

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
ASD-302-0.88
PERRY TOWNSHIP
ASHLAND COUNTY

PROJECT DESCRIPTION

IMPROVING 0.06 MILE OF S.R. 302 BY REPLACING THE EXISTING CONTINUOUS CONCRETE SLAB BRIDGE OVER MUDDY FORK OF MOHICAN RIVER WITH A PRECAST CONCRETE BOX BEAM BRIDGE INCLUDING APPROACH ROADWAY RECONSTRUCTION.

PROJECT EARTH DISTURBED AREA = 0.49 ACRES
ESTIMATED CONTRACTOR EARTH DISTURBED AREA = 0.125 ACRE
NOTICE OF INTENT EARTH DISTURBED AREA = N/A (NO NOI REQUIRED)

2008 SPECIFICATIONS

THE STANDARD SPECIFICATIONS OF THE STATE OF OHIO, DEPARTMENT OF TRANSPORTATION, INCLUDING CHANGES AND SUPPLEMENTAL SPECIFICATIONS LISTED IN THE PROPOSAL SHALL GOVERN THIS IMPROVEMENT.

MAINTENANCE OF TRAFFIC ENDORSEMENT

I HEREBY APPROVE THESE PLANS AND DECLARE THAT THE MAKING OF THIS IMPROVEMENT WILL REQUIRE THE CLOSING TO TRAFFIC OF THE HIGHWAY AND A DETOUR WILL BE PROVIDED AS INDICATED ON SHEET NO. 5.

APPROVED _____
DATE 2/17/09 DISTRICT DEPUTY DIRECTOR

APPROVED _____
DATE 5-1-09 DIRECTOR, DEPARTMENT OF TRANSPORTATION

FEDERAL PROJECT NO.
E 090 (785)

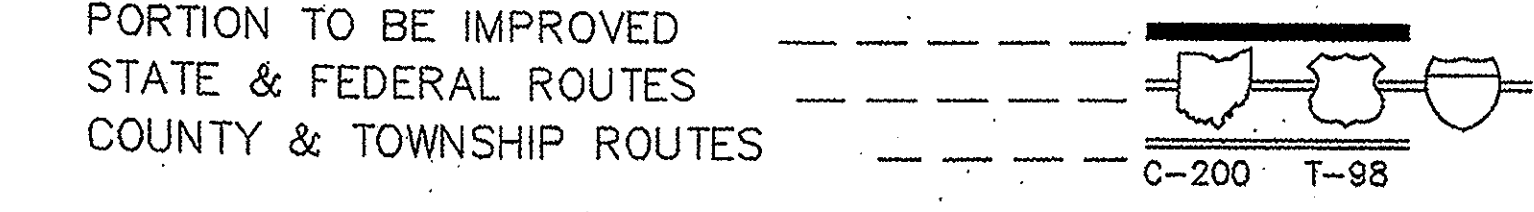
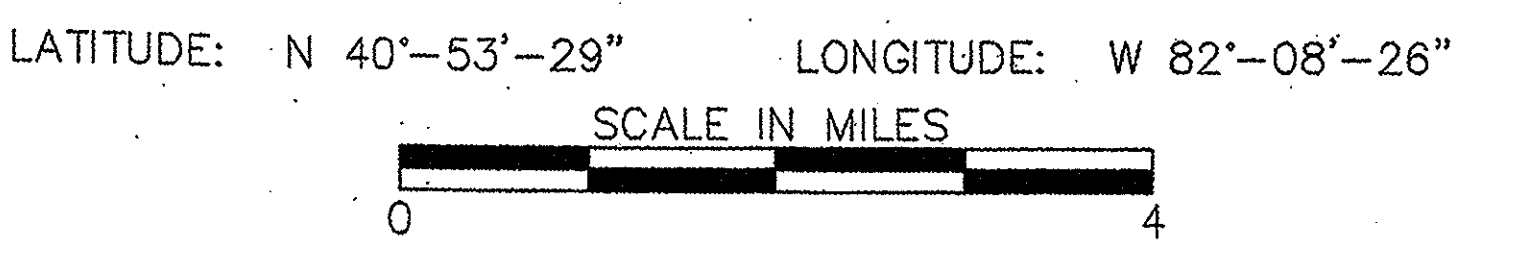
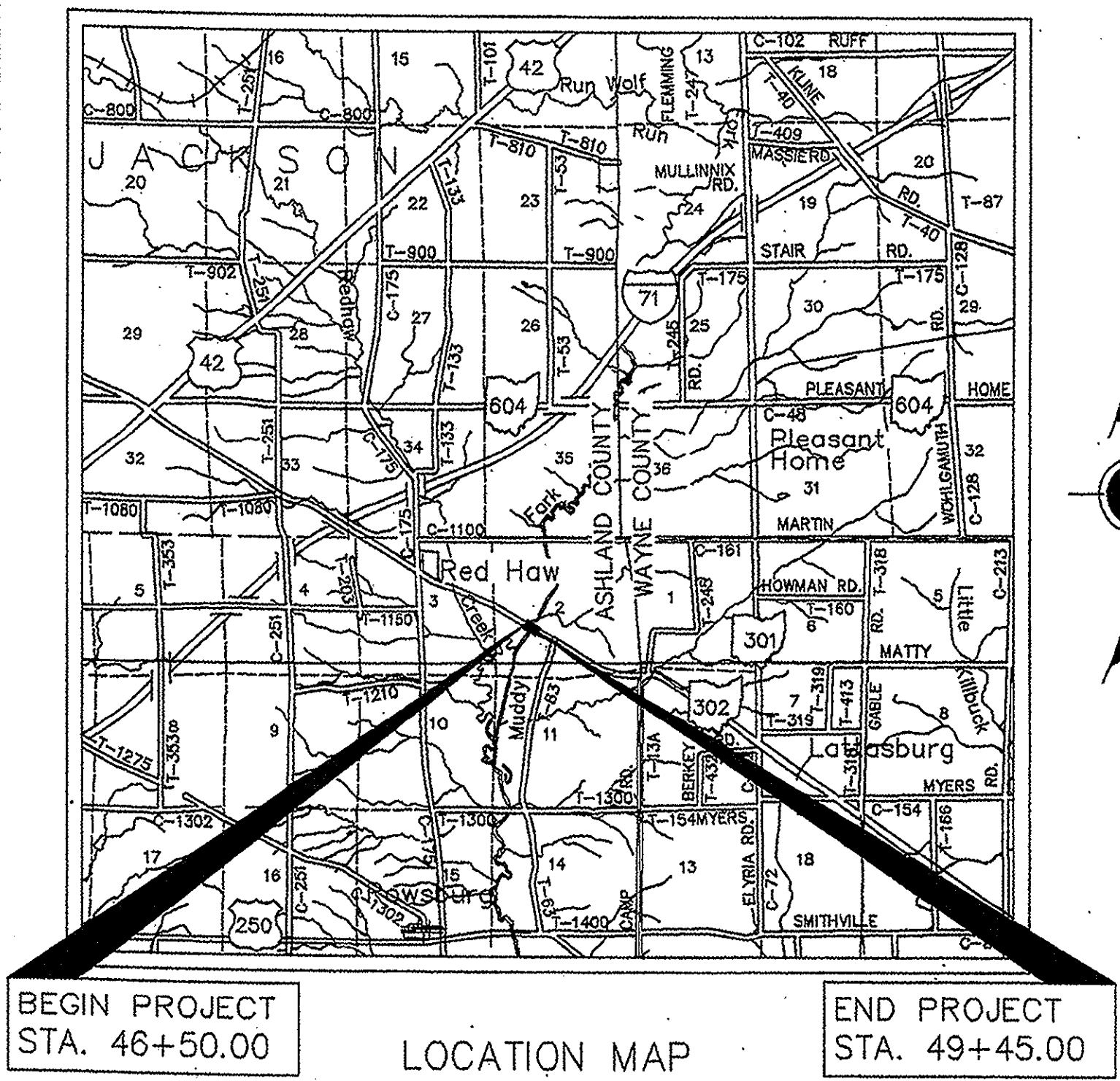
PID NO.
19571

CONSTRUCTION PROJECT NO.

RAILROAD INVOLVEMENT
NONE

ASD-302-0.88

1
21



DESIGN DESIGNATION:

CURRENT ADT (2010) _____ 1400

DESIGN YEAR ADT (2030) _____ 2060

DESIGN HOURLY VOLUME (2030) _____ 230

DIRECTIONAL DISTRIBUTION _____ 56%

TRUCKS (24 HOUR B&C) _____ 6%

DESIGN SPEED _____ 55 m.p.h.

LEGAL SPEED _____ 55 m.p.h.

DESIGN FUNCTIONAL CLASSIFICATION - RURAL MAJOR COLLECTOR

DESIGN EXCEPTIONS: NONE

INDEX OF SHEETS:

TITLE SHEET	1
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STRUCTURAL FOUNDATION INVESTIGATION	

STANDARD CONSTRUCTION DRAWINGS				SUPPLEMENTAL SPECIFICATIONS	
BP-3.1	10-19-07	AS-1-81	7-19-02		
BP-4.1	7-16-04	DBR-2-73	7-19-02	800	04-17-09
		DS-1-92	7-18-03		
				832	05-05-09
GR-1.1	7-16-04	PSBD-1-93	4-20-07		
GR-2.1	1-16-04				
GR-3.4	1-20-06	TC-41.10	10-19-07		
GR-4.2	1-19-07	TC-41.20	1-19-01		
		TC-42.20	7-16-04		
RM-1.1	7-18-08	TC-52.10	1-19-07		
		TC-52.20	1-19-07		
		TC-73.10	1-19-01		
DM-1.1	4-21-06				
DM-4.1	7-19-02				
DM-4.3	7-19-02	MT-97.10	9-05-06		
DM-4.4	7-19-02	MT-101.60	9-05-06		
DM-5.1	7-19-02	MT-105.10	1-16-09		

ENGINEERS SEAL:
FOR REVISIONS ONLY

STATE OF OHIO
DAVID C. MOLLENSHOTT
REGISTERED PROFESSIONAL ENGINEER
E-60210

David C. Molleshott 2/17/09
DATE

THOMAS L. SEITZ, P.E. #24757
DATE 5-2-01

PREPARED AND RECOMMENDED BY
SHAFFER, JOHNSTON, LICHTENWALTER
& ASSOCIATES, INC.
CONSULTING ENGINEERS - SURVEYORS
MANSFIELD OHIO WOOSTER

UNDERGROUND UTILITIES
CONTACT BOTH SERVICES
CALL TWO WORKING DAYS
BEFORE YOU DIG

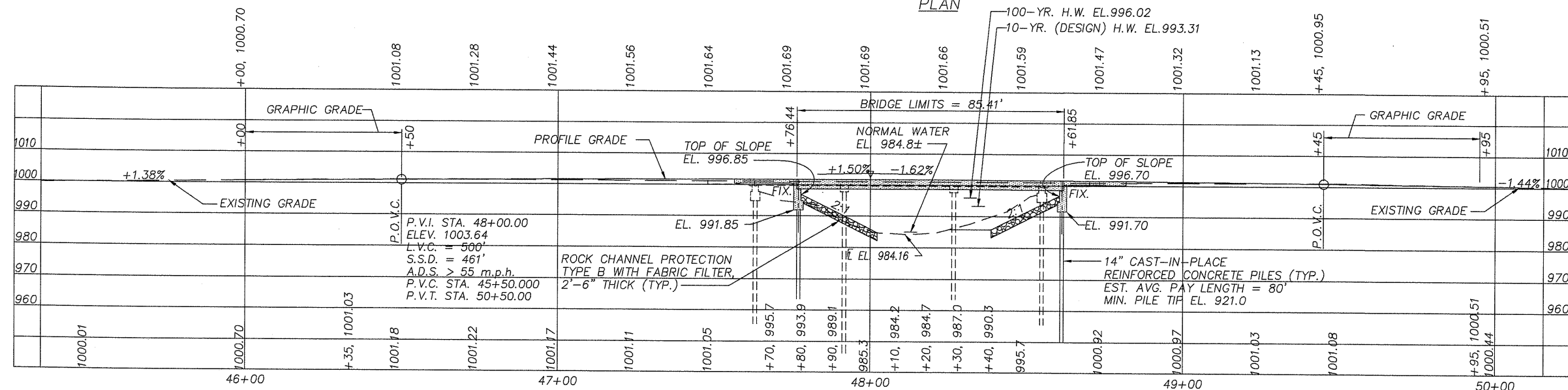
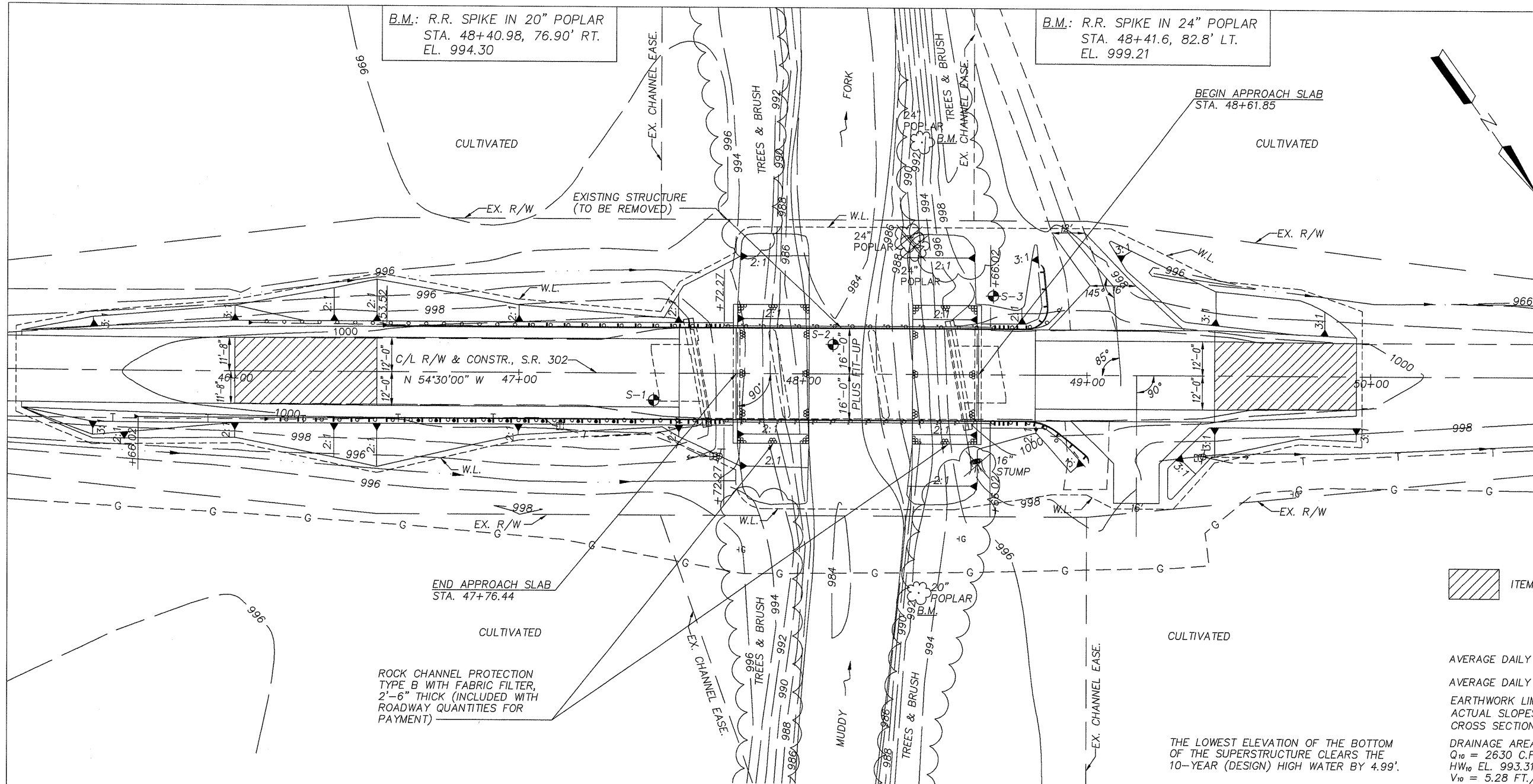
CALL 1-800-362-2764 (TOLL FREE)

OHIO UTILITIES PROTECTION SERVICE
NON-MEMBERS
MUST BE CALLED DIRECTLY

OIL & GAS PRODUCERS PROTECTIVE
SERVICE CALL: 1-800-925-0988

ASD-SR-302-0.88
091052 PID-19571
Dist 3 6/10/2009

DESIGN FILE: I:\projects\19571\Revisedplans\19571GTA.dwg
WORKSTATION: dmollens DATE: 2/12/2009



PROFILE ALONG C CONSTRUCTION

ITEM 202-WEARING COURSE REMOVED

AVERAGE DAILY TRAFFIC: 1400 (2010)
 2060 (2030)
 AVERAGE DAILY TRUCK TRAFFIC: 124 (2030)
 EARTHWORK LIMITS SHOWN ARE APPROXIMATE.
 ACTUAL SLOPES SHALL CONFORM TO PLAN
 CROSS SECTIONS.
 DRAINAGE AREA = 45.49 SQ. MI.
 $Q_{10} = 2630$ C.F.S. $Q_{100} = 4340$ C.F.S.
 HW_{10} EL. 993.31 HW_{100} EL. 996.02
 $V_{10} = 5.28$ FT./SEC. $V_{100} = 5.79$ FT./SEC.

FOUNDATION INVESTIGATION LEGEND:
 ● INDICATES CORE BORING LOCATION
 S-1 @ STA. 47+47.46, 9.68' RT.
 S-2 @ STA. 48+10.61, 10.26' LT.
 S-3 @ STA. 48+67.00, 28.00' LT.

EXISTING STRUCTURE
 BRIDGE NO. ASD-302-0089
 TYPE: CONTINUOUS REINFORCED CONCRETE SLAB
 WITH CAPPED PILE SUBSTRUCTURE
 SPANS: 28'-0"±, 35'-0"±, 28'-0"± (C/C BRGS.)
 ROADWAY: 32'-0"± F/F GUARDRAILS
 LOADING: CF-30(51)
 SKEW: 10'-00' R.F.
 WEARING SURFACE: MONOLITHIC CONCRETE
 APPROACH SLABS: 15'-0"± LONG
 ALIGNMENT: TANGENT
 DATE BUILT: 1956
 STRUCTURE FILE NO. 0305197

PROPOSED STRUCTURE
 TYPE: NON-COMPOSITE PRECAST CONCRETE BOX
 BEAM WITH CAPPED PILE SUBSTRUCTURE
 SIZE: 8'-3" C/C BEARINGS
 ROADWAY: 32'-0" F/F RAILING
 LOADING: HS20-44 AND THE ALTERNATE MILITARY
 LOADING
 SKEW: NONE
 WEARING SURFACE: ASPHALT CONCRETE (3" MIN.)
 APPROACH SLABS: AS-1-81 (20'-0" LONG)
 ALIGNMENT: TANGENT
 CROWN: 3/16"/FT.
 LATITUDE: N 40°-53'-29"
 LONGITUDE: W 82°-08'-26"

GENERAL NOTES

REFERENCE SHALL BE MADE TO STANDARD DRAWINGS:

AS-1-81, DATED 7-19-02
DS-1-92, DATED 7-18-03
PSBD-1-93, DATED 4-20-07
DBR-2-73, DATED 7-19-02

DESIGN SPECIFICATIONS:

THIS STRUCTURE CONFORMS TO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 2002, INCLUDING THE 2003, 2004, 2000S, AND 2006 SPECIFICATIONS AND THE O.D.O.T BRIDGE DESIGN MANUAL.

DESIGN LOADING:
HS20-44 AND THE ALTERNATE MILITARY LOADING.
FUTURE WEARING SURFACE OF 60 psf.

DESIGN STRESSES:

CONCRETE CLASS C - COMPRESSIVE STRENGTH 4000 psi

CONCRETE FOR PRESTRESSED BEAMS -
MIN. COMPRESSIVE STRENGTH AT 28 DAYS, f'c = 6000 psi
MIN. COMPRESSIVE STRENGTH AT TIME OF INITIAL PRESTRESS, f'c = 4000 psi
UNIT STRESS - 2400 psi COMPRESSION, 465 psi TENSION.

REINFORCING STEEL -
ASTM A615 OR A996, GRADE 60, MINIMUM YIELD STRENGTH 60,000 psi
MILD REINFORCING STEEL FOR THE CONCRETE PRESTRESSED BEAMS -
GRADE 60, MINIMUM YIELD STRENGTH 60,000 psi

PRESTRESSING STRAND -
ASTM A416, GRADE 270, 1/2" DIAMETER, SEVEN WIRE, UNCOATED,
LOW-RELAXATION STRAND. f's = 270,000 psi
INITIAL STRESS = 0.75 f's
1/2" DIAMETER AREA = 0.153 SQ. IN.
INITIAL TENSION LOAD = 30,982 LBS./STRAND

MINIMUM CONCRETE COVER - 2" UNLESS OTHERWISE NOTED.

DECK PROTECTION METHOD:

TYPE 3 WATERPROOFING
SEALING OF CONCRETE SURFACES
STEEL DRIP STRIP

REMOVAL OF EXISTING STRUCTURE:

WHEN NO LONGER NEEDED TO MAINTAIN TRAFFIC THE EXISTING STRUCTURE SHALL BE REMOVED UPON RECEIVING PERMISSION FROM THE ENGINEER.

PILE DESIGN LOADS (ULTIMATE BEARING VALUE):

THE ULTIMATE BEARING VALUE IS 104 TONS PER PILE FOR THE 14" CAST-IN-PLACE REINFORCED CONCRETE ABUTMENT PILES.

ABUTMENT PILES

14 PILES OF ORDER LENGTH 85' LONG
1 DYNAMIC LOAD TESTING ITEMS
2 RESTRIKING ITEMS

ITEM SPECIAL, STEEL DRIP STRIP:

SEE STANDARD DRAWING DS-1-92 FOR DETAILS AND NOTES.

ITEM 516, BEARING PAD SHIMS:

PLACE 1/8" THICK PREFORMED BEARING PAD SHIMS, PLAN AREA 9 INCHES BY 9 INCHES, UNDER THE ELASTOMERIC BEARING PADS WHERE REQUIRED FOR PROPER BEARING. FURNISH TWO SHIMS PER BEAM. THE DEPARTMENT WILL MEASURE THIS ITEM BY THE TOTAL NUMBER SUPPLIED. THE DEPARTMENT WILL PAY FOR ACCEPTED QUANTITIES AT THE CONTRACT PRICE FOR ITEM 516- 1/8" PREFORMED BEARING PADS. ANY UNUSED SHIMS WILL BECOME THE PROPERTY OF THE STATE.

SURVEY DISK ON STRUCTURE:

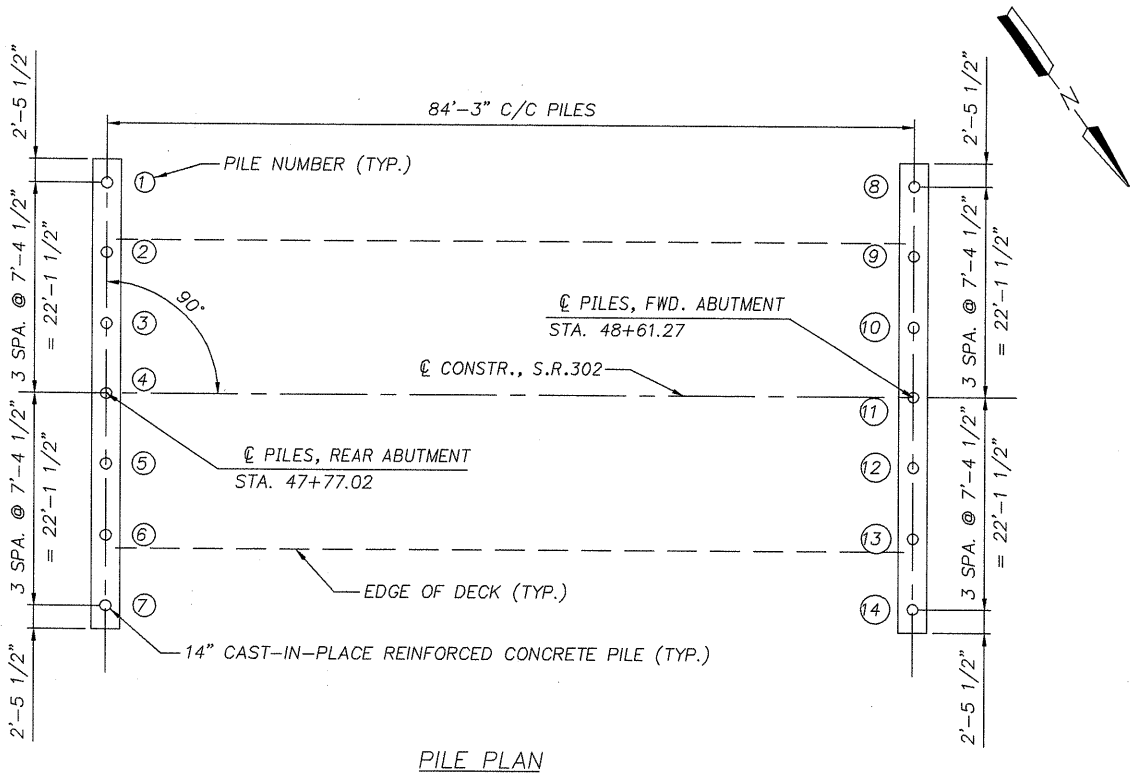
THE CONTRACTOR SHALL NOTIFY THE ENGINEER AT LEAST ONE (1) WEEK IN ADVANCE OF POURING THE CONCRETE FOR COMPLETION OF THE ABUTMENT. THE ENGINEER WILL PROVIDE THE CONTRACTOR ONE (1) SURVEY DISK (OBTAINED FROM THE DISTRICT SURVEYOR) WHICH THE CONTRACTOR SHALL PLACE IN THE SURFACE OF THE FRESH CONCRETE. THE LOCATION OF THE DISK SHALL BE ON THE ABUTMENT AND ON A FLAT, HORIZONTAL SURFACE BEYOND THE EDGE OF DECK AND GUARDRAIL. THE BENCHMARK SHALL BE ACCESSIBLE TO A SURVEYOR'S ROD WITHOUT ANY OBSTRUCTIONS. COST OF THIS WORK IS CONSIDERED INCIDENTAL TO THE CONCRETE BID ITEM.

ITEM 511, CLASS C CONCRETE, ABUTMENT INCLUDING FOOTER, AS PER PLAN:
THE AGGREGATE SHALL CONSIST OF LIMESTONE.

ITEM 515, PRESTRESSED CONCRETE NON-COMPOSITE BOX BEAM BRIDGE MEMBERS, LEVEL 1, B33-48:

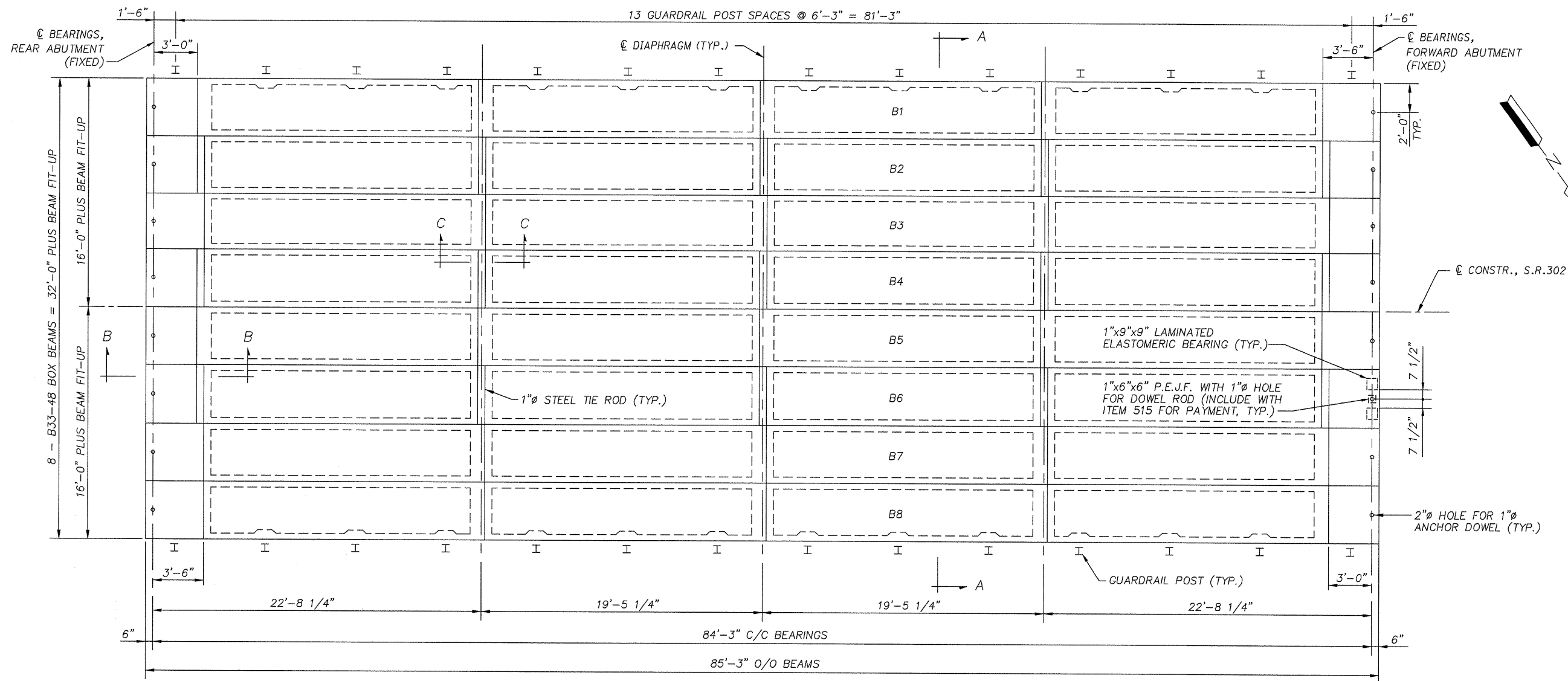
FURNISH MORTAR CONFORMING TO PROPOSAL NOTE "HIGH EARLY STRENGTH KEYWAY GROUT FOR PRESTRESSED/POST TENSIONED CONCRETE MEMBERS."

ITEM 202, STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN:
THE EXISTING STRUCTURE IS TO BE ENTIRELY REMOVED EXCEPT FOR THE PILES. THE EXISTING PILES ARE TO BE REMOVED TO EL. 985.0 AT THE REAR ABUTMENT, EL. 987.0 AT PIER NO.1, EL. 985.0 AT PIER NO.2 AND EL. 991.0 AT THE FORWARD ABUTMENT.

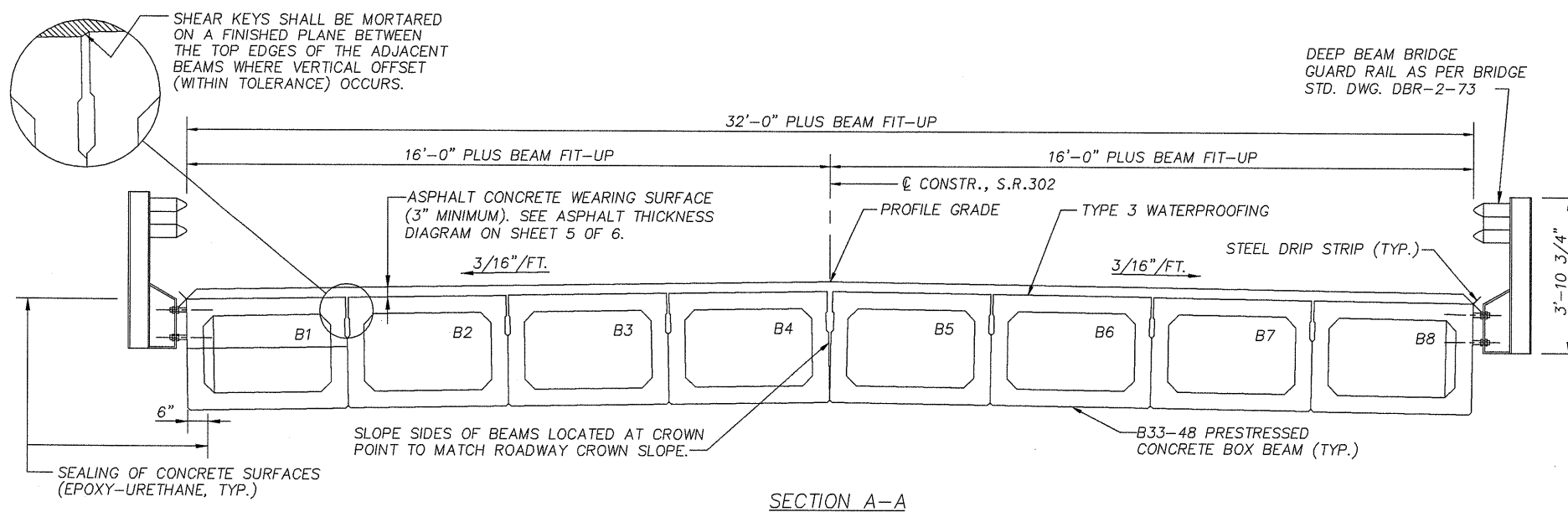


PILE PLAN

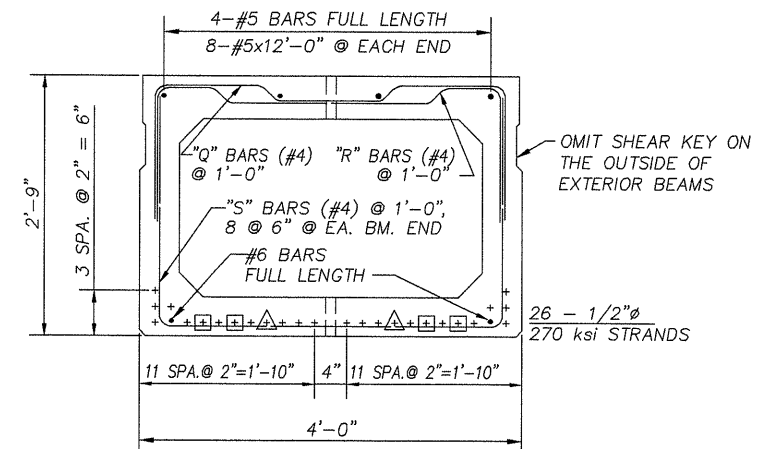
REVISED BY: DCM 2-11-09				ESTIMATED QUANTITIES				CALC'D BY: JSK 4-6-01 CHK'D BY: RAK 4-11-01			
ITEM	ITEM EXT.	TOTAL	UNIT	DESCRIPTION	ABUTS.	SUPER.	GEN'L	REFERENCE SHEET NO.			
202	11003	LUMP		STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN			LUMP	2/6			
407	10000	24	GALLON	TACK COAT		24		4/21			
407	14000	12	GALLON	TACK COAT FOR INTERMEDIATE COURSE		12		4/21			
442	10501	11	CU YD	ASPHALT CONCRETE SURFACE COURSE, 9.5MM, TYPE A (448), AS PER PLAN		11		4/21			
442	20201	18	CU YD	ASPHALT CONCRETE INTERMEDIATE COURSE, 19MM, TYPE A (448), AS PER PLAN		18		4/21			
503	11100	LUMP		COFFERDAMS, CRIBS AND SHEETING			LUMP				
503	21300	LUMP		UNCLASSIFIED EXCAVATION	LUMP						
505	11100	LUMP		PILE DRIVING EQUIPMENT MOBILIZATION	LUMP						
507	00600	1120	FT	14" CAST-IN-PLACE REINFORCED CONCRETE PILES, DRIVEN	1120						
507	00650	1190	FT	14" CAST-IN-PLACE REINFORCED CONCRETE PILES, FURNISHED	1190						
509	10000	5615	POUND	EPOXY COATED REINFORCING STEEL	5615						
511	43501	65	CU YD	CLASS C CONCRETE, ABUTMENT INCLUDING FOOTING, AS PER PLAN	65			2/6			
512	10100	102	SQ YD	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	41	61					
512	33010	301	SQ YD	TYPE 3 WATERPROOFING		301					
515	10090	8	EACH	PRESTRESSED CONCRETE NON-COMPOSITE BOX BEAM BRIDGE MEMBERS, LEVEL 1, B33-48		8		2/6			
SPECIAL	51631300	65	FT	POLYMER MODIFIED ASPHALT EXPANSION JOINT SYSTEM		65		6/6			
516	41100	16	EACH	1/8" PREFORMED BEARING PAD		16		2/6			
516	43100	32	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES ONLY (NEOPRENE), 1" X 9" X 9", 50 DUROMETER		32					
517	72300	187.50	FT	RAILING (DEEP BEAM RAIL WITH STEEL TUBULAR BACKUP AND TYPE 2 STEEL POSTS AND ANCHOR BOLTS)		187.50					
518	21231	LUMP		POROUS BACKFILL WITH FILTER FABRIC, AS PER PLAN	LUMP			3/6			
SPECIAL	51822300	197	FT	STEEL DRIP STRIP		197		2/6			
518	40000	99	FT	6" PERFORATED CORRUGATED PLASTIC PIPE	99						
518	40010	48	FT	6" NON-PERFORATED CORRUGATED PLASTIC PIPE, INCLUDING SPECIALS	48						
523	20000	1	EACH	DYNAMIC LOAD TESTING	1						
523	20500	2	EACH	RESTRIKING	2						
526	15000	142	SQ YD	REINFORCED CONCRETE APPROACH SLABS (T=13")			142				



BEAM LAYOUT



SECTION A-A



B33-48 BOX BEAM DETAIL

NOTES:

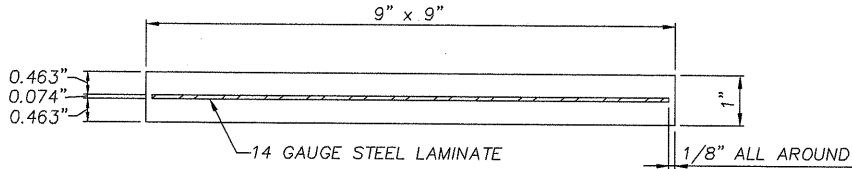
FOR ELASTOMERIC BEARING PAD DETAILS, SECTIONS B-B AND C-C, AND SUPERSTRUCTURE NOTES, SEE SHEET 5 OF 6.

FOR DRIP STRIP DETAILS, SEE BRIDGE STD. DWG. DS-1-92.

FOR PRESTRESSED BOX BEAM DETAILS, SEE BRIDGE STD. DWG. PSBD-1-93.

ELASTOMERIC BEARINGS SHALL COMPLY WITH ITEM 516 AND ARTICLES 18.4.5.1 AND 18.5.6.2 OF SECTION 18, BEARING DEVICES, DIVISION II, CONSTRUCTION, OF THE A.A.S.H.T.O. STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES. BEARINGS SHALL BE GRADE 3, 50 DUROMETER ELASTOMER, AND SHALL BE SUBJECTED TO THE LOAD TESTING REQUIREMENTS DEFINED IN ARTICLE 18.7.4.5 OF THE A.A.S.H.T.O. DOCUMENT LISTED ABOVE. BEARINGS WERE DESIGNED UNDER ARTICLE 14.6.6 OF SECTION 14, BEARINGS, DIVISION I, DESIGN. TESTING SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE BEARINGS, EACH.

BASIS OF PAYMENT: THE UNIT BID PRICE SHALL INCLUDE ALL MATERIALS, LABOR AND INCIDENTALS NECESSARY TO FURNISH AND INSTALL LAMINATED ELASTOMERIC BEARINGS. PAYMENT WILL BE MADE AT THE CONTRACT PRICE FOR ITEM 516, ELASTOMERIC BEARING WITH INTERNAL LAMINATES ONLY (NEOPRENE), AS PER PLAN, 1"x9"x9" (50 DUROMETER), EACH.



LAMINATED ELASTOMERIC BEARING

BEARING DESIGN LOADS

D.L. = 27.92 K
L.L. = 9.36 K
TOTAL = 37.28 K

SUPERSTRUCTURE NOTES:

CALCULATED CAMBER AT THE TIME OF PAVING INCLUDING ALLOWANCE FOR CAMBER GROWTH DUE TO CREEP IS 1 1/8".

CALCULATED DEFLECTION DUE TO WEIGHT OF SURFACE COURSE AND RAILING IS 1".

CAMBER OF 5/8" AT CENTER OF SPAN IS REQUIRED FOR THE CREST VERTICAL CURVE.

REQUIRED EXTRA CAMBER IS 1/2". THIS SHALL BE PROVIDED BY THICKENING THE 442 INTERMEDIATE COURSE FROM 1 3/4" AT ENDS OF SPAN TO 2 3/8" AT CENTER OF SPAN.

ASPHALT CONCRETE BRIDGE PAVEMENT SHALL CONSIST OF A VARIABLE THICKNESS OF 442 INTERMEDIATE COURSE AND 1 3/4" THICKNESS OF 442 SURFACE COURSE. THE 442 INTERMEDIATE COURSE SHALL BE PLACED IN TWO OPERATIONS. THE FIRST COURSE SHALL BE 1 3/4" UNIFORM THICKNESS. THE SECOND COURSE SHALL BE FEATHERED TO PLACE THE SURFACE PARALLEL TO AND 1 1/4" BELOW FINAL PAVEMENT SURFACE ELEVATION.

GRADE 60 EPOXY COATED REINFORCING STEEL

MARK	NUMBER			LENGTH	WEIGHT (LBS.)	TYPE	DIMENSIONS			
	RA	FA	TOTAL				A	B	C	INC.
A401	14	14	28	9'-0"	168	1	1'-9"	2'-6"		
A501	40	40	80	11'-0"	918	1	2'-8"	2'-7"		
A502	8	8	16	26'-2"	437	STR.				
A503	4	4	8	31'-11"	266	STR.				
A504	2	2	4	36'-2"	151	STR.				
A505	12	12	24	10'-5"	261	STR.				
A506	4	4	8	16'-11"	141	2	1'-2"	8'-0"	8'-0"	
	2	2	4	11'-1"				5'-1"	5'-1"	
A507	SERIES	SERIES	SERIES	TO	221	2	1'-2"	TO	TO	8 5/8"
	OF 4	OF 4	OF 4	15'-5"				7'-3"	7'-3"	
A508	4	4	8	5'-4"	45	STR.				
A509	4	4	8	8'-6"	71	3	2'-2"	6'-4"	2'-10 1/4"	
A510	22	22	44	11'-10"	543	2	1'-11"	5'-1"	5'-1"	
A511	22	22	44	6'-6"	298	2	7"	3'-1"	3'-1"	
A601	4	4	8	31'-11"	384	STR.				
A801	8	8	16	27'-8"	1182	STR.				
A802	22	22	44	4'-6"	529	4	1'-5"	1'-9"	1'-5"	
TOTAL					5615					

TOTAL CARRIED TO SHEET 17.

BAR SIZE IS INDICATED IN THE BAR MARK. THE FIRST LETTER IDENTIFIES THE BAR LOCATION. THE NEXT TWO DIGITS INDICATE THE BAR SIZE DESIGNATION. THE REMAINING DIGITS INDICATE THE SEQUENCE NUMBER.

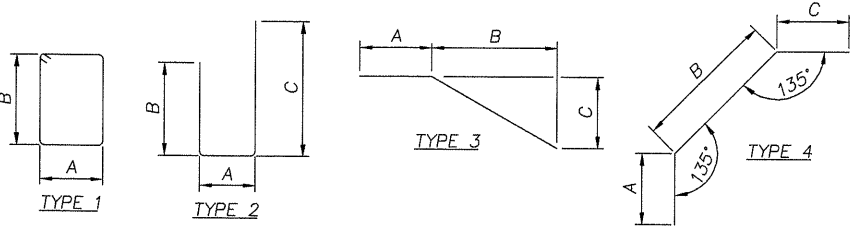
EXAMPLE: A501

A = LOCATION OF THE BAR IN THE STRUCTURE (ABUTMENT)

5 = BAR SIZE DESIGNATION (#5, 5/8"Ø)

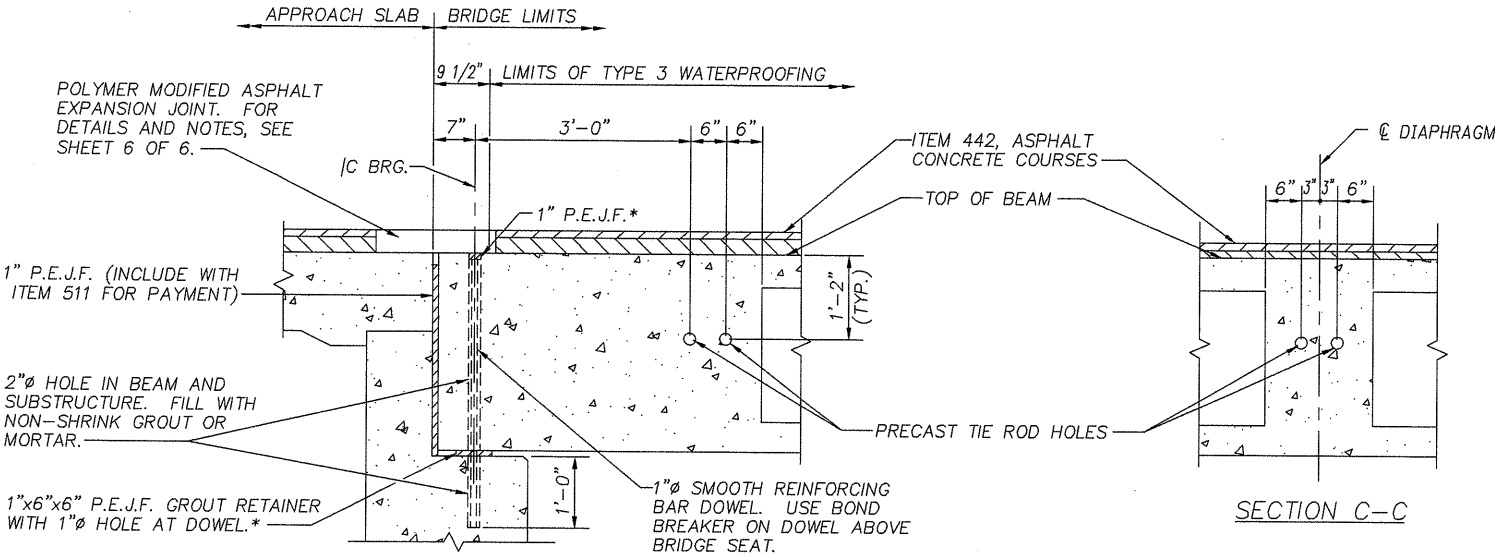
01 = SEQUENCE NUMBER

BAR DIMENSIONS SHOWN ARE OUT-TO-OUT UNLESS NOTED. ALL REINFORCING STEEL TO BE EPOXY COATED. STRAIGHT BARS ARE INDICATED BY "STR." "INC." INDICATES INCREMENTAL CHANGE IN BAR LENGTH FOR SERIES-TYPE REINFORCING STEEL.



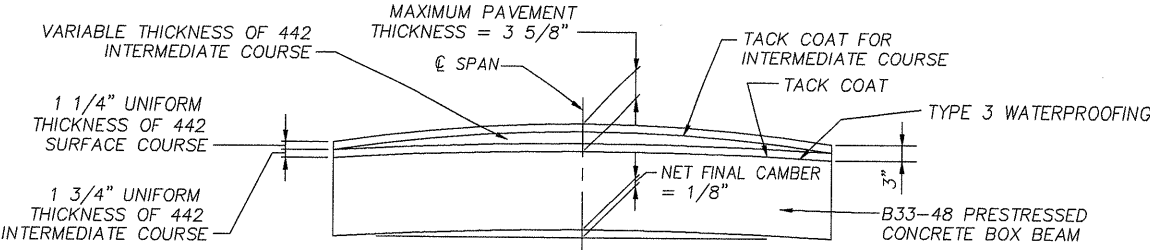
FINAL TOP OF DECK ELEVATIONS TABLE

SPAN POINT	LEFT & RIGHT DECK FASCIA		PROFILE GRADE	
	STATION	ELEVATION	STATION	ELEVATION
0.00	47+77.02	1001.44	47+77.02	1001.69
0.50	48+19.15	1001.42	48+19.15	1001.67
1.00	48+61.27	1001.28	48+61.27	1001.54



* - TO BE INCLUDED WITH ITEM 515 FOR PAYMENT.

INSTALLATION PROCEDURE FOR FIXED ANCHOR DOWEL:
PLACE P.E.J.F. GROUT RETAINER. DRILL AND CLEAN HOLES.
THEN PLACE NON-SHRINKING GROUT, DOWEL AND 1" P.E.J.F. PLUG.



ASPHALT THICKNESS DIAGRAM

DESIGN FILE: i:\projects\19571\Revisedplans\19571SDD.dwg
WORKSTATION: dmollens
DATE: 2/12/2009

GENERAL NOTES AND DETAILS FOR POLYMER MODIFIED ASPHALT EXPANSION JOINT SYSTEM

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.

PRODUCT NAME	SUPPLIER	ADDRESS	PHONE NO.
THORMA-JOINT	DYNAMIC SURFACE APPLICATIONS, LTD	373 VILLAGE RD. PENNSDALE, PA 17756	(570)546-6041
MATRIX 502	CRAFCO INC.	420 N. ROOSEVELT AVE. CHANDLER, AZ 85226	(800)528-8242
EXPANDEX JOINT SYSTEM	WATSON-BOWMAN ACME	95 PINEVIEW DR. AMHERST, NY 14228	(716)691-7566
APJ ASPHALTIC PLUG EXPANSION JOINT	WYOMING EQUIPMENT SALES	281 SIXTH STREET P.O. BOX 287 WEST WYOMING, PA 18644	(570)693-2810

MATERIALS:

BRIDGING PLATE:

MILD STEEL $\frac{1}{8}$ " OR $\frac{1}{4}$ " THICK PLATE, 8" WIDE OR 18 GAUGE ALUMINUM, 8" 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. MIN 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 $\pm$ 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 SHALL BE A CLOSED CELL FOAM EXPANSION JOINT FILLER CAPABLE OF WITHSTANDING THE PLACEMENT TEMPERATURE OF THE POLYMER MODIFIED ASPHALT.

NOTE: PRIOR TO PLACEMENT OF ANY PORTION OF THE JOINT SYSTEM, THE PROJECT ENGINEER MUST HAVE CERTIFIED TEST DATA MEETING ALL THE MINIMUM REQUIREMENTS OF ALL THE MATERIALS OF THE JOINT SYSTEM.

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 TWO INCHES DEEP (20" 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 3000 DEGREES F. AT A VELOCITY OF 3,000 FEET PER

SECOND WITH 15 PSIG 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, 6 INCHES 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 $\frac{1}{8}$ " OR MORE WILL FIRST BE FILLED WITH AN APPROPRIATELY SIZED BACKER ROD. THE BACKER ROD WILL BE INSTALLED SO THAT IT IS BETWEEN $\frac{1}{8}$ " AND 1-1/8" 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 ACCOMODATE THE ENTIRE JOINT LENGTH. SPIKE HOLES WILL BE DRILLED AT 1 FOOT 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 $\frac{1}{2}$ " THICK ON THE BOTTOM OF THE JOINT CAVITY, WITH POOLS OF GREATER THICKNESS WHERE SURFACE IRREGULARITIES EXIST. THE BINDER APPLICATION TEMPERATURE WILL BE BETWEEN 350 AND 390 DEGREES F. THE BINDER WILL NOT BE ALLOWED TO BE HEATED ABOVE 410 DEGREES F. NOR ALLOWED TO EXCEED 390 DEGREES F. 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 275 TO 325 DEGREES F., 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, UNLESS PATENTED INSTALLATION REQUIRES DIFFERENTLY, NOT LESS THAN $\frac{3}{4}$ OF AN INCH NOR EXCEEDING 2-1/2 INCHES. THE THICKNESS OF EACH LAYER CAN BE VARIED WITHIN THESE LIMITS, TO ACHIEVE THE REQUIRED JOINT THICKNESS (MIN. 2 INCHES). 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 $\frac{1}{2}$ INCH AND ONE (1) INCH. 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:

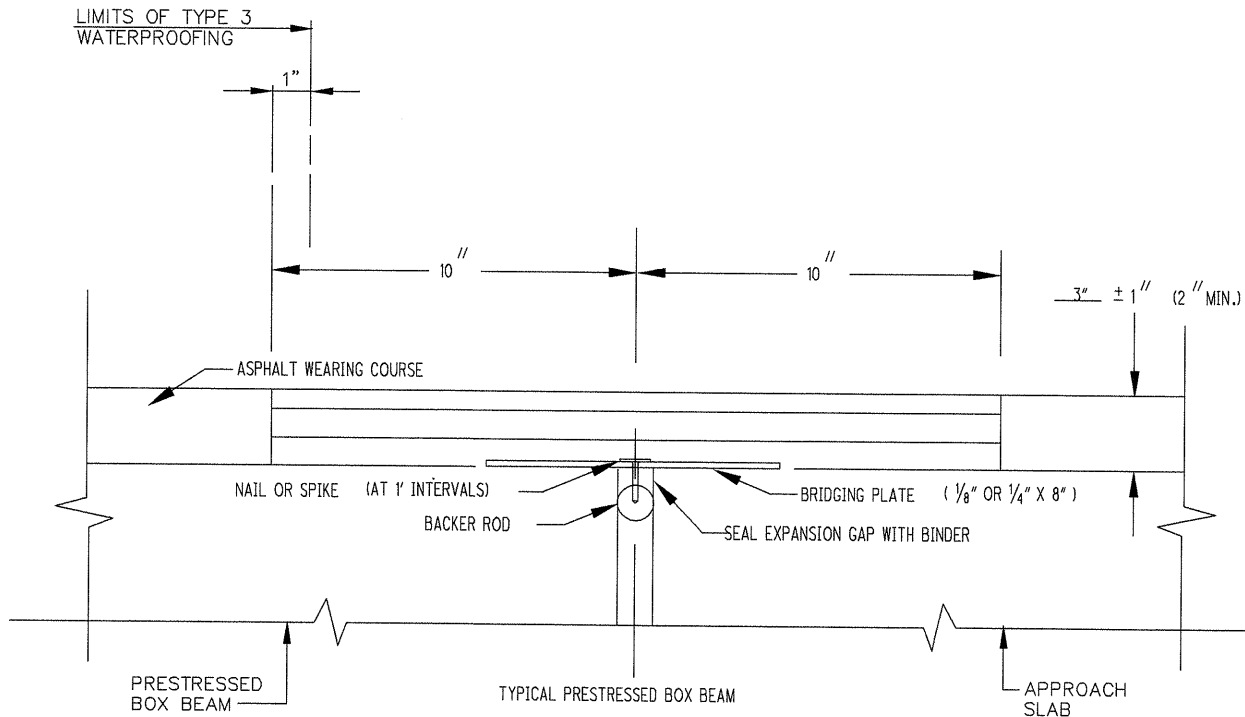
IF NECESSARY TO FACILITATE TRAFFIC MAINTENANCE, THE JOINT WILL BE INSTALLED IN TWO (2) HALF-WIDTH PHASES. DURING PHASE 1 APPROXIMATELY HALF OF THE TOTAL JOINT WILL BE INSTALLED. DURING PHASE 2, A MINIMUM OF TWO (2) INCHES OF THE PHASE 1 JOINT WILL BE REMOVED, AT OR NEAR THE CENTERLINE, WITH THE REMAINDER 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 QUART SAMPLE OF BINDER WILL BE RETRIEVED FROM EACH BRIDGE FOR FURTHER TESTING BY THE O.D.O.T OFFICE OF MATERIALS MANAGEMENT.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT:

THE DEPARTMENT WILL MEASURE THE JOINT BY THE NUMBER OF FEET AND WILL PAY FOR ACCEPTED QUANTITIES AT THE CONTRACT PRICE AS: ITEM SPECIAL, FEET, POLYMER MODIFIED ASPHALT EXPANSION JOINT SYSTEM.



POLYMER MODIFIED ASPHALT EXPANSION JOINT DETAILS
BRIDGE NO. ASD-302-0089
OVER MUDDY FORK

ASD-302-0.88

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DESIGNED	DATE	CALCULATED
MAM	10-28-96	
DRAWN	REVISION	CHECKED
MAM	10-17-03	
	04-15-05	