

**HORIZONTAL CURVE DATA**  
 @ SURVEY & CONST. U.S. 30  
 P.I. STA. = 33+966.571  
 $\Delta = 25^{\circ}16'33''$ L  
 T = 358 755  
 R = 1600 000  
 L = 705 835  
 E = 39 727



DESIGN AGENCY  
**STILSON & ASSOCIATES, INC.**  
 ENGINEERING • ARCHITECTURE • ENVIRONMENTAL  
 6121 HAMILTON ROAD • COLUMBUS, OHIO 43229

DATE  
 5/29/96  
 REVISIONS  
 GWM 5/29/96  
 CG  
 VS  
 CHECKED  
 CMS

**SITE PLAN**  
 BRIDGE No. STA-30-29254 L&R  
 U.S. 30 OVER WHEELING & LAKE ERIE RAILWAY

**STA-30-27.696**

1/13  
 358  
 520

- NOTES:**
- EARTHWORK LIMITS SHOWN ARE APPROXIMATE. ACTUAL SLOPES SHALL CONFORM TO PLAN CROSS SECTIONS.
  - BORING LOCATION B-9
  - ALL DIMENSIONS ARE IN MILLIMETERS, EXCEPT FOR STATIONS, AND ELEVATIONS WHICH ARE IN METERS, UNLESS OTHERWISE NOTED.
  - MSE WALL ELEVATIONS SHOWN ARE TOP OF REINFORCED EARTH VOLUME.
  - OFFSET DIMENSIONS IN MSE WALL LOCATION IS TO FACE OF WALL PANEL.
  - DRAINAGE FLOW SHALL BE MAINTAINED AT ALL TIMES. PONDING WILL NOT BE ALLOWED. DIRECTION OF FLOW AND CONDITION OF DITCHES SHALL BE RETURNED TO ORIGINAL UPON COMPLETION OF CONSTRUCTION.
  - FOR BRIDGE TERMINAL ASSEMBLY TYPES AND QUANTITIES, SEE PLAN AND PROFILE SHEET 76 OF 520.

**BENCHMARK No. 1:** EL. 332.378  
 R.R. SPIKE IN SOUTH SIDE OF 16" ELM WEST OF WHEELING & LAKE ERIE RAILWAY ABOUT 100 METERS NORTH OF CENTERLINE OF U.S. 30

**BENCHMARK No. 2:** EL. 332.984  
 R.R. SPIKE IN NORTH SIDE OF TWIN 10" WILD CHERRY WEST OF WEST OF WHEELING & LAKE ERIE RAILWAY ABOUT 50 METERS SOUTH OF CENTERLINE OF U.S. 30

**RAILROAD INFORMATION**  
 NUMBER OF TRAINS PER DAY = 2  
 TRAIN SPEED = 32 km/h

**TRAFFIC DATA**  
 CURRENT A.D.T. (2001) = 16760  
 DESIGN A.D.T. (2021) = 19480  
 DESIGN A.D.T.T. (2021) = 1753

**PROPOSED STRUCTURES (LEFT AND RIGHT)**

TYPE: SINGLE SPAN SUPERSTRUCTURE CONSISTING OF ROLLED STEEL BEAMS (A588M UNPAINTED) COMPOSITE WITH A REINFORCED CONCRETE DECK; REINFORCED CONCRETE INTEGRAL ABUTMENTS SUPPORTED ON H-PILES WITH MSE WALLS RETAINING THE EMBANKMENT SLOPES

SPANS: 15 023 mm CENTER TO CENTER OF ABUTMENT BEARINGS ALONG REFERENCE LINE

SKEW: 19'18"05" LEFT FORWARD WITH RESPECT TO REFERENCE LINE

ALIGNMENT: 1600 m RADIUS CURVE LEFT

ROADWAY: 12 600 mm TOE TO TOE OF CONCRETE PARAPETS

DESIGN LOADING: MS18 (CASE II) AND THE ALTERNATE MILITARY LOADING

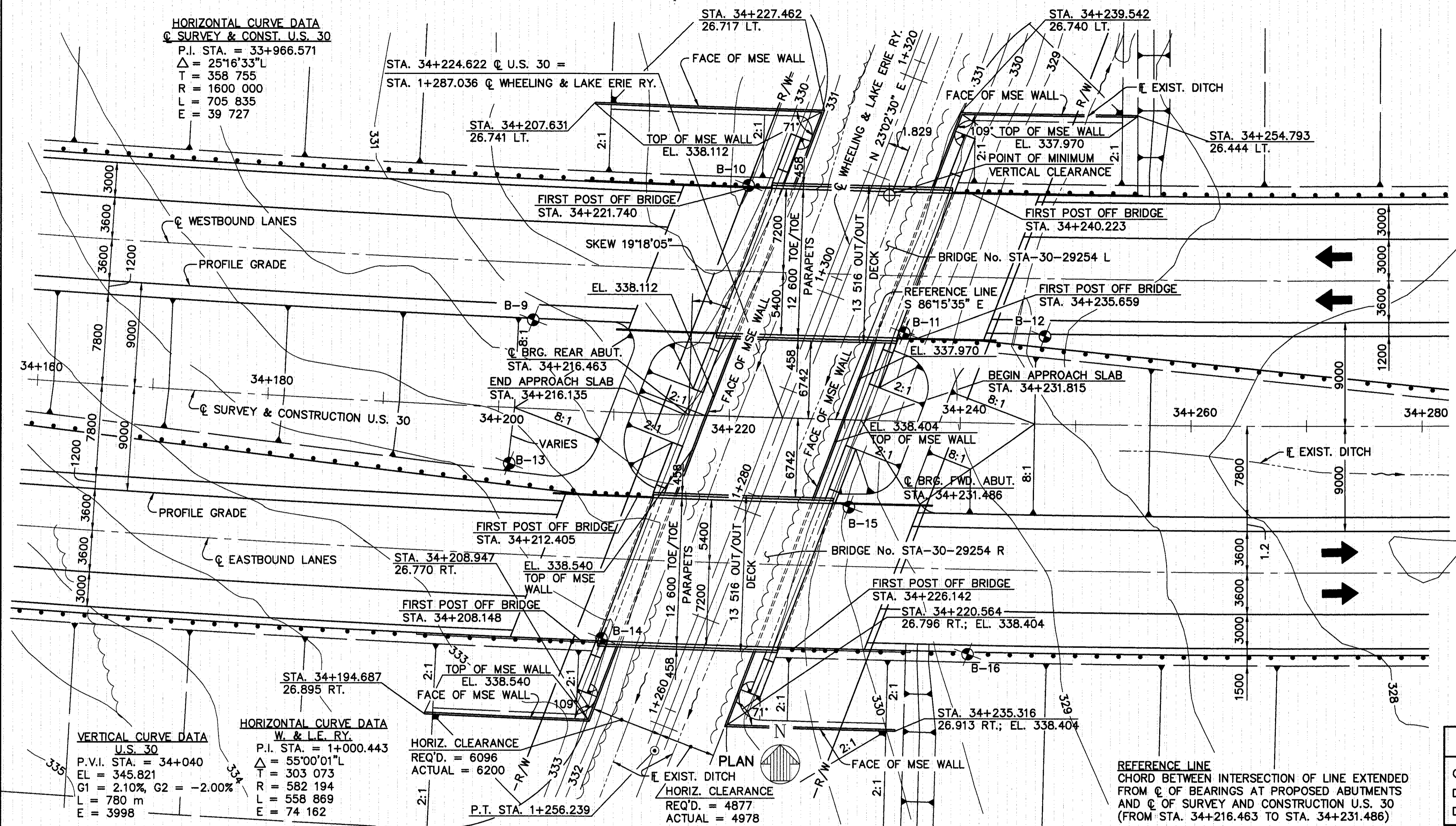
WEARING SURFACE: MONOLITHIC CONCRETE

APPROACH SLABS: AS-1-81M, 7600 mm LONG

SUPERELEVATION: 0.038

LATITUDE: 40°47'06" N

LONGITUDE: 81°26'37" W



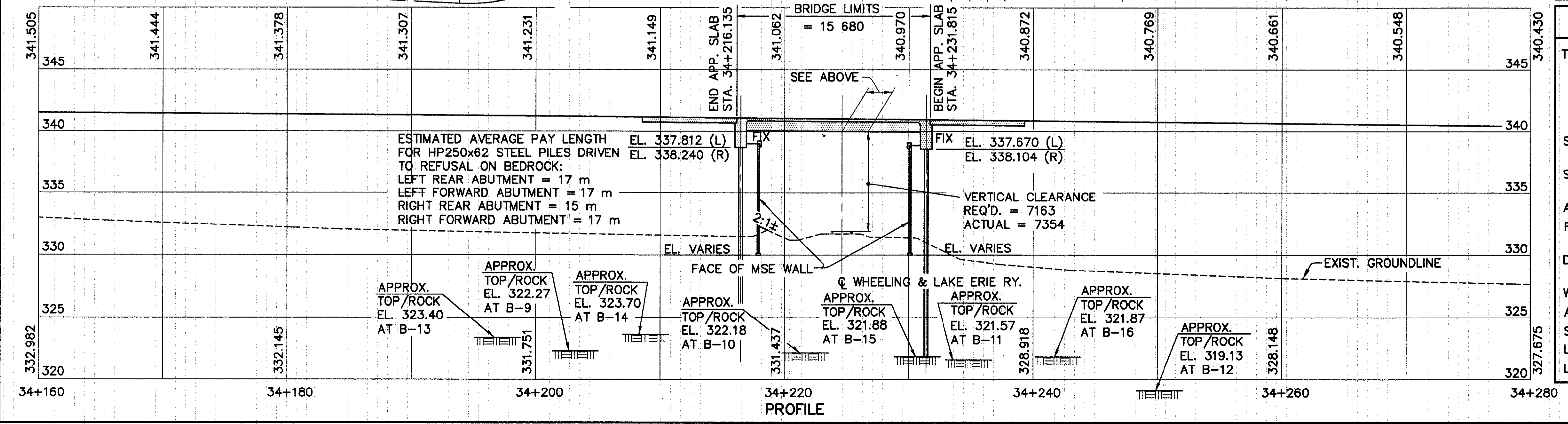
**VERTICAL CURVE DATA**  
 U.S. 30  
 P.V.I. STA. = 34+040  
 EL = 345.821  
 G1 = 2.10% G2 = -2.00%  
 L = 780 m  
 E = 3998

**HORIZONTAL CURVE DATA**  
 W. & L.E. RY.  
 P.I. STA. = 1+000.443  
 $\Delta = 55^{\circ}00'01''$ L  
 T = 303 073  
 R = 582 194  
 L = 558 869  
 E = 74 162

**HORIZ. CLEARANCE**  
 REQ'D. = 6096  
 ACTUAL = 6200

**HORIZ. CLEARANCE**  
 REQ'D. = 4877  
 ACTUAL = 4978

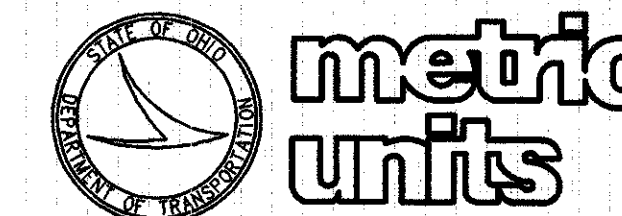
**REFERENCE LINE**  
 CHORD BETWEEN INTERSECTION OF LINE EXTENDED FROM @ OF BEARINGS AT PROPOSED ABUTMENTS AND @ OF SURVEY AND CONSTRUCTION U.S. 30 (FROM STA. 34+216.463 TO STA. 34+231.486)



ESTIMATED AVERAGE PAY LENGTH FOR HP250x62 STEEL PILES DRIVEN TO REFUSAL ON BEDROCK:  
 LEFT REAR ABUTMENT = 17 m  
 LEFT FORWARD ABUTMENT = 17 m  
 RIGHT REAR ABUTMENT = 15 m  
 RIGHT FORWARD ABUTMENT = 17 m

APPROX. TOP/ROCK EL. 323.40 AT B-13  
 APPROX. TOP/ROCK EL. 322.27 AT B-9  
 APPROX. TOP/ROCK EL. 323.70 AT B-14  
 APPROX. TOP/ROCK EL. 322.18 AT B-10  
 APPROX. TOP/ROCK EL. 321.88 AT B-15  
 APPROX. TOP/ROCK EL. 321.57 AT B-11  
 APPROX. TOP/ROCK EL. 321.87 AT B-16  
 APPROX. TOP/ROCK EL. 319.13 AT B-12

MEASURED ALONG  $\phi$  SURVEY & 7600 (TYP.) BRIDGE LIMITS=15 680 (TYP.) 7600 (TYP.)  
CONSTRUCTION U.S.30



DESIGN AGENCY  
**STILSON & ASSOCIATES, INC.**  
ENGINEERING, ARCHITECTURE & ENVIRONMENTAL  
OVER TRAFFIC, ROAD & COLLEGE, ONE-1000

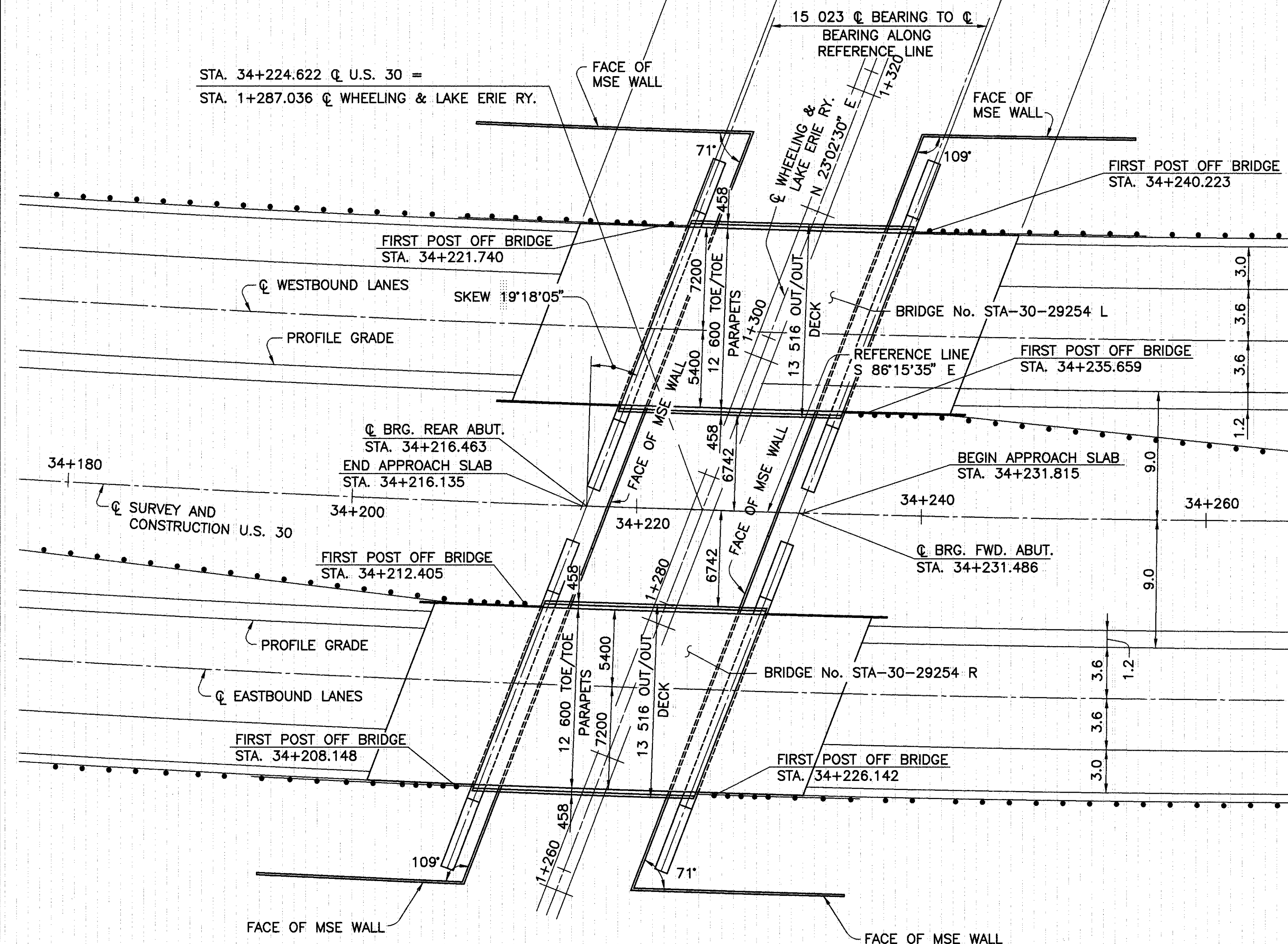
DATE 10/04/96  
DESIGNED CS  
DRAWN RTP  
REVIEWED CWM  
STRUCTURE FILE NUMBER 7603673 L & 7603681 R

**GENERAL PLAN AND ELEVATION**  
BRIDGE No. STA-30-29254 L&R  
U.S. 30 OVER WHEELING & LAKE ERIE RAILWAY

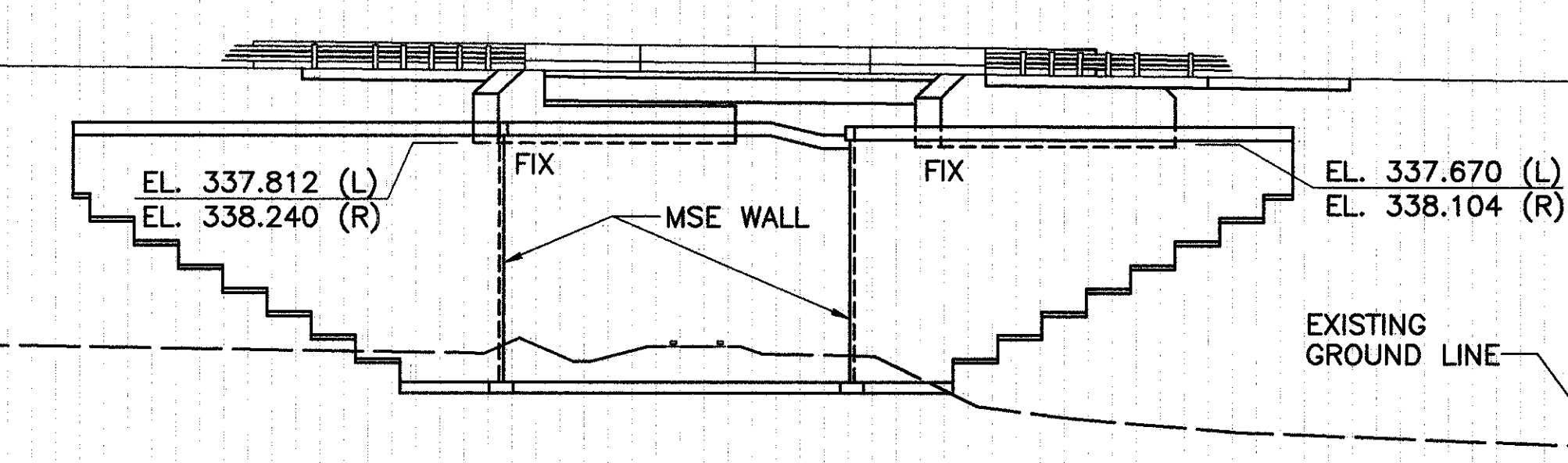
STA-30-27.696

2 / 13

359  
520

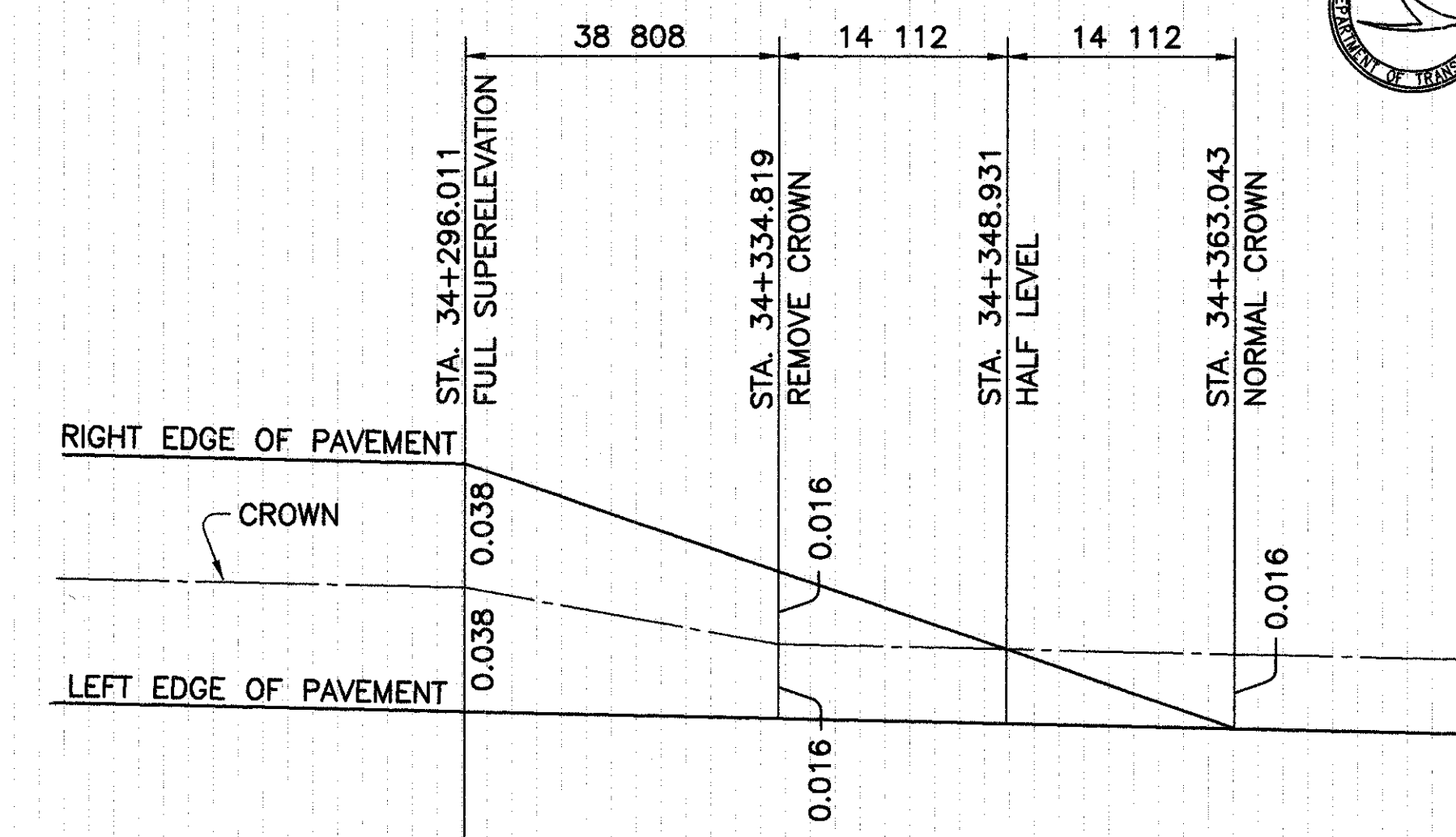


**GENERAL PLAN**

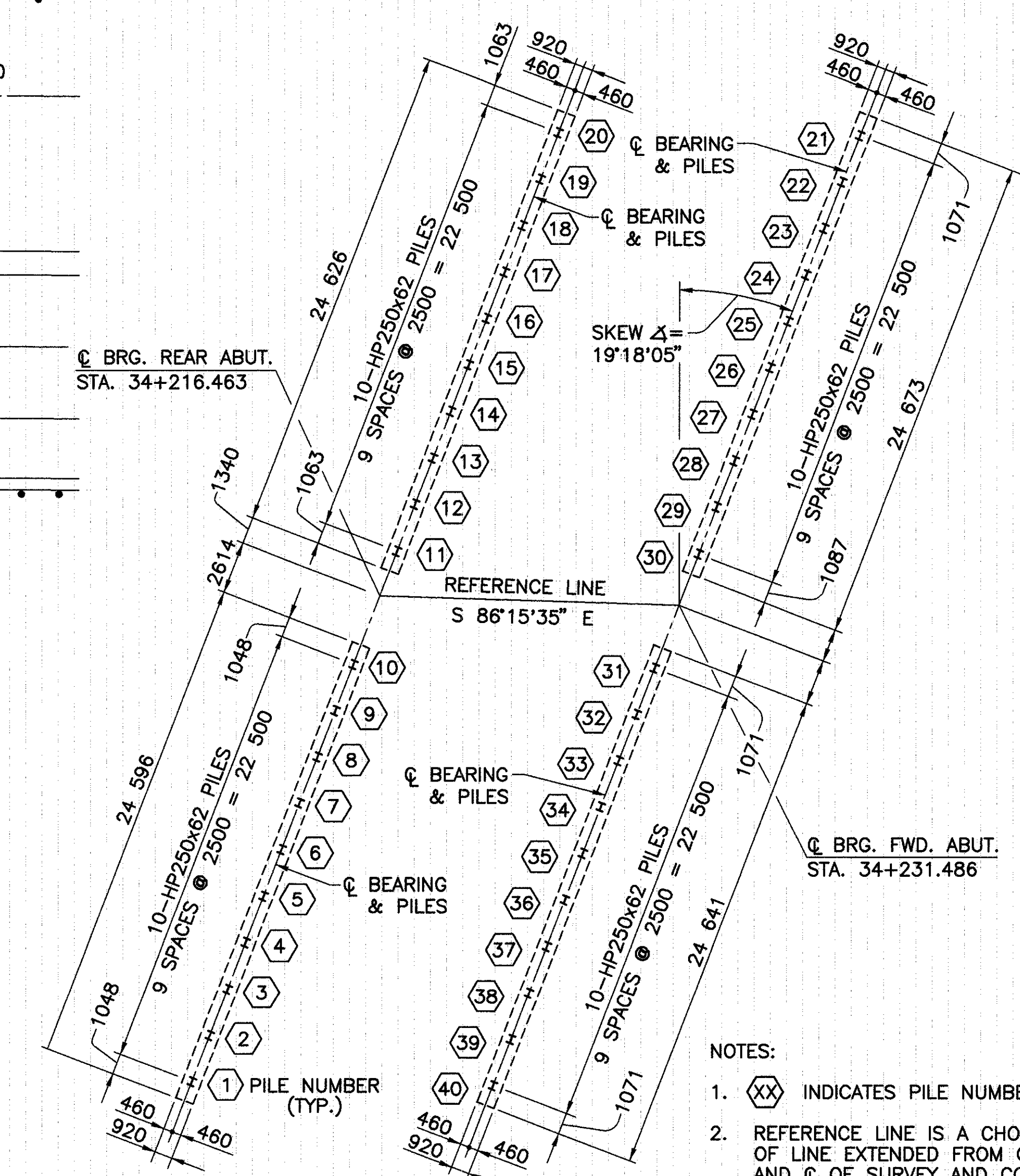


**ELEVATION**

NOTE:  
PILING NOT SHOWN.



**PAVEMENT TRANSITION DETAIL**  
(NOT TO SCALE)



**PILING LAYOUT PLAN**

- NOTES:
1. (XX) INDICATES PILE NUMBER.
  2. REFERENCE LINE IS A CHORD BETWEEN THE INTERSECTION OF LINE EXTENDED FROM  $\phi$  OF PROPOSED ABUTMENTS AND  $\phi$  OF SURVEY AND CONSTRUCTION U.S.30 (FROM STA. 34+216.463 TO STA. 34+231.486)
  3. ALL DIMENSIONS ARE IN MILLIMETERS, EXCEPT FOR STATIONS AND ELEVATIONS WHICH ARE IN METERS, UNLESS OTHERWISE NOTED.
  4. FOR MSE WALL LOCATIONS AND ELEVATIONS SEE SITE PLAN SHEET 1/13

## GENERAL NOTES

REFERENCE SHALL BE MADE TO STANDARD DRAWINGS:

AS-1-81M,	REINFORCED CONCRETE APPROACH SLAB,	DATED 10-25-94
BR-1M,	BRIDGE RAILING DEFLECTOR PARAPET TYPE,	DATED 12-15-94
ICD-1-82M,	INTEGRAL CONSTRUCTION DETAILS, STEEL	
	STRINGER STRUCTURES ON FLEXIBLE ABUTMENTS,	DATED 3-20-95

AND TO SUPPLEMENTAL SPECIFICATIONS:

942 POLYVINYL CHLORIDE (PVC) PROFILE WALL PIPE, DATED 3-18-92  
 944 SMOOTH LINED CORRUGATED POLYETHYLENE PIPE, DATED 5-2-94

### DESIGN SPECIFICATIONS

THIS STRUCTURE CONFORMS TO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 1996, AND THE ODOT BRIDGE DESIGN MANUAL.

### DESIGN LOADING

MS18, CASE II AND THE ALTERNATE MILITARY LOADING.

### DESIGN DATA

CONCRETE CLASS S - COMPRESSIVE STRENGTH 31.0 MPa (SUPERSTRUCTURE)  
 CONCRETE CLASS C - COMPRESSIVE STRENGTH 27.5 MPa (SUBSTRUCTURE)

REINFORCING STEEL - ASTM A615M, A616M OR A617M  
 GRADE 400 MINIMUM YIELD STRENGTH 400 MPa

STRUCTURAL STEEL  
 ASTM A588M - YIELD STRENGTH 350 MPa

### DECK PROTECTION METHOD

EPOXY COATED REINFORCING STEEL  
 65 mm CONCRETE COVER  
 SEALING OF CONCRETE SURFACES

MONOLITHIC WEARING SURFACE IS ASSUMED, FOR DESIGN PURPOSES, TO BE 25 mm THICK.

### EMBANKMENT CONSTRUCTION CONSTRAINTS

PILES SHALL BE DRIVEN TO BEDROCK BEFORE ANY EMBANKMENT CONSTRUCTION BEGINS. SECTIONS OF PILE SLEEVES FOR EACH LIFT OF MSE WALL CONSTRUCTION SHALL BE IN PLACE BEFORE REINFORCING AND EMBANKMENT MATERIALS ARE PLACED. CARE SHALL BE TAKEN IN POSITIONING THE REINFORCING TO AVOID INTERFERENCE WITH THE GUARDRAIL POSTS AND THE CORRUGATED PLASTIC PIPE DRAINS.

### PILES DRIVEN TO BEDROCK

PILES SHALL BE DRIVEN TO REFUSAL ON BEDROCK. REFUSAL SHALL BE CONSIDERED AS OBTAINED BY PENETRATING SOFT BEDROCK FOR SEVERAL MILLIMETERS WITH A MINIMUM RESISTANCE OF 20 BLOWS PER 25 mm OR REFUSAL SHALL BE CONSIDERED AS OBTAINED AFTER THE PILE HAS CONTACTED HARD BEDROCK AND THE PILE HAS THEN RECEIVED AT LEAST 20 BLOWS.

THE DESIGN LOAD IS 430 kN PER PILE FOR THE ABUTMENT PILES.

### ITEM SPECIAL - PILE ENCASEMENT

A PILING SLEEVE POSITIONED TO PROVIDE AT LEAST 75 mm CLEAR COVER AROUND THE EXTERIOR OF THE PILE SHALL BE PLACED AROUND EACH PILE OF THE CAPPED PILE ABUTMENTS. THE SLEEVES SHALL BE POLYETHYLENE PIPE (707.16 OR SS 944) OR PVC PIPE (SS 942) AND SHALL EXTEND FROM THE EXISTING GROUND SURFACE UP TO THE BOTTOM OF THE ABUTMENT FOOTING. THE SLEEVES SHALL BE FILLED WITH BENTONITE SLURRY TO AN ELEVATION 3050 mm BELOW THE BOTTOM OF THE ABUTMENT FOOTING. THE SLURRY SHALL CONSIST OF THE FOLLOWING MATERIALS WITH VOLUME RATIOS OF: ONE PART CEMENT, ONE PART BENTONITE, AND TEN PARTS WATER. LENGTH OF THE PILE ENCASEMENT SHALL BE MEASURED IN METERS ALONG THE LENGTH OF THE PILE.

CONSTRUCTION CLEARANCE OF 4.25 METERS HORIZONTALLY FROM THE CENTER OF TRACKS AND 6.7 METERS VERTICALLY FROM A POINT LEVEL WITH THE TOP OF THE HIGHER RAIL, AND 2.0 METERS FROM THE CENTER OF TRACKS, SHALL BE MAINTAINED AT ALL TIMES.

RAILROAD AERIAL LINES WILL BE RELOCATED BY THE RAILROAD. THE CONTRACTOR SHALL USE ALL PRECAUTIONS NECESSARY TO SEE THAT THE LINES ARE NOT DISTURBED DURING THE CONSTRUCTION STAGE AND SHALL COOPERATE WITH THE RAILROAD IN THE RELOCATION OF THESE LINES. THE COST OF THE RELOCATION SHALL BE INCLUDED IN THE RAILROAD FORCE ACCOUNT WORK.

### ITEM 516 INTEGRAL ABUTMENT EXPANSION JOINT SEAL

INSTALL A 900 mm WIDE STRIP, 2.5 mm THICK, GENERAL PURPOSE, HEAVY DUTY NEOPRENE SHEET WITH NYLON FABRIC REINFORCEMENT AT LOCATIONS SHOWN IN THE PLANS. SECURE THE 900 mm WIDE NEOPRENE SHEETING TO THE CONCRETE WITH 32 x 3 mm (LENGTH x SHANK DIAMETER) GALVANIZED BUTTON HEAD SPIKES THROUGH A 25 mm OUTSIDE DIAMETER, 3 mm GALVANIZED WASHER. MAXIMUM FASTENER SPACING IS 225 mm. OTHER SIMILAR GALVANIZED DEVICES WHICH WILL NOT DAMAGE EITHER THE NEOPRENE OR THE CONCRETE MAY BE USED SUBJECT TO THE APPROVAL OF THE ENGINEER.

CENTER THE NEOPRENE STRIPS ON ALL JOINTS. FOR HORIZONTAL JOINTS, SECURE THE HORIZONTAL NEOPRENE STRIP BY USING A SINGLE LINE OF FASTENERS, STARTING AT 150 mm (+/-) FROM THE TOP OF THE NEOPRENE STRIP. FOR THE VERTICAL JOINTS SECURE THE VERTICAL NEOPRENE STRIP BY USING A SINGLE VERTICAL LINE OF FASTENERS, STARTING AT 150 mm (+/-) FROM THE VERTICAL EDGE OF THE NEOPRENE STRIP NEAREST TO THE CENTERLINE OF ROADWAY. FOR VERTICAL JOINTS, INSTALL 2 ADDITIONAL FASTENERS AT 150 mm CENTER TO CENTER ACROSS THE TOP OF THE NEOPRENE STRIP ON THE SAME SIDE OF THE VERTICAL JOINT AS THE SINGLE VERTICAL ROW OF FASTENERS IS LOCATED.

THE VERTICAL NEOPRENE STRIPS SHOULD COMPLETELY OVERLAP THE HORIZONTAL STRIPS. LAPS IN THE LENGTH OF THE HORIZONTAL STRIPS DUE TO MATERIAL MANUFACTURING SHALL BE AT LEAST 300 mm IN LENGTH, IF NOT VULCANIZED OR ADHESIVE BONDED, OR 150 mm IN LENGTH IF THE LAP IS VULCANIZED OR ADHESIVE BONDED. NO LAPS ARE ACCEPTABLE IN VERTICALLY INSTALLED NEOPRENE STRIPS.

THE NEOPRENE SHEETING SHALL BE 2.5 mm THICK GENERAL PURPOSE, HEAVY DUTY NEOPRENE SHEET WITH NYLON FABRIC REINFORCEMENT. THE SHEETING SHALL BE FAIRPRENE NUMBER NN-0003, BY E.I. DUPONT DE NEMOURS AND COMPANY, INC., 'WINGPRENE' BY THE GOODYEAR TIRE AND RUBBER COMPANY, OR AN APPROVED ALTERNATE. THE NEOPRENE SHEETING SHALL CONFORM TO THE FOLLOWING:

DESCRIPTION OF TEST	ASTM METHOD	REQUIREMENT
THICKNESS, mm	D751	2.5 +/- .25
BREAKING STRENGTH, GRAB WXF, N, MINIMUM	D751	3130X3130
ADHESIVE 25 mm STRIP, 50 mm MINIMUM, N MINIMUM	D751	27
BURST STRENGTH (MULLEN) MPa MINIMUM	D751	9.65
HEAT AGING 70 HOURS T 100°C, 180 BEND WITHOUT CRACKING	D2136	NO CRACKING OF COATING
LOW TEMPERATURE BRITTLENESS 1 HOUR AT -40°C, BEND AROUND 6 mm MANDREL	D2136	NO CRACKING OF COATING

PAYMENT FOR LABOR, MATERIALS AND INSTALLATION FOR THESE ITEMS SHALL BE INCLUDED IN ITEM 516 INTEGRAL ABUTMENT EXPANSION JOINT SEAL, AS PER PLAN.

### CONCRETE PARAPETS

AS SOON AS A CONCRETE SAW CAN BE OPERATED WITHOUT DAMAGING THE FRESHLY PLACED CONCRETE, 25 mm DEEP CONTROL JOINTS SHALL BE SAWED INTO THE PERIMETER OF THE CONCRETE PARAPET. THE SAW CUT SHALL BE MADE IN THE COMPLETE CIRCUMFERENCE OF THE PARAPET, STARTING AND ENDING AT THE ELEVATION OF THE CONCRETE DECK. THE SAWCUTS SHALL BE PLACED AT A MINIMUM OF 2000 mm AND A MAXIMUM OF 3000 mm CENTERS. THE USE OF AN EDGE GUIDE, FENCE, OR JIG IS REQUIRED TO INSURE THAT THE CUT JOINT IS STRAIGHT, TRUE, AND ALIGNED ON ALL FACES OF THE PARAPET. THE JOINT WIDTH SHALL BE THE WIDTH OF THE SAW BLADE, A NOMINAL WITH OF 6 mm. THE PERIMETER OF THE DEFLECTION CONTROL JOINT SHALL BE SEALED TO A MINIMUM DEPTH OF 25 mm WITH A CAULKING MATERIAL CONFORMING TO FEDERAL SPECIFICATION, TT-S-00227E.

### HIGH PERFORMANCE CONCRETE

THE CONCRETE USED FOR THE FOLLOWING ITEMS SHALL BE MIX 3:  
 ITEM SPECIAL - HIGH PERFORMANCE CONCRETE, SUPERSTRUCTURE (DECK)  
 ITEM SPECIAL - HIGH PERFORMANCE CONCRETE, SUPERSTRUCTURE (PARAPET)  
 ITEM SPECIAL - HIGH PERFORMANCE CONCRETE, SUBSTRUCTURE



DESIGN AGENCY  
**STILSON & ASSOCIATES, INC.**  
 ENGINEERING • ARCHITECTURE • ENVIRONMENTAL  
 6121 HUNLEY ROAD • COLUMBUS, OHIO 43229

DATE 10/04/96  
 REVIEWED GMM  
 STRUCTURE FILE NUMBER 7603673 L & 7603681 R

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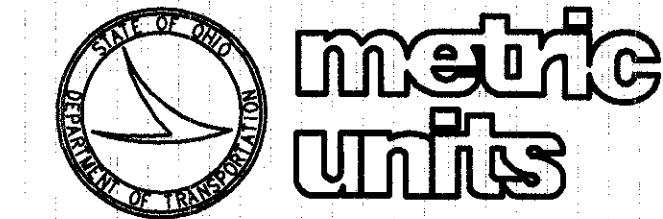
**GENERAL NOTES**  
 BRIDGE No. STA-30-29254 L&R  
 U.S. 30 OVER WHEELING & LAKE ERIE RAILWAY

STA-30-27.696

3 / 13

360  
 520

# ESTIMATED QUANTITIES



DESIGN AGENCY  
**STILSON & ASSOCIATES, INC.**  
 ENGINEERING • ARCHITECTURE • ENVIRONMENTAL  
 6121 HANLEY ROAD • COLUMBUS, OHIO 43228

LEFT BRIDGE									AS PER PLAN
ITEM	ITEM EXT.	TOTAL	UNIT	DESCRIPTION	REAR ABUT	FWD ABUT	SUPER	GENERAL	SHEET NO.
505	11100	LUMP		PILE DRIVING EQUIPMENT MOBILIZATION				LUMP	
507	11100	340	METER	STEEL PILES HP 250x62	170	170			
SPECIAL	50771200	125	METER	PILE ENCASEMENT	58	67			
509	15830	13 040	KILOGRAM	EPOXY COATED REINFORCING STEEL, GRADE 400	2096	2096	8848		
SPECIAL	51148000	94	CU METER	HIGH PERFORMANCE CONCRETE, SUPERSTRUCTURE (DECK) *			94		
SPECIAL	51148020	10	CU METER	HIGH PERFORMANCE CONCRETE, SUPERSTRUCTURE (PARAPET) *			10		
SPECIAL	51148040	70	CU METER	HIGH PERFORMANCE CONCRETE, SUBSTRUCTURE *	35	35			
SPECIAL	51149000	LUMP		HIGH PERFORMANCE CONCRETE, TRIAL MIX *			LUMP		
SPECIAL	51149010	LUMP		HIGH PERFORMANCE CONCRETE TESTING *			LUMP		
SPECIAL	51267500	213	SQ METER	SEALING OF CONCRETE SURFACES *	61	62	90		
513	11300	16 212	KILOGRAM	STRUCTURAL STEEL, A588 AISC CATEGORY I *			16 212		
513	20000	645	EACH	WELDED STUD SHEAR CONNECTOR			645		
516	13200	9	SQ METER	13 mm PREFORMED EXPANSION JOINT FILLER	4	5			
516	13600	18	SQ METER	25 mm PREFORMED EXPANSION JOINT FILLER	9	9			
516	14014	38	METER	INTEGRAL ABUTMENT EXPANSION JOINT SEAL	19	19			
518	21200	68	CU METER	POROUS BACKFILL WITH FILTER FABRIC	34	34			

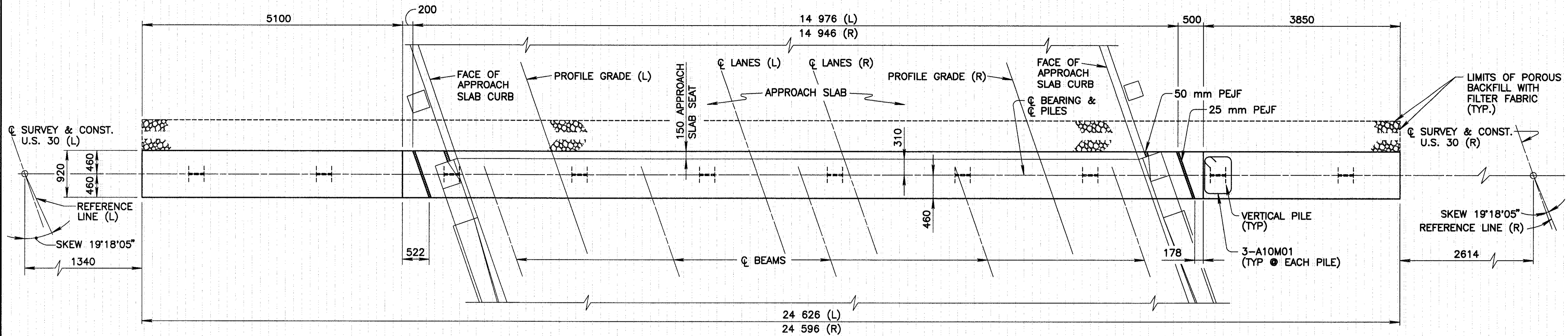
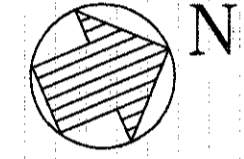
RIGHT BRIDGE									AS PER PLAN
ITEM	ITEM EXT.	TOTAL	UNIT	DESCRIPTION	REAR ABUT	FWD ABUT	SUPER	GENERAL	SHEET NO.
505	11100	LUMP		PILE DRIVING EQUIPMENT MOBILIZATION				LUMP	
507	11100	320	METER	STEEL PILES HP 250x62	150	170			
SPECIAL	50771200	134	METER	PILE ENCASEMENT	63	71			
509	15830	13 172	KILOGRAM	EPOXY COATED REINFORCING STEEL, GRADE 400	2096	2096	8980		
SPECIAL	51148000	94	CU METER	HIGH PERFORMANCE CONCRETE, SUPERSTRUCTURE (DECK) *			94		
SPECIAL	51148020	10	CU METER	HIGH PERFORMANCE CONCRETE, SUPERSTRUCTURE (PARAPET) *			10		
SPECIAL	51148040	71	CU METER	HIGH PERFORMANCE CONCRETE, SUBSTRUCTURE *	35	36			
SPECIAL	51149000	LUMP		HIGH PERFORMANCE CONCRETE, TRIAL MIX *			LUMP		
SPECIAL	51149010	LUMP		HIGH PERFORMANCE CONCRETE TESTING *			LUMP		
SPECIAL	51267500	210	SQ METER	SEALING OF CONCRETE SURFACES *	60	60	90		
513	11300	16 212	KILOGRAM	STRUCTURAL STEEL, A588 AISC CATEGORY I *			16 212		
513	20000	645	EACH	WELDED STUD SHEAR CONNECTOR			645		
516	13200	9	SQ METER	13 mm PREFORMED EXPANSION JOINT FILLER	4	5			
516	13600	18	SQ METER	25 mm PREFORMED EXPANSION JOINT FILLER	9	9			
516	14014	38	METER	INTEGRAL ABUTMENT EXPANSION JOINT SEAL	19	19			
518	21200	66	CU METER	POROUS BACKFILL WITH FILTER FABRIC	33	33			

\* SEE PROPOSAL NOTE

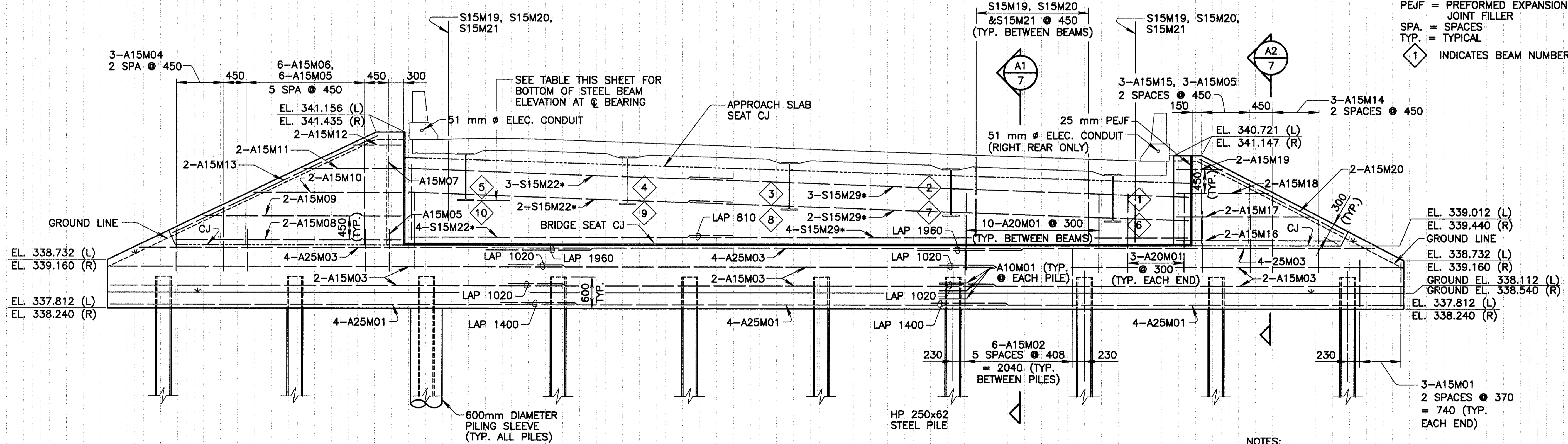
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**STA-30-27.696**


**REAR ABUTMENT PLAN**  
 (MSE WALL NOT SHOWN)


- LEGEND**
- CJ = CONSTRUCTION JOINT
  - PEJF = PREFORMED EXPANSION JOINT FILLER
  - SPA = SPACES
  - TYP. = TYPICAL
  - 1 INDICATES BEAM NUMBER

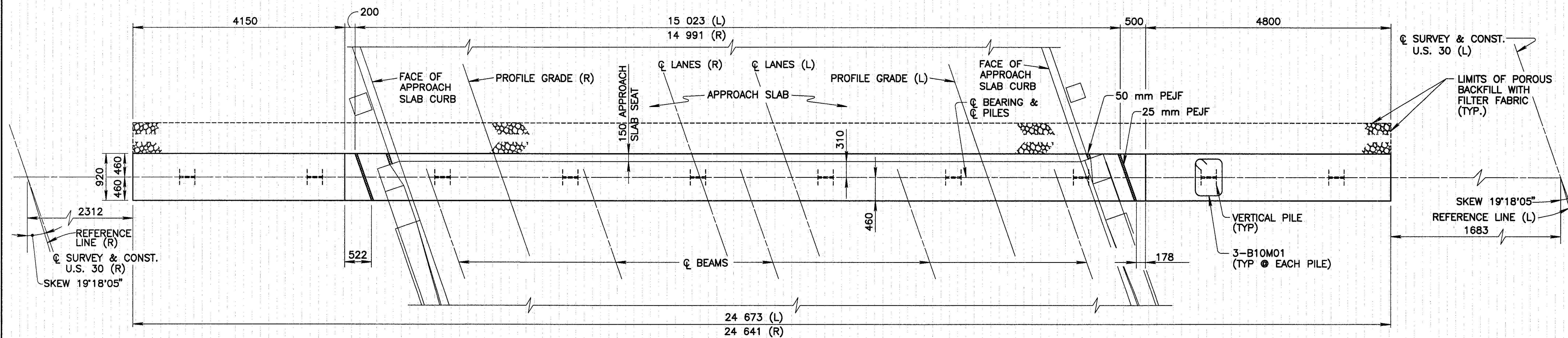

**REAR ABUTMENT ELEVATION**

- NOTES:**
1. DIMENSIONS, ELEVATIONS AND NOTATIONS MARKED WITH (L) OR (R) APPLY TO THE LEFT OR RIGHT BRIDGE RESPECTIVELY.
  2. LAP LENGTHS SHOWN ARE MINIMUM.
  3. FOR ABUTMENT NOTES SEE SHEET [7/13].
  4. \*-SUPERSTRUCTURE REINFORCING. SEE SHEETS [10/13] AND [11/13] FOR ALL OTHER SUPERSTRUCTURE REINFORCING.
  5. FOR PILING LAYOUT DIAGRAM SEE SHEET [2/13].

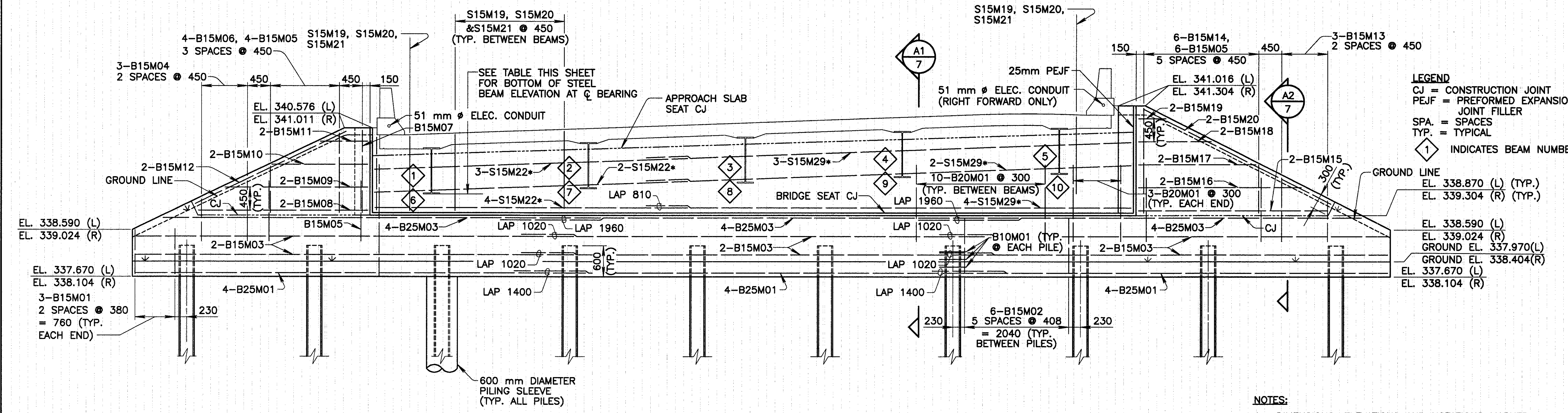
	LEFT REAR					RIGHT REAR				
BEAM NO.	1	2	3	4	5	6	7	8	9	10
BOTTOM OF BEAM ELEV.	339.462	339.582	339.701	339.821	339.897	339.890	340.009	340.128	340.244	340.174

**ABUTMENT DETAILS**  
 BRIDGE No. STA-30-29254 L&R  
 U.S. 30 OVER WHEELING & LAKE ERIE RAILWAY

STA-30-27.696



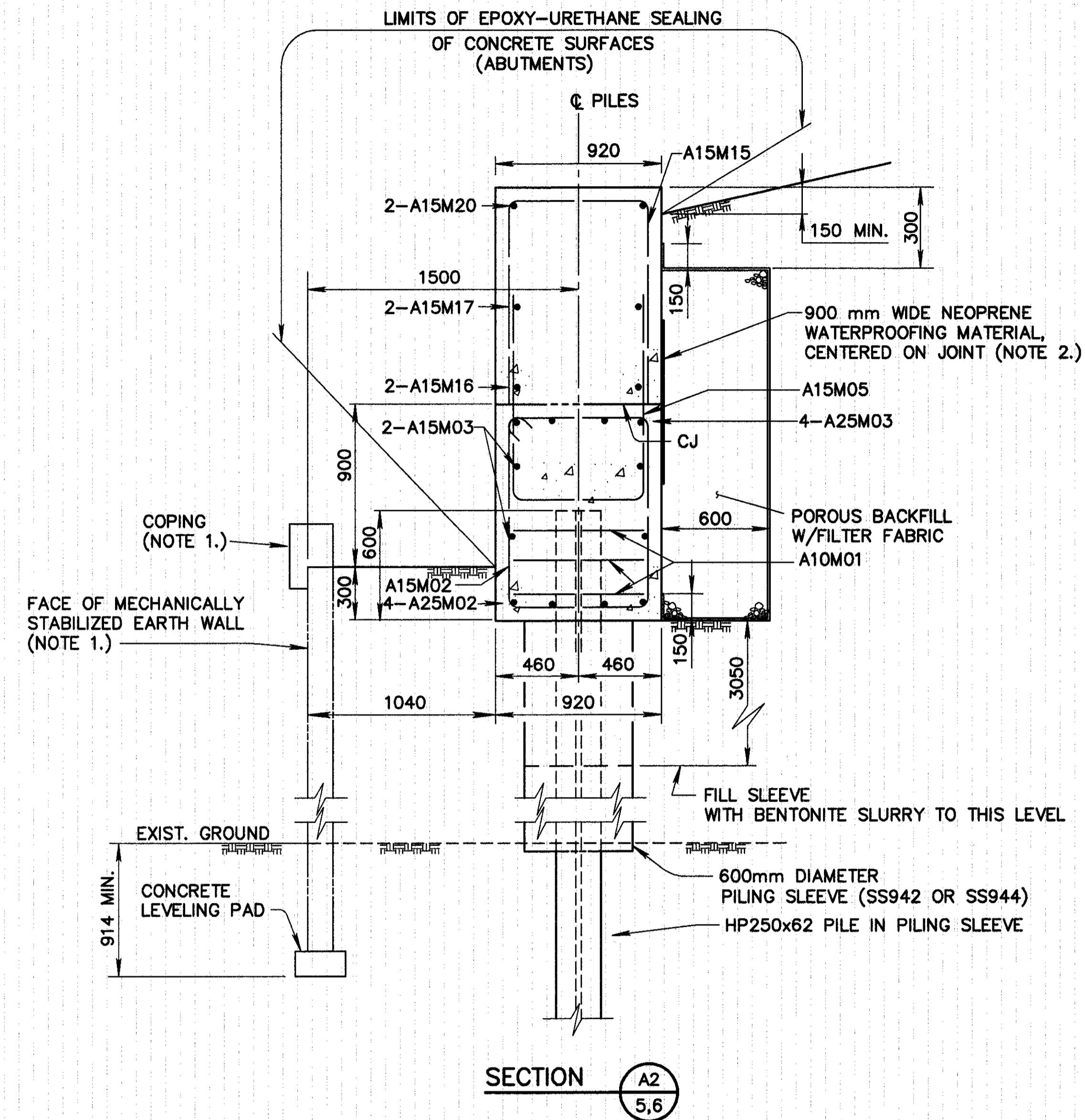
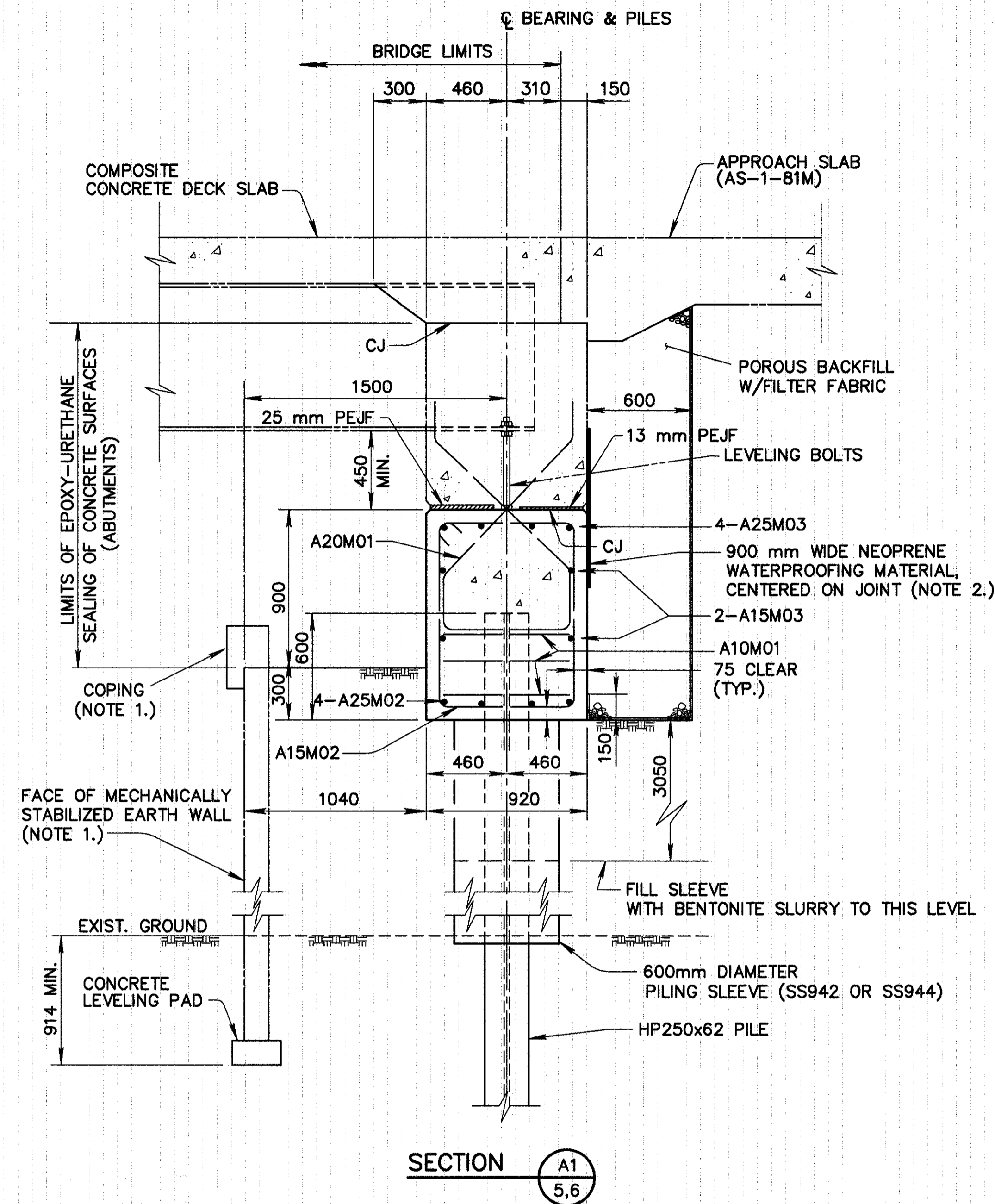
**FORWARD ABUTMENT PLAN**  
 (MSE WALL NOT SHOWN)



**FORWARD ABUTMENT ELEVATION**

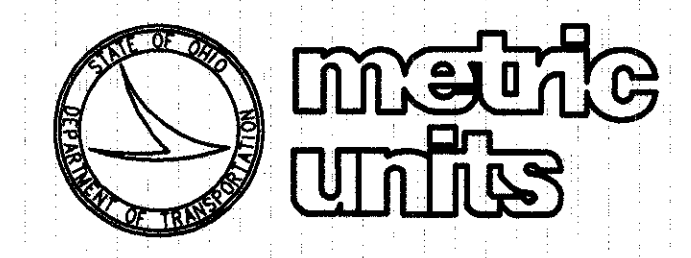
- NOTES:**
1. DIMENSIONS, ELEVATIONS AND NOTATIONS MARKED WITH (L) OR (R) APPLY TO THE LEFT OR RIGHT BRIDGE RESPECTIVELY.
  2. LAP LENGTHS SHOWN ARE MINIMUM.
  3. SEE SHEET 7/13 FOR ABUTMENT NOTES.
  4. \*-SUPERSTRUCTURE REINFORCING. SEE SHEETS 10/13 AND 11/13 FOR ALL OTHER SUPERSTRUCTURE REINFORCING.
  5. FOR PILING LAYOUT DIAGRAM SEE SHEET 2/13

	LEFT FORWARD					RIGHT FORWARD				
BEAM NO.	1	2	3	4	5	6	7	8	9	10
BOTTOM OF BEAM ELEV.	339.320	339.440	339.560	339.680	339.755	339.754	339.873	339.993	340.111	340.046



**ABUTMENT NOTES:**

1. SEE ATTACHED DRAWINGS BY THE REINFORCED EARTH COMPANY AND THE VSL CORPORATION FOR MSE WALL DETAILS.
2. SEE ODOT STD. DWG. ICD-1-82M FOR DETAILS OF NEOPRENE PLACEMENT.
3. SEE SHEET 2/13 FOR PILING LAYOUT PLAN.
4. REINFORCING BAR MARKS SHOWN ARE FOR THE REAR ABUTMENTS. FORWARD ABUTMENT BAR MARKS ARE SIMILAR.
5. POROUS BACKFILL WITH FILTER FABRIC, 600 mm THICK SHALL EXTEND UP TO THE PLANE OF THE SUBGRADE, TO 300 mm BELOW THE EMBANKMENT SURFACE, AND Laterally TO THE ENDS OF THE WINGWALLS.



DESIGN AGENCY  
**STILSON & ASSOCIATES, INC.**  
 ENGINEERING • ARCHITECTURE • ENVIRONMENTAL  
 6121 HURLEY ROAD • COLUMBUS, OHIO 43229

DESIGNED  
 CMS  
 CHECKED  
 TEU

DRAWN  
 RTP  
 REVISED

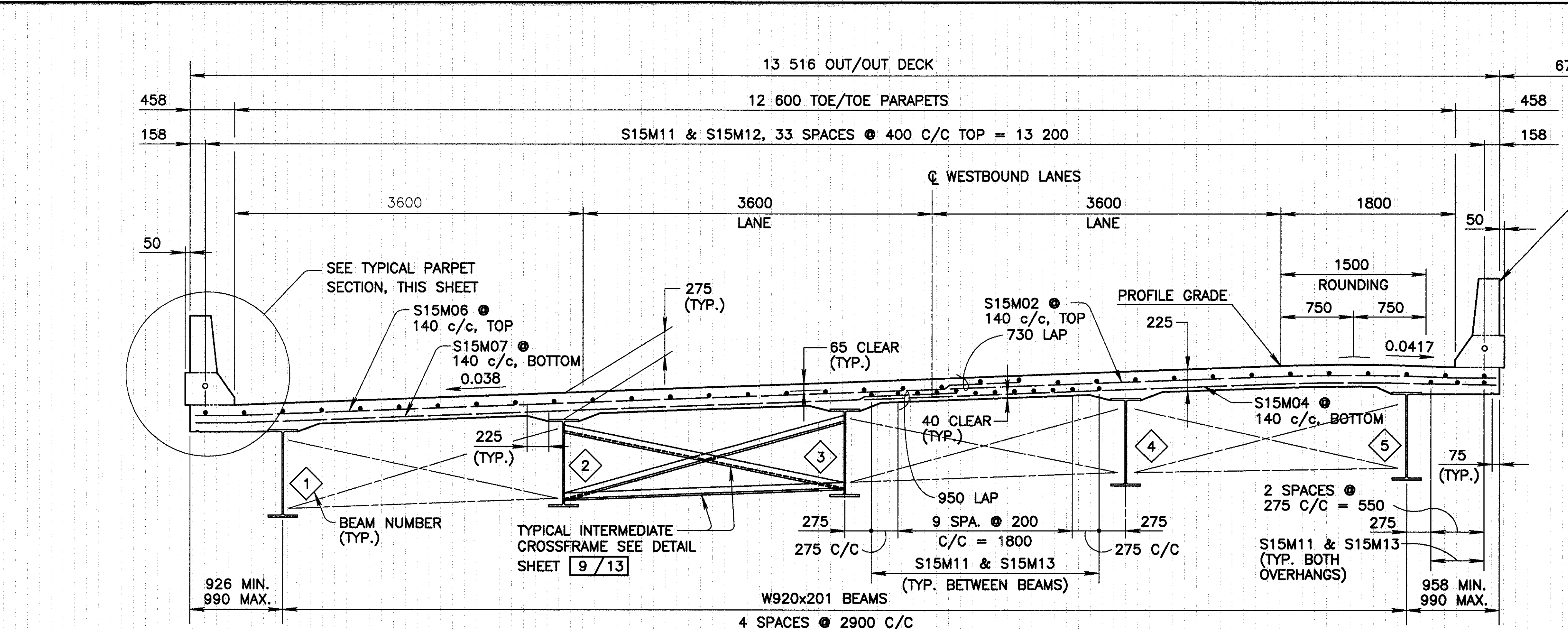
REVIEWED  
 GWM  
 STRUCTURE FILE NUMBER  
 7603673 L & 7603681 R

DATE  
 10/04/96

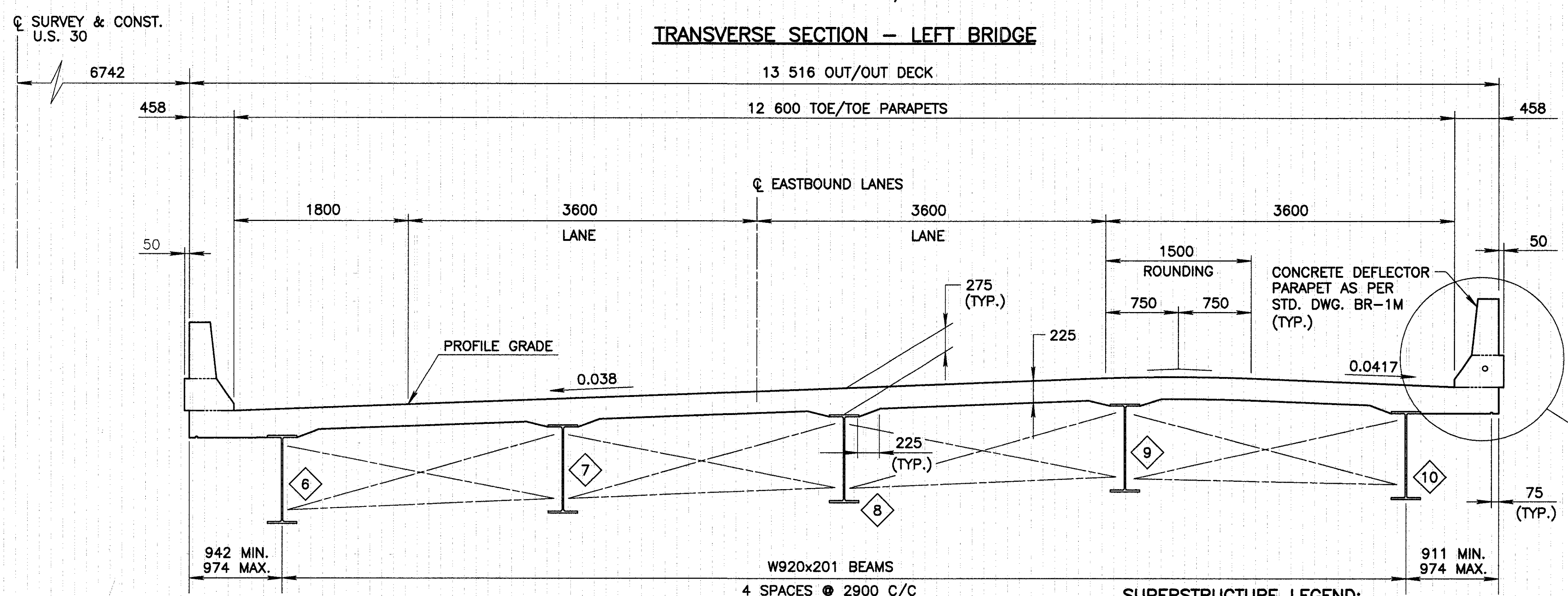
**SUPERSTRUCTURE DETAILS**  
 BRIDGE No. STA-30-29254 L&R  
 U.S. 30 OVER WHEELING & LAKE ERIE RAILWAY

STA-30-27.696

8/13  
 365  
 520



**TRANSVERSE SECTION - LEFT BRIDGE**



**TRANSVERSE SECTION - RIGHT BRIDGE**

ALL REINFORCING SIMILAR TO LEFT BRIDGE

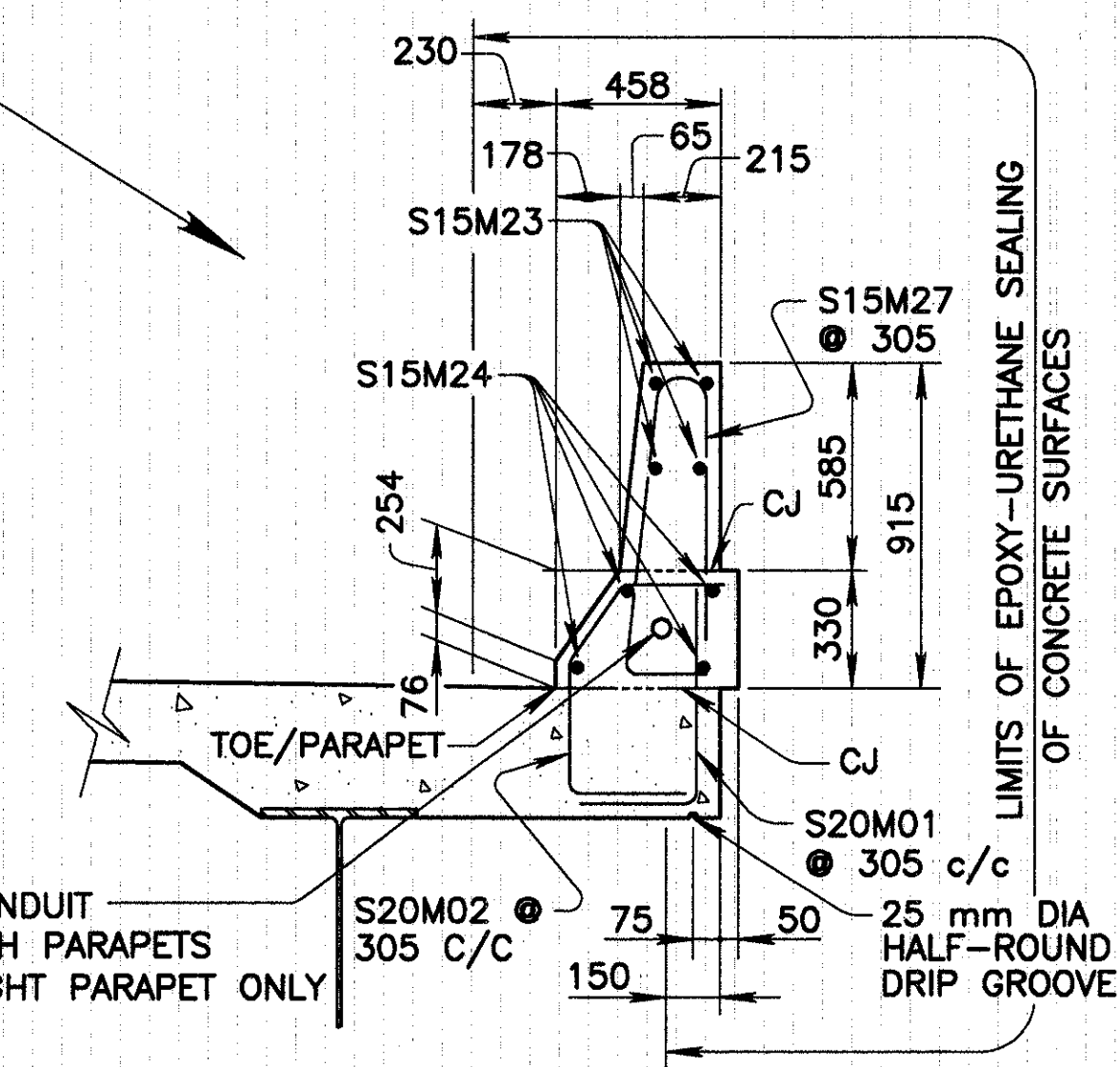
CONCRETE DEFLECTOR PARAPET AS PER STD. DWG. BR-1M (TYP.)

**SUPERSTRUCTURE NOTES:**

- WHERE A SHAPE OR PLATE IS DESIGNATED (CVN) THE MATERIAL SHALL MEET SPECIFIED MINIMUM NOTCH TOUGHNESS REQUIREMENTS AS SPECIFIED IN 711.01
- DIAPHRAGM** CONCRETE ENCASING THE STRUCTURAL MEMBER SECTIONS SUPPORTED IN INTEGRAL ABUTMENTS SHALL BE PLACED AT LEAST 48 HOURS BEFORE THE ACTUAL DECK CONCRETE IS PLACED.
- TEMPORARY BRACING FROM THE BOTTOM OF THE BEAMS TO THE MSE EMBANKMENT SHALL BE PROVIDED TO SUPPORT THE SUPERSTRUCTURE DURING ERECTION AND PLACEMENT OF THE CONCRETE DIAPHRAGM ENCASING THE ENDS OF THE BEAMS. COST OF THE BRACING SHALL BE INCLUDED WITH ITEM 513 STRUCTURAL STEEL, A588 AISC CATEGORY I, FOR PAYMENT.
- DECK SLAB DEPTH:** THE DISTANCE SHOWN FROM THE TOP OF THE DECK SLAB TO TOP OF STEEL BEAM IS THE THEORETICAL DESIGN DIMENSION INCLUDING THE DESIGN HAUNCH THICKNESS OF 50 mm. THE QUANTITY OF DECK CONCRETE TO BE PAID FOR SHALL BE BASED ON THIS DIMENSION, EVEN THOUGH DEVIATION FROM IT MAY BE NECESSARY BECAUSE THE TOP FLANGE OF THE BEAM MAY NOT HAVE THE EXACT CAMBER OR CONFORMATION REQUIRED TO PLACE IT PARALLEL TO THE FINISHED GRADE.
- HAUNCH WIDTH** OF 225 mm SHALL BE USED FOR THE QUANTITY OF CONCRETE. HOWEVER, THE HAUNCH WIDTH MAY VARY BETWEEN 150 mm AND 300 mm.
- A588 STEEL** IS TO BE LEFT UNPAINTED. THE OUTSIDE SURFACES AND BOTTOM SURFACES OF THE BOTTOM FLANGES OF FASCIA BEAMS SHALL BE ABRASIVELY BLAST CLEANED TO GRADE Sq2 IN THE FABRICATION SHOP. SEE CMS 513.221 FOR FINAL FIELD CLEANING REQUIREMENTS. PAYMENT SHALL BE INCLUDED IN ITEM 513.
- WELDED ATTACHMENT OF SUPPORTS FOR THE CONCRETE DECK FINISHING MACHINE MAY BE MADE TO THE FASCIA STRINGER TOP FLANGES. FILLET WELDS TO COMPRESSION FLANGES SHALL BE NOT CLOSER THAN 25 mm FROM EDGE OF FLANGE, BE NOT MORE THAN 50 mm LONG AND BE NOT SMALLER THAN THE MINIMUM SIZE REQUIRED BY AASHTO.
- PAYMENT: QUANTITIES OF REINFORCING STEEL, CONCRETE FOR BARRIER, AND PARAPET CAULKING MATERIAL ARE INCLUDED WITH SUPERSTRUCTURE ITEMS 509 AND 511 FOR PAYMENT UNLESS OTHERWISE NOTED. PAYMENT FOR LEVELING BOLTS SHALL BE INCLUDED IN ITEM 513 STRUCTURAL STEEL, A588 AISC CATEGORY I.
- SEE STANDARD DRAWING BR-1M FOR OTHER DETAILS.
- EACH RUN OF LONGITUDINAL DECK REINFORCING FOR BOTH LEFT AND RIGHT BRIDGES SHALL BE COMPRISED OF THE FOLLOWING:  
 TOP BARS: 1-S15M11 & 1-S15M12, MINIMUM LAP = 450 mm  
 BOTTOM BARS: 1-S15M11 & 1-S15M13, MINIMUM LAP = 450 mm
- EACH RUN OF LONGITUDINAL PARAPET REINFORCING FOR BOTH LEFT AND RIGHT BRIDGES SHALL BE COMPRISED OF THE FOLLOWING:  
 2-S15M24, MINIMUM LAP = 580 mm  
 2-S15M23, MINIMUM LAP = 1020 mm
- ALL REINFORCING STEEL SHALL BE PLACED TO PROVIDE A MINIMUM COVER OF 50 mm UNLESS OTHERWISE NOTED.

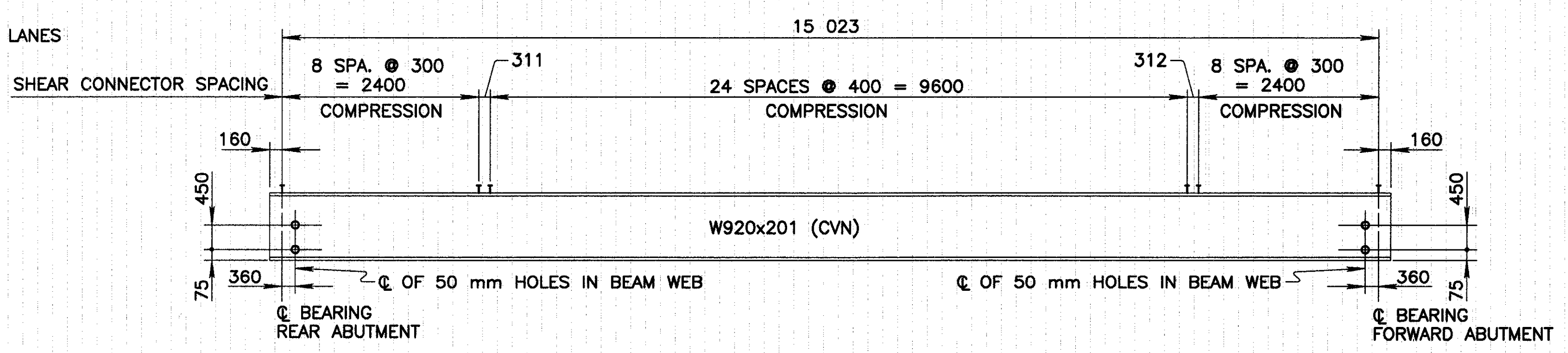
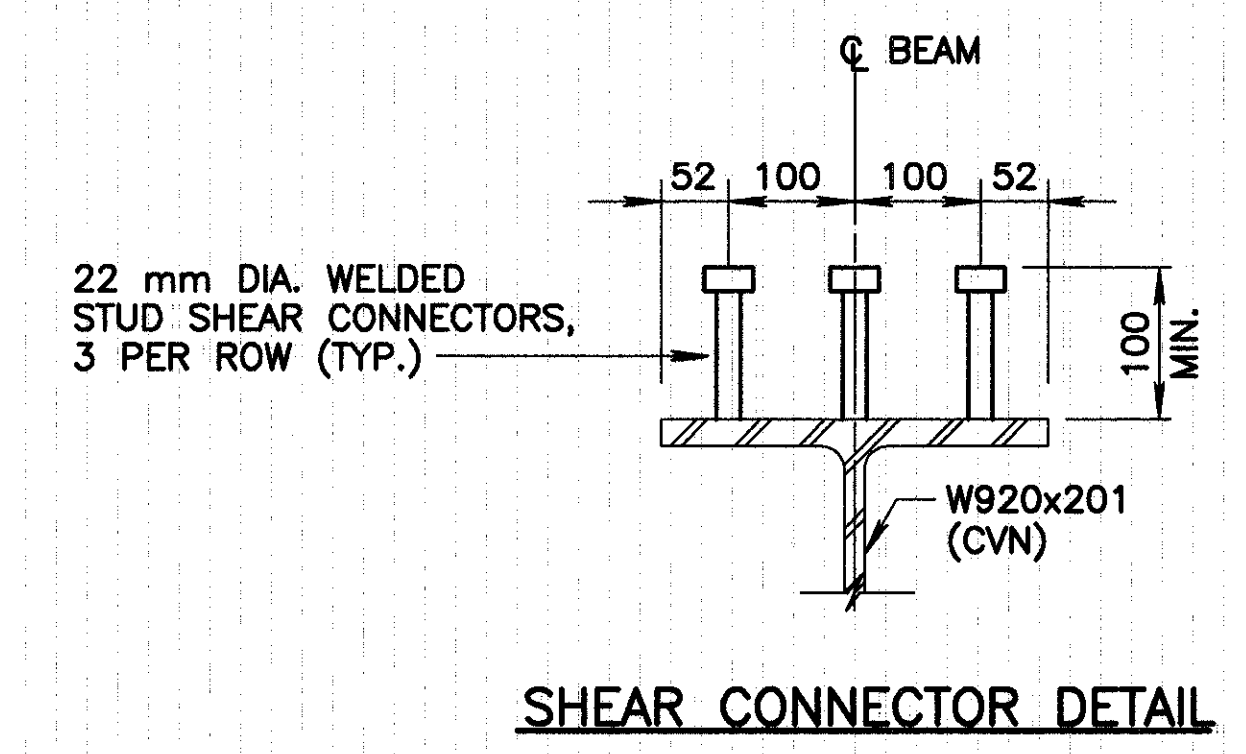
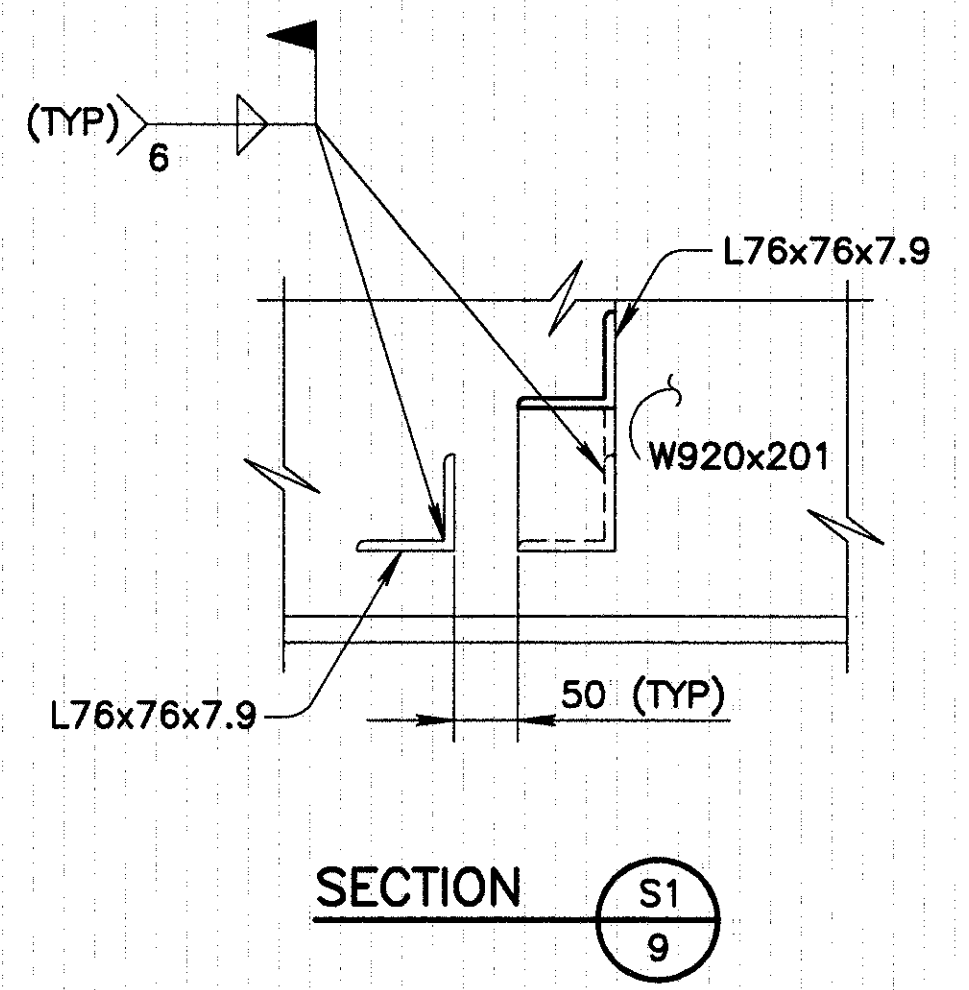
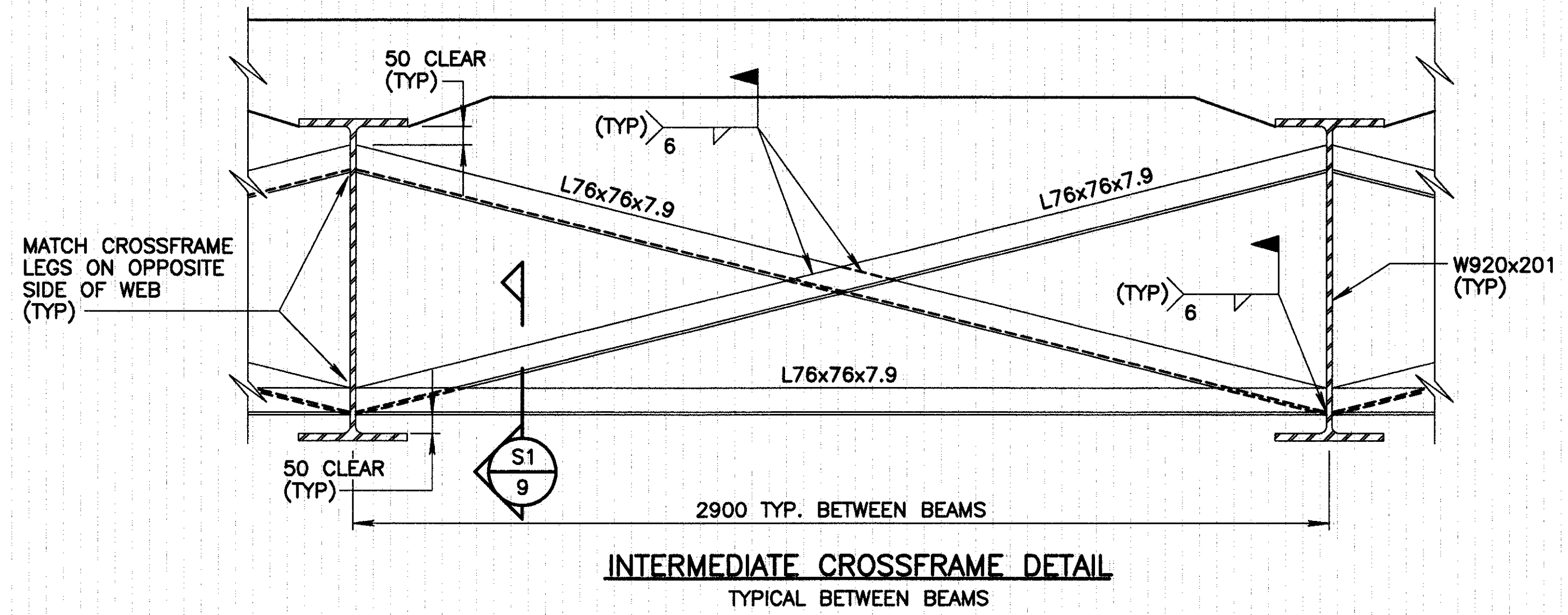
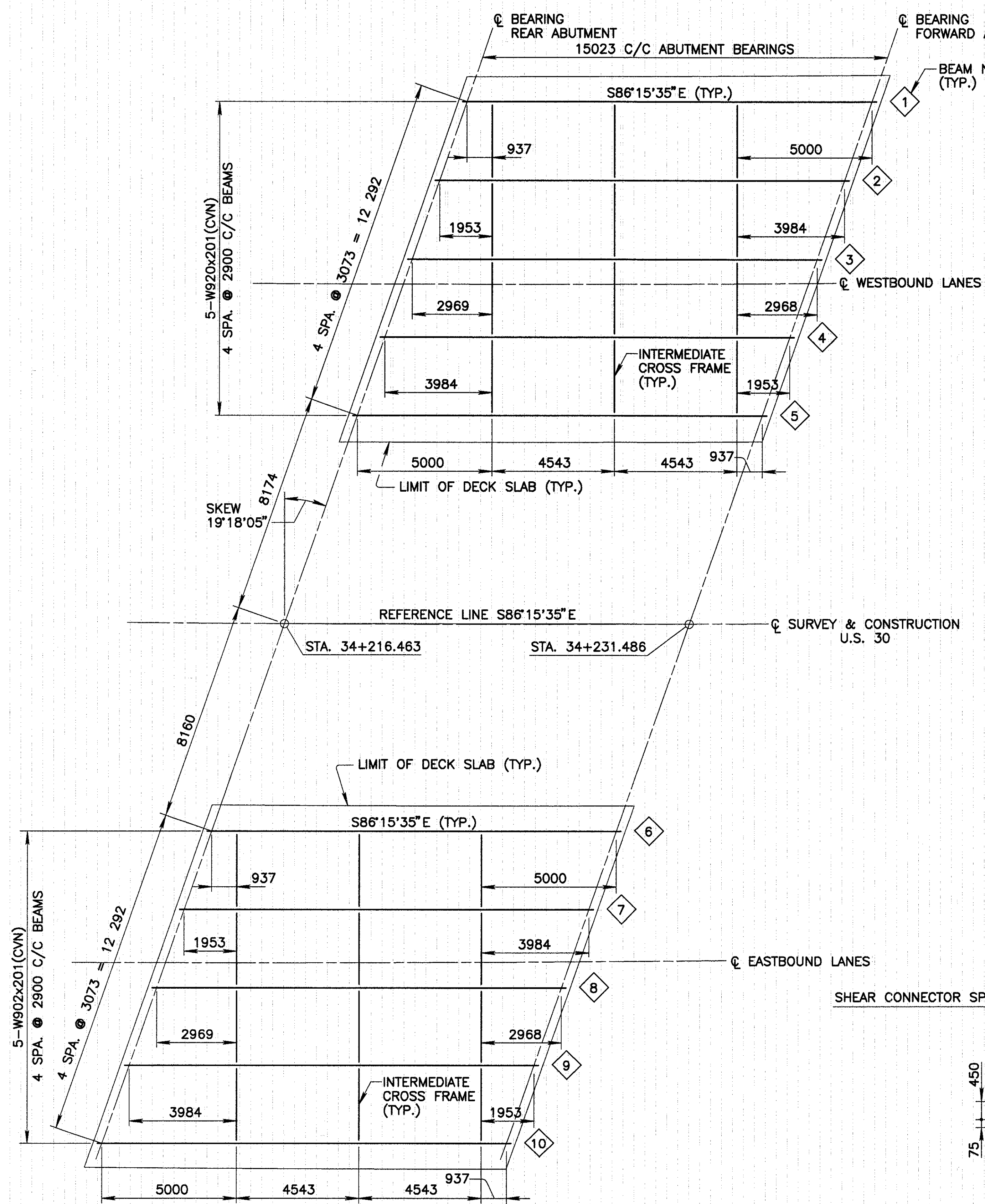
**SUPERSTRUCTURE LEGEND:**

- ALT - ALTERNATE
- B - BOTTOM
- c/c - CENTER TO CENTER
- CJ - CONSTRUCTION JOINT
- CVN - MATERIAL SHALL MEET MINIMUM NOTCH TOUGHNESS REQUIREMENTS
- DIA - DIAMETER
- FF - FAR FACE
- HS - HIGH STRENGTH
- HORIZ - HORIZONTAL
- MIN - MINIMUM
- NF - NEAR FACE
- P.E.J.F. - PREFORMED EXPANSION JOINT FILLER
- SPA - SPACES
- T - TOP
- TYP - TYPICAL
- VERT - VERTICAL



**TYPICAL PARAPET SECTION**





- NOTES:**
- FOR ADDITIONAL SUPERSTRUCTURE NOTES AND LEGEND SEE SHEET [8/13].
  - SEE SECTION S7 ON SHEET [10/13] FOR BEAM END DETAIL.
  - BEAMS ARE ALIGNED PARALLEL TO THE REFERENCE LINE.

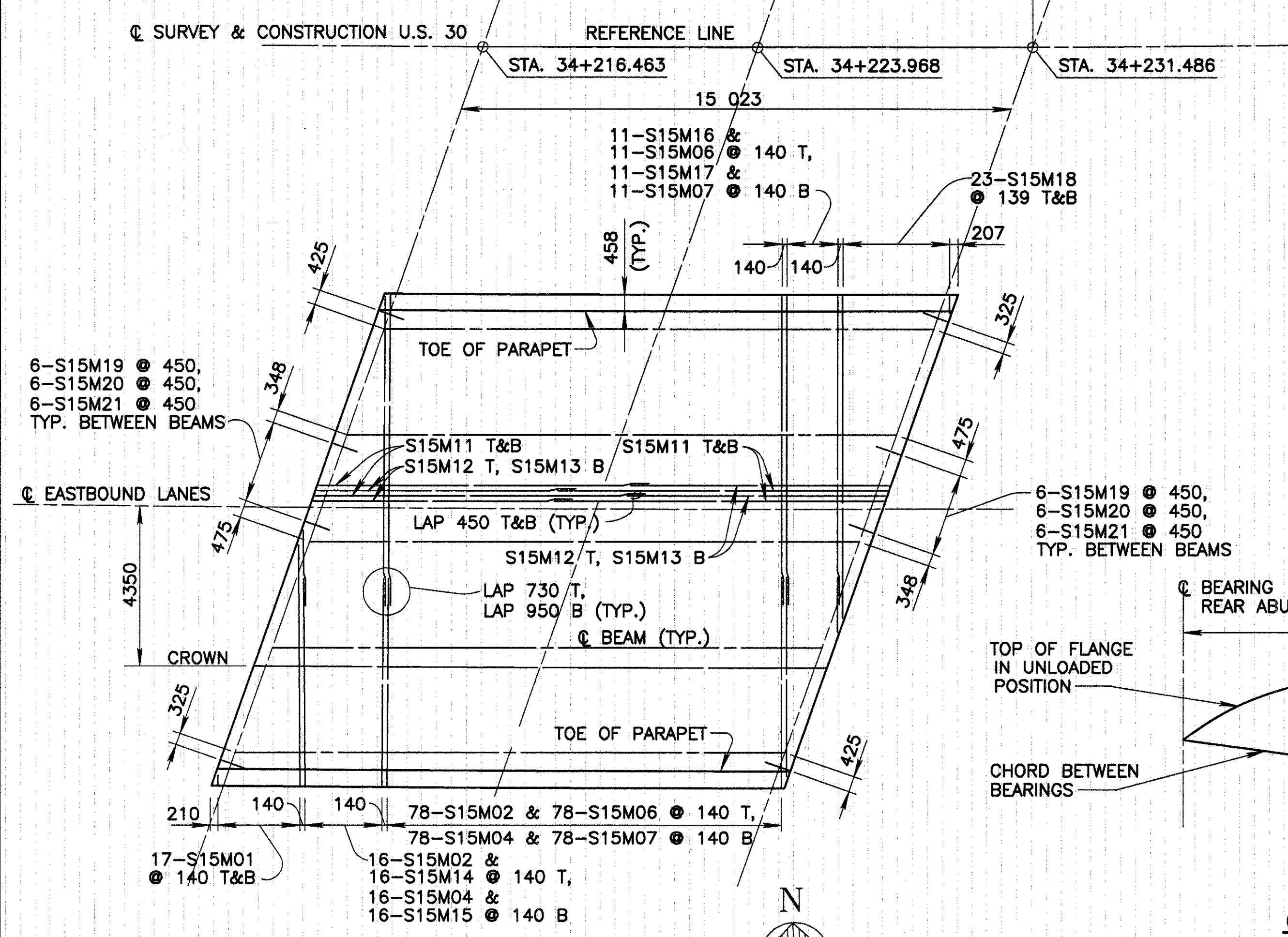
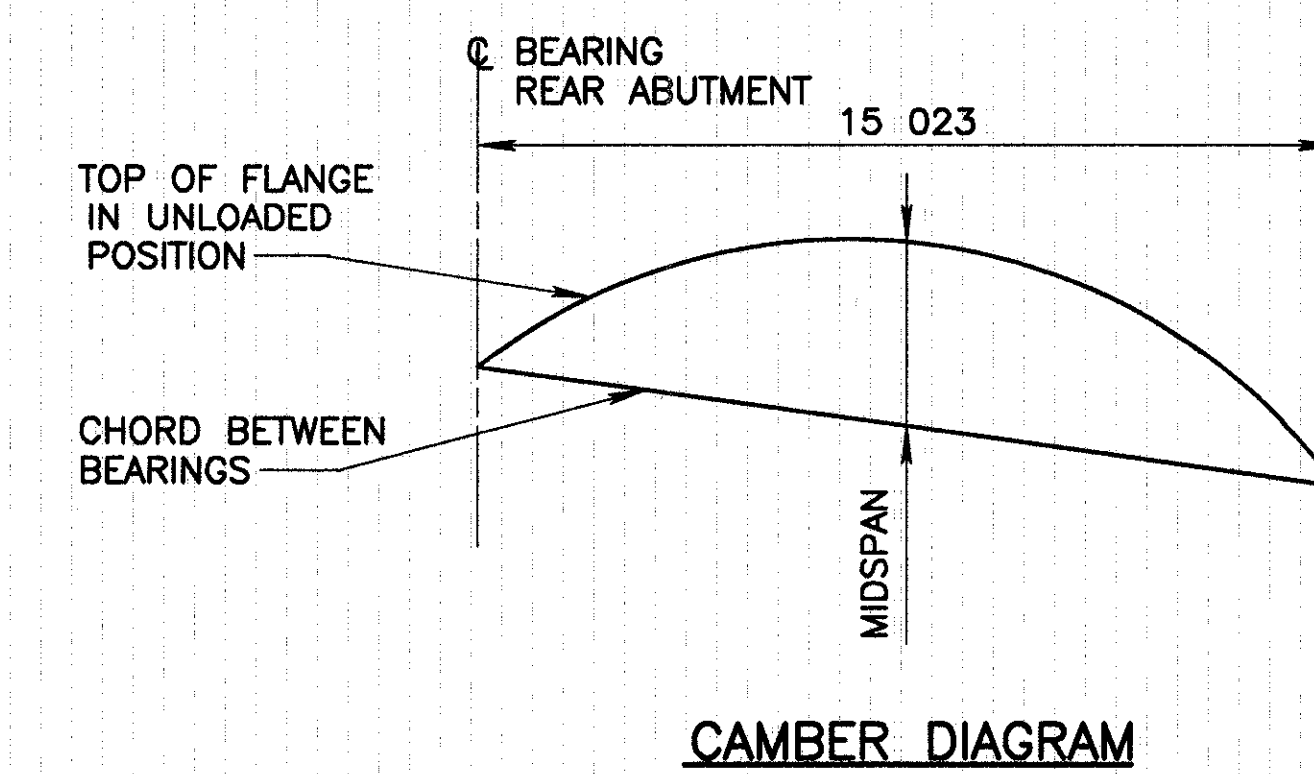
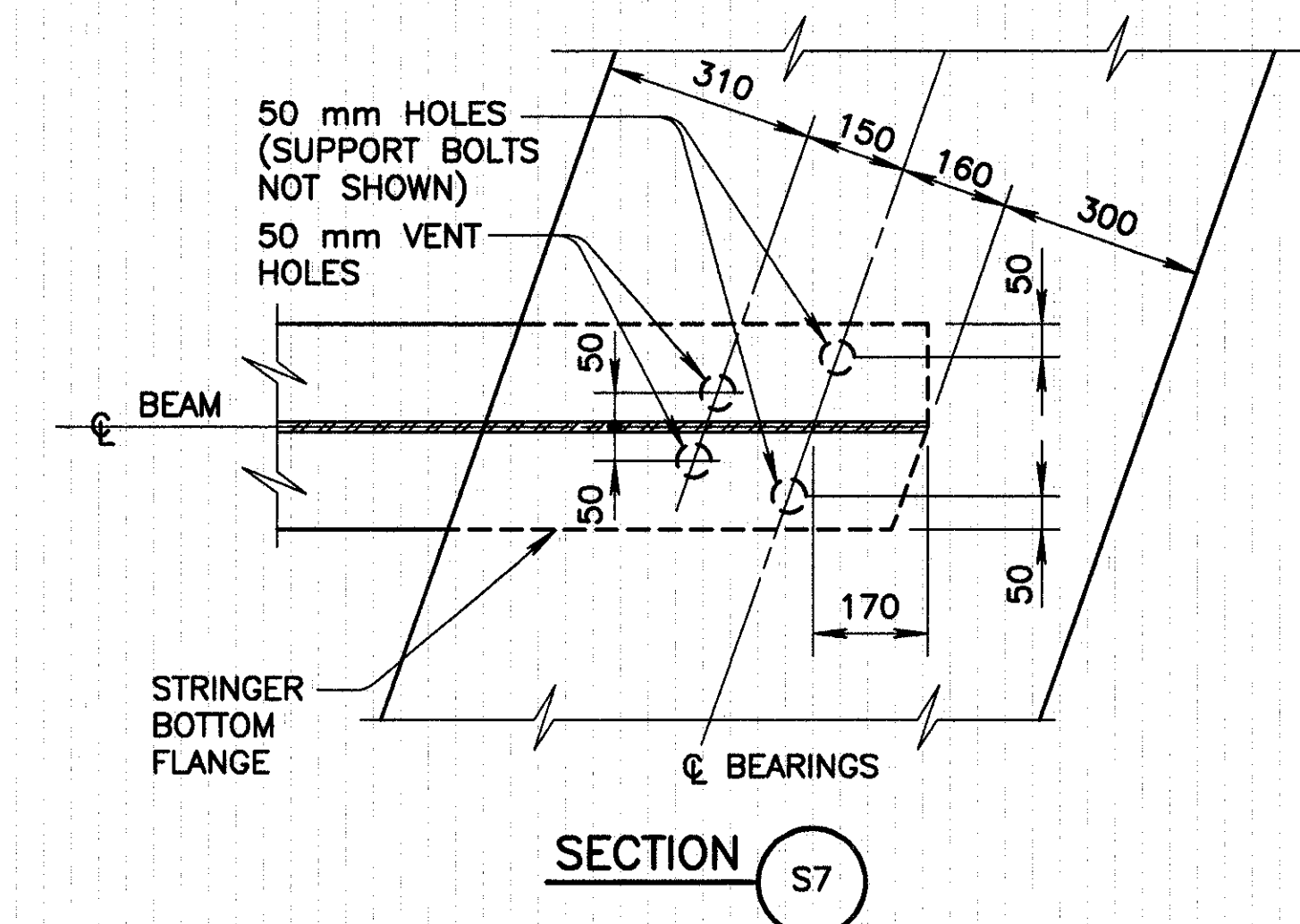
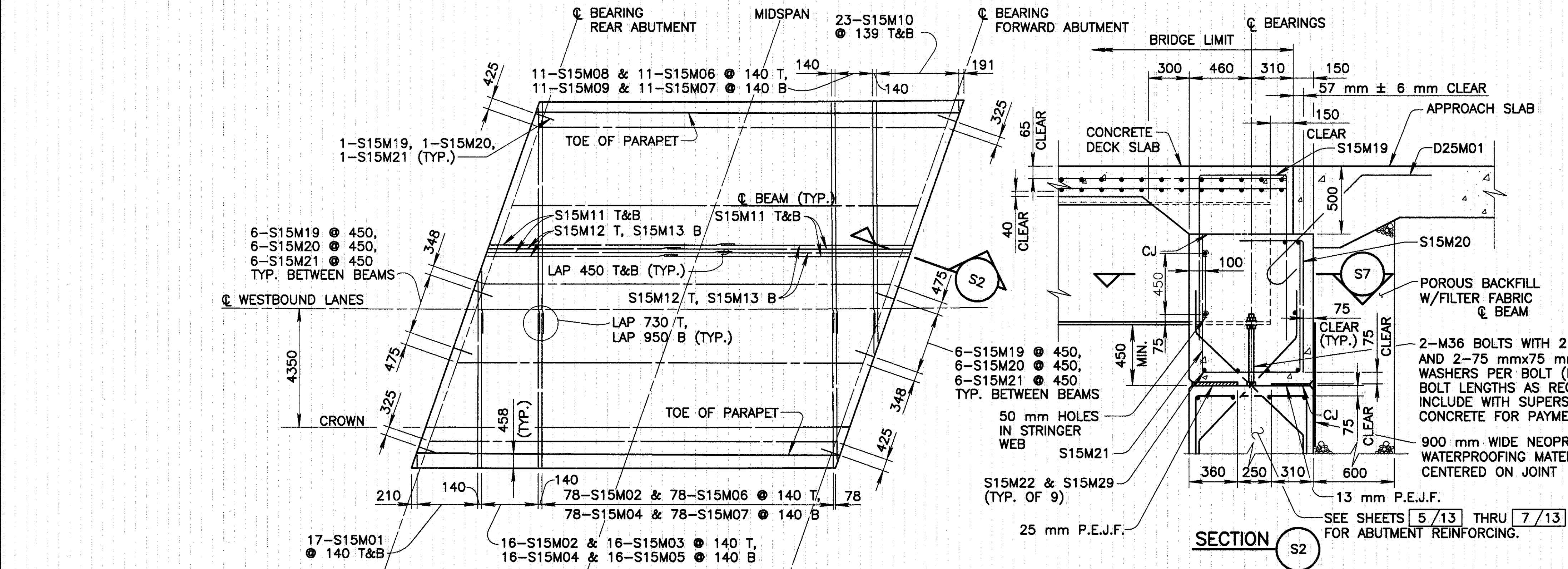
**TABLE OF SCREED ELEVATIONS**

	☉ BEARING REAR ABUTMENT	MIDSPAN	☉ BEARING FORWARD ABUTMENT
LEFT BRIDGE			
LEFT TOE/PARAPET	340.621	340.566	340.476
☉ BEAM NO.1	340.640	340.586	340.498
☉ BEAM NO.2	340.760	340.707	340.618
☉ BEAM NO.3	340.879	340.827	340.738
☉ BEAM NO.4	340.999	340.946	340.858
CROWN	341.083	341.031	340.942
☉ BEAM NO.5	341.075	341.022	340.933
RIGHT TOE/PARAPET	341.056	341.003	340.916
RIGHT BRIDGE			
LEFT TOE/PARAPET	341.047	340.996	340.911
☉ BEAM NO.6	341.068	341.016	340.932
☉ BEAM NO.7	341.187	341.137	341.051
☉ BEAM NO.8	341.306	341.256	341.171
CROWN	341.431	341.384	341.300
☉ BEAM NO.9	341.422	341.374	341.289
☉ BEAM NO.10	341.352	341.306	341.224
RIGHT TOE/PARAPET	341.335	341.287	341.204

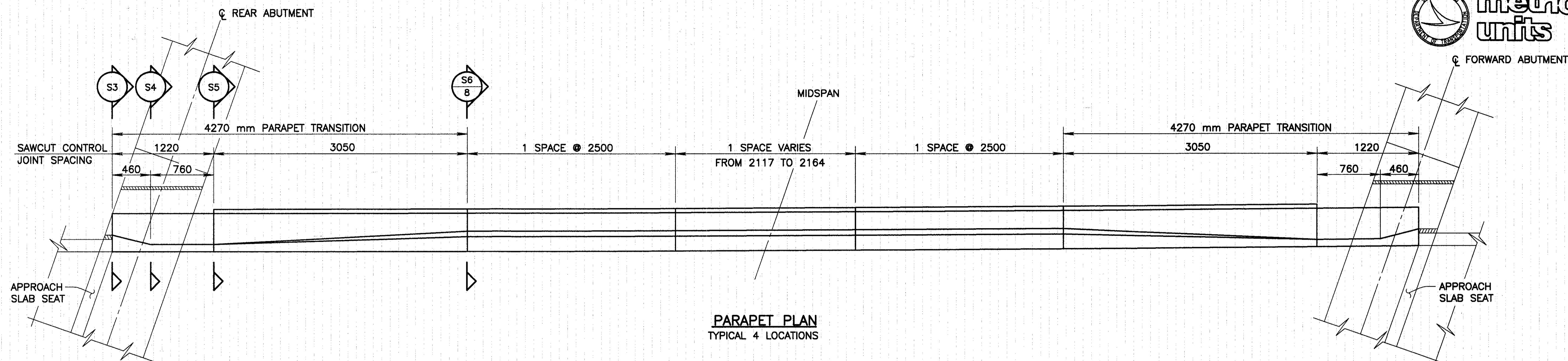
NOTE: SCREED ELEVATIONS SHOWN ARE FOR THE DECK SLAB SURFACE PRIOR TO CONCRETE PLACEMENT. ALLOWANCE HAS BEEN MADE FOR ANTICIPATED CALCULATED DEAD LOAD DEFLECTIONS.

**DEFLECTION AND CAMBER**

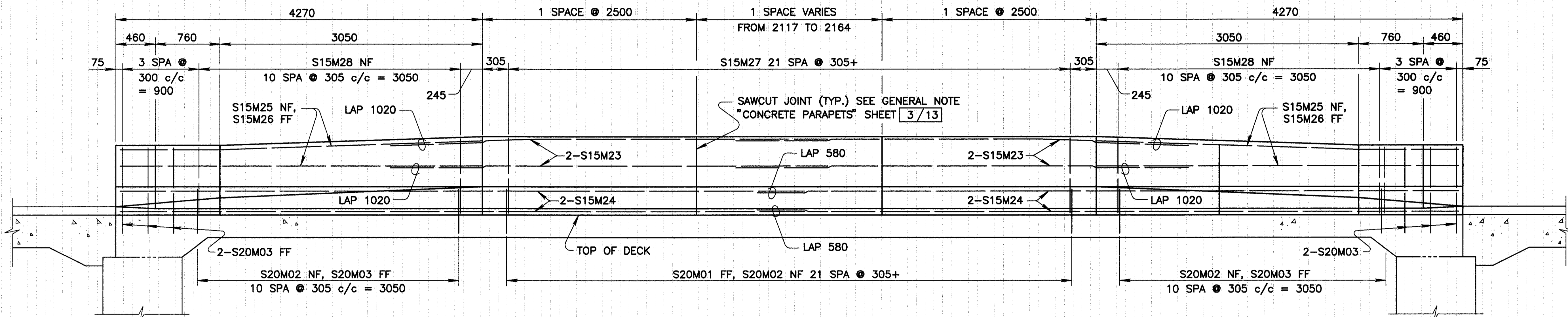
BEAM	MIDSPAN	
BEAM 1	DEFLECTION DUE TO WEIGHT OF STEEL	2
	DEFLECTION DUE TO REMAINING DEAD LOAD	19
	ADJUSTMENT REQUIRED FOR CURVATURE	1
REQUIRED SHOP CAMBER		22
BEAM 2	DEFLECTION DUE TO WEIGHT OF STEEL	2
	DEFLECTION DUE TO REMAINING DEAD LOAD	18
	ADJUSTMENT REQUIRED FOR CURVATURE	1
REQUIRED SHOP CAMBER		21
BEAM 3	DEFLECTION DUE TO WEIGHT OF STEEL	2
	DEFLECTION DUE TO REMAINING DEAD LOAD	18
	ADJUSTMENT REQUIRED FOR CURVATURE	1
REQUIRED SHOP CAMBER		21
BEAM 4	DEFLECTION DUE TO WEIGHT OF STEEL	2
	DEFLECTION DUE TO REMAINING DEAD LOAD	18
	ADJUSTMENT REQUIRED FOR CURVATURE	1
REQUIRED SHOP CAMBER		21
BEAM 5	DEFLECTION DUE TO WEIGHT OF STEEL	2
	DEFLECTION DUE TO REMAINING DEAD LOAD	19
	ADJUSTMENT REQUIRED FOR CURVATURE	2
REQUIRED SHOP CAMBER		23
BEAM 6	DEFLECTION DUE TO WEIGHT OF STEEL	2
	DEFLECTION DUE TO REMAINING DEAD LOAD	19
	ADJUSTMENT REQUIRED FOR CURVATURE	1
REQUIRED SHOP CAMBER		22
BEAM 7	DEFLECTION DUE TO WEIGHT OF STEEL	2
	DEFLECTION DUE TO REMAINING DEAD LOAD	18
	ADJUSTMENT REQUIRED FOR CURVATURE	1
REQUIRED SHOP CAMBER		21
BEAM 8	DEFLECTION DUE TO WEIGHT OF STEEL	2
	DEFLECTION DUE TO REMAINING DEAD LOAD	18
	ADJUSTMENT REQUIRED FOR CURVATURE	1
REQUIRED SHOP CAMBER		21
BEAM 9	DEFLECTION DUE TO WEIGHT OF STEEL	2
	DEFLECTION DUE TO REMAINING DEAD LOAD	18
	ADJUSTMENT REQUIRED FOR CURVATURE	1
REQUIRED SHOP CAMBER		21
BEAM 10	DEFLECTION DUE TO WEIGHT OF STEEL	2
	DEFLECTION DUE TO REMAINING DEAD LOAD	19
	ADJUSTMENT REQUIRED FOR CURVATURE	2
REQUIRED SHOP CAMBER		23



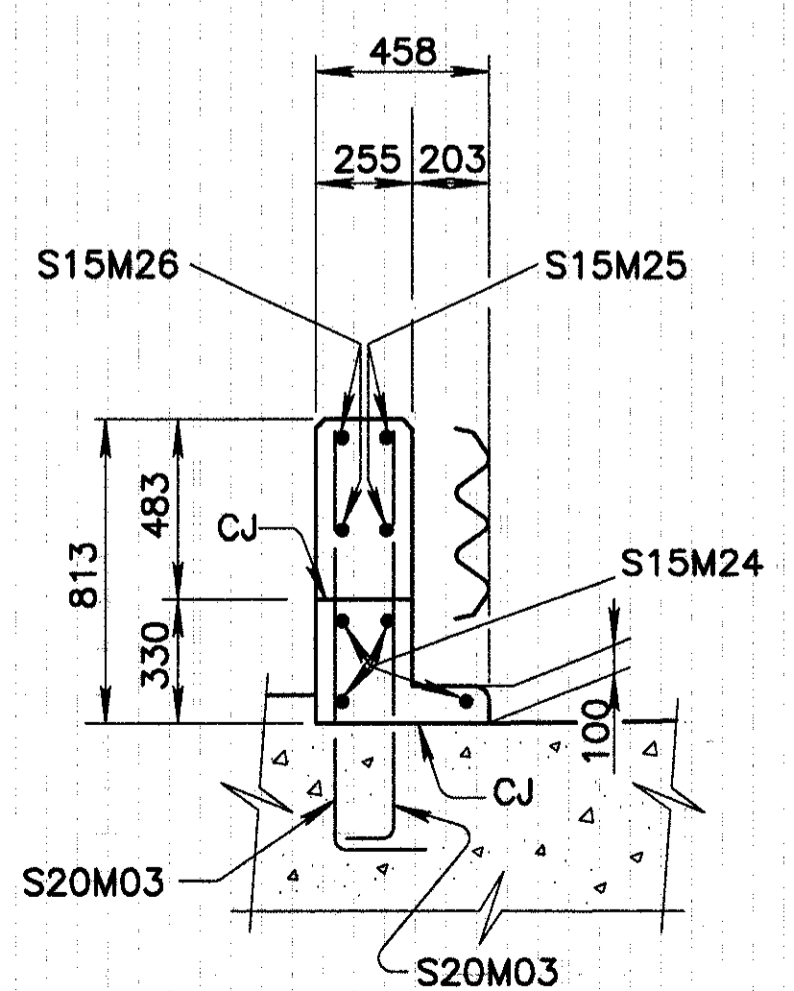
- SUPERSTRUCTURE NOTES:**
- FIELD BEND LONGITUDINAL REINFORCING STEEL TO CONFORM TO CURVE OF DECK. FOR LONGITUDINAL REINFORCING SPACING, SEE TRANSVERSE SECTION, SHEET [ 8 / 13 ] .
  - TRANSVERSE REINFORCING IS TO BE PLACED RADIALLY ALONG THE CURVE. ALL LONGITUDINAL DIMENSIONS ARE MEASURED ALONG THE EDGES OF THE DECK.
  - THE CONTRACTOR MAY PLACE THE TRANSVERSE REINFORCING STEEL BARS BEFORE INSTALLING THE WELDED STUD SHEAR CONNECTORS WHICH MAY BE LOCATED 40 mm FROM PRESCRIBED SPACING TO AVOID INTERFERENCE.
  - FOR ADDITIONAL SUPERSTRUCTURE NOTES AND LEGEND SEE SHEET [ 8 / 13 ] .



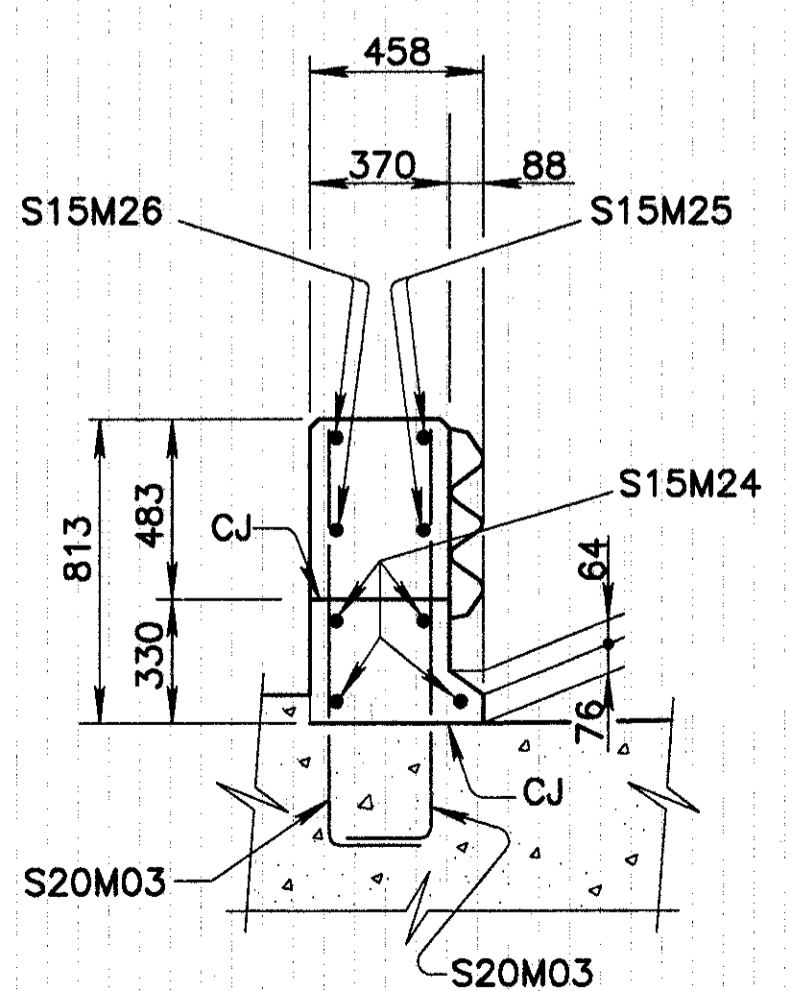
**PARAPET PLAN**  
TYPICAL 4 LOCATIONS



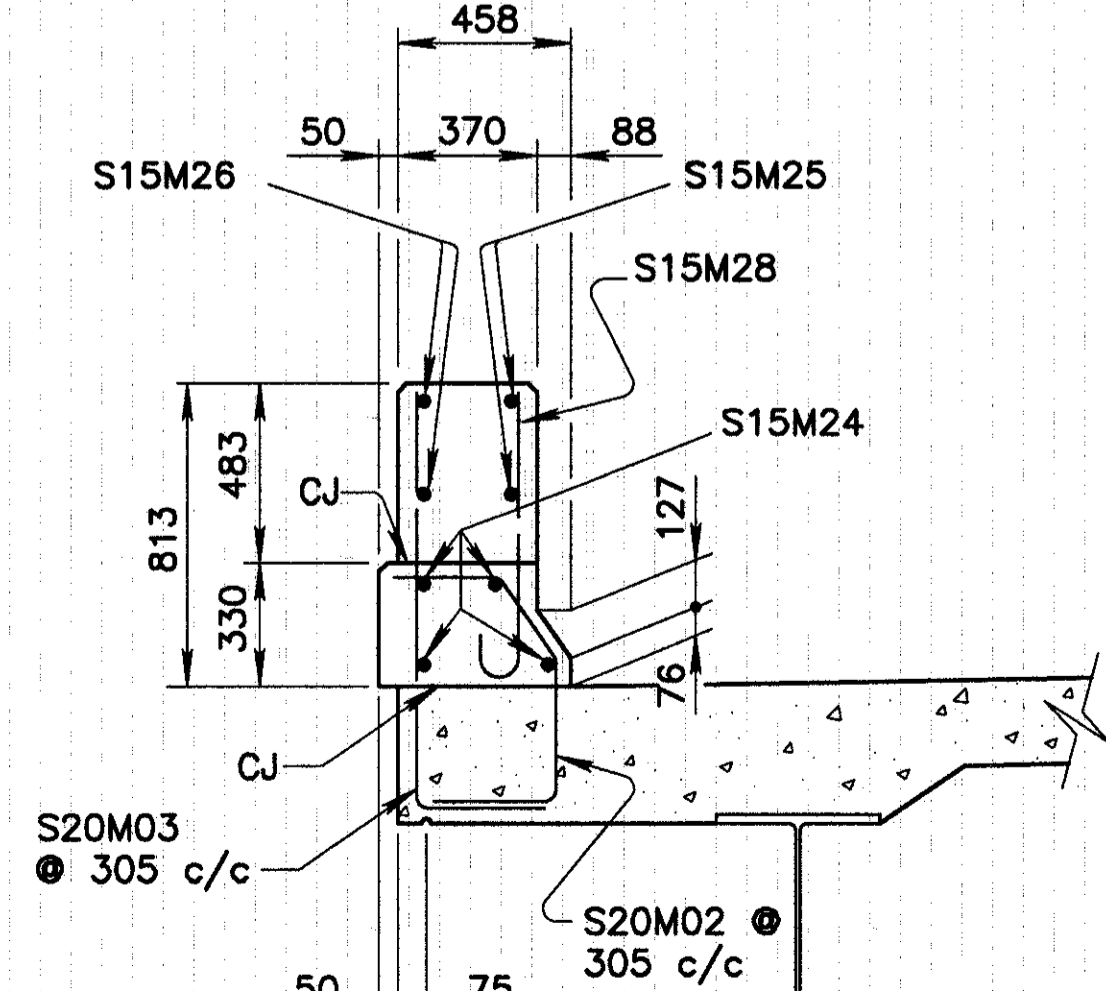
**PARAPET ELEVATION**  
TYPICAL 4 LOCATIONS



**SECTION S3**



**SECTION S4**



**SECTION S5**

NOTE: FOR SUPERSTRUCTURE NOTES AND LEGEND SEE SHEET 8/13.

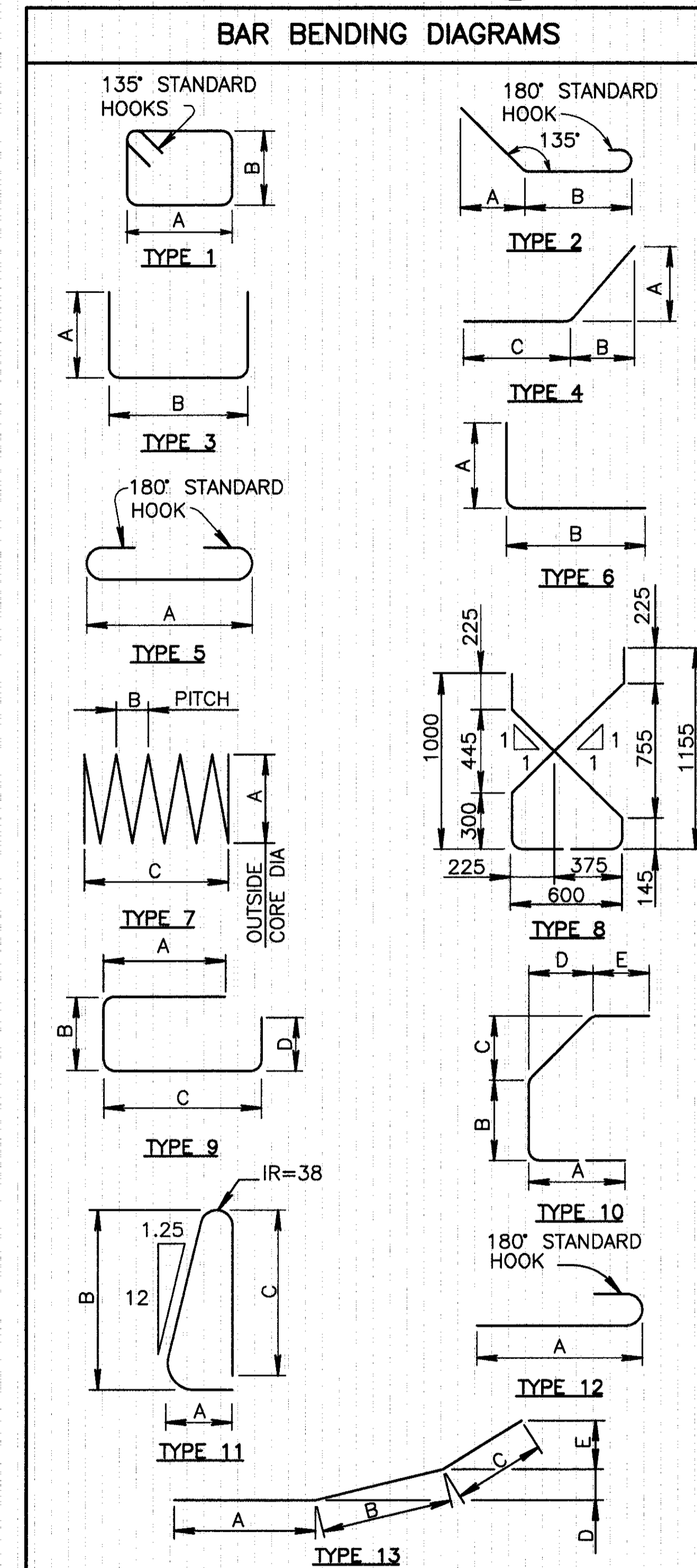
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CHECKED	TEU	REVIEWED	GWM
DRAWN	RTP	STRUCTURE FILE NUMBER	7603673 L & 7603681 R

**SUPERSTRUCTURE DETAILS**  
BRIDGE No. STA-30-29254 L&R  
U.S. 30 OVER WHEELING & LAKE ERIE RAILWAY

**STA-30-27.696**

REINFORCING STEEL LIST										
MARK	NO.	LENGTH	WEIGHT	TYPE	A	B	C	D	E	NOTE
<b>REAR ABUTMENT</b>										
A10M01	30	2435	57	1	740	515				
A15M01	6	3160	30	1	770	770				
A15M02	54	3720	315	1	1050	770				
A15M03	12	8840	167	STR						
A15M04	SER	1	2290	3	800	770				1
		TO	13	DIMENSION A VARIES BY 200						
		3	3090	3	1200	770				1
A15M05	10	2890	45	3	1100	770				
A15M06	SER	1	2570	3	940	770				1
		TO	35	DIMENSION A VARIES BY 220						
		6	4770	3	2040	770				1
A15M07	1	4890	8	3	2100	770				
A15M08	2	4300	14	STR						
A15M09	2	3800	12	STR						
A15M10	2	2850	9	STR						
A15M11	2	1900	6	STR						
A15M12	2	950	3	STR						
A15M13	2	4300	14	STR						
A15M14	SER	1	2610	3	960	770				1
		TO	15	DIMENSION A VARIES BY 240						
		3	3570	3	1440	770				1
A15M15	SER	1	3010	3	1160	770				1
		TO	17	DIMENSION A VARIES BY 240						
		3	3970	3	1640	770				1
A15M16	2	3150	10	STR						
A15M17	2	2650	9	STR						
A15M18	2	1800	6	STR						
A15M19	2	950	3	STR						
A15M20	2	3100	10	STR						
A20M01	46	4055	440	8	770	300	770	255		
A25M01	12	9092	428	STR						
A25M02	12	9120	430	STR						
TOTAL = 2096 KILOGRAM										
<b>FORWARD ABUTMENT</b>										
B10M01	30	2435	57	1	740	515				
B15M01	6	3160	30	1	770	770				
B15M02	54	3720	315	1	1050	770				
B15M03	12	8856	167	STR						
B15M04	SER	1	2290	3	800	770				1
		TO	13	DIMENSION A VARIES BY 180						
		3	3010	3	1160	770				1
B15M05	11	2890	50	3	1100	770				
B15M06	SER	1	2570	3	940	770				1
		TO	20	DIMENSION A VARIES BY 220						
		4	3770	3	1540	770				1
B15M07	1	3970	6	3	1640	770				
B15M08	2	3300	11	STR						
B15M09	2	2800	9	STR						
B15M10	2	1850	6	STR						
B15M11	2	900	3	STR						
B15M12	2	3300	11	STR						
B15M13	SER	1	2410	3	860	770				1
		TO	13	DIMENSION A VARIES BY 190						
		3	3170	3	1240	770				1
B15M14	SER	1	2690	3	1000	770				1
		TO	36	DIMENSION A VARIES BY 220						
		6	4890	3	2100	770				1
B15M15	2	3700	12	STR						
A15M16	3	3200	10	STR						
B15M17	2	2300	7	STR						
B15M18	2	1400	5	STR						
B15M19	2	550	2	STR						
B15M20	2	4150	13	STR						
B20M01	46	4055	440	8	770	300	770	255		
B25M01	12	9108	429	STR						
B25M02	12	9136	431	STR						
TOTAL = 2096 KILOGRAM										

REINFORCING STEEL LIST										
MARK	NO.	LENGTH	WEIGHT	TYPE	A	B	C	D	E	NOTE
<b>SUPERSTRUCTURE</b>										
S15M01	SER	2	400	STR						1
		TO	192	DIMENSION A VARIES BY 400						
S15M02	94	5650	834	STR						
S15M04	94	6550	967	STR						
S15M06	89	8500	1188	STR						
S15M07	89	7825	1094	STR						
S15M11	88	9000	244	STR						
S15M12	34	7050	377	STR						
S15M13	54	7200	611	STR						
S15M14	SER	1	2550	STR						1
		TO	139	DIMENSION A VARIES BY 400						
S15M15	SER	1	1850	STR						1
		TO	122	DIMENSION A VARIES BY 400						
S15M16	SER	1	1300	STR						1
		TO	57	DIMENSION A VARIES BY 400						
S15M17	SER	1	2200	STR						1
		TO	73	DIMENSION A VARIES BY 400						
S15M18	SER	2	250	STR						1
		TO	336	DIMENSION A VARIES BY 400						
S15M19	52	3600	294	3	1520	620				
S15M20	52	1450	119	6	460	1020				
S15M21	52	2700	221	3	1000	770				
S15M22	18	6400	181	STR						
S15M23	16	5275	133	STR						
S15M24	16	8100	204	STR						
S15M25	8	4225	53	13	3050	738	432	38	127	
S15M26	8	4225	53	STR						
S15M27	44	825	253	11	765	840	1.25	205	38	
S15M28	48	900	68	12	713					
S15M29	18	9350	264	STR						
S20M01	44	750	89	6	280	515				
S20M02	94	850	188	10	125	300	216	152	230	
S20M03	68	1250	200	6	280	1000				
D25M01	62	1750	426	2	305	1015				
TOTAL = 8980 KILOGRAM										

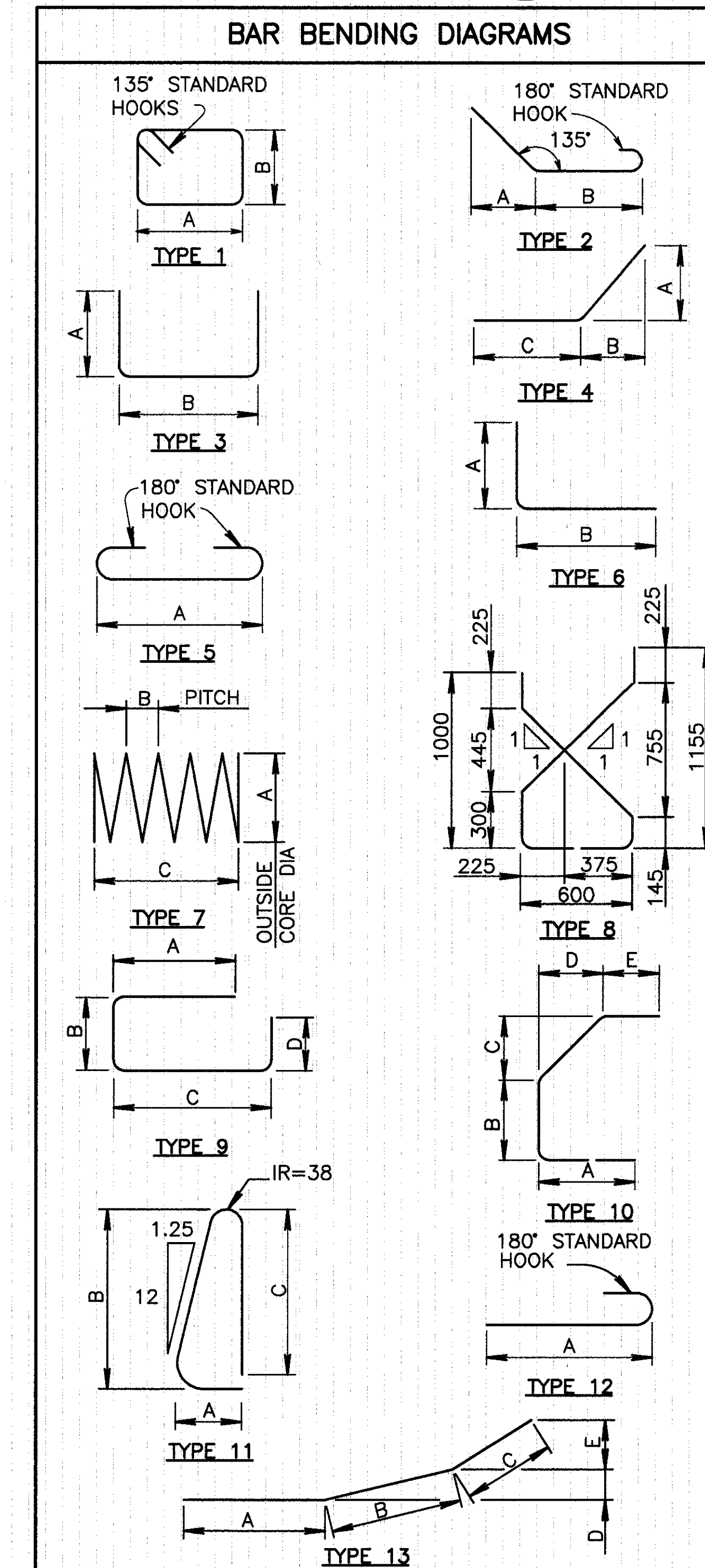


**REINFORCING STEEL NOTES:**

- SERIES BARS - EACH BAR VARIES BY TABULATED AMOUNTS.
- ALL DIMENSIONS ARE OUT TO OUT.
- TYPE 'STR' INDICATES A STRAIGHT BAR.
- THE BAR SIZE NUMBER IS SPECIFIED IN THE 'MARK' COLUMN. THE FIRST TWO DIGITS INDICATE THE BAR SIZE NUMBER. FOR EXAMPLE, A15M01 IS A 15M BAR SIZE.
- ALL BARS SHALL BE EPOXY COATED.
- SPACERS CONCRETE SPACERS OR OTHER APPROVED NONCORROSIVE SPACING DEVICES SHALL BE USED AT SUFFICIENT INTERVALS (NEAR THE BOTTOM AND AT INTERVALS NOT EXCEEDING 3050 mm) TO INSURE CONCENTRIC SPACING FOR THE ENTIRE CAGE LENGTH. SPACERS SHALL BE CONSTRUCTED OF APPROVED MATERIAL EQUAL IN QUALITY AND DURABILITY TO THE CONCRETE SPECIFIED FOR THE SHAFT. THE SPACERS SHALL HAVE ADEQUATE DIMENSIONS TO ENSURE A MINIMUM 75 mm CLEAR SPACE BETWEEN THE OUTSIDE OF THE REINFORCING CAGE AND THE DESIGN DIMENSION OF THE DRILLED SHAFT OR COLUMN. CYLINDRICAL CONCRETE FEET (BOTTOM SUPPORTS) SHALL BE PROVIDED TO ENSURE THAT THE BOTTOM OF THE CAGE IS MAINTAINED AT THE PROPER DISTANCE ABOVE THE BASE.

REINFORCING STEEL LIST										
MARK	NO.	LENGTH	WEIGHT	TYPE	A	B	C	D	E	NOTE
<b>REAR ABUTMENT</b>										
A10M01	30	2435	57	1	740	515				
A15M01	6	3160	30	1	770	770				
A15M02	54	3720	315	1	1050	770				
A15M03	12	8840	167	STR						
A15M04	SER	TO	13		DIMENSION A VARIES BY 200					1
	3	3090		3	1200	770				
A15M05	10	2890	45	3	1100	770				
A15M06	SER	TO	35		DIMENSION A VARIES BY 220					1
	6	4770		3	2040	770				
A15M07	1	4890	8	3	2100	770				
A15M08	2	4300	14	STR						
A15M09	2	3800	12	STR						
A15M10	2	2850	9	STR						
A15M11	2	1900	6	STR						
A15M12	2	950	3	STR						
A15M13	2	4300	14	STR						
A15M14	SER	TO	15		DIMENSION A VARIES BY 240					1
	3	3570		3	1440	770				
	1	3010		3	1160	770				
A15M15	SER	TO	17		DIMENSION A VARIES BY 240					1
	3	3970		3	1640	770				
A15M16	2	3150	10	STR						
A15M17	2	2650	9	STR						
A15M18	2	1800	6	STR						
A15M19	2	950	3	STR						
A15M20	2	3100	10	STR						
A20M01	46	4055	440	8	770	300	770	255		
A25M01	12	9092	428	STR						
A25M02	12	9120	430	STR						
TOTAL = 2096 KILOGRAM										
<b>FORWARD ABUTMENT</b>										
B10M01	30	2435	57	1	740	515				
B15M01	6	3160	30	1	770	770				
B15M02	54	3720	315	1	1050	770				
B15M03	12	8856	167	STR						
B15M04	SER	TO	13		DIMENSION A VARIES BY 180					1
	3	3010		3	1160	770				
B15M05	11	2890	50	3	1100	770				
B15M06	SER	TO	20		DIMENSION A VARIES BY 220					1
	4	3770		3	1540	770				
B15M07	1	3970	6	3	1640	770				
B15M08	2	3300	11	STR						
B15M09	2	2800	9	STR						
B15M10	2	1850	6	STR						
B15M11	2	900	3	STR						
B15M12	2	3300	11	STR						
B15M13	SER	TO	13		DIMENSION A VARIES BY 190					1
	3	3170		3	1240	770				
	1	2690		3	1000	770				
B15M14	SER	TO	36		DIMENSION A VARIES BY 220					1
	6	4890		3	2100	770				
B15M15	2	3700	12	STR						
A15M16	3	3200	10	STR						
B15M17	2	2300	7	STR						
B15M18	2	1400	5	STR						
B15M19	2	550	2	STR						
B15M20	2	4150	13	STR						
B20M01	46	4055	440	8	770	300	770	255		
B25M01	12	9108	429	STR						
B25M02	12	9136	431	STR						
TOTAL = 2096 KILOGRAM										

REINFORCING STEEL LIST										
MARK	NO.	LENGTH	WEIGHT	TYPE	A	B	C	D	E	NOTE
<b>SUPERSTRUCTURE</b>										
S15M01	2	400		STR						1
	SER	TO	192		DIMENSION A VARIES BY 400					
	17	6800		STR						1
S15M02	94	5650	834	STR						
S15M03	1	2325		STR						1
	SER	TO	134		DIMENSION A VARIES BY 400					
	16	8325		STR						1
S15M04	94	6550	967	STR						
S15M05	1	1650		STR						1
	SER	TO	117		DIMENSION A VARIES BY 400					
	16	7650		STR						1
S15M06	89	8500	1188	STR						
S15M07	89	7825	1094	STR						
S15M08	1	1550		STR						1
	SER	TO	60		DIMENSION A VARIES BY 385					
	11	5400		STR						1
S15M09	1	2450		STR						1
	SER	TO	76		DIMENSION A VARIES BY 385					
	11	6300		STR						1
	2	325		STR						1
S15M10	SER	TO	329		DIMENSION A VARIES BY 385					
	23	8795		STR						1
S15M11	88	9000	244	STR						
S15M12	34	7050	377	STR						
S15M13	54	7200	611	STR						
S15M19	52	3600	294	3	1520	620				
S15M20	52	1450	119	6	460	1020				
S15M21	52	2700	221	3	1000	770				
S15M22	18	6400	181	STR						
S15M23	16	5275	133	STR						
S15M24	16	8100	204	STR						
S15M25	8	4225	53	13	3050	738	432	38	127	
S15M26	8	4225	53	STR						
S15M27	44	825	253	11	765	840	1.25	205	38	
S15M28	48	900	68	12	713					
S15M29	18	9350	264	STR						
S20M01	44	750	89	6	280	515				
S20M02	94	850	188	10	125	300	216	152	230	
S20M03	68	1250	200	6	280	1000				
D25M01	62	1750	426	2	305	1015				
TOTAL = 8848 KILOGRAM										


**REINFORCING STEEL NOTES:**

- SERIES BARS - EACH BAR VARIES BY TABULATED AMOUNTS.
- ALL DIMENSIONS ARE OUT TO OUT.
- TYPE 'STR' INDICATES A STRAIGHT BAR.
- THE BAR SIZE NUMBER IS SPECIFIED IN THE 'MARK' COLUMN. THE FIRST TWO DIGITS INDICATE THE BAR SIZE NUMBER. FOR EXAMPLE, A15M01 IS A 15M BAR SIZE.
- ALL BARS SHALL BE EPOXY COATED.
- SPACERS CONCRETE SPACERS OR OTHER APPROVED NONCORROSIVE SPACING DEVICES SHALL BE USED AT SUFFICIENT INTERVALS (NEAR THE BOTTOM AND AT INTERVALS NOT EXCEEDING 3050 mm) TO INSURE CONCENTRIC SPACING FOR THE ENTIRE CAGE LENGTH. SPACERS SHALL BE CONSTRUCTED OF APPROVED MATERIAL EQUAL IN QUALITY AND DURABILITY TO THE CONCRETE SPECIFIED FOR THE SHAFT. THE SPACERS SHALL HAVE ADEQUATE DIMENSIONS TO ENSURE A MINIMUM 75 mm CLEAR SPACE BETWEEN THE OUTSIDE OF THE REINFORCING CAGE AND THE DESIGN DIMENSION OF THE DRILLED SHAFT OR COLUMN. CYLINDRICAL CONCRETE FEET (BOTTOM SUPPORTS) SHALL BE PROVIDED TO ENSURE THAT THE BOTTOM OF THE CAGE IS MAINTAINED AT THE PROPER DISTANCE ABOVE THE BASE.