

AASHTO T-3 TRIAL DESIGN BRIDGE DESCRIPTION

State: Nevada

Trial Design Designation: NV-1

Bridge Name: Fifth Street Grade Separation

Superstructure Type: Post-Tensioned Cast-in-place concrete box girder

Span Length(s): 135 ft. (41.1 m)-130 ft. (39.6 m)-130 ft. (39.6 m)

Substructure Type: Three 5.0 ft. diameter (1.524 m) reinforced concrete columns per bent with Integral Cap

Foundation: Spread footings, continuous, founded on 18 in. (457 mm) steel pipe piles

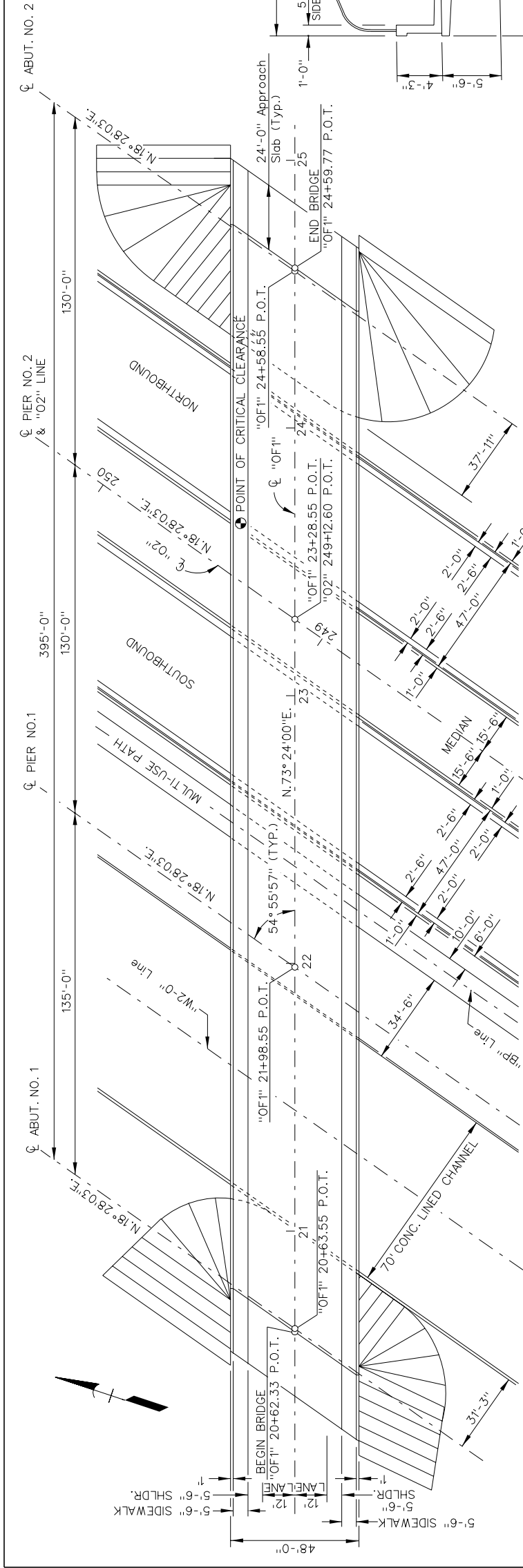
Abutments: Diaphragm on 18 in. (457 mm) driven piles

Seismic Design Category (SDC): "C"

Seismic Design Strategy (Type 1, 2 or 3): Type 1

Design Spectral Acceleration at 1-second Period (S_{D1}): 0.53 g

Additional Description (Optional): Additional plan drawings available. Design calculations to be furnished.

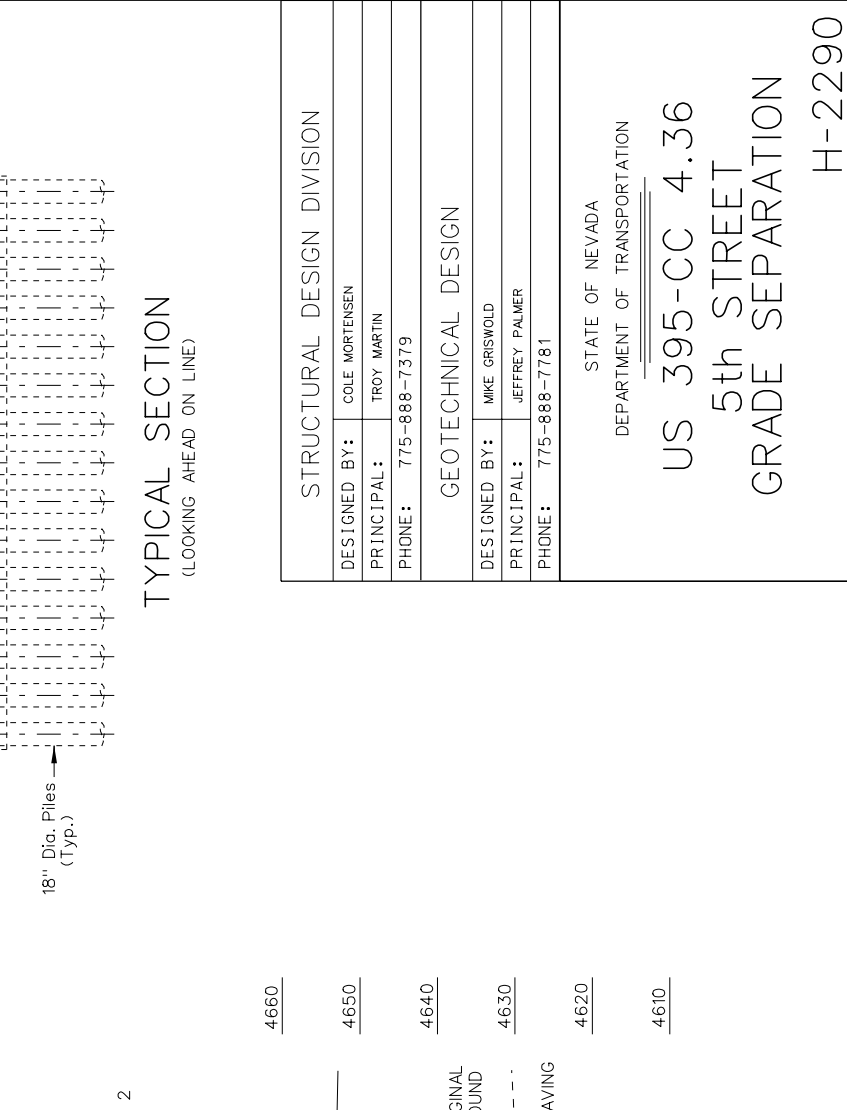
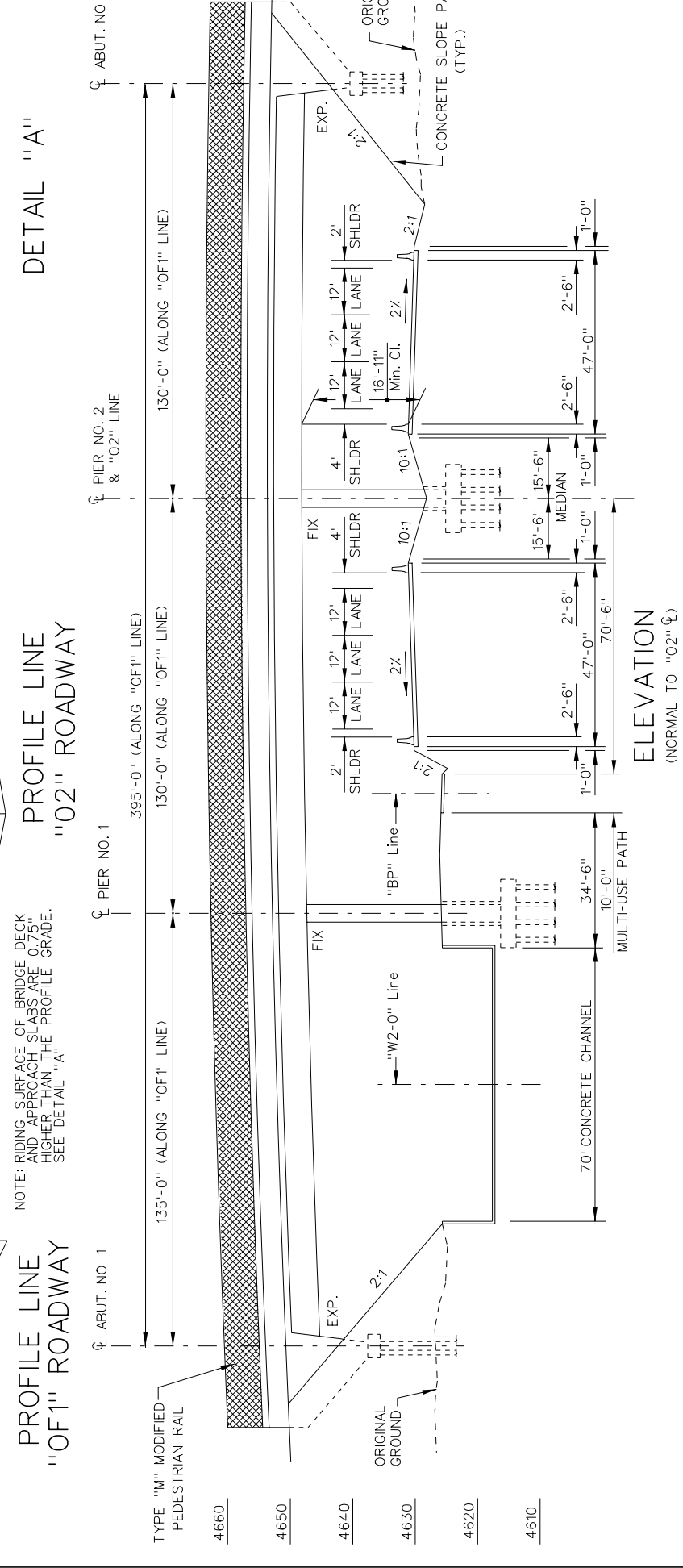
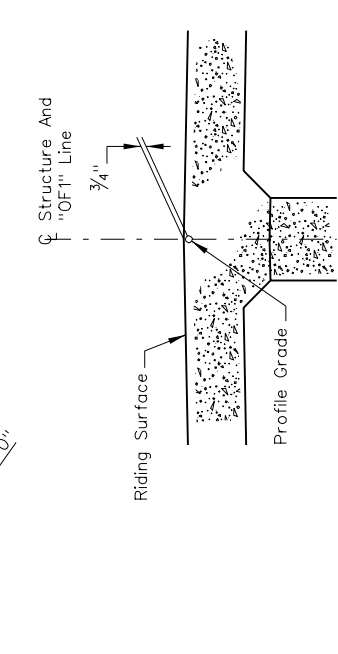


PROFILE LINE "02" ROADWAY

P.V.C. "02" 238+00.00	ELEV. 4633.69	-0.71%	P.V.I. "02" 246+00.00	ELEV. 4628.00	+0.67%	P.V.R.C. "02" 254+00.00	ELEV. 4633.33	+0.67%	P.V.I. "02" 258+00.00	ELEV. 4636.00	-0.43%	P.V.T. "02" 262+00.00	ELEV. 4634.30
1600' V.C.													

PROFILE LINE "01" ROADWAY

P.V.C. "01" 18+25.00	ELEV. 4643.58	+3.86%	P.V.I. "01" 24+25.00	ELEV. 4666.75	-5.03%	P.V.R.C. "01" 30+25.00	ELEV. 4636.59
1200' V.C.							



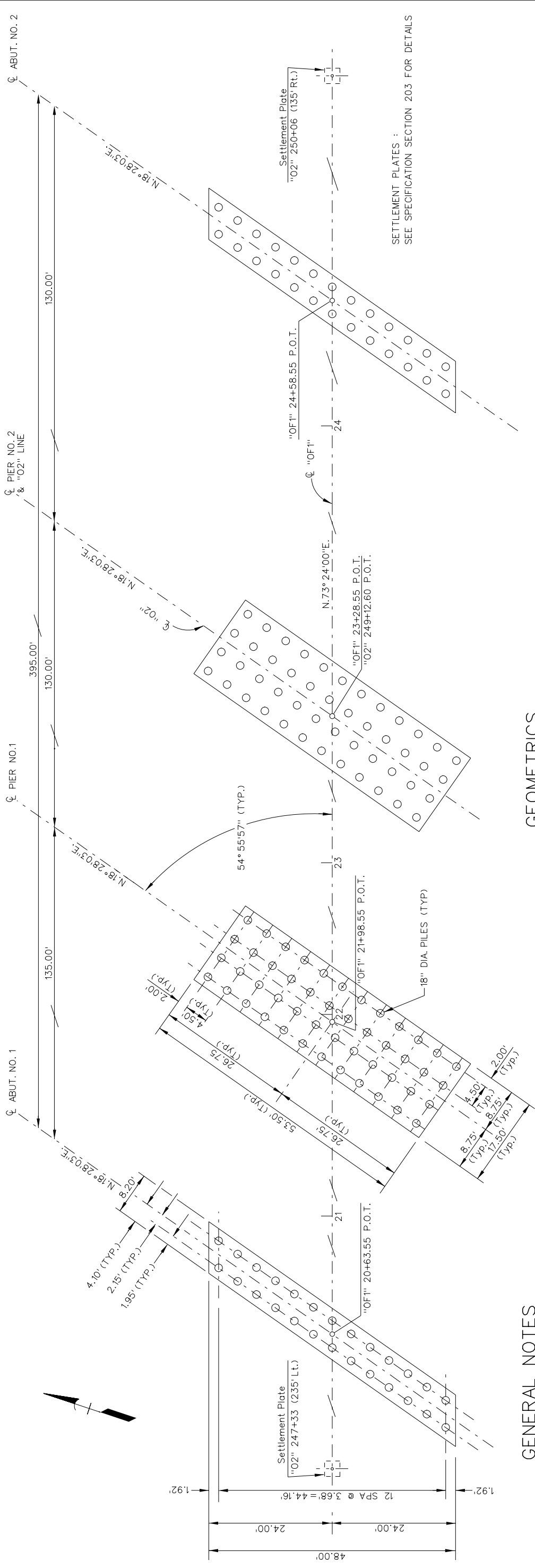
STRUCTURAL DESIGN DIVISION

DESIGNED BY:	COLE MORTENSEN
PRINCIPAL:	TROY MARTIN
PHONE:	775-888-7379
GEOTECHNICAL DESIGN	
DESIGNED BY:	MIKE GRISWOLD
PRINCIPAL:	JEFFREY PALMER
PHONE:	775-888-7781

STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION

US 395-CC 4.36
5th STREET
GRADE SEPARATION

H-2290



SETTLEMENT PLATES :
SEE SPECIFICATION SECTION 203 FOR DETAILS

GENERAL NOTES

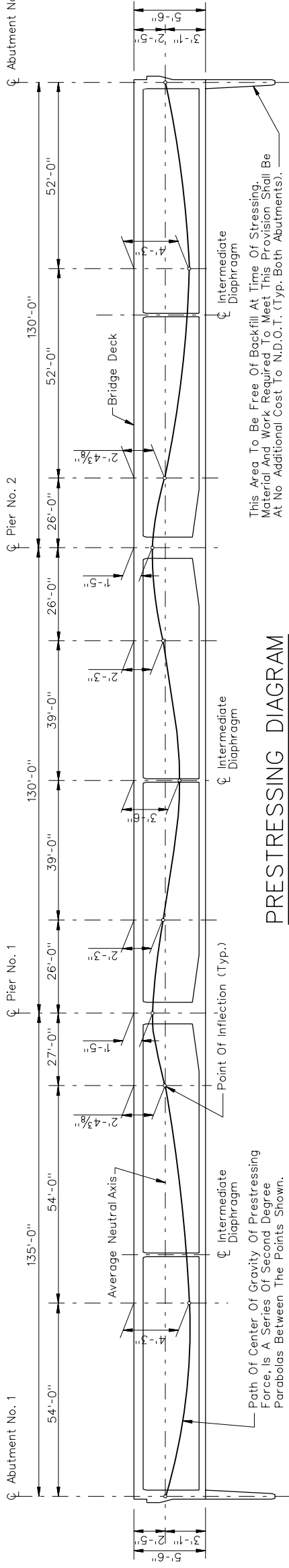
- DESIGN SPECIFICATIONS: AASHTO "LRFD BRIDGE DESIGN SPECIFICATIONS" THIRD EDITION 2004.
- CONSTRUCTION SPECIFICATIONS: STATE OF NEVADA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 2001", EXCEPT AS NOTED BELOW AND IN THE SPECIAL PROVISIONS FOR THIS CONTRACT.
- DEADLOAD: IN ACCORDANCE WITH SPECIFICATIONS WITH AN ALLOWANCE OF 38 PSF FOR FUTURE WEARING SURFACE.
- LIVELOAD: AASHTO HL-93 LOADING. OVERLOAD DESIGN BASED ON CALIFORNIA "STANDARD PERMIT DESIGN VEHICLES" (MAXIMUM ALLOWABLE OVERLOAD P-13 TRUCK). DECK DESIGN BASED ON THE EQUIVALENT STRIP METHOD WITH A 40.0-KIP AXLE.
- SEISMIC LOAD: ACCELERATION COEFFICIENT 0.40g WITH TYPE II SOIL.
- CONCRETE: SEE PRESTRESSING NOTES AND CONCRETE CLASSIFICATION 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 ENDING WITH THE LETTER "E" INDICATE THAT BAR SHALL BE EPOXY COATED. 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: PILES LOCATED AT THE ABUTMENTS AND PIERS SHALL BE 18-INCH (O.D.) CONCRETE FILLED PIPE PILES. THE DESIGN SPECIFICATIONS USED FOR FOUNDATION DESIGN ARE THE AASHTO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SEVENTEENTH EDITION, 2002". THE FACTOR OF SAFETY IS 2.25. THE FACTORED ULTIMATE DESIGN CAPACITY IS EQUAL TO THE DRIVING RESISTANCE. SEE PILE NOTES FOR ADDITIONAL INFORMATION.
- BARRIER RAIL: DESIGNED FOR TL-4 WITH SIDEWALKS REMOVED.
- CONSTRUCTION TYPE CODE: X281

GEOMETRICS

Item No.	Item	Unit	Quantity
206 0500	STRUCTURE EXCAVATION	CUYD	820
207 0504	GRANULAR BACKFILL	CUYD	1600
502 0840	CLASS AA CONCRETE, MODIFIED (MAJOR)	CUYD	1403
502 0856	CLASS DA CONCRETE, MODIFIED (MAJOR)	CUYD	117
502 0864	CLASS EA CONCRETE, MODIFIED (MAJOR)	CUYD	836
502 0940	STRIP SEAL EXPANSION JOINT (5-INCH MOVEMENT)	LINFT	120
502 1008	GROOVE CONCRETE DECK SLAB	SQYD	1630
502 1010	BRIDGE DECK CURING COMPOUND	GAL	160
503 0012	PRESTRESSING CAST-IN-PLACE CONCRETE	L.S.	---
505 0500	REINFORCING STEEL	POUND	354814
505 0504	REINFORCING STEEL (EPOXY COATED)	POUND	294579
506 0076	APPROACH SLAB RESTRAINER UNIT	EACH	46
506 0500	STRUCTURAL STEEL	POUND	10486
506 0592	PEDESTRIAN RAIL TYPE M (MODIFIED)	LINFT	886
508 0016	DRIVE STEEL SHELLS FOR PILES	EACH	148
508 0023	RESTRIKE PILES	EACH	74
508 0040	SPLICES	EACH	74
508 0054	DYNAMIC PILE LOAD TEST	EACH	8
508 1510	FURNISH CONCRETE FILLED STEEL SHELL PILES (18 INCH)	LINFT	5690
611 0504	CLASS AA CONCRETE SLOPE PAVEMENT	CUYD	135

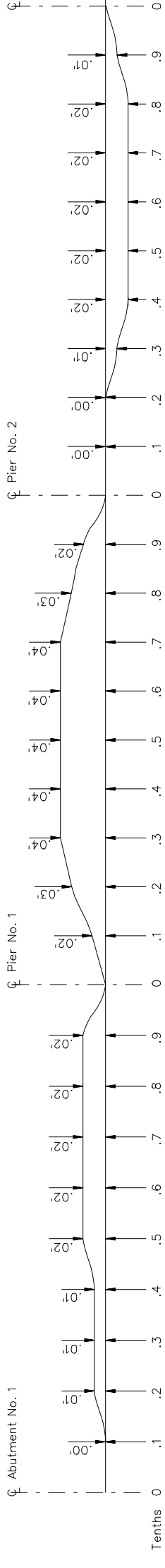
QUANTITIES

Abutment No. 2

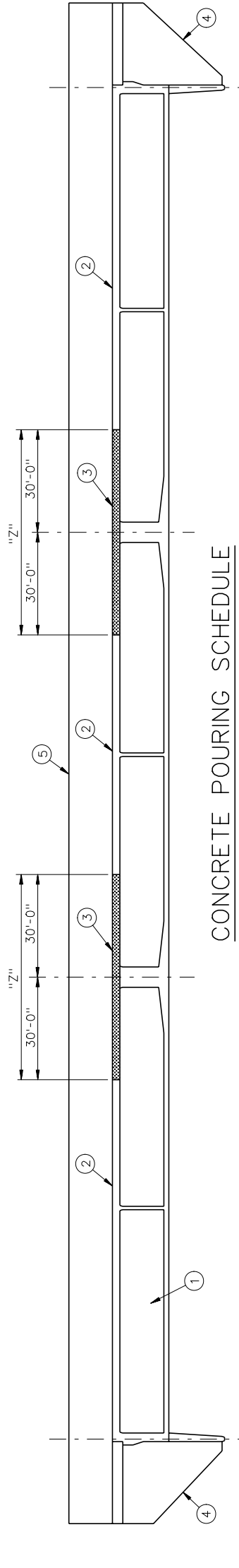


PRESTRESSING DIAGRAM

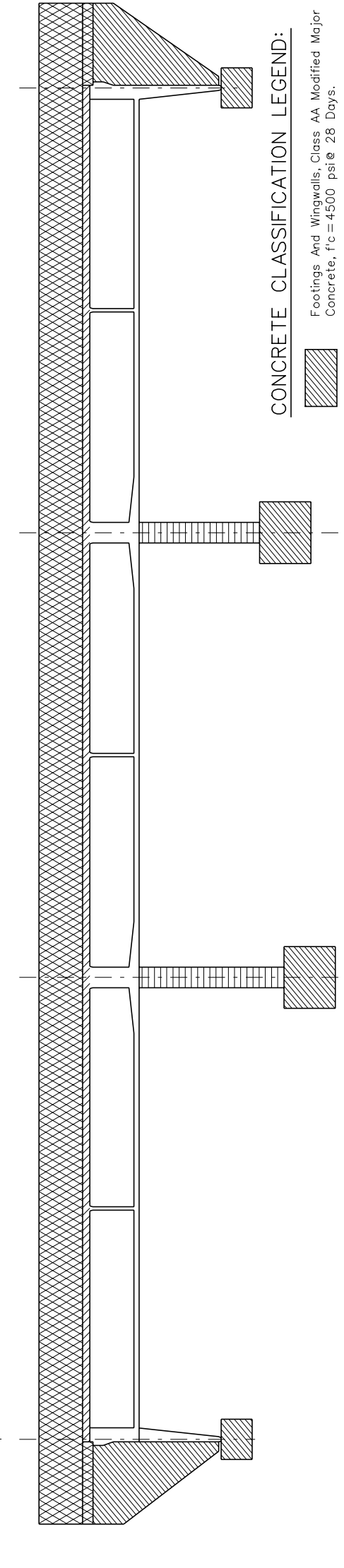
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CAMBER DIAGRAM



CONCRETE POURING SCHEDULE



CONCRETE CLASSIFICATION DIAGRAM

CONCRETE CLASSIFICATION LEGEND:

- Footings And Wingwalls, Class AA Modified Major Concrete, $f'_c = 4500$ psi @ 28 Days.
- Pier Columns, Class DA Modified Major Concrete, $f'_c = 5000$ psi @ 28 Days.
- Bottom Slab, Webs And Diaphragms, Post-Tensioned Class AA Modified Major Concrete, $f'_c = 5500$ psi @ 28 Days.
- Top Slab, Post-Tensioned Class EA Modified Major Concrete, $f'_c = 5500$ psi @ 28 Days.
- Approach Slab And Rail, Class EA Modified Major Concrete, $f'_c = 4500$ psi @ 28 Days.

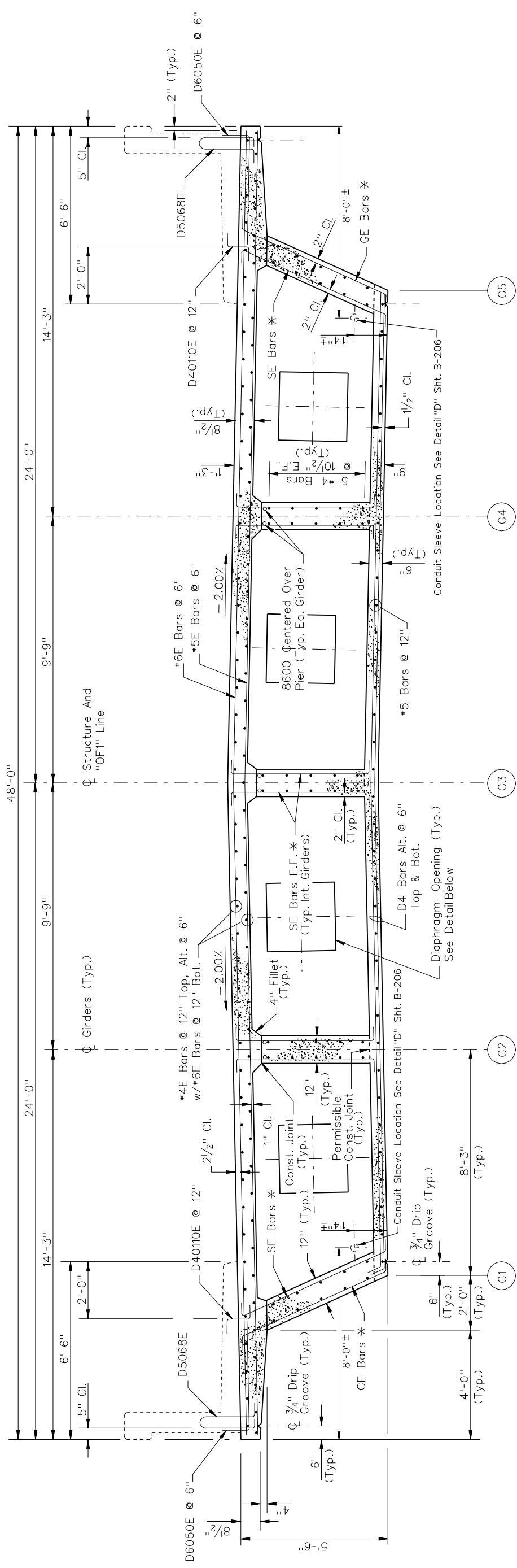
PRESTRESSING NOTES:

1. POST-TENSIONING SHALL BE COMPLETED BY JACKING ALL TENDONS FROM BOTH ABUTMENTS.
2. THE POST-TENSIONING FORCE SHALL BE: $P_{jack} = 17,400$ KIPS.
3. THE CONCRETE COMPRESSIVE STRENGTH AT 28 DAYS SHALL BE: $f'_c = 5,500$ PSI. THE CONCRETE COMPRESSIVE STRENGTH AT STRESSING SHALL BE: $f'_c = 3,500$ PSI, OR AS REQUIRED BY THE INTENDED POST-TENSIONING SYSTEM ANCHORAGES.
4. THE POST-TENSIONING STRAND SHALL BE LOW RELAX STRAND.
5. THE DESIGN IS BASED ON A $U = 0.20$ AND A $K = 0.0002$. JACK SPECIFIED IS AT TENDON ENDS AND INCLUDES LOSSES DUE TO FRICTION, CREEP AND SHRINKAGE OF CONCRETE, CREEP OF STEEL, AND STRESSING SEQUENCE. TOTAL LOSSES = 30,000 PSI.
6. THE TENDONS SHALL BE JACKED TO 0.75 fpu AND ANCHORED TO AN ANCHOR SET $\pm 3/8"$.
7. THE CONTRACTOR SHALL SUBMIT ELONGATION AND JACKING CALCULATIONS FOR THE INTENDED POST-TENSIONING SYSTEM.
8. NO MORE THAN $1/2$ OF THE PRESTRESSING FORCE IN ANY GIRDER MAY BE STRESSED BEFORE AN EQUAL FORCE IS STRESSED IN THE ADJACENT GIRDERS. THE EXTERIOR $1/5$ OF THE STRUCTURE SHALL NOT BE STRESSED UNTIL AT LEAST $1/6$ OF THE TOTAL PRESTRESSING FORCE HAS BEEN STRESSED IN THE MIDDLE $3/5$ OF THE STRUCTURE. AT NO TIME WILL MORE THAN $1/6$ OF THE TOTAL PRESTRESSING FORCE BE APPLIED ECCENTRICALLY ABOUT THE CENTERLINE OF THE STRUCTURE.
9. METALLIC ENCLOSURES SHALL BE GALVANIZED RIGID DUCT. ENCLOSURES SHALL BE VENTED THROUGH THE DECK SLAB WITHIN 3" OF THE HIGH POINTS OF THE TENDON PATHS.
10. THE ELONGATION SHALL BE CONTINUOUSLY MEASURED AND COMPARED TO THE GAUGE PRESSURE TO CHECK FOR DUCT BLOCKAGE AND EXCESSIVE FRICTION DURING THE STRESSING OPERATIONS.
11. BAR REINFORCEMENT INTERFERING WITH A PRESTRESSING TENDON SHALL BE ADJUSTED AS DIRECTED BY THE BRIDGE ENGINEER.
12. REQUIRED REINFORCING STEEL SHOWN ON THE STANDARD PLAN SHEET B-28.1.1(503) SHALL BE SHOWN ON THE CONTRACTOR'S STRESSING SHOP DRAWINGS. THIS REINFORCEMENT AND ALL DUCT TIES SHALL BE INCLUDED FOR PAYMENT IN THE BID ITEM "PRESTRESSING CAST IN PLACE CONCRETE".

CONCRETE POURING SCHEDULE NOTES:

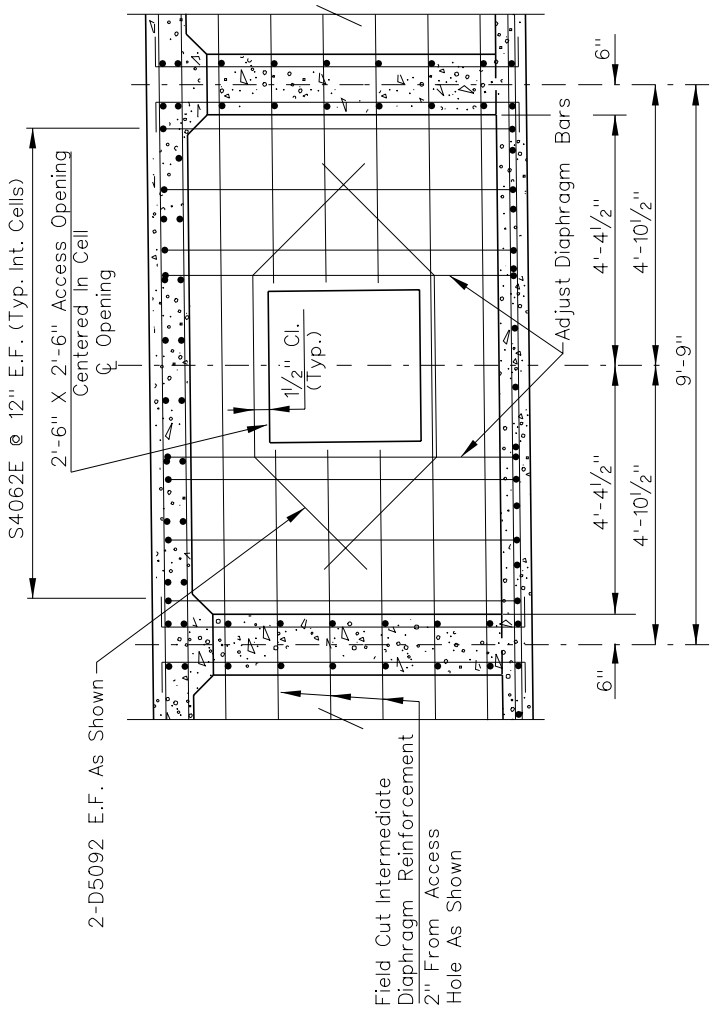
- A. The Bottom Slab May Be Poured Separately From The Girder Webs.
- B. The Top Slab Shall Be Placed Separately From The Girder Webs.
- C. The Top Slab May Have Transverse Construction Joints Except In Area "Z".
- D. (2) & (3) Indicate The Sequence Of Placing The Top Slab. (2) & (3) May Be Poured Together Provided The Engineer Agrees That Settlement Will Be Slight.
- E. The Abutment Footing Shear Blocks And Wingwalls Shall Not Be Cast Until Stressing Is Complete.
- F. The Barrier Rails Shall Not Be Cast Until The Stressing Is Complete And The Falsework Is Released.

STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NH-395-1 (018)	CARSON CITY	B-215



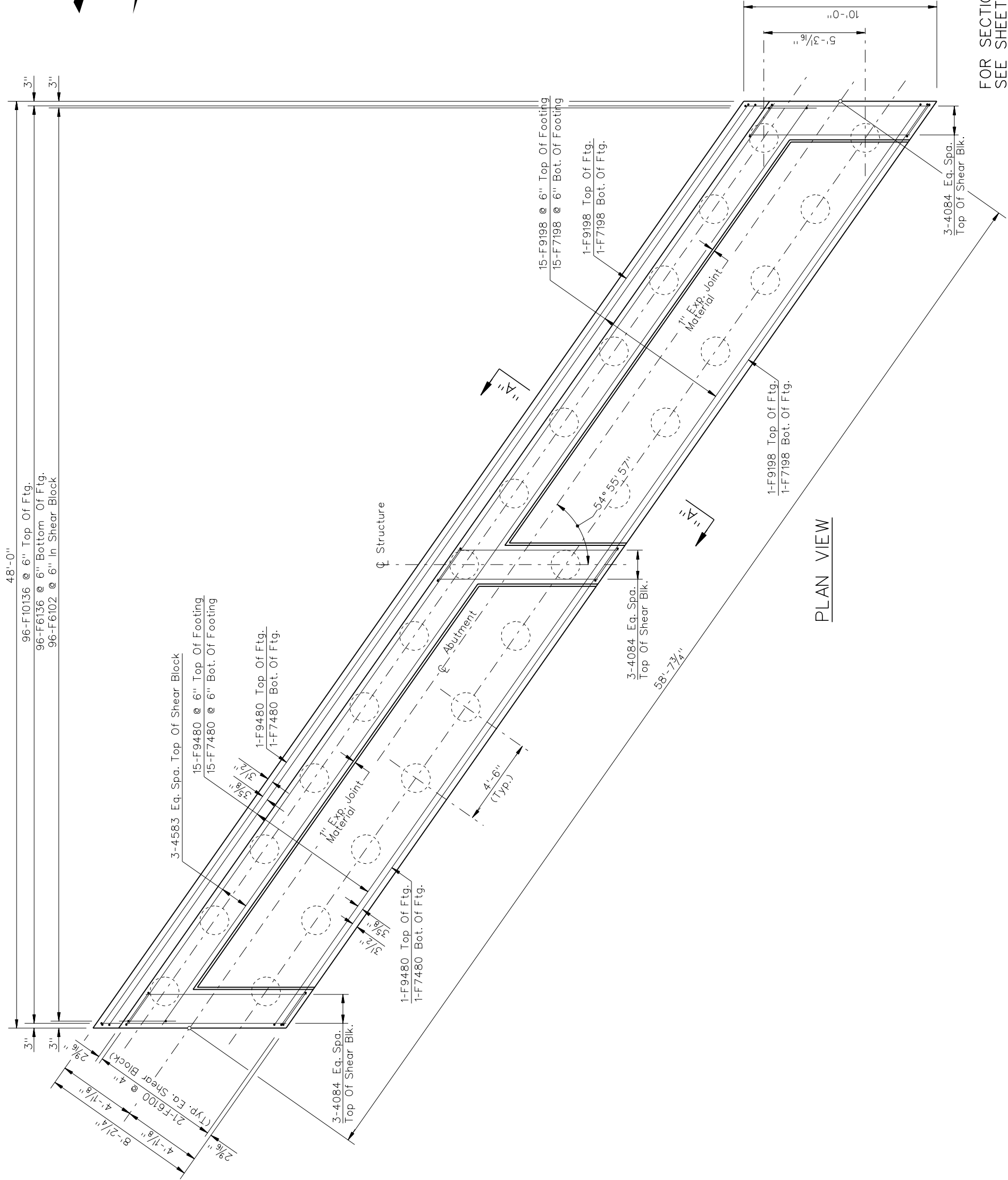
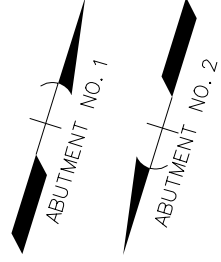
TYPICAL DECK SECTION
LOOKING AHEAD ON LINE

* - FOR BAR SIZE AND SPACING REFER TO SHEETS NO. B-222, B-223 AND B-224



TYPICAL DIAPHRAGM OPENING DETAIL

STATE	PROJECT NO.	COUNTY	SHEET NO.
NEVADA	NH-395-1 (018)	CARSON CITY	B-203



PLAN VIEW

STATE OF NEVADA
 DEPARTMENT OF TRANSPORTATION
**ABUTMENT FOOTING
 NO. 1 AND NO. 2
 REINFORCEMENT**
 H-2290

FOR SECTION "A"- "A"
 SEE SHEET NO. B-204