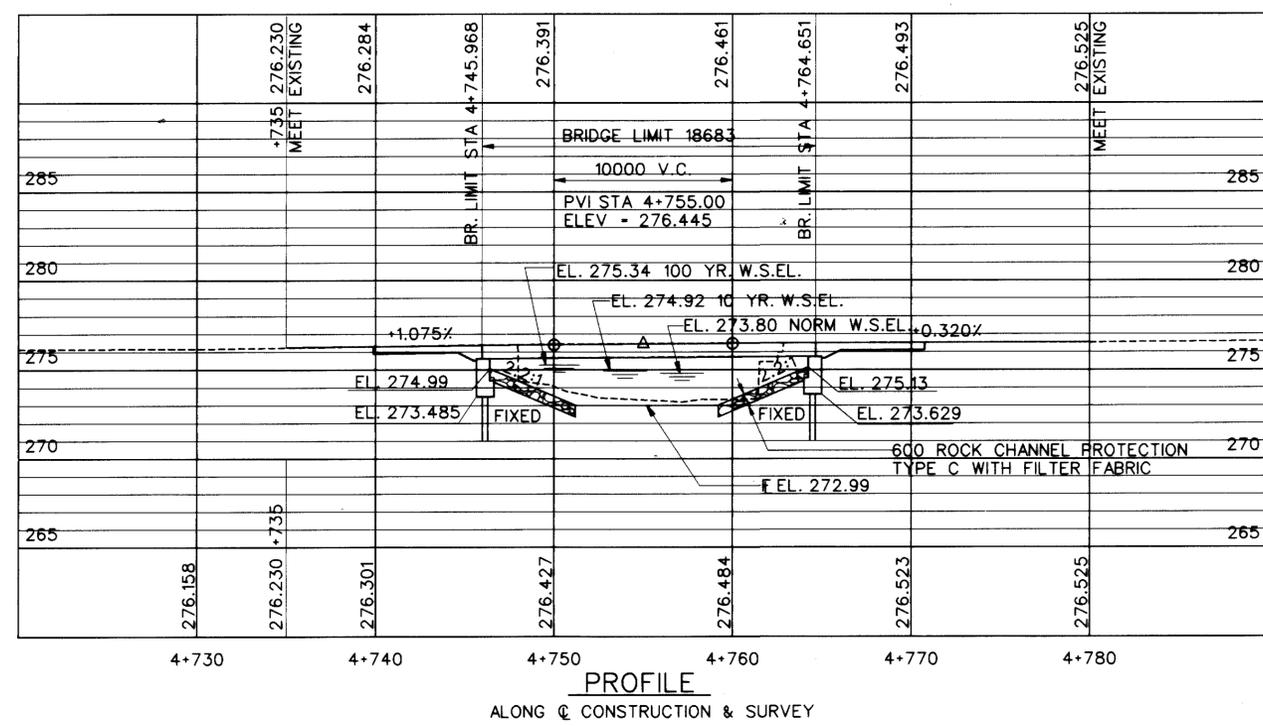
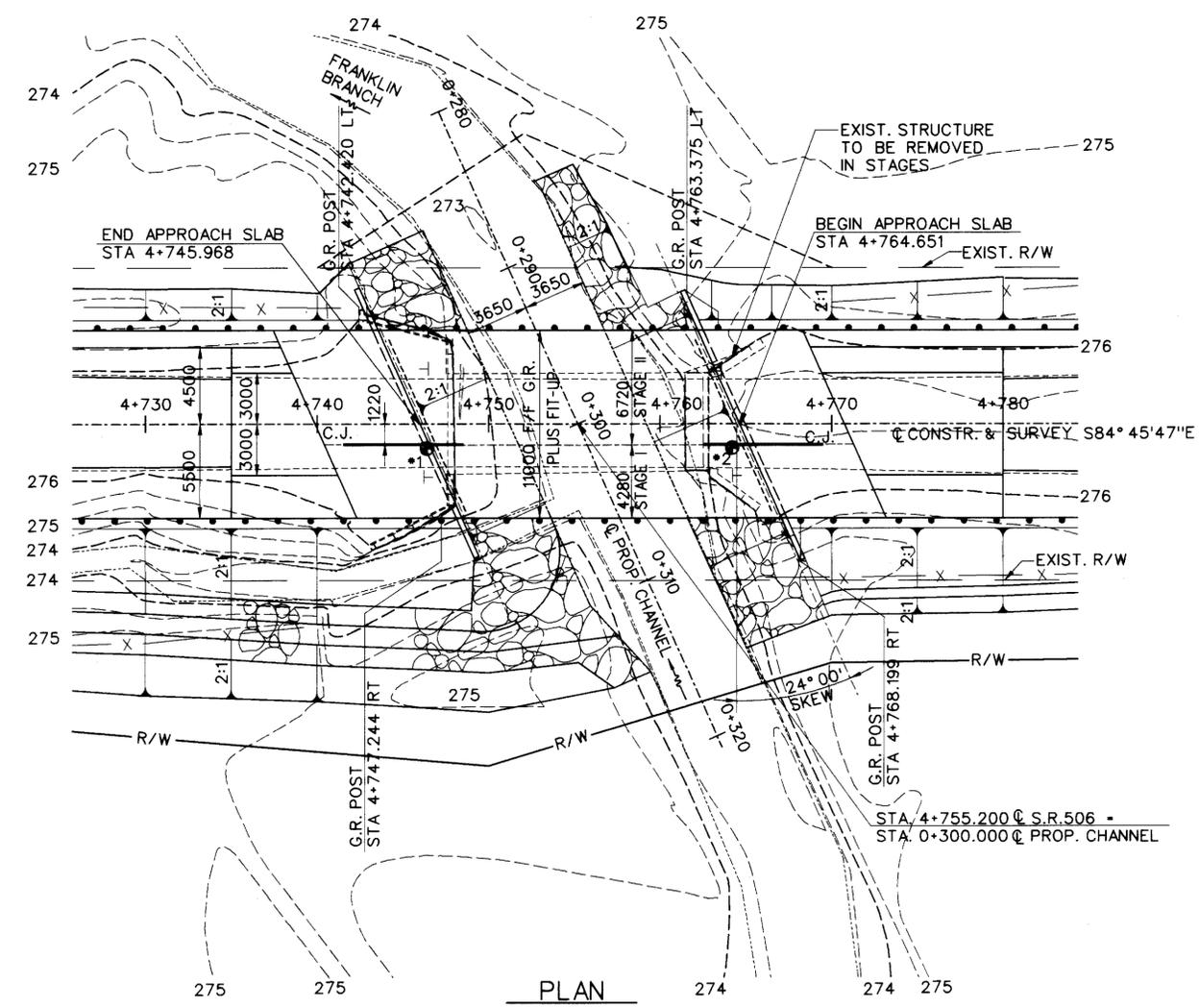


STATION OF FIRST GUARDRAIL POST OFF BRIDGE
STA. 4+742.420 LT.
STA. 4+747.244 RT.
STA. 4+763.375 LT.
STA. 4+768.199 RT.

BENCH MARK NO.1 ELEV. 275.622
STA. 4+650.5 28.4 LT
CROSS NOTCH CUT IN CONCRETE
BENCH MARK NO.2 ELEV. 274.970
STA. 4+782.45 24.9 LT
16mm IRON PIN SET

DESIGN YEAR ADT (2017)  
1442 VEHICLES PER DAY  
72 TRUCKS PER DAY



- NOTES:
- EARTHWORK LIMITS SHOWN ARE APPROXIMATE. ACTUAL SLOPES SHALL CONFORM TO PLAN CROSS-SECTIONS.
  - BRIDGE TERMINAL ASSEMBLY TYPE 4, WILL BE USED AT ALL FOUR CORNERS.
  - ALL STATIONS AND ELEVATIONS ARE IN METERS. ALL DIMENSIONS ARE IN MILLIMETERS.
- TEST BORING LOCATION

DRAINAGE AREA - 14.25 SQ. KILOMETERS
Q10 - 23.1 C.M.S.    Q100 - 41.5 C.M.S.
V10 - 1.06 M.P.S.    V100 - 1.48 M.P.S.

**EXISTING STRUCTURE**

TYPE: STONE WALL TYPE ABUTMENTS, CAPPED WITH CONCRETE, WITH TIMBER DECK ON STEEL BEAM SUPERSTRUCTURE.

SPAN: 15062 C. TO C. BEARINGS.  
ROADWAY: 5842 FACE TO FACE OF GUARDRAIL  
SKEW: NONE  
ALIGNMENT: TANGENT  
WEARING SURFACE: ASPHALT CONCRETE  
APPROACH SLAB: NONE  
STRUCTURE FILE NO: 3603962  
DATE BUILT: 1956

**PROPOSED STRUCTURE**

TYPE: SINGLE SPAN, NON-COMPOSITE BOX BEAM WITH REINFORCED CONCRETE SUBSTRUCTURE

SPAN: 18300 C.C. BRGS.  
ROADWAY: 11000 FACE TO FACE OF GUARDRAIL  
LOADING: MS 18-44 & THE ALTERNATE MILITARY LOADING  
SKEW: 24°-00' R.F.  
ALIGNMENT: TANGENT  
WEARING SURFACE: ASPHALT CONCRETE  
APPROACH SLAB: AS-1-81 (6100 LONG)  
NORMAL CROWN: 0.016  
N 39°-09'-36" LATITUDE  
E 83°-25'-55" LONGITUDE

ALL PILES ARE 300 mm CAST-IN-PLACE REINFORCED CONCRETE PILES

ESTIMATED AVERAGE PAY LENGTHS  
REAR ABUTMENT 30 METERS  
FORWARD ABUTMENT 24 METERS



**GENERAL NOTES**

REFERENCE SHALL BE MADE TO STANDARD DRAWINGS AND TO SUPPLEMENTAL SPECIFICATIONS

AS-1-81M DATED 10-25-94 865 DATED 1-6-98  
 DBR-2-73M RESIVED 8-18-95 911 DATED 9-9-97  
 PSBD-1-93M DATED 12-19-94 954 DATED 9-9-97  
 DS-1-94M DATED 12-15-94  
 DM-1.1M DATED 6-30-95

**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 DATA:**

DESIGN LOADING: MS18 AND THE ALTERNATE MILITARY LOADING

**DESIGN STRESSES:**

CONCRETE CLASS C - COMPRESSIVE STRENGTH 27.5 MPa(SUBSTRUCTURE)

REINFORCING STEEL - ASTM A615M, A616M, OR A617M  
 GRADE 420 MINIMUM YIELD STRENGTH 420 MPa

MILD REINFORCING STEEL FOR THE CONCRETE PRESTRESSED BEAMS GRADE 420, MIN. YIELD STRENGTH 420 MPa:

CONCRETE FOR PRESTRESSED BEAMS:  
 COMPRESSIVE STRENGTH - 38.0 MPa  
 UNIT STRESS - 15.2 MPa COMPRESSION/3.1 MPa TENSION

PRESTRESSING STRAND ASTM A416M GRADE 270, 12.7mm DIAMETER, SEVEN-WIRE, UNCOATED LOW RELAXATION STRAND  
 f's - 1860 MPa,  
 INTIAL STRESS 0.75f's (LOW RELAXATION STRANDS)

**DECK PROTECTION METHOD:**

EPOXY COATED REINFORCING STEEL  
 WATER PROOFING AND ASPHALT CONCRETE OVERLAY  
 STEEL DRIP STRIP.  
 SEALING OF CONCRETE DECK EDGES WITH EPOXY-URETHANE SEALER

**PILE DESIGN LOADS (ULTIMATE BEARING VALUE):**

THE ULTIMATE BEARING VALUE IS 333 KN PER PILE FOR THE 300mm ABUTMENT PILES REAR ABUTMENT PILES:  
 10 PILES 30 METERS LONG, ESTIMATED LENGTH  
 10 PILES OF ORDER LENGTH 18 METERS LONG  
 10 PILES OF ORDER LENGTH 13.5 METERS LONG  
 10 SPLICES

FORWARD ABUTMENT PILES  
 10 PILES 24 METERS LONG, ESTIMATED LENGTH  
 10 PILES OF ORDER LENGTH 18 METERS LONG  
 10 PILES OF ORDER LENGTH 7.5 METERS LONG  
 10 SPLICES

**UTILITY LINES:**

ALL EXPENSE INVOLVED IN RELOCATION OF THE AFFECTED UTILITY LINES SHALL BE BORNE BY THE OWNERS. THE CONTRACTOR AND OWNERS ARE REQUESTED TO COOPERATE BY ARRANGING THEIR WORK IN SUCH A MANNER THAT INCONVENIENCE TO EITHER WILL BE HELD TO A MINIMUM.

**ITEM 202 STRUCTURE REMOVED, OVER 6 METER SPAN, AS PER PLAN**

WHEN NO LONGER NEEDED TO MAINTAIN TRAFFIC, THE EXISTING STRUCTURE SHALL BE REMOVED IN STAGES AS SHOWN ON SHEET [4/11] UPON RECEIVING PERMISSION FROM THE ENGINEER.

**ITEM 503 COFFERDAMS, CRIBS AND SHEETING, AS PER PLAN**

IN ADDITION TO THE NORMAL REQUIRMENTS OF SECTION 503.03 OF THE CMS FOR THE CONSTRUCTION OF THE STRUCTURE, THE TEMPORARY SHORING REQUIRED TO SUPPORT THE EXISTING EMBANKMENT DURING PHASE CONSTRUCTION, AS SHOWN ON SHEETS [2/11], [5/11], AND [6/11] SHALL BE INCLUDED IN THE LUMP SUM BID ITEM 503, COFFERDAMS, CRIBS AND SHEETING, AS PER PLAN.

MINIMUM SHEETING SIZE (ASTM A328) SHALL HAVE A SECTION MODULES  $S_x=590 \text{ cm}^3/\text{m}$  SHEETING SHALL BE CUT OFF PRIOR TO PLACING THE APPROACH SLAB IN PHASE 2. SHEETING LEFT IN PLACE SHALL BE CUT OFF EITHER AT THE APPLICABLE LIMIT OF 300mm MINIMUM BELOW GROUND LINE OR FLUSH WITH LEVEL OF SUBGRADE

SHEETING SHALL BE EMBEDDED AS SHOWN ON SHEET [2/11]

ALTERNATE DESIGN OF THE TEMPORARY SHORING FOR PHASE CONSTRUCTION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. PLANS FOR SUCH SHORING SHALL BE DESIGNED BY A REGISTERED PROFESSIONAL ENGINEER AND CONFORM WITH 501.05. THE CONTRACTOR SHALL SUBMIT FIVE COPIES TO THE DIRECTOR AND CONCURRENTLY, ONE COPY TO THE OFFICE OF STRUCTURAL ENGINEERING, FOR REVIEW AND APPROVAL. CONSTRUCTION OF THE TEMPORARY SHORING SHALL NOT BEGIN UNTIL AFTER WRITTEN APPROVAL HAS BEEN RECEIVED FROM THE DIRECTOR.

PORTIONS OF THE TEMPORARY SHORING COMPOSED OF STEEL OR CONCRETE MAY BE LEFT IN PLACE AT THE DISCRETION OF THE ENGINEER. PORTIONS COMPOSED OF OTHER MATERIALS SHALL BE REMOVED PRIOR TO COMPLETION OF THE WORK.

PAYMENT FOR THE ABOVE SHALL BE INCLUDED IN THE LUMP SUM BID FOR ITEM 503, COFFERDAMS, CRIBS AND SHEETING, AS PER PLAN AND SHALL INCLUDE ALL NECESSARY LABOR, EQUIPMENT AND MATERIALS NEEDED TO COMPLETE THIS WORK.

ESTIMATED QUANTITIES								CALCULATED BY: JCO DATE 12-18-97	
								CHECKED BY: MTL DATE 1-8-98	
ITEM	ITEM EXT.	GRAND TOTAL	UNIT	DESCRIPTION	SUPERSTR.	ABUTMENT	GENERAL	SEE SHEET NO.	
202	11003	LUMP		STRUCTURE REMOVED OVER 6 METER SPAN, AS PER PLAN			LUMP	[3/11]	
448	46050	9	CU METER	ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2 , PG64-22	9				
448	47020	7	CU METER	ASPHALT CONCRETE SURFACE COURSE, TYPE 1, PG64-22	7				
503	1101	LUMP		COFFERDAMS, CRIBS AND SHEETING, AS PER PLAN			LUMP	[3/11]	
503	21101	232	CU METER	UNCLASSIFIED EXCAVATION, AS PER PLAN			232	[3/11]	
505	11100	LUMP		PILE DRIVING EQUIPMENT MOBILIZATION			LUMP		
507	00500	540	METER	300mm CAST-IN-PLACE REINFORCED CONCRETE PILES, DRIVEN			540		
507	00550	540	METER	300mm CAST-IN-PLACE REINFORCED CONCRETE PILES, FURNISHED			540		
507	50500	20	EACH	STEEL PILE SPLICES			20		
511	43500	51	CU METER	CLASS C CONCRETE, ABUTMENT INCLUDING FOOTING			51		
512	33000	73	SQ METER	TYPE 2 WATERPROOFING			73		
512	33010	213	SQ METER	TYPE 3 WATERPROOFING	231				
SPECIAL	51267510	74	SQ METER	SEALING OF CONCRETE SURFACE (EPOXY-URETHANE, SEE PROPOSAL NOTE)	31		43		
516	13600	17	SQ METER	25mm PREFORMED EXPANSION JOINT FILLER			17		
SPECIAL	51631300	26	METER	POLYMER MODIFIED ASPHALT EXPANSION JOINT SYSTEM			26	[10/11]	
516	41100	20	EACH	3mm PREFORMED BEARING PAD, 711.21	20				
516	43101	40	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES ONLY (NEOPRENE), AS PER PLAN, 25mmX200mmX300mm (SEE PROPOSAL NOTE)	40			[8/11]	
517	72306	41.91	METER	RAILING (DEEP BEAM RAIL WITH STEEL TUBULAR BACKUPS AND TYPE 2 STEEL POST (SEE PROPOSAL NOTE)	41.91				
518	21230	LUMP		POROUS BACKFILL, WITH FILTER FABRIC			LUMP		
SPECIAL	51822300	37	METER	STEEL DRIP STRIP (SEE PROPOSAL NOTE)	37				
518	40000	36	METER	150mm PERFORATED CORRUGATED PLASTIC PIPE			36		
518	40010	15	METER	150mm NON-PERFORATED CORRUGATED PLASTIC PIPE INCLUDING SPECIALS			15		
604	36600	4	EACH	PRECAST REINFORCED CONCRETE OUTLET			4		
865	10060	4	EACH	PRESTRESSED CONCRETE NON-COMPOSITE BOX BEAM BRIDGE MEMBER, LEVEL 1, B685-915	4				
865	10070	6	EACH	PRESTRESSED CONCRETE NON-COMPOSITE BOX BEAM BRIDGE MEMBER, LEVEL 1, B685-1220	6				

**ITEM 503 UNCLASSIFIED EXCAVATION, AS PER PLAN**

UNCLASSIFIED EXCAVATION SHALL BE IN ACCORDANCE WITH 503 EXCEPT THE BACKFILL MATERIAL FOR THE EXCAVATION BEHIND ABUTMENTS SHALL BE ITEM 613 LOW STRENGTH MORTAR BACKFILL, TYPE 1 (LSM BACKFILL) WITHIN THE LIMITS OF THE APPROACH SLABS AS SHOWN ON THE SHEET [7/11] THE CONTRACTOR ALSO MAY USE THE LSM BACKFILL TO CONSTRUCT THE SLOPES IN THE SAME AREA AS LONG AS IT IS COVERED WITH 300mm OF SOIL TO MEET THE FINISHED GRADE. THE AREA FOR THE POROUS BACKFILL WITH FILTER FABRIC SHALL BE FORMED UP PRIOR TO THE PLACEMENT OF THE LSM BACKFILL, AND THE FILTER FABRIC AND POROUS BACKFILL SHALL BE PLACED AFTER THE LSM BACKFILL HAS BEEN CURED AND THE FORMS HAVE BEEN REMOVED.

THE COST OF ALL LABOR, EQUIPMENT, AND MATERIAL TO PLACE THE LSM BACKFILL AS DESCRIBED ABOVE SHALL BE INCLUDED IN THE UNIT BID FOR ITEM 503, UNCLASSIFIED EXCAVATION, AS PER PLAN.

**ITEM SPECIAL, SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)**

A CONCRETE SEALER SHALL BE APPLIED TO THE SURFACES SHOWN ON SHEET [7/11] AND SHEET [9/11]. SEE THE PROPOSAL FOR SURFACE PREPARATION REQUIREMENTS, APPLICATION RATES, MATERIAL REQUIREMENTS AND APPLICATION PROCEDURES. THE COLOR OF THE URETHANE SEALER SHALL BE FEDERAL COLOR STANDARD NO. 17778 (OFF WHITE).

**ITEM 516 3mm PREFORMED BEARING PAD, 711.21**

3mm THICK PREFORMED BEARING PAD SHIMS, PLAN AREA 200mm BY 300mm SHALL BE PLACED UNDER THE ELASTOMERIC BEARING PADS WHERE REQUIRED FOR PROPER BEARING. PAYMENT WILL BE MADE AT THE CONTRACT BID PRICE FOR ITEM 516 - 3mm PREFORMED BEARING PAD ANY UNUSED SHIMS SHALL BECOME THE PROPERTY OF THE STATE.

**ITEM 518 POROUS BACKFILL WITH FILTER FABRIC**

POROUS BACKFILL 600mm THICK SHALL EXTEND UP TO THE PLANE OF THE SUBGRADE, TO 300mm BELOW THE EMBANKMENT SURFACE, AND LATERALLY TO THE ENDS OF THE WINGWALLS. GEOTEXTILE FABRIC SHALL CONFORM WITH 712.09, TYPE A. GEOTEXTILE FABRIC IS INCLUDED WITH POROUS BACKFILL FOR PAYMENT.

**ITEM 611 REINFORCED CONCRETE APPROACH SLAB (T-330), AS PER PLAN**

THE APPROACH SLABS SHALL BE CONSTRUCTED PART WIDTH AND THE TRANSVERSE BARS SHALL BE JOINED WITH MECHANICAL CONNECTORS AT EACH CONSTRUCTION JOINT.

TWO SEPERATE THICKNESS OF CLEAR OR OPAQUE POLYETHYLENE FILM, 705.06, SHALL BE PLACED ON THE PREPARED SUBBASE AND WHERE THE APPROACH SLAB IS TO BE CONSTRUCTED THE POLYETHYLENE FILMS SHALL COMPLETELY COVER THE FULL LENGTH AND WIDTH OF THE SUBBASE BETWEEN THE SIDEWALL FORMS FOR THE APPROACH SLAB.

PAYMENT FOR ALL LABOR, EQUIPMENT AND MATERIALS NECESSARY TO PERFORM THE ABOVE WORK SHALL BE INCLUDED IN THE SQUARE METER BID PRICE FOR ITEM 611, REINFORCED CONCRETE APPROACH SLAB (T-330), AS PER PLAN.



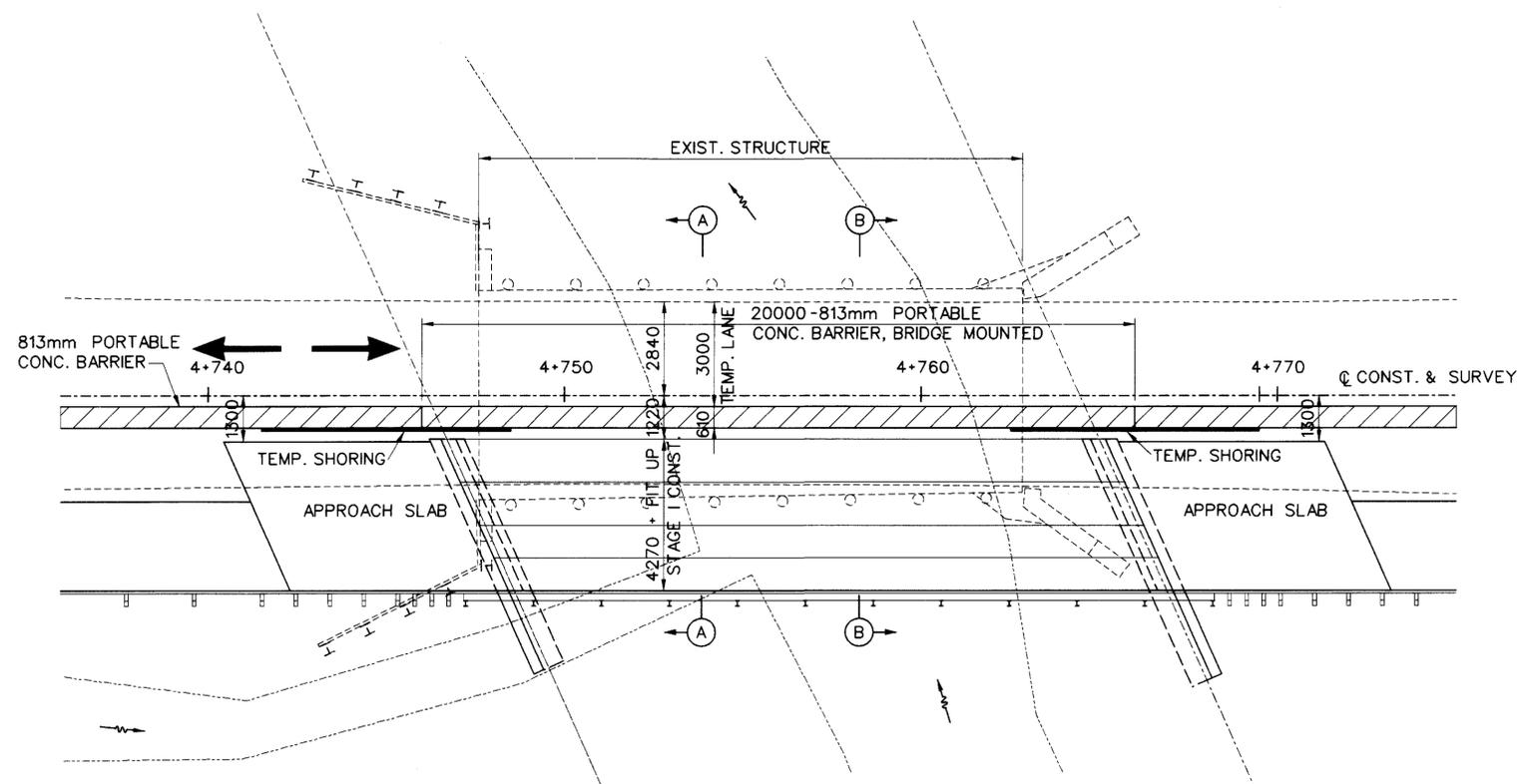
DESIGN AGENCY  
 A.M. KINNEY, INC.  
 2900 VERNON PLACE  
 CINCINNATI, OH 45219

DATE  
 1/9/98  
 REVIEWED  
 DBH  
 STRUCTURE FILE NO.  
 3603970  
 DRAWN  
 MTL  
 CHECKED  
 MTL

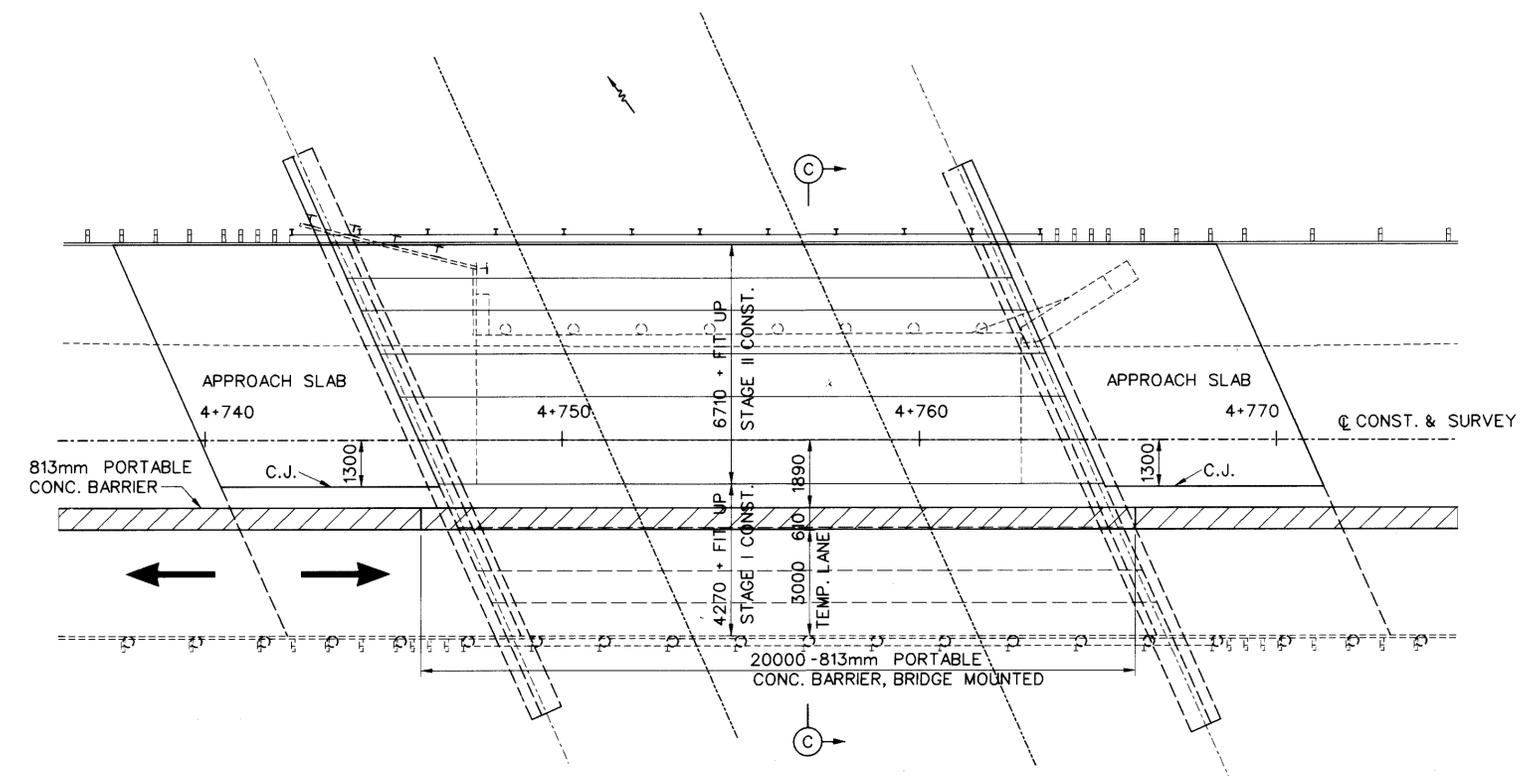
GENERAL NOTES AND ESTIMATED QUANTITIES  
 BRIDGE NO. HIG-506-0294  
 OVER FRANKLIN BRANCH

HIG-506-4.735/6.222

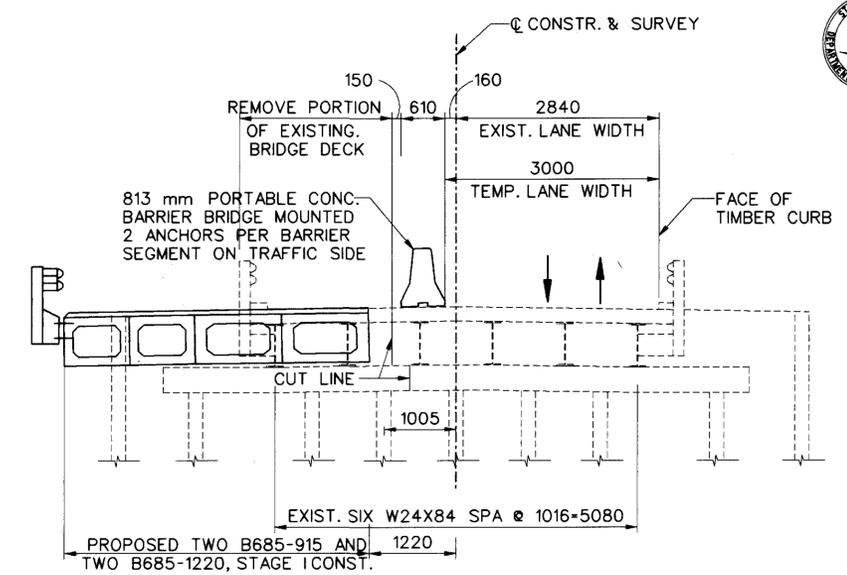
3 / 11  
 38  
 59



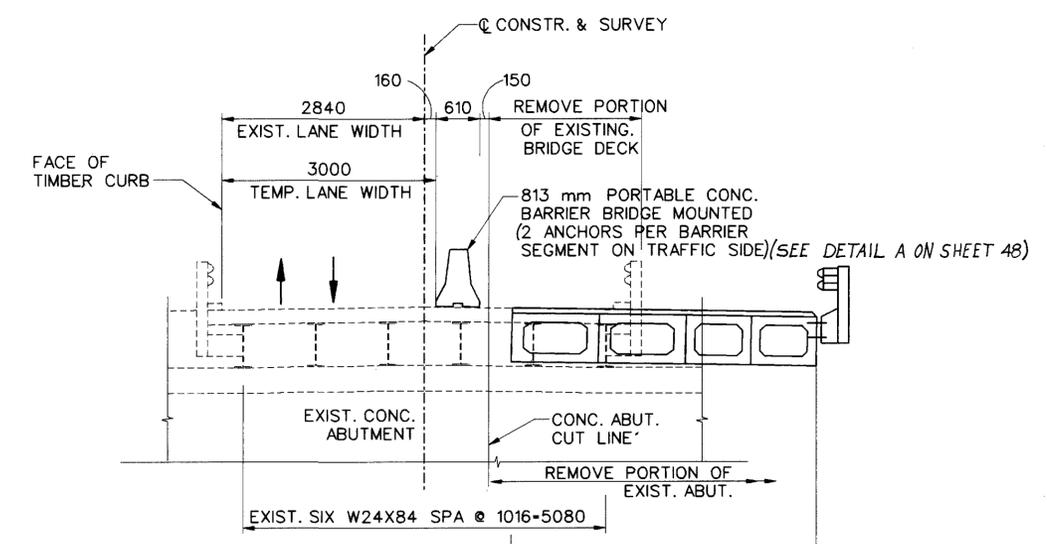
**LANE CLOSURE PLAN, STAGE I**



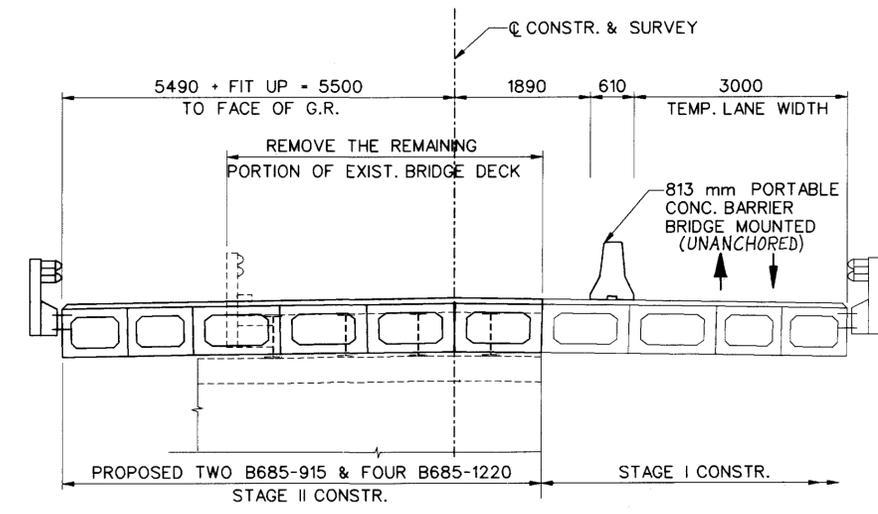
**LANE CLOSURE PLAN, STAGE II**



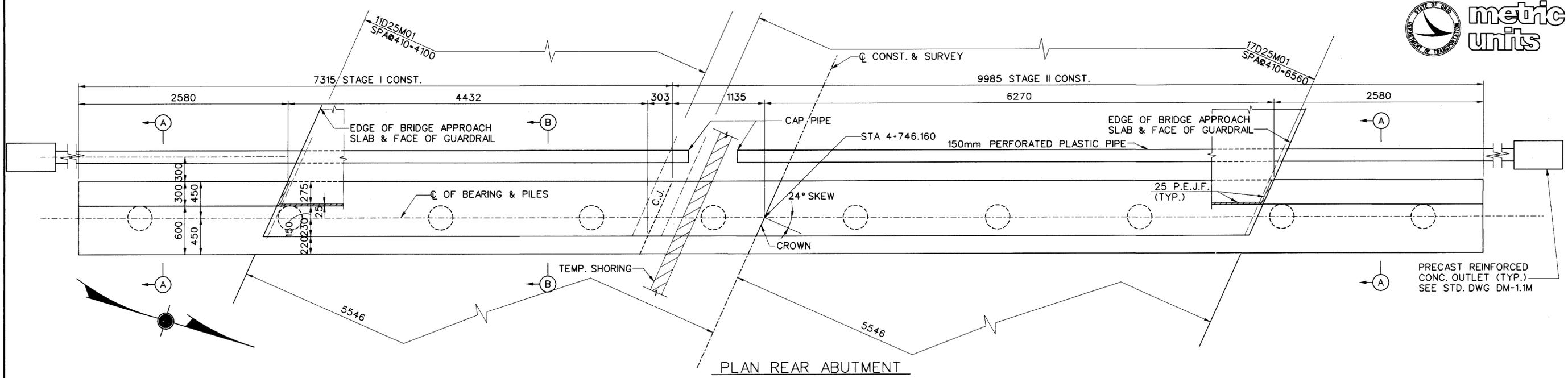
**SECTION A-A  
STAGE I CONSTRUCTION**



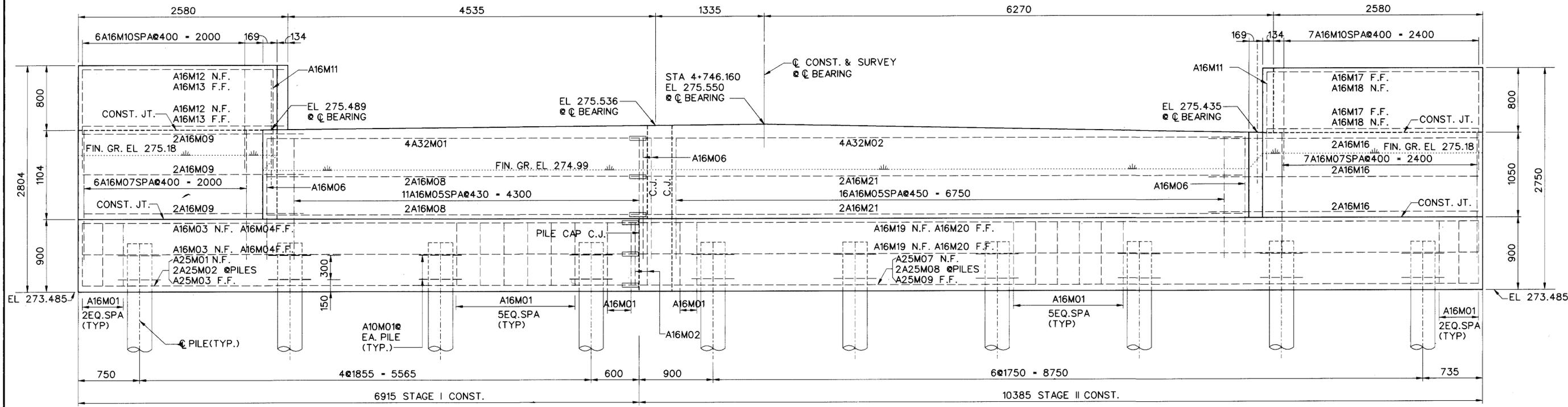
**SECTION B-B  
STAGE I CONSTRUCTION**



**SECTION C-C  
STAGE II CONSTRUCTION**



PLAN REAR ABUTMENT



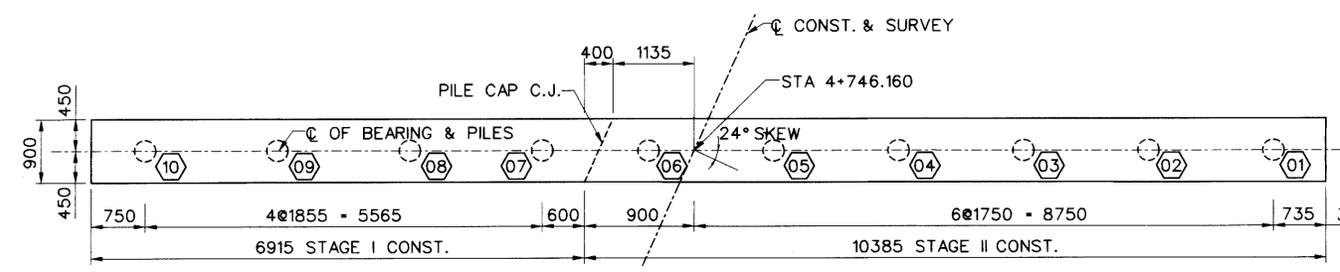
ELEVATION REAR ABUTMENT

LEGEND:

- P.E.J.F. = PREFORMED EXPANSION JOINT FILLER
- N.F. = NEAR FACE
- F.F. = FAR FACE
- R.C.P. = CAST-IN-PLACE REINFORCED CONCRETE PILE
- C.J. = CONSTRUCTION JOINT
- ① = PILE IDENTIFICATION NUMBER
- ≡ = MECHANICAL CONNECTOR

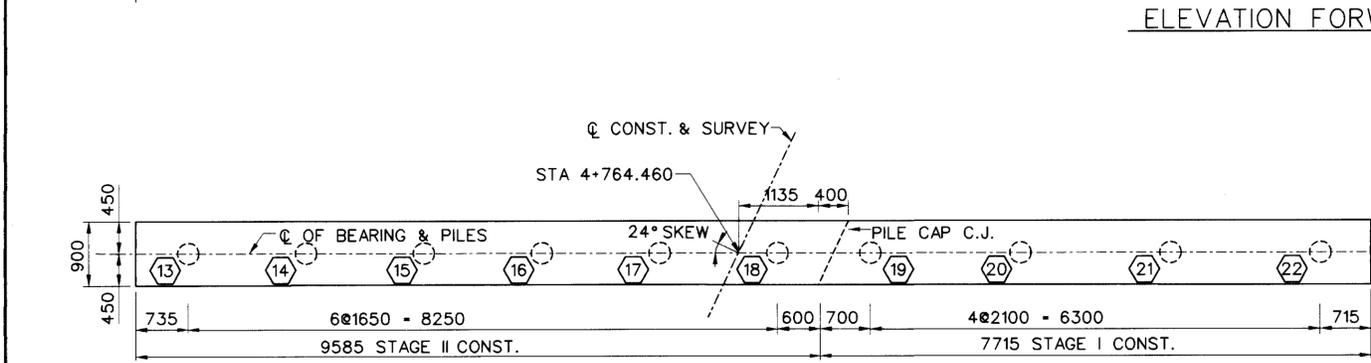
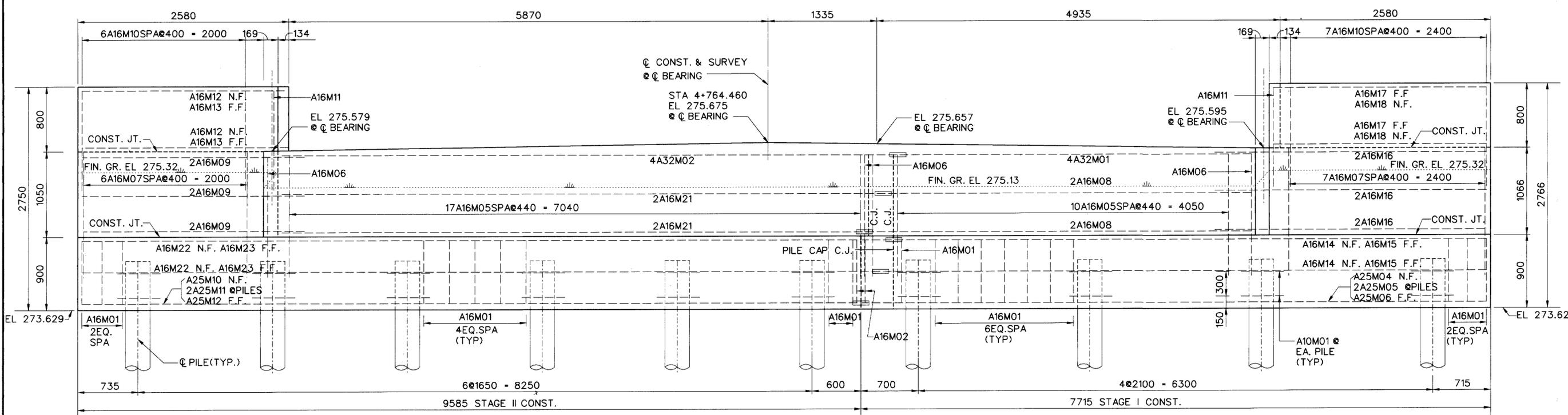
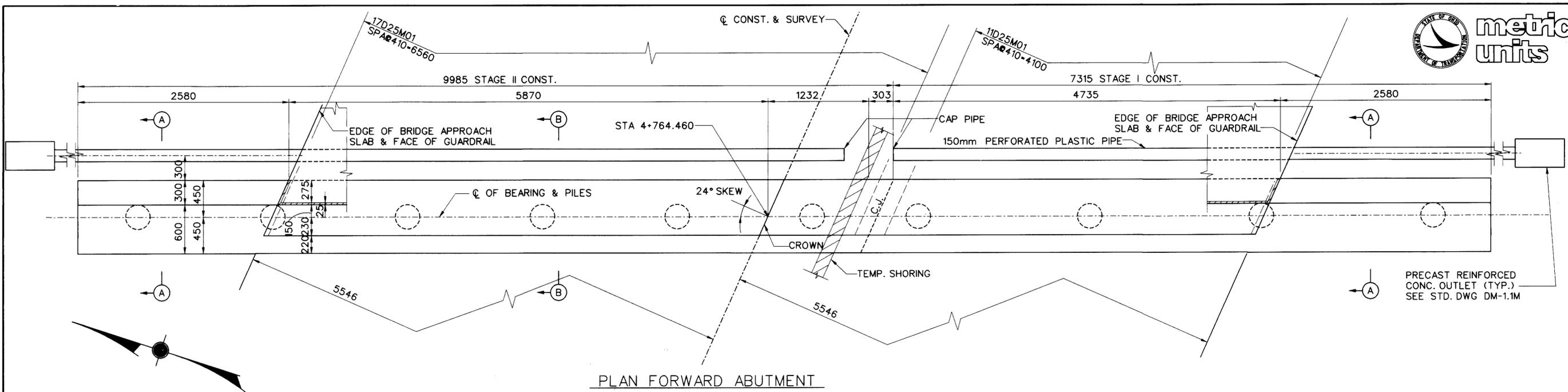
NOTES:

1. ABUTMENT WING WALL CONCRETE ABOVE THE BRIDGE SEAT CONSTRUCTION JOINT SHALL NOT BE PLACED UNTIL AFTER THE PRESTRESSED CONCRETE BOX BEAMS HAVE BEEN ERECTED.
2. FOR SECTION A-A AND B-B, SEE SHEET 7/11



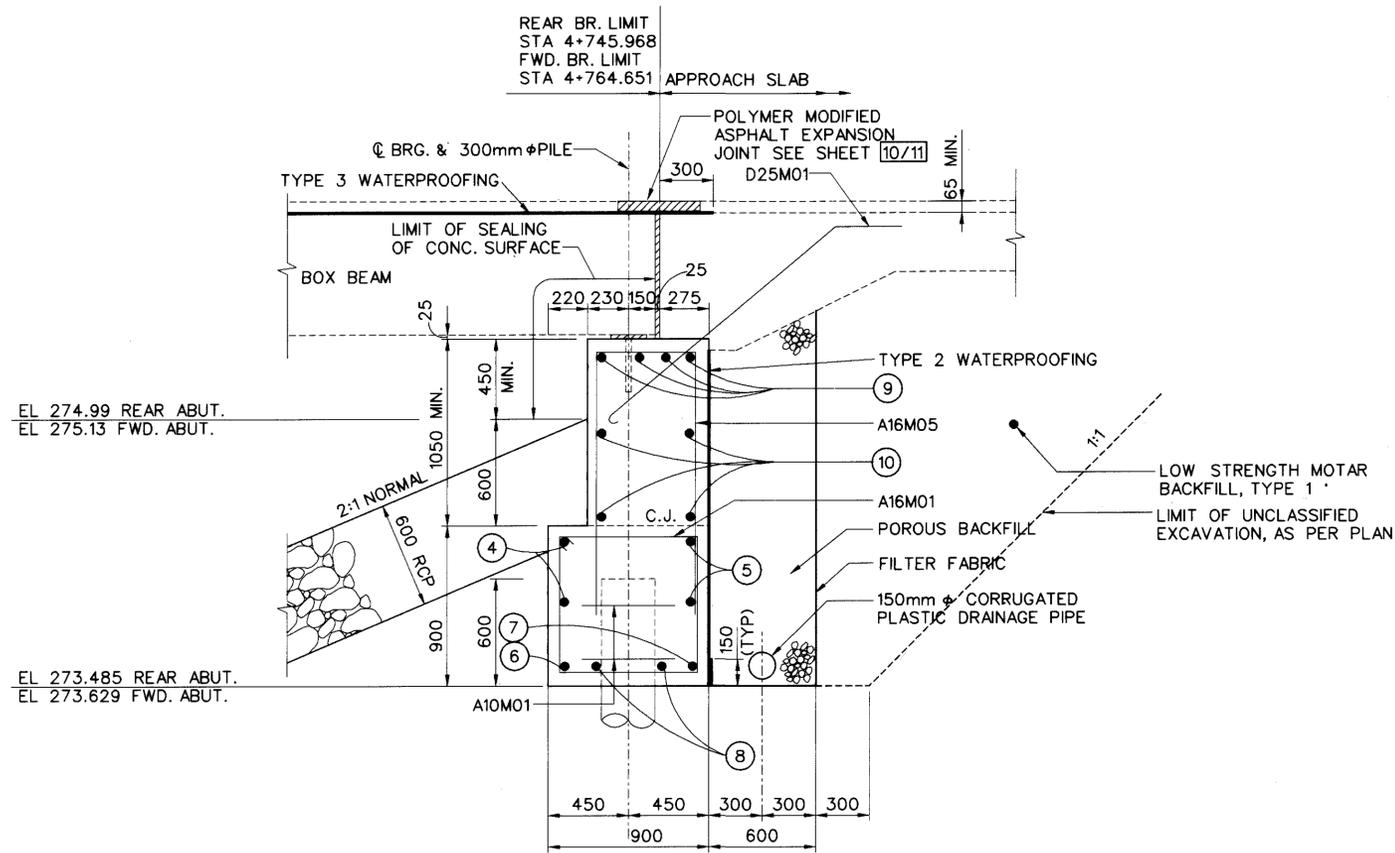
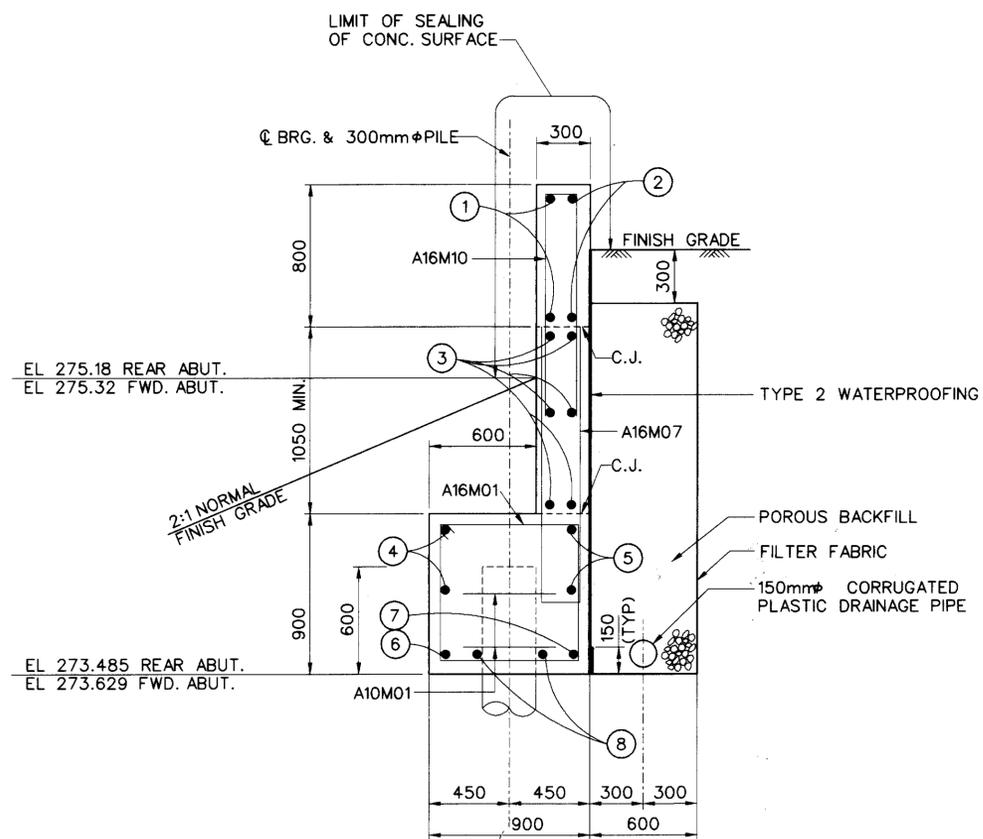
PILE AND PILE CAP PLAN

ALL PILES ARE 300 mm DIA. R.C.P.



**LEGEND:**  
P.E.J.F. - PREFORMED EXPANSION JOINT FILLER  
N.F. - NEAR FACE  
F.F. - FAR FACE  
R.C.P. - CAST-IN-PLACE REINFORCED CONCRETE PILE  
C.J. - CONSTRUCTION JOINT  
(01) - PILE IDENTIFICATION NUMBER  
≡ - MECHANICAL CONNECTOR

**NOTES:**  
1. ABUTMENT WING WALL CONCRETE ABOVE THE BRIDGE SEAT CONSTRUCTION JOINT SHALL NOT BE PLACED UNTIL AFTER THE PRESTRESSED CONCRETE BOX BEAMS HAVE BEEN ERRECTED.  
2. FOR SECTION A-A AND B-B, SEE SHEET 7/11



SECTION A-A

SECTION B-B

- ① A16M12 STAGE I REAR/STAGE II FWD  
A16M18 STAGE II REAR & /STAGE I FWD
- ② A16M13 STAGE I REAR & STAGE II FWD  
A16M17 STAGE II REAR & STAGE I FWD
- ③ A16M09 STAGE I REAR & STAGE II FWD  
A16M16 STAGE II REAR & STAGE I FWD
- ④ A16M03 STAGE I REAR  
A16M14 STAGE I FWD  
A16M19 STAGE II REAR  
A16M22 STAGE II FWD
- ⑤ A16M04 STAGE I REAR  
A16M15 STAGE I FWD  
A16M20 STAGE II REAR  
A16M23 STAGE II FWD
- ⑥ A25M01 STAGE I REAR  
A25M07 STAGE II REAR  
A25M04 STAGE I FWD  
A25M10 STAGE II FWD
- ⑦ A25M03 STAGE I REAR  
A25M09 STAGE II REAR  
A25M06 STAGE I FWD  
A25M12 STAGE II FWD
- ⑧ A25M02 STAGE I REAR  
A25M08 STAGE II REAR  
A25M05 STAGE I FWD  
A25M11 STAGE II FWD
- ⑨ A32M01 STAGE I REAR & FWD  
A32M02 STAGE II REAR & FWD
- ⑩ A16M08 STAGE I REAR & FWD  
A16M21 STAGE II REAR & FWD

**NOTES:**

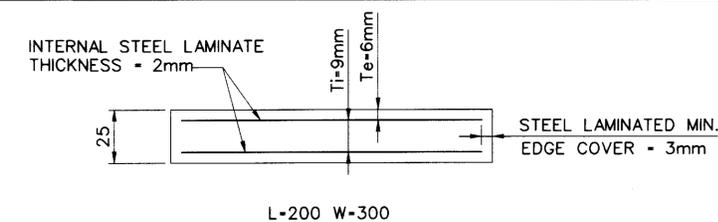
1. POROUS BACKFILL WITH FILTER FABRIC, 600mm THICK SHALL EXTEND UP TO THE PLANE OF THE SUBGRADE, TO 300mm BELOW THE EMBANKMENT SURFACE, AND Laterally TO THE ENDS OF THE WINGWALLS. GEOTEXTILE FABRIC SHALL CONFORM WITH 712.09, TYPE A. THE BOTTOM OF THE POROUS BACKFILL SHALL BE SLOPED (0.08 MINIMUM) Laterally TO DRAIN. GEOTEXTILE FABRIC IS INCLUDED WITH POROUS BACKFILL FOR PAYMENT.
2. FOR LOCATION OF SECTION A-A AND B-B, SEE SHEETS [5/11] AND [6/11]

DATE	1/9/98
REVIEWED	DBH
STRUCTURE FILE NO.	3603970
DRAWN	MTL
CHECKED	REVISD
DESIGNED	JCO
CHECKED	MTL

ABUTMENT DETAIL  
BRIDGE NO. HIG-506-0294  
OVER FRANKLIN BRANCH

HIG-506-4.735/6.222

**ITEM 516 - ELASTOMERIC BEARING WITH INTERNAL LAMINATES ONLY (NOEOPRENE), AS PER PLAN 200mm X 300mm X 25mm**



**LAMINATED ELASTOMERIC BEARING 50 DUROMETER**

DEAD LOAD REACTION = 68.5 KN  
LIVE LOAD REACTION = 91.2 KN  
MAX. DESIGN LOAD = 159.7 KN

**TOLERANCES**

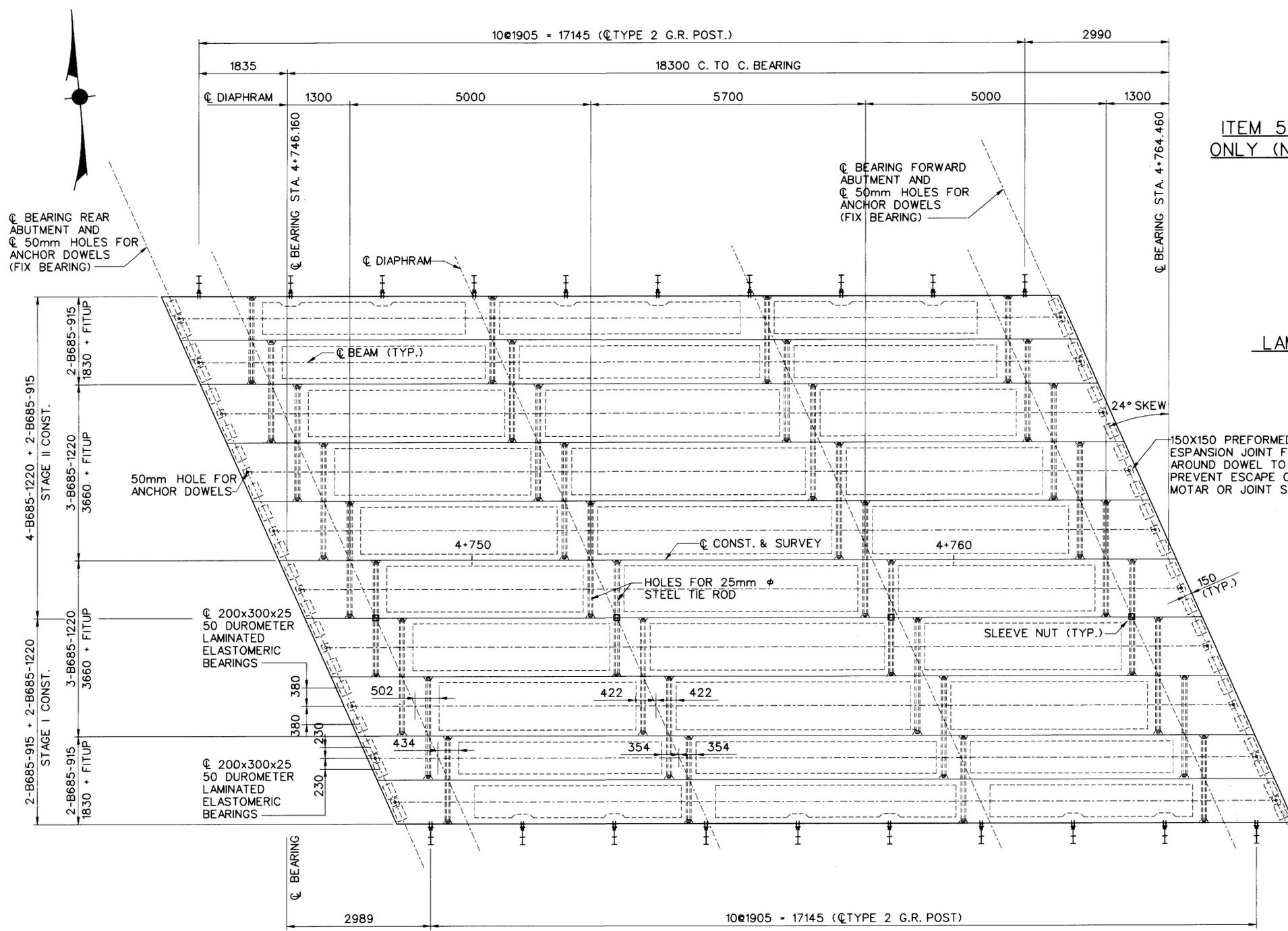
INDIVIDUAL ELASTOMERIC LAYER THICKNESS: 20% OF DESIGN VALUE (NOT EXCEED ±3mm)

PLAN DIMENSION -0, +6mm  
DESIGN THICKNESS -0, +3mm  
EDGE COVER OF EMBEDDED LAMINATES -0, 3mm

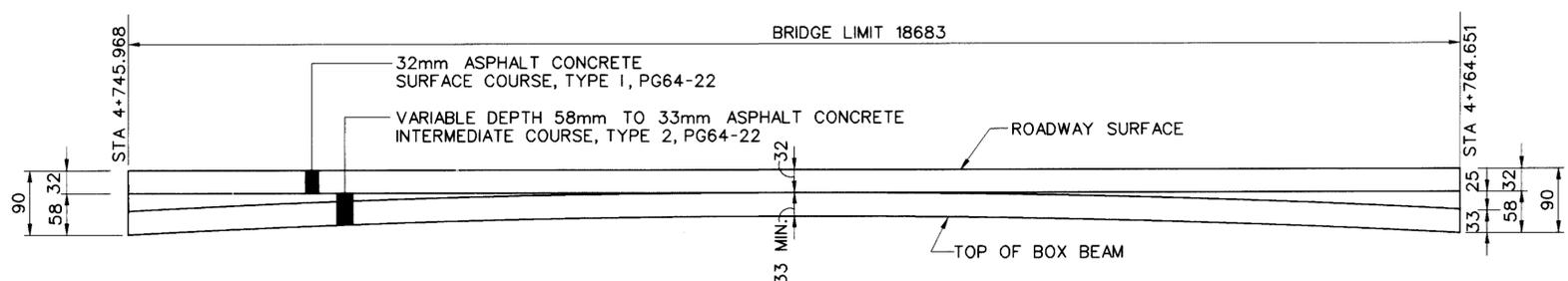
THE ELASTOMERIC BEARING MANUFACTURER SHALL SUPPLY A PLAIN ELASTOMERIC PAD FOR TESTING PURPOSES. THE PAD SHALL BE FURNISHED FROM THE SAME BATCH OF NEOPRENE THAT IS USED IN THE FABRICATION OF THE LAMINATED ELASTOMERIC BEARINGS AND THE FABRICATOR SHALL CERTIFY THE IDENTITY OF THE ELASTOMER. THE PAD SHALL HAVE 12mm THICKNESS AND SHALL HAVE MINIMUM LENGTH AND WIDTH DIMENSIONS OF 150mm. PAYMENT FOR THE TEST PAD WILL BE INCLUDED IN THE PRICE BID FOR THE BEARINGS.

**BASIS OF PAYMENT**

THE UNIT BID PRICE SHALL INCLUDE ALL MATERIAL, LABOR AND INCIDENTALS NECESSARY TO FURNISH AND INSTALL LAMINATED ELASTOMERIC BEARINGS EITHER FIXED OR EXPANSION. PAYMENT WILL BE MADE AT THE CONTRACT PRICE FOR ITEM 516, EACH. ELASTOMERIC BEARING WITH INTERNAL LAMINATES ONLY (NEOPRENE), AS PER PLAN (250mmX300mmX25mm)



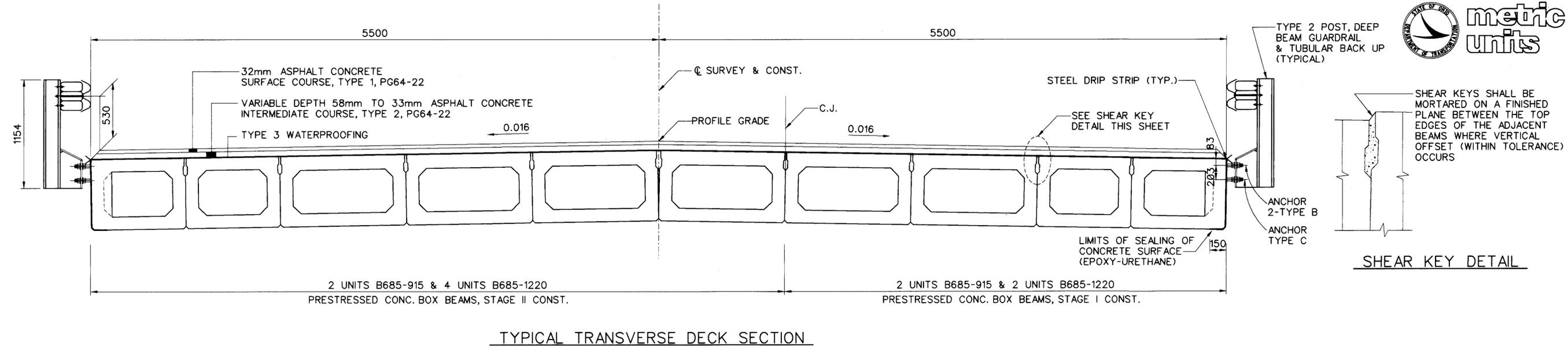
**DECK PLAN**



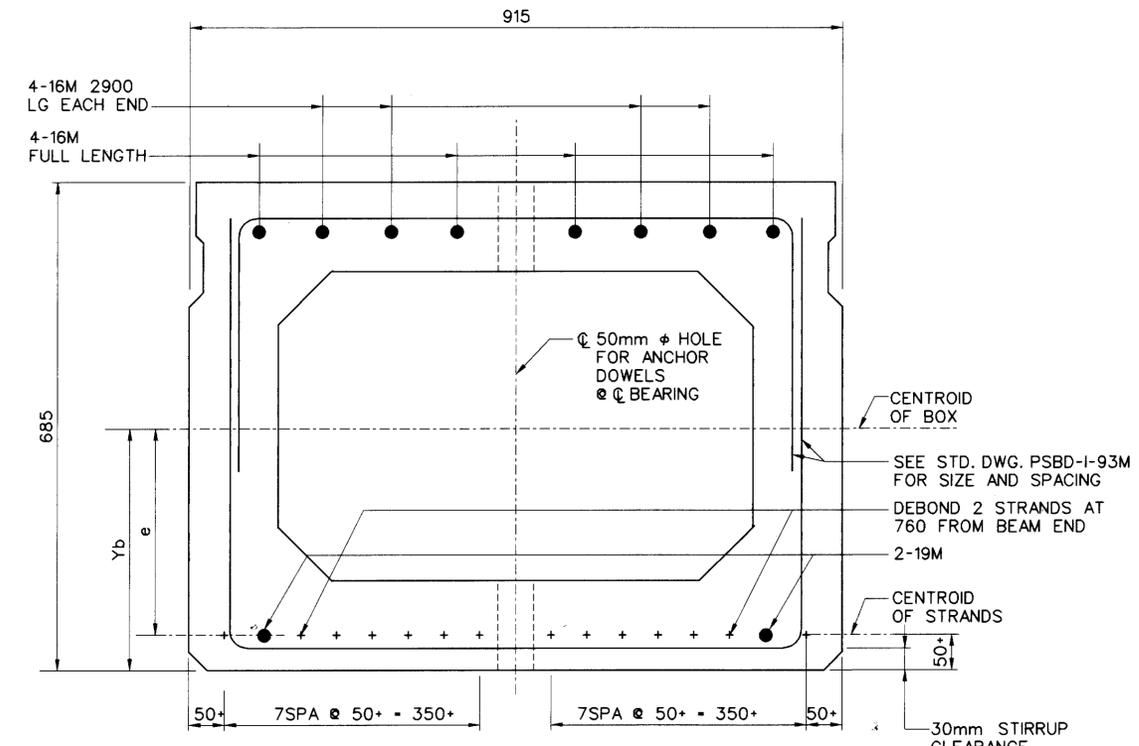
**TRANVERSE DECK SECTION**

**NOTE:**

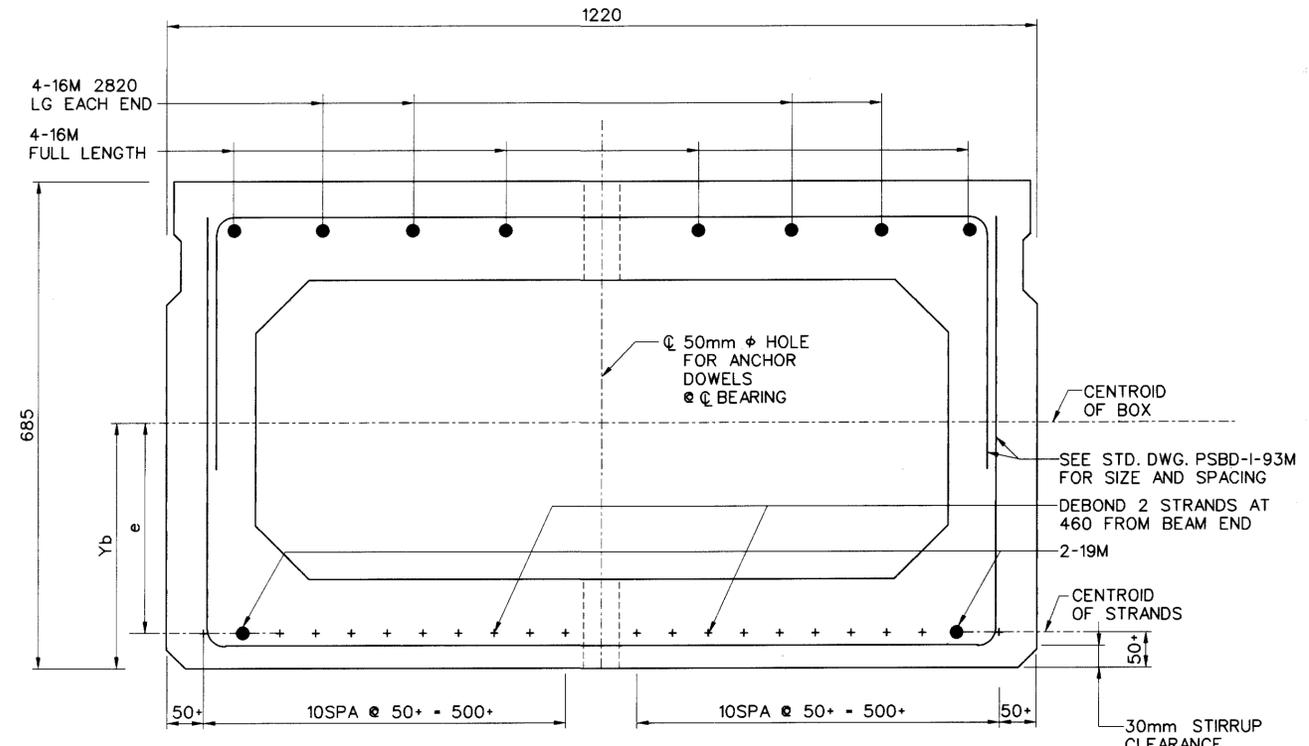
FOR ADDITIONAL NOTES, SEE SHEET 9/11  
FOR GENERAL NOTES, SEE SHEET 3/11



TYPICAL TRANSVERSE DECK SECTION



TYPICAL BEAM SECTION ( B685-915)  
FOR DIMENSIONS NOT SHOWN, SEE STD. DWG. PSBD-I-93M



TYPICAL BEAM SECTION ( B685-1220)  
FOR DIMENSIONS NOT SHOWN, SEE STD. DWG. PSBD-I-93M

BOX BEAM (B685-915) SECTION PROPERTIES		BOX BEAM (B685-1220) SECTION PROPERTIES	
A = 348,300 mm <sup>2</sup>	NO. OF STRAND - 14 e = 289 mm INITIAL CAMBER = 15 mm DEBONDED STRANDS = 2@760 mm	A = 437,900 mm <sup>2</sup>	NO. OF STRAND - 20 e = 295 mm INITIAL CAMBER = 18 mm DEBONDED STRANDS = 2@460 mm
I = 20,248,400,000 mm <sup>4</sup>		I = 26,909,000,000 mm <sup>4</sup>	
Yb = 339.3 mm		Yb = 345.7 mm	
Zt = 58,500,000 mm <sup>3</sup>		Zt = 79,100,000 mm <sup>3</sup>	
Zb = 59,700,000 mm <sup>3</sup>		Zb = 77,800,000 mm <sup>3</sup>	

INITIAL CAMBER IS GIVEN AT TIME OF TRANSFER OF STRESS AND INCLUDES DEFLECTION DUE TO WEIGHT OF BEAM BUT DOES NOT INCLUDE AN ALLOWANCE FOR CREEP.

NOTES:

- CALCULATED DEFLECTION DUE TO WEIGHT OF ASPHALT CONCRETE SURFACE AND RAILING IS 4mm
- FOR PRESTRESSED CONCRETE BOX BEAM NOTES, LIFTING INSERTS, DETAILS AT ANCHOR DOWELS, DETAILS AND REINFORCEMENT OF BEAM ENDS, END DETAILS OF TRANSVERSE TIE ROD ANCHORAGE, BEAM DIMENSIONAL TOLERANCE AND MISCELLANEOUS DETAILS AND NOTES, SEE STANDARD DRAWING PSBD-1-93M.
- FOR RAILING DETAILS, SEE STANDARD DRAWING DBR-2-73M.
- FOR DRIP STRIP DETAIL, SEE STANDARD DRAWING DS-1-94M
- FOR GENERAL NOTES, SEE SHEET 5711
- ASPHALT SURFACE COURSE FOR THE ENTIRE BRIDGE TO BE PLACED AFTER THE PHASE 2 CONSTRUCTION

# GENERAL NOTES AND DETAILS FOR POLYMER MODIFIED ASPHALT EXPANSION JOINT SYSTEM

CALCULATED  
 CHECKED  
 DATE REVISION  
 10-28-96  
 DESIGNED  
 MAM  
 DRAWN  
 MAM  
 POLYMER MODIFIED ASPHALT EXPANSION JOINT SYSTEM  
 HIG-506-0294  
 HIG-506-4-735/6.622  
 10/11  
 45  
 59

## ITEM SPECIAL - POLYMER-MODIFIED ASPHALT EXPANSION JOINT SYSTEM

THIS ITEM WILL BE USED TO SEAL THE EXPANSION/CONTRACTION JOINTS AS PER THESE DETAILS AND THE MANUFACTURER'S REQUIREMENTS USING A POLYMER-MODIFIED ASPHALT SYSTEM. THE PRIME CONTRACTOR WILL OBTAIN THE SERVICES OF ONE OF THE FOLLOWING APPROVED APPLICATORS WHO WILL FURNISH AND INSTALL THE NEW BRIDGE EXPANSION JOINT SYSTEM AFTER ALL PAVING ON THE AFFECTED BRIDGE(S) HAS BEEN COMPLETED.

D.S. BROWN COMPANY P.O. BOX 158 300 E. CHERRY ST. N. BALTIMORE, OH 45872-0158 TEL: 1-800-258-0162	LINEAR DYNAMICS, INC. RD #2 BOX 311 MUNCY, PA 17756 TEL: (717) 546-6041	INFRASTRUCTURE SYSTEMS, INC. 830 E. Higgins Road Chicago, IL 60173-4792 SUITE 111 W TEL: (708) 706-9230
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HARRIS SPECIALTY CHEMICAL, INC.  
10245 CENTURION PARKWAY, N.  
JACKSONVILLE, FL 32256  
TEL: (904) 996-6000

### MATERIALS:

#### BRIDGING PLATE:

MILD STEEL 3 mm OR 6 mm THICK PLATE, 200 mm WIDE OR 18 GAUGE (APPROX. 1.3 mm) ALUMINUM, 204 mm WIDE.

#### BINDER:

TYPE:	POLYMER MODIFIED ASPHALT
SOFTENING POINT:	180 DEGREES F. MIN.
FLOW:	3 mm. MAX. AT 140 DEGREES F.
PENETRATION:	9 mm. MAX. AT 77 DEGREES F.
	1 mm. MAX AT 0 DEGREES F.
	ASTM D 3407
DUCTILITY:	40 cm. MIN. ASTM D 113
RESILIENCE:	60% MIN. AT 77 DEGREES F.
TENSILE ADHESION:	700% MIN.
SPECIFIC GRAVITY:	1.10 * 0.05
POURING TEMP:	350 - 390 DEGREES F.

#### AGGREGATE:

TYPE: CRUSHED, DOUBLE WASHED, AND DRIED GRANITE OR BASALT

#### GRADATION

THE GRADATION OF THE AGGREGATE VARIES BY MANUFACTURER AND WILL BE AS PER THE MANUFACTURER'S RECOMMENDATIONS FOR THE SYSTEM BEING USED ON THIS PROJECT.

#### BACKER ROD:

THE BACKER ROD SHALL BE A CLOSED CELL FOAM EXPANSION JOINT FILLER CAPABLE OF WITHSTANDING THE PLACEMENT TEMPERATURE OF THE POLYMER MODIFIED ASPHALT.

### INSTALLATION PROCEDURES:

#### SAWING AND SURFACE PREPARATION:

AFTER ALL PAVING OPERATIONS ARE COMPLETE, THE OVERLAY IS TO BE TRANSVERSELY SAW CUT FULL DEPTH NO LESS THAN 51 MILLIMETERS DEEP (508 mm CENTERED OVER JOINT OPENING, UNLESS OTHERWISE NOTED). REMOVE ALL MATERIAL, INCLUDING WATER-PROOFING MATERIAL, BETWEEN SAW CUTS. THOROUGHLY CLEAN AND DRY EXPOSED CONCRETE, STEEL, AND CUT SURFACES USING COMPRESSED AIR AND A HOT COMPRESSED AIR (HCA) LANCE. THE LANCE MUST PRODUCE A FLAME RETARDED AIR STREAM TEMPERATURE OF 1649 DEGREES C. AT A VELOCITY OF 914 METERS PER SECOND WITH 103.4 kPa GAGE CHAMBER PRESSURE. IF THERE IS AN INTERRUPTION DUE TO WEATHER OR OTHER CAUSES, THE OPERATION WILL BE REPEATED WITH THE HCA LANCE IMMEDIATELY BEFORE THE BINDER COAT OPERATION. ALSO, 152 mm OF THE ROAD SURFACE ON EITHER SIDE OF THE JOINT WILL BE DRIED SO THAT A SUITABLE SURFACE FOR BITUMEN ADHESION IS OBTAINED.

### SEALING OF EXPANSION JOINT: (PRE-STRESSED BOX OR CONCRETE SLAB)

THE EXPANSION JOINT GAP IS TO BE SEALED AND A BRIDGING PLATE CENTERED ALONG IT. A VERY NARROW GAP WILL BE SEALED BY POURING HOT BINDER INTO THE GAP. GAPS OF 3 mm OR MORE WILL FIRST BE FILLED WITH AN APPROPRIATELY SIZED BACKER ROD. THE BACKER ROD WILL BE INSTALLED SO THAT IT IS BETWEEN 3 mm AND 30 mm BELOW THE TOP OF THE EXISTING GAP. THE GAP WILL THEN BE FILLED WITH BINDER.

### BOND BREAKER:

SPREAD BINDER OVER SURFACE AREA WHERE THE METAL BRIDGING PLATE WILL BE PLACED. CENTER THE BRIDGING PLATE OVER THE EXISTING JOINT AND BED INTO THE HOT BINDER. BUTT JOINT THE BRIDGING PLATES TO ACCOMMODATE THE ENTIRE JOINT LENGTH. SPIKE HOLES WILL BE DRILLED AT 300 mm INTERVALS ALONG THE LONGITUDINAL CENTERLINE OF THE PLATES. SECURE BRIDGING PLATE WITH NAILS OR SPIKES. SEAL BUTT JOINTS WITH HOT BINDER AND ALLOW BINDER TO SETUP BEFORE NEXT OPERATION. WHEN ALUMINUM BRIDGING PLATES ARE USED, ONLY THE BINDER IS REQUIRED TO SECURE THE INDIVIDUAL PLATES.

### BINDER COAT:

SEAL ALL PREPARED, EXPOSED SURFACES OF THE JOINT WITH BINDER. POUR THE HOT BINDER OVER THE FLOOR AREA OF THE JOINT AND SPREAD TO COAT ALL EXPOSED SURFACES. THE BINDER WILL BE A MINIMUM OF 1 mm THICK ON THE BOTTOM OF THE JOINT CAVITY, WITH POOLS OF GREATER THICKNESS WHERE SURFACE IRREGULARITIES EXIST. THE BINDER APPLICATION TEMPERATURE WILL BE BETWEEN 177 AND 199 DEGREES C. THE BINDER WILL NOT BE ALLOWED TO BE HEATED ABOVE 210 DEGREES C. NOR ALLOWED TO EXCEED 199 DEGREES C. FOR MORE THAN 1 HOUR. A DOUBLE JACKETED OIL MELTER WILL BE USED TO HEAT THE BINDER. THE MELTER WILL BE EQUIPPED WITH A CONTINUOUS AGITATION SYSTEM, TEMPERATURE CONTROLS, AND A CALIBRATED THERMOMETER. ALSO A SYSTEM FOR ACCURATELY MEASURING THE WEIGHTS OF THE BINDER AND THE AGGREGATE WILL BE REQUIRED.

### BUILD-UP OF JOINT LAYERS:

#### AGGREGATE PREPARATION:

HEAT THE AGGREGATE TO A TEMPERATURE OF 135 TO 163 DEGREES C., WITH A SUITABLE ROTATING DRUM WITH ATTACHED HEAT SOURCE OR A HOT COMPRESSED AIR LANCE, TO REMOVE DUST AND MOISTURE.

#### AGGREGATE PROPORTION AND LAYER THICKNESS:

MIX THE AGGREGATE WITH THE BINDER SUCH THAT THE MINIMUM AGGREGATE CONTENT BY WEIGHT WILL BE 68%. THE HEATED AGGREGATE AND BINDER WILL BE COMBINED IN LAYERS NOT LESS THAN 13 MILLIMETERS NOR EXCEEDING 64 MILLIMETERS. THE THICKNESS OF EACH LAYER CAN BE VARRIED, WITHIN THESE LIMITS, TO ACHIEVE THE REQUIRED JOINT THICKNESS (MINIMUM 51 mm). THE OBJECTIVE IS TO COAT EACH STONE AND FILL THE VOIDS WHILE AVOIDING AN EXCESS OF BINDER. THIS WILL ACHIEVE THE MAXIMUM CONTENT OF STONE CONSISTENT WITH ALL STONES BEING COATED WITH BINDER. RAKE THE MIXTURE TO MIX AND LEVEL.

THE TOP LAYER THICKNESS WILL VARY BETWEEN 13 mm AND ONE 25 mm. IN PREPARING THE TOP LAYER, THE RATIO OF AGGREGATE TO BINDER WILL BE APPROXIMATELY 6:1 BY WEIGHT. OVERFILL THE TOP LAYER AND COMPACT TO THE LEVEL OF THE ADJACENT SURFACES USING A ROLLER OR VIBRATORY PLATE COMPACTOR. IMMEDIATELY AFTER COMPLETION OF THE COMPACTION, POUR SUFFICIENT BINDER OVER THE JOINT TO FILL THE SURFACE VOIDS AND COAT THE SURFACE STONE. DUST THE FINISHED JOINT WITH A FINE, DRY AGGREGATE TO PREVENT TACKINESS.

### MAINTENANCE OF TRAFFIC:

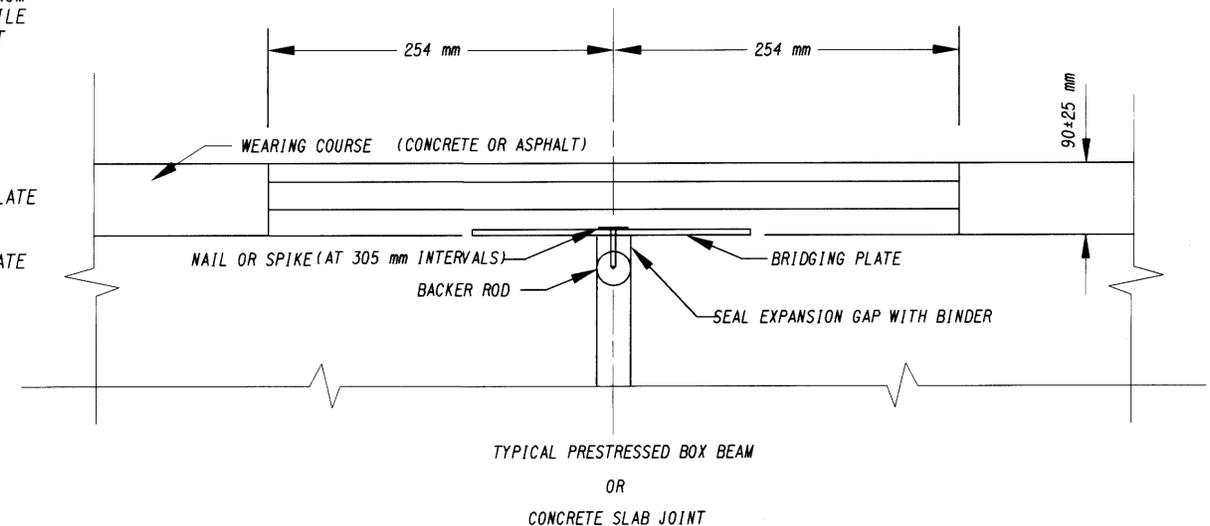
IF NECESSARY TO FACILITATE TRAFFIC MAINTENANCE, THE JOINT WILL BE INSTALLED IN TWO (2) HALF-WIDTH PHASES. DURING PHASE 1 APPROXIMATELY HALF OF THE TOTAL JOINT WILL BE INSTALLED. DURING PHASE 2, A MINIMUM OF 51 MILLIMETERS OF THE PHASE 1 JOINT WILL BE REMOVED, AT OR NEAR THE CENTERLINE, WITH THE REMAINDER OF THE JOINT INSTALLED. IN ALL CASES, OPERATIONS WILL BE SCHEDULED SO THAT ALL LANES CAN BE OPEN TO TRAFFIC DURING ALL NON-WORKING HOURS.

### TESTING:

CERTIFICATION WILL BE SUPPLIED FOR EACH PROJECT SHOWING BINDER COMPLIANCE WITH REQUIRED PROPERTIES. A ONE LITER SAMPLE OF BINDER WILL BE RETRIEVED FROM EACH BRIDGE FOR FURTHER TESTING BY THE O.D.O.T. TESTING LABORATORY.

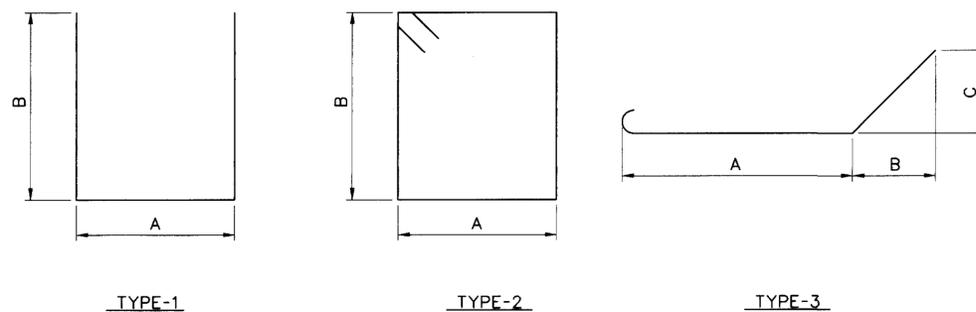
### PAYMENT:

PAYMENT FOR ALL THE ABOVE WILL BE AT THE UNIT PRICE BID PER LINEAR METER OF SEALED JOINT IN PLACE FOR ITEM SPECIAL 516 31300, POLYMER MODIFIED ASPHALT EXPANSION JOINT SYSTEM (90 MILLIMETERS THICK). THIS WILL INCLUDE ALL LABOR, EQUIPMENT, MATERIALS, AND INCIDENTALS NECESSARY TO COMPLETE THE ABOVE WORK.



**STEEL LIST**

MARK	NUMBER					LENGTH	TYPE	DIMENSIONS				BENDING DIAGRAM
	STAGE I		STAGE II		TOTAL			A	B	C	L	
	REAR	FWD	REAR	FWD								
<b>ABUTMENTS</b>												
A10M01	8	8	12	12	40	2655	2	530	730			
A16M01	23	25	35	30	113	3360	2	800	800			
A16M02	1	1	1	1	4	3510	2	875	800			
A16M03*	2				2	6865	STRAIGHT					1025
A16M04*	2				2	6900	STRAIGHT					1025
A16M05	11	10	16	17	54	3700	1	580	1600			
A16M06	2	2	2	2	8	3755	1	635	1600			
A16M07	6	7	7	6	26	3320	1	200	1600			
A16M08*	4				4	4680	STRAIGHT					1025
A16M09	6			6	12	3030	STRAIGHT					
A16M10	6	7	7	6	26	2620	1	200	1250			
A16M11	1	1	1	1	4	2640	1	220	1250			
A16M12	2			2	4	2340	STRAIGHT					
A16M13	2			2	4	2475	STRAIGHT					
A16M14*		2			2	7300	STRAIGHT					1025
A16M15*		2			2	7265	STRAIGHT					1025
A16M16		6	6		12	3160	STRAIGHT					
A16M17		2	2		4	2475	STRAIGHT					
A16M18		2	2		4	2610	STRAIGHT					
A16M19*			2		2	9970	STRAIGHT					1025
A16M20*			2		2	9935	STRAIGHT					1025
A16M21*			4	4	8	7350	STRAIGHT					1025
A16M22*				2	2	9535	STRAIGHT					1025
A16M23*				2	2	9570	STRAIGHT					1025
A25M01*	1				1	6865	STRAIGHT					1600
A25M02*	2				2	6875	STRAIGHT					1600
A25M03*	1				1	6900	STRAIGHT					1600
A25M04*		1			1	7300	STRAIGHT					1600
A25M05*		2			2	7275	STRAIGHT					1600
A25M06*		1			1	7265	STRAIGHT					1600
A25M07*			1		1	9970	STRAIGHT					1600
A25M08*			2		2	9945	STRAIGHT					1600
A25M09*			1		1	9935	STRAIGHT					1600
A25M10*				1	1	9535	STRAIGHT					1600
A25M11*				2	2	9545	STRAIGHT					1600
A25M12*				1	1	9570	STRAIGHT					1600
A32M01*	4	4			8	4680	STRAIGHT					2050
A32M02*			4	4	8	7350	STRAIGHT					2050
D25M01	11	11	17	17	56	2395	3	1700	305	305		



- NOTES:**
1. ALL REINFORCING STEEL SHALL BE EPOXY COATED.
  2. ALL DIMENSIONS ARE OUT TO OUT UNLESS OTHERWISE INDICATED.
  3. ALL DIMENSIONS ARE SHOWN IN MILLIMETERS, EXCEPT WHERE NOTED.
  4. THE BAR SIZE NUMBER IS SPECIFIED ON THE PLANS IN THE BAR MARK COLUMN. THE FIRST TWO DIGITS INDICATES THE BAR SIZE NUMBER, FOR EXAMPLE A16M01 IS A 16 BAR.
  5. STANDARD BENDS ARE TO BE PROVIDED, EXCEPT WHERE NOTED.
  6. MECHANICAL CONNECTORS
    - \* AFTER BAR NUMBER INDICATES BAR WITH MECHANICAL CONNECTOR. BAR LENGTH IS MEASURED TO THE CONSTRUCTION JOINT. EXTRA LENGTH AND/OR END PREPARATION MAY BE NECESSARY DEPENDING UPON THE TYPE OF MECHANICAL CONNECTOR FURNISHED.
    - AN APPROVAED TYPE OF MECHANICAL CONNECTOR FOR REINFORCING BARS SHALL BE PROVIDED. INSTALLATION OF CONNECTORS SHALL CONFORM WITH MANUFACTURER'S RECOMMENDED PROCEDURES. IF A DOWEL BAR SPLICE TYPE OF CONNECTOR IS FURNISHED, THE MINIMUM DOWEL BAR LENGTH TO BE INCLUDED WITH THE CONNECTOR SHALL BE AS GIVEN BY THE DIMENSION "L" SHOWN ON THE PLANS.
    - CONNECTORS AND DOWEL BARS SHALL BE EPOXY COATED. COATING FOR BOTH CONNECTORS AND BARS SHALL CONFORM TO SAME SPECIFICATIONS. COATINGS WHICH HAVE BEEN DAMAGED OR WHICH OTHERWISE DO NOT MEET SPECIFICATIONS WITH RESPECT TO COLOR, CONTINUITY, AND UNIFORMITY MAY BE REPAIRED AS DIRECTED BY ENGINEER OR THEY MAY BE REPLACED BY MATERIAL WHICH MEET THE SPECIFICATIONS.
    - CONNECTORS AND DOWEL BAR EXTRUSIONS SHALL CONFORM WITH ITEM 509 AND SHALL BE INCLUDED IN THE BID PRICE FOR THE APPROPRIATE CONCRETE ITEM.
  7. REINFORCING STEEL IS INCLUDED WITH THE APPROPRIATE CONCRETE ITEM FOR PAYMENT.

DESIGNED	JCO	CHECKED	MTL
DRAWN	MTL	REVISED	
REVIEWED	DBH	STRUCTURE FILE NO.	3603970
DATE	1/9/98		

STEEL LIST  
BRIDGE NO. HIG-506-0294  
OVER FRANKLIN BRANCH

HIG-506-4.735/6.222