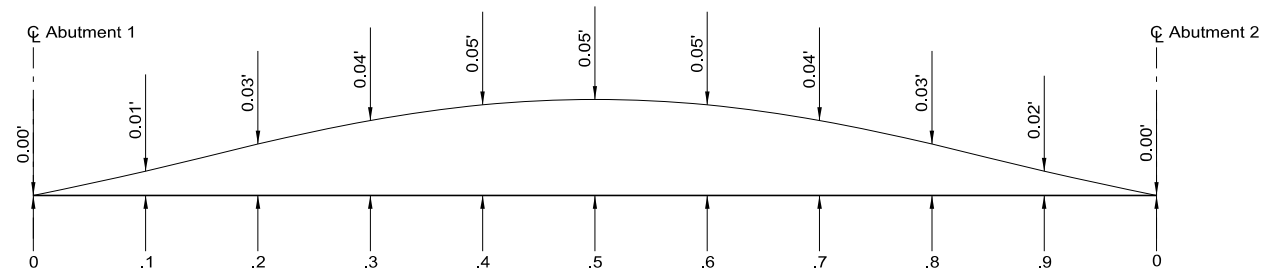
1. All dimensions along "V4" Line unless otherwise noted.
2. Transverse bar spacing noted is at structure centerline.
3. For Typical Section, see Sheet B313.
4. For clipped corner dimensions and reinforcing, see Sheet B317.

STATE OF NEVADA  
 DEPARTMENT OF TRANSPORTATION

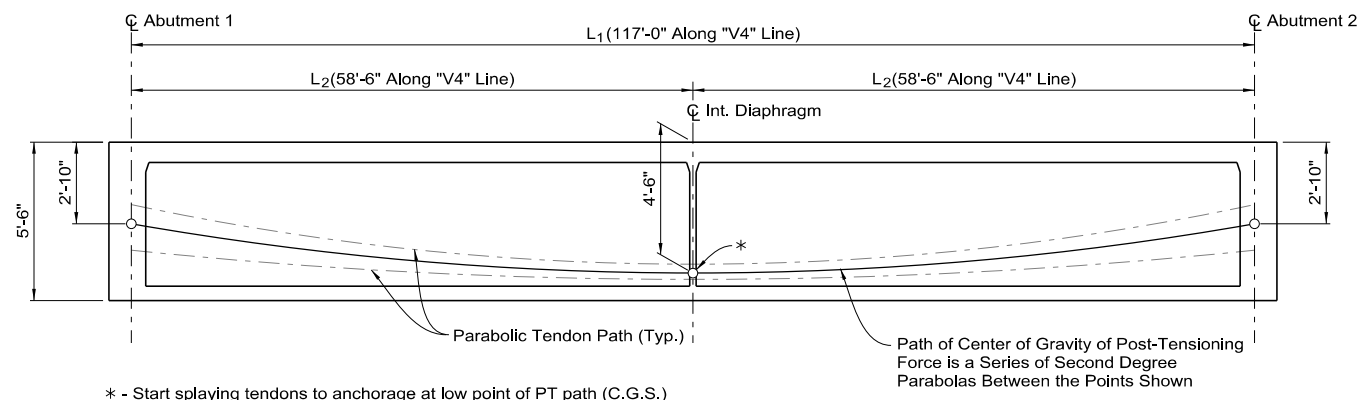
**DECK  
 REINFORCING**

I-3262

DATE : 1/26/2023

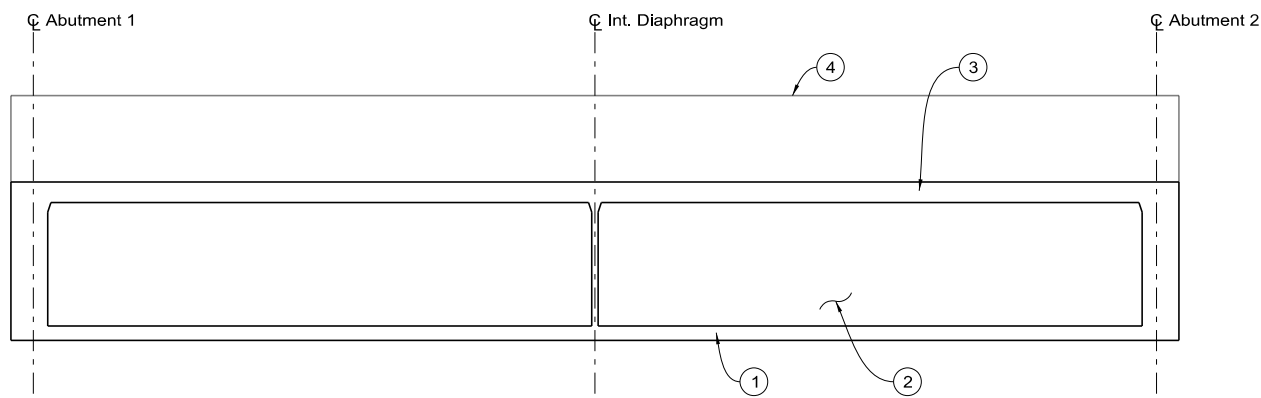


**CAMBER DIAGRAM**

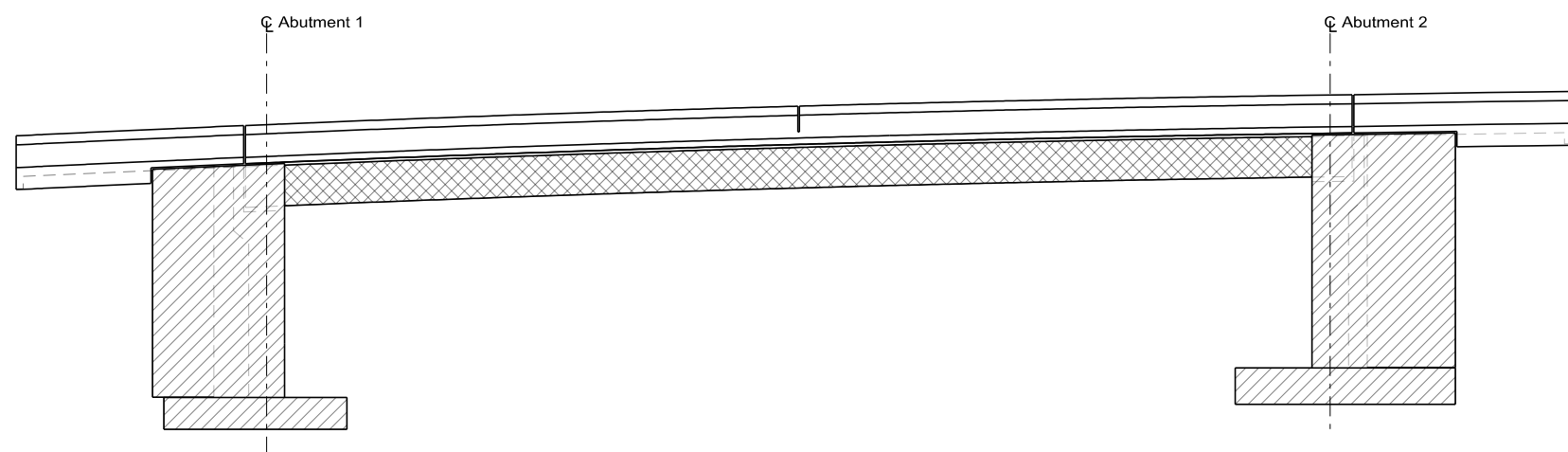


**POST-TENSIONING DIAGRAM**

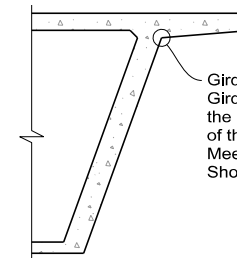
\* - Start splaying tendons to anchorage at low point of PT path (C.G.S.)



**CONCRETE PLACEMENT SCHEDULE**



**CONCRETE CLASSIFICATION DIAGRAM**



Girder Lengths for Exterior Girders are Calculated at the Point Where the Outside of the Exterior Girder Meets the Overhang (As Shown)

**GIRDER LENGTH TABLE**

Girder	L <sub>1</sub>	L <sub>2</sub>
G1	117.20'	58.60'
G2	115.95'	57.98'
G3	114.72'	57.36'

**CAMBER NOTES**

1. Camber diagram considers long-term deflections due to DC, DW, and Post-Tensioning loads.
2. Camber shown is taken at centerline of structure.

**POST-TENSIONING NOTES**

1. Post-tensioning shall be completed by one-end stressing, stressing half the tendons from each abutment.
2. Post-tensioning force shall be:  $p_{jack} = 7,119$  kips. The tendons shall be stressed to 0.75 fpu.
3. The concrete compressive strength at 28-days shall be:  $f_c = 4,500$  psi. The concrete compressive strength at stressing shall be:  $f_{ci} = 4,000$  psi, or as required by the intended post-tensioning system anchorages.
4. The post-tensioning strand shall be  $f_{pu} = 270$  ksi low relax strand.
5. The post-tensioning design accounts for losses due to friction, seating, creep and shrinkage of concrete, relaxation of steel, and stressing sequence. Assumed design values are  $u = 0.15$ ,  $K = 0.0002/ft$ , and an anchor set of  $3/8"$ . Total losses due to stressing sequence and long-term losses = 25 ksi.
6. The Contractor shall submit elongation and stressing calculations for the intended post-tensioning system.
7. No more than  $1/2$  of the post-tensioning force in any girder may be stressed before an equal force is stressed in the adjacent girders. At no time will more than  $1/3$  of the total post-tensioning force be applied eccentrically about the centerline of the structure. The maximum temporary force variation between girders shall not exceed the post-tensioning force of the largest tendon used in the structure.
8. Metallic enclosures shall be galvanized rigid duct. Enclosures shall be vented per specification. The center of gravity of the post-tensioning steel shall not vary in height from girder to girder.
9. Continuously measure and compare the elongation to the gage pressure to check for duct blockage and excessive friction during stressing.
10. Bar reinforcement interfering with a post-tensioning tendon shall be adjusted as directed by the Bridge Engineer.
11. Post-tensioning force shall be equally distributed between each girder. C.G.S. of tendon path in each girder shall match C.G.S. shown above.

**PLACEMENT SCHEDULE NOTES**

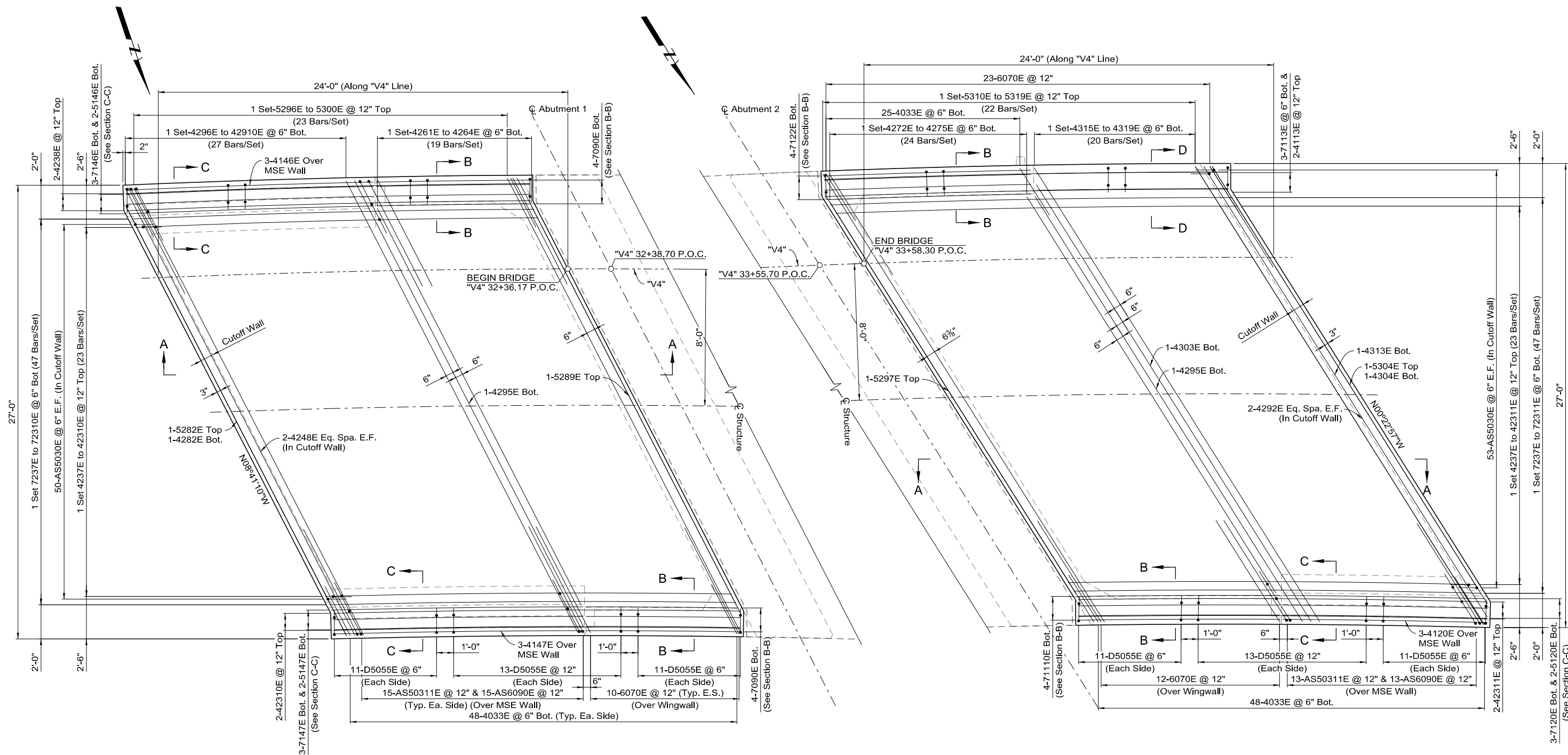
- A. Bottom Slab (1) shall be placed prior to Girder Concrete (2).
- B. Bottom Slab Concrete shall be placed separately from Girder Concrete.
- C. Top Slab Concrete (3) shall be placed separately from Girder.
- D. Do not place Barrier Rails (4) until stressing is complete and the falsework is released.

**CONCRETE CLASSIFICATION LEGEND**

- Approach Slab, Top Deck Slab, and Bridge Rail:  
Class EA Modified  $f_c = 4.5$  ksi @ 28 Days
- Abutments and Wingwalls:  
Class DA Modified  $f_c = 4.5$  ksi @ 28 Days
- Bottom Slab, Webs, Diaphragms, and Pier Caps:  
Class DA Modified  $f_c = 4.5$  ksi @ 28 Days

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION  
  
**POST-TENSIONING,  
CAMBER, AND CONCRETE  
PLACEMENT SCHEDULE**

STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B321



**PLAN VIEW**  
APPROACH SLAB 1

**PLAN VIEW**  
APPROACH SLAB 2

**NOTES**

1. All dimensions along "V4" line unless otherwise noted.
2. Transverse bar spacing noted is at structure centerline.
3. For Preformed Expansion Joint Details, see Sheet B324.
4. See Bridge Rail Details on Sheet B323.

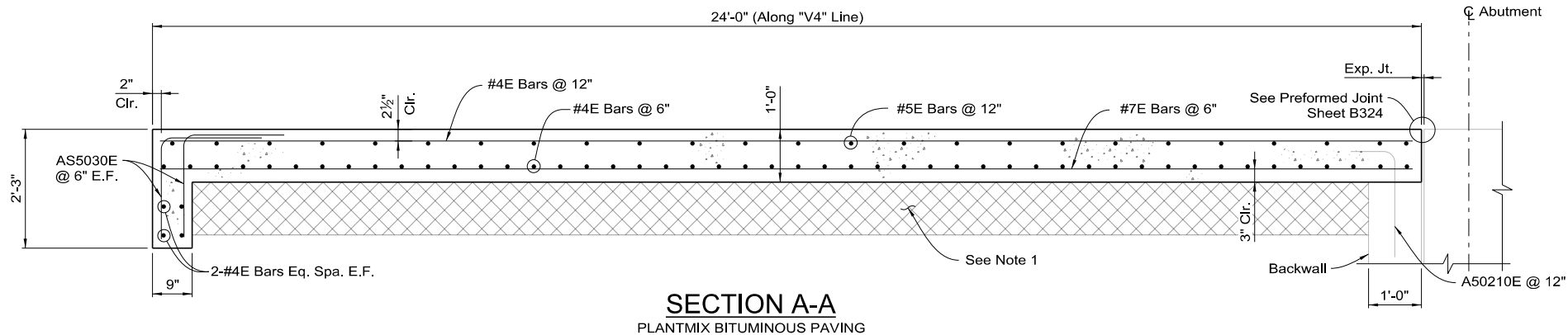
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION  
**APPROACH SLAB  
REINFORCING**

DATE : 1/26/2023

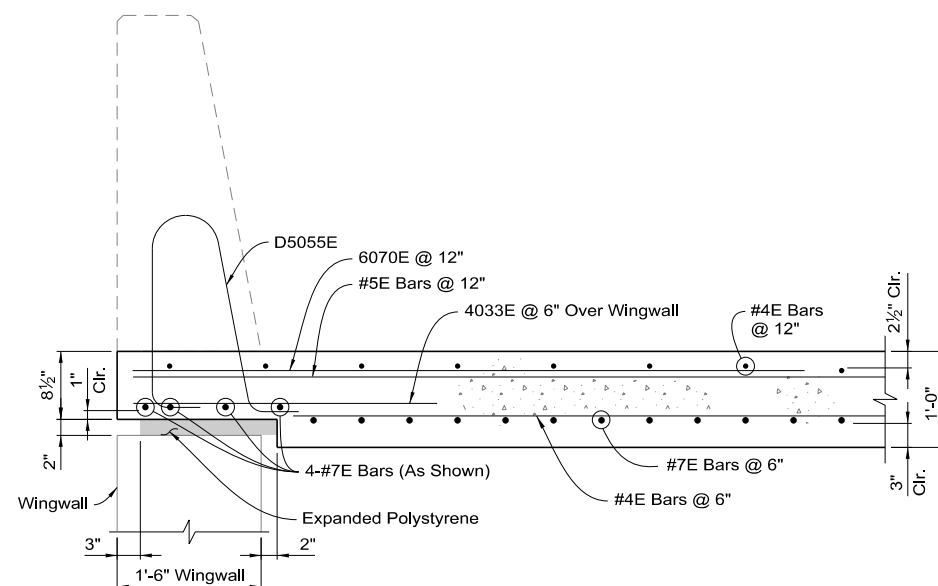
I-3262



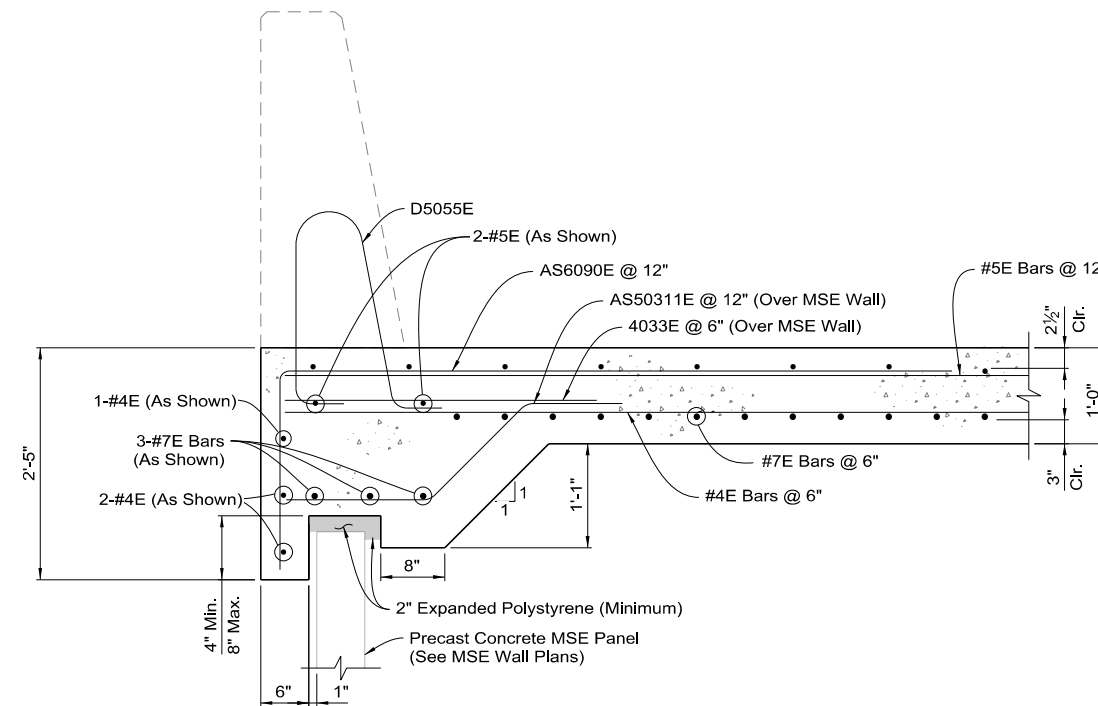
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B322



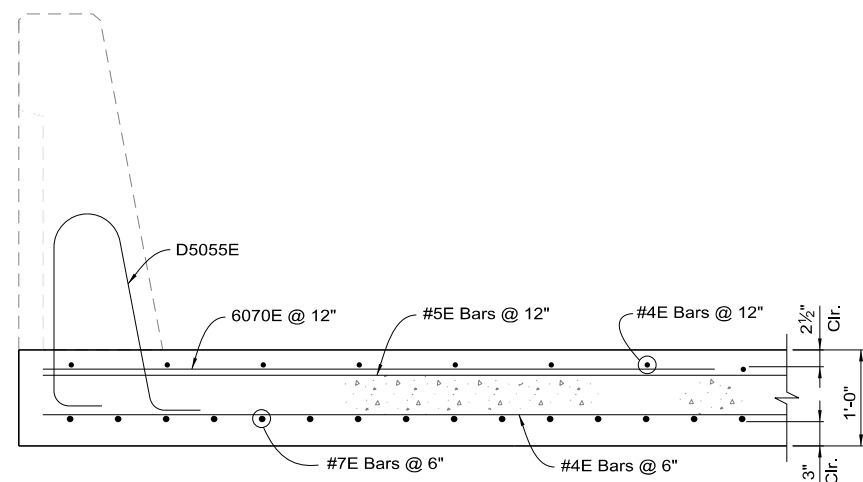
**SECTION A-A**  
PLANTMIX BITUMINOUS PAVING



**SECTION B-B**  
OVER WINGWALL



**SECTION C-C**  
OVER MSE WALL



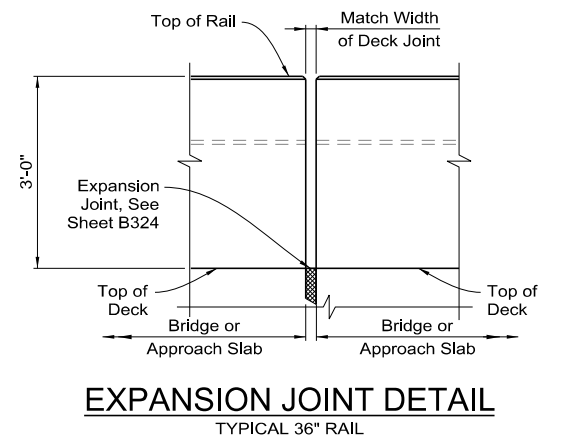
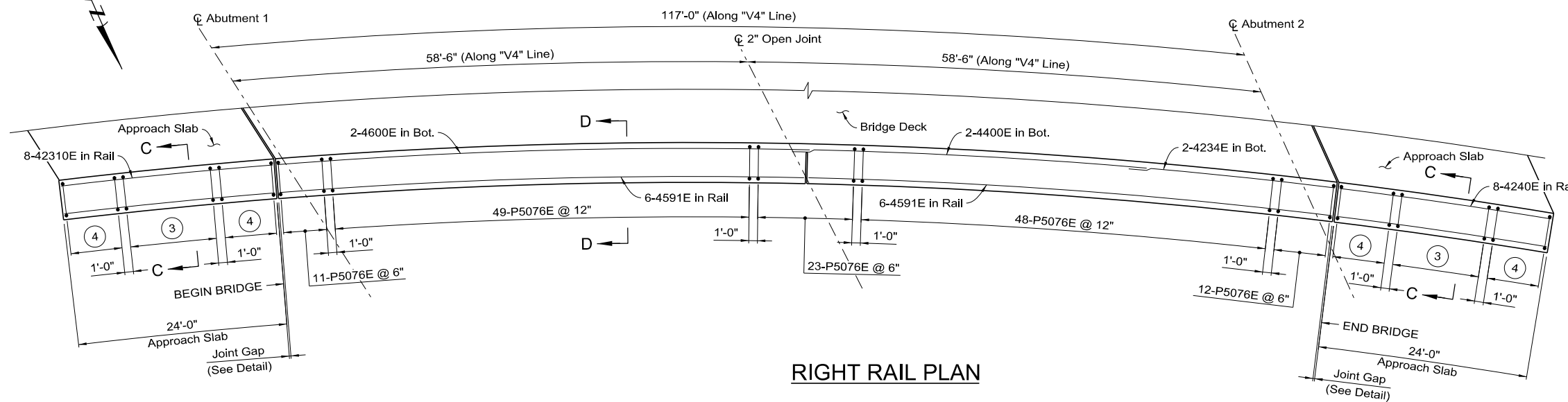
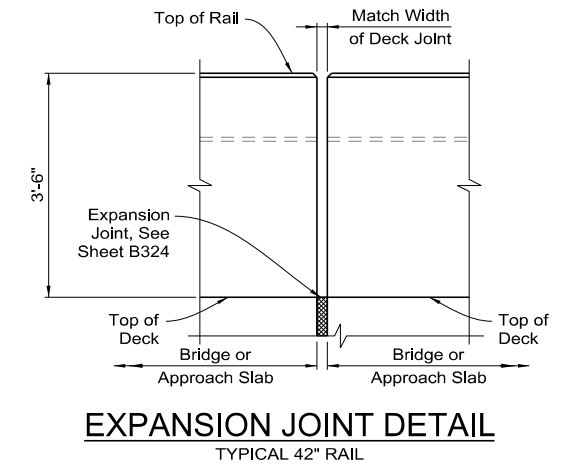
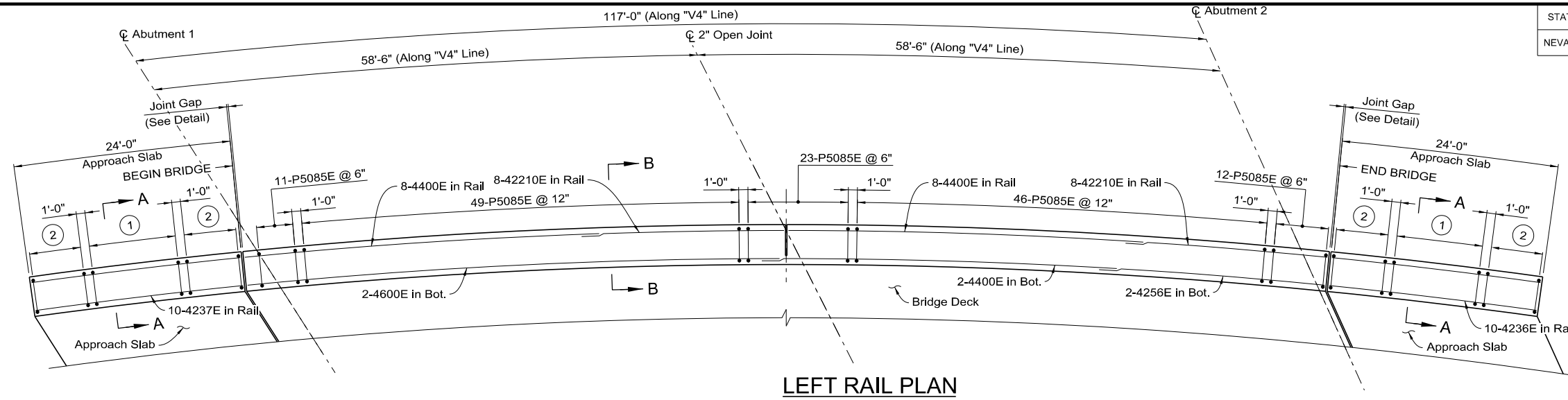
**SECTION D-D**  
OVER SUBGRADE

**NOTES**

1. Fill material under approach slabs shall be a 12-inch layer of granular backfill compacted to not less than 95% of the maximum density in accordance with subsection 207.03.01 of the Standard Specifications.
2. For expansion joint details, see Sheet B324.

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION  
**APPROACH SLAB  
DETAILS**

STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B323

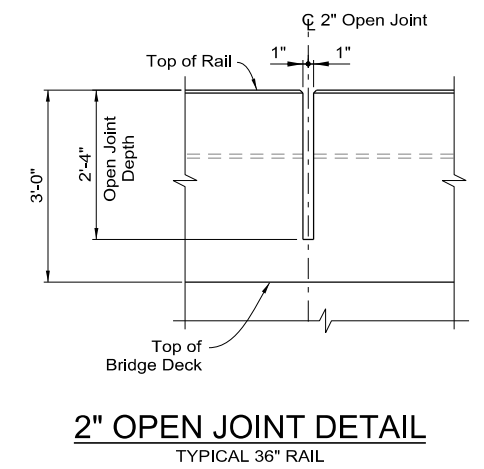
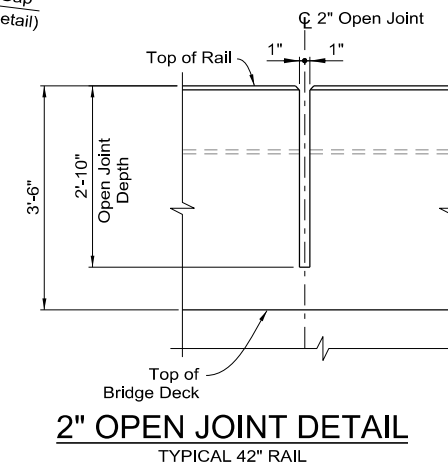
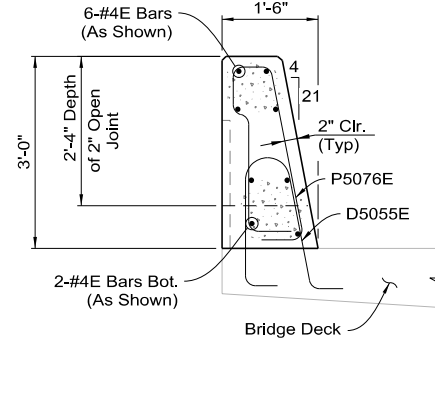
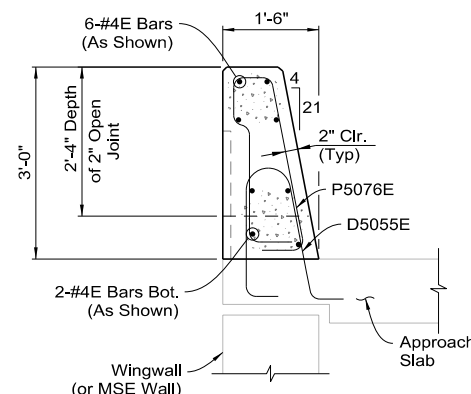
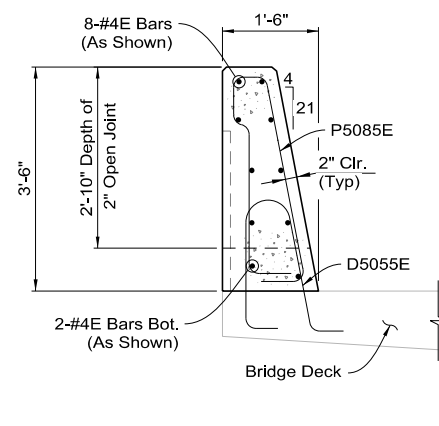
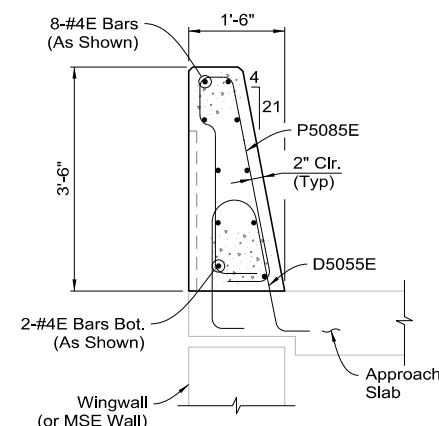


**NOTES**

- All dimensions along "V4" Line unless otherwise noted.
- Spacing of all P5085E and P5076E bars along structure centerline.
- Match P5085E and P5076E Bars with D5055E Bars in Deck.
- For aesthetic treatments to bridge rail, see Landscape & Aesthetics Plans.

**MINIMUM BAR LAP**  
#4E Bar to #4E Bar = 24"

- ① 13-P5085E @ 12"
- ② 11-P5085E @ 6"
- ③ 13-P5076E @ 12"
- ④ 11-P5076E @ 6"

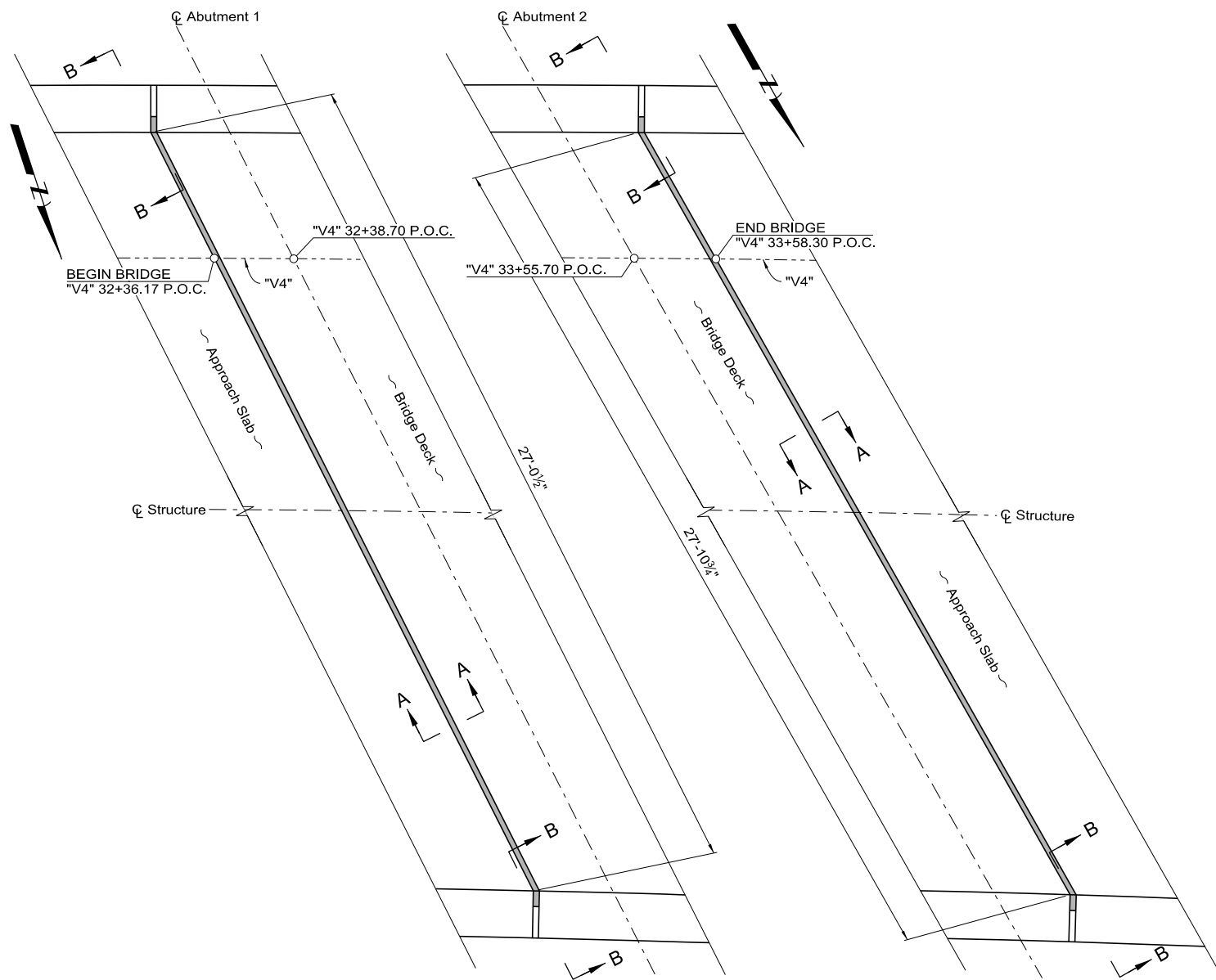


STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**BRIDGE RAIL  
DETAILS**

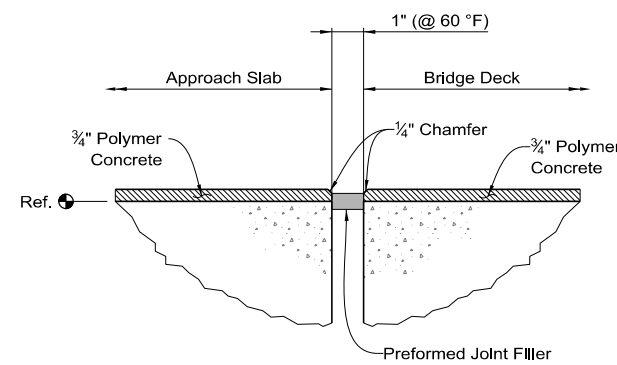
I-3262

DATE : 1/26/2023



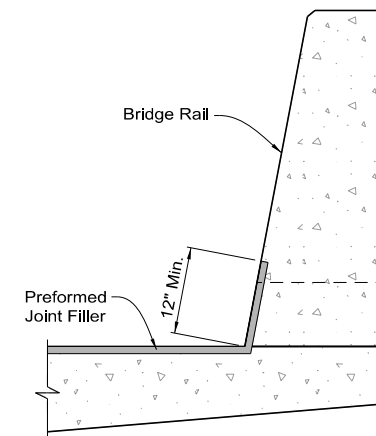
PLAN

PLAN

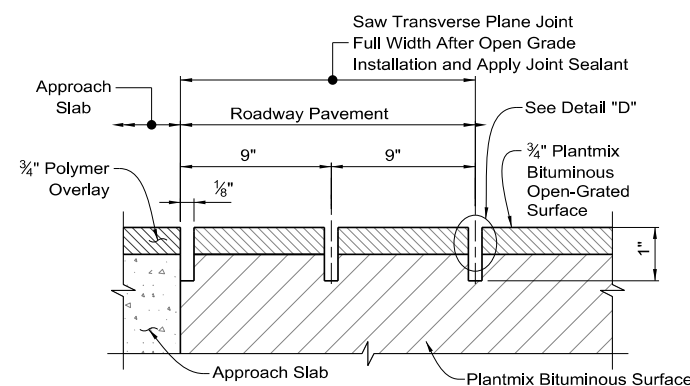


Note: Verify joint width prior to ordering joint filler material.

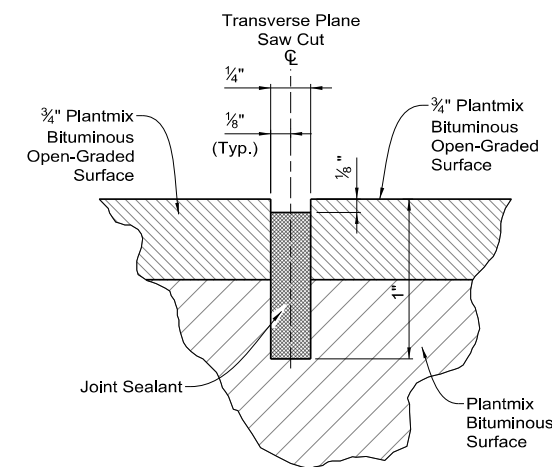
SECTION A-A



SECTION B-B



DETAIL "C"  
TRANSVERSE PLANE JOINT DETAIL  
(Detail at End of Approach Slabs)



DETAIL "D"  
(Typical at Saw Cuts)

**JOINT INFORMATION**

Location	Movement Rating (MRL)	Movement Rating (MRT)	Min Gap (in)	Max Gap (in)	Temperature Adjustment Factor, "Tadj"
Abutment 1	1"	3/8"	1 1/2"	2 1/8"	-1/16" per 10°F above 60°F +1/16" per 10°F below 60°F
Abutment 2	1"	3/8"	1 5/8"	2 1/4"	-1/16" per 10°F above 60°F +1/16" per 10°F below 60°F

Movement is closing (-) and opening (+)  
MRL is longitudinal movement rating (perpendicular to joint). MRT is transverse movement rating (parallel to joint)  
Temperature Movement is from 60 °F for a temperature range of 0 °F to 80 °F  
Creep/Shrinkage Movement is for 5 weeks to 1000 weeks elapsed time from prestressing

**NOTES**

1. Preformed expansion joint material should be sized larger than measured joint opening at time of installation. Refer to joint manufacturer's product data sheets for temperature chart/movement table.
2. Contractor to submit proposed preformed expansion joint material for Engineer review and approval. Refer to Section 502.03.13 of the Standard Specifications and the NDOT Qualified Products List.
3. Joint manufacturer's installation instructions shall be followed.
4. Install pourable joint sealant per manufacturer's recommendations and dimensions. Refer to Section 502.03.13 of the Standard Specifications.

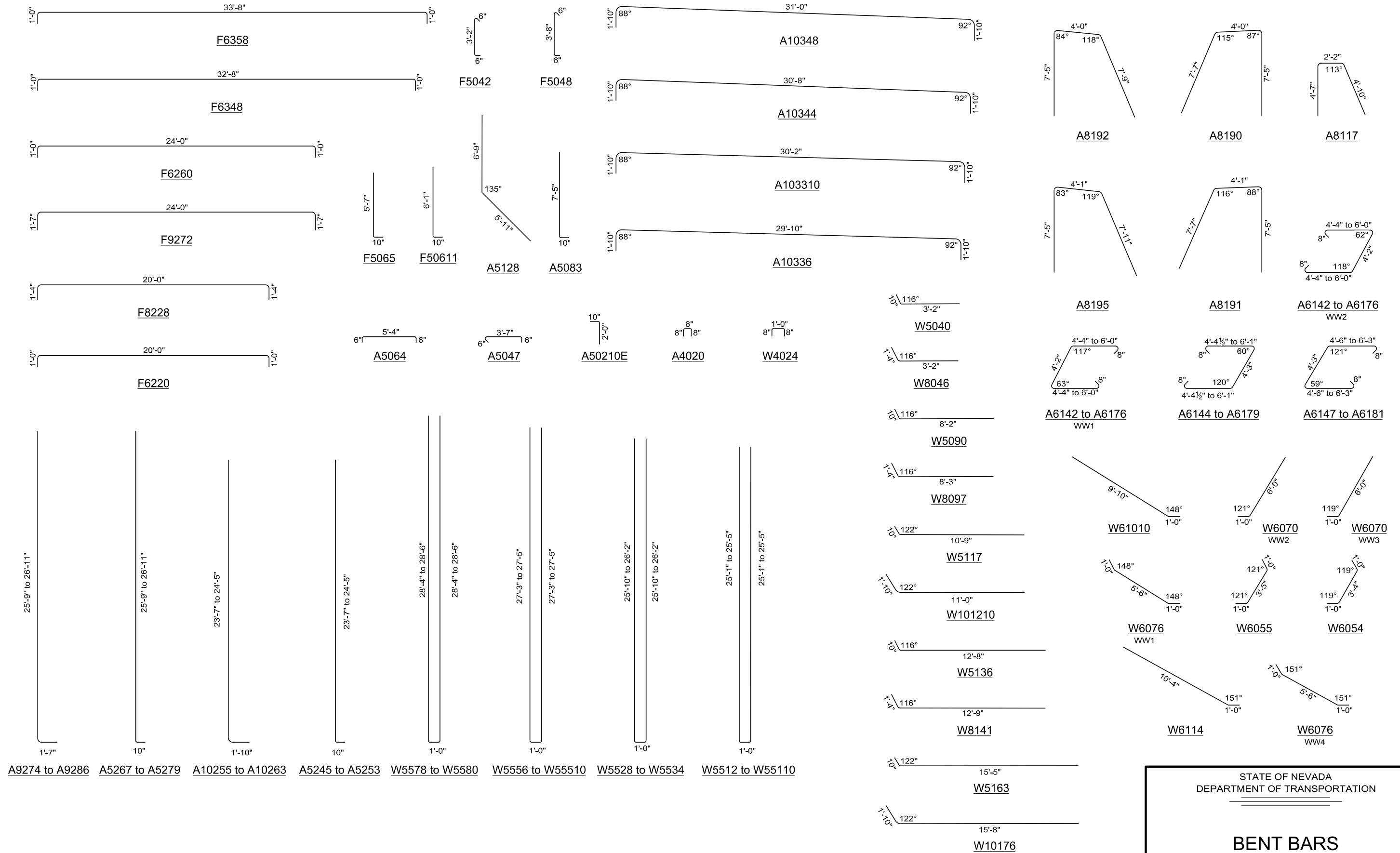
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

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**EXPANSION JOINT  
DETAILS**

I-3262

STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B325



DATE : 1/26/2023

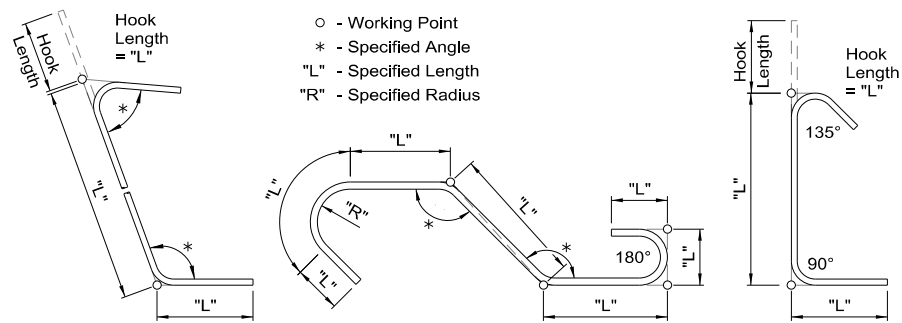
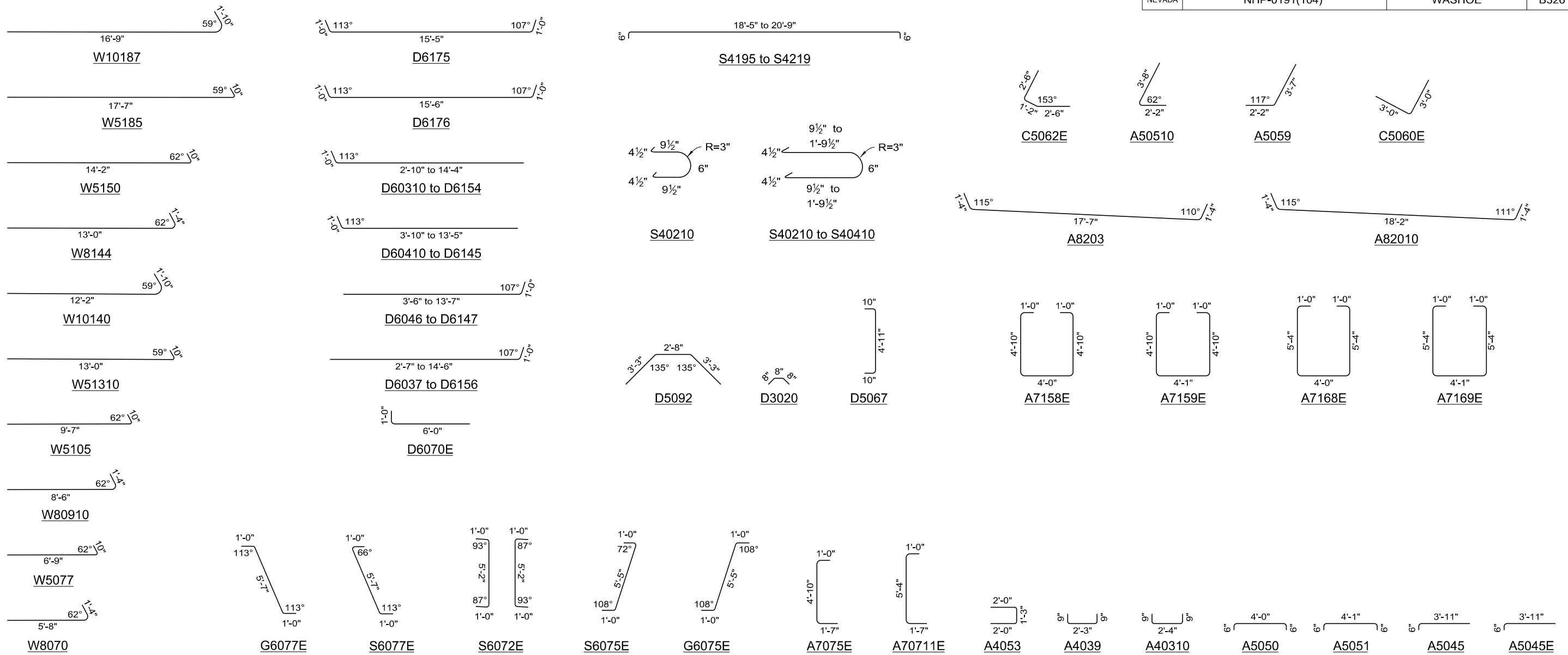
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

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**BENT BARS**

1 of 2 I-3262

STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B326



**BENT BAR MEASUREMENT DETAILS**

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**BENT BARS**

**ABUTMENT 1 FOOTING**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
5200	5	20' - 0"	4	83.44 lb.
5328	5	32' - 8"	4	136.29 lb.
F 5042	5	4' - 2"	153	664.91 lb.
F 5065	5	6' - 5"	23	153.93 lb.
F 6220	6	22' - 0"	66	2,180.90 lb.
F 6348	6	34' - 8"	38	1,978.63 lb.
F 8228	8	22' - 8"	66	3,994.32 lb.
SUB-TOTAL				
Reinforcing Steel				9,193 POUND
Class DA Concrete, Modified (Major)				77.00 CUYD

**ABUTMENT 2 FOOTING**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
5240	5	24' - 0"	6	150.19 lb.
5338	5	33' - 8"	6	210.69 lb.
F 5048	5	4' - 8"	180	876.12 lb.
F 50611	5	6' - 11"	23	165.92 lb.
F 6260	6	26' - 0"	68	2,655.54 lb.
F 6358	6	35' - 8"	44	2,357.14 lb.
F 9272	9	27' - 2"	68	6,280.93 lb.
SUB-TOTAL				
Reinforcing Steel				12,697 POUND
Class DA Concrete, Modified (Major)				105.78 CUYD

**ABUTMENT 1**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
5100	5	10' - 0"	24	250.32 lb.
5140	5	14' - 0"	12	175.22 lb.
6302	6	30' - 2"	85	3,851.38 lb.
A 4020	4	2' - 0"	31	41.42 lb.
A 5047	5	4' - 7"	620	2,963.86 lb.
A 5064	5	6' - 4"	31	204.78 lb.
A 5083	5	8' - 3"	31	266.75 lb.
A 5128	5	12' - 8"	31	409.55 lb.
A 10336	10	33' - 6"	9	1,297.35 lb.
A 103310	10	33' - 10"	9	1,310.26 lb.
A 50210E	5	2' - 10"	31	91.61 lb.
1 Set	A5245	to A5253	61 Bars/Set	1,579.97 lb.
1 Set	A10255	to A10263	61 Bars/Set	3,631.01 lb.
SUB-TOTAL				
Reinforcing Steel				15,982 POUND
Reinforcing Steel (Epoxy Coated)				92 POUND
Class DA Concrete, Modified (Major)				102.78 CUYD

**ABUTMENT 2**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
5100	5	10' - 0"	24	250.32 lb.
5150	5	15' - 0"	12	187.74 lb.
6310	6	31' - 0"	93	4,330.27 lb.
A 4020	4	2' - 0"	32	42.75 lb.
A 5047	5	4' - 7"	704	3,365.41 lb.
A 5064	5	6' - 4"	32	211.38 lb.
A 5083	5	8' - 3"	32	275.35 lb.
A 5128	5	12' - 8"	32	422.76 lb.
A 10344	10	34' - 4"	9	1,329.63 lb.
A 10348	10	34' - 8"	9	1,342.54 lb.
A 50210E	5	2' - 10"	32	94.57 lb.
1 Set	A5267	to A5279	63 Bars/Set	1,785.09 lb.
2 Set	A9274	to A9286	63 Bars/Set	11,959.50 lb.
SUB-TOTAL				
Reinforcing Steel				25,503 POUND
Reinforcing Steel (Epoxy Coated)				95 POUND
Class DA Concrete, Modified (Major)				113.78 CUYD

**ABUTMENT 1 SHEAR KEYS**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
5042	5	4' - 2"	12	52.15 lb.
6042	6	4' - 2"	10	62.58 lb.
A 8117	8	11' - 7"	6	185.57 lb.
A 8190	8	19' - 0"	3	152.19 lb.
A 8192	8	19' - 2"	3	153.53 lb.
2 Set	A6142	to A6176	5 Bars/Set	237.82 lb.
SUB-TOTAL				
Reinforcing Steel				844 POUND
Class DA Concrete, Modified (Major)				8.23 CUYD

**ABUTMENT 2 SHEAR KEYS**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
5043	5	4' - 3"	12	53.19 lb.
6043	6	4' - 3"	10	63.84 lb.
A 8117	8	11' - 7"	6	185.57 lb.
A 8191	8	19' - 1"	3	152.86 lb.
A 8195	8	19' - 5"	3	155.53 lb.
1 Set	A6144	to A6179	5 Bars/Set	120.47 lb.
1 Set	A6147	to A6181	5 Bars/Set	122.66 lb.
SUB-TOTAL				
Reinforcing Steel				855 POUND
Class DA Concrete, Modified (Major)				8.46 CUYD

**WINGWALL 1**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
5212	5	21' - 2"	6	132.46 lb.
52510	5	25' - 10"	1	26.94 lb.
5262	5	26' - 2"	3	81.88 lb.
W 4024	4	2' - 4"	8	12.47 lb.
W 5040	5	4' - 0"	1	4.17 lb.
W 5090	5	9' - 0"	5	46.94 lb.
W 5136	5	13' - 6"	22	309.77 lb.
W 6076	6	7' - 6"	5	56.33 lb.
W 61010	6	10' - 10"	22	357.98 lb.
W 8046	8	4' - 6"	1	12.02 lb.
W 8097	8	9' - 7"	9	230.29 lb.
W 8141	8	14' - 1"	43	1,616.91 lb.
1 Set	W5528	to W5534	8 Bars/Set	442.23 lb.
SUB-TOTAL				
Reinforcing Steel				3,331 POUND
Class DA Concrete, Modified (Major)				11.81 CUYD

**WINGWALL 2**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
5204	5	20' - 4"	6	127.25 lb.
5250	5	25' - 0"	1	26.08 lb.
5255	5	25' - 5"	2	53.02 lb.
W 4024	4	2' - 4"	9	14.03 lb.
W 5077	5	7' - 7"	1	7.91 lb.
W 5105	5	10' - 5"	5	54.32 lb.
W 5150	5	15' - 0"	21	328.55 lb.
W 6055	6	5' - 5"	5	40.68 lb.
W 6070	6	7' - 0"	21	220.79 lb.
W 8070	8	7' - 0"	1	18.69 lb.
W 80910	8	9' - 10"	9	236.30 lb.
W 8144	8	14' - 4"	41	1,569.07 lb.
1 Set	W5512	to W55110	9 Bars/Set	483.43 lb.
SUB-TOTAL				
Reinforcing Steel				3,181 POUND
Class DA Concrete, Modified (Major)				13.76 CUYD

**WINGWALL 3**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
5018	5	1' - 8"	29	50.41 lb.
5232	5	23' - 2"	6	144.98 lb.
5284	5	28' - 4"	2	59.10 lb.
5286	5	28' - 6"	1	29.73 lb.
W 4024	4	2' - 4"	13	20.26 lb.
W 51310	5	13' - 10"	5	72.14 lb.
W 5185	5	18' - 5"	24	461.01 lb.
W 6054	6	5' - 4"	5	40.05 lb.
W 6070	6	7' - 0"	24	252.34 lb.
W 10140	10	14' - 0"	10	602.42 lb.
W 10187	10	18' - 7"	47	3,758.31 lb.
1 Set	W5578	to W5580	13 Bars/Set	784.16 lb.
SUB-TOTAL				
Reinforcing Steel				6,275 POUND
Class DA Concrete, Modified (Major)				20.69 CUYD

**WINGWALL 4**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
5221	5	22' - 1"	6	138.20 lb.
5273	5	27' - 3"	3	85.27 lb.
5275	5	27' - 5"	1	28.60 lb.
W 4024	4	2' - 4"	11	17.15 lb.
W 5117	5	11' - 7"	5	60.41 lb.
W 5163	5	16' - 3"	23	389.82 lb.
W 6076	6	7' - 6"	5	56.33 lb.
W 6114	6	11' - 4"	23	391.52 lb.
W 101210	10	12' - 10"	10	552.22 lb.
W 10176	10	17' - 6"	45	3,388.61 lb.
1 Set	W5556	to W55510	11 Bars/Set	638.66 lb.
SUB-TOTAL				
Reinforcing Steel				5,747 POUND
Class DA Concrete, Modified (Major)				16.44 CUYD

**BOTTOM SLAB**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
5055	5	5' - 5"	8	45.20 lb.
6262	6	26' - 2"	16	628.84 lb.
6400	6	40' - 0"	16	961.28 lb.
6600	6	60' - 0"	16	1,441.92 lb.
D 6175	6	17' - 5"	128	3,348.46 lb.
D 6176	6	17' - 6"	112	2,943.92 lb.
2 Set	D6154	to D60310	7 Bars/Set	201.52 lb.
1 Set	D6145	to D60410	6 Bars/Set	86.74 lb.
2 Set	D6147	to D6046	7 Bars/Set	200.64 lb.
1 Set	D6156	to D6037	8 Bars/Set	114.65 lb.
SUB-TOTAL				
Reinforcing Steel				9,974 POUND
Class DA Concrete, Modified (Major)				36.00 CUYD

DATE : 1/26/2023

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

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QUANTITIES

1 of 2 I-3262

**WEBS AND INTERMEDIATE DIAPHRAGMS**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
5259	5	25' - 9"	30	805.72 lb.
5400	5	40' - 0"	30	1,251.60 lb.
5600	5	60' - 0"	30	1,877.40 lb.
D 3020	3	2' - 0"	8	6.02 lb.
S 40210	4	2' - 10"	348	658.65 lb.
D 5092	5	9' - 2"	8	76.49 lb.
S 5067E	5	6' - 7"	34	233.46 lb.
S 6072E	6	7' - 2"	420	4,521.02 lb.
S 6075E	6	7' - 5"	296	3,297.39 lb.
G 6075E	6	7' - 5"	296	3,297.39 lb.
S 6077E	6	7' - 7"	296	3,371.49 lb.
G 6077E	6	7' - 7"	296	3,371.49 lb.
12 Set	S40210	to S40410	25 Bars/Set	768.20 lb.
2 Set	S4195	to S4219	6 Bars/Set	165.00 lb.
SUB-TOTAL				
Reinforcing Steel				5,610 POUND
Reinforcing Steel (Epoxy Coated)				18,093 POUND
Class DA Concrete, Modified (Major)				54.00 CUYD

**END DIAPHRAGM (ABUTMENT 1)**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
92011	9	20' - 11"	3	213.35 lb.
5047E	5	4' - 7"	4	19.12 lb.
50410E	5	4' - 10"	4	20.16 lb.
5050E	5	5' - 0"	4	20.86 lb.
5288E	5	28' - 8"	2	59.80 lb.
6300E	6	30' - 0"	10	450.60 lb.
A 4039	4	3' - 9"	16	40.08 lb.
A 40310	4	3' - 10"	16	40.97 lb.
A 5045	5	4' - 5"	12	55.28 lb.
A 5050	5	5' - 0"	12	62.58 lb.
A 5059	5	5' - 9"	11	65.97 lb.
A 50510	5	5' - 10"	11	66.93 lb.
A 8203	8	20' - 3"	5	270.34 lb.
A 5045E	5	4' - 5"	4	18.43 lb.
C 5060E	5	6' - 0"	2	12.52 lb.
C 5062E	5	6' - 2"	2	12.86 lb.
A 7075E	7	7' - 5"	14	212.24 lb.
A 70711E	7	7' - 11"	12	194.18 lb.
A 7158E	7	15' - 8"	8	256.18 lb.
A 7168E	7	16' - 8"	4	136.27 lb.
2 Set	5099	to 5113	11 Bars/Set	240.93 lb.
4 Set	9181	to 9196	2 Bars/Set	511.13 lb.
SUB-TOTAL				
Reinforcing Steel				1,568 POUND
Reinforcing Steel (Epoxy Coated)				1,414 POUND
Class DA Concrete, Modified (Major)				9.85 CUYD

**END DIAPHRAGM (ABUTMENT 2)**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
9216	9	21' - 6"	3	219.30 lb.
5047E	5	4' - 7"	4	19.12 lb.
50410E	5	4' - 10"	4	20.16 lb.
5050E	5	5' - 0"	4	20.86 lb.
5288E	5	28' - 8"	2	59.80 lb.
6307E	6	30' - 7"	10	459.36 lb.
A 4039	4	3' - 9"	16	40.08 lb.
A 40310	4	3' - 10"	16	40.97 lb.
A 5045	5	4' - 5"	12	55.28 lb.
A 5051	5	5' - 1"	12	63.62 lb.
A 5059	5	5' - 9"	11	65.97 lb.
A 50510	5	5' - 10"	11	66.93 lb.
A 82010	8	20' - 10"	5	278.13 lb.
A 5045E	5	4' - 5"	4	18.43 lb.
C 5060E	5	6' - 0"	2	12.52 lb.
C 5062E	5	6' - 2"	2	12.86 lb.
A 7075E	7	7' - 5"	14	212.24 lb.
A 70711E	7	7' - 11"	12	194.18 lb.
A 7159E	7	15' - 9"	8	257.54 lb.
A 7169E	7	16' - 9"	4	136.95 lb.
2 Set	5101	to 5117	11 Bars/Set	248.58 lb.
4 Set	9188	to 9201	2 Bars/Set	527.00 lb.
SUB-TOTAL				
Reinforcing Steel				1,606 POUND
Reinforcing Steel (Epoxy Coated)				1,425 POUND
Class DA Concrete, Modified (Major)				10.13 CUYD

**TOP SLAB**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
4260E	4	26' - 0"	30	521.04 lb.
4400E	4	40' - 0"	30	801.60 lb.
4600E	4	60' - 0"	30	1,202.40 lb.
5271E	5	27' - 1"	54	1,525.39 lb.
5400E	5	40' - 0"	54	2,252.88 lb.
5600E	5	60' - 0"	54	3,379.32 lb.
6266E	6	26' - 6"	428	17,035.68 lb.
D 5055E	5	5' - 5"	284	1,604.48 lb.
D 6070E	6	7' - 0"	92	967.29 lb.
1 Set	6028E	to 6249E	24 Bars/Set	494.16 lb.
1 Set	6022E	to 6233E	24 Bars/Set	458.11 lb.
1 Set	6246E	to 6026E	27 Bars/Set	547.48 lb.
1 Set	62411E	to 6021E	28 Bars/Set	567.76 lb.
SUB-TOTAL				
Reinforcing Steel (Epoxy Coated)				31,358 POUND
Class EA Concrete, Modified (Major)				98.00 CUYD

**APPROACH SLAB 1**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
4033E	4	3' - 3"	96	208.42 lb.
4146E	4	14' - 6"	3	29.06 lb.
4147E	4	14' - 7"	3	29.23 lb.
4238E	4	23' - 8"	2	31.62 lb.
42310E	4	23' - 10"	2	31.84 lb.
4248E	4	24' - 8"	4	65.91 lb.
4282E	4	28' - 2"	1	18.82 lb.
4295E	4	29' - 5"	1	19.65 lb.
5146E	5	14' - 6"	2	30.25 lb.
5147E	5	14' - 7"	2	30.42 lb.
5282E	5	28' - 2"	1	29.38 lb.
5289E	5	28' - 9"	1	29.99 lb.
6070E	6	7' - 0"	20	210.28 lb.
7090E	7	9' - 0"	8	147.17 lb.
7146E	7	14' - 6"	3	88.91 lb.
7147E	7	14' - 7"	3	89.43 lb.
AS 5030E	5	3' - 0"	100	312.90 lb.
AS 50311E	5	3' - 11"	30	122.55 lb.
D 5055E	5	5' - 5"	70	395.47 lb.
AS 6090E	6	9' - 0"	30	405.54 lb.
1 Set	4237E	to 42310E	23 Bars/Set	364.25 lb.
1 Set	4261E	to 4264E	19 Bars/Set	332.64 lb.
1 Set	4296E	to 42910E	27 Bars/Set	535.07 lb.
1 Set	5296E	to 5300E	23 Bars/Set	713.67 lb.
1 Set	7237E	to 72310E	47 Bars/Set	2,277.61 lb.
SUB-TOTAL				
Reinforcing Steel (Epoxy Coated)				6,551 POUND
Class EA Concrete, Modified (Major)				27.78 CUYD

**APPROACH SLAB 2**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
4033E	4	3' - 3"	73	158.48 lb.
4113E	4	11' - 3"	2	15.03 lb.
4120E	4	12' - 0"	3	24.05 lb.
42311E	4	23' - 11"	2	31.95 lb.
4292E	4	29' - 2"	4	77.93 lb.
4295E	4	29' - 5"	1	19.65 lb.
4303E	4	30' - 3"	1	20.21 lb.
4304E	4	30' - 4"	1	20.26 lb.
4313E	4	31' - 3"	1	20.88 lb.
5120E	5	12' - 0"	2	25.03 lb.
5297E	5	29' - 7"	1	30.86 lb.
5304E	5	30' - 4"	1	31.64 lb.
6070E	6	7' - 0"	35	367.99 lb.
7113E	7	11' - 3"	3	68.99 lb.
71110E	7	11' - 10"	4	96.75 lb.
7120E	7	12' - 0"	3	73.58 lb.
7122E	7	12' - 2"	4	99.47 lb.
AS 5030E	5	3' - 0"	106	331.67 lb.
AS 50311E	5	3' - 11"	13	53.11 lb.
D 5055E	5	5' - 5"	70	395.47 lb.
AS 6090E	6	9' - 0"	13	175.73 lb.
1 Set	4237E	to 42311E	23 Bars/Set	364.90 lb.
1 Set	4272E	to 4275E	24 Bars/Set	437.54 lb.
1 Set	4315E	to 4319E	20 Bars/Set	421.95 lb.
1 Set	5310E	to 5319E	22 Bars/Set	719.93 lb.
1 Set	7237E	to 72311E	47 Bars/Set	2,281.62 lb.
SUB-TOTAL				
Reinforcing Steel (Epoxy Coated)				6,365 POUND
Class EA Concrete, Modified (Major)				27.40 CUYD

**BRIDGE RAIL**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
42210E	4	22' - 10"	16	244.04 lb.
4234E	4	23' - 4"	2	31.17 lb.
4236E	4	23' - 6"	10	156.98 lb.
4237E	4	23' - 7"	10	157.54 lb.
42310E	4	23' - 10"	8	127.37 lb.
4240E	4	24' - 0"	8	128.26 lb.
4256E	4	25' - 6"	2	34.07 lb.
4400E	4	40' - 0"	20	534.40 lb.
4591E	4	59' - 1"	12	473.61 lb.
4600E	4	60' - 0"	4	160.32 lb.
P 5076E	5	7' - 6"	213	1,666.19 lb.
P 5085E	5	8' - 5"	211	1,852.28 lb.
SUB-TOTAL				
Reinforcing Steel (Epoxy Coated)				5,567 POUND
Class EA Concrete, Modified (Major)				49.00 CUYD

**TOTALS**

Reinforcing Steel	102,366 POUND
Reinforcing Steel (Epoxy Coated)	70,960 POUND
Class DA Concrete, Modified (Major)	588.71 CUYD
Class EA Concrete, Modified (Major)	202.18 CUYD

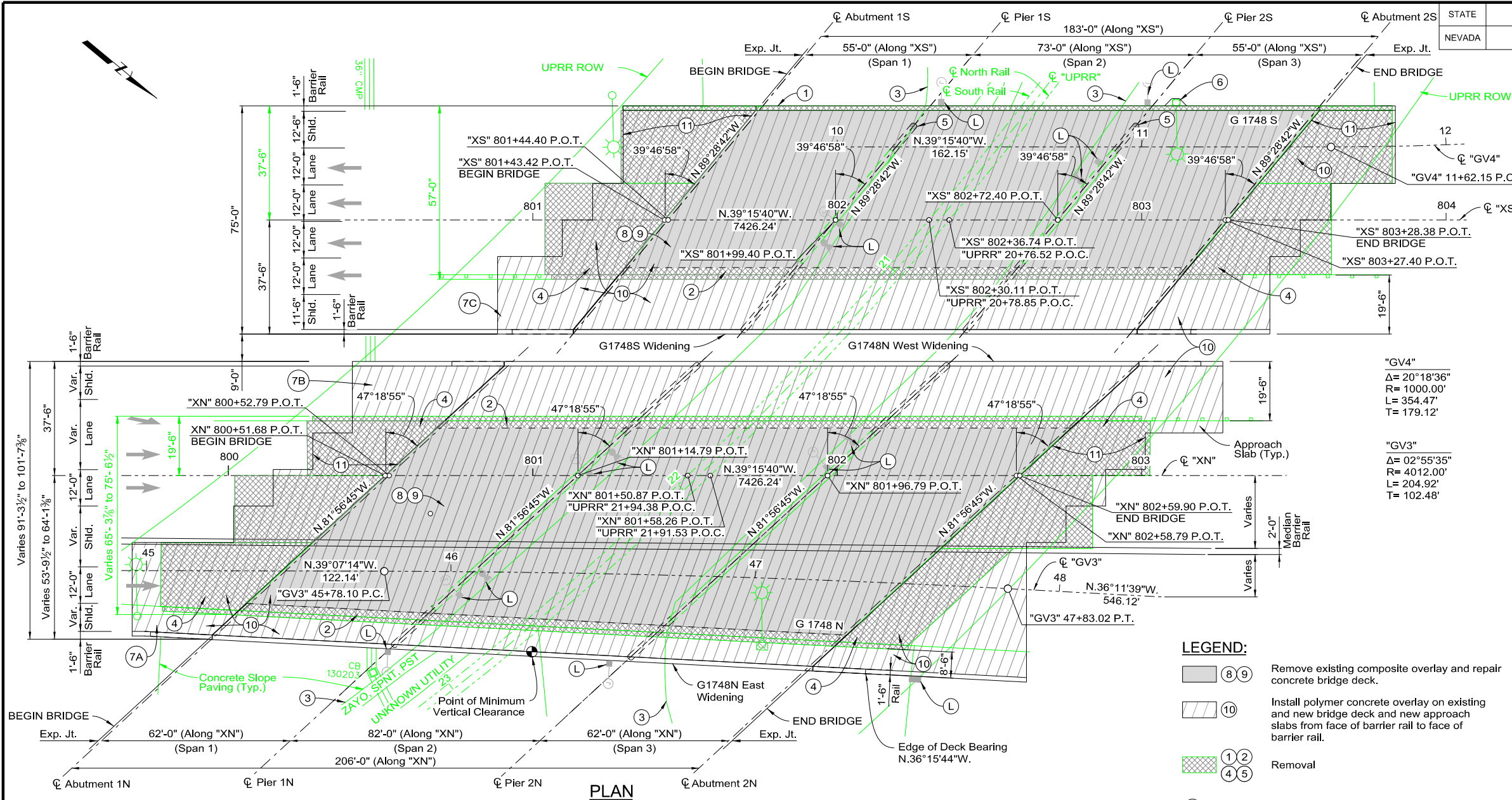
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**QUANTITIES**



### DESCRIPTION OF WORK

- ① Remove existing barrier rail, splashwall, pedestrian rail and portion of wingwalls. Protect in place existing reinforcing in overhang and wingwalls (Bid Item 202 0125). See Removal Details sheets.
- ② Remove all existing barrier rail, splashwall, pedestrian rail, and overhang at proposed widenings. Protect in place existing reinforcing in deck (Bid Item 202 0125). See Removal Details sheets.
- ③ Remove all existing concrete slope paving (Bid Item 202 1270). Replace with concrete slope paving treatment and concrete ditch in-kind, graded to drain to existing inlets (Bid Item 611 0120). See Concrete Slope Paving sheets for details.
- ④ Remove existing wingwall, portion of abutment and portion of shear block. Protect in place existing reinforcing in abutment wall (Bid Item 202 0125). Remove existing approach slabs. (Bid Item 202 0125). Contractor responsible for temporary shoring as needed to maintain traffic. See Removal Details sheets
- ⑤ Remove portion of existing cantilever. Protect in place existing reinforcing in cantilever (Bid Item 202 0125). See Removal Details sheets.
- ⑥ Remove existing overhead lighting pedestal (Bid Item 202 0125). See Removal Details Sheets.
- ⑦ Construct bridge widenings; See Railroad Construction Plan, Construction Sequence, and Construction Phasing sheets for details.
  - 7A. G1748N East Widening
  - 7B. G1748N West Widening
  - 7C. G1748S East Widening
- ⑧ Remove existing composite overlay on the bridge deck (Bid Item 202 0120). Care shall be taken to protect existing concrete bridge deck from damage.
- ⑨ Repair existing concrete bridge deck (Bid Item 502 0360). Remove damaged concrete to such depth that sound concrete is exposed over the entire area. Blast clean any exposed reinforcing steel. Prepare repair areas and patch per 502.03.15. Submit proposed patch material for review 30 days prior to start of deck repair.
- ⑩ Bridge deck and approach slab preparation and polymer concrete overlay placement.
  - 10A. Perform surface preparation on bridge deck and approach slabs in accordance with the manufacturer's recommendation (Bid Item 496 0130).
  - 10B. Place polyester based overlay system for a total depth of approximately 3/4" on the bridge deck and 3/4" on the approach slabs (Bid Items 496 130, 496 0160 and 496 0170).
- ⑪ Expansion joint replacement.
  - 11A. Remove existing strip seal expansion joints at abutments (Bid Item 202 0160).
  - 11B. Install new full length 3-inch preformed joint filler at abutments per manufacturer's specifications and as shown in detail on Expansion Joint Details sheets (Bid Item 502 2020).
  - 11C. Install new 2-inch preformed joint filler between approach slabs and roadway per manufacturer's specifications and as shown in detail on Approach Slab Details sheets.

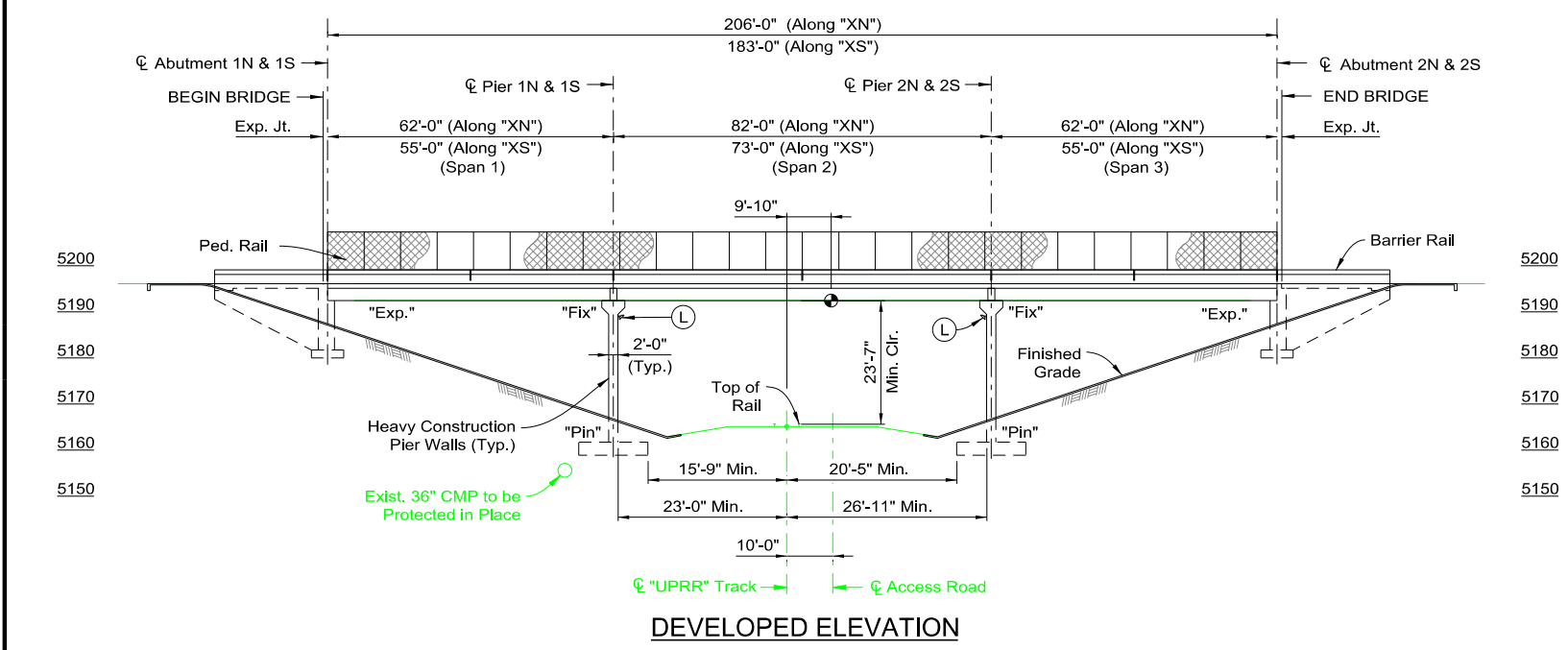


"GV4"  
 $\Delta = 20'18'36"$   
 $R = 1000.00'$   
 $L = 354.47'$   
 $T = 179.12'$

"GV3"  
 $\Delta = 02'55'35"$   
 $R = 4012.00'$   
 $L = 204.92'$   
 $T = 102.48'$

**LEGEND:**

- ⑧ ⑨ Remove existing composite overlay and repair concrete bridge deck.
- ⑩ Install polymer concrete overlay on existing and new bridge deck and new approach slabs from face of barrier rail to face of barrier rail.
- ① ② ④ ⑤ Removal
- L - Denotes under deck lighting (Refer to Lighting Plans)



12/20/2022

ORIGINAL CONTRACT: 2243  
 MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT

UPRR MILEPOST :	10.16
UPRR SUBDIVISION:	RENO IND. LD.
PROJECT CITY:	RENO
REVISION DATE:	OCTOBER 28, 2021
LAT. / LONG. :	39°35'47.01" N / 119°50'0.75" W

STATE OF NEVADA  
 DEPARTMENT OF TRANSPORTATION

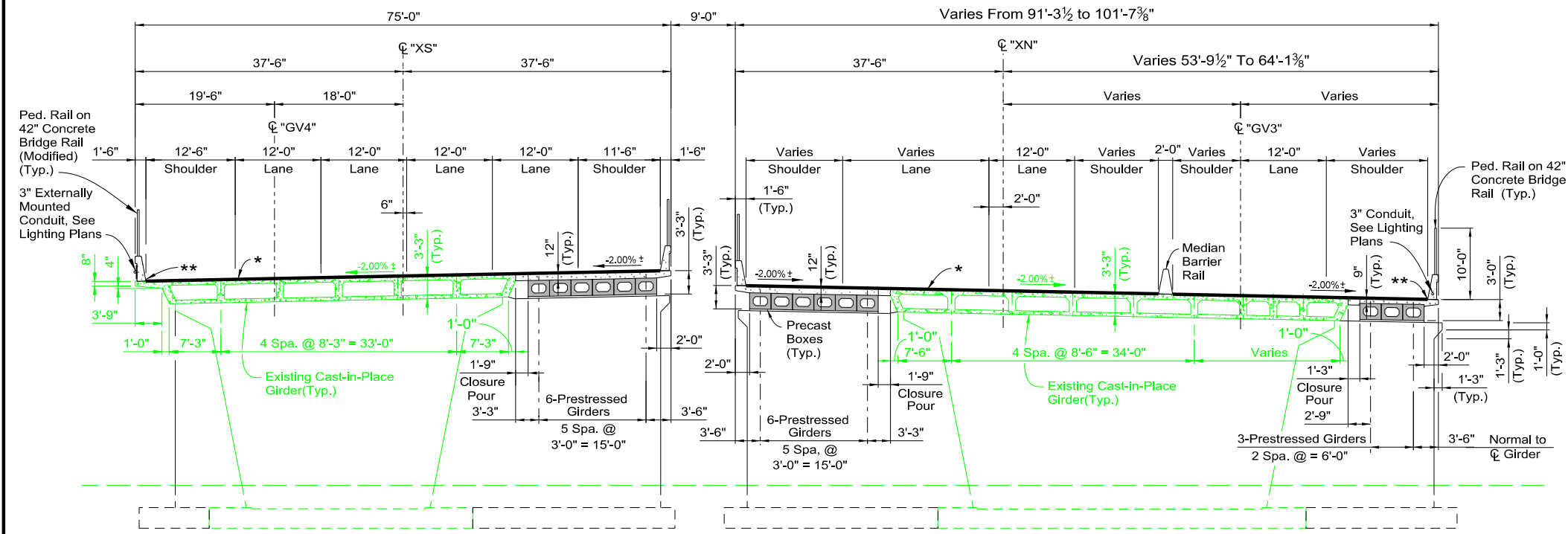
**US 395 - WA 30.54  
 PANTHER BRANCH  
 UPRR OVERPASS**

G-1748 N&S

HDR Engineering, Inc. 9805 Double R Boulevard, Suite 101  
 Reno, NV 89521-5917  
 PH: 775-337-4700 FAX: 775-337-4774



STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B401



TYPICAL SECTION LAYOUT AT PIER  
LOOKING AHEAD ON LINE NORMAL TO ALIGNMENT

\* - Polymer Concrete Overlay (See Note 18)  
\*\* - Collected Deck Drainage (See Note 21)

QUANTITIES

ITEM NO.	ITEM DESCRIPTION	UNIT	G1748S QTY	G1748N QTY	TOTAL
202 0120	REMOVAL OF PORTION OF BRIDGE DECK	SQ.YD.	1,455	1,061	2,516
202 0125	REMOVAL OF PORTION OF BRIDGE	L.S.	1	1	1
202 0160	REMOVAL OF EXPANSION JOINTS	LIN.FT.	200	141	341
202 1270	REMOVAL OF SLOPE PAVING	SQ.YD.	2,899	2,376	5,275
206 0110	STRUCTURE EXCAVATION	CU.YD.	1,485	976	2,460
207 0110	GRANULAR BACKFILL	CU.YD.	1,077	702	1,779
496 0130	BRIDGE DECK PREPARATION AND CONCRETE PLACEMENT	SQ.YD.	2,992	1,996	4,988
496 0160	POLYMER CONCRETE AGGREGATE	POUND	262,911	175,401	438,312
496 0170	POLYMER CONCRETE RESIN	POUND	31,550	21,049	52,599
502 0360	CONCRETE BRIDGE DECK REPAIR	F.A.	1	1	1
502 0881	CLASS DA CONCRETE, MODIFIED (MAJOR)(STRUCTURES)	CU.YD.	704	443	1,147
502 1010	CLASS EA CONCRETE, MODIFIED (MAJOR)	CU.YD.	704	436	1,140
502 1950	BRIDGE DECK CURING COMPOUND	GAL	110	67	177
502 2020	PREFORMED JOINT FILLER (3-INCH)	LIN.FT.	282	193	475
503 0420	55 FOOT PRECAST CONCRETE MEMBERS	EACH	0	12	12
503 0440	58 FOOT PRECAST CONCRETE MEMBERS	EACH	6	0	6
503 0450	60 FOOT PRECAST CONCRETE MEMBERS	EACH	12	0	12
503 0510	70 FOOT PRECAST CONCRETE MEMBERS	EACH	0	6	6
503 0540	74 FOOT PRECAST CONCRETE MEMBERS	EACH	3	0	3
503 0560	78 FOOT PRECAST CONCRETE MEMBERS	EACH	6	0	6
505 0100	REINFORCING STEEL	POUND	100,502	61,897	162,399
505 0110	REINFORCING STEEL (DOWELED)	POUND	1,586	1,494	3,080
505 0120	REINFORCING STEEL (EPOXY COATED)	POUND	146,082	86,757	232,839
505 0130	REINFORCING STEEL (EPOXY COATED) (DOWELED)	POUND	183	0	183
506 0110	STRUCTURAL STEEL	POUND	1,514	981	2,495
506 0470	APPROACH SLAB RESTRAINER UNIT	EACH	142	98	240
506 0810	PEDESTRIAN RAIL, TYPE V (MODIFIED)	LIN.FT.	406	370	776
611 0120	CLASS AA CONCRETE SLOPE PAVEMENT	CU.YD.	216	192	408

SHEET INDEX

SHEET	DESCRIPTION
B400	US395 - WA 30.54 Panther Branch UPRR Overpass
B401	General Notes and Quantities
B402	Geometrics
B403	Railroad Coordination Plan
B404	Railroad Track Profiles
B405	Excavation and Backfill
B406	Bridge Construction Sequence
B407	Bridge Construction Phase 1 & 2
B408	Removal Details (1 of 2)
B409	Removal Details (2 of 2)
<b>G1748N SHEETS</b>	
B410	Abutment Footing Plan 1N & 2N
B411	Abutment Footing Details
B412	Abutment 1N West Plan & Elevation
B413	Abutment 1N East Plan & Elevation
B414	Abutment 2N West Plan & Elevation
B415	Abutment 2N East Plan & Elevation
B416	Abutment 1N & 2N Details (1 of 2)
B417	Abutment 1N & 2N Details (2 of 2)
B418	Wingwall Plan & Elevation (1 of 2)
B419	Wingwall Plan & Elevation (2 of 2)
B420	Pier 1N & 2N West Footing Details Plan & Sections
B421	Pier 1N & 2N East Footing Details Plan & Sections
B422	Pier 1N & 2N West Plan & Elevation
B423	Pier 1N & 2N East Plan & Elevation
B424	Pier 1N & 2N Wall Details (1 of 3)
B425	Pier 1N & 2N Wall Details (2 of 3)
B426	Pier 1N & 2N Wall Details (3 of 3)
B427	Deck Section
B428	Prestressed Girder Framing Plan (1 of 3)
B429	Prestressed Girder Framing Plan (2 of 3)
B430	Prestressed Girder Framing Plan (3 of 3)
B431	Prestressed Girder Details (1 of 2)
B432	Prestressed Girder Details (2 of 2)
B433	Tie Rod Details (1 of 2)
B434	Tie Rod Details (2 of 2)
B435	Deck Reinforcing
B436	Camber and Classification Diagrams
B437	Finish Grade Elevations (1 of 2)
B438	Finish Grade Elevations (2 of 2)
B439	Approach Slabs (1 of 3)
B440	Approach Slabs (2 of 3)
B441	Approach Slabs (3 of 3)
B442	Approach Slab Details
B443	Expansion Joint Details
B444	Barrier Rail
B445	Barrier Rail Details
B446	Pedestrian Rail Details
B447	Concrete Slope Paving
B448	Bent Bars (1 of 2)
B449	Bent Bars (2 of 2)
B450	Bill of Materials (1 of 3)
B451	Bill of Materials (2 of 3)
B452	Bill of Materials (3 of 3)

SHEET	G1748S SHEETS
B453	Abutment Footing Plan 1S & 2S
B454	Abutment Footing Details
B455	Abutment 1S Plan & Elevation
B456	Abutment 2S Plan & Elevation
B457	Abutment 1S & 2S Details
B458	Wingwall Plan & Elevation
B459	Pier 1S & 2S West Footing Details Plan & Sections
B460	Pier 1S & 2S East Footing Details Plan & Sections
B461	Pier 1S & 2S West Plan & Elevation
B462	Pier 1S & 2S East Plan & Elevation
B463	Pier 1S & 2S Wall Details (1 of 2)
B464	Pier 1S & 2S Wall Details (2 of 2)
B465	Deck Section
B466	Prestressed Girder Framing Plan (1 of 3)
B467	Prestressed Girder Framing Plan (2 of 3)
B468	Prestressed Girder Framing Plan (3 of 3)
B469	Prestressed Girder Details (1 of 2)
B470	Prestressed Girder Details (2 of 2)
B471	Tie Rod Details (1 of 2)
B472	Tie Rod Details (2 of 2)
B473	Deck Reinforcing
B474	Camber and Classification Diagrams
B475	Finish Grade Elevations
B476	Approach Slabs (1 of 2)
B477	Approach Slabs (2 of 2)
B478	Approach Slab Details
B479	Expansion Joint Details
B480	Barrier Rail
B481	Barrier Rail Details
B482	Pedestrian Rail Details
B483	Concrete Slope Paving
B484	Bent Bars (1 of 2)
B485	Bent Bars (2 of 2)
B486	Bill of Materials (1 of 2)
B487	Bill of Materials (2 of 2)

STANDARD BAR LAPS

Bar Size	Uncoated (in)	Epoxy Coated (in)
#4	20	24
#5	24	30
#6	30	34
#7	38	45
#8	48	57
#9	60	72
#10	74	88
#11	90	108

ABBREVIATIONS

Alt.	Alternate	E.S.	Each Side	Pr.	Pair
Abut.	Abutment	Exp.	Expansion	P.S.	Prestressing
Brg.	Bearing	Ext.	Existing / Exterior	PT	Post-Tensioning
Bot.	Bottom	E.W.	Each Way	Sect.	Section
C.G.	Center of Gravity	F.F.	Far Face	Shld.	Shoulder
C.G.S.	Center of Gravity of Steel	Fix.	Fixed	Spa.	Space
CIP	Cast In Place	Galv.	Galvanized	Spa. Var.	Spacing Varies
Clr	Clear	I.D.	Inner Diameter	Sq.	Square
CMP	Corrugated Metal Pipe	Int.	Interior / Intermediate	Typ.	Typical
Col.	Column	Jt.	Joint	Var.	Varies
Const. Jt.	Construction Joint	LOL	Layout Line		
Dbl.	Double	Max.	Maximum		
Dia.	Diameter	Min.	Minimum		
Dim.	Dimension	N.F.	Near Face		
Ea.	Each	O.D.	Outer Diameter		
E.F.	Each Face	Opt.	Optional		
Elev.	Elevation	Ped.	Pedestrian		
Eq. Spa.	Equal Space	P.G.	Profile Grade		

GENERAL NOTES

- Design Specifications: AASHTO "LRFD Bridge Design Specifications" Eighth Edition 2017, AASHTO "Guide Specifications for LRFD Seismic Bridge Design" Second Edition 2011, with interims through 2015, and "NDOT Structures Manual" 2008, with interims through 2019. Seismic Retrofit designed in accordance with FHWA "Seismic Retrofitting Manual for Highway Structures: Part 1 Bridges" 2006.
- Construction Specifications: State of Nevada Department of Transportation "Standard Specifications for Road and Bridge Construction, 2014" except as noted below and in the Special Provisions of this Contract.
- Dead Load: In accordance with Specifications with an allowance of 38 psf for future wearing surface.
- Live Load: AASHTO HL-93 Loading. Overload design based on California "Standard Permit Design Vehicles" (Maximum Overload P-13 Truck). Deck Design based on the Equivalent Strip Method with a 40.0 kip axle.
- Seismic Load: PGA Coefficient = 0.50g, Short Period Coefficient (Ss) = 1.25g, Long Period Coefficient (S1) = 0.50g, Site Class C Soil Profile (Seismic Zone 3).  $\gamma_w = 0.25$ .
- Concrete: See Concrete Placement Schedule and Diagram for concrete class and compressive strengths.
- Reinforcing Steel: All reinforcing steel to be ASTM A706. Reinforcing steel for precast girders may be A615 or A706. Dimensions relating to bar spacing are center to center. Bending dimensions are from out to out of the bars. Bar sizes three (3) to nine (9) are indicated by the first number of the mark; ten (10) or larger by the first two numbers. Bar marks with a letter prefix indicate a bent bar. Bar marks with a "D" suffix indicate a doweled bar. Bar marks ending with either the letter "E" or "ED" indicate that the bar shall be epoxy coated the length of the bar. Sizes four (4) and five (5), when considered as bars to control temperature, shrinkage, and distribution stresses by the Engineer, may be adjusted upon concurrence and approval of the Engineer.
- Dowelled reinforcing steel: Reinforcing to be dowelled in the existing concrete shall be epoxied in drilled holes with a maximum diameter equal to the bar diameter plus 1/4". Holes shall be cleaned with oil free compressed air after drilling. Care shall be taken to avoid damaging existing reinforcing. Minimum embedment shall be 12" unless shown otherwise.
- Foundations: Piers and abutments shall be on spread footing foundations. For geotechnical information refer to Geotechnical Report from HDR titled "Geotechnical Design Report, US395 North Valleys, Washoe County, Nevada. Nevada Department of Transportation".
- Camber: Camber shall be as shown on the Plans.
- Bridge Rail: Designed for TL-4. Bridge Rail (Modified): Designed for Standard Specification loading.
- Construction Type Code: X181.
- Concrete construction joints designated as a "Permissible Joint" or as an "Optional Construction Joint" may be incorporated into the construction at the Contractor's option. Joints designated as a "Construction Joint" are considered mandatory and shall be incorporated into the construction unless otherwise approved in writing by the Bridge Design Engineer.
- Elevations and roadway profile information in these plans are approximate and are based on Contract 1286, adjusted to the survey datum for this project. Contractor to verify profile and elevations to ensure a smooth roadway profile between new bridge deck and existing roadway. Any discrepancies shall be brought to the attention of the Engineer prior to construction.
- All dimensions are measured at 60 °F unless noted otherwise.
- Verification of Existing Conditions: Before ordering materials or commencing work on any item which may be affected by the dimensions or elevations of the existing structure, the Contractor shall field verify those dimensions and elevations and shall notify the Engineer of any field measured dimensions or elevations which deviate substantially from these plans prior to commencing the work. No direct payment will be made for field measurements.
- All exposed concrete surfaces of new and existing structures (excluding bridge deck) to receive stain or surface treatments as specified in the Landscape & Aesthetic Plans. Finishes to extend one foot minimum below surface grade.
- Install 3/4" polymer concrete overlay to bridge deck and approach slabs. Polymer concrete shall be installed from face of rail to face of rail. Refer to Section 496 of the Contract Special Provisions.
- Design of temporary shoring as needed for maintaining the UPRR Minimum Construction Clearance Envelope shall satisfy UPRR-BNSF Guidelines for Temporary Shoring.
- Stay-in-place deck forms to be used at locations of closure pours.
- Deck Drainage shall be collected at roadway level, directed to a storm drain system and discharged away from UPRR Right-of-Way.



ORIGINAL CONTRACT: 2243  
MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**GENERAL NOTES  
AND QUANTITIES**

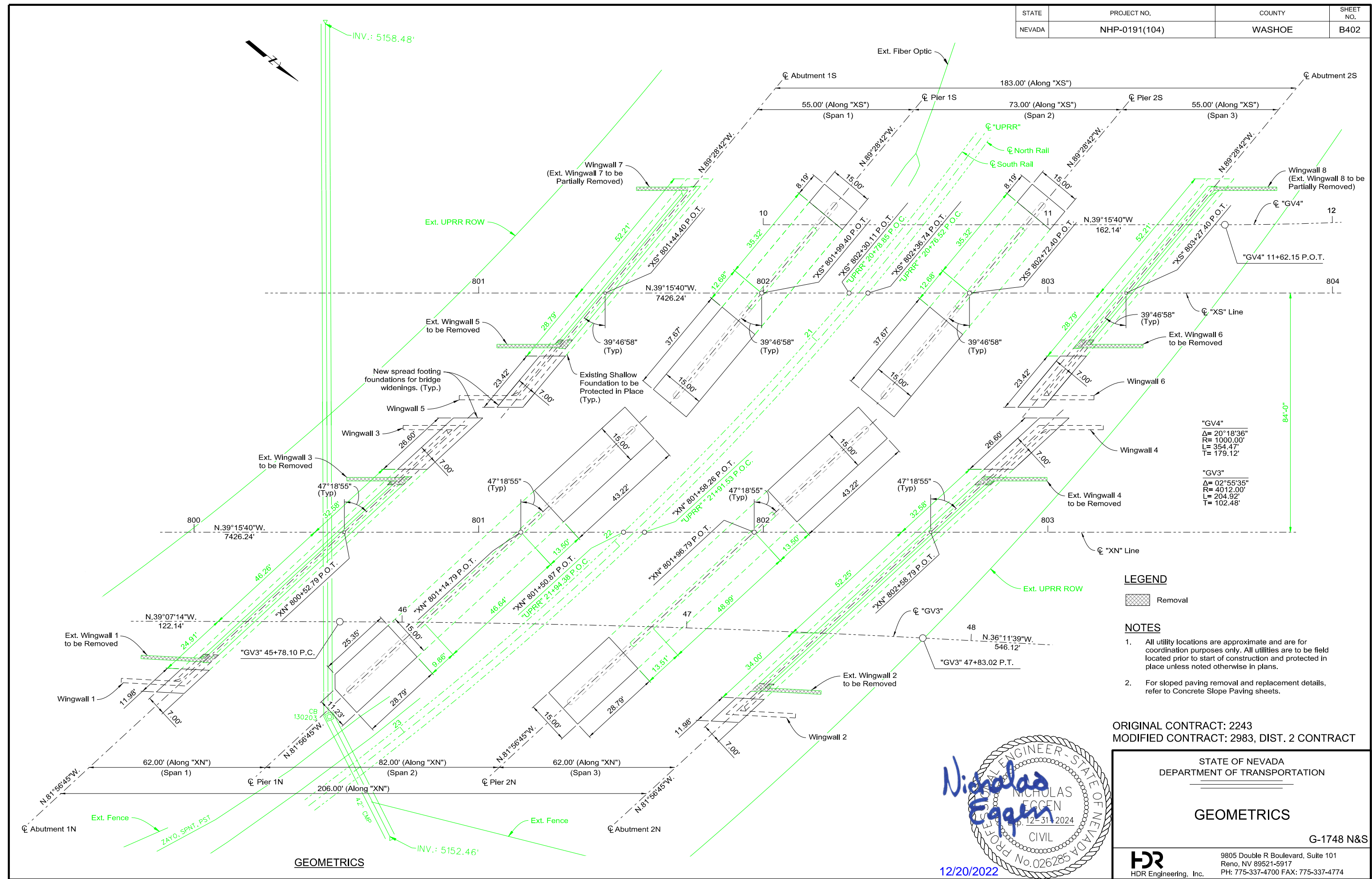
G-1748 N&S

**HDR**  
HDR Engineering, Inc.

8905 Double R Boulevard, Suite 101  
Reno, NV 89521-5917  
PH: 775-337-4700 FAX: 775-337-4774

12/20/2022

STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B402



"GV4"	$\Delta = 20^{\circ}18'36"$ $R = 1000.00'$ $L = 354.47'$ $T = 179.12'$
"GV3"	$\Delta = 02^{\circ}55'35"$ $R = 4012.00'$ $L = 204.92'$ $T = 102.48'$

**LEGEND**

Removal

**NOTES**

- All utility locations are approximate and are for coordination purposes only. All utilities are to be field located prior to start of construction and protected in place unless noted otherwise in plans.
- For sloped paving removal and replacement details, refer to Concrete Slope Paving sheets.

ORIGINAL CONTRACT: 2243  
MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT



STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**GEOMETRICS**

G-1748 N&S

**HDR**  
HDR Engineering, Inc.

9805 Double R Boulevard, Suite 101  
Reno, NV 89521-5917  
PH: 775-337-4700 FAX: 775-337-4774

GEOMETRICS

12/20/2022



STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B403

**CONSTRUCTION PHASING**

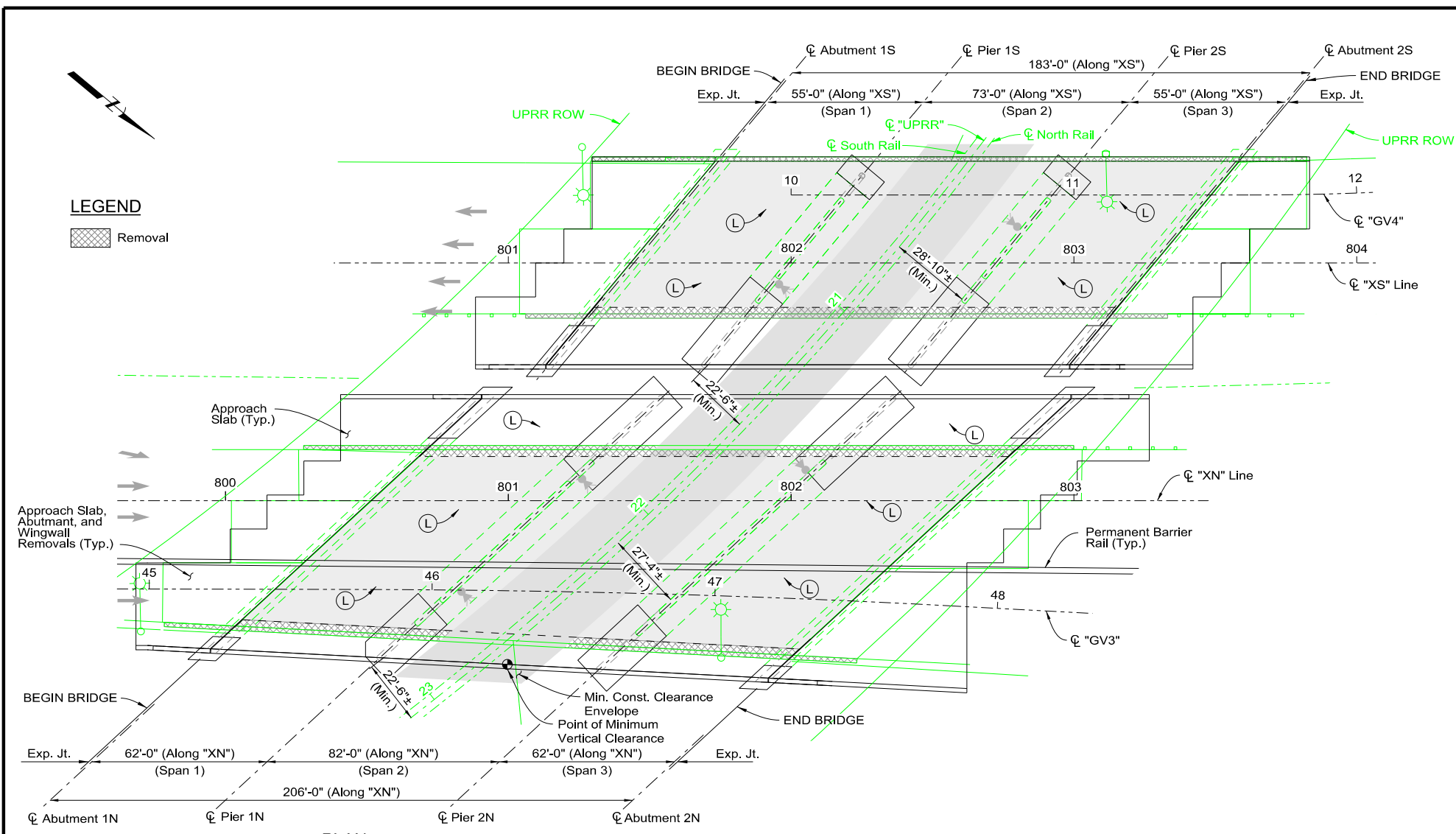
All construction to conform to the Guidelines for Railroad Grade Separation Projects, May 2016.

The following is the proposed construction sequencing for the major items of work:

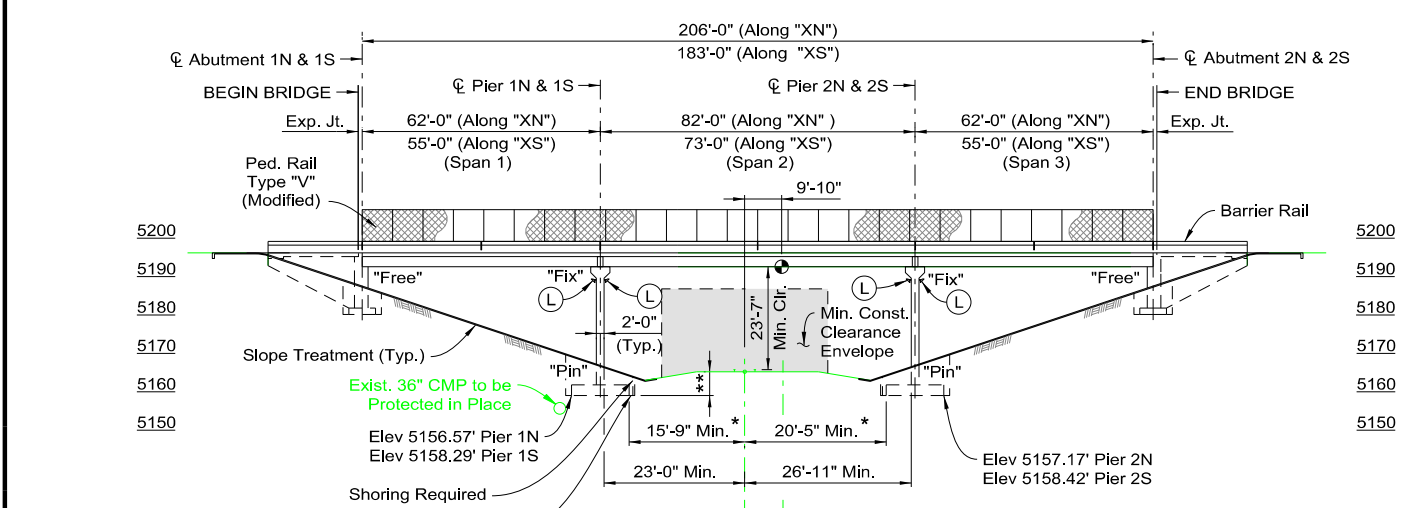
1. Install portable precast barrier rails anchored to bridge deck to separate traffic from bridge widening work on the shoulders.
2. Remove existing bridge rails and deck overhangs while protecting the railroad track below and maintaining the required minimum construction clearances.
3. Perform excavation of the abutment and pier spread footing foundations. Install excavation shoring where required to maintain minimum horizontal clearance to centerline of railroad track. Refer to the Minimum Construction Clearance Envelope.
4. Construct abutment and pier concrete spread footings. See Geometrics Foundation Plan.
5. Remove portions of the existing abutment walls, wing walls, and approach slabs as needed for extensions and connections of the new abutments and pier walls.
6. Construct new pier walls and abutments.
7. Backfill foundation excavations.
8. Construct abutment wing walls and adjacent retaining walls in the freeway median.
9. Place precast box girders on pier walls and abutments. Girder delivery and erection to be performed from the freeway above and existing bridge decks. Calculations showing sufficient capacity of existing structure shall be sealed by a Nevada registered professional engineer and provided to the engineer for approval.
10. Construct pier and abutment diaphragm connections to precast girders.
11. Construct deck slab and bridge rails.
12. Form and pour cast-in-place deck closure pours between existing bridge deck and new deck.
13. Construct approach slabs at abutments and bridge rails on the approach slabs.
14. Grade abutment fill slopes and construct slope treatment with drainage ditches parallel to railroad track.
15. Paint bridge concrete surfaces as required per aesthetic requirements while protecting the railroad track below.
16. Remove temporary precast bridge rails, perform bridge deck profile grinding, install polymer concrete overlay, construct permanent barrier rail, and open bridge lanes to traffic.

**CONSTRUCTION NOTES**

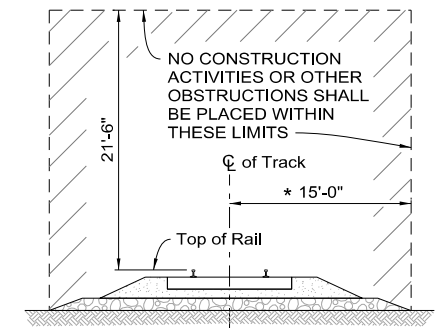
1. Any shoring system that impacts the Railroad operations and/or supports Railroad embankment shall be designed and constructed per the Railroad temporary shoring requirements.
2. All demolition within the Railroad right-of-way and/or demolition that may impact the Railroad tracks or operations shall comply with the Railroad demolition requirements.
3. Erection over the Railroad right-of-way shall be designed to cause no interruption to all Railroad operations.
4. The elevation of the existing top-of-rail shall be verified before beginning construction. All discrepancies shall be brought to the attention of the Railroad and the Engineer prior to construction.
5. The proposed grade separation shall not increase the quantity and/or characteristics of the flow in the Railroad ditches and/or drainage structures.
6. The Contractor must submit a proposed method of erosion and sediment control and have the method approved by the Railroad prior to beginning any grading on the project site.
7. For Railroad coordination please refer to the Railroad's Coordination Requirements as part of the Specifications or Special Provisions of the project.
8. Temporary Construction Clearances, including falsework clearances, shall comply with the Minimum Construction Clearance Envelope.
9. All permanent clearances shall be verified before project closeout.
10. Railroad requirements do not allow work within 50 feet of track centerline when a train passes the work site and all personnel must clear the area within 25 feet of the track centerline and secure all equipment.
11. For location of Points of Critical Clearance relative to the track centerline, see Developed Elevation on Sheet B400.
12. For Typical Section, see Sheet B401.
13. For Railroad Profile Grade Diagrams, see Sheet B404.



**PLAN**



**DEVELOPED ELEVATION**



**MIN. CONST. CLR. ENVELOPE (NORMAL TO RAILROAD)**

\* 15'-7" Temporary Horizontal Clearance is Required for the Northbound and Southbound Structures. Horizontal clearance is increased by 7" to account for railroad curvature.

\*\* Approximate depth of pier footings below bottom of rail ties:  
Pier 1N = 7.65', Pier 1S = 6.33',  
Pier 2N = 7.05', Pier 2S = 6.20'

ORIGINAL CONTRACT: 2243  
MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT

UPRR MILEPOST :	10.16
UPRR SUBDIVISION:	RENO IND. LD.
PROJECT CITY:	RENO
REVISION DATE:	OCTOBER 28, 2021
LAT. / LONG. :	39°35'47.01" N/ 119°50'0.75" W

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION  
**RAILROAD COORDINATION PLAN**  
G-1748 N&S



12/20/2022

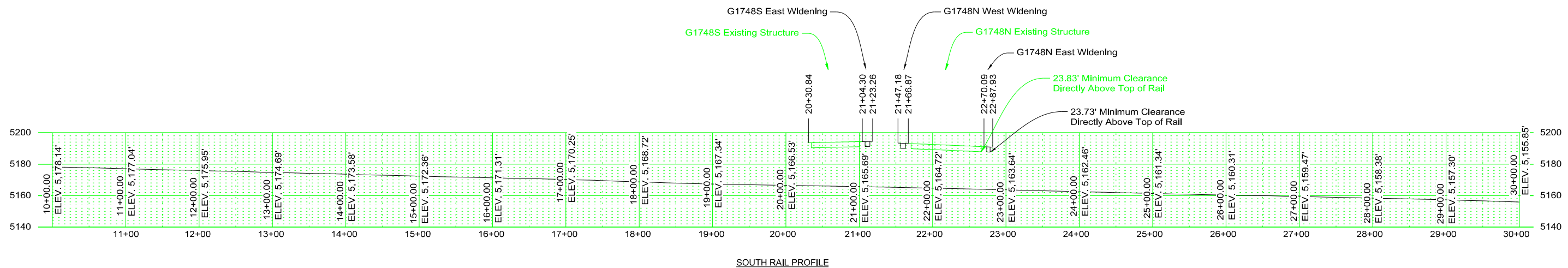
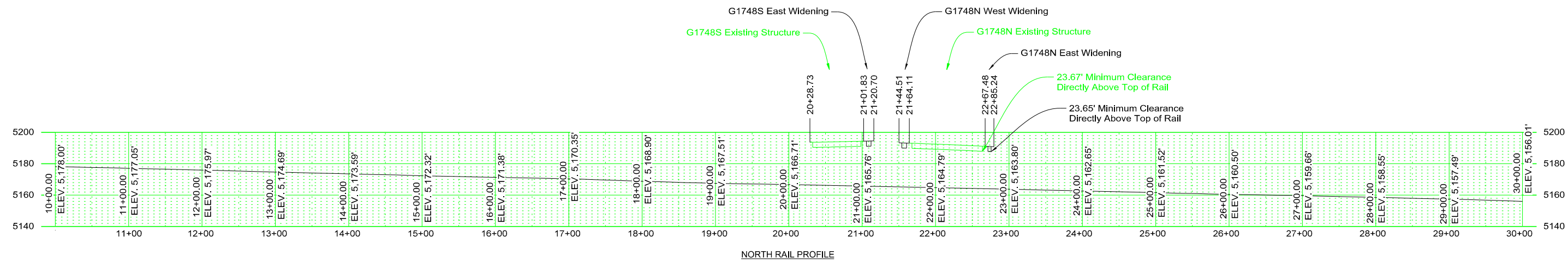
HDR Engineering, Inc. 9805 Double R Boulevard, Suite 101  
Reno, NV 89521-5917  
PH: 775-337-4700 FAX: 775-337-4774

**LEGEND**

Removal

Approach Slab, Abutment, and Wingwall Removals (Typ.)

(L) - Denotes under deck lighting (Refer to Lighting Plans)



UPRR TRACK PROFILES			
NORTH RAIL		SOUTH RAIL	
STATION	ELEVATION	STATION	ELEVATION
10+00.00	5178.00	10+00.00	5178.14
11+00.00	5177.05	11+00.00	5177.04
12+00.00	5175.97	12+00.00	5175.95
13+00.00	5174.69	13+00.00	5174.69
14+00.00	5173.59	14+00.00	5173.58
15+00.00	5172.32	15+00.00	5172.36
16+00.00	5171.83	16+00.00	5171.31
17+00.00	5170.35	17+00.00	5170.25
18+00.00	5168.90	18+00.00	5168.72
19+00.00	5167.51	19+00.00	5167.34
20+00.00	5166.71	20+00.00	5166.53
21+00.00	5165.76	21+00.00	5165.69
22+00.00	5164.79	22+00.00	5164.72
23+00.00	5163.80	23+00.00	5163.64
24+00.00	5162.65	24+00.00	5162.46
25+00.00	5161.52	25+00.00	5161.34
26+00.00	5160.50	26+00.00	5160.31
27+00.00	5159.66	27+00.00	5159.47
28+00.00	5158.55	28+00.00	5158.38
29+00.00	5157.49	29+00.00	5157.30
30+00.00	5156.01	30+00.00	5155.85

- PROFILE NOTES**
- Top of Rail Field Surveys by Nevada Department of Transportation, Location Division, July 2019.
  - Track centerlines generated from aerially mapped track planimetrics. Stationing assumed.
  - Reported rail elevations interpolated from Lidar and mapping data points, reported at 100-ft station intervals.



ORIGINAL CONTRACT: 2243  
 MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT

STATE OF NEVADA  
 DEPARTMENT OF TRANSPORTATION

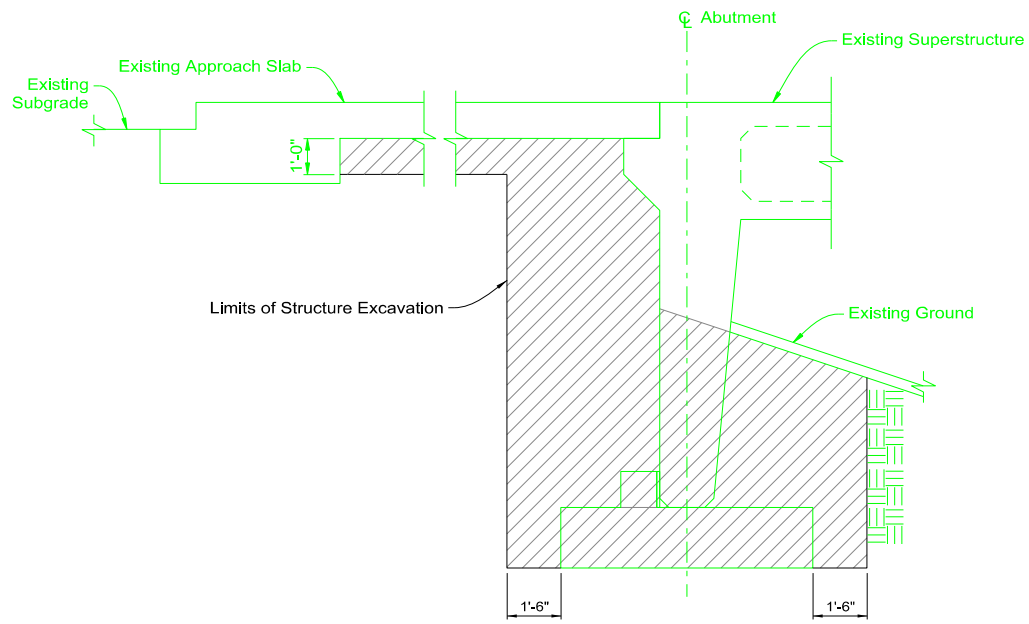
**RAILROAD TRACK PROFILES**

G-1748 N&S

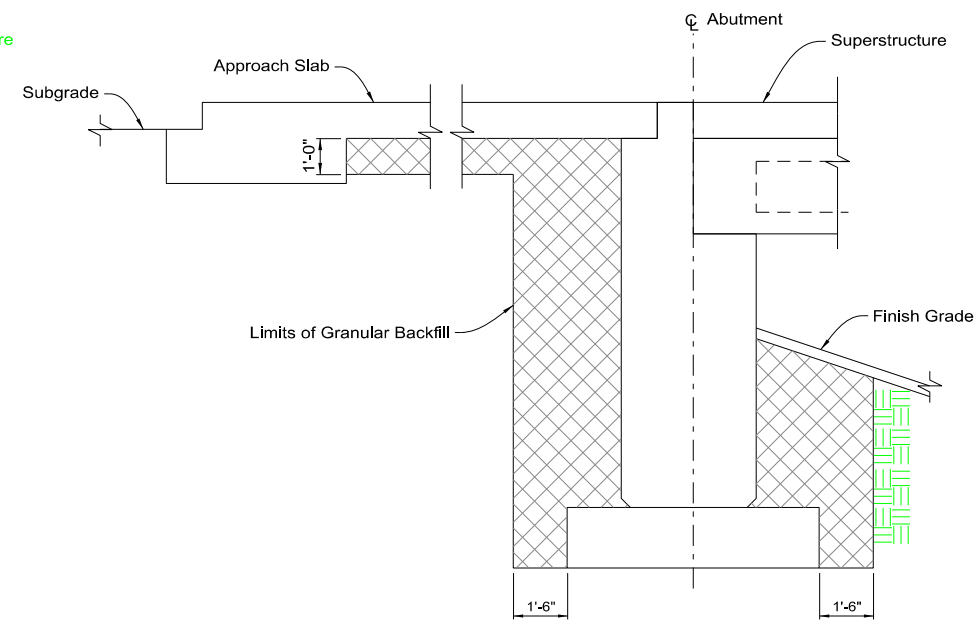
**HDR**  
 HDR Engineering, Inc.

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STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B405



**ABUTMENT EXCAVATION SCHEMATIC**



**ABUTMENT BACKFILL SCHEMATIC**

**LEGEND**

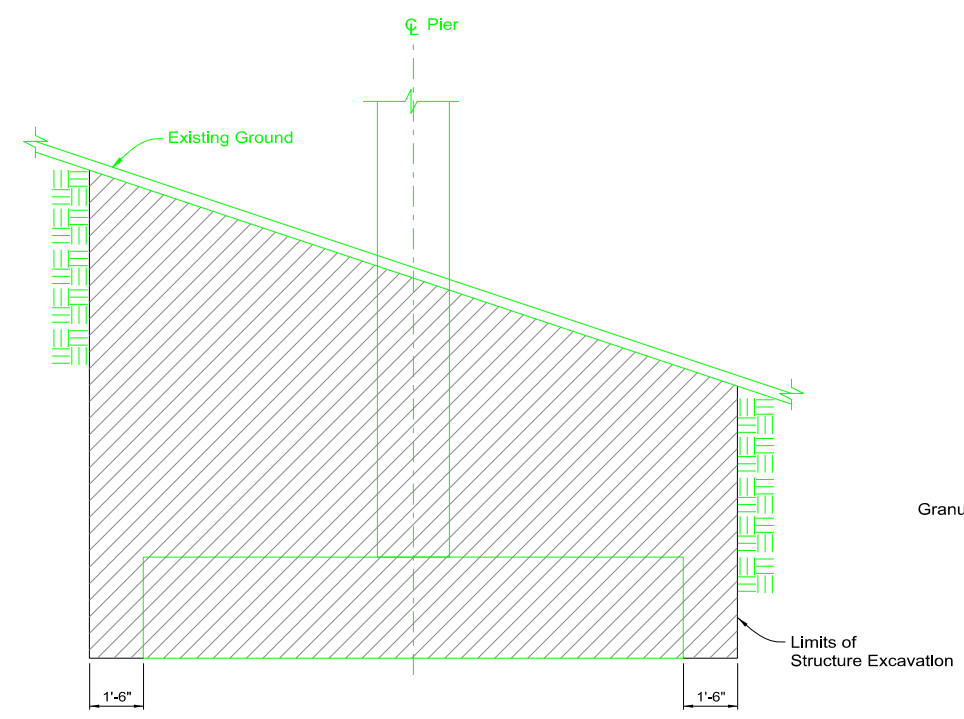
- Structure Excavation
- Granular Backfill

**NOTES**

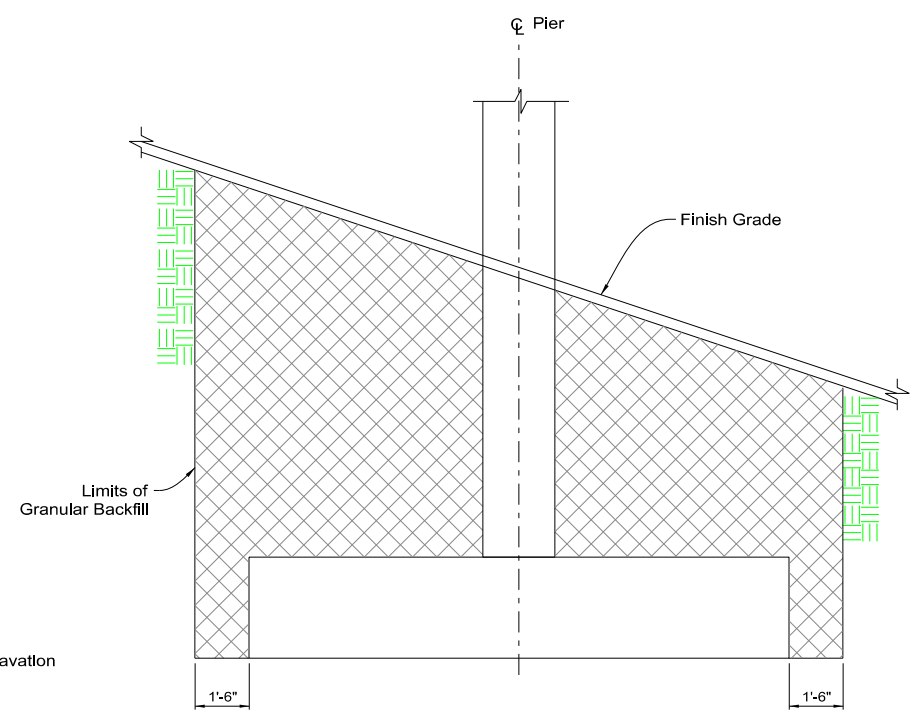
1. Any shoring system that impacts the Railroad operations and/or supports Railroad embankments shall be designed and constructed per the Railroad temporary shoring requirements.
2. Trenches more than 4' deep shall be shored, laid back to at least the angle of repose for existing field conditions, or some other means of protection shall be provided.
3. If hazardous field conditions indicate ground movement may be expected, trenches less than 4' deep shall also be protected as indicated in Note 2.
4. For the purpose of payment, structure excavation and backfill quantities are based on these drawings and no additional payment will be made for shoring.
5. Trench excavation shoring shall conform to OSHA Regulations 29 CFR Part 1926, Subpart P.
6. The quantity of structure excavation and backfill measured for payment shall be the number of cubic yards calculated minus any duplication of limits which overlap.
7. The limits of structure excavation and backfill shown herein shall be used for the method of measurement and payment only. There shall be no additional compensation for any additional excavation or backfill required for excavations to meet OSHA regulations.

**EARTHWORK SUMMARY**

Quantity (Cu. Yd.)	Abutment 1	Pier 1	Pier 2	Abutment 2	Total
NB West Structure Excavation	109	274	274	109	766
NB East Structure Excavation	44	188	188	44	465
NB West Granular Backfill	63	192	192	63	510
NB East Granular Backfill	25	132	132	25	314
SB West Structure Excavation	0	60	91	0	151
SB East Structure Excavation	89	250	250	89	677
SB West Granular Backfill	0	42	64	0	105
SB East Granular Backfill	51	174	174	51	449
NB Approach Slabs Structure Excavation	105	0	0	148	239
NB Approach Slabs Granular Backfill	105	0	0	148	239
SB Approach Slabs Structure Excavation	73	0	0	73	145
SB Approach Slabs Granular Backfill	73	0	0	73	145



**PIER EXCAVATION SCHEMATIC**



**PIER BACKFILL SCHEMATIC**

ORIGINAL CONTRACT: 2243  
MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT



12/20/2022

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

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**EXCAVATION AND BACKFILL**

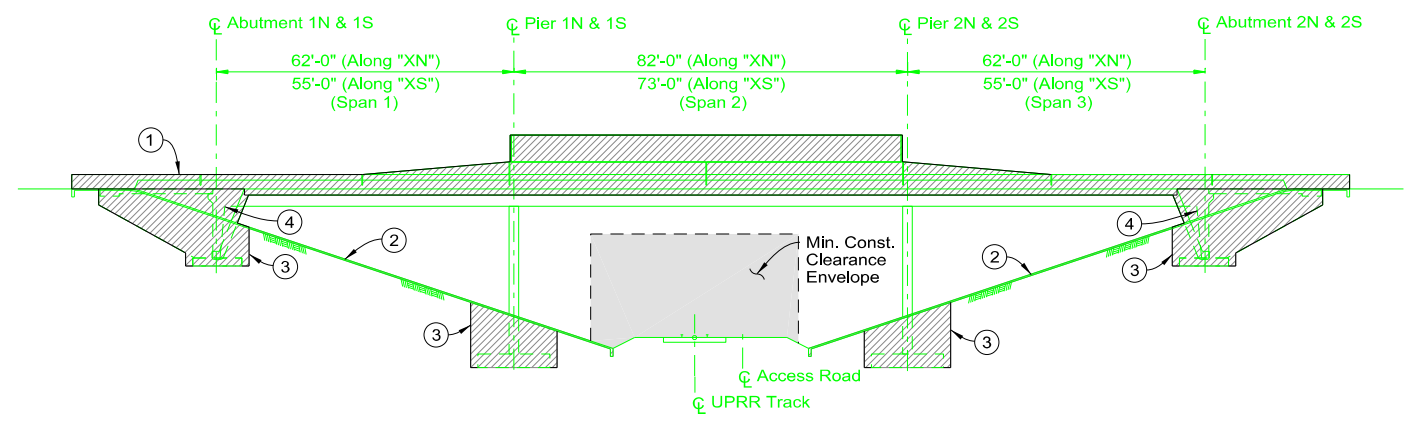
G-1748 N&S

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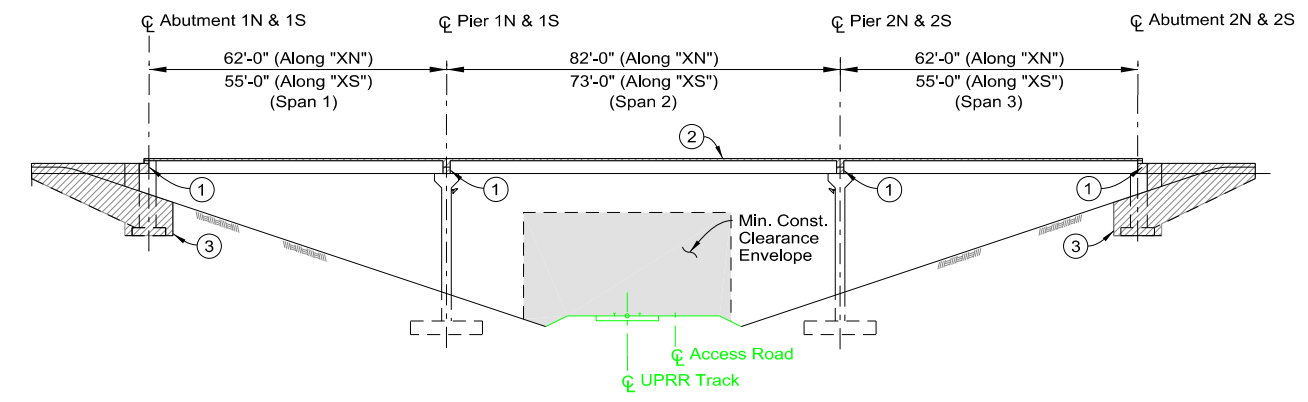


STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B406



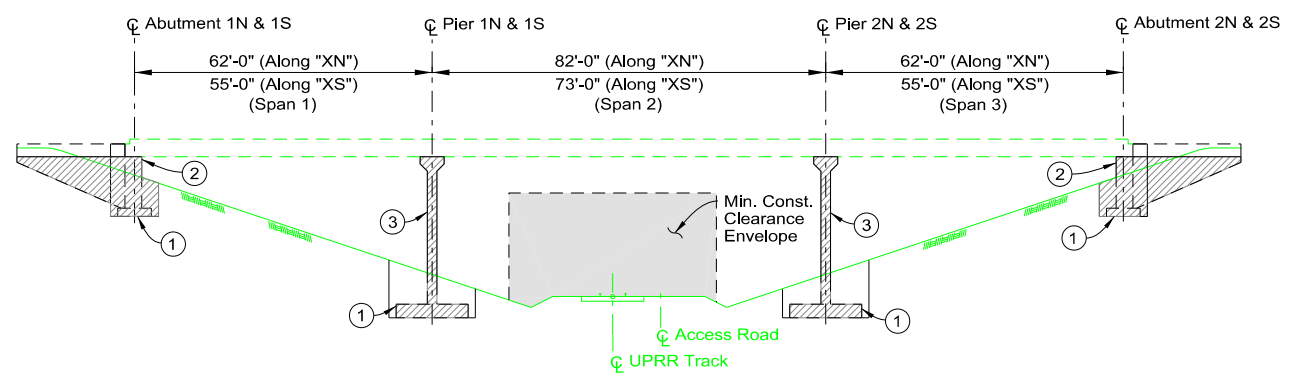
### STAGE 1

- ① Remove pedestrian fence, barrier rail, overhang for applicable widening's from the existing structure. See Removal Details sheets for limits of removal.
- ② Remove all slope paving.
- ③ Excavate abutment and pier soil to facilitate construction of spread footing foundation. See Removal Details sheets for limits of removal. Utilize temporary shoring as needed to maintain UPRR Minimum Construction Clearance Envelope, and as approved by UPRR. For shoring requirements refer to "UPRR and BNSF Guidelines for Temporary Shoring."
- ④ Remove wingwall and portions of approach slab and abutment wall. See Sheet B410 for limits of removal.



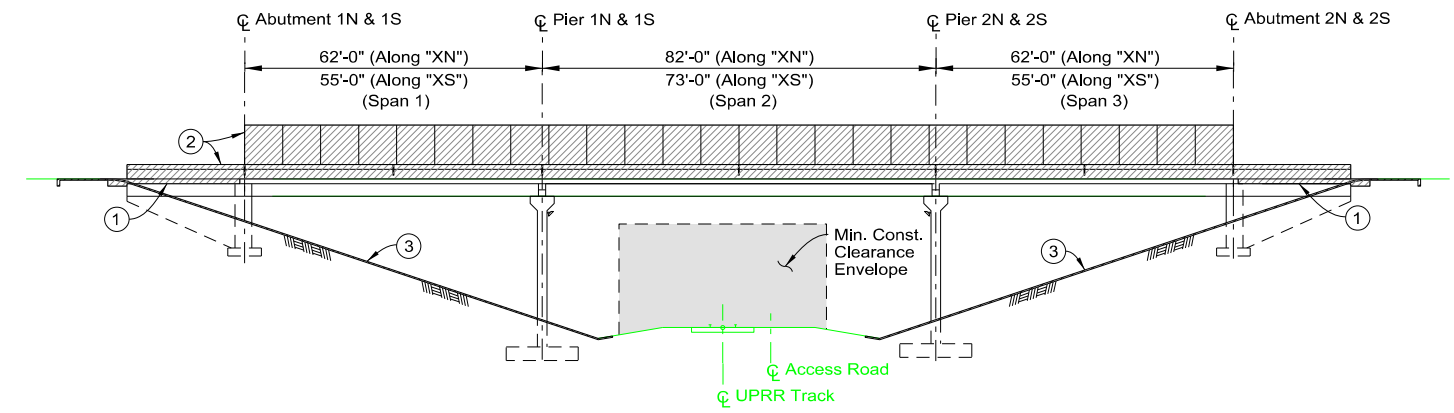
### STAGE 4

- ① Construct abutment and pier diaphragms, and remaining portion of wingwalls.
- ② Construct CIP deck.
- ③ Backfill abutment excavations.



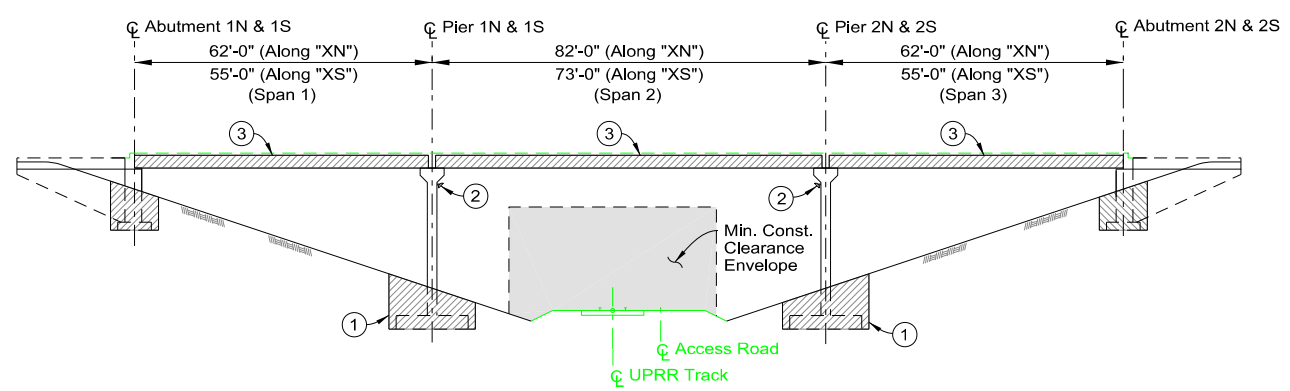
### STAGE 2

- ① Construct spread footing foundation at both abutments and piers.
- ② Construct abutment wall, wingwall, and shear keys at Abutment 1 & 2.
- ③ Construct pier wall at Piers 1 & 2.
- ④ Contractor to ensure stability of walls during construction and provide a girder erection and wall stability plan for approval prior to the start of construction.



### STAGE 5

- ① Construct approach slabs at Begin Bridge and End Bridge.
- ② Construct barrier rail and install pedestrian fence.
- ③ Construct slope treatment and concrete V-ditch along pier walls.
- ④ Not shown in Construction Sequence Diagrams, construct CIP deck closure pour between existing and new decks. Install expansion joints at Begin Bridge and End Bridge.



### STAGE 3

- ① Backfill pier excavations. Remove temporary shoring as backfill is placed while maintaining the UPRR Minimum Construction Clearance Envelope.
- ② Install under deck lighting.
- ③ Erect precast girders at Spans 1, 2, & 3.

### NOTE:

1. Refer to Section 108.04, Limitations of Operations, of the Special Provisions for requirements related to maintenance of traffic.
2. All demolition within the Railroad right-of-way and/or demolition that may impact the Railroad tracks or operations shall comply with the Railroad demolition requirements. For limits of Railroad right-of-way see Railroad Coordination Plan sheet.
3. Any shoring system that may impact the Railroad operations and/or supports Railroad embankments shall be designed and constructed per "UPRR and BNSF Guidelines for Temporary Shoring."

### LEGEND:

Work to be performed





12/20/2022

ORIGINAL CONTRACT: 2243  
MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT

STATE OF NEVADA DEPARTMENT OF TRANSPORTATION	
<b>BRIDGE CONSTRUCTION SEQUENCE</b>	
G-1748 N&S	
	9805 Double R Boulevard, Suite 101 Reno, NV 89521-5917 PH: 775-337-4700 FAX: 775-337-4774

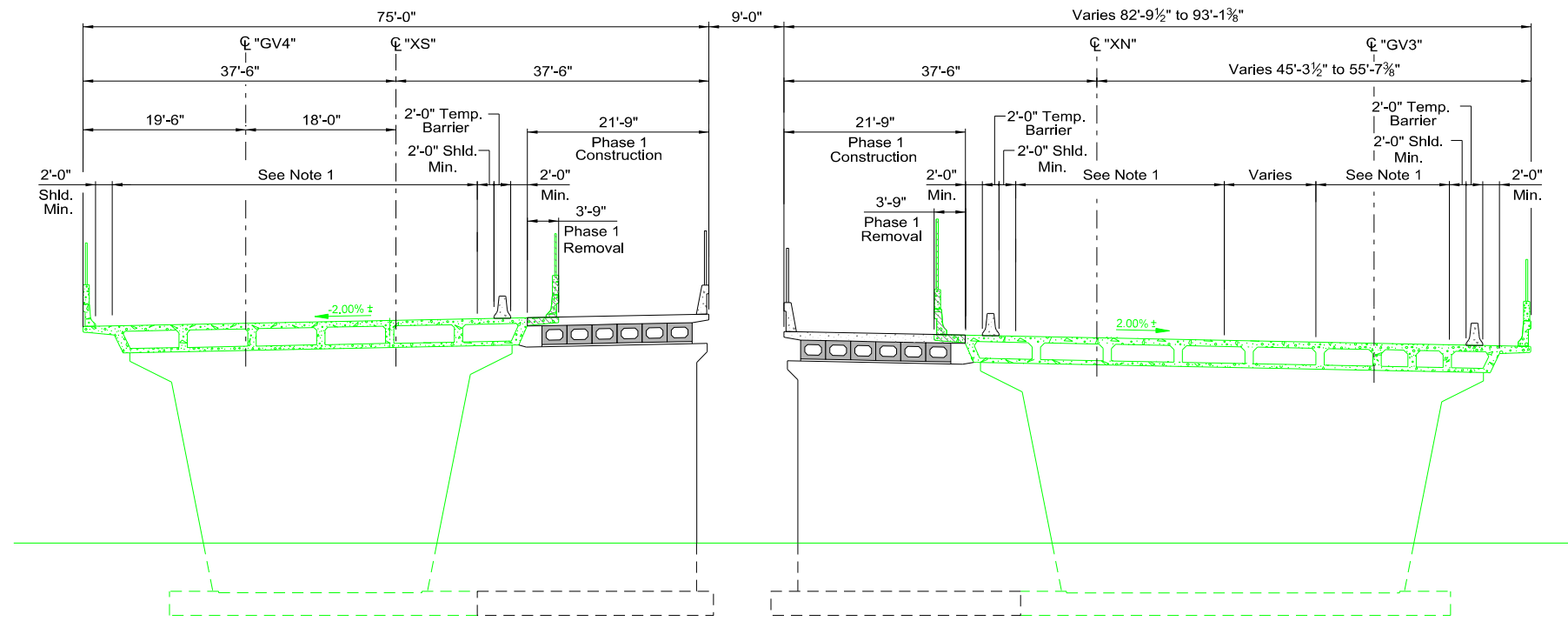
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B407

**LEGEND:**

-  Phase 1 - Limits of Removal
-  Phase 2 - Limits of Removal

**NOTES:**

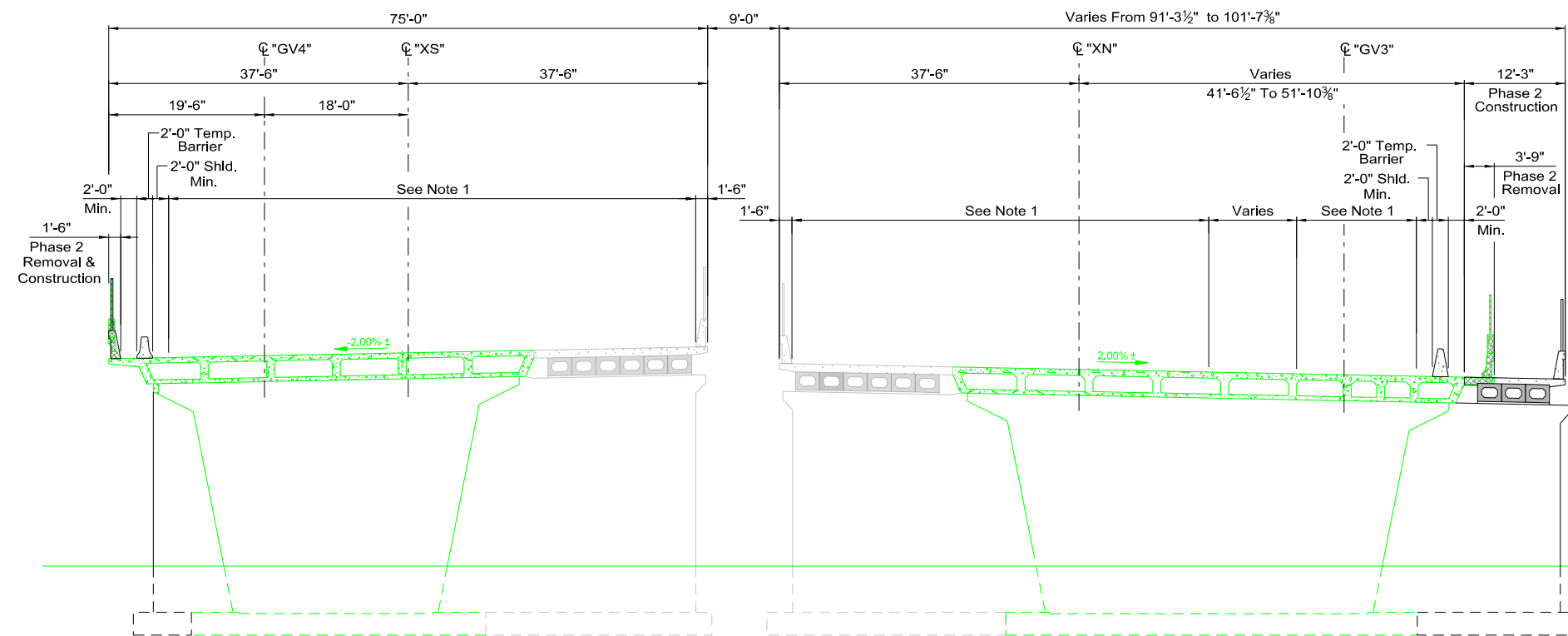
1. Phasing shown is conceptual. Refer to Traffic Control plans and Contract Special Provisions for limitations and phasing requirements.



**"XS" SECTION**

**"XN" SECTION**

**SECTION - PHASE 1**  
LOOKING AHEAD ON LINE



**"XS" SECTION**

**"XN" SECTION**

**SECTION - PHASE 2**  
LOOKING AHEAD ON LINE



12/20/2022

ORIGINAL CONTRACT: 2243  
MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION


**BRIDGE CONSTRUCTION  
PHASE 1 & 2**

G-1748 N&S

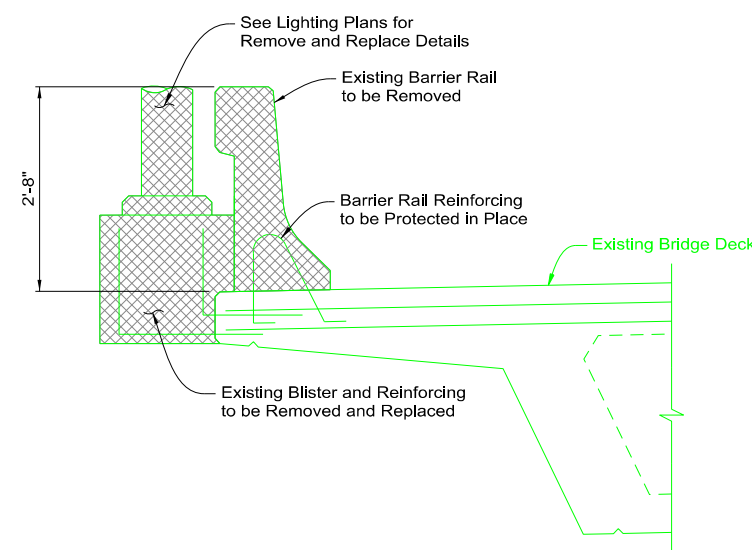
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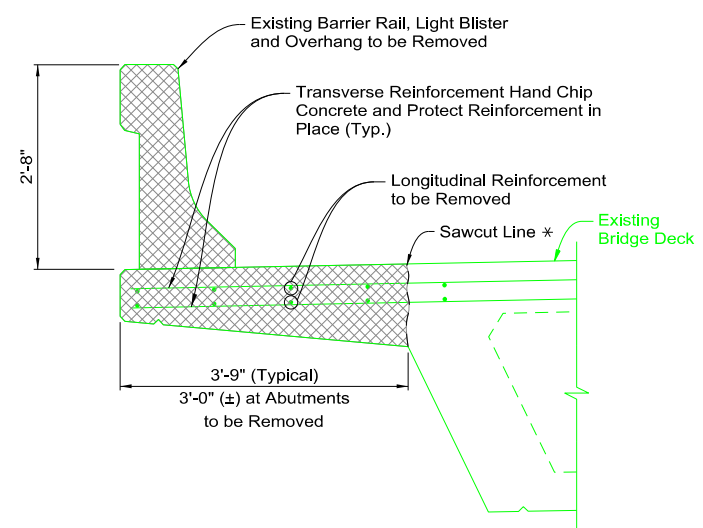
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B408

**LEGEND:**  
 Limits of Removal

- NOTES:**
- All demolition within the Railroad right-of-way and/or demolition that may impact the Railroad tracks or operations shall comply with the Railroad demolition requirements.
  - Protect reinforcing steel that is to remain during concrete removal. Sand blast clean all existing reinforcing steel exposed after concrete removal operations. Notify Engineer if reinforcing to remain is damaged during removal.
  - Dimensions of existing elements shown are based on As-Built plans unless otherwise noted. Actual field dimension may vary, no additional compensation will be made for removal of elements with dimensions inconsistent with those shown herein.
  - For additional details, see Contract 2243 As-Built Sheets "Barrier Rail and Splashwall Sections & Details".

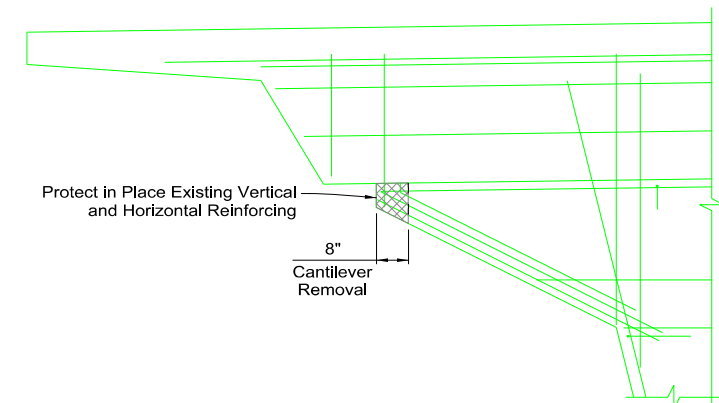


**SECTION B-B**  
TYPICAL UNWIDENED SIDE  
G1748S BARRIER RAIL ON OVERHANG REMOVAL

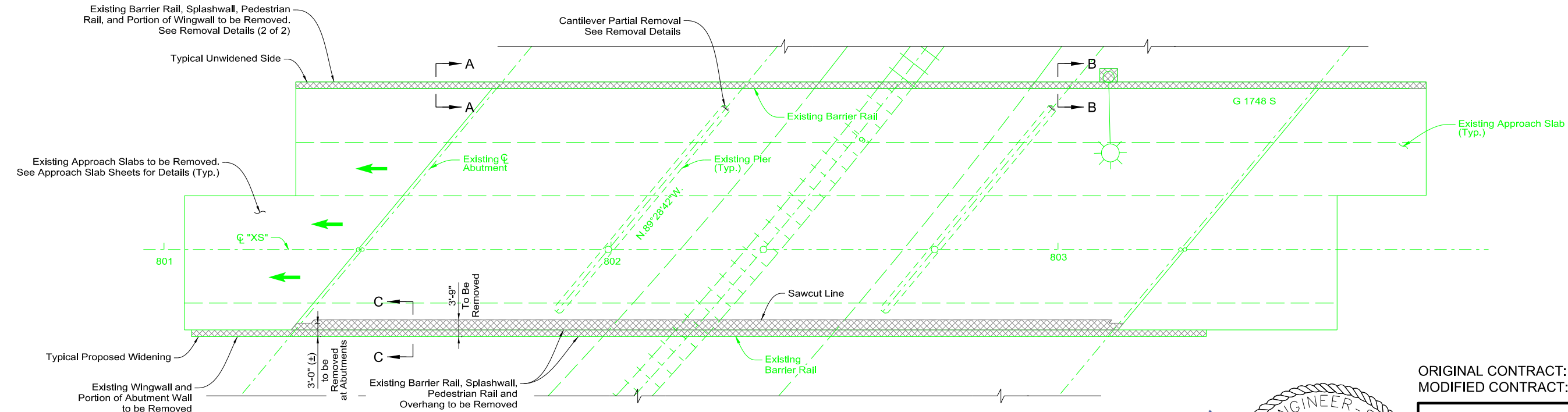


**SECTION C-C**  
TYPICAL PROPOSED WIDENINGS  
G1748 N&S EXISTING BARRIER RAIL  
AND OVERHANG REMOVAL

\* - Saw cut top and bottom to 1" max. depth. Existing reinforcing to remain in place and undamaged.



**CANTILEVER PARTIAL REMOVAL**  
LOOKING AHEAD ON LINE,  
G1748S ONLY



**DECK REMOVAL PLAN**  
G1748S STRUCTURE SHOWN, G1748N EAST AND G1748N WEST SIMILAR  
TYPICAL UNWIDENED SIDE - SECTION A-A & B-B  
TYPICAL PROPOSED WIDENINGS - SECTION C-C



ORIGINAL CONTRACT: 2243  
MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**REMOVAL DETAILS**  
(1 OF 2)

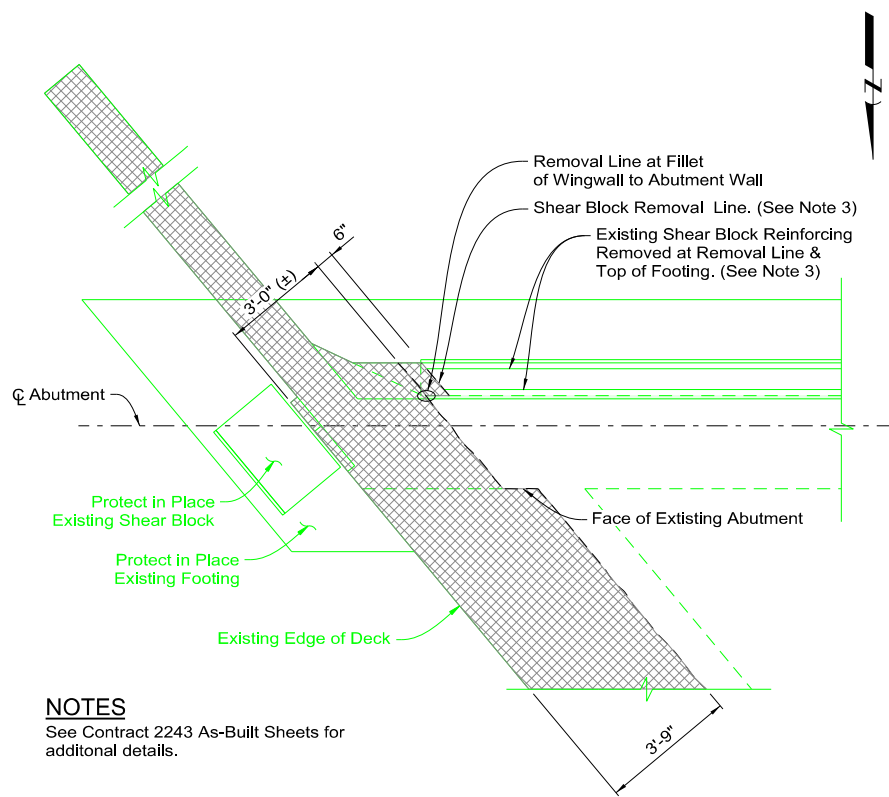
G-1748 N&S

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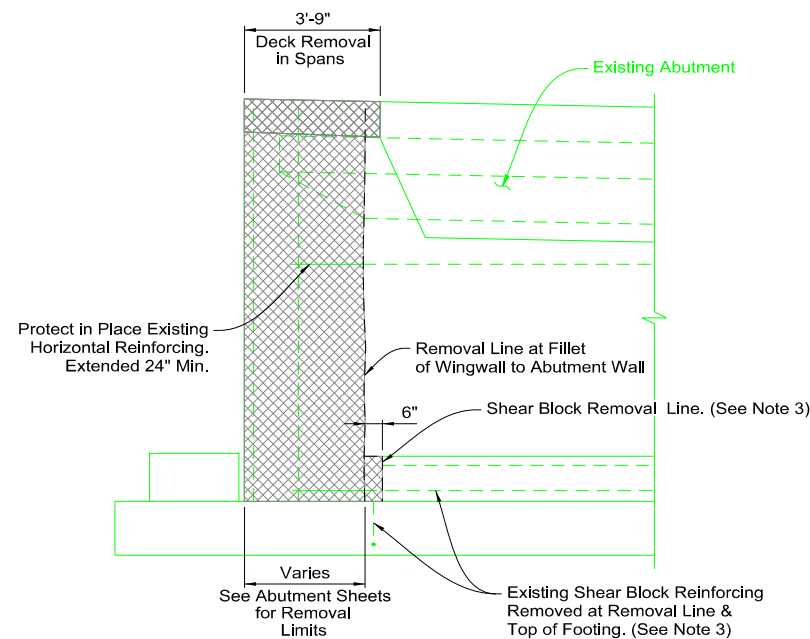


STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B409

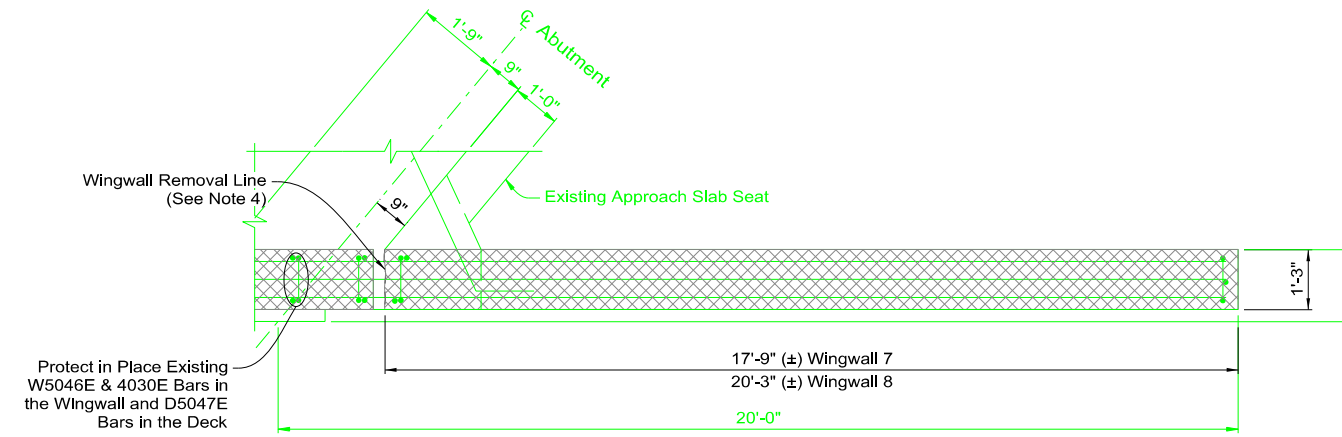


**NOTES**  
See Contract 2243 As-Built Sheets for additional details.

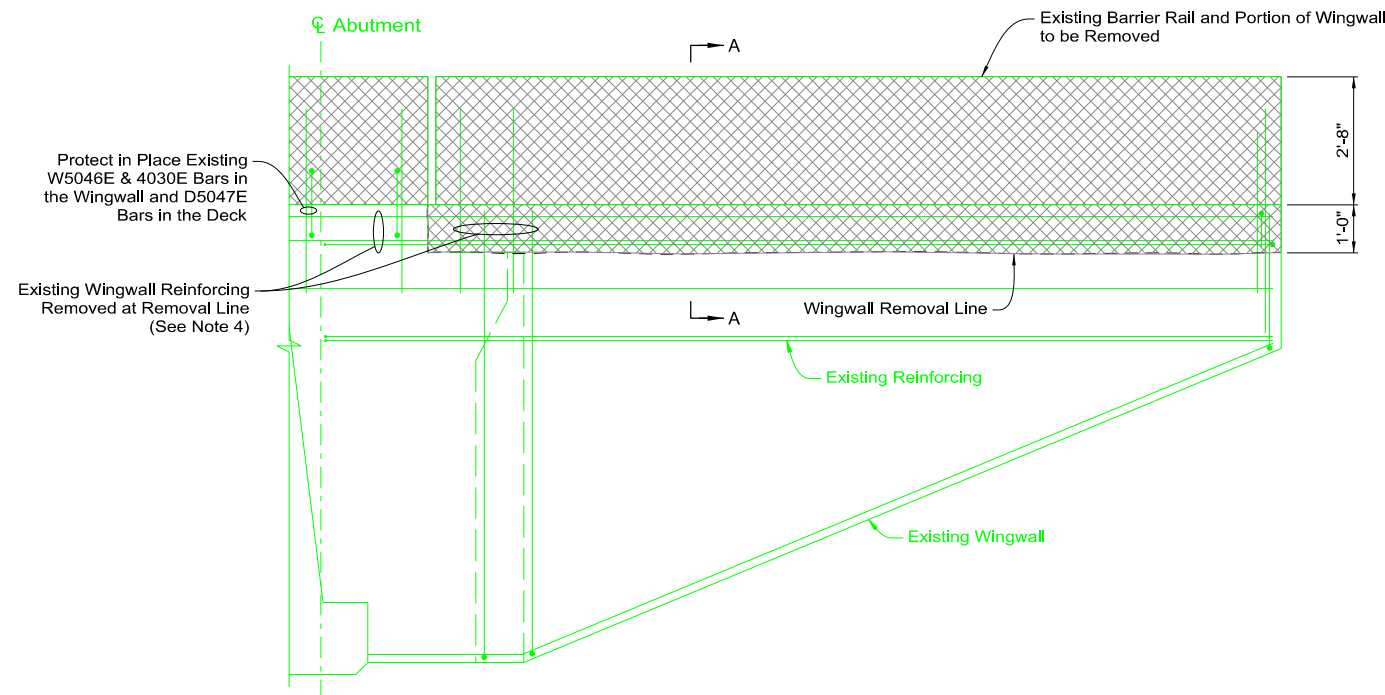
**ABUTMENT PARTIAL REMOVAL PLAN**  
EXISTING ABUTMENT 1S SHOWN, TYPICAL WIDENED SIDE  
OTHER WIDENED ABUTMENTS SIMILAR



**ABUTMENT PARTIAL REMOVAL ELEVATION**  
LOOKING BACK ONLINE NORMAL TO ALIGNMENT  
EXISTING ABUTMENT 1S SHOWN, TYPICAL WIDENED SIDE  
OTHER WIDENED ABUTMENTS SIMILAR



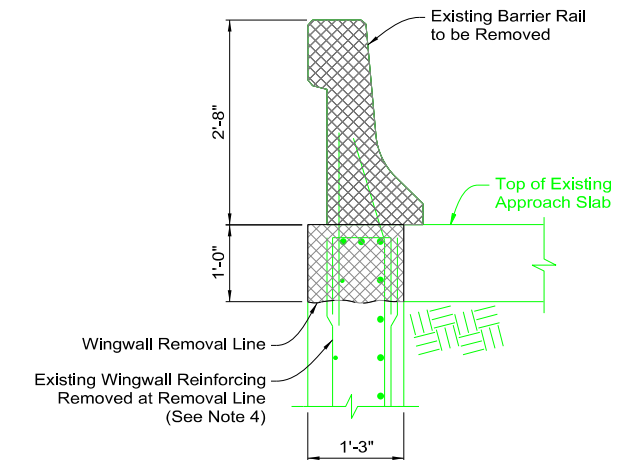
**WINGWALL PARTIAL REMOVAL PLAN**  
TYPICAL UNWIDENED SIDE  
EXISTING ABUTMENT 1S (WINGWALL 7) SHOWN,  
ABUTMENT 2S (WINGWALL 8) SIMILAR



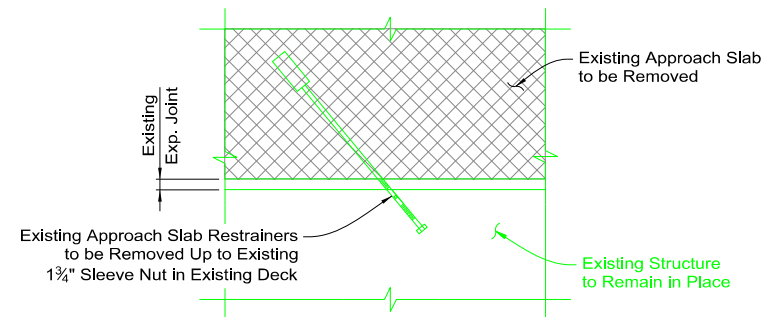
**WINGWALL PARTIAL REMOVAL ELEVATION**  
TYPICAL UNWIDENED SIDE  
EXISTING ABUTMENT 1S SHOWN, ABUTMENT 2S SIMILAR

**LEGEND:**  
Limits of Removal

- NOTES:**
- All demolition within the Railroad right-of-way and/or demolition that may impact the Railroad tracks or operations shall comply within the Railroad demolition requirements.
  - Protect reinforcing steel that is to remain during concrete removal. Sand blast clean all existing reinforcing steel exposed after concrete removal operations. Notify Engineer if reinforcing to remain is damaged during removal.
  - Partial removal of existing longitudinal shear block. Remove existing reinforcing at removal line & top of footing and coat exposed reinforcing steel with Engineer approved corrosion protection. Place expanded polystyrene between remaining shear block and proposed abutment wall. Abutment shear block removal measured perpendicular to abutment wall removal line.
  - Partial Removal of existing wingwalls on G1748S unwidened side only. Remove existing reinforcing at removal line and coat exposed reinforcing steel with Engineer approved corrosion protection. Removal line is perpendicular to the outside face of wingwall.
  - Dimensions of existing elements shown are based on as-built plans unless otherwise noted. Actual field dimensions may vary, no additional compensation will be made for removal of elements with dimensions inconsistent with those shown herein.



**SECTION A-A**  
TYPICAL UNWIDENED SIDE  
G1748S BARRIER RAIL AND PARTIAL WINGWALL REMOVAL



**APPROACH SLAB REMOVAL PARTIAL PLAN**  
TYPICAL APPROACH SLAB REMOVAL WHERE  
EXISTING STRUCTURE IS TO REMAIN

ORIGINAL CONTRACT: 2243  
MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT



12/20/2022

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**REMOVAL DETAILS**  
(2 OF 2)

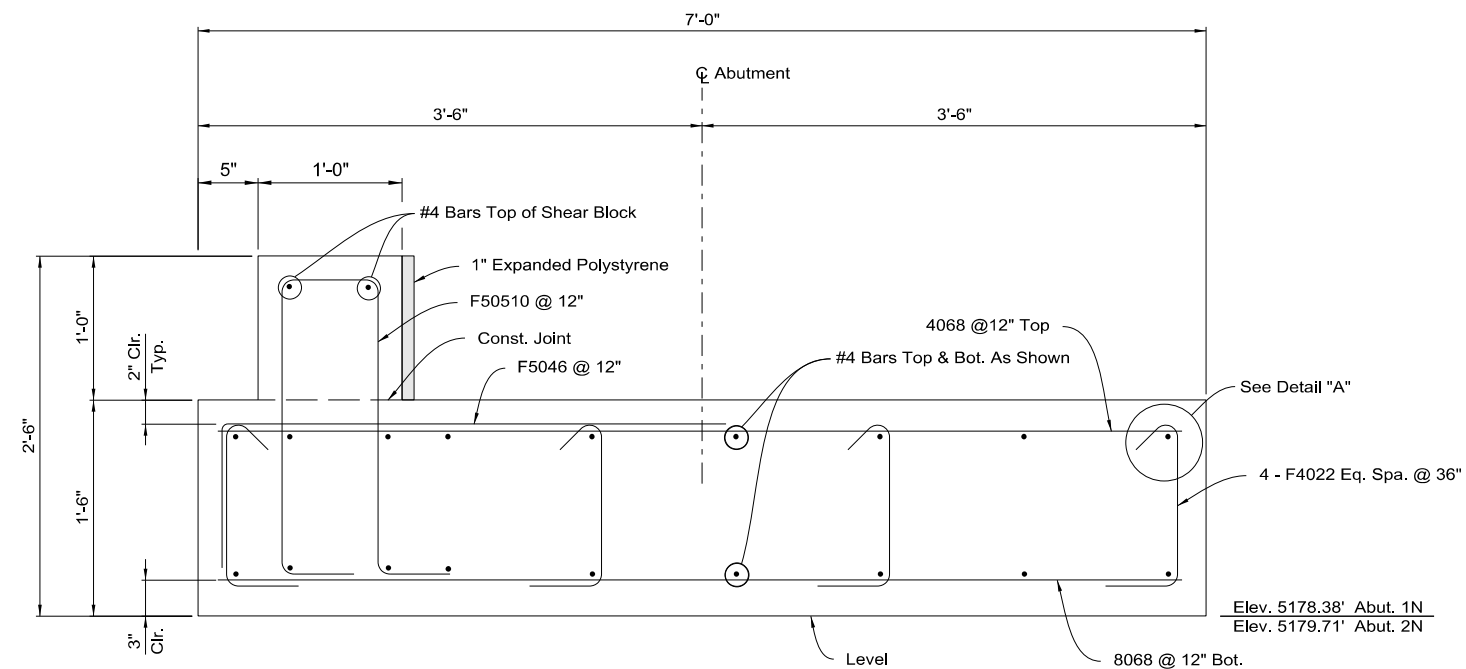
G-1748 N&S

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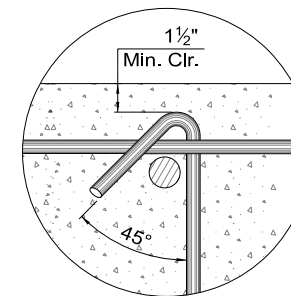
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PH: 775-337-4700 FAX: 775-337-4774



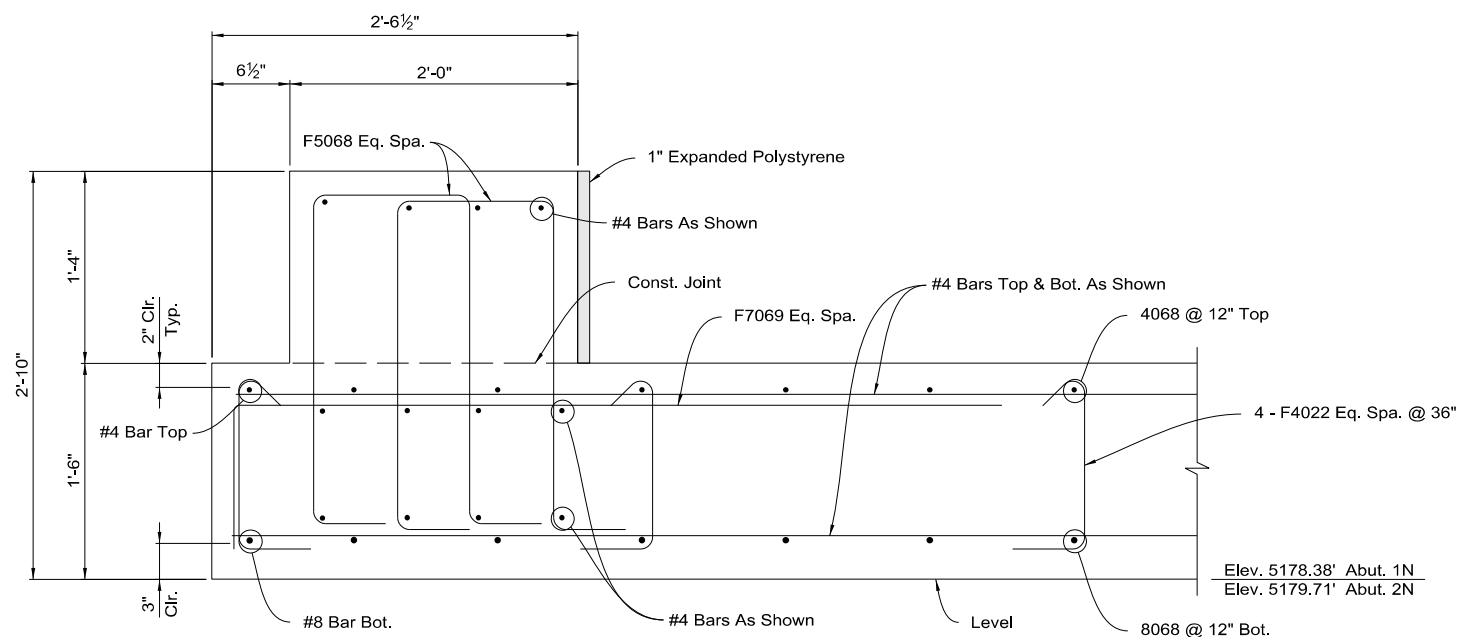
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B411



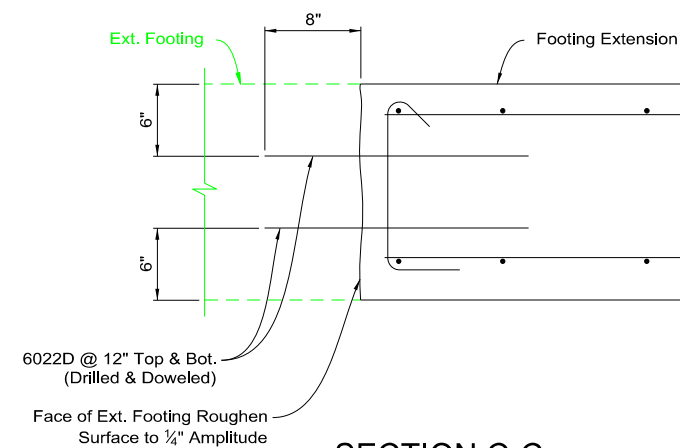
**SECTION A-A**



**DETAIL "A"**



**SECTION B-B**



**SECTION C-C**



12/20/2022

ORIGINAL CONTRACT: 2243  
 MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT

STATE OF NEVADA  
 DEPARTMENT OF TRANSPORTATION

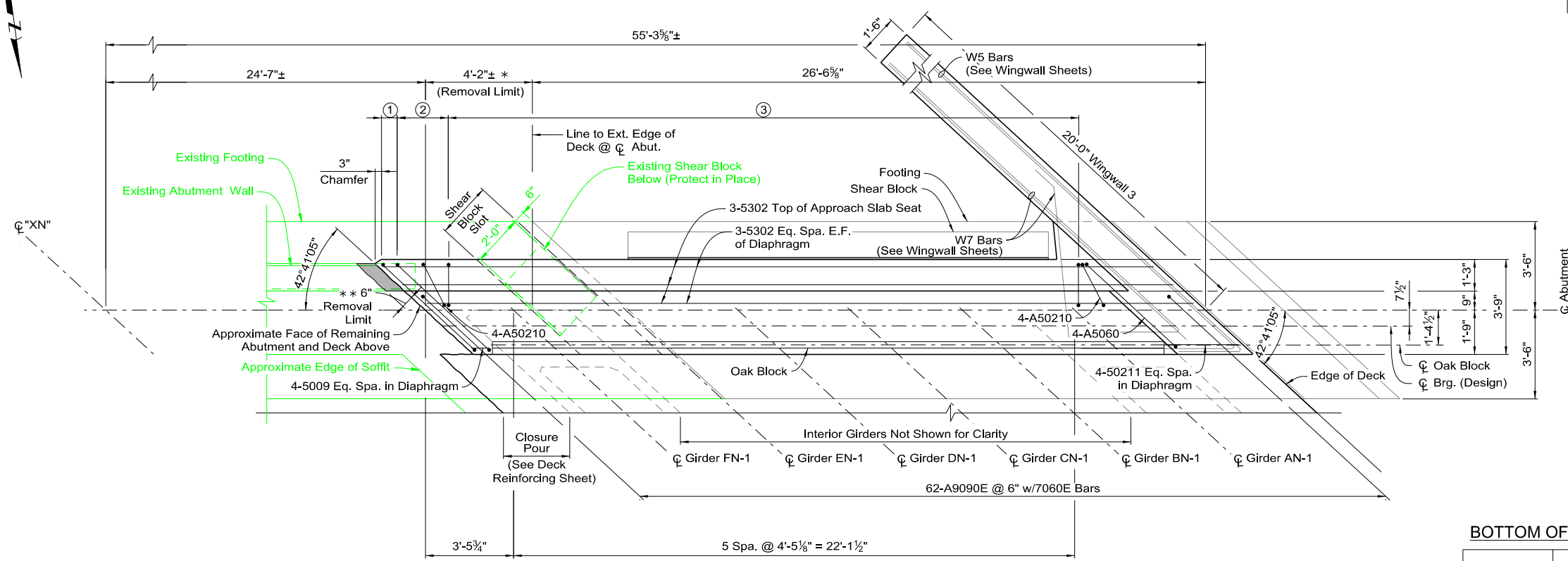
**ABUTMENT FOOTING  
 DETAILS**

G-1748 N

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STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B412



**PLAN**

**NOTES:**

1. See Abutment Details sheet for Sections D-D, E-E, F-F and details not shown.
  2. Bottom of girder elevations are taken along  $\phi$  Oak Block locations.
  3. Abutment elevations shown are taken along  $\phi$  Abutment, unless otherwise noted.
  4. See Wingwall Plan and Elevation (2 of 2) sheet for Wingwall 3 details.
- \* Removal of existing wingwall and portion of abutment wall. Protect in place existing reinforcing in abutment wall. Lap or embed into new wall. Abutment wall removal measured along abutment centerline.
- \*\* Partial removal of existing longitudinal shear block. Remove existing reinforcing at removal line & top of footing and coat exposed reinforcing steel with Engineer approved corrosion protection. Place expanded polystyrene between remaining shear block and proposed abutment wall. Abutment shear block removal measured perpendicular to abutment wall removal line.

**REINFORCING STEEL:**

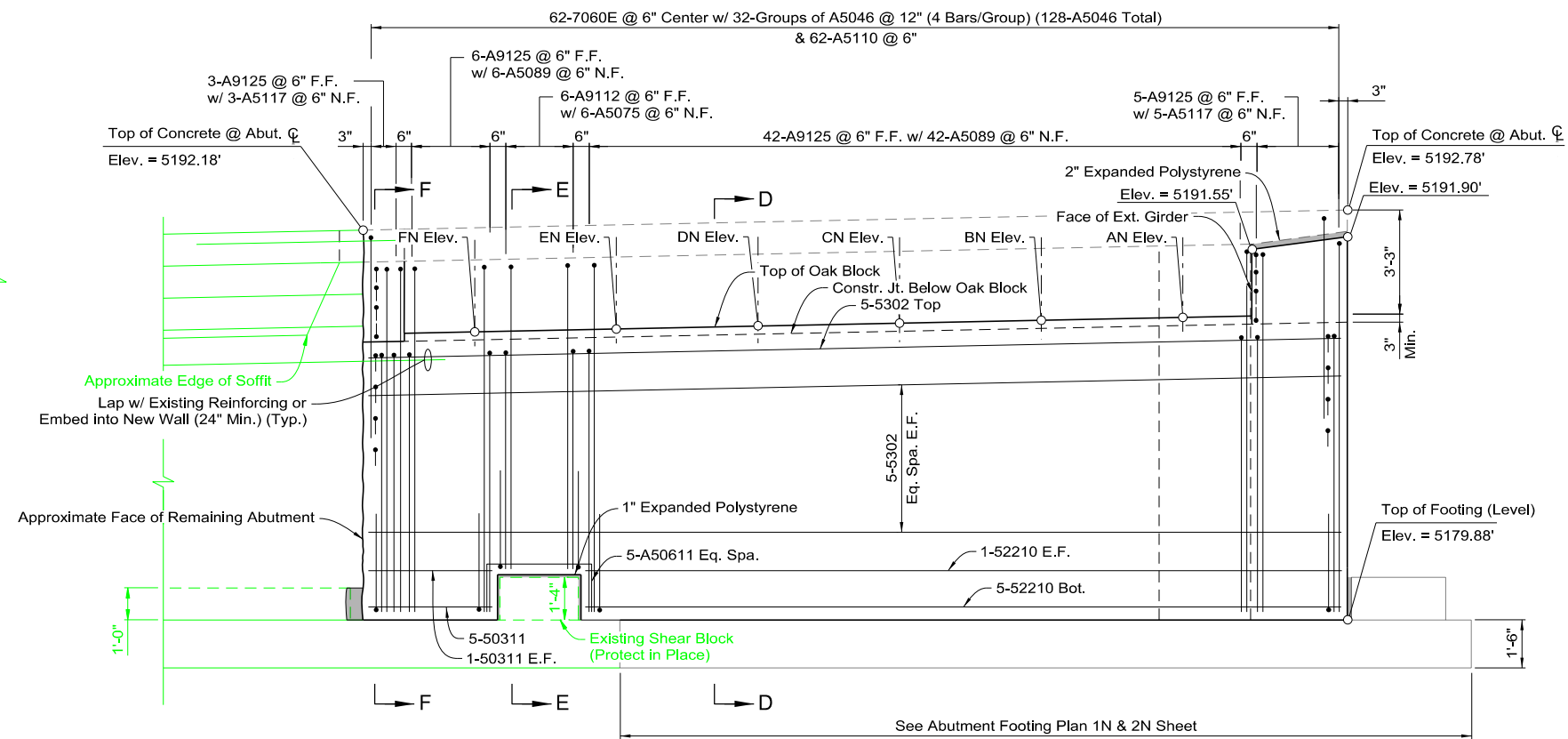
- ① 2 Groups of A5060 (4 Bars/Group) Eq. Spa. Vertically in Diaphragm (8-A5060 Total)
- ② 2 Spa. @ 9" Max. w/ 1 Group of A50210 bar (4 Bars/Group) (Typ. Ea. End)
- ③ 26 Groups of A5029 @ 12" (4 Bars/ Group) Eq. Spa. Vertically in Diaphragm (104-A5029 Total)

**MINIMUM BAR LAPS**

#5 Bar to #9 Bar = 27"

**BOTTOM OF GIRDER ELEVATION**

Elevation	$\phi$ Girder AN-1	$\phi$ Girder BN-1	$\phi$ Girder CN-1	$\phi$ Girder DN-1	$\phi$ Girder EN-1	$\phi$ Girder FN-1
Abutment 1N	5189.45	5189.36	5189.27	5189.19	5189.10	5189.02



**ELEVATION**

LOOKING BACK ON LINE NORMAL TO SKEW



ORIGINAL CONTRACT: 2243  
MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**ABUTMENT 1N WEST  
PLAN & ELEVATION**

G-1748 N

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STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B414

**NOTES:**

- See Abutment Details sheet for Sections D-D, E-E, F-F and details not shown.
  - Bottom of girder elevations are taken along  $\phi$  Oak Block locations.
  - Abutment elevations shown are taken along  $\phi$  Abutment, unless otherwise noted.
  - See Wingwall Plan and Elevation (2 of 2) sheet for Wingwall 4 details.
- \* Removal of existing wingwall and portion of abutment wall. Protect in place existing reinforcing in abutment wall. Lap or embed into new wall. Abutment wall removal measured along abutment centerline.
- \*\* Partial removal of existing longitudinal shear block. Remove existing reinforcing at removal line & top of footing and coat exposed reinforcing with Engineer approved corrosion protection. Place expanded polystyrene between remaining shear block and proposed abutment wall. Abutment shear block removal measured perpendicular to abutment wall removal line.

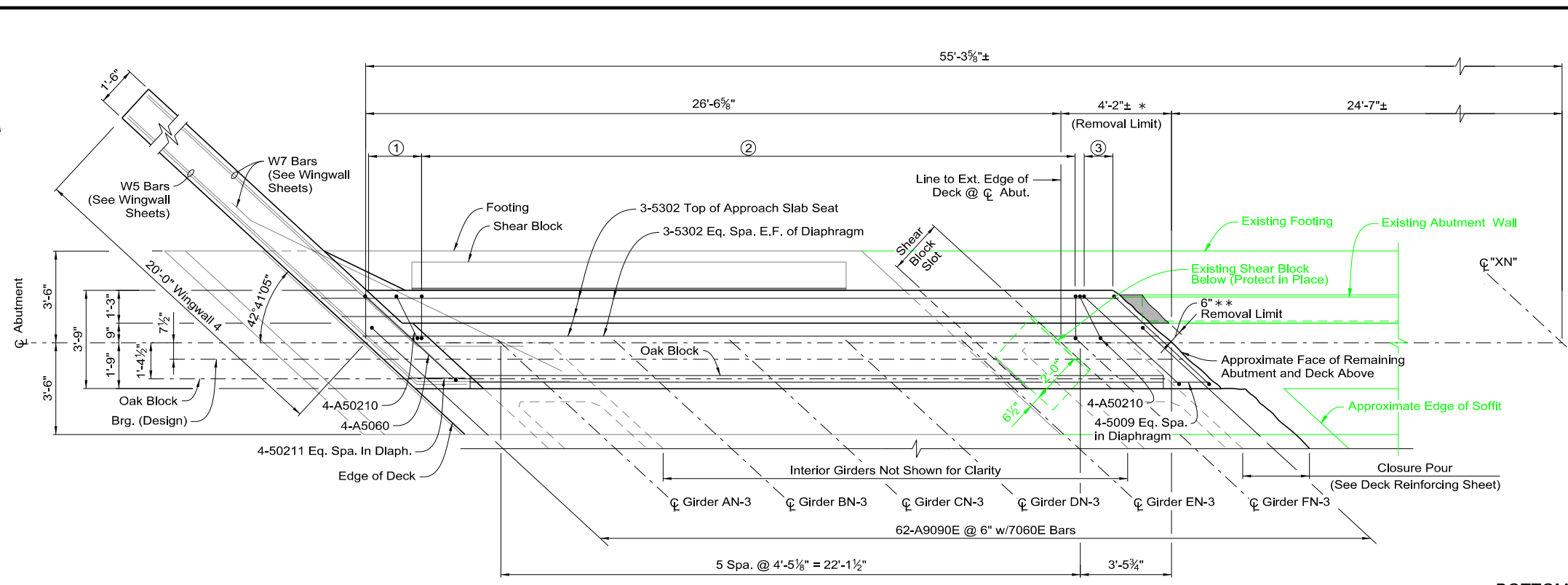
**REINFORCING STEEL:**

- 2 Spa. @ 9" Max. w/1 Group of A50210 bar (4 Bars/Group) (Typ. Ea. End)
- 26 Groups of A5029 @ 12" (4 Bars/ Group) Eq. Spa. Vertically in Diaphragm (104-A5029 Total)
- 2 Groups of A5060 (4 Bars/Group) Eq. Spa. Vertically in Diaphragm (8-A5060 Total)

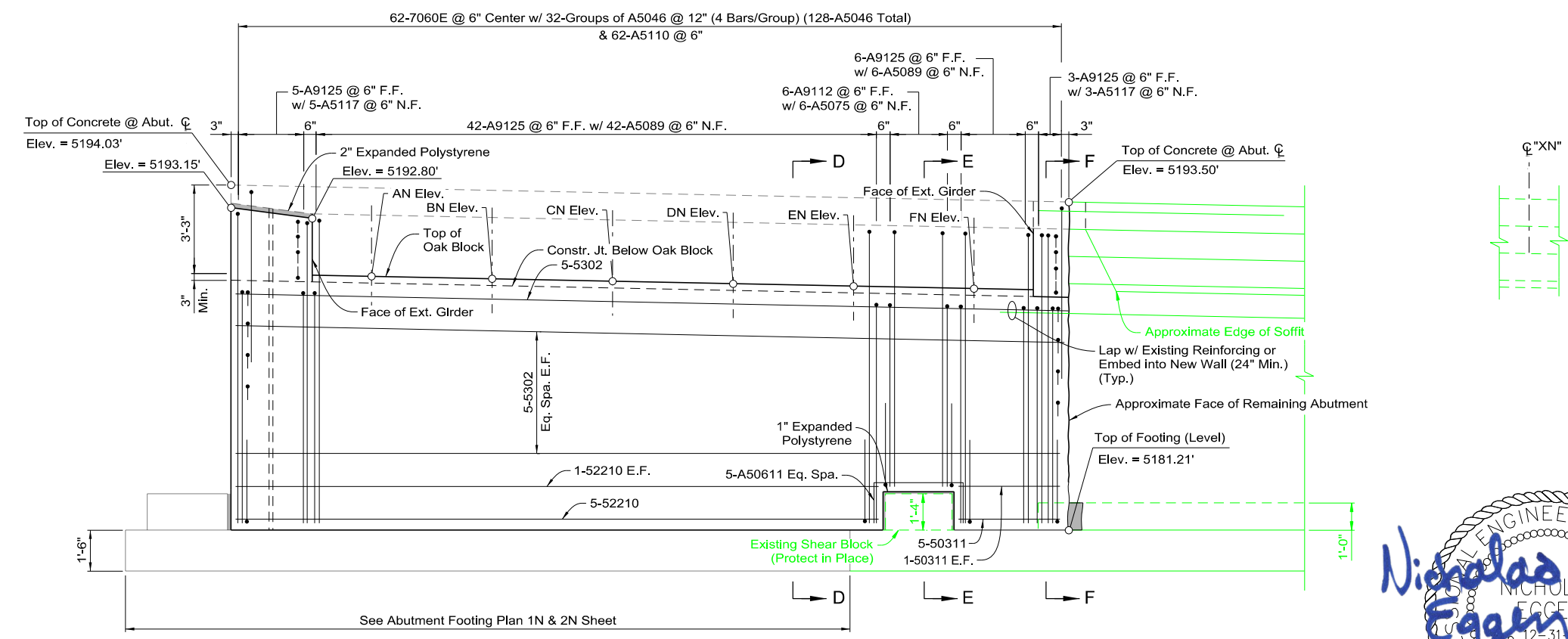
**MINIMUM BAR LAPS**  
#5 Bar to #9 Bar = 27"

**BOTTOM OF GIRDER ELEVATION**

Elevation	$\phi$ Girder AN-3	$\phi$ Girder BN-3	$\phi$ Girder CN-3	$\phi$ Girder DN-3	$\phi$ Girder EN-3	$\phi$ Girder FN-3
Abutment 2N	5190.68	5190.60	5190.53	5190.45	5190.38	5190.30



**PLAN**



**ELEVATION**  
LOOKING AHEAD ON LINE NORMAL TO SKEW



ORIGINAL CONTRACT: 2243  
MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT

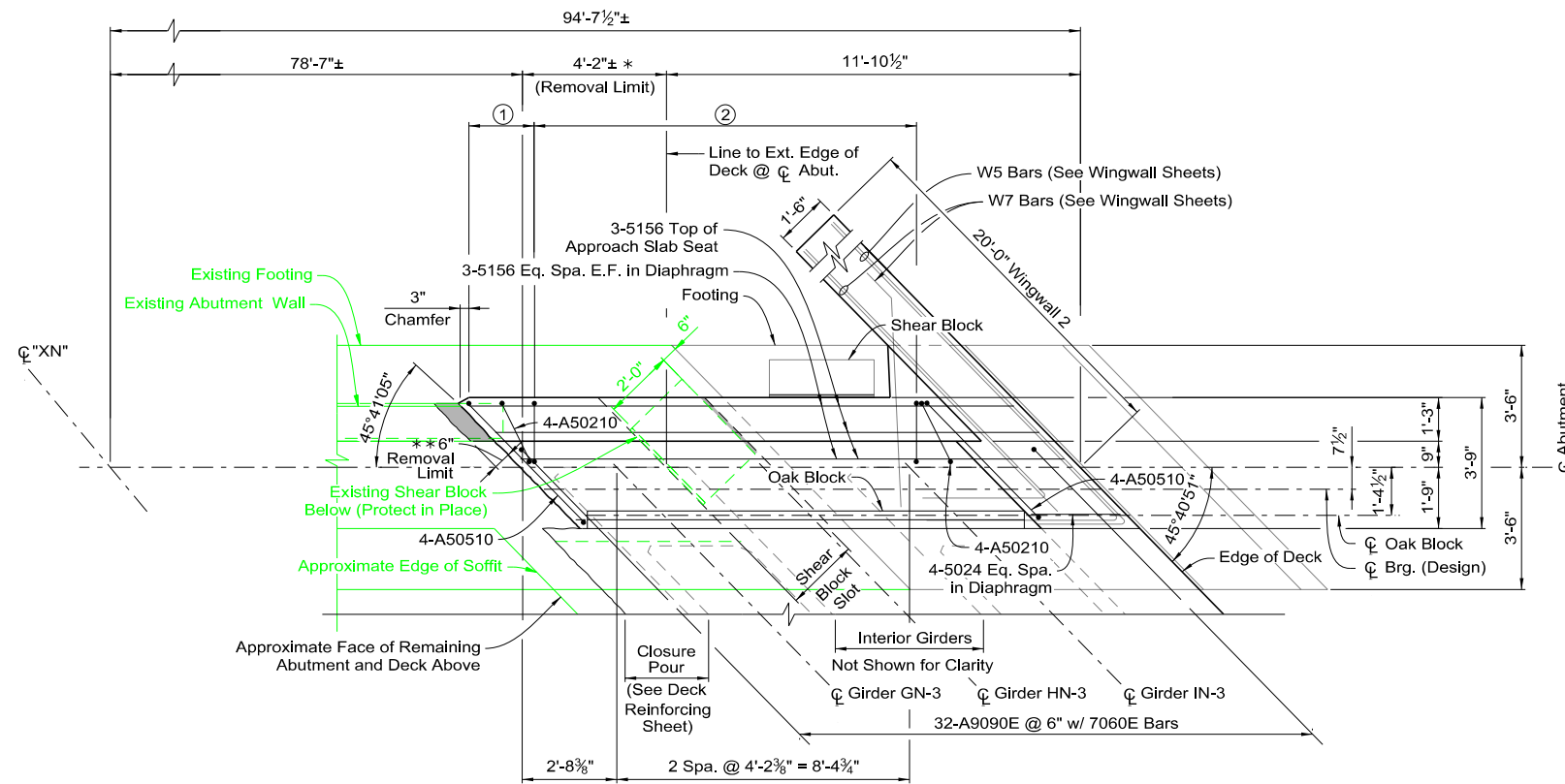
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**ABUTMENT 2N WEST  
PLAN & ELEVATION**

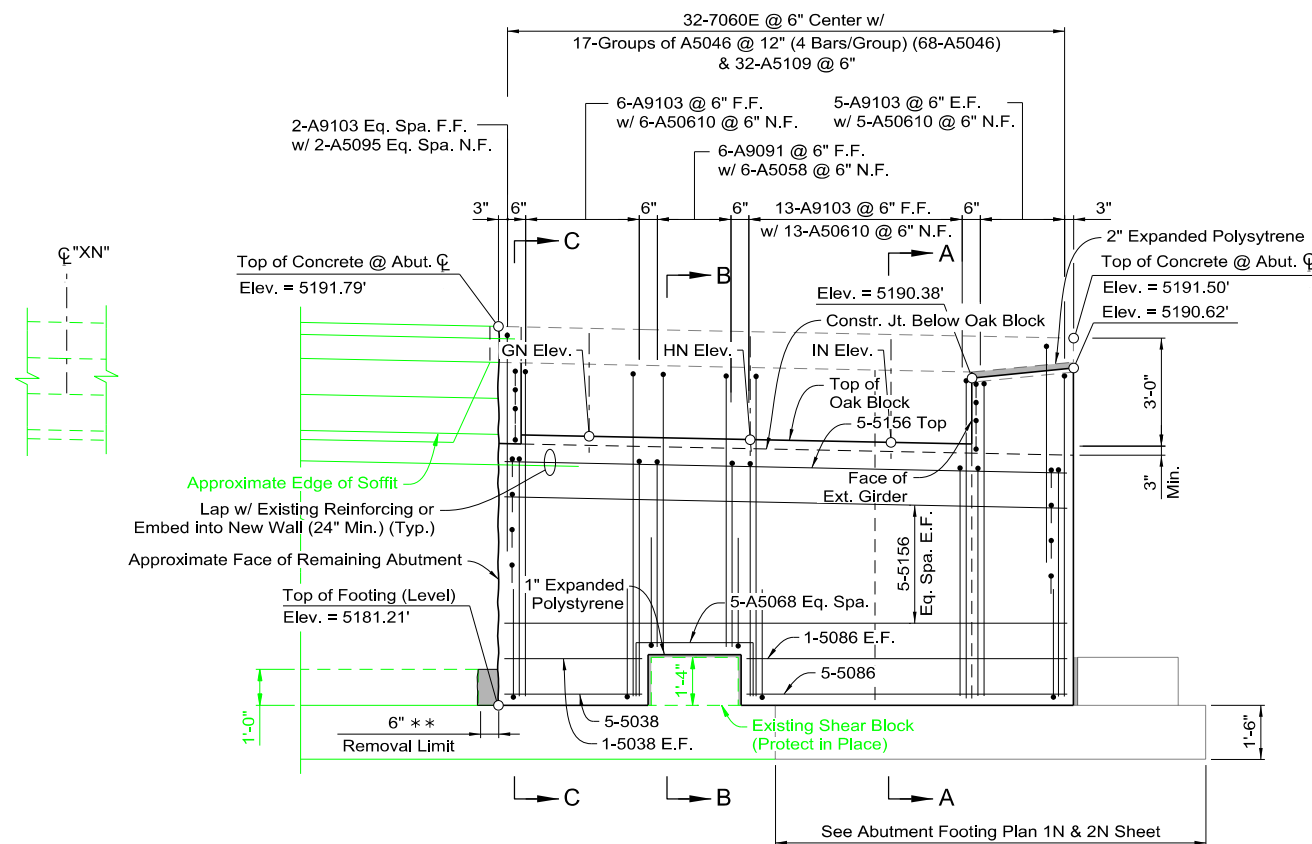
G-1748 N

HDR Engineering, Inc.      9805 Double R Boulevard, Suite 101  
Reno, NV 89521-5917      PH: 775-337-4700 FAX: 775-337-4774

STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B415



**PLAN**



**ELEVATION**

LOOKING AHEAD ON LINE NORMAL TO SKEW

**NOTES:**

- See Abutment Details sheet for Sections A-A, B-B, C-C and details not shown.
  - Bottom of girder elevations are taken along  $\phi$  Oak Block locations.
  - Abutment elevations shown are taken along  $\phi$  Abutment, unless otherwise noted.
  - See Wingwall Plan and Elevation (1 of 2) sheet for Wingwall 2 details.
- \* Removal of existing wingwall and portion of abutment wall. Protect in place existing reinforcing in abutment wall. Lap or embed into new wall. Abutment wall removal measured along abutment centerline.
- \*\* Partial removal of existing longitudinal shear block. Remove existing reinforcing at removal line & top of footing and coat exposed reinforcing steel with Engineer approved corrosion protection. Place expanded polystyrene between remaining shear block and proposed abutment wall. Abutment shear block removal measured perpendicular to abutment wall removal line.

**REINFORCING STEEL:**

- 2 Spa. @ 9" Max. w/ 1 Group of A50210 bar (4 Bars/Group) (Typ. Ea. End)
- 13 Groups of A5029 @ 12" (4 Bars/ Group) Eq. Spa. Vertically in Diaphragm (52-A5029 Total)

**MINIMUM BAR LAPS**

#5 Bar to #9 Bar = 27"

**BOTTOM OF GIRDER ELEVATION**

Elevation	$\phi$ Girder GN-3	$\phi$ Girder HN-3	$\phi$ Girder IN-3
Abutment 2N	5188.74	5188.66	5188.58



12/20/2022

ORIGINAL CONTRACT: 2243  
MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**ABUTMENT 2N EAST  
PLAN & ELEVATION**

G-1748 N

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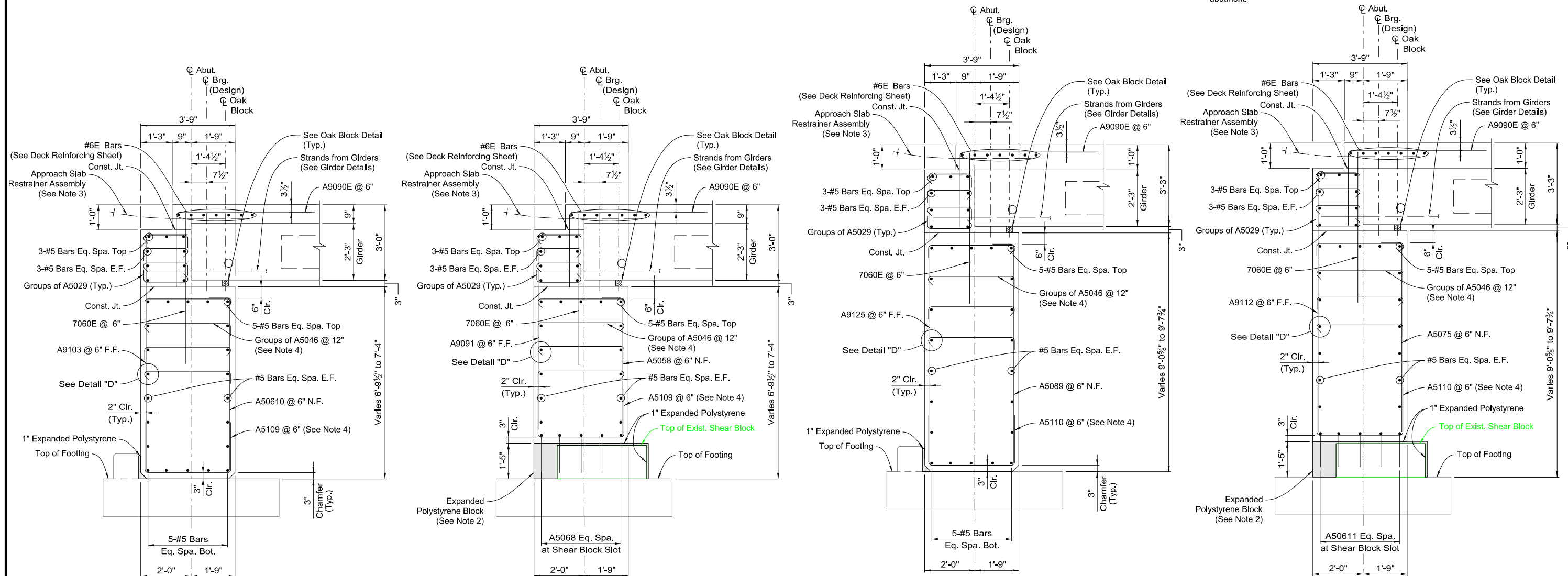
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PH: 775-337-4700 FAX: 775-337-4774



STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B416

**NOTES:**

- Contractor shall not backfill against abutment stemwall until diaphragm and deck are placed and cured.
- Expanded polystyrene block to match shear block slot and be flush with face of abutment wall.
- See Approach Slab Details sheet for Approach Slab Restrainer Assembly details.
- A5109 and A5110 bars are placed along the abutment wall skew and A5029 and A5046 bars are placed perpendicular to centerline of abutment. A5068 and A50611 bars are placed parallel to centerline of abutment.

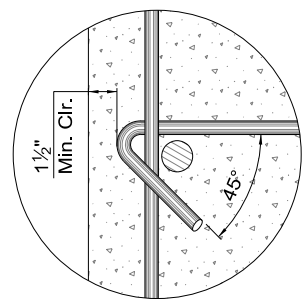


**SECTION A-A**  
EAST WIDENING

**SECTION B-B**  
EAST WIDENING

**SECTION D-D**  
WEST WIDENING

**SECTION E-E**  
WEST WIDENING



**DETAIL "D"**



ORIGINAL CONTRACT: 2243  
MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**ABUTMENT 1N & 2N DETAILS**  
(1 OF 2)

G-1748 N



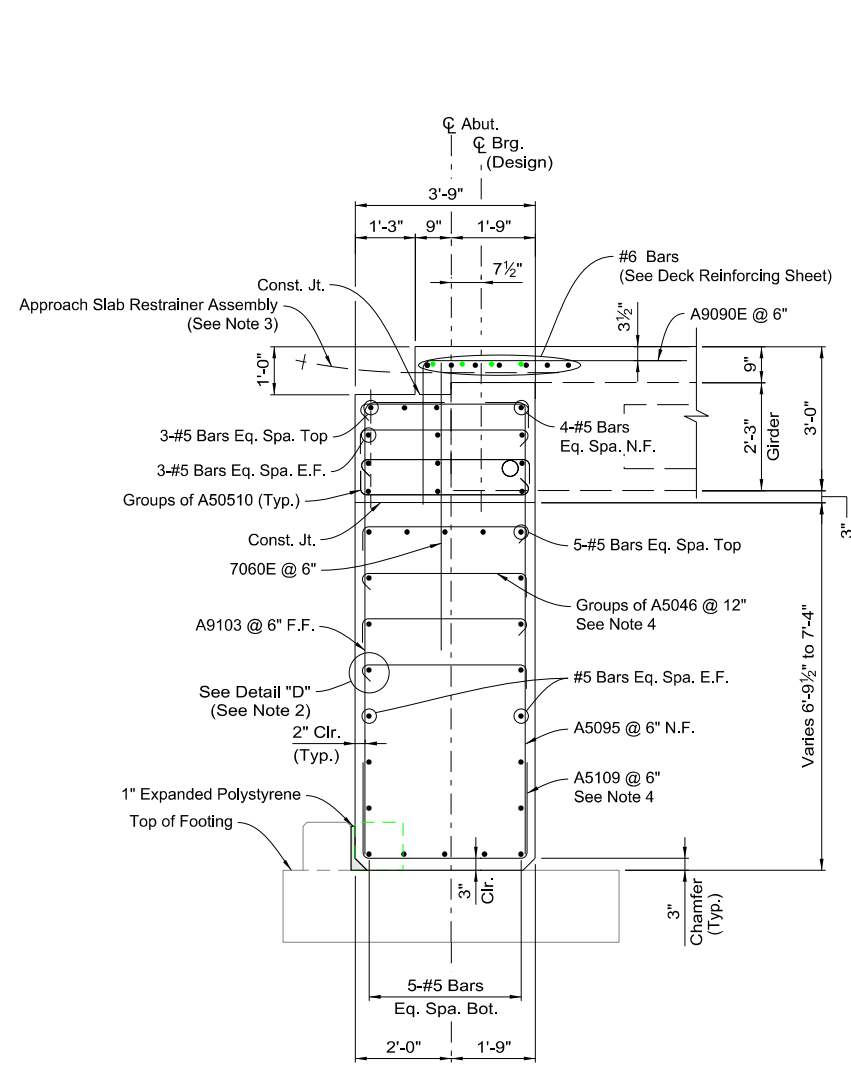
9805 Double R Boulevard, Suite 101  
Reno, NV 89521-5917  
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12/20/2022

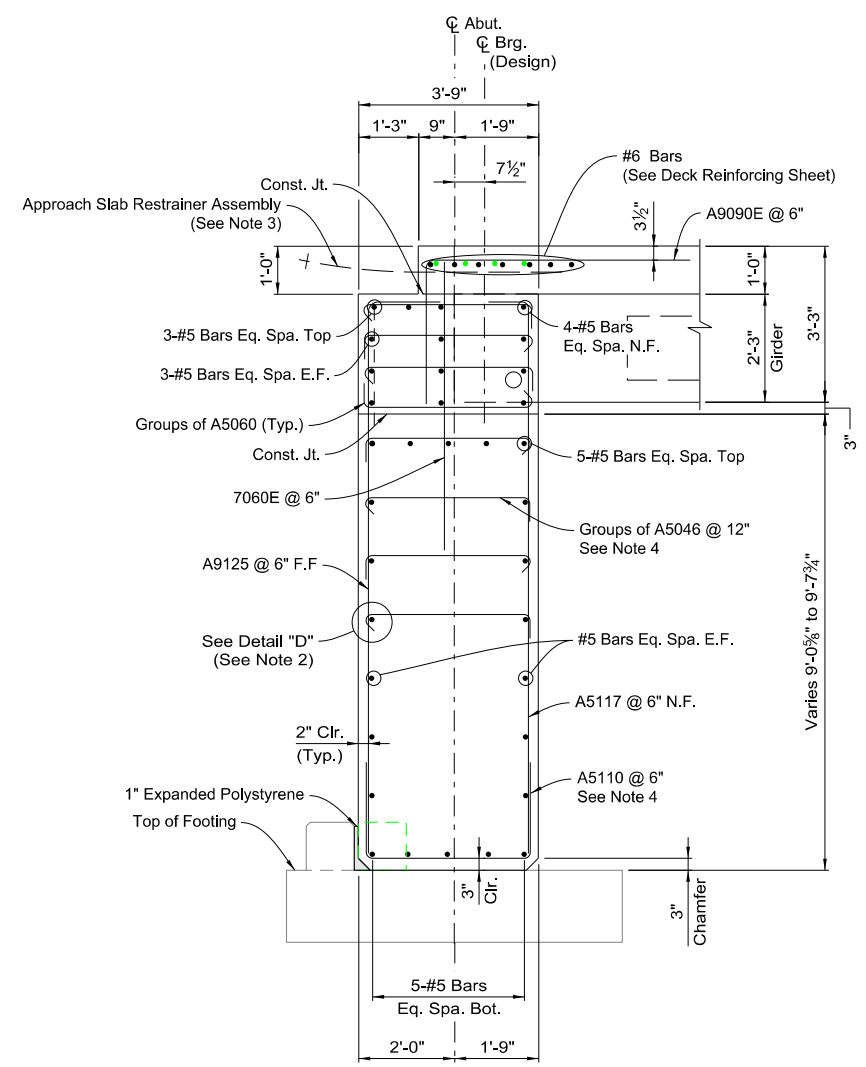
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B417

**NOTES:**

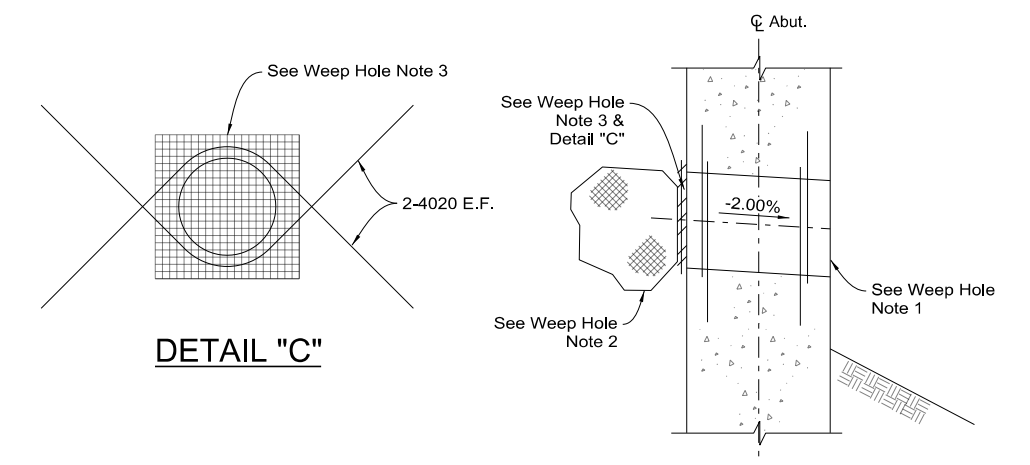
- Vary height as necessary to provide uniform bearing full width of girder.
- See Abutment 1N & 2N Details (1 of 2) sheet for Detail "D".
- See Approach Slab Details sheet for Approach Slab Restrainer Assembly details.
- A5109 and A5110 bars are placed along the abutment wall skew and A5046 bars are placed perpendicular to centerline abutment.
- Oak blocks shall be placed parallel to Abutment Wall. Dimensions shown are normal to Abutment Walls. Maintain no less than 3" clear under precast girder ends. Constructor shall maintain stability of Precast Girders on Abutment Walls during all construction operations. If Oak Block aspect ratio exceed 1:1 additional shoring may be required. No direct payment for oak blocks.



**SECTION C-C**  
EAST WIDENING

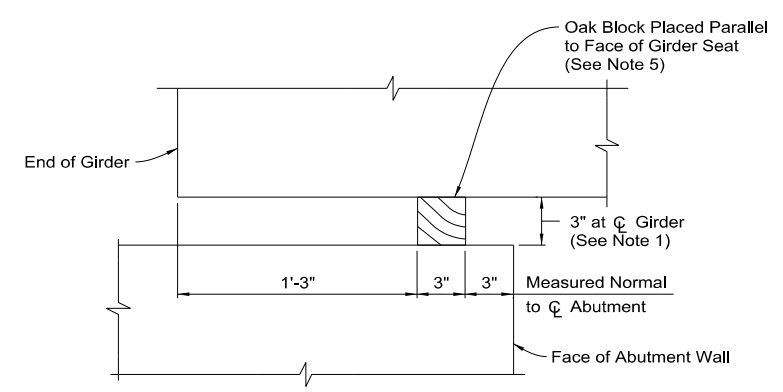


**SECTION F-F**  
WEST WIDENING

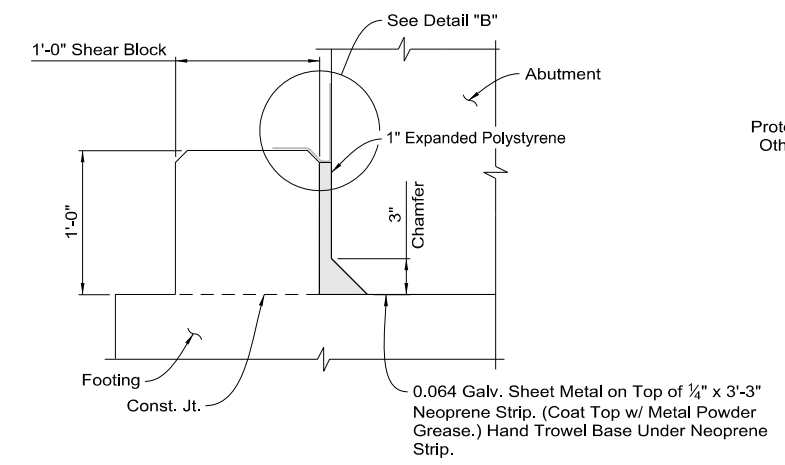


**WEEP HOLE NOTES:**

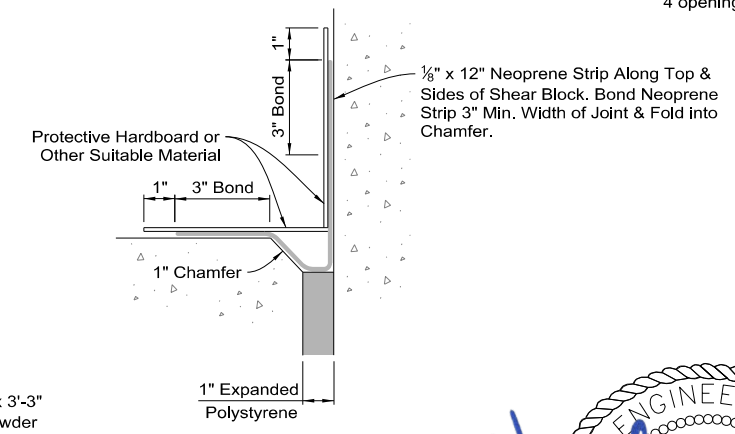
- One 4-inch diameter drain at center of wall or 25-feet maximum from existing weep hole. Exposed drains shall be located 3-inches ± above finished grade.
- 2-cubic feet of type 2 drain backfill encapsulated in a geotextile fabric securely tied. Geotextile shall meet the following:
  - A. Meet at least class 2 strength requirement per AASHTO M288 test method.
  - B. Have an AOS not greater than U.S. sieve No. 40.
  - C. Have a permittivity of at least 0.5 Sec. <sup>-1</sup>
- 6-inch square aluminum or galvanized steel wire mesh hardware cloth, 4 openings per inch and minimum wire diameter 0.03-inches.



**OAK BLOCK DETAIL**



**ABUTMENT SEAT DETAIL**



**DETAIL "B"**



ORIGINAL CONTRACT: 2243  
MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT

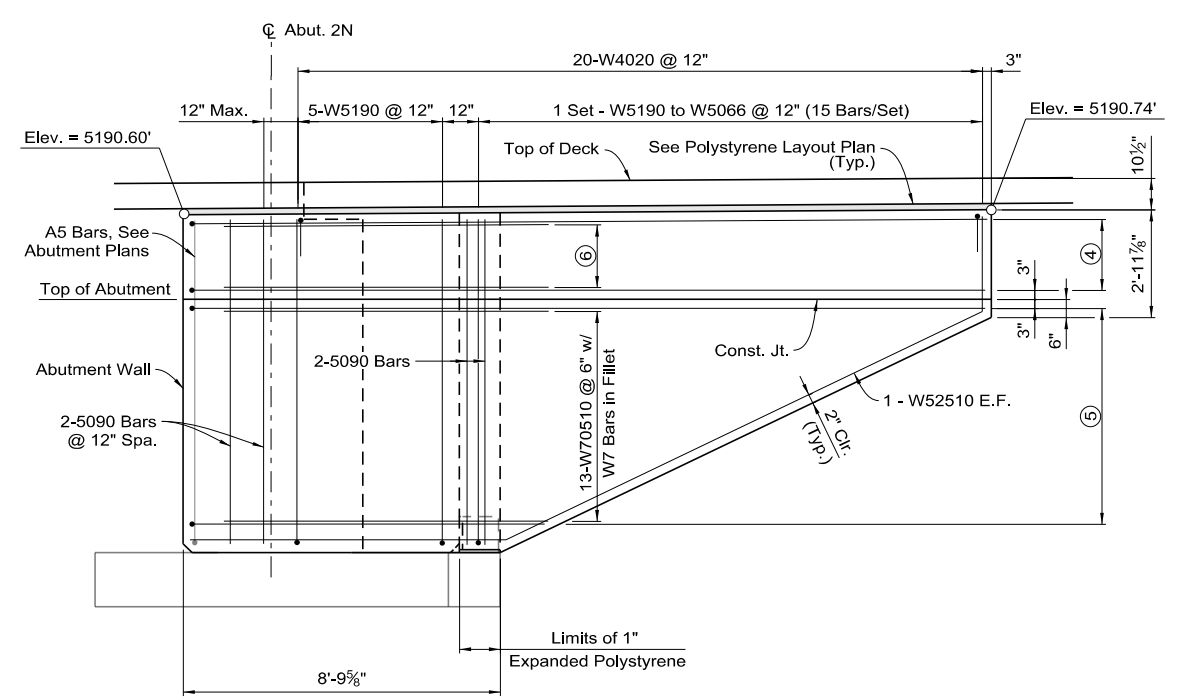
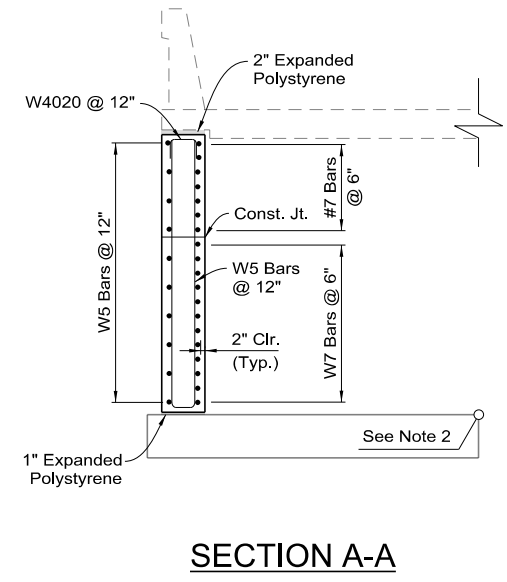
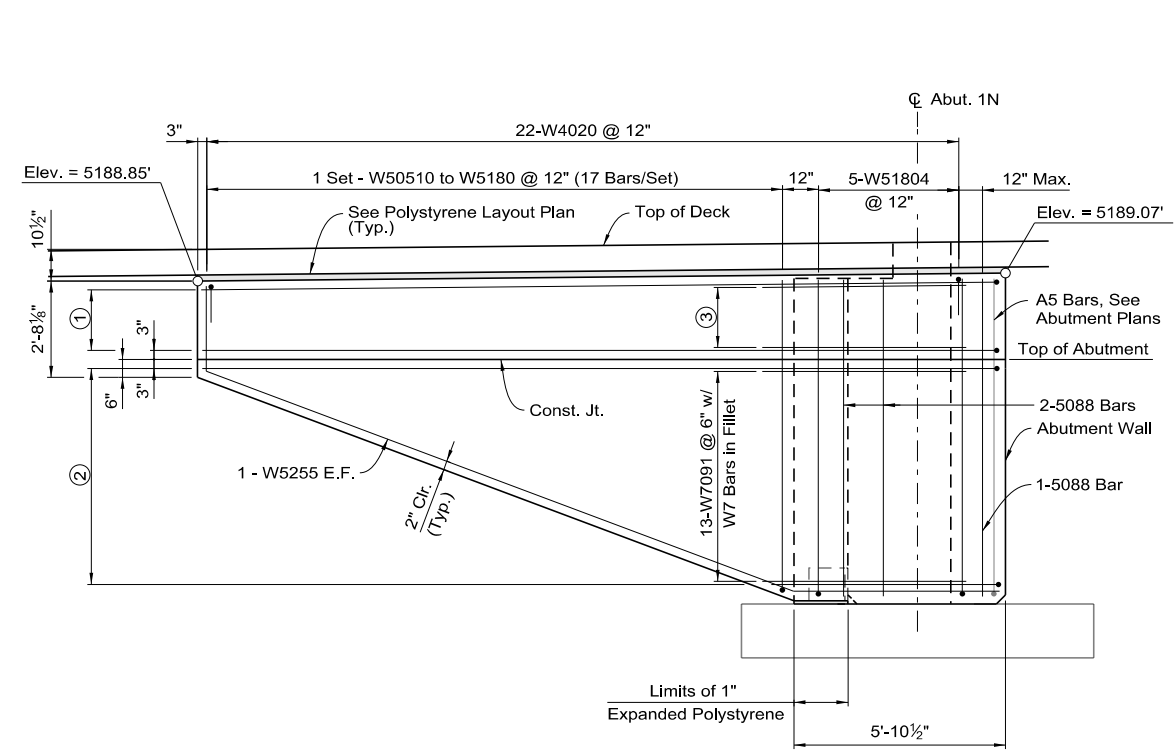
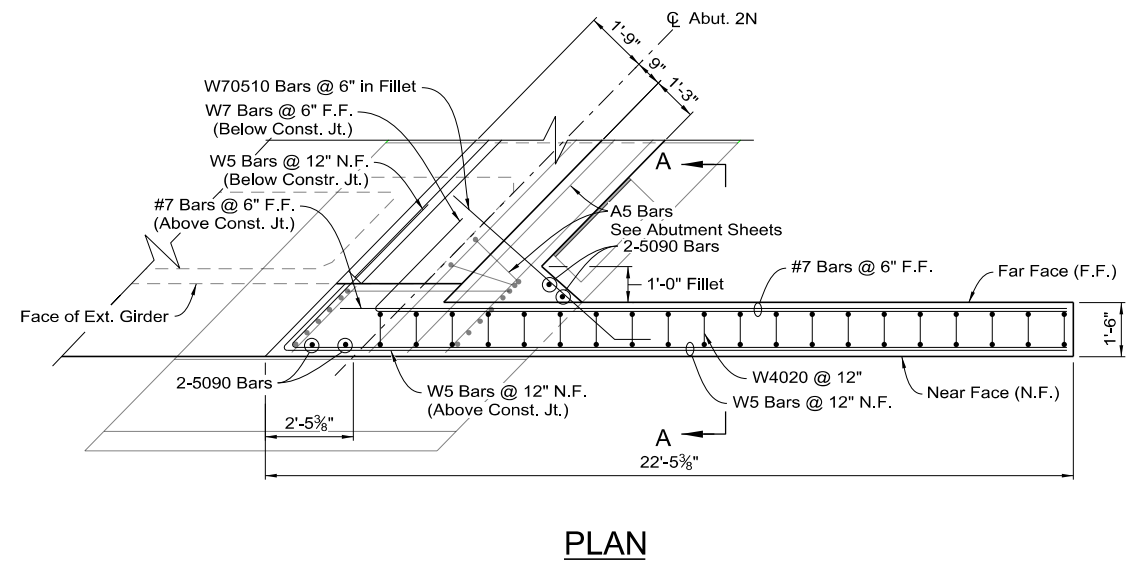
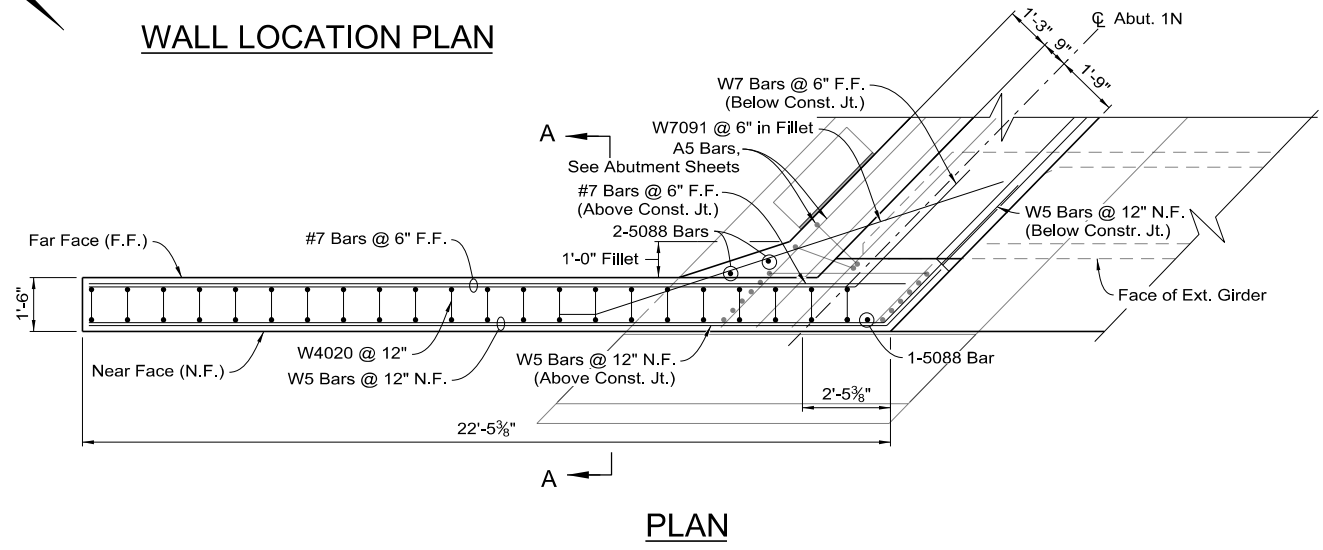
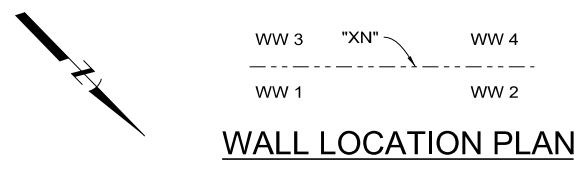
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**ABUTMENT 1N & 2N DETAILS**  
(2 OF 2)

G-1748 N

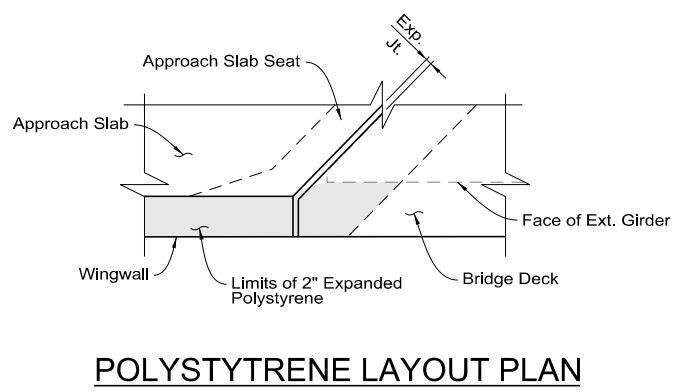
**HDR**  
HDR Engineering, Inc.  
9805 Double R Boulevard, Suite 101  
Reno, NV 89521-5917  
PH: 775-337-4700 FAX: 775-337-4774

STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B418



- REINFORCING STEEL:**
- ① 5-72111 @ 6" F.F.  
3-W5240 @ 12" N.F.
  - ② 1-Set W7241 to W7085 @ 6" F.F. (13 Bars/Set)  
1-Set W5265 to W51010 @ 12" N.F. (7 Bars/Set)
  - ③ 5-W7091 @ 6" w/ #7 Bars In Fillet
  - ④ 5-7208 @ 6" F.F.  
3-W5242 @ 12" N.F.
  - ⑤ 1-Set W7221 to W7100 @ 6" F.F. (13 Bars/Set)  
1-Set W5264 to W5142 @ 12" F.F. (7 Bars/Set)
  - ⑥ 5-W70510 @ 6" w/ W7 Bars in Fillet

- NOTES:**
1. Girders tie rods at the abutments shall be installed prior to finishing the construction of the wingwalls.
  2. For abutment details and elevations not shown, see Abutment Plan & Elevation sheets.



ORIGINAL CONTRACT: 2243  
MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

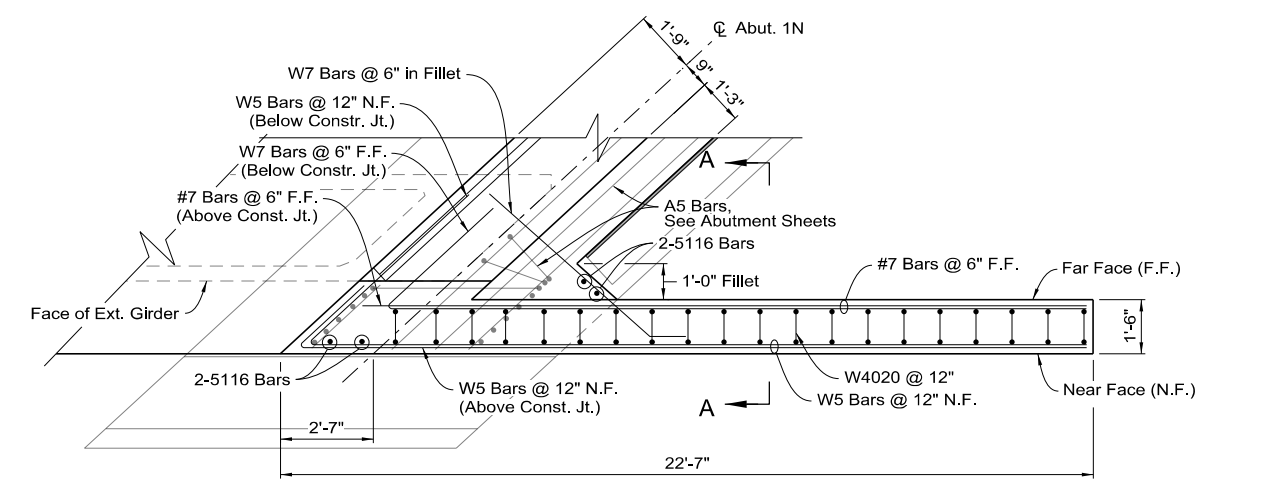
**WINGWALL PLAN & ELEVATION**  
(1 OF 2)

G-1748 N

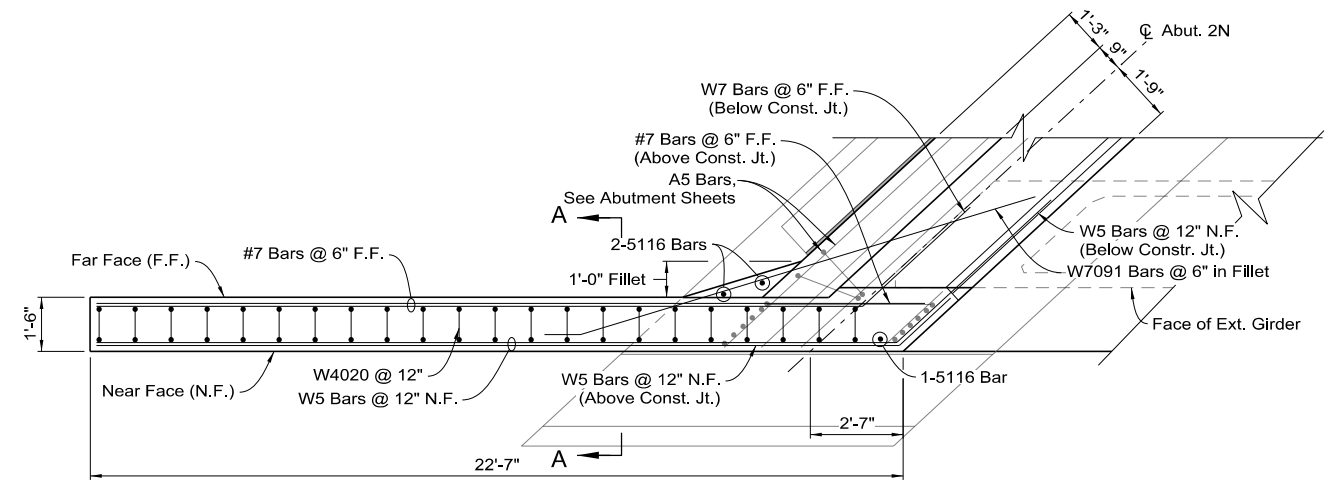
**HDR**  
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PH: 775-337-4700 FAX: 775-337-4774

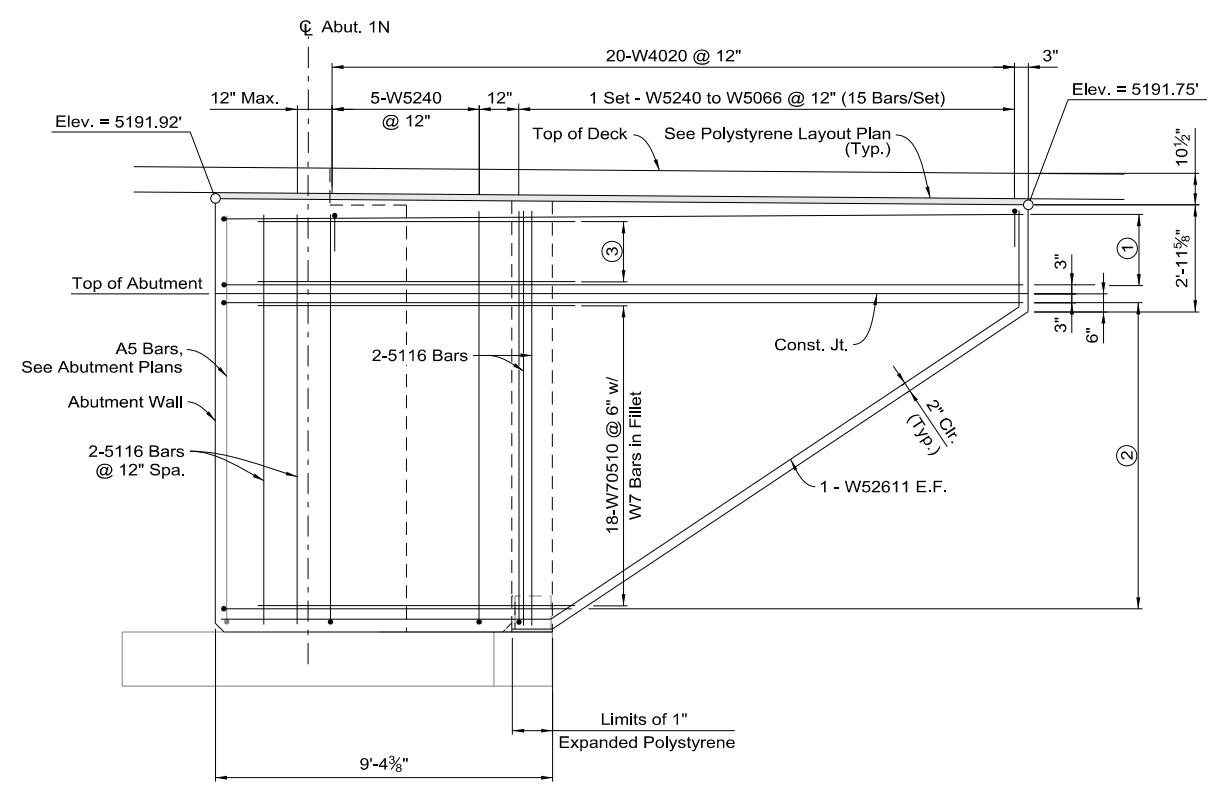
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B419



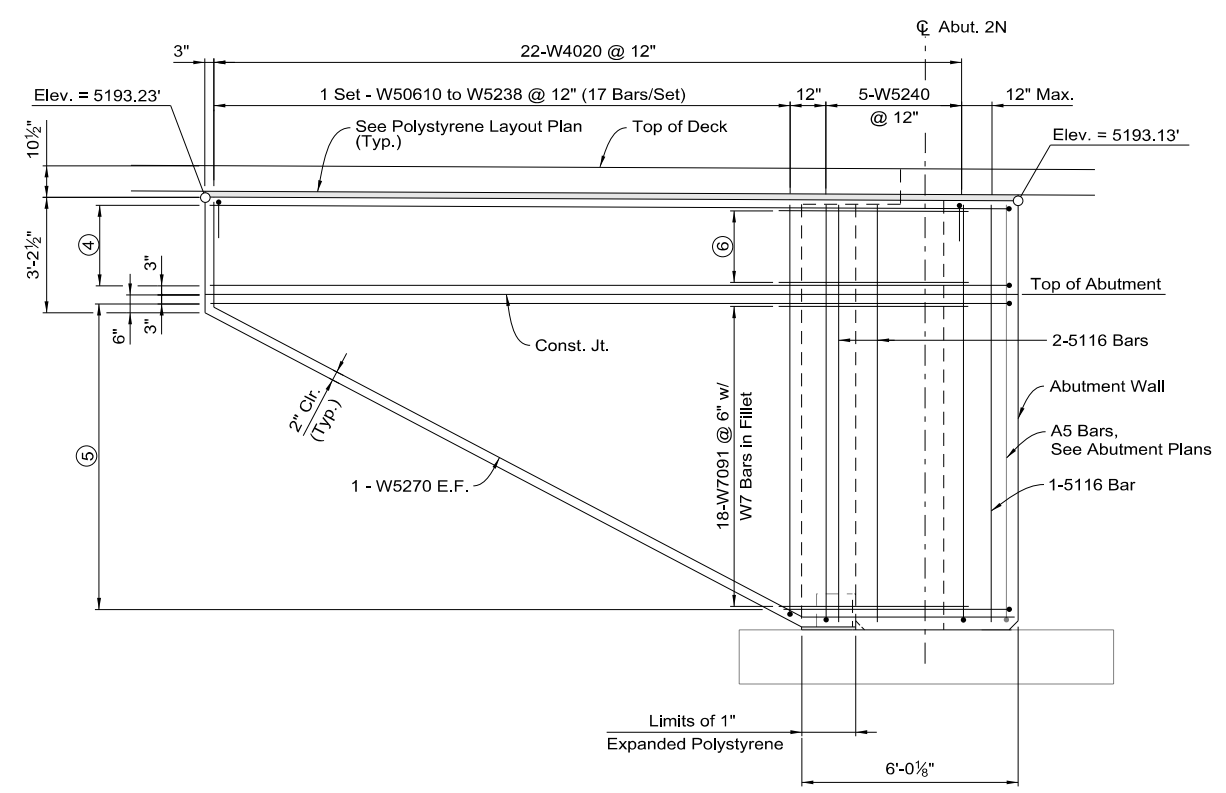
PLAN



PLAN



ELEVATION - WINGWALL 3



ELEVATION - WINGWALL 4

REINFORCING STEEL:

- |                                                                                                 |                                                                                                |
|-------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|
| ① 5-7207 @ 6" F.F.<br>3-W5241 @ 12" N.F.                                                        | ④ 5-7221 @ 6" F.F.<br>3-W52311 @ 12" N.F.                                                      |
| ② 1-Set W7221 to W70910 @ 6" F.F. (18 Bars/Set)<br>1-Set W5263 to W5145 @ 12" F.F. (9 Bars/Set) | ⑤ 1-Set W7241 to W7085 @ 6" F.F. (18 Bars/Set)<br>1-Set W5267 to W5118 @ 12" F.F. (9 Bars/Set) |
| ③ 5-W70510 @ 6" w/ W7 Bars in Fillet                                                            | ⑥ 5-W7091 @ 6" w/ W7 Bars in Fillet                                                            |

NOTES:

- Girders tie rods at the abutments shall be installed prior to finishing the construction of the wingwalls.
- For Wingwall Location Plan, Polystyrene Layout Plan and Section A-A, see Wingwall Plan & Elevation (1 of 2) sheet.



ORIGINAL CONTRACT: 2243  
MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**WINGWALL PLAN & ELEVATION**  
(2 OF 2)

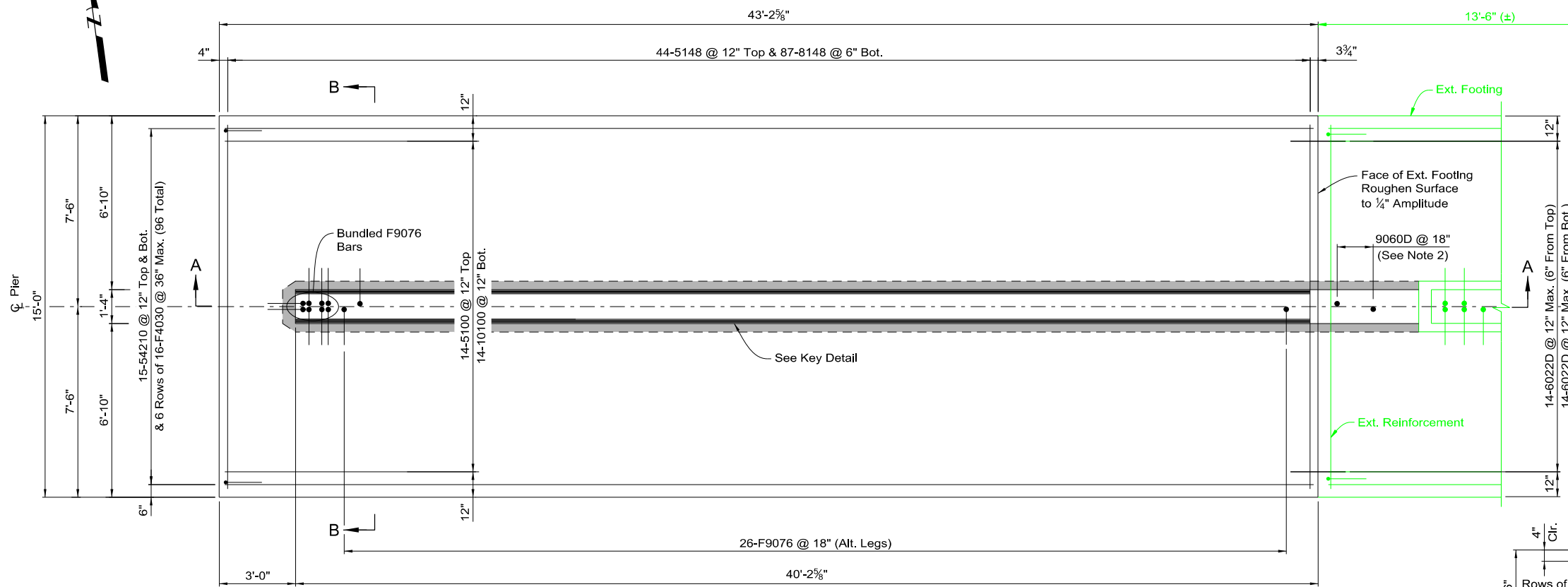
G-1748 N

**HDR**  
HDR Engineering, Inc.

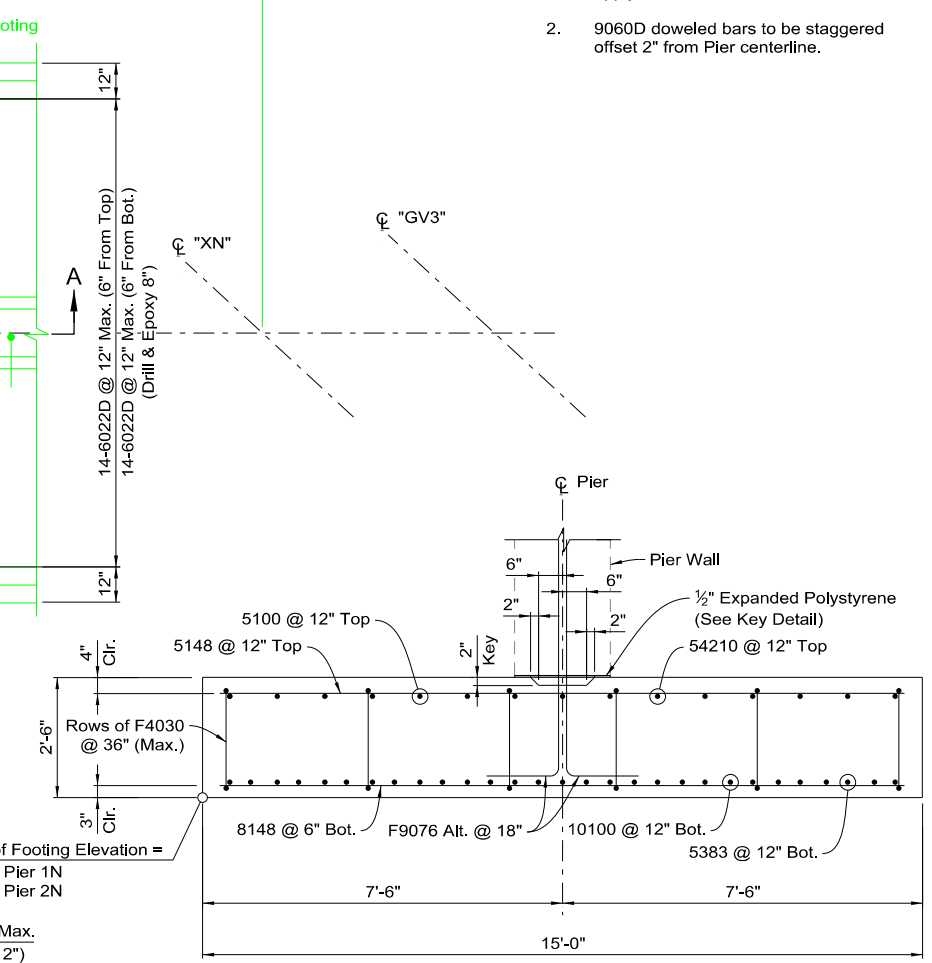
9805 Double R Boulevard, Suite 101  
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STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B420

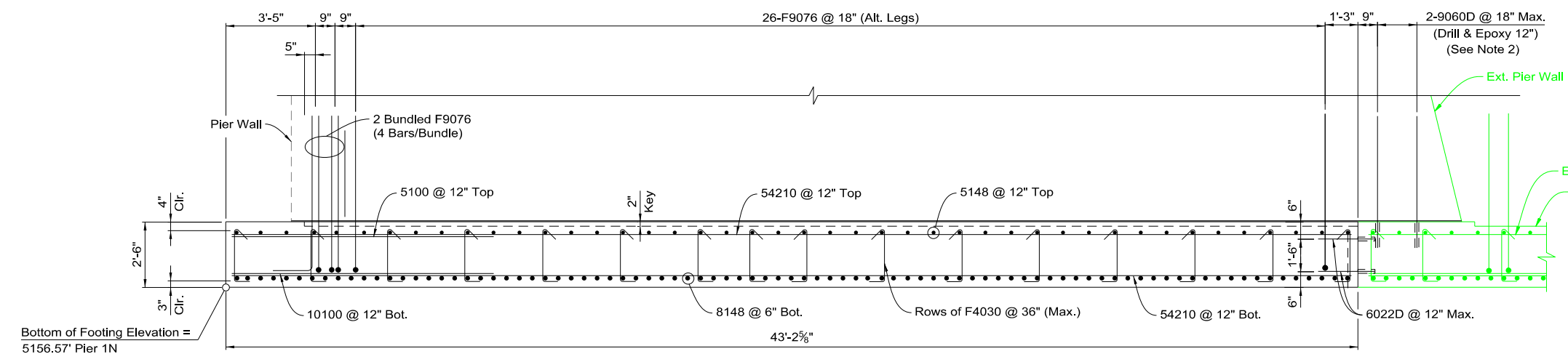
- NOTE:**
- Pier wall reinforcing and details apply to Pier 1N and Pier 2N.
  - 9060D doweled bars to be staggered offset 2" from Pier centerline.



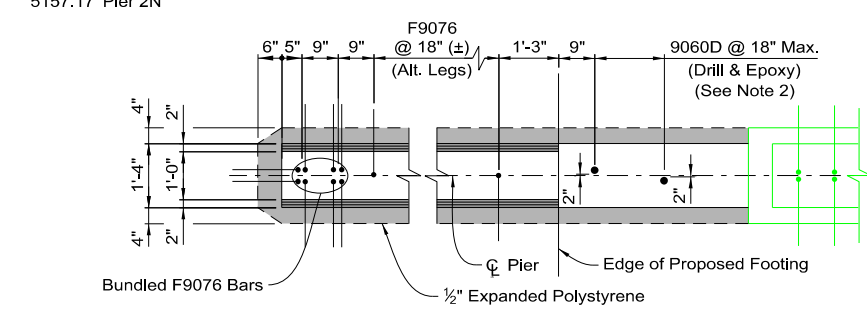
**PLAN**  
PIER 1N WEST SHOWN,  
PIER 2N WEST SIMILAR



**SECTION B-B**  
PIER 1N WEST SHOWN,  
PIER 2N WEST SIMILAR



**SECTION A-A**  
PIER 1N WEST SHOWN,  
PIER 2N WEST SIMILAR



**KEY DETAIL**



12/20/2022

ORIGINAL CONTRACT: 2243  
MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**PIER 1N & 2N WEST  
FOOTING DETAILS  
PLAN & SECTIONS** G-1748 N

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HDR Engineering, Inc.

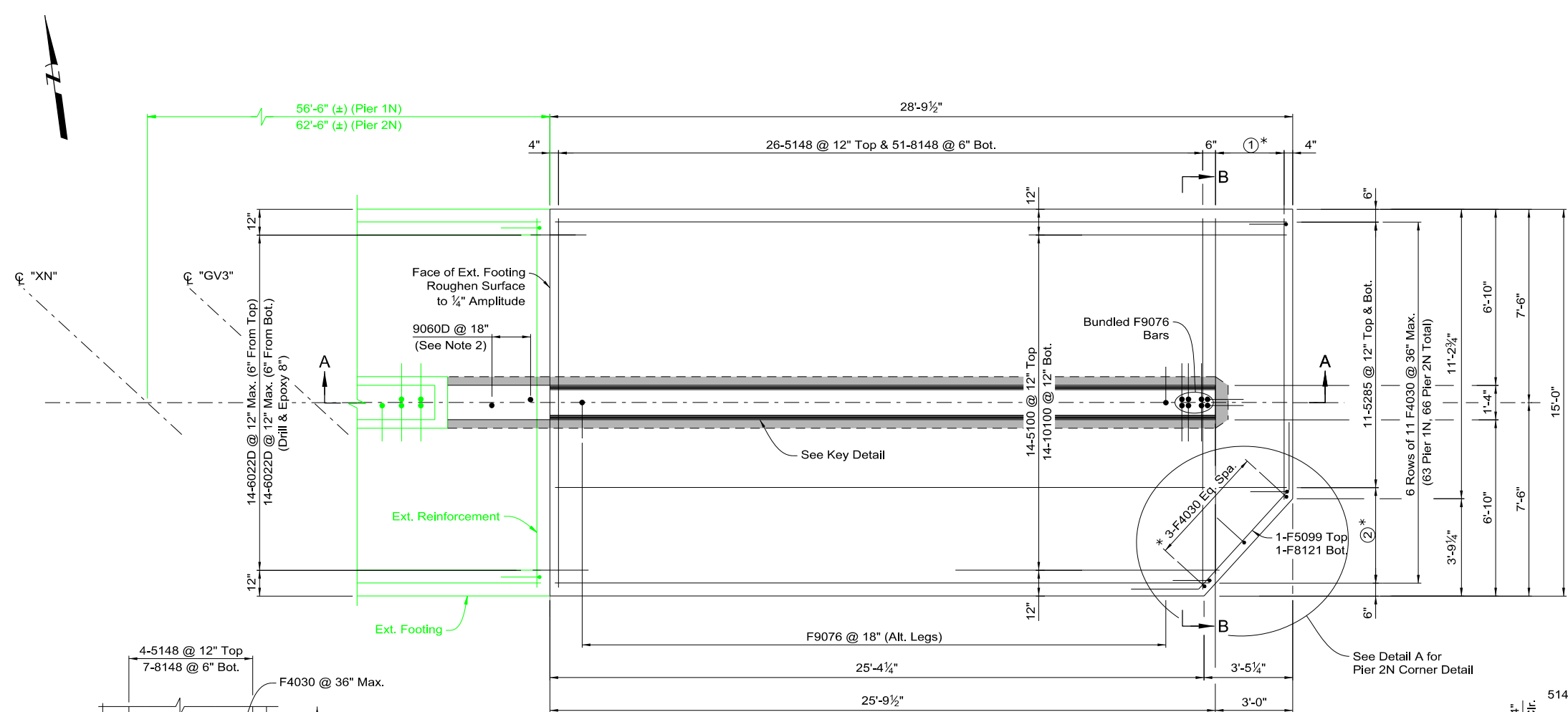
9805 Double R Boulevard, Suite 101  
Reno, NV 89521-5917  
PH: 775-337-4700 FAX: 775-337-4774



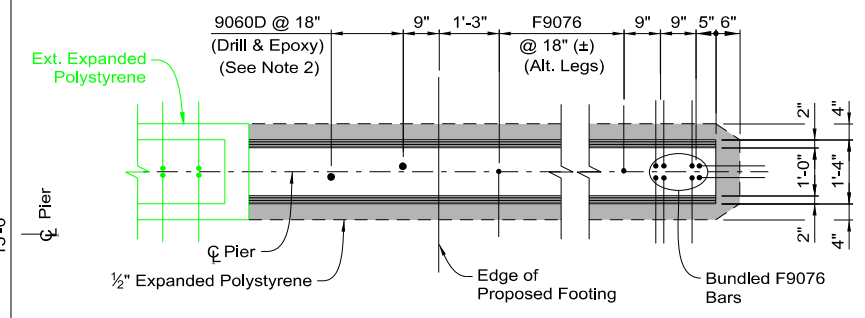
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B421

**NOTE:**

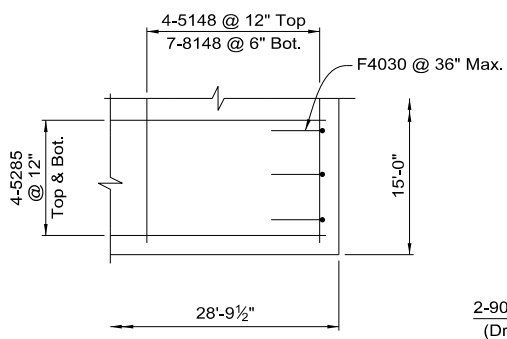
- Pier wall reinforcing and details apply to Pier 1N and Pier 2N, unless noted otherwise.
  - 9060D doweled bars to be staggered offset 2" from Pier centerline.
- ① 1 Set 5139 to 51011 @ 12" Top & Bot. (4 Bars/Set)  
1 Set 8139 to 81011 @ 6" Top & Bot. (7 Bars/Set)
- ② 1 Set 5281 to 5255 @ 12" Top & Bot. (4 Bars/Set)
- \* Reinforcing to be replaced with that shown in Detail A for Pier 2N



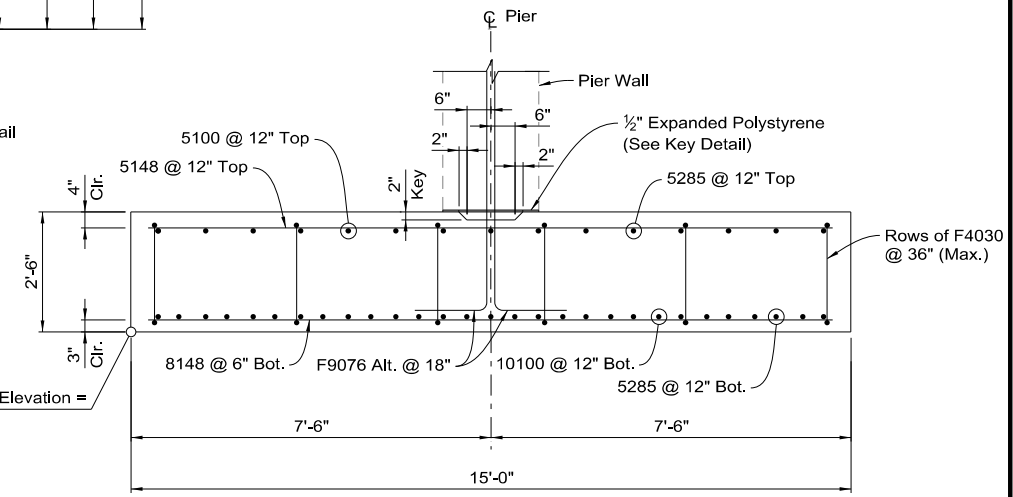
**PLAN 1N**  
PIER 1N EAST SHOWN,  
PIER 2N EAST SIMILAR



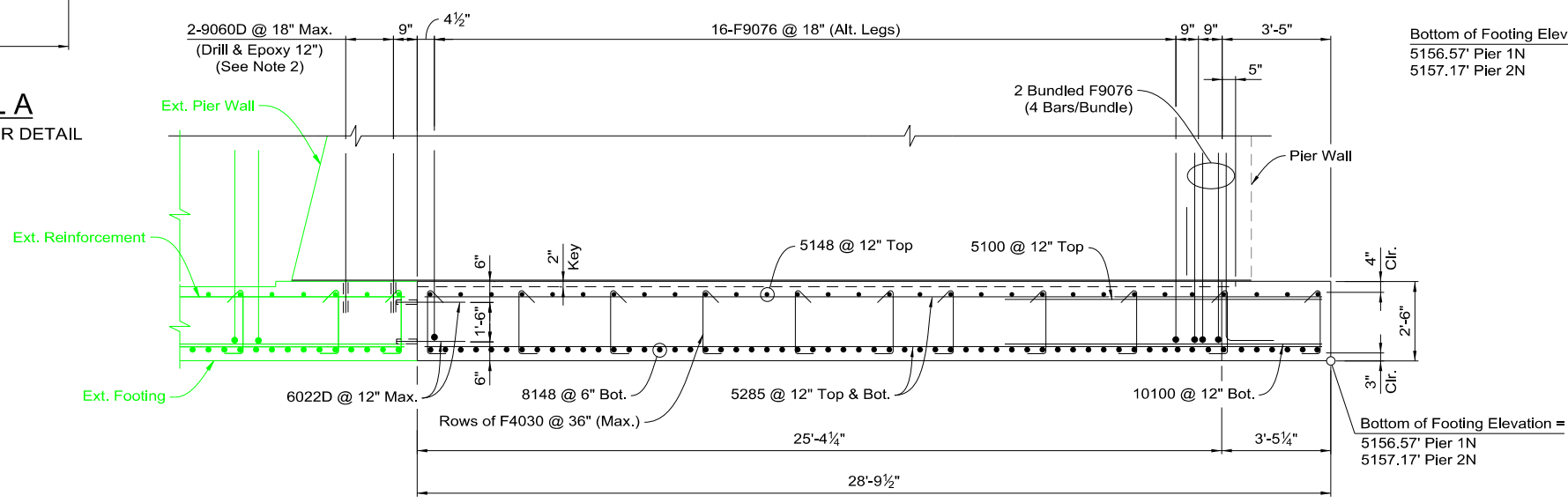
**KEY DETAIL**



**DETAIL A**  
PIER 2N CORNER DETAIL



**SECTION B-B**  
PIER 1N EAST SHOWN,  
PIER 2N EAST SIMILAR



**SECTION A-A**  
PIER 1N EAST SHOWN,  
PIER 2N EAST SIMILAR



12/20/2022

ORIGINAL CONTRACT: 2243  
MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**PIER 1N & 2N EAST  
FOOTING DETAILS  
PLAN & SECTIONS** G-1748 N

**HDR**  
HDR Engineering, Inc.

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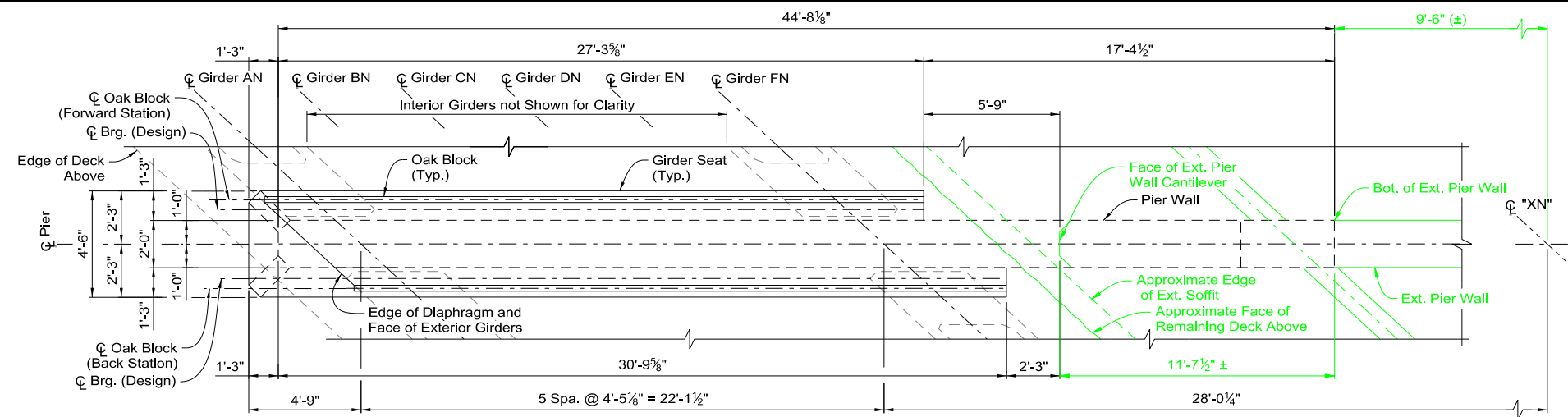
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B422

- NOTE:**
- Pier wall reinforcing and details apply to Pier 1N and Pier 2N.
  - Bottom of girder elevations are taken along  $\phi$  Oak Block locations.
  - Pier elevations shown are taken along  $\phi$  Pier, unless otherwise noted.

**Reinforcing Steel:**

① 7 Spa. @ 6 in Max. for horizontal #4 bars.

**MINIMUM BAR LAPS**  
#7 Bars to #7 Bars = 38"



**PLAN 1N**

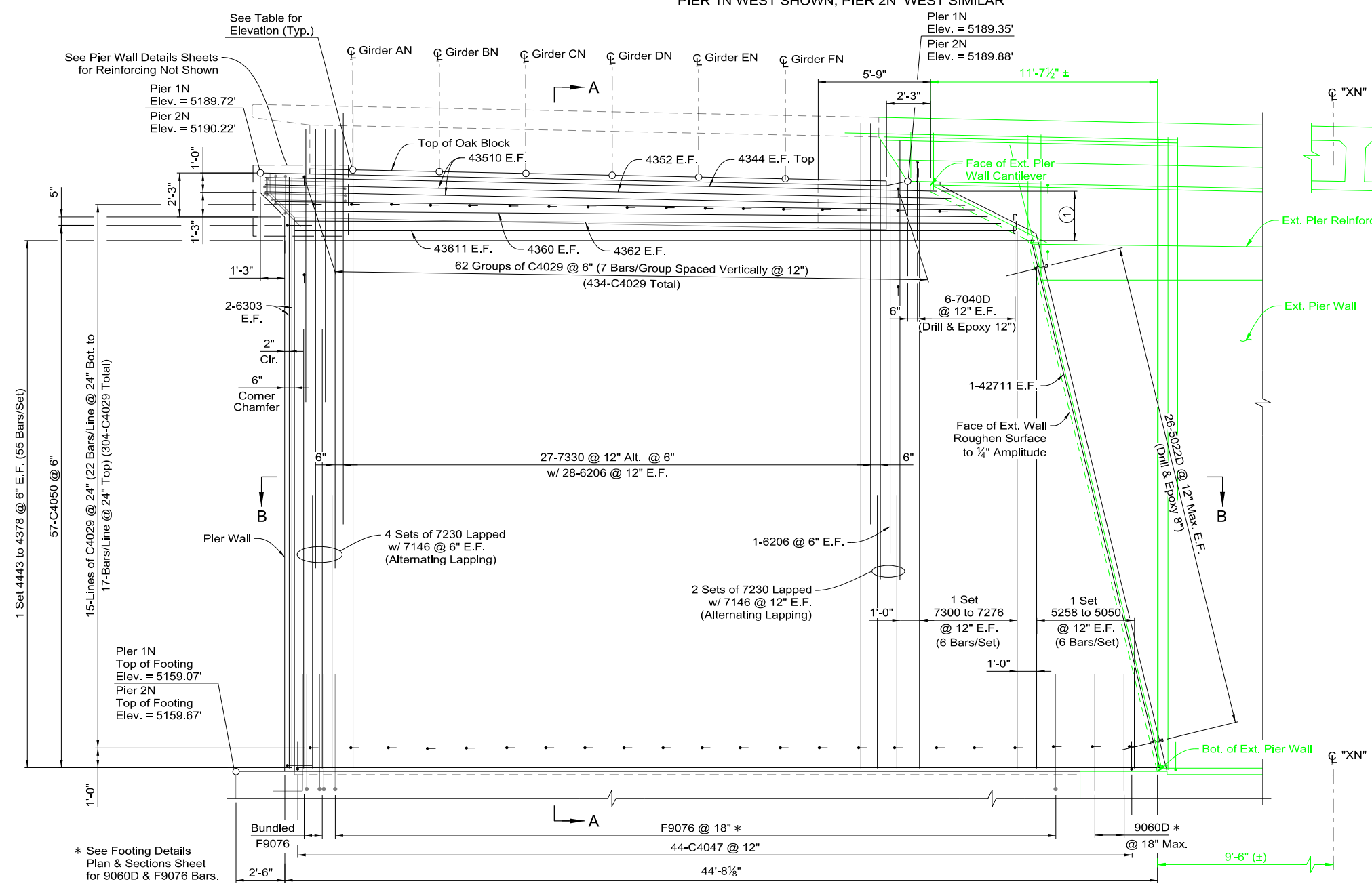
PIER 1N WEST SHOWN, PIER 2N WEST SIMILAR

**BOTTOM OF GIRDER ELEVATION**

Elevation	$\phi$ Girder AN	$\phi$ Girder BN	$\phi$ Girder CN	$\phi$ Girder DN	$\phi$ Girder EN	$\phi$ Girder FN
Pier 1N (Back Station)	5189.87	5189.79	5189.70	5189.62	5189.54	5189.45
Pier 1N (Forward Station)	5189.90	5189.82	5189.74	5189.66	5189.58	5189.49

**BOTTOM OF GIRDER ELEVATION**

Elevation	$\phi$ Girder AN	$\phi$ Girder BN	$\phi$ Girder CN	$\phi$ Girder DN	$\phi$ Girder EN	$\phi$ Girder FN
Pier 2N (Back Station)	5190.37	5190.29	5190.21	5190.14	5190.06	5189.98
Pier 2N (Forward Station)	5190.40	5190.32	5190.24	5190.17	5190.09	5190.01



**ELEVATION 1N**

PIER 1N WEST SHOWN, PIER 2N WEST SIMILAR  
LOOKING AHEAD ON LINE NORMAL TO SKEW



ORIGINAL CONTRACT: 2243  
MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**PIER 1N & 2N WEST  
PLAN & ELEVATION**

G-1748 N

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\* See Footing Details Plan & Sections Sheet for 9060D & F9076 Bars.



**NOTE:**

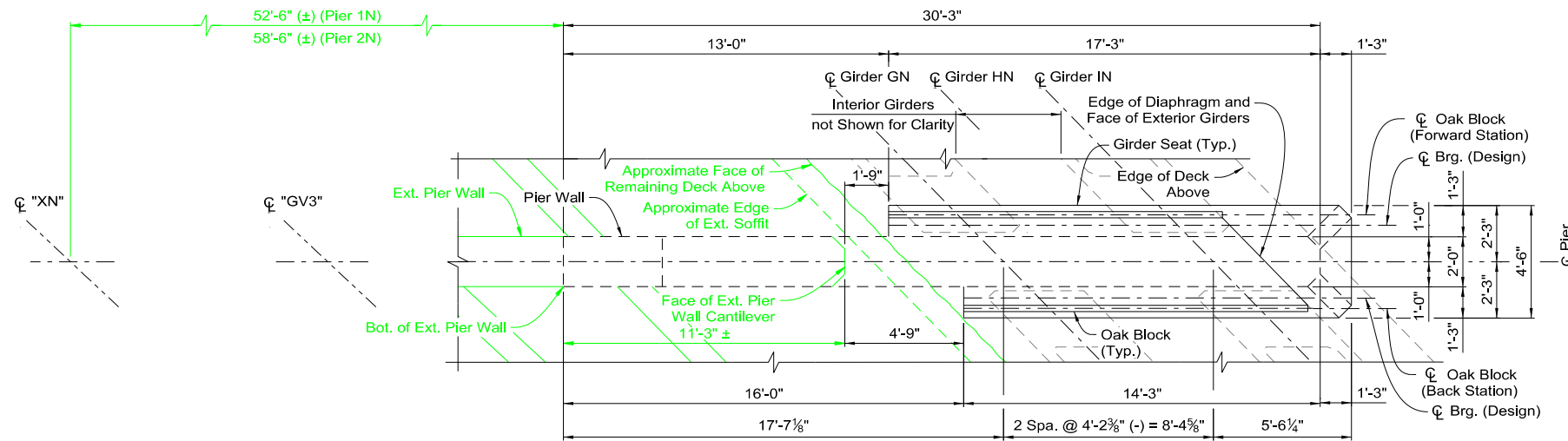
- Pier wall reinforcing and details apply to Pier 1N and Pier 2N.
- Bottom of girder elevations are taken along  $\phi$  Oak Block locations.
- Pier elevations shown are taken along  $\phi$  Pier, unless otherwise noted.

**Reinforcing Steel:**

- 6 Spa. @ 6 in Max. for horizontal #4 bars.

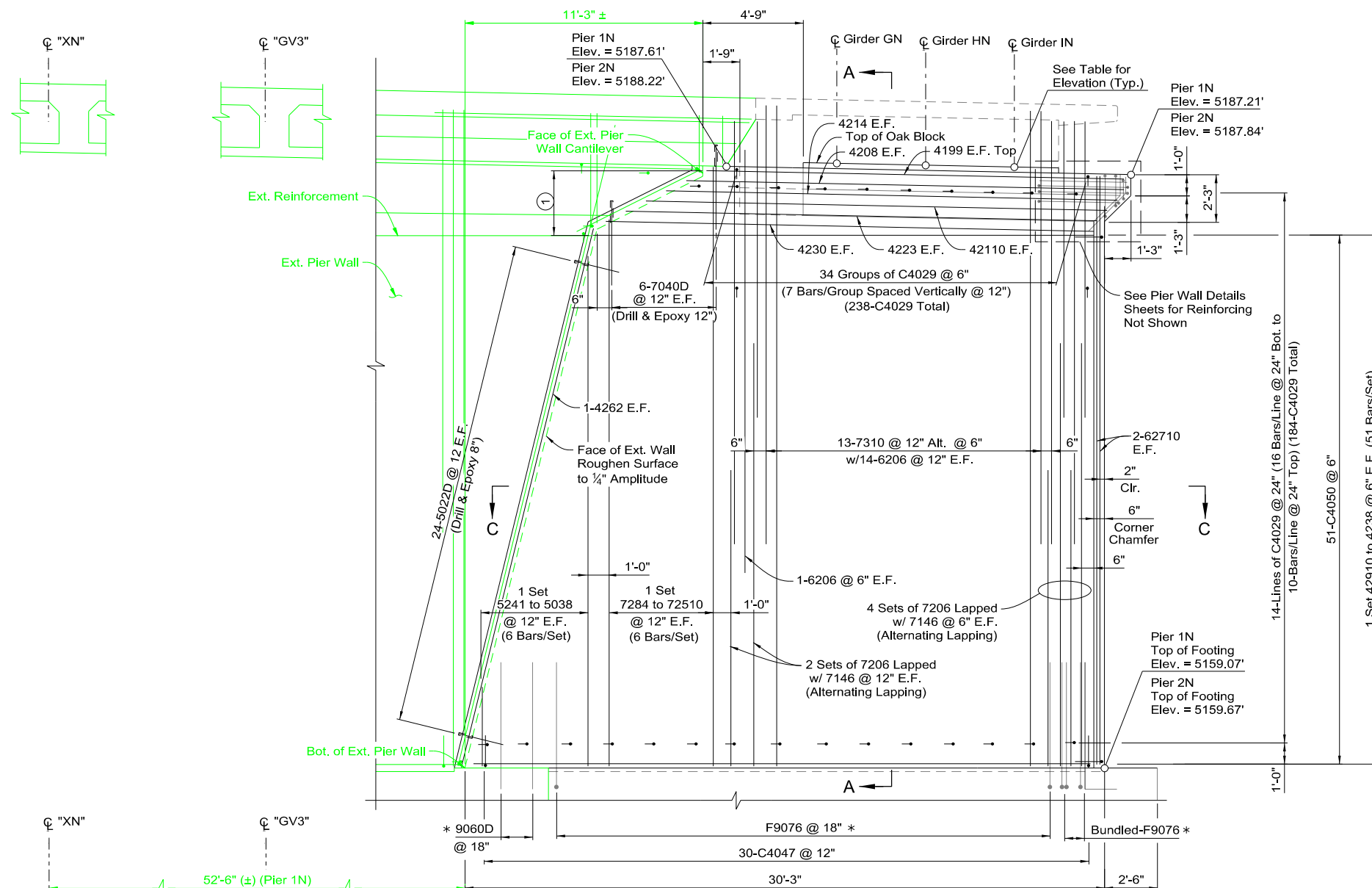
**MINIMUM BAR LAPS**

#7 Bars to #7 Bars = 38"



**PLAN 1N**

PIER 1N EAST SHOWN, PIER 2N EAST SIMILAR



**ELEVATION 1N**

PIER 1N EAST SHOWN, PIER 2N EAST SIMILAR  
LOOKING AHEAD ON LINE NORMAL TO SKEW

\* See Footing Details  
Plan & Sections Sheet  
for 9060D & F9076 Bars.

**BOTTOM OF GIRDER ELEVATION**

Elevation	$\phi$ Girder GN	$\phi$ Girder HN	$\phi$ Girder IN
Pier 1N (Back Station)	5187.73	5187.64	5187.55
Pier 1N (Forward Station)	5187.77	5187.68	5187.60

**BOTTOM OF GIRDER ELEVATION**

Elevation	$\phi$ Girder GN	$\phi$ Girder HN	$\phi$ Girder IN
Pier 2N (Back Station)	5188.34	5188.26	5188.18
Pier 2N (Forward Station)	5188.38	5188.30	5188.22

ORIGINAL CONTRACT: 2243  
MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT



STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**PIER 1N & 2N EAST  
PLAN & ELEVATION**

G-1748 N



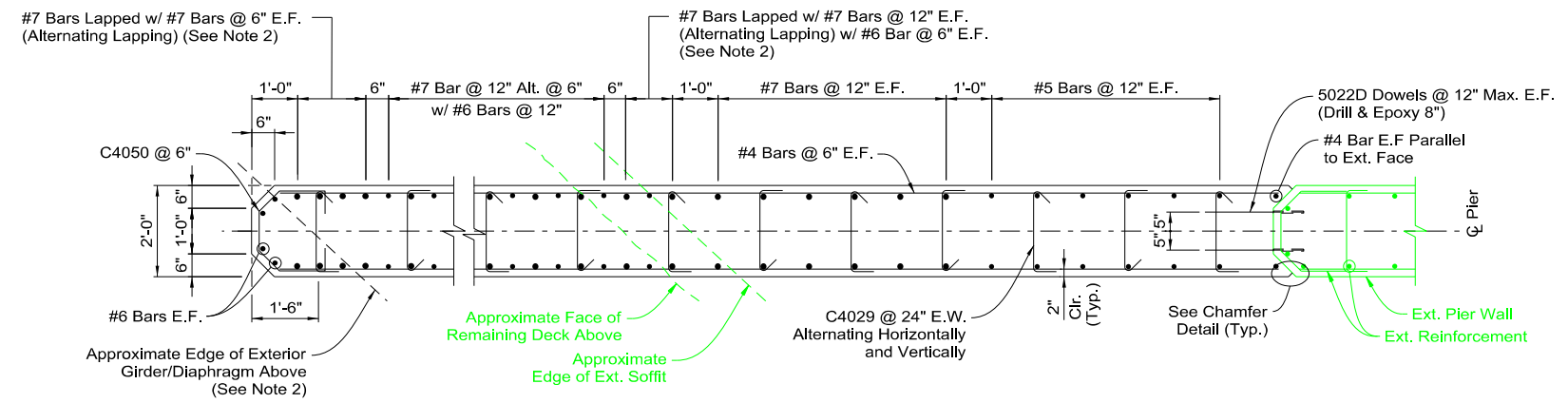
9805 Double R Boulevard, Suite 101  
Reno, NV 89521-5917  
PH: 775-337-4700 FAX: 775-337-4774

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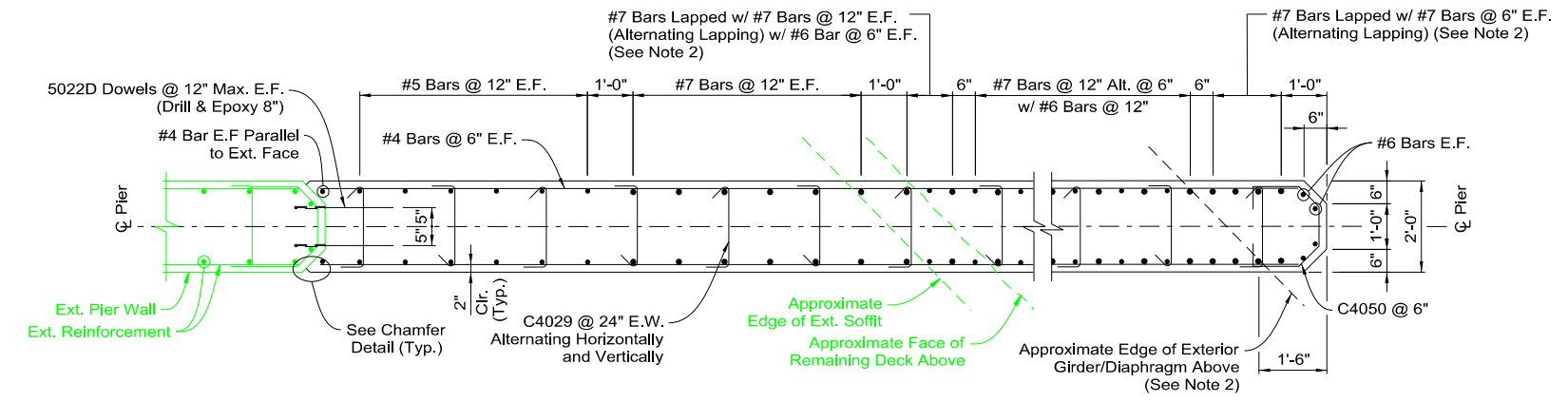
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B424

**NOTES:**

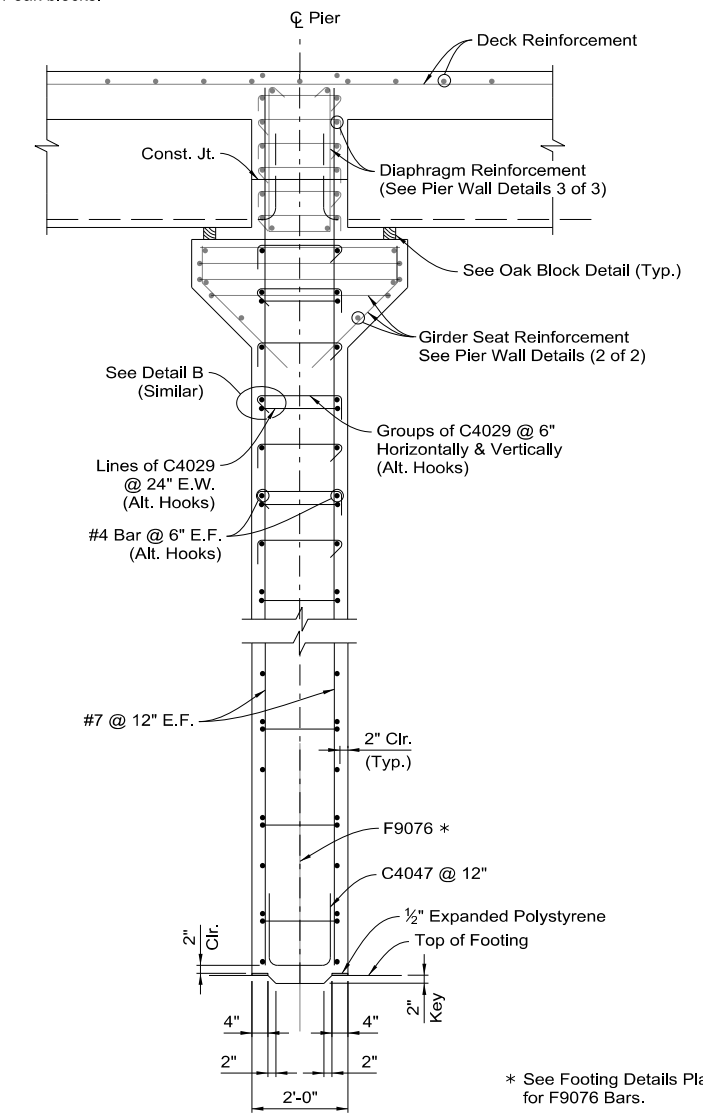
1. Pier wall reinforcing and details apply to Pier 1N and Pier 2N.
2. Adjust bar lap splicing to maintain 2" clear below top of pier wall or existing exterior girder.
3. Vary height as necessary to provide uniform bearing full width of girder.
4. Pier wall shall be continuously braced during construction until girders are placed, deck and diaphragm concrete is placed, and concrete is cured. Prior to the start of construction, the contractor shall provide a girder erection and wall stability plan that is signed and sealed by a Nevada registered Professional Engineer for review and approval.
5. Existing pier wall is approximate. Reinforcing shown may be trimmed to fit with the Engineer's approval.
6. Oak blocks shall be placed parallel to Pier Wall. Dimensions shown are normal to Pier Walls. Maintain no less than 3" clear under precast girder ends. Contractor shall maintain stability of Precast Girders on Abutment Walls during all construction operations. If Oak Block aspect ratio exceed 1:1 additional shoring may be required. No direct payment for oak blocks.



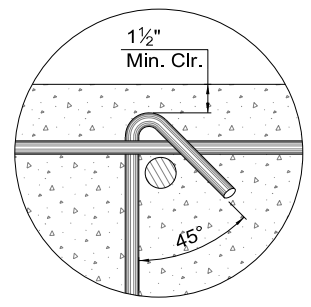
**SECTION B-B**  
PIER 1N WEST SHOWN, PIER 2N WEST SIMILAR



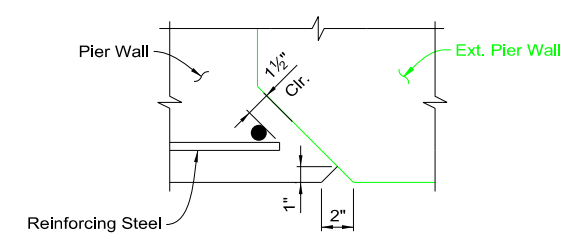
**SECTION C-C**  
PIER 1N EAST SHOWN, PIER 2N EAST SIMILAR



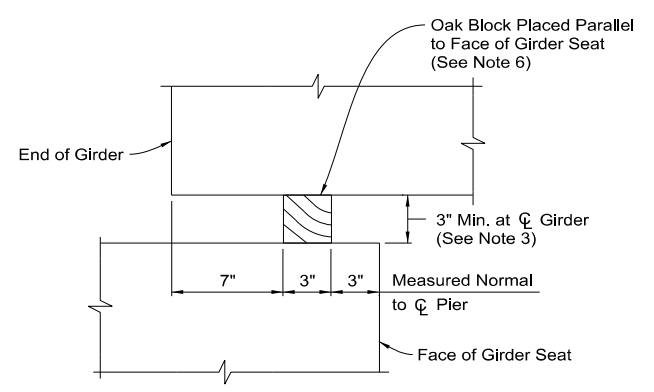
**SECTION A-A**



**DETAIL "B"**



**CHAMFER DETAIL**



**OAK BLOCK DETAIL**



12/20/2022

ORIGINAL CONTRACT: 2243  
MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

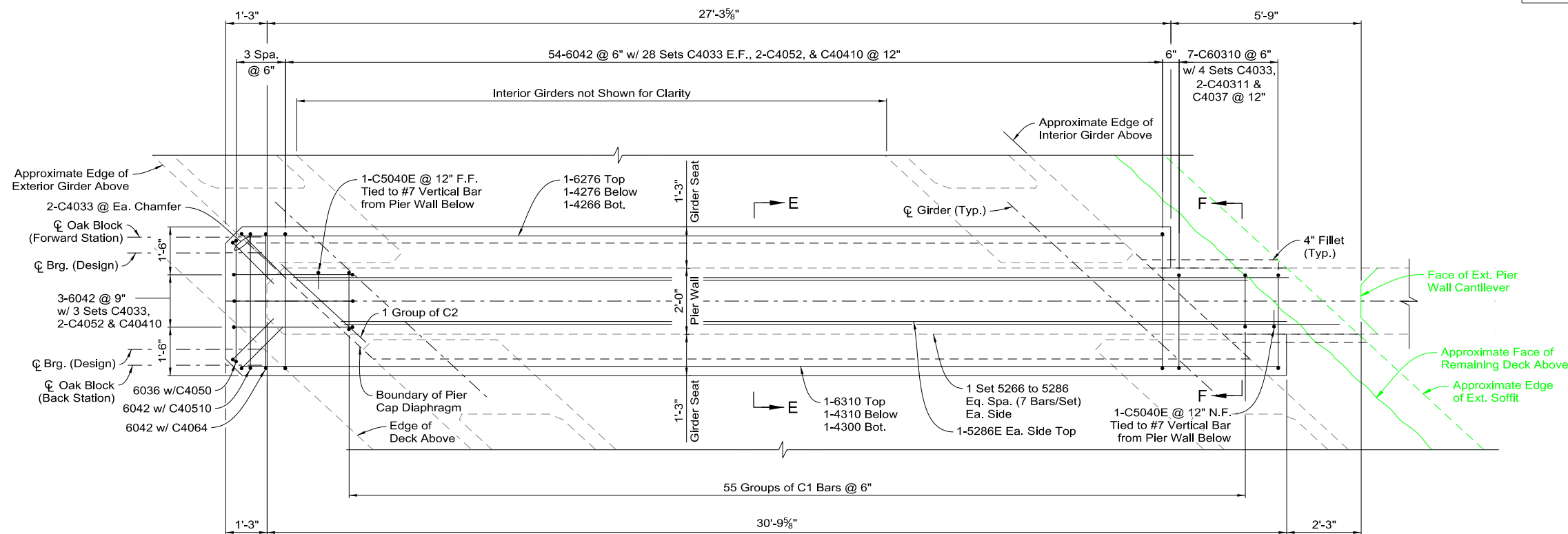
**PIER 1N & 2N WALL DETAILS**  
(1 of 3)

G-1748 N

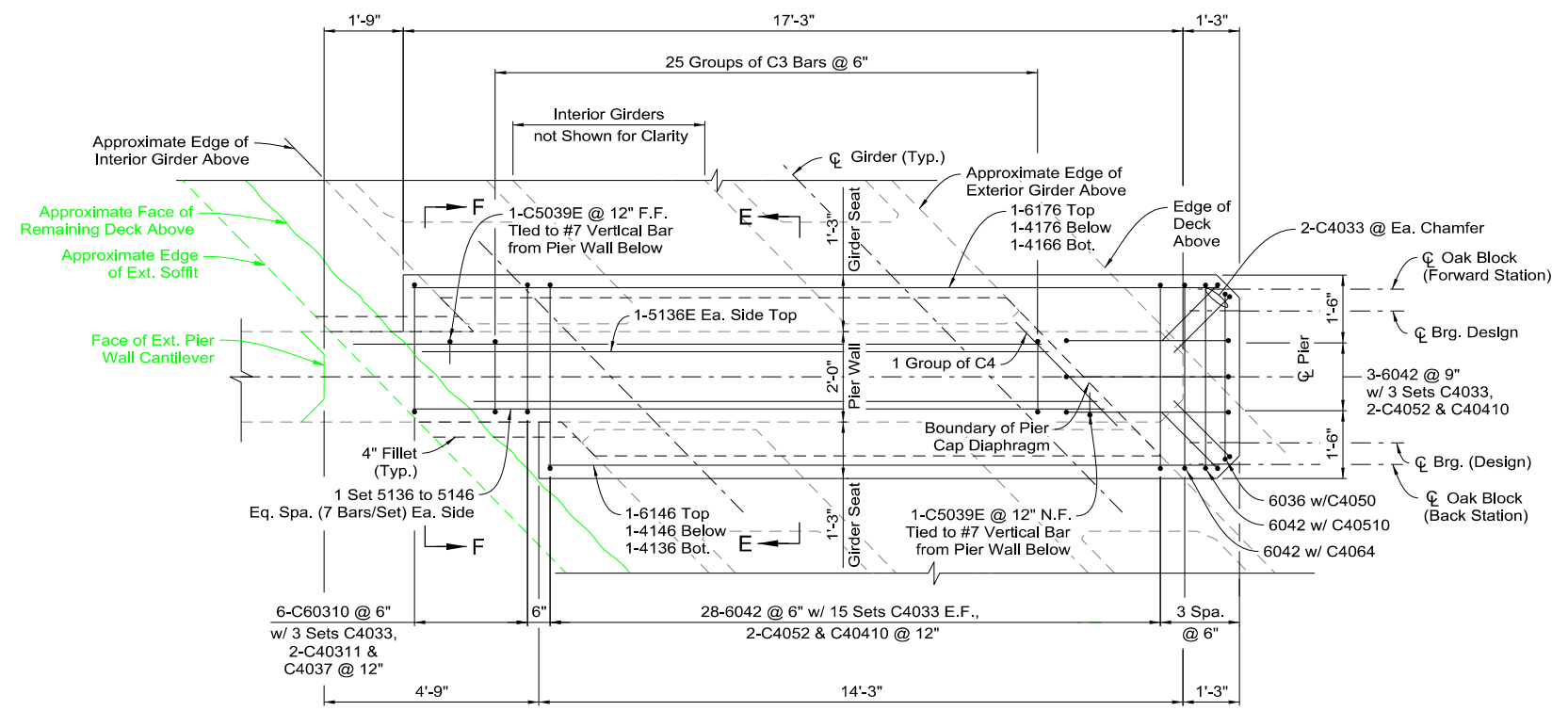
**HDR**  
HDR Engineering, Inc.

9805 Double R Boulevard, Suite 101  
Reno, NV 89521-5917  
PH: 775-337-4700 FAX: 775-337-4774

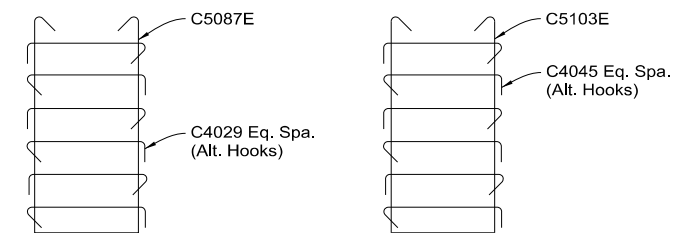
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B425



**PIER GIRDER SEAT - PLAN**  
PIER 1N WEST SHOWN, PIER 2N WEST SIMILAR

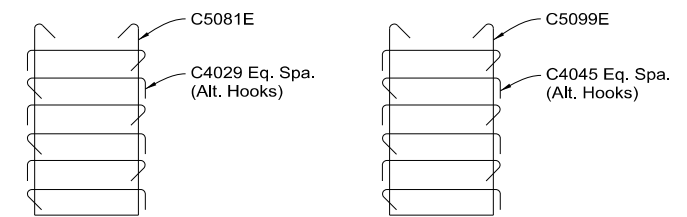


**PIER GIRDER SEAT - PLAN**  
PIER 1N EAST SHOWN, PIER 2N EAST SIMILAR



**GROUP C1**  
1-C5087E \*  
6-C4029

**GROUP C2**  
1-C5103E  
6-C4045



**GROUP C3**  
1-C5081E \*  
6-C4029

**GROUP C4**  
1-C5099E  
6-C4045

\* C5087E & C5081E Bars Tied to #7 Vertical Bars from Pier Wall



12/20/2022

ORIGINAL CONTRACT: 2243  
MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**PIER 1N & 2N WALL DETAILS**  
(2 of 3)

G-1748 N

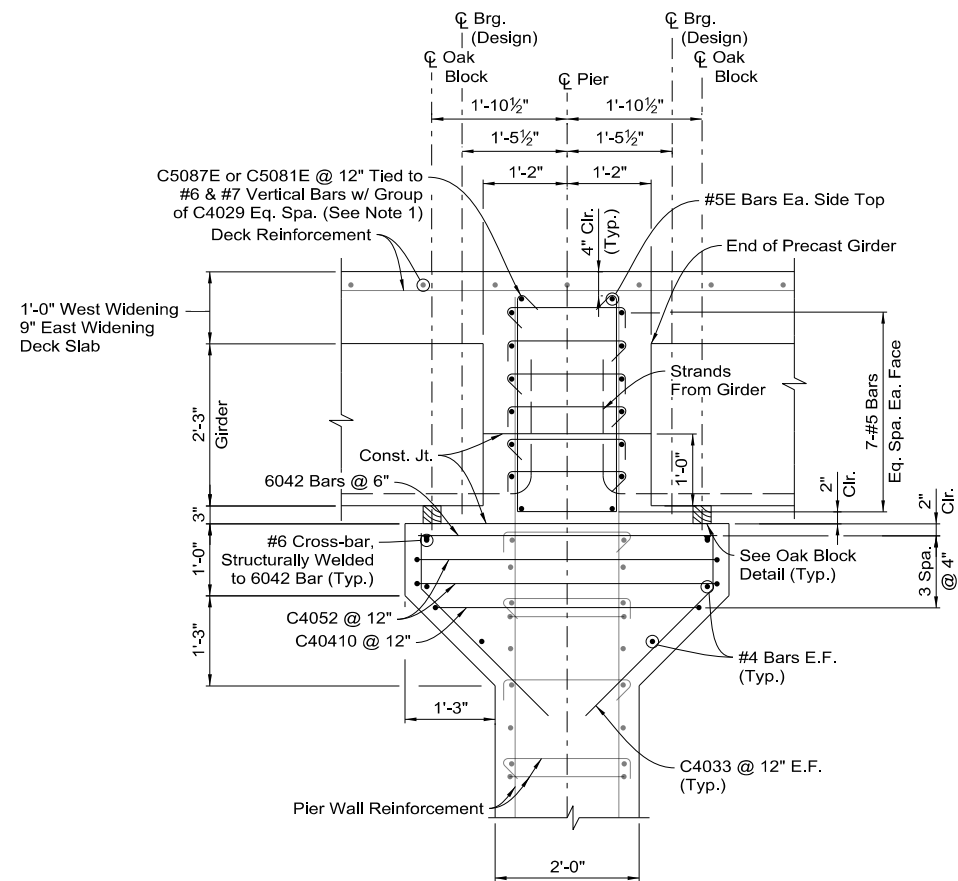
**HDR**  
HDR Engineering, Inc.

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PH: 775-337-4700 FAX: 775-337-4774

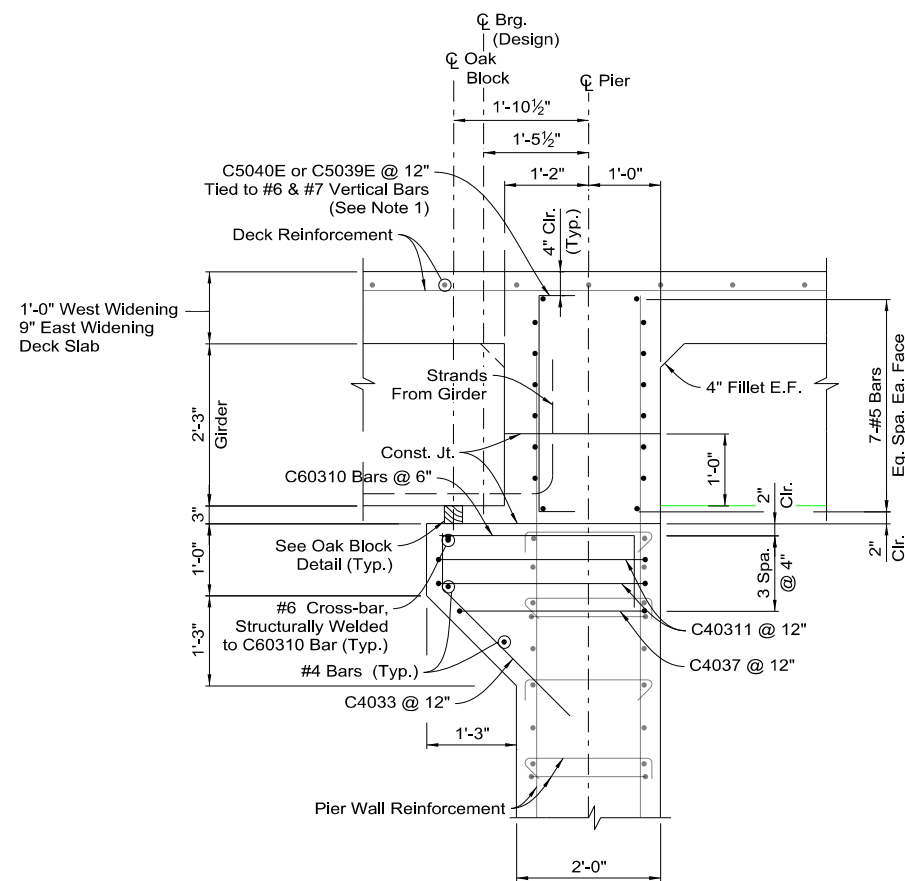
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B426

**NOTES:**

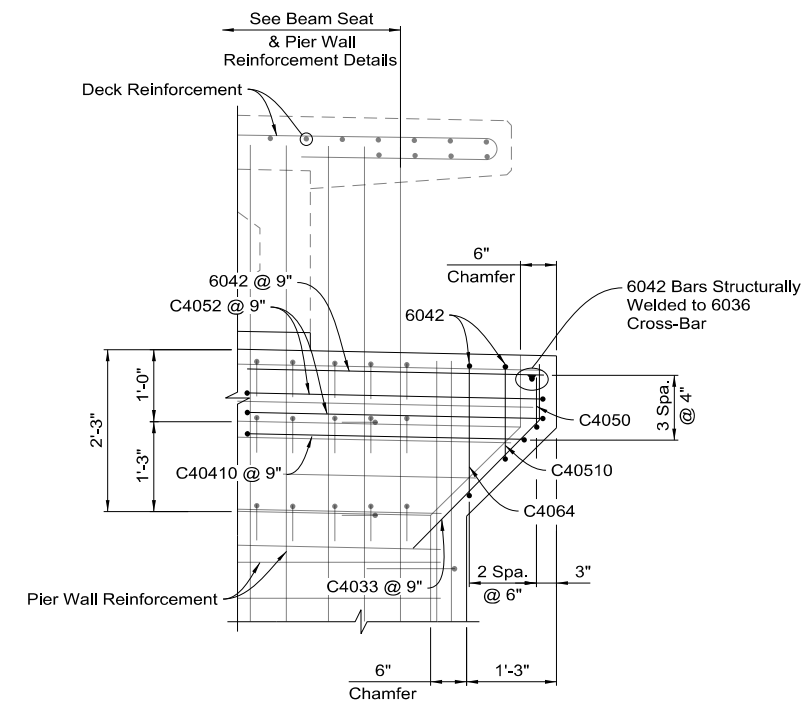
- #6 and #7 vertical bars from the pier wall shall be embedded a minimum of 30-inches into the diaphragm. C4029 ties shall be equally spaced.



**PIER GIRDER SEAT - SECTION E-E**



**PIER GIRDER SEAT - SECTION F-F**



**PIER CAP CANTILEVER - ELEVATION**

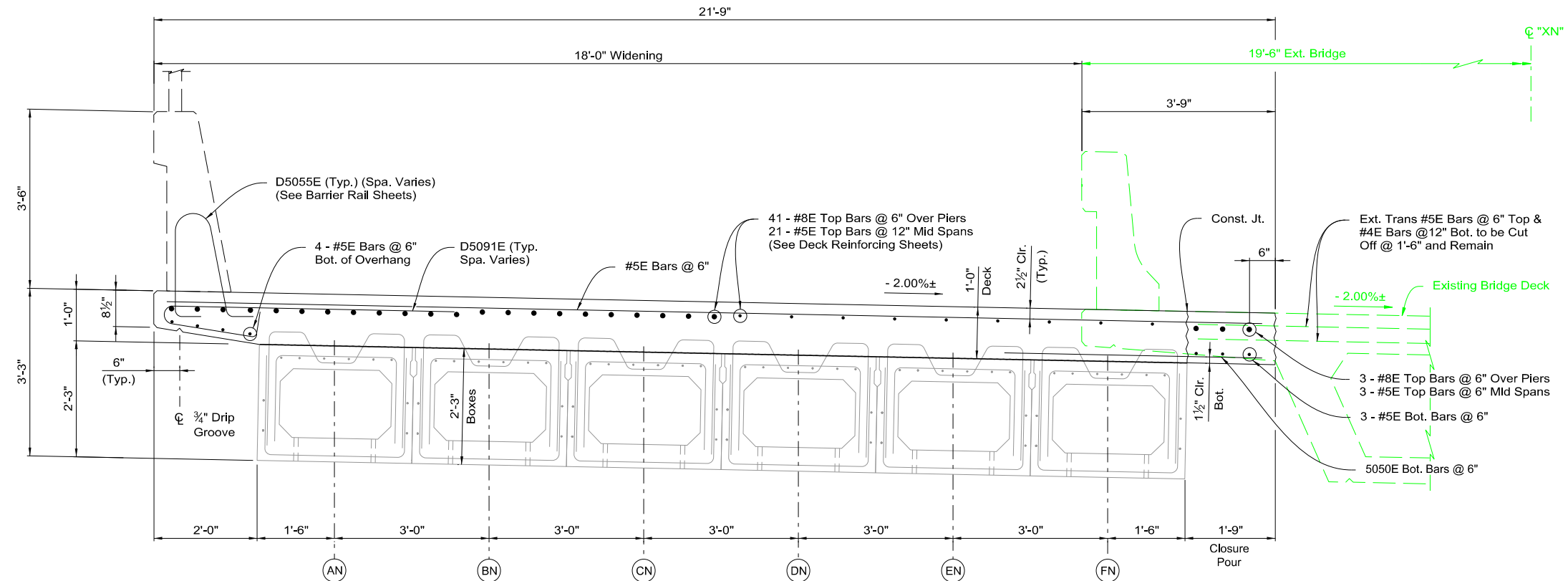


12/20/2022

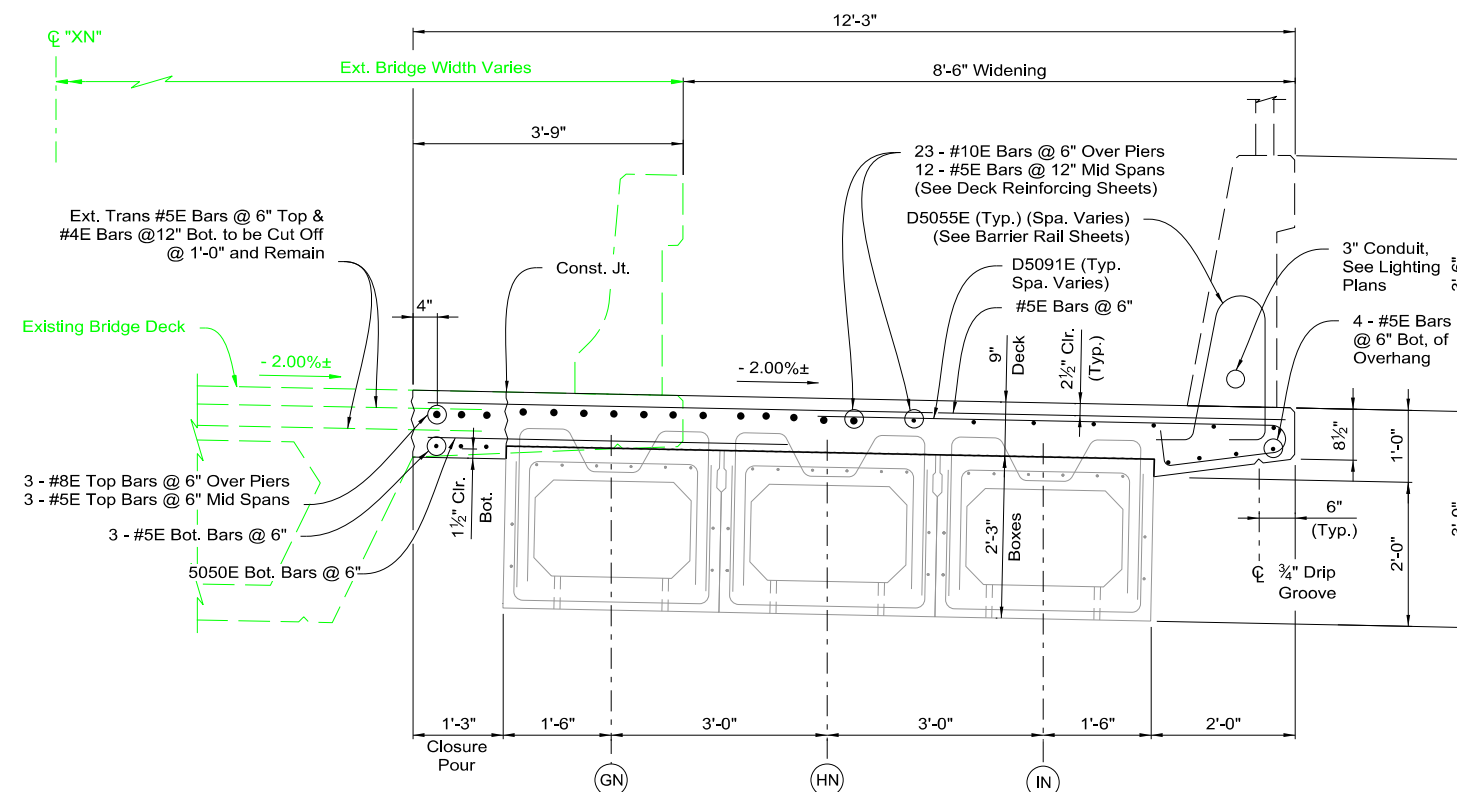
ORIGINAL CONTRACT: 2243  
 MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT

STATE OF NEVADA DEPARTMENT OF TRANSPORTATION	
<b>PIER 1N &amp; 2N WALL DETAILS</b> (3 of 3)	
G-1748 N	
<b>HDR</b> HDR Engineering, Inc.	9805 Double R Boulevard, Suite 101 Reno, NV 89521-5917 PH: 775-337-4700 FAX: 775-337-4774

STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B427



**TYPICAL SECTION - WEST**  
SCALE: 3/8" = 1'-0"  
LOOKING AHEAD ON LINE NORMAL TO ALIGNMENT



**TYPICAL SECTION - EAST**  
SCALE: 3/8" = 1'-0"  
LOOKING AHEAD ON LINE NORMAL TO ALIGNMENT

**NOTES:**

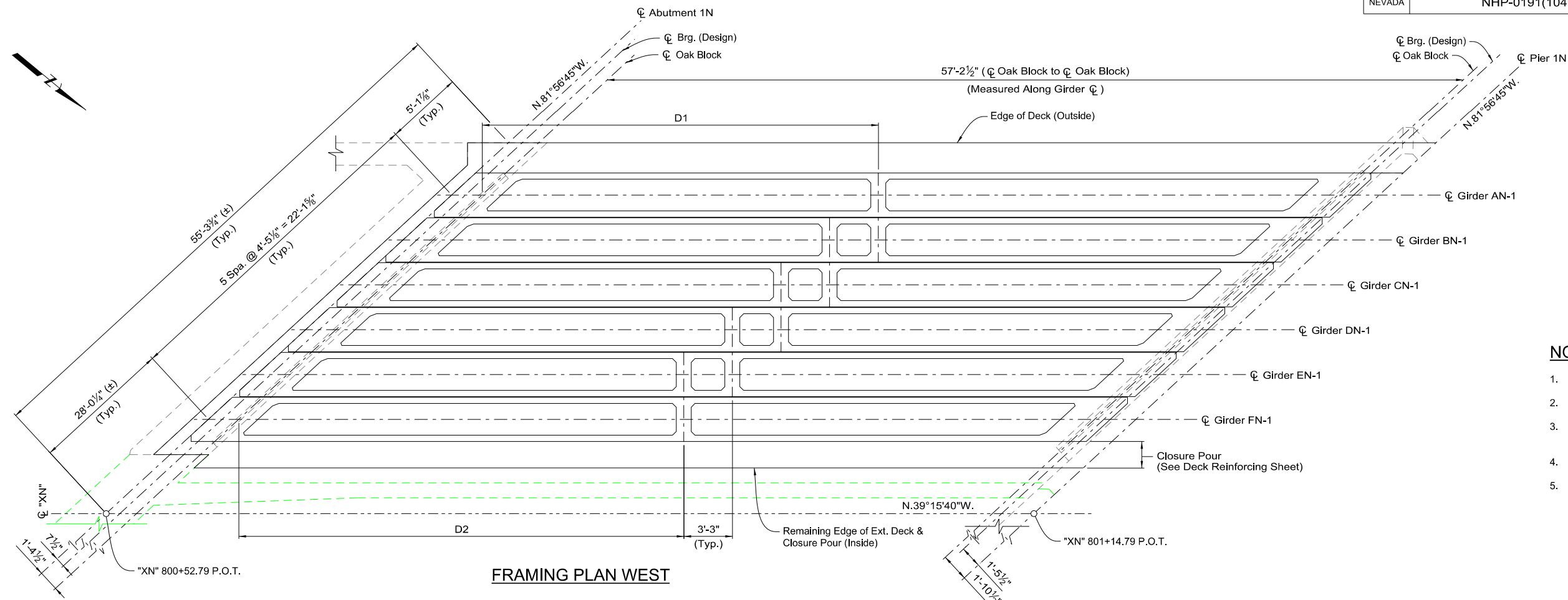
1. For precast girder reinforcing, see Precast Girder Details Sheet.
2. For removal of existing bridge overhang, see Removal Details (1 of 2) Sheet.
3. For conduit passing through expansion joints, see Expansion Fitting Detail on sheet TG-9 of the NDOT Standard Plans for Road and Bridge Construction.



ORIGINAL CONTRACT: 2243  
MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT

STATE OF NEVADA DEPARTMENT OF TRANSPORTATION	
<b>DECK SECTION</b>	
G-1748 N	
<b>HDR</b> HDR Engineering, Inc.	9805 Double R Boulevard, Suite 101 Reno, NV 89521-5917 PH: 775-337-4700 FAX: 775-337-4774

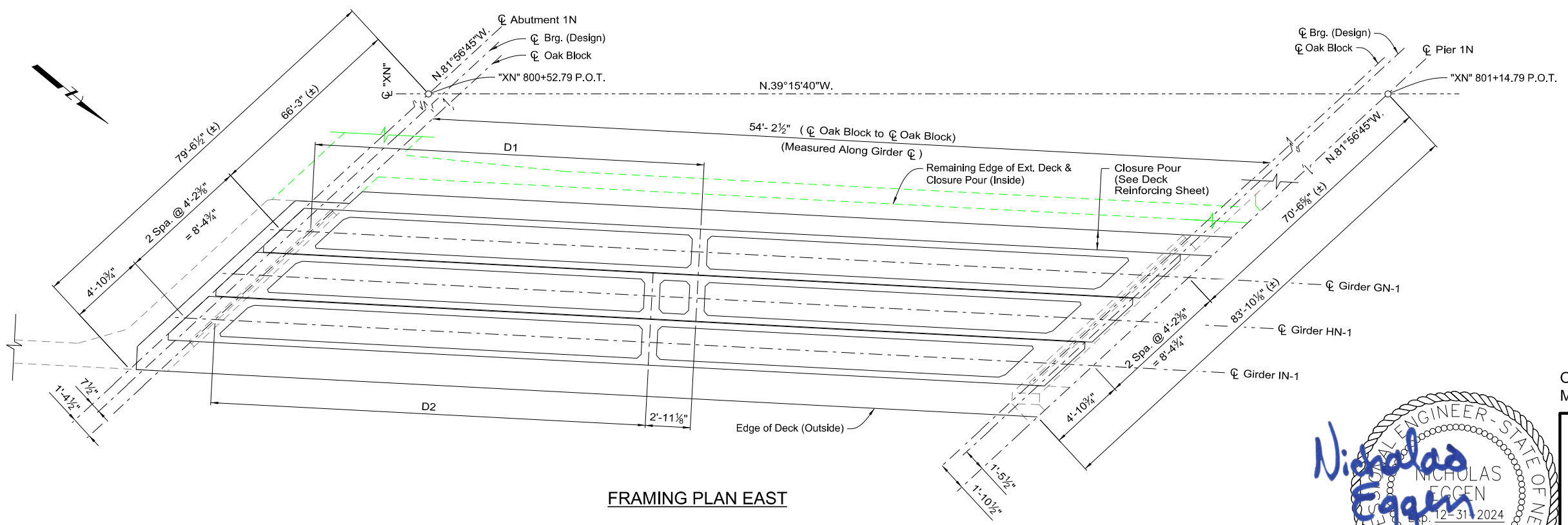




**FRAMING PLAN WEST**

**NOTES:**

1.  $\phi$  NB West Girders are parallel to N39°15'40"W
2.  $\phi$  NB East Girders are parallel to N36°15'40"W
3. For Girder Details see "Prestressed Girder Details" sheets.
4. All Dimensions are Horizontal.
5. All Brg  $\phi$  are parallel to N81°56'45"W



**FRAMING PLAN EAST**

Girder	D1	D2
AN-1	26'-5 3/4"	-
BN-1 to EN-1	26'-5 3/4"	29'-8 3/4"
FN-1	-	29'-8 3/4"
GN-1	25'-2 1/8"	-
HN-1	25'-2 1/8"	28'-1 1/4"
IN-1	-	28'-1 1/4"

ORIGINAL CONTRACT: 2243  
 MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT



STATE OF NEVADA  
 DEPARTMENT OF TRANSPORTATION

**PRESTRESSED GIRDER  
 FRAMING PLAN (1 of 3)**

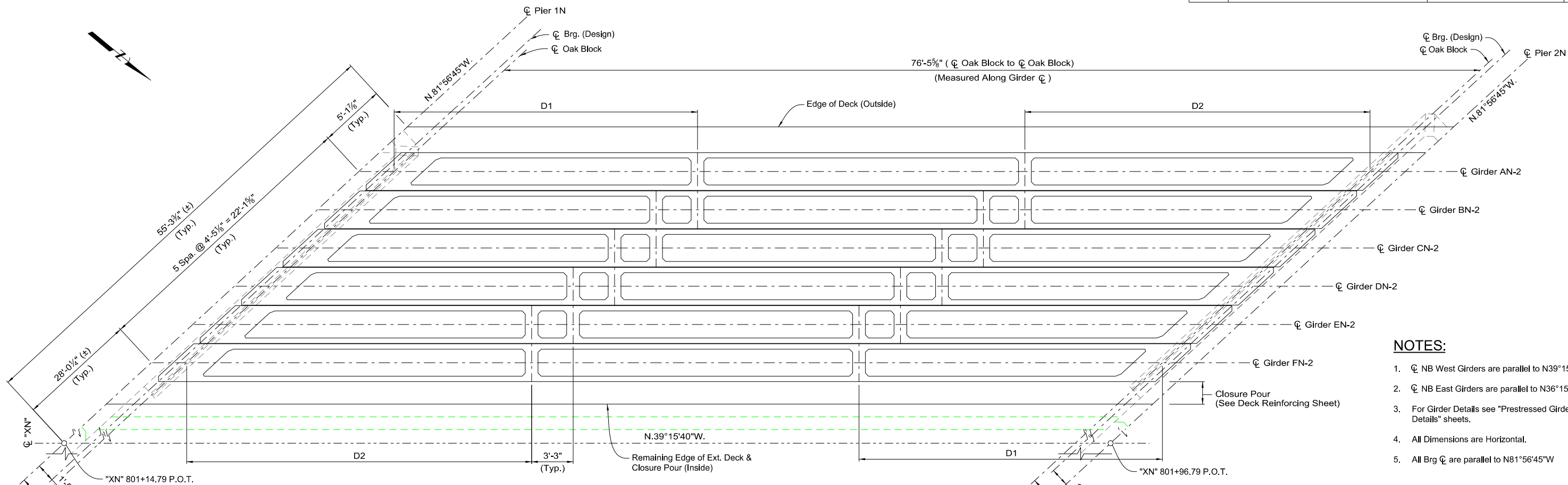
G-1748 N

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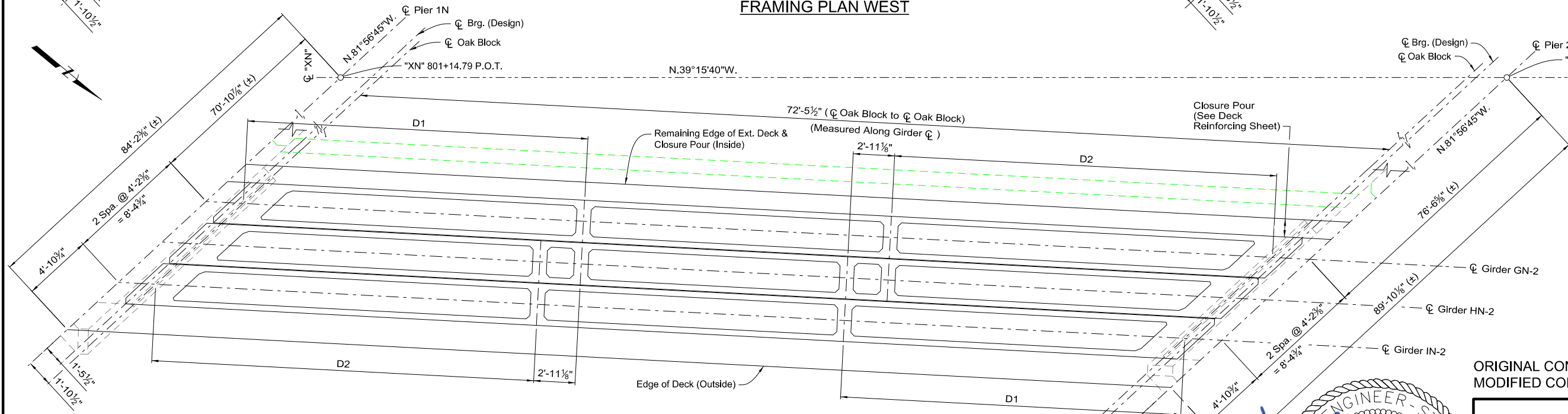
12/20/2022

STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B429



**FRAMING PLAN WEST**

- NOTES:**
1.  $\phi$  NB West Girders are parallel to N39°15'40"W
  2.  $\phi$  NB East Girders are parallel to N36°15'40"W
  3. For Girder Details see "Prestressed Girder Details" sheets.
  4. All Dimensions are Horizontal.
  5. All Brg  $\phi$  are parallel to N81°56'45"W



**FRAMING PLAN EAST**

Girder	D1	D2
AN-2	23'-9 1/4"	27'-0 1/4"
BN-2 to EN-2	23'-9 1/4"	27'-0 1/4"
FN-2	23'-9 1/4"	27'-0 1/4"
GN-2	22'-7 1/8"	25'-6 1/4"
HN-2	22'-7 1/8"	25'-6 1/4"
IN-2	22'-7 1/8"	25'-6 1/4"



12/20/2022

ORIGINAL CONTRACT: 2243  
 MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT

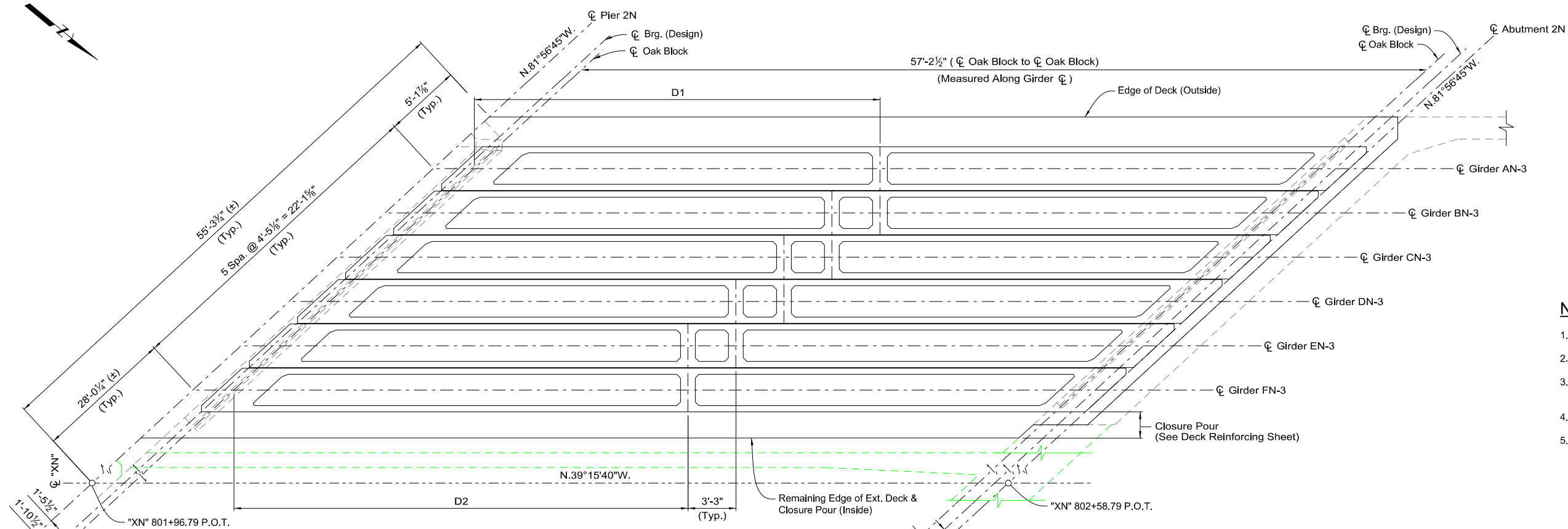
STATE OF NEVADA  
 DEPARTMENT OF TRANSPORTATION

**PRESTRESSED GIRDER  
 FRAMING PLAN (2 of 3)**

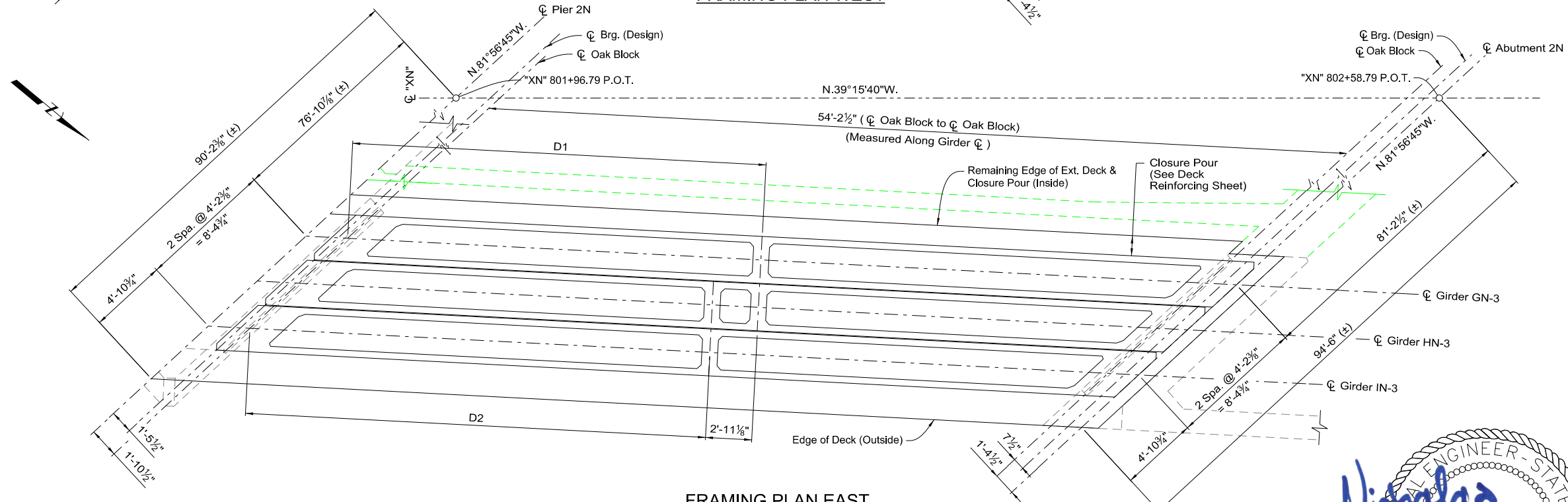
G-1748 N

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**FRAMING PLAN WEST**



**FRAMING PLAN EAST**

- NOTES:**
1.  $\phi$  NB West Girders are parallel to N39°15'40"W
  2.  $\phi$  NB East Girders are parallel to N36°15'40"W
  3. For Girder Details see "Prestressed Girder Details" sheets.
  4. All Dimensions are Horizontal.
  5. All Brg  $\phi$  are parallel to N81°56'45"W

Girder	D1	D2
AN-1	27'-5 1/2"	-
BN-1 to EN-1	27'-5 1/2"	30'-8 1/2"
FN-1	-	30'-8 1/2"
GN-1	26'-1 1/4"	-
HN-1	26'-1 1/4"	29'-0 3/8"
IN-1	-	29'-0 3/8"



12/20/2022

ORIGINAL CONTRACT: 2243  
 MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT

STATE OF NEVADA  
 DEPARTMENT OF TRANSPORTATION

**PRESTRESSED GIRDER  
 FRAMING PLAN (3 of 3)**

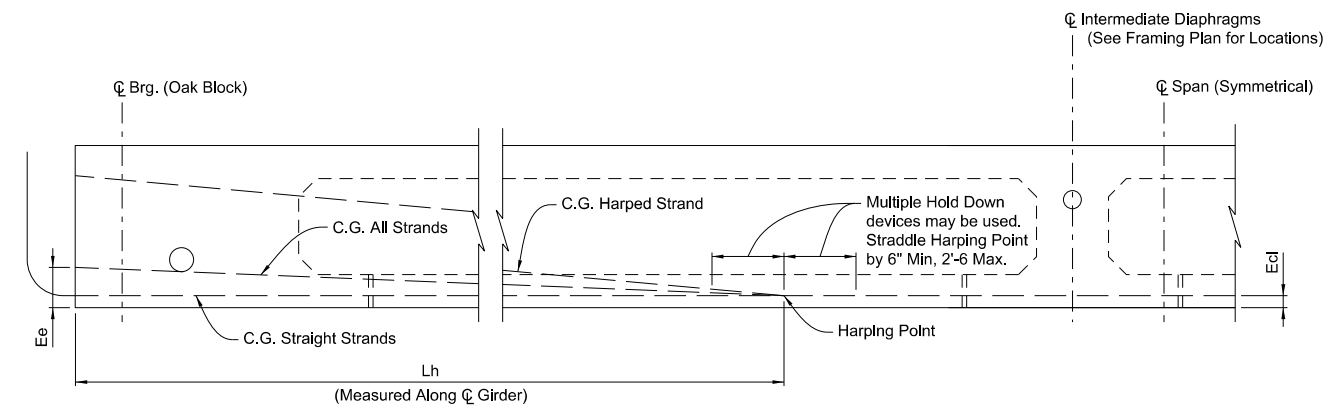
G-1748 N

8005 Double R Boulevard, Suite 101  
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 PH: 775-337-4700 FAX: 775-337-4774

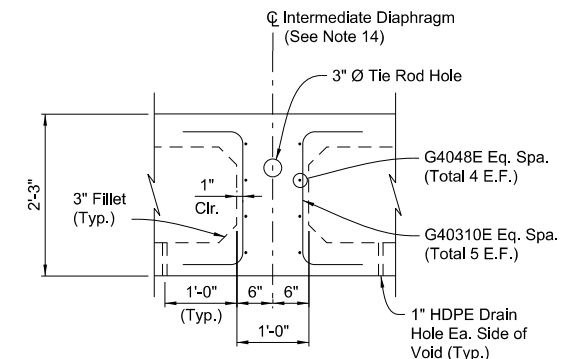
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B431

**NOTES:**

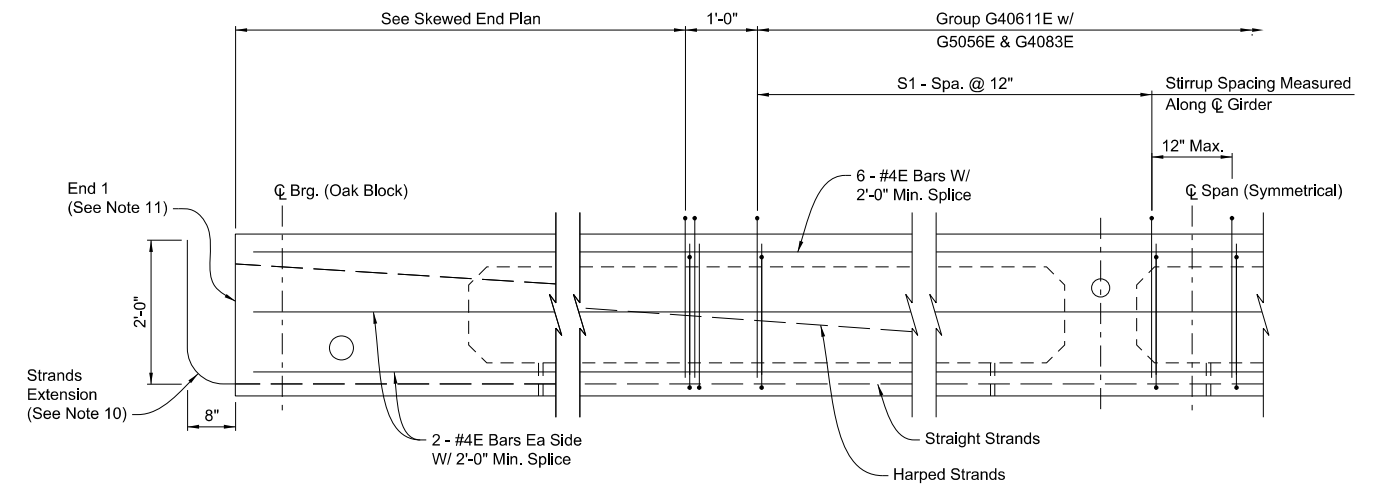
- See Prestressed Girder Details (2 of 2) for Girder Schedule.
- Fabricator shall increase plan length as necessary to compensate for shortening due to prestress, creep, and shrinkage. This shall be provided on shop drawings.
- Use 0.6"Ø Low Relaxation strands (AASHTO M203 Grade 270).
- All lifting embedments are to be designed by the Contractor in accordance with the Standard Specifications.
- Prestressed force shown in the table is for the controlling girder, and includes elastic gains at Service III Limit state.
- Contractor is responsible for analysis and evaluation of girder stability during construction, including shipping and erection.
- For predicted girder camber, see Camber and Concrete Classification sheet.
- All dimensions are horizontal. Fabricator must correct for vertical grade.
- All reinforcing steel to be ASTM A615 Grade 60, Epoxy Coated
- Extend number of bottom row strands as shown for ends of girders as detailed in the Girder Schedule. Cut all other strands flush. Offset extended strands between adjacent spans. Fabricator to select and show extended strands in shop drawings.
- End 1 shown on down-station side, End 2 on opposite up-station end of girder.
- Any reinforcing interfering with the location of the transverse tie rod ducts may be adjusted with the approval of the engineer. Where required, install additional reinforcing groups to maintain the minimum spacing as shown on the plans.
- The Contractor shall check, record, and submit the vertical deflection (Camber) of each girder at the following times: (Initial) upon removal of the girder from the casting bed, (Shipment) within 14 days prior to shipment, and (Erection) after girder erection and prior to equalization. At a minimum, survey data shall be taken at each girder end, and at midspan. For predicted girder camber, see "Pouring Schedule, Concrete Placement, and Camber" sheet. If vertical camber at Erection varies from predicted girder camber by more than 1/2", submit to the Bridge Engineer a Plan for Corrective Action.
- For blockouts and tie rod hole positioning at diaphragms not shown, see "Transverse Tie Rod Details" sheet.



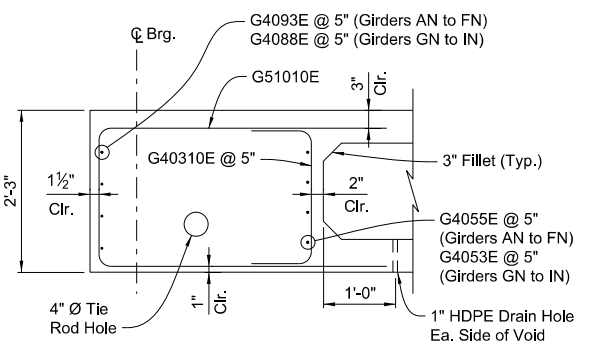
**GIRDER ELEVATION**



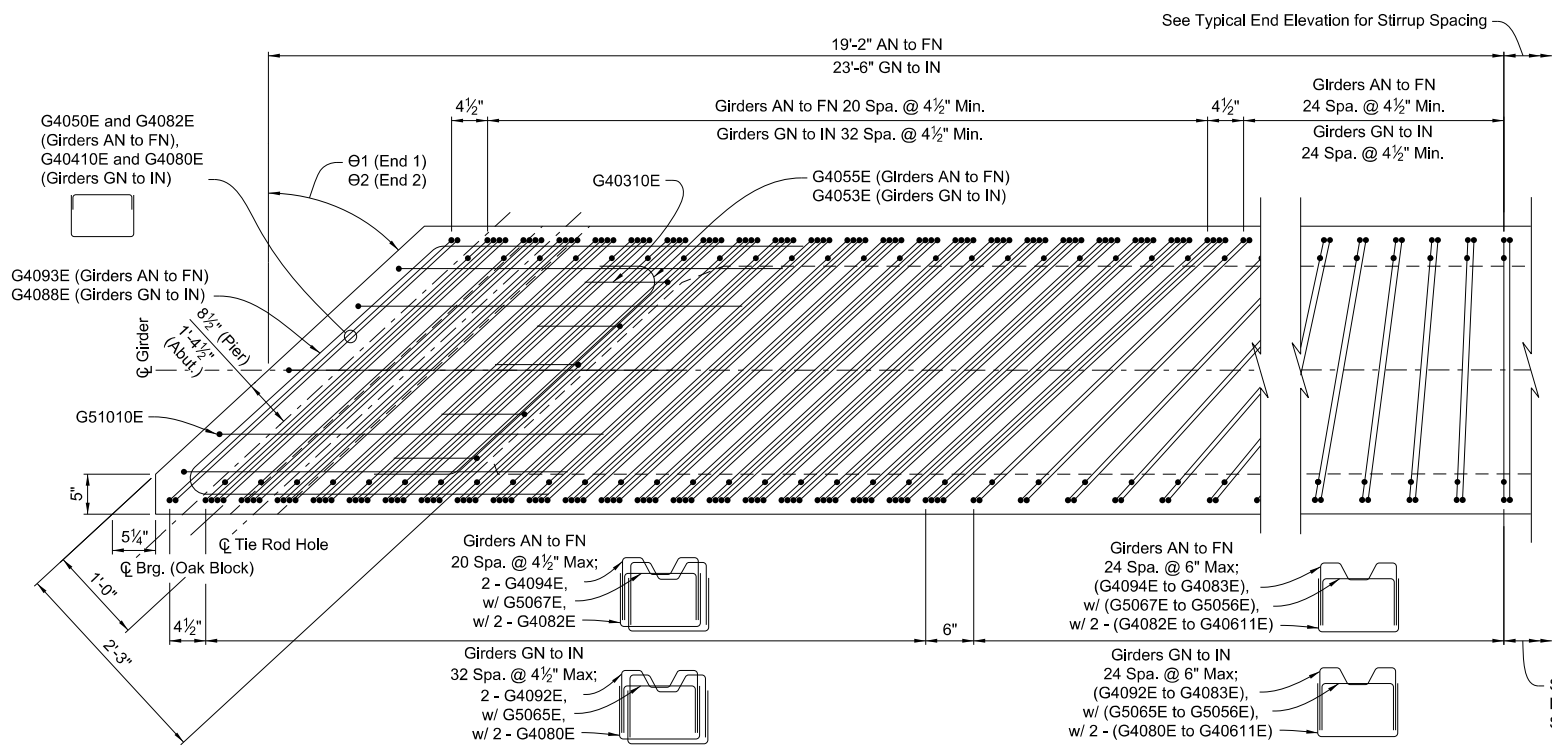
**INTERMEDIATE DIAPHRAGM SECTION**



**TYPICAL END ELEVATION**

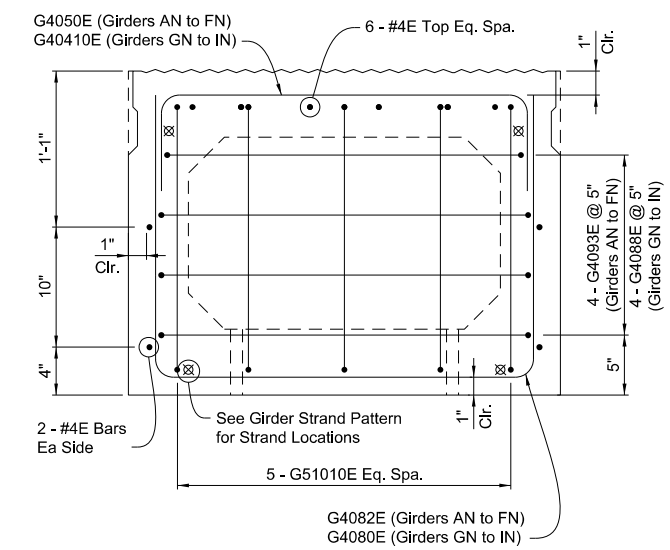


**TYPICAL END SECTION**

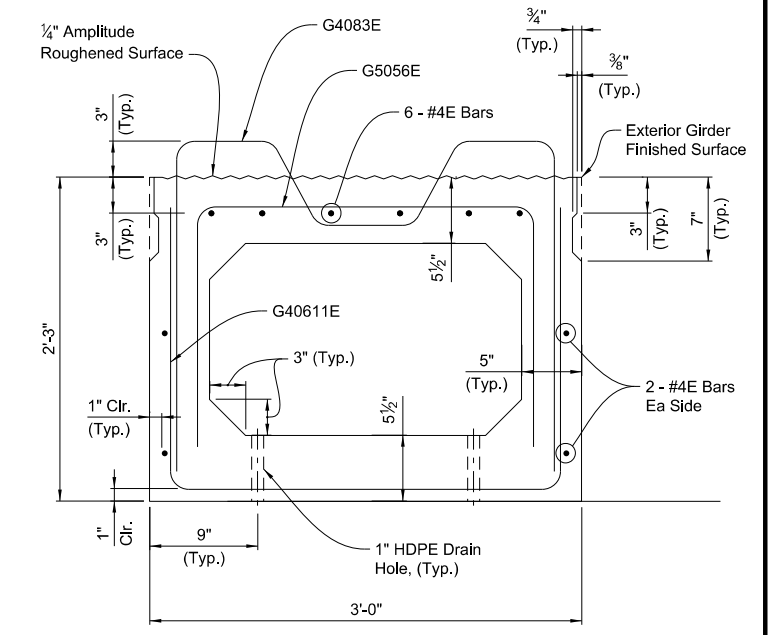


**SKEWED END PLAN**

(Girders AN to FN Shown, Girders GN to IN Similar)  
(End 1 Shown, End 2 Similar)



**TYPICAL END VIEW**



**TYPICAL SECTION**



12/20/2022

ORIGINAL CONTRACT: 2243  
MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**PRESTRESSED GIRDER DETAILS**  
(1 of 2)

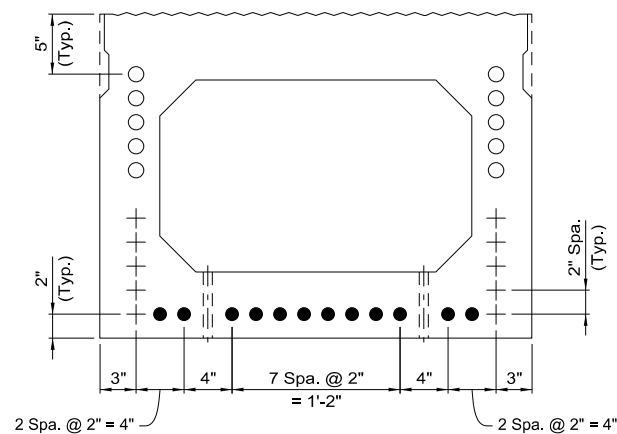
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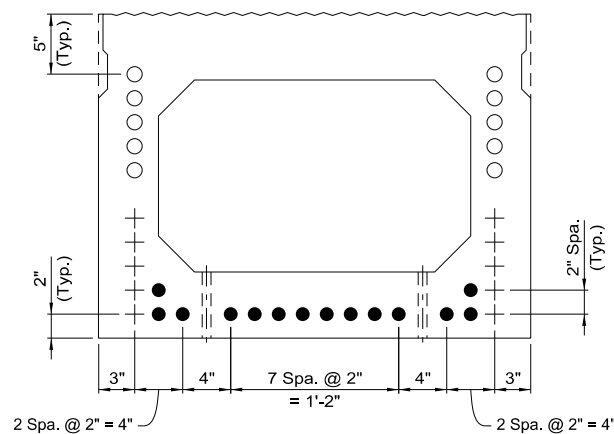
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Girder Schedule																			
Span	Box Beam	Box Beam Type	Plan Length	Min. Concrete Compressive Strength		Stirrup Spaces	Harping Dist	End Skew		Strand Pattern	Harped		Straight		Prestressed Force After All Losses	Location of C.G. Strands		Strand Extension (Number of Strands)	
				f <sub>ci</sub> (ksi)	f <sub>c</sub> (ksi)			Lh (ft)	θ 1 (deg)		θ 2 (deg)	Number of Strands	Jacking Force (kips)	Number of Strands		Jacking Force (kips)	E <sub>e</sub> (inch)	E <sub>cl</sub> (inch)	End 1
1	AN-FN	36" x 27"	60'-3 3/8"	6.00	7.50	11	24'-1 3/8"	47° 18' 55"	47° 18' 55"	1	10	439	12	527	755	9.27	3.82	6	6
2	AN-FN	36" x 27"	78'-6 3/4"	6.00	7.50	21	31'-5 1/8"	47° 18' 55"	47° 18' 55"	2	10	439	14	615	856	8.83	3.83	7	7
3	AN-FN	36" x 27"	60'-3 3/8"	6.00	7.50	11	24'-1 3/8"	47° 18' 55"	47° 18' 55"	1	10	439	12	527	755	9.27	3.82	6	6
1	GN-IN	36" x 27"	57'-1 1/2"	6.00	7.50	6	22'-10 1/4"	44° 18' 55"	44° 18' 55"	1	10	439	12	527	745	9.27	3.82	6	6
2	GN-IN	36" x 27"	74'-5 1/4"	6.00	7.50	14	29'-9 1/4"	44° 18' 55"	44° 18' 55"	1	10	439	12	527	784	9.27	3.82	6	6
3	GN-IN	36" x 27"	57'-1 1/2"	6.00	7.50	6	22'-10 1/4"	44° 18' 55"	44° 18' 55"	1	10	439	12	527	745	9.27	3.82	6	6

E<sub>e</sub> = C.G. of all strands at end of girder  
E<sub>cl</sub> = C.G. of all strands at centerline of girder



STRAND PATTERN 1



STRAND PATTERN 2

**LEGEND**

- Denotes Straight Strands
- Denotes Harp Strands at Ends
- ⊕ Denotes Harp Strands At Midspan

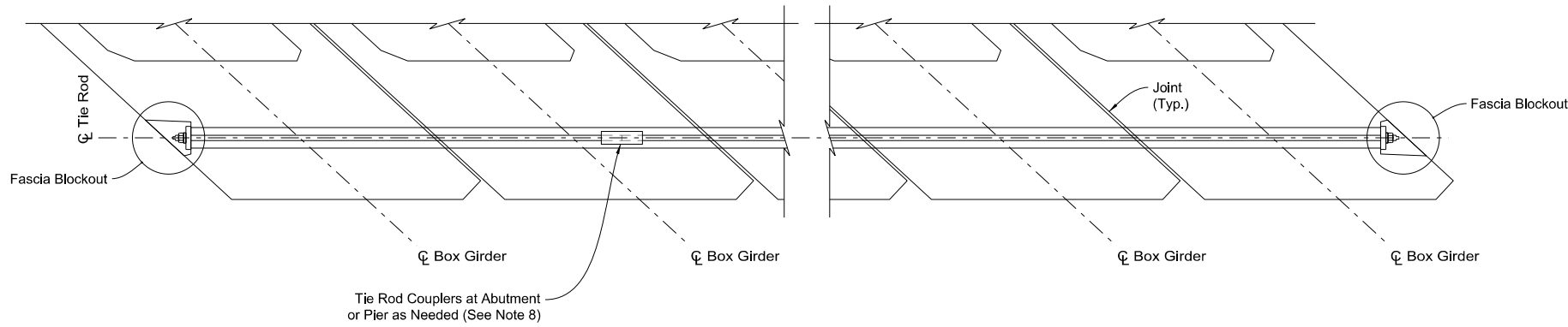


12/20/2022

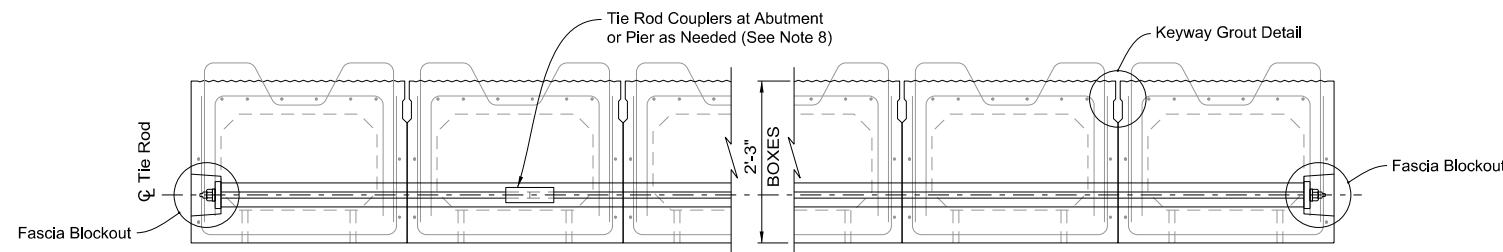
ORIGINAL CONTRACT: 2243  
MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT

STATE OF NEVADA DEPARTMENT OF TRANSPORTATION	
<b>PRESTRESSED GIRDER DETAILS</b> (2 of 2)	
G-1748 N	
<b>HDR</b> HDR Engineering, Inc.	9805 Double R Boulevard, Suite 101 Reno, NV 89521-5917 PH: 775-337-4700 FAX: 775-337-4774

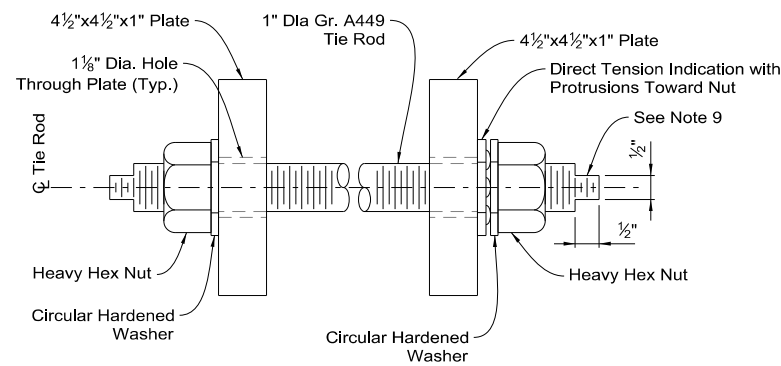
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B433



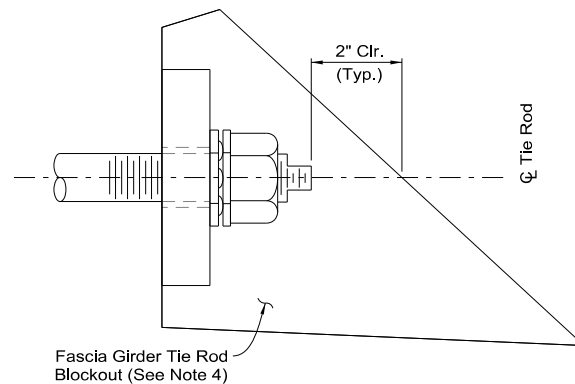
**TRANSVERSE TENSIONING PLAN @ ABUTMENT & PIER**



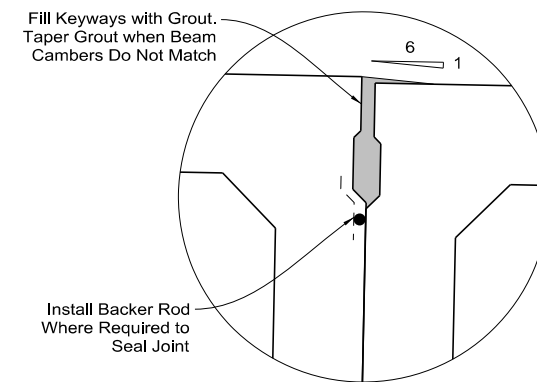
**TRANSVERSE TENSIONING ELEVATION @ ABUTMENT & PIER**



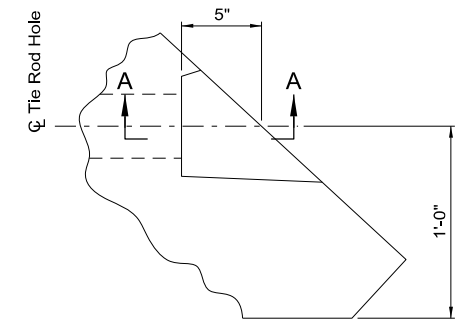
**TIE ROD DETAILS**



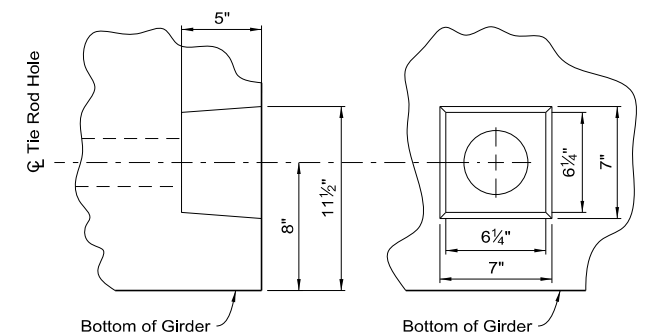
**TIE ROD BLOCKOUT @ ABUTMENT & PIER  
TYPICAL, FASICA GIRDER**



**KEYWAY GROUT DETAIL**



**PARTIAL PLAN**



**SECTION A-A  
FASCIA BLOCKOUT @ ABUTMENT & PIER  
TYPICAL, FASICA GIRDER**

**NOTES**

1. Transverse tie rods shall be 1" diameter high strength rod conforming to ASTM A449. Heavy hex nuts shall conform to ASTM A563. Hardened washers shall conform to ASTM F436. Bearing plates shall conform to ASTM A36. Direct tension indicators (DTIS) shall conform to ASTM F959. Hot-dip galvanize all tie rod components after fabrication, excluding DTIS. Tie rods and all associated hardware will be paid for under the structural steel bid item.
2. Plates at tie rod locations shall be ASTM A36. Hot-dip galvanize after fabrication. wedges and plates are paid for under the structural steel bid item.
3. Tighten all transverse tie rods, to about one half the specified tension before proceeding with the final tensioning. Tension all tie rods to a minimum of 51.0 kips as indicated by the DTI.
4. After girder erection and all tie rod tensioning is completed fill all tie rod blockouts and keyways with grout. Keyway and blockout grout is considered incidental to the transverse tie rods installation and there will be no direct payment.
5. After placement of the keyway grout no additional load may be placed on the girders until the grout has reached a compressive strength of 2000 psi.
6. At no time prior to completion of the deck curing operation shall any equipment or vehicles be placed on the bridge without approval of the bridge engineer.
7. For intermediate diaphragm locations, see Prestressed Girder Framing plan sheets.
8. Depending on order of construction, conflicts with adjacent structures may exist at time of tie rod installation. tie rod couplers may be used to aide in construction. Tie rod couplers are considered incidental to the transverse tie rod installation and there will be no direct payment.
9. Mill both ends of tie rod. Use wrench to prevent the rod turning when tensioning.



12/20/2022

ORIGINAL CONTRACT: 2243  
MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT

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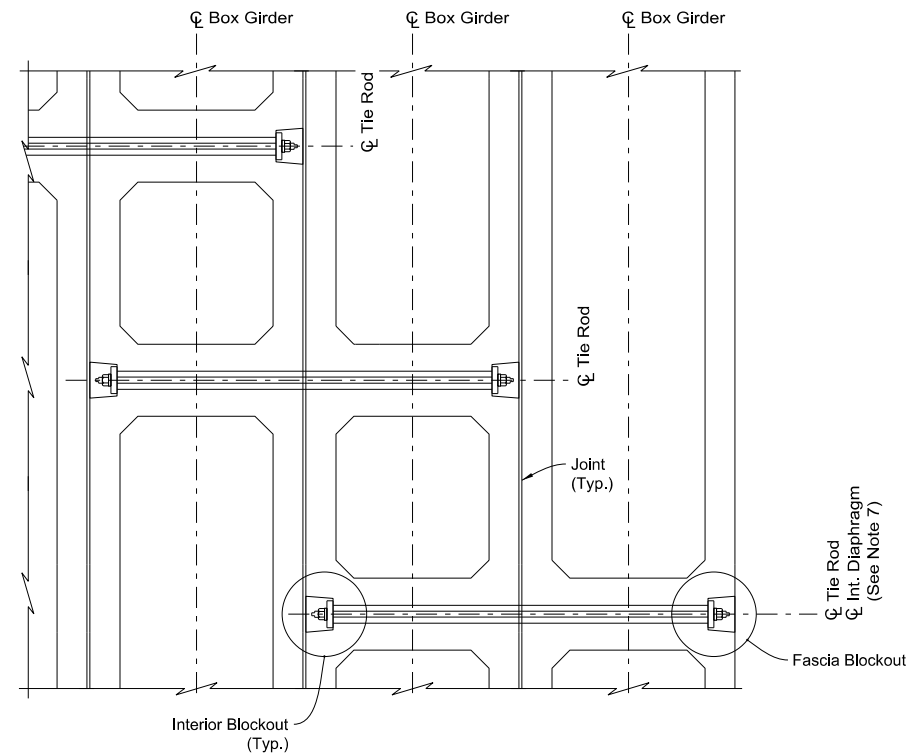
**TIE ROD DETAILS  
(1 OF 2)**

G-1748 N

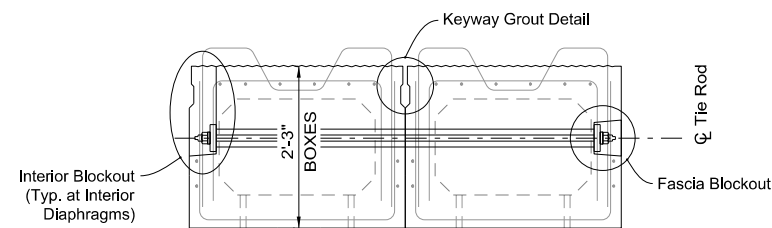
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NEVADA	NHP-0191(104)	WASHOE	B434



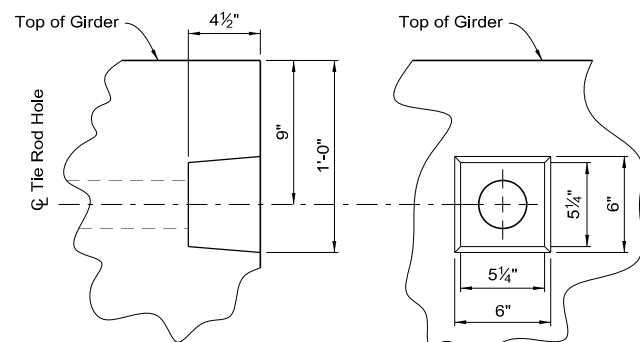
**TRANSVERSE TENSIONING PLAN  
@ INTERIOR DIAPHRAGM**



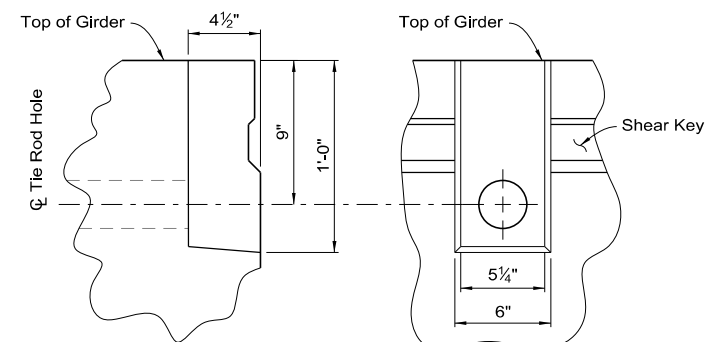
**TRANSVERSE TENSIONING ELEVATION  
@ INTERIOR DIAPHRAGM**

**NOTES**

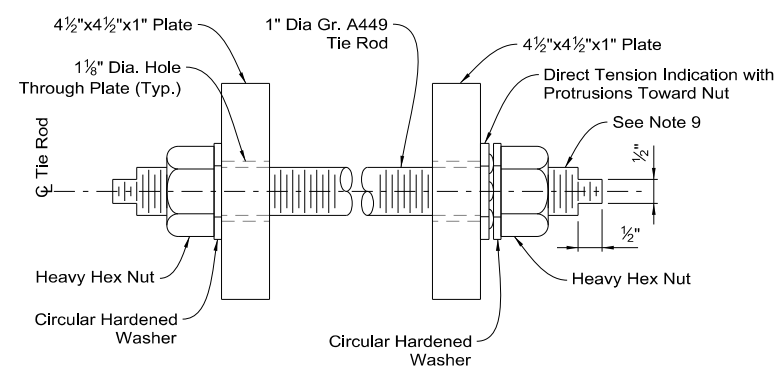
1. Transverse tie rods shall be 1" diameter high strength rod conforming to ASTM A449. Heavy hex nuts shall conform to ASTM A563. Hardened washers shall conform to ASTM F436. Bearing plates shall conform to ASTM A36. Direct tension indicators (DTIS) shall conform to ASTM F959. Hot-dip galvanize all tie rod components after fabrication, excluding DTIS. Tie rods and all associated hardware will be paid for under the structural steel bid item.
2. Plates at tie rod locations shall be ASTM A36. Hot-dip galvanize after fabrication. wedges and plates are paid for under the structural steel bid item.
3. Tighten all transverse tie rods, to about one half the specified tension before proceeding with the final tensioning. Tension all tie rods to a minimum of 51.0 kips as indicated by the DTI.
4. After girder erection and all tie rod tensioning is completed fill all tie rod blockouts and keyways with grout. Keyway and blockout grout is considered incidental to the transverse tie rods installation and there will be no direct payment.
5. After placement of the keyway grout no additional load may be placed on the girders until the grout has reached a compressive strength of 2000 psi.
6. At no time prior to completion of the deck curing operation shall any equipment or vehicles be placed on the bridge without approval of the bridge engineer.
7. For intermediate diaphragm locations, see Prestressed Girder Framing plan sheets.
8. Depending on order of construction, conflicts with adjacent structures may exist at time of tie rod installation. Tie rod couplers may be used to aide in construction. Tie rod couplers are considered incidental to the transverse tie rod installation and there will be no direct payment.
9. Mill both ends of tie rod. Use wrench to prevent the rod turning when tensioning.



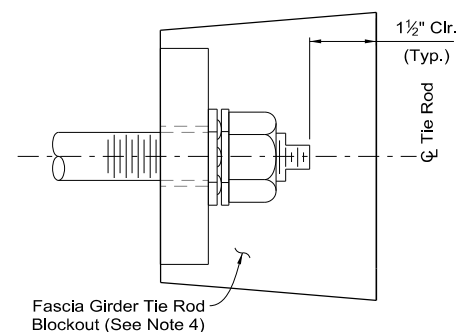
**FASCIA BLOCKOUT @ INTERIOR DIAPHRAGM  
TYPICAL, FASCIA GIRDER**



**INTERIOR BLOCKOUT**



**TIE ROD DETAILS**



**TIE ROD BLOCKOUT  
TYPICAL, FASCIA GIRDER**



12/20/2022

ORIGINAL CONTRACT: 2243  
MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**TIE ROD DETAILS  
(2 OF 2)**

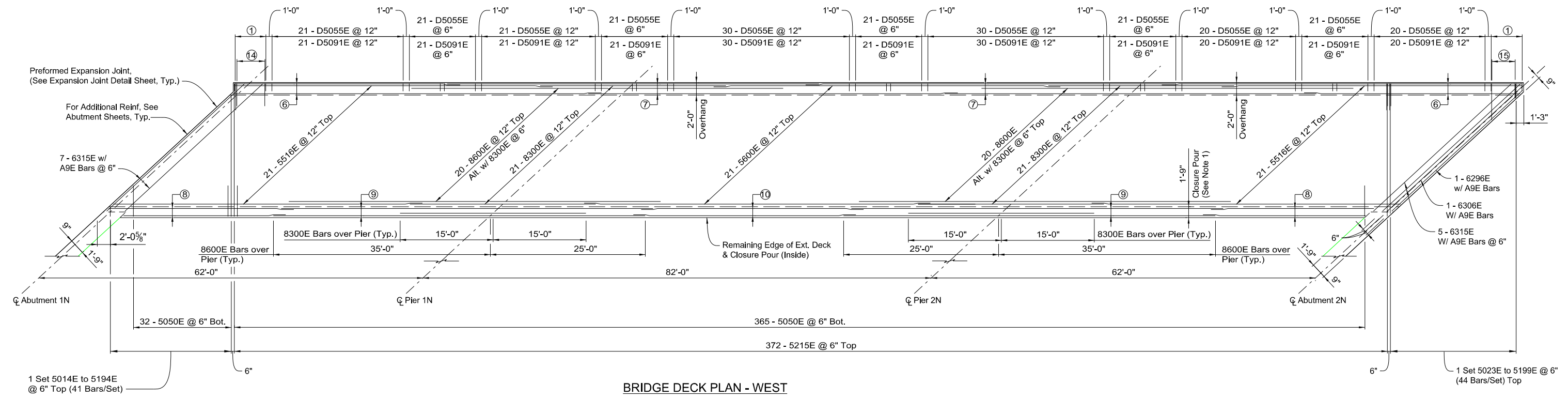
G-1748 N

**HDR**  
HDR Engineering, Inc.

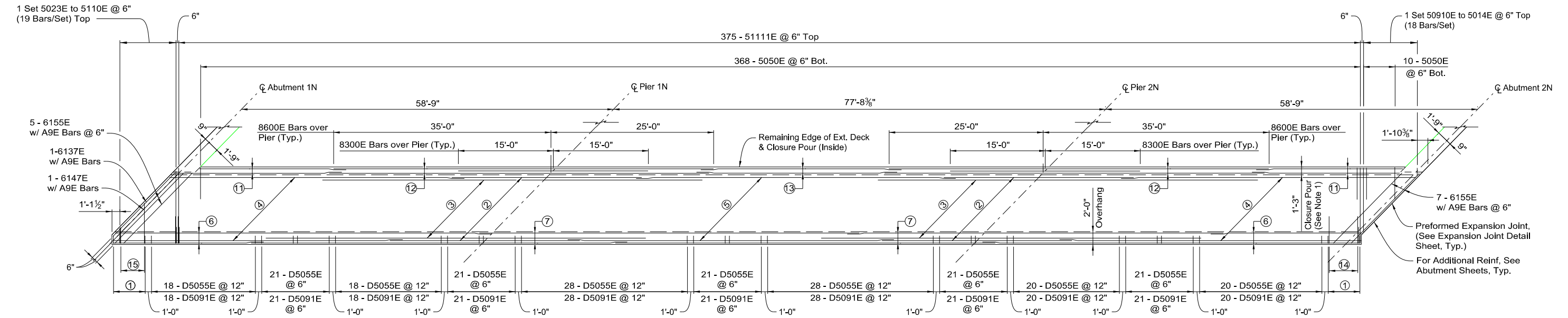
9805 Double R Boulevard, Suite 101  
Reno, NV 89521-5917  
PH: 775-337-4700 FAX: 775-337-4774



STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B435



BRIDGE DECK PLAN - WEST



BRIDGE DECK PLAN - EAST

**NOTES**

- Closure pour at abutments is between remaining abutment face and adjacent girder. Closure pour from face-to-face of abutments is between remaining edge of existing deck and adjacent girder.
- For A9E bars, See Abutment Plans.

**MINIMUM BAR LAPS**

- #5E Bars to #5E Bars = 30"
- #5E Bars to #8E Bars = 34"
- #5E Bars to #10E Bars = 42"

**REINFORCING NOTES**

- |                                              |                                                                                 |                                                                                   |
|----------------------------------------------|---------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| ① 11 - D5055E @ 6"                           | ⑥ 2 - 5400E Alt. w/ 2 - 5600E @ 6" Bot.                                         | ⑩ 1 - 5600E Alt. w/ 2 - 5400E @ 6" Top<br>2 - 5600E Alt. w/ 1 - 5400E @ 6" Bot.   |
| ② 12 - 10300E @ 12" Top                      | ⑦ 4 - 5600E @ 6" Bot.                                                           | ⑪ 1 - 5496E Alt. w/ 2 - 5300E @ 6" Top<br>2 - 5496E Alt. w/ 1 - 5300E @ 6" Bot.   |
| ③ 11 - 10600E @ 12" Top Alt @ w/ 10300E @ 6" | ⑧ 1 - 5516E Alt. w/ 2 - 5316E @ 6" Top<br>2 - 5516E Alt. w/ 1 - 5316E @ 6" Bot. | ⑫ 1 - 10300E Alt. w/ 2 - 10600E @ 6" Top<br>2 - 5300E Alt. w/ 1 - 5600E @ 6" Bot. |
| ④ 12 - 5496E @ 12" Top                       | ⑨ 1 - 8300E Alt. w/ 2 - 8600E @ 6" Top<br>2 - 5300E Alt. w/ 1 - 5600E @ 6" Bot. | ⑬ 1 - 5600E Alt. w/ 2 - 5400E @ 6" Top<br>2 - 5600E Alt. w/ 1 - 5400E @ 6" Bot.   |
| ⑤ 12 - 5600E @ 12" Top                       |                                                                                 |                                                                                   |

- ⑭ 11-D5091E @ 6"
- ⑮ 1-Set D50410E to D5091E @ 6" (9 Bars/Set)



ORIGINAL CONTRACT: 2243  
MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**DECK REINFORCING**

G-1748 N

**HDR**  
HDR Engineering, Inc.

9805 Double R Boulevard, Suite 101  
Reno, NV 89521-5917  
PH: 775-337-4700 FAX: 775-337-4774

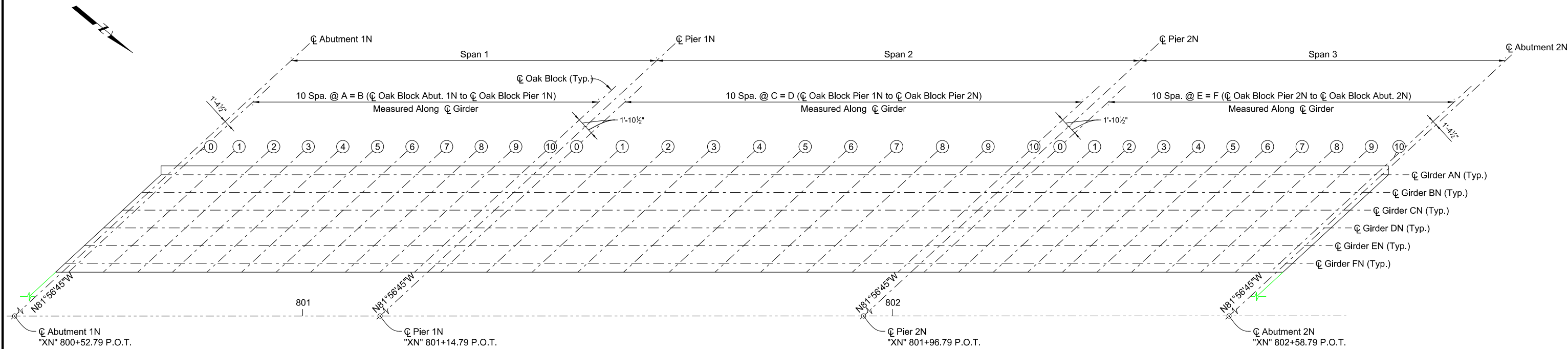
Deflection Diagram Table - West (inch)

Deflection Diagram Table - East (inch)

Span	Girder	Point	Deflection Diagram Table - West (inch)											
			0.0L	0.1L	0.2L	0.3L	0.4L	0.5L	0.6L	0.7L	0.8L	0.9L	1.0L	
Span 1	Girder AN	J	0.00	0.96	1.58	2.04	2.34	2.45	2.34	2.04	1.58	0.96	0.00	
		K	0.00	-0.26	-0.46	-0.61	-0.71	-0.75	-0.71	-0.61	-0.46	-0.26	0.00	
		M	0.00	-0.03	-0.05	-0.06	-0.07	-0.06	-0.05	-0.04	-0.02	-0.01	0.00	
		T	0.00	0.67	1.07	1.37	1.56	1.64	1.58	1.39	1.10	0.70	0.00	
	Girder BN	J	0.00	0.96	1.58	2.04	2.34	2.45	2.34	2.04	1.58	0.96	0.00	
		K	0.00	-0.16	-0.29	-0.39	-0.46	-0.48	-0.46	-0.39	-0.29	-0.16	0.00	
		M	0.00	-0.04	-0.06	-0.07	-0.08	-0.08	-0.06	-0.05	-0.03	-0.01	0.00	
		T	0.00	0.76	1.23	1.58	1.81	1.89	1.82	1.61	1.26	0.79	0.00	
	Girder CN	J	0.00	0.96	1.58	2.04	2.34	2.45	2.34	2.04	1.58	0.96	0.00	
		K	0.00	-0.16	-0.29	-0.39	-0.46	-0.48	-0.46	-0.39	-0.29	-0.16	0.00	
		M	0.00	-0.04	-0.06	-0.07	-0.08	-0.08	-0.06	-0.05	-0.03	-0.01	0.00	
		T	0.00	0.76	1.23	1.58	1.81	1.89	1.82	1.61	1.26	0.79	0.00	
Girder DN	J	0.00	0.96	1.58	2.04	2.34	2.45	2.34	2.04	1.58	0.96	0.00		
	K	0.00	-0.16	-0.29	-0.39	-0.46	-0.48	-0.46	-0.39	-0.29	-0.16	0.00		
	M	0.00	-0.01	-0.02	-0.02	-0.02	-0.02	-0.02	-0.01	-0.01	0.00	0.00		
	T	0.00	0.79	1.27	1.63	1.87	1.95	1.87	1.64	1.28	0.79	0.00		
Girder EN	J	0.00	0.96	1.58	2.04	2.34	2.45	2.34	2.04	1.58	0.96	0.00		
	K	0.00	-0.16	-0.29	-0.39	-0.46	-0.48	-0.46	-0.39	-0.29	-0.16	0.00		
	M	0.00	-0.01	-0.02	-0.02	-0.02	-0.02	-0.02	-0.01	-0.01	0.00	0.00		
	T	0.00	0.79	1.27	1.63	1.87	1.95	1.87	1.64	1.28	0.79	0.00		
Girder FN	J	0.00	0.96	1.58	2.04	2.34	2.45	2.34	2.04	1.58	0.96	0.00		
	K	0.00	-0.16	-0.28	-0.38	-0.44	-0.47	-0.44	-0.38	-0.28	-0.16	0.00		
	M	0.00	-0.01	-0.02	-0.02	-0.02	-0.02	-0.02	-0.01	-0.01	0.00	0.00		
	T	0.00	0.79	1.28	1.64	1.88	1.96	1.88	1.65	1.28	0.80	0.00		
Span 2	Girder AN	J	0.00	1.21	2.05	2.66	3.04	3.17	3.04	2.66	2.05	1.21	0.00	
		K	0.00	-0.71	-1.32	-1.81	-2.11	-2.22	-2.11	-1.80	-1.32	-0.71	0.00	
		M	0.00	-0.03	-0.07	-0.10	-0.13	-0.14	-0.13	-0.10	-0.07	-0.03	0.00	
		T	0.00	0.47	0.65	0.75	0.80	0.82	0.80	0.75	0.66	0.47	0.00	
	Girder BN	J	0.00	1.21	2.05	2.66	3.04	3.17	3.04	2.66	2.05	1.21	0.00	
		K	0.00	-0.46	-0.85	-1.16	-1.36	-1.43	-1.36	-1.16	-0.85	-0.46	0.00	
		M	0.00	-0.04	-0.08	-0.12	-0.15	-0.16	-0.15	-0.12	-0.08	-0.04	0.00	
		T	0.00	0.72	1.11	1.37	1.53	1.58	1.53	1.37	1.11	0.72	0.00	
	Girder CN	J	0.00	1.21	2.05	2.66	3.04	3.17	3.04	2.66	2.05	1.21	0.00	
		K	0.00	-0.46	-0.85	-1.16	-1.36	-1.43	-1.36	-1.16	-0.85	-0.46	0.00	
		M	0.00	-0.04	-0.08	-0.12	-0.15	-0.16	-0.15	-0.12	-0.08	-0.04	0.00	
		T	0.00	0.72	1.11	1.37	1.53	1.58	1.53	1.37	1.11	0.72	0.00	
Girder DN	J	0.00	1.21	2.05	2.66	3.04	3.17	3.04	2.66	2.05	1.21	0.00		
	K	0.00	-0.46	-0.85	-1.16	-1.36	-1.43	-1.36	-1.16	-0.85	-0.46	0.00		
	M	0.00	-0.01	-0.02	-0.03	-0.04	-0.05	-0.04	-0.03	-0.02	-0.01	0.00		
	T	0.00	0.74	1.17	1.46	1.64	1.70	1.64	1.46	1.17	0.75	0.00		
Girder EN	J	0.00	1.21	2.05	2.66	3.04	3.17	3.04	2.66	2.05	1.21	0.00		
	K	0.00	-0.46	-0.85	-1.16	-1.36	-1.43	-1.36	-1.16	-0.85	-0.46	0.00		
	M	0.00	-0.01	-0.02	-0.03	-0.04	-0.05	-0.04	-0.03	-0.02	-0.01	0.00		
	T	0.00	0.74	1.17	1.46	1.64	1.70	1.64	1.46	1.17	0.75	0.00		
Girder FN	J	0.00	1.21	2.05	2.66	3.04	3.17	3.04	2.66	2.05	1.21	0.00		
	K	0.00	-0.45	-0.83	-1.13	-1.32	-1.39	-1.32	-1.13	-0.83	-0.44	0.00		
	M	0.00	-0.01	-0.02	-0.03	-0.04	-0.05	-0.04	-0.03	-0.02	-0.01	0.00		
	T	0.00	0.76	1.20	1.50	1.68	1.74	1.68	1.50	1.20	0.76	0.00		
Span 3	Girder AN	J	0.00	0.96	1.58	2.04	2.34	2.45	2.34	2.04	1.58	0.96	0.00	
		K	0.00	-0.26	-0.46	-0.61	-0.71	-0.75	-0.71	-0.61	-0.46	-0.26	0.00	
		M	0.00	-0.01	-0.02	-0.04	-0.05	-0.06	-0.07	-0.06	-0.05	-0.03	0.00	
		T	0.00	0.70	1.10	1.39	1.58	1.64	1.57	1.37	1.07	0.67	0.00	
	Girder BN	J	0.00	0.96	1.58	2.04	2.34	2.45	2.34	2.04	1.58	0.96	0.00	
		K	0.00	-0.16	-0.29	-0.39	-0.46	-0.48	-0.46	-0.39	-0.29	-0.16	0.00	
		M	0.00	-0.01	-0.03	-0.05	-0.06	-0.08	-0.08	-0.07	-0.06	-0.04	0.00	
		T	0.00	0.79	1.26	1.61	1.81	1.89	1.81	1.58	1.23	0.76	0.00	
	Girder CN	J	0.00	0.96	1.58	2.04	2.34	2.45	2.34	2.04	1.58	0.96	0.00	
		K	0.00	-0.16	-0.29	-0.39	-0.46	-0.48	-0.46	-0.39	-0.29	-0.16	0.00	
		M	0.00	-0.01	-0.03	-0.05	-0.06	-0.08	-0.08	-0.07	-0.06	-0.04	0.00	
		T	0.00	0.79	1.26	1.61	1.81	1.89	1.81	1.58	1.23	0.76	0.00	
Girder DN	J	0.00	0.96	1.58	2.04	2.34	2.45	2.34	2.04	1.58	0.96	0.00		
	K	0.00	-0.16	-0.29	-0.39	-0.46	-0.48	-0.46	-0.39	-0.29	-0.16	0.00		
	M	0.00	0.00	-0.01	-0.01	-0.02	-0.02	-0.02	-0.02	-0.02	-0.01	0.00		
	T	0.00	0.79	1.28	1.64	1.87	1.95	1.87	1.63	1.27	0.79	0.00		
Girder EN	J	0.00	0.96	1.58	2.04	2.34	2.45	2.34	2.04	1.58	0.96	0.00		
	K	0.00	-0.16	-0.29	-0.39	-0.46	-0.48	-0.46	-0.39	-0.29	-0.16	0.00		
	M	0.00	0.00	-0.01	-0.01	-0.02	-0.02	-0.02	-0.02	-0.02	-0.01	0.00		
	T	0.00	0.79	1.28	1.64	1.87	1.95	1.87	1.63	1.27	0.79	0.00		
Girder FN	J	0.00	0.96	1.58	2.04	2.34	2.45	2.34	2.04	1.58	0.96	0.00		
	K	0.00	-0.16	-0.28	-0.38	-0.44	-0.47	-0.44	-0.38	-0.28	-0.16	0.00		
	M	0.00	0.00	-0.01	-0.01	-0.02	-0.02	-0.02	-0.02	-0.02	-0.01	0.00		
	T	0.00	0.80	1.28	1.65	1.88	1.96	1.88	1.64	1.28	0.79	0.00		

Span	Girder	Point	Deflection Diagram Table - East (inch)											
			0.0L	0.1L	0.2L	0.3L	0.4L	0.5L	0.6L	0.7L	0.8L	0.9L	1.0L	
Span 1	Girder GN	J	0.00	0.91	1.49	1.94	2.22	2.32	2.22	1.94	1.49	0.91	0.00	
		K	0.00	-0.10	-0.17	-0.23	-0.27	-0.28	-0.27	-0.23	-0.17	-0.10	0.00	
		M	0.00	-0.02	-0.04	-0.05	-0.05	-0.05	-0.04	-0.03	-0.02	-0.01	0.00	
		T	0.00	0.79	1.28	1.66	1.90	1.99	1.91	1.68	1.31	0.80	0.00	
	Girder HN	J	0.00	0.91	1.49	1.94	2.22	2.32	2.22	1.94	1.49	0.91	0.00	
		K	0.00	-0.10	-0.18	-0.24	-0.27	-0.29	-0.27	-0.24	-0.18	-0.10	0.00	
		M	0.00	-0.02	-0.04	-0.05	-0.05	-0.05	-0.04	-0.03	-0.02	-0.01	0.00	
		T	0.00	0.78	1.28	1.65	1.89	1.98	1.90	1.67	1.30	0.80	0.00	
	Girder IN	J	0.00	0.91	1.49	1.94	2.22	2.32	2.22	1.94	1.49	0.91	0.00	
		K	0.00	-0.15	-0.27	-0.36	-0.42	-0.44	-0.42	-0.36	-0.27	-0.15	0.00	
		M	0.00	-0.02	-0.03	-0.04	-0.04	-0.04	-0.04	-0.03	-0.02	-0.01	0.00	
		T	0.00	0.74	1.19	1.54	1.76	1.84	1.76	1.55	1.21	0.75	0.00	
Span 2	Girder GN	J	0.00	1.00	1.69	2.21	2.54	2.65	2.54	2.21	1.69	1.00	0.00	
		K	0.00	-0.27	-0.50	-0.68	-0.79	-0.83	-0.79	-0.68	-0.50	-0.27	0.00	
		M	0.00	-0.03	-0.06	-0.08	-0.10	-0.11	-0.10	-0.08	-0.06	-0.03	0.00	
		T	0.00	0.70	1.14	1.45	1.65	1.71	1.65	1.45	1.14	0.70	0.00	
	Girder HN	J	0.00	1.00	1.69	2.21	2.54	2.65	2.54	2.21	1.69	1.00	0.00	
		K	0.00	-0.28	-0.52	-0.71	-0.83	-0.87	-0.83	-0.71	-0.52	-0.28	0.00	
		M	0.00	-0.03	-0.06	-0.08	-0.10	-0.11	-0.10	-0.08	-0.06	-0.03	0.00	
		T	0.00	0.69	1.12	1.42	1.61	1.67	1.61	1.42	1.12	0.69	0.00	
	Girder IN	J	0.00	1.00	1.69	2.21	2.54	2.65	2.54	2.21	1.69	1.00	0.00	
		K	0.00	-0.42	-0.78	-1.07	-1.25	-1.31	-1.25	-1.07	-0.78	-0.42	0.00	
		M	0.00	-0.02	-0.05	-0.07	-0.09	-0.09	-0.09	-0.07	-0.05	-0.02	0.00	
		T	0.00	0.55	0.86	1.08	1.21	1.25	1.21	1.08	0.86	0.55	0.00	
Span 3	Girder GN	J	0.00	0.91	1.49	1.94	2.22	2.32	2.22	1.94	1.49	0.91	0.00	
		K	0.00	-0.10	-0.17	-0.23	-0.26	-0.28	-0.26	-0.23	-0.17	-0.10	0.00	
		M	0.00	-0.01	-0.02	-0.03	-0.04	-0.05	-0.05	-0.05	-0.04	-0.02	0.00	
		T	0.00	0.80	1.31	1.68	1.91	1.99	1.90	1.66	1.28	0.79	0.00	
	Girder HN	J	0.00	0.91	1.49	1.94	2.22	2.32	2.22	1.94	1.49	0.91	0.00	
		K	0.00	-0.10	-0.18	-0.24	-0.27	-0.29	-0.27	-0.24	-0.18	-0.10	0.00	
		M	0.00	-0.01	-0.02	-0.03	-0.04	-0.05	-0.05	-0.05	-0.04	-0.02	0.00	
		T	0.00	0.80	1.30	1.67	1.90	1.98	1.89	1.65	1.28	0.78	0.00	
	Girder IN	J	0											





**FINISH GRADE ELEVATIONS - WEST**

		Finished Grade Elevations											
		0	1	2	3	4	5	6	7	8	9	10	
Span 1	Girder AN	Elevation	5192.70	5192.74	5192.79	5192.83	5192.87	5192.91	5192.96	5193.00	5193.04	5193.08	5193.12
	Girder AN	DL Defl.	0.00	0.02	0.04	0.06	0.06	0.07	0.06	0.05	0.04	0.02	0.00
	Girder BN	Elevation	5192.61	5192.65	5192.70	5192.75	5192.79	5192.83	5192.87	5192.92	5192.95	5193.00	5193.04
	Girder BN	DL Defl.	0.00	0.02	0.03	0.04	0.04	0.05	0.04	0.04	0.03	0.01	0.00
	Girder CN	Elevation	5192.52	5192.57	5192.61	5192.66	5192.71	5192.74	5192.79	5192.83	5192.87	5192.91	5192.95
	Girder CN	DL Defl.	0.00	0.02	0.03	0.04	0.04	0.05	0.04	0.04	0.03	0.01	0.00
Span 2	Girder DN	Elevation	5192.44	5192.48	5192.53	5192.57	5192.62	5192.66	5192.70	5192.75	5192.79	5192.83	5192.87
	Girder DN	DL Defl.	0.00	0.01	0.03	0.03	0.04	0.04	0.04	0.03	0.02	0.01	0.00
	Girder EN	Elevation	5192.35	5192.40	5192.44	5192.49	5192.53	5192.58	5192.62	5192.66	5192.71	5192.75	5192.79
	Girder EN	DL Defl.	0.00	0.01	0.03	0.03	0.04	0.04	0.04	0.03	0.02	0.01	0.00
	Girder FN	Elevation	5192.27	5192.31	5192.36	5192.40	5192.45	5192.49	5192.54	5192.57	5192.62	5192.67	5192.70
	Girder FN	DL Defl.	0.00	0.01	0.03	0.03	0.04	0.04	0.04	0.03	0.02	0.01	0.00
Span 3	Girder AN	Elevation	5193.15	5193.21	5193.25	5193.30	5193.35	5193.40	5193.44	5193.49	5193.53	5193.57	5193.62
	Girder AN	DL Defl.	0.00	0.06	0.12	0.16	0.19	0.20	0.19	0.16	0.12	0.06	0.00
	Girder BN	Elevation	5193.07	5193.13	5193.17	5193.22	5193.27	5193.31	5193.36	5193.41	5193.45	5193.50	5193.54
	Girder BN	DL Defl.	0.00	0.04	0.08	0.11	0.13	0.13	0.13	0.11	0.08	0.04	0.00
	Girder CN	Elevation	5192.99	5193.04	5193.09	5193.14	5193.19	5193.23	5193.28	5193.33	5193.38	5193.42	5193.46
	Girder CN	DL Defl.	0.00	0.04	0.08	0.11	0.13	0.13	0.13	0.11	0.08	0.04	0.00
Span 3	Girder DN	Elevation	5192.91	5192.96	5193.01	5193.06	5193.11	5193.15	5193.20	5193.25	5193.30	5193.34	5193.39
	Girder DN	DL Defl.	0.00	0.04	0.07	0.10	0.12	0.12	0.12	0.10	0.07	0.04	0.00
	Girder EN	Elevation	5192.83	5192.88	5192.93	5192.98	5193.03	5193.07	5193.12	5193.17	5193.21	5193.26	5193.31
	Girder EN	DL Defl.	0.00	0.04	0.07	0.10	0.12	0.12	0.12	0.10	0.07	0.04	0.00
	Girder FN	Elevation	5192.74	5192.80	5192.85	5192.90	5192.95	5192.99	5193.04	5193.09	5193.13	5193.18	5193.23
	Girder FN	DL Defl.	0.00	0.04	0.07	0.10	0.11	0.12	0.11	0.10	0.07	0.04	0.00

	A	B	C	D	E	F
All Girders	5'-8 5/8"	57'-2 1/4"	7'-7 3/4"	76'-5 1/2"	5'-8 5/8"	57'-2 1/4"

**NOTES:**

- In the Finish Grade Elevations table, the values shown are the final top of concrete deck elevations prior to placement of overlay. "DL DEFL" values are dead load deflections (in feet). Add "DL DEFL" values to the final top concrete deck elevations to obtain screed elevations for each girder.
- Dead load deflections are derived from the weight of the deck slab, bridge rail and overlay.
- All elevations indicated are at finished grade.
- All longitudinal dimensions are shown along  $\bar{C}$  Girder.
- Elevations are based on existing structure survey data from Contract 1286, adjusted to the survey datum for this project, and assume a uniform 3/8" overlay that is to be removed from the existing structure. Discrepancies shall be brought to the attention of the engineer prior to construction.



ORIGINAL CONTRACT: 2243  
MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT

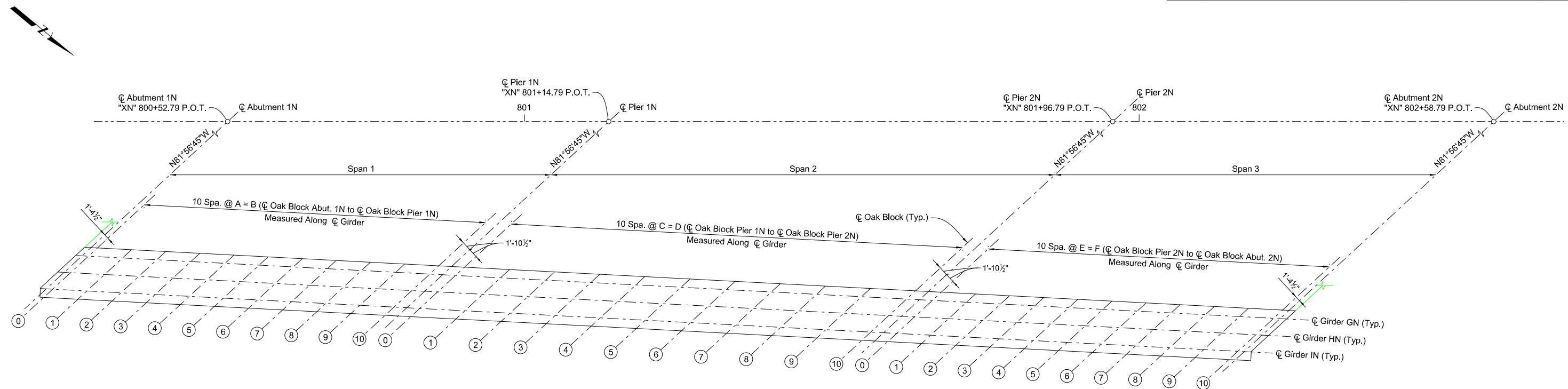
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**FINISH GRADE ELEVATIONS**  
(1 of 2)

G-1748 N

**HDR**  
HDR Engineering, Inc.

9805 Double R Boulevard, Suite 101  
Reno, NV 89521-5917  
PH: 775-337-4700 FAX: 775-337-4774



**FINISH GRADE ELEVATIONS - EAST**

		Finished Grade Elevations											
		0	1	2	3	4	5	6	7	8	9	10	
Span 1	Girder GN	Elevation	5190.23	5190.28	5190.33	5190.38	5190.43	5190.48	5190.53	5190.58	5190.63	5190.68	5190.73
	Girder GN	DL Defl.	0.00	0.01	0.02	0.02	0.03	0.03	0.03	0.02	0.02	0.01	0.00
	Girder HN	Elevation	5190.14	5190.19	5190.24	5190.29	5190.35	5190.40	5190.45	5190.49	5190.54	5190.59	5190.64
Span 2	Girder GN	Elevation	5190.05	5190.10	5190.15	5190.21	5190.26	5190.31	5190.36	5190.41	5190.46	5190.50	5190.55
	Girder GN	DL Defl.	0.00	0.01	0.03	0.03	0.04	0.04	0.03	0.02	0.01	0.00	
	Girder HN	Elevation	5190.77	5190.83	5190.89	5190.95	5191.01	5191.07	5191.13	5191.18	5191.24	5191.29	5191.34
Span 3	Girder GN	Elevation	5190.68	5190.75	5190.81	5190.87	5190.93	5190.98	5191.04	5191.10	5191.15	5191.21	5191.26
	Girder GN	DL Defl.	0.00	0.03	0.05	0.07	0.08	0.08	0.08	0.07	0.05	0.03	0.00
	Girder HN	Elevation	5190.60	5190.66	5190.72	5190.78	5190.84	5190.90	5190.96	5191.01	5191.07	5191.12	5191.18
Span 3	Girder GN	Elevation	5191.38	5191.42	5191.45	5191.49	5191.53	5191.56	5191.60	5191.63	5191.67	5191.70	5191.74
	Girder GN	DL Defl.	0.00	0.01	0.02	0.02	0.03	0.03	0.03	0.02	0.02	0.01	0.00
	Girder HN	Elevation	5191.30	5191.34	5191.37	5191.41	5191.45	5191.48	5191.52	5191.55	5191.59	5191.62	5191.66
Span 3	Girder GN	Elevation	5191.22	5191.25	5191.29	5191.33	5191.37	5191.40	5191.44	5191.47	5191.51	5191.54	5191.58
	Girder GN	DL Defl.	0.00	0.01	0.02	0.03	0.04	0.04	0.04	0.03	0.03	0.01	0.00

	A	B	C	D	E	F
All Girders	5'-5"	54'-2"	7'-3"	72'-6"	5'-5"	54'-2"

**NOTES:**

- In the Finish Grade Elevations table, the values shown are the final top of concrete deck elevations prior to placement of overlay. "DL DEFL" values are dead load deflections (in feet). Add "DL DEFL" values to the final top concrete deck elevations to obtain screed elevations for each girder.
- Dead load deflections are derived from the weight of the deck slab, bridge rail and overlay.
- All elevations indicated are at finished grade.
- All longitudinal dimensions are shown along  $\bar{C}$  Girder.
- Elevations are based on existing structure survey data from Contract 1286, adjusted to the survey datum for this project, and assume a uniform  $\frac{3}{8}$ " overlay that is to be removed from the existing structure. Discrepancies shall be brought to the attention of the engineer prior to construction.

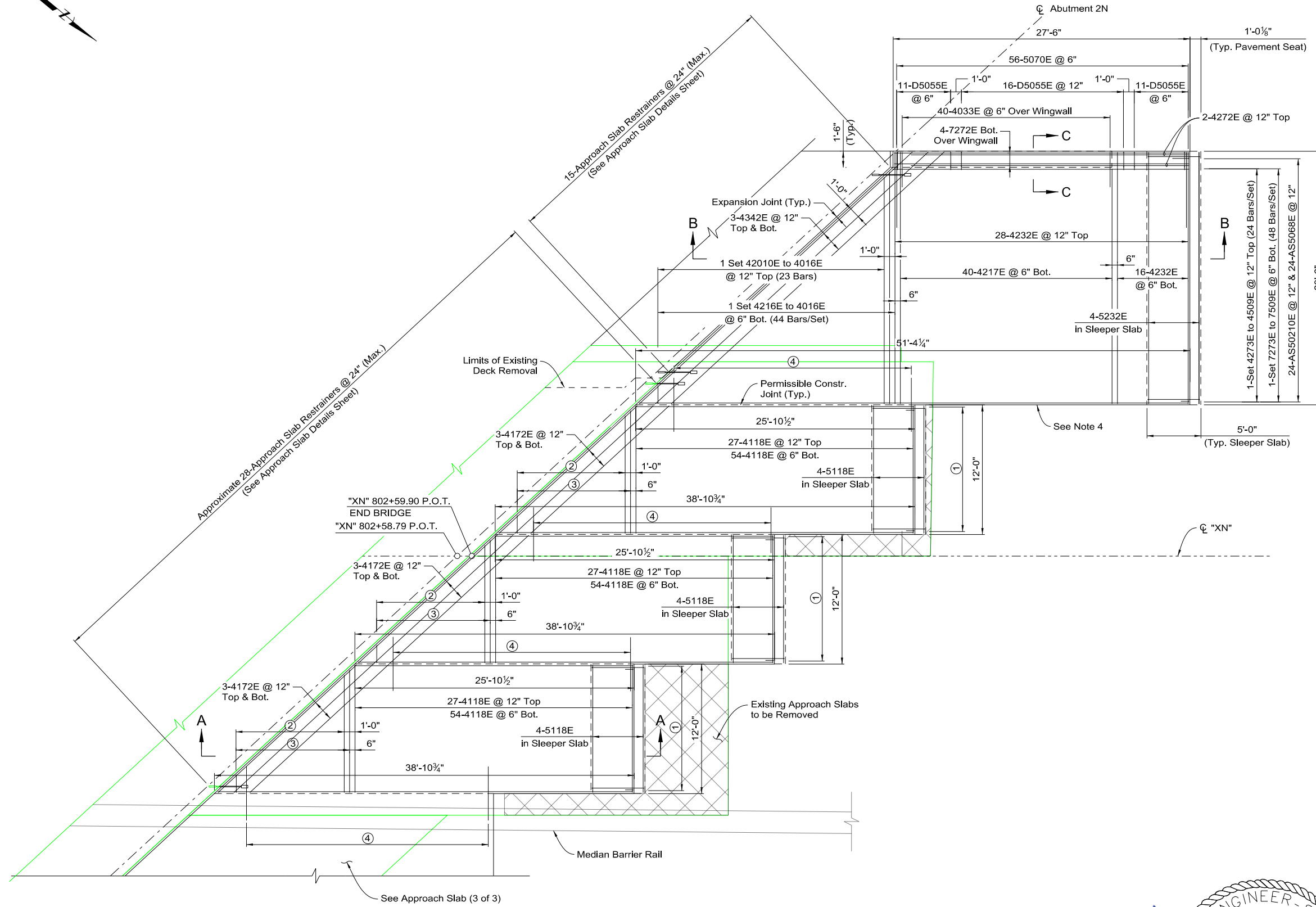


ORIGINAL CONTRACT: 2243  
 MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT

STATE OF NEVADA DEPARTMENT OF TRANSPORTATION	
<b>FINISH GRADE ELEVATIONS</b> (2 of 2)	
G-1748 N	
9805 Double R Boulevard, Suite 101 Reno, NV 89521-5917 PH: 775-337-4700 FAX: 775-337-4774	12/20/2022



STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B440



- REINFORCING NOTES:**
- 1-Set 4257E to 4383E @ 12" Top (13 Bars/Set)  
1-Set 7257E to 7383E @ 6" Bot. (26 Bars/Set)  
13-AS5068E @ 12" & 13-AS50210E @ 12" in Sleeper Slab
  - 1-Set 4108E to 4016E @ 12" Top (11 Bars/Set)
  - 1-Set 4112E to 4016E @ 6" Bot. (22 Bars/Set)
  - 24-4050E @ 12" Top  
48-4050E @ 6" Bot.  
Center w/ Permissible Constr. Joint, (See Note 3)

- NOTES:**
1. For sections, see Approach Slab Detail sheet.
  2. Transverse dimensions are measured perpendicular to Construction  $\phi$ .
  3. Transverse reinforcing between permissible construction joints shall be placed prior to concrete placement.
  4. Place  $\frac{1}{4}$ -inch expansion joint material between the concrete pavement and the longitudinal face of the approach slab. The expansion joint material is to be recessed  $\frac{1}{2}$ -inch from the surface and the joint sealed identically to the "longitudinal weakened plane joint" on detail CP-1 of the NDOT Standard Plans.

**PLAN**



12/20/2022

ORIGINAL CONTRACT: 2243  
MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**APPROACH SLABS  
(2 OF 3)**

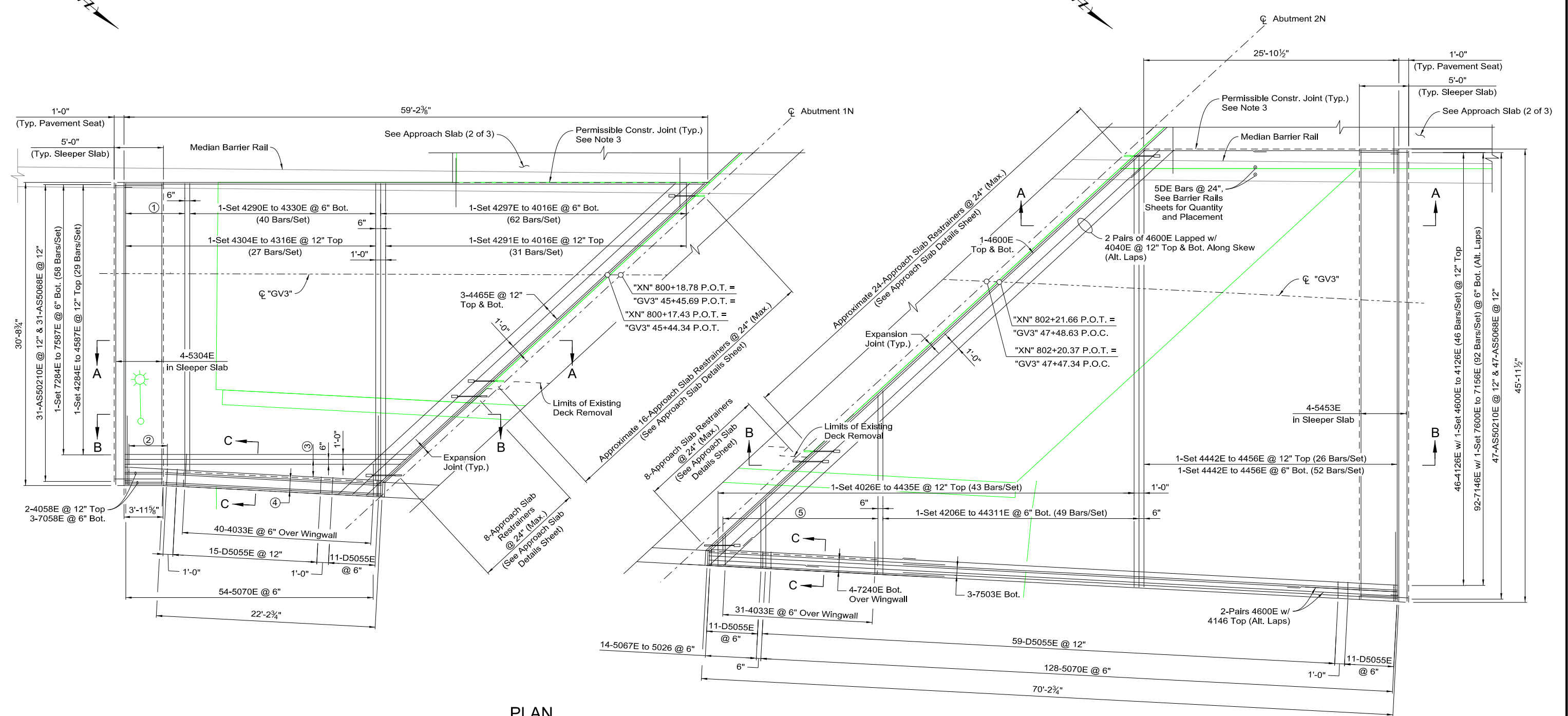
G-1748 N

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STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B441



**PLAN**

- ① 13-4304E @ 6" Bot.
- ② 11-D5055E @ 6"
- ③ 1-Set 4260E to 42710E @ 12" Max. Top (Splayed) (3 Bars/Set)  
1-Set 7260E to 72710E @ 6" Max. Bot. (Splayed) (6 Bars/Set)
- ④ 4-7240E Bot., 2-4240 @ 12" Top Over Wingwall
- ⑤ 1-Set 4016E to 4186E @ 6" Bot. (36 Bars/Set)

**NOTES:**

1. For sections, see Approach Slab Detail sheet.
2. Transverse dimensions are measured perpendicular to Construction  $\phi$ .
3. Transverse reinforcing between permissible construction joints shall be placed prior to concrete placement.
4. Place 1/4-inch expansion joint material between the concrete pavement and the longitudinal face of the approach slab. The expansion joint material is to be recessed 1/2-inch from the surface and the joint sealed identically to the "longitudinal weakened plane joint" on detail CP-1 of the NDOT Standard Plans.

**MINIMUM BAR LAPS**

#4E Bars to #4E Bars = 24"  
#7E Bars to #7E Bars = 45"



12/20/2022

ORIGINAL CONTRACT: 2243  
MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**APPROACH SLABS  
(3 OF 3)**

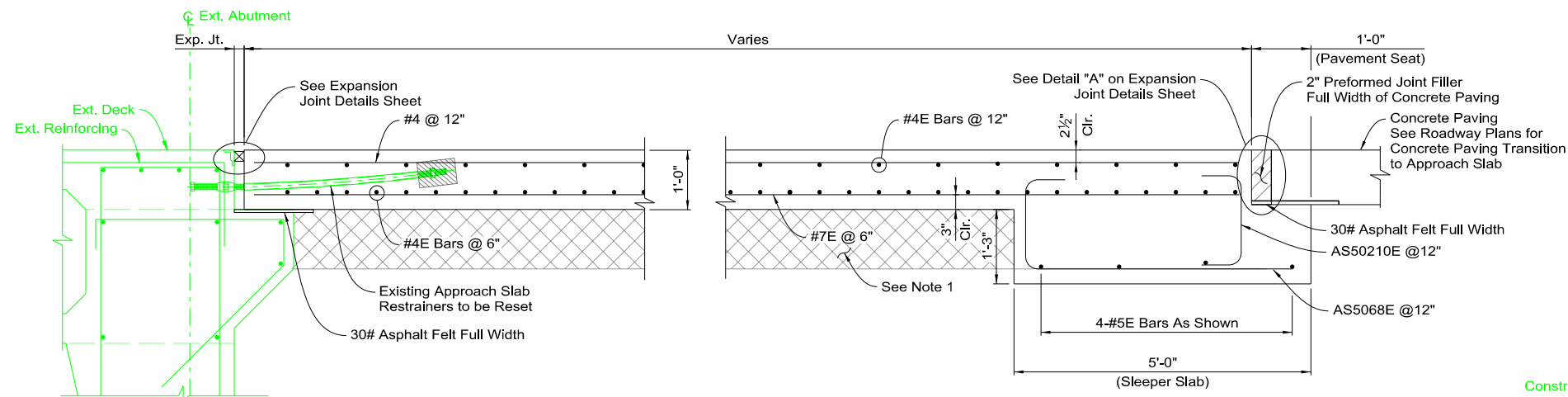
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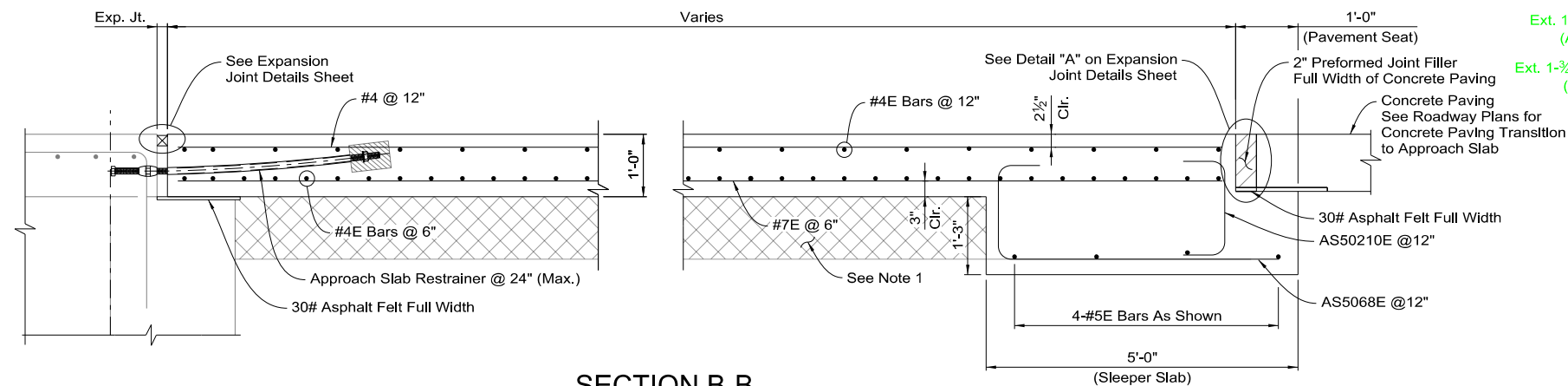
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B442

**NOTES:**

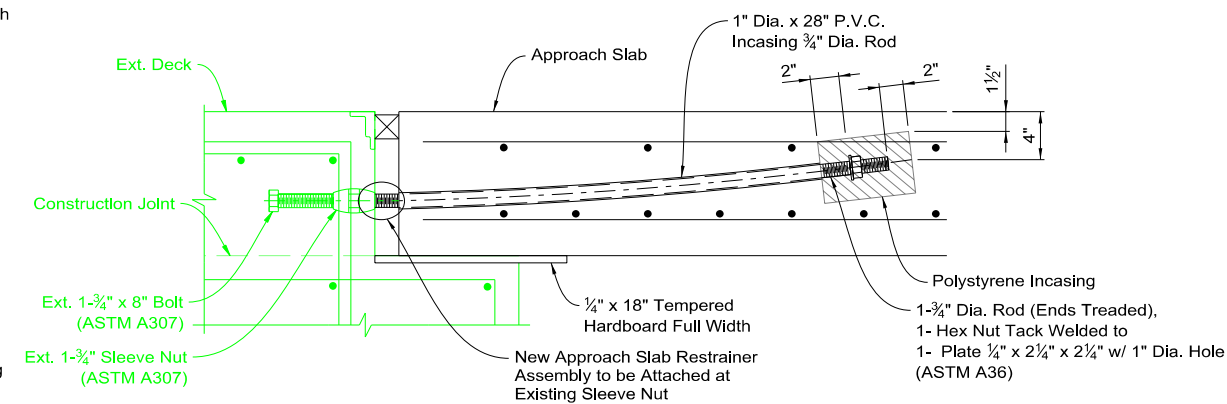
1. Fill material under approach slabs shall be a 12-inch layer of granular backfill compacted to not less than 95% of the maximum density in accordance with subsection 207.03.01 of the Standard Specifications.



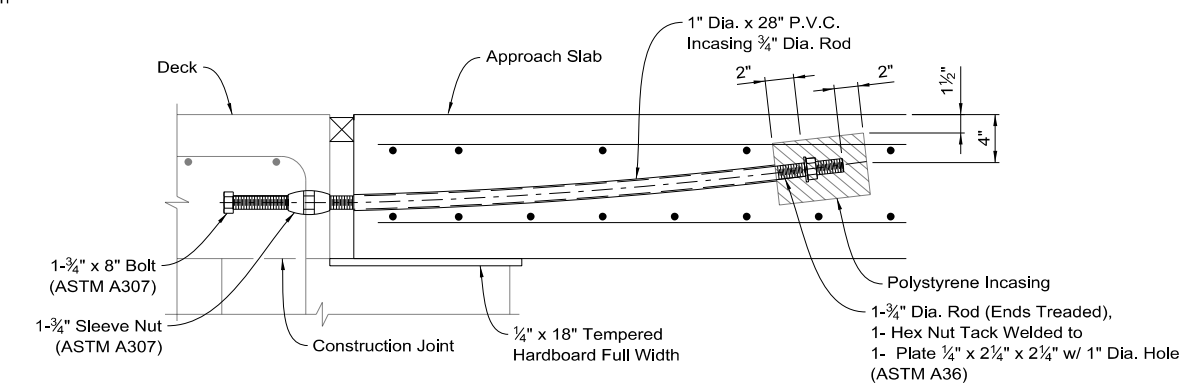
**SECTION A-A**  
OVER EXISTING ABUTMENT



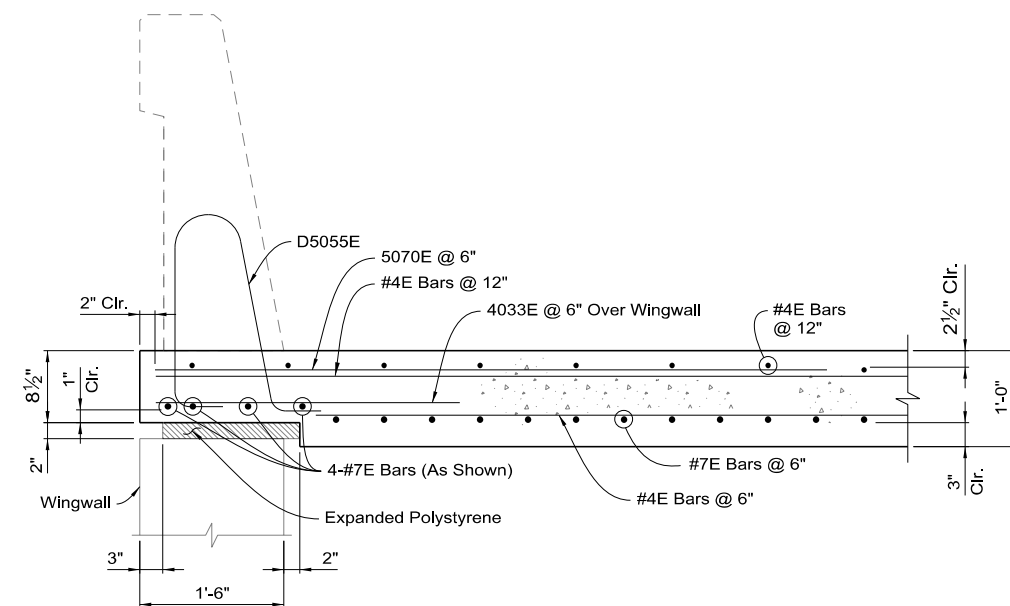
**SECTION B-B**  
OVER EXISTING ABUTMENT



**APPROACH SLAB RESTRAINER ASSEMBLY**  
OVER EXISTING ABUTMENT



**APPROACH SLAB RESTRAINER ASSEMBLY**



**SECTION C-C**



12/20/2022

ORIGINAL CONTRACT: 2243  
MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**APPROACH SLAB  
DETAILS**

G-1748 N

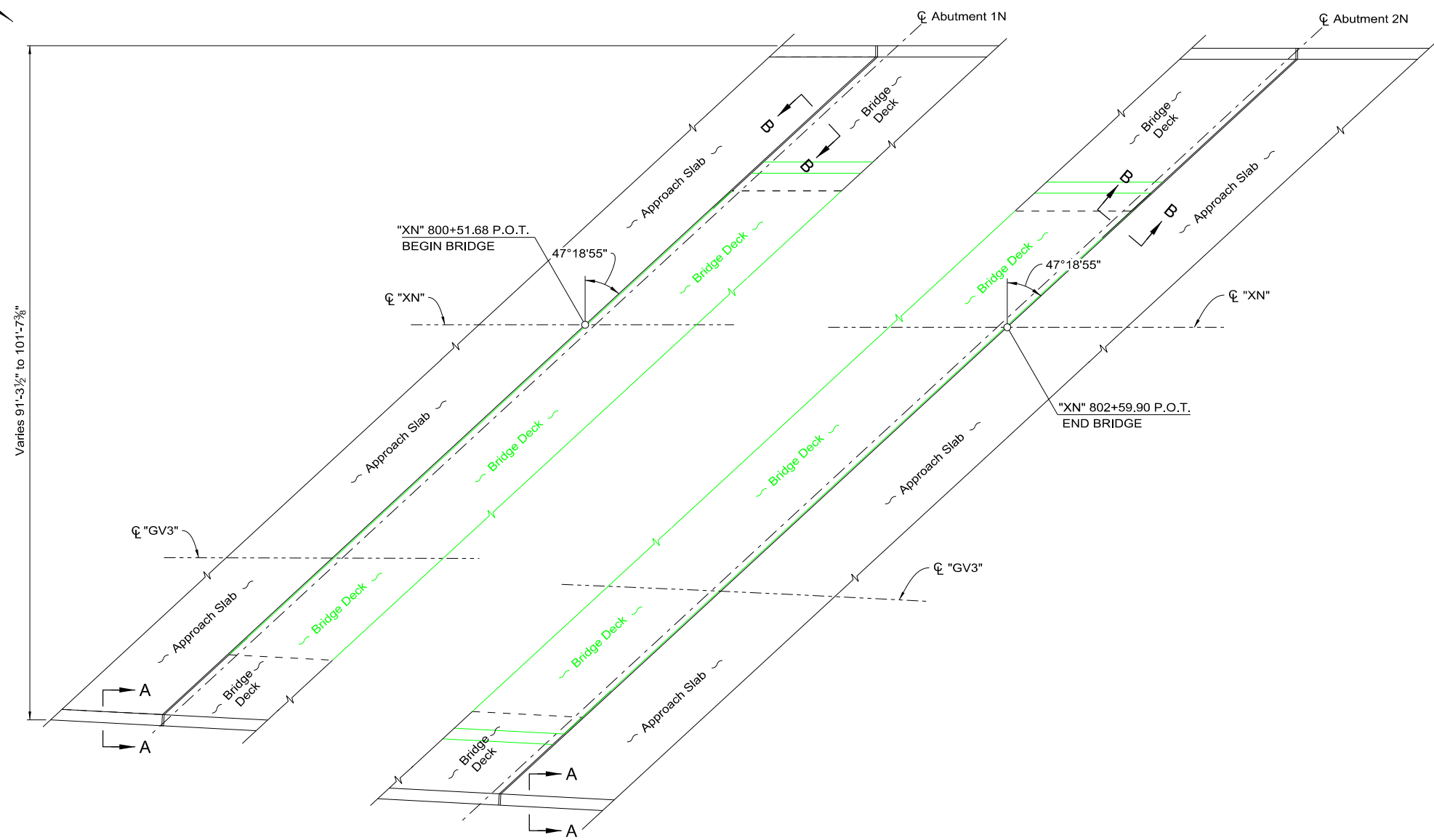
**HDR**  
HDR Engineering, Inc.

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PH: 775-337-4700 FAX: 775-337-4774

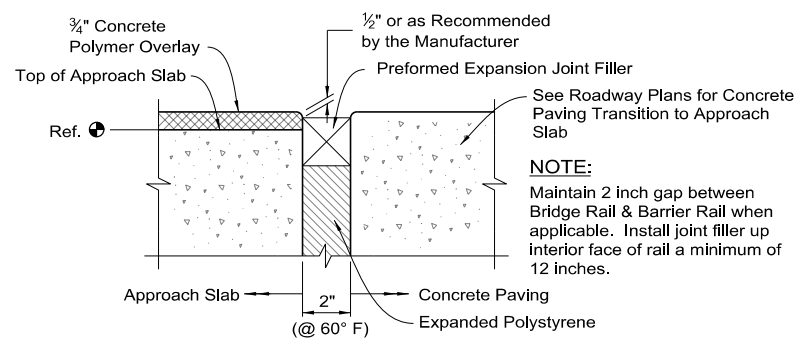
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B443

**NOTES:**

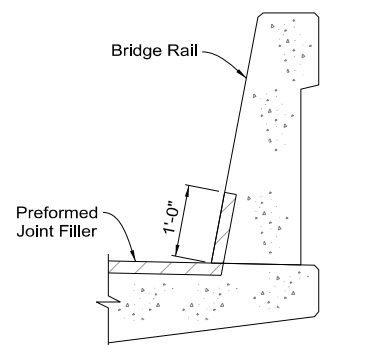
1. Provide preformed expansion joint filler with a minimum movement rating of 3-inches with ability to accommodate up to 1 1/8" of racking movement.
2. The preformed expansion joint filler manufacturer's instructions must be followed.
3. The expansion joint opening in Section B-B shall be increased by 1/8" for every 10° F temperature fall from 60° F, shall be decreased by 1/8" for every 10° F temperature rise from 60° F.
4. Round installation temperature to nearest 10° increment.



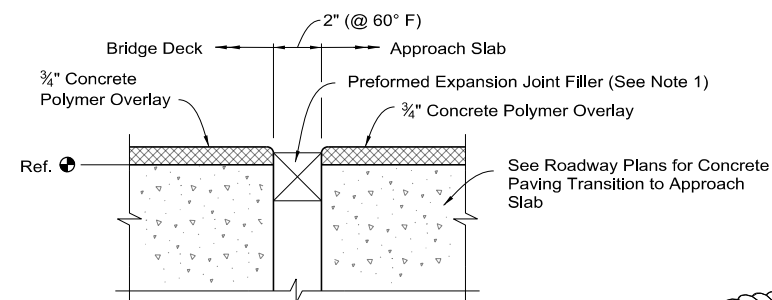
**PLAN**



**DETAIL "A"**



**SECTION A-A**  
WIDENED STRUCTURE  
(EXISTING STRUCTURE SIMILAR)



**SECTION B-B**



12/20/2022

ORIGINAL CONTRACT: 2243  
MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

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**EXPANSION JOINT  
DETAILS**

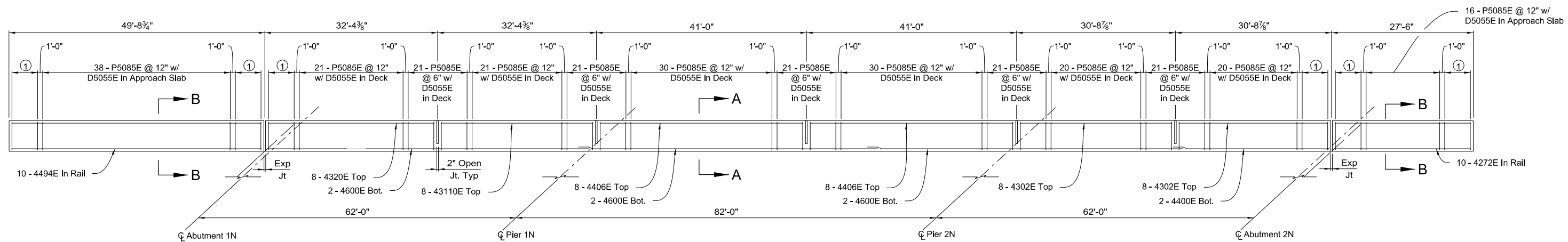
G-1748 N

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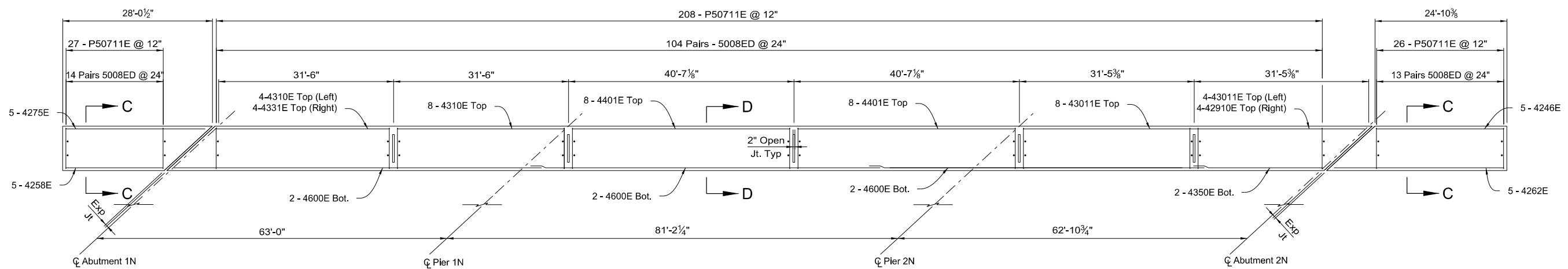
**HDR** 9805 Double R Boulevard, Suite 101  
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PH: 775-337-4700 FAX: 775-337-4774



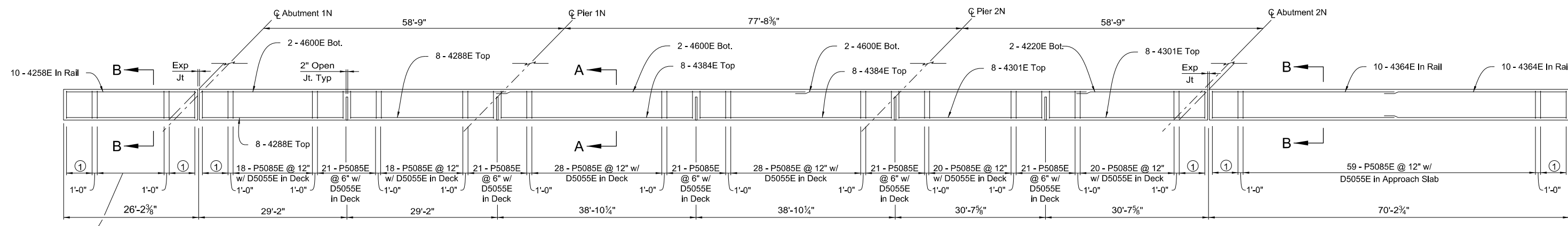
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B444



**BRIDGE RAIL PLAN - WEST SIDE**  
SCALE: NTS



**MEDIAN RAIL PLAN**  
SCALE: NTS



**BRIDGE RAIL PLAN - EAST SIDE**  
SCALE: NTS

**REINFORCING NOTES:**

① 11 - P5085E @ 6" w/ D5055E in Deck/Approach Slab

**MINIMUM BAR LAPS:**

#4E Bars to #4E Bars = 27"



12/20/2022

ORIGINAL CONTRACT: 2243  
MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

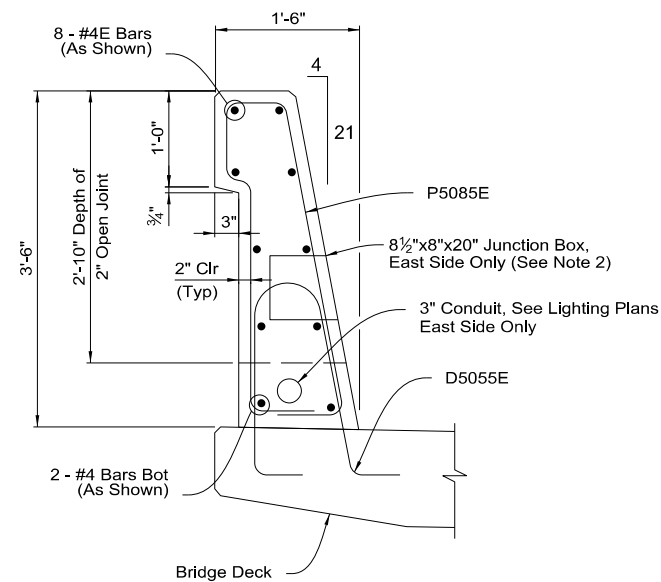
**BARRIER RAIL**

G-1748 N

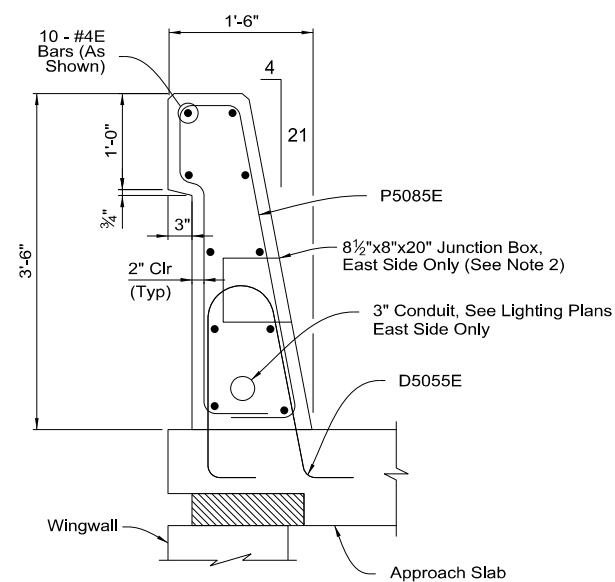
**HDR**  
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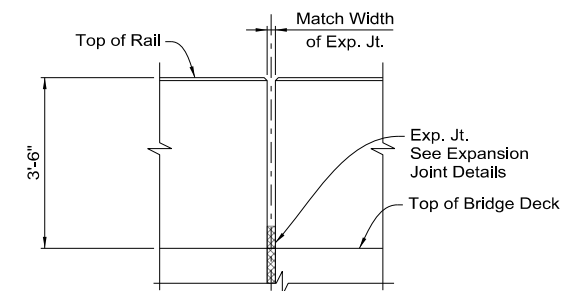
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B445



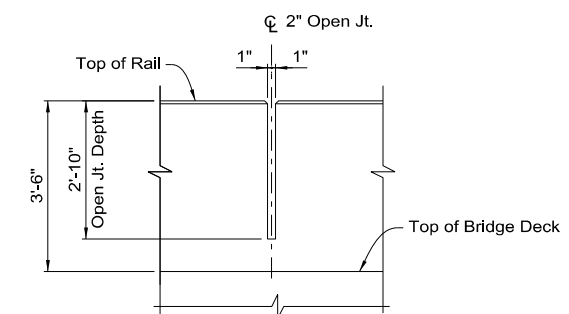
**SECTION A-A**



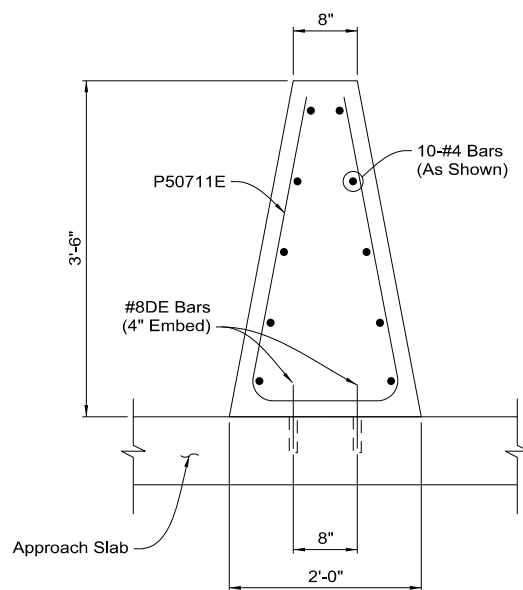
**SECTION B-B**



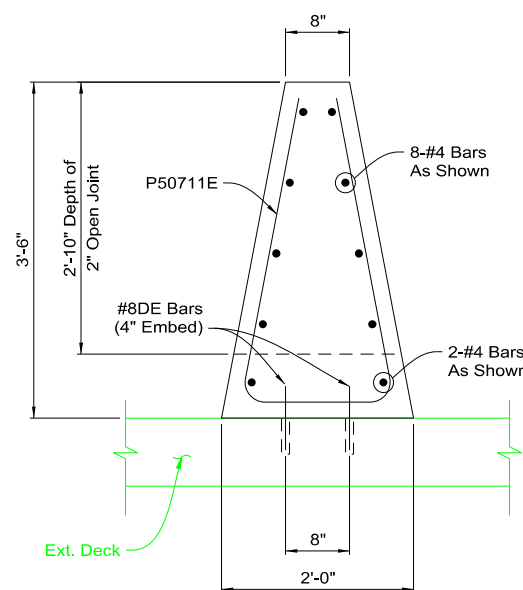
**TYPICAL EXPANSION JOINT**



**2" OPEN JOINT DETAIL**



**SECTION C-C**



**SECTION D-D**

**NOTE:**

1. For conduit passing through expansion joints, see Expansion Fitting Detail on sheet TG-9 of the NDOT Standard Plans for Road and Bridge Construction.
2. Relocate transverse reinforcement in barrier rail interrupted by junction box equally to each side.



12/20/2022

ORIGINAL CONTRACT: 2243  
MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT

STATE OF NEVADA  
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**BARRIER RAIL  
DETAILS**

G-1748 N

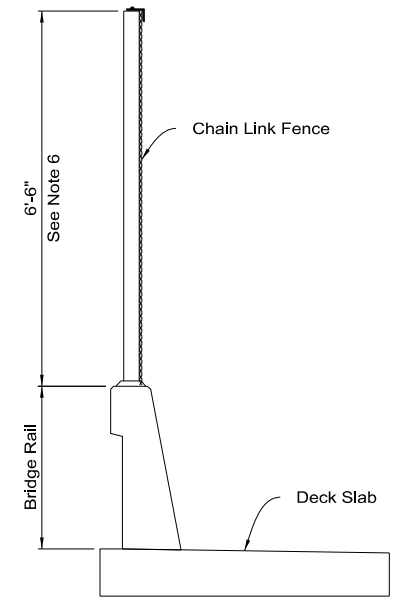
**HDR**  
HDR Engineering, Inc.

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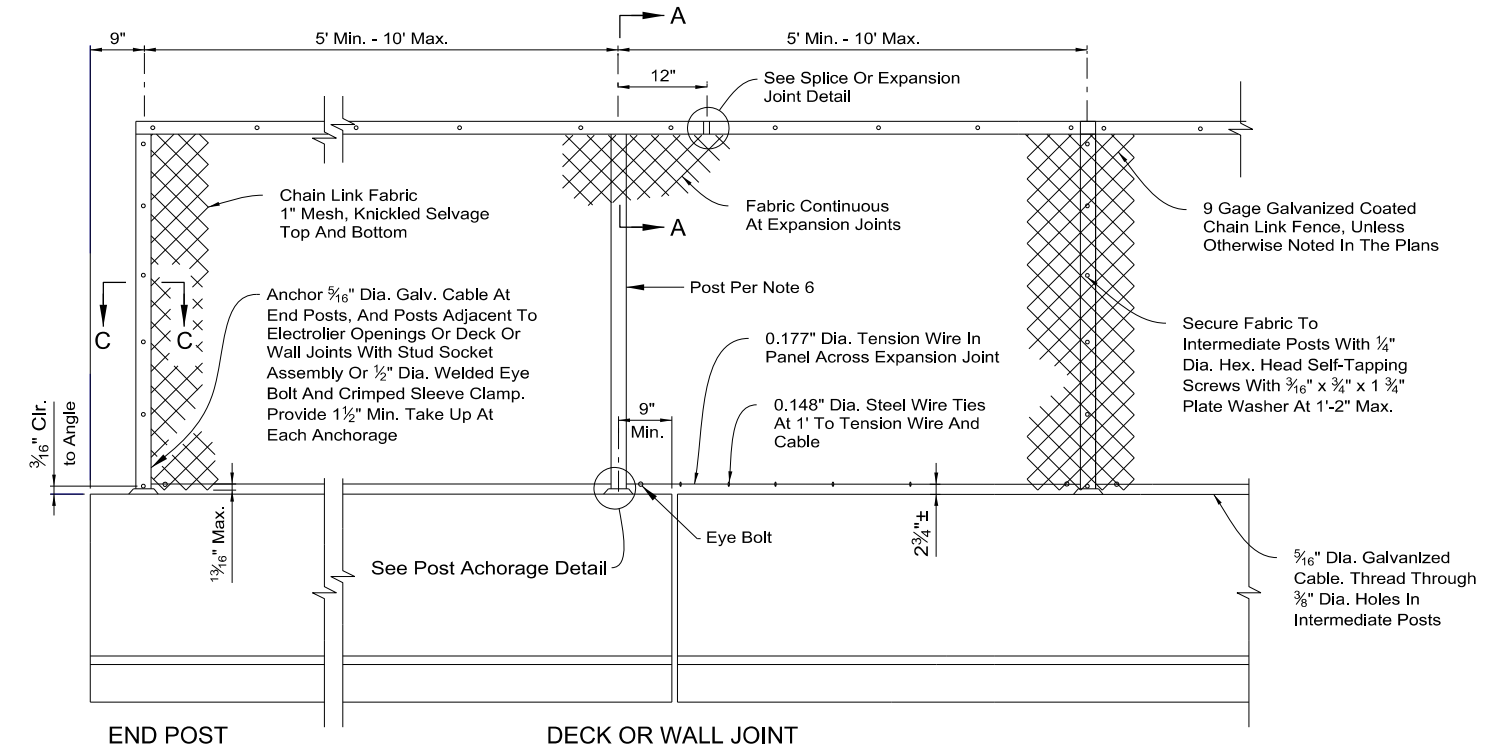
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B446

**NOTES:**

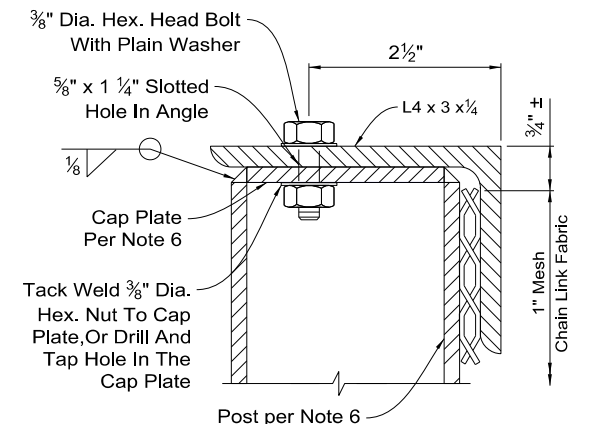
1. Posts shall be vertical.
2. Railing shall conform to horizontal and vertical alignment. Horizontal angle may be on 10-foot chords.
3. Horizontal angle shall be continuous over not less than two intermediate posts, except that a shorter length is permitted at expansion joints, and others rail discontinuities.
4. When rail is on slope, place fabric parallel to slope.
5. Expansion joint same dimension as expansion joint in deck or wall. Increase slotted hole length and splice bar length correspondingly.
6. For posts, use HSS 3 x 2 x 3/16. Cap plate to be same thickness as the post used.
7. Railing assembly, except chain link fabric, to be galvanized after fabrication, unless otherwise noted in the plans.



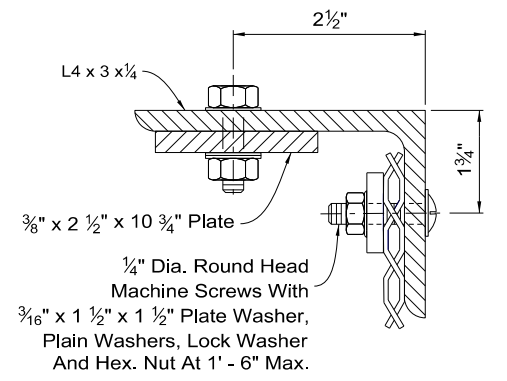
TYPICAL SECTION



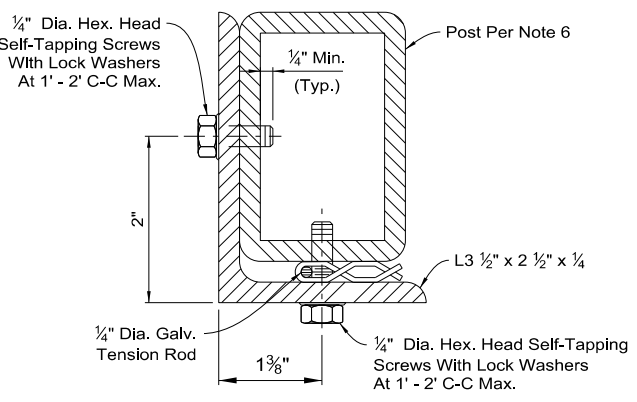
ELEVATION



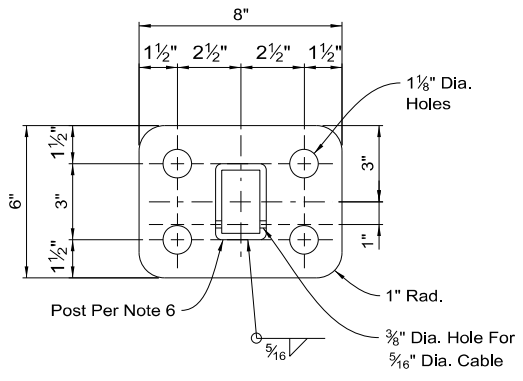
SECTION A-A



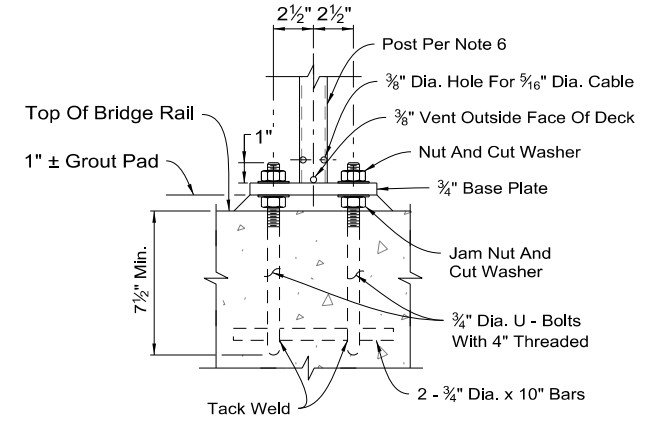
SECTION B-B



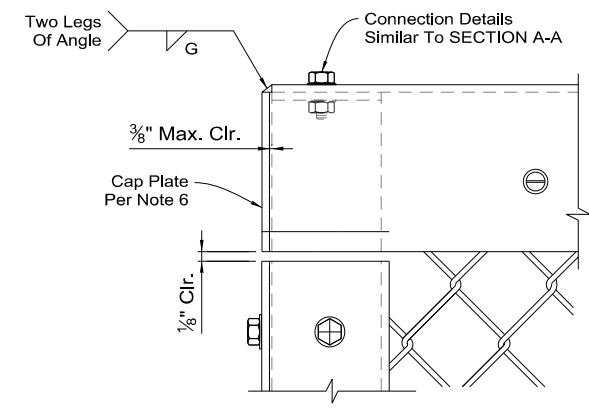
SECTION C-C



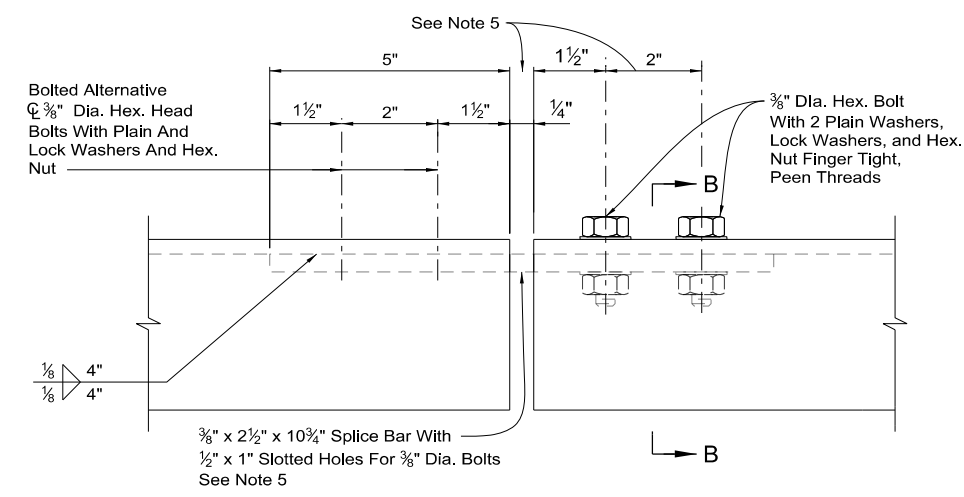
BASE PLATE



POST ANCHORAGE DETAIL



END POST ELEVATION



SPLICE OR EXPANSION JOINT DETAIL



12/20/2022

ORIGINAL CONTRACT: 2243  
MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**PEDESTRIAN RAIL  
DETAILS**

G-1748 N

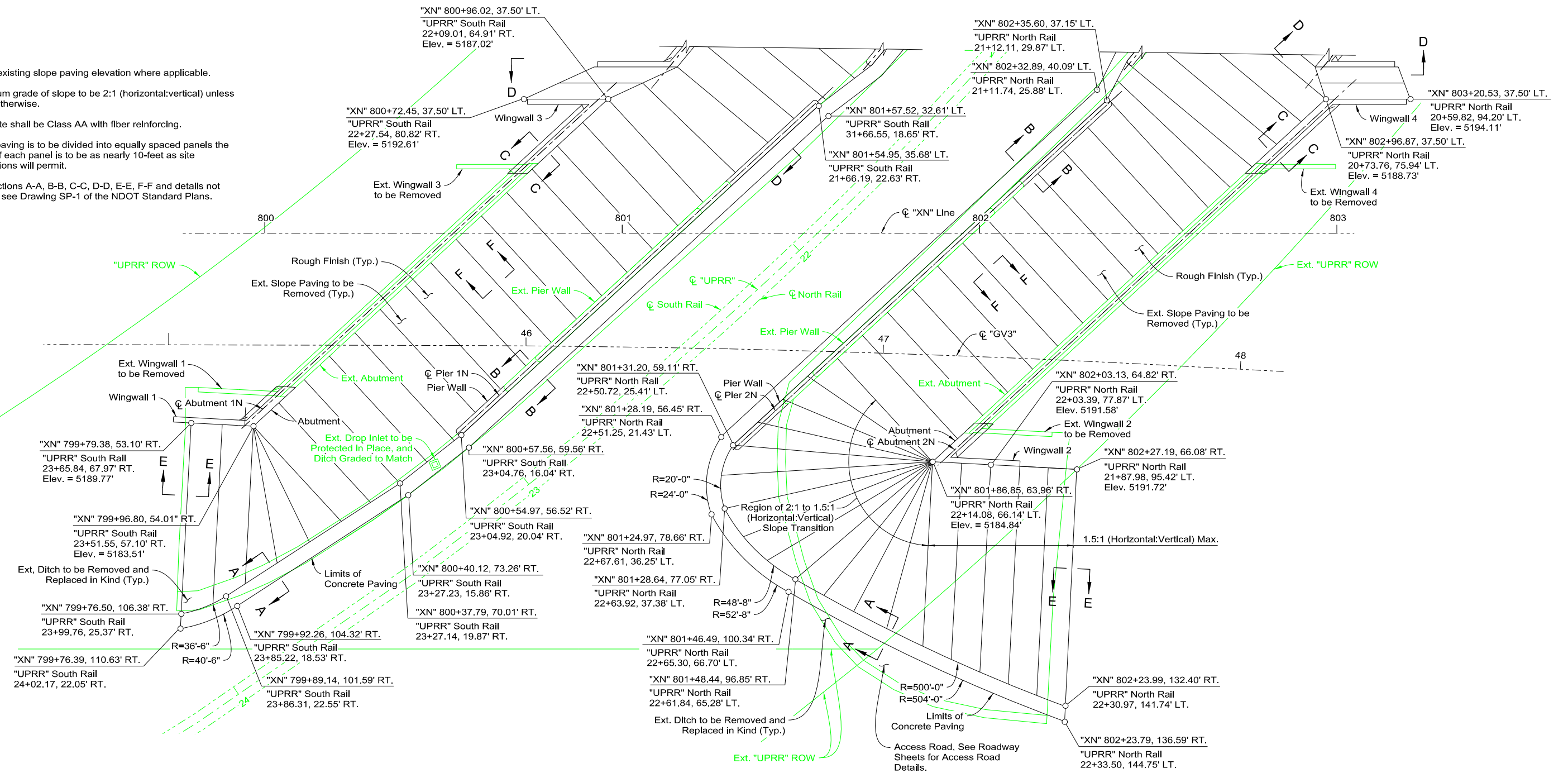
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STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B447

**NOTES:**

1. Match existing slope paving elevation where applicable.
2. Maximum grade of slope to be 2:1 (horizontal:vertical) unless noted otherwise.
3. Concrete shall be Class AA with fiber reinforcing.
4. Slope paving is to be divided into equally spaced panels the width of each panel is to be as nearly 10-feet as site dimensions will permit.
5. For Sections A-A, B-B, C-C, D-D, E-E, F-F and details not shown, see Drawing SP-1 of the NDOT Standard Plans.



**PLAN**

ORIGINAL CONTRACT: 2243  
 MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT



STATE OF NEVADA  
 DEPARTMENT OF TRANSPORTATION

**CONCRETE SLOPE PAVING**

G-1748 N

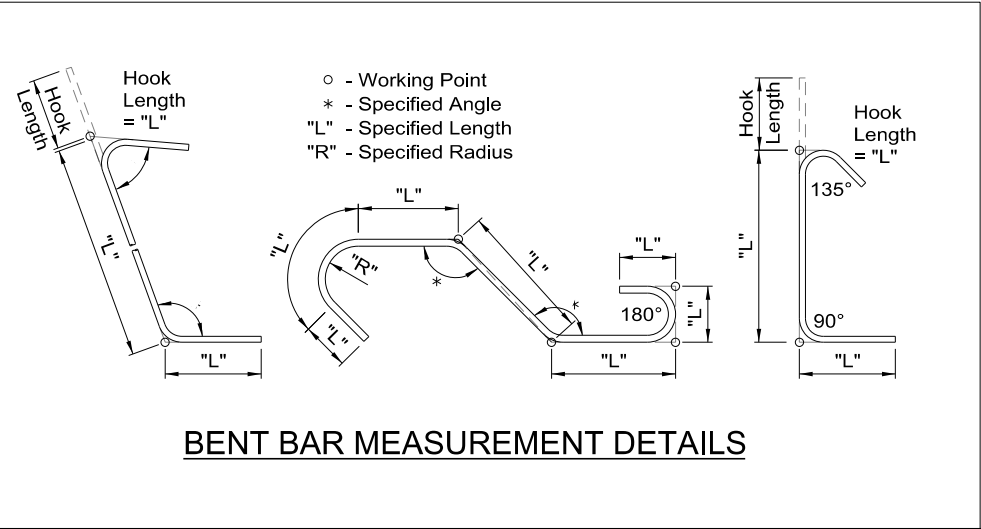
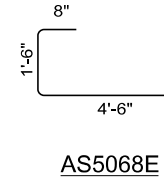
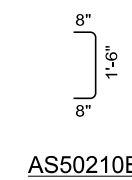
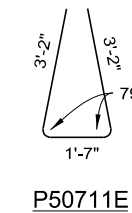
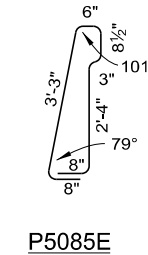
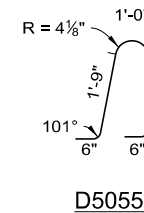
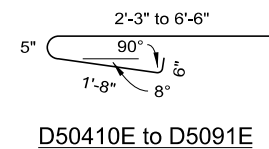
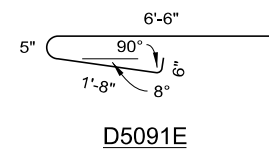
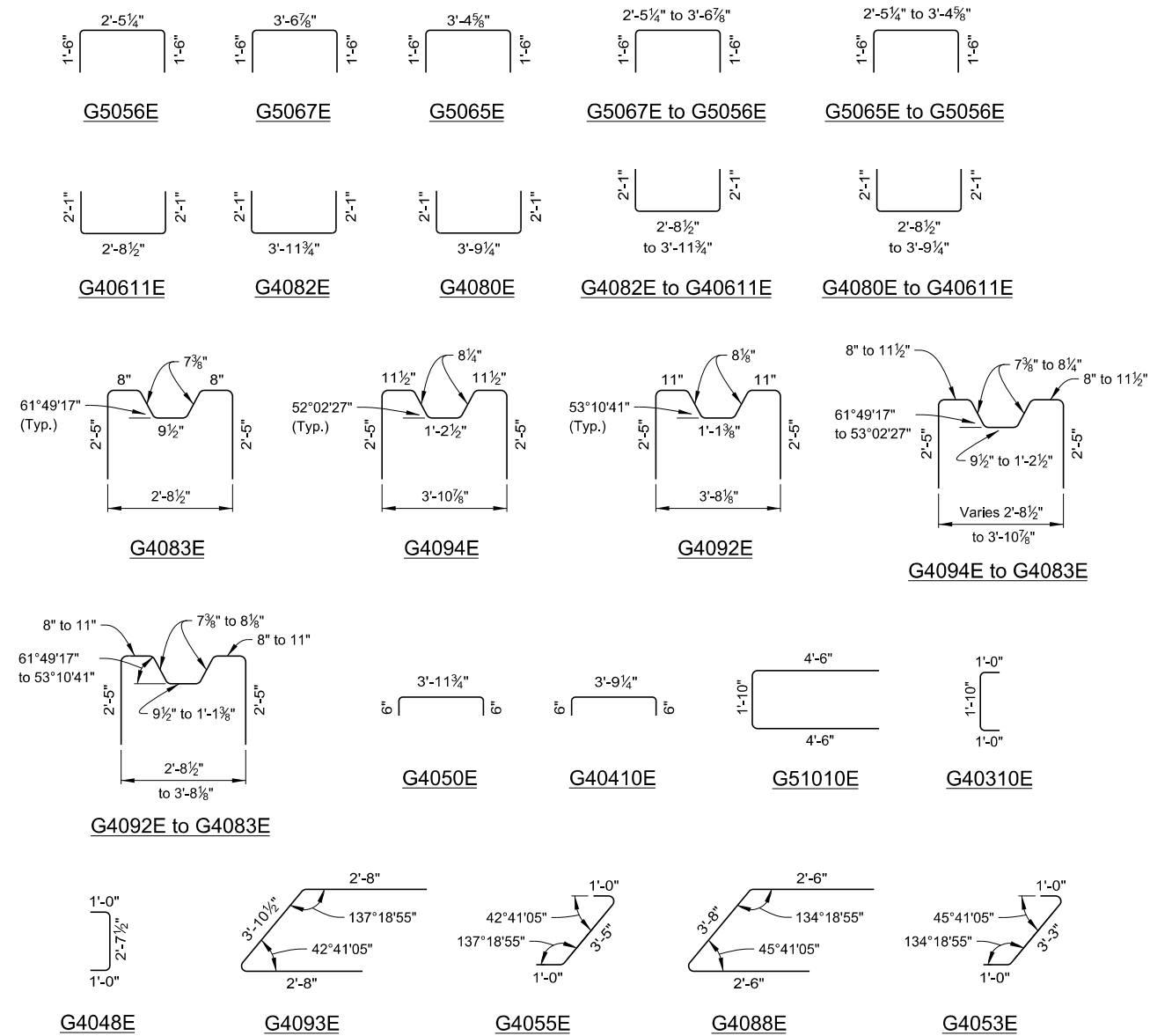
**HDR**  
 HDR Engineering, Inc.

9805 Double R Boulevard, Suite 101  
 Reno, NV 89521-5917  
 PH: 775-337-4700 FAX: 775-337-4774





STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B449



12/20/2022

ORIGINAL CONTRACT: 2243  
MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**BENT BARS**  
(2 OF 2)

G-1748 N

**HDR**  
HDR Engineering, Inc.

9805 Double R Boulevard, Suite 101  
Reno, NV 89521-5917  
PH: 775-337-4700 FAX: 775-337-4774



**ABUTMENT 1N & 2N WEST FOOTING (each)**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
4261	4	26' - 1"	18	313.63 lb.
4068	4	6' - 8"	20	89.07 lb.
8068	8	6' - 8"	20	356.00 lb.
40910	4	9' - 10"	14	91.96 lb.
80910	8	9' - 10"	2	52.51 lb.
2 Set	4062	to 4017	6 Bars/Set	31.06 lb.
2 Set	8062	to 8017	6 Bars/Set	124.16 lb.
F 4022	4	2' - 2"	48	69.47 lb.
6022	D 6	2' - 2"	16	52.07 lb.
F 5068	5	6' - 8"	20	139.07 lb.
F 7069	7	6' - 9"	10	137.97 lb.
4163	4	16' - 3"	2	21.71 lb.
F 50510	5	5' - 10"	17	103.43 lb.
F 5046	5	4' - 6"	17	79.79 lb.
Reinforcing Steel				1,610 lb.
Reinforcing Steel (Doweled)				53 lb.
Class DA Concrete, Modified (Major)(Structures)				11.98 C.Y.

**ABUTMENT 1N & 2N EAST FOOTING (each)**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
4116	4	11' - 6"	18	138.28 lb.
4068	4	6' - 8"	6	26.72 lb.
8068	8	6' - 8"	6	106.80 lb.
4093	4	9' - 3"	14	86.51 lb.
8093	8	9' - 3"	2	49.40 lb.
2 Set	4058	to 4016	6 Bars/Set	28.72 lb.
2 Set	8058	to 8016	6 Bars/Set	114.81 lb.
F 4022	4	2' - 2"	20	28.95 lb.
6022	D 6	2' - 2"	16	52.07 lb.
F 5068	5	6' - 8"	20	139.07 lb.
F 7069	7	6' - 9"	10	137.97 lb.
4028	4	2' - 8"	2	3.56 lb.
F 50510	5	5' - 10"	4	24.34 lb.
F 5046	5	4' - 6"	4	18.77 lb.
Reinforcing Steel				904 lb.
Reinforcing Steel (Doweled)				53 lb.
Class DA Concrete, Modified (Major)(Structures)				5.74 C.Y.

**ABUTMENT 1N & 2N WEST WALL (each)**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
5302	5	30' - 2"	15	471.96 lb.
52210	5	22' - 10"	7	166.71 lb.
50311	5	3' - 11"	7	28.60 lb.
A 50611	5	6' - 11"	5	36.07 lb.
A 5110	5	11' - 0"	62	711.33 lb.
A 5046	5	4' - 6"	128	600.77 lb.
A 9125	9	12' - 5"	56	2,364.13 lb.
A 9112	9	11' - 2"	6	227.80 lb.
A 5089	5	8' - 9"	48	438.06 lb.
A 5075	5	7' - 5"	6	46.41 lb.
A 5117	5	11' - 7"	8	96.65 lb.
7060	E 7	6' - 0"	62	760.37 lb.
Reinforcing Steel				5,189 lb.
Reinforcing Steel (Epoxy Coated)				761 lb.
Class DA Concrete, Modified (Major)(Structures)				36.93 C.Y.

**ABUTMENT 1N & 2N EAST WALL (each)**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
5156	5	15' - 6"	15	242.50 lb.
5086	5	8' - 6"	7	62.06 lb.
5038	5	3' - 8"	7	26.77 lb.
A 5068	5	6' - 8"	5	34.77 lb.
A 5109	5	10' - 9"	32	358.79 lb.
A 5046	5	4' - 6"	68	319.16 lb.
A 9103	9	10' - 3"	26	906.10 lb.
A 9091	9	9' - 1"	6	185.30 lb.
A 50610	5	6' - 10"	19	135.42 lb.
A 5058	5	5' - 8"	6	35.46 lb.
A 5095	5	9' - 5"	7	68.75 lb.
7060	E 7	6' - 0"	32	392.45 lb.
Reinforcing Steel				2,376 lb.
Reinforcing Steel (Epoxy Coated)				393 lb.
Class DA Concrete, Modified (Major)(Structures)				13.59 C.Y.

**ABUTMENT 1N & 2N WEST DIAPHRAGM (each)**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
A 9090	E 9	9' - 0"	62	1,897.20 lb.
5302	5	30' - 2"	9	283.17 lb.
50211	5	2' - 11"	4	12.17 lb.
5009	5	0' - 9"	4	3.13 lb.
A 5060	5	6' - 0"	12	75.10 lb.
A 50210	5	2' - 10"	8	23.64 lb.
A 5029	5	2' - 9"	104	298.30 lb.
Reinforcing Steel				696 lb.
Reinforcing Steel (Epoxy Coated)				1,898 lb.
Class DA Concrete, Modified (Major)(Structures)				5.22 C.Y.

**ABUTMENT 1N & 2N EAST DIAPHRAGM (each)**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
A 9090	E 9	9' - 0"	32	979.20 lb.
5156	5	15' - 6"	9	145.50 lb.
5022	5	2' - 2"	4	9.04 lb.
A 50510	5	5' - 10"	8	48.67 lb.
A 50210	5	2' - 10"	8	23.64 lb.
A 5029	5	2' - 9"	52	149.15 lb.
Reinforcing Steel				376 lb.
Reinforcing Steel (Epoxy Coated)				980 lb.
Class DA Concrete, Modified (Major)(Structures)				2.88 C.Y.

**ABUTMENT 1N EAST WINGWALL 1**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
72111	7	21' - 11"	5	223.99 lb.
W 5240	5	24' - 0"	3	75.10 lb.
1 Set	W 7241	to W 7085	13 Bars/Set	431.80 lb.
1 Set	W 5265	to W 51010	7 Bars/Set	135.98 lb.
W 7091	7	9' - 1"	18	334.19 lb.
W 5255	5	25' - 5"	2	53.02 lb.
W 4020	4	2' - 0"	22	29.39 lb.
1 Set	W 50510	to W 5180	17 Bars/Set	211.29 lb.
W 51804	5	18' - 4"	5	95.61 lb.
5088	5	8' - 8"	3	27.12 lb.
Reinforcing Steel				1,618 lb.
Class DA Concrete, Modified (Major)(Structures)				8.72 C.Y.

**ABUTMENT 2N EAST WINGWALL 2**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
7208	7	20' - 8"	5	211.21 lb.
W 5242	5	24' - 2"	3	75.62 lb.
1 Set	W 7221	to W 7100	13 Bars/Set	426.26 lb.
1 Set	W 5264	to W 5142	7 Bars/Set	147.85 lb.
W 70510	7	5' - 10"	18	214.62 lb.
W 52510	5	25' - 10"	2	53.89 lb.
W 4020	4	2' - 0"	20	26.72 lb.
1 Set	W 5190	to W 5066	15 Bars/Set	199.47 lb.
W 5190	5	19' - 0"	5	99.09 lb.
5090	5	9' - 0"	4	37.55 lb.
Reinforcing Steel				1,493 lb.
Class DA Concrete, Modified (Major)(Structures)				9.67 C.Y.

**ABUTMENT 1N WEST WINGWALL 3**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
7207	7	20' - 7"	5	210.36 lb.
W 5241	5	24' - 1"	3	75.36 lb.
1 Set	W 7221	to W 70910	18 Bars/Set	587.14 lb.
1 Set	W 5263	to W 5145	9 Bars/Set	190.87 lb.
W 70510	7	5' - 10"	23	274.24 lb.
W 52611	5	26' - 11"	2	56.15 lb.
W 4020	4	2' - 0"	20	26.72 lb.
1 Set	W 5240	to W 5066	15 Bars/Set	238.59 lb.
W 5240	5	24' - 0"	5	125.16 lb.
5116	5	11' - 6"	4	47.98 lb.
Reinforcing Steel				1,833 lb.
Class DA Concrete, Modified (Major)(Structures)				11.38 C.Y.

**ABUTMENT 2N WEST WINGWALL 4**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
7221	7	22' - 1"	5	225.69 lb.
W 52311	5	23' - 11"	3	74.84 lb.
1 Set	W 7241	to W 7085	18 Bars/Set	597.87 lb.
1 Set	W 5267	to W 5118	9 Bars/Set	179.53 lb.
W 7091	7	9' - 1"	23	427.03 lb.
W 5270	5	27' - 0"	2	56.32 lb.
W 4020	4	2' - 0"	22	29.39 lb.
1 Set	W 50610	to W 5238	17 Bars/Set	270.40 lb.
W 5240	5	24' - 0"	5	125.16 lb.
5116	5	11' - 6"	3	35.98 lb.
Reinforcing Steel				2,023 lb.
Class DA Concrete, Modified (Major)(Structures)				10.76 C.Y.

**PIER 1N & 2N WEST FOOTING (each)**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
54210	5	42' - 10"	15	670.13 lb.
54210	5	42' - 10"	15	670.13 lb.
5100	5	10' - 0"	14	146.02 lb.
10100	10	10' - 0"	14	602.42 lb.
5148	5	14' - 8"	44	673.08 lb.
8148	8	14' - 8"	87	3,406.92 lb.
F 4030	4	3' - 0"	96	192.38 lb.
F 9076	9	7' - 6"	34	867.00 lb.
9060	D 9	6' - 0"	2	40.80 lb.
6022	D 6	2' - 2"	28	91.12 lb.
Reinforcing Steel				7,229 lb.
Reinforcing Steel (Doweled)				132 lb.
Class DA Concrete, Modified (Major)(Structures)				60.03 C.Y.



12/20/2022

ORIGINAL CONTRACT: 2243  
MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

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**BILL OF MATERIALS**  
(1 OF 3)

G-1748 N

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**HDR** 9805 Double R Boulevard, Suite 101  
Reno, NV 89521-5917  
PH: 775-337-4700 FAX: 775-337-4774

STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B451

**PIER 1N EAST FOOTING**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT	
5285	5	28' - 5"	22	652.05 lb.	
2 Set	5281	to	4 Bars/Set	223.20 lb.	
5100	5	10' - 0"	14	146.02 lb.	
10100	10	10' - 0"	14	602.42 lb.	
5148	5	14' - 8"	26	397.73 lb.	
1 Set	5139	to	4 Bars/Set	51.45 lb.	
8148	8	14' - 8"	51	1,997.16 lb.	
1 Set	8139	to	7 Bars/Set	230.51 lb.	
F 5099	5	9' - 9"	1	10.17 lb.	
F 8121	8	12' - 1"	1	32.26 lb.	
F 4030	4	3' - 0"	63	126.25 lb.	
F 9076	9	7' - 6"	24	612.00 lb.	
9060	D 9	6' - 0"	2	40.80 lb.	
6022	D 6	2' - 2"	28	91.12 lb.	
				Reinforcing Steel	5,082 lb.
				Reinforcing Steel (Doweled)	132 lb.
				Class DA Concrete, Modified (Major)(Structures)	39.46 C.Y.

**PIER 2N EAST FOOTING**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT	
5285	5	28' - 5"	30	889.16 lb.	
5100	5	10' - 0"	14	146.02 lb.	
10100	10	10' - 0"	14	602.42 lb.	
5148	5	14' - 8"	30	458.92 lb.	
8148	8	14' - 8"	58	2,271.28 lb.	
F 4030	4	3' - 0"	66	132.26 lb.	
F 9076	9	7' - 6"	24	612.00 lb.	
9060	D 9	6' - 0"	2	40.80 lb.	
6022	D 6	2' - 2"	28	91.12 lb.	
				Reinforcing Steel	5,113 lb.
				Reinforcing Steel (Doweled)	132 lb.
				Class DA Concrete, Modified (Major)(Structures)	39.99 C.Y.

**PIER 1N & 2N WEST WALL (each)**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT	
C 4050	4	5' - 0"	57	190.38 lb.	
C 4029	4	2' - 9"	738	1,355.71 lb.	
C 4047	4	4' - 7"	44	134.71 lb.	
2 Set	4443	to	55 Bars/Set	3,009.62 lb.	
4344	4	34' - 4"	2	45.87 lb.	
4352	4	35' - 2"	2	46.98 lb.	
43510	4	35' - 10"	2	95.75 lb.	
4360	4	36' - 0"	2	48.10 lb.	
4362	4	36' - 2"	2	48.32 lb.	
43611	4	36' - 11"	2	49.32 lb.	
6303	6	30' - 3"	4	181.74 lb.	
7330	7	33' - 0"	54	3,642.41 lb.	
6206	6	20' - 6"	58	1,785.88 lb.	
7230	7	23' - 0"	12	564.14 lb.	
7146	7	14' - 6"	12	355.66 lb.	
2 Set	7300	to	6 Bars/Set	705.18 lb.	
2 Set	5258	to	7 Bars/Set	223.90 lb.	
42711	4	27' - 11"	2	37.30 lb.	
5022	D 5	2' - 2"	52	117.51 lb.	
7040	D 7	4' - 0"	12	98.11 lb.	
6310	6	31' - 0"	1	46.56 lb.	
4310	4	31' - 0"	1	20.71 lb.	
4300	4	30' - 0"	1	20.04 lb.	
6276	6	27' - 6"	1	41.31 lb.	
4276	4	27' - 6"	1	18.37 lb.	
4266	4	26' - 6"	1	17.70 lb.	
C 60310	6	3' - 10"	7	40.30 lb.	
C 4033	4	3' - 3"	67	145.46 lb.	
C 40311	4	3' - 11"	8	20.93 lb.	
C 4037	4	3' - 7"	4	9.57 lb.	
6042	6	4' - 2"	59	369.24 lb.	
				Reinforcing Steel	1,048 lb.
				Reinforcing Steel (Epoxy Coated)	571 lb.
				Class EA Concrete, Modified (Major)	6.79 C.Y.

**PIER 1N & 2N WEST WALL (each) (Continued)**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT	
C 4052	4	5' - 2"	62	213.98 lb.	
C 40410	4	4' - 10"	31	100.09 lb.	
6036	6	3' - 6"	1	5.26 lb.	
C 4050	4	5' - 0"	1	3.34 lb.	
C 40510	4	5' - 10"	1	3.90 lb.	
C 4064	4	6' - 4"	1	4.23 lb.	
				Reinforcing Steel	13,602 lb.
				Reinforcing Steel (Doweled)	216 lb.
				Class DA Concrete, Modified (Major)(Structures)	96.40 C.Y.

**PIER 1N & 2N EAST WALL (each)**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT	
C 4050	4	5' - 0"	51	170.34 lb.	
C 4029	4	2' - 9"	422	775.21 lb.	
C 4047	4	4' - 7"	30	91.85 lb.	
2 Set	42910	to	51 Bars/Set	1,822.64 lb.	
4199	4	19' - 9"	2	26.39 lb.	
4208	4	20' - 8"	2	27.61 lb.	
4214	4	21' - 4"	2	28.50 lb.	
42110	4	21' - 10"	2	29.17 lb.	
4223	4	22' - 3"	2	29.73 lb.	
4230	4	23' - 0"	2	30.73 lb.	
62710	6	27' - 10"	4	167.22 lb.	
7310	7	31' - 0"	26	1,647.46 lb.	
6206	6	20' - 6"	30	923.73 lb.	
7206	7	20' - 6"	12	502.82 lb.	
7146	7	14' - 6"	12	355.66 lb.	
2 Set	7284	to	6 Bars/Set	664.30 lb.	
2 Set	5241	to	6 Bars/Set	173.66 lb.	
4262	4	26' - 2"	2	34.96 lb.	
5022	D 5	2' - 2"	48	108.47 lb.	
7040	D 7	4' - 0"	12	98.11 lb.	
6146	6	14' - 6"	1	21.78 lb.	
4146	4	14' - 6"	1	9.69 lb.	
4136	4	13' - 6"	1	9.02 lb.	
6176	6	17' - 6"	1	26.29 lb.	
4176	4	17' - 6"	1	11.69 lb.	
4166	4	16' - 6"	1	11.02 lb.	
C 60310	6	3' - 10"	6	34.55 lb.	
C 4033	4	3' - 3"	40	86.84 lb.	
C 40311	4	3' - 11"	6	15.70 lb.	
C 4037	4	3' - 7"	3	7.18 lb.	
6042	6	4' - 2"	33	206.53 lb.	
C 4052	4	5' - 2"	36	124.25 lb.	
C 40410	4	4' - 10"	18	58.12 lb.	
6036	6	3' - 6"	1	5.26 lb.	
C 4050	4	5' - 0"	1	3.34 lb.	
C 40510	4	5' - 10"	1	3.90 lb.	
C 4064	4	6' - 4"	1	4.23 lb.	
				Reinforcing Steel	8,142 lb.
				Reinforcing Steel (Doweled)	207 lb.
				Class DA Concrete, Modified (Major)(Structures)	58.99 C.Y.

**PIER 1N & 2N WEST DIAPHRAGM (each)**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT	
C 5040	E 5	4' - 0"	2	8.34 lb.	
C 5087	E 5	8' - 7"	55	492.38 lb.	
C 4029	4	2' - 9"	330	606.21 lb.	
C 5103	E 5	10' - 3"	1	10.69 lb.	
C 4045	4	4' - 5"	6	17.70 lb.	
5286	E 5	28' - 6"	2	59.45 lb.	
2 Set	5296	to	7 Bars/Set	423.46 lb.	
				Reinforcing Steel	1,048 lb.
				Reinforcing Steel (Epoxy Coated)	571 lb.
				Class EA Concrete, Modified (Major)	6.79 C.Y.

**PIER 1N & 2N EAST DIAPHRAGM (each)**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT	
C 5039	E 5	3' - 9"	2	7.82 lb.	
C 5081	E 5	8' - 1"	25	210.77 lb.	
C 4029	4	2' - 9"	150	275.55 lb.	
C 5099	E 5	9' - 9"	1	10.17 lb.	
C 4045	4	4' - 5"	6	17.70 lb.	
5136	E 5	13' - 6"	2	28.16 lb.	
2 Set	5146	to	7 Bars/Set	204.43 lb.	
				Reinforcing Steel	498 lb.
				Reinforcing Steel (Epoxy Coated)	257 lb.
				Class EA Concrete, Modified (Major)	3.61 C.Y.

**DECK WEST**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT	
5516	E 5	51' - 6"	42	2,256.01 lb.	
8300	E 8	30' - 0"	42	3,364.20 lb.	
8600	E 8	60' - 0"	40	6,408.00 lb.	
5600	E 5	60' - 0"	33	2,065.14 lb.	
6296	E 6	29' - 6"	1	44.31 lb.	
6306	E 6	30' - 6"	1	45.81 lb.	
6315	E 6	31' - 5"	12	566.25 lb.	
1 Set	5014	E to	5194 E 41 Bars/Set	441.88 lb.	
5215	E 5	21' - 5"	372	8,309.58 lb.	
1 Set	5023	E to	5199 E 44 Bars/Set	504.81 lb.	
5050	E 5	5' - 0"	397	2,070.36 lb.	
5400	E 5	40' - 0"	4	166.88 lb.	
D 5091	E 5	9' - 1"	258	2,444.27 lb.	
1 Set	D 50410	E to	D 5091 E 9 Bars/Set	65.32 lb.	
D 5055	E 5	5' - 5"	269	1,519.74 lb.	
				Reinforcing Steel (Epoxy Coated)	30,273 lb.
				Class EA Concrete, Modified (Major)	151.46 C.Y.

**DECK CLOSURE POUR WEST**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT	
5516	E 5	51' - 6"	6	322.29 lb.	
5316	E 5	31' - 6"	6	197.13 lb.	
8300	E 8	30' - 0"	2	160.20 lb.	
8600	E 8	60' - 0"	4	640.80 lb.	
5300	E 5	30' - 0"	4	125.16 lb.	
5600	E 5	60' - 0"	5	312.90 lb.	
5400	E 5	40' - 0"	3	125.16 lb.	
				Reinforcing Steel (Epoxy Coated)	1,884 lb.
				Class EA Concrete, Modified (Major)	13.45 C.Y.



ORIGINAL CONTRACT: 2243  
 MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT

STATE OF NEVADA  
 DEPARTMENT OF TRANSPORTATION

**BILL OF MATERIALS**  
 (2 OF 3)

G-1748 N

**HDR**  
 HDR Engineering, Inc.

9805 Double R Boulevard, Suite 101  
 Reno, NV 89521-5917  
 PH: 775-337-4700 FAX: 775-337-4774

STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B452

**DECK EAST**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT		
5496	E	5	49' - 6"	24	1,239.08 lb.	
10300	E	10	30' - 0"	24	3,098.16 lb.	
10600	E	10	60' - 0"	22	5,679.96 lb.	
5600	E	5	60' - 0"	24	1,501.92 lb.	
6137	E	6	13' - 7"	1	20.40 lb.	
6147	E	6	14' - 7"	1	21.90 lb.	
6155	E	6	15' - 5"	12	277.87 lb.	
1 Set	5023	E	to 5110	E	19 Bars/Set	131.29 lb.
51111	E	5	11' - 11"	375	4,660.91 lb.	
1 Set	50910	E	to 5014	E	18 Bars/Set	104.82 lb.
5050	E	5	5' - 0"	378	1,971.27 lb.	
5400	E	5	40' - 0"	4	166.88 lb.	
D 5091	E	5	9' - 1"	248	2,349.53 lb.	
1 Set	D 50410	E	to D 5091	E	9 Bars/Set	65.32 lb.
D 5055	E	5	5' - 5"	259	1,483.24 lb.	
Reinforcing Steel (Epoxy Coated)					22,753 lb.	
Class EA Concrete, Modified (Major)					61.61 C.Y.	

**DECK CLOSURE POUR EAST**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT	
5496	E	5	49' - 6"	6	309.77 lb.
5300	E	5	30' - 0"	10	312.90 lb.
10300	E	10	30' - 0"	2	258.18 lb.
10600	E	10	60' - 0"	4	1,032.72 lb.
5600	E	5	60' - 0"	5	312.90 lb.
5400	E	5	40' - 0"	3	125.16 lb.
Reinforcing Steel (Epoxy Coated)					2,352 lb.
Class EA Concrete, Modified (Major)					9.11 C.Y.

**ABUTMENT 1N APPROACH SLAB**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT		
AS 50210	E	5	2' - 10"	94	277.79 lb.	
AS 5068	E	5	6' - 8"	94	653.61 lb.	
1 Set	7256	E	to 7492	E	48 Bars/Set	3,662.85 lb.
1 Set	4256	E	to 4492	E	24 Bars/Set	598.53 lb.
4494	E	4	49' - 4"	2	65.91 lb.	
7324	E	7	32' - 4"	3	198.27 lb.	
7240	E	7	24' - 0"	8	392.45 lb.	
3 Set	7257	E	to 7383	E	26 Bars/Set	5,088.54 lb.
3 Set	4257	E	to 4383	E	13 Bars/Set	831.49 lb.
1 Set	7284	E	to 7587	E	58 Bars/Set	5,152.07 lb.
1 Set	4284	E	to 4587	E	29 Bars/Set	841.87 lb.
1 Set	7260	E	to 72710	E	6 Bars/Set	330.11 lb.
1 Set	4260	E	to 42710	E	3 Bars/Set	53.94 lb.
5232	E	5	23' - 2"	4	96.65 lb.	
5304	E	5	30' - 4"	4	126.55 lb.	
4232	E	4	23' - 2"	81	1,253.50 lb.	
1 Set	4228	E	to 4173	E	13 Bars/Set	173.32 lb.
1 Set	4153	E	to 4016	E	31 Bars/Set	173.43 lb.
1 Set	4222	E	to 4026	E	24 Bars/Set	197.73 lb.
4342	E	4	34' - 2"	4	91.29 lb.	
4322	E	4	32' - 2"	2	42.97 lb.	
5118	E	5	11' - 8"	12	146.02 lb.	
4118	E	4	11' - 8"	243	1,893.78 lb.	
4172	E	4	17' - 2"	18	206.41 lb.	
3 Set	4108	E	to 4016	E	11 Bars/Set	134.10 lb.
3 Set	4112	E	to 4016	E	22 Bars/Set	279.22 lb.
4304	E	4	30' - 4"	13	263.41 lb.	
1 Set	4290	E	to 4330	E	40 Bars/Set	828.32 lb.
1 Set	4297	E	to 4016	E	62 Bars/Set	643.67 lb.
1 Set	4304	E	to 4316	E	27 Bars/Set	557.61 lb.
1 Set	4291	E	to 4016	E	31 Bars/Set	316.66 lb.
4465	E	4	46' - 5"	6	186.04 lb.	
4058	E	4	5' - 8"	2	7.57 lb.	
7058	E	7	5' - 8"	3	34.75 lb.	
4240	E	4	24' - 0"	2	32.06 lb.	
4033	E	4	3' - 3"	70	151.97 lb.	
5070	E	5	7' - 0"	141	1,029.44 lb.	
1 Set	5070	E	to 5026	E	12 Bars/Set	59.45 lb.
4050	E	4	5' - 0"	288	961.92 lb.	
D 5055	E	5	5' - 5"	97	548.01 lb.	
Reinforcing Steel (Epoxy Coated)					28,584 lb.	
Class EA Concrete, Modified (Major)					146.30 C.Y.	

**ABUTMENT 2N APPROACH SLAB**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT		
AS 50210	E	5	2' - 10"	110	325.07 lb.	
AS 5068	E	5	6' - 8"	110	764.87 lb.	
1 Set	7273	E	to 7509	E	48 Bars/Set	3,826.37 lb.
1 Set	4273	E	to 4509	E	24 Bars/Set	625.25 lb.
4272	E	4	27' - 2"	2	36.29 lb.	
7272	E	7	27' - 2"	4	222.11 lb.	
3 Set	7257	E	to 7383	E	26 Bars/Set	5,088.54 lb.
3 Set	4257	E	to 4383	E	13 Bars/Set	831.49 lb.
7146	E	7	14' - 6"	92	2,726.70 lb.	
1 Set	7600	E	to 7156	E	92 Bars/Set	7,098.81 lb.
4126	E	4	12' - 6"	46	384.10 lb.	
1 Set	4600	E	to 4126	E	46 Bars/Set	1,113.89 lb.
5232	E	5	23' - 2"	4	96.65 lb.	
5453	E	5	45' - 3"	4	188.78 lb.	
4232	E	4	23' - 2"	44	680.91 lb.	
4217	E	4	21' - 7"	40	576.71 lb.	
1 Set	4216	E	to 4016	E	44 Bars/Set	338.01 lb.
1 Set	42010	E	to 4016	E	23 Bars/Set	171.56 lb.
4342	E	4	34' - 2"	6	136.94 lb.	
5118	E	5	11' - 8"	12	146.02 lb.	
4118	E	4	11' - 8"	243	1,893.78 lb.	
4172	E	4	17' - 2"	18	206.41 lb.	
3 Set	4108	E	to 4016	E	11 Bars/Set	134.10 lb.
3 Set	4112	E	to 4016	E	22 Bars/Set	279.22 lb.
1 Set	4442	E	to 4456	E	52 Bars/Set	1,557.33 lb.
1 Set	4016	E	to 4186	E	36 Bars/Set	240.48 lb.
1 Set	4206	E	to 44311	E	49 Bars/Set	1,054.24 lb.
1 Set	4442	E	to 4456	E	26 Bars/Set	778.67 lb.
1 Set	4026	E	to 4435	E	43 Bars/Set	659.46 lb.
4600	E	4	60' - 0"	8	320.64 lb.	
4040	E	4	4' - 0"	4	10.69 lb.	
4146	E	4	14' - 6"	2	19.37 lb.	
7503	E	7	50' - 3"	3	308.13 lb.	
7240	E	7	24' - 0"	4	196.22 lb.	
4033	E	4	3' - 3"	71	154.14 lb.	
5070	E	5	7' - 0"	184	1,343.38 lb.	
1 Set	5067	E	to 5026	E	14 Bars/Set	66.32 lb.
4050	E	4	5' - 0"	288	961.92 lb.	
D 5055	E	5	5' - 5"	119	672.30 lb.	
Reinforcing Steel (Epoxy Coated)					36,236 lb.	
Class EA Concrete, Modified (Major)					181.92 C.Y.	

**BARRIER RAIL WEST**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT	
43110	E	4	31' - 10"	8	170.12 lb.
4600	E	4	60' - 0"	6	240.48 lb.
4320	E	4	32' - 0"	8	171.01 lb.
4406	E	4	40' - 6"	16	432.86 lb.
4302	E	4	30' - 2"	16	322.42 lb.
4400	E	4	40' - 0"	2	53.44 lb.
4494	E	4	49' - 4"	10	329.55 lb.
4272	E	4	27' - 2"	10	181.47 lb.
P 5085	E	5	8' - 5"	367	3,221.74 lb.
Reinforcing Steel (Epoxy Coated)					5,124 lb.
Class EA Concrete, Modified (Major)					36.40 C.Y.

**BARRIER RAIL MIDDLE**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT	
4258	E	4	25' - 8"	5	85.73 lb.
4275	E	4	27' - 5"	5	91.57 lb.
4310	E	4	31' - 0"	12	248.50 lb.
4331	E	4	33' - 1"	4	88.40 lb.
42910	E	4	29' - 10"	4	79.71 lb.
4401	E	4	40' - 1"	16	428.41 lb.
43011	E	4	30' - 11"	12	247.83 lb.
4600	E	4	60' - 0"	6	240.48 lb.
4350	E	4	35' - 0"	2	46.76 lb.
4262	E	4	26' - 2"	5	87.40 lb.
4246	E	4	24' - 6"	5	81.83 lb.
P 5008	ED	5	0' - 8"	262	182.18 lb.
P 50711	E	5	7' - 11"	261	2,155.10 lb.
Reinforcing Steel (Epoxy Coated)					3,882 lb.
Reinforcing Steel (Epoxy Coated)(Doweled)					183 lb.
Class EA Concrete, Modified (Major)					45.14 C.Y.

**BARRIER RAIL EAST**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT	
4288	E	4	28' - 8"	16	306.39 lb.
4384	E	4	38' - 4"	16	409.71 lb.
4301	E	4	30' - 1"	16	321.53 lb.
4600	E	4	60' - 0"	6	240.48 lb.
4220	E	4	22' - 0"	2	29.39 lb.
4258	E	4	25' - 8"	10	171.45 lb.
4364	E	4	36' - 4"	20	485.41 lb.
P 5085	E	5	8' - 5"	377	3,309.53 lb.
Reinforcing Steel (Epoxy Coated)					5,274 lb.
Class EA Concrete, Modified (Major)					37.48 C.Y.

Totals	Quantity	Unit
Reinforcing Steel	100,502.00	lb.
Reinforcing Steel (Doweled)	1,586.00	lb.
Reinforcing Steel (Epoxy Coated)	146,082.00	lb.
Reinforcing Steel (Epoxy Coated)(Doweled)	183.00	lb.
Class DA Concrete, Modified (Major)(Structures)	703.49	C.Y.
Class EA Concrete, Modified (Major)	703.67	C.Y.



12/20/2022

ORIGINAL CONTRACT: 2243  
MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

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**BILL OF MATERIALS**  
(3 OF 3)

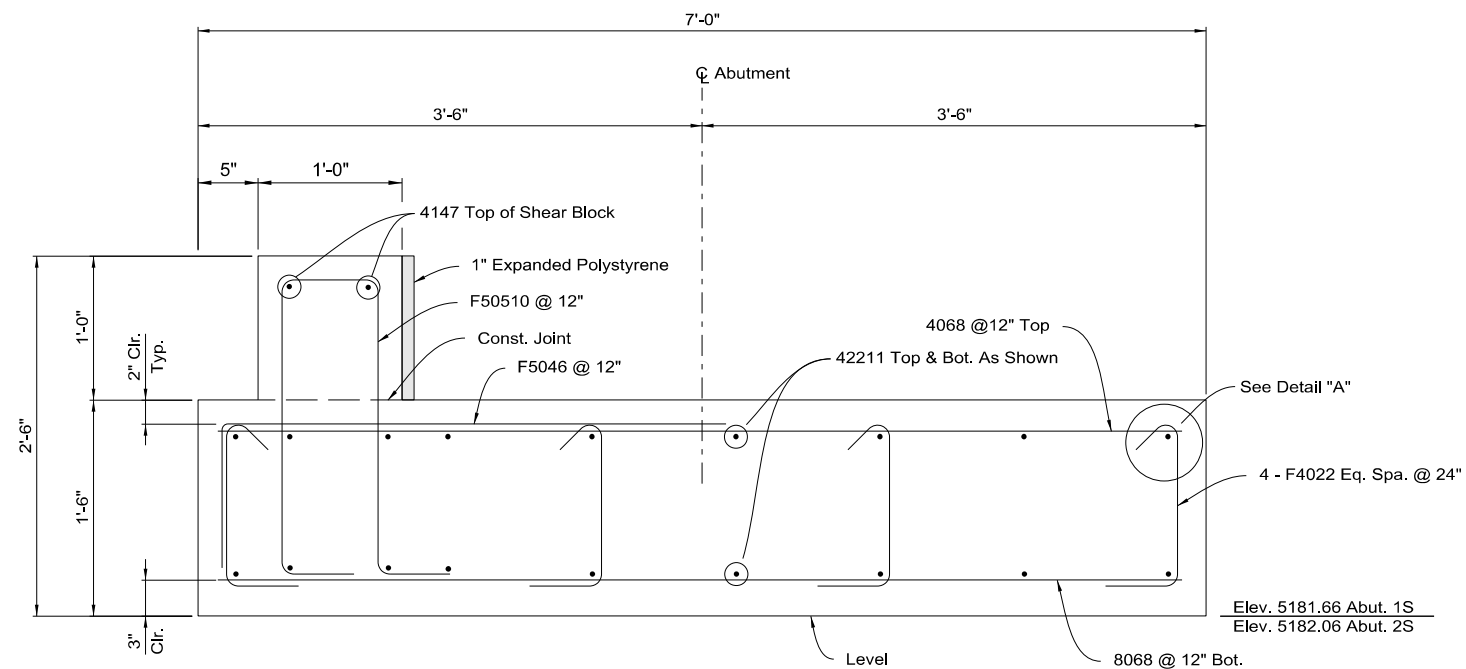
G-1748 N

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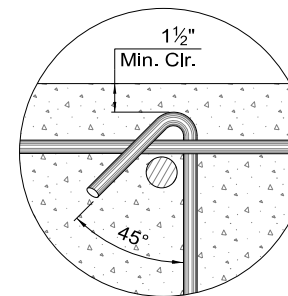
**HDR** Engineering, Inc. 9805 Double R Boulevard, Suite 101  
Reno, NV 89521-5917  
PH: 775-337-4700 FAX: 775-337-4774



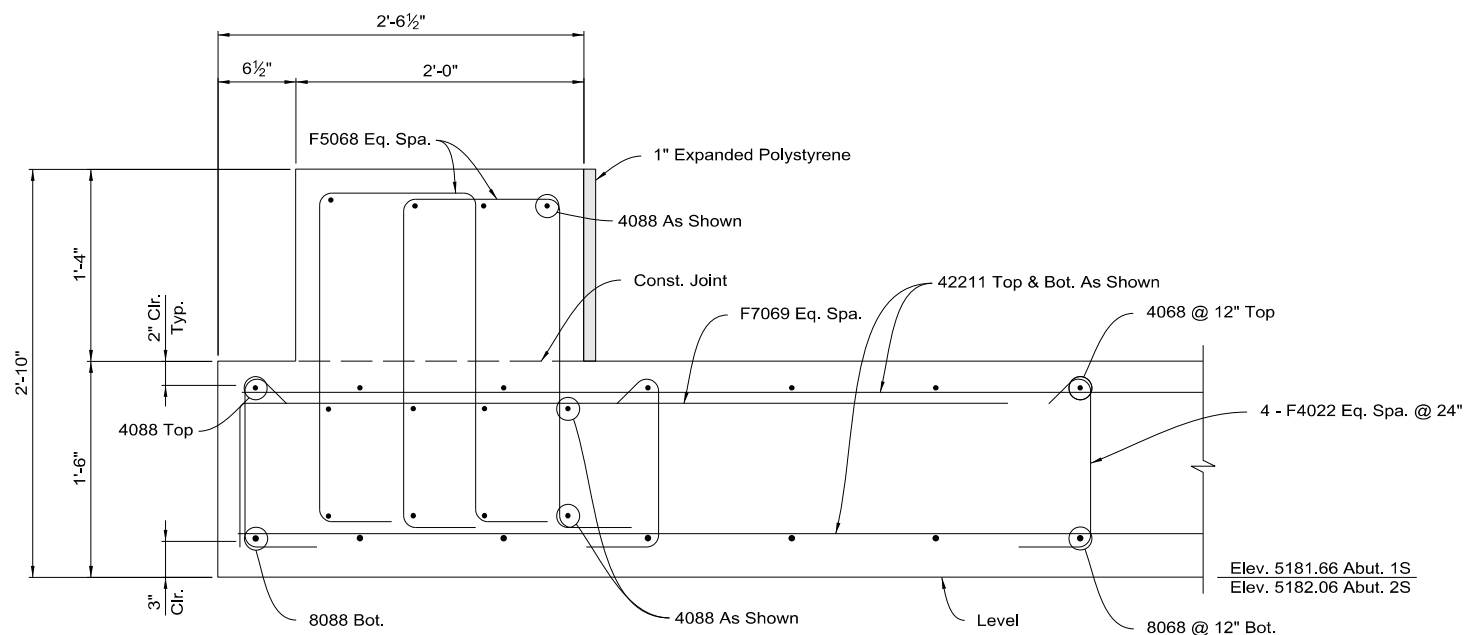
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B454



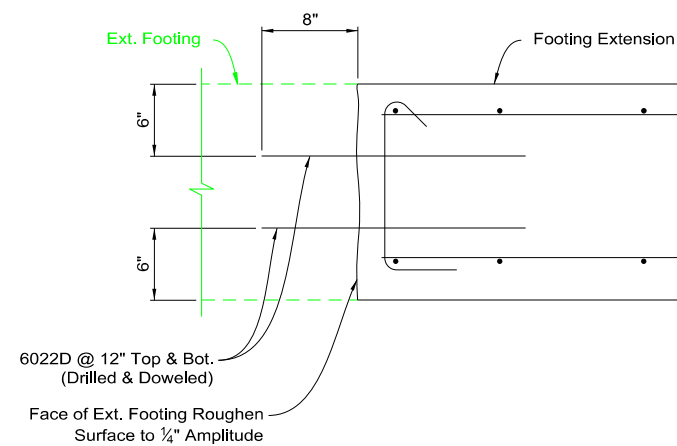
**SECTION A-A**



**DETAIL "A"**



**SECTION B-B**



**SECTION C-C**



12/20/2022

ORIGINAL CONTRACT: 2243  
MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

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**ABUTMENT FOOTING  
DETAILS**

G-1748 S

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STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B455

**NOTES:**

- See Abutment Details sheet for Sections A-A, B-B, C-C and details not shown.
  - Bottom of girder elevations are taken along  $\phi$  Oak Block locations.
  - Abutment elevations shown are taken along  $\phi$  Abutment, unless otherwise noted.
  - See Wingwall Plan and Elevation sheet for Wingwall 5 details.
- \* Removal of existing wingwall and portion of abutment wall. Protect in place existing reinforcing in abutment wall. Lap or embed into new wall. Abutment wall removal measured along abutment centerline.
- \*\* Partial removal of existing longitudinal shear block. Remove existing reinforcing at removal line & top of footing and coat exposed reinforcing steel with Engineer approved corrosion protection. Place expanded polystyrene between remaining shear block and proposed abutment wall. Abutment shear block removal measured perpendicular to abutment wall removal line.

**REINFORCING STEEL:**

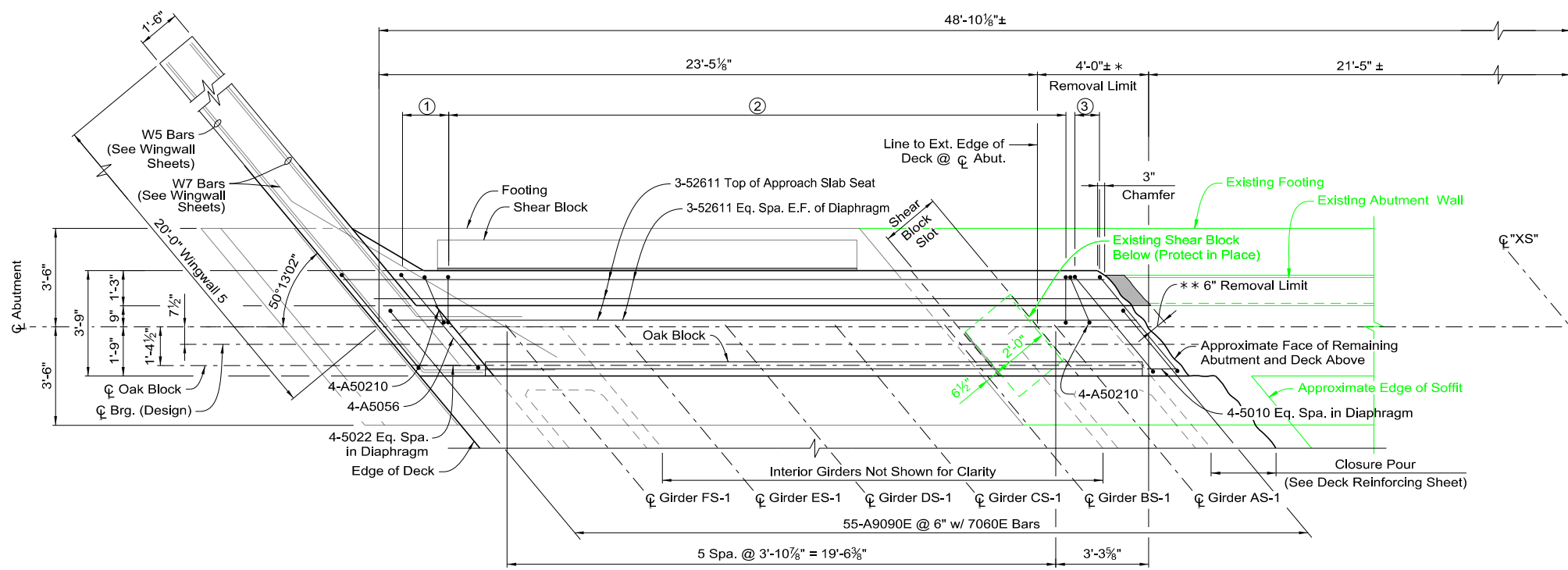
- 2 Spa. @ 9" Max. w/ 1 Group of A50210 bar (4 Bars/Group) (Typ. Ea. End)
- 23 Groups of A5029 @ 12" (4 Bars/ Group) Eq. Spa. Vertically in Diaphragm (92-A5029 Total)
- 2 Groups of A5056 (4 Bars/Group) Eq. Spa. Vertically in Diaphragm (8-A5056 Total)

**MINIMUM BAR LAPS**

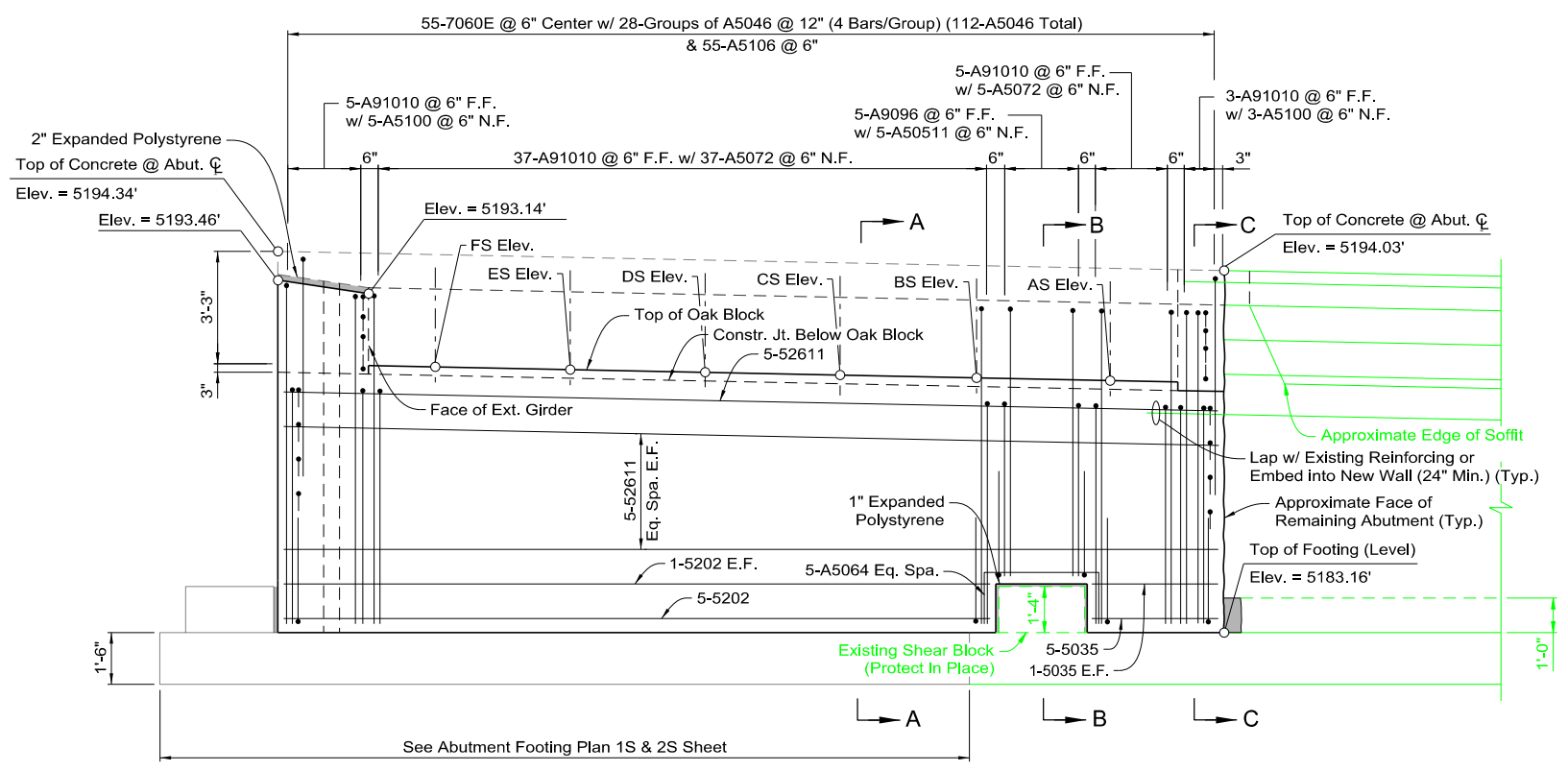
#5 Bar to #9 Bar = 27"

**BOTTOM OF GIRDER ELEVATION**

Elevation	$\phi$ Girder AS-1	$\phi$ Girder BS-1	$\phi$ Girder CS-1	$\phi$ Girder DS-1	$\phi$ Girder ES-1	$\phi$ Girder FS-1
Abutment 1S	5190.83	5190.88	5190.92	5190.96	5191.01	5191.05



**PLAN**



**ELEVATION**

LOOKING BACK ON LINE NORMAL TO SKEW



12/20/2022

ORIGINAL CONTRACT: 2243  
MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**ABUTMENT 1S  
PLAN & ELEVATION**

G-1748 S

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STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B456

**NOTES:**

- See Abutment 1S & 2S Details sheet for Sections A-A, B-B, C-C and details not shown.
  - Bottom of girder elevations are taken along  $\phi$  Oak Block locations.
  - Abutment elevations shown are taken along  $\phi$  Abutment, unless otherwise noted.
  - See Wingwall Plan and Elevation sheet for Wingwall 6 Details.
- \* Removal of existing wingwall and portion of abutment wall. Protect in place reinforcing in abutment wall. Lap or embed into new wall. Abutment wall removal measured along abutment centerline.
- \*\* Partial removal of existing longitudinal shear block. Remove existing reinforcing at removal line & top of footing and coat exposed reinforcing steel with Engineer approved corrosion protection. Place expanded polystyrene between remaining shear block and proposed abutment wall. Abutment shear block removal measured perpendicular to abutment wall removal line.

**REINFORCING STEEL:**

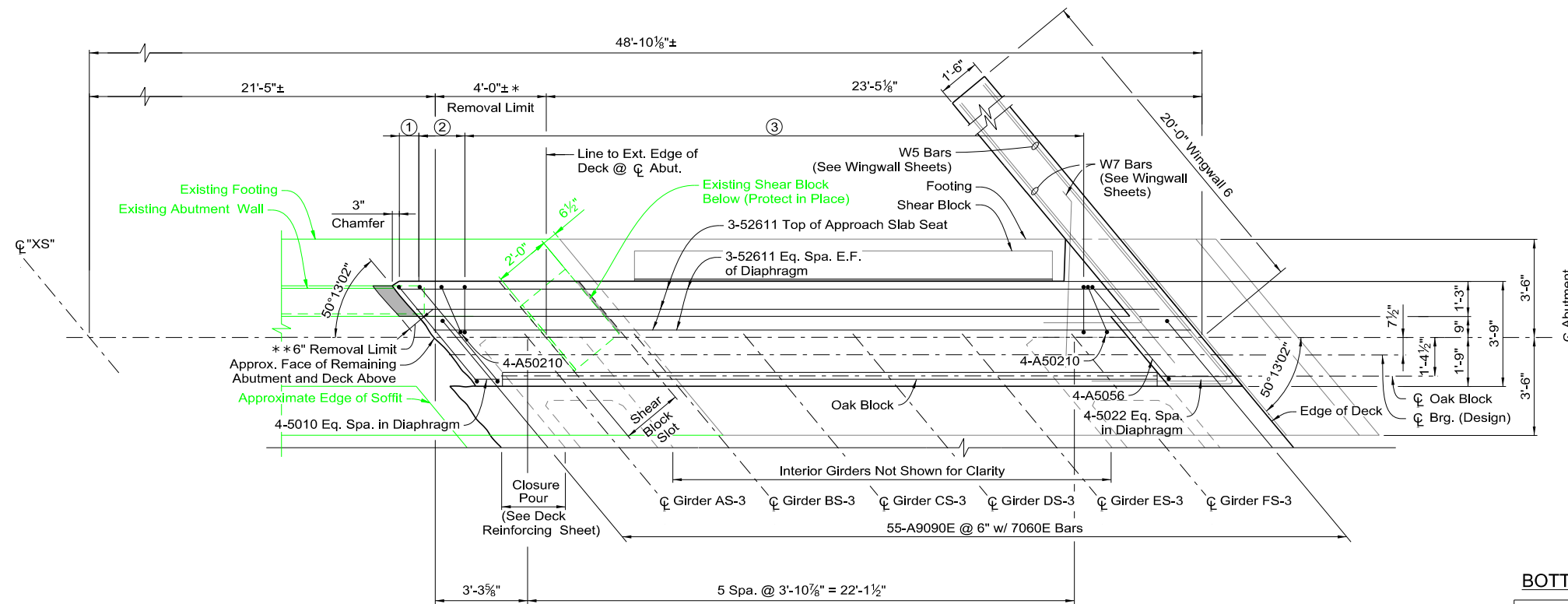
- 2 Groups of A5056 (4 Bars/Group) Eq. Spa. Vertically in Diaphragm (8-A5056 Total)
- 2 Spa. @ 9" Max. w/ 1 Group of A50210 bar (4 Bars/Group) (Typ. Ea. End)
- 23 Groups of A5029 @ 12" (4 Bars/ Group) Eq. Spa. Vertically in Diaphragm (92-A5029 Total)

**MINIMUM BAR LAPS**

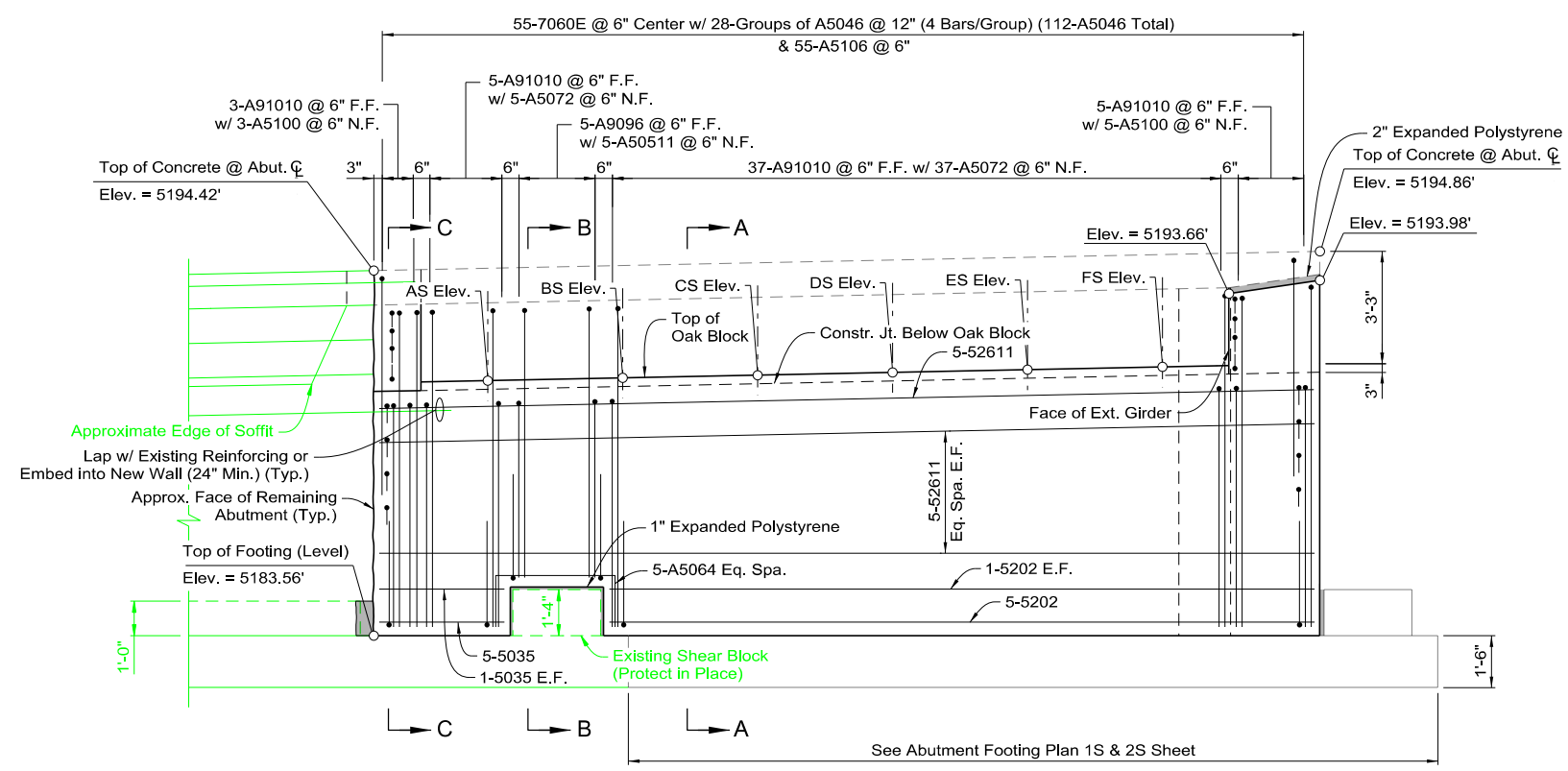
#5 Bar to #9 Bar = 27"

**BOTTOM OF GIRDER ELEVATION**

Elevation	$\phi$ Girder AS-3	$\phi$ Girder BS-3	$\phi$ Girder CS-3	$\phi$ Girder DS-3	$\phi$ Girder ES-1	$\phi$ Girder FS-1
Abutment 2S	5191.23	5191.30	5191.36	5191.43	5191.49	5191.55



**PLAN**



**ELEVATION**

LOOKING AHEAD ON LINE NORMAL TO SKEW



12/20/2022

ORIGINAL CONTRACT: 2243  
MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**ABUTMENT 2S  
PLAN & ELEVATION**

G-1748 S

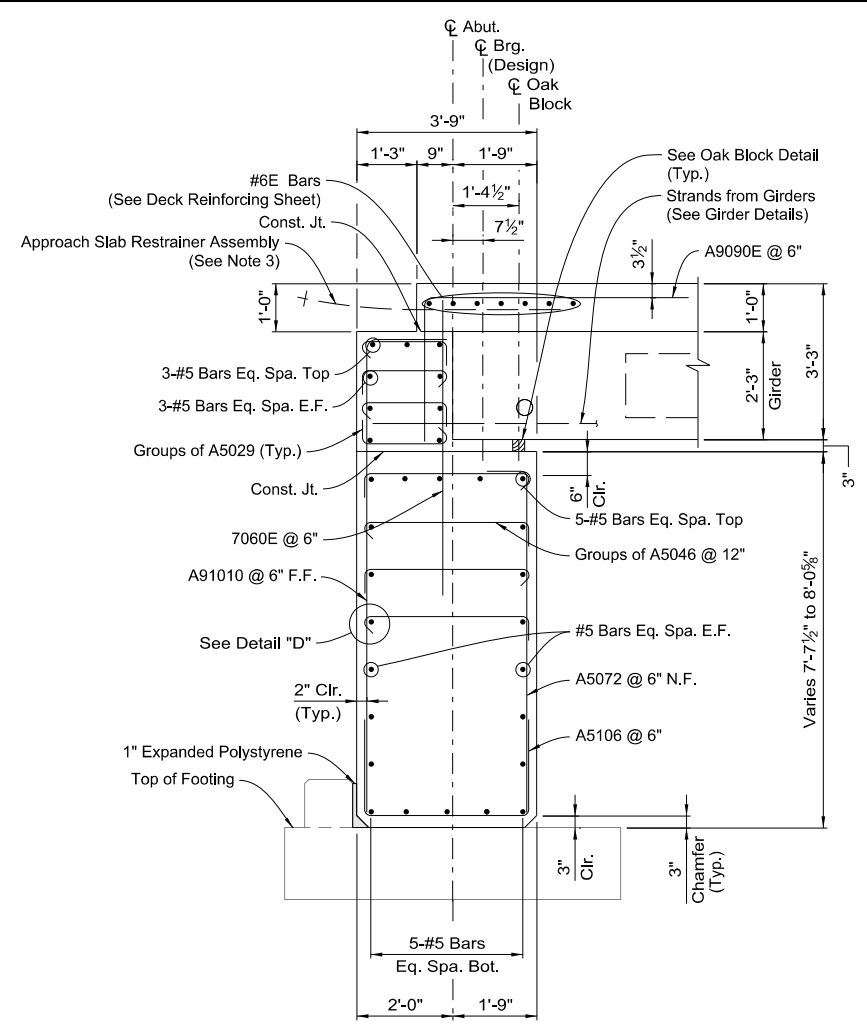
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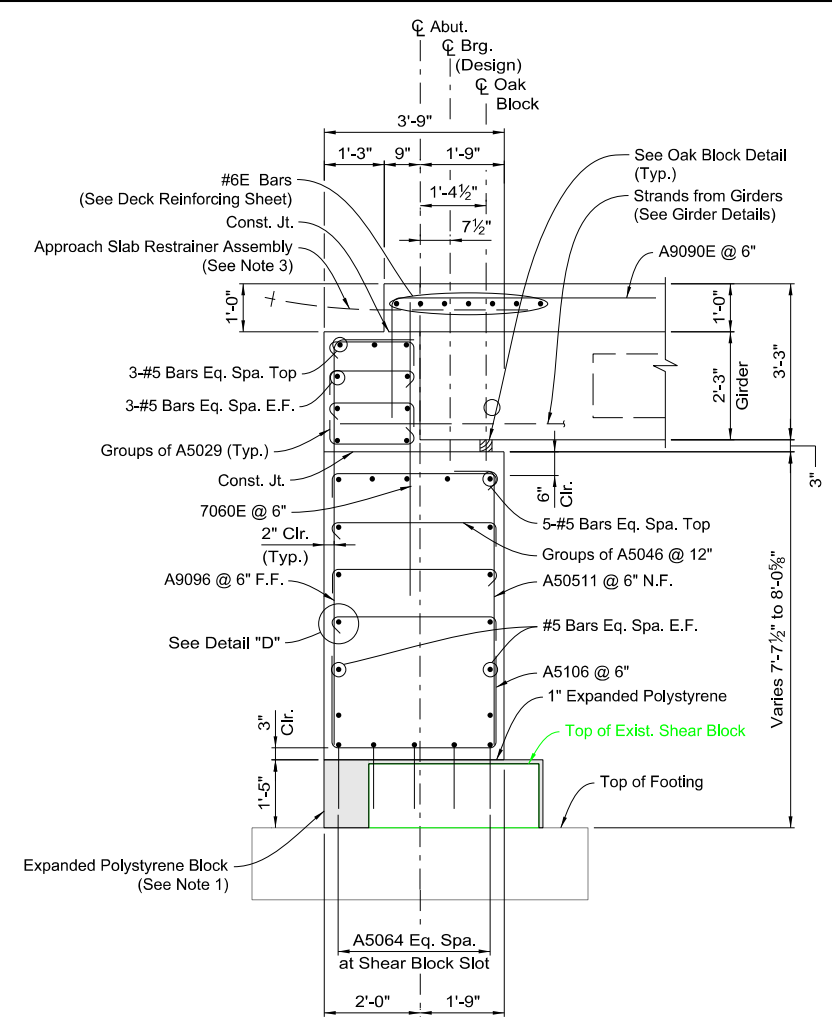
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B457

**NOTES:**

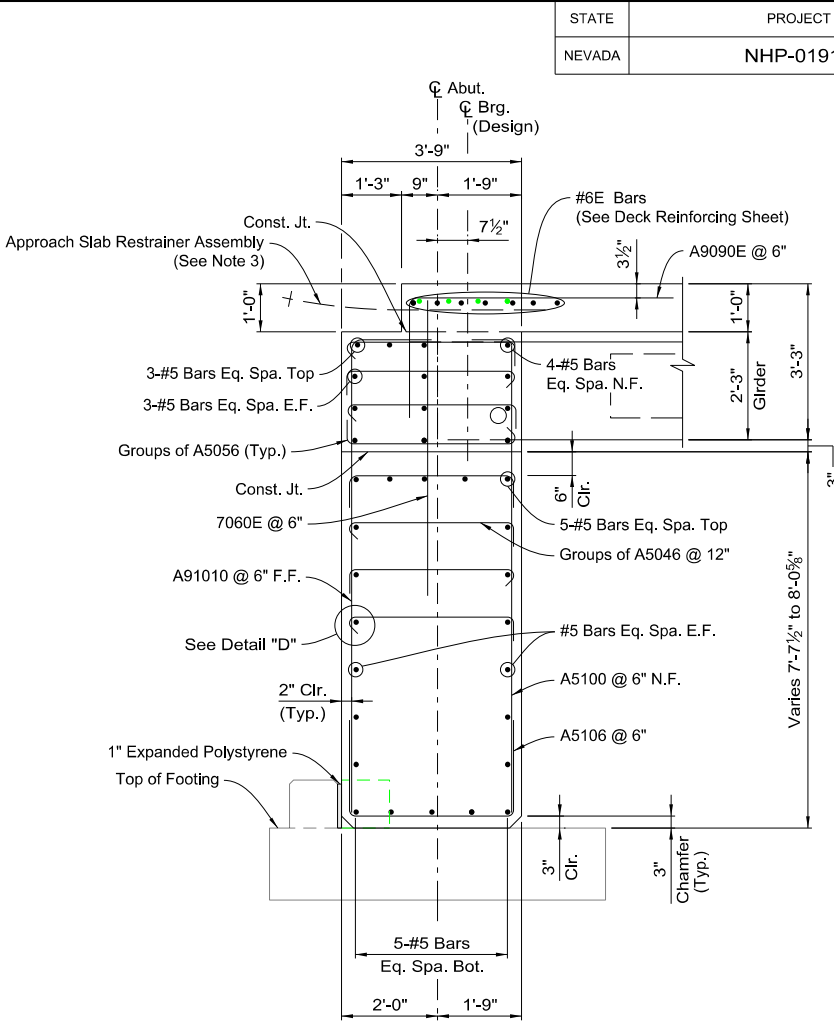
- Expanded polystyrene block to match shear block slot and be flush with face of abutment wall.
- Vary height as necessary to provide uniform bearing full width of girder.
- See Approach Slab Details sheet for Approach Slab Restrainer Assembly details.
- A5106 bars are placed along the abutment wall skew. A5029 and A5046 bars are placed perpendicular to centerline of abutment. A5064 bars are placed parallel to centerline of abutment.
- Contractor shall not backfill against abutment stemwall until diaphragm and deck are placed and cured.
- Oak blocks shall be placed parallel to Abutment Wall. Dimensions shown are normal to Abutment Walls. Maintain no less than 3" clear under precast girder ends. Contractor shall maintain stability of Precast Girders on Abutment Walls during all construction operations. If Oak Block aspect ratio exceed 1:1 additional shoring may be required. No direct payment for oak blocks.



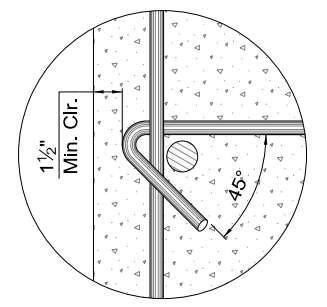
**SECTION A-A**



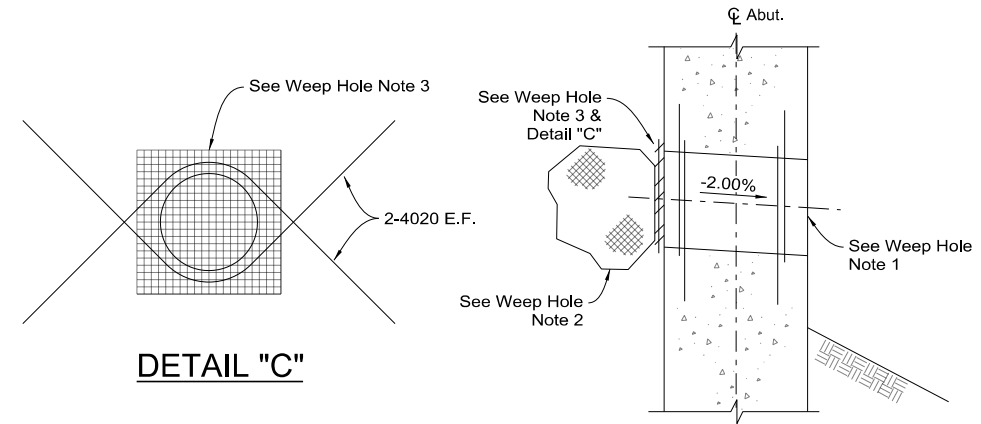
**SECTION B-B**



**SECTION C-C**



**DETAIL "D"**

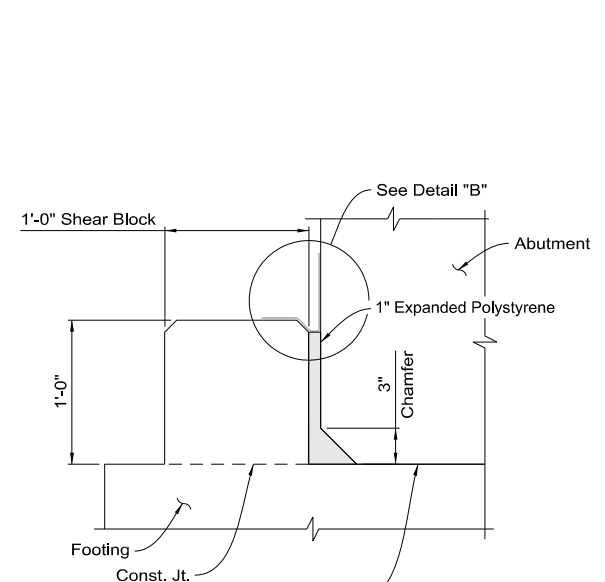


**DETAIL "C"**

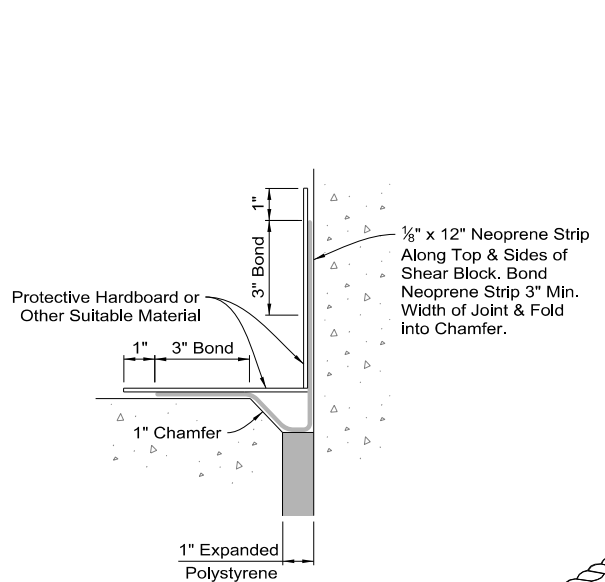
**ABUTMENT WEEP HOLE DETAIL**

**WEEP HOLE NOTES:**

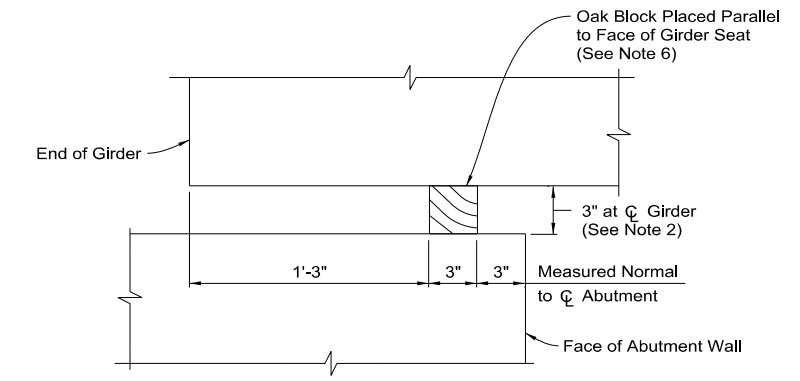
- One 4-inch diameter drain at center of wall or 25-feet maximum from existing weep hole. Exposed drains shall be located 3-inches ± above finished grade.
- 2-cubic feet of type 2 drain backfill encapsulated in a geotextile fabric securely tied. Geotextile shall meet the following:
  - A. Meet at least class 2 strength requirement per AASHTO M288 test method.
  - B. Have an AOS not greater than U.S. sieve No. 40.
  - C. Have a permittivity of at least 0.5 Sec.<sup>-1</sup>
- 6-inch square aluminum or galvanized steel wire mesh hardware cloth, 4 openings per inch and minimum wire diameter 0.03-inches.



**ABUTMENT SEAT DETAIL**



**DETAIL "B"**



**OAK BLOCK DETAIL**

ORIGINAL CONTRACT: 2243  
MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT



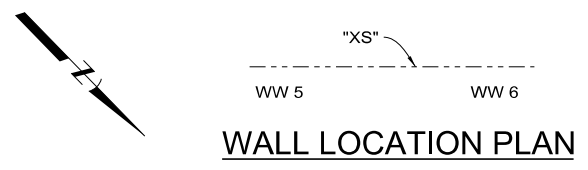
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**ABUTMENT 1S & 2S DETAILS**

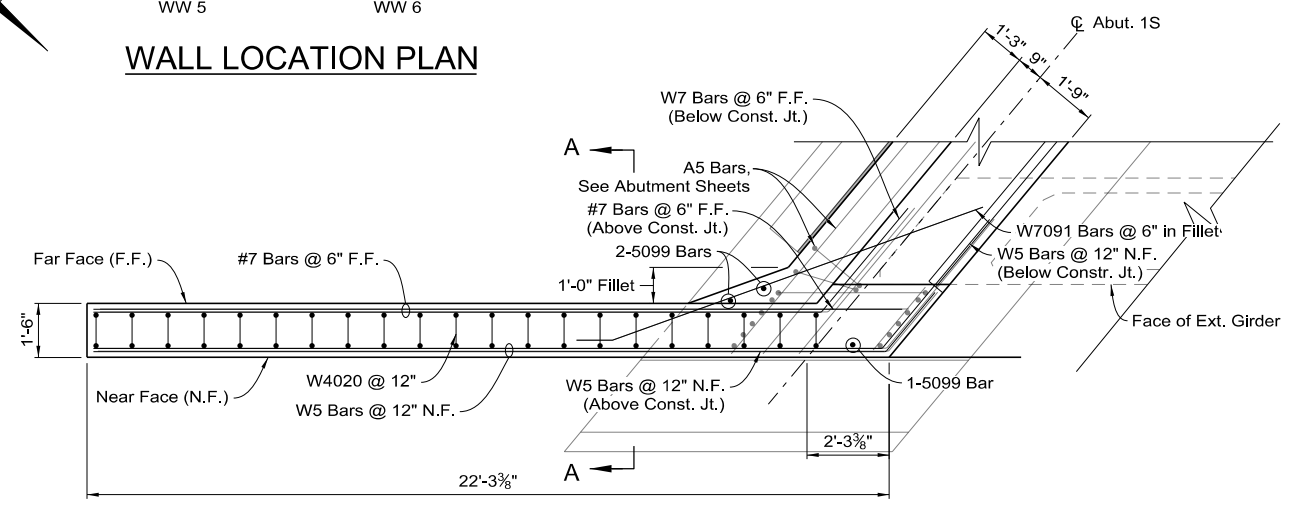
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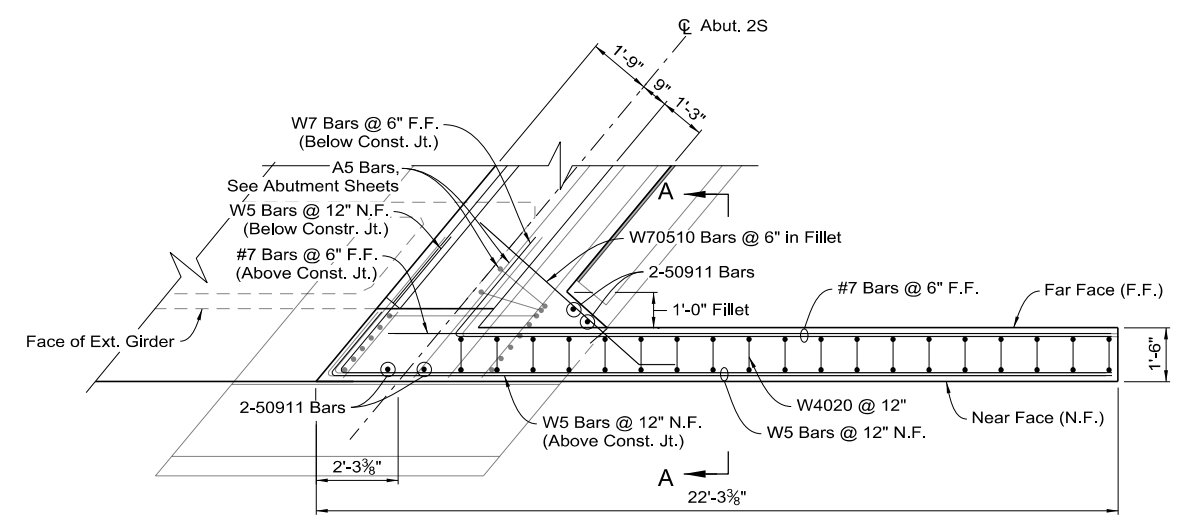
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B458



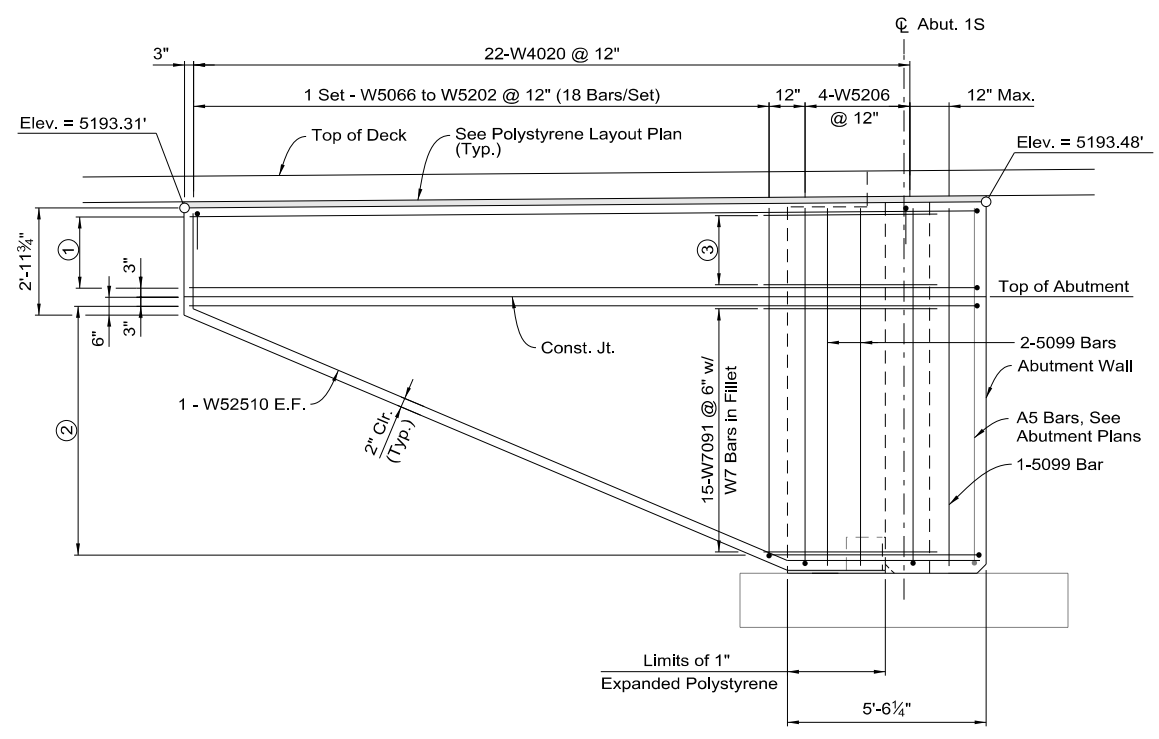
**WALL LOCATION PLAN**



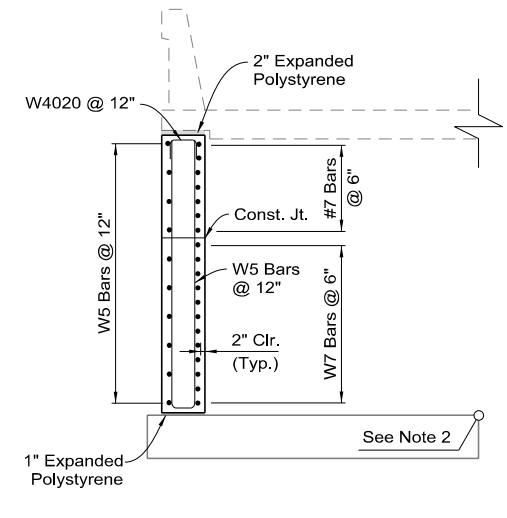
**PLAN**



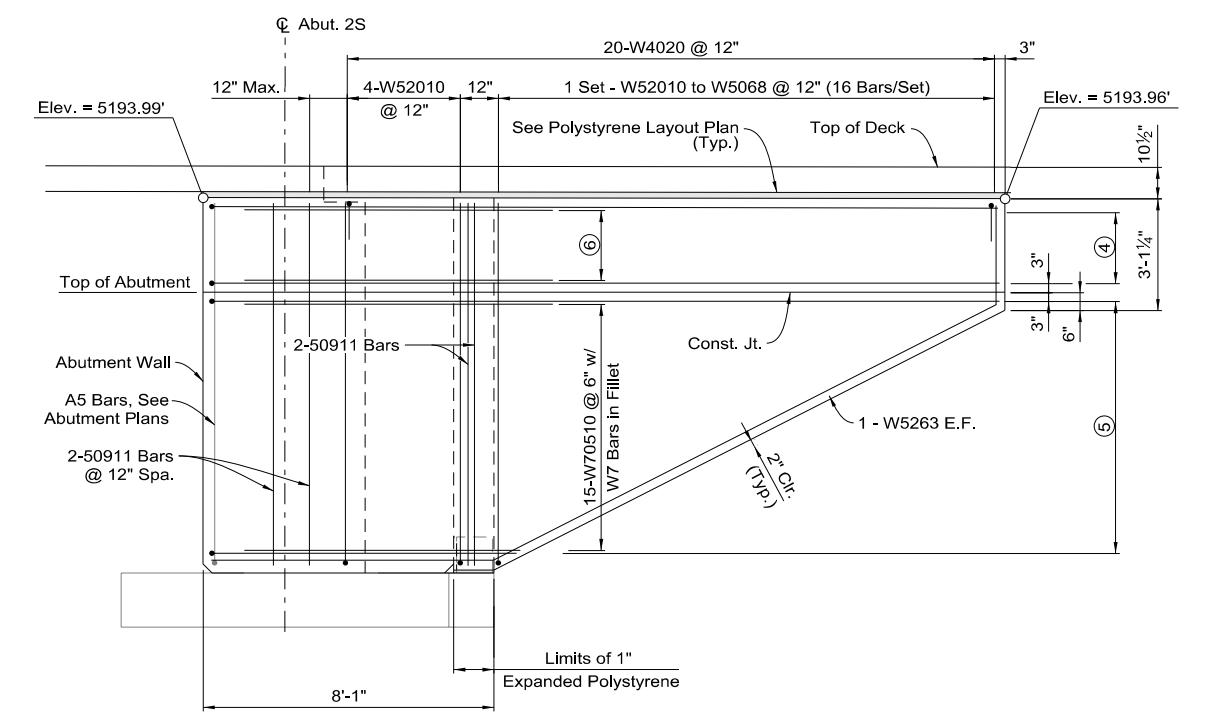
**PLAN**



**ELEVATION - WINGWALL 5**



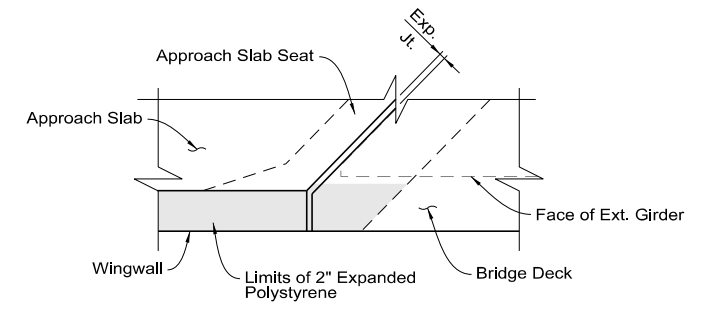
**SECTION A-A**



**ELEVATION - WINGWALL 6**

- REINFORCING STEEL:**
- ① 5-7219 @ 6" F.F.  
3-W52311 @ 12" N.F.
  - ② 1-Set W7233 to W7070 @ 6" N.F. (15 Bars/Set)  
1-Set W5264 to W5104 @ 12" N.F. (8 Bars/Set)
  - ③ 5-W7091 @ 6" w/ W7 Bars in Fillet
  - ④ 5-7208 @ 6" F.F.  
3-W5238 @ 12" N.F.
  - ⑤ 1-Set W7212 to W7078 @ 6" N.F. (15 Bars/Set)  
1-Set W5260 to W5127 @ 12" N.F. (8 Bars/Set)
  - ⑥ 6-W70510 @ 6" w/ W7 Bars in Fillet

- NOTES:**
- 1. Girders tie rods at the abutments shall be installed prior to finishing the construction of the wingwalls.
  - 2. For abutment details and elevations not shown, see Abutment Plan & Elevation sheets.



**POLYSTYRENE LAYOUT PLAN**



ORIGINAL CONTRACT: 2243  
MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**WINGWALL PLAN & ELEVATION**

G-1748 S

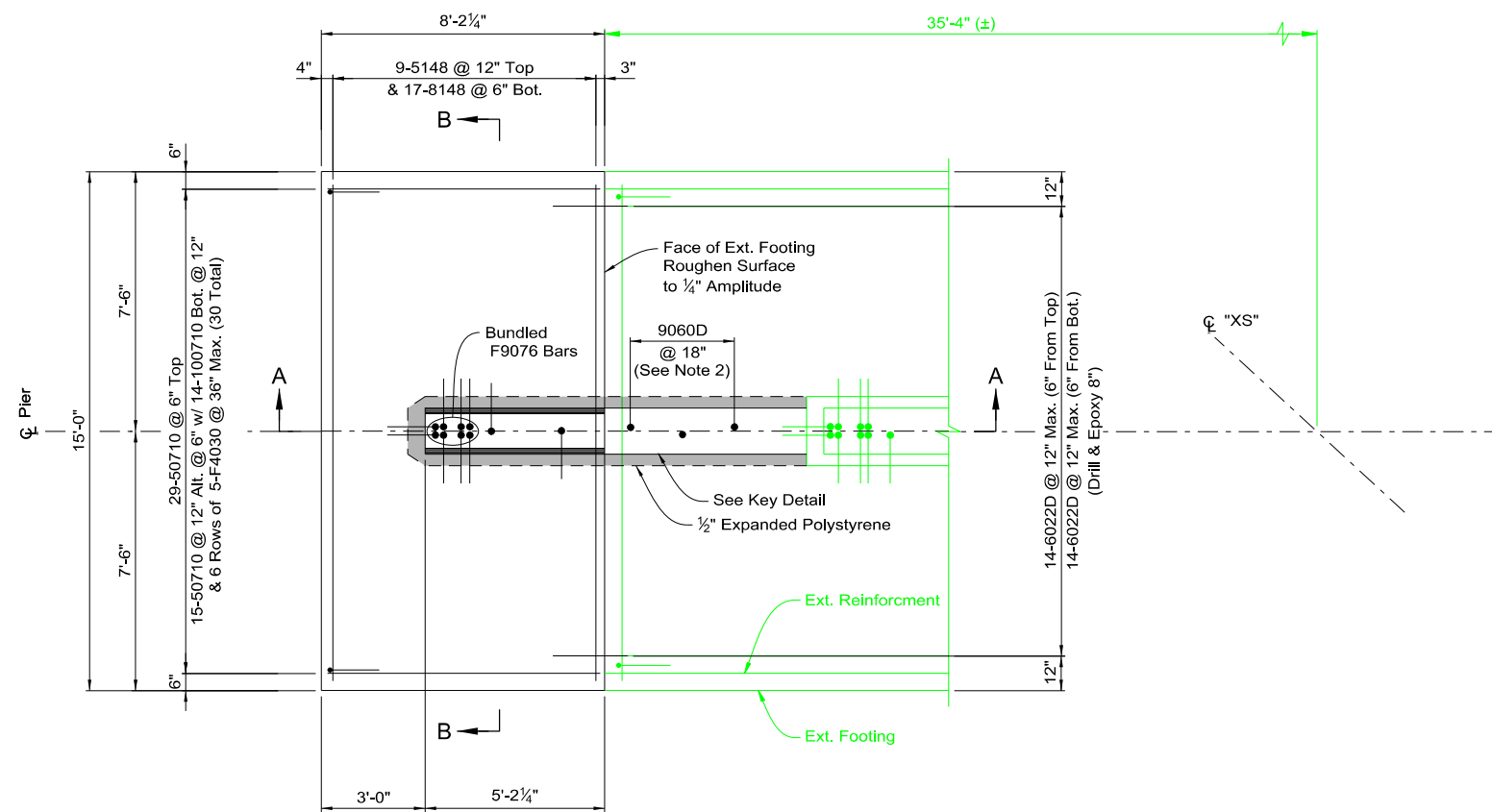
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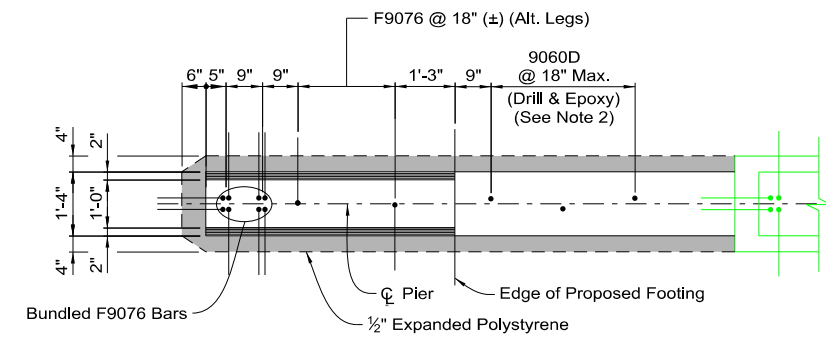
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B459

**NOTE:**

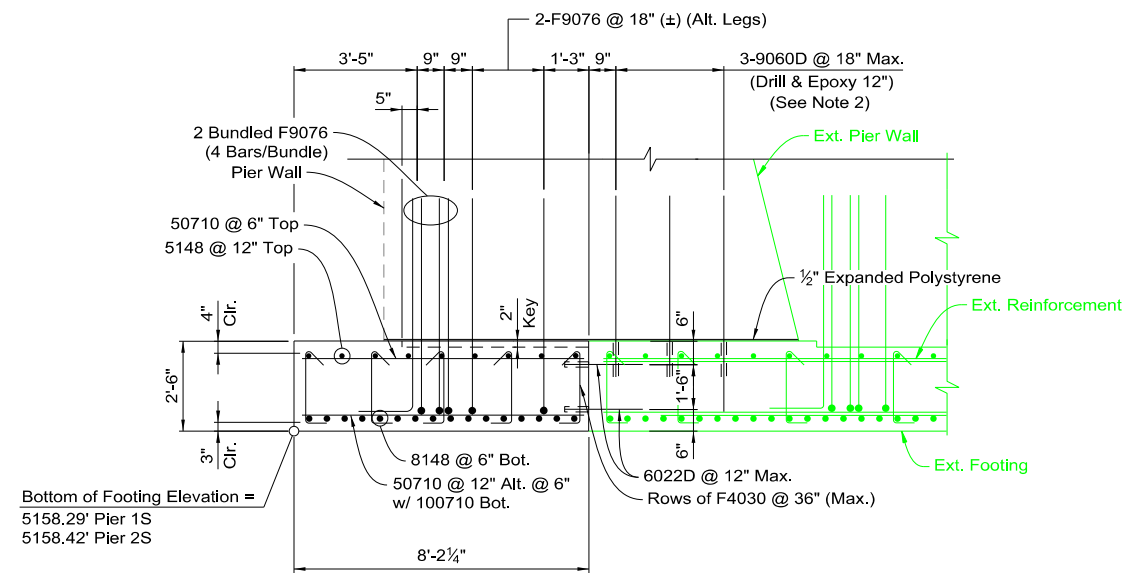
- Pier wall reinforcing and details apply to Pier 1S and Pier 2S.
- 9060D doweled bars to be staggered offset 2" from Pier centerline.



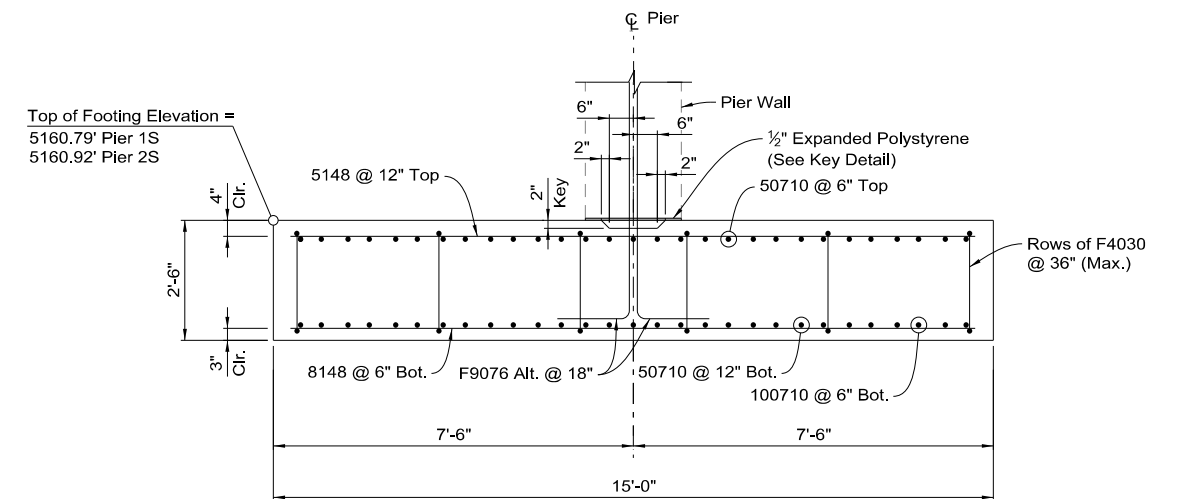
**PLAN 1S**  
PIER 1S SHOWN,  
PIER 2S SIMILAR



**KEY DETAIL**



**SECTION A-A**  
PIER 1S SHOWN,  
PIER 2S SIMILAR



**SECTION B-B**  
PIER 1S SHOWN,  
PIER 2S SIMILAR

ORIGINAL CONTRACT: 2243  
MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT



12/20/2022

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**PIER 1S & 2S WEST  
FOOTING DETAILS  
PLAN & SECTIONS** G-1748 S

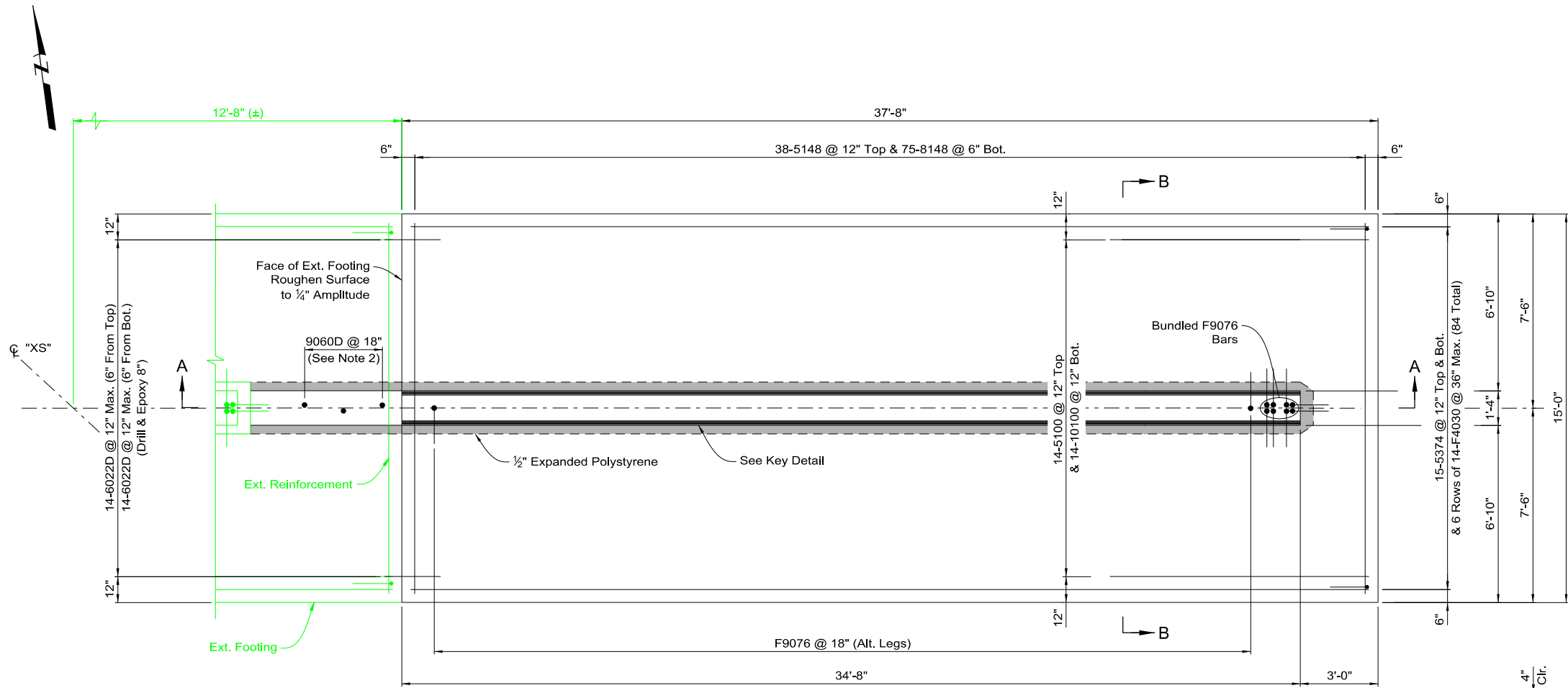
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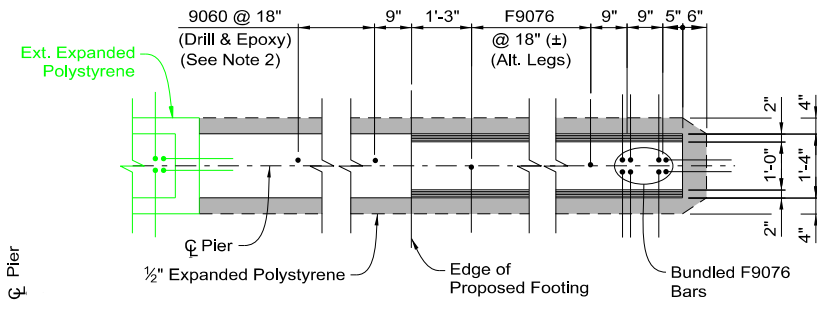
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B460

**NOTES:**

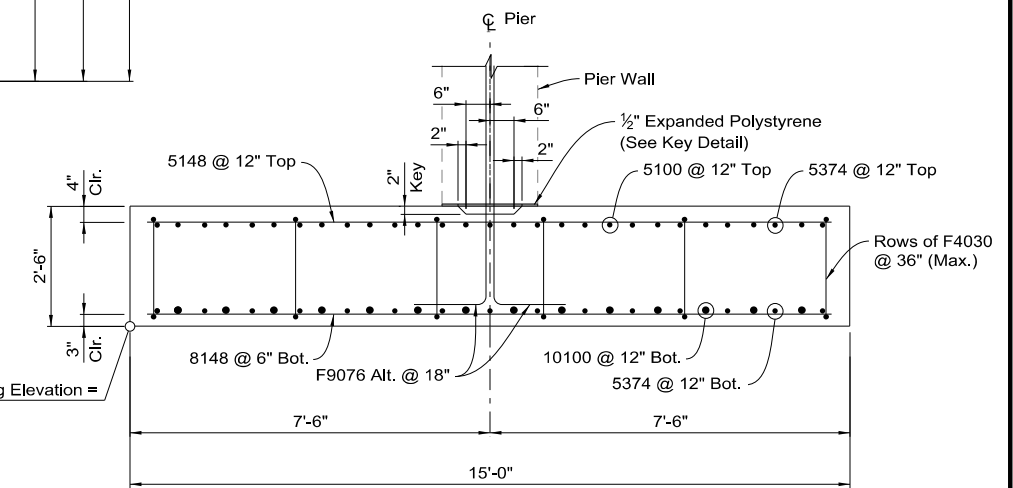
- Pier wall reinforcing and details apply to Pier 1S and Pier 2S.
- 9060D doweled bars to be staggered offset 2" from Pier centerline.



**PLAN 1S**  
PIER 1S SHOWN,  
PIER 2S SIMILAR

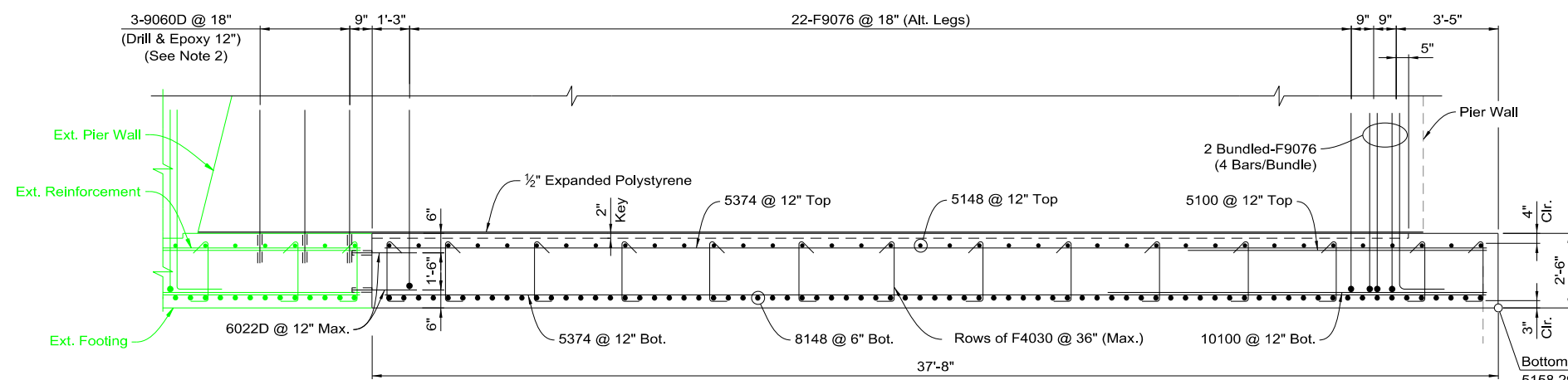


**KEY DETAIL**



**SECTION B-B**

Pier 1S Shown,  
Pier 2S Similar



**SECTION A-A**

PIER 1S SHOWN,  
PIER 2S SIMILAR



12/20/2022

ORIGINAL CONTRACT: 2243  
MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**PIER 1S & 2S EAST  
FOOTING DETAILS  
PLAN & SECTIONS** G-1748 S

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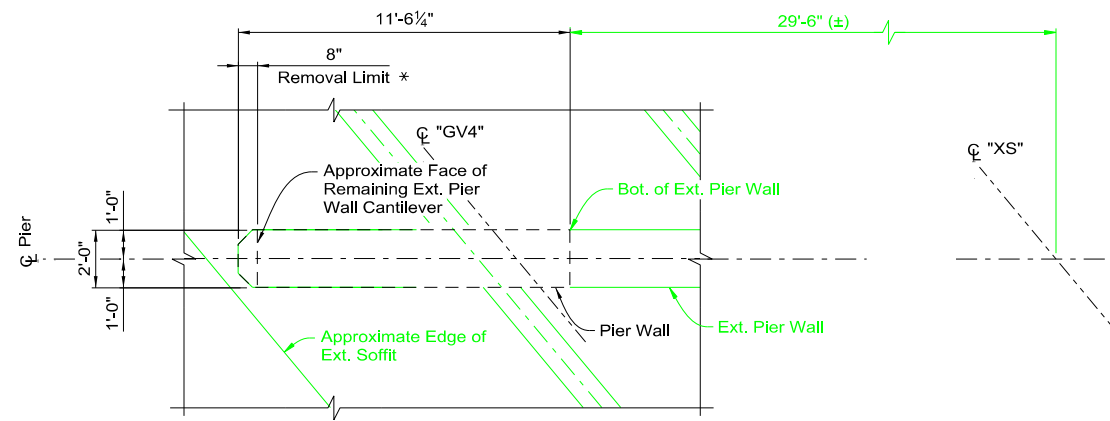
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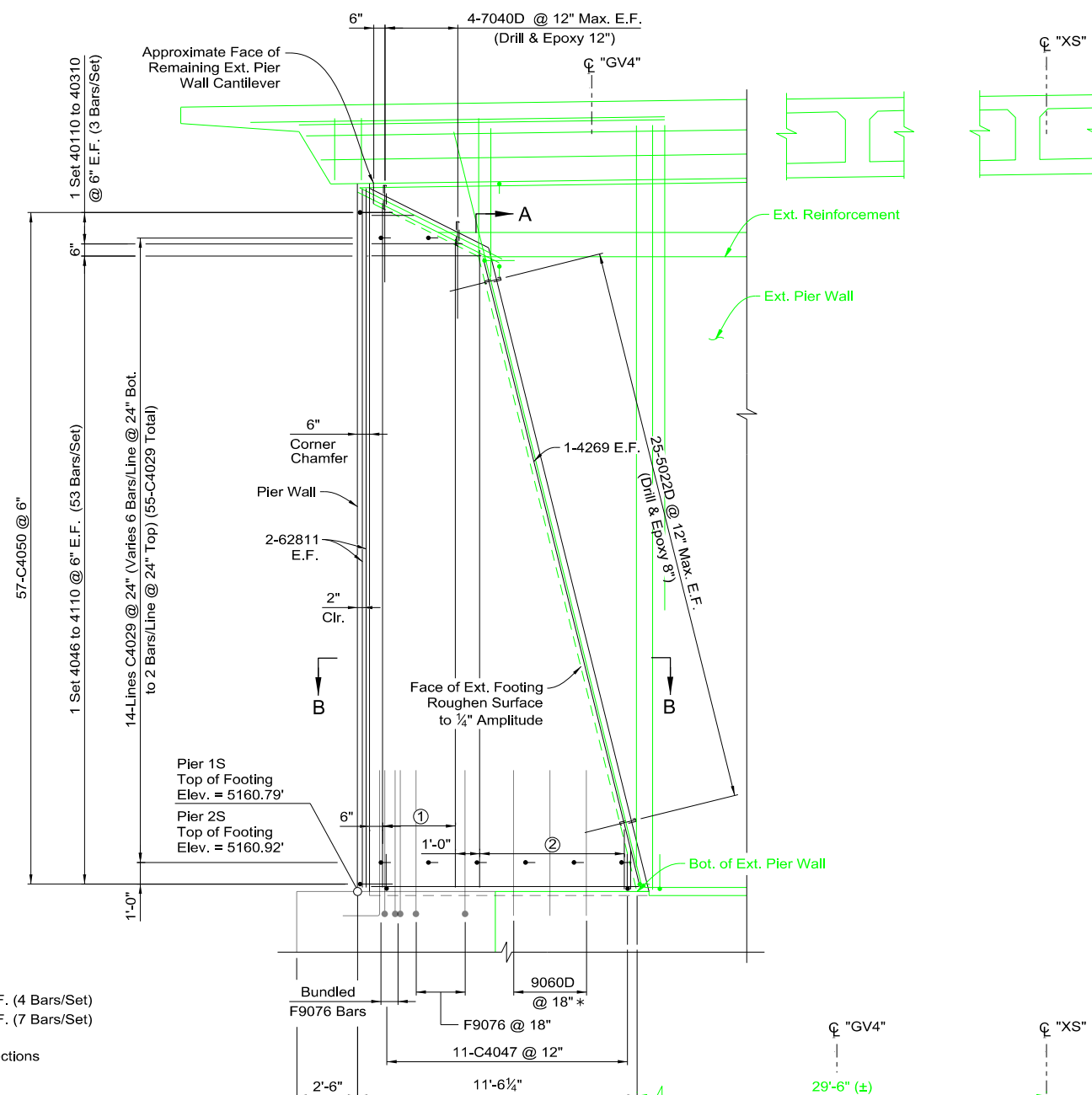
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B461

**NOTES:**

- Pier wall reinforcing and details apply to Pier 1S and Pier 2S.
- \* Partial removal of the existing cantilever. Protect in place existing reinforcing in cantilever and embed into new wall.



**PLAN 1S**  
PIER 1S SHOWN, PIER 2S SIMILAR



**ELEVATION 1S**  
PIER 1S SHOWN, PIER 2S SIMILAR  
LOOKING AHEAD ON LINE NORMAL TO SKEW

**REINFORCING NOTES:**

- 1 Set 7283 to 7269 @ 12" E.F. (4 Bars/Set)
- 1 Set 5266 to 5025 @ 12" E.F. (7 Bars/Set)

\* See Footing Details Plan & Sections sheet for 9060D & F9076 bars



ORIGINAL CONTRACT: 2243  
MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**PIER 1S & 2S WEST  
PLAN & ELEVATION**

G-1748 S

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STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B462

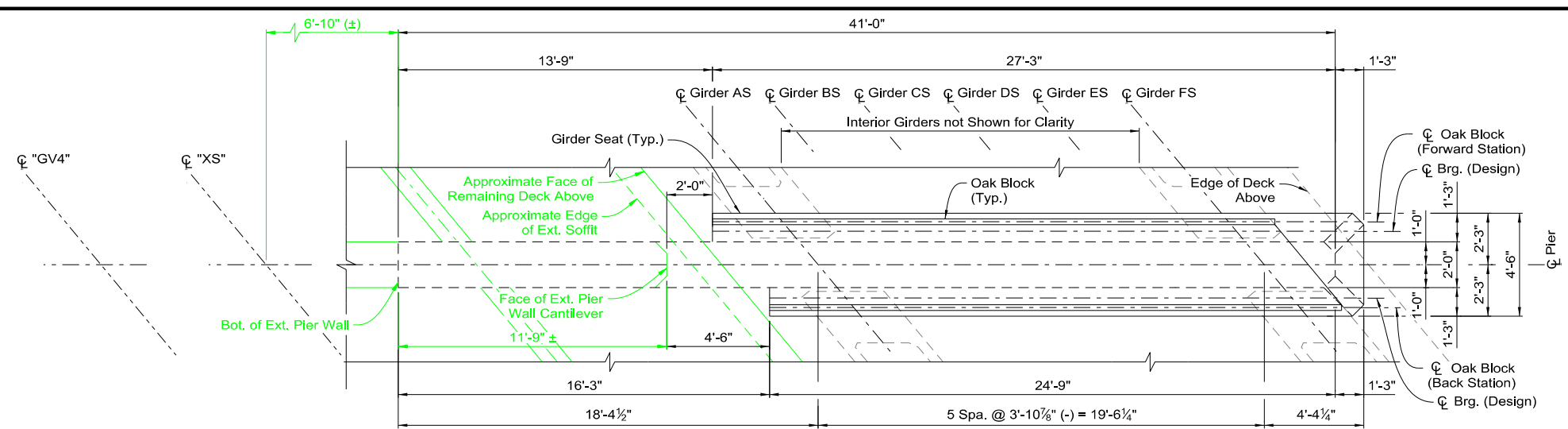
- NOTE:**
- Pier wall reinforcing and details apply to Pier 1S and Pier 2S.
  - Bottom of girder elevations are taken along  $\phi$  Oak Block locations.
  - Pier elevations shown are taken along  $\phi$  Pier, unless otherwise noted.

**Reinforcing Steel:**

① 5 Spa. @ 6" Max. for horizontal #4 bars.

**MINIMUM BAR LAPS**

#7 Bars to #7 Bars = 38"



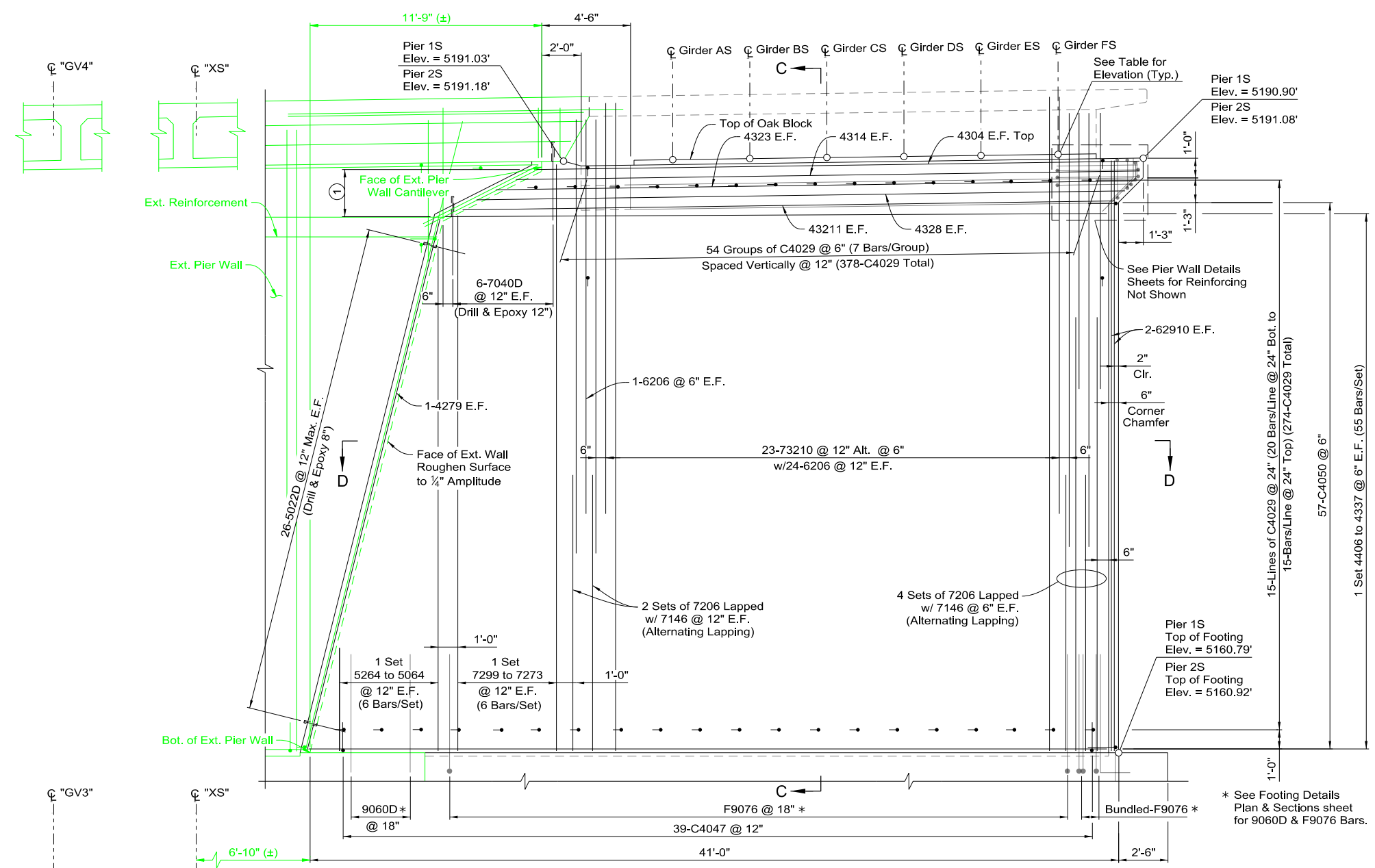
**PLAN 1S**  
PIER 1S SHOWN, PIER 2S SIMILAR

**BOTTOM OF GIRDER ELEVATION**

Elevation	$\phi$ Girder AS	$\phi$ Girder BS	$\phi$ Girder CS	$\phi$ Girder DS	$\phi$ Girder ES	$\phi$ Girder FS
Pier 1S (Back Station)	5191.09	5191.14	5191.19	5191.24	5191.29	5191.34
Pier 1S (Forward Station)	5191.11	5191.16	5191.21	5191.26	5191.31	5191.36

**BOTTOM OF GIRDER ELEVATION**

Elevation	$\phi$ Girder AS	$\phi$ Girder BS	$\phi$ Girder CS	$\phi$ Girder DS	$\phi$ Girder ES	$\phi$ Girder FS
Pier 2S (Back Station)	5191.27	5191.33	5191.39	5191.45	5191.50	5191.56
Pier 2S (Forward Station)	5191.27	5191.33	5191.39	5191.45	5191.51	5191.57



**ELEVATION 1S**  
PIER 1S SHOWN, PIER 2S SIMILAR  
LOOKING AHEAD ON LINE NORMAL TO SKEW

\* See Footing Details Plan & Sections sheet for 9060D & F9076 Bars.



12/20/2022

ORIGINAL CONTRACT: 2243  
MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT

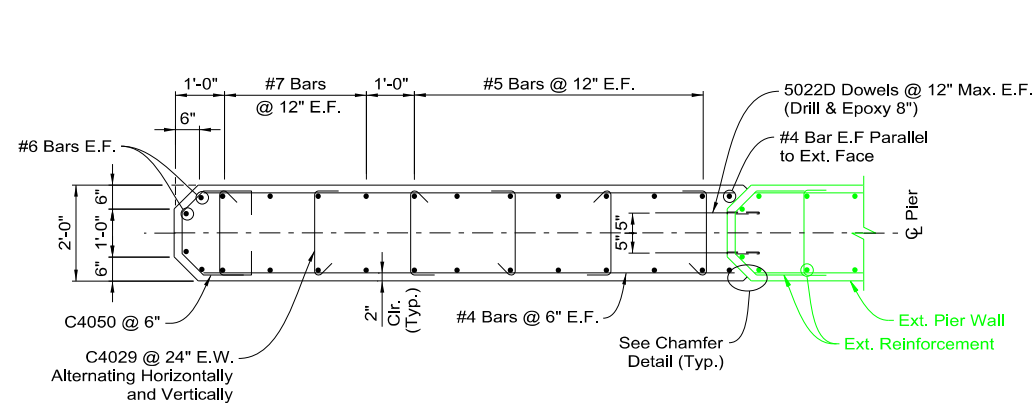
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**PIER 1S & 2S EAST  
PLAN & ELEVATION**

G-1748 S

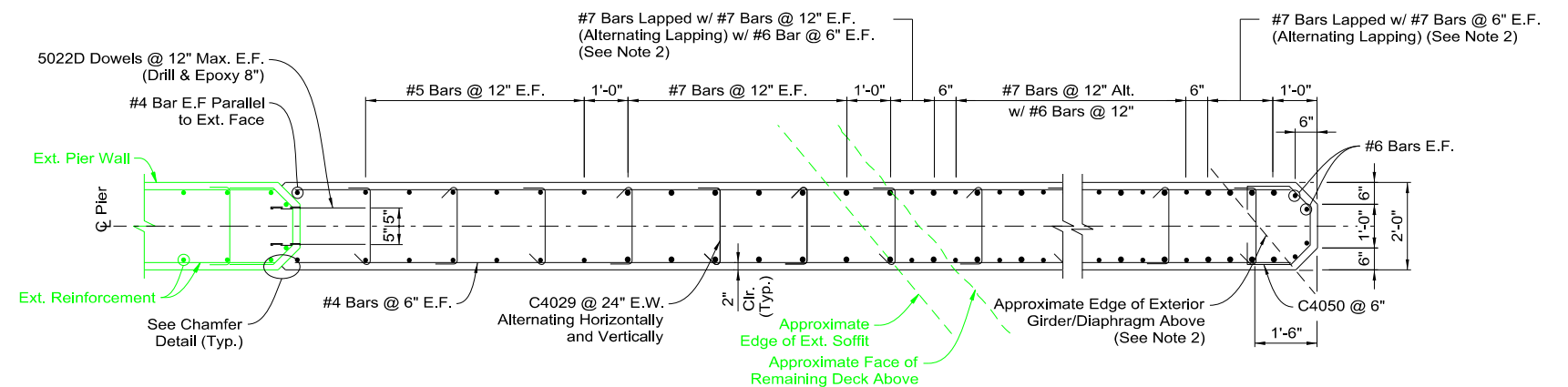
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STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B463



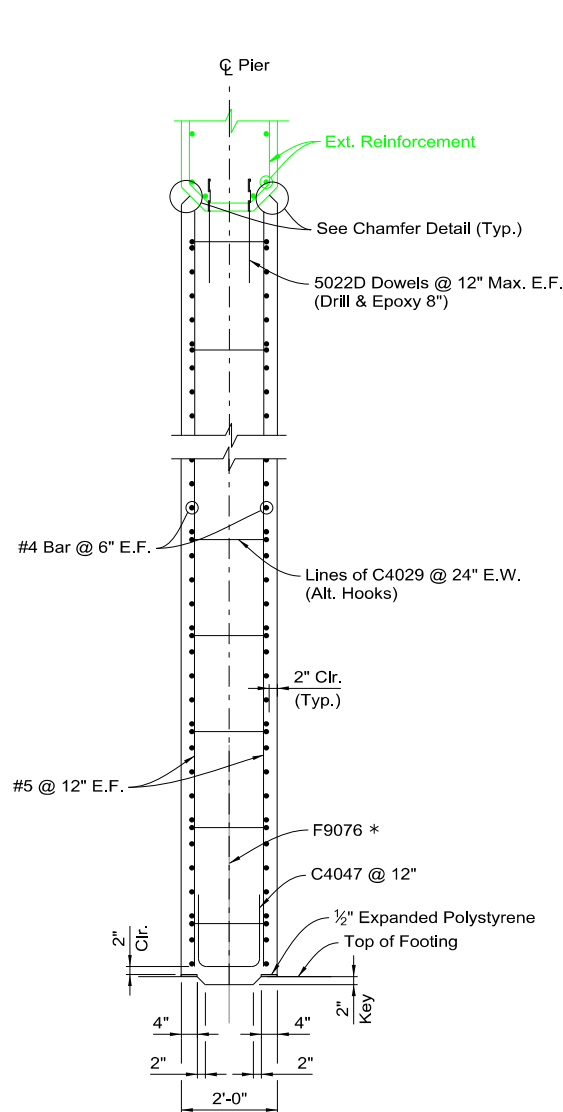
**SECTION B-B**

PIER 1S WEST SHOWN,  
PIER 2S WEST SIMILAR



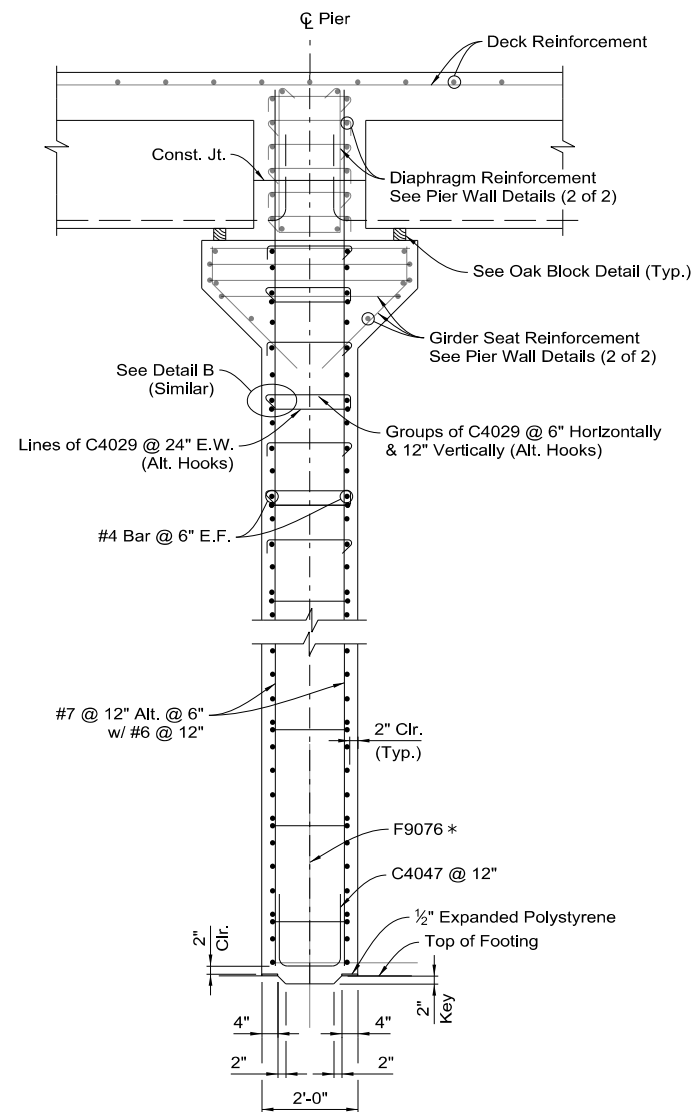
**SECTION D-D**

PIER 1S EAST SHOWN,  
PIER 2S EAST SIMILAR

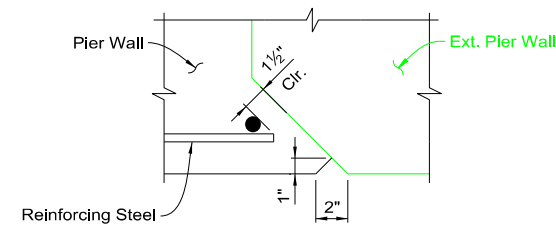


**SECTION A-A**

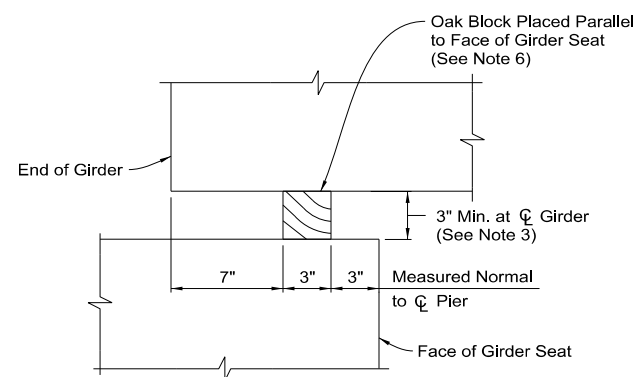
\* See Footing Details Plan & Sections sheets for F9076 bars.



**SECTION C-C**



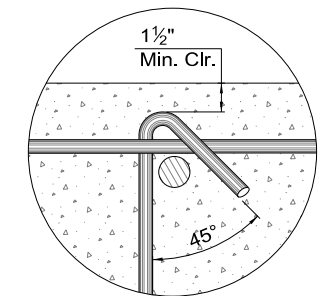
**CHAMFER DETAIL**



**OAK BLOCK DETAIL**

**NOTES**

- Pier wall reinforcing and details apply to Pier 1S and Pier 2S.
- Adjust bar lap splicing to maintain 2" of clear below top of pier wall or existing exterior girder.
- Vary oak block height as necessary to provide uniform bearing full width of girder.
- Pier wall shall be continuously braced during construction until girders are placed, deck and diaphragm concrete is placed, and concrete is cured. Prior to the start of construction, the contractor shall provide a girder erection and wall stability plan that is signed and sealed by a Nevada registered Professional Engineer for review and approval.
- Existing pier wall is approximate. Reinforcing shown may be trimmed to fit with the Engineer's approval.
- Oak blocks shall be placed parallel to Pier Wall. Dimensions shown are normal to Pier Walls. Maintain no less than 3" clear under precast girder ends. Contractor shall maintain stability of Precast Girders on Abutment Walls during all construction operations. If Oak Block aspect ratio exceed 1:1 additional shoring may be required. No direct payment for oak blocks.



**DETAIL "B"**

ORIGINAL CONTRACT: 2243  
MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**PIER 1S & 2S WALL DETAILS  
(1 OF 2)**

G-1748 S



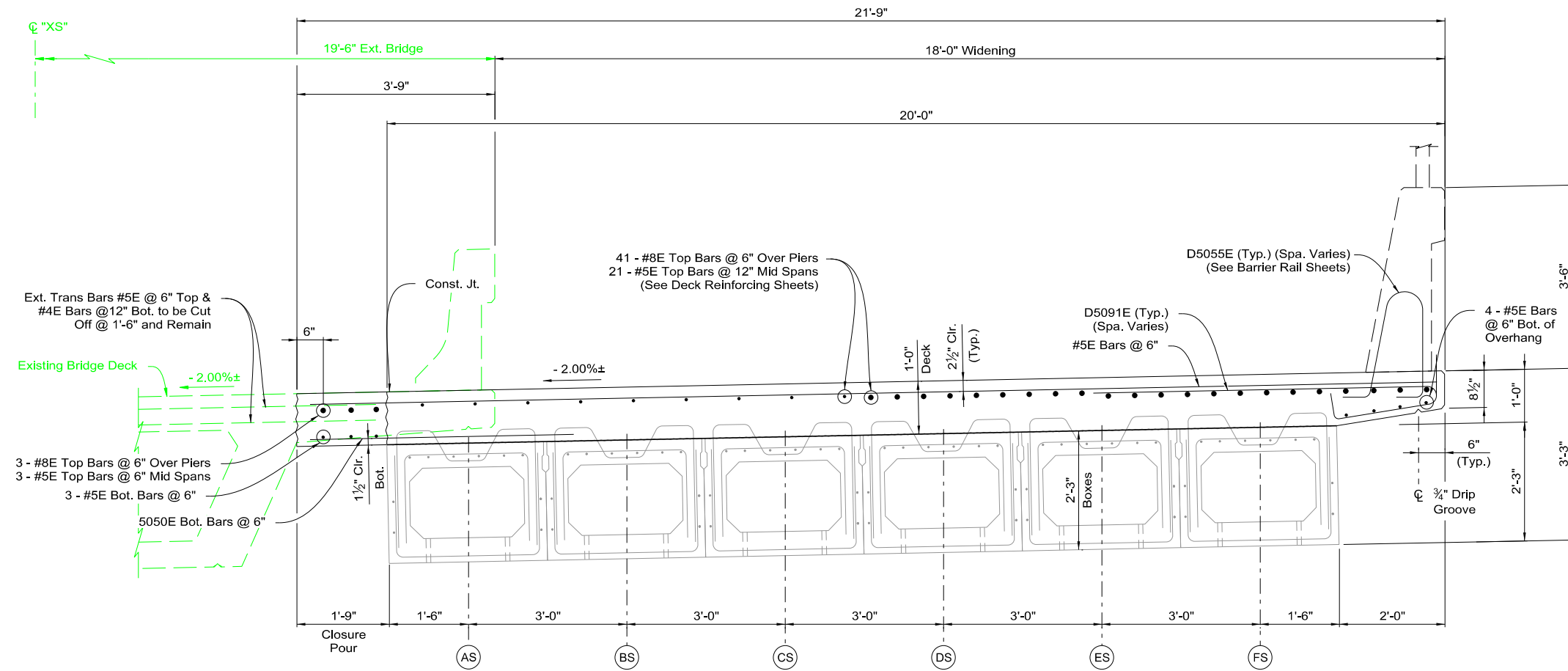
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12/20/2022



STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B465



**TYPICAL SECTION**

SCALE: 3/8" = 1'-0"

LOOKING AHEAD ON LINE NORMAL TO ALIGNMENT

**NOTES:**

1. For precast girder reinforcing, see Precast Girder Details Sheet.
2. For removal of existing bridge overhang, see Removal Details (1 of 2) Sheet.

ORIGINAL CONTRACT: 2243  
 MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT



12/20/2022

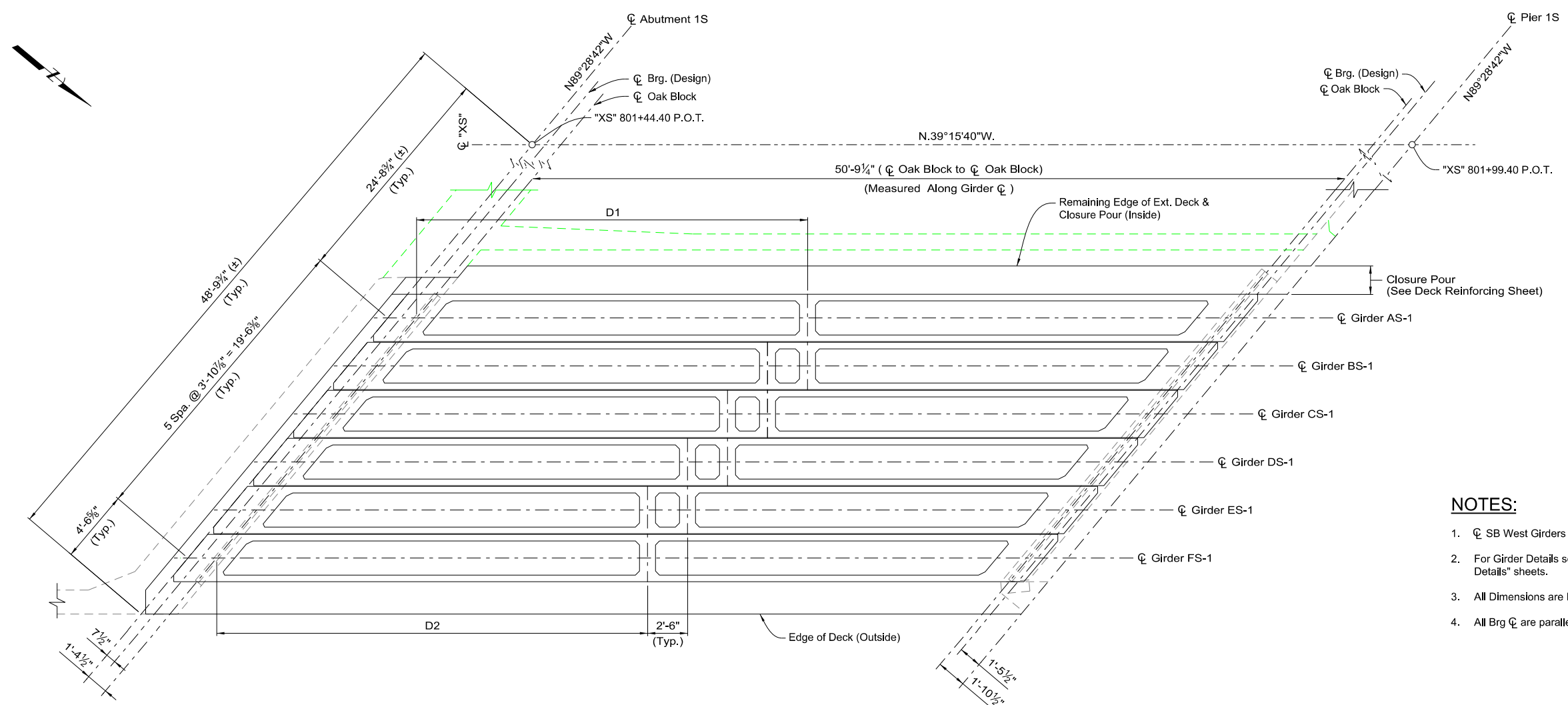
STATE OF NEVADA  
 DEPARTMENT OF TRANSPORTATION

**DECK SECTION**

G-1748 S

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**FRAMING PLAN**

**NOTES:**

1.  $\phi$  SB West Girders are parallel to N39°15'40"W
2. For Girder Details see "Prestressed Girder Details" sheets.
3. All Dimensions are Horizontal.
4. All Brg  $\phi$  are parallel to N89°28'42"W

Girder	D1	D2
AS-1	23'-8 $\frac{3}{8}$ "	-
BS-1 to ES-1	23'-8 $\frac{3}{8}$ "	26'-2 $\frac{3}{8}$ "
FS-1	-	26'-2 $\frac{3}{8}$ "



12/20/2022

ORIGINAL CONTRACT: 2243  
 MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT

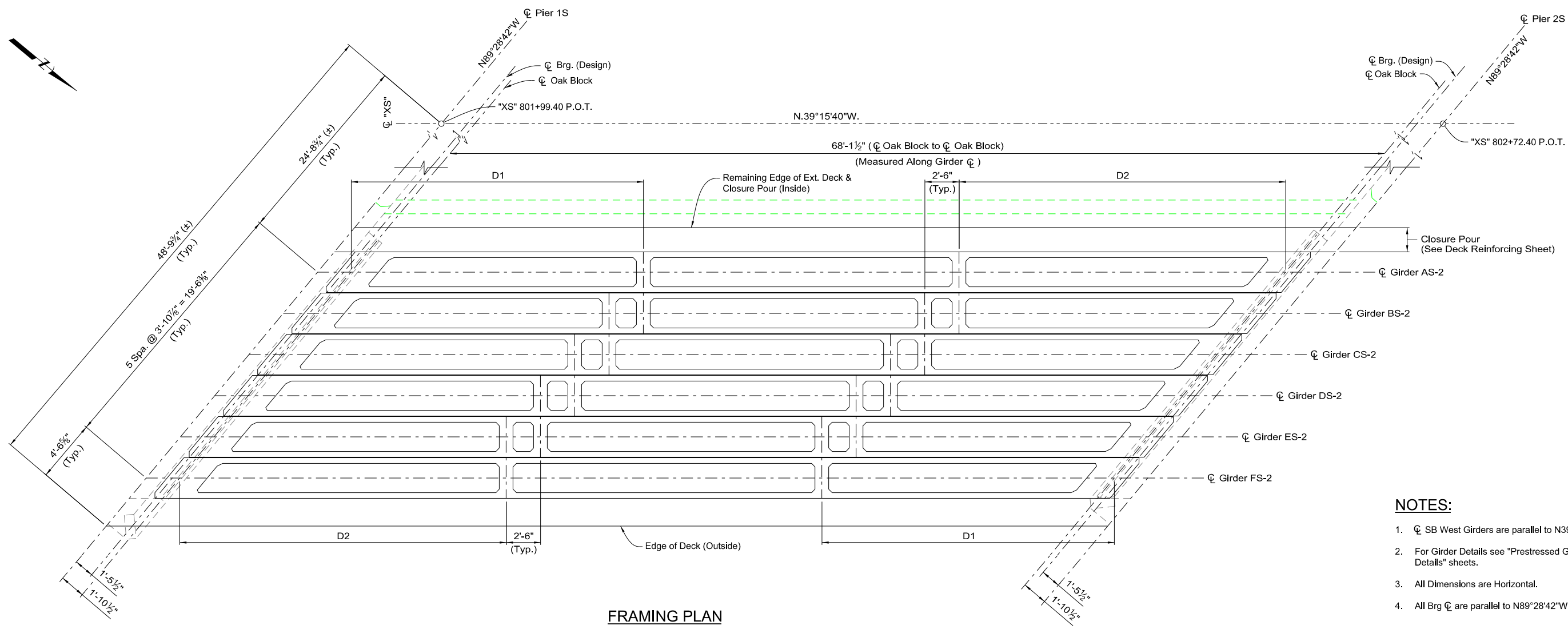
STATE OF NEVADA  
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**PRESTRESSED GIRDER  
 FRAMING PLAN (1 of 3)**

G-1748 S

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**FRAMING PLAN**

- NOTES:**
1. SB West Girders are parallel to N39°15'40"W
  2. For Girder Details see "Prestressed Girder Details" sheets.
  3. All Dimensions are Horizontal.
  4. All Brg C are parallel to N89°28'42"W

Girder	D1	D2
AS-1	21'-4 3/8"	23'-10 3/8"
BS-1 to ES-1	21'-4 3/8"	23'-10 3/8"
FS-1	21'-4 3/8"	23'-10 3/8"

ORIGINAL CONTRACT: 2243  
MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT



STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**PRESTRESSED GIRDER  
FRAMING PLAN (2 of 3)**

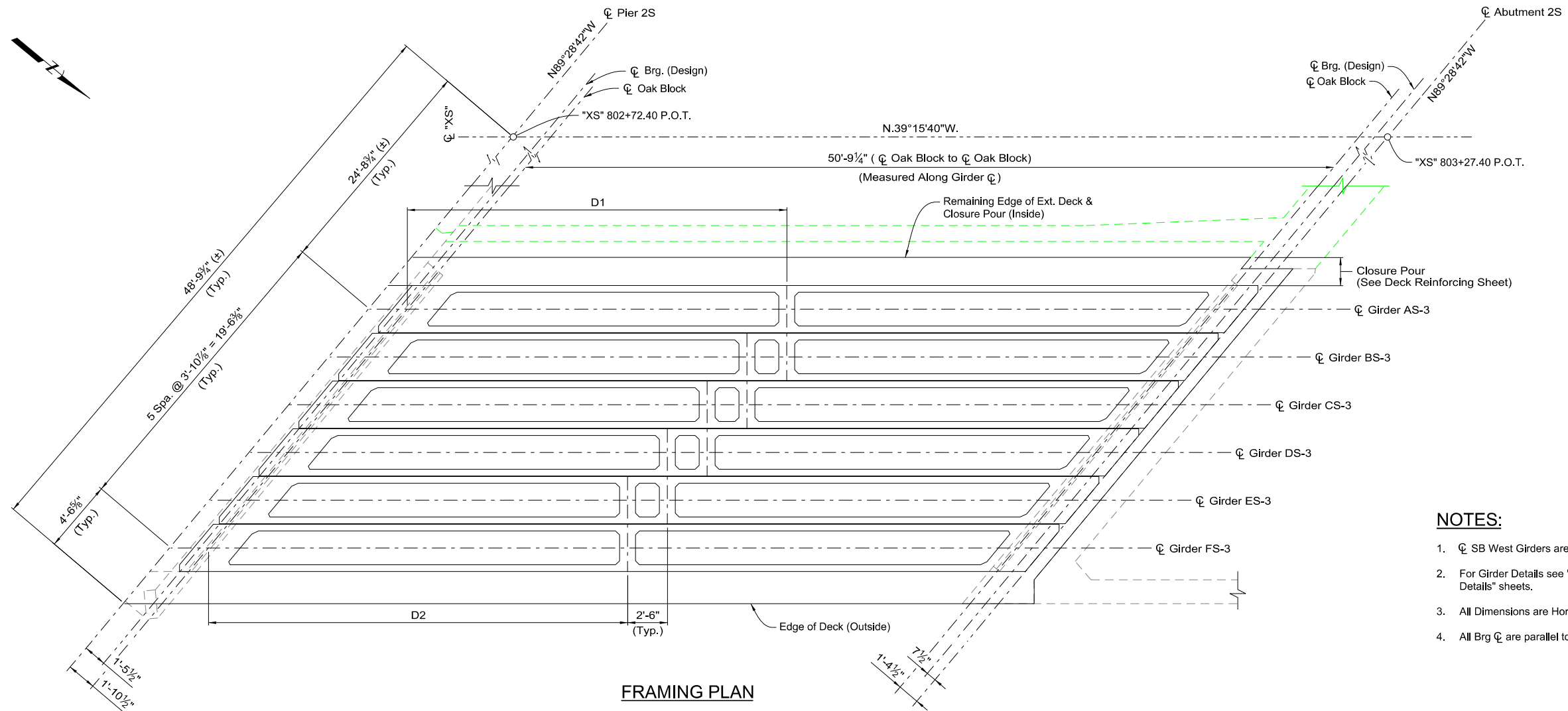
G-1748 S

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12/20/2022





**FRAMING PLAN**

**NOTES:**

1.  $\phi$  SB West Girders are parallel to N39°15'40"W
2. For Girder Details see "Prestressed Girder Details" sheets.
3. All Dimensions are Horizontal.
4. All Brg  $\phi$  are parallel to N89°28'42"W

Girder	D1	D2
AS-1	24'-6 $\frac{3}{4}$ "	-
BS-1 to ES-1	24'-6 $\frac{3}{4}$ "	27'-0 $\frac{3}{4}$ "
FS-1	-	27'-0 $\frac{3}{4}$ "

ORIGINAL CONTRACT: 2243  
 MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT



12/20/2022

STATE OF NEVADA  
 DEPARTMENT OF TRANSPORTATION

**PRESTRESSED GIRDER  
 FRAMING PLAN (3 of 3)**

G-1748 S

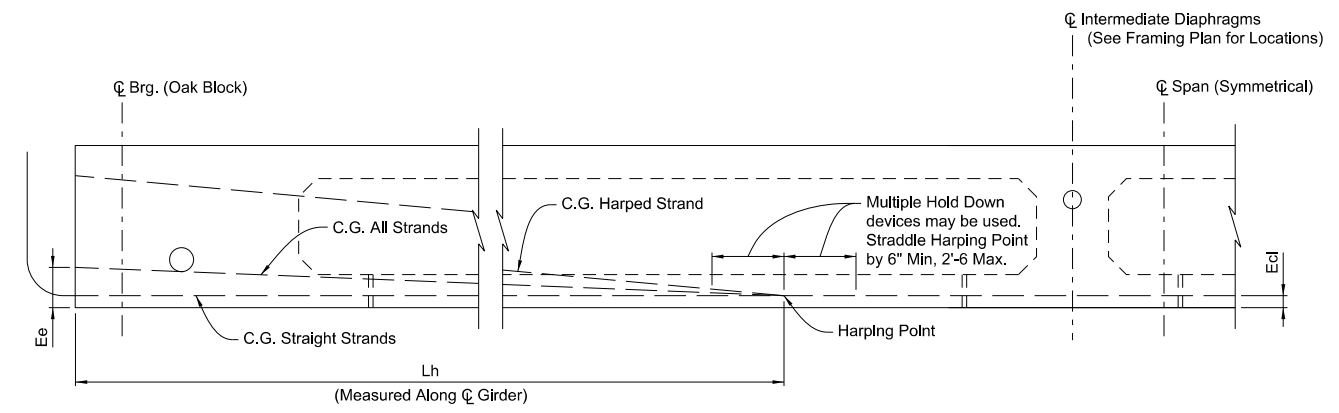
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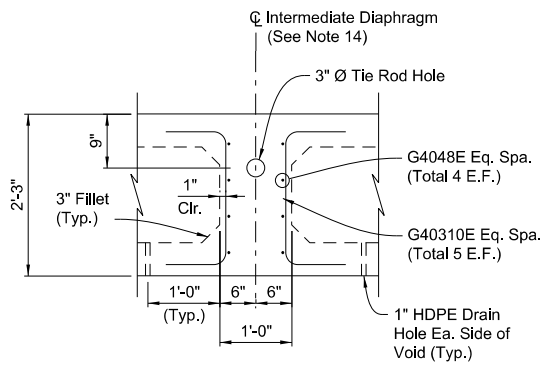
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B469

**NOTES:**

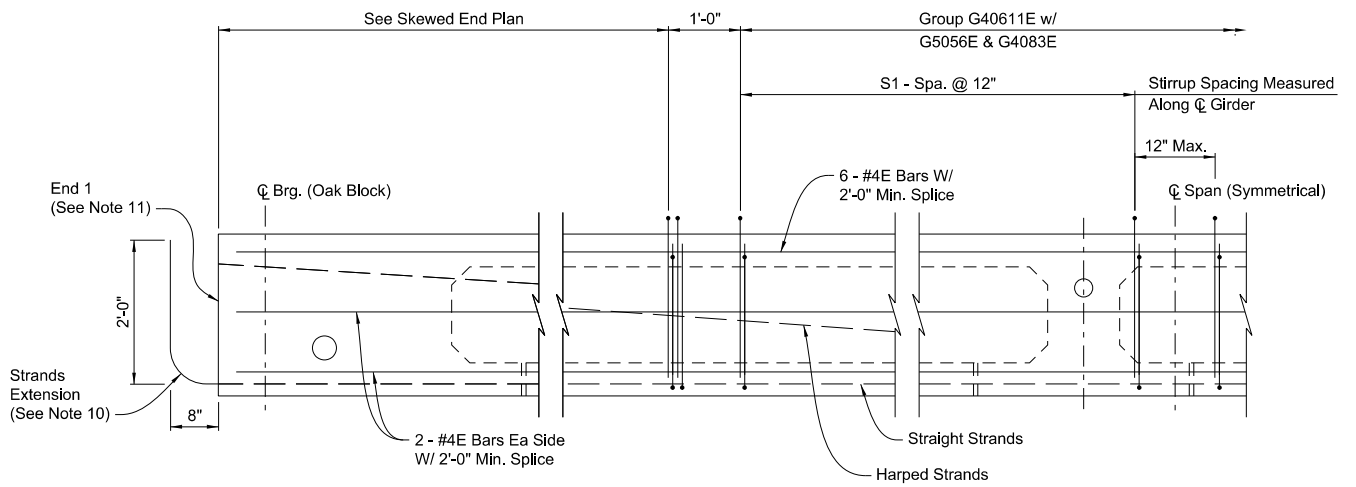
- See Prestressed Girder Details (2 of 2) for Girder Schedule.
- Fabricator shall increase plan length as necessary to compensate for shortening due to prestress, creep, and shrinkage. This shall be provided on shop drawings.
- Use 0.6"Ø Low Relaxation strands (AASHTO M203 Grade 270).
- All lifting embedments are to be designed by the Contractor in accordance with the Standard Specifications.
- Prestressed force shown in the table is for the controlling girder, and includes elastic gains at Service III Limit state.
- Contractor is responsible for analysis and evaluation of girder stability during construction, including shipping and erection.
- For predicted girder camber, see Camber and Concrete Classification sheet.
- All dimensions are horizontal. Fabricator must correct for vertical grade.
- All reinforcing steel to be ASTM A615 Grade 60, Epoxy Coated
- Extend number of bottom row strands as shown for ends of girders as detailed in the Girder Schedule. Cut all other strands flush. Offset extended strands between adjacent spans. Fabricator to select and show extended strands in shop drawings.
- End 1 shown on down-station side, End 2 on opposite up-station end of girder.
- Any reinforcing interfering with the location of the transverse tie rod ducts may be adjusted with the approval of the engineer. Where required, install additional reinforcing groups to maintain the minimum spacing as shown on the plans.
- The Contractor shall check, record, and submit the vertical deflection (Camber) of each girder at the following times: (Initial) upon removal of the girder from the casting bed, (Shipment) within 14 days prior to shipment, and (Erection) after girder erection and prior to equalization. At a minimum, survey data shall be taken at each girder end, and at midspan. For predicted girder camber, see "Pouring Schedule, Concrete Placement, and Camber" sheet. If vertical camber at Erection varies from predicted girder camber by more than 1/2", submit to the Bridge Engineer a Plan for Corrective Action.
- For blockouts and tie rod hole positioning at diaphragms not shown, see "Transverse Tie Rod Details" sheet.



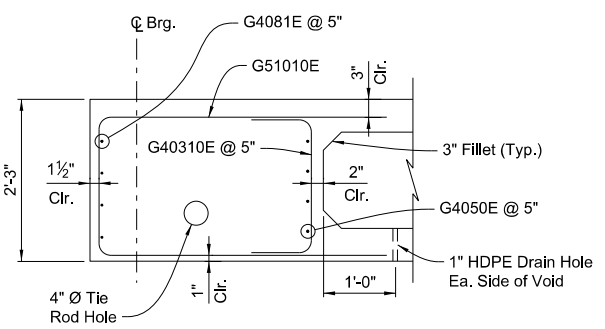
**GIRDER ELEVATION**



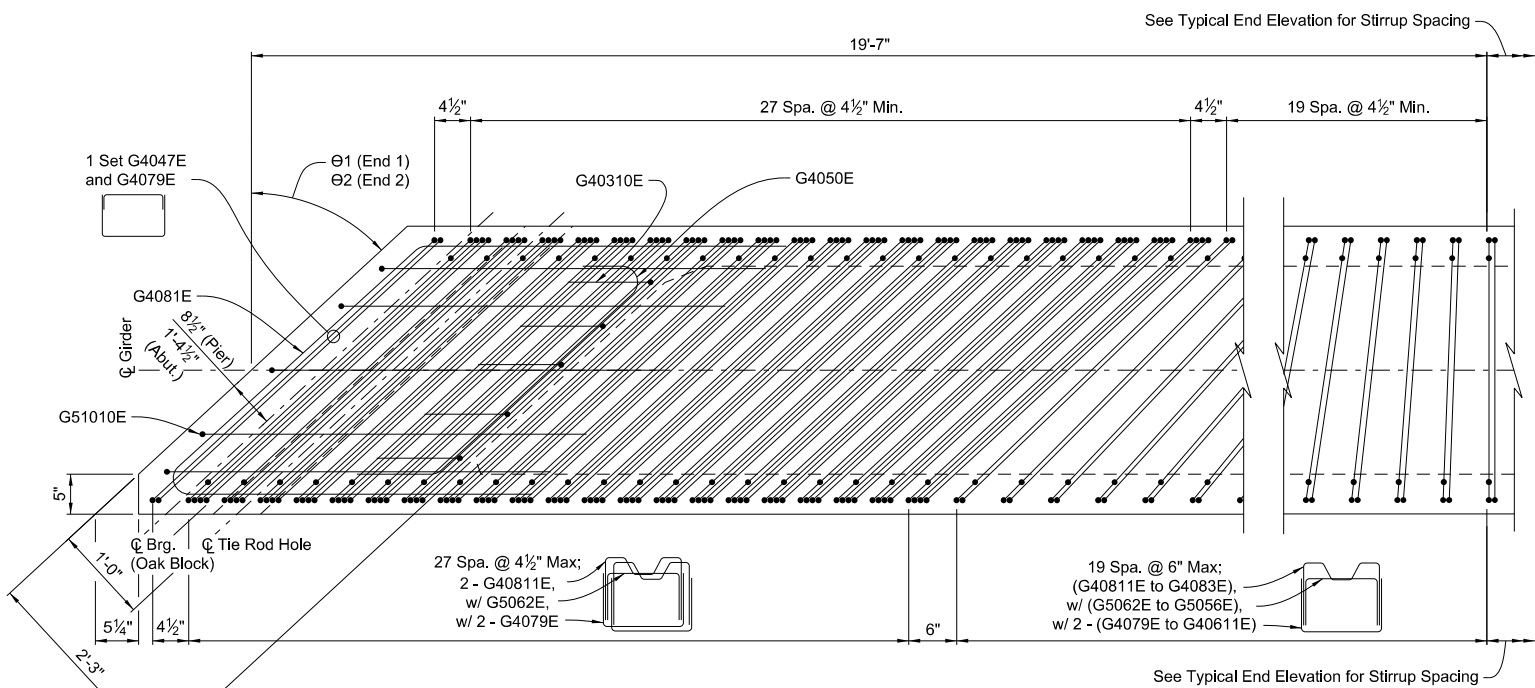
**INTERMEDIATE DIAPHRAGM SECTION**



**TYPICAL END ELEVATION**

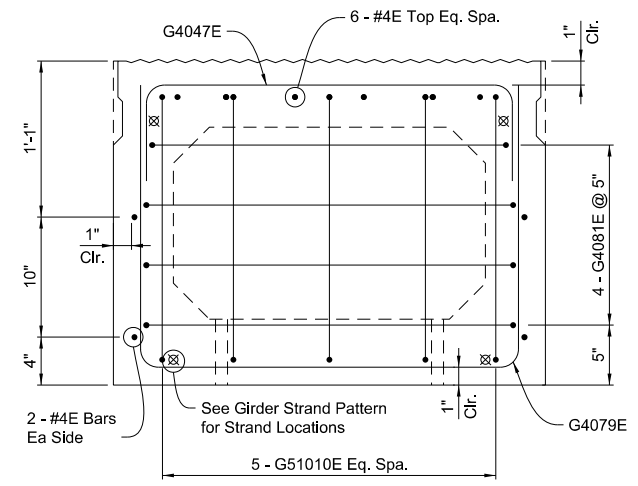


**TYPICAL END SECTION**

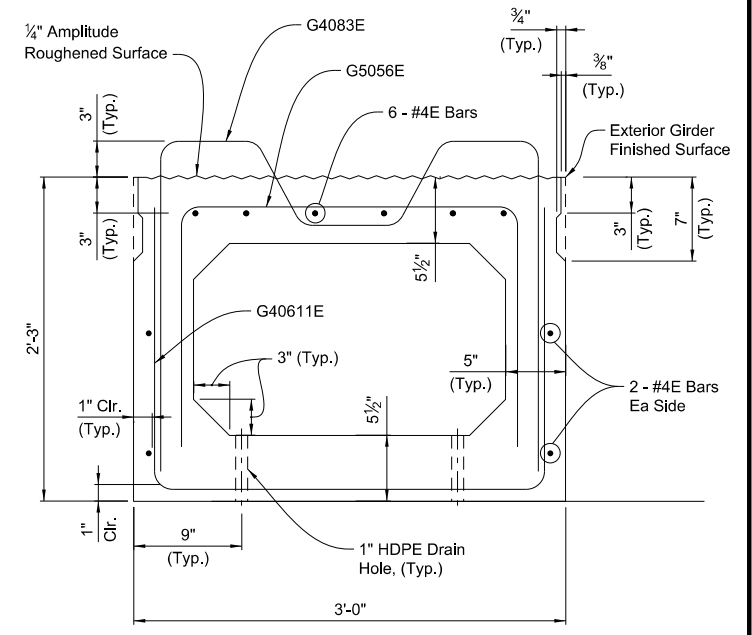


**SKEWED END PLAN**

(End 1 Shown, End 2 Similar)



**TYPICAL END VIEW**



**TYPICAL SECTION**

ORIGINAL CONTRACT: 2243  
MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT



12/20/2022

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**PRESTRESSED GIRDER DETAILS**  
(1 of 2)

G-1748 S

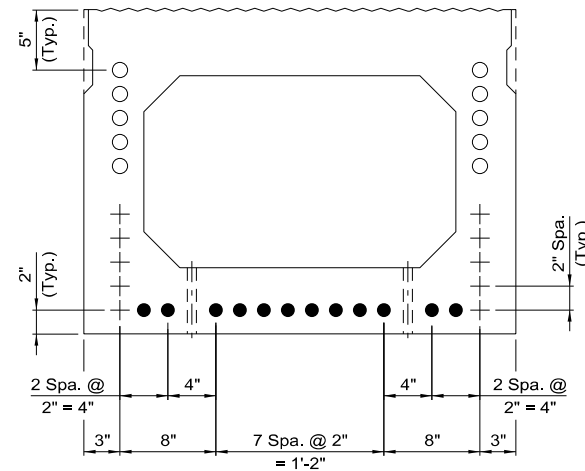
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STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B470

Girder Schedule																			
Span	Box Beam	Box Beam Type	Plan Length	Min. Concrete Compressive Strength		Stirrup Spaces	Harping Dist	End Skew		Strand Pattern	Harped		Straight		Prestressed Force After All Losses	Location of C.G. Strands		Strand Extension (Number of Strands)	
				f <sub>ci</sub> (ksi)	f <sub>c</sub> (ksi)			Lh (ft)	θ 1 (deg)		θ 2 (deg)	Number of Strands	Jacking Force (klps)	Number of Strands		Jacking Force (klps)	Ee (inch)	Ecl (inch)	End 1
1	AS-FS	36" x 27"	53'-5 3/4"	6	7.50	6	21'-4 3/4"	39° 46' 58"	39° 46' 58"	1	10	439	12	527	740	9.27	3.82	6	6
2	AS-FS	36" x 27"	69'-11 5/8"	6	7.50	16	27'-11 3/4"	39° 46' 58"	39° 46' 58"	1	10	439	12	527	776	9.27	3.82	6	6
3	AS-FS	36" x 27"	53'-5 3/4"	6	7.50	6	21'-4 3/4"	39° 46' 58"	39° 46' 58"	1	10	439	12	527	740	9.27	3.82	6	6

Ee = C.G. of all strands at end of girder  
Ecl = C.G. of all strands at centerline of girder



STRAND PATTERN 1

**LEGEND**

- Denotes Straight Strands
- Denotes Harp Strands at Ends
- +

ORIGINAL CONTRACT: 2243  
MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT



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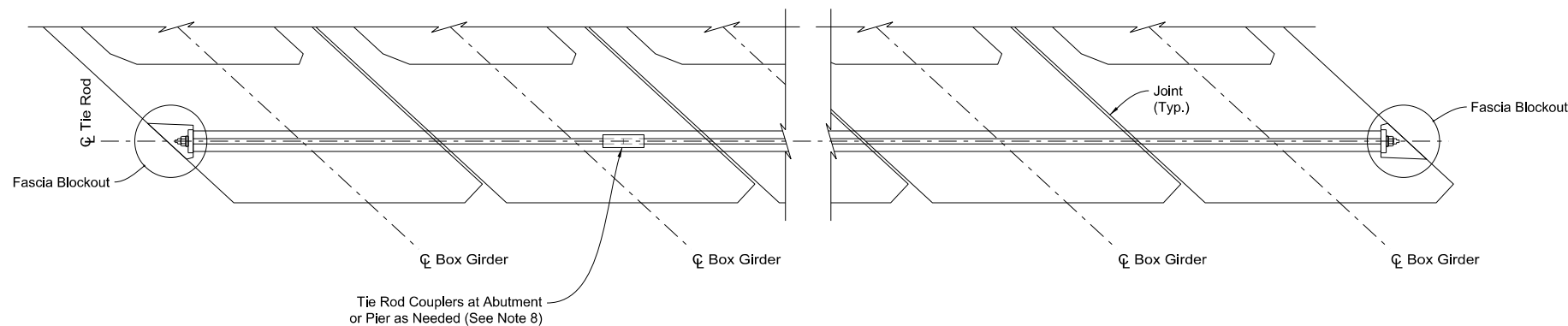
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**PRESTRESSED GIRDER DETAILS**  
(2 of 2) G-1748 S

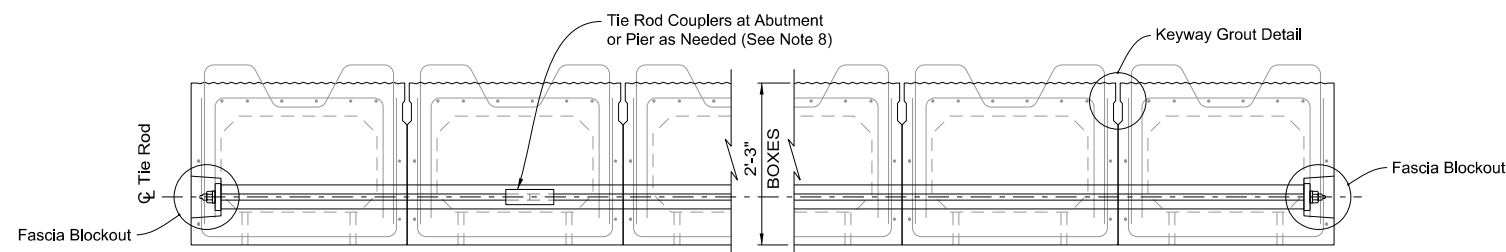
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Reno, NV 89521-5917  
PH: 775-337-4700 FAX: 775-337-4774

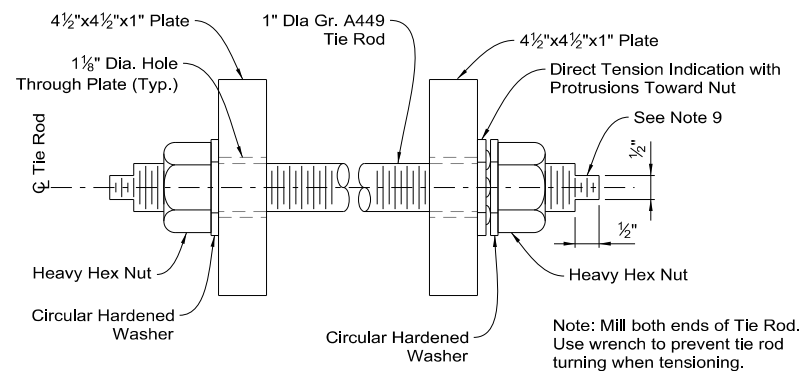
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B471



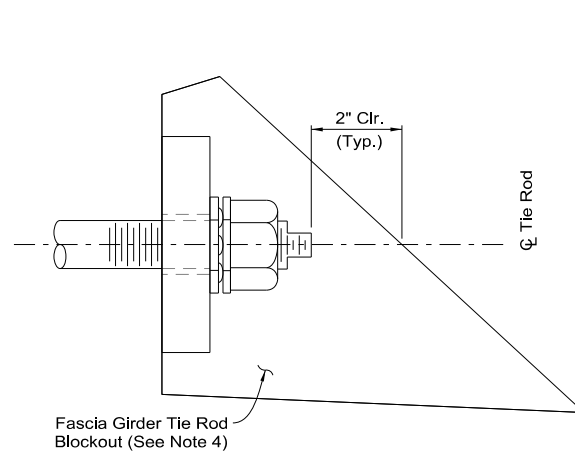
**TRANSVERSE TENSIONING PLAN @ ABUTMENT & PIER**



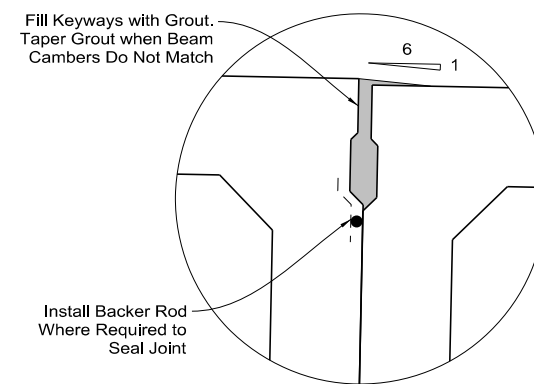
**TRANSVERSE TENSIONING ELEVATION @ ABUTMENT & PIER**



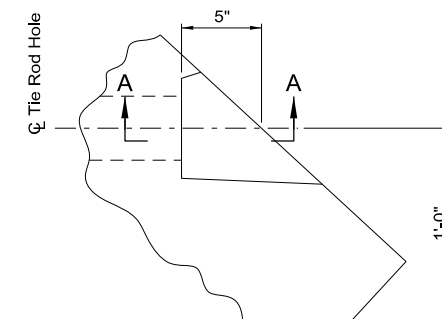
**TIE ROD DETAILS**



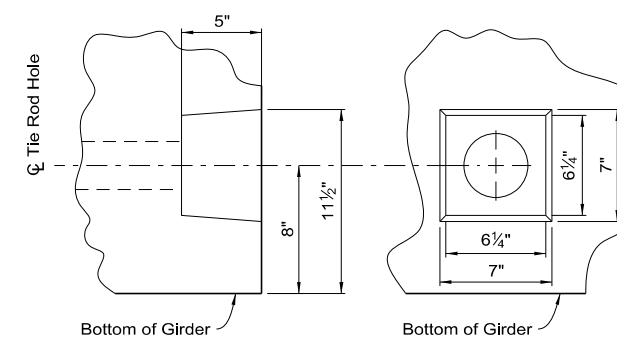
**TIE ROD BLOCKOUT @ ABUTMENT & PIER  
TYPICAL, FASICA GIRDER**



**KEYWAY GROUT DETAIL**



**PARTIAL PLAN**



**SECTION A-A  
FASCIA BLOCKOUT @ ABUTMENT & PIER  
TYPICAL, FASICA GIRDER**

**NOTES**

1. Transverse tie rods shall be 1" diameter high strength rod conforming to ASTM A449. Heavy hex nuts shall conform to ASTM A563. Hardened washers shall conform to ASTM F436. Bearing plates shall conform to ASTM A36. Direct tension indicators (DTIS) shall conform to ASTM F959. Hot-dip galvanize all tie rod components after fabrication, excluding DTIS. Tie rods and all associated hardware will be paid for under the structural steel bid item.
2. Plates at tie rod locations shall be ASTM A36. Hot-dip galvanize after fabrication. wedges and plates are paid for under the structural steel bid item.
3. Tighten all transverse tie rods, to about one half the specified tension before proceeding with the final tensioning. Tension all tie rods to a minimum of 51.0 kips as indicated by the DTI.
4. After girder erection and all tie rod tensioning is completed fill all tie rod blockouts and keyways with grout. Keyway and blockout grout is considered incidental to the transverse tie rods installation and there will be no direct payment.
5. After placement of the keyway grout no additional load may be placed on the girders until the grout has reached a compressive strength of 2000 psi.
6. At no time prior to completion of the deck curing operation shall any equipment or vehicles be placed on the bridge without approval of the bridge engineer.
7. For intermediate diaphragm locations, see Prestressed Girder Framing plan sheets.
8. Depending on order of construction, conflicts with adjacent structures may exist at time of tie rod installation. Tie rod couplers may be used to aide in construction. Tie rod couplers are considered incidental to the transverse tie rod installation and there will be no direct payment.
9. Mill both ends of tie rod. Use wrench to prevent the rod turning when tensioning.



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MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT

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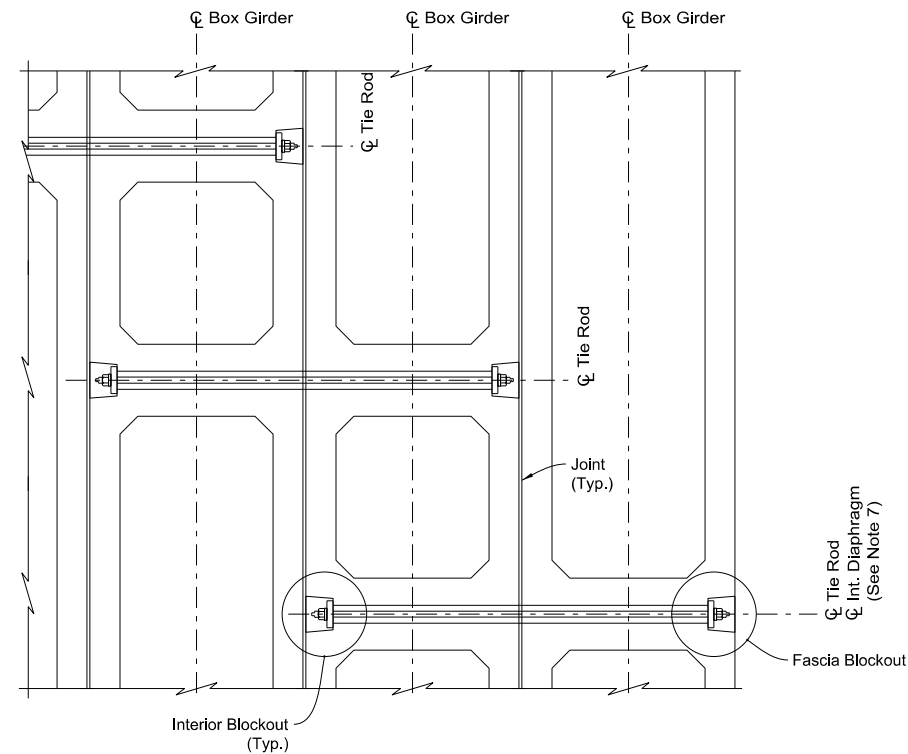
**TIE ROD DETAILS  
(1 OF 2)**

G-1748 S

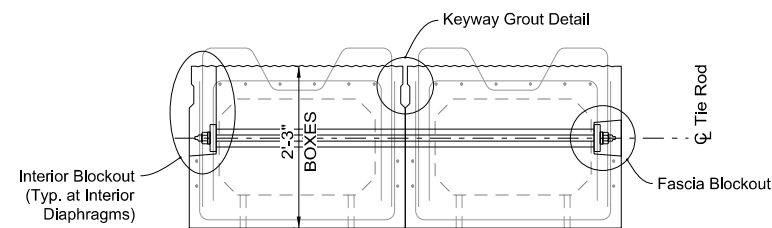
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NEVADA	NHP-0191(104)	WASHOE	B472



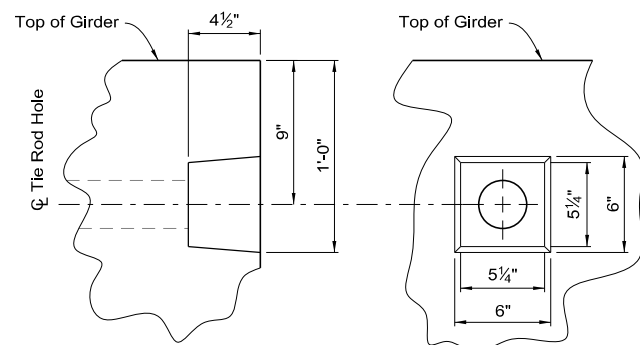
**TRANSVERSE TENSIONING PLAN  
@ INTERIOR DIAPHRAGM**



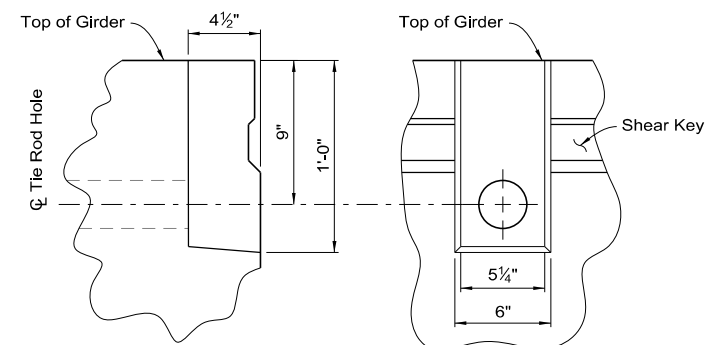
**TRANSVERSE TENSIONING ELEVATION  
@ INTERIOR DIAPHRAGM**

**NOTES**

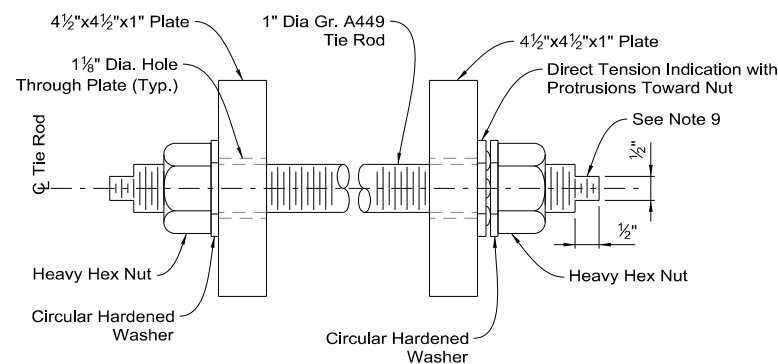
1. Transverse tie rods shall be 1" diameter high strength rod conforming to ASTM A449. Heavy hex nuts shall conform to ASTM A563. Hardened washers shall conform to ASTM F436. Bearing plates shall conform to ASTM A36. Direct tension indicators (DTIS) shall conform to ASTM F959. Hot-dip galvanize all tie rod components after fabrication, excluding DTIS. Tie rods and all associated hardware will be paid for under the structural steel bid item.
2. Plates at tie rod locations shall be ASTM A36. Hot-dip galvanize after fabrication. wedges and plates are paid for under the structural steel bid item.
3. Tighten all transverse tie rods, to about one half the specified tension before proceeding with the final tensioning. Tension all tie rods to a minimum of 51.0 kips as indicated by the DTI.
4. After girder erection and all tie rod tensioning is completed fill all tie rod blockouts and keyways with grout. Keyway and blockout grout is considered incidental to the transverse tie rods installation and there will be no direct payment.
5. After placement of the keyway grout no additional load may be placed on the girders until the grout has reached a compressive strength of 2000 psi.
6. At no time prior to completion of the deck curing operation shall any equipment or vehicles be placed on the bridge without approval of the bridge engineer.
7. For intermediate diaphragm locations, see Prestressed Girder Framing plan sheets.
8. Depending on order of construction, conflicts with adjacent structures may exist at time of tie rod installation. Tie rod couplers may be used to aide in construction. Tie rod couplers are considered incidental to the transverse tie rod installation and there will be no direct payment.
9. Mill both ends of tie rod. Use wrench to prevent the rod turning when tensioning.



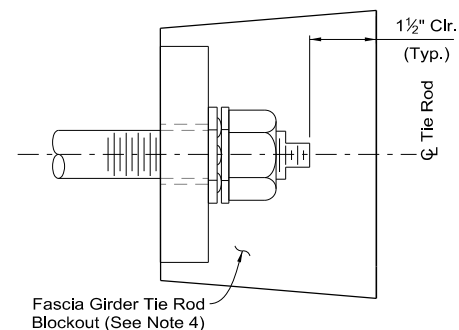
**FASCIA BLOCKOUT @ INTERIOR DIAPHRAGM  
TYPICAL, FASICA GIRDER**



**INTERIOR BLOCKOUT**



**TIE ROD DETAILS**



**TIE ROD BLOCKOUT  
TYPICAL, FASICA GIRDER**



ORIGINAL CONTRACT: 2243  
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**TIE ROD DETAILS  
(2 OF 2)**

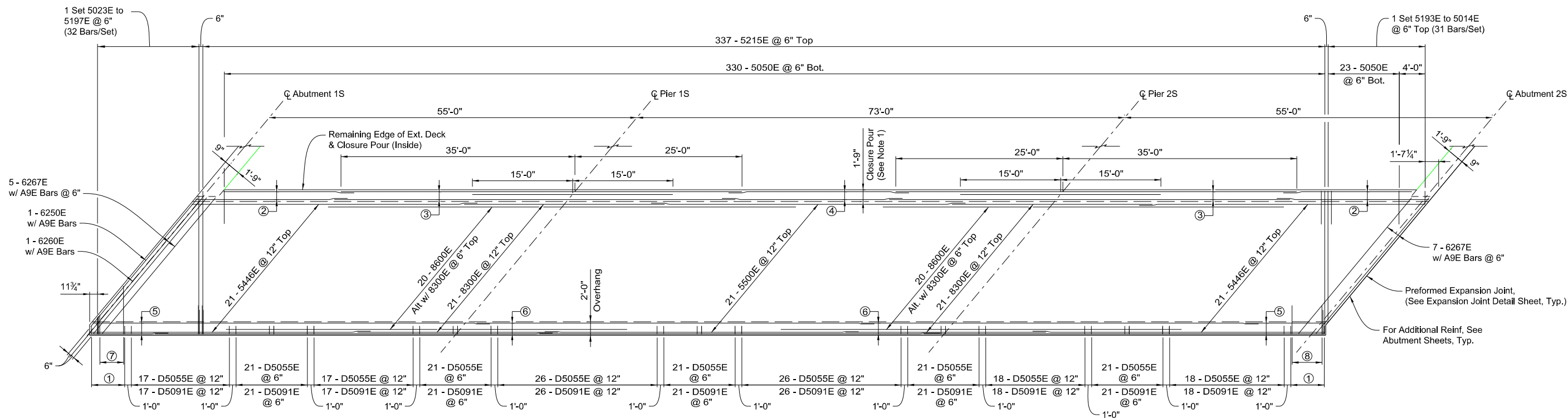
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**BRIDGE DECK PLAN**  
SCALE: 1/16" = 1'-0"

**NOTES**

- Closure pour at abutments is between remaining abutment face and adjacent girder. Closure pour from face-to-face of abutments is between remaining edge of existing deck and adjacent girder.
- For A9E bars, See Abutment Plans.

**REINFORCING NOTES**

- 11 - D5055E @ 6"
- 1 - 5446E Alt. w/ 2 - 5246E @ 6" Top  
2 - 5446E Alt. w/ 1 - 5246E @ 6" Bot.
- 1 - 8300E Alt. w/ 2 - 8600E @ 6" Top  
2 - 5300E Alt. w/ 1 - 5600E @ 6" Bot.
- 1 - 5500E Alt. w/ 2 - 5300E @ 6" Top  
2 - 5500E Alt. w/ 1 - 5300E @ 6" Bot.
- 2 - 5150E Alt. w/ 2 - 5600E @ 6" Bot.
- 4 - 5600E @ 6" Bot.
- 1-Set D5041E to D5091E @ 6" (9 Bars/Set)
- 11-D5091E @ 6"

**MINIMUM BAR LAPS**

#5E Bars to #5E Bars = 30"  
#5E Bars to #8E Bars = 34"



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**DECK REINFORCING**

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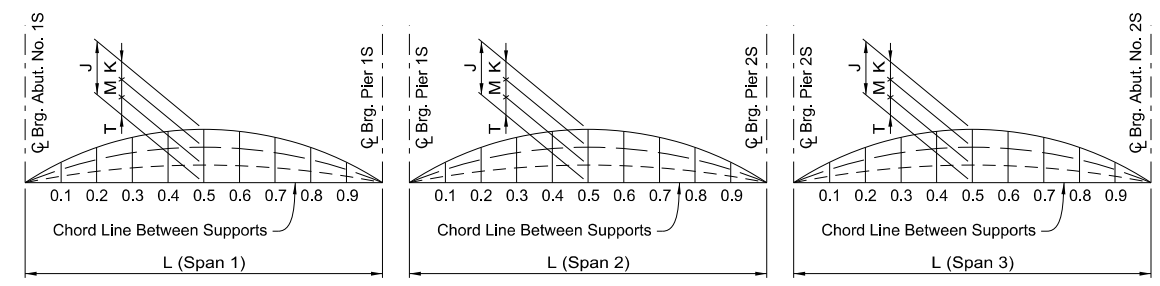
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		Deflection Diagram Table (inch)											
		0.0L	0.1L	0.2L	0.3L	0.4L	0.5L	0.6L	0.7L	0.8L	0.9L	1.0L	
Span 1	Girder AS	J	0.00	0.84	1.38	1.80	2.06	2.15	2.06	1.80	1.38	0.84	0.00
		K	0.00	-0.10	-0.18	-0.24	-0.28	-0.29	-0.28	-0.24	-0.18	-0.10	0.00
		M	0.00	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	0.00	0.00	0.00
		T	0.00	0.73	1.20	1.55	1.77	1.85	1.77	1.55	1.20	0.74	0.00
	Girder BS	J	0.00	0.84	1.38	1.80	2.06	2.15	2.06	1.80	1.38	0.84	0.00
		K	0.00	-0.10	-0.18	-0.24	-0.28	-0.30	-0.28	-0.24	-0.18	-0.10	0.00
		M	0.00	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	0.00	0.00	0.00
		T	0.00	0.73	1.19	1.54	1.76	1.84	1.76	1.54	1.20	0.73	0.00
	Girder CS	J	0.00	0.84	1.38	1.80	2.06	2.15	2.06	1.80	1.38	0.84	0.00
		K	0.00	-0.10	-0.18	-0.24	-0.28	-0.30	-0.28	-0.24	-0.18	-0.10	0.00
		M	0.00	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	0.00	0.00	0.00
		T	0.00	0.73	1.19	1.54	1.76	1.84	1.76	1.54	1.20	0.73	0.00
Girder DS	J	0.00	0.84	1.38	1.80	2.06	2.15	2.06	1.80	1.38	0.84	0.00	
	K	0.00	-0.10	-0.18	-0.24	-0.28	-0.30	-0.28	-0.24	-0.18	-0.10	0.00	
	M	0.00	-0.02	-0.03	-0.04	-0.05	-0.04	-0.04	-0.03	-0.01	-0.01	0.00	
	T	0.00	0.71	1.17	1.51	1.73	1.81	1.74	1.53	1.19	0.73	0.00	
Girder ES	J	0.00	0.84	1.38	1.80	2.06	2.15	2.06	1.80	1.38	0.84	0.00	
	K	0.00	-0.10	-0.18	-0.24	-0.28	-0.30	-0.28	-0.24	-0.18	-0.10	0.00	
	M	0.00	-0.02	-0.03	-0.04	-0.05	-0.04	-0.04	-0.03	-0.01	-0.01	0.00	
	T	0.00	0.71	1.17	1.51	1.73	1.81	1.74	1.53	1.19	0.73	0.00	
Girder FS	J	0.00	0.84	1.38	1.80	2.06	2.15	2.06	1.80	1.38	0.84	0.00	
	K	0.00	-0.16	-0.28	-0.38	-0.44	-0.46	-0.44	-0.38	-0.28	-0.16	0.00	
	M	0.00	-0.02	-0.03	-0.04	-0.04	-0.04	-0.03	-0.02	-0.01	0.00	0.00	
	T	0.00	0.66	1.07	1.38	1.58	1.65	1.59	1.39	1.09	0.67	0.00	
Span 2	Girder AS	J	0.00	0.99	1.69	2.22	2.55	2.67	2.55	2.22	1.69	0.99	0.00
		K	0.00	-0.28	-0.52	-0.71	-0.83	-0.87	-0.83	-0.71	-0.52	-0.28	0.00
		M	0.00	-0.01	-0.01	-0.02	-0.03	-0.03	-0.03	-0.02	-0.01	-0.01	0.00
		T	0.00	0.70	1.15	1.49	1.69	1.77	1.69	1.49	1.15	0.70	0.00
	Girder BS	J	0.00	0.99	1.69	2.22	2.55	2.67	2.55	2.22	1.69	0.99	0.00
		K	0.00	-0.29	-0.54	-0.74	-0.86	-0.91	-0.86	-0.74	-0.54	-0.29	0.00
		M	0.00	-0.01	-0.01	-0.02	-0.03	-0.03	-0.03	-0.02	-0.01	-0.01	0.00
		T	0.00	0.69	1.14	1.46	1.66	1.73	1.66	1.46	1.14	0.69	0.00
	Girder CS	J	0.00	0.99	1.69	2.22	2.55	2.67	2.55	2.22	1.69	0.99	0.00
		K	0.00	-0.29	-0.54	-0.74	-0.86	-0.91	-0.86	-0.74	-0.54	-0.29	0.00
		M	0.00	-0.01	-0.01	-0.02	-0.03	-0.03	-0.03	-0.02	-0.01	-0.01	0.00
		T	0.00	0.69	1.14	1.46	1.66	1.73	1.66	1.46	1.14	0.69	0.00
Girder DS	J	0.00	0.99	1.69	2.22	2.55	2.67	2.55	2.22	1.69	0.99	0.00	
	K	0.00	-0.29	-0.54	-0.74	-0.86	-0.91	-0.86	-0.74	-0.54	-0.29	0.00	
	M	0.00	-0.02	-0.05	-0.07	-0.09	-0.10	-0.09	-0.07	-0.05	-0.02	0.00	
	T	0.00	0.68	1.10	1.41	1.60	1.66	1.60	1.41	1.10	0.68	0.00	
Girder ES	J	0.00	0.99	1.69	2.22	2.55	2.67	2.55	2.22	1.69	0.99	0.00	
	K	0.00	-0.29	-0.54	-0.74	-0.86	-0.91	-0.86	-0.74	-0.54	-0.29	0.00	
	M	0.00	-0.02	-0.05	-0.07	-0.09	-0.10	-0.09	-0.07	-0.05	-0.02	0.00	
	T	0.00	0.68	1.10	1.41	1.60	1.66	1.60	1.41	1.10	0.68	0.00	
Girder FS	J	0.00	0.99	1.69	2.22	2.55	2.67	2.55	2.22	1.69	0.99	0.00	
	K	0.00	-0.45	-0.83	-1.14	-1.33	-1.40	-1.33	-1.14	-0.83	-0.45	0.00	
	M	0.00	-0.02	-0.04	-0.06	-0.07	-0.08	-0.07	-0.06	-0.04	-0.02	0.00	
	T	0.00	0.52	0.82	1.02	1.15	1.19	1.15	1.02	0.82	0.52	0.00	
Span 3	Girder AS	J	0.00	0.84	1.38	1.80	2.06	2.15	2.06	1.80	1.38	0.84	0.00
		K	0.00	-0.10	-0.18	-0.24	-0.28	-0.29	-0.28	-0.24	-0.18	-0.10	0.00
		M	0.00	0.00	0.00	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	0.00
		T	0.00	0.74	1.20	1.55	1.77	1.85	1.77	1.55	1.20	0.73	0.00
	Girder BS	J	0.00	0.84	1.38	1.80	2.06	2.15	2.06	1.80	1.38	0.84	0.00
		K	0.00	-0.10	-0.18	-0.24	-0.28	-0.30	-0.28	-0.24	-0.18	-0.10	0.00
		M	0.00	0.00	0.00	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	0.00
		T	0.00	0.73	1.20	1.54	1.77	1.84	1.76	1.54	1.19	0.73	0.00
	Girder CS	J	0.00	0.84	1.38	1.80	2.06	2.15	2.06	1.80	1.38	0.84	0.00
		K	0.00	-0.10	-0.18	-0.24	-0.28	-0.30	-0.28	-0.24	-0.18	-0.10	0.00
		M	0.00	0.00	0.00	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	0.00
		T	0.00	0.73	1.20	1.54	1.77	1.84	1.76	1.54	1.19	0.73	0.00
Girder DS	J	0.00	0.84	1.38	1.80	2.06	2.15	2.06	1.80	1.38	0.84	0.00	
	K	0.00	-0.10	-0.18	-0.24	-0.28	-0.30	-0.28	-0.24	-0.18	-0.10	0.00	
	M	0.00	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	0.00	
	T	0.00	0.73	1.19	1.53	1.74	1.81	1.73	1.51	1.17	0.71	0.00	
Girder ES	J	0.00	0.84	1.38	1.80	2.06	2.15	2.06	1.80	1.38	0.84	0.00	
	K	0.00	-0.10	-0.18	-0.24	-0.28	-0.30	-0.28	-0.24	-0.18	-0.10	0.00	
	M	0.00	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	0.00	
	T	0.00	0.73	1.19	1.53	1.74	1.81	1.73	1.51	1.17	0.71	0.00	
Girder FS	J	0.00	0.84	1.38	1.80	2.06	2.15	2.06	1.80	1.38	0.84	0.00	
	K	0.00	-0.16	-0.28	-0.38	-0.44	-0.46	-0.44	-0.38	-0.28	-0.16	0.00	
	M	0.00	-0.01	-0.01	-0.02	-0.03	-0.04	-0.04	-0.04	-0.03	-0.02	0.00	
	T	0.00	0.67	1.09	1.39	1.59	1.65	1.58	1.38	1.07	0.66	0.00	

**LEDGEND**

- J = Net Girder Camber at Erection (40 days)
- K = Non-composite Dead Load Deflection (Deck & Closure Pour) at Erection
- M = Superimposed Dead Load Deflection from Bridge Rail, Pedestrian Fencing and Overlay at Erection
- T = Total Residual Camber After All Dead Load is Placed (Excludes Future Wearing Surface DW)



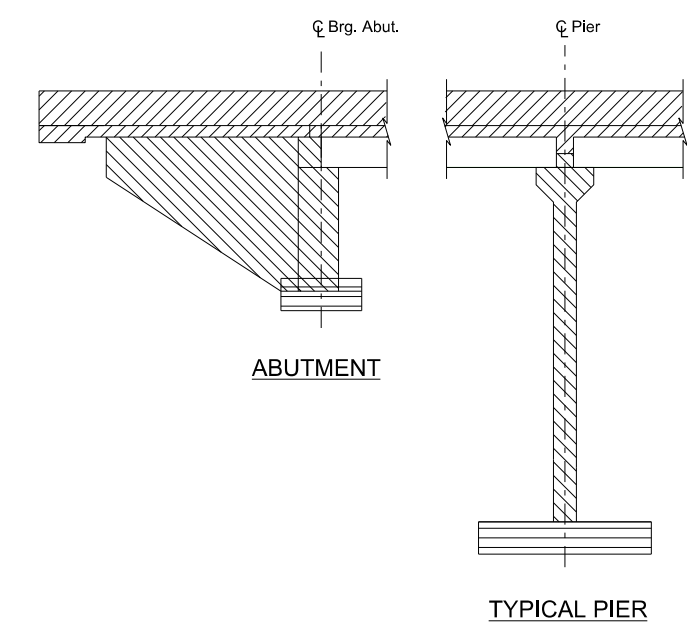
**DEFLECTION DIAGRAM**

**NOTES**

1. Values given in the Deflection Diagram Table are based on theoretical girder cambers and deflection estimates at 40 days after prestressing release. Monitor girder cambers for the purpose of mitigating reinforcing conflicts in the deck and for controlling bridge profile. If the measured girder cambers create a conflict with the deck reinforcing, deck geometry, or proposed finished grade elevations, notify the engineer immediately.
2. Negative deflections indicate downward movement as load is increased. Positive deflections indicate an upward camber.

**LEGEND**

- Bridge Deck, Closure Pour, Approach Slab, Bridge Rails, Pier Diaphragm  
Class EA Modified, f<sub>c</sub> = 4.5 ksi
- Prestressed Concrete Girders  
See Prestressed Girder  
Details for Concrete Strength  
Class PAA, Entrained Air = 4% - 7%
- Pier Walls, Abutment Walls, Wingwalls, Abutment Diaphragm  
Class DA Modified, f<sub>c</sub> = 4.5 ksi
- Footings, Shear Keys  
Class DA Modified, f<sub>c</sub> = 4.5 ksi



**CONCRETE CLASSIFICATION DIAGRAM**



12/20/2022

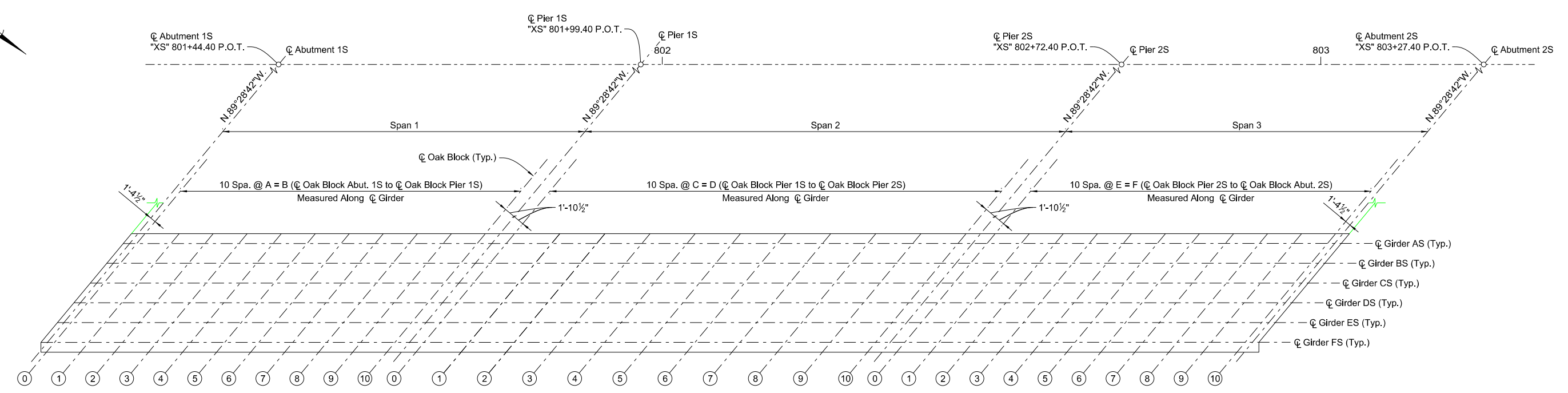
ORIGINAL CONTRACT: 2243  
MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**CAMBER AND CLASSIFICATION  
DIAGRAMS**

G-1748 S

HDR Engineering, Inc. 9805 Double R Boulevard, Suite 101  
Reno, NV 89521-5917  
PH: 775-337-4700 FAX: 775-337-4774



**FINISH GRADE ELEVATIONS**

		Finished Grade Elevations											
		0	1	2	3	4	5	6	7	8	9	10	
Span 1	Girder AS	Elevation	5194.08	5194.11	5194.14	5194.17	5194.20	5194.23	5194.26	5194.28	5194.30	5194.32	5194.34
		DL Defl.	0.00	0.01	0.02	0.02	0.02	0.03	0.02	0.02	0.02	0.01	0.00
	Girder BS	Elevation	5194.13	5194.15	5194.19	5194.22	5194.25	5194.27	5194.30	5194.33	5194.35	5194.37	5194.39
		DL Defl.	0.00	0.01	0.02	0.02	0.02	0.03	0.02	0.02	0.02	0.01	0.00
	Girder CS	Elevation	5194.17	5194.20	5194.23	5194.26	5194.29	5194.32	5194.35	5194.38	5194.40	5194.42	5194.44
		DL Defl.	0.00	0.01	0.02	0.02	0.02	0.03	0.02	0.02	0.02	0.01	0.00
Span 2	Girder DS	Elevation	5194.21	5194.25	5194.28	5194.31	5194.34	5194.37	5194.39	5194.43	5194.45	5194.47	5194.49
		DL Defl.	0.00	0.01	0.02	0.02	0.03	0.03	0.03	0.02	0.02	0.01	0.00
	Girder ES	Elevation	5194.26	5194.29	5194.32	5194.35	5194.38	5194.41	5194.44	5194.47	5194.50	5194.52	5194.54
		DL Defl.	0.00	0.01	0.02	0.02	0.03	0.03	0.03	0.02	0.02	0.01	0.00
	Girder FS	Elevation	5194.30	5194.33	5194.37	5194.40	5194.43	5194.46	5194.49	5194.52	5194.55	5194.57	5194.59
		DL Defl.	0.00	0.01	0.03	0.03	0.04	0.04	0.04	0.03	0.02	0.01	0.00
Span 3	Girder AS	Elevation	5194.36	5194.39	5194.42	5194.44	5194.45	5194.47	5194.48	5194.49	5194.51	5194.51	5194.52
		DL Defl.	0.00	0.02	0.04	0.06	0.07	0.08	0.07	0.06	0.06	0.02	0.00
	Girder BS	Elevation	5194.41	5194.44	5194.47	5194.49	5194.51	5194.52	5194.54	5194.55	5194.56	5194.57	5194.58
		DL Defl.	0.00	0.02	0.05	0.06	0.07	0.08	0.07	0.06	0.05	0.02	0.00
	Girder CS	Elevation	5194.46	5194.49	5194.52	5194.54	5194.56	5194.58	5194.60	5194.61	5194.62	5194.63	5194.64
		DL Defl.	0.00	0.02	0.05	0.06	0.07	0.08	0.07	0.06	0.05	0.02	0.00
Span 3	Girder DS	Elevation	5194.51	5194.54	5194.57	5194.59	5194.62	5194.63	5194.65	5194.66	5194.67	5194.68	5194.70
		DL Defl.	0.00	0.03	0.05	0.07	0.08	0.08	0.08	0.07	0.05	0.03	0.00
	Girder ES	Elevation	5194.56	5194.59	5194.62	5194.64	5194.67	5194.69	5194.70	5194.72	5194.73	5194.74	5194.75
		DL Defl.	0.00	0.03	0.05	0.07	0.08	0.08	0.08	0.07	0.05	0.03	0.00
	Girder FS	Elevation	5194.61	5194.64	5194.67	5194.69	5194.72	5194.74	5194.76	5194.77	5194.79	5194.80	5194.81
		DL Defl.	0.00	0.04	0.07	0.10	0.12	0.12	0.12	0.10	0.07	0.04	0.00
Span 3	Girder AS	Elevation	5194.52	5194.52	5194.52	5194.52	5194.52	5194.51	5194.51	5194.50	5194.49	5194.48	
		DL Defl.	0.00	0.01	0.02	0.02	0.02	0.03	0.02	0.02	0.02	0.01	0.00
	Girder BS	Elevation	5194.58	5194.58	5194.58	5194.58	5194.58	5194.58	5194.57	5194.57	5194.56	5194.56	5194.55
		DL Defl.	0.00	0.01	0.02	0.02	0.02	0.03	0.02	0.02	0.02	0.01	0.00
	Girder CS	Elevation	5194.64	5194.64	5194.64	5194.64	5194.64	5194.63	5194.63	5194.63	5194.62	5194.62	5194.61
		DL Defl.	0.00	0.01	0.02	0.02	0.02	0.03	0.02	0.02	0.02	0.01	0.00
Span 3	Girder DS	Elevation	5194.70	5194.70	5194.70	5194.70	5194.70	5194.70	5194.69	5194.69	5194.68	5194.68	5194.68
		DL Defl.	0.00	0.01	0.02	0.02	0.03	0.03	0.03	0.02	0.02	0.01	0.00
	Girder ES	Elevation	5194.76	5194.76	5194.76	5194.76	5194.76	5194.76	5194.75	5194.75	5194.75	5194.74	5194.74
		DL Defl.	0.00	0.01	0.02	0.02	0.03	0.03	0.03	0.02	0.02	0.01	0.00
	Girder FS	Elevation	5194.82	5194.82	5194.82	5194.82	5194.82	5194.82	5194.82	5194.81	5194.81	5194.80	5194.80
		DL Defl.	0.00	0.01	0.02	0.03	0.04	0.04	0.04	0.03	0.03	0.01	0.00

	A	B	C	D	E	F
All Girders	5'-0 7/8"	50'-8 3/4"	6'-9 3/4"	68'-1 1/2"	5'-0 7/8"	50'-8 3/4"

**NOTES:**

- In the Finish Grade Elevations table, the values shown are the final top of concrete deck elevations prior to placement of overlay. "DL DEFL" values are dead load deflections (in feet). Add "DL DEFL" values to the final top concrete deck elevations to obtain screed elevations for each girder.
- Dead load deflections are derived from the weight of the deck slab, bridge rail and overlay.
- All elevations indicated are at finished grade.
- All longitudinal dimensions are shown along centerline of girder.
- Elevations are based on existing structure survey data from Contract 1286, adjusted to the survey datum for this project, and assume a uniform 3/8" overlay that is to be removed from the existing structure. Discrepancies shall be brought to the attention of the engineer prior to construction.



ORIGINAL CONTRACT: 2243  
 MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT

STATE OF NEVADA  
 DEPARTMENT OF TRANSPORTATION

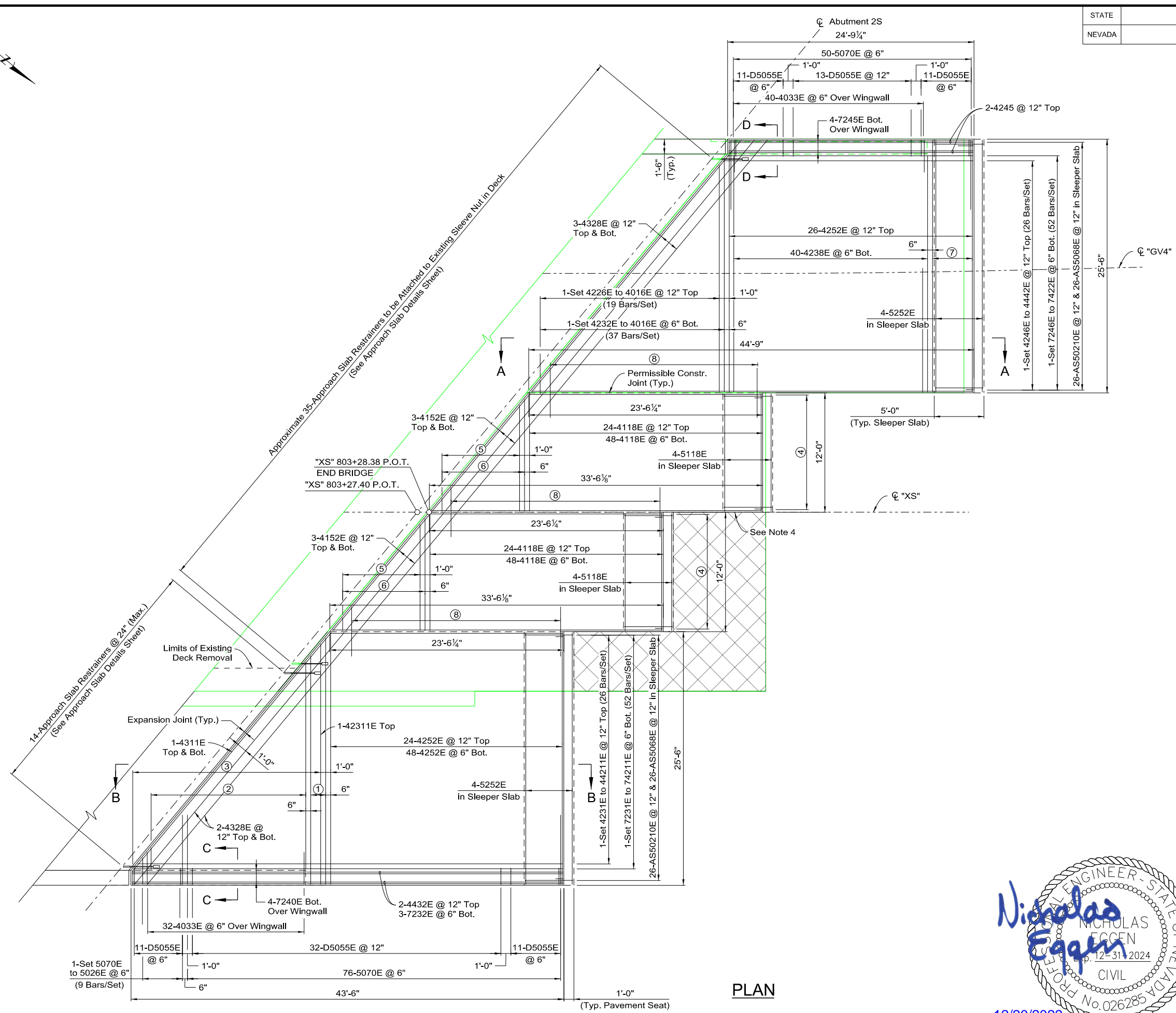
**FINISH GRADE ELEVATIONS**

G-1748 S

**HDR**  
 HDR Engineering, Inc.  
 9805 Double R Boulevard, Suite 101  
 Reno, NV 89521-5917  
 PH: 775-337-4700 FAX: 775-337-4774



STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B477



- REINFORCING NOTES:**
- 1-Set 4246E to 4226E @ 6" Bot. (4 Bars/Set)
  - 1-Set 4205E to 4016E @ 6" Bot. (34 Bars/Set)
  - 1-Set 4229E to 4026E @ 12" Top (18 Bars/Set)
  - 1-Set 4233E to 43211E @ 12" Top (13 Bars/Set)  
1-Set 7233E to 73211E @ 6" Bot. (26 Bars/Set)  
13-AS5068E @ 12" & 13-AS50210E @ 12" in Sleeper Slab
  - 1-Set 4105E to 4016E @ 12" Top (9 Bars/Set)
  - 1-Set 4110E to 4016E @ 6" Bot. (17 Bars/Set)
  - 10-4252 @ 6" Bot.
  - 22-4050E @ 12" Top  
44-4050E @ 6" Bot.  
Center w/ Permissible Constr. Joint. (See Note 3)

- NOTES:**
1. For sections, see Approach Slab Detail sheet.
  2. Transverse dimensions are measured perpendicular to Construction  $\phi$ .
  3. Transverse reinforcing between permissible construction joints shall be placed prior to concrete placement.
  4. Place 1/4-inch expansion joint material between the concrete pavement and the longitudinal face of the approach slab. The expansion joint material is to be recessed 1/2-inch from the surface and the joint sealed identically to the "longitudinal weakened plane joint" on detail CP-1 of the NDOT Standard Plans.

PLAN



12/20/2022

ORIGINAL CONTRACT: 2243  
MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**APPROACH SLABS  
(2 OF 2)**

G-1748 S

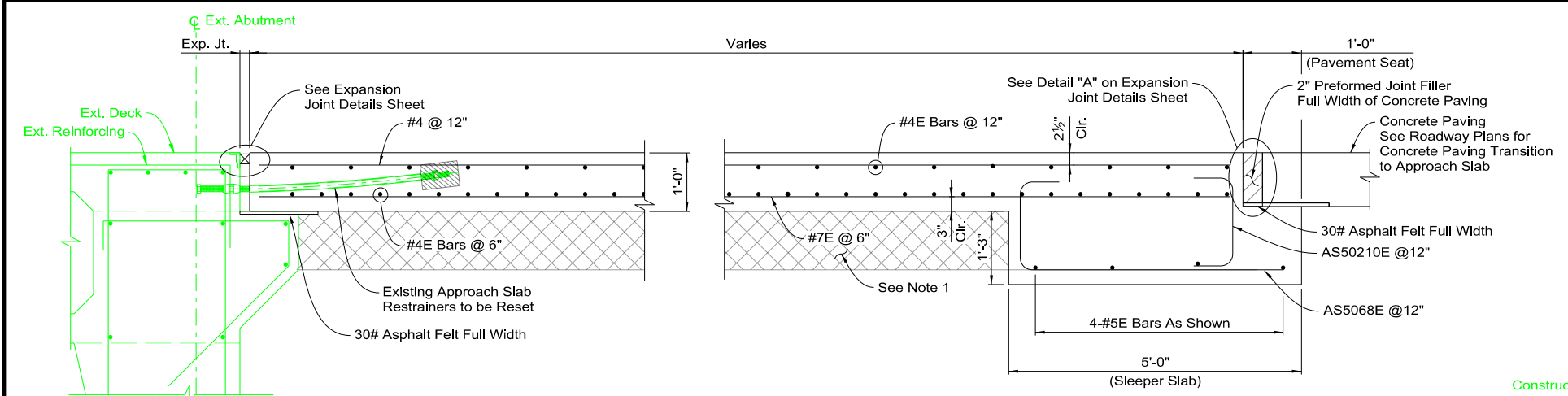
**HDR**  
HDR Engineering, Inc.

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Reno, NV 89521-5917  
PH: 775-337-4700 FAX: 775-337-4774

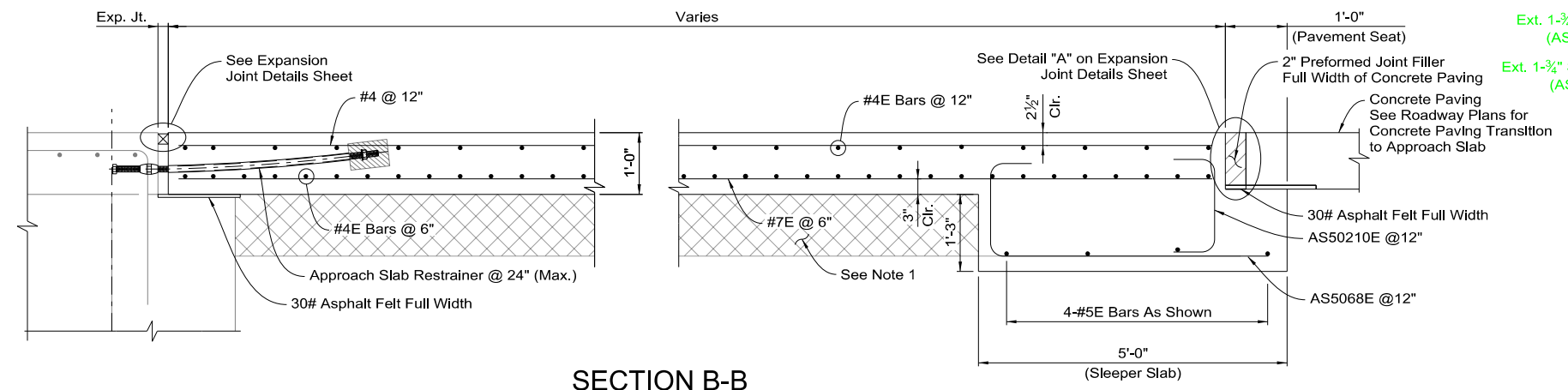


STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B478

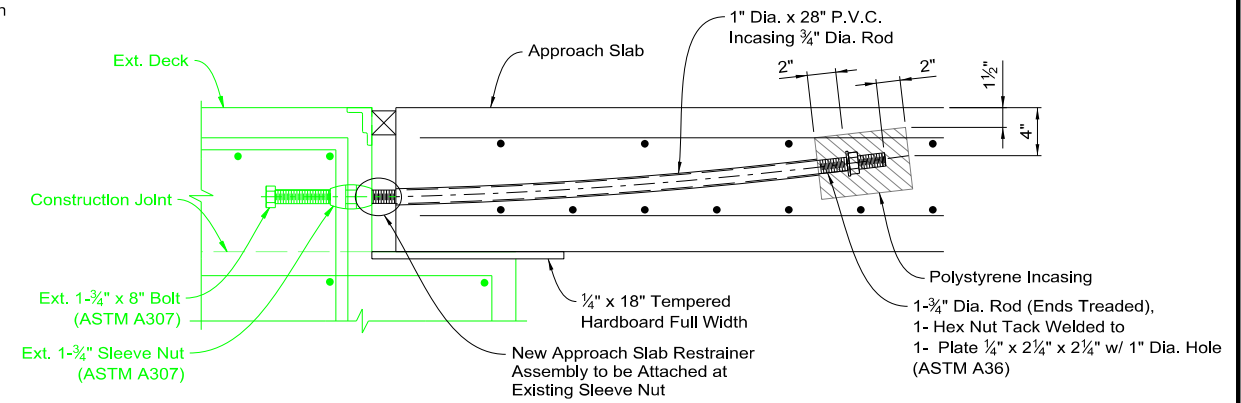
- NOTES:**
- Fill material under approach slabs shall be a 12-inch layer of granular backfill compacted to not less than 95% of the maximum density in accordance with subsection 207.03.01 of the Standard Specifications.
  - Coat exposed remaining ends of existing wingwall reinforcing after removal and prior to placing expanded polystyrene with Engineer approved corrosion protection.



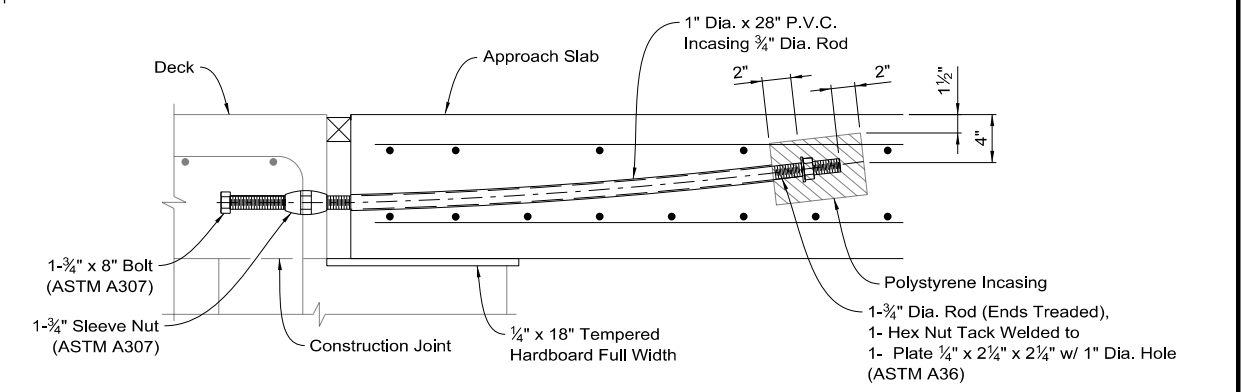
**SECTION A-A**



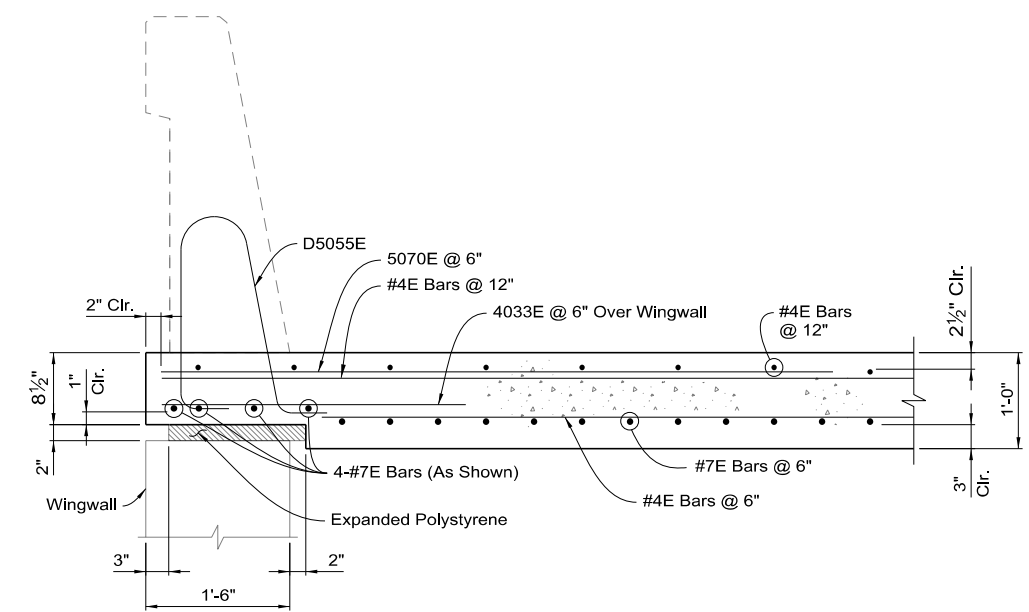
**SECTION B-B**



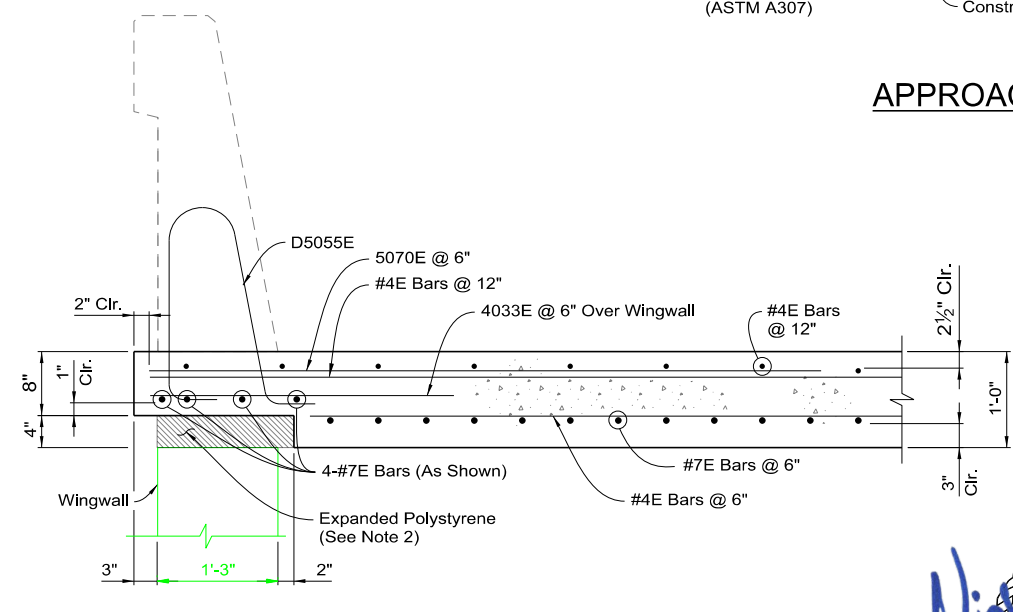
**APPROACH SLAB RESTRAINER ASSEMBLY OVER EXISTING ABUTMENT**



**APPROACH SLAB RESTRAINER ASSEMBLY**



**SECTION C-C**



**SECTION D-D OVER EXISTING WINGWALL**



12/20/2022

ORIGINAL CONTRACT: 2243  
MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

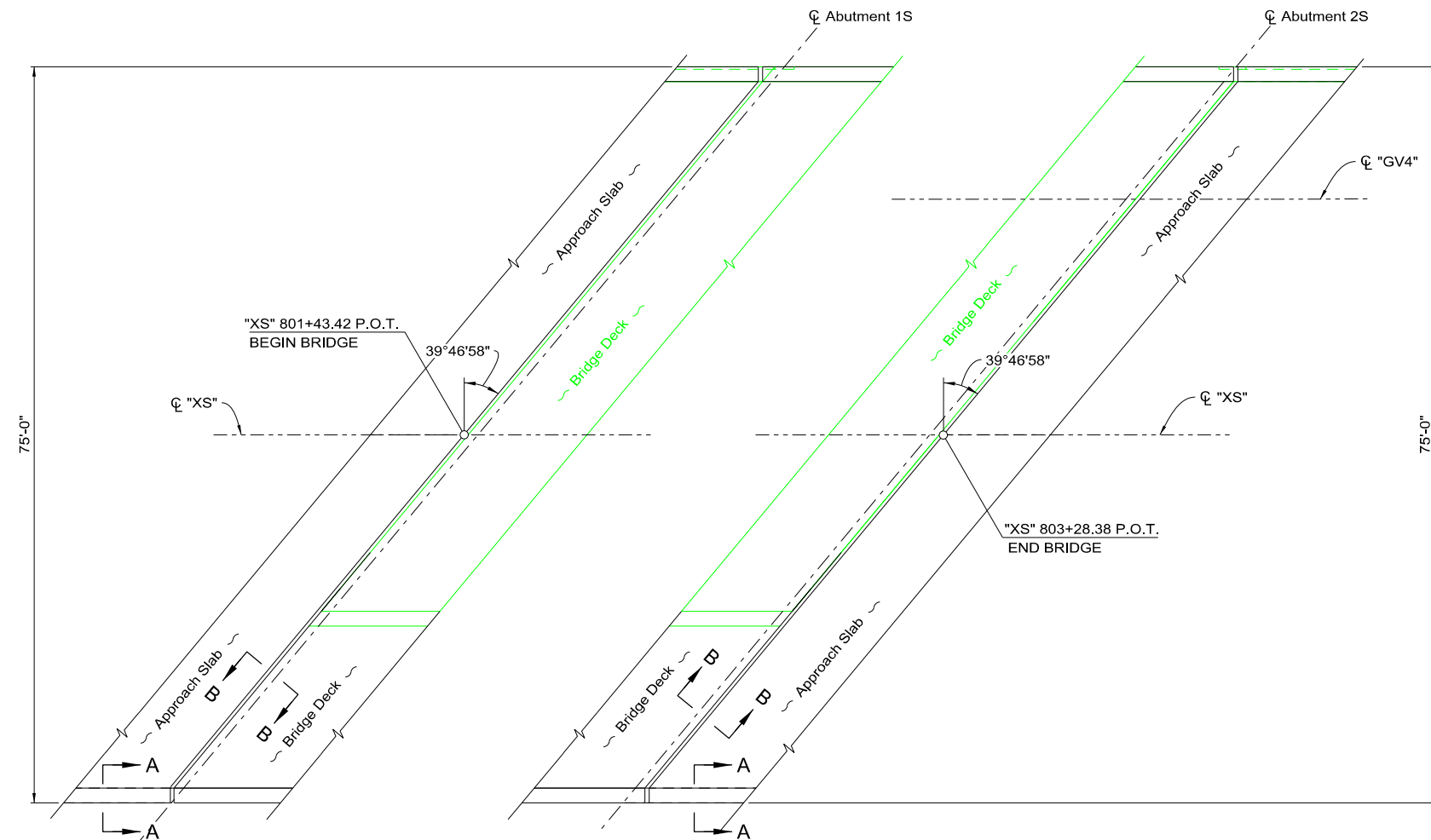
**APPROACH SLAB DETAILS**

G-1748 S

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PH: 775-337-4700 FAX: 775-337-4774

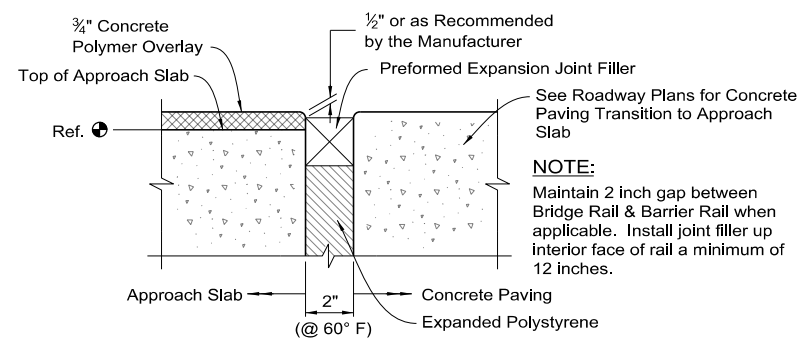
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B479



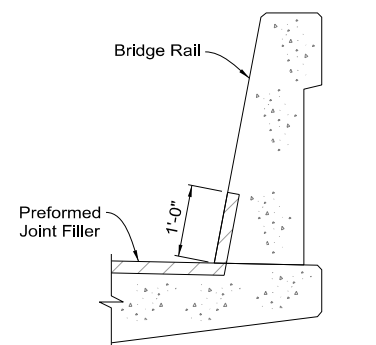
**PLAN**

**NOTES:**

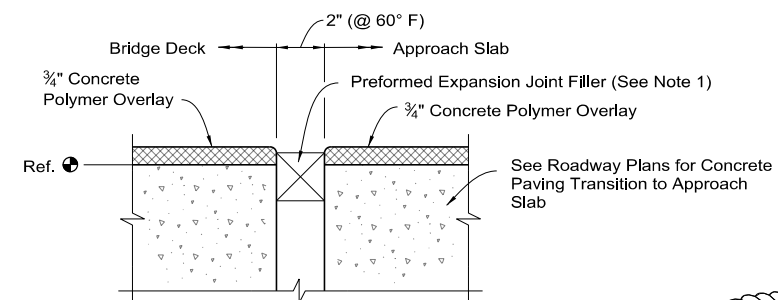
1. Provide preformed expansion joint filler with a minimum movement rating of 3-inches with ability to accommodate up to 1 1/8" of racking movement.
2. The preformed expansion joint filler manufacturer's instructions must be followed.
3. The expansion joint opening in Section B-B shall be increased by 1/8" for every 10° F temperature fall from 60° F, shall be decreased by 1/8" for every 10° F temperature rise from 60° F.
4. Round installation temperature to nearest 10° increment.



**DETAIL "A"**



**SECTION A-A**  
WIDENED STRUCTURE  
(EXISTING STRUCTURE SIMILAR)



**SECTION B-B**



12/20/2022

ORIGINAL CONTRACT: 2243  
MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**EXPANSION JOINT  
DETAILS**

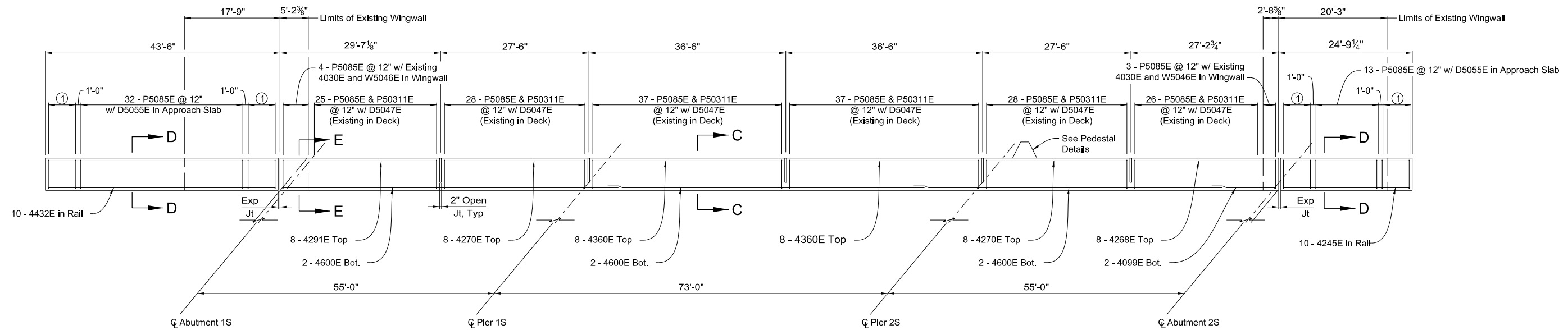
G-1748 S

**HDR**  
HDR Engineering, Inc.

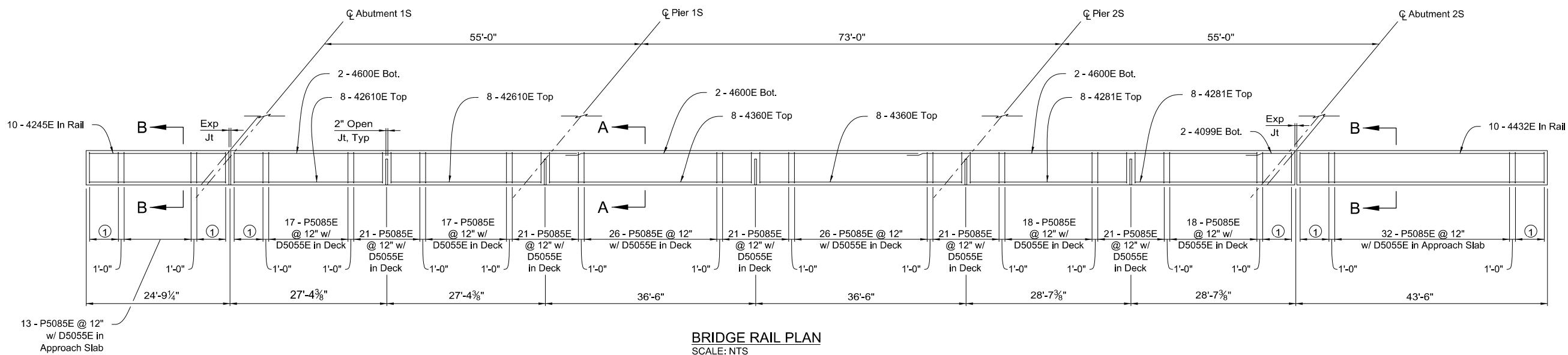
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STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B480



**BRIDGE RAIL PLAN - WEST SIDE REPLACEMENT**  
SCALE: NTS



**BRIDGE RAIL PLAN**  
SCALE: NTS

**REINFORCING NOTES:**

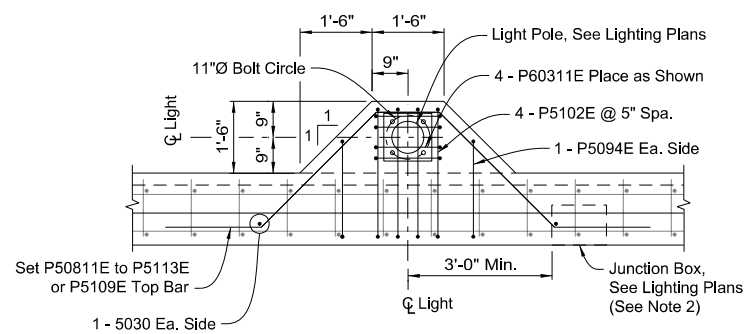
- ① 11 - P5085E @ 6" w/ D5055E in Deck/Approach Slab

**NOTES:**

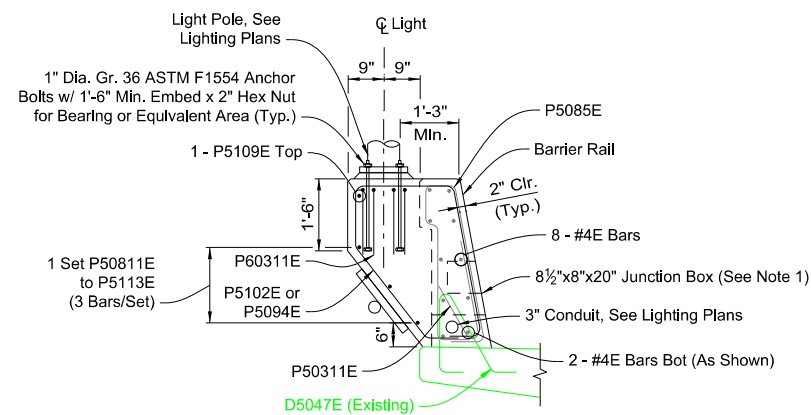
- 1. Relocate transverse reinforcement in barrier rail interrupted by junction box equally to each side.

**MINIMUM BAR LAPS:**

#4E Bars to #4E Bars = 27"



**PEDESTAL PLAN DETAIL**  
SCALE: NTS



**PEDESTAL ELEVATION DETAIL**  
SCALE: NTS



12/20/2022

ORIGINAL CONTRACT: 2243  
MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

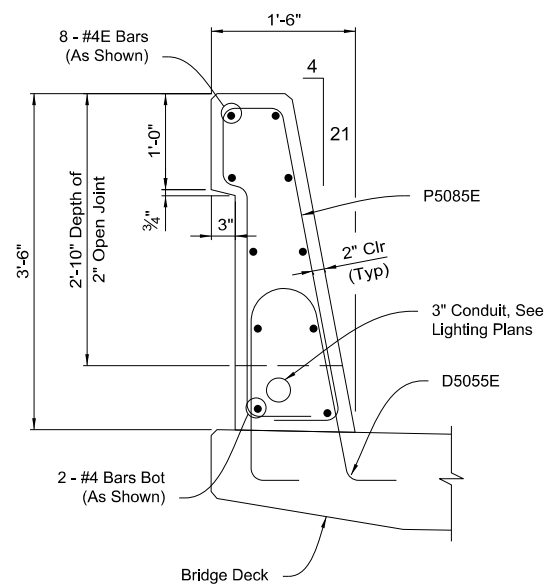
**BARRIER RAIL**

G-1748 S

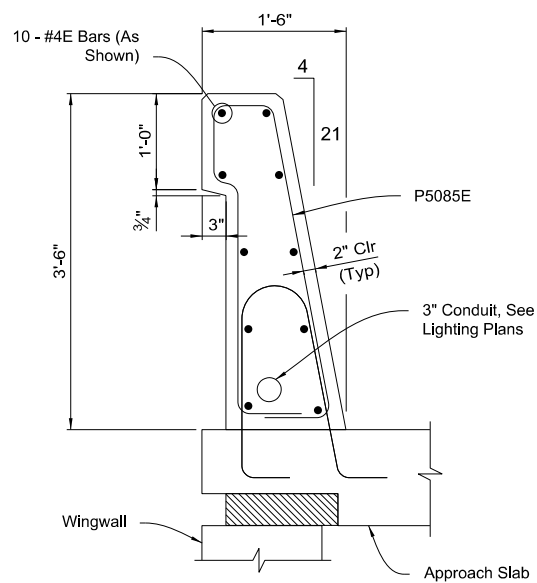


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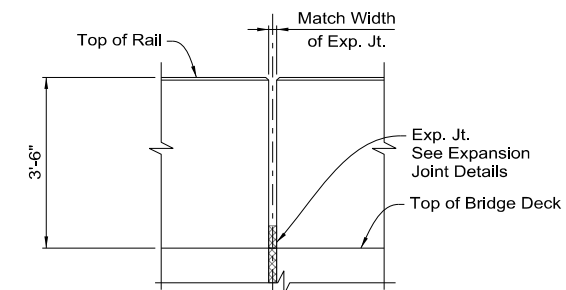
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B481



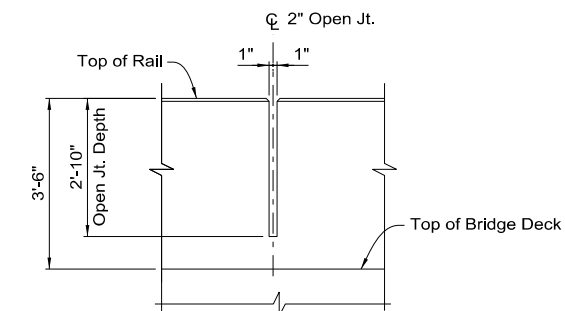
**SECTION A-A**



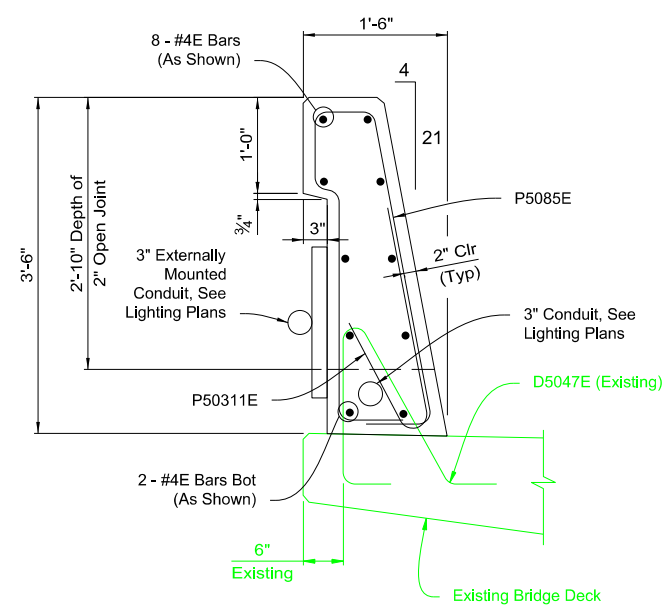
**SECTION B-B**



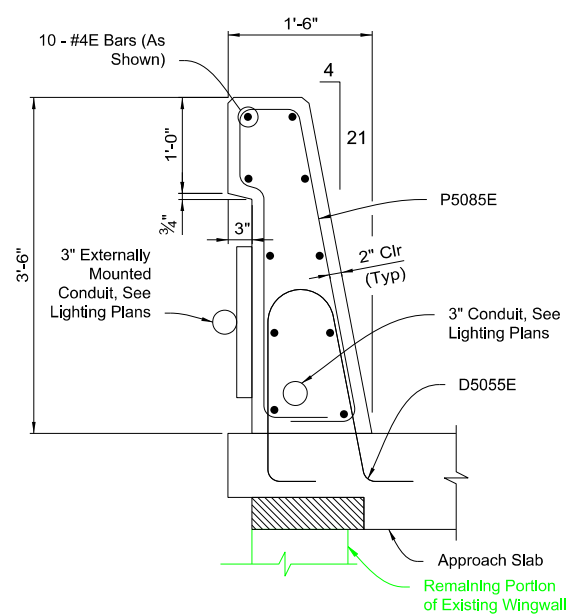
**TYPICAL EXPANSION JOINT**



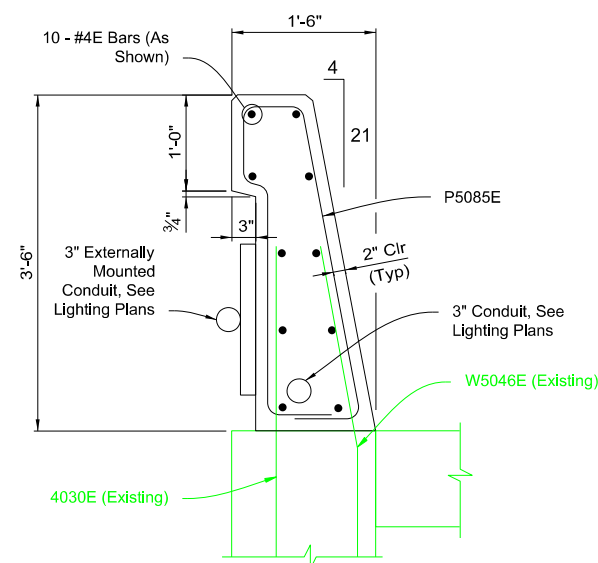
**2" OPEN JOINT DETAIL**



**SECTION C-C**



**SECTION D-D**



**SECTION E-E**

**NOTE:**

- For conduit passing through expansion joints, see Expansion Fitting Detail on sheet TG-9 of the NDOT Standard Plans for Road and Bridge Construction.

ORIGINAL CONTRACT: 2243  
 MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT



12/20/2022

STATE OF NEVADA  
 DEPARTMENT OF TRANSPORTATION

**BARRIER RAIL  
 DETAILS**

G-1748 S

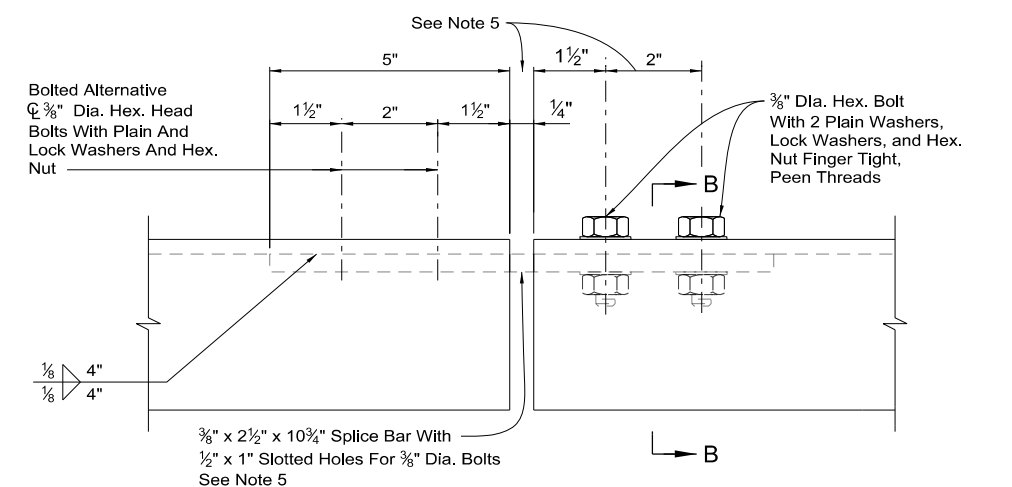
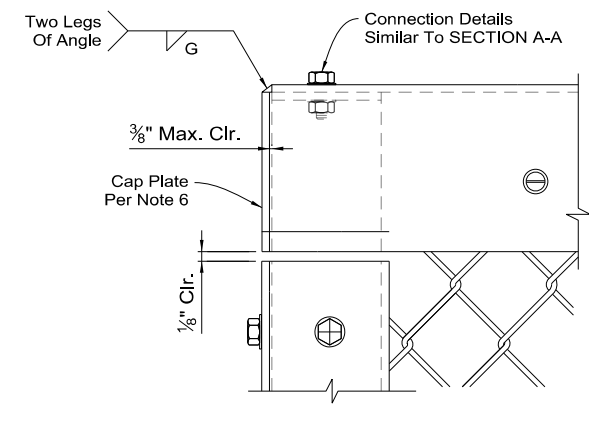
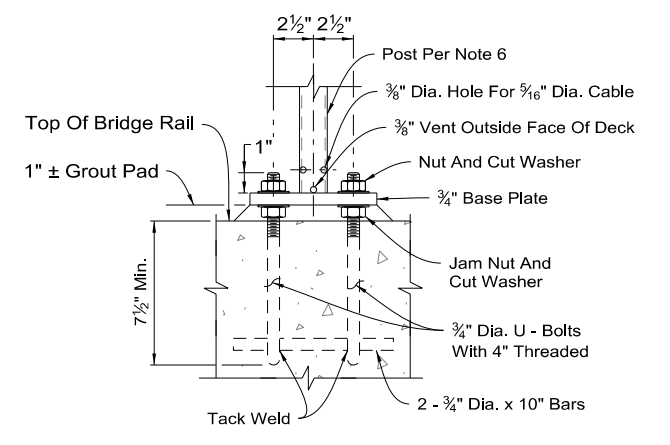
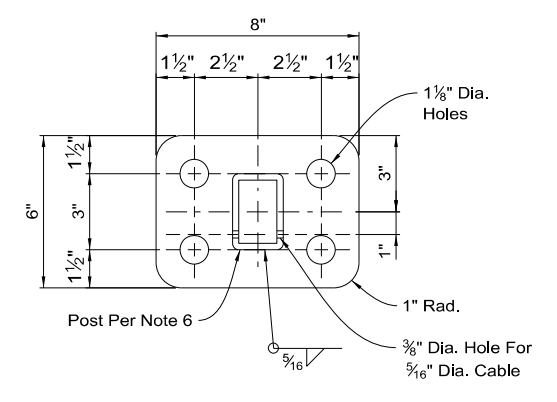
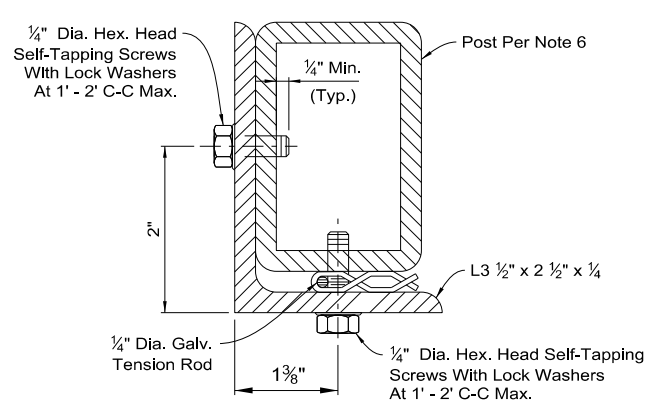
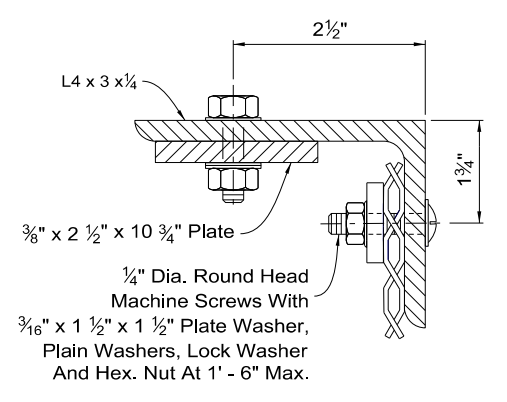
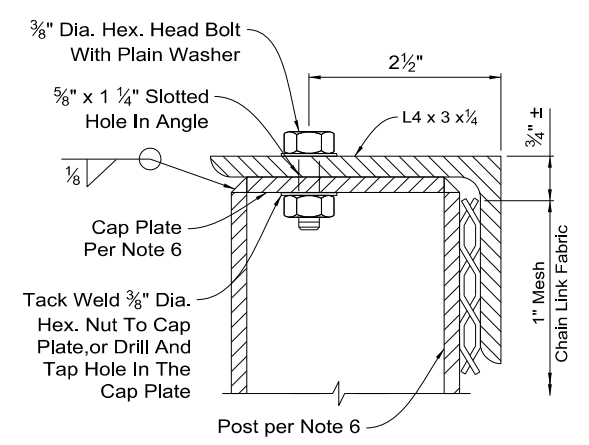
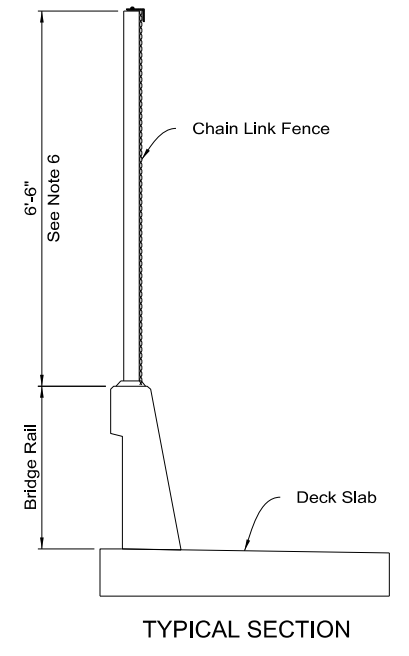
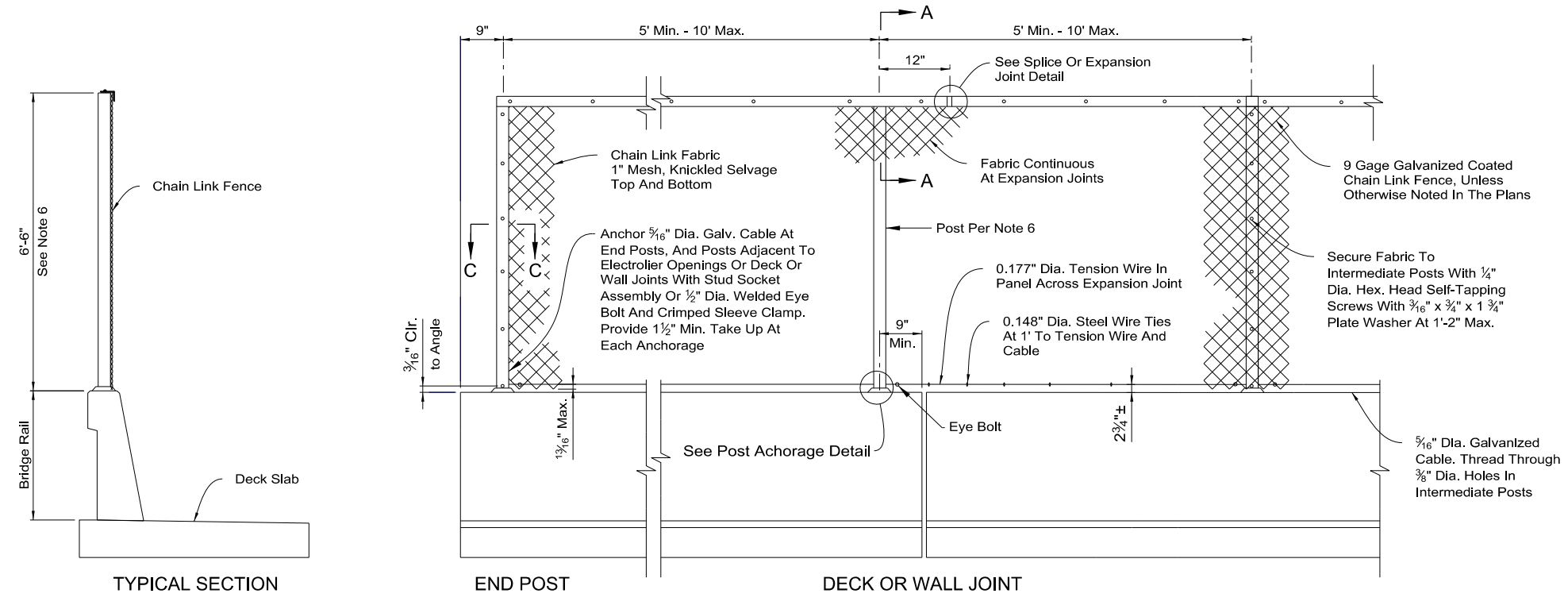
**HDR**  
 HDR Engineering, Inc.

9805 Double R Boulevard, Suite 101  
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 PH: 775-337-4700 FAX: 775-337-4774

STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B482

**NOTES:**

1. Posts shall be vertical.
2. Railing shall conform to horizontal and vertical alignment. Horizontal angle may be on 10-foot chords.
3. Horizontal angle shall be continuous over not less than two intermediate posts, except that a shorter length is permitted at expansion joints, and others rail discontinuities.
4. When rail is on slope, place fabric parallel to slope.
5. Expansion joint same dimension as expansion joint in deck or wall. Increase slotted hole length and splice bar length correspondingly.
6. For posts, use HSS 3 x 2 x 3/16. Cap plate to be same thickness as the post used.
7. Railing assembly, except chain link fabric, to be galvanized after fabrication, unless otherwise noted in the plans.



ORIGINAL CONTRACT: 2243  
MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**PEDESTRIAN RAIL  
DETAILS**

G-1748 S

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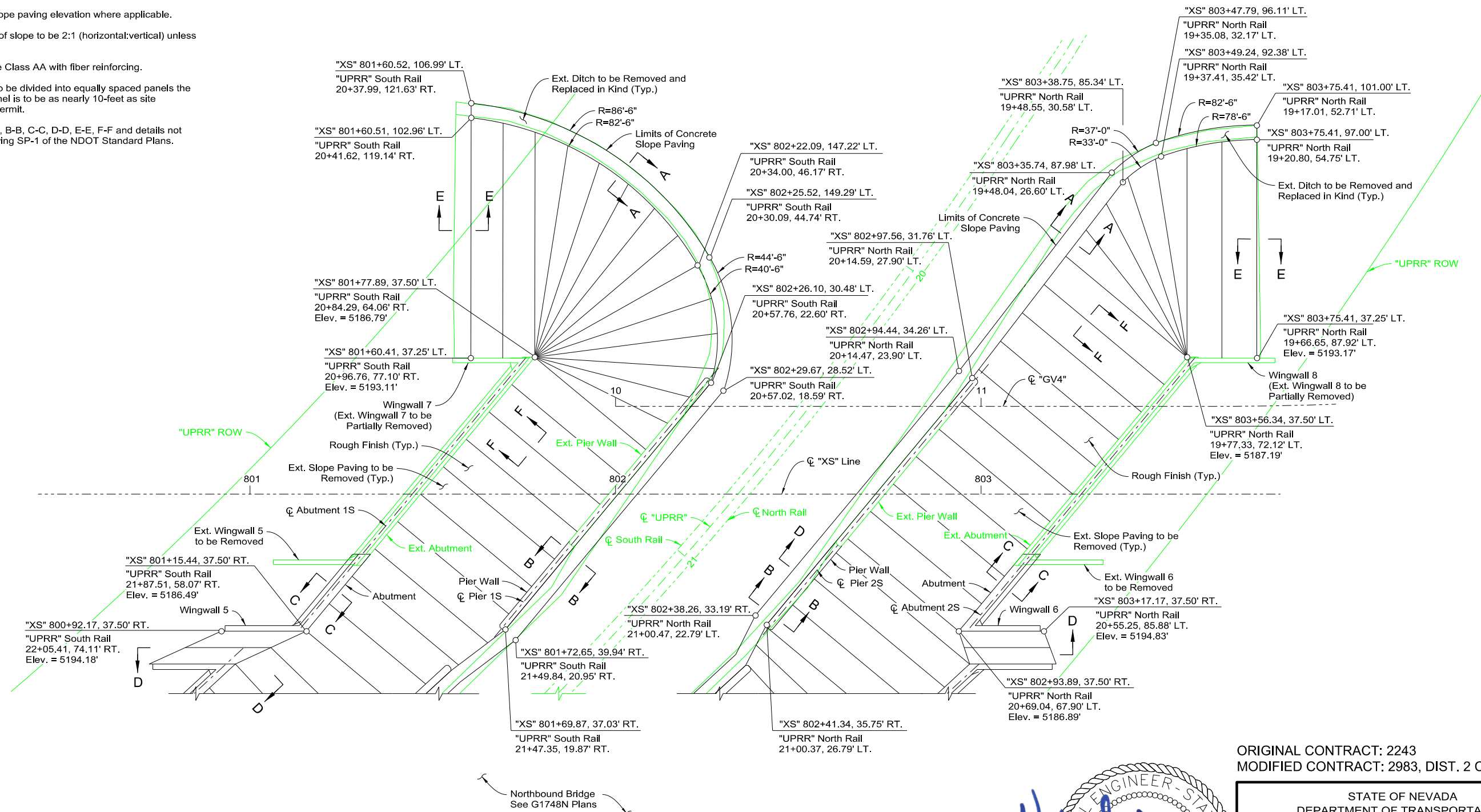
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12/20/2022

STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B483

**NOTES:**

1. Match existing slope paving elevation where applicable.
2. Maximum grade of slope to be 2:1 (horizontal:vertical) unless noted otherwise.
3. Concrete shall be Class AA with fiber reinforcing.
4. Slope paving is to be divided into equally spaced panels the width of each panel is to be as nearly 10-feet as site dimensions will permit.
5. For Sections A-A, B-B, C-C, D-D, E-E, F-F and details not shown, see Drawing SP-1 of the NDOT Standard Plans.



PLAN



ORIGINAL CONTRACT: 2243  
 MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT

STATE OF NEVADA  
 DEPARTMENT OF TRANSPORTATION

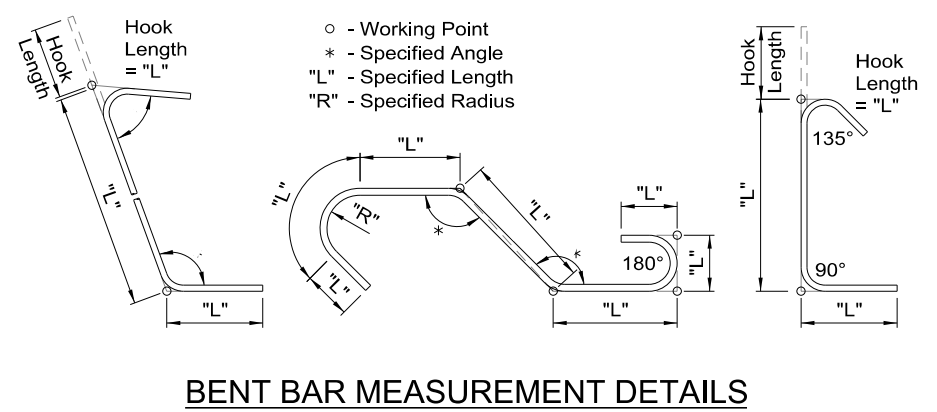
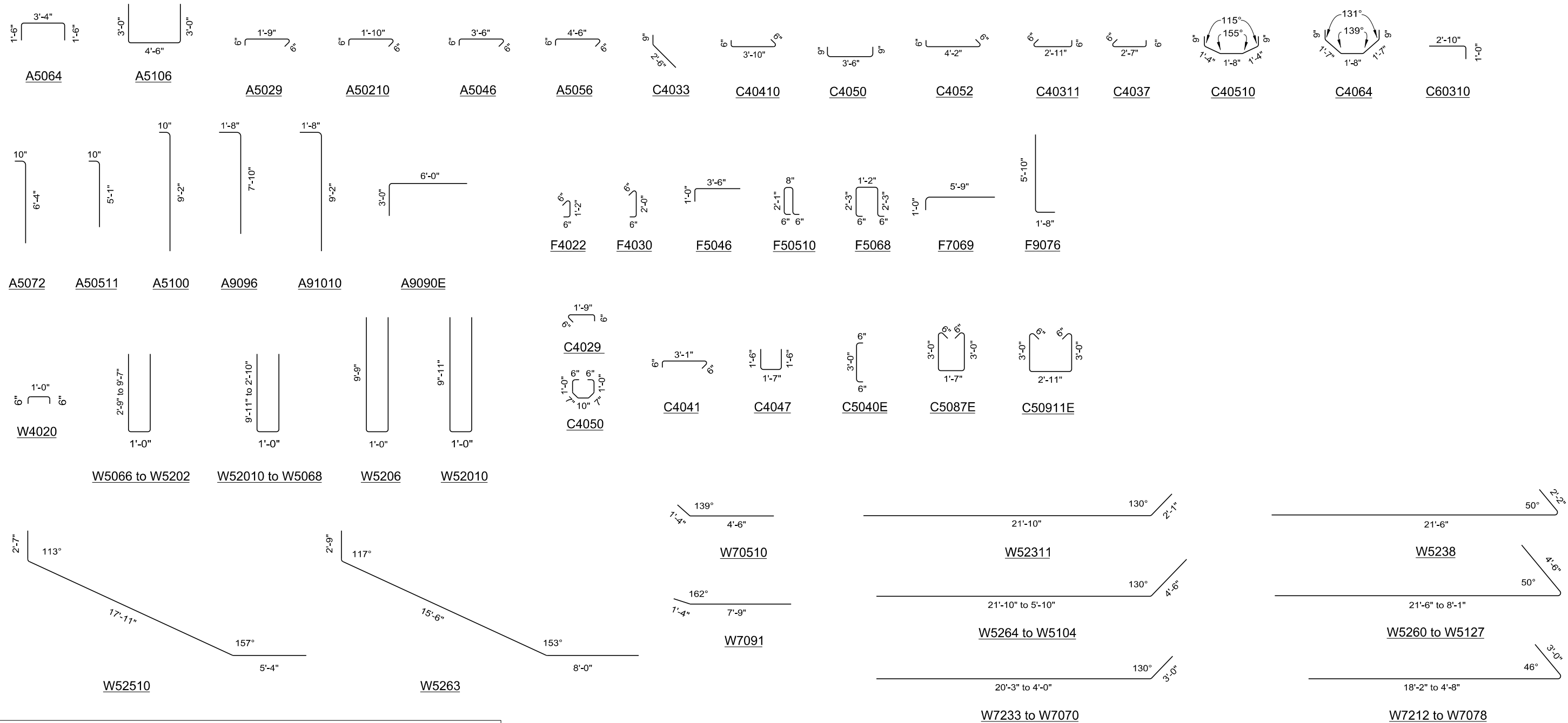
**CONCRETE SLOPE PAVING**

G-1748 S

**HDR**  
 HDR Engineering, Inc.

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 Reno, NV 89521-5917  
 PH: 775-337-4700 FAX: 775-337-4774

STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B484



12/20/2022

ORIGINAL CONTRACT: 2243  
 MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT

STATE OF NEVADA  
 DEPARTMENT OF TRANSPORTATION

**BENT BARS**  
 (1 OF 2)

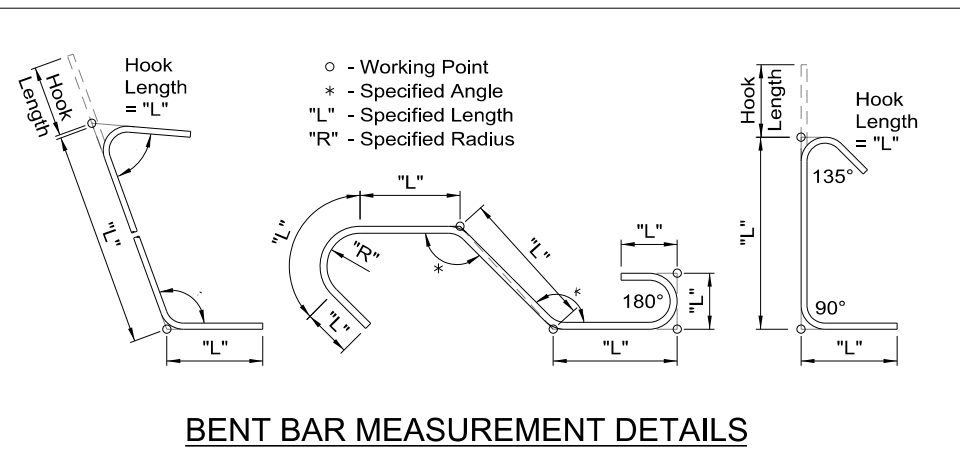
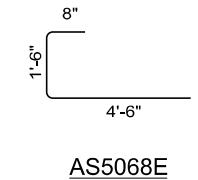
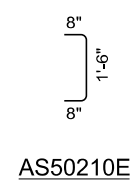
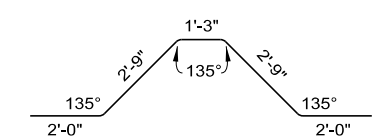
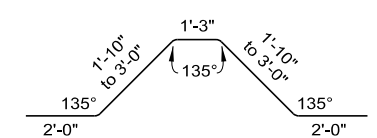
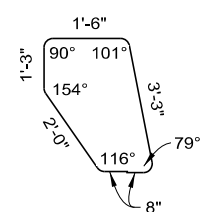
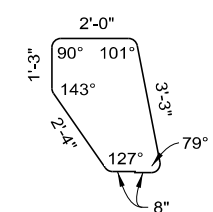
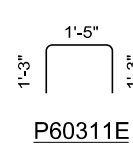
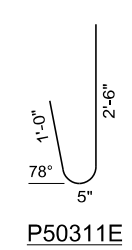
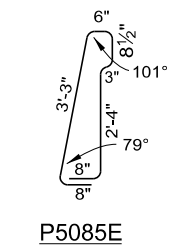
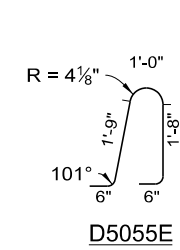
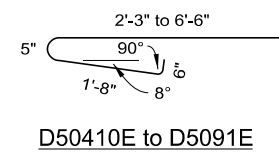
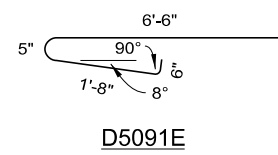
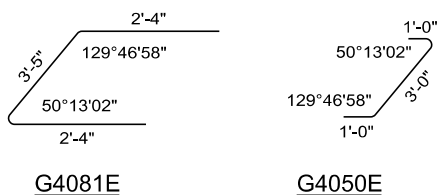
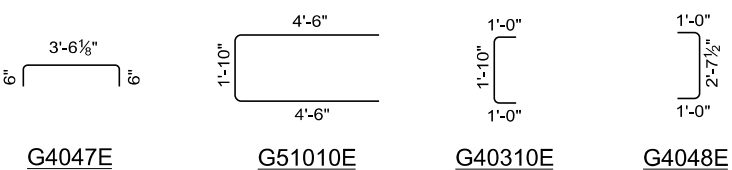
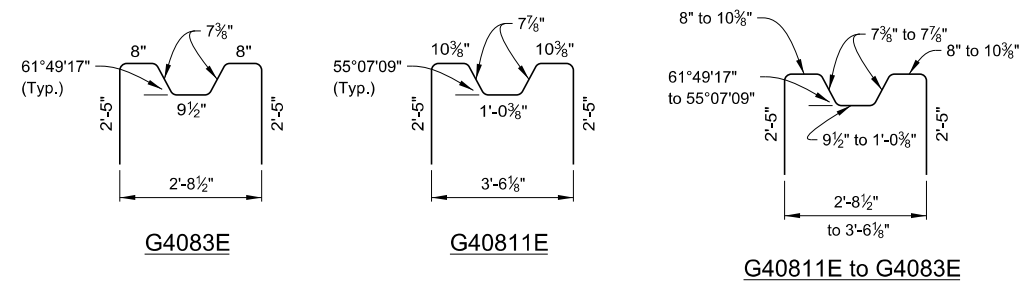
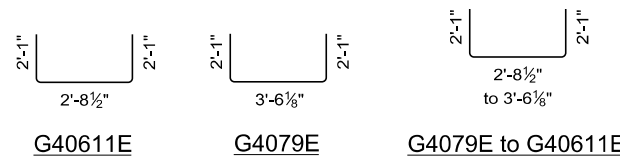
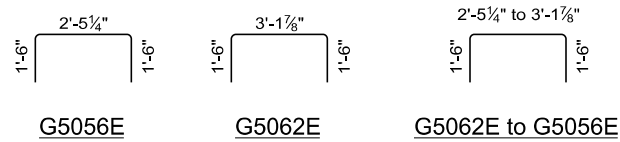
G-1748 S

**HDR**  
 HDR Engineering, Inc.

9805 Double R Boulevard, Suite 101  
 Reno, NV 89521-5917  
 PH: 775-337-4700 FAX: 775-337-4774



STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	B485



12/20/2022

ORIGINAL CONTRACT: 2243  
MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**BENT BARS**  
(2 OF 2)

G-1748 S

**HDR**  
HDR Engineering, Inc.

9805 Double R Boulevard, Suite 101  
Reno, NV 89521-5917  
PH: 775-337-4700 FAX: 775-337-4774



**ABUTMENT 1S & 2S FOOTING (each)**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
42211	4	22' - 11"	18	275.55 lb.
4068	4	6' - 8"	18	80.16 lb.
8068	8	6' - 8"	18	320.40 lb.
4088	4	8' - 8"	14	81.05 lb.
8088	8	8' - 8"	2	46.28 lb.
2 Set	40510	to 4010	6 Bars/Set	27.39 lb.
2 Set	80510	to 8010	6 Bars/Set	109.47 lb.
F 4022	4	2' - 2"	44	63.68 lb.
6022	D 6	2' - 2"	14	45.56 lb.
F 5068	5	6' - 8"	20	139.07 lb.
F 7069	7	6' - 9"	10	137.97 lb.
4147	4	14' - 7"	2	19.48 lb.
F 50510	5	5' - 10"	15	91.26 lb.
F 5046	5	4' - 6"	15	70.40 lb.

Reinforcing Steel 1,463 lb.  
 Reinforcing Steel (Doweled) 46 lb.  
 Class DA Concrete, Modified (Major)(Structures) 10.56 C.Y.

**ABUTMENT 1S & 2S WALL (each)**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
52611	5	26' - 11"	15	421.11 lb.
5202	5	20' - 2"	7	147.24 lb.
5035	5	3' - 5"	7	24.95 lb.
A 5064	5	6' - 4"	5	33.03 lb.
A 5106	5	10' - 6"	55	602.33 lb.
A 5046	5	4' - 6"	112	525.67 lb.
A 91010	9	10' - 10"	50	1,841.67 lb.
A 9096	9	9' - 6"	5	161.50 lb.
A 5072	5	7' - 2"	42	313.94 lb.
A 50511	5	5' - 11"	5	30.86 lb.
A 5100	5	10' - 0"	8	83.44 lb.
7060	E 7	6' - 0"	55	674.52 lb.

Reinforcing Steel 4,186 lb.  
 Reinforcing Steel (Epoxy Coated) 675 lb.  
 Class DA Concrete, Modified (Major)(Structures) 27.50 C.Y.

**ABUTMENT 1S & 2S DIAPHRAGM (each)**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
A 9090	E 9	9' - 0"	55	1,683.00 lb.
52611	5	26' - 11"	9	252.67 lb.
5022	5	2' - 2"	4	9.04 lb.
5010	5	1' - 0"	4	4.17 lb.
A 5056	5	5' - 6"	12	68.84 lb.
A 50210	5	2' - 10"	8	23.64 lb.
A 5029	5	2' - 9"	92	263.88 lb.

Reinforcing Steel 623 lb.  
 Reinforcing Steel (Epoxy Coated) 1,683 lb.  
 Class DA Concrete, Modified (Major)(Structures) 5.25 C.Y.

**ABUTMENT 1S WINGWALL 5**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
7219	7	21' - 9"	5	222.29 lb.
W 52311	5	23' - 11"	3	74.84 lb.
1 Set	W 7233	to W 7070	15 Bars/Set	463.73 lb.
1 Set	W 5264	to W 5104	8 Bars/Set	152.97 lb.
W 7091	7	9' - 1"	20	371.33 lb.
W 52510	5	25' - 10"	2	53.89 lb.
W 4020	4	2' - 0"	22	29.39 lb.
1 Set	W 5066	to W 5202	18 Bars/Set	250.32 lb.
W 5206	5	20' - 6"	4	85.53 lb.
5099	5	9' - 9"	3	30.51 lb.

Reinforcing Steel 1,735 lb.  
 Class DA Concrete, Modified (Major)(Structures) 9.54 C.Y.

**ABUTMENT 2S WINGWALL 6**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
7208	7	20' - 8"	5	211.21 lb.
W 5238	5	23' - 8"	3	74.05 lb.
1 Set	W 7212	to W 7078	15 Bars/Set	442.02 lb.
1 Set	W 5260	to W 5127	8 Bars/Set	160.97 lb.
W 70510	7	5' - 10"	21	250.39 lb.
W 5263	5	26' - 3"	2	54.76 lb.
W 4020	4	2' - 0"	20	26.72 lb.
1 Set	W 52010	to W 5068	16 Bars/Set	229.46 lb.
W 52010	5	20' - 10"	4	86.92 lb.
50911	5	9' - 11"	4	41.37 lb.

Reinforcing Steel 1,578 lb.  
 Class DA Concrete, Modified (Major)(Structures) 10.21 C.Y.

**PIER 1S & 2S WEST FOOTING (each)**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
50710	5	7' - 10"	44	359.49 lb.
100710	10	7' - 10"	14	471.90 lb.
5148	5	14' - 8"	9	137.68 lb.
8148	8	14' - 8"	17	665.72 lb.
F 4030	4	3' - 0"	30	60.12 lb.
F 9076	9	7' - 6"	10	255.00 lb.
9060	D 9	6' - 0"	3	61.20 lb.
6022	D 6	2' - 2"	28	91.12 lb.

Reinforcing Steel 1,950 lb.  
 Reinforcing Steel (Doweled) 153 lb.  
 Class DA Concrete, Modified (Major)(Structures) 11.37 C.Y.

**PIER 1S & 2S EAST FOOTING (each)**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
5374	5	37' - 4"	30	1,168.16 lb.
5100	5	10' - 0"	14	146.02 lb.
10100	10	10' - 0"	14	602.42 lb.
5148	5	14' - 8"	38	581.30 lb.
8148	8	14' - 8"	75	2,937.00 lb.
F 4030	4	3' - 0"	84	168.34 lb.
F 9076	9	7' - 6"	30	765.00 lb.
9060	D 9	6' - 0"	3	61.20 lb.
6022	D 6	2' - 2"	28	91.12 lb.

Reinforcing Steel 6,369 lb.  
 Reinforcing Steel (Doweled) 153 lb.  
 Class DA Concrete, Modified (Major)(Structures) 52.31 C.Y.

**PIER 1S & 2S WEST WALL (each)**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
C 4050	4	5' - 0"	57	190.38 lb.
C 4029	4	2' - 9"	55	101.04 lb.
C 4047	4	4' - 7"	11	33.68 lb.
2 Set	4046	to 4110	53 Bars/Set	548.76 lb.
2 Set	40110	to 40310	3 Bars/Set	11.36 lb.
62811	6	28' - 11"	4	173.73 lb.
2 Set	7283	to 7269	4 Bars/Set	449.68 lb.
2 Set	5266	to 5025	7 Bars/Set	211.12 lb.
4269	4	26' - 9"	2	35.74 lb.
5022	D 5	2' - 2"	50	112.99 lb.
7040	D 7	4' - 0"	8	65.41 lb.

Reinforcing Steel 1,756 lb.  
 Reinforcing Steel (Doweled) 179 lb.  
 Class DA Concrete, Modified (Major)(Structures) 16.77 C.Y.

**PIER 1S & 2S EAST WALL (each)**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
C 4050	4	5' - 0"	57	190.38 lb.
C 4029	4	2' - 9"	652	1,197.72 lb.
C 4047	4	4' - 7"	39	119.41 lb.
2 Set	4406	to 4337	55 Bars/Set	2,721.82 lb.
4304	4	30' - 4"	2	40.53 lb.
4314	4	31' - 4"	2	41.86 lb.
4323	4	32' - 3"	2	43.09 lb.
4328	4	32' - 8"	2	43.64 lb.
43211	4	32' - 11"	2	43.98 lb.
62910	6	29' - 10"	4	179.24 lb.
73210	7	32' - 10"	46	3,087.12 lb.
6206	6	20' - 6"	50	1,539.55 lb.
7206	7	20' - 6"	12	502.82 lb.
7146	7	14' - 6"	12	355.66 lb.
2 Set	7299	to 7273	6 Bars/Set	699.05 lb.
2 Set	5264	to 5064	6 Bars/Set	204.43 lb.
4279	4	27' - 9"	2	37.07 lb.
5022	D 5	2' - 2"	52	117.51 lb.
7040	D 7	4' - 0"	12	98.11 lb.
6250	6	25' - 0"	1	37.55 lb.
4250	4	25' - 0"	1	16.70 lb.
4240	4	24' - 0"	1	16.03 lb.
6276	6	27' - 6"	1	41.31 lb.
4276	4	27' - 6"	1	18.37 lb.
4266	4	26' - 6"	1	17.70 lb.
C 60310	6	3' - 10"	5	28.79 lb.
C 4033	4	3' - 3"	60	130.26 lb.
C 40311	4	3' - 11"	6	15.70 lb.
C 4037	4	3' - 7"	3	7.18 lb.
6042	6	4' - 2"	54	337.95 lb.
C 4052	4	5' - 2"	56	193.27 lb.
C 40410	4	4' - 10"	28	90.40 lb.
6036	6	3' - 6"	1	5.26 lb.
C 4050	4	5' - 0"	1	3.34 lb.
C 40510	4	5' - 10"	1	3.90 lb.
C 4064	4	6' - 4"	1	4.23 lb.

Reinforcing Steel 12,016 lb.  
 Reinforcing Steel (Doweled) 216 lb.  
 Class DA Concrete, Modified (Major)(Structures) 87.48 C.Y.

**PIER 1S & 2S DIAPHRAGM (each)**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
C 5040	E 5	4' - 0"	2	8.34 lb.
C 5087	E 5	8' - 7"	49	438.67 lb.
C 4029	4	2' - 9"	294	540.08 lb.
C 50911	E 5	9' - 11"	1	10.34 lb.
C 4041	4	4' - 1"	6	16.37 lb.
5250	E 5	25' - 0"	2	52.15 lb.
2 Set	5260	to 5250	7 Bars/Set	372.35 lb.

Reinforcing Steel 929 lb.  
 Reinforcing Steel (Epoxy Coated) 510 lb.  
 Class EA Concrete, Modified (Major) 5.80 C.Y.



12/20/2022

ORIGINAL CONTRACT: 2243  
 MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT

STATE OF NEVADA  
 DEPARTMENT OF TRANSPORTATION

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**BILL OF MATERIALS**  
 (1 OF 2)

G-1748 S

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**HDR** 9805 Double R Boulevard, Suite 101  
 Reno, NV 89521-5917  
 PH: 775-337-4700 FAX: 775-337-4774

**DECK**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
5446	E	5	44' - 6"	1,949.37 lb.
8300	E	8	30' - 0"	3,364.20 lb.
8600	E	8	60' - 0"	6,408.00 lb.
5500	E	5	50' - 0"	1,095.15 lb.
6250	E	6	25' - 0"	37.55 lb.
6260	E	6	26' - 0"	39.05 lb.
6267	E	6	26' - 7"	479.14 lb.
1 Set	5023	E	to 5197	32 Bars/Set 364.35 lb.
5215	E	5	21' - 5"	337 7,527.77 lb.
1 Set	5193	E	to 5014	31 Bars/Set 332.76 lb.
5050	E	5	5' - 0"	353 1,840.90 lb.
5150	E	5	15' - 0"	4 62.58 lb.
5600	E	5	60' - 0"	12 750.96 lb.
1 Set	D 50410	E	to D 5091	9 Bars/Set 65.32 lb.
D 5091	E	5	9' - 1"	238 2,254.79 lb.
D 5055	E	5	5' - 5"	249 1,406.75 lb.
Reinforcing Steel (Epoxy Coated)				27,979 lb.
Class EA Concrete, Modified (Major)				134.67 C.Y.

**DECK CLOSURE POUR**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
5446	E	5	44' - 6"	278.48 lb.
5246	E	5	24' - 6"	153.32 lb.
8300	E	8	30' - 0"	160.20 lb.
8600	E	8	60' - 0"	640.80 lb.
5300	E	5	30' - 0"	219.03 lb.
5600	E	5	60' - 0"	125.16 lb.
5500	E	5	50' - 0"	156.45 lb.
Reinforcing Steel (Epoxy Coated)				1,734 lb.
Class EA Concrete, Modified (Major)				11.96 C.Y.

**ABUTMENT 1S APPROACH SLAB**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
AS 50210	E	5	2' - 10"	230.50 lb.
AS 5068	E	5	6' - 8"	542.36 lb.
1 Set	7231	E	to 74211	52 Bars/Set 3,507.50 lb.
1 Set	4231	E	to 44211	26 Bars/Set 573.14 lb.
4432	E	4	43' - 2"	2 57.67 lb.
7232	E	7	23' - 2"	3 142.06 lb.
7240	E	7	24' - 0"	4 196.22 lb.
2 Set	7233	E	to 73211	26 Bars/Set 2,984.92 lb.
2 Set	4233	E	to 43211	13 Bars/Set 487.75 lb.
1 Set	7246	E	to 7442	52 Bars/Set 3,649.22 lb.
1 Set	4246	E	to 4442	26 Bars/Set 596.30 lb.
5252	E	5	25' - 2"	8 209.99 lb.
4252	E	4	25' - 2"	108 1,815.62 lb.
42311	E	4	23' - 11"	1 15.98 lb.
1 Set	4246	E	to 4226	4 Bars/Set 62.79 lb.
1 Set	4205	E	to 4016	34 Bars/Set 248.89 lb.
1 Set	4229	E	to 4026	18 Bars/Set 151.80 lb.
4328	E	4	32' - 8"	10 218.21 lb.
4311	E	4	31' - 1"	2 41.53 lb.
5118	E	5	11' - 8"	8 97.35 lb.
4118	E	4	11' - 8"	144 1,122.24 lb.
4152	E	4	15' - 2"	12 121.58 lb.
2 Set	4105	E	to 4016	9 Bars/Set 71.64 lb.
2 Set	4110	E	to 4016	17 Bars/Set 141.95 lb.
4238	E	4	23' - 8"	40 632.37 lb.
1 Set	4226	E	to 4016	19 Bars/Set 152.30 lb.
1 Set	4232	E	to 4016	37 Bars/Set 304.83 lb.
4245	E	4	24' - 5"	2 32.62 lb.
7245	E	7	24' - 5"	4 199.63 lb.
4033	E	4	3' - 3"	72 156.31 lb.
5070	E	5	7' - 0"	126 919.93 lb.
1 Set	5070	E	to 5026	9 Bars/Set 44.59 lb.
4050	E	4	5' - 0"	198 661.32 lb.
D 5055	E	5	5' - 5"	89 502.81 lb.
Reinforcing Steel (Epoxy Coated)				20,894 lb.
Class EA Concrete, Modified (Major)				106.37 C.Y.

**ABUTMENT 2S APPROACH SLAB**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
AS 50210	E	5	2' - 10"	230.50 lb.
AS 5068	E	5	6' - 8"	542.36 lb.
1 Set	7246	E	to 7422	52 Bars/Set 3,542.93 lb.
1 Set	4246	E	to 4442	26 Bars/Set 596.30 lb.
4245	E	4	24' - 5"	2 32.62 lb.
7245	E	7	24' - 5"	4 199.63 lb.
2 Set	7233	E	to 73211	26 Bars/Set 2,984.92 lb.
2 Set	4233	E	to 43211	13 Bars/Set 487.75 lb.
1 Set	7231	E	to 74211	52 Bars/Set 3,507.50 lb.
1 Set	4231	E	to 44211	26 Bars/Set 573.14 lb.
5252	E	5	25' - 2"	8 209.99 lb.
4252	E	4	25' - 2"	108 1,815.62 lb.
42311	E	4	23' - 11"	1 15.98 lb.
1 Set	4246	E	to 4226	4 Bars/Set 62.79 lb.
1 Set	4205	E	to 4016	34 Bars/Set 248.89 lb.
1 Set	4229	E	to 4026	18 Bars/Set 151.80 lb.
4328	E	4	32' - 8"	10 218.21 lb.
5118	E	5	11' - 8"	8 97.35 lb.
4118	E	4	11' - 8"	144 1,122.24 lb.
4152	E	4	15' - 2"	12 121.58 lb.
2 Set	4105	E	to 4016	9 Bars/Set 71.64 lb.
2 Set	4110	E	to 4016	17 Bars/Set 141.95 lb.
4238	E	4	23' - 8"	40 632.37 lb.
1 Set	4226	E	to 4016	19 Bars/Set 152.30 lb.
1 Set	4232	E	to 4016	37 Bars/Set 304.83 lb.
4311	E	4	31' - 1"	2 41.53 lb.
4432	E	4	43' - 2"	2 57.67 lb.
7232	E	7	23' - 2"	3 142.06 lb.
7240	E	7	24' - 0"	4 196.22 lb.
4033	E	4	3' - 3"	72 156.31 lb.
5070	E	5	7' - 0"	126 919.93 lb.
1 Set	5070	E	to 5026	9 Bars/Set 44.59 lb.
4050	E	4	5' - 0"	198 661.32 lb.
D 5055	E	5	5' - 5"	89 502.81 lb.
Reinforcing Steel (Epoxy Coated)				20,788 lb.
Class EA Concrete, Modified (Major)				106.37 C.Y.

**BARRIER RAIL WEST REPLACEMENT**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
4432	E	4	43' - 2"	10 288.35 lb.
4245	E	4	24' - 5"	10 163.10 lb.
4268	E	4	26' - 8"	8 142.51 lb.
4270	E	4	27' - 0"	16 288.58 lb.
4291	E	4	29' - 1"	8 155.42 lb.
4360	E	4	36' - 0"	16 384.77 lb.
4600	E	4	60' - 0"	6 240.48 lb.
4099	E	4	9' - 9"	2 13.03 lb.
P 5085	E	5	8' - 5"	277 2,431.67 lb.
P 50311	E	5	3' - 11"	181 739.40 lb.
5030	E	5	3' - 0"	2 6.26 lb.
P 60311	E	6	3' - 11"	4 23.53 lb.
P 5102	E	5	10' - 2"	4 42.42 lb.
P 5094	E	5	9' - 4"	2 19.47 lb.
P 5109	E	5	10' - 9"	1 11.21 lb.
1 Set	P 50811	E	to P 5113	3 Bars/Set 31.55 lb.
Reinforcing Steel (Epoxy Coated)				4,982 lb.
Class EA Concrete, Modified (Major)				32.16 C.Y.

**BARRIER RAIL EAST**

BAR MARK	SIZE	LENGTH	NO. BARS	WEIGHT
4432	E	4	43' - 2"	10 288.35 lb.
4245	E	4	24' - 5"	10 163.10 lb.
42610	E	4	26' - 10"	16 286.79 lb.
4281	E	4	28' - 1"	16 300.15 lb.
4360	E	4	36' - 0"	16 384.77 lb.
4600	E	4	60' - 0"	6 240.48 lb.
4099	E	4	9' - 9"	2 13.03 lb.
P 5085	E	5	8' - 5"	338 2,967.16 lb.
Reinforcing Steel (Epoxy Coated)				4,644 lb.
Class EA Concrete, Modified (Major)				32.16 C.Y.

Totals	Quantity	Unit
Reinforcing Steel	61,897.00	lb.
Reinforcing Steel (Doweled)	1,494.00	lb.
Reinforcing Steel (Epoxy Coated)	86,757.00	lb.
Class DA Concrete, Modified (Major)(Structures)	442.23	C.Y.
Class EA Concrete, Modified (Major)	435.29	C.Y.



12/20/2022

ORIGINAL CONTRACT: 2243  
 MODIFIED CONTRACT: 2983, DIST. 2 CONTRACT

STATE OF NEVADA  
 DEPARTMENT OF TRANSPORTATION

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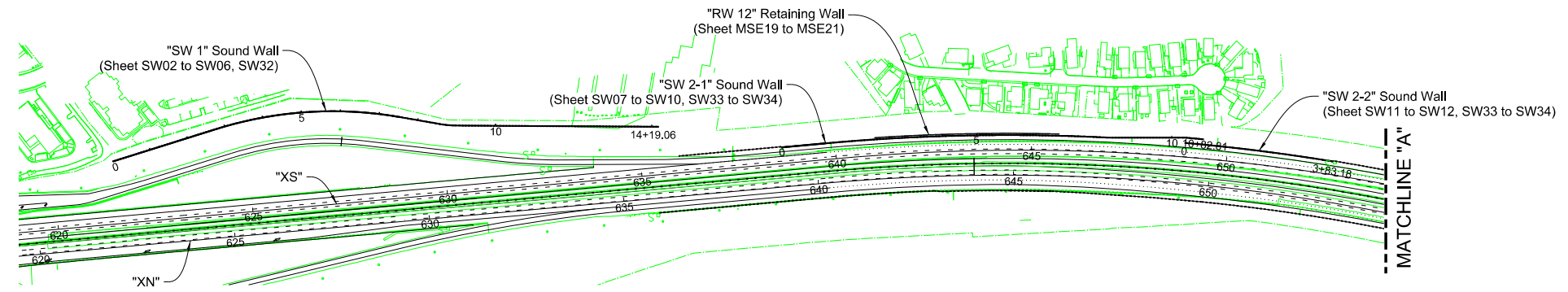
**BILL OF MATERIALS**  
 (2 OF 2)

G-1748 S

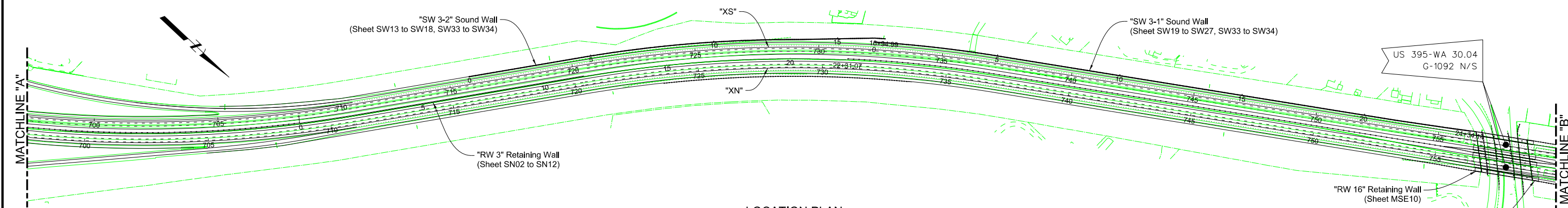
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**HDR** 9805 Double R Boulevard, Suite 101  
 Reno, NV 89521-5917  
 HDR Engineering, Inc. PH: 775-337-4700 FAX: 775-337-4774

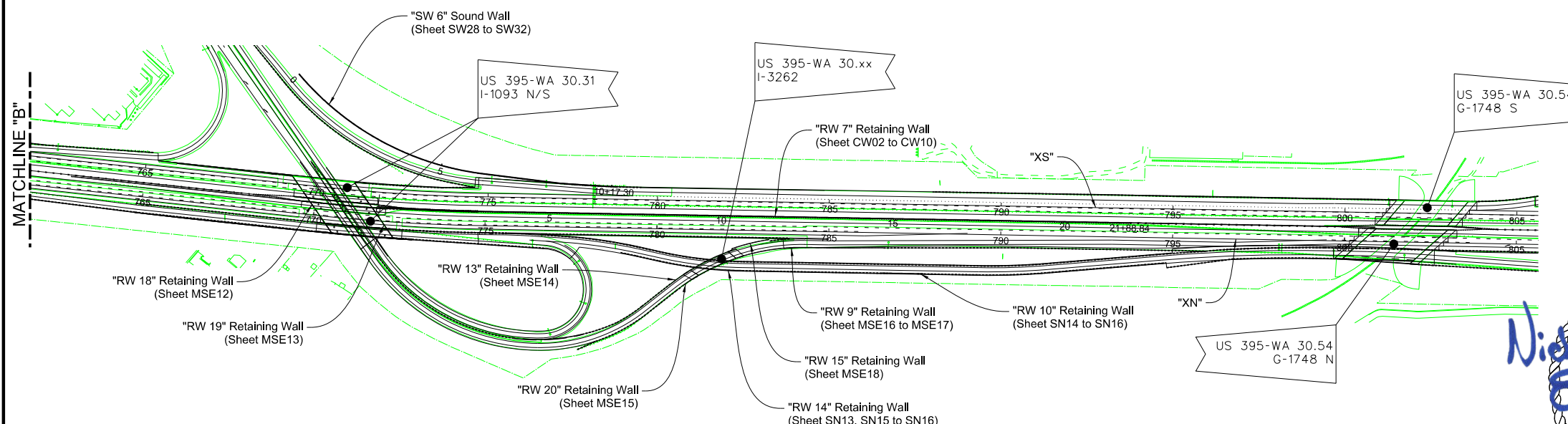
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	MSE01



LOCATION PLAN



LOCATION PLAN



LOCATION PLAN



12/20/2022

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**WALL LOCATION PLAN**

**HDR**  
HDR Engineering, Inc.

9805 Double R Boulevard, Suite 101  
Reno, NV 89521-5917  
PH: 775-337-4700 FAX: 775-337-4774

## GENERAL NOTES (MSE WALLS)

- Design Specifications: AASHTO "LRFD Bridge Design Specifications" Eighth Edition 2017.
- Construction Specifications: State of Nevada Department of Transportation "Standard Specifications For Road And Bridge Construction, 2014" except as noted below and in the Special Provisions of this Contract.
- Live Load: On MSE Walls, Live Load Surcharge pressure equal to 2 ft of earth.
- Seismic Load: PGA Coefficient = 0.50g, Site Class C Soil Profile (Seismic Zone 4).
- Concrete: All concrete shall be Class DA Modified (Major) with an ultimate compressive strength  $f_c = 4,500$  psi at 28 Days. Only Type V Cement shall be used for concrete in contact with soil.
- Reinforcing Steel: All reinforcing steel to be ASTM A615 Grade 60. Dimensions relating to bar spacing are center to center. Bending dimensions are from out to out of the bars. Bar sizes three (3) to nine (9) are indicated by the first number of the mark; ten (10) or larger by the first two numbers. Bar marks with a letter prefix indicate a bent bar. Bar marks ending with either the letter "E" or "ED" indicate that the bar shall be epoxy coated the length of the bar. Sizes four (4) and five (5), when considered as bars to control temperature, shrinkage, and distribution stresses by the Engineer, may be adjusted upon concurrence and approval of the Engineer.
- Barrier Rail: Designed for TL-4.
- Wall Panel: Panel layout and panel geometry shown are for bidding purposes only. The Contractor shall submit panel layout and panel geometry based on their proposed panel details and be subject to approval by the Engineer. Maximum panel size shall not exceed 50 sq. ft. per panel.
- Drainage: The Contractor shall be responsible for appropriate drainage behind the wall as required by the Contractor's internal design of the walls. No direct payment shall be made for the drainage portion of the work.
- Coping Slab and Barrier Rail: Cost of the coping slab and barrier rail concrete will be paid under Bid Item 502 0990 "Class DA Modified (Major)". Coping slab and barrier rail reinforcing will be paid under Bid Item 505 0120 "Reinforcing Steel (Epoxy Coated)".
- Leveling Pad: Contractor shall consider and be responsible for the design of the leveling pads as required by the Contractor's internal design of the walls. No direct payment shall be made for construction of the leveling pads.
- Incidental Items: All items shown or noted on the plans which are not specifically bid items are considered to be incidental items. No direct payment shall be made for the cost of furnishing and installing all such items, unless noted otherwise.
- For aesthetic treatments to MSE walls, see Landscape Improvement Plans. Finishes to extend one foot below Finish Grade. Aesthetic patterning detailed in the Landscape Improvement Plans shall be included and accommodated in the MSE shop drawings.
- Hydraulics: For details related to adjacent drop inlets and site drainage pipes, including wall penetration details, see Hydraulic Plans. Refer to Standard Specification Section 642.01.02 for more requirements.
- The Contractor shall provide details in the MSE shop drawings for any adjustments necessary to the soil reinforcement to avoid obstructions including drilled shaft foundations.
- Profile grade elevations noted taken at top of riding surface unless noted otherwise.
- All utility locations are approximate and are for coordination purposes only. All utilities are to be field located prior to start of construction and protected in place unless noted otherwise in plans.

## MSE WALL GEOTECHNICAL DESIGN DATA

MSE Walls are designed based on the properties summarized below per the following Geotechnical Reports:  
 "Geotechnical Design Report, US-395 G-1092 and I-1093 MSE Abutment Walls, Washoe County, Nevada" (Nevada Department of Transportation)  
 "I-3262 MSE Wall" (Design Memo, NewFields)  
 "Geotechnical Design Report, US-395 North Valleys, Washoe County, Nevada" (HDR)

**MSE Backfill:**  
 Internal Angle of Friction = 34°  
 Cohesion = 0 psf  
 Unit Weight = 135 pcf

**Foundation Properties for Walls in Fill:**  
 Internal Angle of Friction = 34°  
 Cohesion = 0 psf  
 Unit Weight = 125 pcf

**Foundation Properties for Walls in Native Soil:**  
 See Geotechnical Report

**External Design Parameters:**  
 See Geotechnical Report

## MSE WALL SEQUENCE OF CONSTRUCTION NOTES

- Prepare foundation for construction of Leveling Pad and placement of initial panel course.
- Construct Leveling Pad.
- Place panel course joint materials.
- Place MSE panels.
- Place approved backfill up to the bottom row of panel tie strips.
- Place Soil Reinforcement.
- Repeat steps 3 to 6 as appropriate to top wall elevation.
- Construct concrete barrier rail and coping slab as shown on the plans.

## SHEET INDEX

SHEET	DESCRIPTION
MSE01	MSE Wall Location
MSE02	MSE Wall General Notes and Quantities
MSE03	MSE Wall Details - 1 of 4
MSE04	MSE Wall Details - 2 of 4
MSE05	MSE Wall Details - 3 of 4
MSE06	MSE Wall Details - 4 of 4
MSE07	Pedestrian Rail
MSE08	MSE Wall Phasing Plan (1 of 2)
MSE09	MSE Wall Phasing Plan (2 of 2)
MSE10	MSE Wall "RW16" Plan and Elevation
MSE11	MSE Wall "RW17" Plan and Elevation
MSE12	MSE Wall "RW18" Plan and Elevation
MSE13	MSE Wall "RW19" Plan and Elevation
MSE14	MSE Wall "RW13" Plan and Elevation
MSE15	MSE Wall "RW20" Plan and Elevation
MSE16	MSE Wall "RW9" Plan and Elevation (1 of 2)
MSE17	MSE Wall "RW9" Plan and Elevation (2 of 2)
MSE18	MSE Wall "RW15" Plan and Elevation

## STANDARD BAR LAPS

Bar Size	Uncoated (in)	Epoxy Coated (in)
#4	20	24
#5	24	30
#6	30	34
#7	38	45
#8	48	57
#9	60	72
#10	74	88
#11	90	108

## QUANTITIES - MSE WALLS

ITEM NO.	ITEM DESCRIPTION	UNIT	RW16	RW17	RW18	RW19
202 0125	REMOVAL OF PORTION OF BRIDGE	LS	1	1	1	1
206 0110	STRUCTURE EXCAVATION	CU YD	6,568	7,084	5,521	8,423
207 0110	GRANULAR BACKFILL	CU YD	563	502	581	394
502 0990	CLASS DA CONCRETE, MODIFIED (MAJOR)	CU YD	2	2	2	2
505 0120	REINFORCING STEEL (EPOXY COATED)	POUND	68	68	84	90
506 0820	PEDESTRIAN RAIL, TYPE "X"	LINFT	10	10	12	13
642 0100	CONCRETE PANEL WALL	SQ FT	5,106	5,373	5,369	6,370
642 0110	MECHANICALLY STABILIZED EARTH BACKFILL	CU YD	3,607	3,975	3,528	4,874

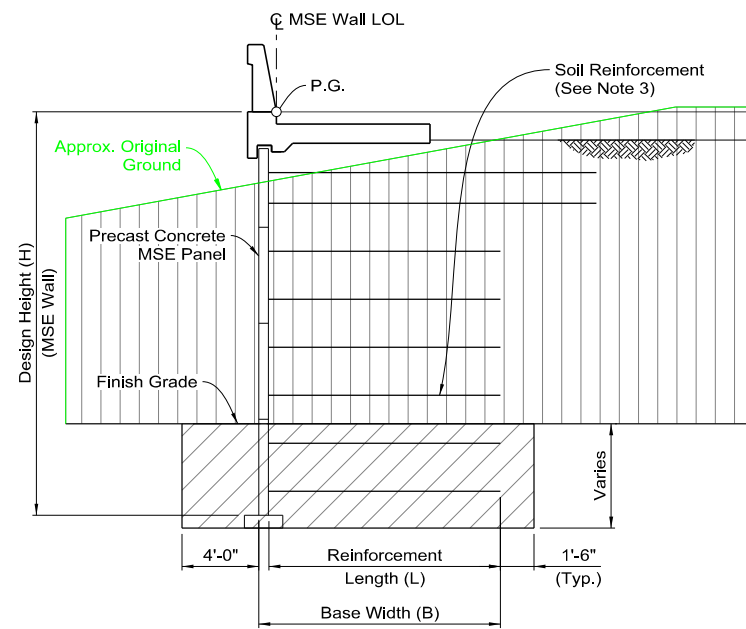
ITEM NO.	ITEM DESCRIPTION	UNIT	RW13	RW20	RW9	RW15	RW12	TOTAL
202 0125	REMOVAL OF PORTION OF BRIDGE	LS	0	0	0	0	0	1
206 0110	STRUCTURE EXCAVATION	CU YD	315	115	2847	353	2,243	33,469
207 0110	GRANULAR BACKFILL	CU YD	63	52	367	101	263	2,886
502 0990	CLASS DA CONCRETE, MODIFIED (MAJOR)	CU YD	29	21	227	12	0	297
505 0120	REINFORCING STEEL (EPOXY COATED)	POUND	3422	2525	27121	733	0	34,111
506 0820	PEDESTRIAN RAIL, TYPE "X"	LINFT	0	0	0	116	0	161
642 0100	CONCRETE PANEL WALL	SQ FT	940	568	4779	1118	5,550	35,173
642 0110	MECHANICALLY STABILIZED EARTH BACKFILL	CU YD	511	220	2683	518	2,825	22,741

## ABBREVIATIONS

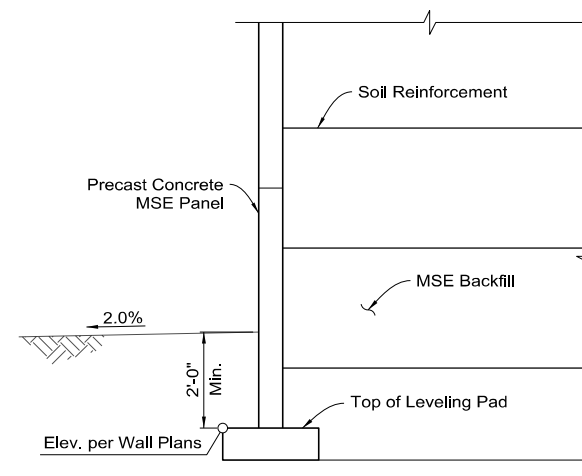
Alt.	Alternate
Brg.	Bearing
Bot.	Bottom
C.G.	Center of Gravity
C.G.S.	Center of Gravity of Steel
Clr.	Clear
CMP	Corrugated Metal Pipe
Col.	Column
Const. Jt.	Construction Joint
Dbl.	Double
Dia.	Diameter
Dim.	Dimension
Ea.	Each
E.F.	Each Face
Elev.	Elevation
EQ. Spa.	Equal Space
E.S.	Each Side
Exp.	Expansion
Ext.	Existing/Exterior
E.W.	Each Way
F.F.	Far Face
Fix.	Fixed
Galv.	Galvanized
I.D.	Inner Diameter
Int.	Interior/Intermediate
Jt.	Joint
LOL	Layout Line
Max.	Maximum
Min.	Minimum
N.F.	Near Face
O.D.	Outer Diameter
Opt.	Optional
P.G.	Profile Grade
Ped.	Pedestrian
Pr.	Pair
P.S.	Prestressing
PT	Post-Tensioning
Sect.	Section
Shld.	Shoulder
Spa.	Space
Spa. Var.	Spacing Varies
Sq.	Square
Typ.	Typical

STATE OF NEVADA  
 DEPARTMENT OF TRANSPORTATION  
**MSE WALL  
 GENERAL NOTES AND  
 QUANTITIES**

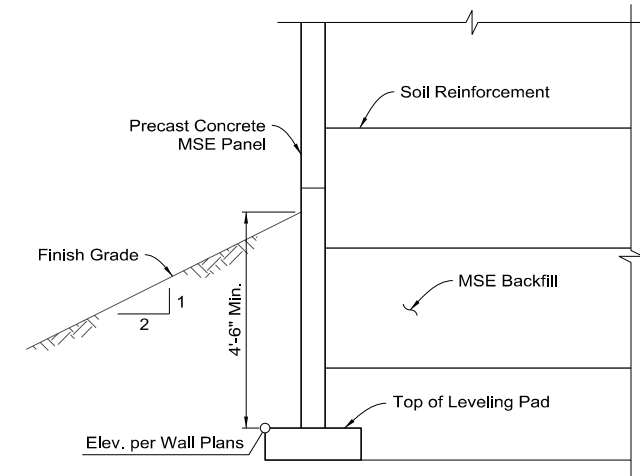
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	MSE03



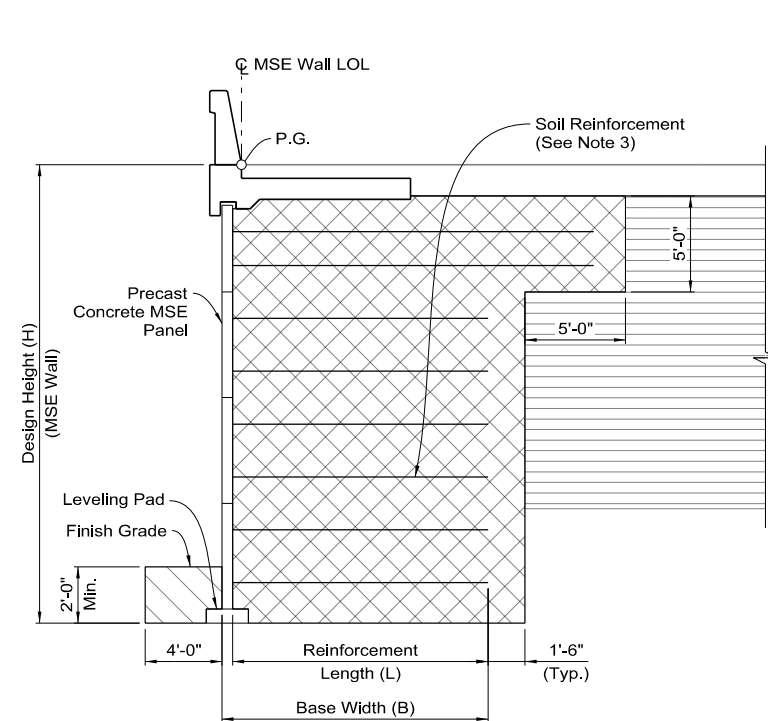
**EXCAVATION SCHEMATIC**  
RW13, RW15, RW20, RW9



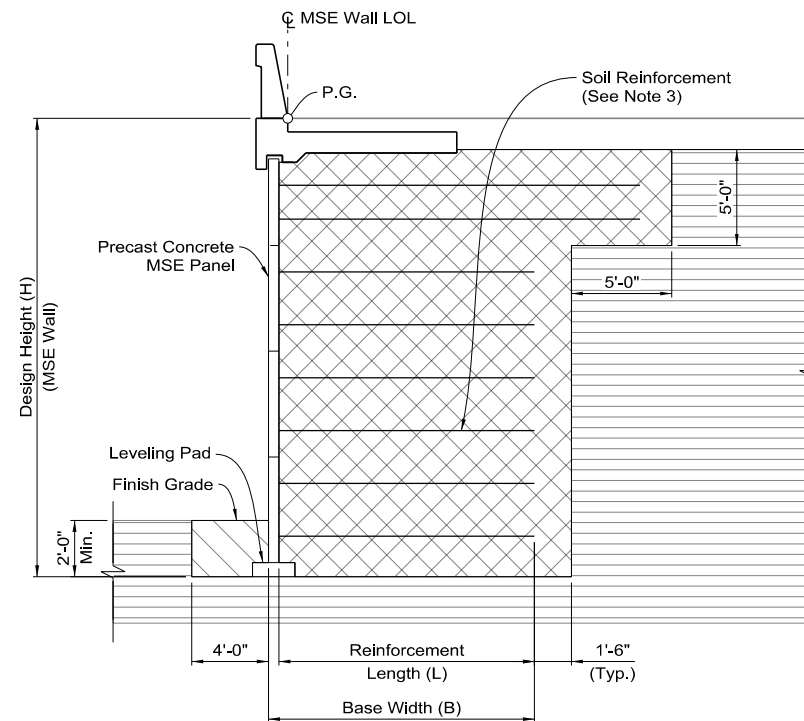
**TYPICAL GRADING DETAIL "A"**



**TYPICAL GRADING DETAIL "B"**  
SLOPING TOE CONDITION








**BACKFILL SCHEMATIC**  
IN NATIVE SOILS  
RW13, RW15, RW20, RW9, RW12



**BACKFILL SCHEMATIC**  
IN FILL  
RW13, RW15, RW20, RW9

**LEGEND**

-  Limits of Structure Excavation
-  Limits of Mechanically Stabilized Earth Backfill
-  Limits of Granular Backfill
-  Limits of Borrow Embankment
-  Limits of Roadway Excavation

**NOTES**

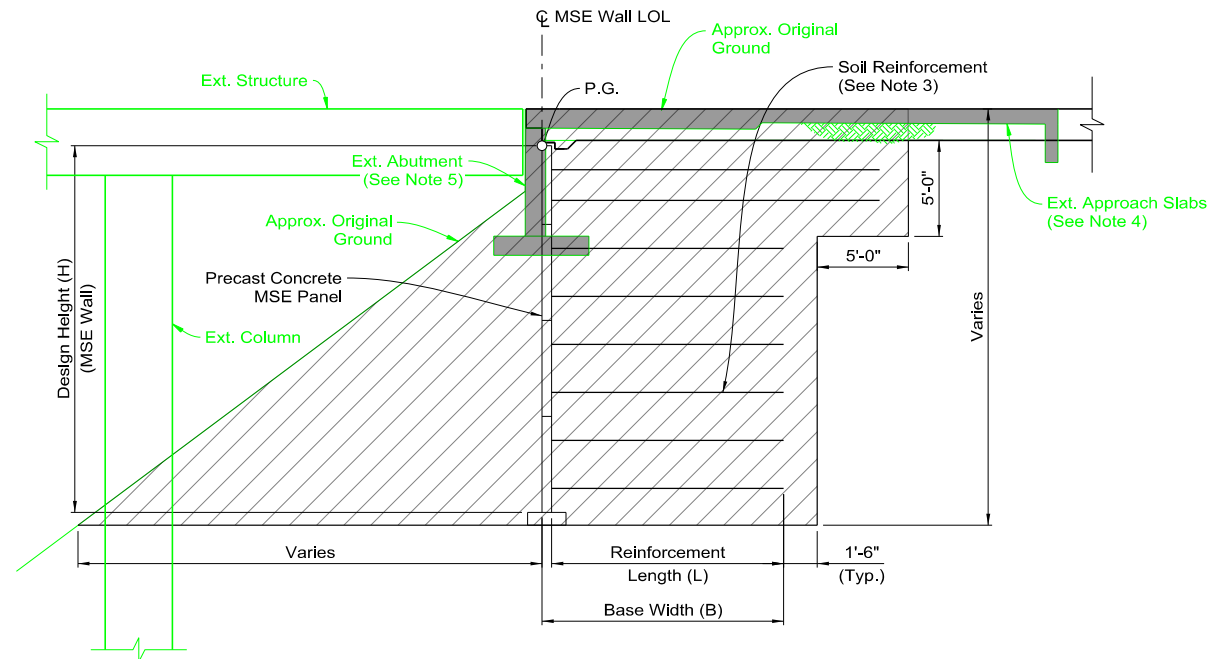
1. The limits of structure excavation and backfill shown herein shall be used for the method of measurement and payment only. There shall be no additional compensation for any additional excavation and backfill required for excavations to meet OSHA regulations.
2. MSE backfill limits shown herein is for external wall design requirements. See Standard Specifications Section 642.04.01.
3. Top two layers of soil reinforcement shall be a minimum of 5'-0" longer than all other layers below per Standard Specifications Section 642.01.02.

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

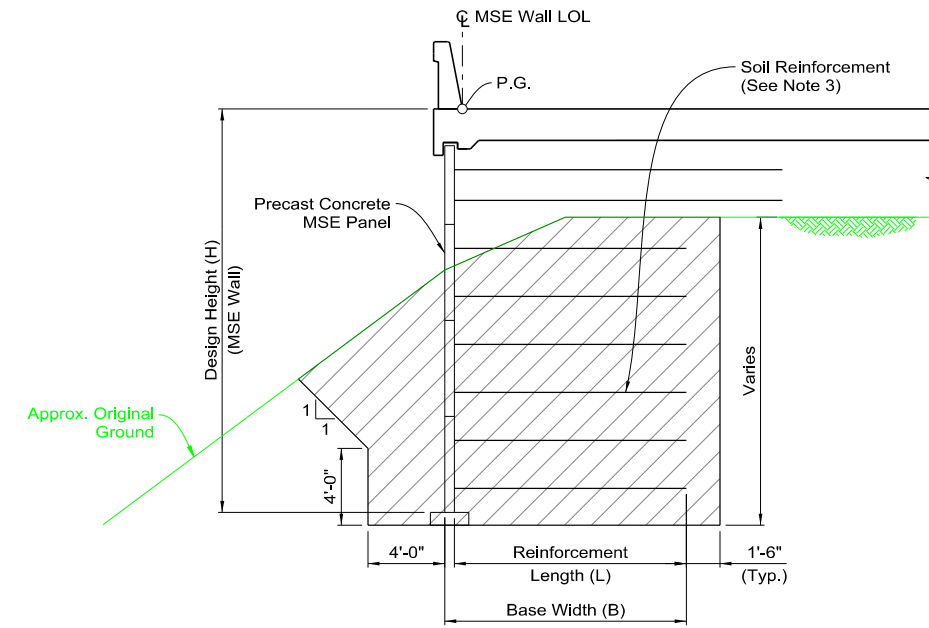
**MSE WALL  
DETAILS**

DATE : 1/26/2023

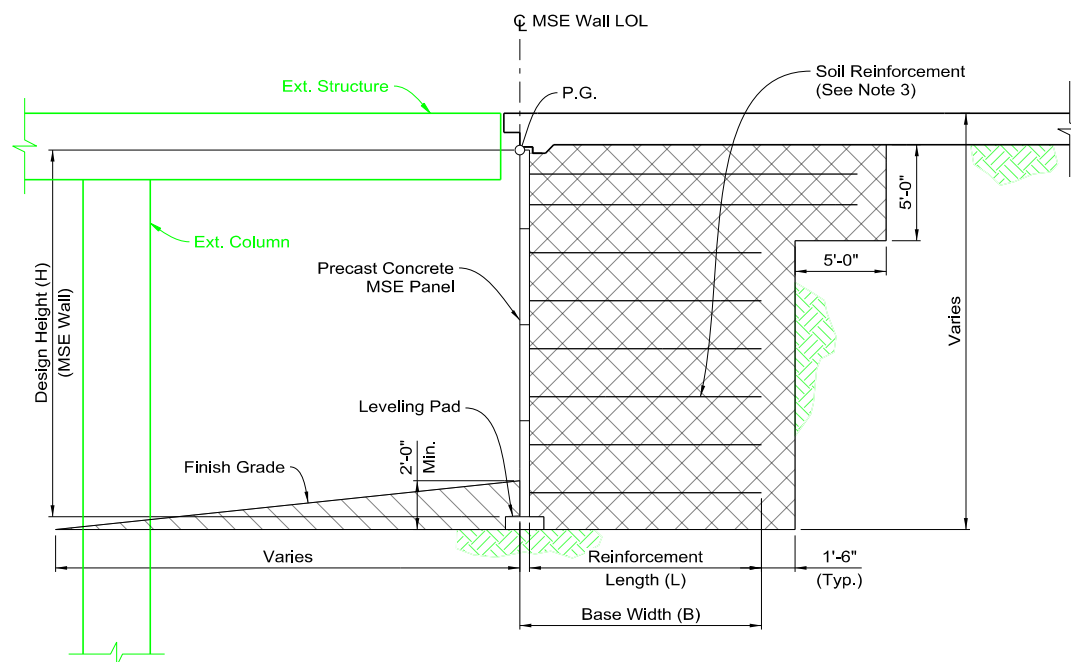




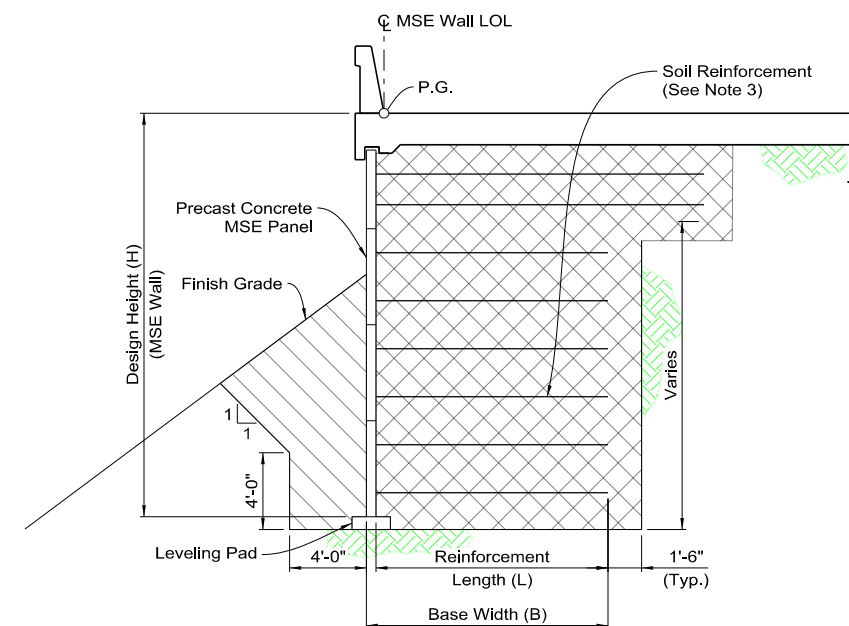
**EXCAVATION SCHEMATIC**  
RW16, RW17, RW18, RW19  
REGION A\*



**EXCAVATION SCHEMATIC**  
RW16, RW17, RW18, RW19  
REGION B\*



**BACKFILL SCHEMATIC A**  
RW16, RW17, RW18, RW19  
REGION A\*



**BACKFILL SCHEMATIC B**  
RW16, RW17, RW18, RW19  
REGION B\*

**LEGEND**

- Limits of Structure Excavation
- Limits of Mechanically Stabilized Earth Backfill
- Limits of Granular Backfill
- Existing Structural Elements to be Removed (see Notes)

**NOTES**

- The limits of structure excavation and backfill shown herein shall be used for the method of measurement and payment only. There shall be no additional compensation for any additional excavation and backfill required for excavations to meet OSHA regulations.
- MSE backfill limits shown herein are for external wall design requirements. See Standard Specifications Section 642.04.01.
- Top two layers of soil reinforcement shall be a minimum of 5'-0" longer than all other layers below per Standard Specifications Section 642.01.02.
- Removal of existing approach slabs shall be paid for under Bid Item 202 0125 "Removal of Portion of Bridge".
- Removal of existing abutments and wingwalls is incidental to Bid Item 206 0110 "Structure Excavation".

\* See Sheets MSE10-MSE13 for Region A & B limits

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

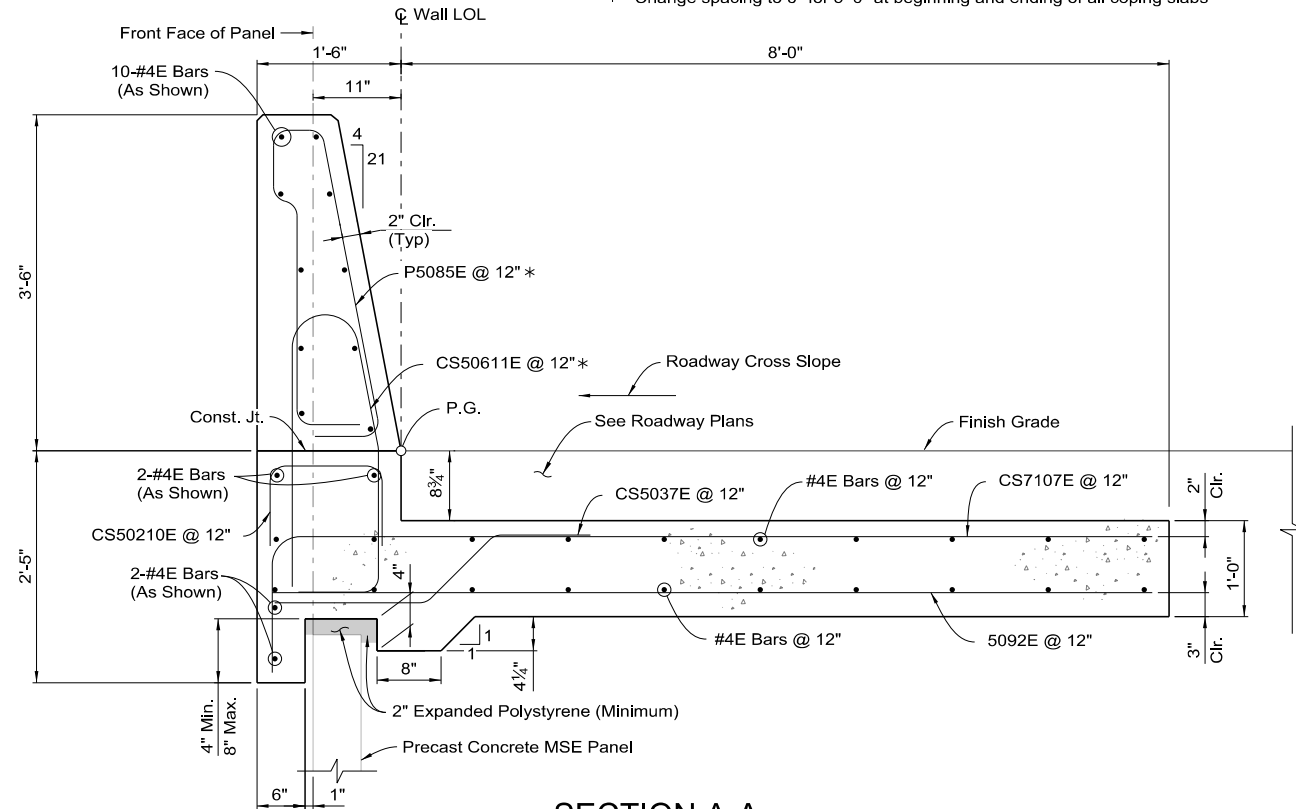
**MSE WALL  
DETAILS**

2 of 4



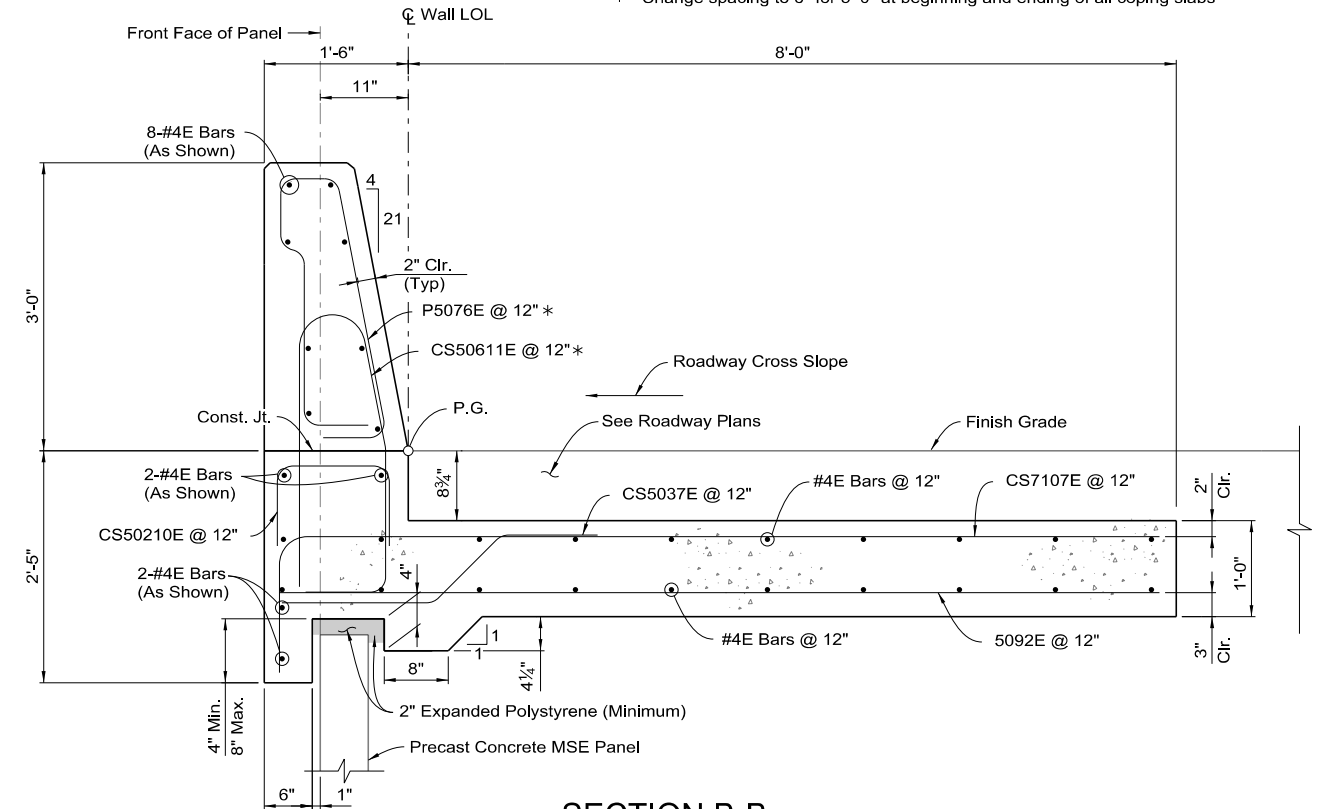
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	MSE05

\* - Change spacing to 6" for 5'-0" at beginning and ending of all coping slabs

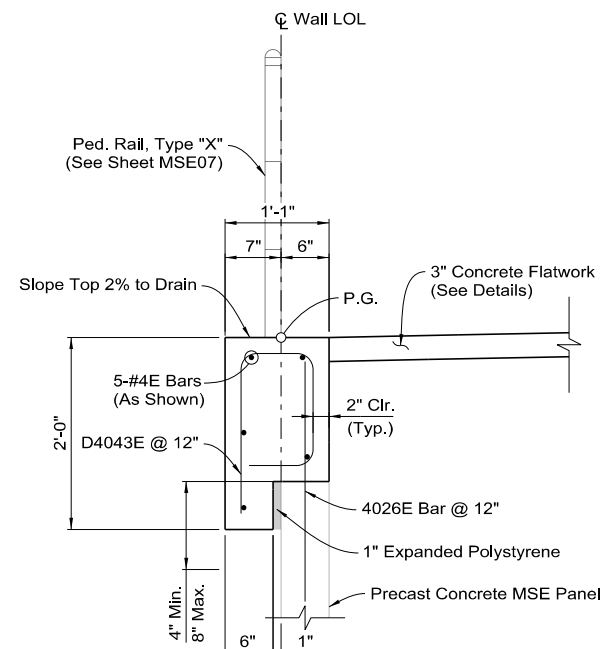


**SECTION A-A**  
MSE COPING SLAB SECTION, 42" BARRIER RAIL  
TYPICAL RW13

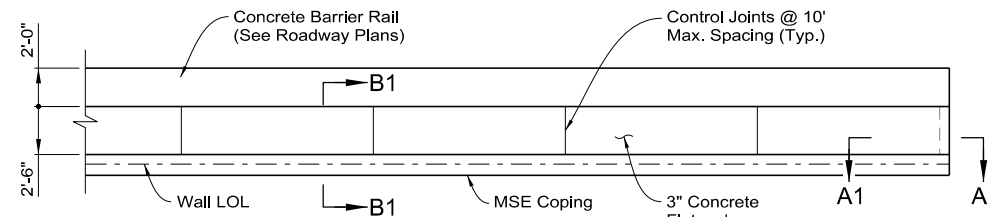
\* - Change spacing to 6" for 5'-0" at beginning and ending of all coping slabs



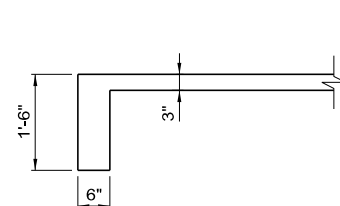
**SECTION B-B**  
MSE COPING SLAB SECTION, 36" BARRIER RAIL  
TYPICAL RW20, RW9



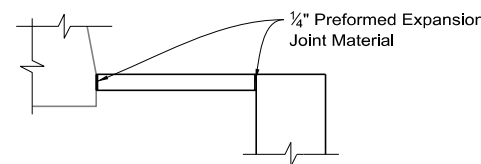
**SECTION C-C**  
MSE COPING DETAIL, RW15  
(For reinforcing not shown, see Sect. A-A, Sheet MSE07)



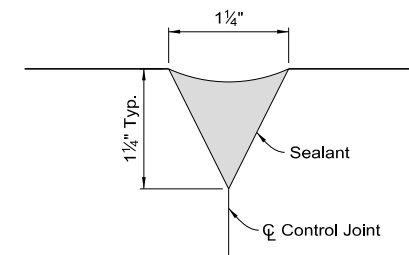
**CONCRETE FLATWORK DETAIL**



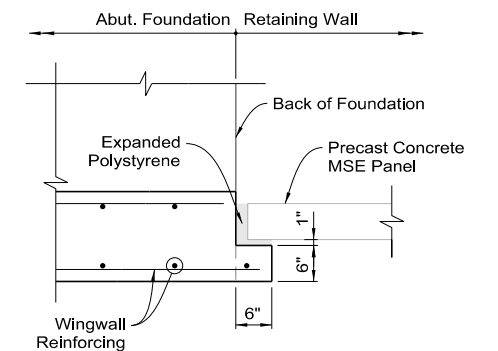
**SECTION A1-A1**



**SECTION B1-B1**



**CONTROL JOINT DETAIL**



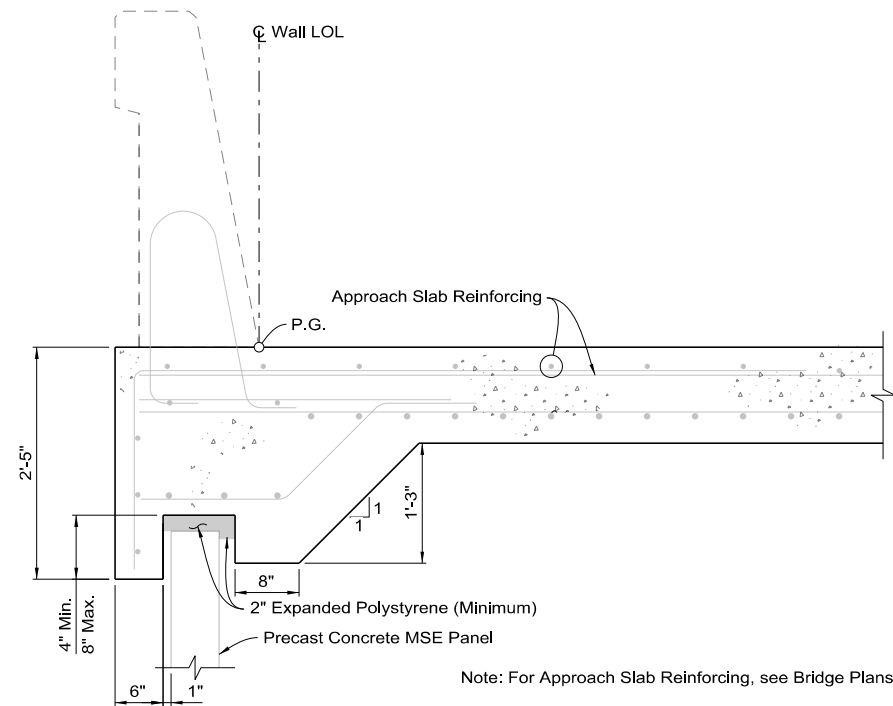
**DETAIL M**  
WINGWALL CONNECTION DETAIL

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**MSE WALL  
DETAILS**

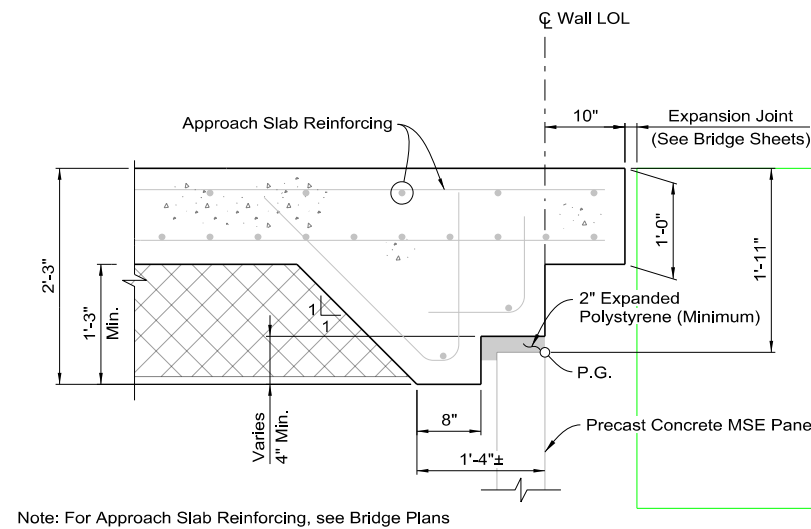
DATE : 1/26/2023

STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	MSE06



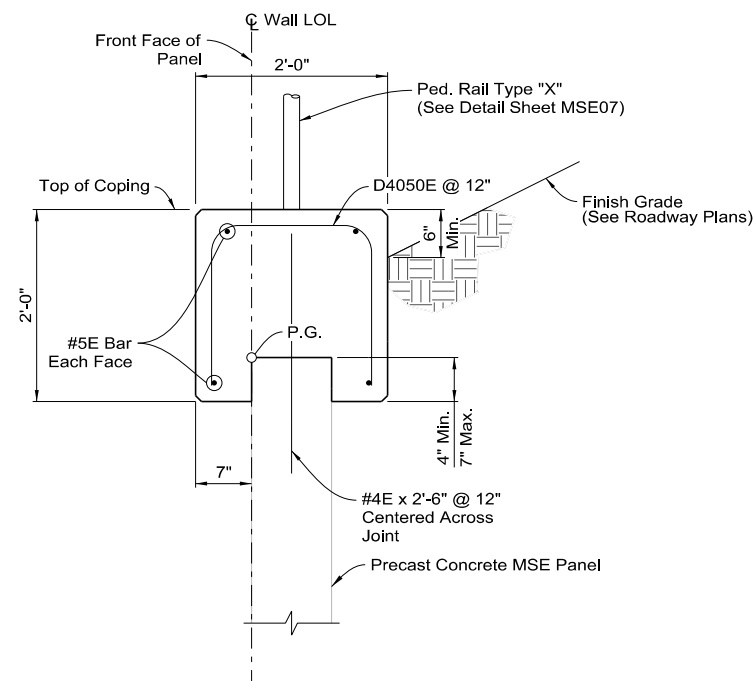
Note: For Approach Slab Reinforcing, see Bridge Plans

**SECTION D-D**  
APPROACH SLAB COPING DETAIL  
TYPICAL, MSE WALLS RW16, RW17, RW18, and RW19

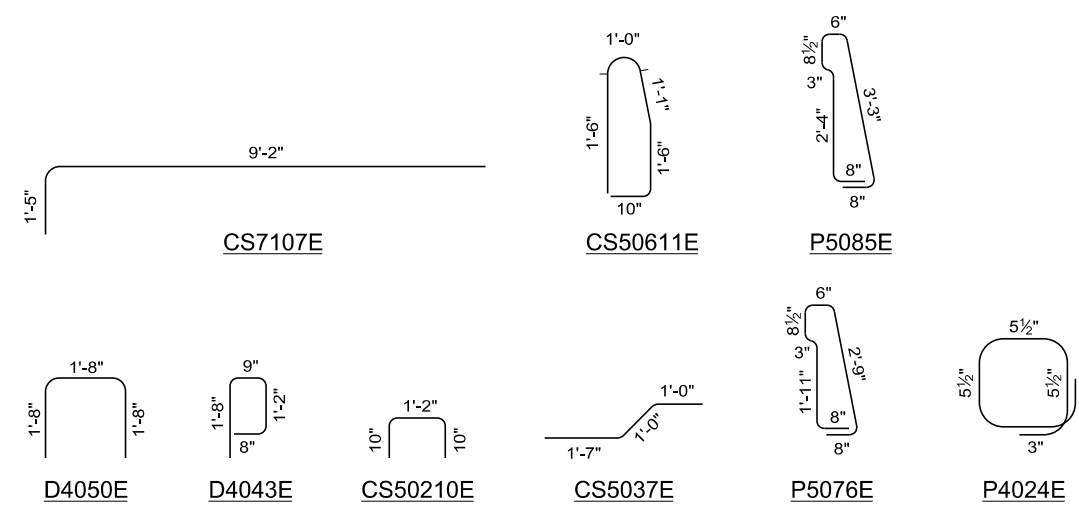


Note: For Approach Slab Reinforcing, see Bridge Plans

**SECTION E-E**  
APPROACH SLAB COPING DETAIL  
TYPICAL, MSE WALLS RW16, RW17, RW18, and RW19



**SECTION F-F**  
PED RAIL COPING DETAIL - TYPICAL MSE WALLS RW16, RW17, RW18, RW19  
(For reinforcing not shown, see Sect. A-A, Sheet MSE07)



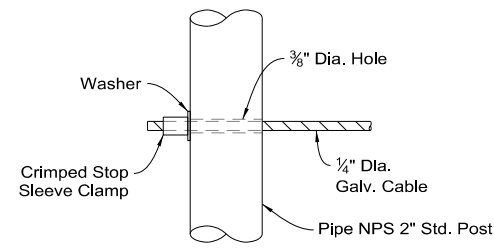
**BENT BARS**

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

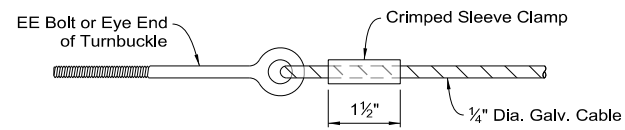
**MSE WALL  
DETAILS**

DATE : 1/26/2023

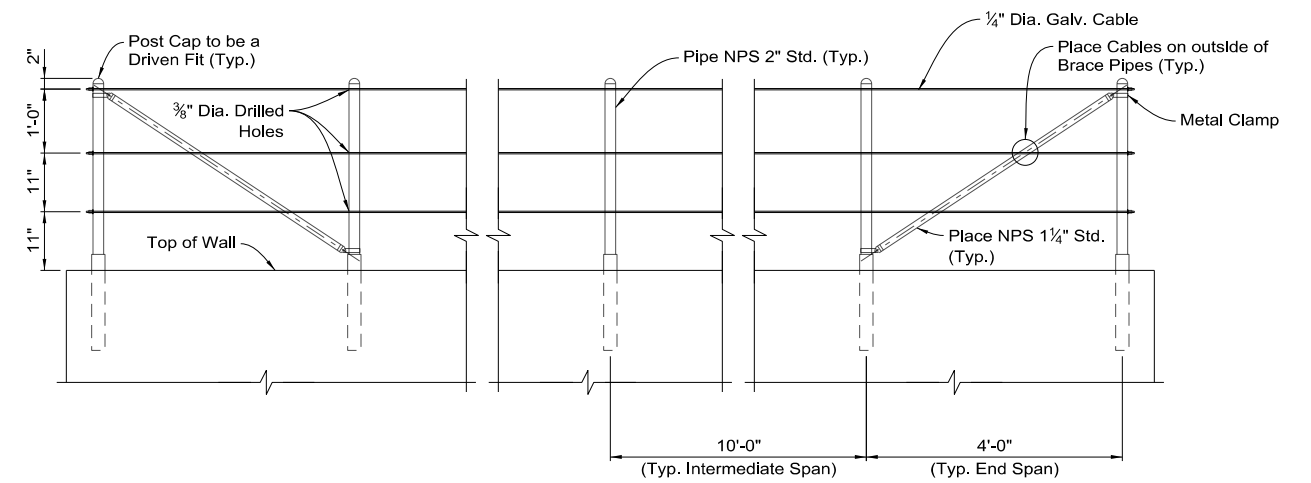
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	MSE07



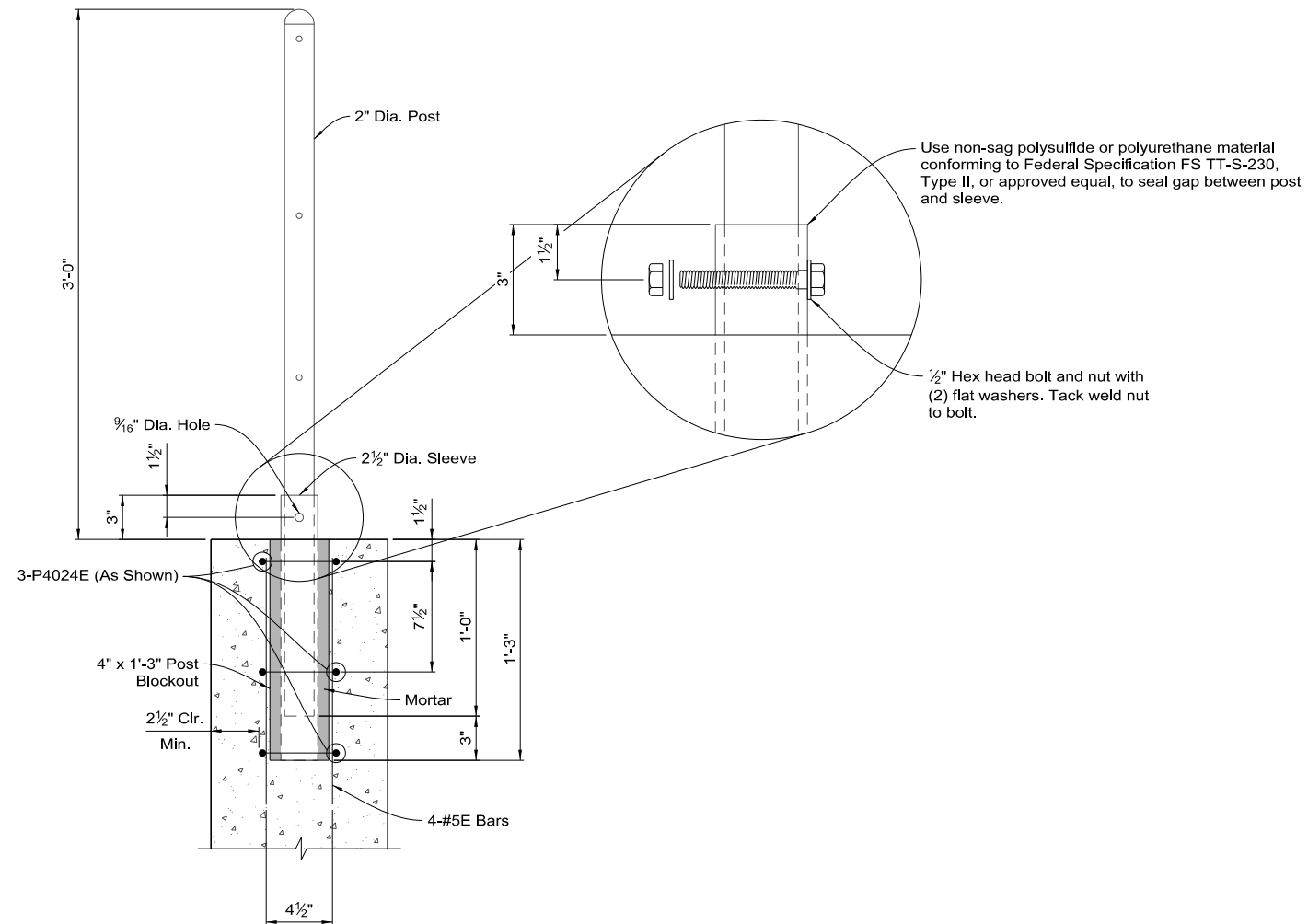
**ALTERNATE DEAD END ANCHORAGE**



**ALTERNATE CABLE CONNECTION**



**TYPICAL ELEVATION**



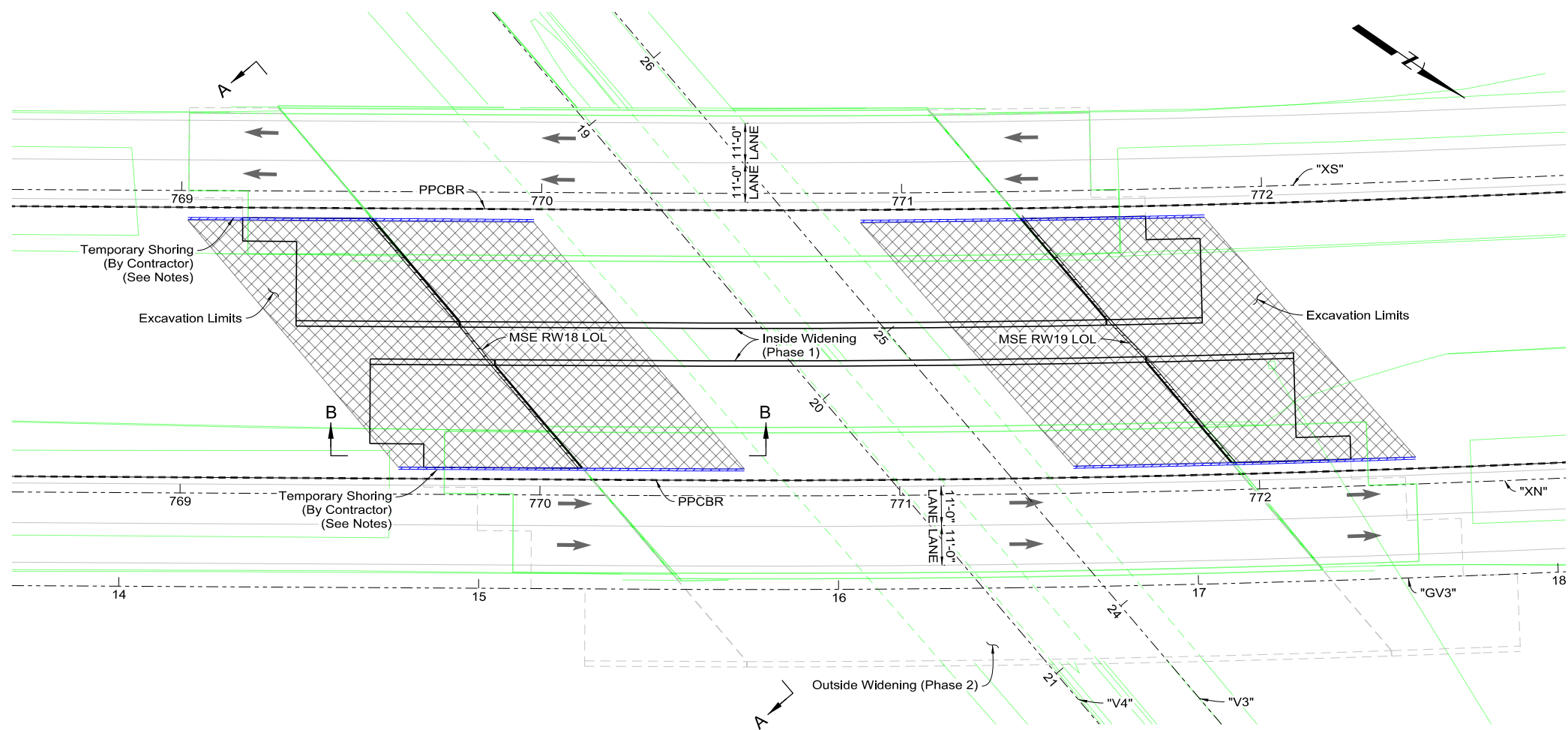
**SECTION A-A**

**NOTES**

1. Maximum distance between turnbuckles shall be 200'-0".
2. Intermediate turnbuckles to be placed in adjacent spans.
3. Cable shall not be spliced between intermediate turnbuckles and end posts.
4. All posts, cable, and hardware to be galvanized.
5. Posts to be vertical.
6. Alignment of holes in posts may vary to conform to slope of top of MSE Wall.
7. The Contractor shall verify all dependent dimensions in the field before ordering or fabricating any material.
8. Alternative details may be submitted by the Contractor for approval by the Engineer.
9. Post pockets to be centered in top of wall.
10. Typical end spans, braced in both directions, shall be constructed at changes in line where the angle of deflection is 15° or more.
11. Provide thimbles at the cable loops.
12. Terminate cable rail 1'-0" from wall top obstructions.

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION  
**PEDESTRIAN RAIL  
TYPE "X"**

STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	MSE08

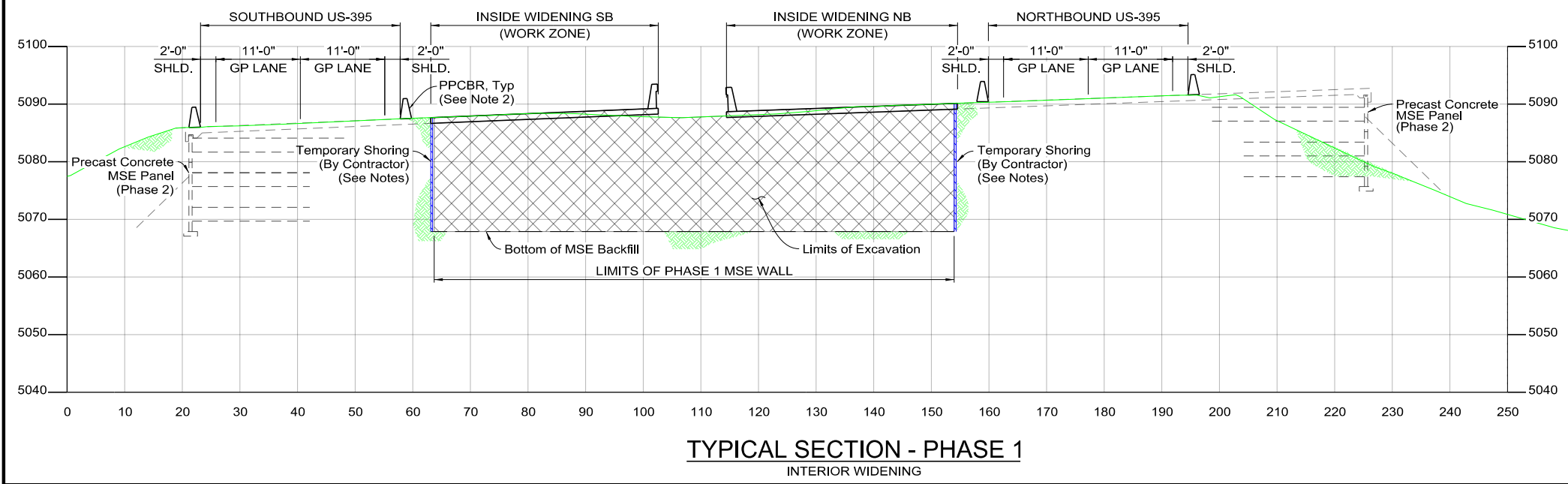


**PLAN - PHASE 1**  
 INTERIOR WIDENING  
 RW18 & RW19 SHOWN; RW16 & RW17 SIMILAR

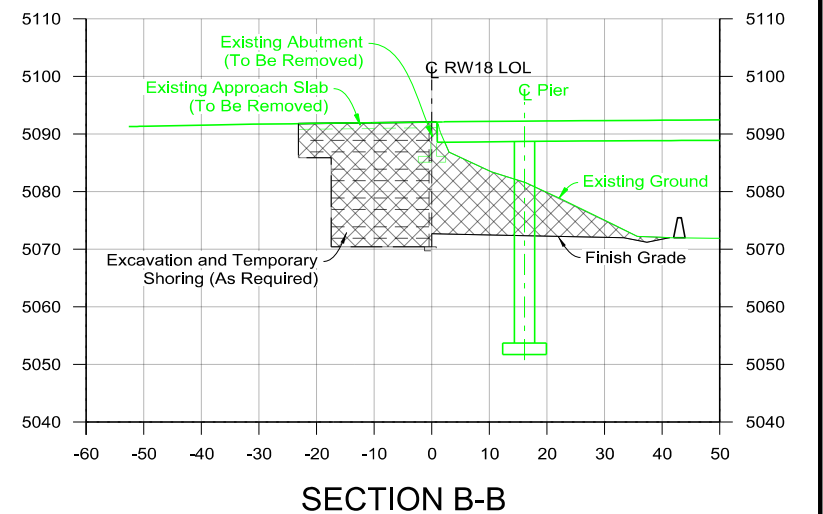
**NOTES**

1. Phasing shown is conceptual. Refer to Traffic Control plans and Contract Special Provisions for limitations and phasing requirements.
2. Anchor all portable precast concrete barrier rails to pavement (refer to Standard Plans Sheets RB-47A and RB-47B for details).
3. All temporary shoring will be the responsibility of the Contractor. Submit plans, working drawings, and calculations for temporary shoring for approval. The shoring plans and calculations shall be prepared and stamped by a Professional Engineer registered in the State of Nevada.

**LEGEND**



**TYPICAL SECTION - PHASE 1**  
 INTERIOR WIDENING



**SECTION B-B**

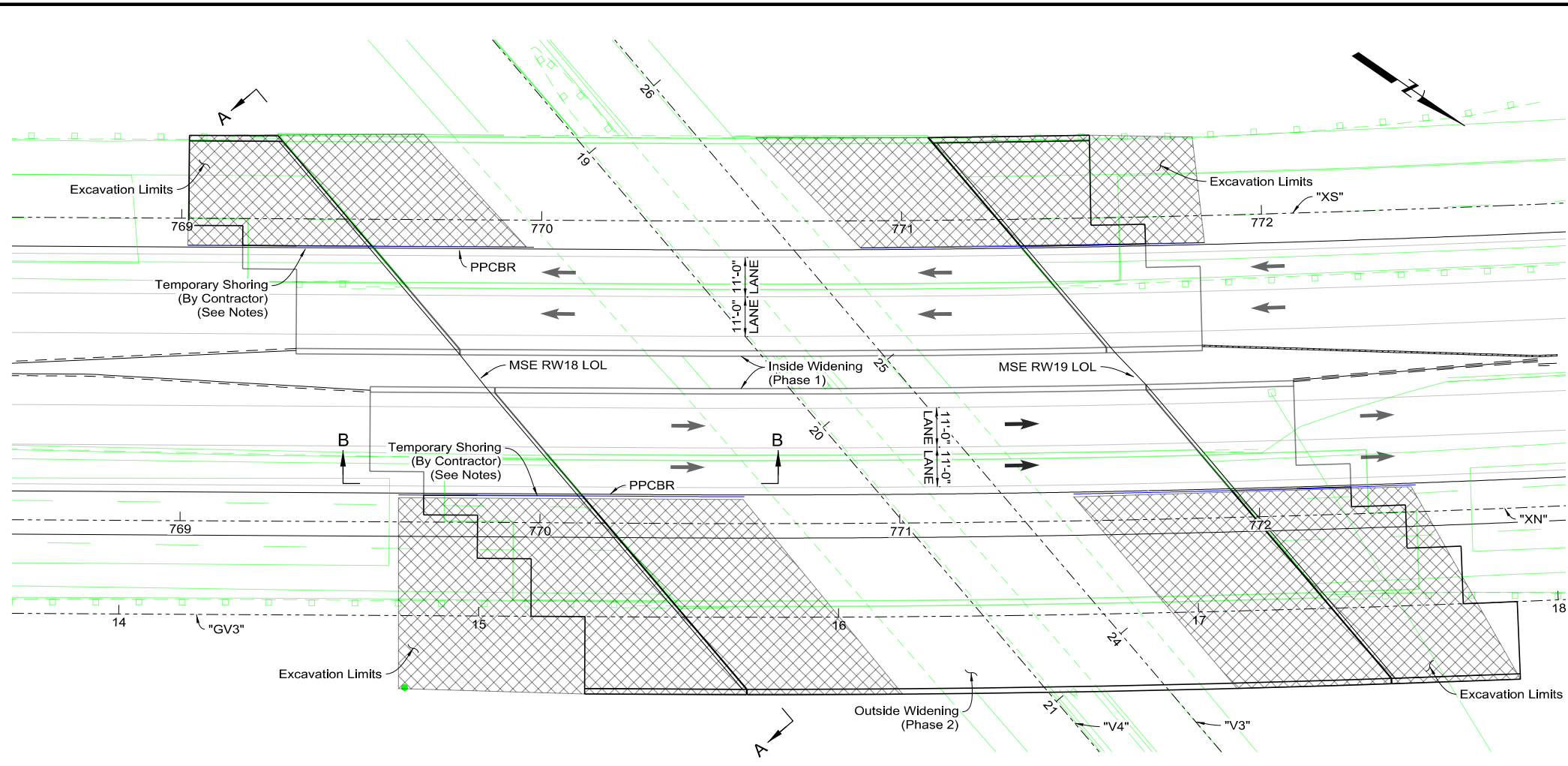
STATE OF NEVADA  
 DEPARTMENT OF TRANSPORTATION

**MSE WALL  
 PHASING PLAN**

1 of 2

DATE : 1/26/2023

STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	MSE09





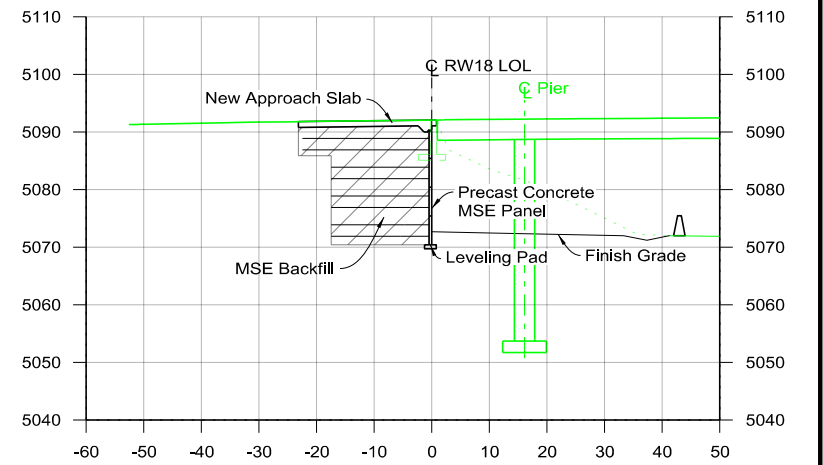
**PLAN - PHASE 2**  
EXTERIOR WIDENING  
RW18 & RW19 SHOWN; RW16 & RW17 SIMILAR

**NOTES**

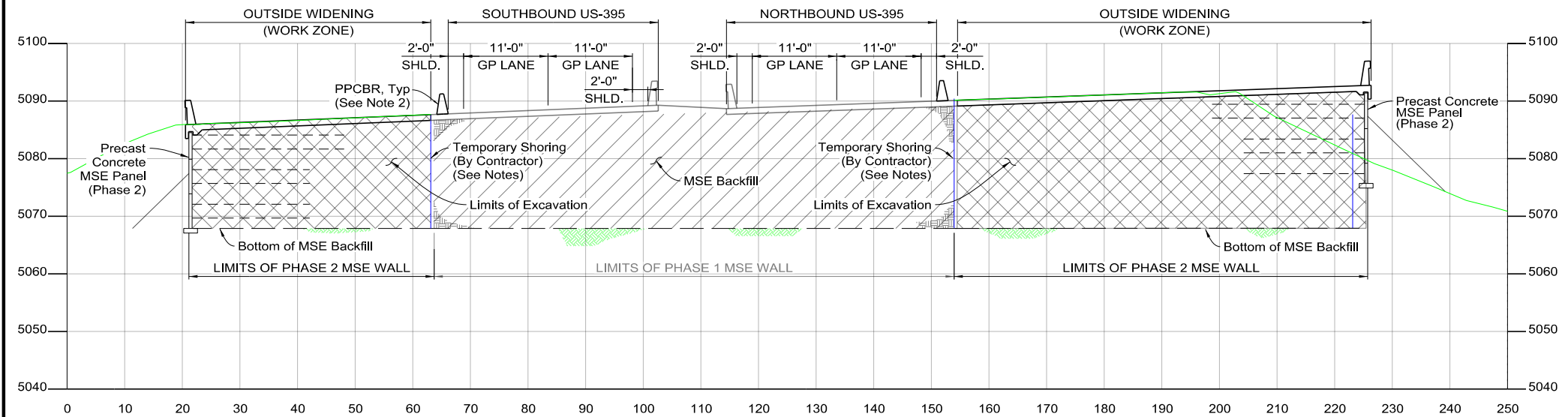
1. Phasing shown is conceptual. Refer to Traffic Control plans and Contract Special Provisions for limitations and phasing requirements.
2. Anchor all portable precast concrete barrier rails to pavement (refer to Standard Plans Sheets RB-47A and RB-47B for details).
3. All temporary shoring will be the responsibility of the Contractor. Submit plans, working drawings, and calculations for temporary shoring for approval. The shoring plans and calculations shall be prepared and stamped by a Professional Engineer registered in the State of Nevada.

**LEGEND**

-  Limits of Excavation
-  Limits of MSE Backfill



**SECTION B-B**

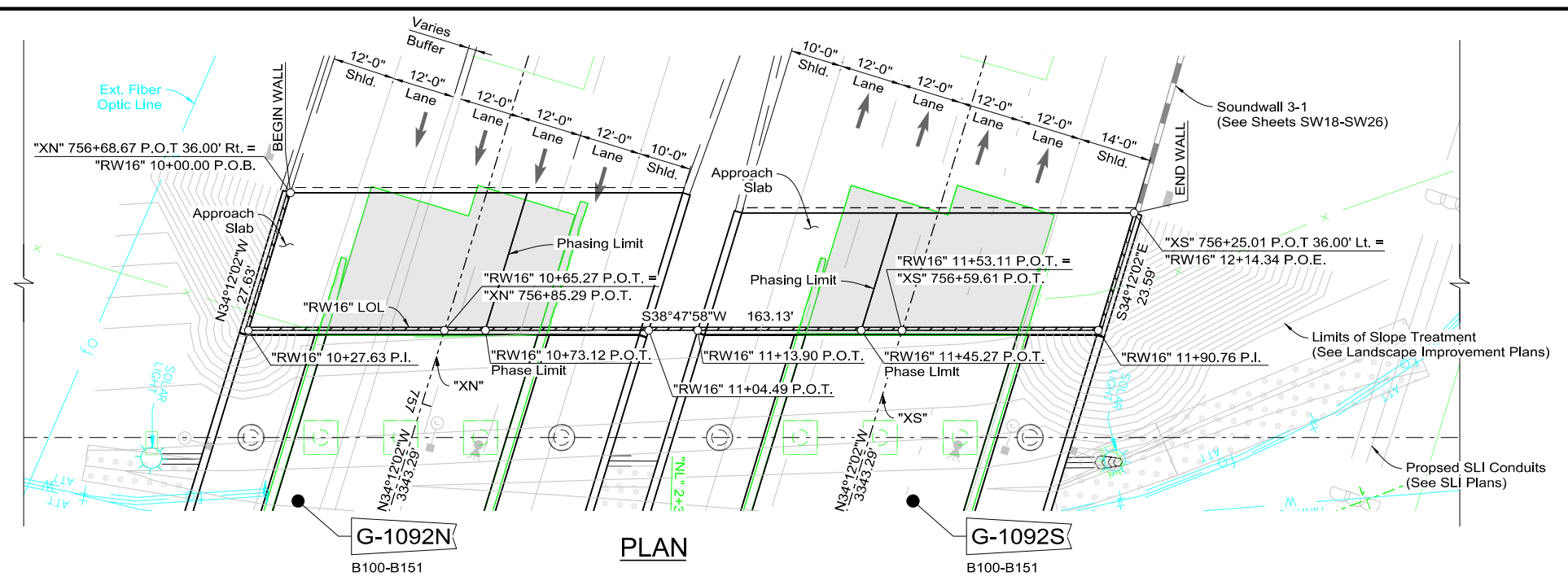


**TYPICAL SECTION - PHASE 2**  
EXTERIOR WIDENING

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

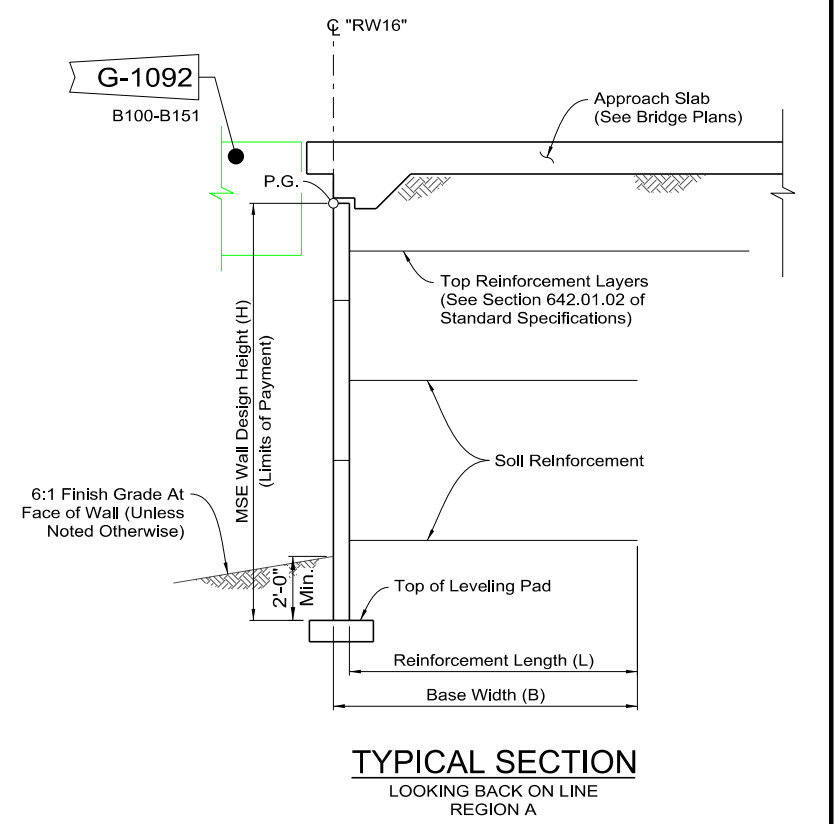
**MSE WALL  
PHASING PLAN**

STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	MSE10

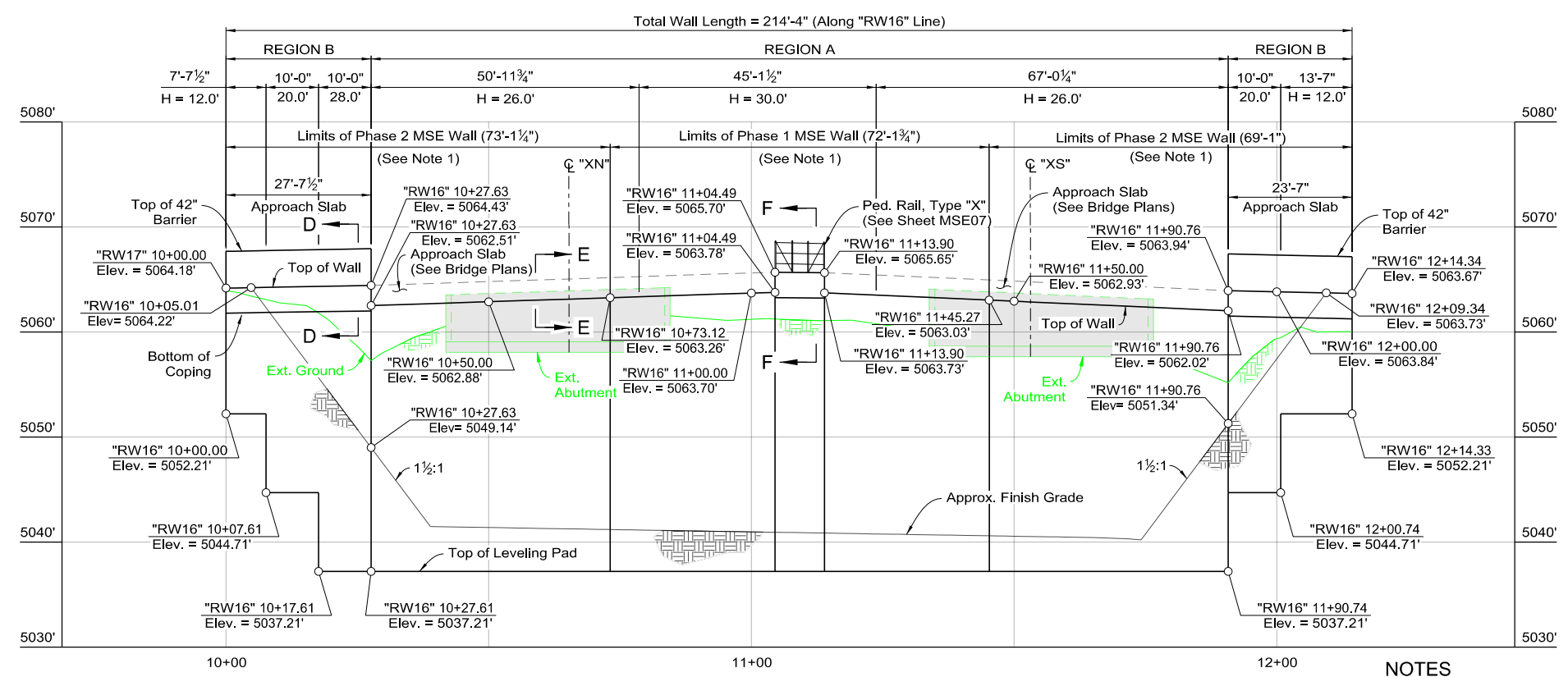


**LEGEND**

Limits of Removal of Existing Approach Slab (Bid Item 202 0125 "Removal of Portion of Bridge") and Abutments (Bid Item 206 0110 "Structure Excavation")



**TYPICAL SECTION**  
LOOKING BACK ON LINE  
REGION A



**DEVELOPED ELEVATION**

**MSE WALL SCHEDULES**

REGION A (0.70H)		REGION B (1.10H)	
Max. Wall Design Height (H)	Min. Reinforcement Length (L)	Max. Wall Design Height (H)	Min. Reinforcement Length (L)
<10'-0"	8'-0"	<10'-0"	9'-0"
10'-0"	8'-0"	10'-0"	11'-0"
12'-0"	9'-0"	12'-0"	14'-0"
14'-0"	10'-0"	14'-0"	16'-0"
16'-0"	12'-0"	16'-0"	18'-0"
18'-0"	13'-0"	18'-0"	20'-0"
20'-0"	14'-0"	20'-0"	22'-0"
22'-0"	16'-0"	22'-0"	25'-0"
24'-0"	17'-0"	24'-0"	27'-0"
26'-0"	19'-0"	26'-0"	29'-0"
28'-0"	20'-0"	28'-0"	31'-0"
30'-0"	21'-0"	30'-0"	33'-0"
32'-0"	23'-0"	32'-0"	36'-0"
34'-0"	24'-0"	34'-0"	38'-0"

- NOTES**
- For MSE Wall Phasing and requirements, see sheets MSE08 & MSE09.
  - For approach slab details not shown, see Sheet B140.

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

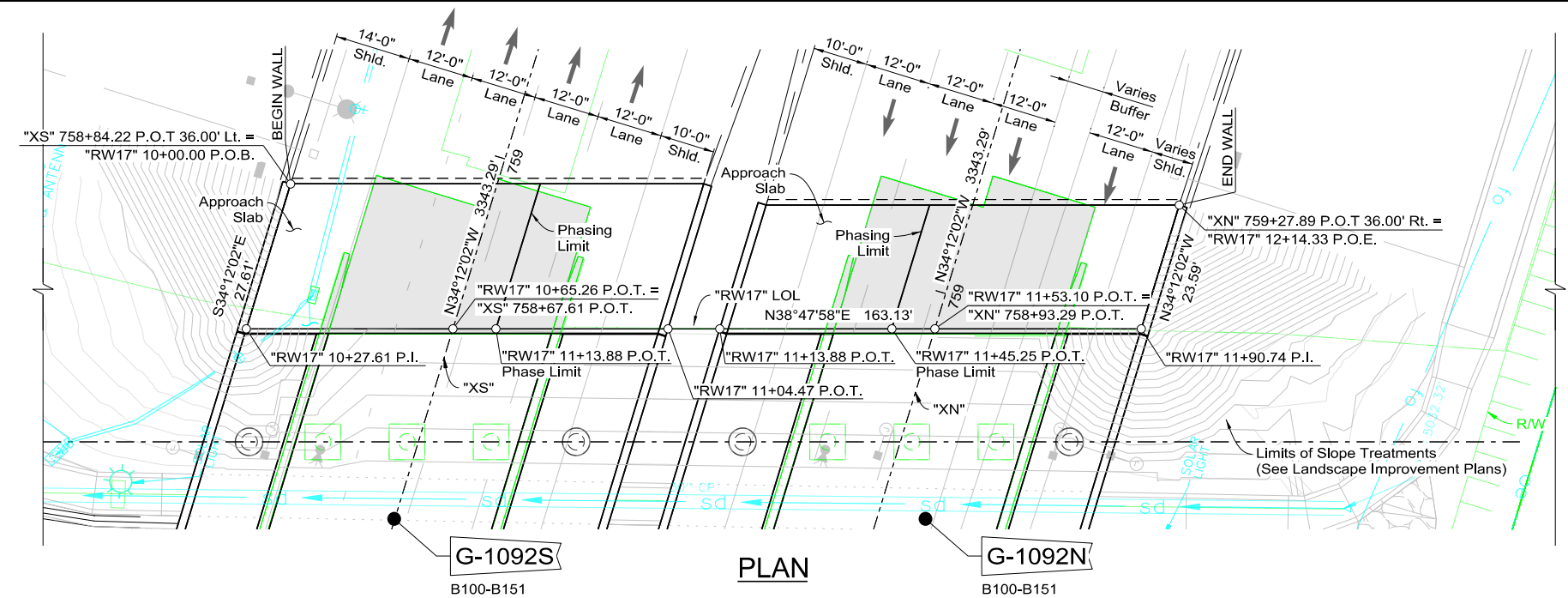
**MSE WALL "RW16"  
PLAN AND ELEVATION**

DATE : 1/26/2023

For Section D-D, E-E, and F-F, see Sheet MSE06

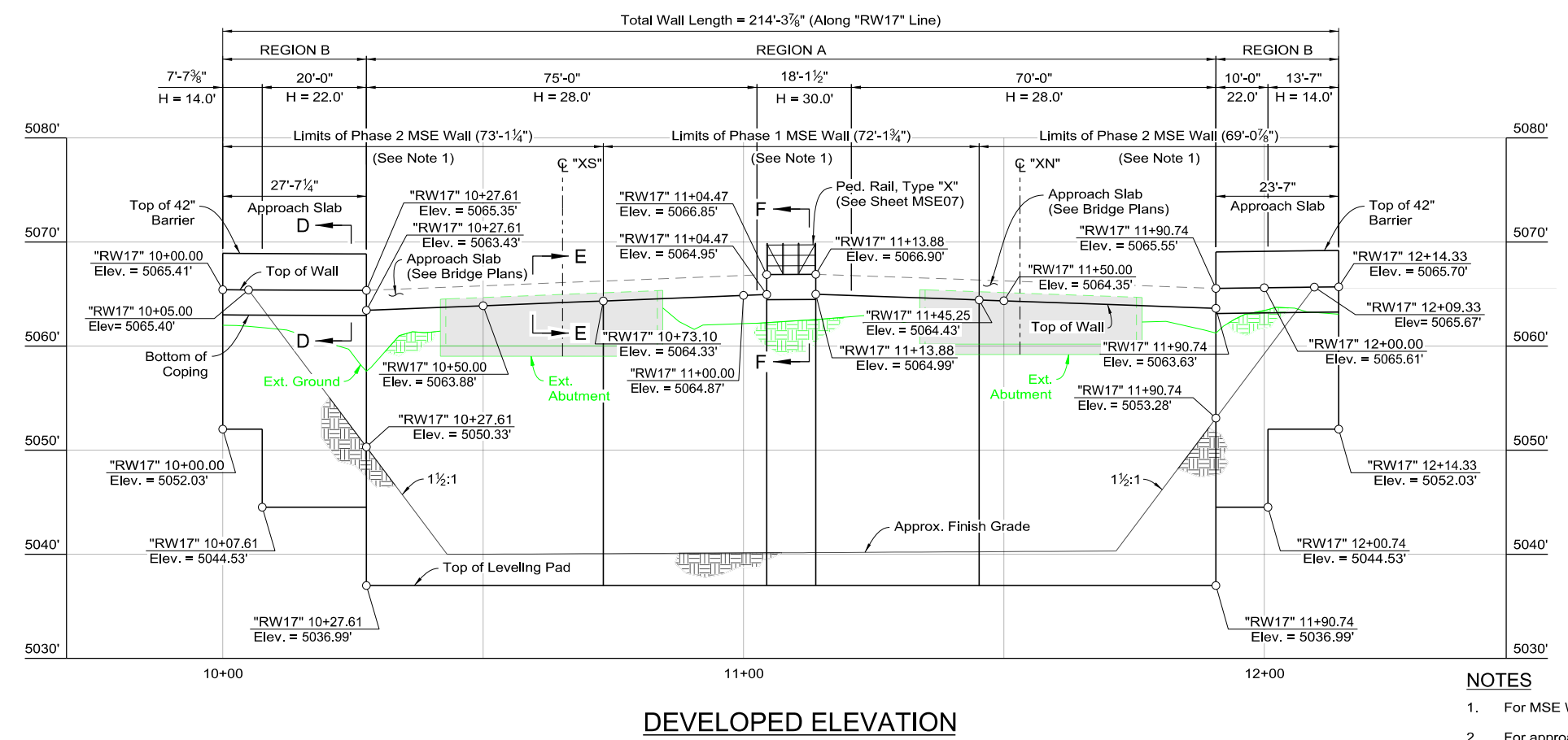
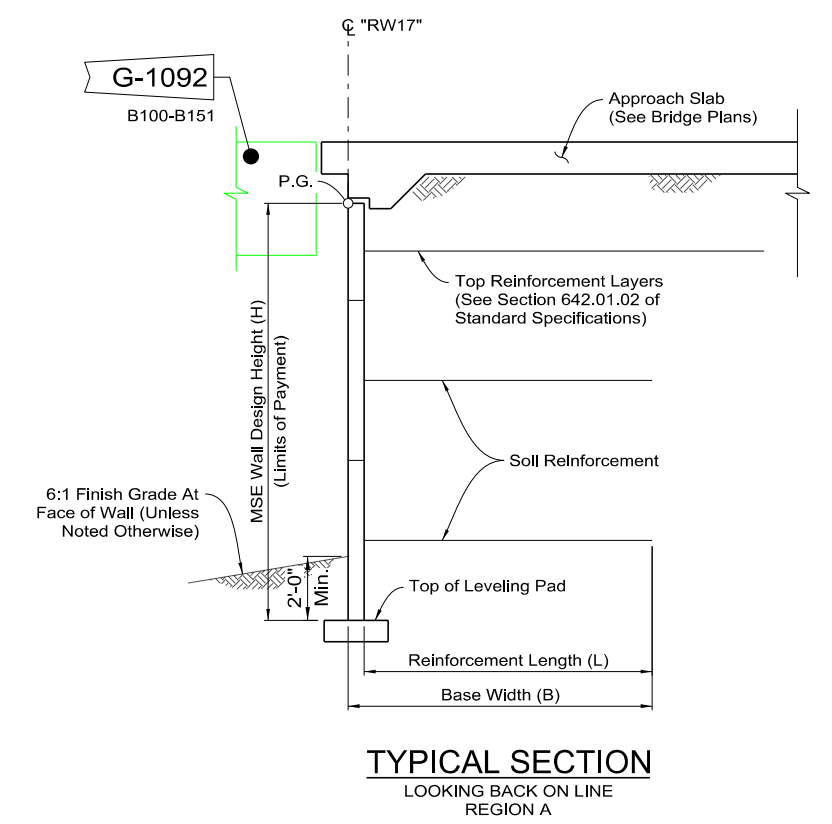


STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	MSE11



**LEGEND**

Limits of Removal of Existing Approach Slab (Bid Item 202 0125 "Removal of Portion of Bridge") and Abutments (Bid Item 206 0110 "Structure Excavation")



**MSE WALL SCHEDULES**

REGION A (0.70H)		REGION B (1.10H)	
Max. Wall Design Height (H)	Min. Reinforcement Length (L)	Max. Wall Design Height (H)	Min. Reinforcement Length (L)
<10'-0"	8'-0"	<10'-0"	9'-0"
10'-0"	8'-0"	10'-0"	11'-0"
12'-0"	9'-0"	12'-0"	14'-0"
14'-0"	10'-0"	14'-0"	16'-0"
16'-0"	12'-0"	16'-0"	18'-0"
18'-0"	13'-0"	18'-0"	20'-0"
20'-0"	14'-0"	20'-0"	22'-0"
22'-0"	16'-0"	22'-0"	25'-0"
24'-0"	17'-0"	24'-0"	27'-0"
26'-0"	19'-0"	26'-0"	29'-0"
28'-0"	20'-0"	28'-0"	31'-0"
30'-0"	21'-0"	30'-0"	33'-0"
32'-0"	23'-0"	32'-0"	36'-0"
34'-0"	24'-0"	34'-0"	38'-0"

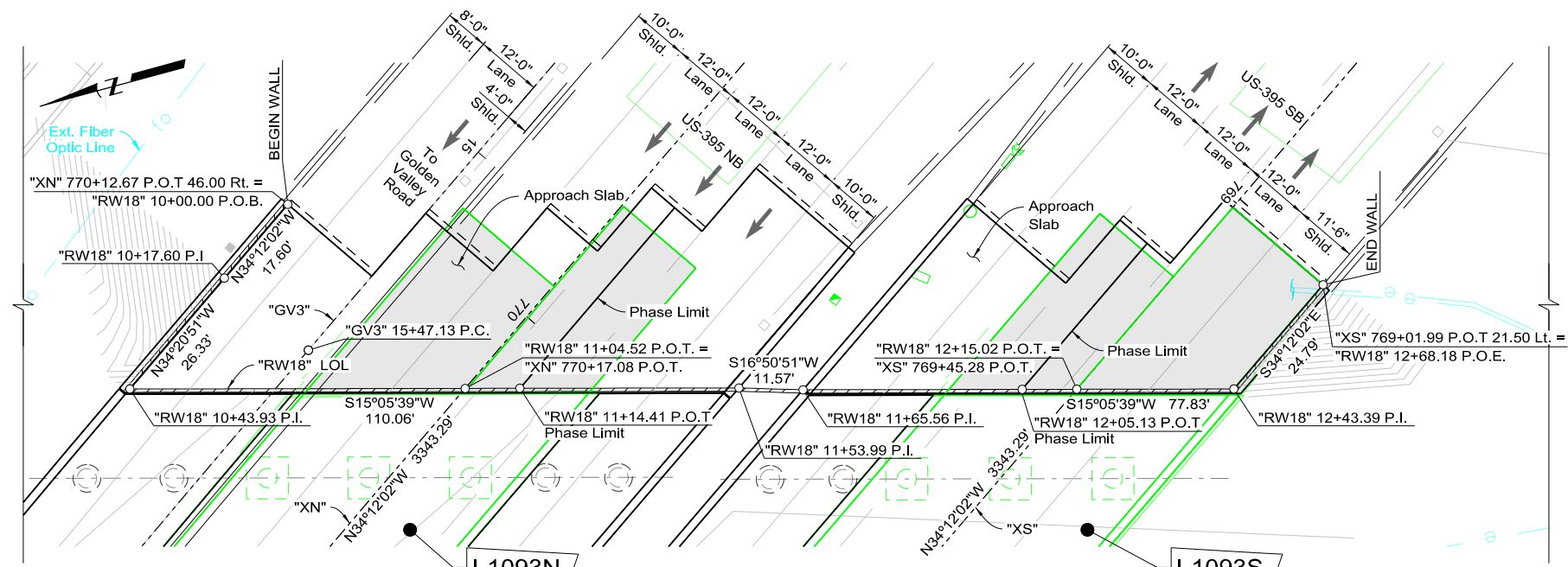
- NOTES**
- For MSE Wall Phasing and requirements, see sheets MSE08 & MSE09.
  - For approach slab details not shown, see Sheet B140.

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**MSE WALL "RW17"  
PLAN AND ELEVATION**

DATE : 1/26/2023

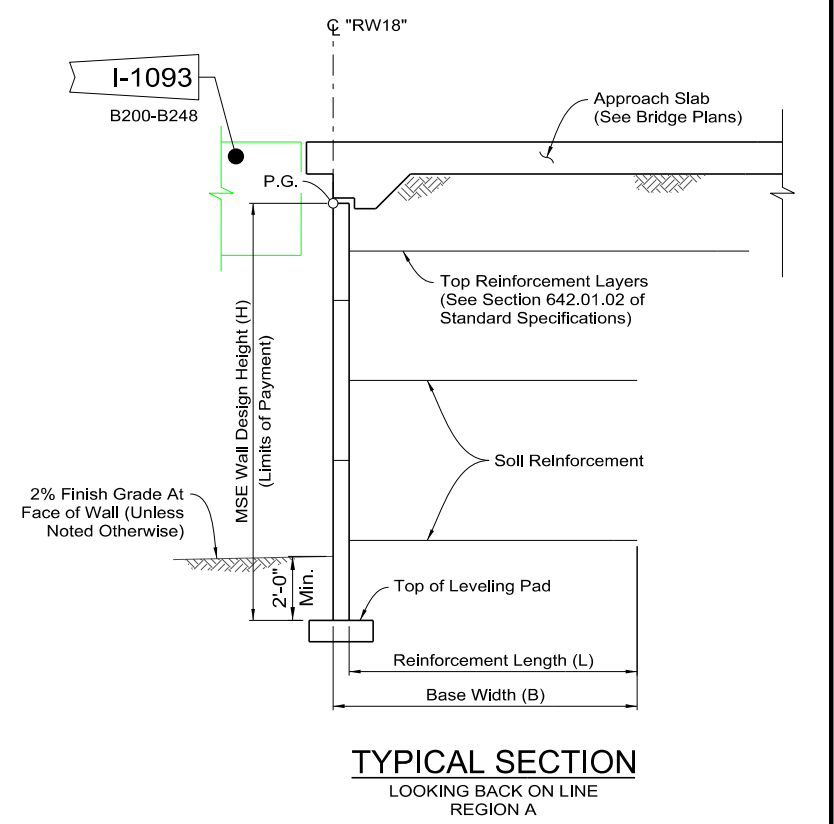
For Section D-D, E-E, and F-F, see Sheet MSE06



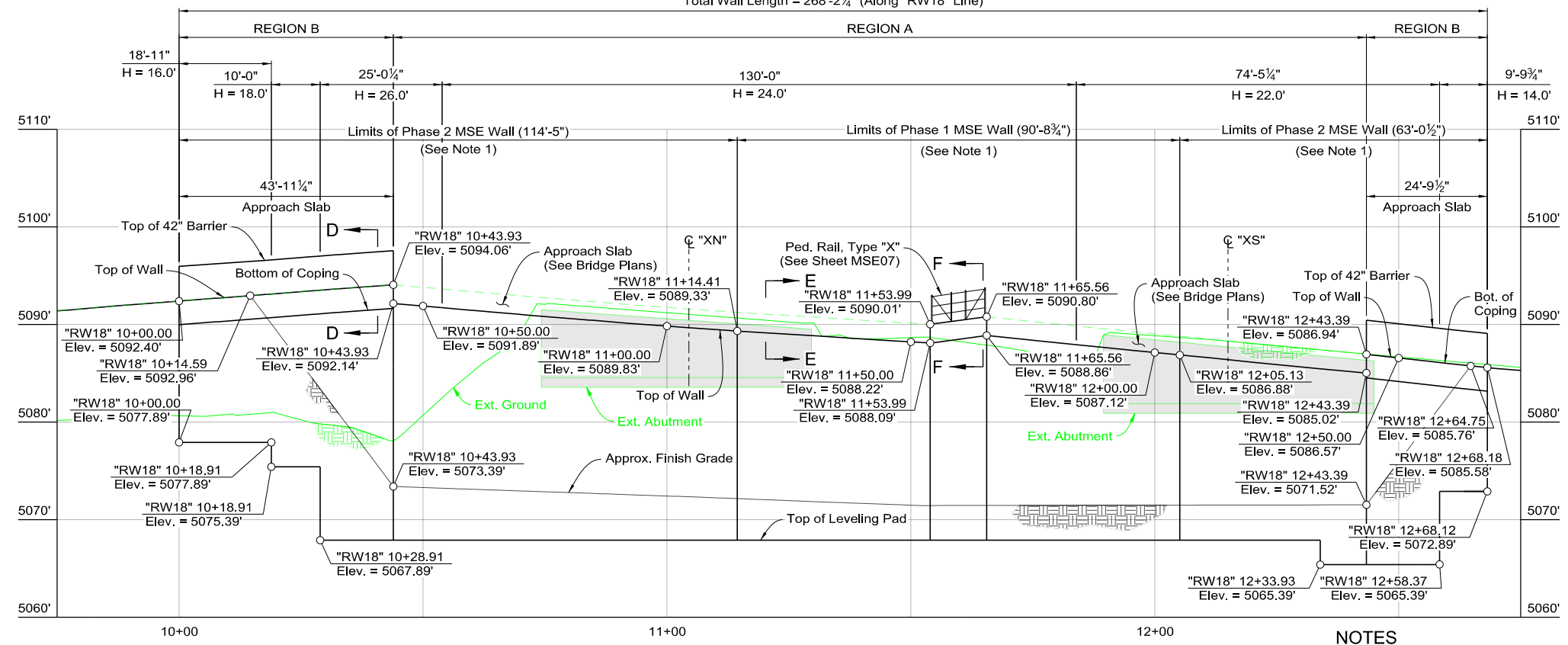
"GV3"  
 $\Delta = 5^{\circ}03'38"$   
 $R = 5110.00'$   
 $L = 451.33'$   
 $T = 225.81'$

**LEGEND**

Limits of Removal of Existing Approach Slab  
 (Bid Item 202 0125 "Removal of Portion of Bridge") and  
 Abutments (Bid Item 206 0110 "Structure Excavation")



Total Wall Length = 268'-2 1/4" (Along "RW18" Line)



**MSE WALL SCHEDULES**

REGION A (0.70H)		REGION B (1.10H)	
Max. Wall Design Height (H)	Min. Reinforcement Length (L)	Max. Wall Design Height (H)	Min. Reinforcement Length (L)
<10'-0"	8'-0"	<10'-0"	9'-0"
10'-0"	8'-0"	10'-0"	11'-0"
12'-0"	9'-0"	12'-0"	14'-0"
14'-0"	10'-0"	14'-0"	16'-0"
16'-0"	12'-0"	16'-0"	18'-0"
18'-0"	13'-0"	18'-0"	20'-0"
20'-0"	14'-0"	20'-0"	22'-0"
22'-0"	16'-0"	22'-0"	25'-0"
24'-0"	17'-0"	24'-0"	27'-0"
26'-0"	19'-0"	26'-0"	29'-0"
28'-0"	20'-0"	28'-0"	31'-0"
30'-0"	21'-0"	30'-0"	33'-0"
32'-0"	23'-0"	32'-0"	36'-0"
34'-0"	24'-0"	34'-0"	38'-0"

- NOTES**
- For MSE Wall Phasing and requirements, see sheets MSE08 & MSE09.
  - For approach slab details not shown, see Sheet B237.

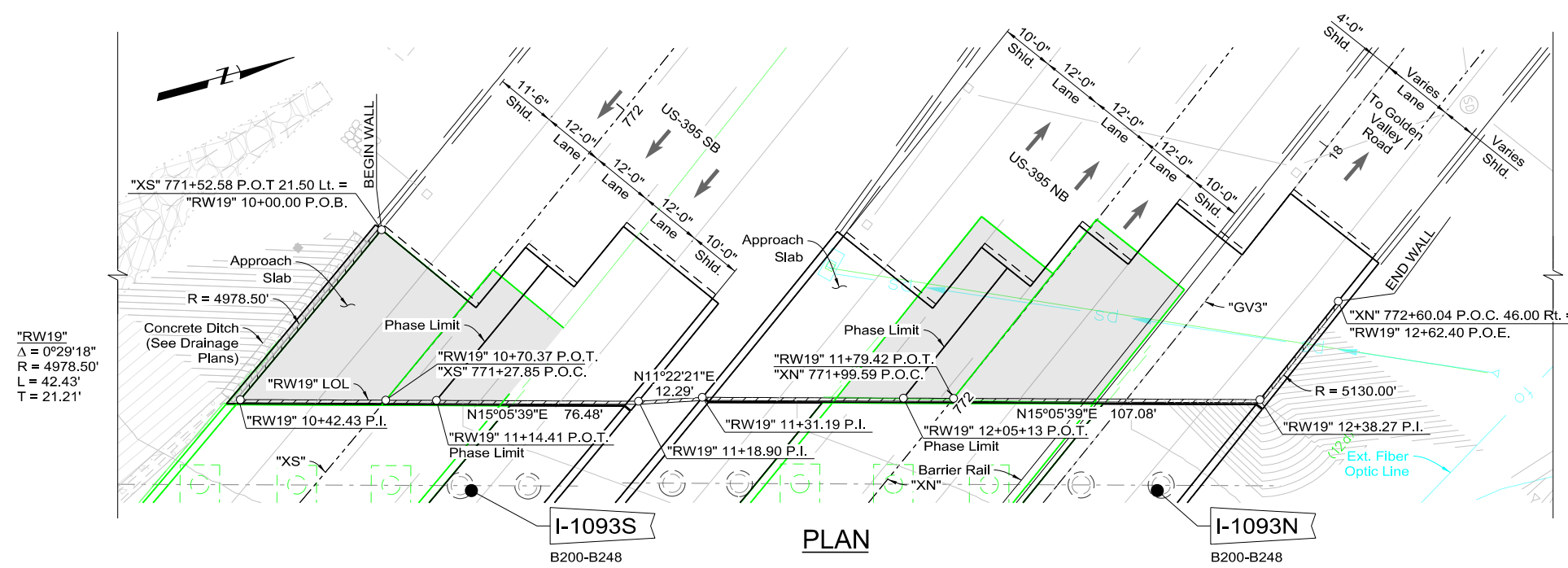
STATE OF NEVADA  
 DEPARTMENT OF TRANSPORTATION

**MSE WALL "RW18"  
 PLAN AND ELEVATION**

DATE : 1/26/2023

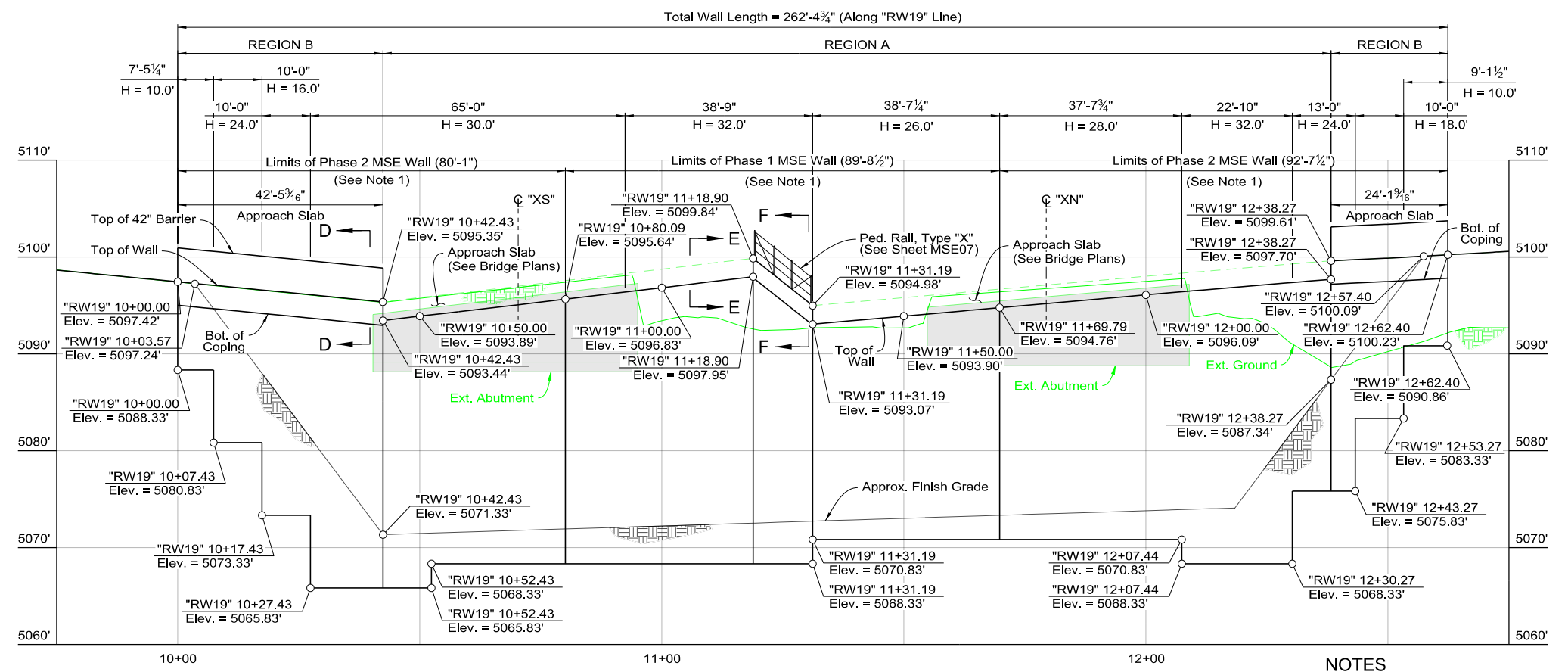
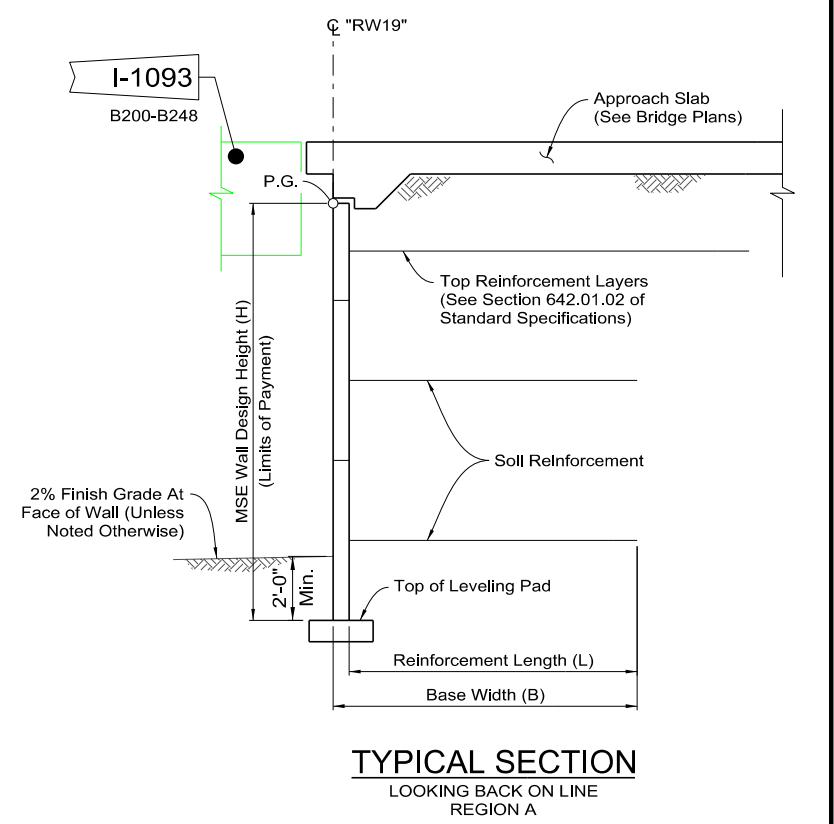
For Section D-D, E-E, and F-F, see Sheet MSE06

STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	MSE13



**LEGEND**

Limits of Removal of Existing Approach Slab (Bid Item 202 0125 "Removal of Portion of Bridge") and Abutments (Bid Item 206 0110 "Structure Excavation")



**MSE WALL SCHEDULES**

REGION A (0.70H)		REGION B (1.10H)	
Max. Wall Design Height (H)	Min. Reinforcement Length (L)	Max. Wall Design Height (H)	Min. Reinforcement Length (L)
<10'-0"	8'-0"	<10'-0"	9'-0"
10'-0"	8'-0"	10'-0"	11'-0"
12'-0"	9'-0"	12'-0"	14'-0"
14'-0"	10'-0"	14'-0"	16'-0"
16'-0"	12'-0"	16'-0"	18'-0"
18'-0"	13'-0"	18'-0"	20'-0"
20'-0"	14'-0"	20'-0"	22'-0"
22'-0"	16'-0"	22'-0"	25'-0"
24'-0"	17'-0"	24'-0"	27'-0"
26'-0"	19'-0"	26'-0"	29'-0"
28'-0"	20'-0"	28'-0"	31'-0"
30'-0"	21'-0"	30'-0"	33'-0"
32'-0"	23'-0"	32'-0"	36'-0"
34'-0"	24'-0"	34'-0"	38'-0"

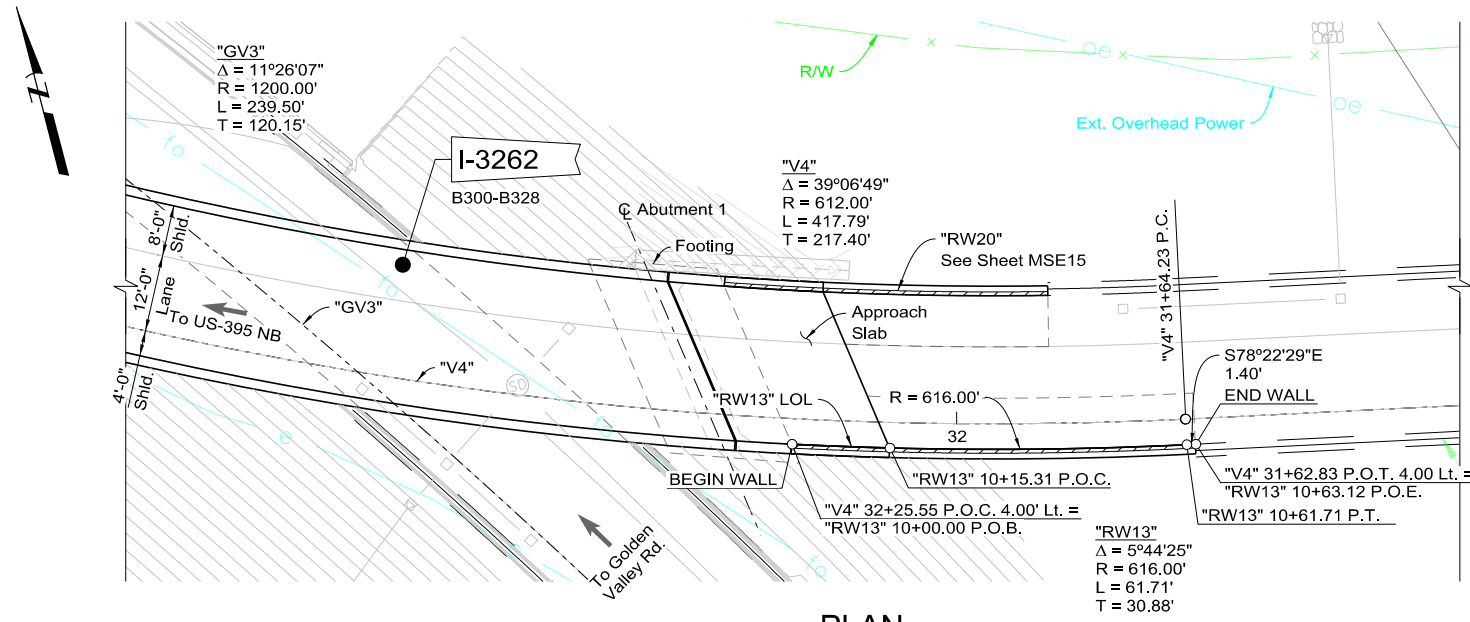
- NOTES**
- For MSE Wall Phasing and requirements, see sheets MSE08 & MSE09.
  - For approach slab details not shown, see Sheet B237.

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

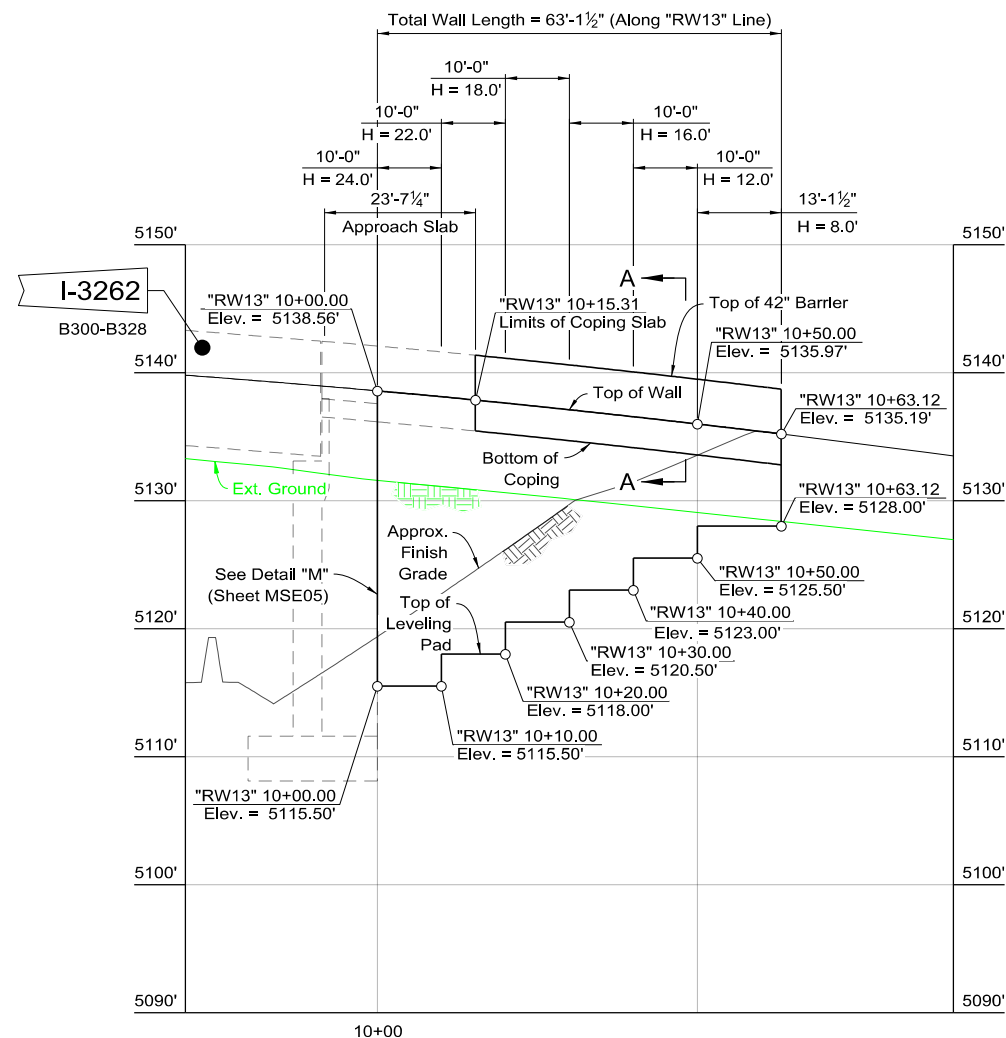
**MSE WALL "RW19"  
PLAN AND ELEVATION**

DATE : 1/26/2023

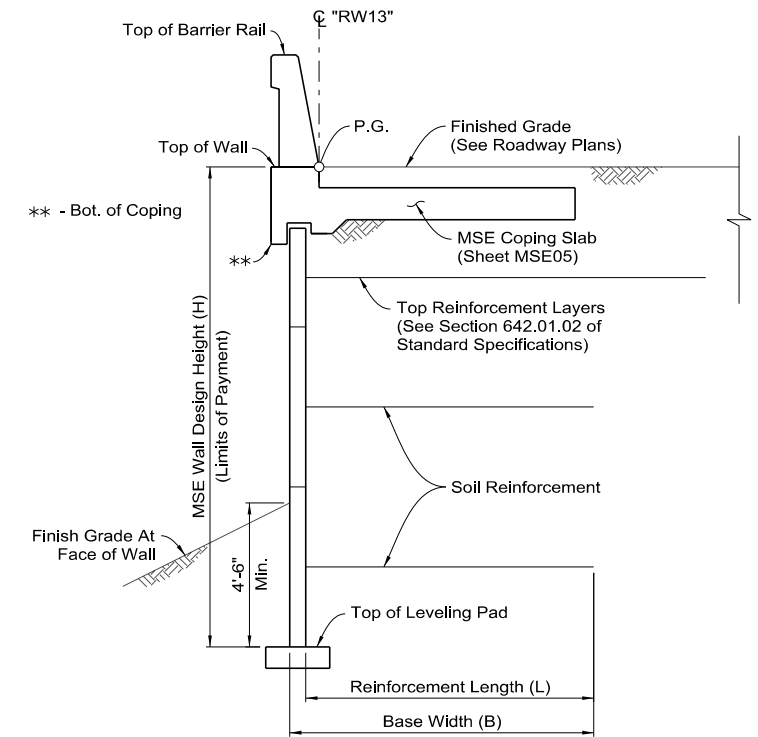
For Section D-D, E-E, and F-F, see Sheet MSE06



PLAN



DEVELOPED ELEVATION



TYPICAL SECTION  
LOOKING BACK ON LINE

MSE WALL SCHEDULE

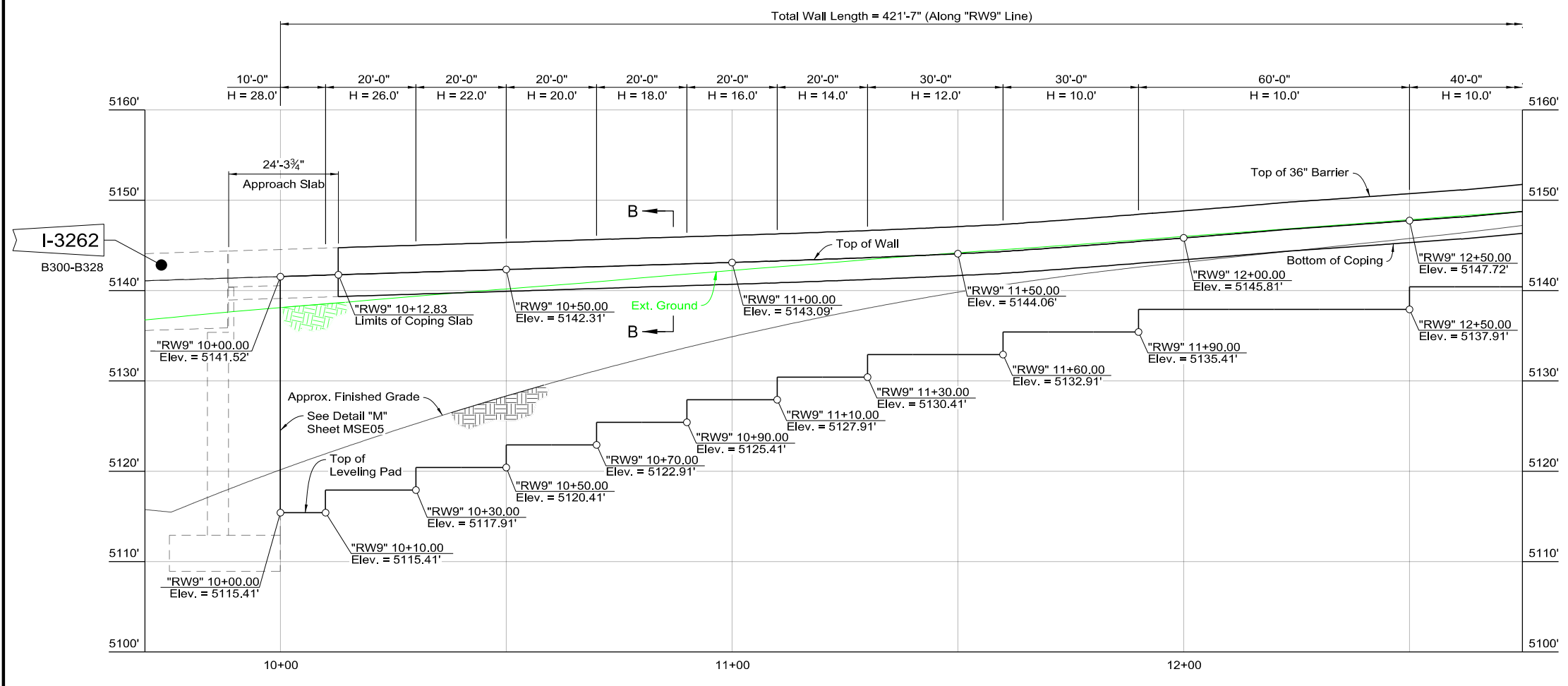
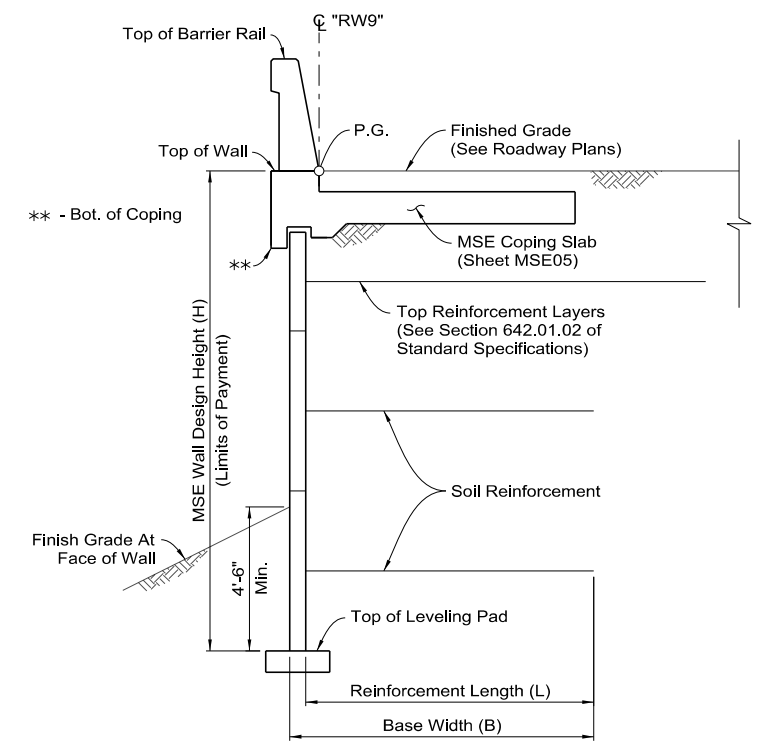
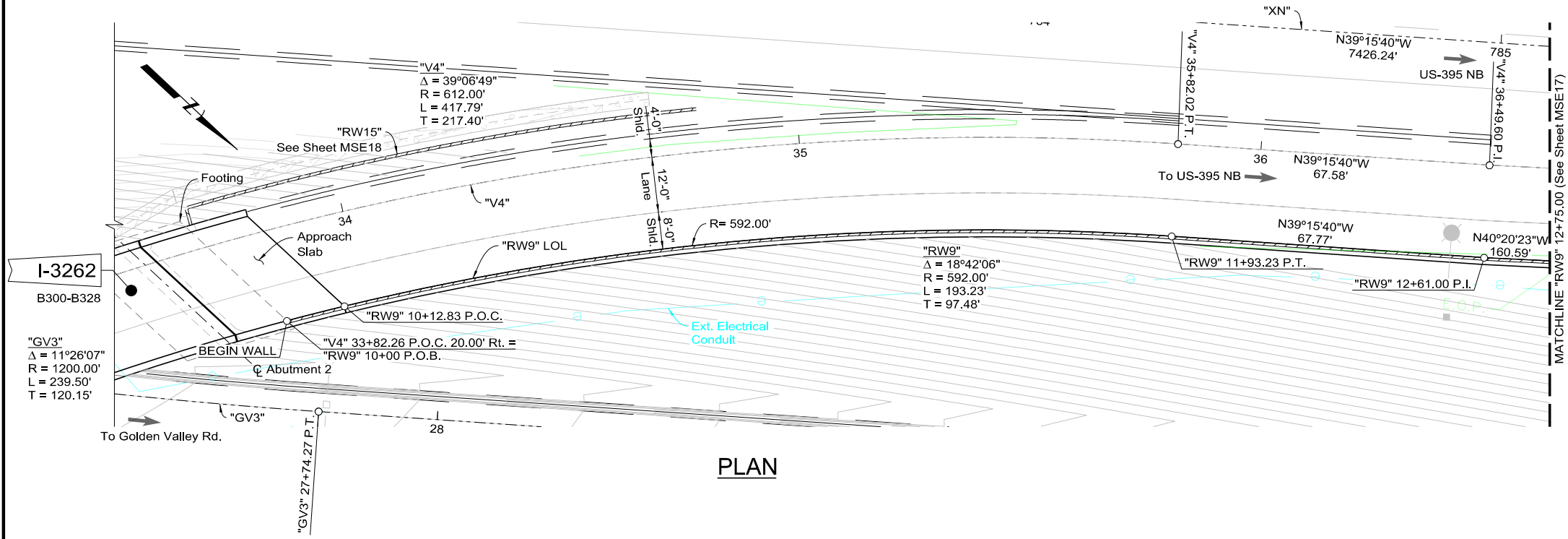
Max. Wall Design Height (H)	Min. Reinforcement Length (L)
<10'-0"	8'-0"
10'-0"	9'-0"
12'-0"	11'-0"
14'-0"	12'-0"
16'-0"	14'-0"
18'-0"	16'-0"
20'-0"	17'-0"
22'-0"	19'-0"
24'-0"	21'-0"
26'-0"	23'-0"
28'-0"	24'-0"
30'-0"	26'-0"
32'-0"	28'-0"
34'-0"	29'-0"

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION  
**MSE WALL "RW13"  
PLAN AND ELEVATION**





STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	MSE16



**MSE WALL SCHEDULE**

Max. Wall Design Height (H)	Min. Reinforcement Length (L)
<10'-0"	8'-0"
10'-0"	9'-0"
12'-0"	11'-0"
14'-0"	12'-0"
16'-0"	14'-0"
18'-0"	16'-0"
20'-0"	17'-0"
22'-0"	19'-0"
24'-0"	21'-0"
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30'-0"	26'-0"
32'-0"	28'-0"
34'-0"	29'-0"

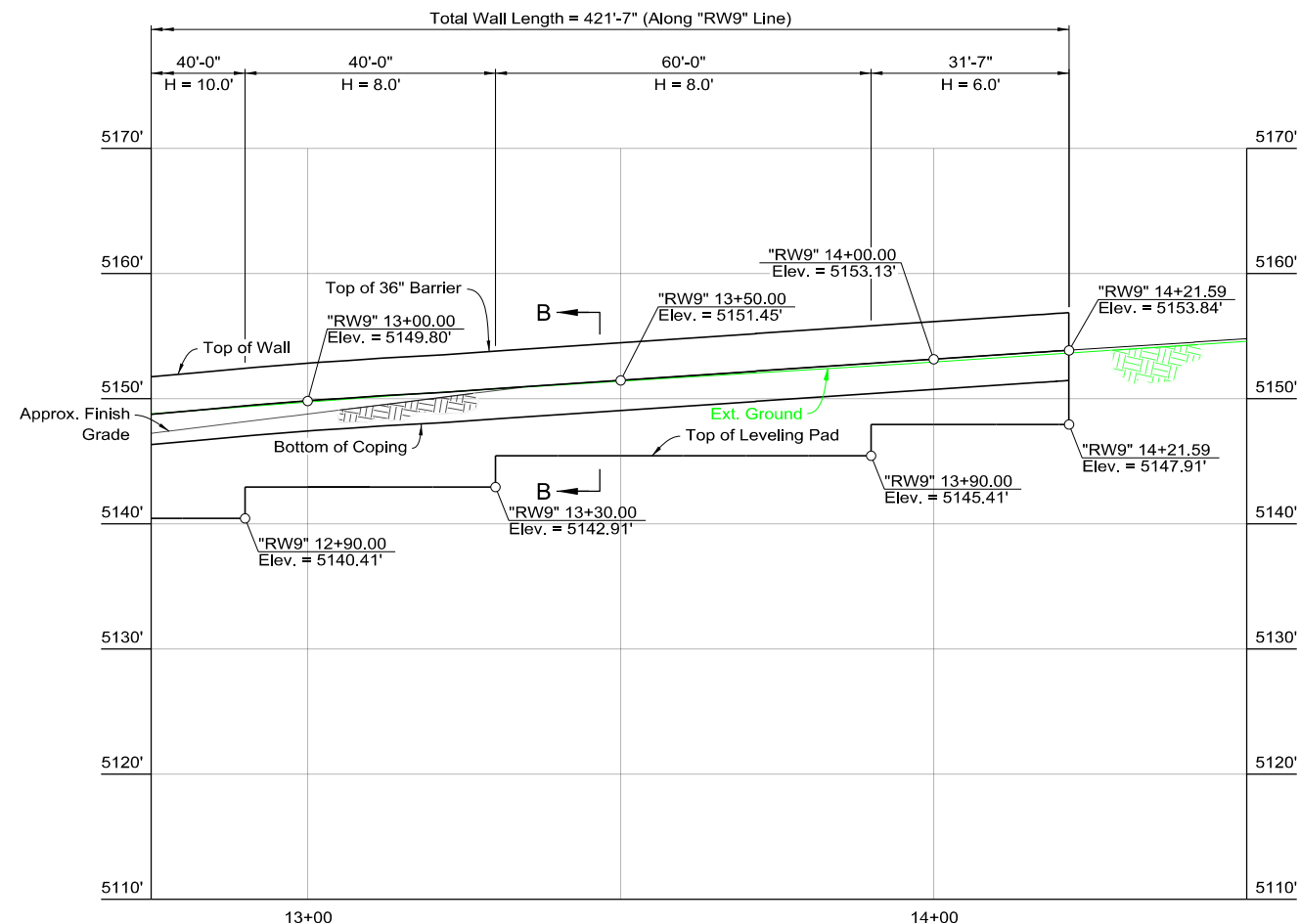
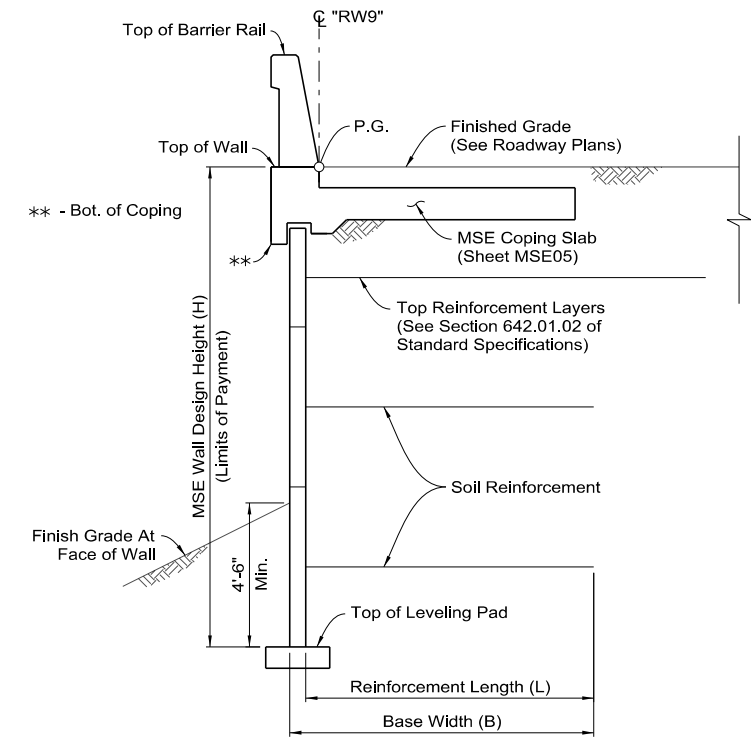
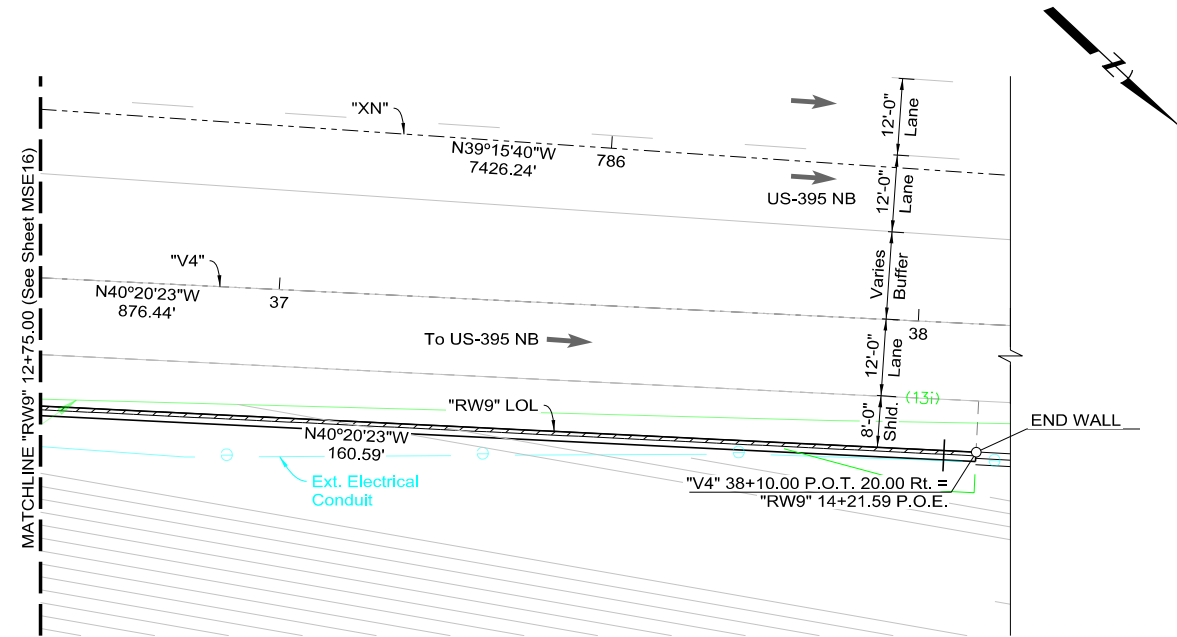
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**MSE WALL "RW9"  
PLAN AND ELEVATION**

DATE : 1/26/2023

For Section B-B, see Sheet MSE05



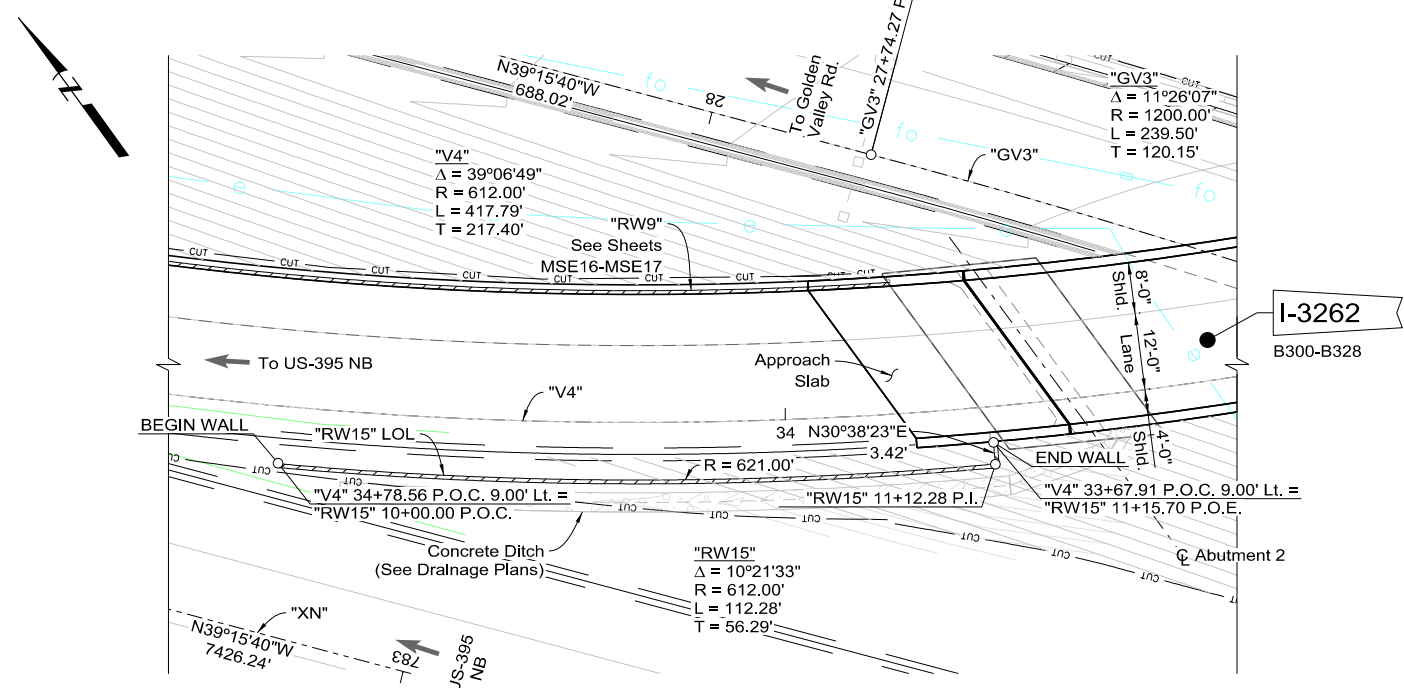


### MSE WALL SCHEDULE

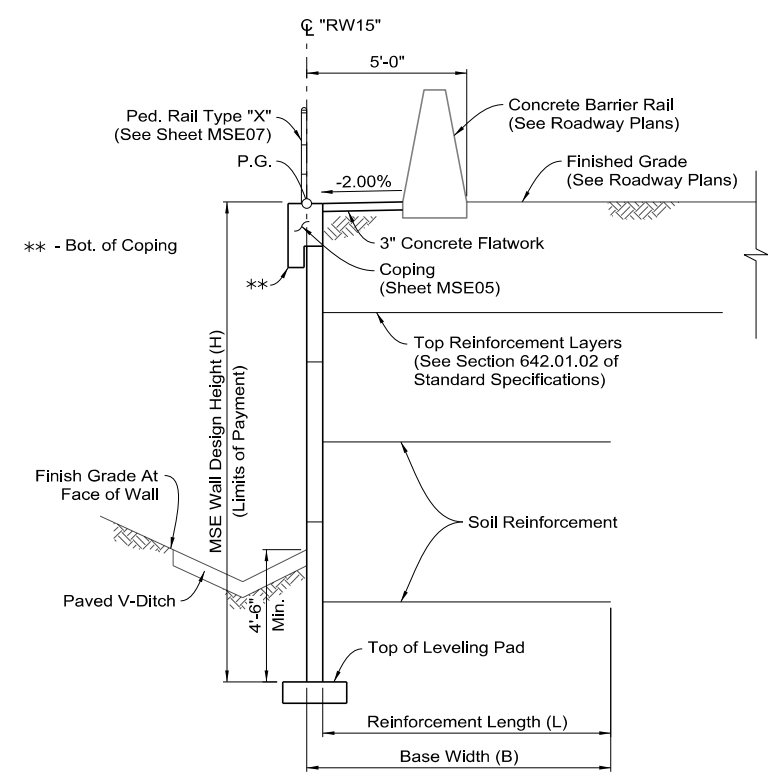
Max. Wall Design Height (H)	Min. Reinforcement Length (L)
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10'-0"	9'-0"
12'-0"	11'-0"
14'-0"	12'-0"
16'-0"	14'-0"
18'-0"	16'-0"
20'-0"	17'-0"
22'-0"	19'-0"
24'-0"	21'-0"
26'-0"	23'-0"
28'-0"	24'-0"
30'-0"	26'-0"
32'-0"	28'-0"
34'-0"	29'-0"

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION  
**MSE WALL "RW9"  
PLAN AND ELEVATION**

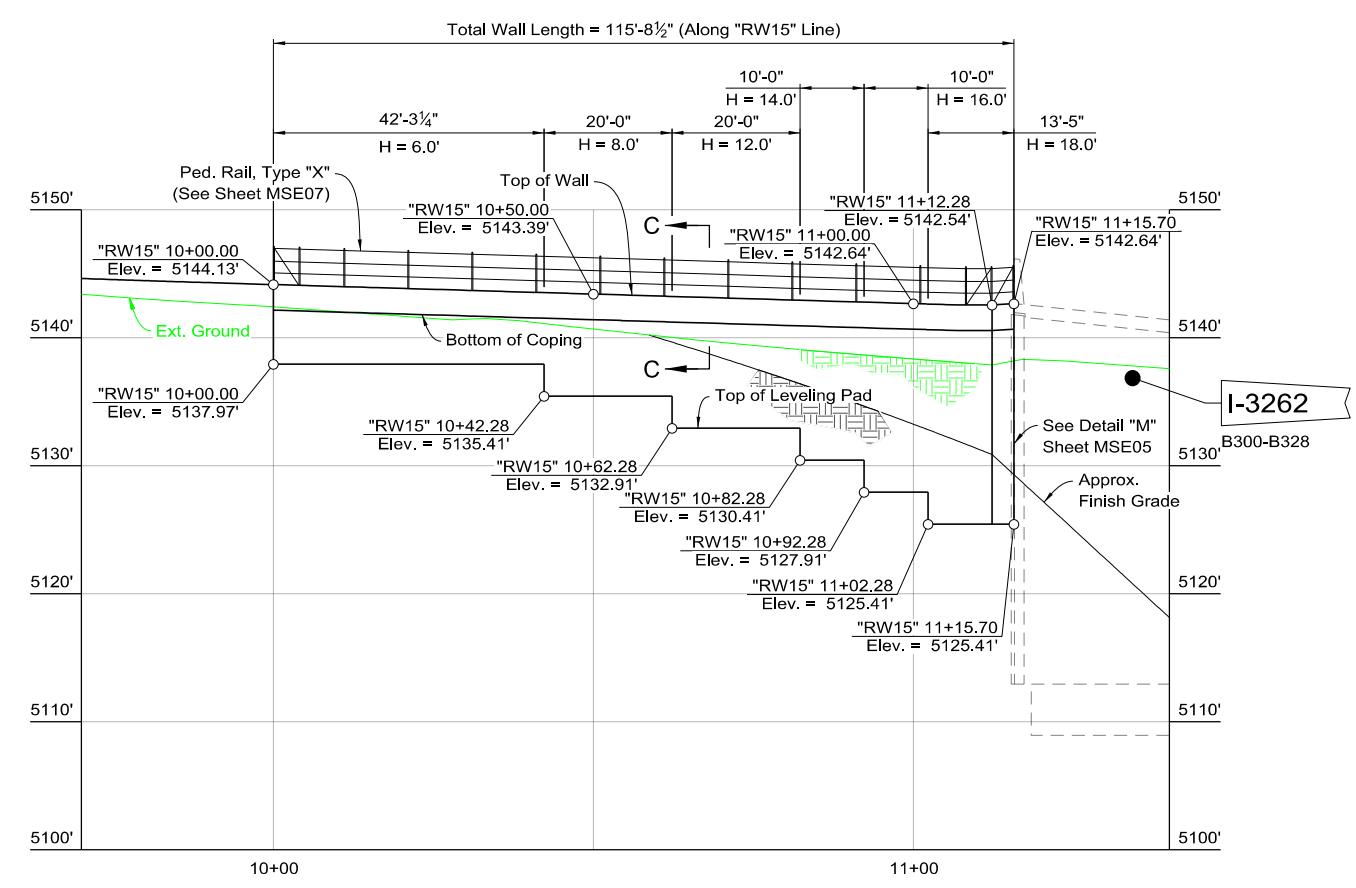
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	MSE18



PLAN



TYPICAL SECTION  
LOOKING BACK ON LINE



DEVELOPED ELEVATION

MSE WALL SCHEDULE

Max. Wall Design Height (H)	Min. Reinforcement Length (L)
<10'-0"	8'-0"
10'-0"	9'-0"
12'-0"	11'-0"
14'-0"	12'-0"
16'-0"	14'-0"
18'-0"	16'-0"
20'-0"	17'-0"
22'-0"	19'-0"
24'-0"	21'-0"
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30'-0"	26'-0"
32'-0"	28'-0"
34'-0"	29'-0"

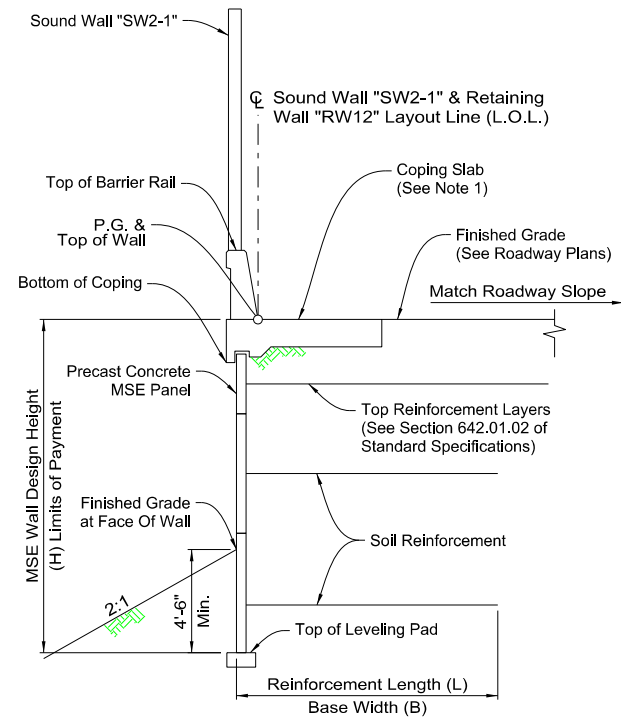
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

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**MSE WALL "RW15"  
PLAN AND ELEVATION**

DATE : 1/26/2023

For Section C-C, see Sheet MSE05

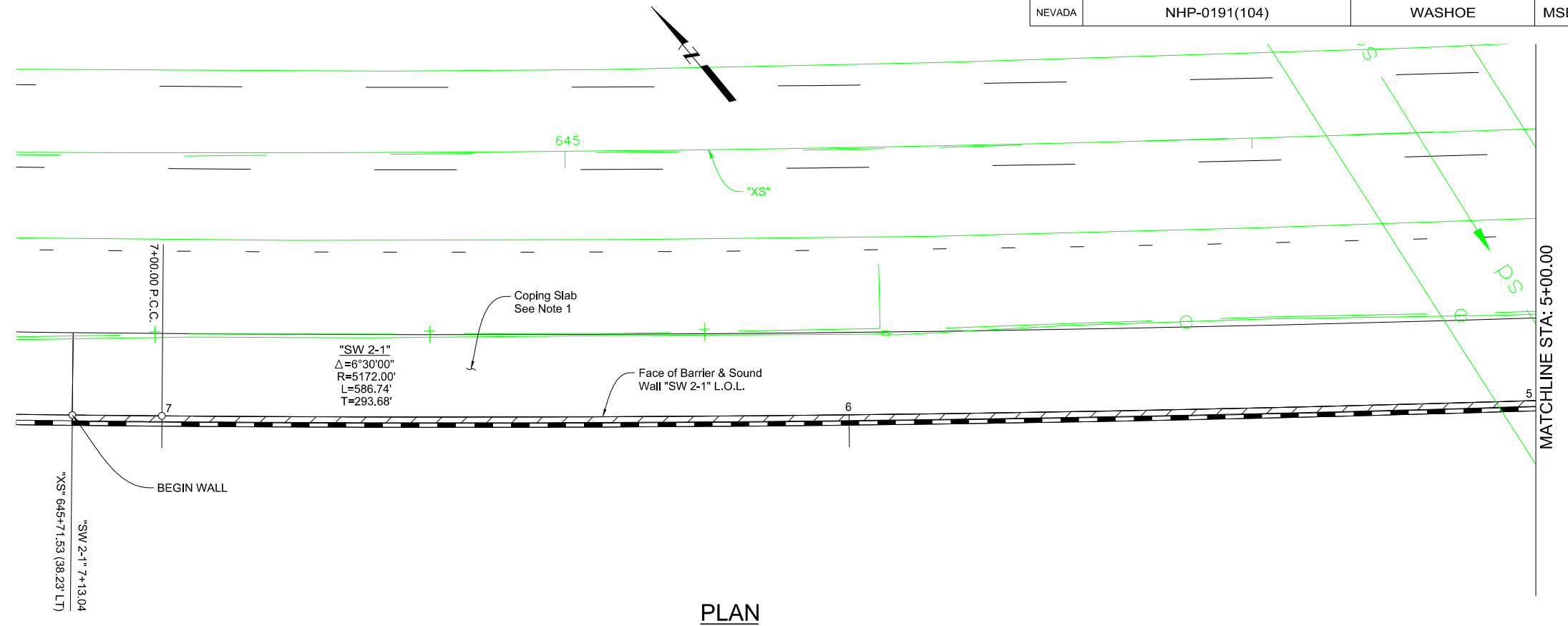


**TYPICAL SECTION**  
LOOKING AHEAD ON LINE

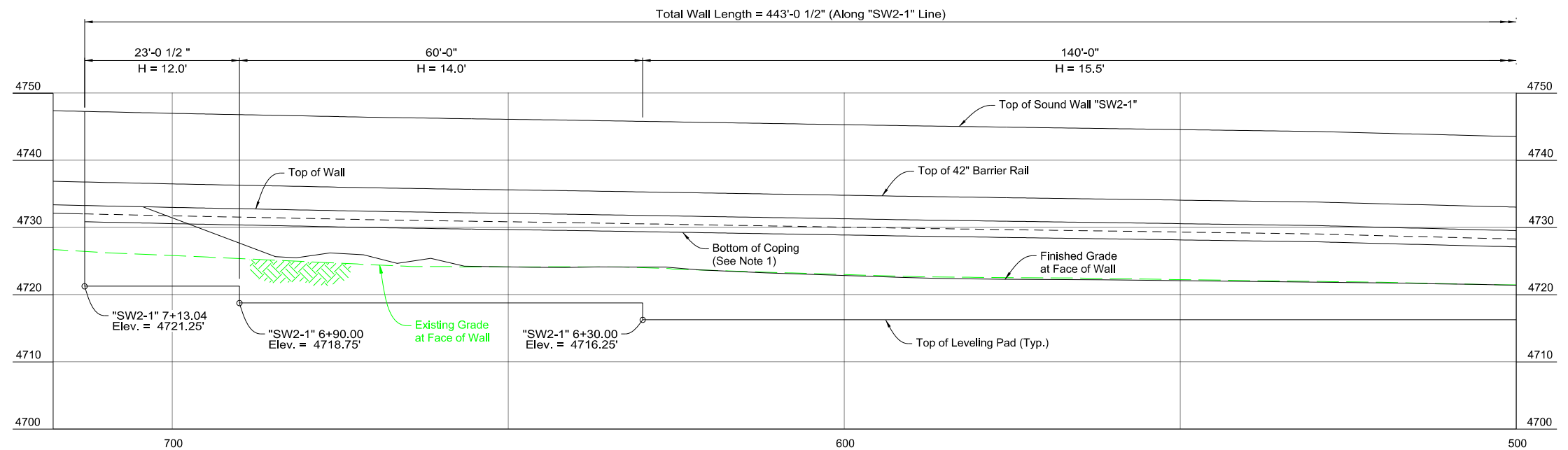
MSE WALL SCHEDULE	
Max. Wall Design Height (H)	Min. Reinforcement Length (L)
< 10'-0"	9'-0"
10'-0"	9'-0"
12'-0"	11'-0"
14'-0"	13'-0"
16'-0"	15'-0"
18'-0"	17'-0"
20'-0"	18'-0"

**NOTE:**

- For coping slab information and details, see Sound Wall "SW2-1" and Sound Wall Details 2 sheets.



**PLAN**



**DEVELOPED ELEVATION**



12/20/2022

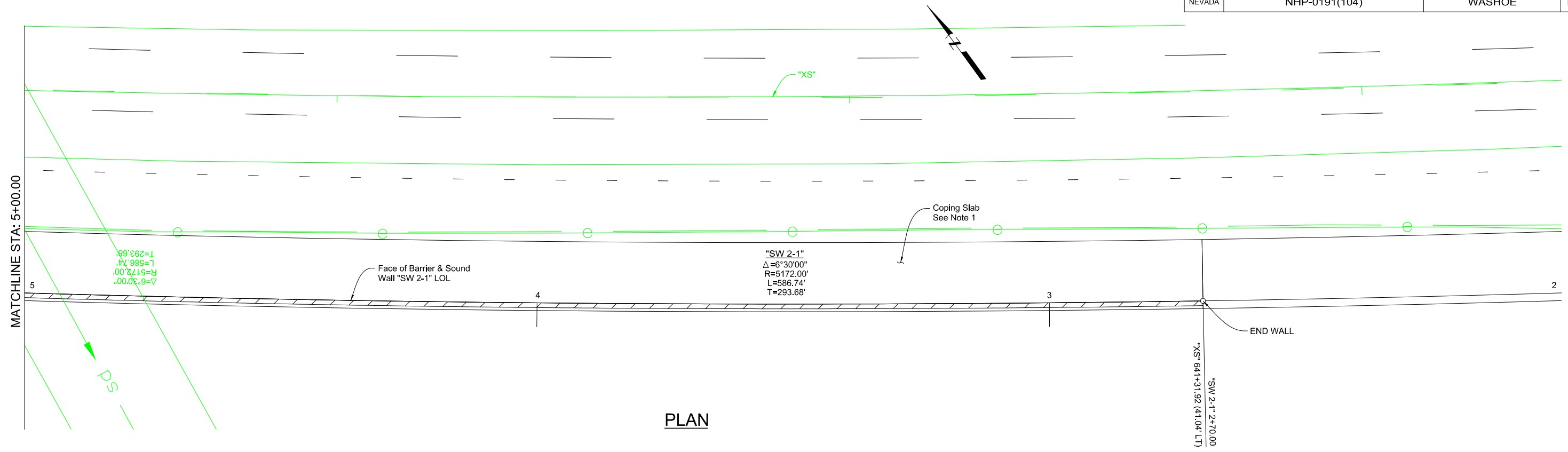
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**RETAINING WALL "RW12"  
PLAN AND ELEVATION**

1 of 2

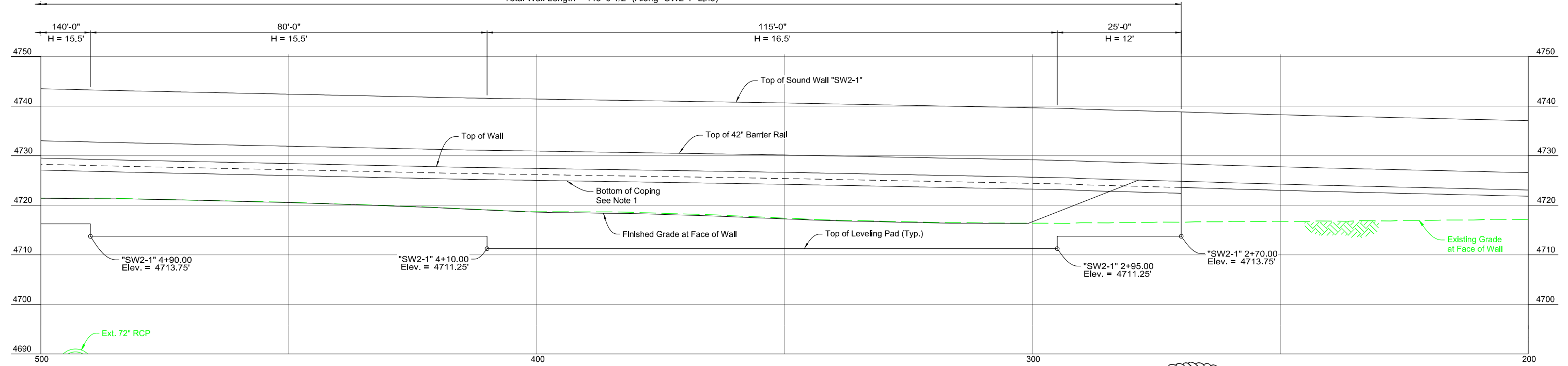
9805 Double R Boulevard, Suite 101  
Reno, NV 89521-5917  
PH: 775-337-4700 FAX: 775-337-4774

STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	MSE20



PLAN

Total Wall Length = 443'-0 1/2" (Along "SW2-1" Line)



DEVELOPED ELEVATION

NOTES:

1. For coping slab information and details, see Sound Wall "SW2-1" and Sound Wall Details 2 sheets.
2. For MSE Wall Schedule, see Retaining Wall "RW12" Plan and Elevation 1 sheet.



STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

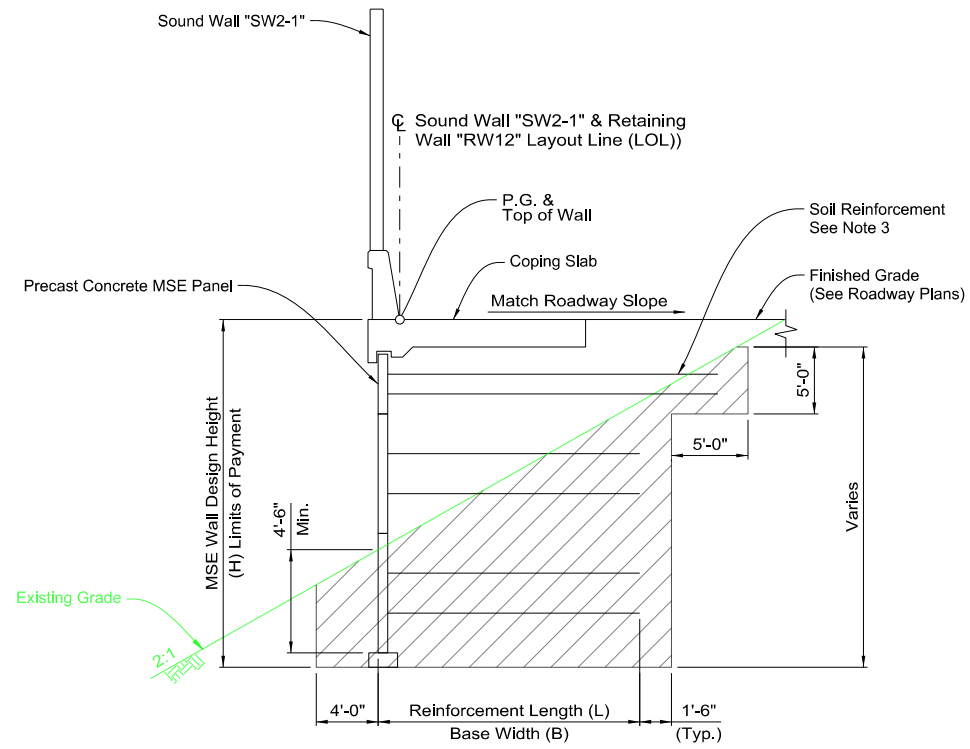
**RETAINING WALL "RW12"  
PLAN AND ELEVATION**

2 of 2

**HDR**  
HDR Engineering, Inc.

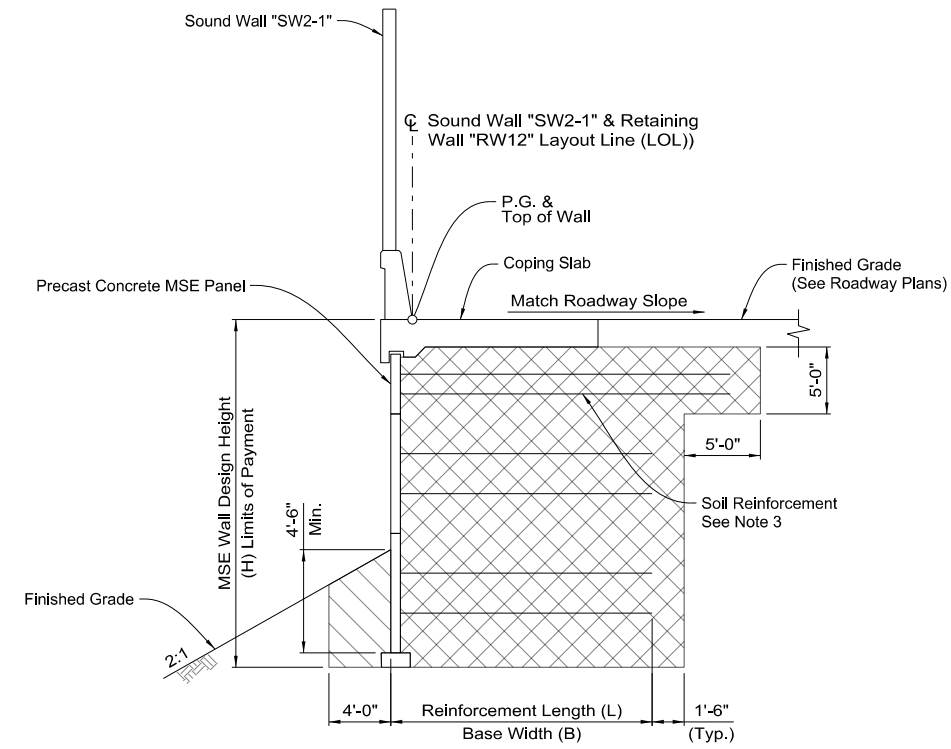
9805 Double R Boulevard, Suite 101  
Reno, NV 89521-5917  
PH: 775-337-4700 FAX: 775-337-4774

STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	MSE21



**EXCAVATION SCHEMATIC**




RW12



**BACKFILL SCHEMATIC**

RW12

**LEGEND:**

-  Limits of Structure Excavation
-  Limits of Granular Backfill
-  Limits of Mechanically Stabilized Earth Backfill

**NOTES:**

1. The limits of structure excavation and backfill shown herein shall be used for the method of measurement and payment only. There shall be no additional compensation for any additional excavation and backfill required for excavations to meet OSHA regulations.
2. MSE backfill limits shown herein is for external wall design requirements. See Standard Specifications Section 642.04.01.
3. Top two layers of soil reinforcement shall be a minimum of 5'-0" longer than all other layers below per Standard Specifications Section 642.01.02.



12/20/2022

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

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**RETAINING WALL "RW12"  
DETAILS**

---

**HDR** 9805 Double R Boulevard, Suite 101  
Reno, NV 89521-5917  
PH: 775-337-4700 FAX: 775-337-4774



STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	SN01

**GENERAL NOTES:**

- Existing grade, top of shotcrete wall, and bottom of shotcrete wall elevations are provided on drawings. However, these drawings may not accurately represent field conditions. The Contractor is required to conduct necessary field investigations to verify all controlling measurements (dimensions, elevations and bearings) prior to ordering materials, preparing shop drawings or starting any construction. Submit all information to the engineer, identify those measurements that deviate substantially from the plans and that will impact the new construction for resolution by the engineer. No direct payment will be made for obtaining field measurements.
- All nail lengths and nail bar sizes shall be in accordance with schedules and details shown herein.
- For shotcrete wall reinforcing requirements, see sheets SN10, SN11, SN15 & SN16.
- For nail inclination requirements, see sheet SN10 & SN15.
- All materials, workmanship and construction shall be in accordance with contract documents.
- The contractor is responsible for field locating all utilities.
- The contractor is responsible for providing and maintaining stable slopes above and below the soil nail walls. Soil in back of wall that is disturbed by sloughing or construction shall be carefully removed and replaced with lean concrete at no direct payment.
- No general excavation open cuts steeper than 1.5H:1V shall be made within 10 ft. Of the face of the soil nail walls without approval of the geotechnical engineer.
- The soil nail wall designed as a part of these plans is permanent and is designed to resist all lateral earth pressures.
- Structural Excavation & Granular Backfill Limits: For limits of structural excavation and granular backfill, refer to NDOT Standard Plans Sheet EB-4. Any temporary shoring required to maintain traffic, protect utilities, or as otherwise needed shall conform to the Design and Construction Specifications of these General Notes. Contractor to submit a plan outlining construction procedures, shoring requirements, and design to the engineer for review and approval prior to proceeding with the work.

**DESIGN REQUIREMENTS:**

- Design Specifications: AASHTO LRFD Bridge Design Specifications, Eighth Edition, 2017.
- See "Geotechnical Design Report, US 395 North Valleys, Washoe County, Nevada. Nevada Department of Transportation" by HDR
- The following factors of safety were applied to the above parameters:  
STATIC ANALYSIS: F.S. C = 1.5, F.S.Qd = 2.0, F.S. nh = 1.35, F.S.fy = 1.80
- Live Load: Retaining walls shall be designed for a live load surcharge pressure per AASHTO LRFD Article 3.11.6.4.
- Seismic Load: Design based on AASHTO Response Spectra for Site Class C and Seismic Performance Zone 4. Peak Ground Acceleration Coefficient = 0.5, Ss = 1.25, S1 = 0.5 from Figure 12.3-H of the NDOT Structures Manual.

**SEQUENCE OF CONSTRUCTION:**

- The soil nail Contractor shall locate all utilities (existing and new) and existing foundations in the vicinity of the wall to confirm adequate clearance. If a conflict is encountered, contact the Engineer to evaluate the wall design as required.
- Excavation to the final temporary face, defined as the back of the structural shotcrete facing, shall use procedures which: (1) prevent over-excavation; (2) prevent ground loss, swelling, air slaking, or mass loosening; (3) prevent loss of support for completed portions of the wall or existing roadway; (4) prevent gain or loss of soil moisture at the face; and (5) prevent damage to existing roadway, structures and utilities.
- Walls shall be built from the top down in accordance with the staged excavation lifts. Lifts are not to exceed 5 feet in height without the installation of the soil nails and shotcrete facing.
- Soil nails shall be installed at the locations and to the lengths and inclinations shown in these Plans.
- Installation of production soil nails shall not be permitted in any soil unit before successful pre-production verification testing of sacrificial soil nails is completed in that unit and approved by the Engineer. Verification test soil nails shall be installed using the same equipment, methods, soil nail inclination, and drill hole diameter as for the production soil nails. Pre-production verification tests shall be performed in accordance with the Verification Testing section of these Plans and the Specifications. Locations of verification test nails shall be selected by the soil nail Contractor based on the encountered soil units and approved by the Engineer.
- Construction of the soil nail wall may require the excavation face of the soil nail wall to be stabilized. The soil nail Contractor is responsible for developing and constructing the soil stabilization system to facilitate construction of the soil nail wall.
- The following wall construction sequence for each excavation lift shall be completed prior to initiating work on the next excavation lift unless otherwise approved by the Engineer:
  - Excavate to rough grade.
  - Perform soil nail verification tests as required.
  - Trim to final wall face excavation line or stabilizing berm (if used). Employ additional stabilization methods if caving soils are encountered. Stabilization methods may include flash coating with shotcrete or constructing a stabilizing berm.
  - Install soil nails. Trim stabilizing berm (if used) to final wall face excavation line.
  - Install geocomposite drain strips.
  - Place reinforcing steel and apply shotcrete. Excavation with exposed wall face shall not be left unstabilized at the end of the work shift unless approved by the Engineer.
  - Perform soil nail proof tests in accordance with the Proof Testing section of these Plans and the Specifications after the nail grout and shotcrete have attained their specified strengths.
- Soil nail Contractor shall coordinate with the fascia Contractor for construction of the CIP concrete fascia wall.

**SOIL NAIL INSTALLATION:**

- VERIFICATION: Dimensions and locations of future structures shall be verified prior to fabrication and installation of any structural member. Engineer shall be notified of any discrepancies in dimensions.
- SOIL NAIL TOLERANCES: Nail head plan location < 6 Inches not cumulative, orientation < 3 degrees.
- Minimum soil nail drill hole diameter is 6 inches.
- QUALITY CONTROL: A systematic program of observation shall be conducted during the project execution to determine the effect of construction on adjacent soil nails in order to protect them from damage.

**INSPECTION AND MONITORING:**

- The contractor shall provide inspection, material testing, and surveying and monitoring of soil nail wall installation.
- Drilling contractor shall take photographs to document conditions of adjacent existing structures, walls, street pavements, utilities, etc. prior to commencement of work.
- Daily observations shall be made of conditions above the soil nail wall for signs of ground movement such as new cracks in structures, increased size of existing cracks, or separation of joints in structures, foundations, streets or paved and unpaved surfaces.
- Monitoring of ground settlement and soil nail wall movement shall be through survey with instruments provided by the contractor at least twice per week until the completion of the soil nail wall, and twice per week afterwards. The above monitoring frequencies may be revised after engineer has examined the survey data and evaluated the performance of the soil nail wall. The number and locations of survey points required shall be determined by engineer. Monitoring data shall be transmitted on a weekly basis.
- Should signs of ground movement or sudden increase of ground settlement or soil nail wall movement be detected, the contractor shall immediately notify engineer.

**RECORDS:**

- Prepare and submit to the engineer full-length installation records for each installed nail, submit within 24 hours of installation the following: nail head elevation; drill hole diameter; unusual drilling condition; soil stratigraphy; top elevation of strongly cemented soils or bedrock; occurrence of groundwater; bar size; number and location of centralizers; drilling methods; and other useful data.

**MATERIALS:**

- Proportion initial shotcrete facing to have a minimum 28-day compressive strength of 4,000 psi. Use type V cement. Final/finished concrete facing shall have a 28-day compressive strength of 4,000 psi.
- Proportion nail grout to have a minimum 3-day compressive strength of 1,500psi and a minimum 28-day compressive strength of 3,000 psi. Use type V cement.
- Bearing plate/headed concrete anchor assembly steel shall be in accordance with AASHTO M183/ASTM A36.
- Conventional nail bars shall be grade 75 deformed bars in accordance with ASTM A615 with double corrosion protection (Encapsulation with Pregrouting).
- Horizontal water splices shall have laps centered around midspan between nails, and shall be staggered at least 40 bar diameters.
- Tolerances for concrete and fabricating and placing reinforcement shall conform to applicable ACI requirements.
- Notes and details on this sheet apply to all drawings unless otherwise noted.
- Reinforcing bars shall be ASTM A706 grade 60.
- Welded wire reinforcing shall be ASTM A1064 grade 60.
- Coupling hex nuts & other accessories shall be in accordance with nail bar manufacturer's specifications.
- Concrete: All barrier rail concrete shall be Class EA Modified (Major), with fc = 4,500 psi at 28 days. All other concrete shall be Class AA (Major) with Fc = 4,500 psi at 28 days. Unless noted otherwise

**VERIFICATION TESTING:**

- Verification testing shall be performed in accordance with subsection 644.03.08 of the standard specifications.
- Submit detailed records of proposed methods for testing as specified below prior to beginning tests. Include drawings and details to clearly describe methods. Submit calibration reports and data for each test jack, pressure gauge and master pressure gauge (calibrated as a unit) to be used. Calibration reports shall not be older than 90 days. Testing shall be complete within a lift prior to advancing the excavation to the next lift.
- Maximum test load shall not exceed 80 percent of the guaranteed ultimate tensile strength (guts) of conventional nail bars. For grade 75, no. 8 bar, maximum test load is 47.5 kips.

**PROOF TESTING:**

- Proof testing shall be performed in accordance with subsection 644.03.09 of the standard specifications.

**SHEET INDEX**

SHEET	DESCRIPTION
SN01	Soil Nail Wall General Notes & Quantities
SN02	Soil Nail Wall "RW3" Plan and Elevation 1
SN03	Soil Nail Wall "RW3" Plan and Elevation 2
SN04	Soil Nail Wall "RW3" Plan and Elevation 3
SN05	Soil Nail Wall "RW3" Plan and Elevation 4
SN06	Soil Nail Wall "RW3" Plan and Elevation 5
SN07	Soil Nail Wall "RW3" Plan and Elevation 6
SN08	Soil Nail Wall "RW3" Plan and Elevation 7
SN09	Soil Nail Wall "RW3" Plan and Elevation 8
SN10	Soil Nail Wall "RW3" Details 1
SN11	Soil Nail Wall "RW3" Details 2
SN12	Soil Nail Wall "RW3" Details 3
SN13	Soil Nail Wall "RW14" Plan and Elevation
SN14	Soil Nail Wall "RW10" Plan and Elevation
SN15	Soil Nail Wall "RW14" & "RW10" Details 1
SN16	Soil Nail Wall "RW14" & "RW10" Details 2

**QUANTITIES - Soil Nail Walls**

ITEM NO.	ITEM DESCRIPTION	UNIT	RW3	RW10	RW14	Total
206 0110	STRUCTURE EXCAVATION	CU.YD.	8,942	0	0	8,942
207 0110	GRANULAR BACKFILL	CU.YD.	414	0	0	414
502 0950	CLASS AA CONCRETE, MODIFIED (MAJOR)	CU.YD.	2,171	21	11	2,203
502 1010	CLASS EA CONCRETE, MODIFIED (MAJOR)	CU.YD.	287	0	0	287
505 0100	REINFORCING STEEL	POUND	98,149	4,427	2,417	104,993
505 0120	REINFORCING STEEL (EPOXY COATED)	POUND	251,467	0	0	251,467
506 0820	PEDESTRIAN RAIL, TYPE X	LIN.FT.	0	77	50	127
610 0050	GEOTEXTILE (CLASS 1)	SQ.YD.	468	17	9	494
613 0470	CLASS AA CONCRETE GUTTER (2-FOOT)	LIN.FT.	0	75	49	124
644 0100	SOIL NAIL	LIN.FT.	14,570	415	180	15,165
644 0120	VERIFICATION TEST	EA	1	1	1	3
660 0995	PNEUMATICALLY PLACED CONCRETE MORTOR (4-INCH)SQ.YD.		2,329	62	29	2,420



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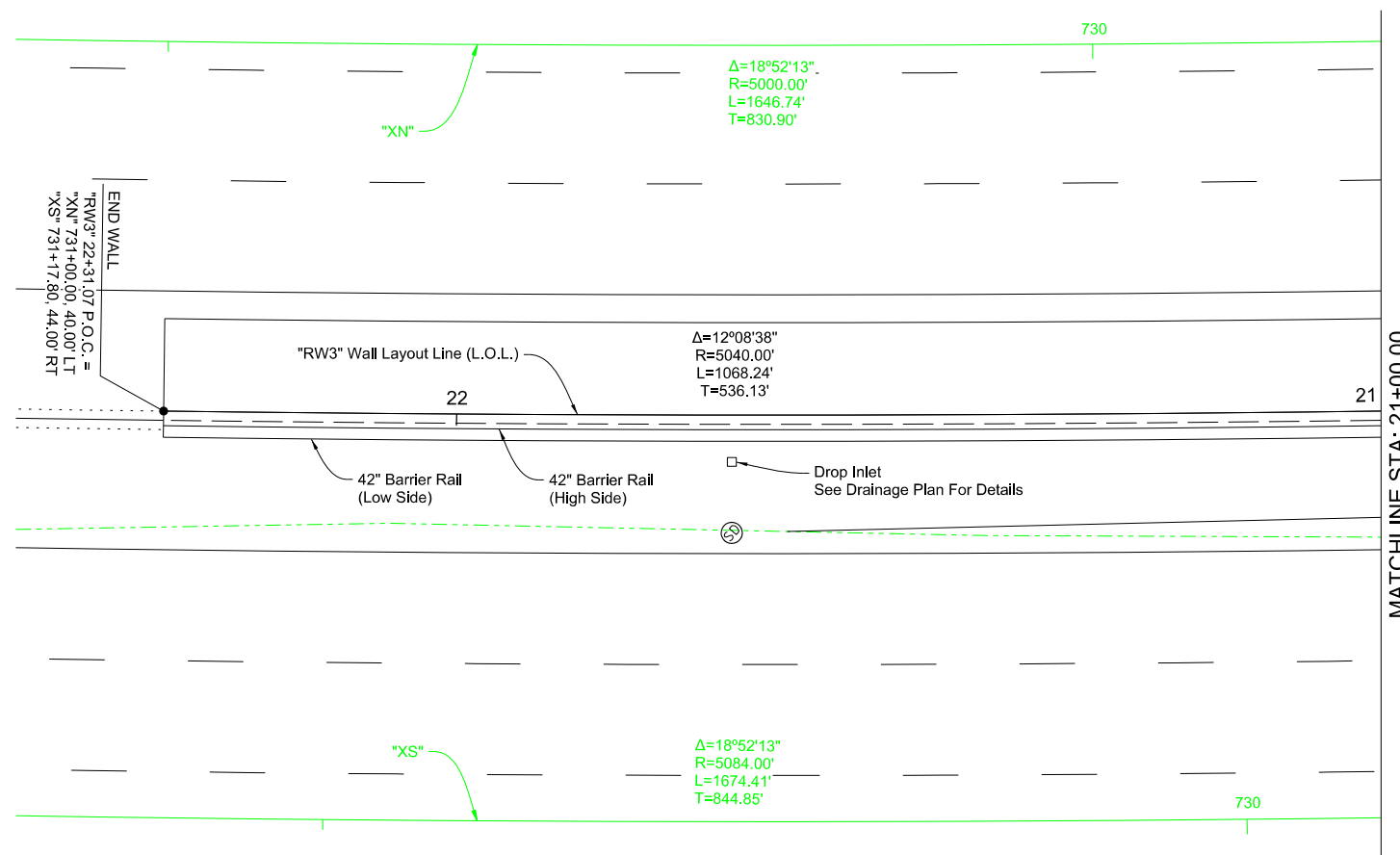
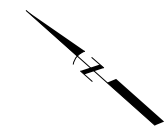
**SOIL NAIL WALL  
GENERAL NOTES  
& QUANTITIES**

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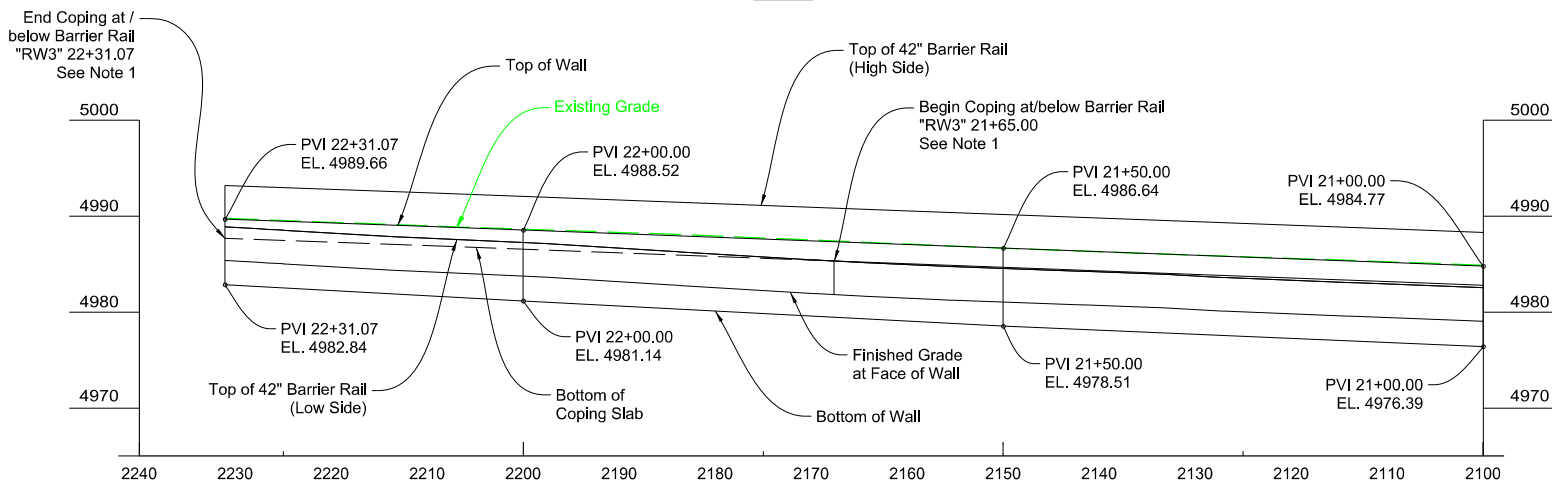
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STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	SN02



PLAN



ELEVATION

**NOTE:**  
 1. Refer to sheet Soil Nail Wall "RW3" Details 3 for Coping at/below Barrier Rail Detail.



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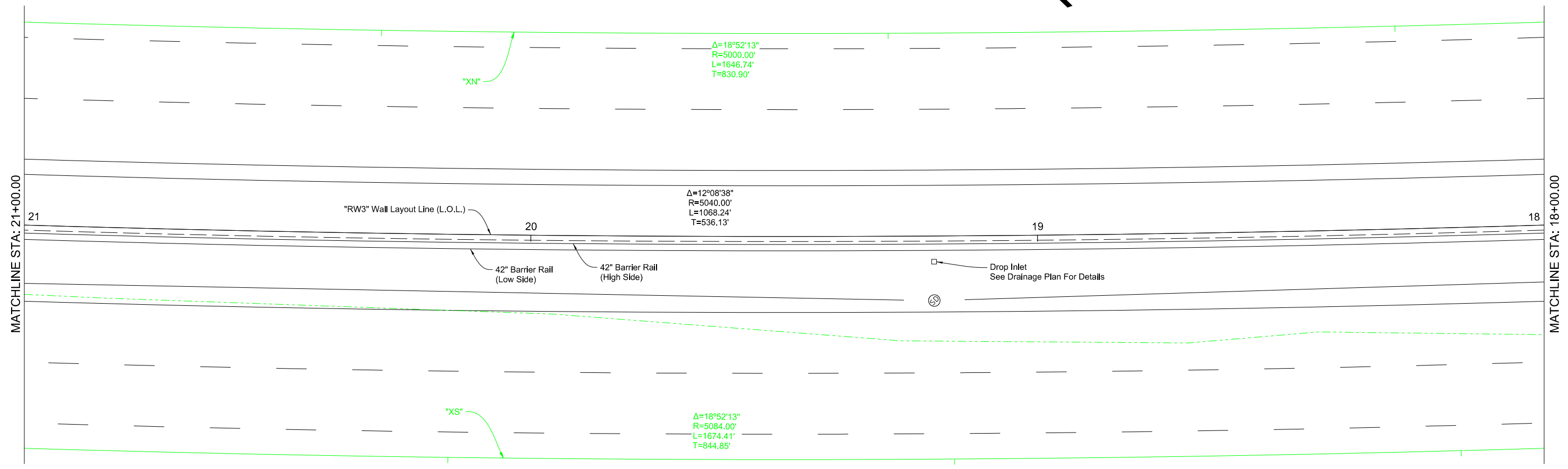
STATE OF NEVADA  
 DEPARTMENT OF TRANSPORTATION

**SOIL NAIL WALL "RW3"  
 PLAN AND ELEVATION 1**

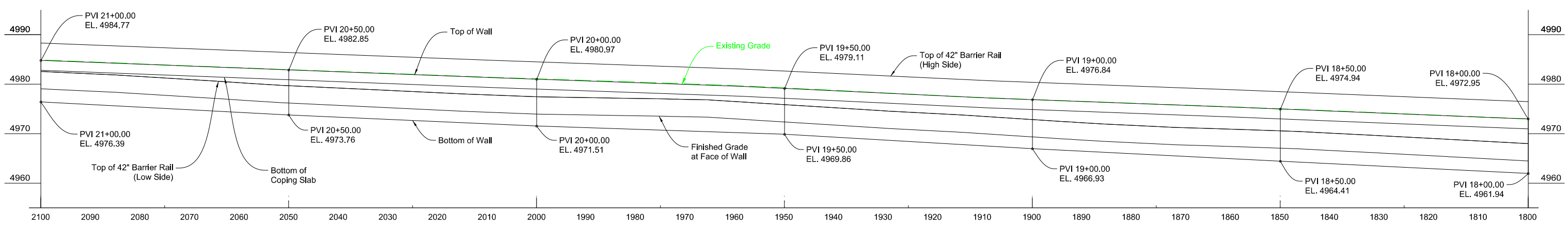
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STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	SN03



PLAN



ELEVATION



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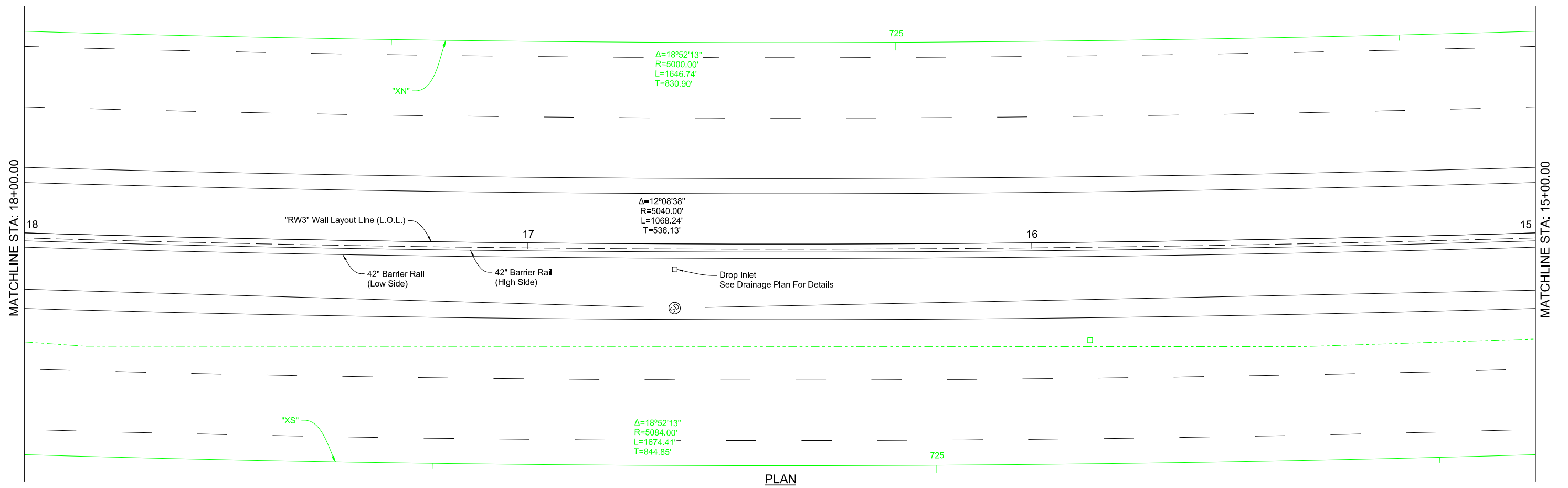
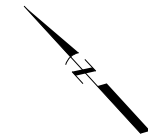
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**SOIL NAIL WALL "RW3"  
PLAN AND ELEVATION 2**

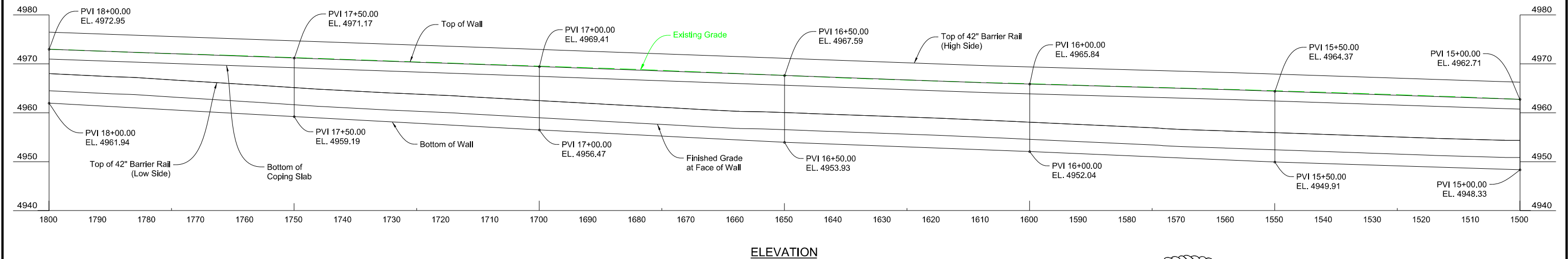


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NEVADA	NHP-0191(104)	WASHOE	SN04



PLAN



ELEVATION



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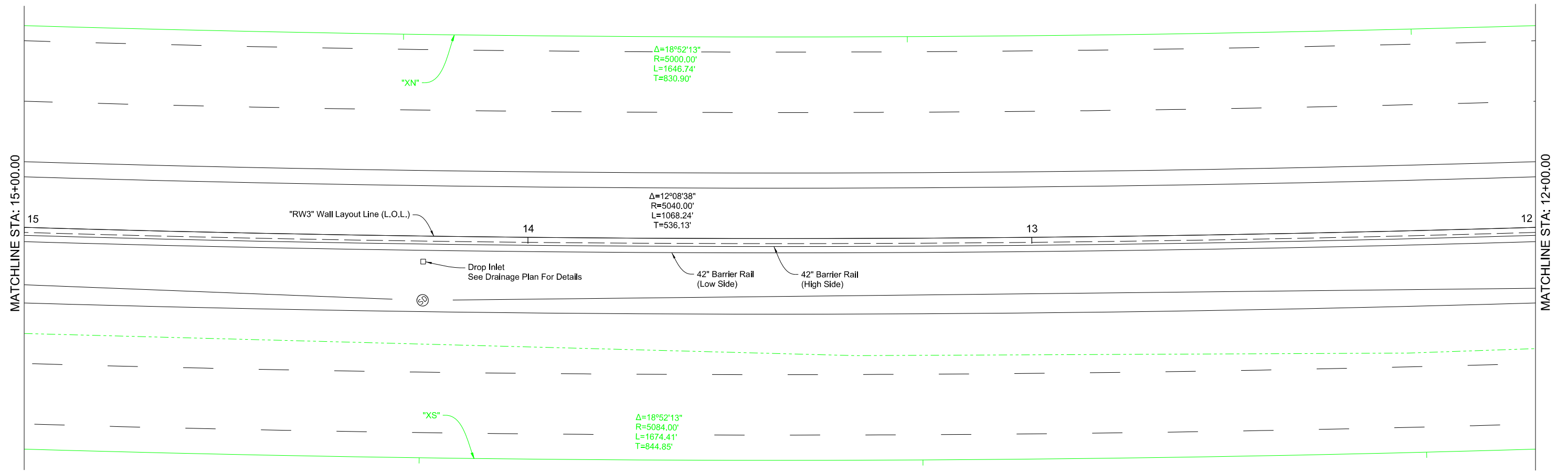
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**SOIL NAIL WALL "RW3"  
PLAN AND ELEVATION 3**

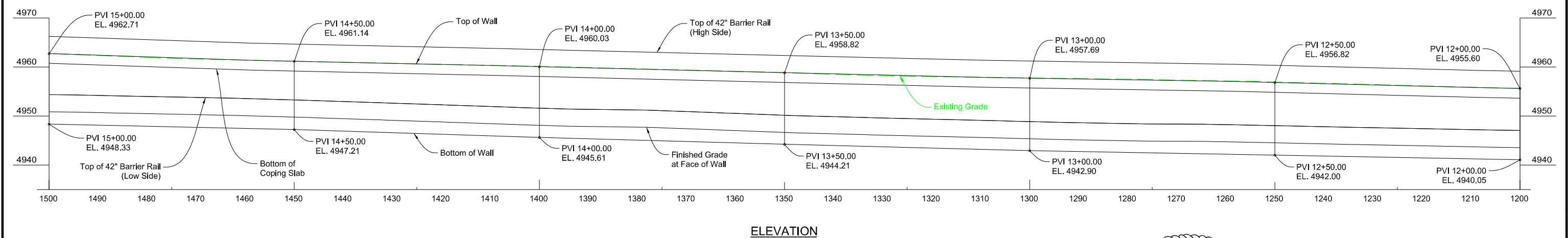
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STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	SN05



PLAN



ELEVATION



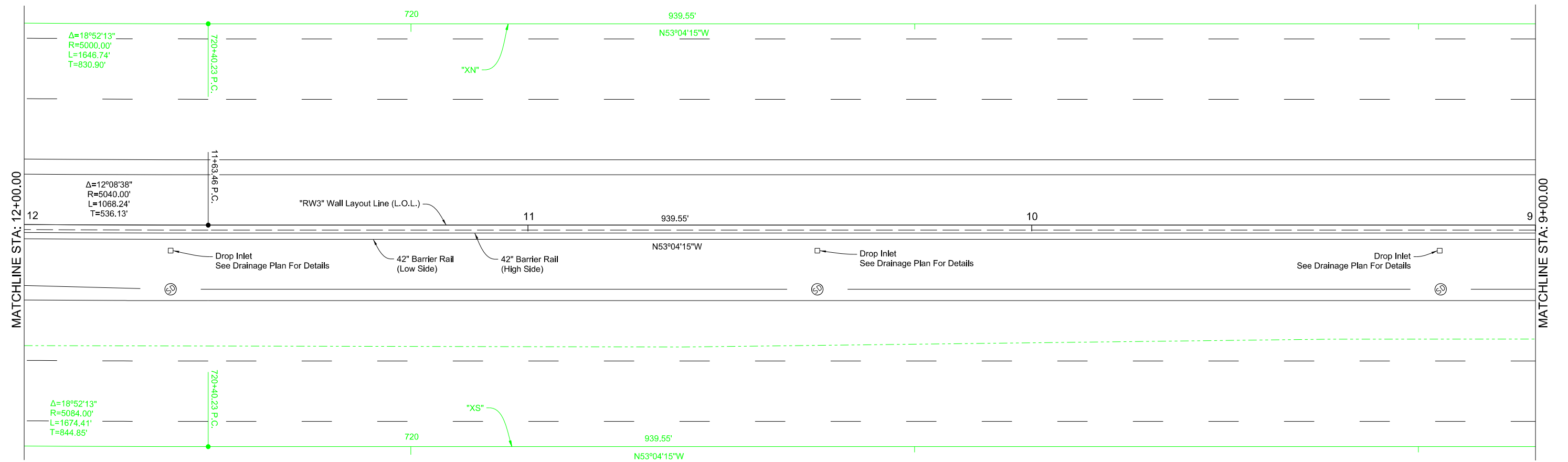
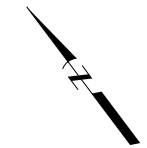
12/20/2022

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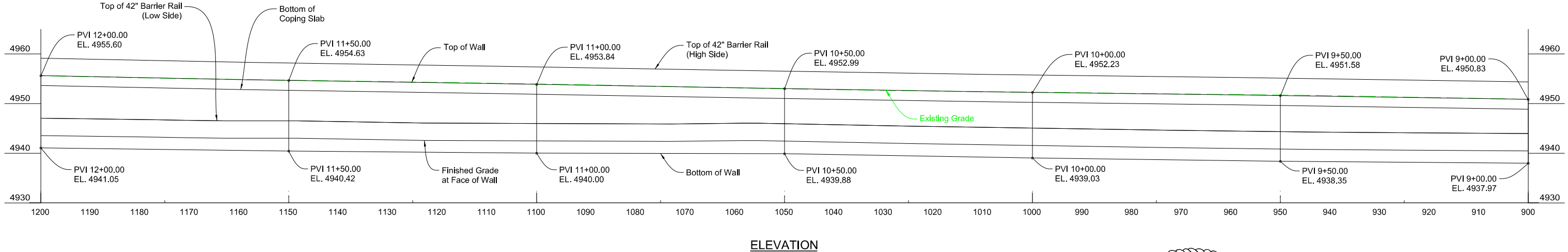
**SOIL NAIL WALL "RW3"  
PLAN AND ELEVATION 4**

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NEVADA	NHP-0191(104)	WASHOE	SN06



**PLAN**



**ELEVATION**



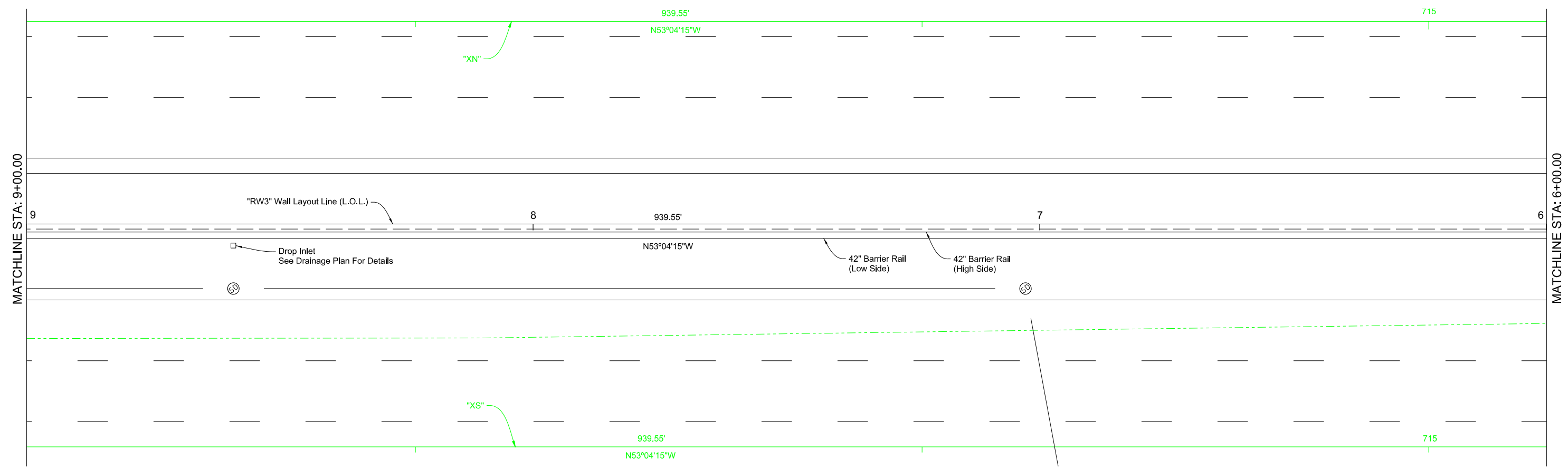
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DEPARTMENT OF TRANSPORTATION

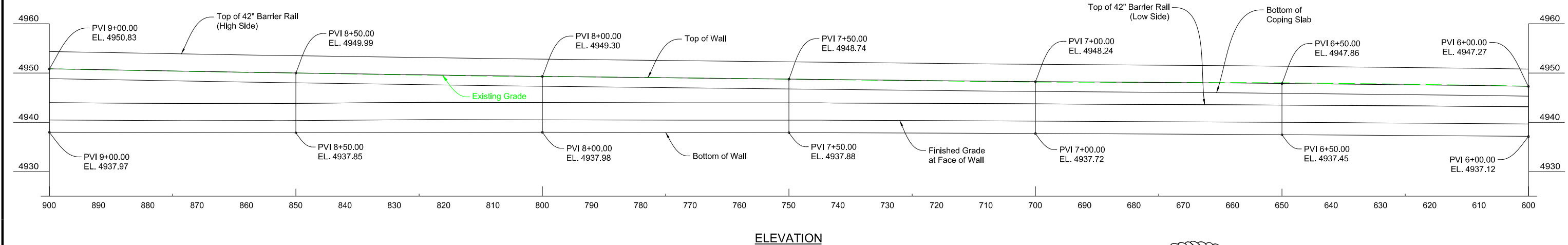
**SOIL NAIL WALL "RW3"  
PLAN AND ELEVATION 5**

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STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	SN07



**PLAN**



**ELEVATION**



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DEPARTMENT OF TRANSPORTATION

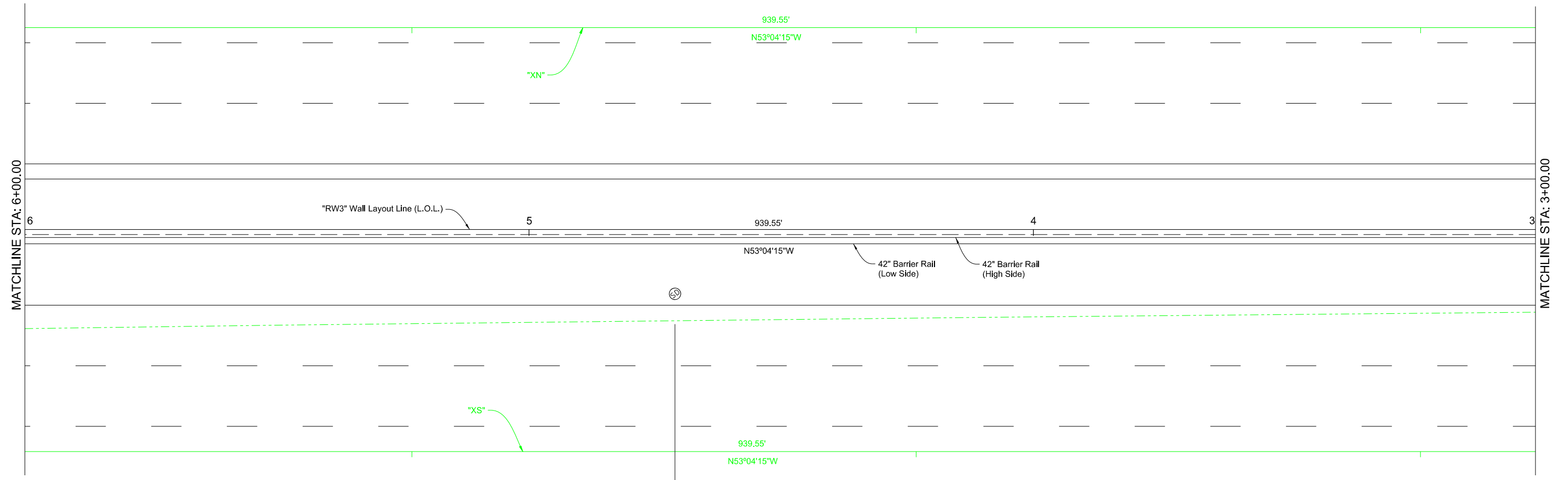
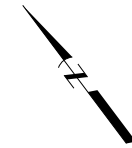
**SOIL NAIL WALL "RW3"  
PLAN AND ELEVATION 6**

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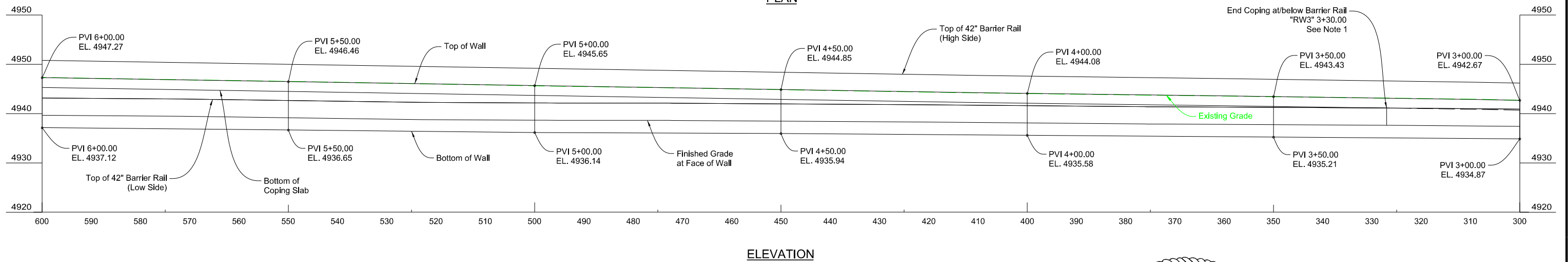
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NEVADA	NHP-0191(104)	WASHOE	SN08



**PLAN**



**ELEVATION**

**NOTE:**


1. Refer to sheet Soil Nail Wall "RW3" Details 3 for Coping at/below Barrier Rail Detail.



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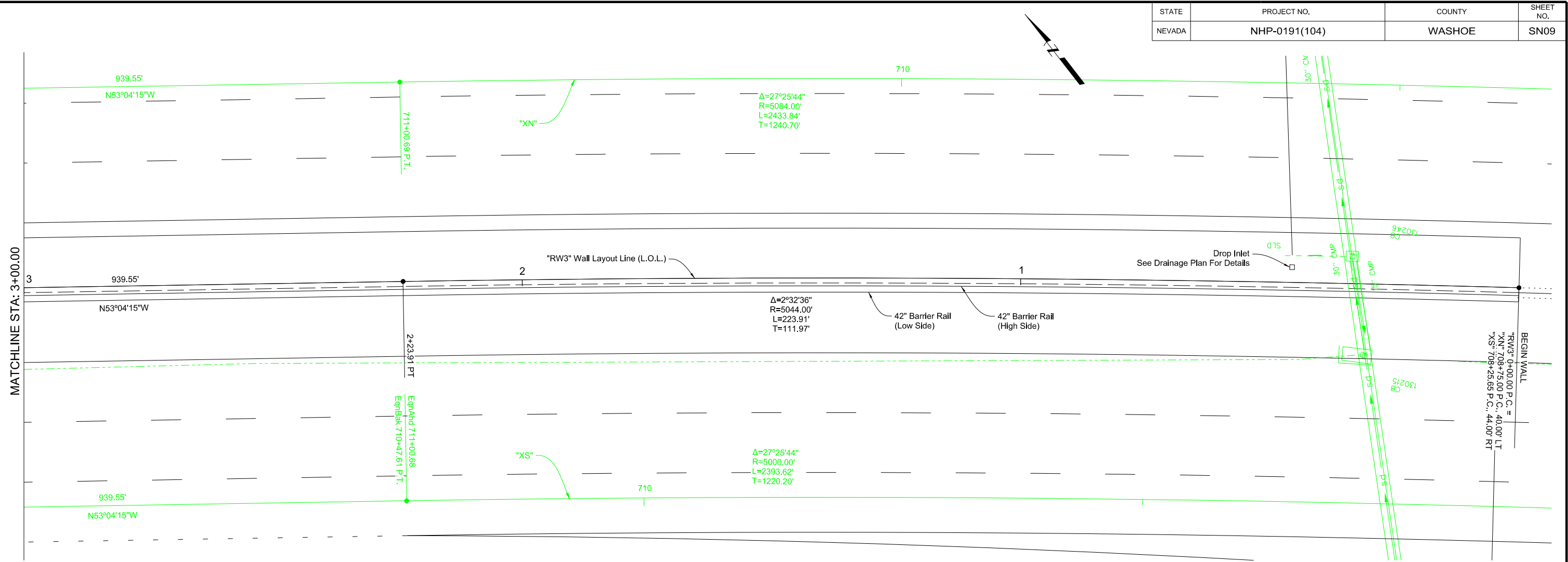
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**SOIL NAIL WALL "RW3"  
PLAN AND ELEVATION 7**

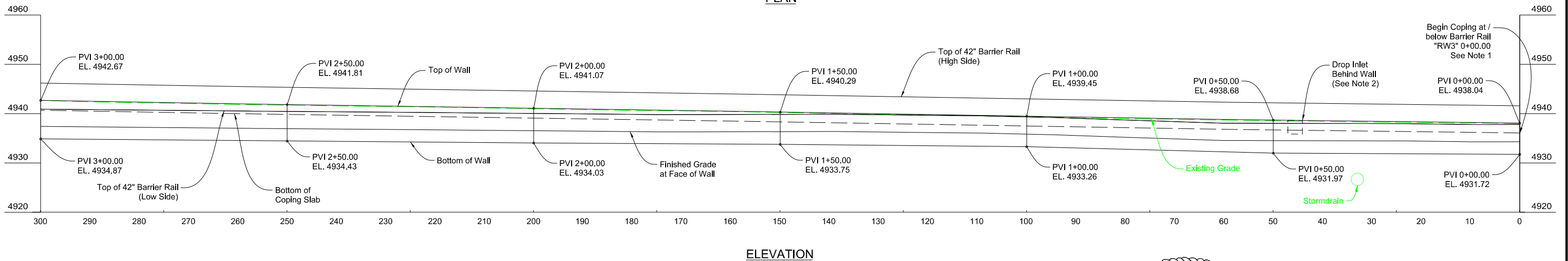


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STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	SN09



PLAN



ELEVATION

- NOTE:**
1. Refer to sheet Soil Nail Wall "RW3" Details 3 for Coping at/below Barrier Rail Detail.
  2. Horizontally space soil nails interrupted by drop inlet equally to each side of inlet, allowing for 1' of minimum clearance.



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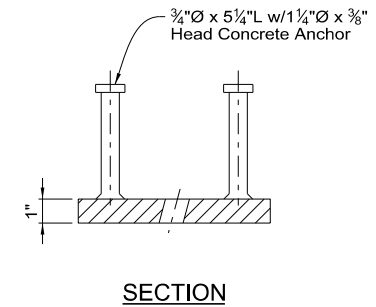
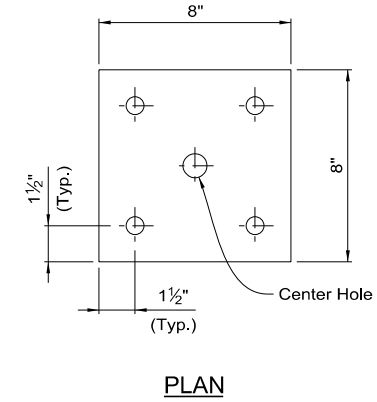
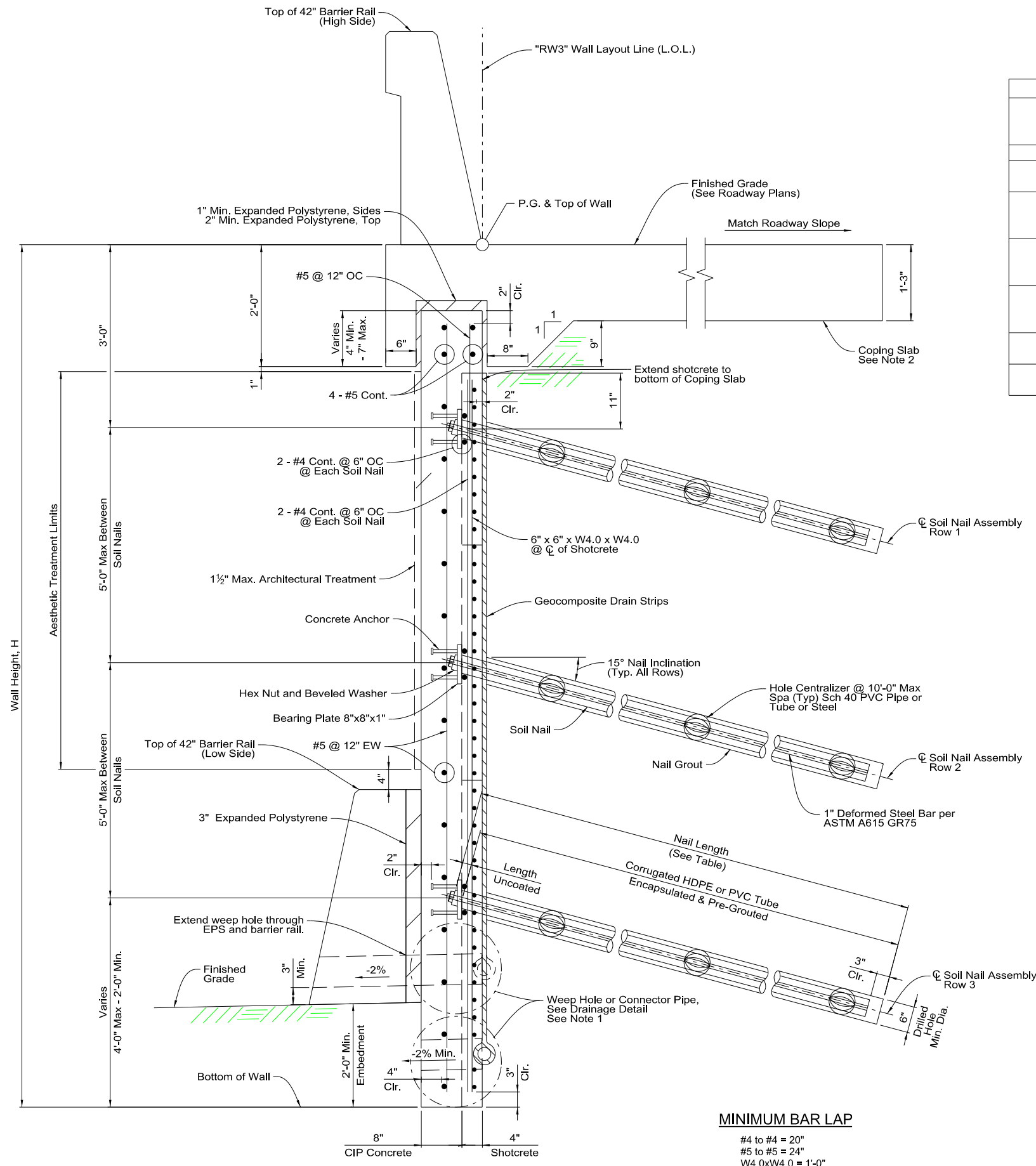
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**SOIL NAIL WALL "RW3"  
PLAN AND ELEVATION 8**

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Wall Station	Wall Height H (ft)	No. of Nail Rows	Depth to Top Row (below FG @ TOW) (ft)	Nail Row Vertical Spacing (ft)	Nail Column Horizontal Spacing (ft)	Nail Row No.	Nail Length (ft)	Nail Inclination (Below Horizontal) (degrees)	Allowable Pullout Resistance, Qd (kips/ft)
0+00 to 2+00	6.3 to 7.0	1	3	NA	5	1	10	15	1.13
2+00 to 7+60	7.0 to 11	2	3	2 to 5	5	1	15	15	1.13
						2	10	15	1.13
7+60 to 15+00	11 to 14.8	3	3	2.5 to 4.4	5	1	15	15	1.13
						2	15	15	1.13
						3	10	15	1.13
15+00 to 17+10	14.5 to 12.8	3	3	3.4 to 4.25	4	1	20	15	1.13
						2	15	15	1.13
						3	10	15	1.13
17+10 to 18+00	12.8 to 11	3	3	2.5 to 3.4	5	1	15	15	1.13
						2	15	15	1.13
						3	10	15	1.13
18+00 to 18+90	11 to 10	2	3	4 to 5	4.5	1	15	15	1.13
						2	15	15	1.13
18+90 to 22+31.07	10 to 6.8	2	3	2 to 4	5	1	15	15	1.13
						2	10	15	1.13



**BEARING PLATE ASSEMBLY**  
 Plate ASTM A36  
 Concrete Anchor ASTM A108 Type A Grade 60

- NOTES:**
1. Refer to sheet Soil Nail Wall "RW3" Details 2 for Weep Hole or Connector Pipe Detail.
  2. Refer to sheet Soil Nail Wall "RW3" Details 3 for Coping Slab Detail.

**MINIMUM BAR LAP**  
 #4 to #4 = 20"  
 #5 to #5 = 24"  
 W4.0xW4.0 = 1'-0"

**SOIL NAIL WALL TYPICAL SECTION**



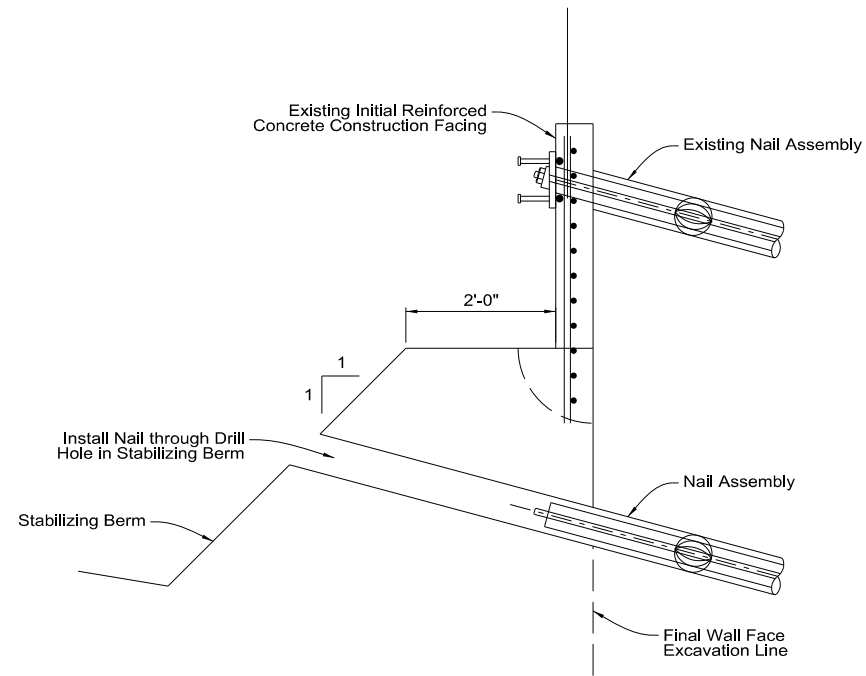
STATE OF NEVADA  
 DEPARTMENT OF TRANSPORTATION

**SOIL NAIL WALL "RW3" DETAILS 1**

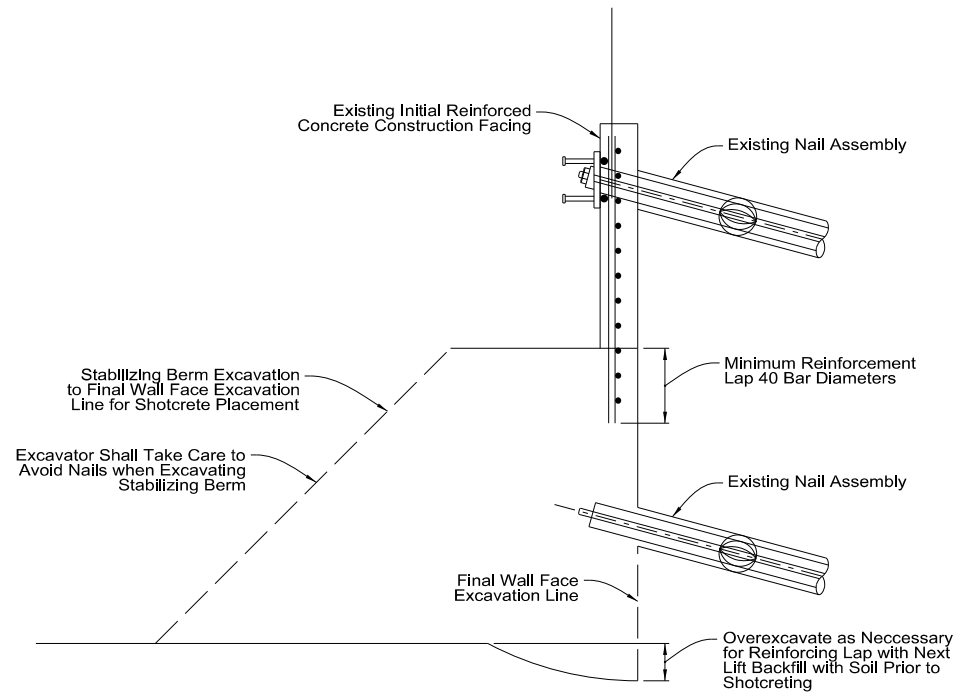
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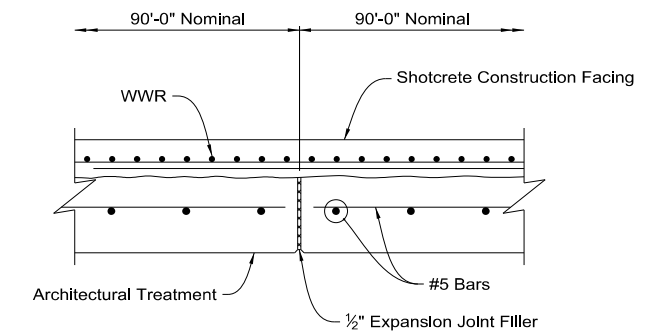
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	SN11



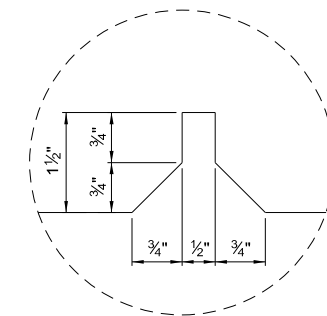
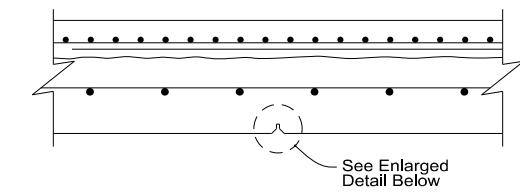
**NAIL INSTALLATION THROUGH  
TEMPORARY STABILIZING BERM  
(CONTRACTOR OPTION)**



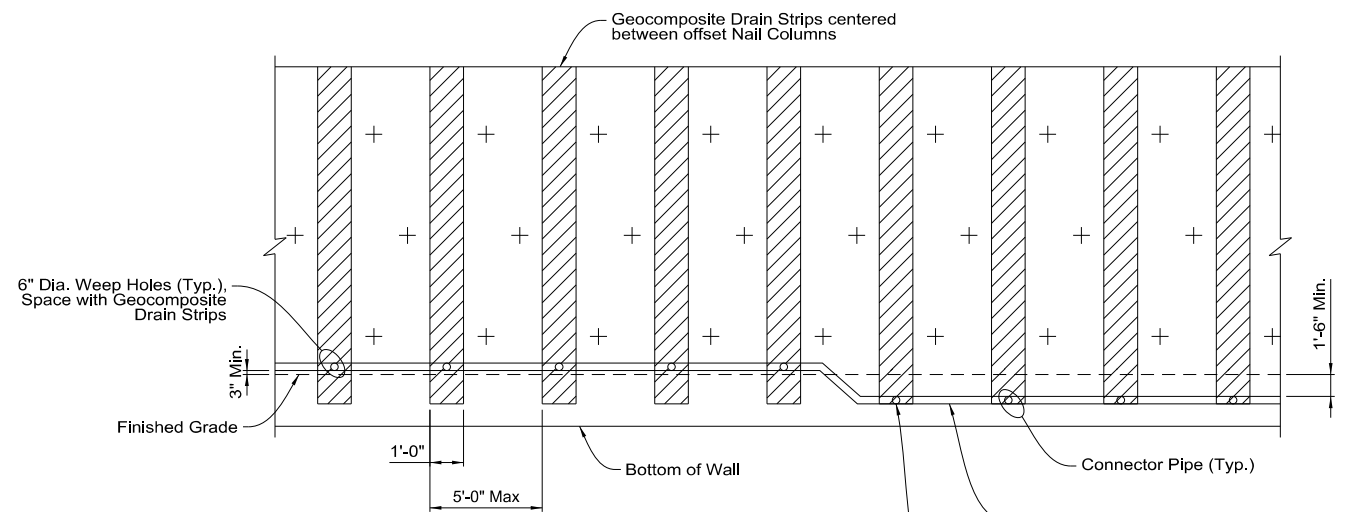
**EXCAVATION OF TEMPORARY STABILIZING  
BERM FOR SHOTCRETE PLACEMENT  
(CONTRACTOR OPTION)**



**EXPANSION JOINT**



**CONTRACTION JOINT  
(Third-point Between Expansion Joints)**



**NOTES:**

- No Direct Payment for Geocomposite Drain or PVC Pipe.

6" Dia. Perforated PVC Drain placed at Location of Geocomposite Drain to Daylight at Manhole Tie-in Locations, End of Wall, or at 6" Dia. Weep Holes where Permitted.

Connector Pipe to Manhole, See Drainage Plans for Tie-in Locations. (Typ.)


**GEOCOMPOSITE DRAIN STRIP DETAIL**  
Weepholes Permitted: "RW3" 22+32 to "RW3" 8+59



12/20/2022

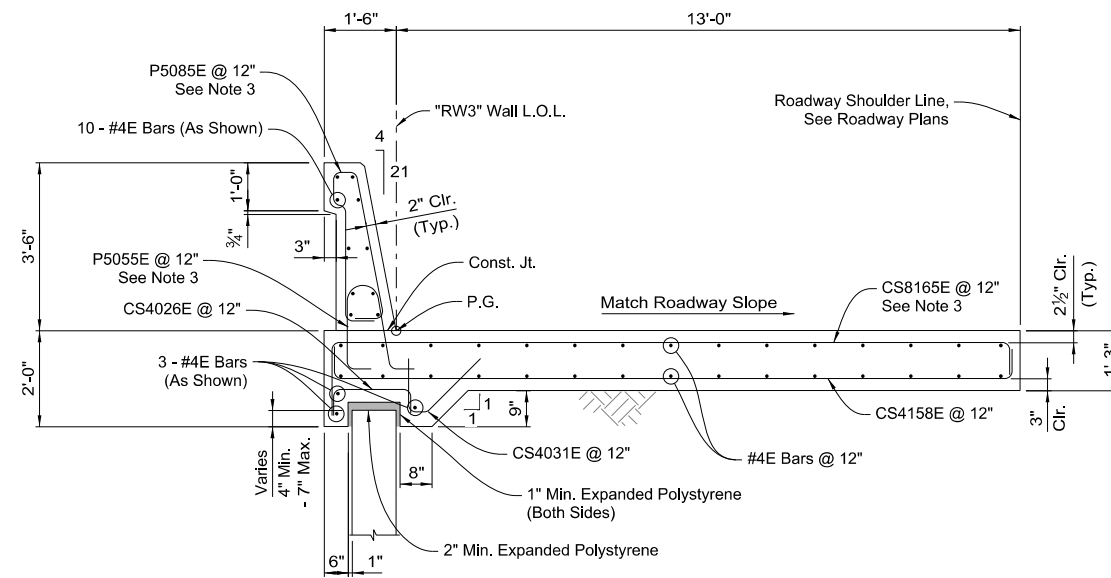
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**SOIL NAIL WALL "RW3"  
DETAILS 2**

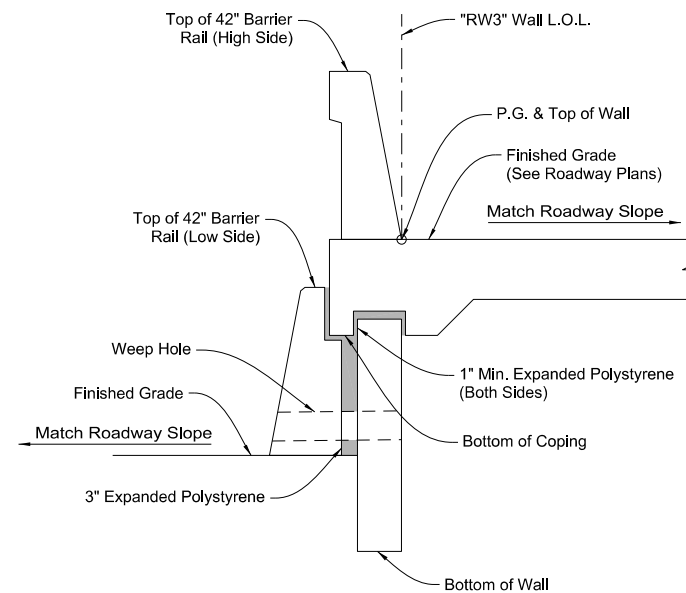


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NEVADA	NHP-0191(104)	WASHOE	SN12



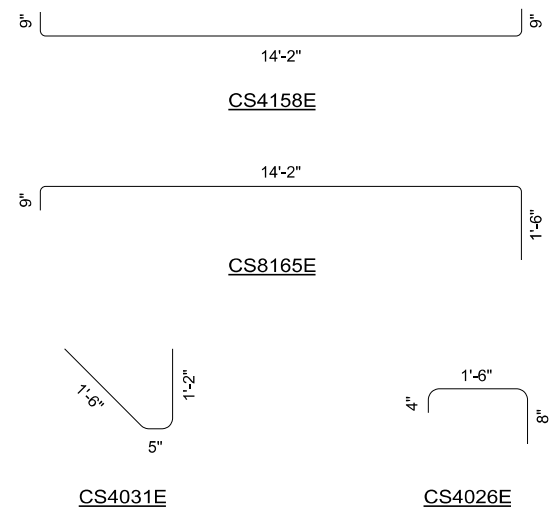
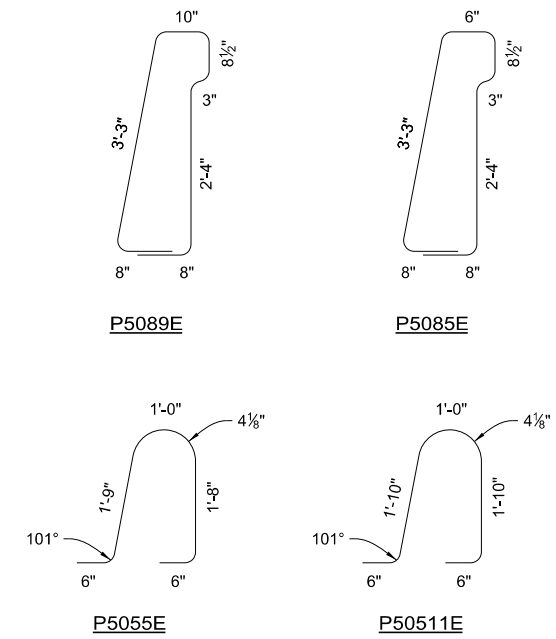
**COPING SLAB**  
(OVER SOIL NAIL WALL "RW3")



**COPING AT/BELOW BARRIER RAIL**  
Begin Wall: "RW3" 3+30.00 to 0+00.00  
End Wall: "RW3" 22+31.07 to 21+65.00

**NOTES:**

- Coping Slab concrete shall be Class AA Modified (Major) with  $f_c = 4,500$  psi at 28 days.
- Coping slab reinforcing steel shall be ASTM A706 Grade 60.
- Reduce spacing of P5055E, P5085E & CS8175E to 6 inches within 5ft of barrier ends.



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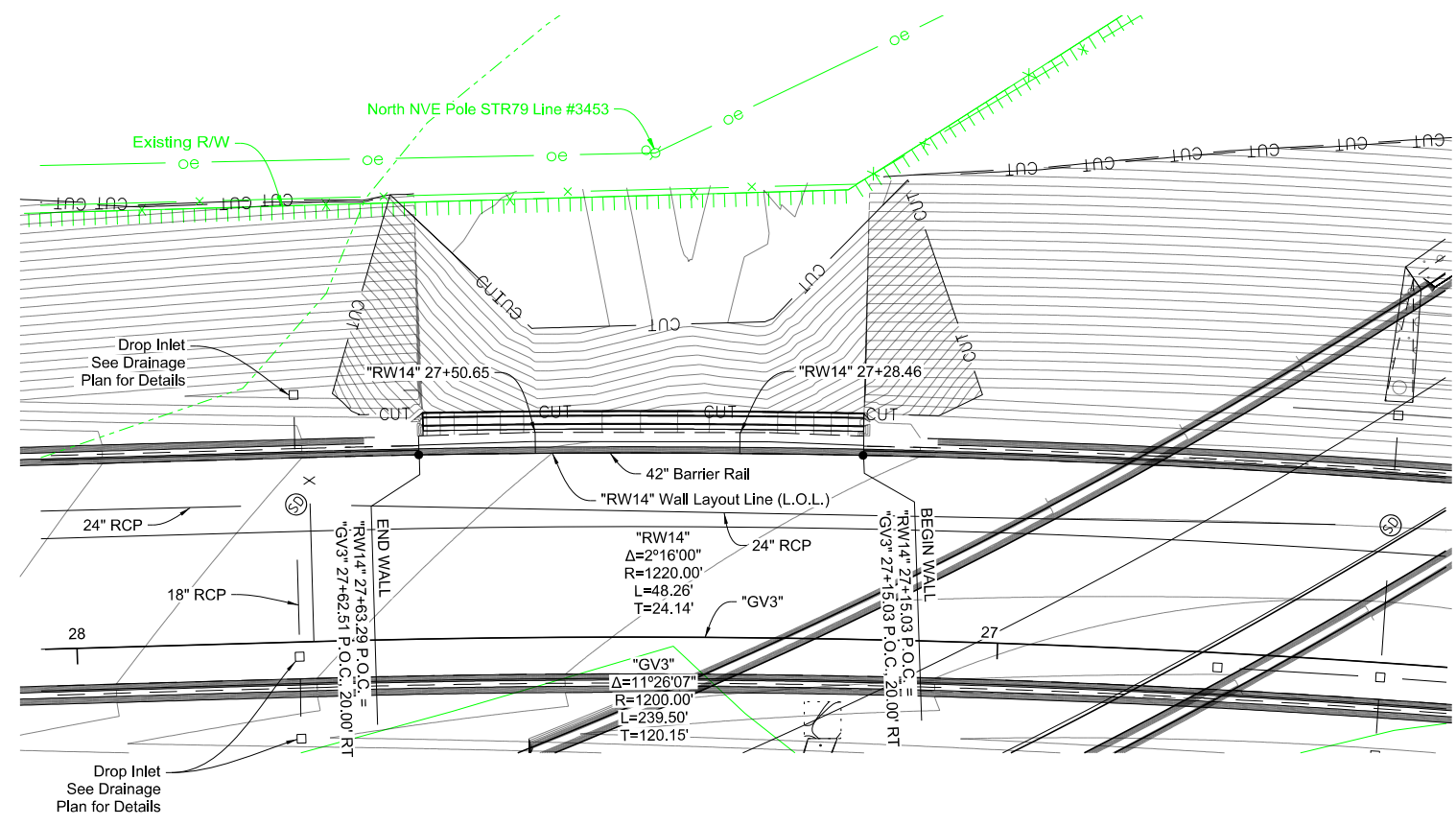
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**SOIL NAIL WALL "RW3"  
DETAILS 3**

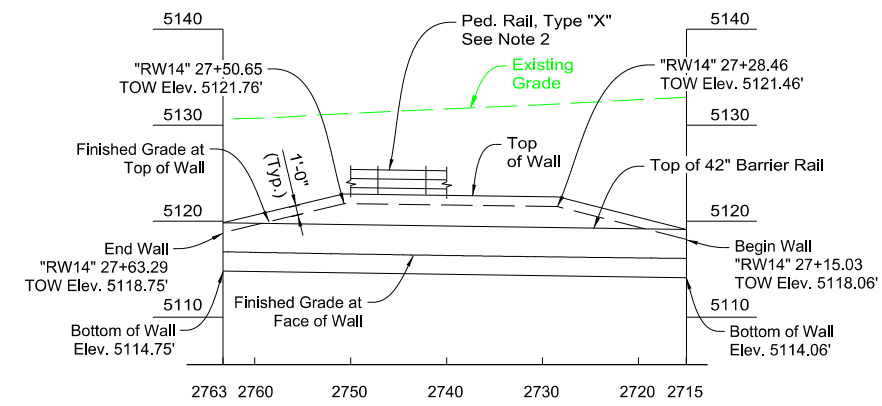
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STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	SN13



PLAN



ELEVATION

NOTES:

- See Sheet Soil Nail Wall "RW14" & "RW10" Details 1 for Cross-section and Soil Nail Information.
- See Sheet Pedestrian Rail Type "X" for Pedestrian Rail Type "X" Details.



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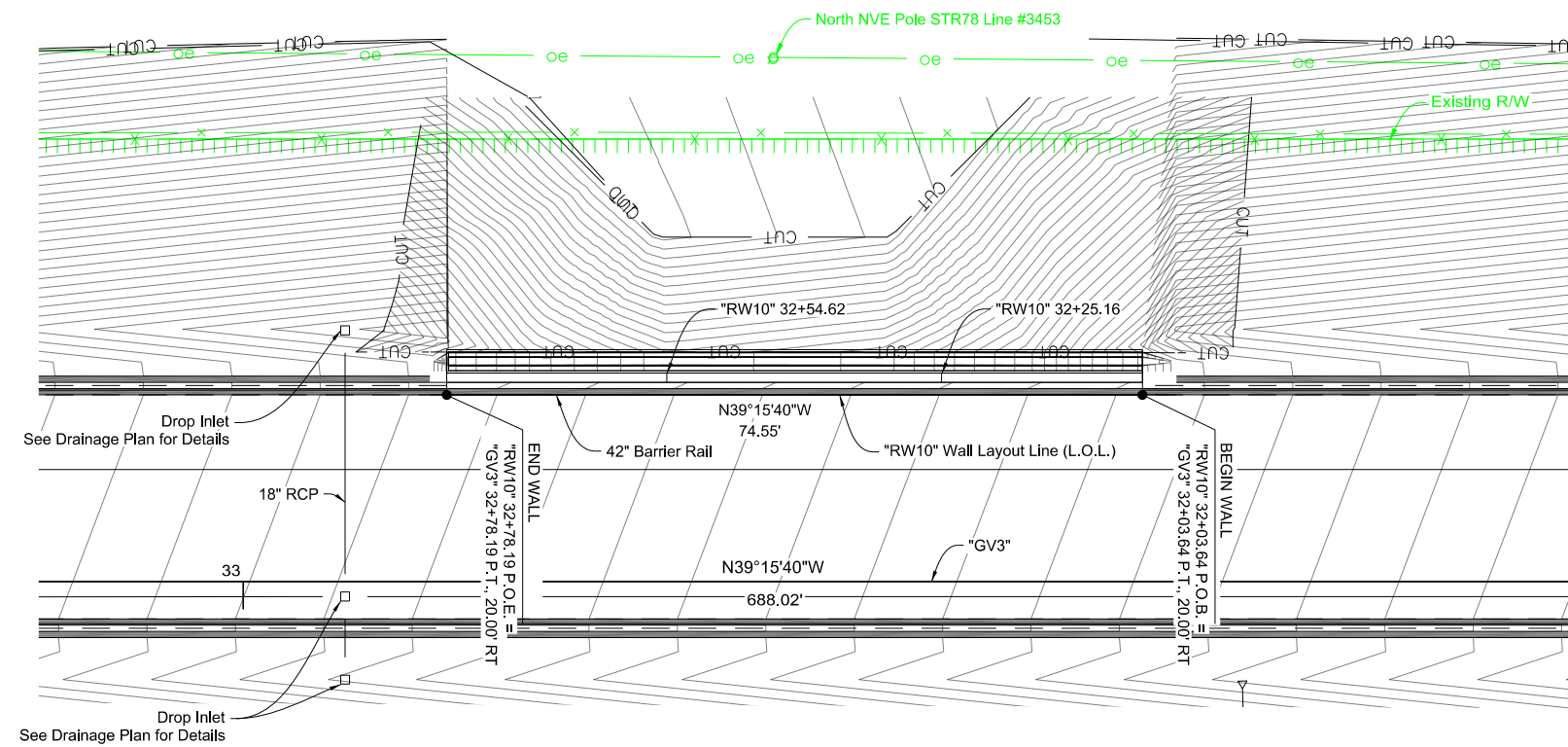
**SOIL NAIL WALL "RW14"  
PLAN AND ELEVATION**

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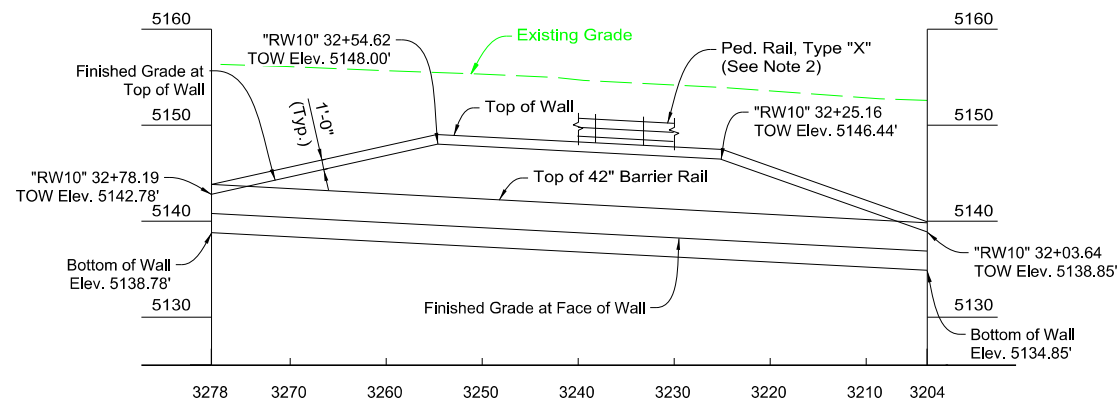
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STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	SN14



PLAN



ELEVATION

**NOTES:**

1. See Sheet Soil Nail Wall "RW14" & "RW10" Details 1 for Cross-section and Soil Nail Information.
2. See Sheet Pedestrian Rail Type "X" for Pedestrian Rail Type "X" Details.



12/20/2022

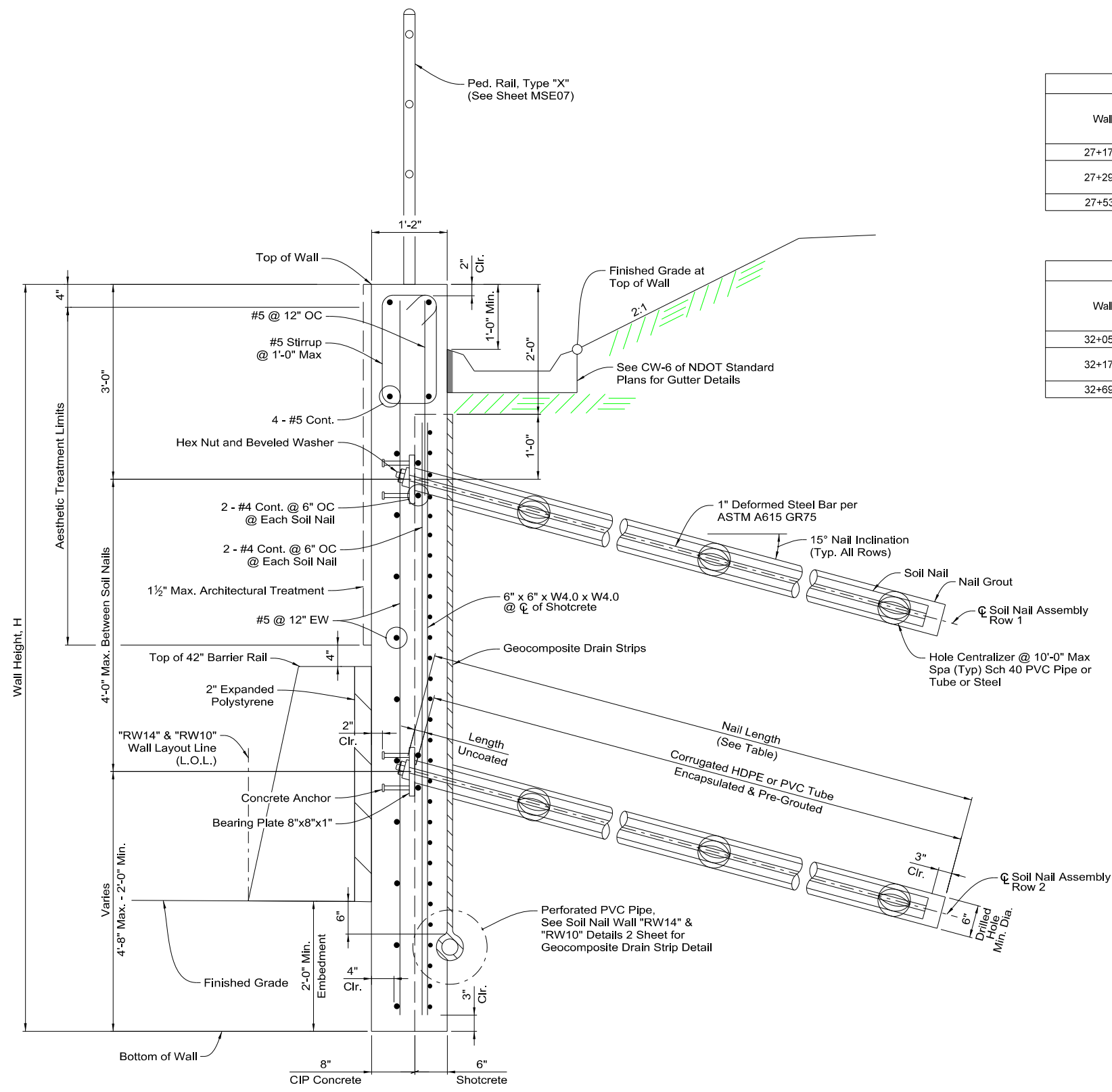
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

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**SOIL NAIL WALL "RW10"  
PLAN AND ELEVATION**



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Reno, NV 89521-5917  
PH: 775-337-4700 FAX: 775-337-4774



SOIL NAIL WALL TYPICAL SECTION

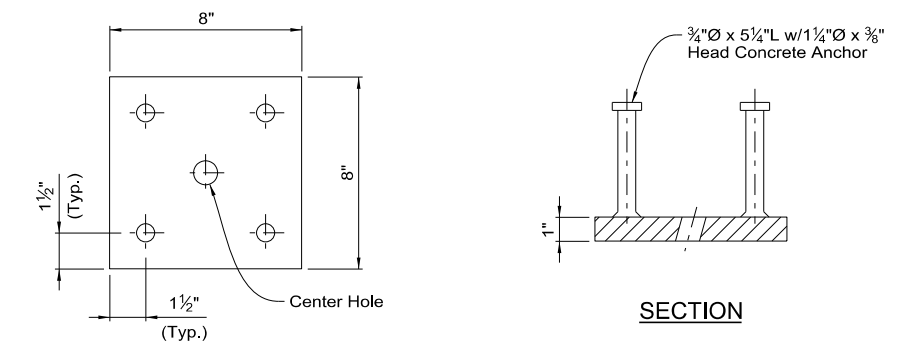
**MINIMUM BAR LAP**  
 #4 to #4 = 20"  
 #5 to #5 = 24"  
 W4.0xW4.0 = 1'-0"

**Soil Nail Wall RW14 - Soil Nail Layout & Schedule**

Wall Station	Wall Height H (ft)	No. of Nail Rows	Depth to Top Row (below TOW) (ft)	Nail Row Vertical Spacing (ft)	Nail Column Horizontal Spacing (ft)	Nail Row No.	Nail Length (ft)	Nail Inclination (Below Horizontal) (degrees)	Allowable Pullout Resistance, Qd (kips/ft)
27+17 to 27+25	5 to 7.4	1	3	NA	4	1	10	15	1.13
27+29 to 27+49	8.2 to 8.25	2	3	3	4	1	10	15	1.13
						2	10	15	1.13
27+53 to 27+61	7.7 to 5	1	3	NA	4	1	10	15	1.13

**Soil Nail Wall RW10 - Soil Nail Layout & Schedule**

Wall Station	Wall Height H (ft)	No. of Nail Rows	Depth to Top Row (below TOW) (ft)	Nail Row Vertical Spacing (ft)	Nail Column Horizontal Spacing (ft)	Nail Row No.	Nail Length (ft)	Nail Inclination (Below Horizontal) (degrees)	Allowable Pullout Resistance, Qd (kips/ft)
32+05 to 32+13	5 to 7.7	1	3	NA	4	1	15	15	1.13
32+17 to 32+65	9 to 11.4	2	3	4	4	1	15	15	1.13
						2	10	15	1.13
32+69 to 32+77	7.8 to 5	1	3	NA	4	1	15	15	1.13



BEARING PLATE ASSEMBLY  
 Plate ASTM A36  
 Concrete Anchor ASTM A108 Type A Grade 60



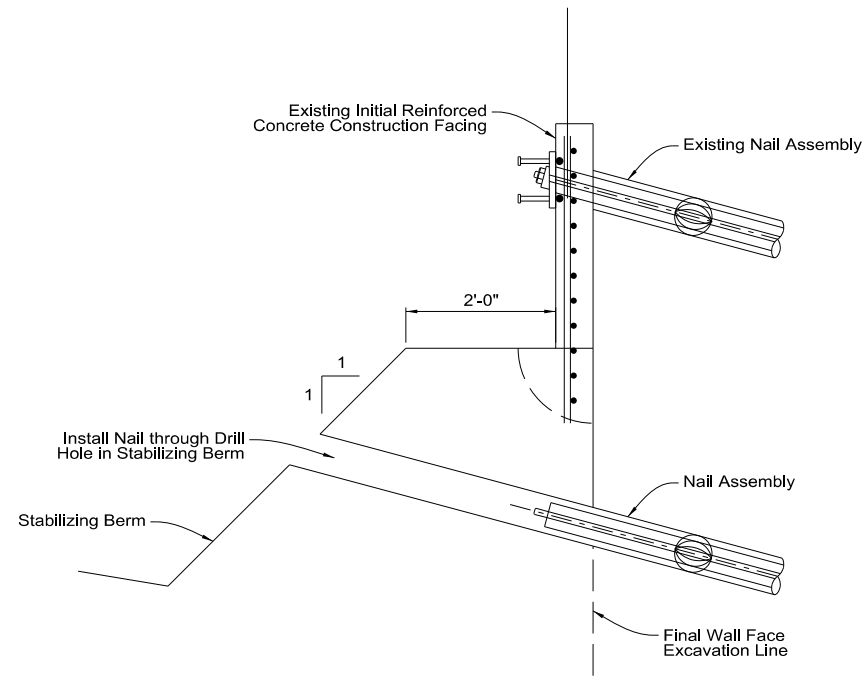
STATE OF NEVADA  
 DEPARTMENT OF TRANSPORTATION

**SOIL NAIL WALL "RW14" & "RW10" DETAILS 1**

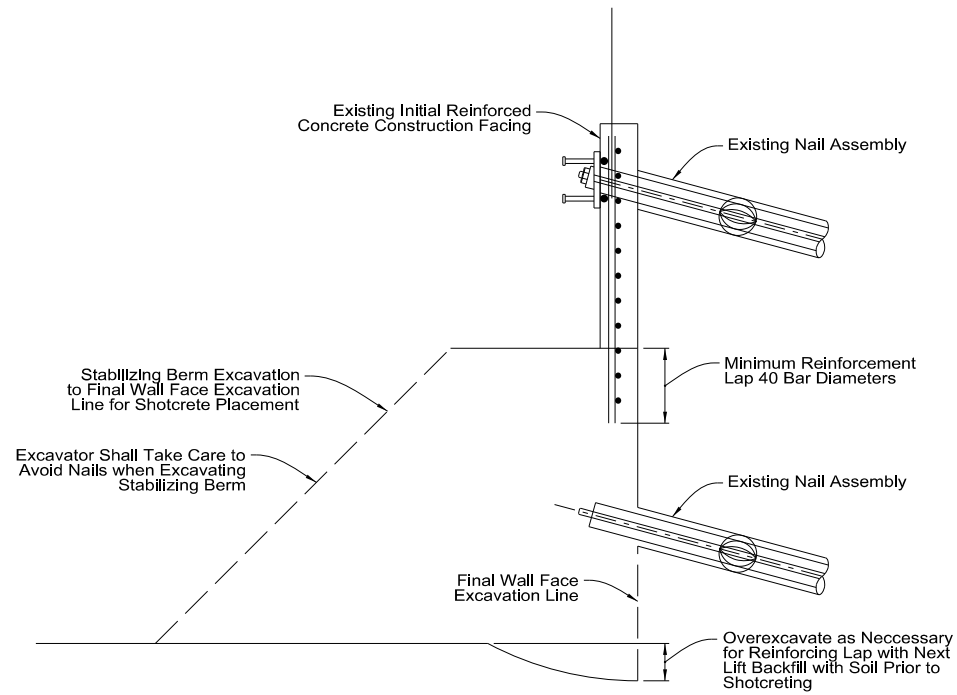
**HDR**  
 HDR Engineering, Inc.

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 Reno, NV 89521-5917  
 PH: 775-337-4700 FAX: 775-337-4774

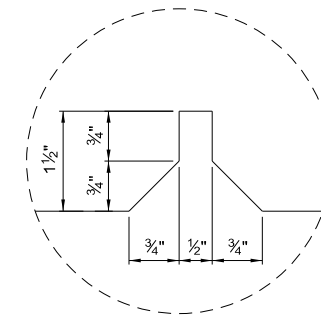
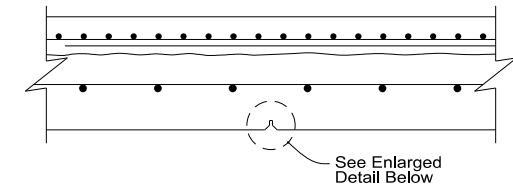
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	SN16



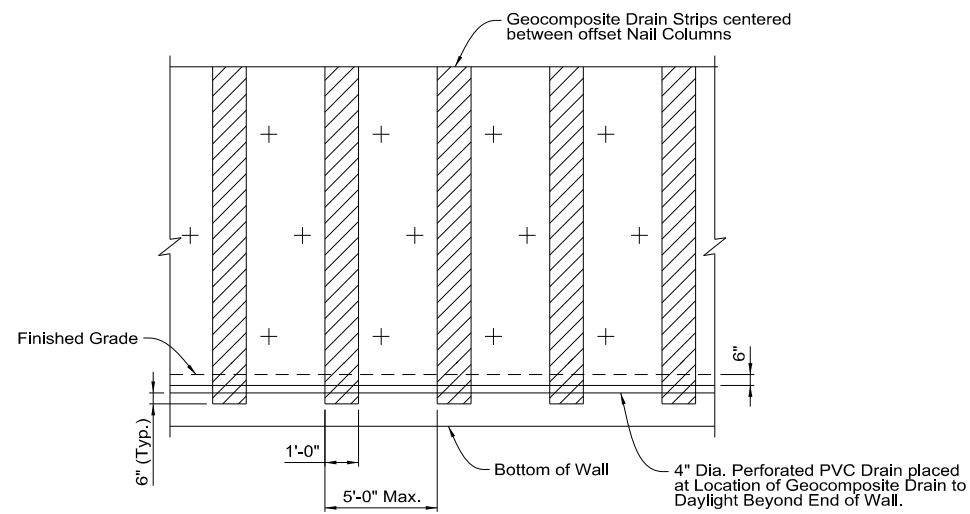
**NAIL INSTALLATION THROUGH  
TEMPORARY STABILIZING BERM  
(CONTRACTOR OPTION)**



**EXCAVATION OF TEMPORARY STABILIZING  
BERM FOR SHOTCRETE PLACEMENT  
(CONTRACTOR OPTION)**



**CONTRACTION JOINT  
(Mid-point Between Wall Ends)**



**NOTES:**

1. No Direct Payment for Geocomposite Drain or PVC Pipe.

**GEOCOMPOSITE DRAIN STRIP DETAIL**



12/20/2022

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**SOIL NAIL WALL "RW14" & "RW10"  
DETAILS 2**

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STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	CW01

**GENERAL NOTES:**

- Design Specifications: AASHTO LRFD Bridge Design Specifications, Eighth Edition, 2017.
- Construction Specifications: State of Nevada Department of Transportation "Standard Specifications for Road and Bridge Construction, 2014" except as noted below.
- Loading: Live load surcharge due to 2-feet of earth. Seismic acceleration = 0.5g, where 1/2 the Peak Ground Acceleration is used in the Design.
- Concrete: All barrier Rail concrete shall be Class EA Modified (Major), with f'c = 4,500 psi at 28 days. All other concrete shall be Class AA Modified (Major) with f'c = 4,500 psi at 28 days, unless noted otherwise.
- Reinforcing Steel: All reinforcing steel to be ASTM A706 Grade 60 unless noted otherwise. Dimensions relating to bar spacing are center to center. Bending dimensions are from out to out of the bars. Bar sizes three (3) to nine (9) are indicated by the first number of the mark; ten (10) or larger by the first two numbers. Bar marks with a letter prefix indicate a bent bar. Bar marks with a "D" suffix indicate a doweled bar. Bar marks ending with either the letter "E" or "ED" indicate that the bar shall be epoxy coated the length of the bar. Sizes four (4) and five (5), when considered as bars to control temperature, shrinkage, and distribution stresses by the Engineer, may be adjusted upon concurrence and approval of the Engineer.
- Plan Dimensions: All plan dimensions shown are measured horizontally or vertically, and are based on an assumed 60 °F unless noted otherwise.
- Elevations and roadway profile information in these plans are approximate and are based on Contract 1484, adjusted to the survey datum for this project. Contractor to verify elevations shown prior to construction to ensure a smooth roadway profile at top and/or bottom of wall can be attained. Any discrepancies shall be brought to the attention of the Engineer prior to construction.
- Incidental Items: All items shown or noted on the plans which are not specifically bid items are considered incidental items. The cost of furnishing all such items will not be paid for directly, but shall be included in the unit price bid for other items unless otherwise noted.
- Structural Excavation & Granular Backfill Limits: For limits of structural excavation and granular backfill, refer to NDOT Standard Plans Sheet EB-4. Any temporary shoring required to maintain traffic, protect utilities, or as otherwise needed shall conform to the Design and Construction Specifications of these General Notes. Contractor to submit a plan outlining construction procedures, shoring requirements, and design to the engineer for review and approval prior to proceeding with the work.
- Foundations: The walls and their foundations were designed using the soil information provided in the Geotechnical Report from HDR titled "Geotechnical Design Report, US 395 North Valleys, Washoe County, Nevada. Nevada Department of Transportation".

**SHEET INDEX**

SHEET	DESCRIPTION
CW01	Cantilevered Wall General Notes & Quantities
CW02	Retaining Wall "RW7" Plan and Elevation 1
CW03	Retaining Wall "RW7" Plan and Elevation 2
CW04	Retaining Wall "RW7" Plan and Elevation 3
CW05	Retaining Wall "RW7" Plan and Elevation 4
CW06	Retaining Wall "RW7" Plan and Elevation 5
CW07	Retaining Wall "RW7" Plan and Elevation 6
CW08	Retaining Wall "RW7" Plan and Elevation 7
CW09	Retaining Wall "RW7" Plan and Elevation 8
CW10	Retaining Wall "RW7" Details

**STANDARD BAR LAPS**


Bar Size	Uncoated (in)	Epoxy Coated (in)
#4	20	24
#5	24	30
#6	30	34
#7	38	45
#8	48	57
#9	60	72
#10	74	88
#11	90	108

**QUANTITIES**

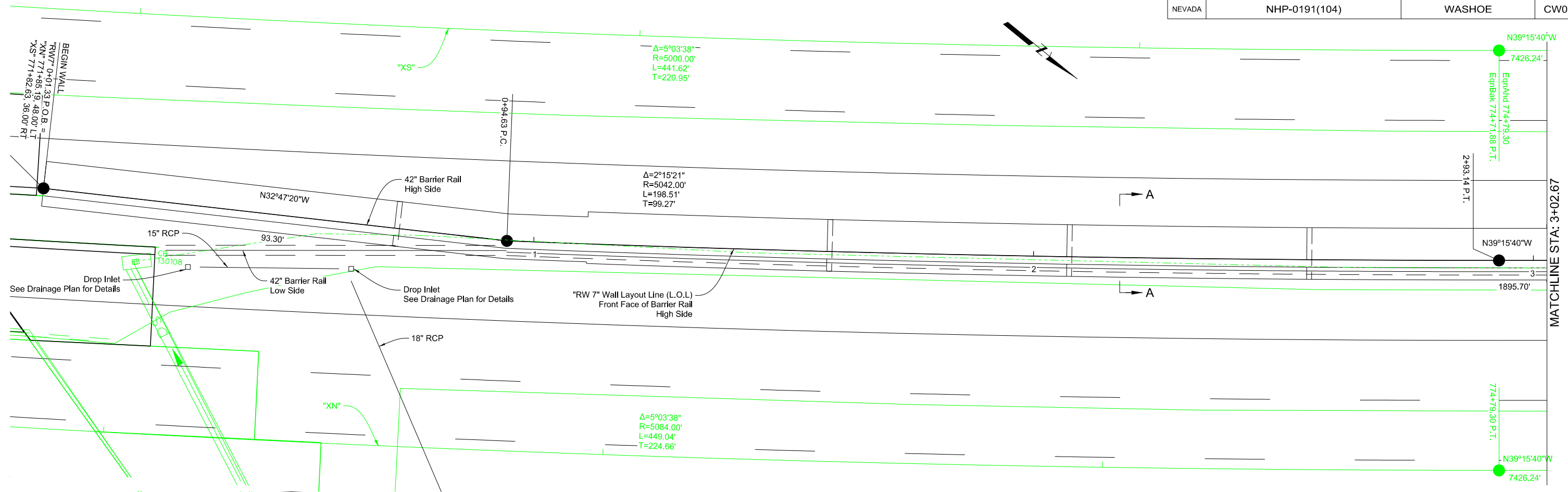
ITEM NO.	ITEM DESCRIPTION	UNIT	RW7	Total
206 0110	STRUCTURE EXCAVATION	CUYD	12,728	12,728
207 0110	GRANULAR BACKFILL	CUYD	18,239	18,239
502 0950	CLASS AA CONCRETE, MODIFIED (MAJOR)	CUYD	2,373	2,373
502 1010	CLASS EA CONCRETE, MODIFIED (MAJOR)	CUYD	282	282
505 0100	REINFORCING STEEL	POUND	349,192	349,192
505 0120	REINFORCING STEEL (EPOXY COATED)	POUND	54,557	54,557



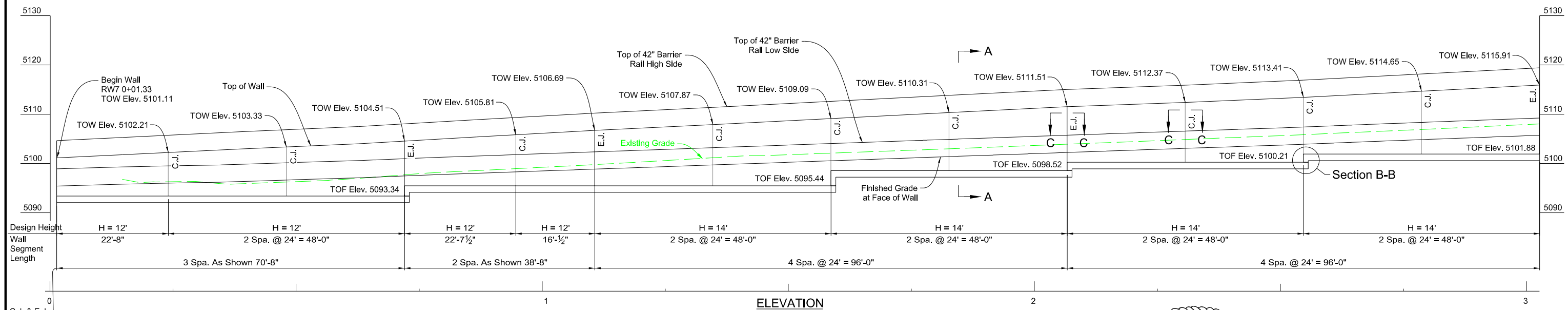
12/20/2022

STATE OF NEVADA DEPARTMENT OF TRANSPORTATION	
<b>CANTILEVERED WALL GENERAL NOTES &amp; QUANTITIES</b>	
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STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	CW02



PLAN



ELEVATION

NOTES:

- Top of wall elevations are approximate, elevations shall match the finished roadway surface at wall face.
- Refer to NDOT Standard Plans Sheet CW-1 for Section A-A, CW-4 thru CW-6 for Section B-B, Section C-C, and other details not shown. Wall dimensions and reinforcing are to be provided per the Design Heights herein.
- Waterstops shall be used at expansion joints where weep holes are not permitted. See Retaining Wall "RW7" Details sheet for limits.



12/20/2022

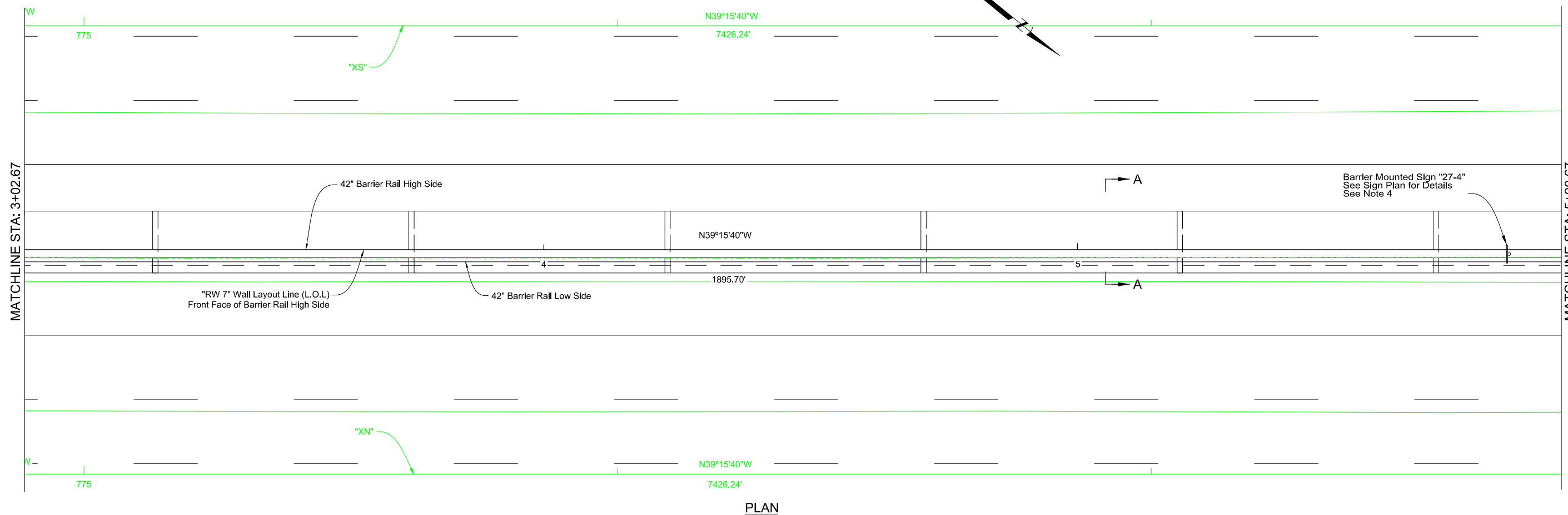
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**RETAINING WALL "RW7"  
PLAN AND ELEVATION 1**

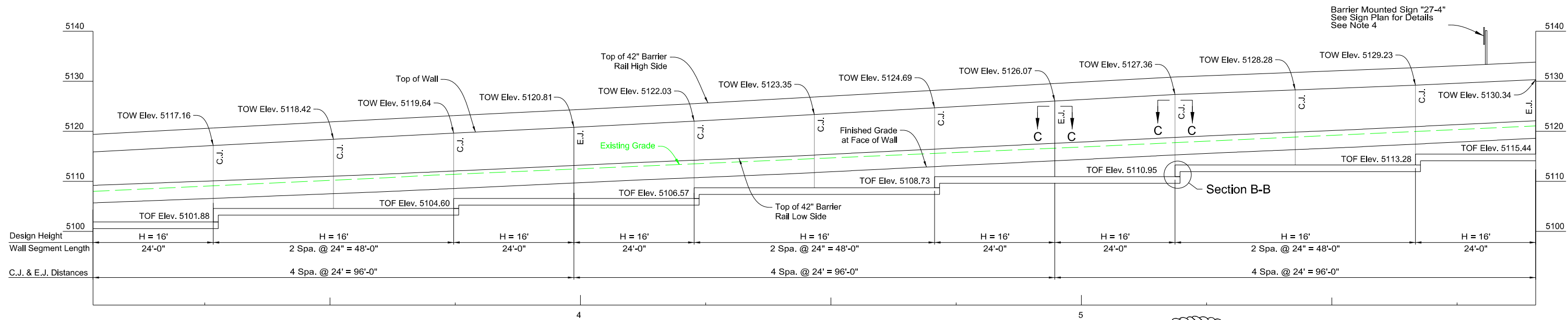
**HDR**  
HDR Engineering, Inc.

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STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	CW03



PLAN



ELEVATION

**NOTES:**

1. Top of wall elevations are approximate, elevations shall match the finished roadway surface at wall face.
2. Refer to NDOT Standard Plans Sheet CW-1 for Section A-A, CW-4 thru CW-6 for Section B-B, Section C-C, and other details not shown. Wall dimensions and reinforcing are to be provided per the Design Heights herein.
3. Waterstops shall be used at expansion joints where weep holes are not permitted. See Retaining Wall "RW7" Details sheet for limits.
4. Refer to Sheet Retaining Wall "RW7" Details for Barrier Mounted Sign Details.



STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**RETAINING WALL "RW7"  
PLAN AND ELEVATION 2**

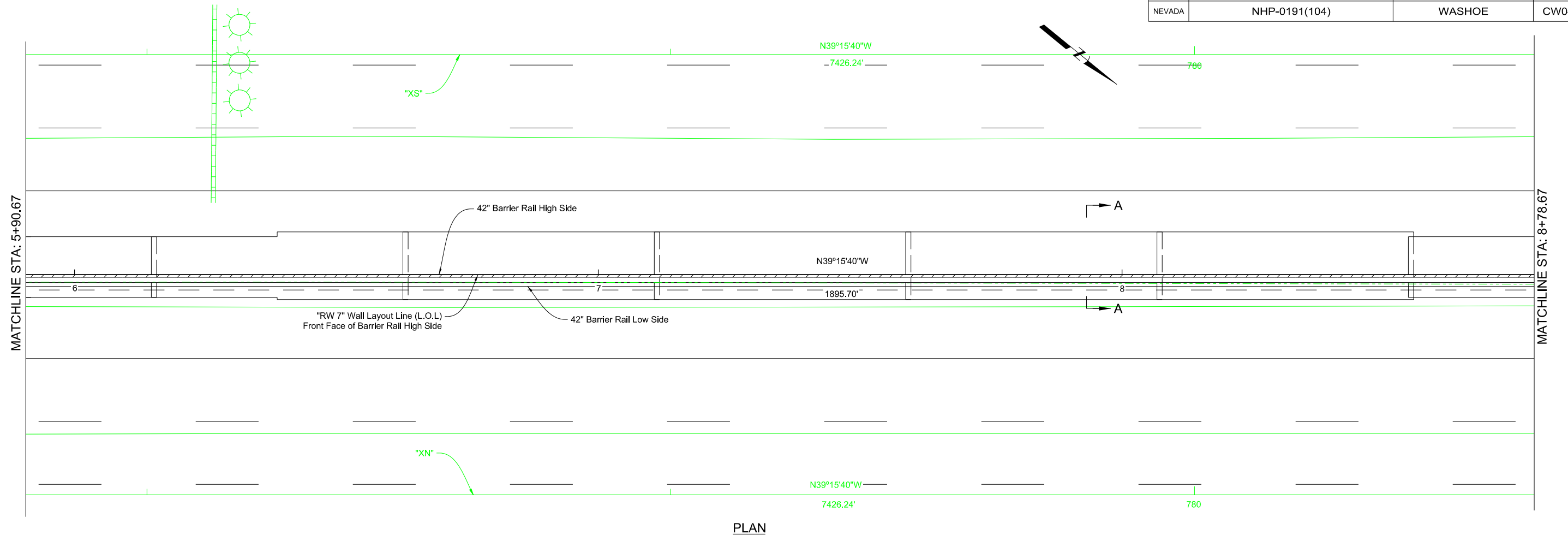
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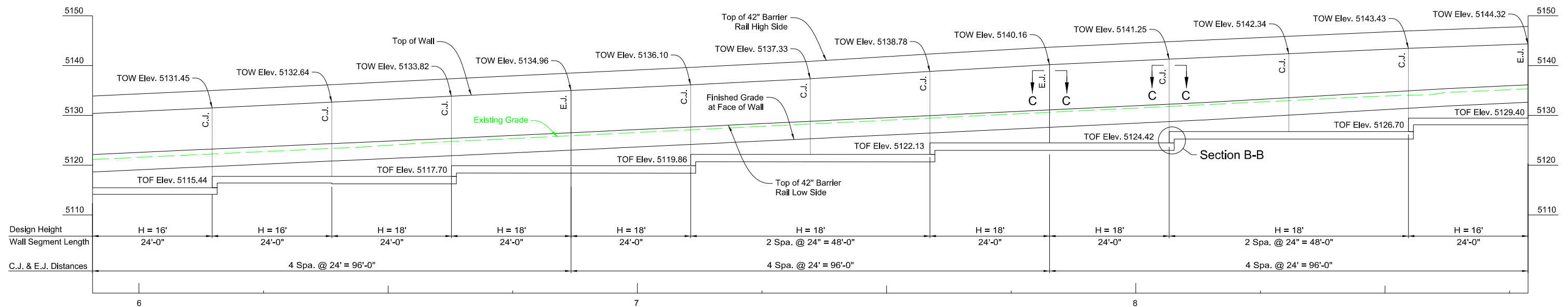
12/20/2022



STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	CW04



PLAN



ELEVATION

NOTES:

- Top of wall elevations are approximate, elevations shall match the finished roadway surface at wall face.
- Refer to NDOT Standard Plans Sheet CW-1 for Section A-A, CW-4 thru CW-6 for Section B-B, Section C-C, and other details not shown. Wall dimensions and reinforcing are to be provided per the Design Heights herein.
- Waterstops shall be used at expansion joints where weep holes are not permitted. See Retaining Wall "RW7" Details sheet for limits.



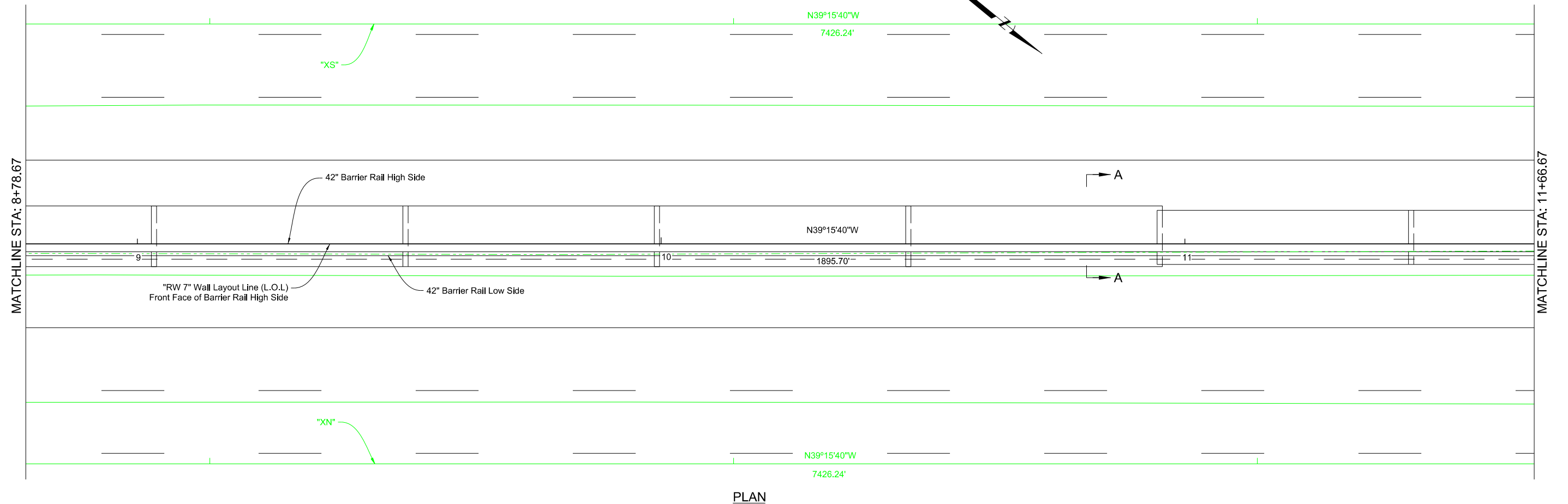
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**RETAINING WALL "RW7"  
PLAN AND ELEVATION 3**

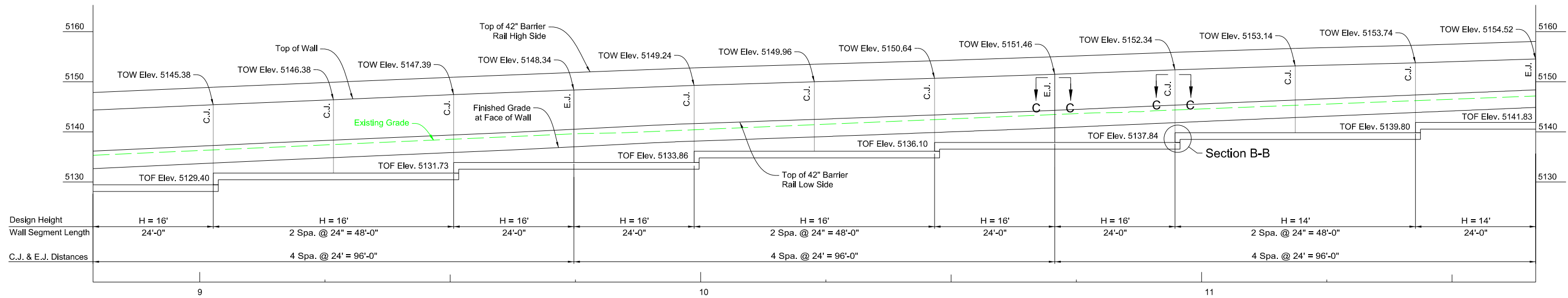
**HDR**  
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STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	CW05



PLAN



ELEVATION

NOTES:

- Top of wall elevations are approximate, elevations shall match the finished roadway surface at wall face.
- Refer to NDOT Standard Plans Sheet CW-1 for Section A-A, CW-4 thru CW-6 for Section B-B, Section C-C, and other details not shown. Wall dimensions and reinforcing are to be provided per the Design Heights herein.
- Waterstops shall be used at expansion joints where weep holes are not permitted. See Retaining Wall "RW7" Details sheet for limits.



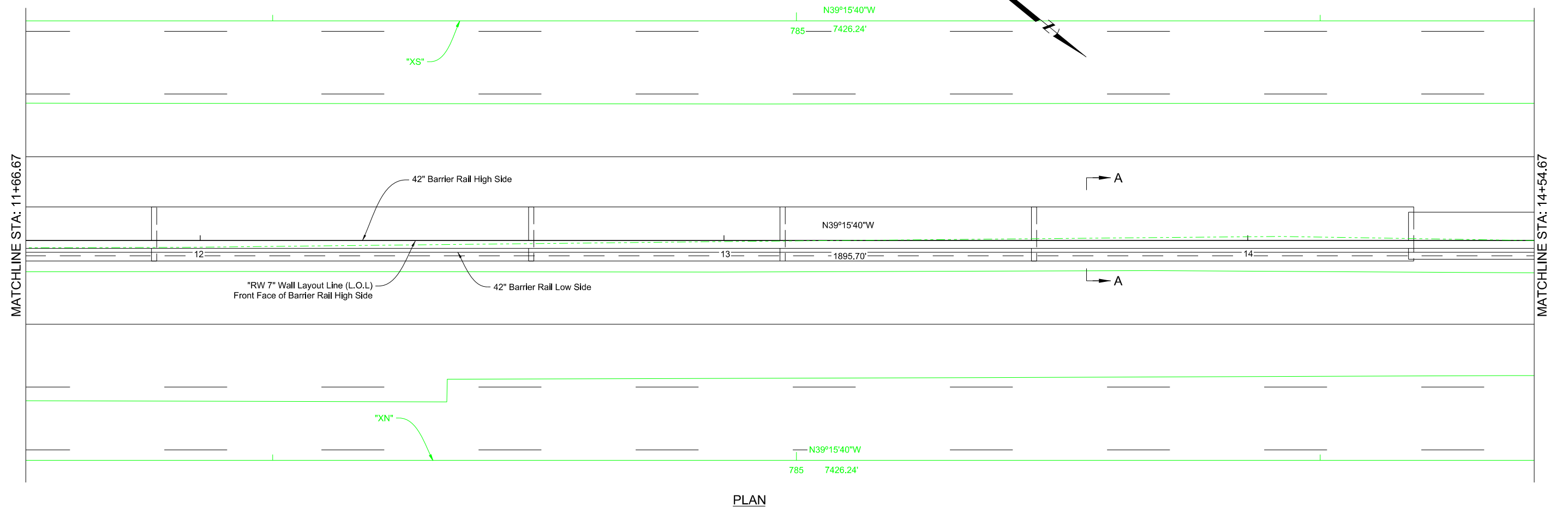
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**RETAINING WALL "RW7"  
PLAN AND ELEVATION 4**

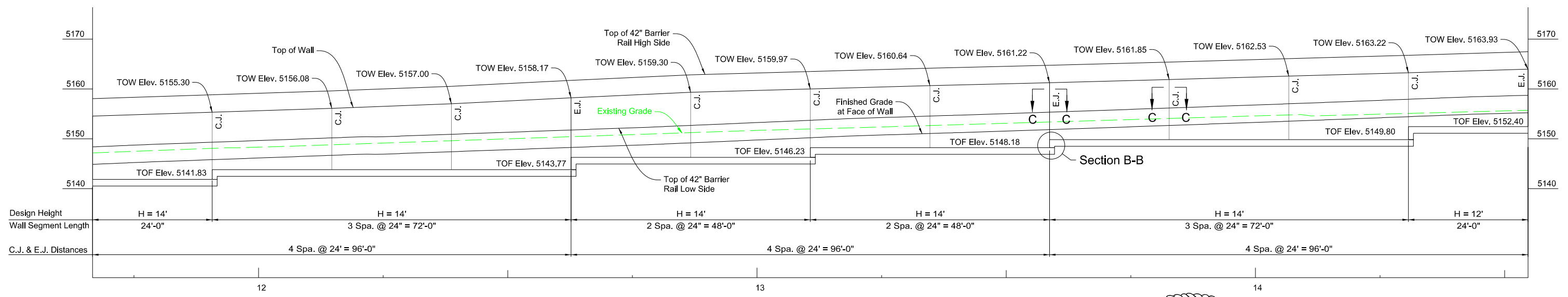
**HDR**  
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STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	CW06



PLAN



ELEVATION

**NOTES:**

- Top of wall elevations are approximate, elevations shall match the finished roadway surface at wall face.
- Refer to NDOT Standard Plans Sheet CW-1 for Section A-A, CW-4 thru CW-6 for Section B-B, Section C-C, and other details not shown. Wall dimensions and reinforcing are to be provided per the Design Heights herein.
- Waterstops shall be used at expansion joints where weep holes are not permitted. See Retaining Wall "RW7" Details sheet for limits.



12/20/2022

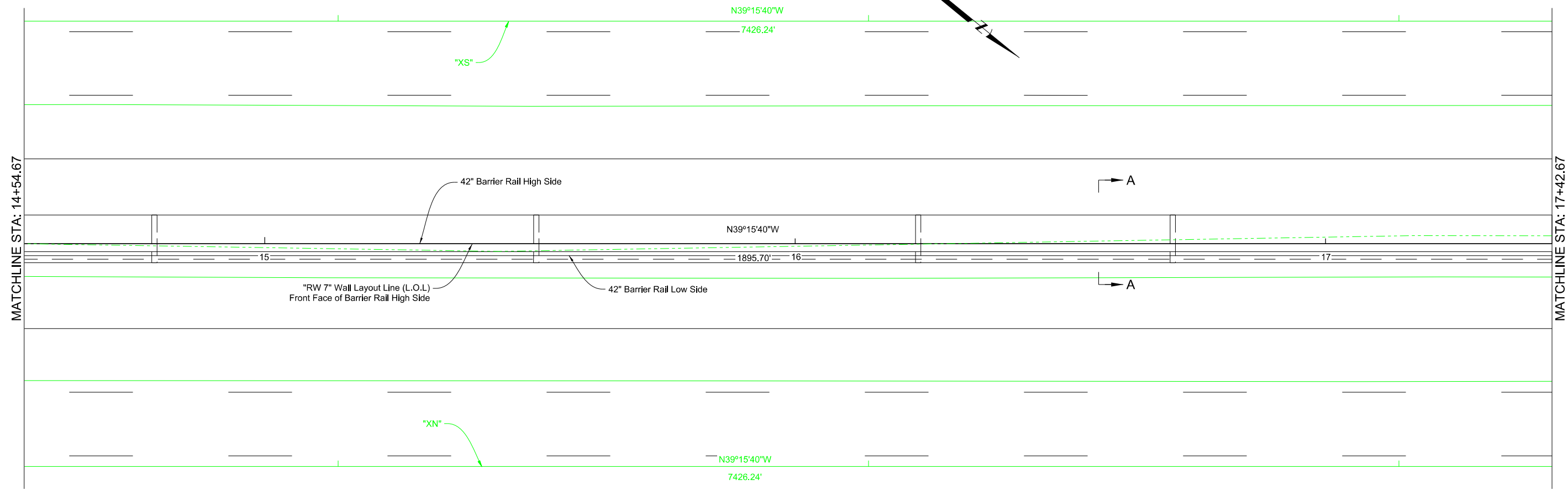
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**RETAINING WALL "RW7"  
PLAN AND ELEVATION 5**

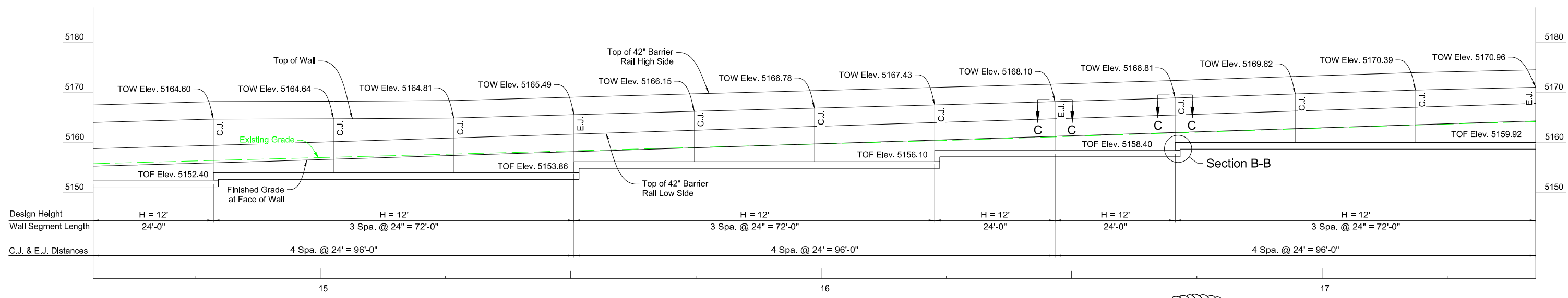
**HDR**  
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STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	CW07



PLAN



ELEVATION

**NOTES:**


1. Top of wall elevations are approximate, elevations shall match the finished roadway surface at wall face.
2. Refer to NDOT Standard Plans Sheet CW-1 for Section A-A, CW-4 thru CW-6 for Section B-B, Section C-C, and other details not shown. Wall dimensions and reinforcing are to be provided per the Design Heights herein.
3. Waterstops shall be used at expansion joints where weep holes are not permitted. See Retaining Wall "RW7" Details sheet for limits.



12/20/2022

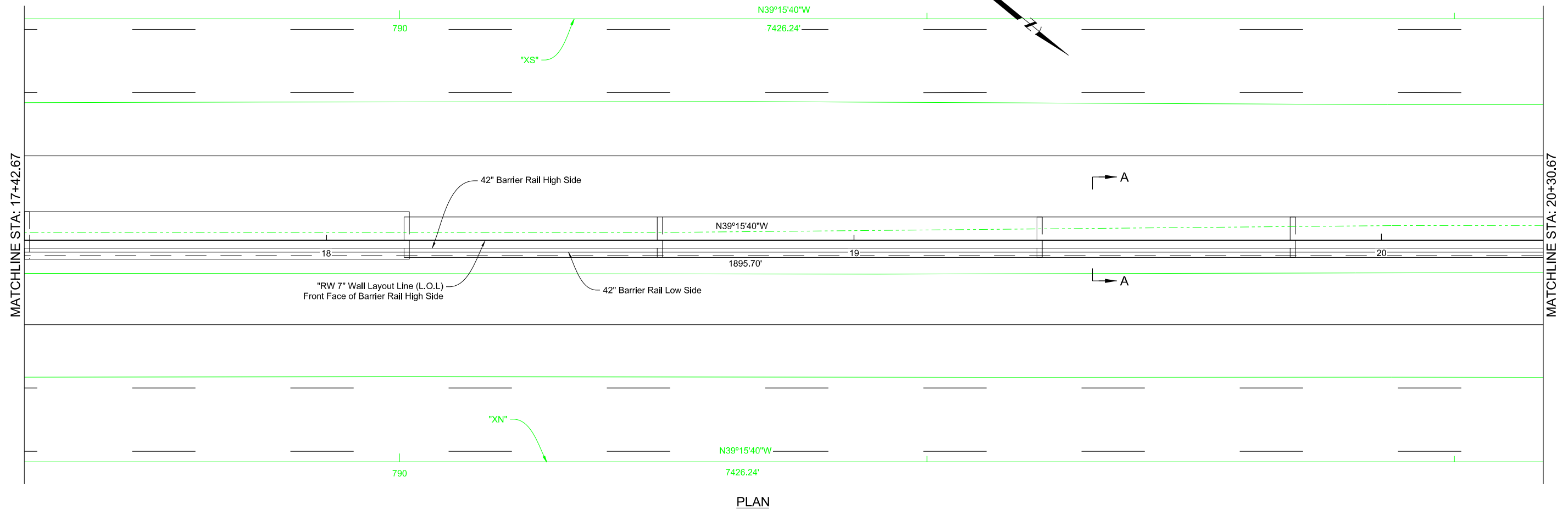
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**RETAINING WALL "RW7"  
PLAN AND ELEVATION 6**

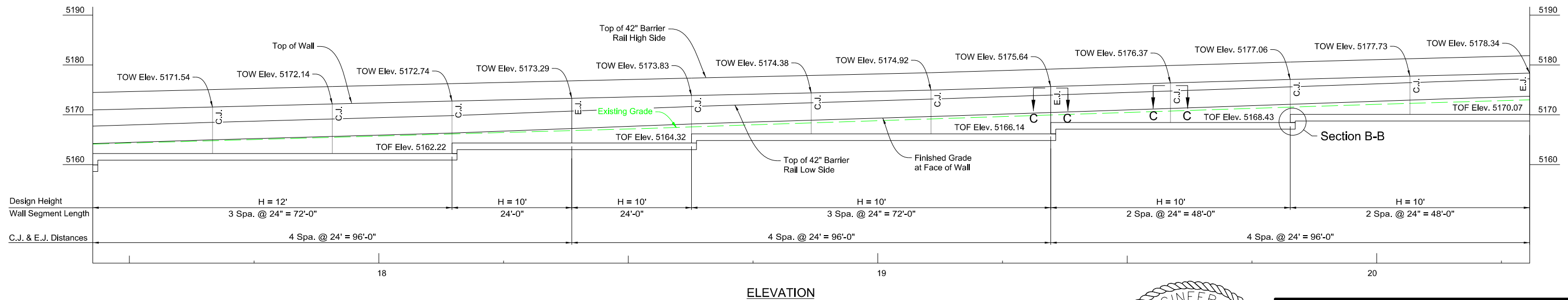


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STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	CW08



PLAN



ELEVATION

**NOTES:**

1. Top of wall elevations are approximate, elevations shall match the finished roadway surface at wall face.
2. Refer to NDOT Standard Plans Sheet CW-1 for Section A-A, CW-4 thru CW-6 for Section B-B, Section C-C, and other details not shown. Wall dimensions and reinforcing are to be provided per the Design Heights herein.
3. Waterstops shall be used at expansion joints where weep holes are not permitted. See Retaining Wall "RW7" Details sheet for limits.



12/20/2022

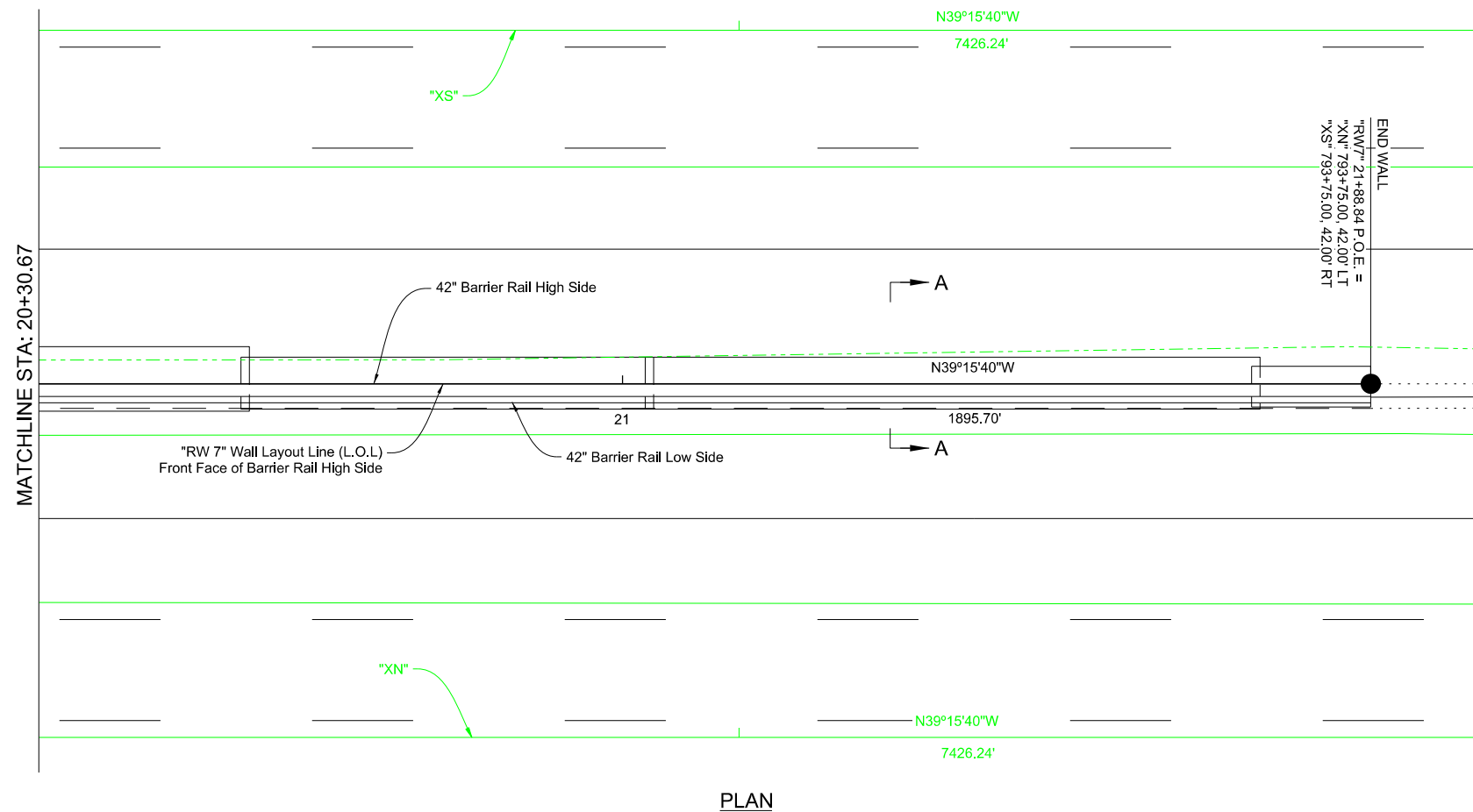
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**RETAINING WALL "RW7"  
PLAN AND ELEVATION 7**

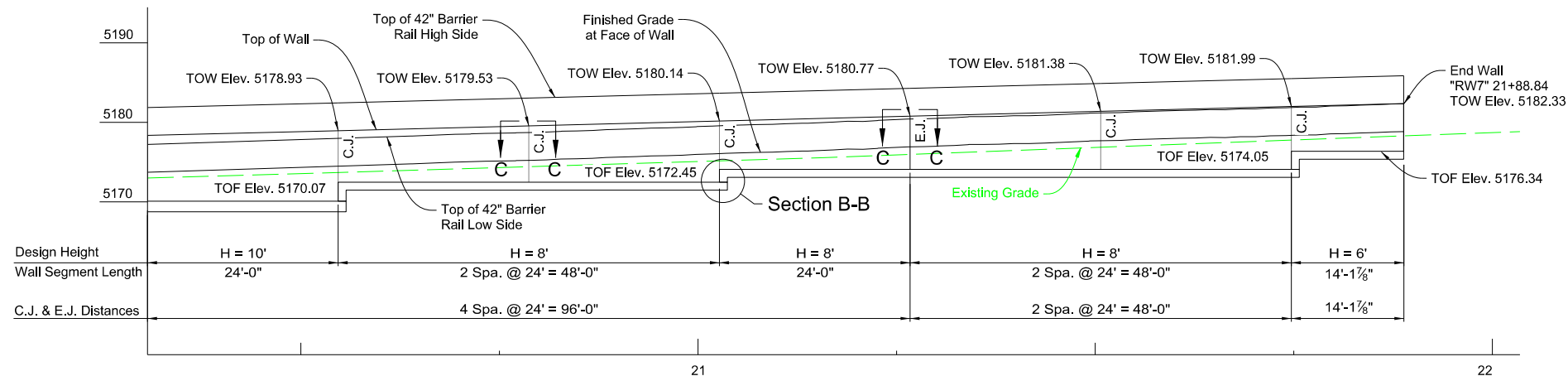
**HDR**  
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Reno, NV 89521-5917  
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STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	CW09



PLAN



ELEVATION

**NOTES:**

1. Top of wall elevations are approximate, elevations shall match the finished roadway surface at wall face.
2. Refer to NDOT Standard Plans Sheet CW-1 for Section A-A, CW-4 thru CW-6 for Section B-B, Section C-C, and other details not shown. Wall dimensions and reinforcing are to be provided per the Design Heights herein.
3. Waterstops shall be used at expansion joints where weep holes are not permitted. See Retaining Wall "RW7" Details sheet for limits.



STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

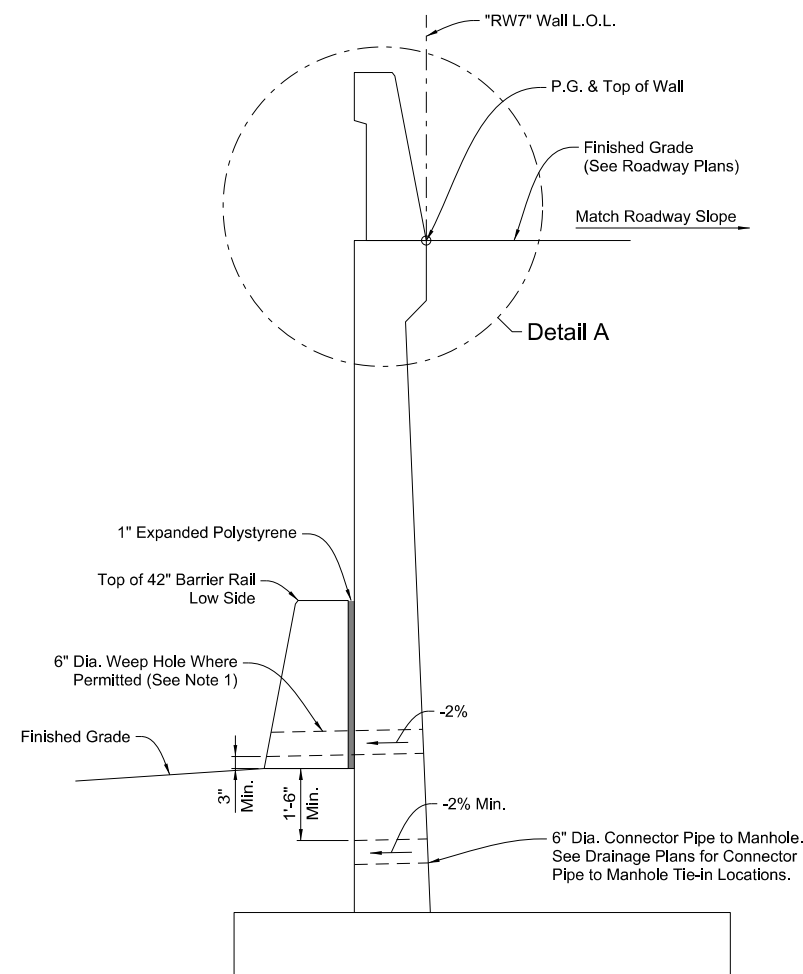
**RETAINING WALL "RW7"  
PLAN AND ELEVATION 8**

**HDR**  
HDR Engineering, Inc.

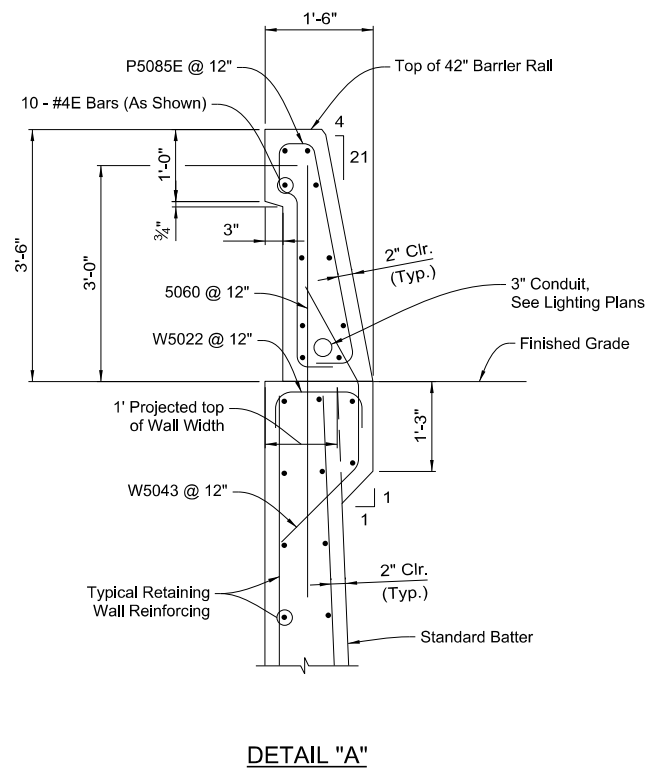
9805 Double R Boulevard, Suite 101  
Reno, NV 89521-5917  
PH: 775-337-4700 FAX: 775-337-4774



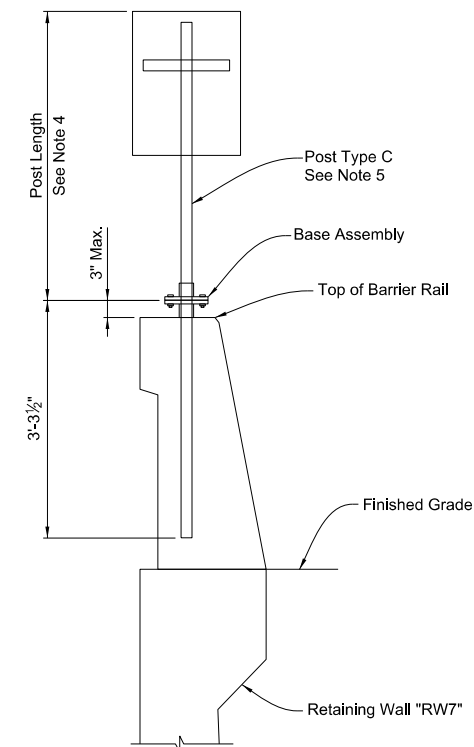
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NEVADA	NHP-0191(104)	WASHOE	CW10



**CANTILEVERED WALL TYPICAL SECTION**

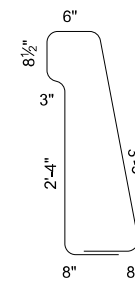


**DETAIL "A"**

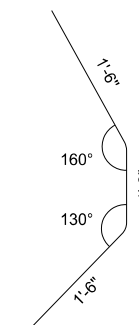


**BARRIER MOUNTED SIGN**

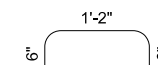
For Overhead Sign "27-4"  
See Sign Plan for Locations and Panel Details



**P5085E**



**W5043**



**W5022**

**NOTES**

1. Extend weep hole through barrier rail where weep holes are permitted. Weep holes permitted: "RW7" 0+00 TO "RW7" 3+80.
2. For weep hole details not shown, see CW-5 of the NDOT Standard Plans. Connector Pipes to Manholes similar.
3. For Retaining Wall Details not shown, see sheets CW-1 & CW-4 thru CW-6 of the NDOT Standard Plans.
4. Refer to NDOT Standard Plans Sheet TRS-1 for Post Length.
5. Refer to NDOT Standard Plans Sheet TRS-13 thru TRS-15 for Post and Connection Details not shown.



12/20/2022

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**RETAINING WALL "RW7"  
DETAILS**

**HDR**  
HDR Engineering, Inc.

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PH: 775-337-4700 FAX: 775-337-4774

STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	SW01

**GENERAL NOTES:**

- Design Specifications: AASHTO LRFD Bridge Design Specifications, Eighth Edition, 2017.
- Construction Specifications: State of Nevada Department of Transportation "Standard Specifications for Road and Bridge Construction, 2014" except as noted below.
- Loading:
  - Wind: 35 psf uniform wind pressure
  - Seismic: Seismic Acceleration = 0.5g
  - Impact: Test Level 4 (TL-4)
- Concrete: All Barrier Rail concrete shall be Class EA Modified (Major), with  $f_c = 4,500$  psi at 28 days. All other concrete shall be Class AA Modified (Major) with  $f_c = 4,500$  psi at 28 days, unless noted otherwise.
- Reinforcing Steel: All reinforcing steel to be ASTM A706 Grade 60 unless noted otherwise. Dimensions relating to bar spacing are center to center. Bending dimensions are from out to out of the bars. Bar sizes three (3) to nine (9) are indicated by the first number of the mark; ten (10) or larger by the first two numbers. Bar marks with a letter prefix indicate a bent bar. Bar marks with a "D" suffix indicate a doweled bar. Bar marks ending with either the letter "E" or "ED" indicate that the bar shall be epoxy coated the length of the bar. Sizes four (4) and five (5), when considered as bars to control temperature, shrinkage, and distribution stresses by the Engineer, may be adjusted upon concurrence and approval of the Engineer.
- Plan Dimensions: All plan dimensions shown are measured horizontally or vertically, and are based on an assumed 60 °F unless noted otherwise.
- Elevations and roadway profile information in these plans are approximate and are based on Contract 1484, adjusted to the survey datum for this project. Contractor to verify elevations shown prior to construction to ensure designed top of wall heights above finished grade can be attained.
- Incidental Items: All items shown or noted on the plans which are not specifically bid items are considered incidental items. The cost of furnishing all such items will not be paid for directly, but shall be included in the unit price bid for other items unless otherwise noted.
- Structural Excavation & Granular Backfill Limits: For limits of structural excavation and granular backfill, refer to NDOT Standard Plans Sheet EB-4.
- Foundations: The walls and their foundations were designed using the soil information provided in the Geotechnical Report from New Fields Project No. 475.0398.000, titled "Sound Wall Design Memo US395 North Valleys Project, Washoe County, Nevada" dated November 2022.
- Contraction and Expansion Joints:
  - Ground Mounted Sound Walls: Contraction and Expansion joints shall be located at 30-foot and 90-foot maximum intervals, respectively.
  - Barrier Rail Mounted Sound Walls: Contraction and Expansion joints shall coincide with barrier rail joints and be located at 30-foot and 90-foot maximum intervals, respectively.
- All precast members, including the precast wall panels, shall be fabricated in a plant certified by the Precast/Prestressed Concrete Institute (PCI) according to Standard Specification Section 503.01.02.

**SHEET INDEX**

SHEET	DESCRIPTION
SW01	Sound Wall General Notes & Quantities
SW02	Sound Wall "SW1" Plan and Elevation 1
SW03	Sound Wall "SW1" Plan and Elevation 2
SW04	Sound Wall "SW1" Plan and Elevation 3
SW05	Sound Wall "SW1" Plan and Elevation 4
SW06	Sound Wall "SW1" Plan and Elevation 5
SW07	Sound Wall "SW2-1" Plan and Elevation 1
SW08	Sound Wall "SW2-1" Plan and Elevation 2
SW09	Sound Wall "SW2-1" Plan and Elevation 3
SW10	Sound Wall "SW2-1" Plan and Elevation 4
SW11	Sound Wall "SW2-2" Plan and Elevation 1
SW12	Sound Wall "SW2-2" Plan and Elevation 2
SW13	Sound Wall "SW3-2" Plan and Elevation 1
SW14	Sound Wall "SW3-2" Plan and Elevation 2
SW15	Sound Wall "SW3-2" Plan and Elevation 3
SW16	Sound Wall "SW3-2" Plan and Elevation 4
SW17	Sound Wall "SW3-2" Plan and Elevation 5
SW18	Sound Wall "SW3-2" Plan and Elevation 6
SW19	Sound Wall "SW3-1" Plan and Elevation 1
SW20	Sound Wall "SW3-1" Plan and Elevation 2
SW21	Sound Wall "SW3-1" Plan and Elevation 3
SW22	Sound Wall "SW3-1" Plan and Elevation 4
SW23	Sound Wall "SW3-1" Plan and Elevation 5
SW24	Sound Wall "SW3-1" Plan and Elevation 6
SW25	Sound Wall "SW3-1" Plan and Elevation 7
SW26	Sound Wall "SW3-1" Plan and Elevation 8
SW27	Sound Wall "SW3-1" Plan and Elevation 9
SW28	Sound Wall "SW6" Plan and Elevation 1
SW29	Sound Wall "SW6" Plan and Elevation 2
SW30	Sound Wall "SW6" Plan and Elevation 3
SW31	Sound Wall "SW6" Plan and Elevation 4
SW32	Sound Wall Details 1
SW33	Sound Wall Details 2
SW34	Sound Wall Details 3

**STANDARD BAR LAPS**

Bar Size	Uncoated (in)	Epoxy Coated (in)
#4	20	24
#5	24	30
#6	30	34
#7	38	45
#8	48	57
#9	60	72
#10	74	88
#11	90	108

**QUANTITIES**

ITEM NO.	ITEM DESCRIPTION	UNIT	SW1	SW2-1	SW2-2	SW3-2	SW3-1	SW6	Total
206 0110	STRUCTURE EXCAVATION	CUYD	2,648	0	0	0	0	887	3,535
207 0110	GRANULAR BACKFILL	CUYD	1,976	0	0	0	0	1,338	3,314
502 0950	CLASS AA CONCRETE, MODIFIED (MAJOR)	CUYD	805	747	244	1,085	1,550	507	4,938
502 1010	CLASS EA CONCRETE, MODIFIED (MAJOR)	CUYD		175	62	273	392		902
505 0100	REINFORCING STEEL	POUND	77,003	0	0	0	0	86,817	163,820
505 0120	REINFORCING STEEL (EPOXY COATED)	POUND	0	119,344	41,229	181,533	259,603	0	601,709
631 0100	PRECAST CONCRETE WALL PANELS	SQFT	26,963	11,370	4,024	17,798	25,559	24,067	109,781


**PRECAST PANEL NOTES:**

- Design Specifications: See General Notes.
- Loading: See General Notes.
- Concrete:
  - Precast Wall Panels: Class DA Modified ( $f_c = 4,500$  psi)
  - Precast Panel Infill: Class SA ( $f_c = 4,500$  psi, max aggregate size =  $\frac{3}{8}$ " )
- Reinforcing Steel: A706, Grade 60
- Shop Drawings: Shop drawings shall be submitted for approval showing complete details and dimensions necessary for fabrication and erection. For both Ground Mounted Sound and Barrier Rail Mounted Sound Walls all joints between panels, or otherwise, shall be plumb. Shop drawings shall be signed and sealed by a Nevada Registered Professional Engineer.
- Aesthetic treatment and panel layout shall be as shown on the wall aesthetic sheets included within these plans.



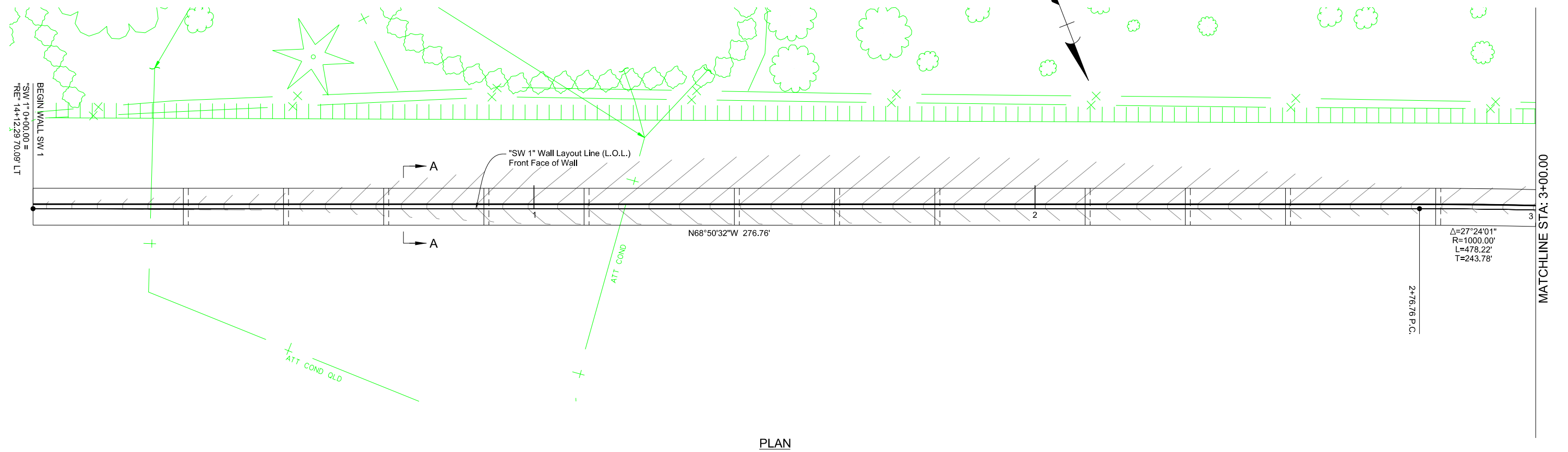
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**SOUND WALL  
GENERAL NOTES  
& QUANTITIES**

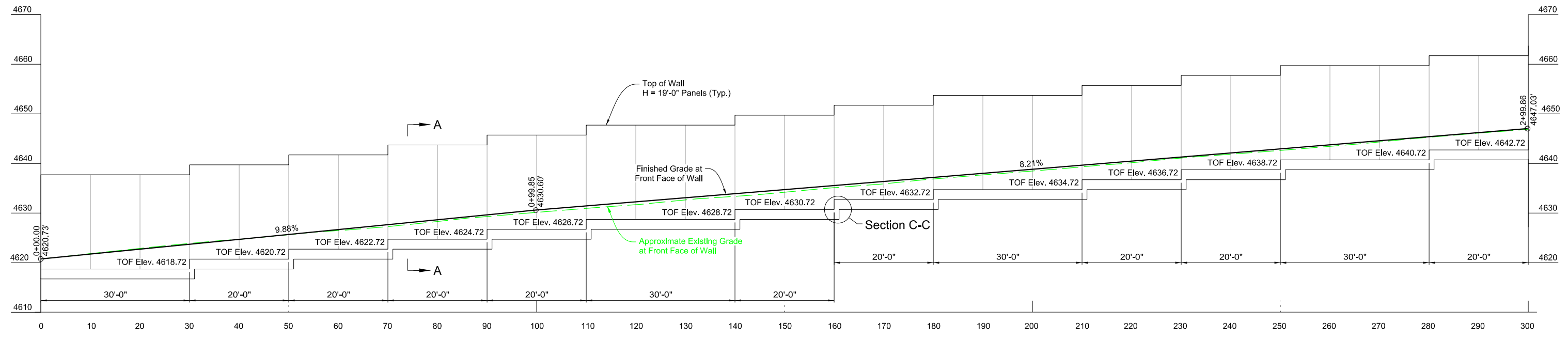


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STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	SW02



PLAN



ELEVATION

**NOTE:**  
1. Refer to sheet Sound Wall Details 1 for Section A-A and Section C-C.



12/20/2022

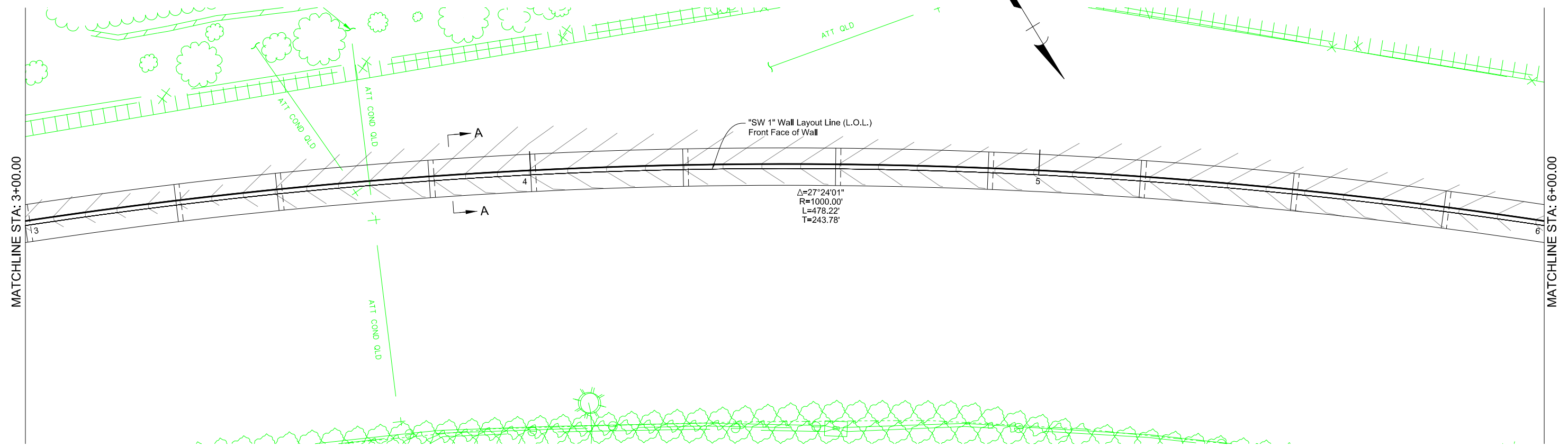
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**SOUND WALL "SW1"  
PLAN AND ELEVATION 1**

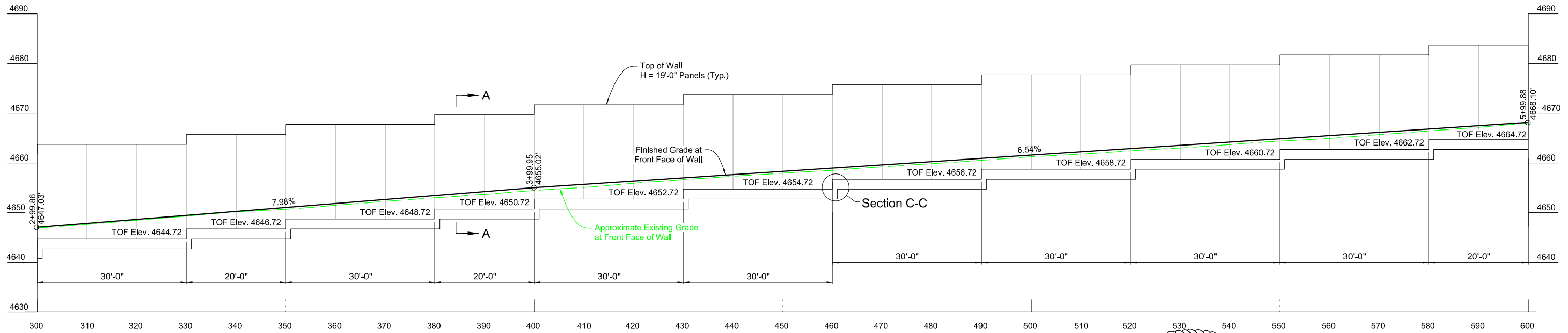
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STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	SW03



PLAN



ELEVATION

**NOTE:**

1. Refer to sheet Sound Wall Details 1 for Section A-A and Section C-C.



12/20/2022

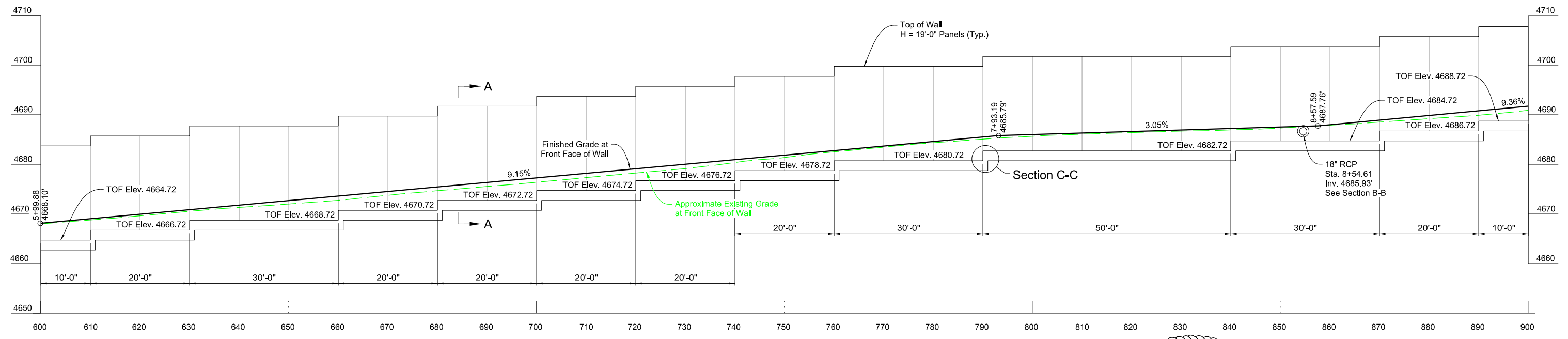
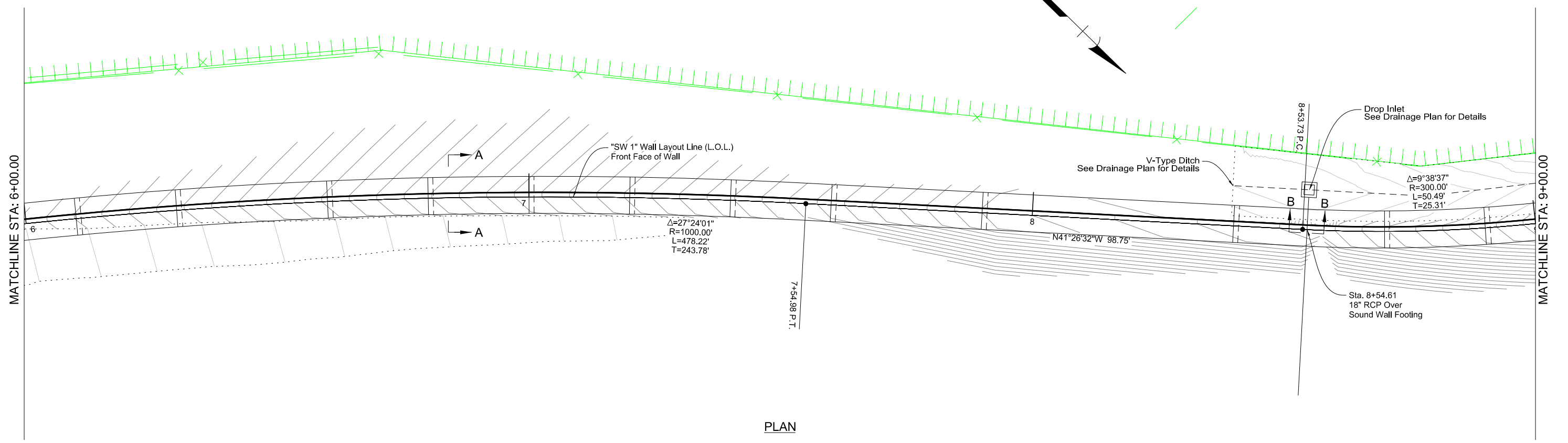
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**SOUND WALL "SW1"  
PLAN AND ELEVATION 2**



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STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	SW04



**NOTE:**  
1. Refer to sheet Sound Wall Details 1 for Section A-A, Section B-B and Section C-C.



12/20/2022

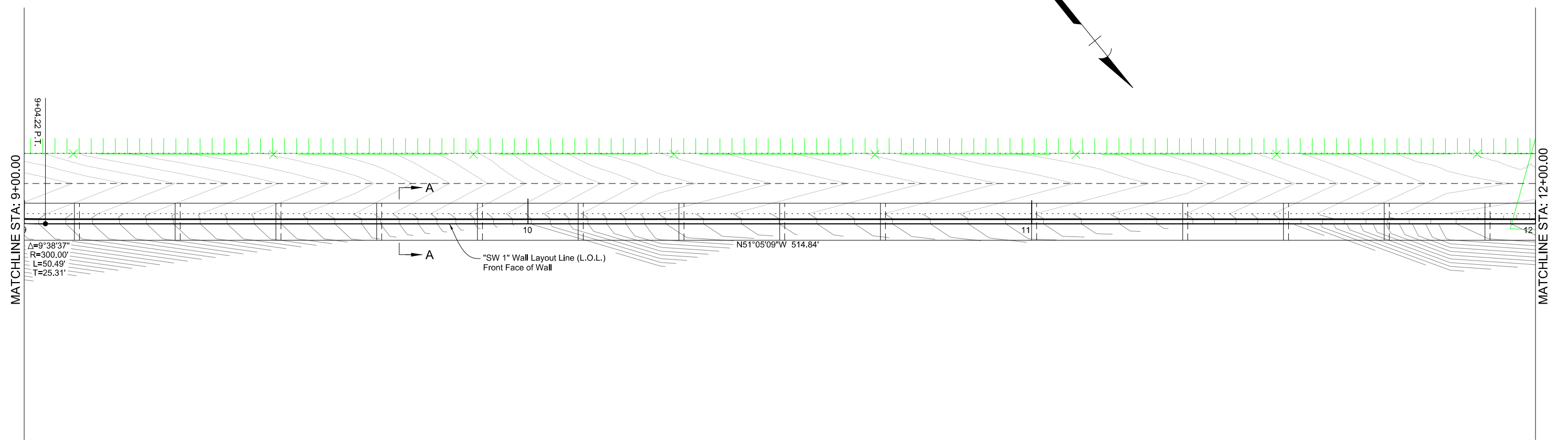
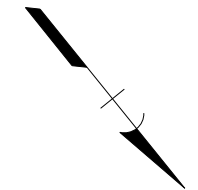
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**SOUND WALL "SW1"  
PLAN AND ELEVATION 3**

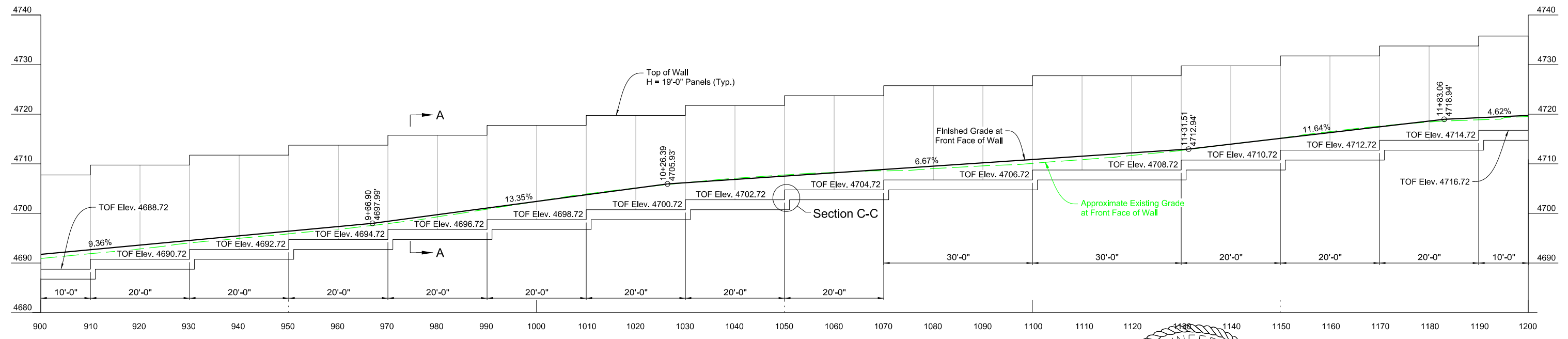
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STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	SW05



PLAN



ELEVATION

**NOTE:**  
1. Refer to sheet Sound Wall Details 1 for Section A-A and Section C-C.



12/20/2022

STATE OF NEVADA  
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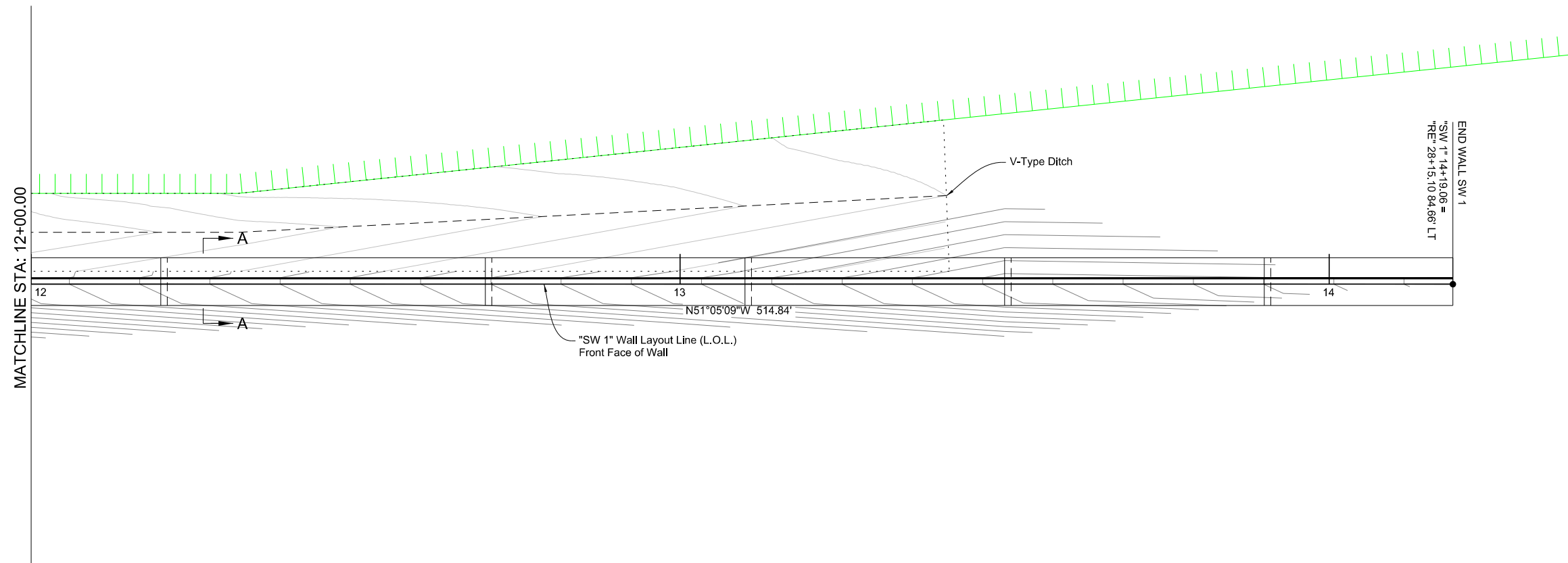
**SOUND WALL "SW1"  
PLAN AND ELEVATION 4**

**HDR**  
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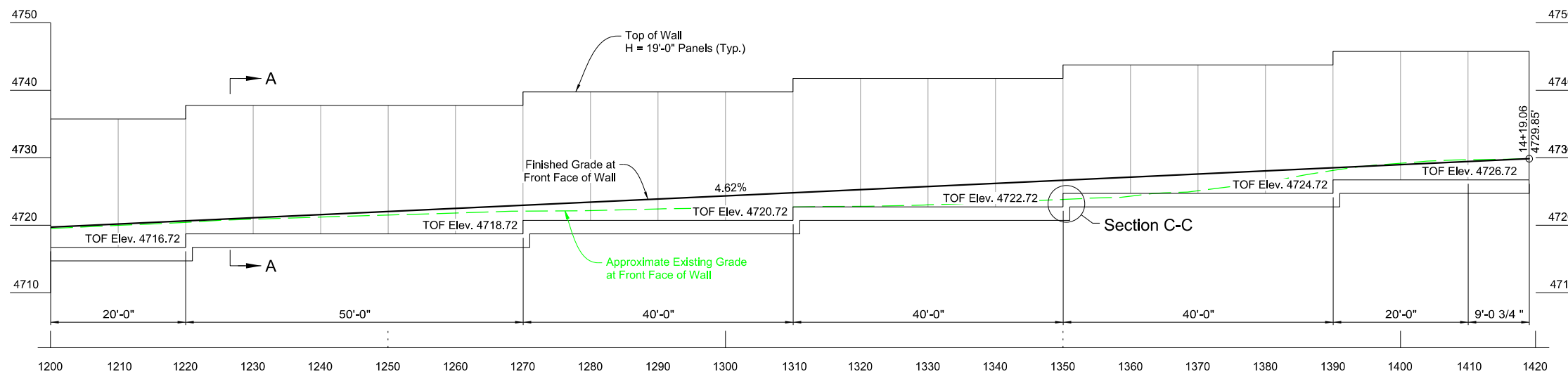
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STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	SW06



PLAN



ELEVATION


**NOTE:**  
1. Refer to sheet Sound Wall Details 1 for Section A-A and Section C-C.



12/20/2022

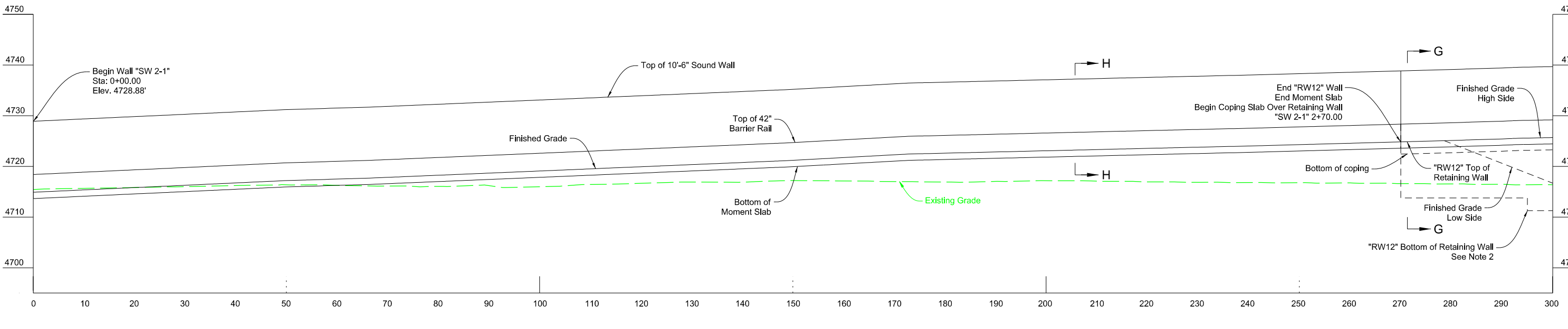
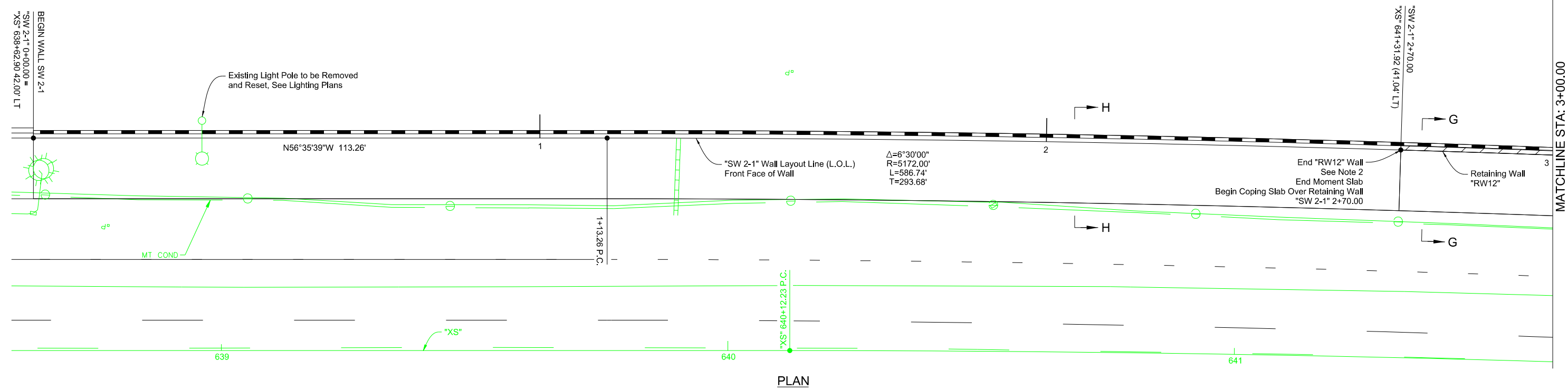
STATE OF NEVADA  
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**SOUND WALL "SW1"  
PLAN AND ELEVATION 5**



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STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	SW07



ELEVATION

NOTES:


1. Refer to sheet Sound Wall Details 2 for Section G-G and Section H-H.
2. Refer to sheet Retaining Wall "RW12" Plan and Elevation 1 and "RW12" Plan and Elevation 2 for Retaining Wall "RW12" Plan and Elevation.



12/20/2022

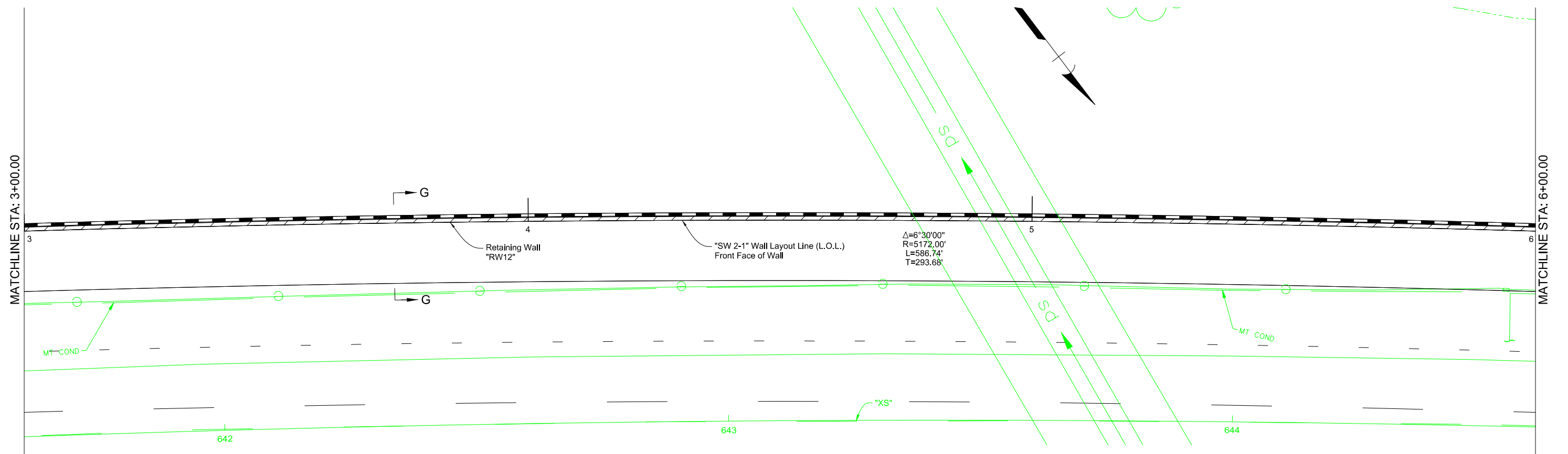
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**SOUND WALL "SW2-1"  
PLAN AND ELEVATION 1**

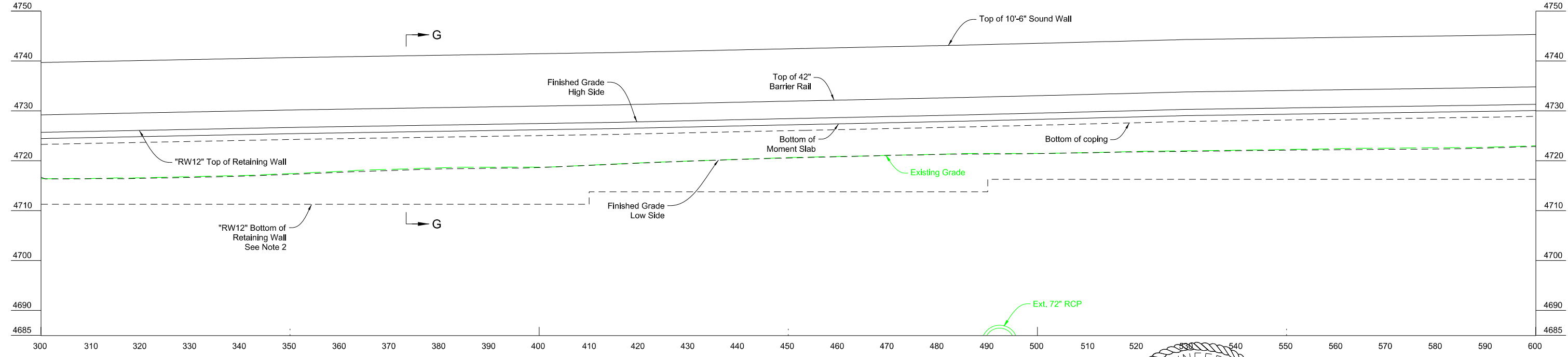


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STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	SW08



PLAN



ELEVATION

**NOTES:**


1. Refer to sheet Sound Wall Details 2 for Section G-G.
2. Refer to sheet Retaining Wall "RW12" Plan and Elevation 1 and "RW12" Plan and Elevation 2 for Retaining Wall "RW12" Plan and Elevation.



12/20/2022

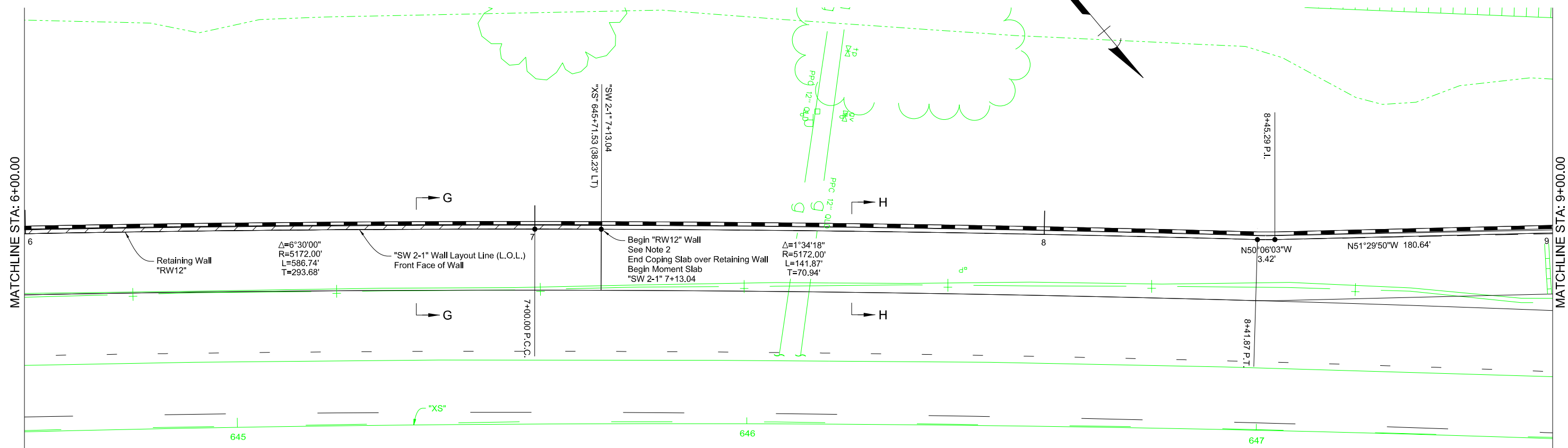
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DEPARTMENT OF TRANSPORTATION

**SOUND WALL "SW2-1"  
PLAN AND ELEVATION 2**

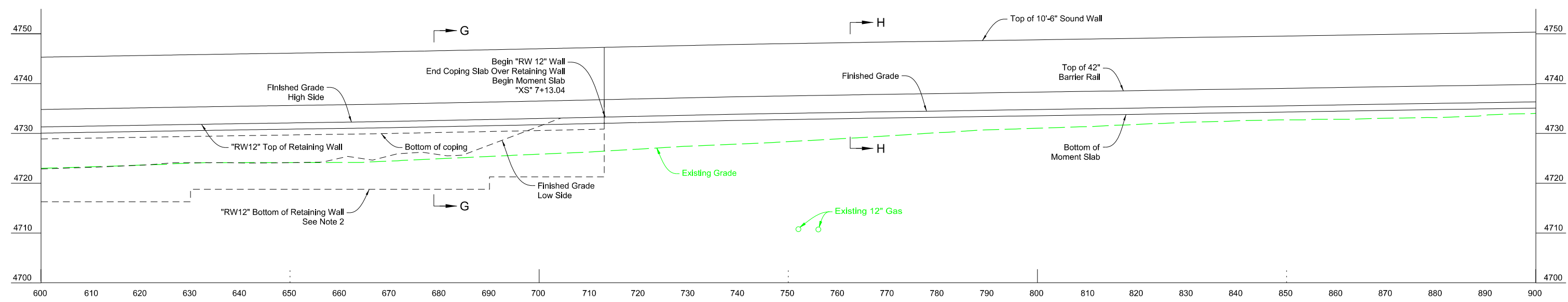


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STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	SW09



PLAN



ELEVATION

NOTES:


1. Refer to sheet Sound Wall Details 2 for Section G-G and Section H-H.
2. Refer to sheet Retaining Wall "RW12" Plan and Elevation 1 and "RW12" Plan and Elevation 2 for RW12 Plan and Elevation.



12/20/2022

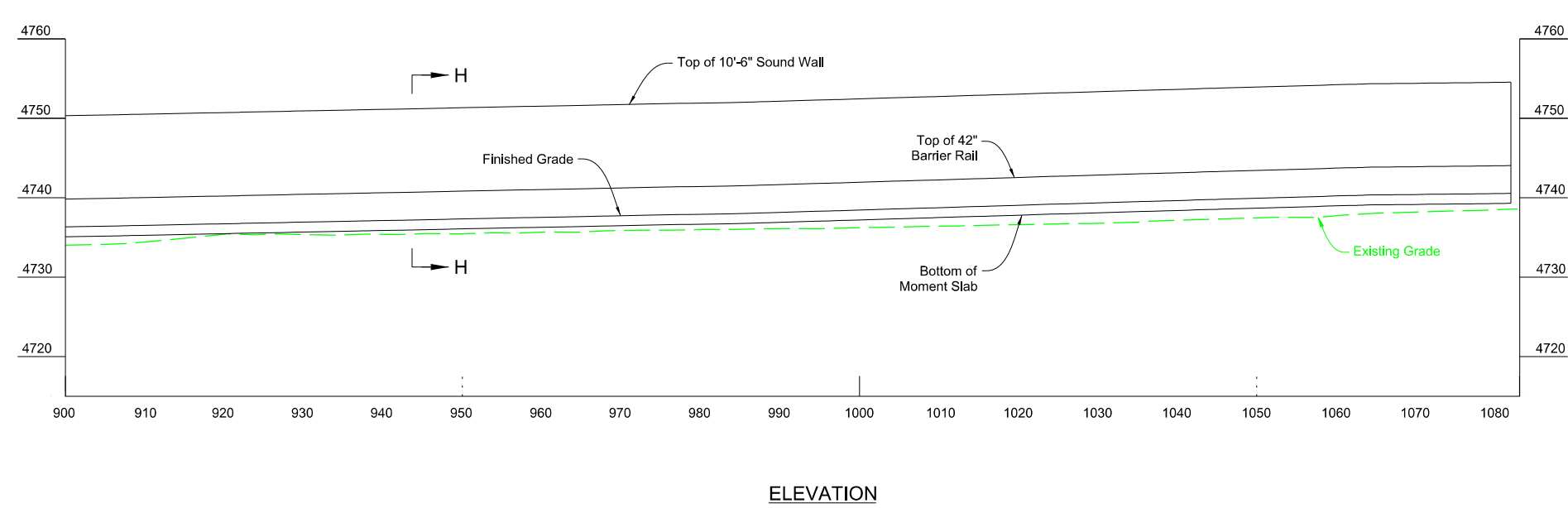
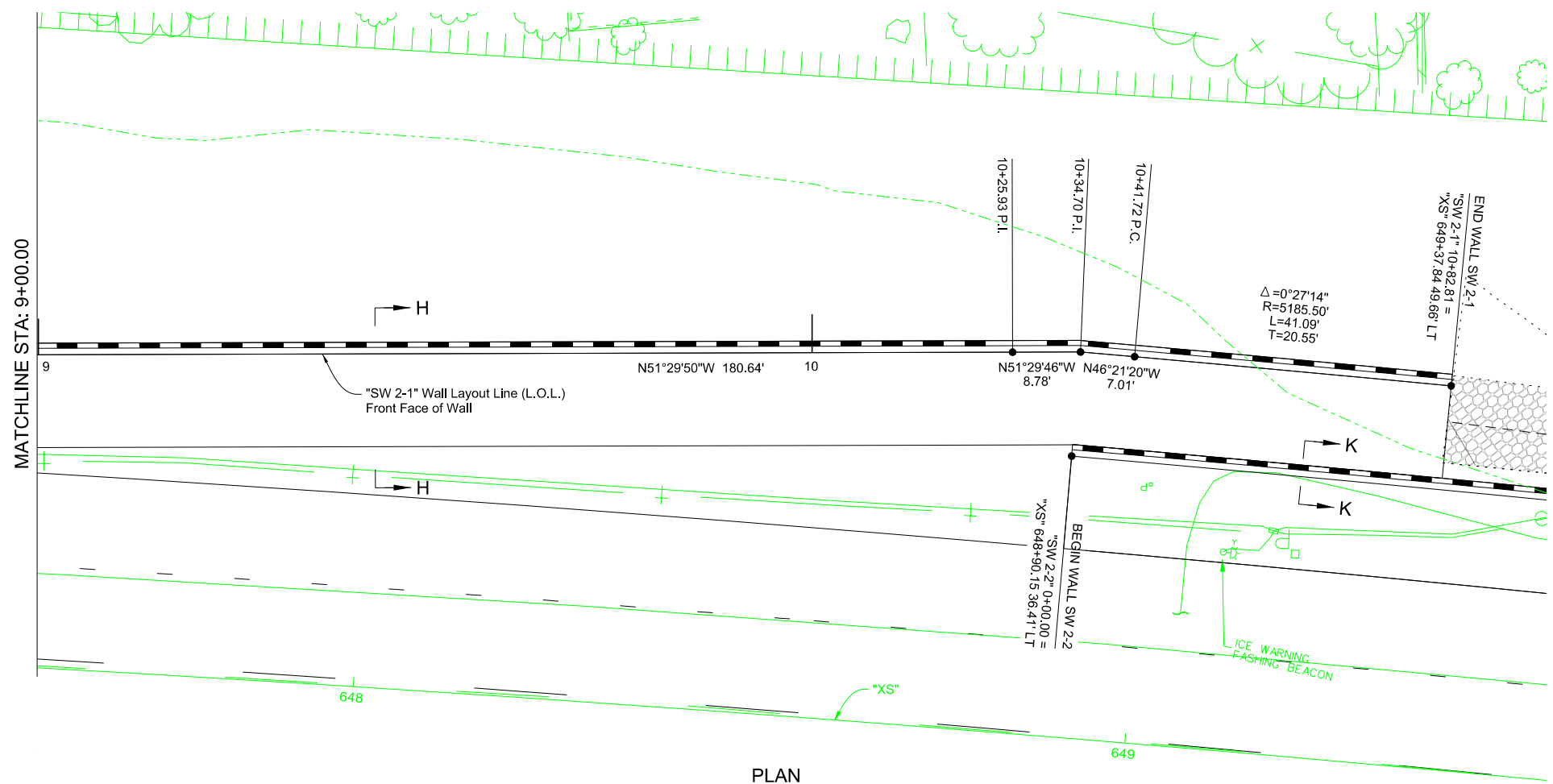
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DEPARTMENT OF TRANSPORTATION

**SOUND WALL "SW2-1"  
PLAN AND ELEVATION 3**



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STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	SW10




**NOTE:**  
 1. Refer to sheet Sound Wall Details 2 for Section H-H and Sound Wall Details 3 for Section K-K.



12/20/2022

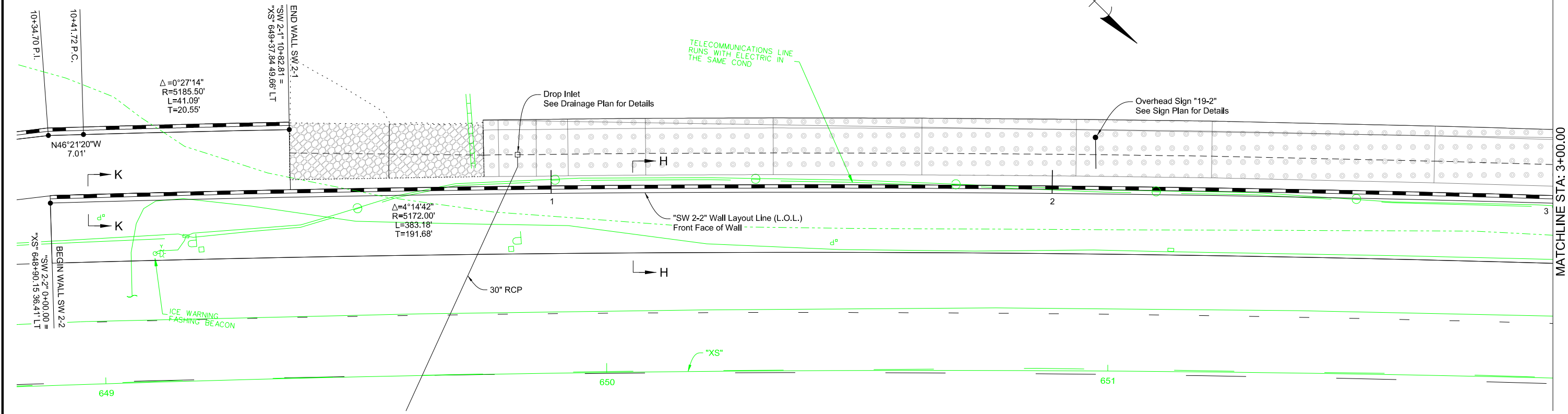
STATE OF NEVADA  
 DEPARTMENT OF TRANSPORTATION

**SOUND WALL "SW2-1"  
 PLAN AND ELEVATION 4**

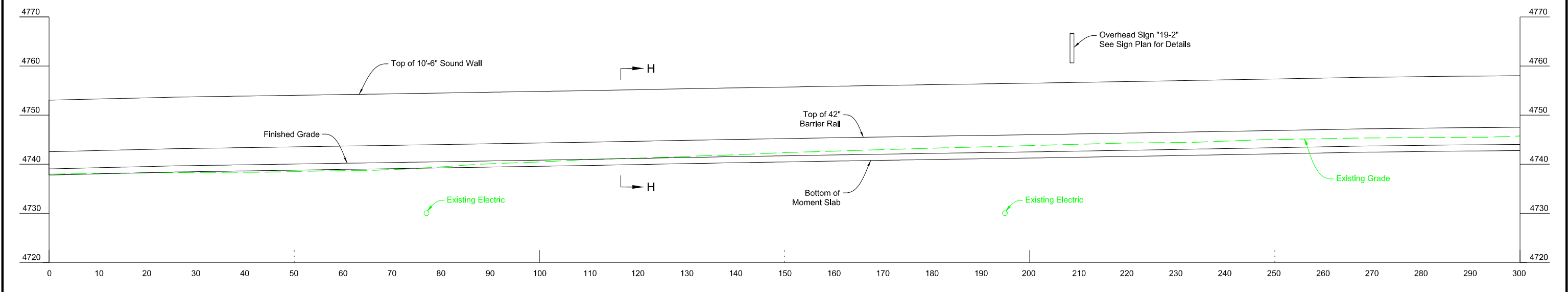


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STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	SW11



PLAN



ELEVATION

**NOTE:**  
 1. Refer to sheet Sound Walls Details 2 for Section H-H and Details 3 for section K-K.



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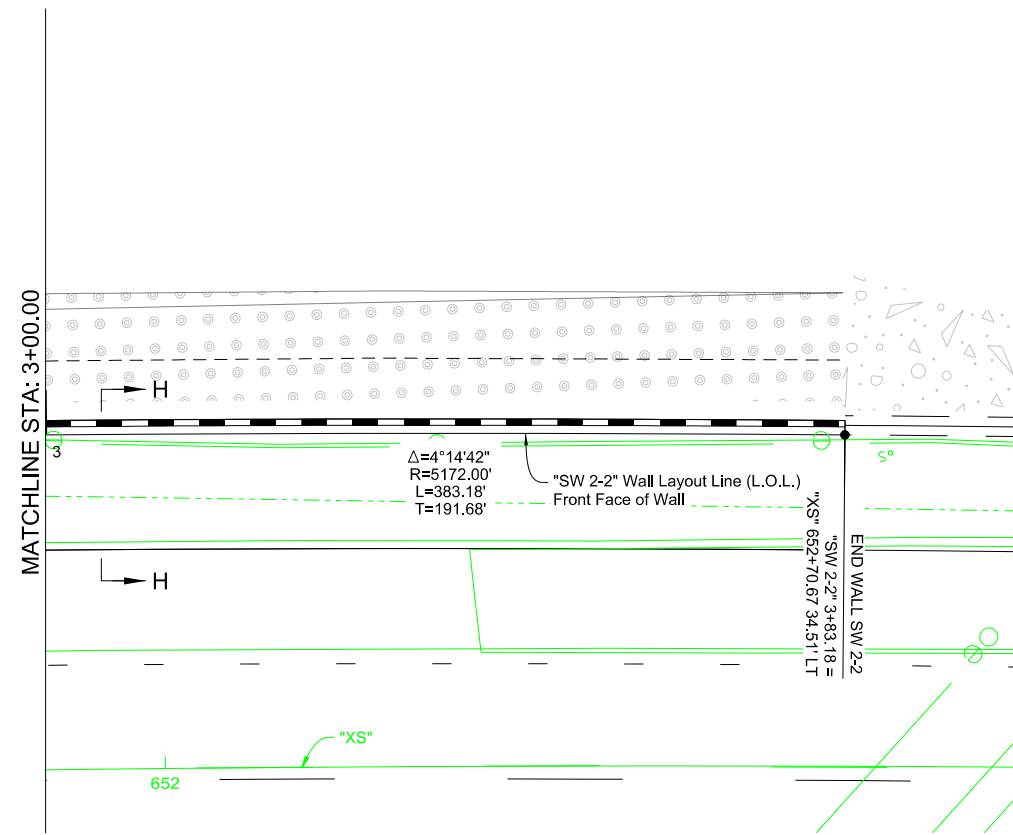
**SOUND WALL "SW2-2"  
 PLAN AND ELEVATION 1**

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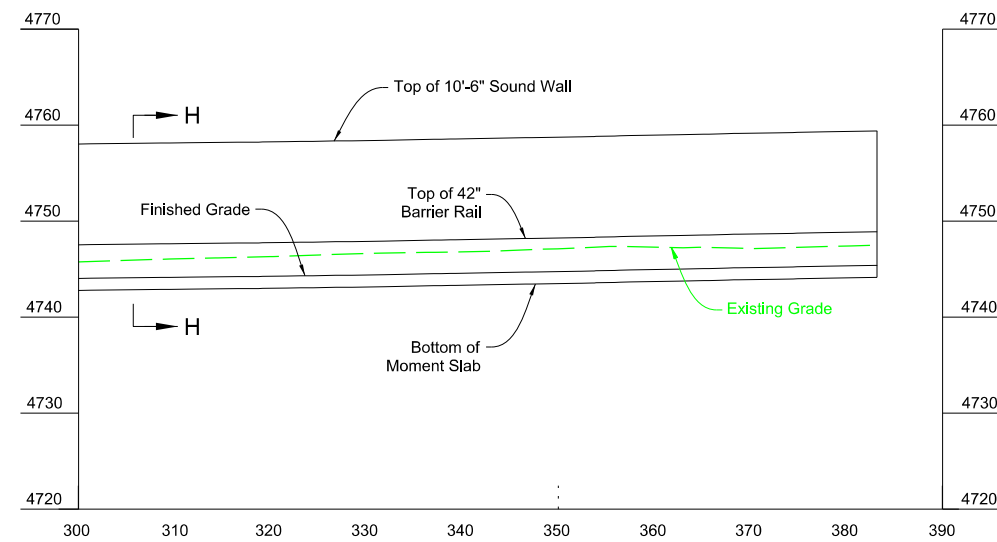
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STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	SW12



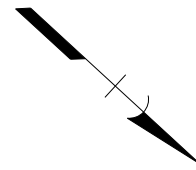
PLAN



ELEVATION

**NOTE:**

1. Refer to sheet Sound Wall Details 2 for Section H-H.



12/20/2022

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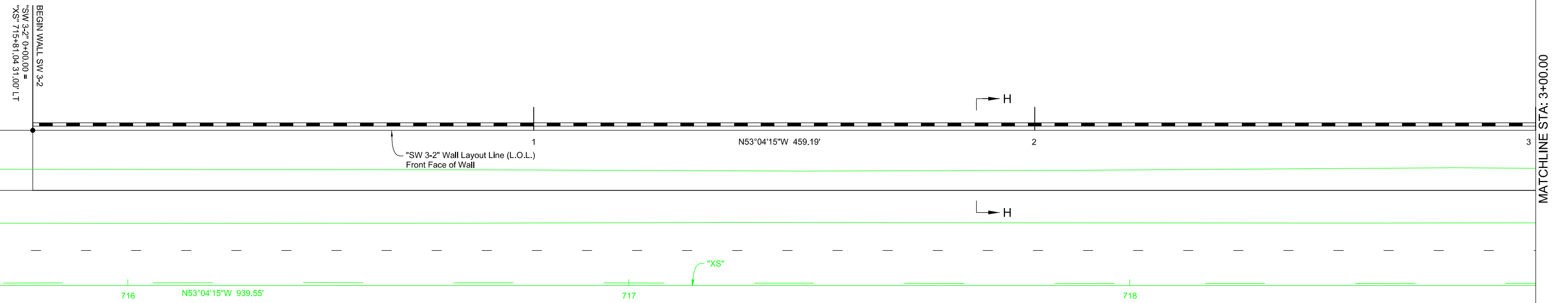
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**SOUND WALL "SW2-2"  
PLAN AND ELEVATION 2**

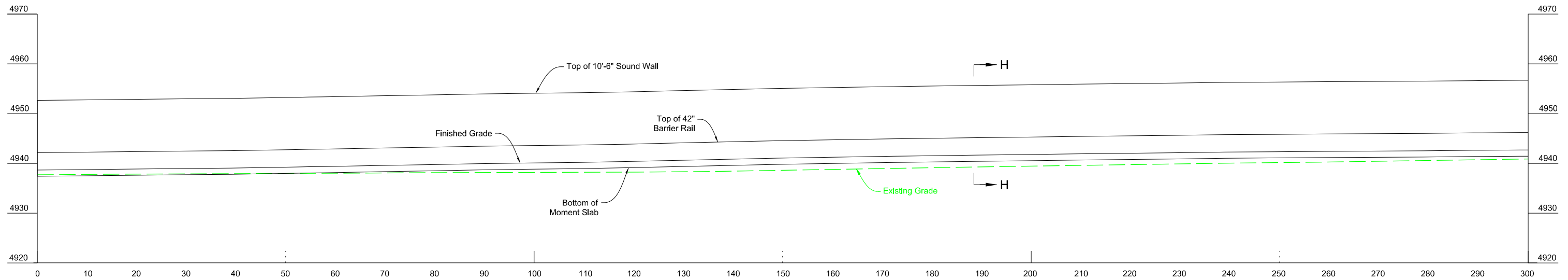
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STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	SW13



PLAN



ELEVATION

**NOTE:**


1. Refer to sheet Sound Wall Details 2 for Section H-H.



12/20/2022

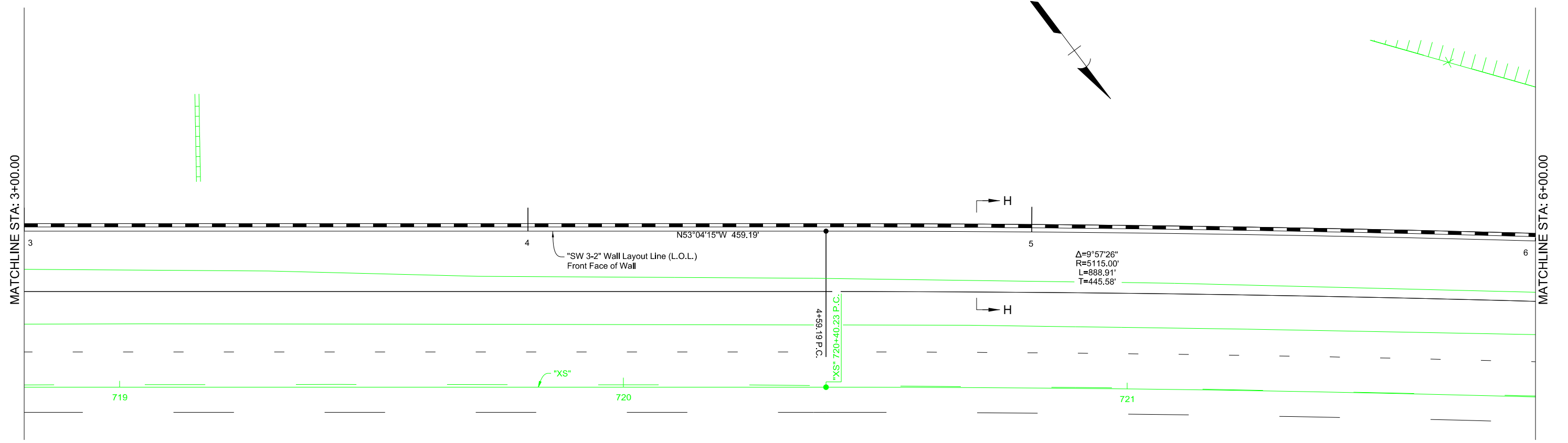
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**SOUND WALL "SW3-2"  
PLAN AND ELEVATION 1**

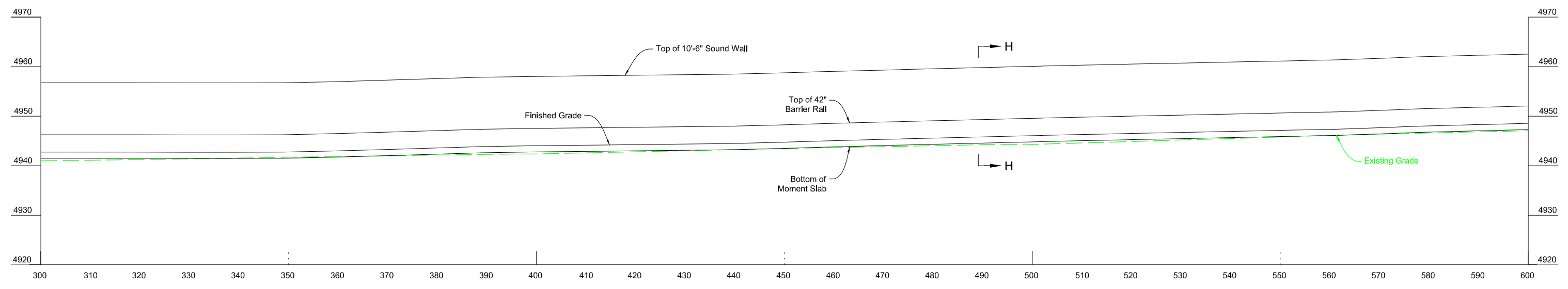


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STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	SW14



PLAN



ELEVATION


**NOTE:**  
1. Refer to sheet Sound Wall Details 2 for Section H-H.



12/20/2022

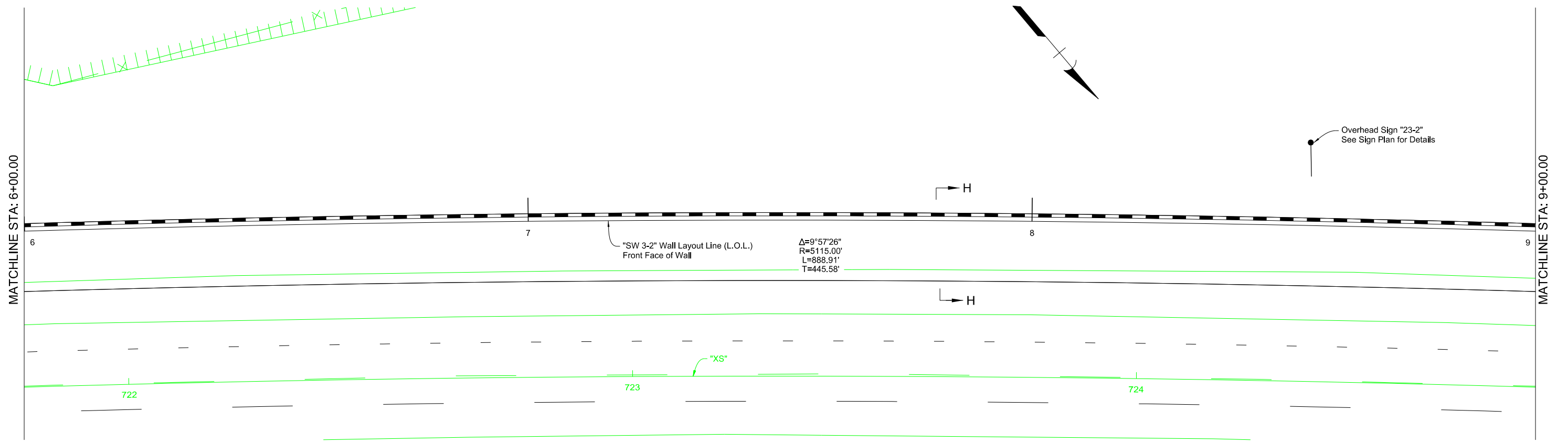
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**SOUND WALL "SW3-2"  
PLAN AND ELEVATION 2**

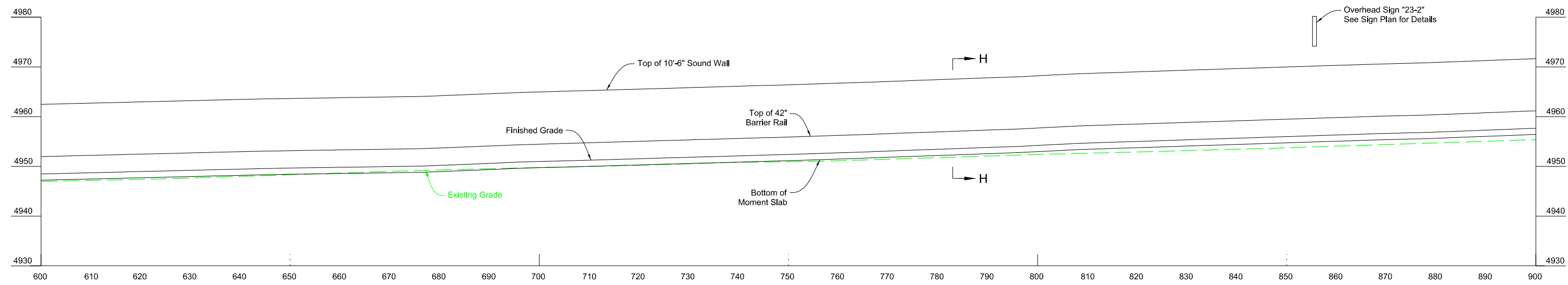


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STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	SW15



PLAN



ELEVATION


**NOTE:**  
1. Refer to sheet Sound Wall Details 2 for Section H-H.



12/20/2022

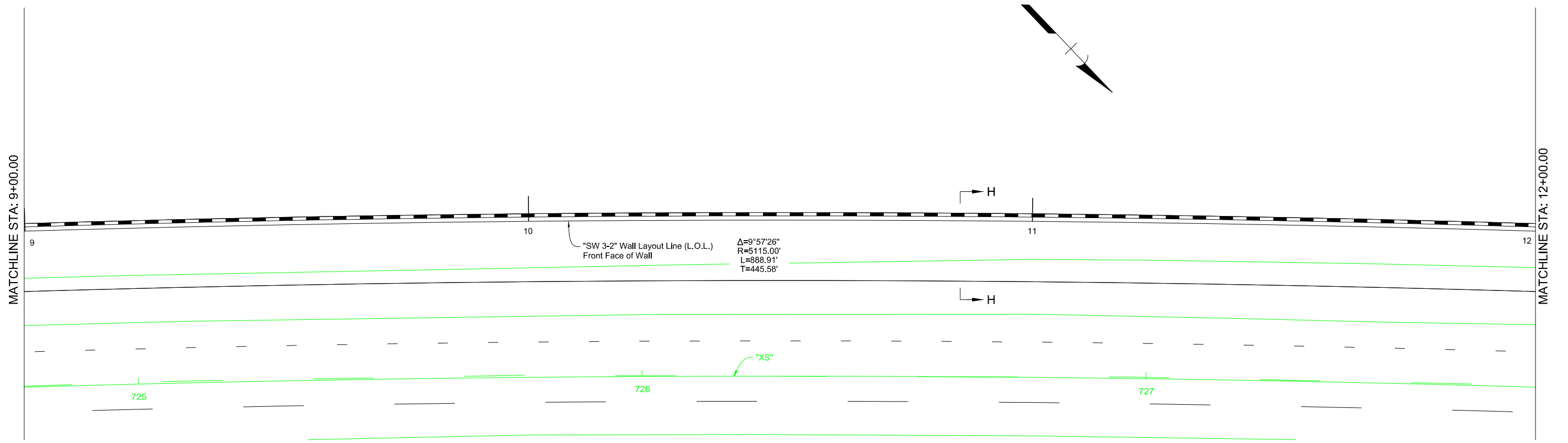
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**SOUND WALL "SW3-2"  
PLAN AND ELEVATION 3**

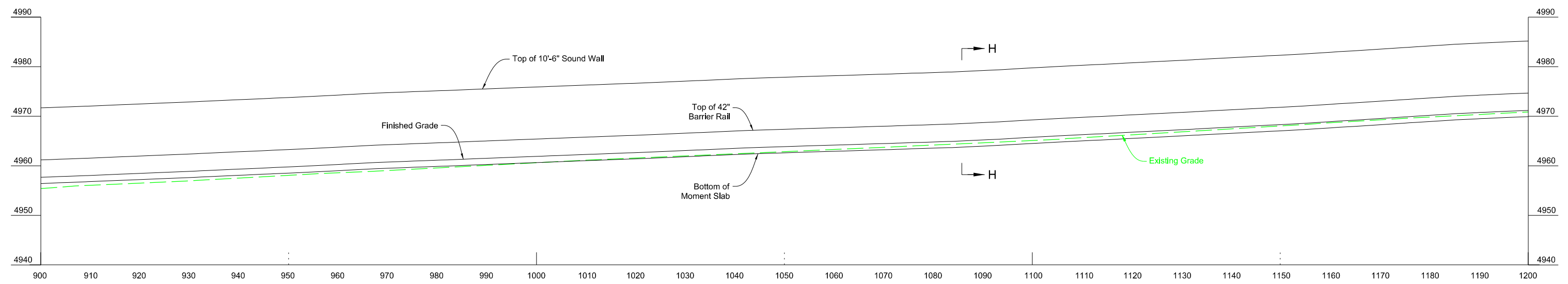


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STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	SW16



PLAN



ELEVATION


**NOTE:**  
1. Refer to sheet Sound Wall Details 2 for Section H-H.



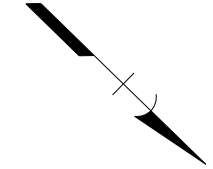
12/20/2022

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**SOUND WALL "SW3-2"  
PLAN AND ELEVATION 4**

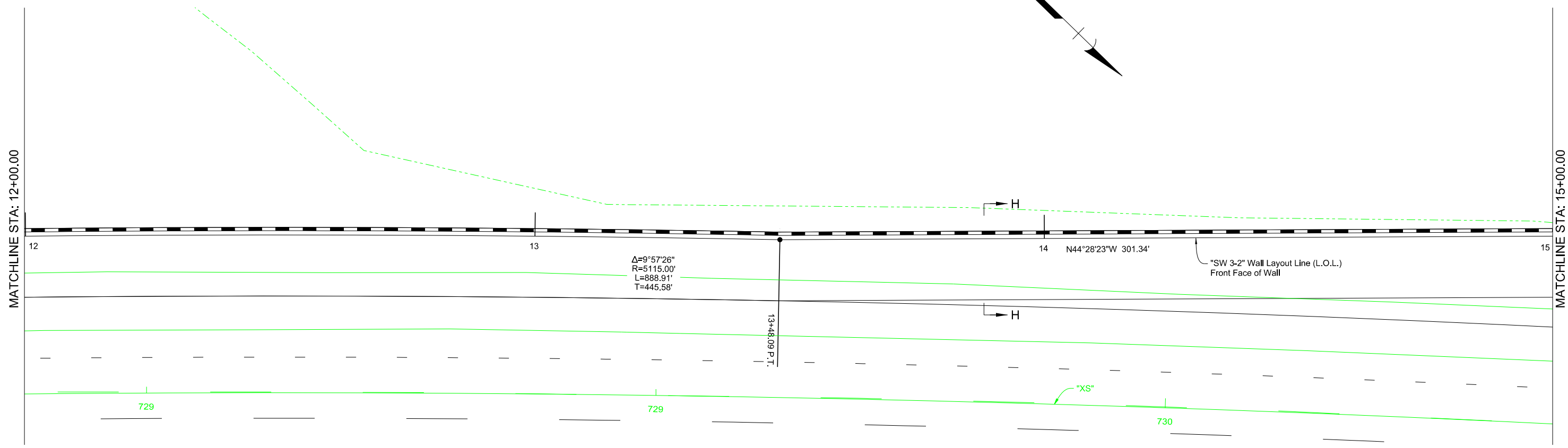
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STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	SW17

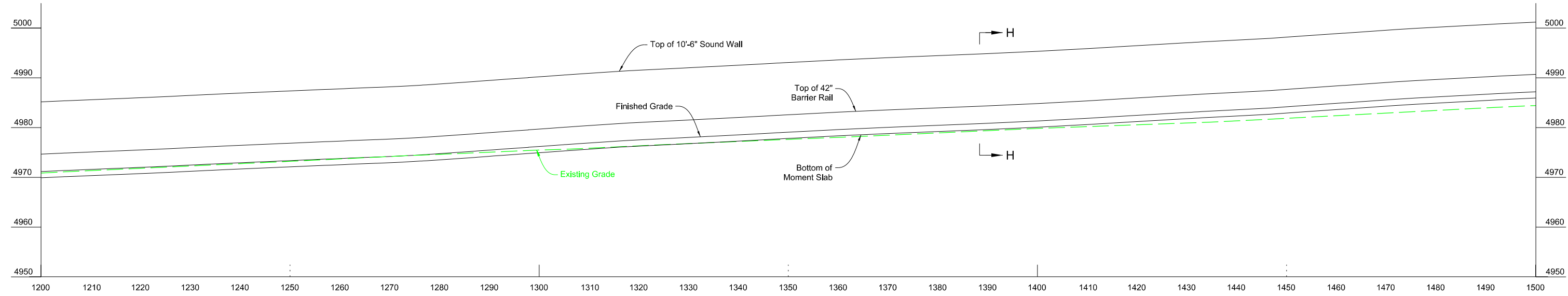


MATCHLINE STA: 12+00.00

MATCHLINE STA: 15+00.00



PLAN



ELEVATION


**NOTE:**  
1. Refer to sheet Sound Wall Details 2 for Section H-H.



12/20/2022

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

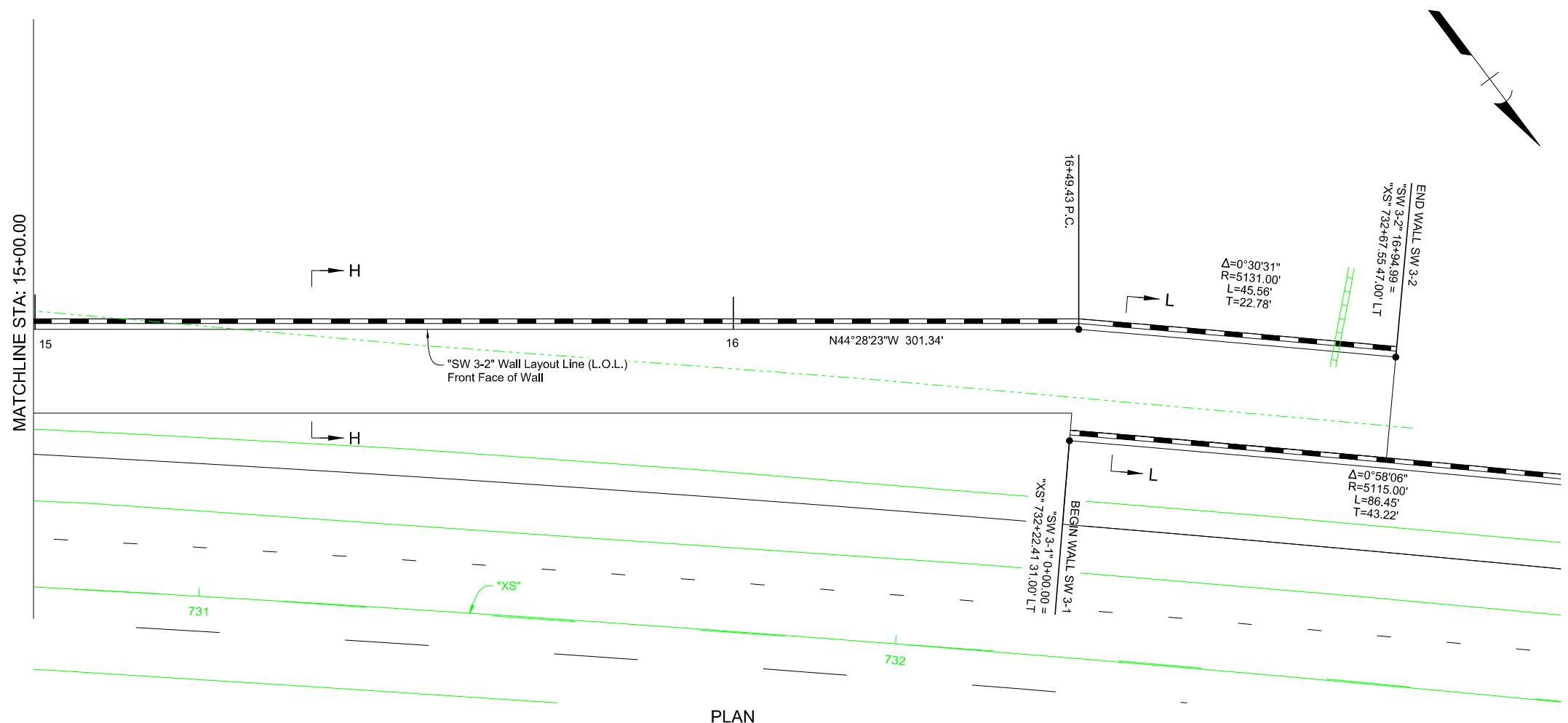
**SOUND WALL "SW3-2"  
PLAN AND ELEVATION 5**



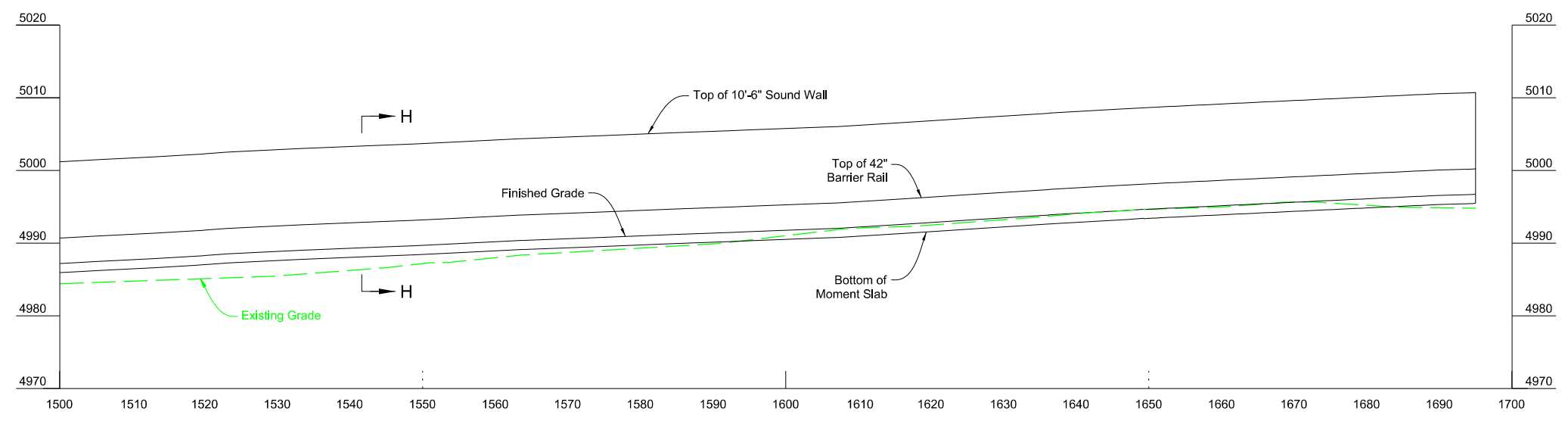
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STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	SW18



PLAN



ELEVATION

**NOTE:**  
 1. Refer to sheet Sound Wall Details 2 for Section H-H and sheet Sound Wall Details 3 for Section L-L.



12/20/2022

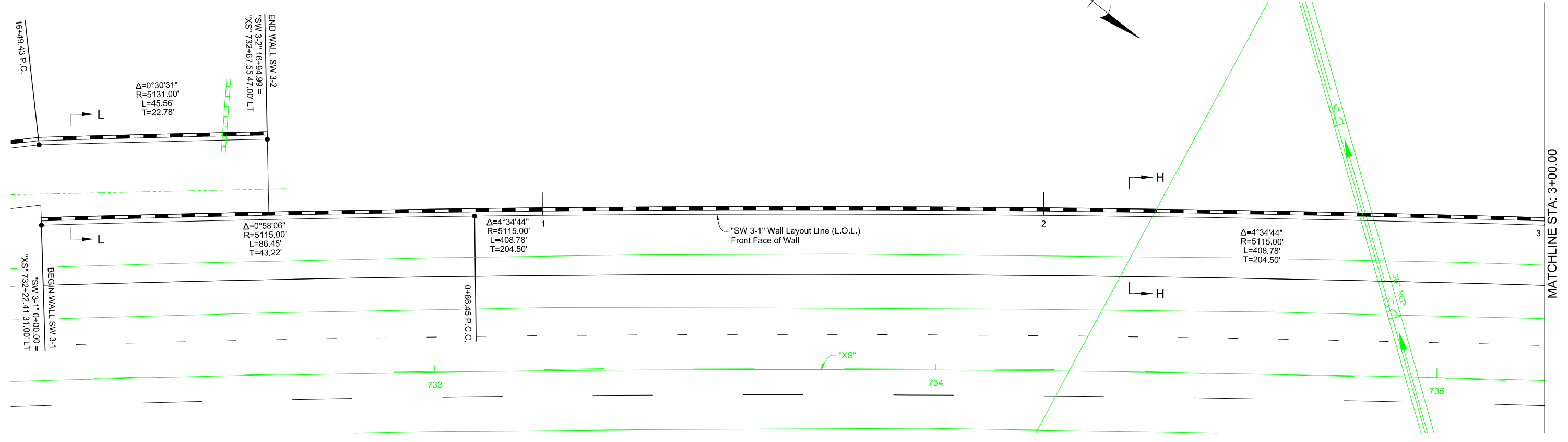
STATE OF NEVADA  
 DEPARTMENT OF TRANSPORTATION

**SOUND WALL "SW3-2"  
 PLAN AND ELEVATION 6**

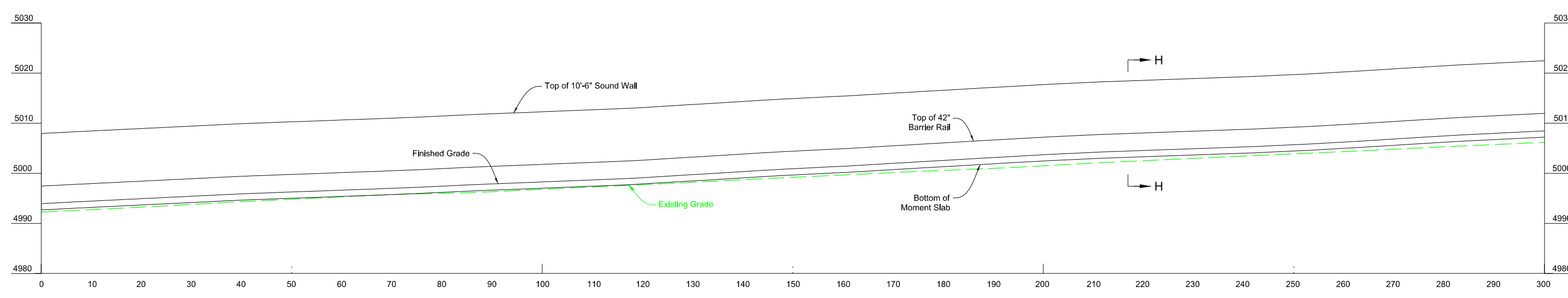
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STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	SW19



PLAN



ELEVATION

**NOTE:**  
 1. Refer to sheet Sound Wall Details 2 for Section H-H and sheet Sound Wall Details 3 for Section L-L.



12/20/2022

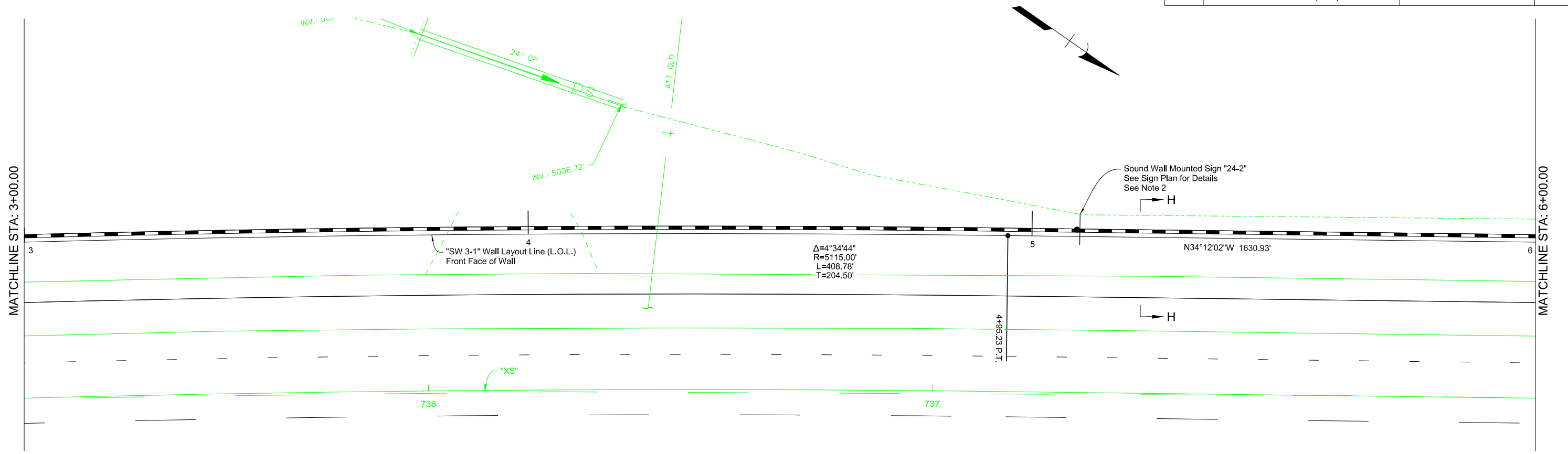
STATE OF NEVADA  
 DEPARTMENT OF TRANSPORTATION

**SOUND WALL "SW3-1"  
 PLAN AND ELEVATION 1**

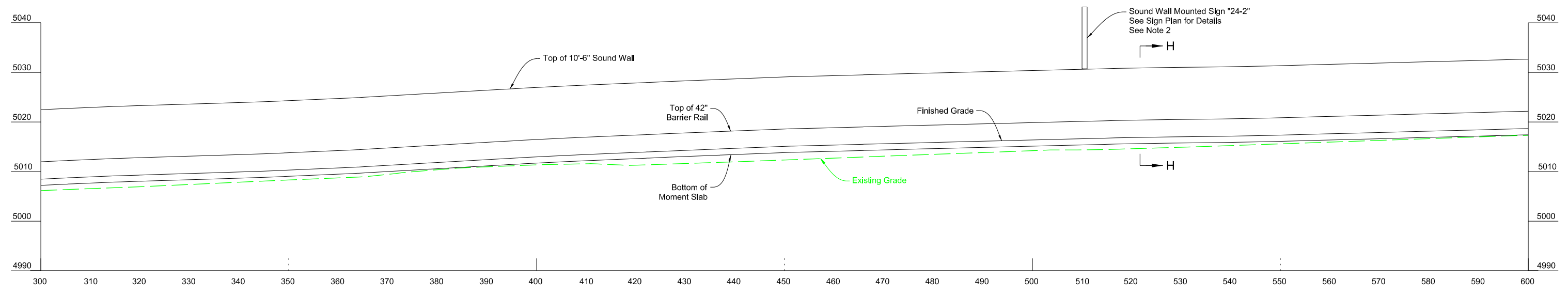
**HDR**  
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STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	SW20



PLAN



ELEVATION

**NOTES:**


1. Refer to sheet Sound Wall Details 2 for Section H-H.
2. Refer to sheet Sound Wall Details 2 for Overhead Sign Mount to Sound Wall Details.



12/20/2022

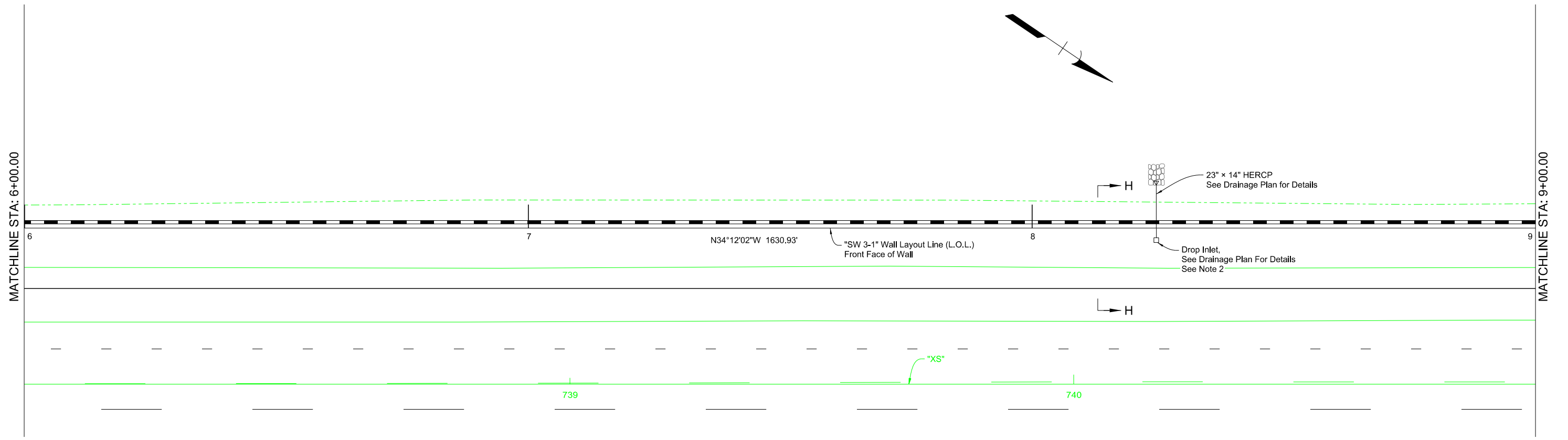
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**SOUND WALL "SW3-1"  
PLAN AND ELEVATION 2**

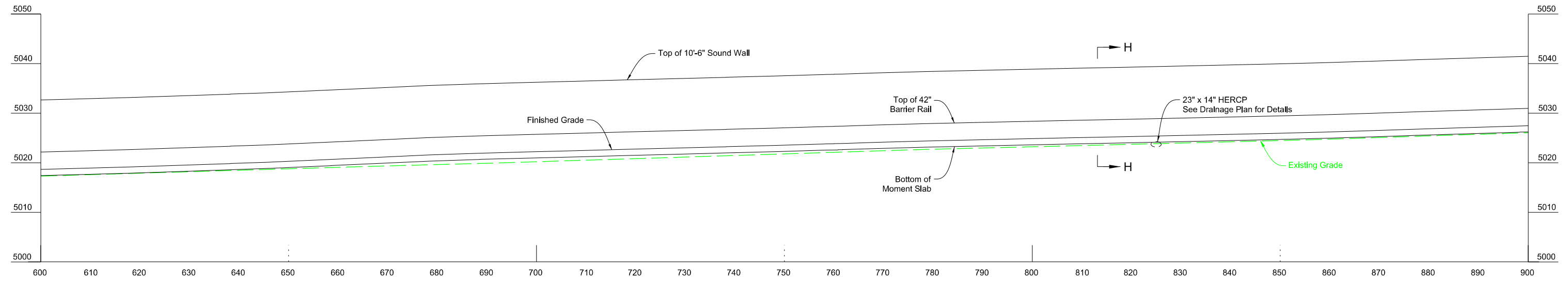


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STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	SW21



PLAN



ELEVATION

**NOTES:**


1. Refer to sheet Sound Wall Details 2 for Section H-H.
2. Refer to sheet Sound Wall Details 3 for Details around Drop Inlet.



12/20/2022

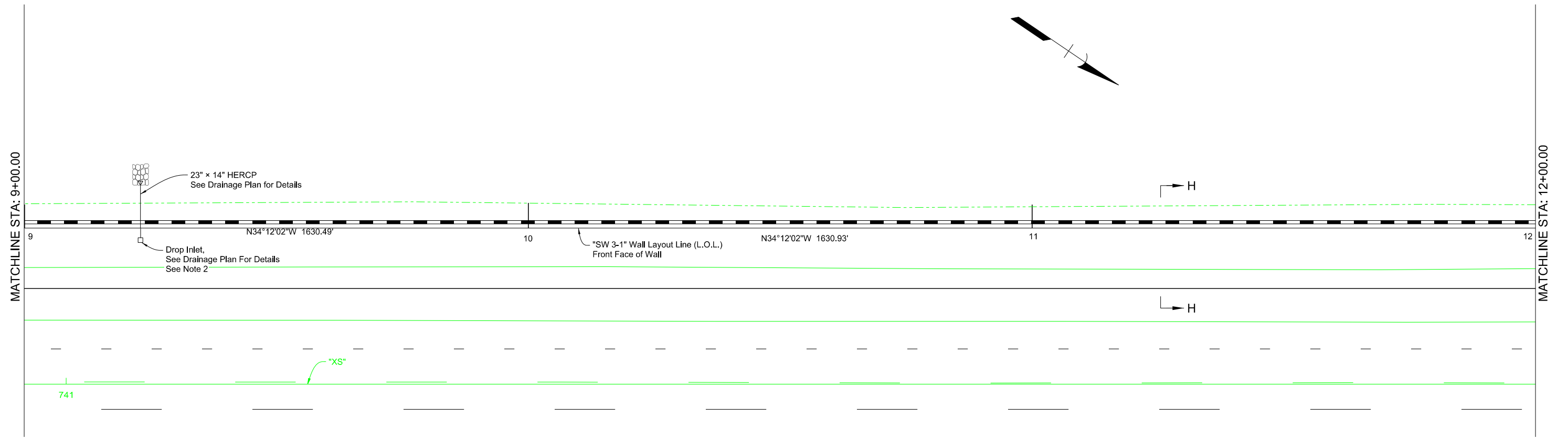
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**SOUND WALL "SW3-1"  
PLAN AND ELEVATION 3**

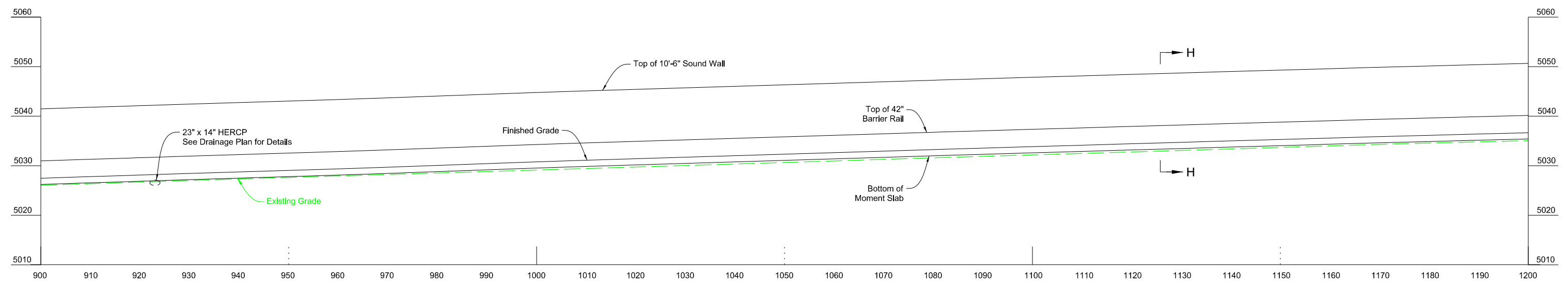


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STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	SW22



PLAN



ELEVATION

- NOTES:**
1. Refer to sheet Sound Wall Details 2 for Section H-H.
  2. Refer to sheet Sound Wall Details 3 for Details around Drop Inlet.



12/20/2022

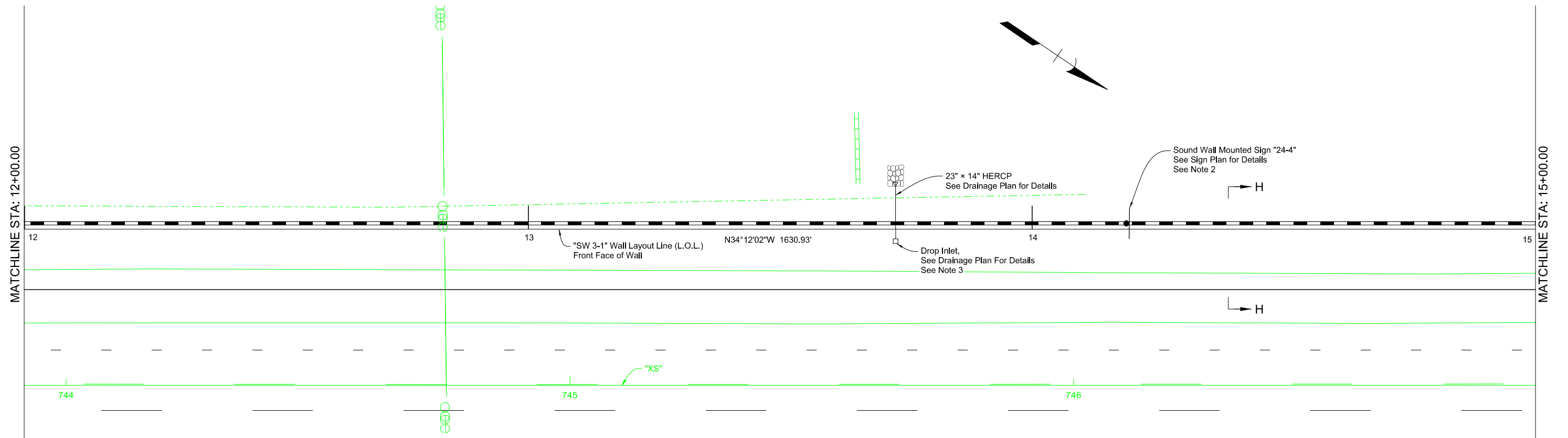
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**SOUND WALL "SW3-1"  
PLAN AND ELEVATION 4**

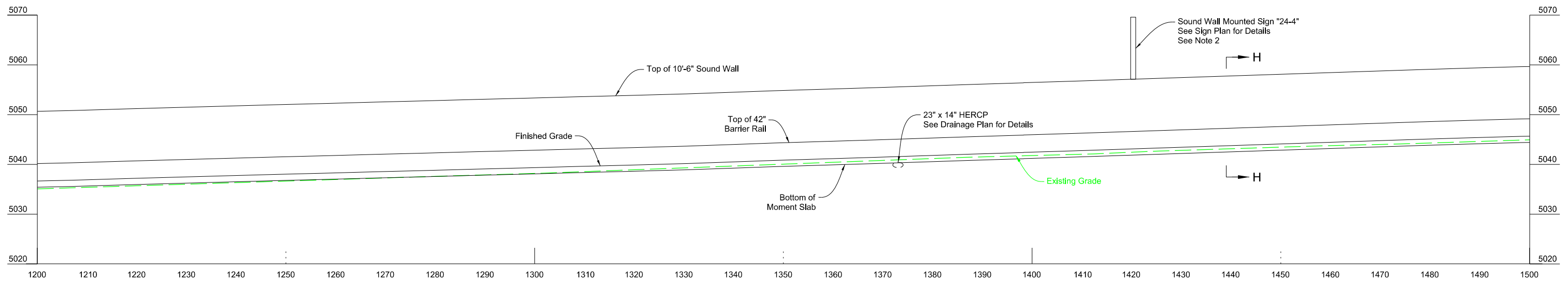
**HDR**  
HDR Engineering, Inc.

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STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	SW23



PLAN



ELEVATION

NOTES:

1. Refer to sheet Sound Wall Details 2 for Section H-H.
2. Refer to sheet Sound Wall Details 2 for Overhead Sign Mount to Sound Wall Details.
3. Refer to sheet Sound Wall Details 3 for Details around Drop Inlet.



12/20/2022

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

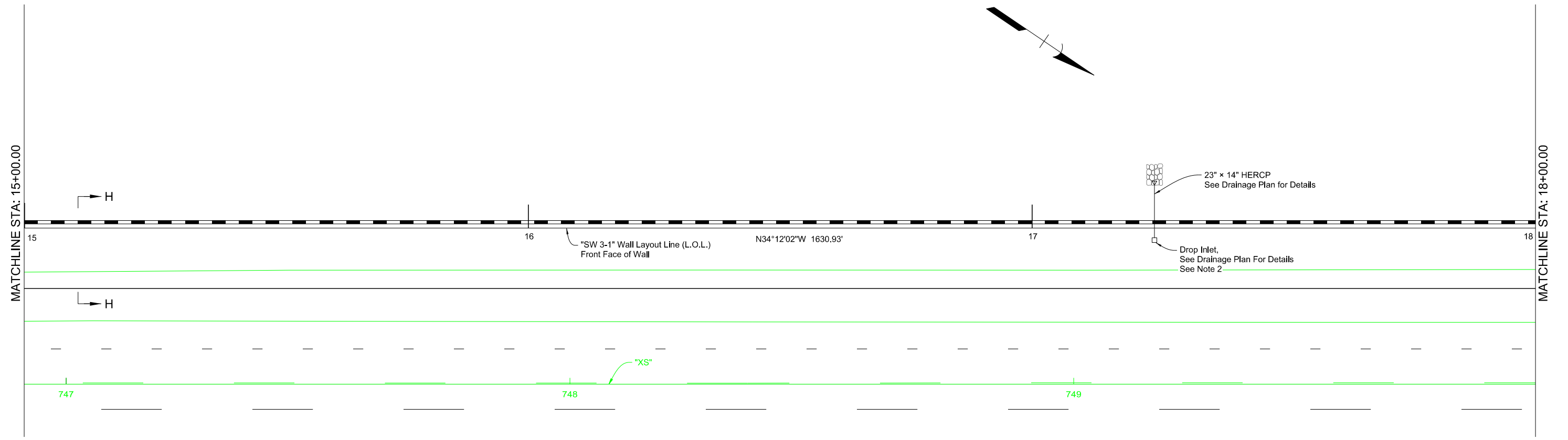
**SOUND WALL "SW3-1"  
PLAN AND ELEVATION 5**

**HDR**  
HDR Engineering, Inc.

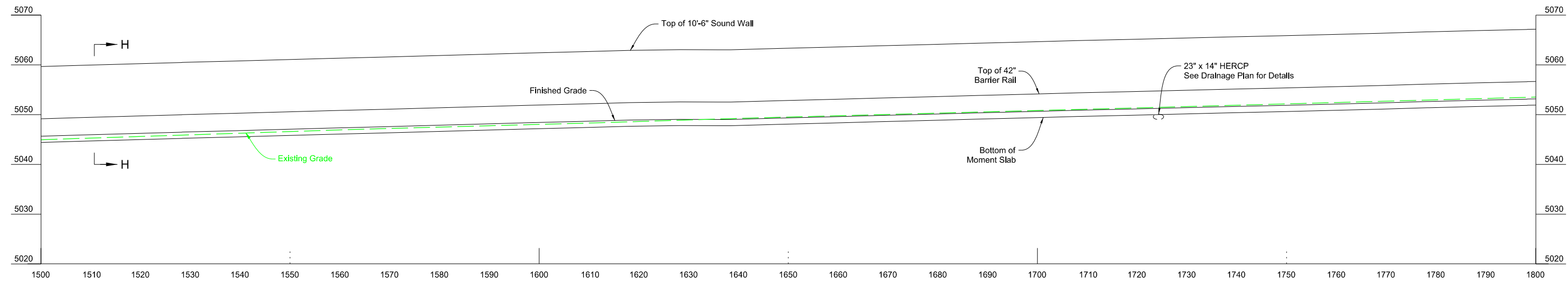
9805 Double R Boulevard, Suite 101  
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STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	SW24



PLAN



ELEVATION

NOTES:


1. Refer to sheet Sound Wall Details 2 for Section H-H.
2. Refer to sheet Sound Wall Details 3 for Details around Drop Inlet.



12/20/2022

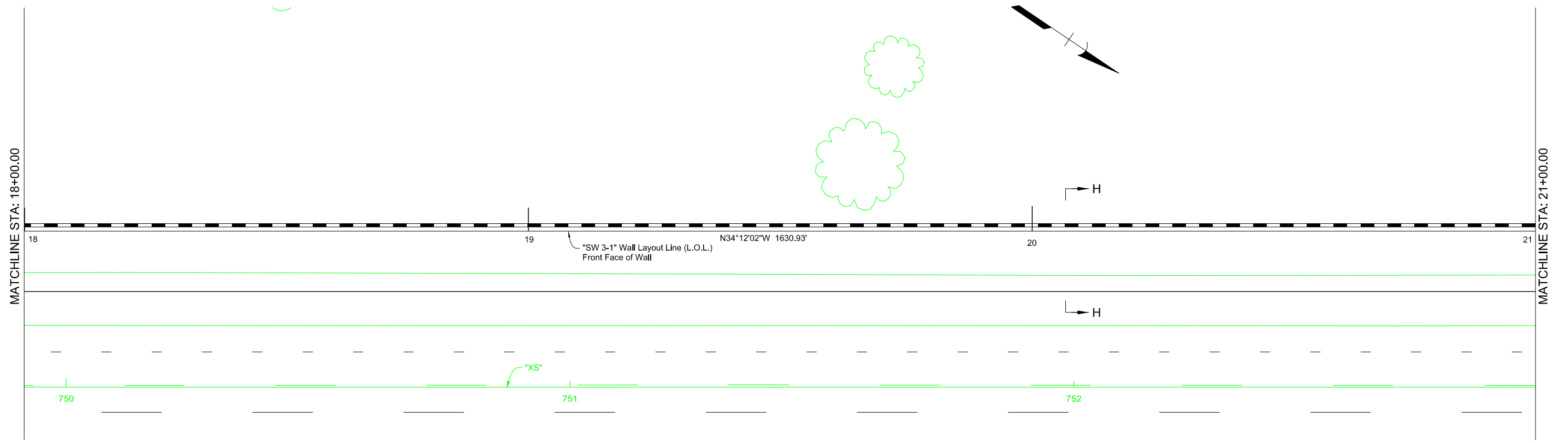
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**SOUND WALL "SW3-1"  
PLAN AND ELEVATION 6**

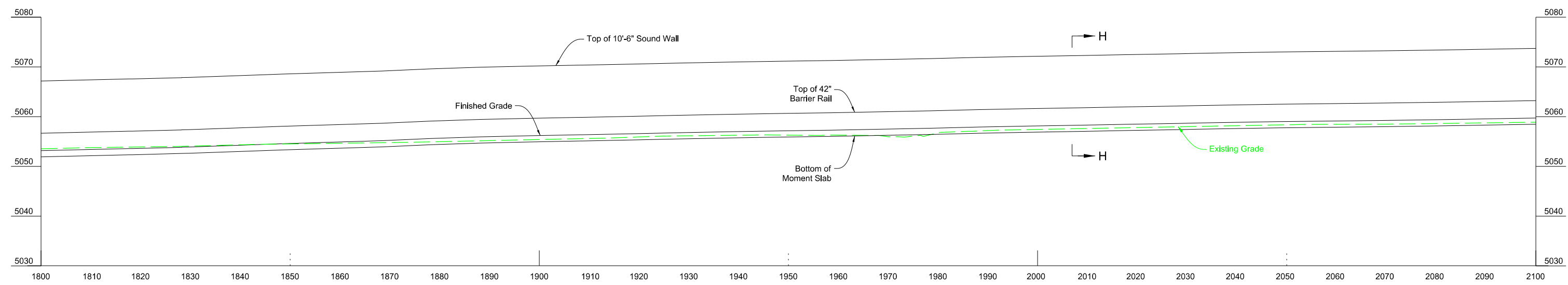


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STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	SW25



PLAN



ELEVATION


**NOTE:**  
1. Refer to sheet Sound Wall Details 2 for Section H-H.



12/20/2022

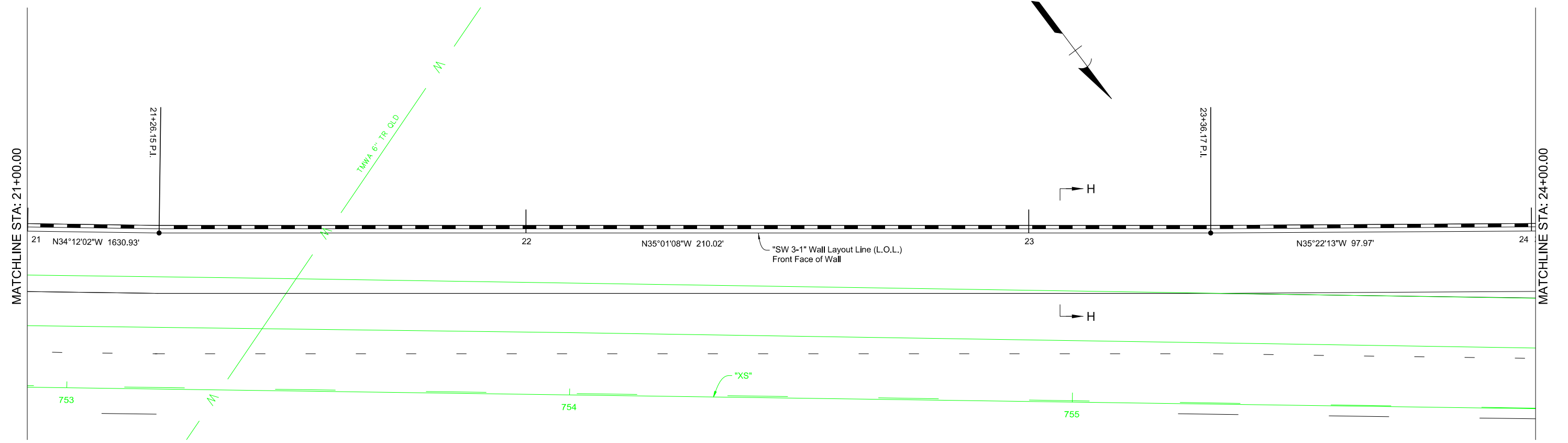
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**SOUND WALL "SW3-1"  
PLAN AND ELEVATION 7**

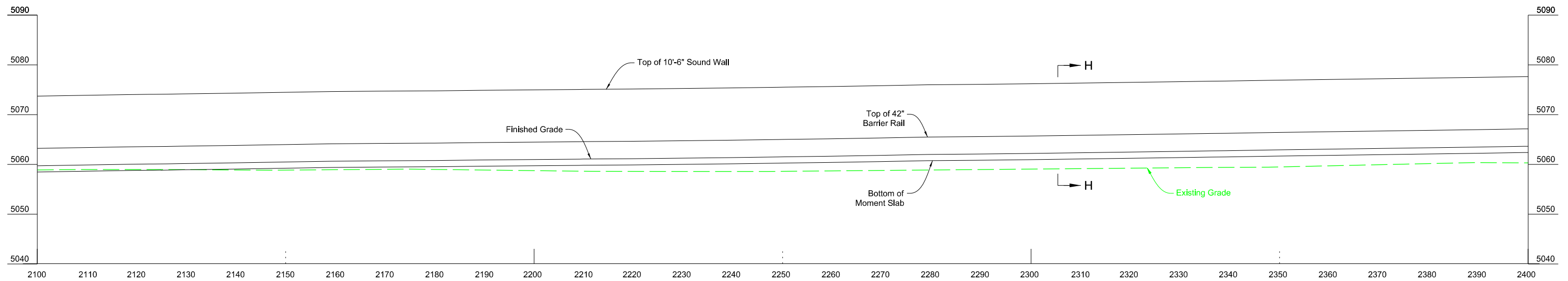


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Reno, NV 89521-5917  
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STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	SW26



PLAN



ELEVATION

**NOTE:**  
1. Refer to sheet Sound Wall Details 2 for Section H-H.



12/20/2022

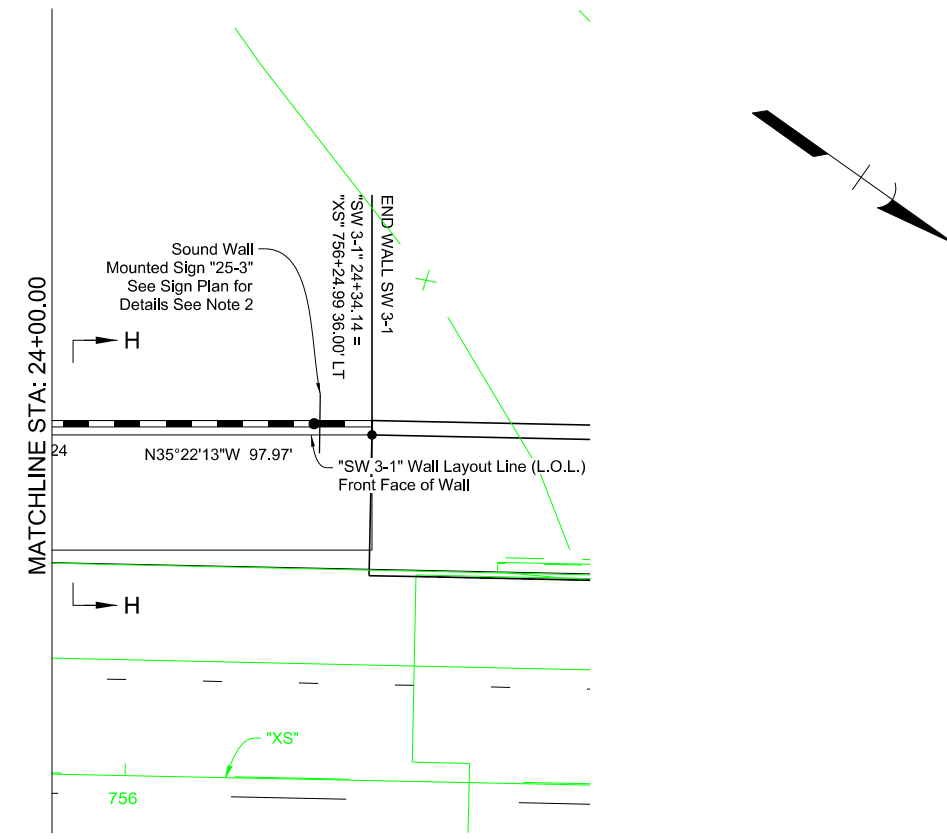
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**SOUND WALL "SW3-1"  
PLAN AND ELEVATION 8**

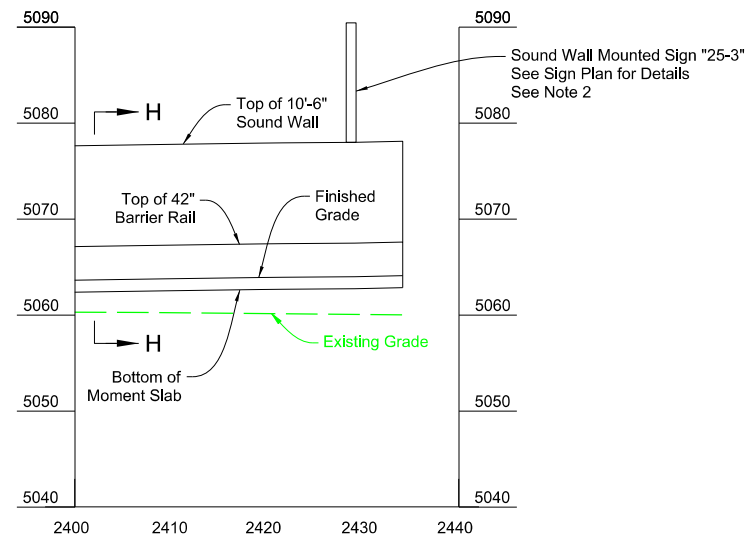
**HDR**  
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STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	SW27



PLAN



ELEVATION

**NOTES:**

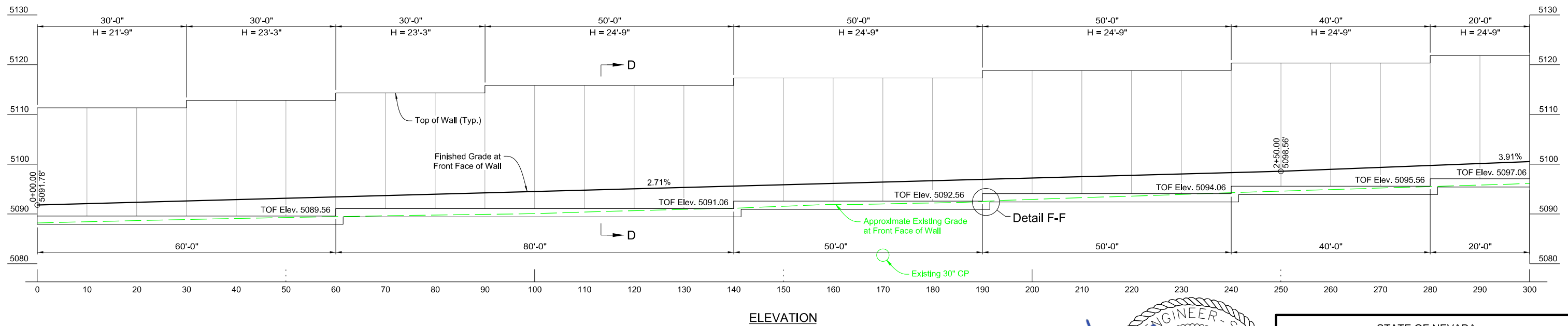
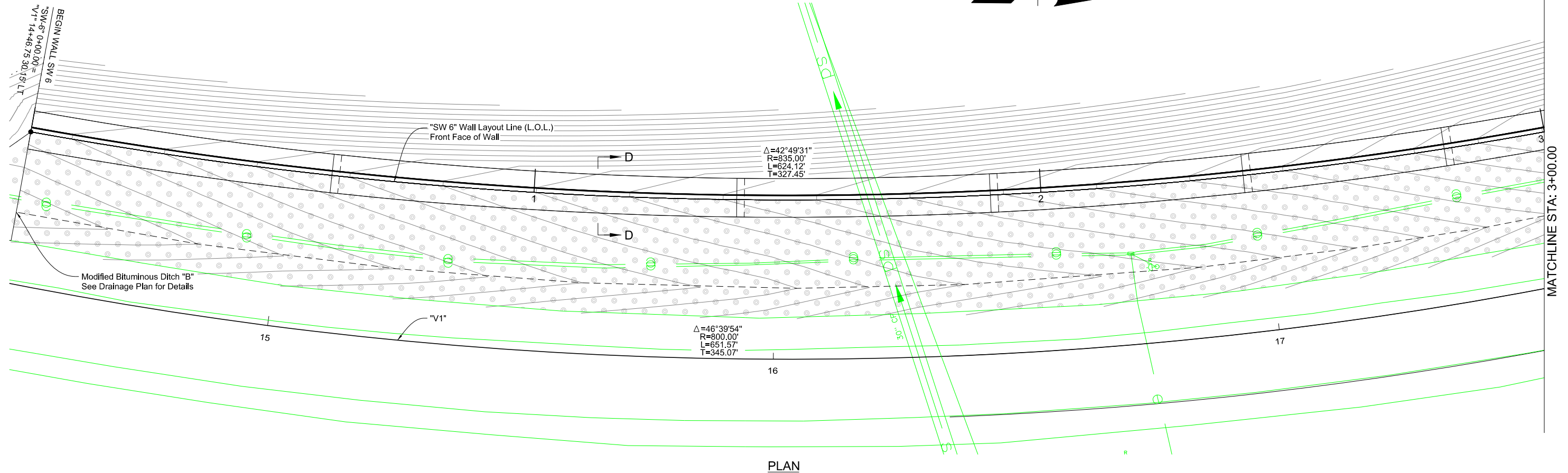
1. Refer to sheet Sound Wall Details 2 for Section H-H.
2. Refer to sheet Sound Wall Details 2 for Overhead Sign Mount to Sound Wall Details.



12/20/2022

STATE OF NEVADA DEPARTMENT OF TRANSPORTATION	
<b>SOUND WALL "SW3-1" PLAN AND ELEVATION 9</b>	
<b>HDR</b> HDR Engineering, Inc.	9805 Double R Boulevard, Suite 101 Reno, NV 89521-5917 PH: 775-337-4700 FAX: 775-337-4774

STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	SW28



**NOTE:**

1. Refer to sheet Sound Wall Details 1 for Section D-D and F-F.



12/20/2022

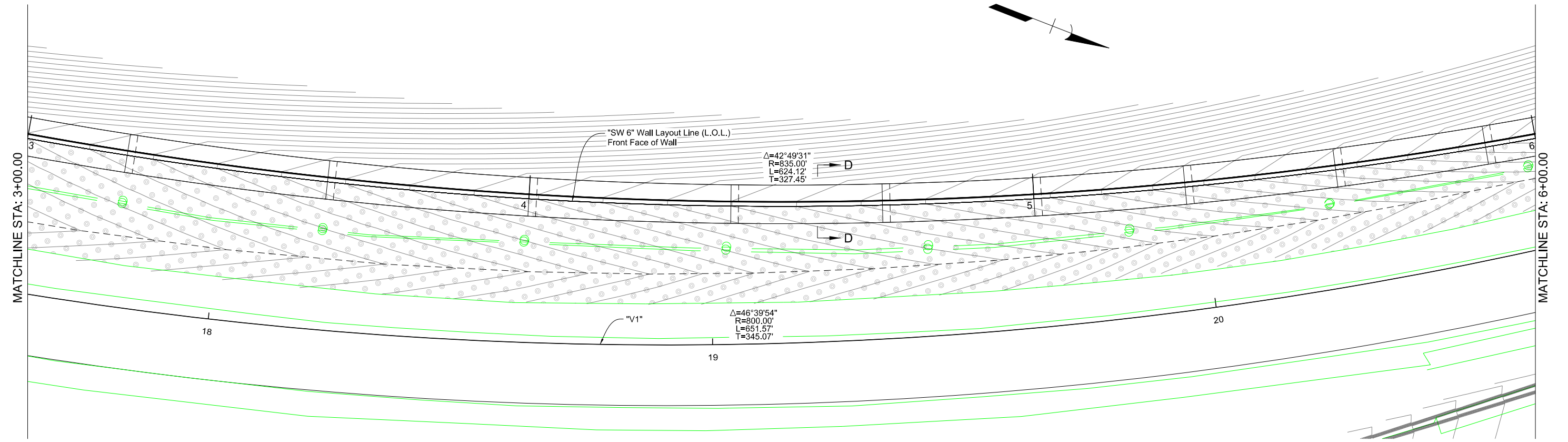
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**SOUND WALL "SW6"  
PLAN AND ELEVATION 1**

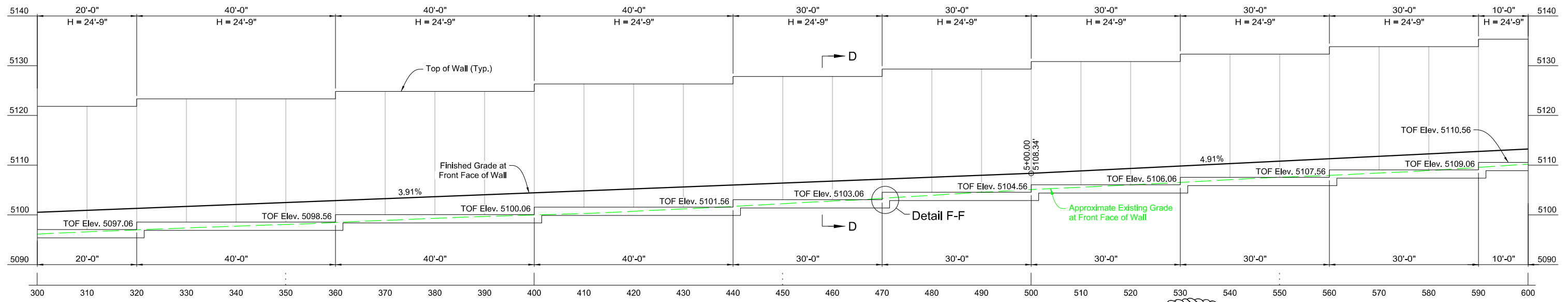
**HDR**  
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STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	SW29



PLAN



ELEVATION

NOTE:

1. Refer to sheet Sound Wall Details 1 for Section D-D and F-F.



12/20/2022

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

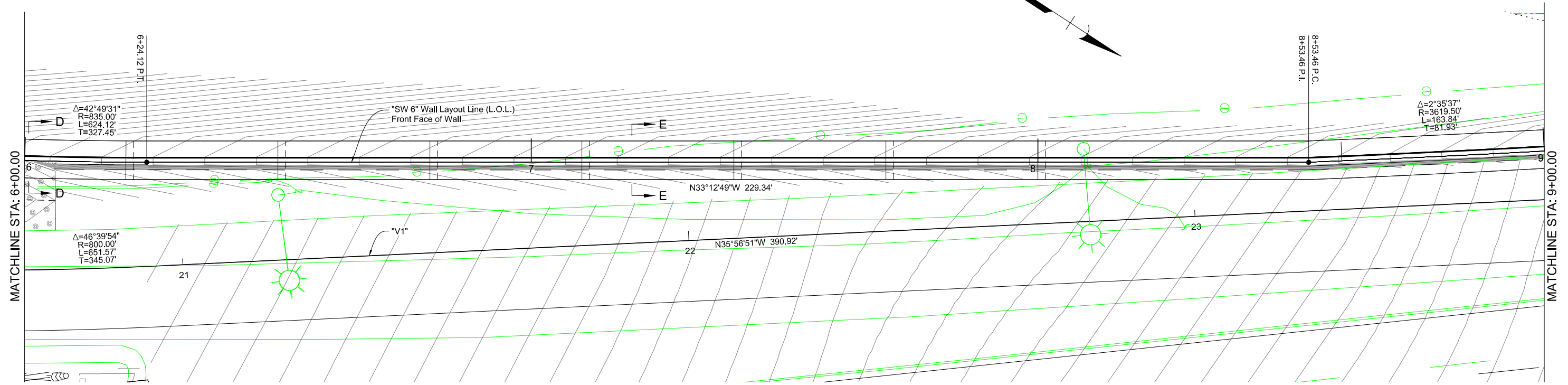
**SOUND WALL "SW6"  
PLAN AND ELEVATION 2**

**HDR**  
HDR Engineering, Inc.

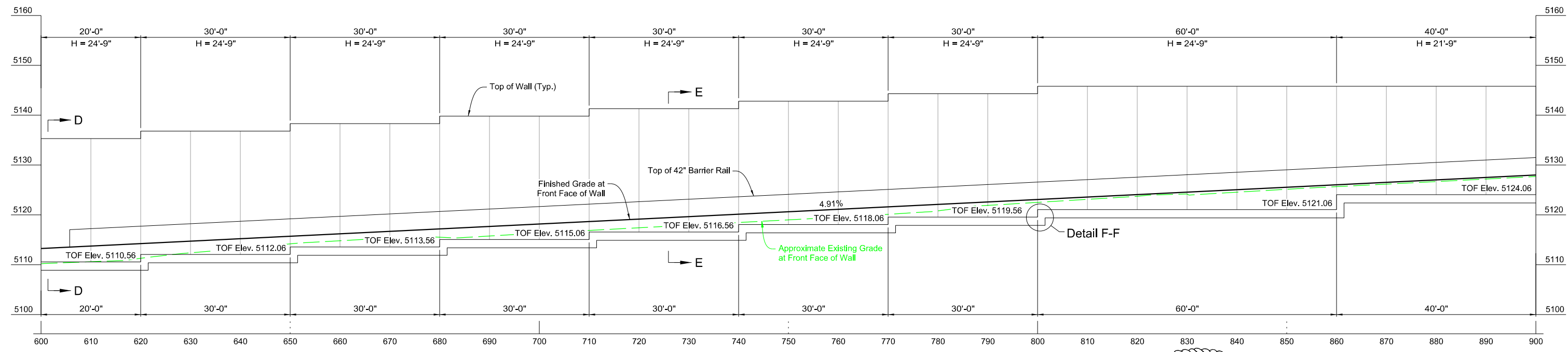
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STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	SW30



PLAN



ELEVATION

**NOTE:**

1. Refer to sheet Sound Wall Details 1 for Section D-D, E-E and F-F.



12/20/2022

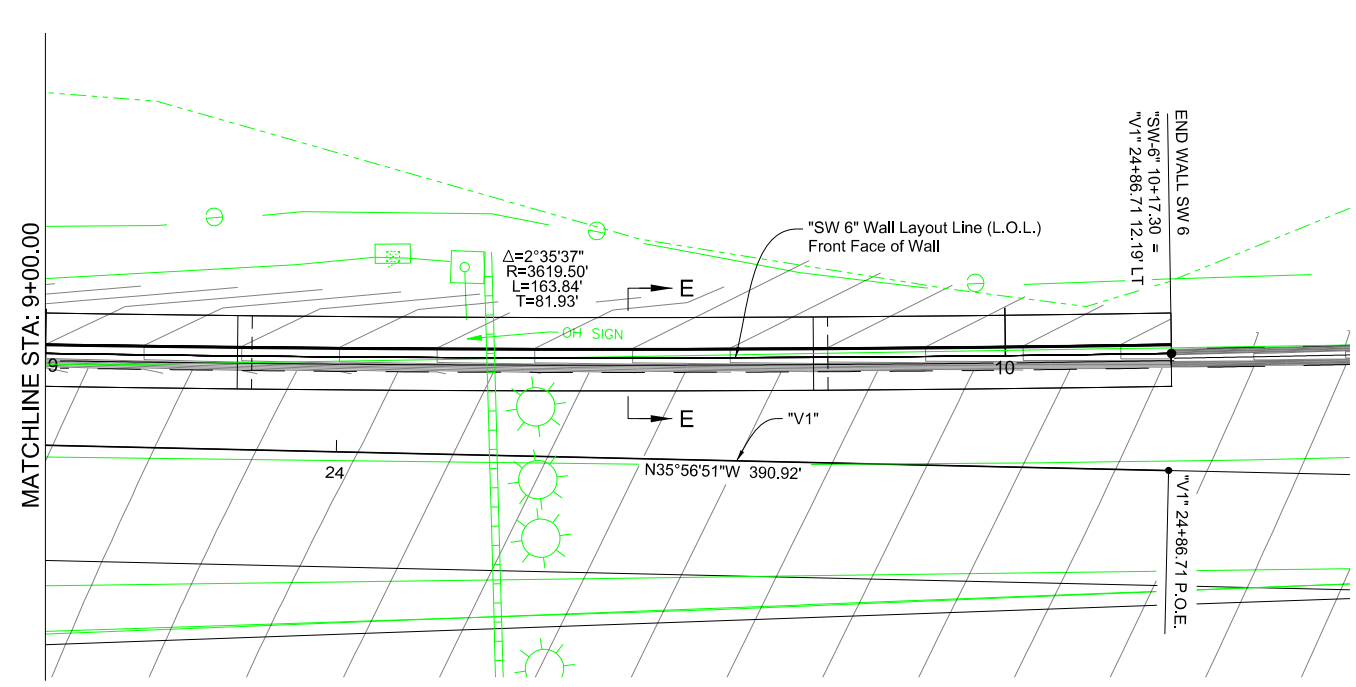
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**SOUND WALL "SW6"  
PLAN AND ELEVATION 3**

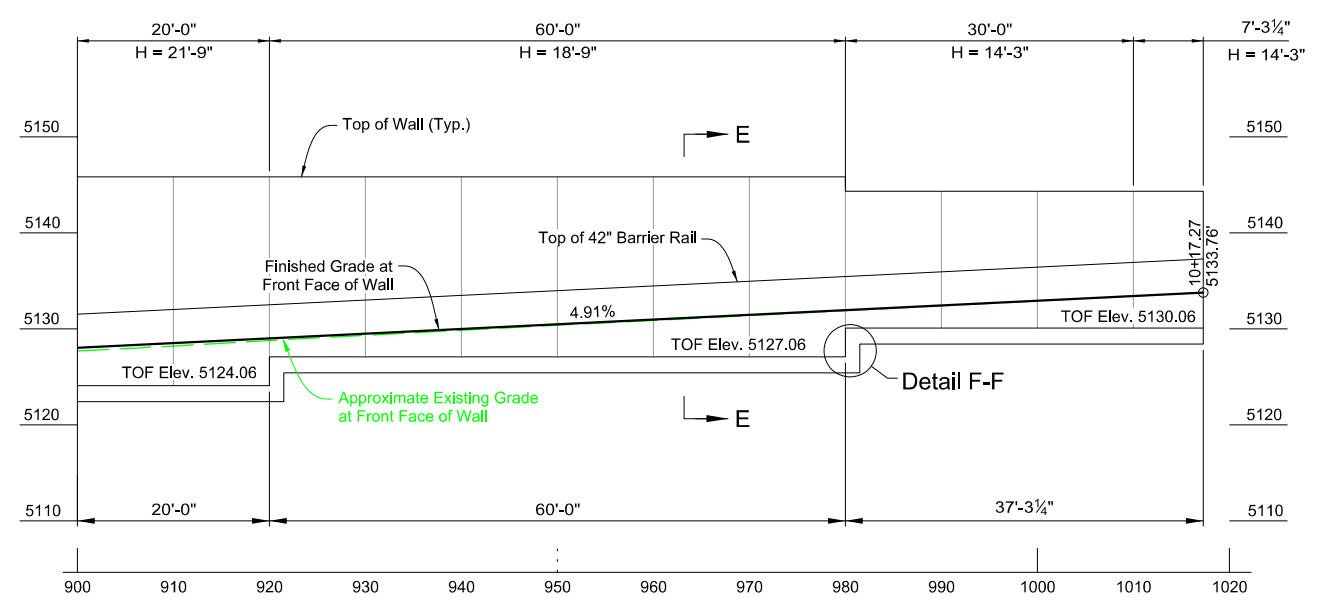
**HDR**  
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STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	SW31



PLAN



ELEVATION

**NOTE:**

1. Refer to sheet Sound Wall Details 1 for Section E-E and F-F.



12/20/2022

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**SOUND WALL "SW6"  
PLAN AND ELEVATION 4**

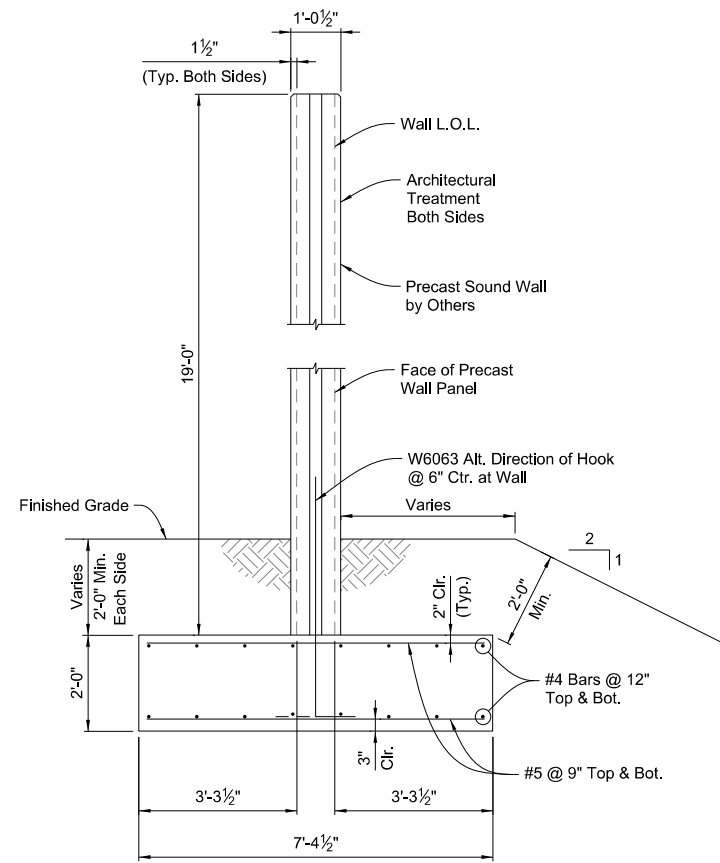
**HDR**  
HDR Engineering, Inc.

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PH: 775-337-4700 FAX: 775-337-4774

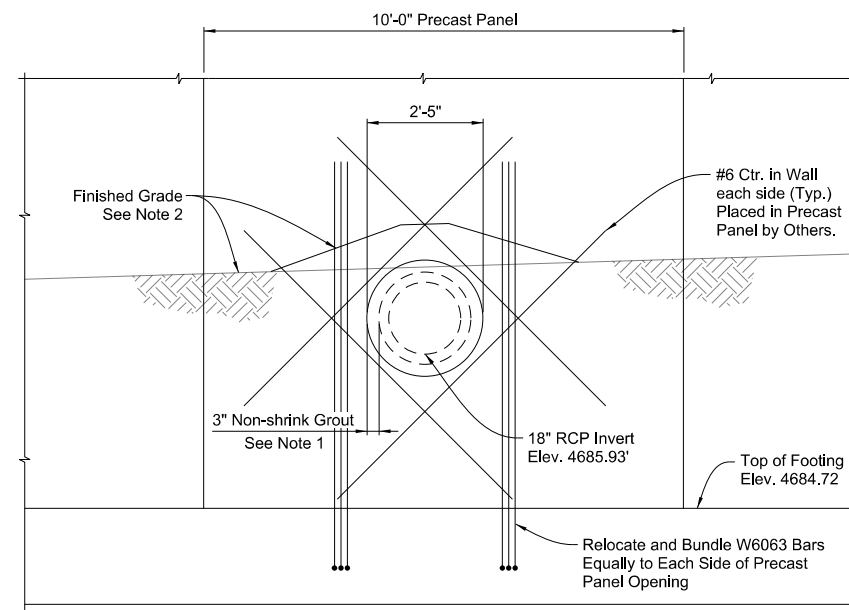
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	SW32

**NOTES:**

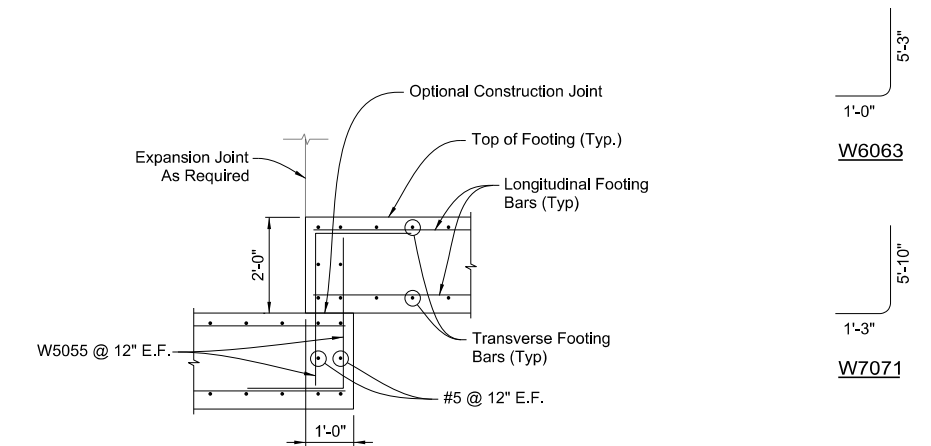
1. Use Approved Non-shrink Grout to Seal Opening around the RCP. Taper all finished surfaces at 45°±.
2. Add 1 foot Soil Cover over the Finished Grade at Each Face at the location of 18 inch Diameter Crossing.
3. Refer to NDOT Standard Plans Sheet RB-35C and Roadway Plans for Type SB Concrete Barrier Rail Detail.
4. Stop Architectural Treatment at Back Face of the Concrete Barrier Rail.
5. Place the Construction Joint at Mid Depth of the Lower Footing.
6. Field Verify the Location of 18 inch Diameter RCP. Notify the Engineer if the Alignment of Existing RCP Crossing Precast Panel Varies from the Plan.



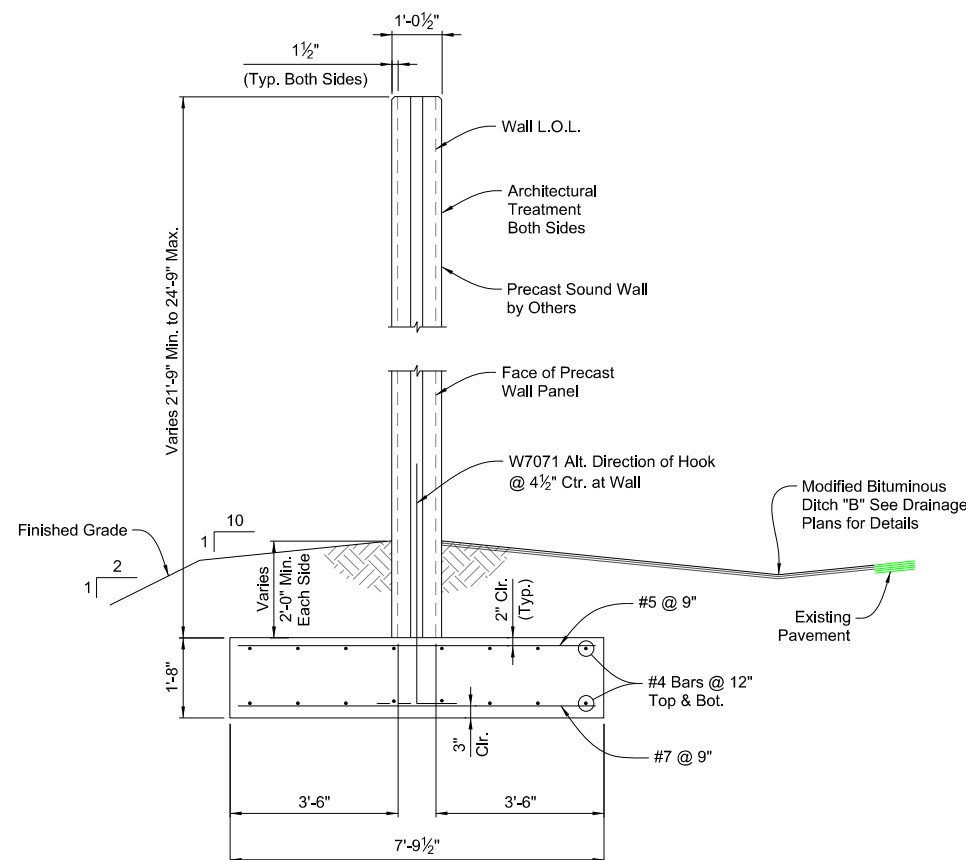
**SECTION A-A**



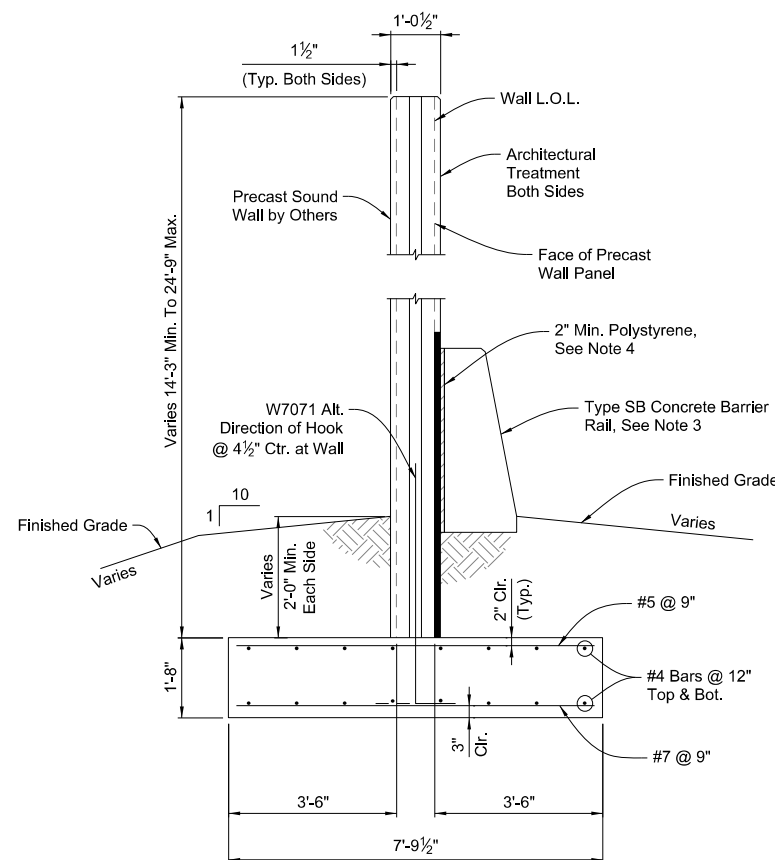
**SECTION B-B**



**SECTION C-C**



**SECTION D-D**



**SECTION E-E**



12/20/2022

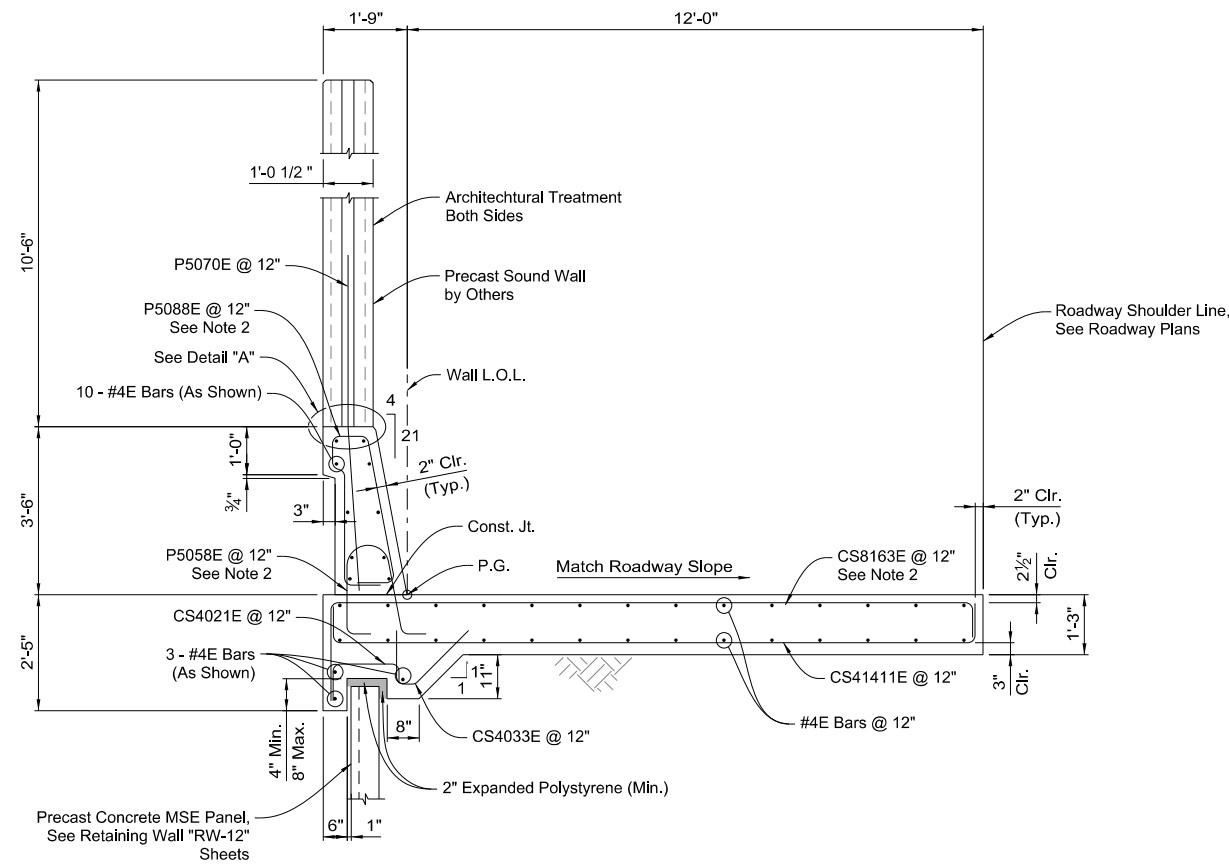
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**SOUND WALL  
DETAILS 1**

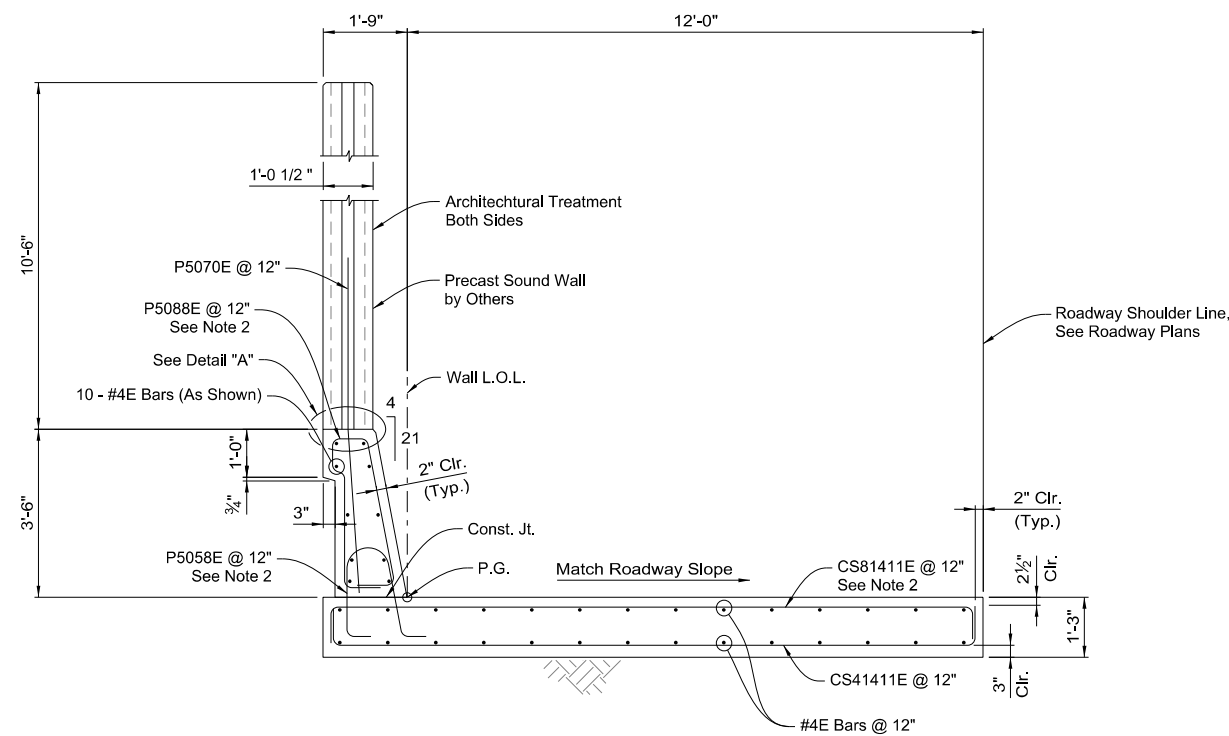
**HDR**  
HDR Engineering, Inc.

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Reno, NV 89521-5917  
PH: 775-337-4700 FAX: 775-337-4774

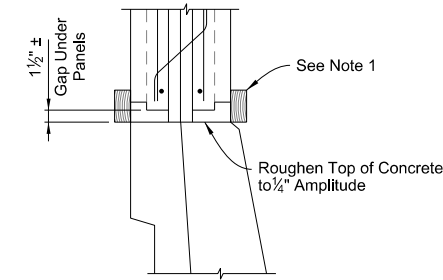
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	SW33



**MOMENT SLAB w/ SOUND WALL - SECTION G-G**  
(OVER RETAINING WALL "RW-12")



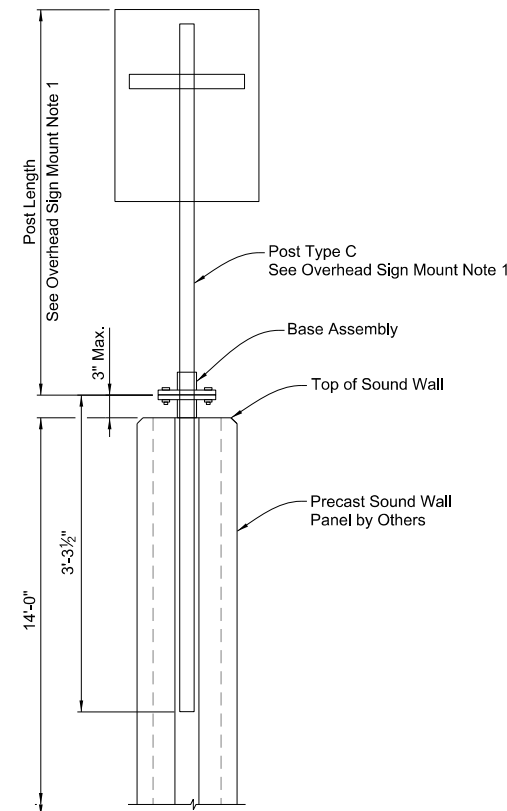
**MOMENT SLAB w/ SOUND WALL - SECTION H-H**



**DETAIL "A"**

**NOTES:**

- 2x4 timber form placed against 1 1/2" Architectural Treatment. Contractor shall verify that during placement of infill concrete, concrete is visible at or above bottom of the panel in the open areas of the Architectural Treatment with (2)-1 1/2" x 6" plastic shim pack each face @ 6'-0".
- Reduce spacing of P5088E, P5058E, CS8163E & CS81411E to 6 inches within 5ft of barrier ends and expansion joints.
- Locate expansion/contraction joints in moment slab to coincide with expansion/contraction joints in the barrier and soundwall.

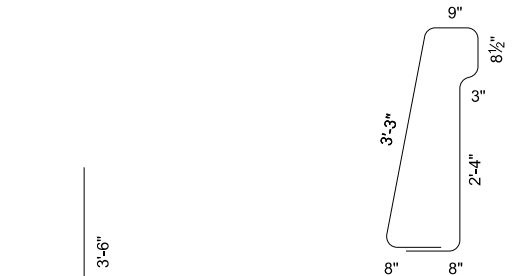


**OVERHEAD SIGN MOUNT TO WALL**

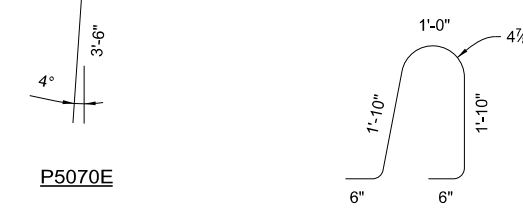
For Overhead Signs "24-2", "24-4", "25-3"  
See Sign Plan for Locations and Panel Details

**OVERHEAD SIGN MOUNT NOTES**

- Refer to NDOT Standard Plans Sheet TRS-2 for Post Length and Post type.
- Refer to NDOT Standard Plans Sheet TRS-13 through TRS-15 for Post and Connection Details not shown.

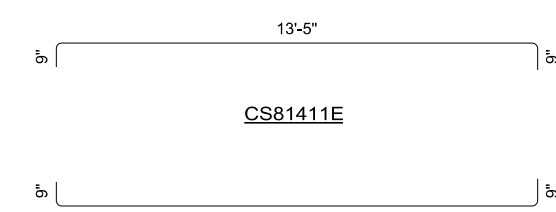


**P5088E**

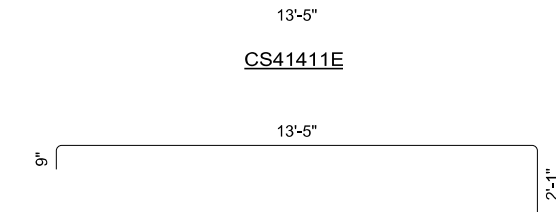


**P5070E**

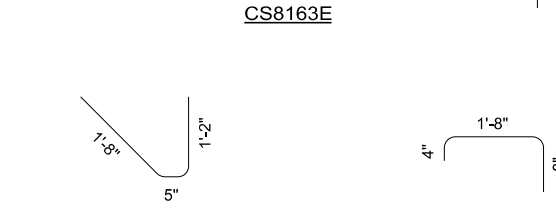
**P5058E**



**CS81411E**



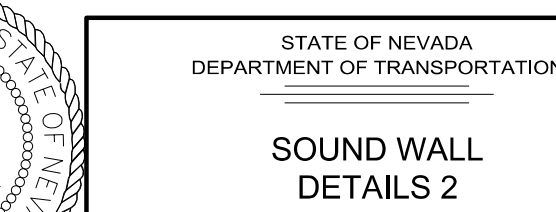
**CS41411E**



**CS8163E**



**CS4033E**



**CS4021E**



12/20/2022

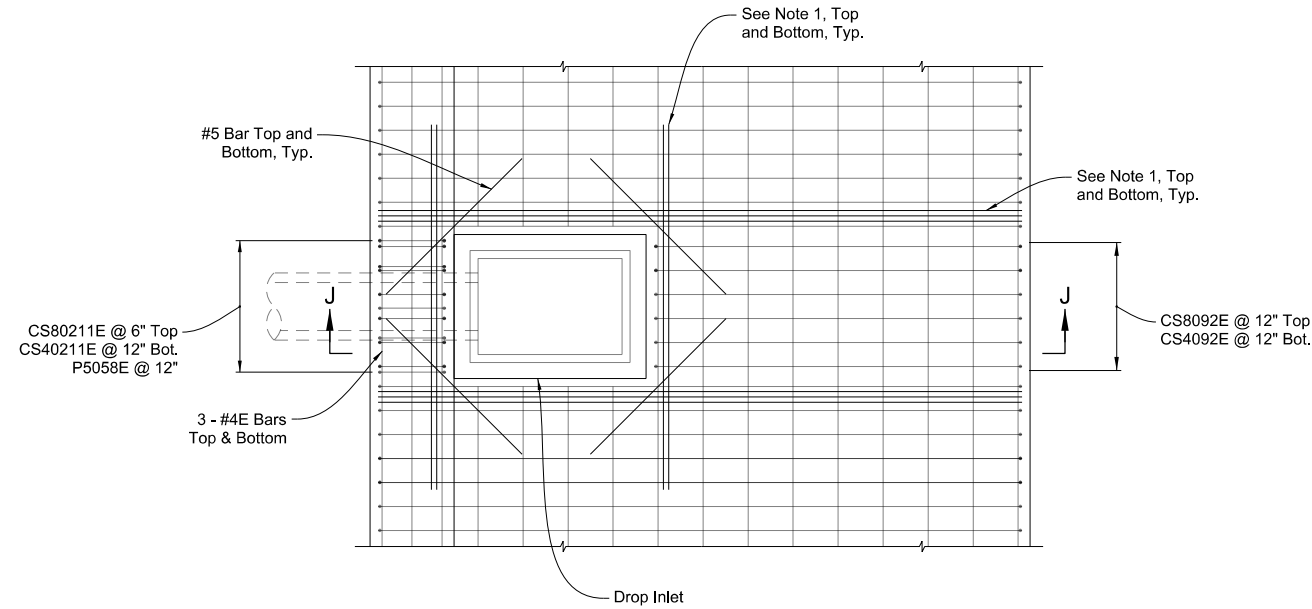
STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**SOUND WALL  
DETAILS 2**

**HDR**  
HDR Engineering, Inc.

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Reno, NV 89521-5917  
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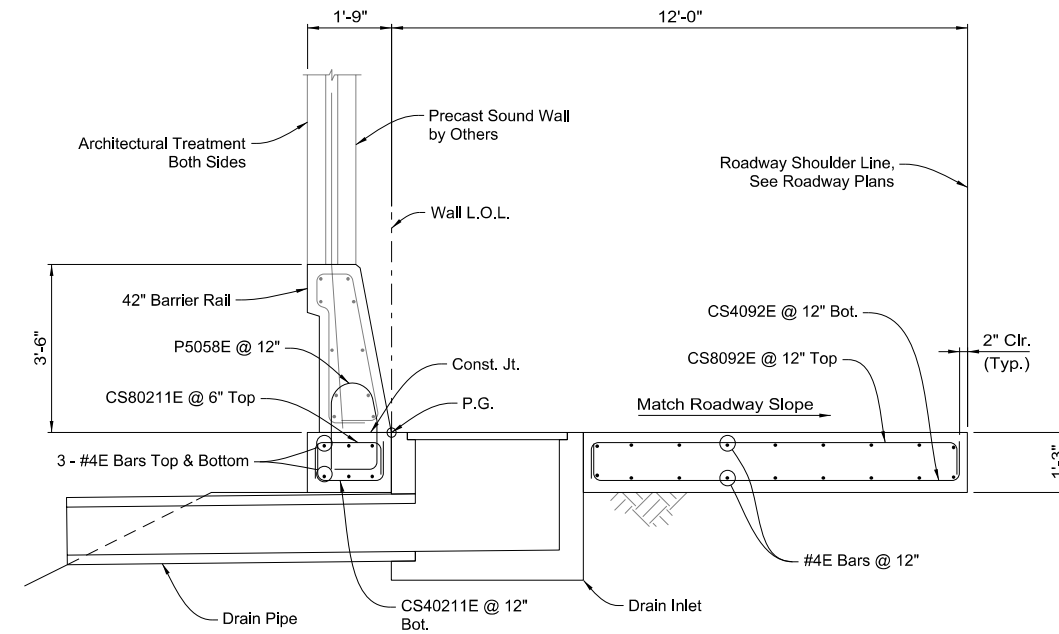
STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	SW34



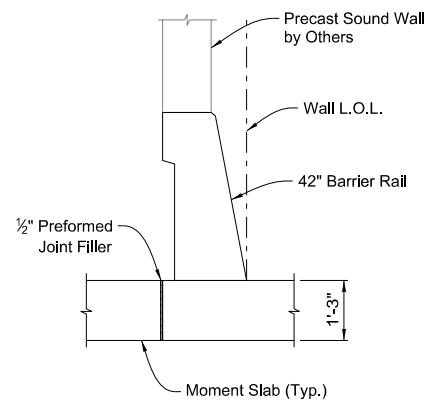
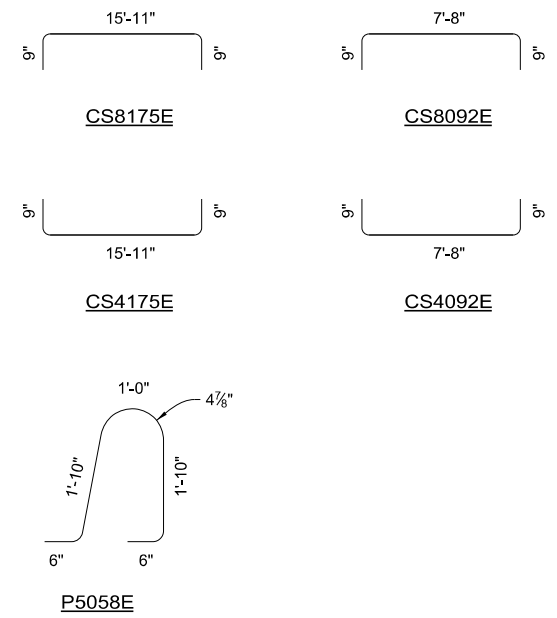
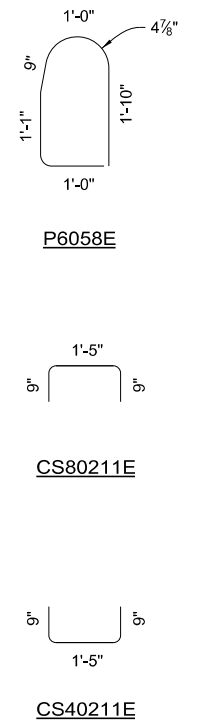
**MOMENT SLAB DROP INLET - PLAN**

**NOTES:**

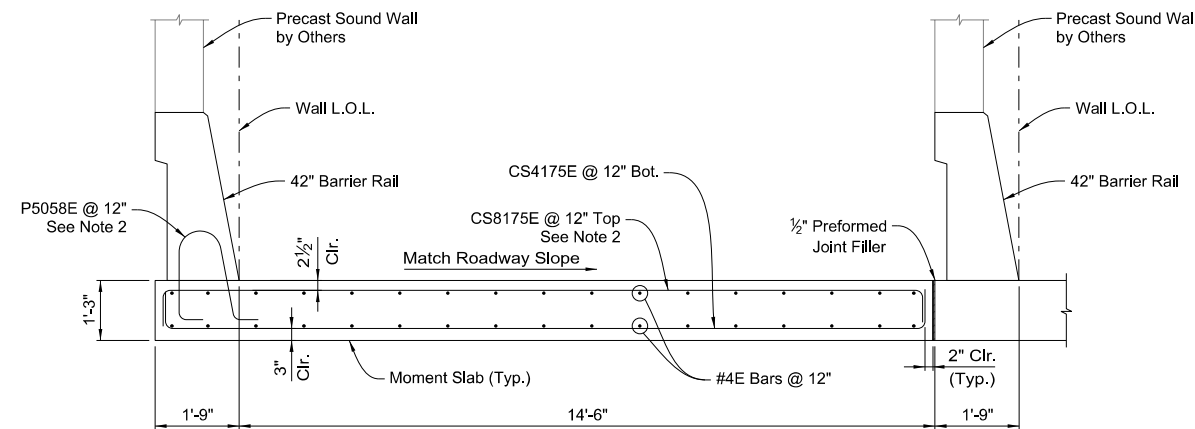
1. Provide bundled reinforcement steel on all 4 sides of inlet to provide an additional area of steel equivalent to 1/2 of the area of bars interrupted by the drop inlet. Do not use reinforcement sizes smaller than #5 or larger than #8.
2. Reduce spacing of P5058E & CS8175E to 6 inches within 5ft of barrier ends and expansion joints.
3. Locate expansion/contraction joints in moment slab to coincide with expansion/contraction joints in the barrier and soundwall.



**MOMENT SLAB DROP INLET - SECTION J-J**



**SECTION K-K**



**SECTION L-L**



12/20/2022

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**SOUND WALL  
DETAILS 3**

**HDR**  
HDR Engineering, Inc.

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Reno, NV 89521-5917  
PH: 775-337-4700 FAX: 775-337-4774









# STRUCTURE LIST

ITEM NO.	QUANTITY	UNIT	DESCRIPTION	STATION TO STATION
641 0100		EACH	IMPACT ATTENUATOR	
623 3018		LS	AUTOMATED VEHICLE CLASSIFICATION SYSTEM (8-LANE CONFIGURATION)	
623 1820		LINFT	3-INCH CONDUIT	
623 1060		EACH	SPECIAL M-1 CABINET	
623 0835		EACH	LOOP DETECTOR (PRE-FORMED)	
623 0232		EACH	NO. 5 PULL BOX, MODIFIED	
618 0540		LINFT	GALVANIZED GUARDRAIL	
618 0250		LINFT	REMOVE AND RESET GUARDRAIL	
616 0300		EACH	16-FOOT METAL GATE (SPECIAL)	
613 1430		SOYD	CLASS AA CONCRETE RAMP (4-INCH)	
613 1140		SOYD	CLASS AA CONCRETE SIDEWALK (4-INCH)	
613 0830		LINFT	CLASS AA CONCRETE CURB AND GUTTER (TYPE 5)	
613 0130		SOYD	DETECTABLE WARNINGS	
609 0570		EACH	ADJUSTING COVERS (SPECIAL)	
609 0220		EACH	ADJUST MANHOLE	
502 0282		LINFT	SINGLE SLOPE CONCRETE BARRIER RAIL, TYPE SB	
502 0281		LINFT	SINGLE SLOPE CONCRETE BARRIER RAIL, TYPE B (OFFSET)	
502 0280		LINFT	SINGLE SLOPE CONCRETE BARRIER RAIL, TYPE B	
502 0275		LINFT	SINGLE SLOPE CONCRETE BARRIER RAIL, TYPE A	
502 0130		LINFT	SPECIAL CONCRETE BARRIER RAIL	
402 0100		SOYD	PLANTMIXING MISCELLANEOUS AREAS	
302 0140		CUYD	TYPE 1 CLASS B AGGREGATE BASE	
202 1280		SOYD	REMOVAL OF MEDIAN ISLAND	
202 1255		LINFT	REMOVAL OF TEMPORARY PORTABLE PRECAST CONCRETE BARRIER RAIL	
202 1110		EACH	REMOVE IMPACT ATTENUATOR	
202 0935		CUYD	REMOVAL OF COMPOSITE SURFACE	
202 0925		EACH	REMOVAL OF PULL BOX	
202 0585		LINFT	REMOVAL OF FENCE	
202 0580		LINFT	RESET FENCE	
202 0565		LINFT	REMOVAL OF RETAINING WALL	
202 0475		LINFT	REMOVAL OF GUARDRAIL	
202 0465		EACH	REMOVE GUARDRAIL END TREATMENT	
202 0460		EACH	RESET GUARDRAIL END TREATMENT	
202 0400		LINFT	REMOVAL OF CONCRETE BARRIER RAIL	
<b>SHEET 9 CONT.</b>				
1				167
2			CONSTRUCT CONCRETE BARRIER RAIL TYPE B WITH IMPACT ATTENUATOR, LT.	"XS" 662+12.76 "XS" 663+68.43
<b>SHEET 10</b>				
1			REMOVE CONCRETE ISLAND GORE AND PAVE GORE, LT.	"XS" 673+52.56 "XS" 674+52.68
2			REMOVE AND RESET GUARDRAIL, LT.	"PD4" 8+76.15 "PD4" 12+69.76
3			REMOVE CONCRETE ISLAND GORE AND PAVE GORE, RT.	"XN" 676+71.46 "XN" 678+55.76
4			REMOVE AND RESET GUARDRAIL, RT.	"PD4" 10+62.78 "PD4" 23+72.01
5			INSTALL SPEED DETECTOR LOOPS AND PULL BOX IN SHOULDER. SITE #0310358 CALL BRIAN KRAMER, THE TRAFFIC OPERATIONS FIELD OPERATIONS SUPERVISOR FOR THE TRAFFIC INFORMATION DIVISION AT (775) 888-7444. FIVE WORKING DAYS/120 HOURS PRIOR TO SETTING PREFORMED LOOPS FOR EXACT PLACEMENT.	"PD3" 7+64.49
6			INSTALL SPEED DETECTOR LOOPS AND PULL BOX IN SHOULDER. SITE #0310357 CALL BRIAN KRAMER, THE TRAFFIC OPERATIONS FIELD OPERATIONS SUPERVISOR FOR THE TRAFFIC INFORMATION DIVISION AT (775) 888-7444. FIVE WORKING DAYS/120 HOURS PRIOR TO SETTING PREFORMED LOOPS FOR EXACT PLACEMENT.	"PD4" 12+59.84
7			REMOVE GUARDRAIL AND END TREATMENT, RT.	"PD3" 9+54.06 "PD3" 23+31.12
8			REMOVE GUARDRAIL AND END TREATMENT, LT.	"PD3" 10+61.77 "PD3" 20+39.89
9			CONSTRUCT CONCRETE BARRIER RAIL TYPE B WITH IMPACT ATTENUATOR, LT.	"PD3" 12+85.80 "PD3" 15+60.05























STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NHP-0191(104)	WASHOE	S14

# STRUCTURE LIST

NOTE NO.	DESCRIPTION	STATION TO STATION
<b>SHEET 19 CONT.</b>		
11	CONSTRUCT CONCRETE BARRIER RAIL TYPE SB, RT.	"XS1" 799+69.51 "XS1" 800+89.44
<b>SHEET 20</b>		
1	REMOVE CONCRETE BARRIER RAIL , RT.	"GV3" 47+28.09
2	CONSTRUCT CONCRETE BARRIER RAIL TYPE B, RT.	"GV3" 47+42.82 "GV3" 60+44.64
3	PAVE MISCELLANEOUS AREAS, RT.	"GV3" 47+53.00 "GV3" 50+58.88
4	CONSTRUCT CONCRETE BARRIER RAIL TYPE B, RT.	"XN1" 802+60.87 "XN1" 808+15.26
5	REMOVE GUARDRAIL, LT.	"XN1" 802+98.15 "XN1" 803+82.28
6	CONSTRUCT CONCRETE BARRIER RAIL TYPE SB, RT.	"XS1" 803+22.40 "XS1" 804+42.40
7	INSTALL SPEED DETECTOR LOOPS AND PULL BOX IN SHOULDER. SITE #0310798 CALL BRIAN KRAMER, THE TRAFFIC OPERATIONS FIELD OPERATIONS SUPERVISOR FOR THE TRAFFIC INFORMATION DIVISION AT (775) 888-7444. FIVE WORKING DAYS/120 HOURS PRIOR TO SETTING PREFORMED LOOPS FOR EXACT PLACEMENT.	"XN1" 803+49.18
8	REMOVE GUARDRAIL AND END TREATMENT, RT.	"XS1" 803+33.38 "XS1" 808+37.80
9	REMOVE CONCRETE BARRIER RAIL , LT.	"GV4" 11+57.34 "GV4" 23+39.04
10	CONSTRUCT CONCRETE BARRIER RAIL TYPE B, LT.	"GV4" 11+82.60 "GV4" 23+39.04
11	CONSTRUCT CONCRETE BARRIER RAIL TYPE B-OFFSET, RT.	"XS1" 804+42.40 "XS1" 804+91.97
12	CONSTRUCT CONCRETE BARRIER RAIL TYPE SB, RT.	"XS1" 804+91.97 "XS1" 805+86.11

