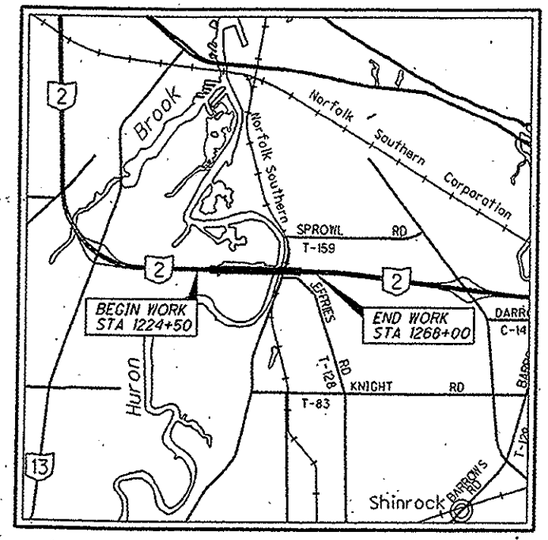
ERI - 2 - 19.11
118010
Dist 3
PID 88754
5/5/2011



LOCATION MAP

LATITUDE: N 41°22'12" LONGITUDE: W 82°32'42"

SCALE IN MILES
0 1/2 1 2

N

PORTION TO BE IMPROVED
INTERSTATE HIGHWAY
STATE & FEDERAL ROUTES
COUNTY & TOWNSHIP ROADS
OTHER ROADS

DESIGN DESIGNATION

CURRENT ADT (2012)	23660
DESIGN YEAR ADT (2032)	28100
DESIGN HOURLY VOLUME (2032)	2810
DIRECTIONAL DISTRIBUTION	55%
TRUCKS (24 HOUR B&C)	14%
DESIGN SPEED	65 MPH
LEGAL SPEED	65 MPH
DESIGN FUNCTIONAL CLASSIFICATION	RURAL PRINCIPAL ARTERIAL
NHS PROJECT	YES

DESIGN EXCEPTIONS

NONE REQUIRED

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

PLAN PREPARED BY:
ENGINEERING ASSOCIATES, INC.
1935 EAGLE PASS - WOOSTER, OHIO
TELEPHONE : (330) 345-6556

ENGINEERS SEAL:	ENGINEERS SEAL:
FOR STRUCTURE ONLY	FOR ENTIRE PLAN EXCEPT STRUCTURES
STATE OF OHIO HERBERT KOGER JR. E-50539 REGISTERED PROFESSIONAL ENGINEER	STATE OF OHIO A. FREDERICK SELING JR. E-48722 REGISTERED PROFESSIONAL ENGINEER
SIGNED: Herbert Koger	SIGNED: A. Frederick Seling Jr.
DATE: 12-4-11	DATE: 2/14/11

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION

ERI-2-19.11

HURON TOWNSHIP
ERIE COUNTY

INDEX OF SHEETS:

PROJECT DESCRIPTION

THIS PROJECT INCLUDES THE REPLACEMENT OF MODULAR JOINTS AND MINOR BRIDGE REPAIRS ON THE STRUCTURE CARRYING S.R. 2 OVER THE HURON RIVER IN ERIE COUNTY, OHIO. THE BRIDGE IS APPROXIMATELY 0.49 MILES LONG. TRAFFIC WILL BE MAINTAINED WITH CROSSOVERS.

EARTH DISTURBED AREAS

PROJECT EARTH DISTURBED AREA:	N/A
ESTIMATED CONTRACTOR EARTH DISTURBED AREA:	N/A
NOTICE OF INTENT EARTH DISTURBED AREA:	N/A
	(MAINTENANCE PROJECT)

LIMITED ACCESS

THIS IMPROVEMENT IS ESPECIALLY DESIGNED FOR THROUGH TRAFFIC AND HAS BEEN DECLARED A LIMITED ACCESS HIGHWAY OR FREEWAY BY ACTION OF THE DIRECTOR IN ACCORDANCE WITH THE PROVISIONS OF SECTION 5511.02 OF THE OHIO REVISED CODE.

2010 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.

I HEREBY APPROVE THESE PLANS AND DECLARE THAT THE MAKING OF THIS IMPROVEMENT WILL NOT REQUIRE THE CLOSING TO TRAFFIC OF THE HIGHWAY AND THAT PROVISIONS FOR THE MAINTENANCE AND SAFETY OF TRAFFIC WILL BE AS SET FORTH ON THE PLANS AND ESTIMATES.

APPROVED _____ DISTRICT DEPUTY DIRECTOR
DATE 1/20/11

APPROVED _____ DIRECTOR, DEPARTMENT OF TRANSPORTATION
DATE 2-9-11

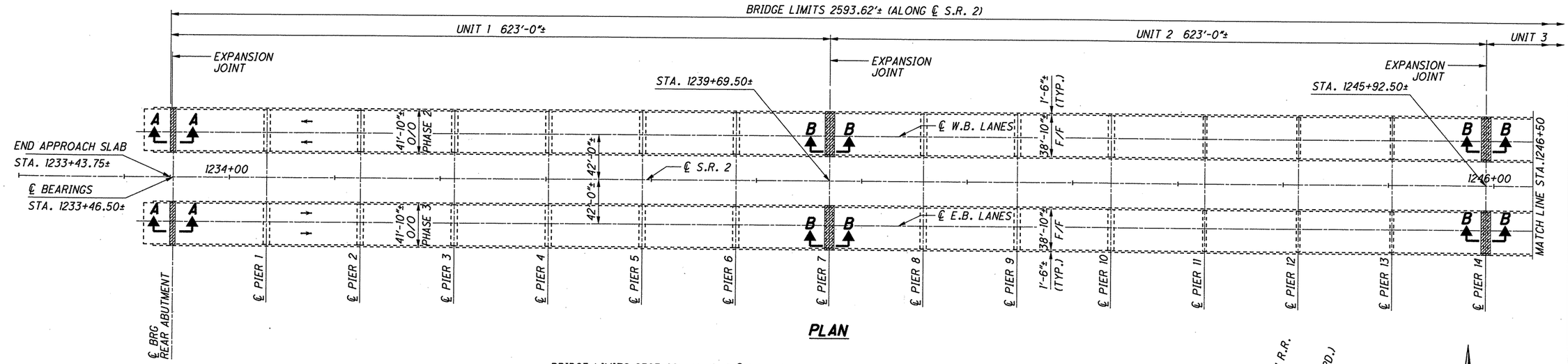
STANDARD CONSTRUCTION DRAWINGS

BP-3.1	10-19-07	GR-5.1	4-16-10	MT-99.20	1-16-09	RM-4.1	10-20-06	EXJ-2-81	7-19-02	800	1-21-11
		GR-5.2	4-16-10	MT-99.30	10-15-10	RM-4.2	10-15-10	EXJ-4-87	7-19-02	802	1-21-11
BP-9.1	4-15-05	GR-5.3	4-16-10					EXJ-6-06	1-20-06	832	5-5-09
				MT-100.00	1-16-09	TC-41.20	1-19-01			843	4-18-03
CB-3.1	7-15-05	GR-6.1	4-16-10			TC-42.20	1-21-11				
				MT-101.60	4-17-09					902	7-16-10
DM-4.3	4-17-09	MT-35.10	4-20-01	MT-101.70	1-21-11	TC-52.10	1-19-07				
DM-4.4	4-17-09			MT-101.90	1-16-09	TC-52.20	1-19-07				
		MT-95.30	7-17-09								
GR-1.1	7-16-04	MT-95.40	7-17-09	MT-102.10	7-17-09	TC-65.10	1-21-05				
		MT-95.70	10-15-10	MT-102.20	4-17-09	TC-65.11	1-21-05				
GR-2.1	1-16-04	MT-95.82	9-5-06	MT-102.30	4-17-09						
						TC-72.20	10-16-09				
GR-3.1	10-16-09	MT-98.11	7-17-09	MT-105.10	1-16-09	TC-73.10	1-19-01				
GR-3.2	10-16-09										

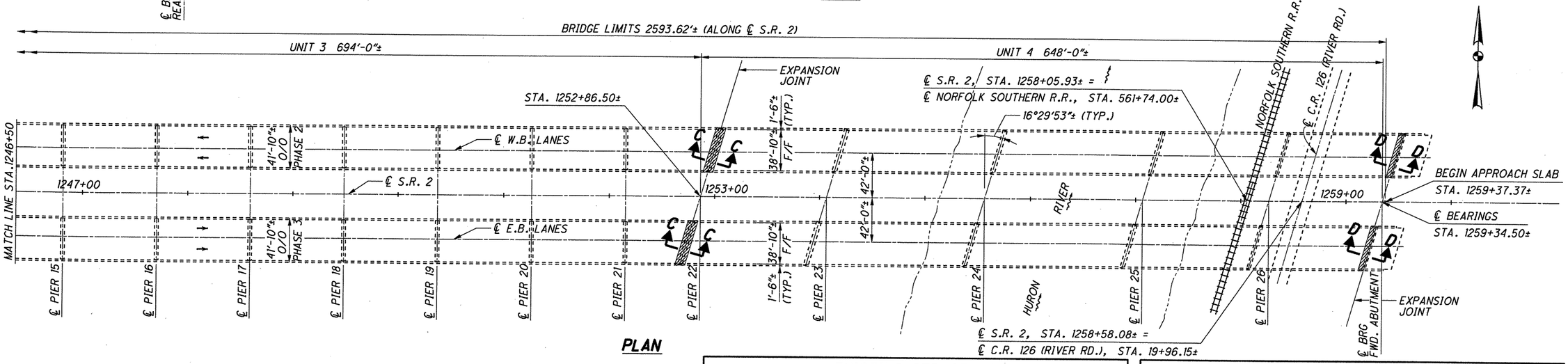
SUPPLEMENTAL SPECIFICATIONS

SPECIAL PROVISIONS

FEDERAL PROJECT NO. E100747
PID NO. 88754
CONSTRUCTION PROJECT NO. -
RAILROAD INVOLVEMENT NORFOLK SOUTHERN
ERI-2-19.11
1/41



PLAN



PLAN

LEGEND

▨ - DENOTES AREA TO BE REMOVED

EXISTING STRUCTURE

TYPE: CONTINUOUS PRESTRESSED I-BEAMS UNITS 1, 2 & 3. CONTINUOUS COMPOSITE WELDED STEEL PLATE GIRDERS UNIT 4. REINFORCED CONCRETE DECK, COMBINATION STRUCTURE, CAPPED PILE PIERS AND REINFORCED CONCRETE PIERS AND ABUTMENTS.

SKEW: 0° 00"± UNITS 1, 2 & 3 AND 16° 29' 53"± (LEFT FORWARD UNIT 4)

SPANS: (UNITS 1 AND 2); 7 SPANS @ 89'-0",±
(UNIT 3); 7 SPANS @ 89'-0"±, 71'-0"±
(UNIT 4); 120'-0"±, 150'-0"±, 150'-0"±, 120'-0"±, 108'-0"±

ROADWAY: 38'-10"± TOE/TOE PARAPETS

LOADING: HS-20-44 CASE II AND THE ALTERNATE MILITARY LOADING

WEARING SURFACE: MONOLITHIC CONCRETE

DATE BUILT: 1987

APPROACH SLABS: AS-1-81 (25'-0"± LONG)

ALIGNMENT: TANGENT

CROWN: 0.0156±

SLOPE PROTECTION: CRUSHED AGGREGATE

TRAFFIC: ADT (2032) 28100
ADTT (2032) 2170

COORDINATES: LATITUDE N 41° 22' 12"
LONGITUDE W 82° 32' 42"

PROPOSED STRUCTURE

PROPOSED WORK: REPLACE MODULAR EXPANSION JOINTS AND PERFORM MISCELLANEOUS BRIDGE REPAIRS.

TYPE: CONTINUOUS PRESTRESSED I-BEAMS UNITS 1, 2 & 3. CONTINUOUS COMPOSITE WELDED STEEL PLATE GIRDERS UNIT 4. REINFORCED CONCRETE DECK, COMBINATION STRUCTURE, CAPPED PILE PIERS AND REINFORCED CONCRETE PIERS AND ABUTMENTS.

SPANS: (UNITS 1 AND 2); 7 SPANS @ 89'-0",±
(UNIT 3); 7 SPANS @ 89'-0"±, 71'-0"±
(UNIT 4); 120'-0"±, 150'-0"±, 150'-0"±, 120'-0"±, 108'-0"±

ROADWAY WIDTH: 38'-10"± T/T PARAPETS

DESIGN LOADING: HS20-44, CASE II AND THE ALTERNATE MILITARY LOADING

SKEW: 0° 00"± UNITS 1, 2 & 3 AND 16° 29' 53"± (LEFT FORWARD UNIT 4)

ALIGNMENT: TANGENT

WEARING SURFACE: MONOLITHIC CONCRETE

APPROACH SLABS: AS-1-81 (25'-0"± LONG)

CROWN: 0.016

NOTES

1. FOR LOCATIONS OF SECTIONS A-A THRU SECTION D-D SEE SHEET 6 / 16 .
2. FOR ABBREVIATIONS SEE SHEET 4 / 16 .

DESIGN AGENCY
ENGINEERING ASSOCIATES, INC.
1335 EAGLE PASS • WOOSTER, OHIO 44691
TELEPHONE (330) 345-6556
FAX (330) 345-6077

DESIGNED	DRAWN	REVIEWED	DATE
HK	RLE	AFS	01/19/11
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BDH	—	2201038L, 2201046R	

GENERAL PLAN
BRIDGE NO. ERI-2-1911 L&R
STATE ROUTE 2 OVER HURON RIVER, NORFOLK SOUTHERN R.R. AND COUNTY RD. 126

ERI-2-19.11
PID 88754

STANDARD DRAWINGS AND SUPPLEMENTAL SPECIFICATIONS:

REFER TO THE FOLLOWING STANDARD BRIDGE DRAWINGS:

EXJ-2-81 REVISED 07-19-02
EXJ-4-87 REVISED 07-19-02
EXJ-6-06 REVISED 01-20-06

AND TO THE FOLLOWING SUPPLEMENTAL SPECIFICATIONS:

843 DATED 04-18-03

DESIGN SPECIFICATIONS:

THESE STRUCTURES CONFORM TO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 2002, 17TH EDITION AND THE O.D.O.T. BRIDGE DESIGN MANUAL.

THE DESIGN DATA IS AS FOLLOWS:

DESIGN LOADING	-HS20-44, CASE II AND THE ALTERNATE MILITARY LOADING. FUTURE WEARING SURFACE (FWS) OF 60 PSF.
DECK PROTECTION METHOD	-EPOXY COATED REINFORCING STEEL, 3" CONCRETE COVER.
MONOLITHIC WEARING SURFACE	-MONOLITHIC WEARING SURFACE IS ASSUMED, FOR DESIGN PURPOSES, TO BE 1" THICK.

DESIGN STRESS:

CONCRETE CLASS S	-COMPRESSIVE STRENGTH 4500 P.S.I.
REINFORCING STEEL	-ASTM A615, OR A996 - GRADE 60 MINIMUM YIELD STRENGTH 60,000 P.S.I.
STRUCTURE STEEL	-ASTM A709 GRADE 50W- YIELD STRENGTH 50,000 P.S.I.

PROPOSED WORK:

THE WORK TO BE DONE UNDER THIS CONTRACT IS AS SHOWN ON THE CONSTRUCTION PLANS AND IN GENERAL INCLUDES THE FOLLOWING:

PHASE 1 - PERFORM ROADWAY WORK AS SHOWN ON SHEET (5/41).

PHASE 2 - PERFORM WORK ON THE LEFT BRIDGE

1. CAREFULLY REMOVE SEISMIC RETROFIT DEVICES AND STORE IN SAFE PLACE FOR REINSTALLATION, REMOVE ALL EXPANSION JOINTS, PORTION OF PARAPETS AND PORTIONS OF APPROACH SLABS. REMOVE DELAMINATED CONCRETE FROM PRESTRESSED CONCRETE BEAMS, REAR ABUTMENT BACK-WALL AND PARAPETS AS SHOWN IN THE PLANS.

2. PERFORM PRESTRESSED CONCRETE BEAM REPAIRS, ABUTMENT BACK-WALL REPAIR AND PARAPET REPAIRS AS PER PLAN.

3. ERECT EXPANSION JOINTS AND CONSTRUCT ADJACENT CONCRETE ELEMENTS AS SHOWN IN THE PLANS.

4. ERECT STEEL PARAPET PLATES AT EXPANSION JOINTS AND REINSTALL SEISMIC RETROFIT.

5. SEAL PRESTRESSED CONCRETE BEAMS AND PARAPETS AS PER PLAN. SEAL ENTIRE RIDING SURFACE WITH HMWM RESIN.

6. SWITCH TRAFFIC TO THE LEFT BRIDGE.

PHASE 3 - PERFORM WORK ON RIGHT BRIDGE.

1. CAREFULLY REMOVE SEISMIC RETROFIT DEVICES AND STORE IN SAFE PLACE FOR RE-INSTALLATION, REMOVE ALL EXPANSION JOINTS, PORTION OF PARAPETS AND PORTIONS OF APPROACH SLABS. REMOVE DELAMINATED CONCRETE FROM PRESTRESSED CONCRETE BEAMS AND PARAPETS AS SHOWN IN THE PLANS.

2. PERFORM PRESTRESS CONCRETE BEAM REPAIR AND PARAPET REPAIRS AS PER PLAN.

3. ERECT EXPANSION JOINTS AND CONSTRUCT ADJACENT CONCRETE ELEMENTS AS SHOWN IN THE PLAN.

4. ERECT STEEL PARAPET PLATES AT EXPANSION JOINTS AND REINSTALL SEISMIC RETROFITS.

5. SEAL PRESTRESSED CONCRETE BEAMS AND PARAPETS AS PER PLAN. SEAL ENTIRE RIDING SURFACE WITH HMWM RESIN.

6. RESTORE TRAFFIC TO NORMAL FLOW PATTERN.

ITEM 202 - PORTIONS OF STRUCTURE REMOVED, AS PER PLAN

THIS WORK CONSISTS OF PARTIAL DECK AND PARAPET REMOVAL, AND COMPLETE DECK JOINT REMOVALS. THE PROVISIONS OF ITEM 202 APPLY EXCEPT AS SPECIFIED BY THE FOLLOWING NOTES. PERFORM WORK CAREFULLY DURING DECK REMOVALS TO PROTECT PORTIONS OF SUCH SYSTEM THAT ARE TO BE SALVAGED AND INCORPORATED INTO THE PROPOSED STRUCTURE. FOR IN-STREAM WORK RESTRICTION NOTE SEE ROADWAY SHEET 3 OF 41. THE USE OF EXPLOSIVES, HEADACHE BALLS AND/OR HOE-RAMS WILL NOT BE PERMITTED. SUBMIT CONSTRUCTION PLANS ACCORDING TO CMS 501.05.

REMOVAL METHODS:

THE CONTRACTOR MAY REMOVE CONCRETE BY MEANS OF HAND OPERATED PNEUMATIC HAMMERS EMPLOYING POINTED OR BLUNTED CHISELS TYPE TOOLS. THE WEIGHT OF HAMMER SHALL BE APPROVED BY THE ENGINEER. PERFORM ALL WORK IN A MANNER THAT WILL NOT CUT, ELONGATE OR DAMAGE THE EXISTING REINFORCING STEEL TO BE PRESERVED. CHIPPING HAMMERS SHALL NOT BE HEAVIER THAN THE NOMINAL 90-POUND CLASS. PNEUMATIC HAMMERS SHALL NOT BE PLACED IN DIRECT CONTACT WITH REINFORCING STEEL THAT IS TO BE RETAINED IN THE REBUILT STRUCTURE. FOR REMOVALS OVER STRUCTURE MEMBERS (I-BEAM, STEEL BEAMS), THE CONTRACTOR MAY USE A HAMMER HEAVIER THAN 35 POUNDS BUT NOT TO EXCEED 90 POUNDS UNLESS APPROVED BY THE ENGINEER. REMOVAL METHODS OVER STRUCTURAL MEMBERS SHALL ENSURE ADEQUATE DEPTH CONTROL AND PREVENT NICKING OR GOUGING THE PRIMARY STRUCTURAL MEMBER.

DUE TO THE POSSIBLE PRESENCE OF ATTACHMENTS (e.g., FINISHING MACHINE, SCUPPER AND FORM SUPPORT, ETC.) TO EXISTING STRUCTURAL MEMBERS, PERFORM WORK CAREFULLY DURING DECK REMOVAL TO AVOID DAMAGING STRUCTURAL MEMBERS. REPAIR STRUCTURAL MEMBERS DAMAGED BY THE REMOVAL OPERATIONS AT NO COST TO THE PROJECT. AT LEAST 7 DAYS BEFORE PERFORMING REPAIR WORK, SUBMIT A PROPOSED REPAIR PLAN, DEVELOPED BY AN OHIO REGISTERED PROFESSIONAL ENGINEER TO THE DIRECTOR. OBTAIN THE DIRECTOR'S APPROVAL BEFORE PERFORMING REPAIR.

DUE TO THE PRESENCE OF COMPOSITE REINFORCING STEEL BETWEEN THE DECK AND THE PRESTRESSED BEAM FLANGES (UNITS 1 THRU 3) AND WELDED STUDS TO THE EXISTING STRUCTURAL STEEL MEMBERS (UNIT 4), SUBMIT A DETAILED PROCEDURE OF THE DECK REMOVAL TO THE ENGINEER AT LEAST 7 DAYS BEFORE CONSTRUCTION BEGINS. THE PROCEDURE SHALL INCLUDE ALL DETAILS, EQUIPMENT AND METHODS OF REMOVAL OVER THE PRESTRESSED BEAM AND AROUND THE COMPOSITE REINFORCING STEEL AND OVER STEEL BEAM FLANGES AND AROUND THE STUDS. REPAIR STRUCTURAL MEMBERS DAMAGED BY THE REMOVAL OPERATIONS AT NO COST THE THE PROJECT. AT LEAST 7 DAYS BEFORE PERFORMING REPAIR WORK, SUBMIT A PROPOSED REPAIR PLAN, DEVELOPED BY AN OHIO REGISTERED PROFESSIONAL ENGINEER TO THE DIRECTOR. OBTAIN THE DIRECTOR'S APPROVAL BEFORE PERFORMING THE REPAIR.

EXISTING WELDED ATTACHMENTS:

REMOVE EXISTING WELDED ATTACHMENTS (e.g., JOINTS ARMOR CONNECTION PLATE WELDED TO GIRDER, CROSS-FRAME ANGLES WELDED TO GUSSET PLATES) AND GRIND SMOOTH. CAREFULLY GRIND PARALLEL TO THE FLANGE.

MEASUREMENT AND PAYMENT:

THE DEPARTMENT WILL MEASURE THE QUANTITY OF REMOVAL ON A LUMP SUM BASIS. THE DEPARTMENT WILL PAY FOR THE ACCEPTED QUANTITIES OF REMOVALS AT THE CONTRACT PRICE FOR ITEM 202, PORTIONS OF STRUCTURE REMOVED, AS PER PLAN.

CUT LINE CONSTRUCTION JOINT PREPARATION

SAW CUT BOUNDARIES OF PROPOSED CONCRETE REMOVALS 1 INCH DEEP. REMOVE CONCRETE TO A ROUGH SURFACE. LEAVE THE EXISTING REINFORCING STEEL, IF REQUIRED IN THE PLANS, IN PLACE. INSTALL DOWEL BARS IF SPECIFIED. PRIOR TO CONCRETE PLACEMENT ABRASIVELY CLEAN JOINT SURFACES AND EXISTING EXPOSED REINFORCEMENT TO REMOVE LOOSED AND DISINTEGRATED CONCRETE AND LOOSED RUST. THROUGHLY CLEAN THE JOINT SURFACE AND EXPOSED REINFORCEMENT OF ALL DIRT, DUST, RUST OR OTHER FOREIGN MATERIAL BY THE USE OF WATER, AIR UNDER PRESSURE, OR OTHER METHODS THAT PRODUCE SATISFACTORY RESULTS. EXISTING REINFORCING STEEL DOES NOT HAVE TO HAVE A BRIGHT STEEL FINISH, BUT REMOVE ALL PACK AND LOOSE RUST. THOROUGHLY DRENCH EXISTING CONCRETE SURFACES WITH CLEAN WATER AND ALLOW TO DRY TO A DAMP CONDITION BEFORE PLACING CONCRETE.

MAINTENANCE OF TRAFFIC:

REFER TO SHEETS (4/41) THRU (22/41) FOR MAINTENANCE OF TRAFFIC PLAN.

ITEM 509 REINFORCING STEEL, REPLACEMENT OF EXISTING STEEL AS PER PLAN

REPLACE ALL EXISTING REINFORCING BARS DEEMED BY THE ENGINEER TO BE UNUSABLE BECAUSE OF CORROSION. THE DEPARTMENT WILL MEASURE THE REPLACEMENT REINFORCING STEEL BY THE NUMBER OF POUNDS ACCEPTED IN PLACE, AND PAYMENT WILL BE PERFORMED BY CHANGE ORDER.

REPLACE ALL EXISTING REINFORCING STEEL BARS WHICH ARE TO BE INCORPORATED INTO THE NEW WORK AND ARE DEEMED BY THE ENGINEER TO BE MADE UNUSABLE BY CONCRETE REMOVAL OPERATIONS WITH NEW EPOXY COATED REINFORCING STEEL OF THE SAME SIZE AT NO COST TO THE DEPARTMENT.

EXISTING STRUCTURE VERIFICATION:

DETAILS AND DIMENSIONS SHOWN ON THESE PLANS PERTAINING TO THE EXISTING STRUCTURE HAVE BEEN OBTAINED FROM PLANS OF THE EXISTING STRUCTURE AND FROM FIELD OBSERVATION AND MEASUREMENTS. CONSEQUENTLY, THEY ARE INDICATIVE OF THE EXISTING STRUCTURE AND THE PROPOSED WORK BUT THEY SHALL BE CONSIDERED TENTATIVE AND APPROXIMATE. THE CONTRACTOR IS REFERRED TO CMS SECTIONS 102.05, 105.02 AND 513.04.

BASE CONTRACT BID PRICES UPON A RECOGNITION OF THE UNCERTAINTIES DESCRIBED ABOVE AND UPON A PREBID EXAMINATION OF THE EXISTING STRUCTURE. HOWEVER, THE DEPARTMENT WILL PAY FOR ALL PROJECT WORK BASED UPON ACTUAL DETAILS AND DIMENSIONS THAT HAVE BEEN VERIFIED IN THE FIELD.

ITEM 509 EPOXY COATED REINFORCING STEEL, AS PER PLAN

IN ADDITION TO THE PROVISIONS OF ITEM 509, FIELD BEND AND/OR FIELD CUT THE REINFORCING STEEL DESIGNATED IN THE PLANS, AS NECESSARY, IN ORDER TO MAINTAIN THE REQUIRED CLEARANCES AND BARS SPACING. REPAIR ALL DAMAGES TO THE EPOXY COATING, AS A RESULT OF THIS WORK, ACCORDING TO 709.00.

ITEM 519 PATCHING CONCRETE STRUCTURES, AS PER PLAN

PRIOR TO THE SURFACE CLEANING SPECIFIED IN 519.04 AND WITHIN 24 HOURS OF PLACING PATCHING MATERIAL, BLAST CLEAN ALL SURFACES TO BE PATCHED INCLUDING THE EXPOSED REINFORCING STEEL. ACCEPTABLE METHODS INCLUDE HIGH-PRESSURE WATER BLASTING WITH OR WITHOUT ABRASIVES IN THE WATER, ABRASIVE BLASTING WITH CONTAINMENT, OR VACUUM ABRASIVE BLASTING.

CONSTRUCTION LIMITATIONS:

THE CONTRACTOR SHALL PERFORM ALL WORK AT PIER LOCATIONS FROM THE BRIDGE DECK. AT ABUTMENTS THE CONTRACTOR MAY PERFORM WORK FROM THE GROUND AT HIS OPTION. WORK PERFORMED OUTSIDE OF PARAPETS IN THE SPAN OVER THE RAILROAD WILL NOT BE PERMITTED.

DESIGN AGENCY
ENGINEERING ASSOCIATES, INC.
1935 EAGLE PASS - WOOSTER, OHIO 44691
TELEPHONE: (330) 345-6568
FAX# (330) 345-8017

DESIGNED	DRAWN	REVIEWED	DATE
HK	RLE	AFS	01/19/11
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BDH	—	22010381, 2201046R	

STRUCTURE GENERAL NOTES
BRIDGE NO. ERI-2-1911 L&R
STATE ROUTE 2 OVER HURON RIVER, NORFOLK SOUTHERN R.R. AND COUNTY RD. 126

ERI-2-19.11
PID 88754

ITEM 843 - PATCHING CONCRETE STRUCTURES WITH TROWELABLE MORTAR, AS PER PLAN

THIS ITEM SHALL FOLLOW SUPPLEMENTAL SPECIFICATION 843 EXCEPT, AS PART OF SURFACE PREPARATION A CORROSION INHIBITOR SHALL BE APPLIED. APPLICATION OF CORROSION INHIBITOR SHALL BE AS PER THE MANUFACTURER'S INSTRUCTIONS. THE RECOMMENDED CORROSION INHIBITOR IS SIKATOP 122 PLUS. THE SUPPLIER IS:

SIKA
201 POLITO AVE.
LYNDHURST, NEW JERSEY 07071
(800) 933-7452

COST OF INHIBITOR, ALL LABOR, EQUIPMENT, INCIDENTALS AND MATERIALS FOR SOUNDING AND PATCHING SHALL BE IN THE UNIT PRICE BID FOR ITEM 843 - PATCHING CONCRETE STRUCTURES WITH TROWELABLE MORTAR, AS PER PLAN.

ITEM SPECIAL - STRUCTURE MISC.: REINSTALLING SEISMIC RETROFIT DEVICES, TYPE A OR TYPE B

DISCONNECT ALL SEISMIC RETROFIT DEVICES AT ABUTMENT AND PIER EXPANSION JOINTS. THE DEVICE REMOVAL AT ABUTMENTS SHALL BE DONE CAREFULLY SO AS NOT TO DAMAGE THE THREADED ANCHOR BOLTS WHICH ARE TO BE REUSED. DOCUMENT EACH DEVICE AND ITS CORRESPONDING LOCATION.

STORE ALL SEISMIC RETROFIT DEVICES IN A LOCATION WHERE THEY WILL NOT BE DAMAGED. THOSE RETROFIT DEVICES WHICH ARE DAMAGED DURING STORAGE SHALL AT THE DIRECTION OF THE ENGINEER BE REPLACED BY THE CONTRACTOR AT HIS EXPENSE. REPAIRS TO COATING IF REQUIRED BY THE ENGINEER SHALL FOLLOW 711.02.

AFTER ABUTMENT BACKWALL AND DECK ARE CONSTRUCTED, REINSTALL SEISMIC RETROFIT DEVICES AT LOCATIONS DOCUMENTED. FASTEN DEVICES TO EXISTING ANCHOR BOLTS WITH NEW DOUBLE NUTS AND WASHERS.

AT PIER EXPANSION JOINTS, PRIOR TO DECK CONSTRUCTION, LOCATE PROPOSED ANCHOR BOLTS USING THE RETROFIT DEVICES AS A TEMPLATE AT THE DOCUMENTED LOCATION. PLACE THREADED ANCHORS IN DIAPHRAGM AND CONSTRUCT DECK/DIAPHRAGM. REINSTALL SEISMIC RETROFIT DEVICES AFTER DECK/DIAPHRAGMS ARE CONSTRUCTED. FASTEN DEVICES TO ANCHORS WITH DOUBLE NUTS AND WASHERS.

PAYMENT:

REINSTALLING SEISMIC RETROFIT DEVICES SHALL INCLUDE ALL MATERIALS, COATING, EQUIPMENT, LABOR AND INCIDENTALS NECESSARY TO COMPLETE DISCONNECTING AND REINSTALLING THE DEVICES. THIS ITEM WILL BE PAID FOR AT THE CONTRACT UNIT PRICE, EACH FOR ITEM SPECIAL - STRUCTURE MISC.: REINSTALLING SEISMIC RETROFIT DEVICES, TYPE A OR TYPE B.

ITEM SPECIAL - MODULAR EXPANSION JOINTS

THIS WORK SHALL CONSIST OF FURNISHING MATERIALS, SERVICES, LABOR, TOOLS, EQUIPMENT, AND INCIDENTALS NECESSARY TO DESIGN, FABRICATE, INSPECT, TEST AND INSTALL THE EXPANSION JOINT SYSTEM AS SPECIFIED INCLUDING STEEL PARAPET PLATES.

THE MODULAR EXPANSION JOINT SYSTEM SHALL CONSIST OF MULTIPLE STRIP SEAL JOINTS THAT SHALL ALLOW MOVEMENTS AS SHOWN ON THE PLANS. THE CONFIGURATION OF THE EXPANSION JOINT SYSTEM SHALL CONSIST OF NEOPRENE STRIP SEALS MECHANICALLY HELD IN PLACE BY STEEL EDGE AND SEPARATION BEAMS. EACH SEPARATION BEAM SHALL BE SUPPORTED BY INDEPENDENT MULTIPLE SUPPORT BARS, WHICH ARE WELDED TO THE SEPARATION BEAMS. THE MULTIPLE SUPPORT BARS SHALL BE SUSPENDED OVER THE JOINT OPENING BY SLIDING ELASTOMERIC BEARINGS. AN EQUIDISTANT CONTROL SYSTEM SHALL BE INCORPORATED THAT DEVELOPS ITS MAXIMUM COMPRESSIVE FORCE WHEN THE JOINT IS AT ITS MAXIMUM OPENING. THE EXPANSION JOINT SYSTEM SHALL NOT INCORPORATE ANY BOLTED CONNECTIONS BETWEEN THE SEPARATION BEAMS AND SUPPORT BARS. THE FINAL COMPLETED EXPANSION JOINT SYSTEM SHALL BE CONTINUOUS ACROSS THE FULL WIDTH OF THE ROADWAY AND CONTINUE INTO THE BRIDGE PARAPETS AS SHOWN ON THE PLANS.

THE QUALIFIED MANUFACTURER SHALL HAVE A MINIMUM OF 5 YEARS EXPERIENCE IN DESIGNING AND FABRICATING MODULAR EXPANSION JOINT SYSTEMS. THE MANUFACTURER MAY BE CHOSEN FROM THE LIST BELOW OR SHALL BE AN APPROVED EQUAL. THE FOLLOWING MANUFACTURERS ARE KNOWN SUPPLIERS OF MODULAR EXPANSION JOINT SYSTEMS:

D.S. BROWN
300 EAST CHERRY STREET
NORTH BALTIMORE, OHIO 45872
(419) 257-3561

WATSON-BOWMAN & ACME CORP
95 PINEVIEW DRIVE
AMHERST, NY 14120
(716) 691-7566

D.S. TECHSTAR, INC.
1219 WEST MAIN CROSS STREET
FINLEY, OHIO 45840
(419) 424-0888

DESIGN REQUIREMENTS

TRUCK AND IMPACT LOADING:

THE MODULAR EXPANSION JOINT SYSTEM SHALL BE DESIGNED IN ACCORDANCE WITH THE "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 17th EDITION AND THE ODOT BRIDGE DESIGN MANUAL (BDM). LIVE LOAD SHALL BE HS20-44. USE AN IMPACT FACTOR OF 100 PERCENT. THE MODULAR EXPANSION JOINT SYSTEM SHALL BE DESIGNED FOR THE MAXIMUM NUMBER OF LANES BETWEEN THE BARRIER CURBS AND THE LANE WIDTH SHALL BE CONSIDERED AS 12 FEET. THE MODULAR EXPANSION JOINT SYSTEM SHALL BE DESIGNED SUCH THAT THE JOINT SYSTEM IS DESIGNED TO SUPPORT A WHEEL LOAD BEING 12 INCHES FROM THE ROADWAY FACE OF THE CURB.

FIELD SPLICES:

THE DESIGN AND FABRICATION OF THE MODULAR EXPANSION JOINT SYSTEM SHALL BE ONE CONTINUOUS UNIT WITHOUT FIELD SPLICES.

MOVEMENT:

THE MODULAR EXPANSION JOINT SYSTEM SHALL BE DESIGNED TO PROVIDE THE MINIMUM TOTAL MOVEMENT AS NOTED ON THE PLANS AND TO ACCOMMODATES ALL EXPECTED LONGITUDINAL MOVEMENTS (i.e. THERMAL, CREEP, SHRINKAGE, ELASTIC SHORTENING, ETC.) AS WELL AS VERTICAL AND HORIZONTAL ROTATIONS. THIS DESIGN SHALL INCORPORATE STRIP SEAL GLANDS WITH A MAXIMUM MOVEMENT RANGE OF 3.15 INCHES PER SEAL.

FATIGUE:

THE MODULAR EXPANSION JOINT SYSTEM SHALL BE TESTED AND DESIGNED FOLLOWING THE GUIDELINES PROVIDED IN THE NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM (NCHRP), REPORT 402 "FATIGUE DESIGN OF MODULAR BRIDGE EXPANSION JOINTS".

WATER TIGHTNESS:

AFTER THE MODULAR EXPANSION JOINT SYSTEM HAS BEEN COMPLETELY INSTALLED, THE JOINT SHALL BE FLOODED FOR A MINIMUM OF ONE HOUR TO A MINIMUM DEPTH OF 3 INCHES. IF THE ENGINEER OBSERVES LEAKAGE, THE EXPANSION JOINT SYSTEM SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE. THE REPAIR PROCEDURE SHALL BE AS RECOMMENDED BY THE MANUFACTURER AND APPROVED BY THE ENGINEER.

CORROSION PROTECTIONS:

COAT ALL STEEL PARTS OF THE JOINT ASSEMBLY ACCORDING TO ITEM 516 OF THE OHIO CONSTRUCTION AND MATERIAL SPECIFICATIONS (CMS) 2010.

MATERIALS:

ALL MATERIAL SHALL BE IN ACCORDANCE WITH THE OHIO CONSTRUCTION AND MATERIAL SPECIFICATION, 2010, AND SPECIFICALLY AS FOLLOWS.

STRUCTURAL STEEL:

JOINT ARMOR SECTIONS SHALL BE IN ACCORDANCE WITH ASTM A709, GRADE 50 OR 50W. ALL OTHER STEEL PARTS INCLUDING RETAINERS, SHALL BE ASTM A709, GRADE 36, 50 OR 50W. SHOP JOINTS IN THE ARMOR SHALL BE COMPLETE PENETRATION WELDS GROUND FLUSH WHERE IN CONTACT WITH THE RETAINER. WELDS IN RETAINER SHALL BE WATER TIGHT, PARTIAL PENETRATION WELDS AROUND THE OUTER PERIPHERY OF THE ABUTTING SURFACES. GRIND FLUSH ALL WELDS IN CONTACT WITH THE SEAL AND JOINT ARMOR. DO NOT USE SHORT PIECES OF RETAINER LESS THAN 6'-0" LONG, UNLESS REQUIRED AT CURBS OR SIDEWALKS. DO NOT PROVIDE ADDITIONAL SPLICES IN THE RETAINERS AT CURB OR SIDEWALK SECTIONS OTHER THAN THOSE DETAILED IN THE PLANS. ALL SEPARATION BEAMS SHALL BE FULL PENETRATION WELDS. ALL SEPARATION BEAMS TO SUPPORT BAR WELDED CONNECTIONS SHALL BE FULL PENETRATION WELDS IN ACCORDANCE WITH NCHRP REPORT 402 REQUIREMENTS. FURNISH SOLID SHAPE STEEL RETAINERS THAT ARE EXTRUDED, HOT ROLLED OR MACHINED. RETAINERS MANUFACTURED FROM BENT PLATE OR BUILT UP PIECES ARE NOT ACCEPTABLE. INTERNAL DIMENSIONS OF THE RETAINERS SHALL BE PROVIDED BY THE MANUFACTURER. AT JOINT UPTURNS, ESPECIALLY ON SKEWED BRIDGE DECKS, THE USE OF SPLIT RETAINERS MAY BE NECESSARY TO ENSURE PROPER SEAL GLAND INSTALLATION. WHERE THE SPLIT RETAINERS ARE REQUIRED, THE MANUFACTURER SHALL OBTAIN THE ENGINEER'S APPROVAL FOR THE DESIGN. BEFORE THE GLAND IS INSTALLED, CORRECT ANY DEFECTS IN THE RETAINER OR THE ACTUAL EXPANSION JOINT THAT COULD CAUSE DAMAGE TO THE GLAND.

STAINLESS STEEL:

THE STAINLESS STEEL SHALL BE IN ACCORDANCE WITH 730.09.

SLIDING BEARINGS:

THE SLIDING BEARINGS SHALL BE FABRICATED AS STEEL REINFORCED ELASTOMERIC PADS WITH POLYTETRAFLOURETHYLENE (PTFE) IN ACCORDANCE WITH 711.23 AND AS REQUIRED BY THE MANUFACTURER. THE BEARINGS SHALL BE DESIGN SO THAT THEY ARE REMOVABLE AND REPLACEABLE.

STRIP SEAL:

FURNISH EXTRUDED POLYCHLOROPRENE MATERIAL CONFORMING TO ASTM D2628. DUE TO THE CONFIGURATION OF THE SEAL, THE RECOVERY TEST IS NOT APPLICABLE. THE PHYSICAL PROPERTIES OF THE STRIP SEAL SHALL CONFORM TO TABLE "E". FURNISH SEALS IN ONE CONTINUOUS PIECE UNLESS OTHERWISE APPROVED BY THE ENGINEER.

THE MANUFACTURER OR AN ACCREDITED LABORATORY SHALL TEST EACH LOT AS SPECIFIED AND SUBMIT TWO COPIES OF CERTIFIED TEST DATA SHOWING COMPLIANCE TO THE OHIO DEPARTMENT OF TRANSPORTATION (ODOT) OFFICE OF MATERIALS MANAGEMENT. THE SEAL AND RETAINER ARE AN INTEGRAL SYSTEM DESIGNED AND SUPPLIED BY THE SAME MANUFACTURER. FOLLOW MANUFACTURER'S PROCEDURE FOR INSTALLATION.

DESIGN AGENCY
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DESIGNED HK | DRAWN RLE | REVIEWED AFS | DATE 01/19/11
CHECKED BDH | REVISED — | STRUCTURE FILE NUMBER 2201038L, 2201046R

STRUCTURE GENERAL NOTES
BRIDGE NO. ERI-2-1911 L&R
STATE ROUTE 2 OVER HURON RIVER, NORFOLK SOUTHERN R.R. AND COUNTY RD. 126

ERI-2-19.11
PID 88754

ITEM SPECIAL - MODULAR EXPANSION JOINTS (CONTINUED)

TABLE E
(PHYSICAL PROPERTIES OF SEAL ELEMENT)

PROPERTY	REQUIREMENT	ASTM METHOD
TENSILE STRENGTH, MIN. PSI	2000	D412
ELONGATED @ BREAK, MIN. (PERCENT)	250	D412
HARDNESS, TYPE A DURAMETER, POINTS	60 ± 5	MODIFIED D2240
OVEN AGING, 70 HR. @ 212°F TENSILE STRENGTH, LOSS, MAX. ELONGATION, LOSS, MAX. HARDNESS, TYPE A DUROMETER, POINTS CHANGE	20 PERCENT 20 PERCENT 0 TO +10	D573 MODIFIED D2240
OIL SWELL, ASTM OIL 3 70 HR@212°F, WEIGHT CHANGE MAX	45 PERCENT	D471
OZONE RESISTANCE 20 PERCENT STRAIN, 300 PPHM IN AIR, 70 HR@ 104°F (WIPED WITH TOLUENE TO REMOVE SURFACE CONTAMINATION)	NO CRACKS	D1149
LOW TEMPERATURE STIFFENING 7 DAYS @ 14°F HARDNESS, TYPE A DUROMETER, POINTS CHANGE COMPRESSION SET, 70 HR@212°F MAX.	0 TO + 15 40 PERCENT	D2240 MODIFIED D2240 D395 METHOD B

LUBRICANT ADHESIVE:

FURNISH A ONE PART MOISTURE CURING POLYURETHANE COMPOUND MEETING THE REQUIREMENTS OF ASTM D4070 AND AS SPECIFIED BY TNE SEAL MANUFACTURER.

SUBMITTALS.

DESIGN COMPUTATIONS AND SHOP DRAWINGS:

THE CONTRACTOR SHALL SUBMIT, FOR THE ENGINEER'S REVIEW, THE DESIGN COMPUTATIONS AND SHOP DRAWINGS IN ACCORDANCE WITH 501.05.

CONSTRUCTION REQUIREMENTS:

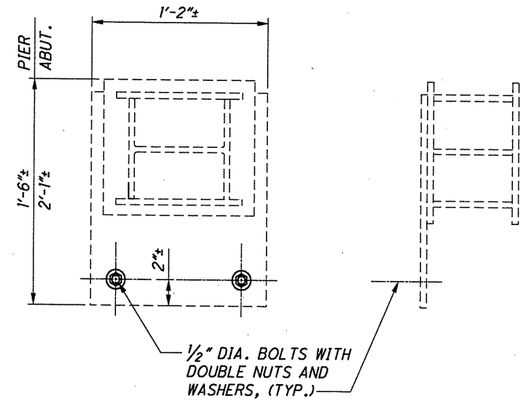
THE FABRICATOR SHALL DESIGN AND INSTALL TEMPORARY SUPPORTS TO RESIST SHIPPING, ERECTION AND CONSTRUCTION FORCES WITHOUT DAMAGE TO THE STEEL ARMOR OR COATING.THESE SUPPORTS SHALL BE ADJUSTABLE IN THE FIELD TO ACCOUNT FOR VARIABLE TEMPERATURE SEETINGS. INSTALL THE SUPPORTS AFTER THE FABRICATION AND COATING IS COMPLETE. THE EXPANSION JOINT SYSTEM SHALL BE STORED AT THE JOB SITE IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN RECOMMENDATIONS. DAMAGE TO THE JOINT SYSYTEM DURING SHIPPING OR HANDLING WILL BE CAUSE FOR REJECTION OF THE JOINT SYSTEM. ANY DAMAGE TO THE CORROSION PROTECTION SYSTEM SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER AT THE CONTRACTOR'S EXPENSE. THE SUPPORT BOXES SHALL REST ON CAST-IN-PLACE CONCRETE OR GROUT PADS INSTALLED INTO A PREFORMED BLOCK OUT. CONCRETE SHALL BE FORCED UNDER AND AROUND SUPPORT BOXES, ANCHORAGE SYSTEMS AND SUPPORTING HARDWARE. PROPER CONSOLIDATION SHALL BE ACHIEVED BY LOCALIZED INTERNAL VIBRATION. A WRITTEN PROCEDURE FOR THE INSTALLATION OF THE EXPANSION JOINT SYSTEM SHALL BE SUBMITTED TO THE EMGINEER FOR APPROVAL, 30 DAYS PRIOR TO INSTALLATION. THE CONTRACTOR SHALL OBTAIN THE SERVICES OF A QUALIFIED TECHNICAL REPRESENTATIVE, APPROVED BY THE MANUFACTURER OF THE EXPANSION JOINT SYSTEM AND ACCEPTABLE TO THE ENGINEER, TO ASSIST DURING THE INSTALLATION. THE INSTALLATION SHALL NOT OCCUR WITHOUT THE QUALIFIED TECHNICAL REPRESENTATIVE BEING PRESENT. THE QUALIFIED TECHNICAL REPRESENTATIVE SHAL HAVE 3 YEARS OF EXPERIENCE WORKING ON INSTALLATION OF MODULAR EXPANSION JOINT SYSTEMS ON BRIDGES.

PAYMENT:

MODULAR EXPANSION JOINTS, INCLUDING ALL MATERIAL, COATING, EQUIPEMENT, LABOR, FABRICATION, INSTALLATION, TECHNICAL ASSISTANCE AND ANY OTHER INCIDENTAL WORK NECESSARY TO COMPLETE THIS WORK, WILL BE PAID FOR AT THE CONTRACT UNIT PRICE PER FOOT FOR ITEM SPECIAL - MODULAR EXPANSION JOINT.

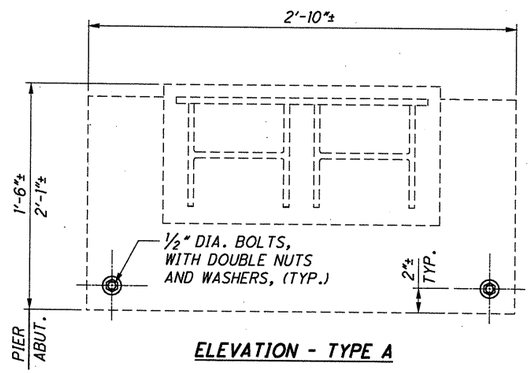
ABBREVIATIONS:

F.F.	- FRONT FACE	CONSTR. JT.	- CONSTRUCTION JOINT
R.F.	- REAR FACE	FWD.	- FORWARD
E.F.	- EACH FACE	STR.	- STRAIGHT
MIN.	- MINIMUM	CONSTR.	- CONSTRUCTION
TYP.	- TYPICAL	INC.	- INCREMENT
DIA.	- DIAMETER	SER.	- SERIES
SPA.	- SPACES	P.E.J.F.	- PREFORMED EXPANSION JOINT FILLER
APPR.	- APPROACH		
ABND.	- ABANDONED	F.A.	- FORWARD ABUTMENT
EX.	- EXISTING	R.A.	- REAR ABUTMENT
SPEC.	- SPECIAL	MAX.	- MAXIMUM
W.P.	- WORK POINT	BOT.	- BOTTOM
ELEV., EL.	- ELEVATION	STRUC.	- STRUCTURE



ELEVATION - TYPE B

SECTION



ELEVATION - TYPE A

SEISMIC RETROFIT DEVICES

SEE NOTE 1

NOTES

1. ALL BOLTS, NUTS & WASHERS SHALL BE ASTM A307 GALVANIZED PER CMS 711.02.

DESIGN AGENCY
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DESIGNED	DRAWN	REVIEWED	DATE
HK	RLE	AFS	01/19/11
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BDH	—	2201038L, 2201046R	

STRUCTURE GENERAL NOTES
BRIDGE NO. ERI-2-1911 L&R
STATE ROUTE 2 OVER HURON RIVER, NORFOLK SOUTHERN R.R. AND COUNTY RD. 126

ERI-2-19.11
PID 88754

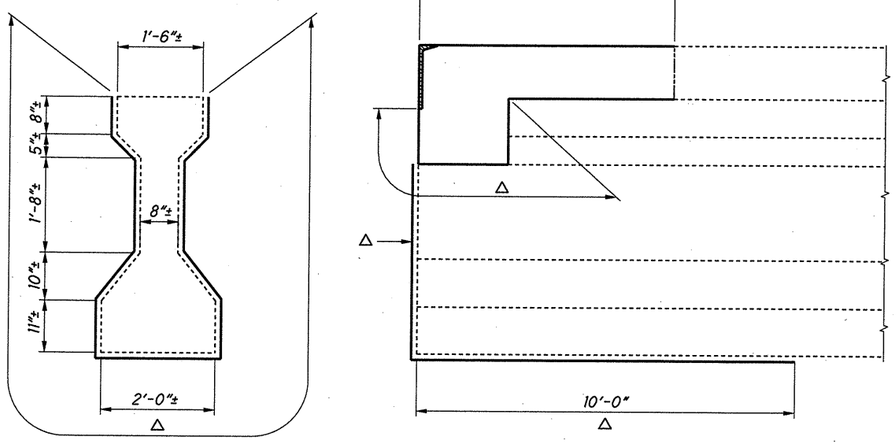
ESTIMATED QUANTITIES

CALC. BY: HK CHKD. BY: RLE DATE: 01/14/2011

ITEM	ITEM EXTENSION	TOTAL LEFT STRUCTURE (W.B.)	TOTAL RIGHT STRUCTURE (E.B.)	UNIT	DESCRIPTION	LEFT STRUCTURE - W.B.				RIGHT STRUCTURE - E.B.				SEE STRUCTURE SHEET NUMBER
						ABUT.	PIER	SUPER.	GEN'L.	ABUT.	PIER	SUPER.	GEN'L.	
202	11201	LUMP	LUMP		PORTIONS OF STRUCTURE REMOVED, AS PER PLAN				LUMP				LUMP	2 & 8 OF 16
509	10001	13,620	13,620	POUND	EPOXY COATED REINFORCING STEEL, AS PER PLAN	465		13,155		465		13,155		2 OF 16
510	10000	81	81	EACH	DOWEL HOLES WITH NONSHRINK, NONMETALLIC GROUT	81				81				
511	34001	81	80.5	CU YD	CLASS S CONCRETE, SUPERSTRUCTURE, AS PER PLAN	6		71.5	3.5	6		71.5	3.0	8,13 & 15 OF 16
512	10100	2610	2590	SQ YD	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)		125	2485			125	2465		
512	10300	11,264	11,206	SQ YD	SEALING OF CONCRETE BRIDGE DECKS WITH HMWM RESIN			11,247	17			11,191	15	
SPEC	51612400	85.5	85.5	FT	MODULAR EXPANSION JOINT (6" RATED MOVEMENT)			85.5				85.5		3,4 & 16 OF 16
SPEC	51612400	127.5	127.5	FT	MODULAR EXPANSION JOINT (9" RATED MOVEMENT)			127.5				127.5		3,4 & 16 OF 16
519	11101	15	125	SQ. FT.	PATCHING CONCRETE STRUCTURE, AS PER PLAN	12		3				125		2,7 & 8 OF 16
SPEC	53000400	26	26	EACH	STRUCTURE MISC.: REINSTALLING SEISMIC RETROFIT DEVICES, TYPE A				26				26	3 & 4 OF 16
SPEC	53000400	6	6	EACH	STRUCTURE MISC.: REINSTALLING SEISMIC RETROFIT DEVICES, TYPE B				6				6	3 & 4 OF 16
843	50001	445	405	SQ FT	PATCHING CONCRETE STRUCTURES WITH TROWELABLE MORTAR, AS PER PLAN			445				405		3 & 8 OF 16

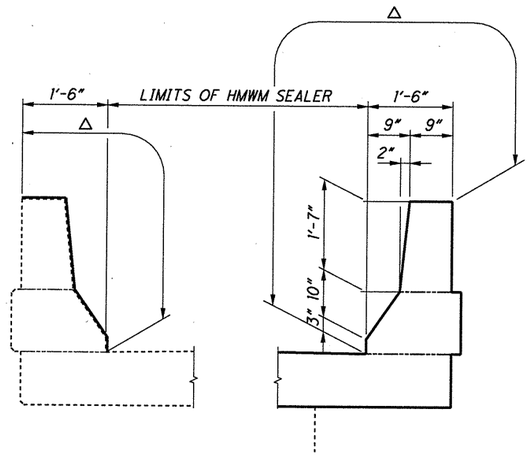
LEGEND

△ - LIMITS FOR SEALING CONCRETE SURFACES (EPOXY-URETHANE)



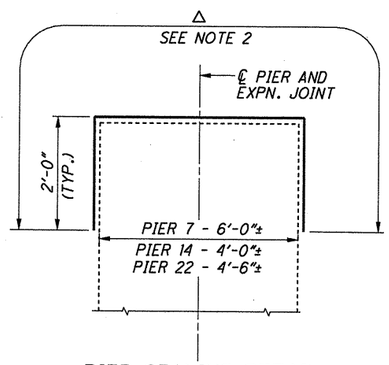
SECTION ELEVATION

BEAM SEALING DETAIL



EXISTING PROPOSED CONSTRUCTION

PARAPET SEALING DETAIL



PIER SEALING DETAIL

PIERS 7, 14 & 22

NOTES

1. FOR ABBREVIATIONS SEE SHEET 4/16 .
2. SEAL TOP OF PIER AND 2'-0" ON EACH FACE. DO NOT SEAL CAP ENDS.

DESIGN AGENCY
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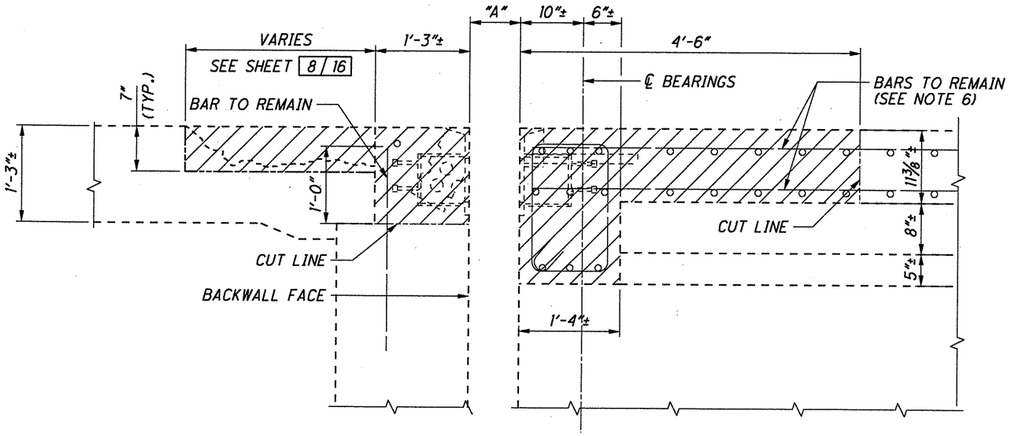
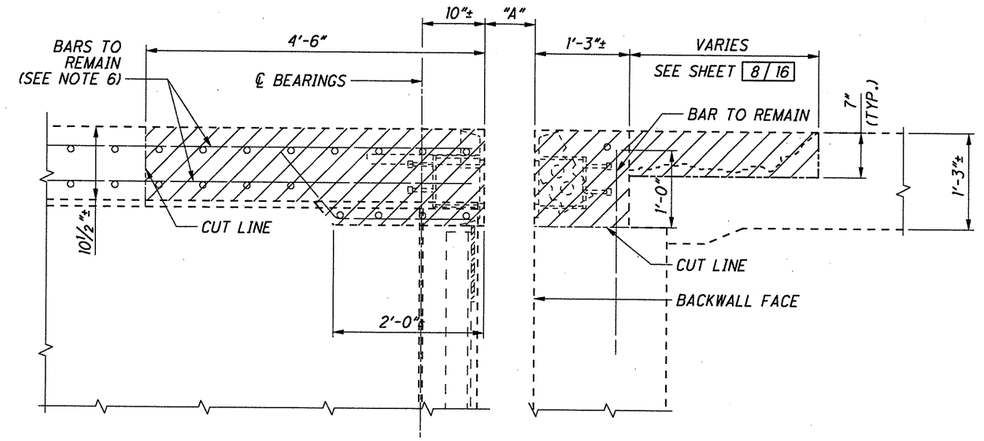
DESIGNED	DRAWN	REVIEWED	DATE
HK	RLE	AFS	01/19/11
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BDH	—	22010381, 2201046R	

ESTIMATED QUANTITIES AND MISCELLANEOUS DETAILS
BRIDGE NO. ERI-2-19.11 L&R
STATE ROUTE 2 OVER HURON RIVER, NORFOLK SOUTHERN R.R. AND COUNTY RD. 126

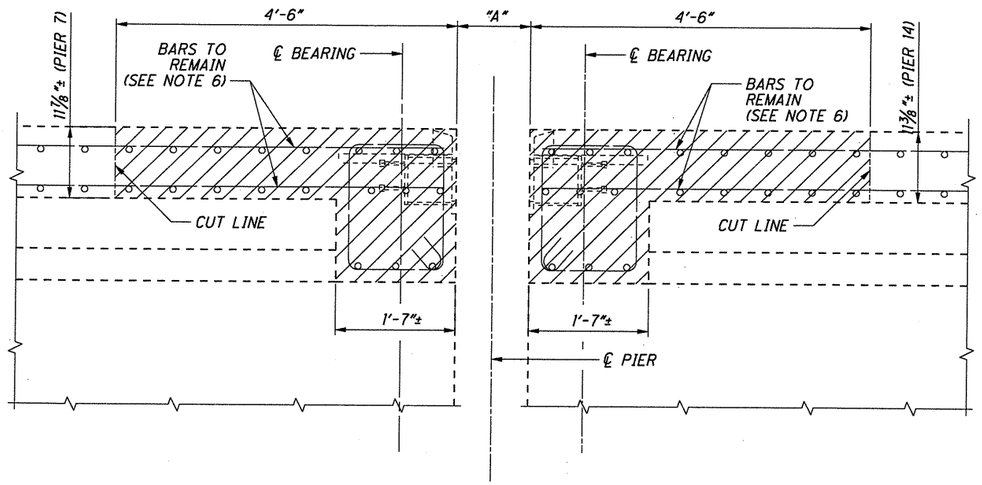
ERI-2-19.11
PID 88754



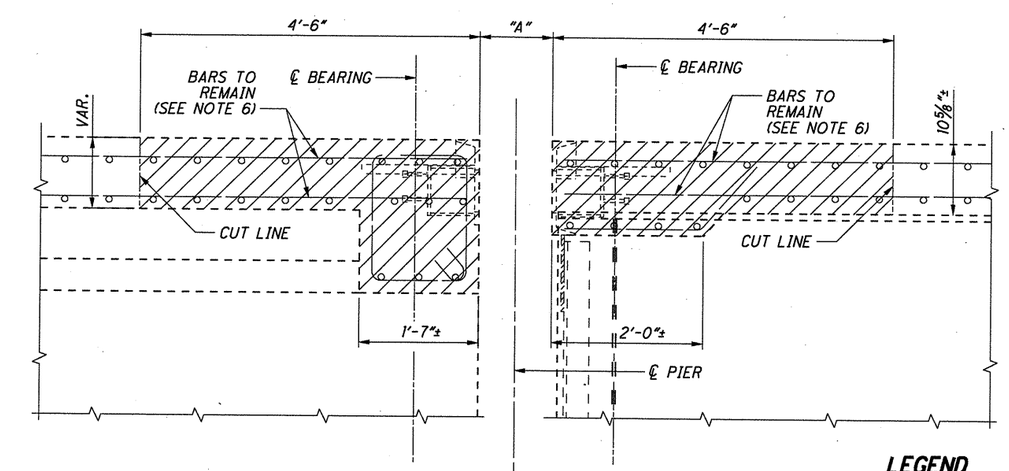
SECTION A-A
REAR ABUTMENT



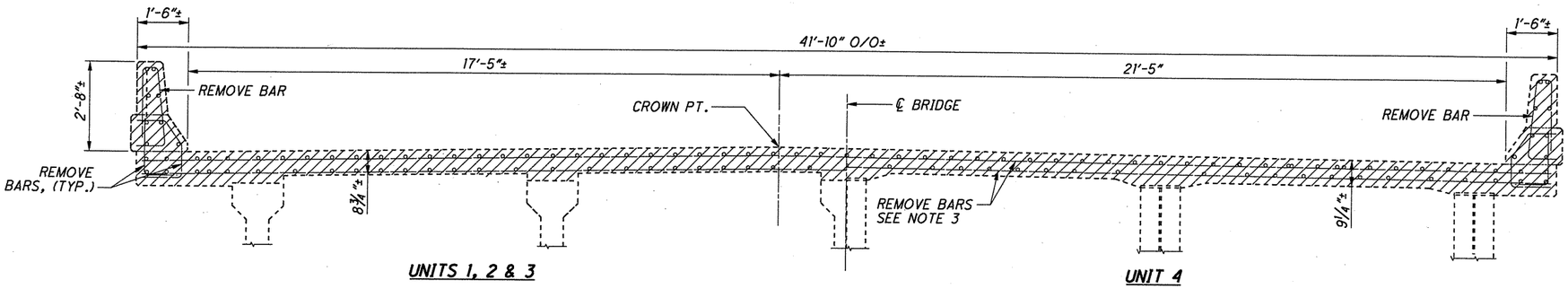
SECTION D-D
FORWARD ABUTMENT



SECTION B-B
PIERS NO. 7 & 14



SECTION C-C
PIER NO. 22



UNITS 1, 2 & 3

UNIT 4

TRANSVERSE DECK SECTION
EASTBOUND LANES SHOWN (PHASE 3)
WESTBOUND LANES SIMILAR (PHASE 2)

LEGEND
▨ DENOTES AREA OF REMOVAL.

NOTES
1. FOR ABUTMENT REMOVAL DETAILS: SEE SHEET 7/16 .
2. FOR PORTIONS OF END CROSS-FRAME TO BE REMOVED: SEE SHEET 7/16 .
3. AT PIER 22, IN SPAN 22, REMOVE CONCRETE TO THE LIMITS SHOWN IN THE PLANS. CUT AND REMOVE ENDS OF TRANSVERSE REINFORCING ON A LINE MEASURED 1'-6" FROM AND PARALLEL TO THE DECK JOINT.
4. FOR LOCATION OF SECTIONS A-A THRU SECTIONS D-D: SEE SHEET 1/16 .
5. FOR SLAB THICKNESS OVER BEAMS AT PIER 22: SEE SHEET 10/16 .
6. CUT AND REMOVE ENDS OF LONGITUDINAL REINFORCING ON A LINE MEASURED 1'-6" AND PARALLEL TO THE DECK JOINTS.
7. FOR DIMENSION "A": SEE TEMPERATURE ADJUSTMENT TABLE ON SHEET 11/16 .

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HK	RLE	AFS	01/19/11
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EXPANSION JOINT REMOVAL DETAILS
BRIDGE NO. ERI-2-19.11L&R
STATE ROUTE 2 OVER HURON RIVER, NORFOLK SOUTHERN R.R. AND COUNTY RD. 126

ERI-2-19.11
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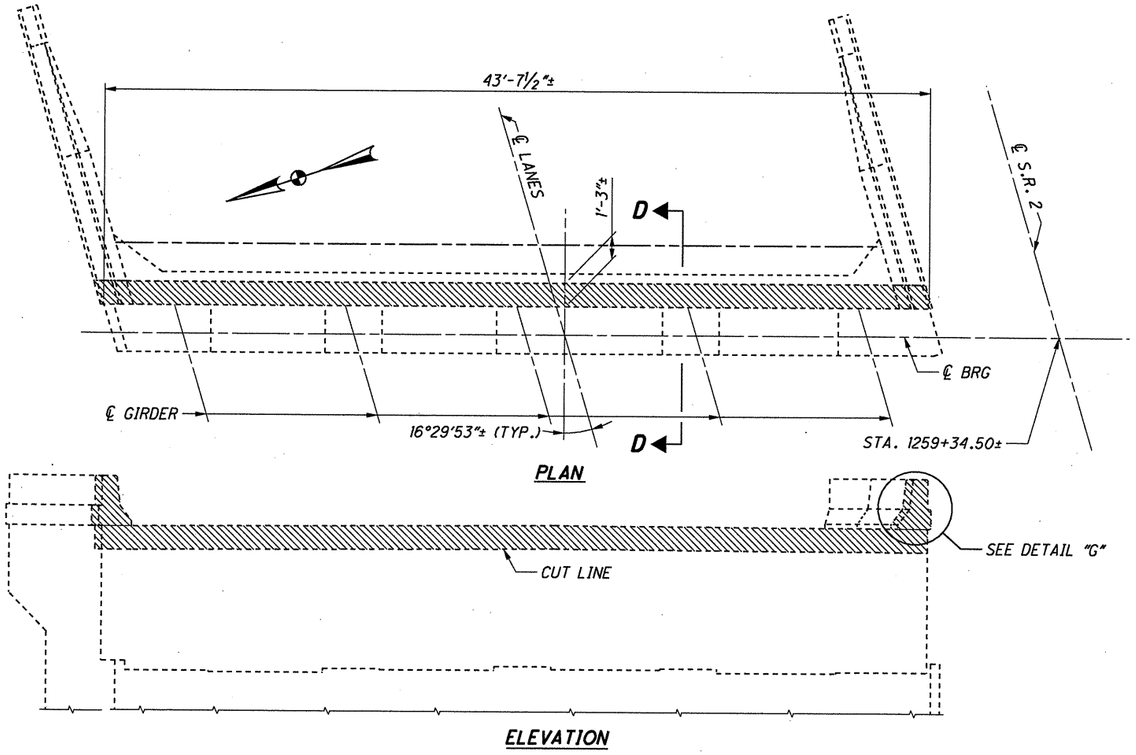
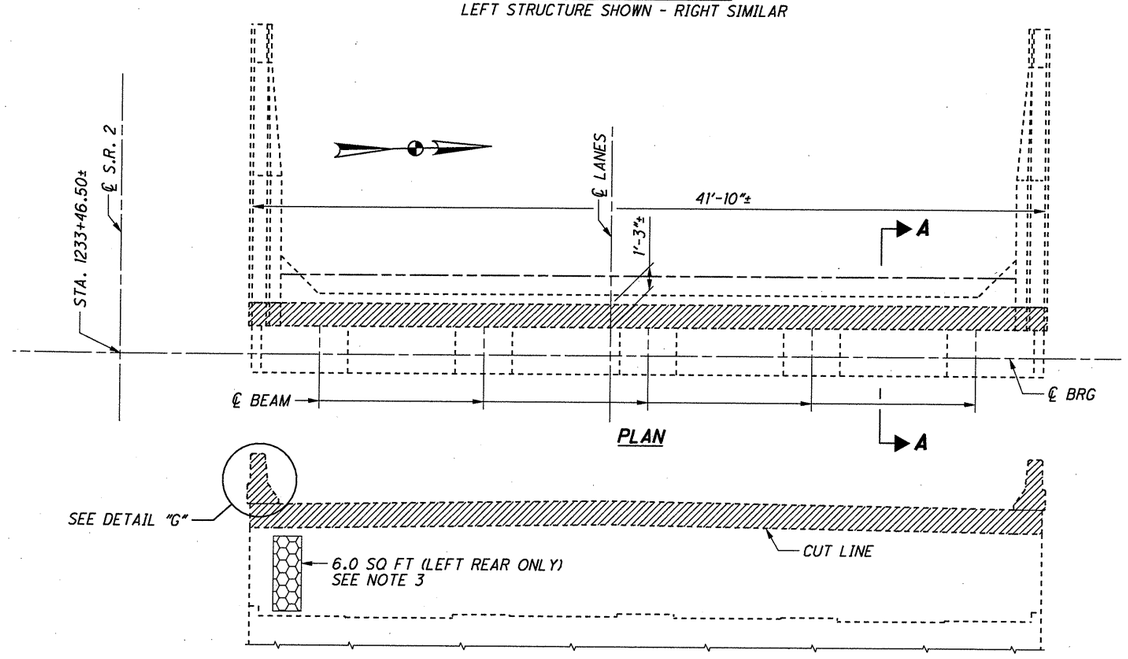


PLAN

ELEVATION

FORWARD ABUTMENT

LEFT STRUCTURE SHOWN - RIGHT SIMILAR

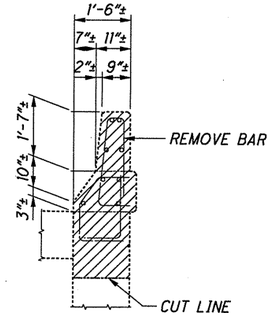


PLAN

ELEVATION

REAR ABUTMENT

LEFT STRUCTURE SHOWN - RIGHT SIMILAR

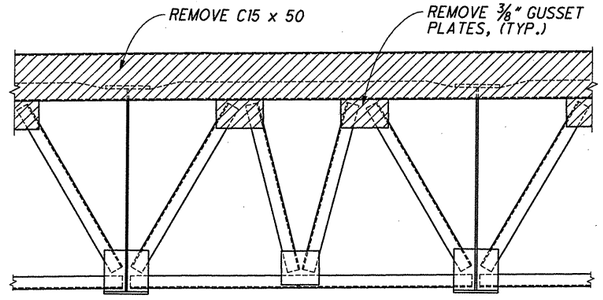


DETAIL "G"

LEGEND

- DENOTES AREA OF REMOVAL

- DENOTES AREAS OF ITEM 519 PATCHING CONCRETE STRUCTURES, AS PER PLAN



TYPICAL END CROSSFRAME

NOTES

1. FOR SECTION A-A AND SECTION D-D: SEE SHEET 6 / 16 .
2. FOR ABBREVIATIONS: SEE SHEET 4 / 16 .
3. PATCHING REPAIR IS PER ITEM 519 - PATCHING CONCRETE STRUCTURE, AS PER PLAN. QUANTITY WILL BE INCREASED 100%, SEE SHEET 8 / 16 .

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HK	RLE	AFS	01/19/11
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BDH	—	2201038L, 2201046R	

ABUTMENT REMOVAL DETAILS

BRIDGE NO. ERI-2-1911L&R
STATE ROUTE 2 OVER HURON RIVER, NORFOLK SOUTHERN R.R. AND COUNTY RD. 126

ERI-2-19.11
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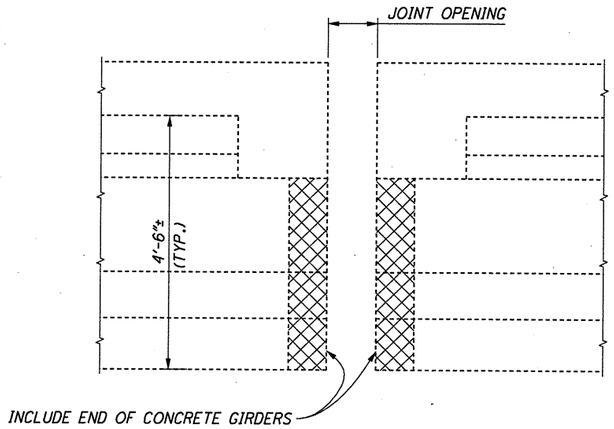
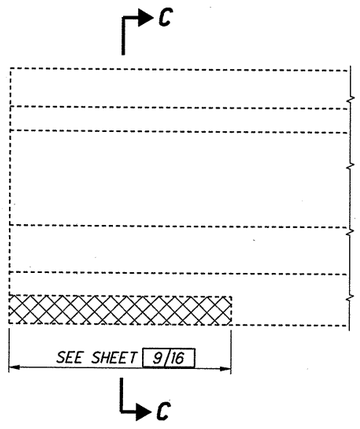
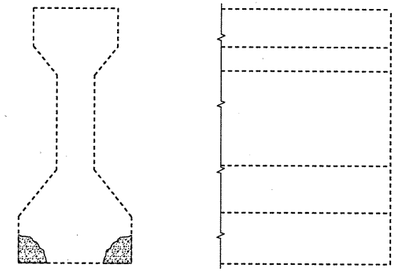


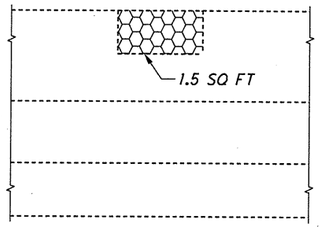
ELEVATION - BEAM END REPAIR AT PIERS (TYPICAL)

ITEM 843 PATCHING SUMMARY		
LOCATION	QUANTITY (SQ FT)	
	LEFT	RIGHT
BEAM EDGE	37	10
50% INCREASE	55	15
BEAM END	390	390
TOTAL	445	405





SECTION C-C

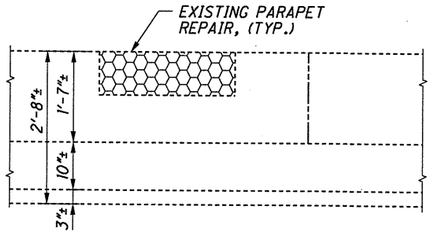


BACK OF NORTH PARAPET

LEFT BRIDGE NEAR PIER 20

ITEM 519 PATCHING SUMMARY		
LOCATION	QUANTITY (SQ FT)	
	LEFT	RIGHT
ABUTMENT	12.0*	
PARAPET	3.0*	125.0
TOTAL	15.0	125.0

* INCREASED 100%



NOTE: BEFORE APPLYING EPOXY-URETHANE SEALER, VERIFY THAT EXISTING PARAPET REPAIR IS SOUND. REPAIRS FOUND TO BE UNSOUND SHALL BE REMOVED AND REPATCHED, REPAIRS MADE TO PARAPETS WILL BE AS PER ITEM 519-PATCHING CONCRETE STRUCTURE, AS PER PLAN FOR PAYMENT.

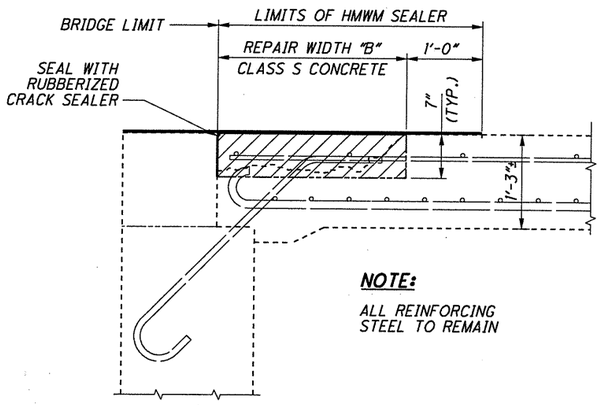
PARAPET ELEVATION

(FACE)

REPAIR WIDTH "B"		
LOCATION	RIGHT	LEFT
REAR ABUTMENT	1'-6"±	1'-6"±
FORWARD ABUTMENT	2'-0"±	2'-6"±

NOTE:
REMOVE CONCRETE, AS SHOWN IN THE PLANS, TO BELOW THE TOP LAYER OF REINFORCING. DEPTH OF REPAIR SHALL BE DOWN TO SOUND CONCRETE, A MINIMUM OF 7". PAYMENT FOR CONCRETE REMOVAL SHALL BE INCLUDED IN UNIT PRICE BID ITEM 202 - PORTIONS OF STRUCTURE REMOVED, AS PER PLAN.

PRIOR TO PLACING CONCRETE BLAST CLEAN REPAIR AREA INCLUDING THE REINFORCING STEEL. ACCEPTABLE METHODS INCLUDE HIGH-PRESSURE WATER BLASTING WITH OR WITHOUT ABRASIVES, ABRASIVE BLASTING WITH CONTAINMENT OR VACUUM ABRASIVE BLASTING. COST OF REPAIR PREPARATION AND RUBBERIZED CRACK SEALER SHALL BE INCIDENTAL AND INCLUDED IN UNIT PRICE BID ITEM 511 - CLASS S CONCRETE, SUPERSTRUCTURE, AS PER PLAN.



NOTE:
ALL REINFORCING STEEL TO REMAIN

APPROACH SLAB REPAIR

LEGEND

- DENOTES AREA OF REMOVAL
- DENOTES AREA OF ITEM 843 PATCHING CONCRETE STRUCTURES WITH TROWELABLE MORTAR, AS PER PLAN
- DENOTES AREAS OF ITEM 519 PATCHING CONCRETE STRUCTURES, AS PER PLAN

NOTES

1. REPAIR AREAS TO BE PATCHED WITH TROWELABLE MORTAR WITH A A PENETRATING CORROSION INHIBITOR IN ACCORDANCE WITH SUPPLEMENTAL SPECIFICATION 843.
2. FOR LOCATION OF BEAM EDGE REPAIRS AND BEAM END REPAIRS: SEE SHEET 9/16 AND 10/16.
3. FOR SEALING OF BEAM ENDS: SEE SHEET 5/16.
4. QUANTITIES FOR BEAM EDGE REPAIR WILL BE INCREASED 50%.

DESIGN AGENCY
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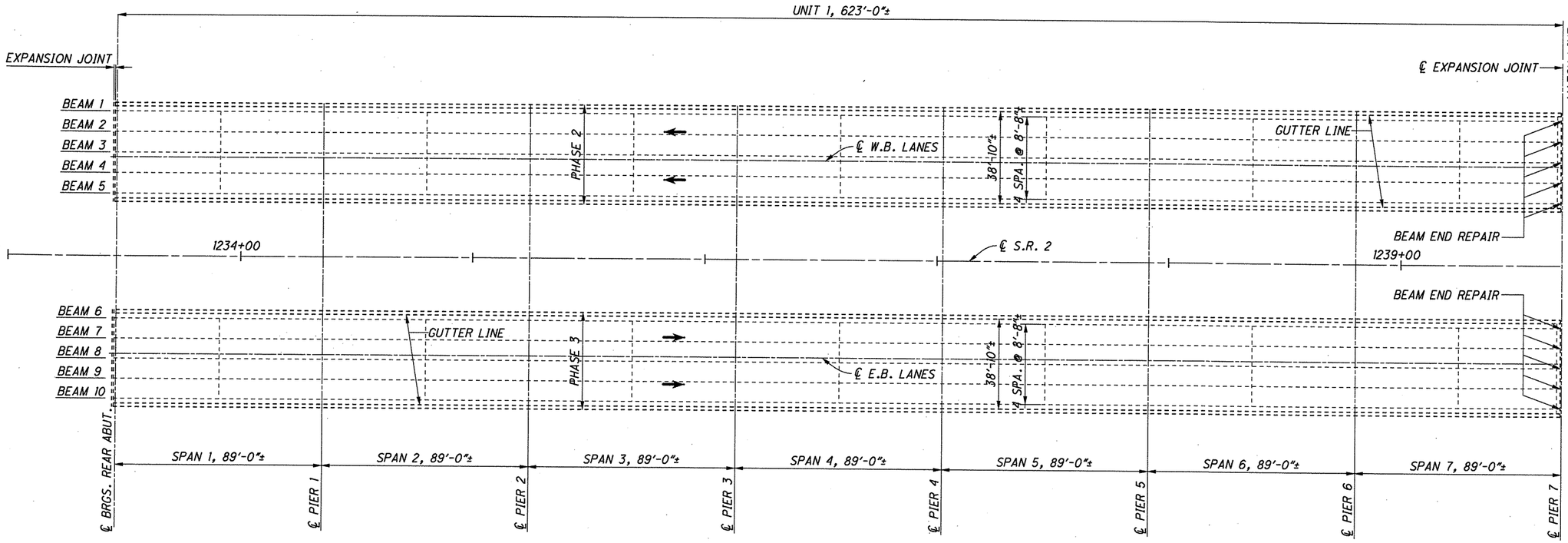
DESIGNED	DRAWN	REVIEWED	DATE
HK	RLE	AFS	01/19/11
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BDH	—	2201038L, 2201046R	

PATCHING AND REPAIR DETAILS
BRIDGE NO. ERI-2-19.11&R
STATE ROUTE 2 OVER HURON RIVER, NORFOLK SOUTHERN R.R. AND COUNTY RD. 126

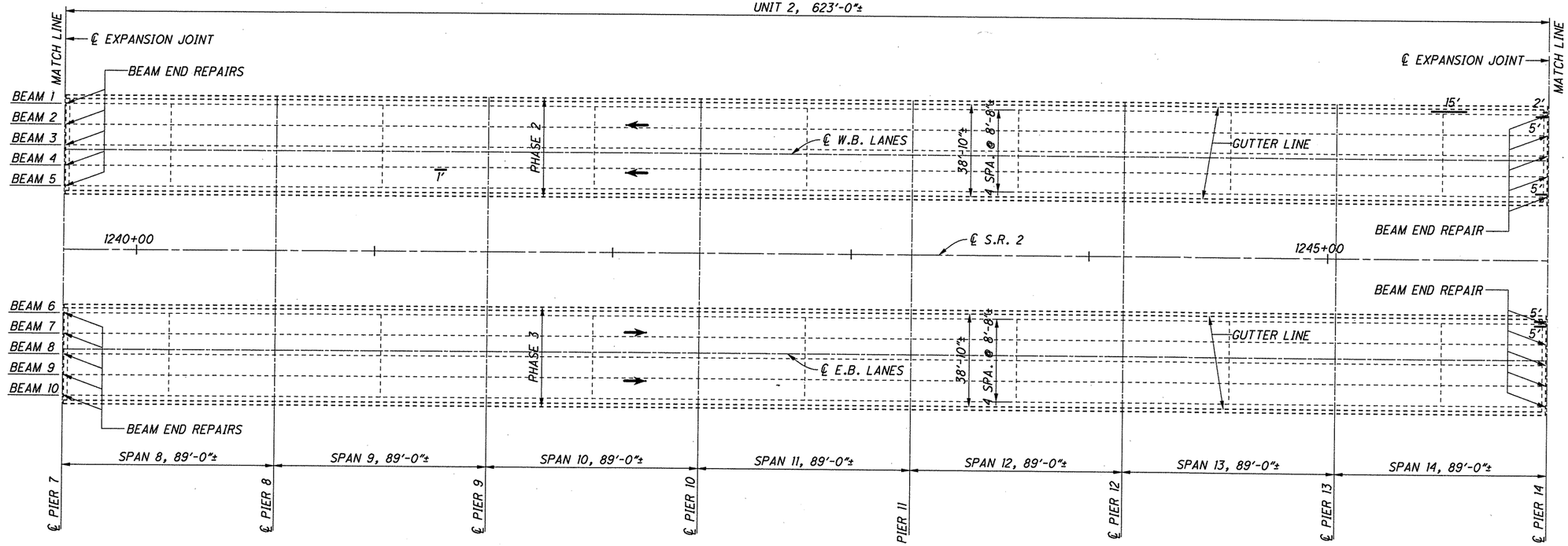
ERI-2-19.11
PID 88754

8 / 16

33
41



PLAN - SPANS 1-7



PLAN - SPANS 8-14

LEGEND

EXIST. BEAM

X' — LENGTH OF REPAIR

DENOTES BEAM EDGE REPAIR

NOTE

1. FOR NOTES SEE SHEET 10 / 16 .

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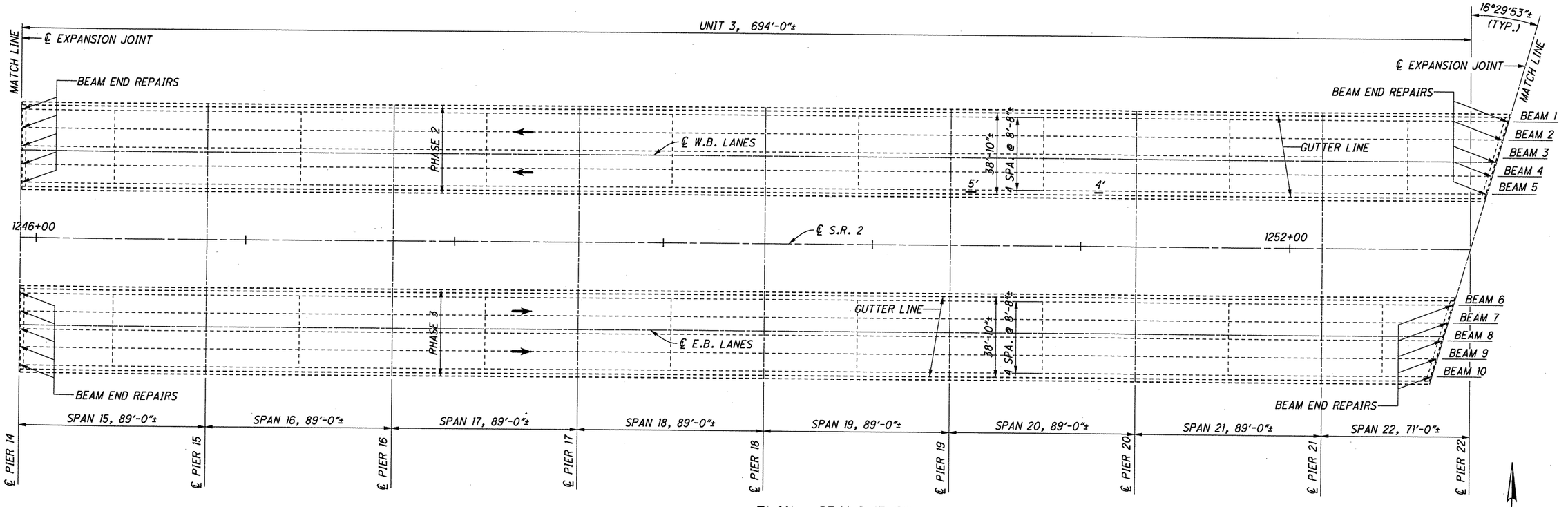
HK	RLE	AFS	01/19/11
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BDH	—	2201038L, 2201046R	

FRAMING PLAN, SPANS 1-14

BRIDGE NO. ERI-2-1911 L&R

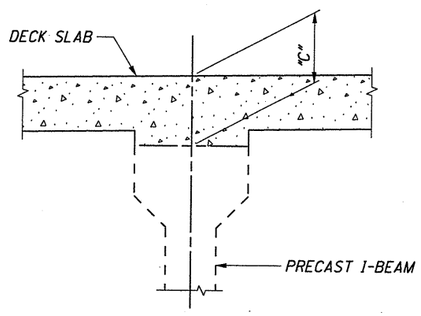
STATE ROUTE 2 OVER HURON RIVER, NORFOLK SOUTHERN R.R. AND COUNTY RD. 126

ERI-2-19.11
PID 88754



PLAN - SPANS 15-22

DIMENSION "C" (±)									
BEAM									
1	2	3	4	5	6	7	8	9	10
11¼"	11¼"	11¼"	10¾"	10⅞"	10½"	10½"	10½"	10⅜"	10⅜"



NOTES

1. FOR BEAM END REPAIR DETAILS AND BEAM EDGE REPAIR DETAILS SEE SHEET 8/16 .
2. BEAM EDGE REPAIRS SHALL BE LOCATED. AT LOCATIONS WHERE CONCRETE HAS NOT YET SPALLED OFF FROM BEAM, CONCRETE IS TO BE REMOVED WITH HAND OPERATED PNEUMATIC HAMMERS AS PER 843.04. REPAIR AREA PREPARATION SHALL BE AS PER 843.05.
3. FOR ABBREVIATIONS: SEE SHEET 4/16 .
4. SEE SHEET 14/16 FOR LOCATION OF DIMENSION "C".

DESIGN AGENCY
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DESIGNED	DRAWN	REVIEWED	DATE
HK	RLE	AFS	01/19/11
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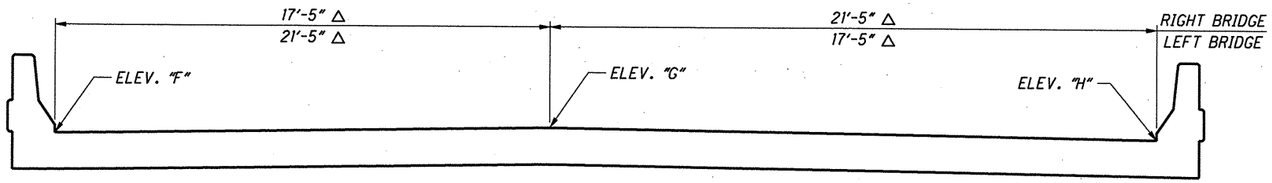
BDH	—	2201038L, 2201046R	

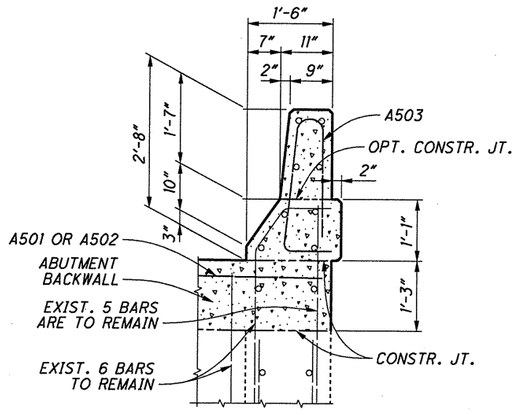
FRAMING PLAN, SPANS 15-22
BRIDGE NO. ERI-2-1911 L&R
STATE ROUTE 2 OVER HURON RIVER, NORFOLK SOUTHERN R.R. AND COUNTY RD. 126

ERI-2-19.11
PID 88754

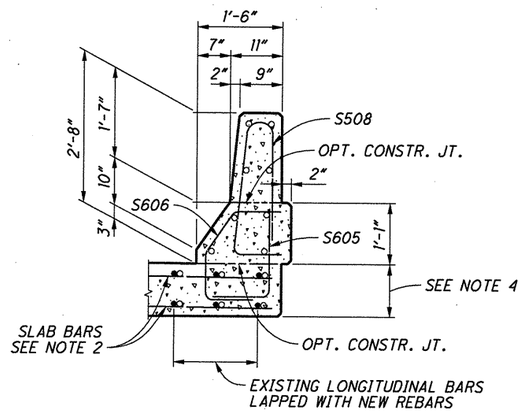


JOINT ELEVATION DIAGRAM

△ DIMENSION ARE NORMAL TO CENTERLINE



SECTION X-X

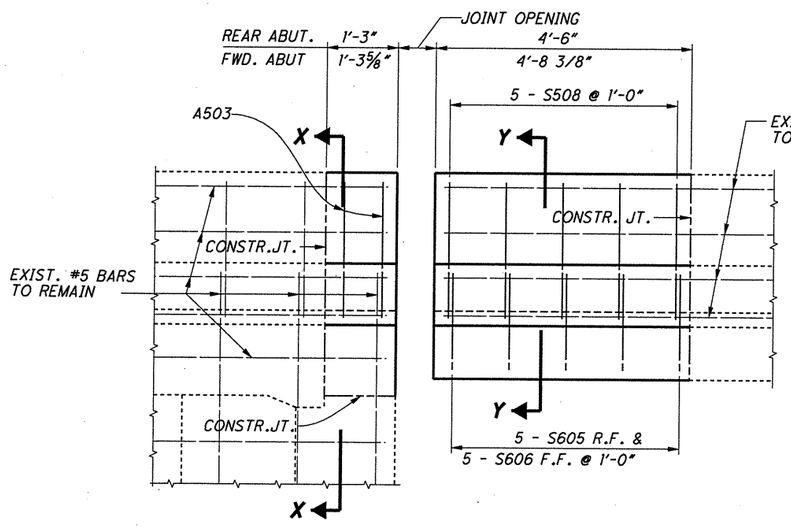


SECTION Y-Y

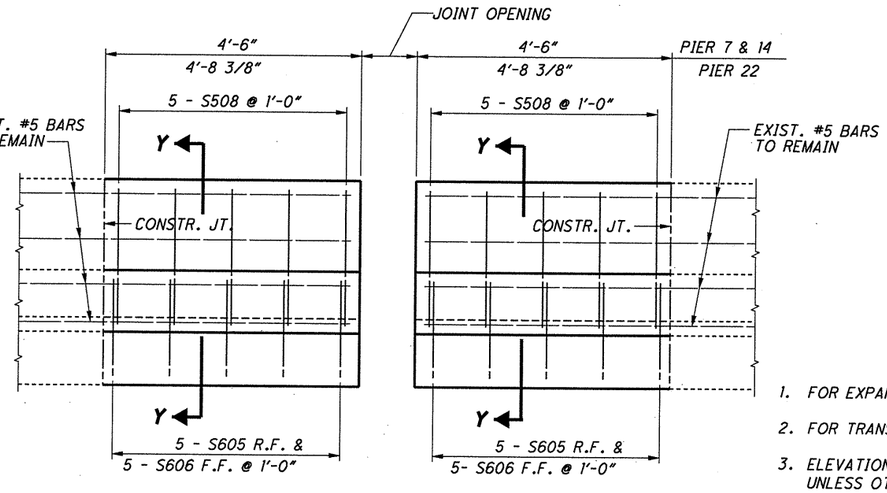
TEMPERATURE ADJUSTMENT FOR "A"							
LOCATION	30°	40°	50°	60°	70°	80°	90°
REAR ABUTMENT	8 5/8"	8 3/8"	8 1/8"	7 1/8"	7 5/8"	7 3/8"	7 1/8"
FWD. ABUTMENT	8 3/4"	8 1/16"	8 3/16"	7 1/8"	7 9/16"	7 5/16"	7"
P-7 & P-14	13 1/8"	12 5/8"	12 3/16"	11 3/4"	11 5/16"	10 1/8"	10 3/8"
P-22	13 1/16"	12 5/8"	12 3/16"	11 3/4"	11 5/16"	10 7/8"	10 7/16"

EXISTING JOINT ELEVATIONS (SEE NOTE 3)						
LOCATION	RIGHT (EASTBOUND)			LEFT (WESTBOUND)		
	EL. "F"	EL. "G"	EL. "H"	EL. "F"	EL. "G"	EL. "H"
*REAR ABUTMENT	588.91	589.24	588.97	588.97	589.24	588.91
*FWD. ABUTMENT	629.68	629.95	629.60	629.64	629.97	629.69
℄ PIER 7	592.01	592.34	592.07	592.07	592.34	592.01
℄ PIER 14	604.55	604.89	604.61	604.61	604.89	604.55
℄ PIER 22	623.03	623.21	622.75	623.47	623.68	623.31

* ELEVATIONS ON BACKWALL



JOINT AT ABUTMENTS



JOINT AT PIERS

NOTES

1. FOR EXPANSION JOINT DETAILS: SEE SHEET 12/16 THRU 15/16.
2. FOR TRANSVERSE BARS SEE SHEET 12/16.
3. ELEVATIONS GIVEN AT CENTERLINE OF EXPANSION JOINT UNLESS OTHERWISE NOTED.
4. FOR PARAPET PLATE DETAILS AND JOINT END TREATMENT SEE SHEET 16/16.
5. FOR ABBREVIATIONS: SEE SHEET 4/16.
6. FOR SEALING OF CONCRETE LIMITS: SEE SHEET 5/16.

PARAPET ELEVATION

DESIGN AGENCY
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DESIGNED	DRAWN	REVIEWED	DATE
HK	RLE	AFS	01/19/11
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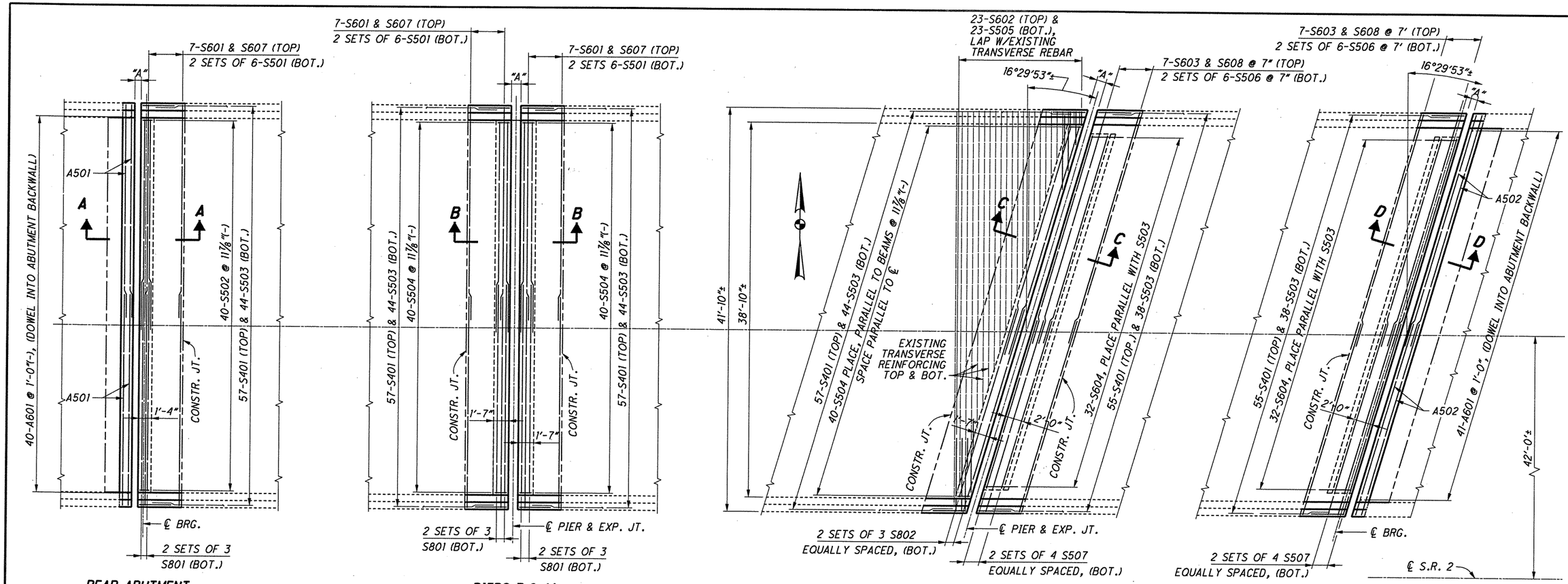
BDH	—	22010381, 2201046R	

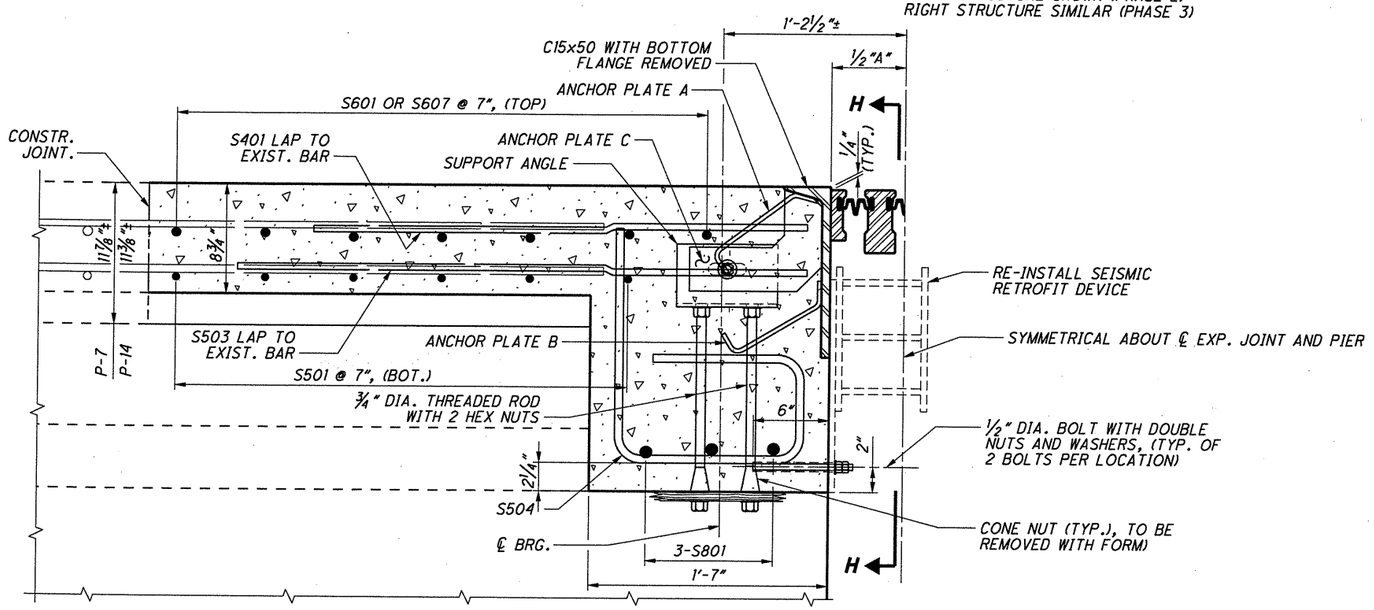
MISCELLANEOUS DETAILS
BRIDGE NO. ERI-2-19.11L&R
STATE ROUTE 2 OVER HURON RIVER, NORFOLK SOUTHERN R.R. AND COUNTY RD. 126

ERI-2-19.11
PID 88754



PARTIAL SLAB PLAN AT DECK JOINTS

LEFT STRUCTURE SHOWN (PHASE 2)
RIGHT STRUCTURE SIMILAR (PHASE 3)



SECTION B-B

SUPPORT BOX NOT SHOWN FOR CLARITY

NOTES

1. FOR SECTIONS A-A AND SUPPORT BOX DETAILS: SEE SHEET 13/16.
2. FOR DIMENSION "A", PARAPET DETAILS, AND JOINT ELEVATIONS: SEE SHEET 11/16.
3. FOR SECTION C-C: SEE SHEET 14/16.
4. FOR SECTION D-D: SEE SHEET 15/16.
5. FOR JOINT TREATMENT AT PARAPETS AND PARAPET PLATES: SEE SHEET 16/16.
6. FOR SEISMIC RETROFIT DEVICES: SEE SHEET 4/16.
7. FOR ABBREVIATIONS: SEE SHEET 4/16.
8. FOR DETAILS NOT SHOWN: SEE STANDARD DRAWING EXJ-6-06.
9. MINIMUM LAP LENGTH UNLESS OTHERWISE NOTED:
   NO. 4 BARS = 1'-11"
   NO. 5 BARS = 2'-5"
   NO. 6 BARS = 2'-11"
   NO. 8 BARS = 4'-11"
10. FOR VIEW H-H AND ANCHOR PLATES: SEE SHEET 14/16.

DESIGN AGENCY
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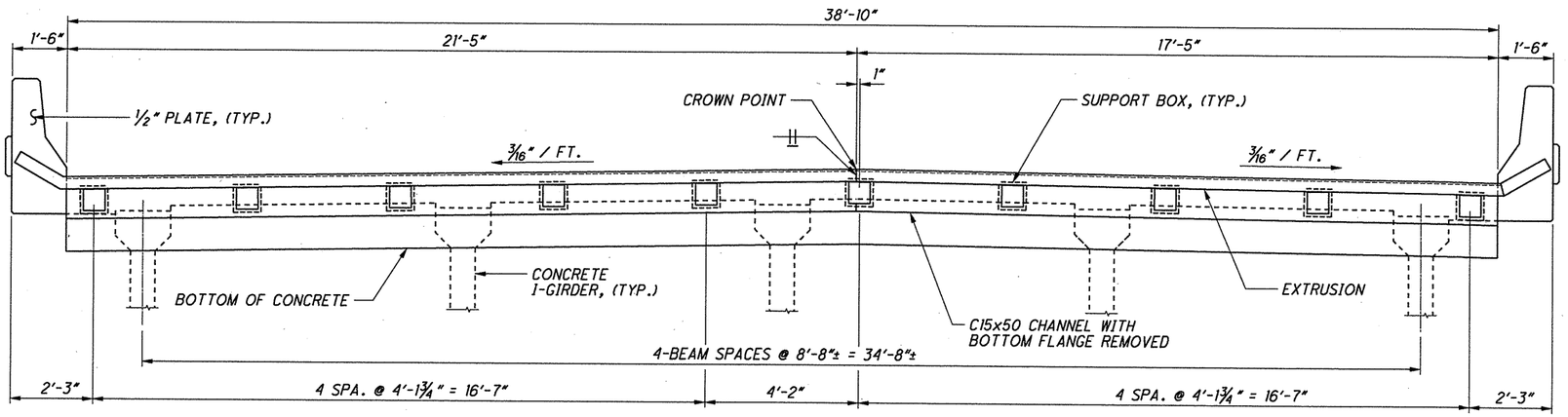
BDH	—	2201038L, 2201046R	

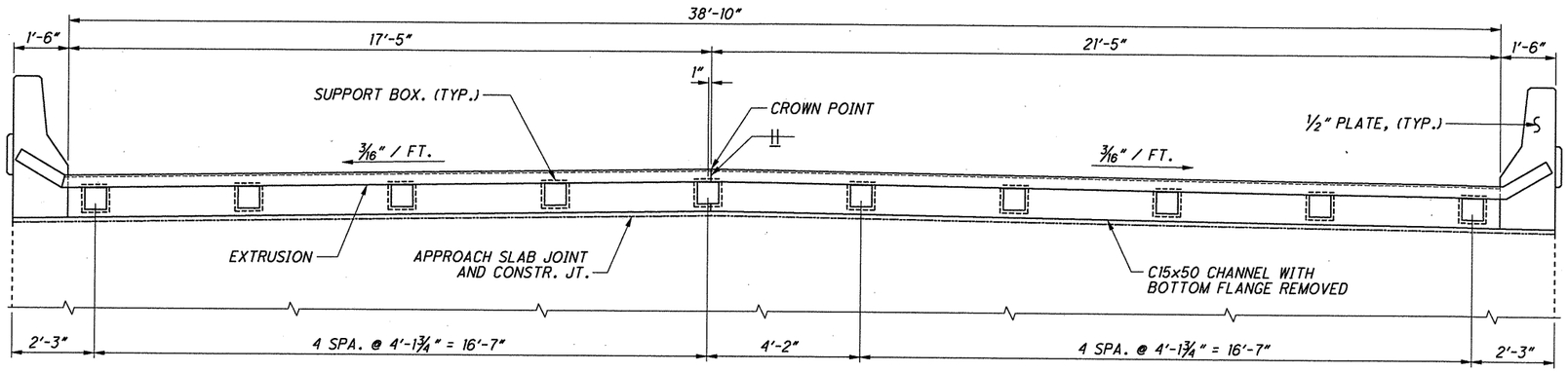
EXPANSION JOINT DETAILS

BRIDGE NO. ERI-2-19.11L&R
STATE ROUTE 2 OVER HURON RIVER, NORFOLK SOUTHERN R.R. AND COUNTY RD. 126

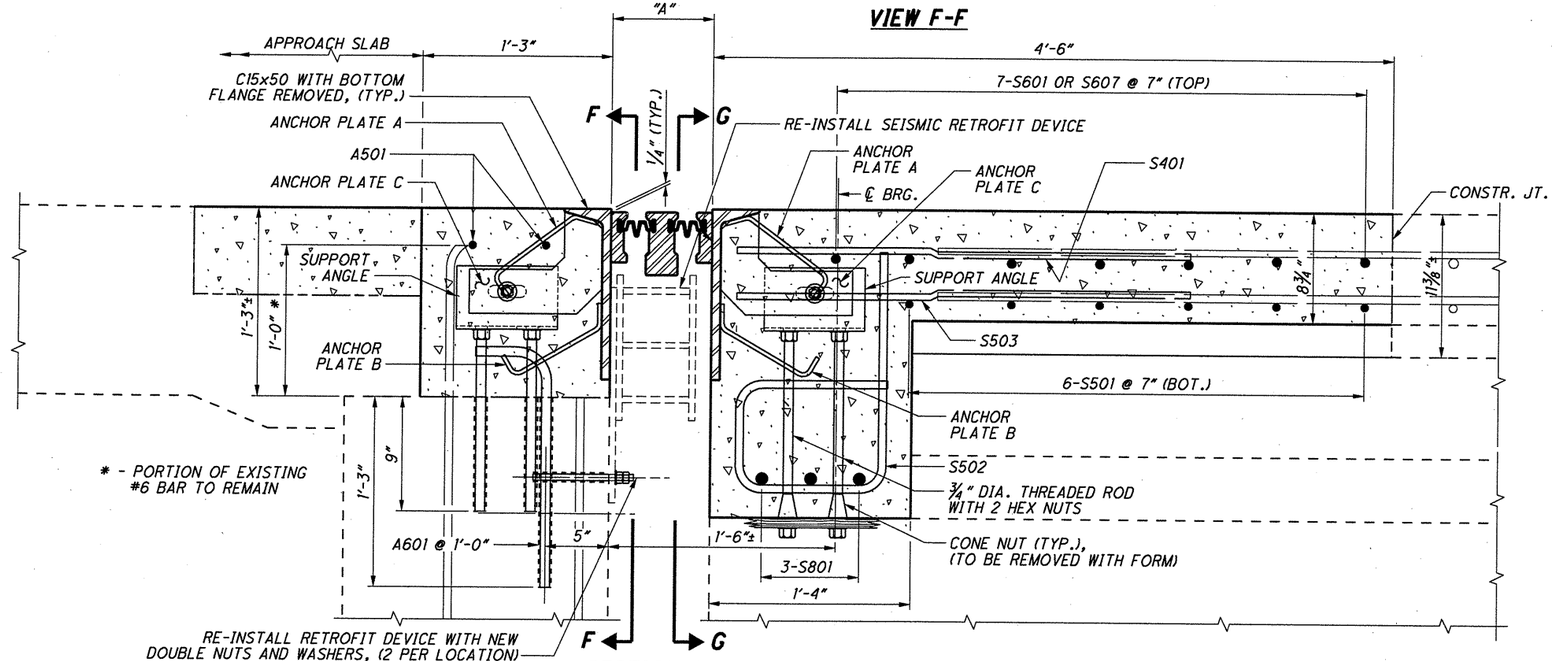
ERI-2-19.11
PID 88754



VIEW G-G

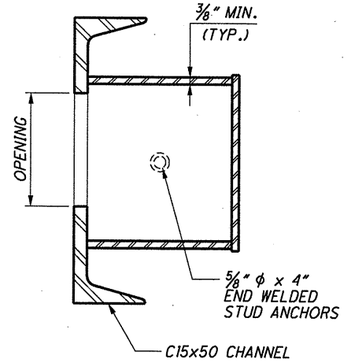


VIEW F-F



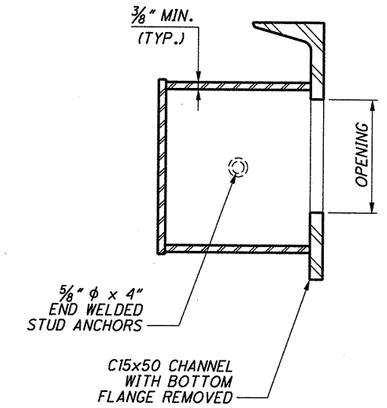
SECTION A-A

SUPPORT BOX NOT SHOWN FOR CLARITY



SUPPORT BOX DETAIL

DIMENSIONS PROVIDED BY MANUFACTURER



SUPPORT BOX DETAIL

DIMENSIONS PROVIDED BY MANUFACTURER

NOTES

1. FOR ADDITIONAL NOTES AND LOCATION OF SECTION A-A: SEE SHEET 12/16 .
2. SPACING OF SUPPORT BOXES SHOWN IS APPROXIMATE, FINAL SPACING IS TO BE DETERMINED BY MANUFACTURER.
3. FOR ADDITIONAL DETAILS: SEE SHEET 14/16 AND 15/16 .
4. BACKWALL CONCRETE SHALL BE INCLUDED IN ITEM 511-CLASS S CONCRETE SUPERSTRUCTURE, AS PER PLAN FOR PAYMENT

DESIGN AGENCY
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HK	RLE	AFS	01/19/11
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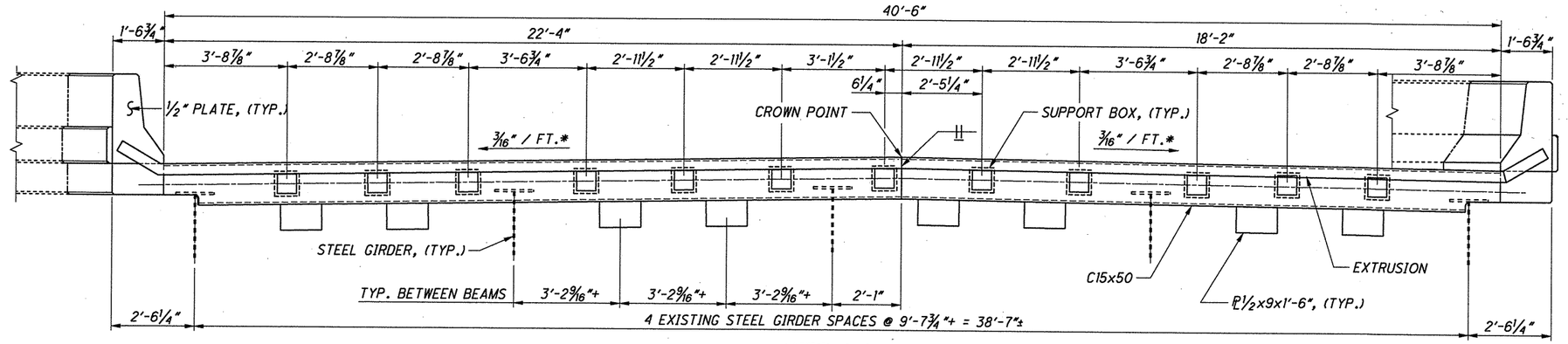
BDH	—	22010381, 22010461R	

EXPANSION JOINT DETAILS

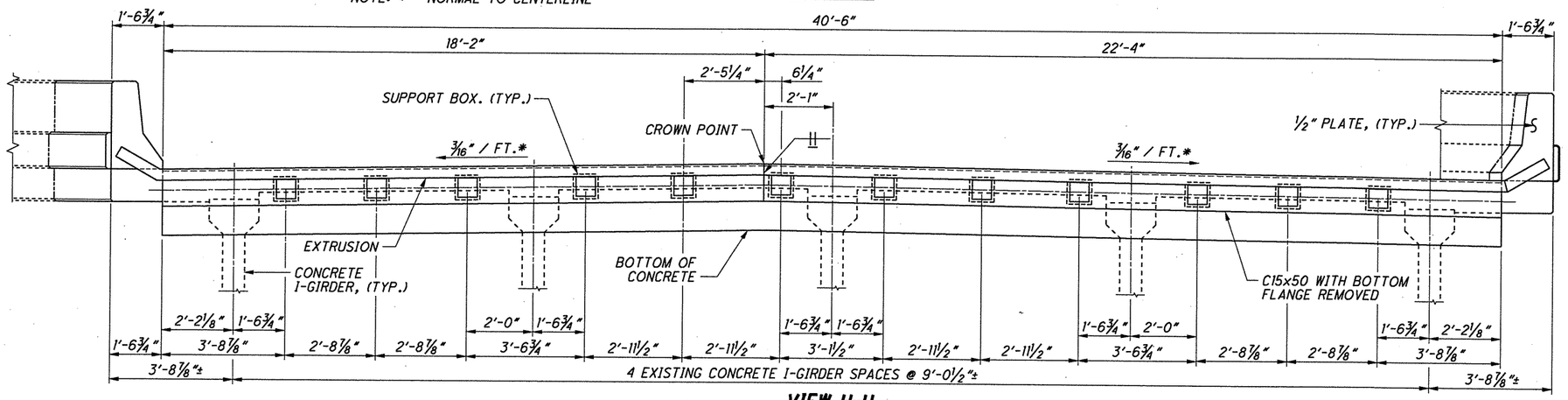
BRIDGE NO. ERI-2-19.11L&R
STATE ROUTE 2 OVER HURON RIVER, NORFOLK SOUTHERN R.R. AND COUNTY RD. 126

ERI-2-19.11
PID 88754

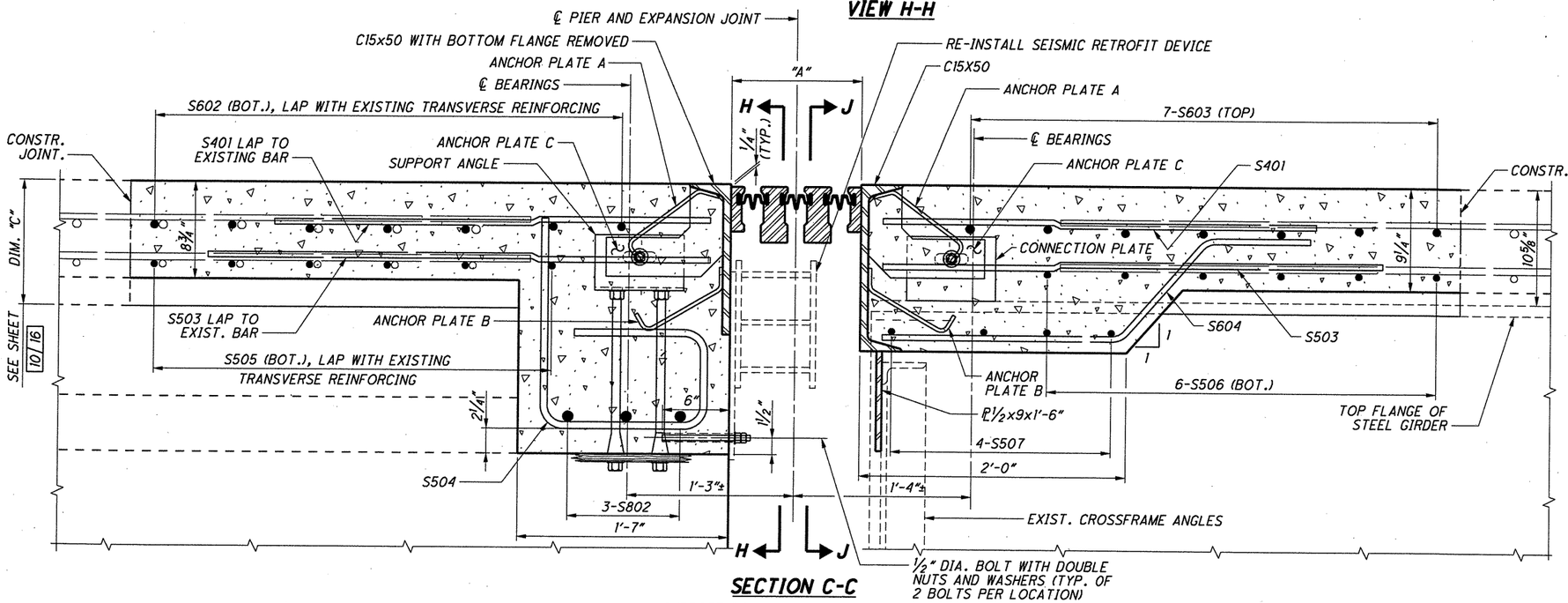


VIEW J-J

NOTE: * - NORMAL TO CENTERLINE

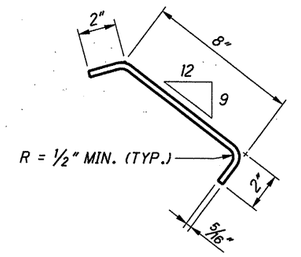


VIEW H-H



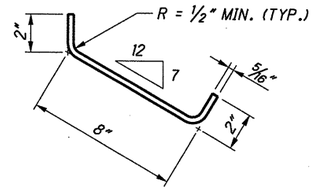
SECTION C-C

SUPPORT BOX NOT SHOWN FOR CLARITY



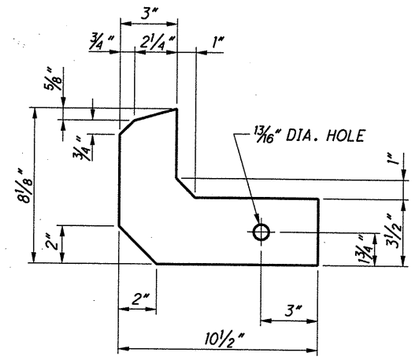
ANCHOR PLATE A

(2" WIDE)



ANCHOR PLATE B

(2" WIDE)



ANCHOR PLATE C

(1/2" THICK)

NOTES

1. FOR ADDITIONAL NOTES AND LOCATION OF SECTION C-C: SEE SHEET 12/16 .
2. SPACING OF SUPPORT BOXES SHOWN IS APPROXIMATE, FINAL SPACING IS TO BE DETERMINED BY MANUFACTURER.
3. FOR ADDITIONAL DETAILS: SEE SHEET 13/16 AND 15/16 .

DESIGN AGENCY
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HK	RLE	AFS	01/19/11
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BDH	—	2201038L, 2201046R	

EXPANSION JOINT DETAILS

BRIDGE NO. ERI-2-19.11L&R

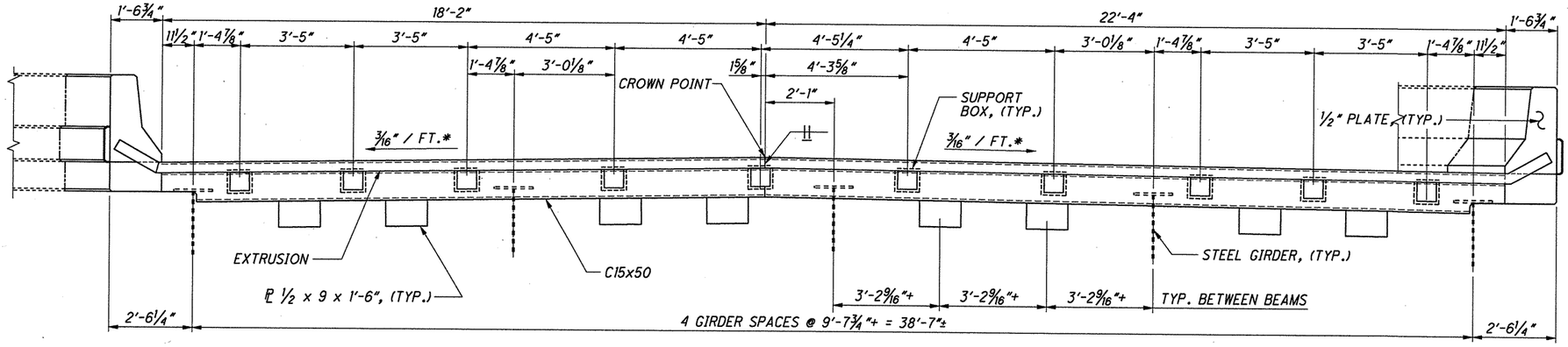
STATE ROUTE 2 OVER HURON RIVER, NORFOLK SOUTHERN R.R. AND COUNTY RD. 126

ERI-2-19.11

PID 88754

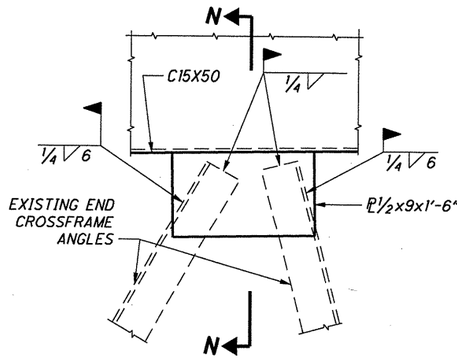
14 / 16

39 / 41

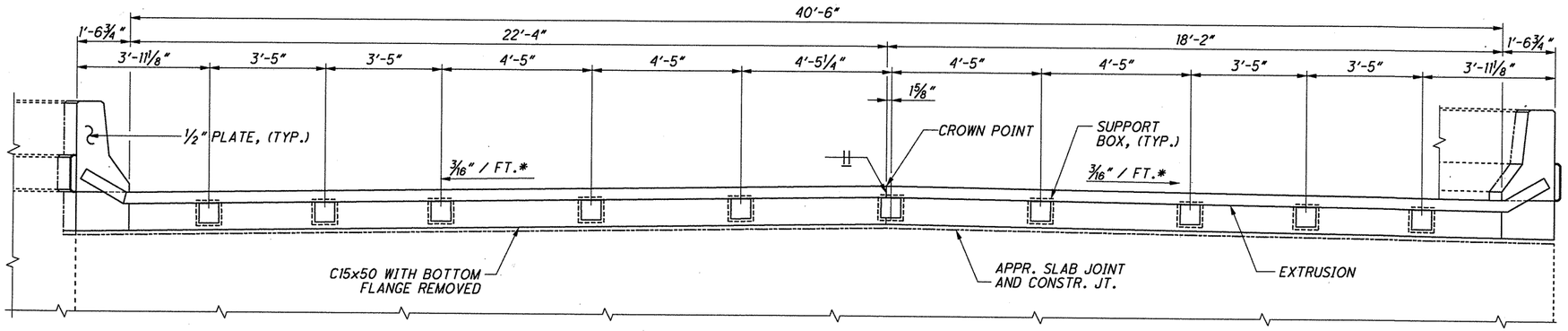


NOTE: * - NORMAL TO CENTERLINE

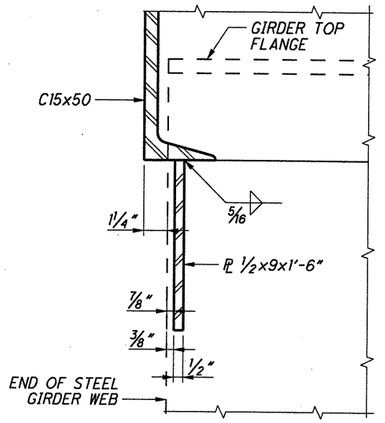
VIEW K-K



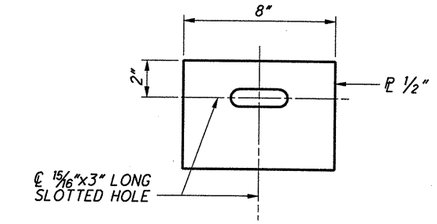
CROSSFRAME RE-ATTACHMENT DETAIL



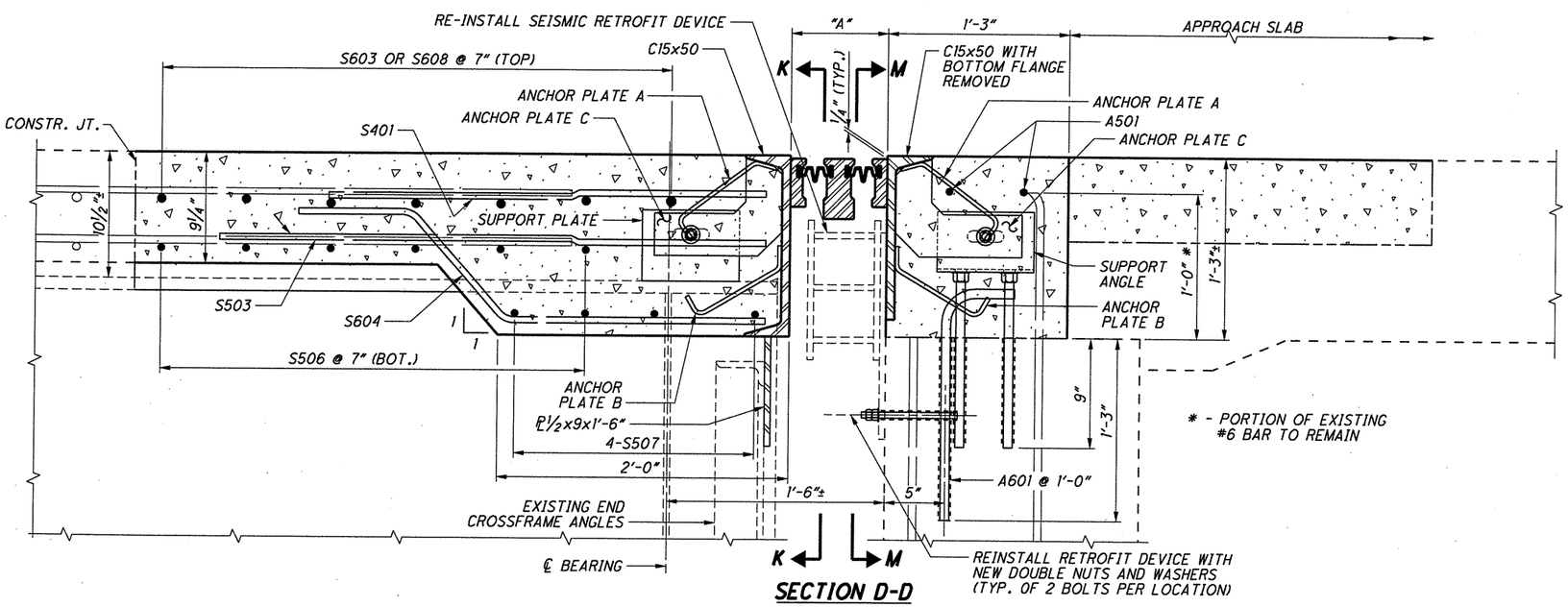
VIEW M-M



SECTION N-N



SUPPORT PLATE AT GIRDERS



SECTION D-D

SUPPORT BOX NOT SHOWN FOR CLARITY

NOTES

1. FOR LOCATION OF SECTION D-D AND ADDITIONAL NOTES: SEE SHEET 12 / 16 .
2. SPACING OF SUPPORT BOXES SHOWN IS APPROXIMATE, FINAL SPACING IS TO BE DETERMINED BY MANUFACTURER.
3. FOR ADDITIONAL DETAILS: SEE SHEET 13 / 16 AND 14 / 16 .
4. BACKWALL CONCRETE SHALL BE INCLUDED IN ITEM 511-CLASS S CONCRETE SUPERSTRUCTURE, AS PER PLAN FOR PAYMENT

DESIGN AGENCY
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BDH	—	22010381, 2201046R	

EXPANSION JOINT DETAILS

BRIDGE NO. ERI-2-1911L&R OVER SOUTHERN R.R. AND COUNTY RD. 126

STATE ROUTE 2 OVER HURON RIVER, NORFOLK SOUTHERN

ERI-2-19.11
PID 88754

15 / 16

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41

ABUTMENT REINFORCING STEEL LIST

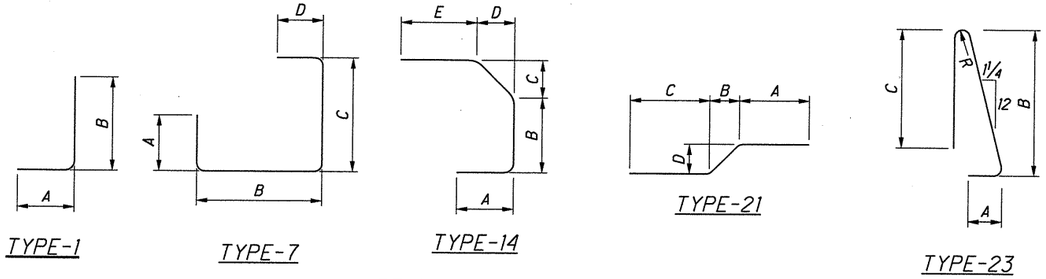
MARK	NUMBER			LENGTH	TYPE	A	B	C	D	E	R	WEIGHT (LBS.) LEFT STRUC.	WEIGHT (LBS.) RIGHT STRUC.
	LEFT STR.	RT. STR.	TOTAL										
A501	4	4	8	22'-0"	STR							92	92
A502	4	4	8	22'-11"	STR							96	96
A503	8	8	16	5'-3"	23	7 1/2"	2'-5"	2'-2"			2 1/8"	44	44
A601	81	81	162	1'-11"	1	6"	1'-7"					233	233
											TOTAL	465	465

SUPERSTRUCTURE REINFORCING STEEL LIST

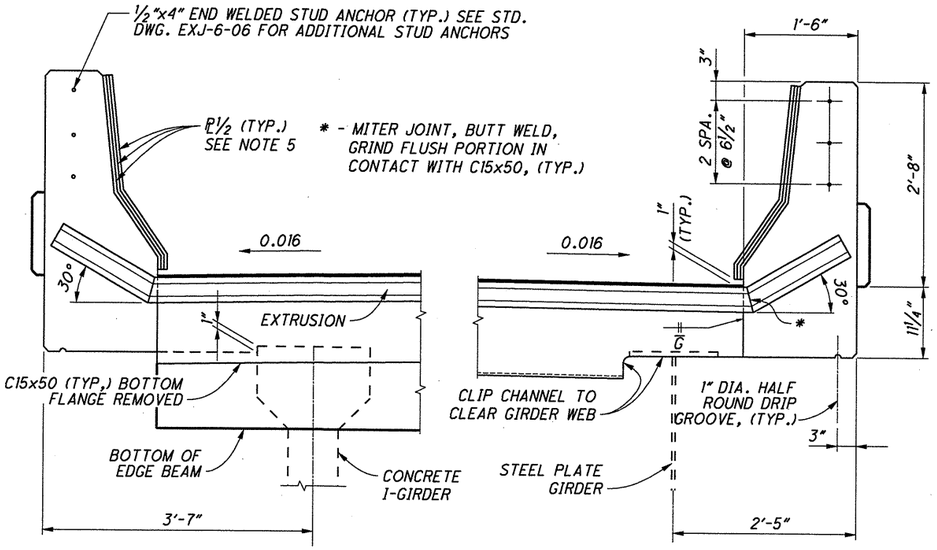
MARK	NUMBER			LENGTH	TYPE	A	B	C	D	E	R	WEIGHT (LBS.) LEFT STRUC.	WEIGHT (LBS.) RIGHT STRUC.
	LEFT STR.	RT. STR.	TOTAL										
S401	452	452	904	3'-7"	STR							1082	1082
S501	60	60	120	22'-0"	STR							1377	1377
S502	40	40	80	3'-10"	7	1'-7"	1'-0"	9"	10"			160	160
S503	340	340	680	4'-1"	STR							1448	1448
S504	200	200	400	4'-1"	7	1'-7"	1'-3"	9"	10"			852	852
S505	23	23	46	7'-5"	STR							178	178
S506	24	24	48	22'-11"	STR							574	574
S507	16	16	32	20'-4"	STR							339	339
S508	80	80	160	5'-3"	23	7 1/2"	2'-5"	2'-2"			2 1/8"	438	438
S601	35	35	70	26'-9"	STR							1406	1406
S602	23	23	46	7'-11"	STR							273	273
S603	14	14	28	27'-10"	STR							585	585
S604	64	64	128	4'-4"	21	1'-9"	10"	1'-6"	10"			417	417
S605	80	80	160	2'-1"	1	10"	1'-5"					250	250
S606	80	80	160	2'-11"	14	10"	8 1/2"	8 1/2"	6"	9"		350	350
S607	35	35	70	17'-9"	STR							933	933
S608	14	14	28	18'-6"	STR							389	389
S801	30	30	60	21'-9"	STR							1742	1742
S802	6	6	12	22'-7"	STR							362	362
											TOTAL	13,155	13,155

NOTES

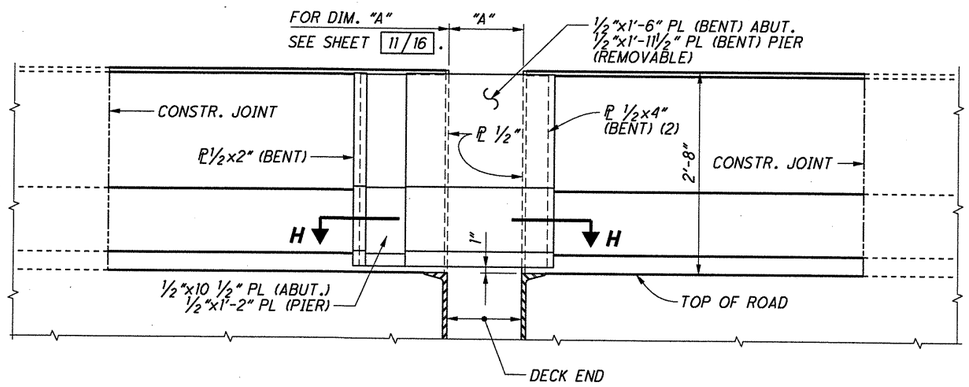
1. ALL REINFORCING STEEL: SHALL BE EPOXY COATED.
2. THE BAR SIZE NUMBER: IS SPECIFIED ON THE PLANS IN THE BAR MARK COLUMN. THE FIRST DIGIT WHERE THREE DIGITS ARE USED, AND THE FIRST TWO DIGITS WHERE FOUR DIGITS ARE USED, INDICATES THE BAR SIZE NUMBER. FOR EXAMPLE, S501 IS A NO. 5 BAR. BAR DIMENSIONS SHOWN ARE OUT TO OUT UNLESS OTHERWISE NOTED. R INDICATES INSIDE RADIUS, UNLESS OTHERWISE NOTED.
3. BAR BENDS: BEND BARS CAREFULLY TO THE DIMENSIONS LISTED IN THE SCHEDULES AND/OR STANDARD BENDS TABLE (CMS 509.05).
4. ABBREVIATIONS: SEE SHEET 4/16 .
5. PARAPET PLATES ARE TO BE INCLUDED FOR PAYMENT IN THE UNIT PRICE BID ITEM SPECIAL - MODULAR EXPANSION JOINT.
6. FOR BOLTS, BOLT LOCATIONS, ANCHOR STUDS NOT SHOWN, SEE STD. DWG. EXJ-6-06.



BENDING DIAGRAMS

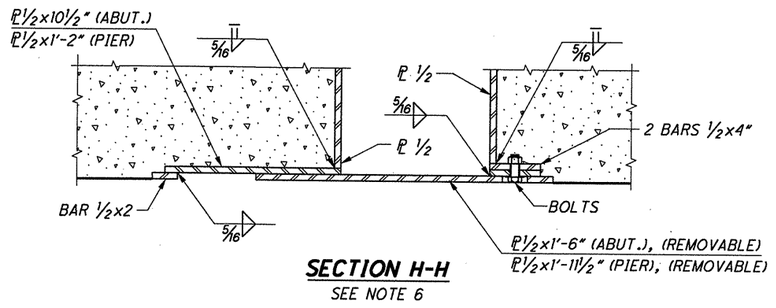


JOINT TREATMENT AT PARAPET



PARAPET PLATE ELEVATION AT EXPANSION JOINTS

PIER INTERMEDIATE JOINT SHOWN, TREATMENT AT ABUTMENT SIMILAR



SECTION H-H

SEE NOTE 6

DESIGN AGENCY
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DESIGNED	DRAWN	REVIEWED	DATE
HK	RLE	AFS	01/19/11
CHECKED	REVISED	STRUCTURE FILE NUMBER	
BDH	—	22020381, 22010461	

REINFORCING STEEL LIST
BRIDGE NO. ERI-2-19.11L&R
STATE ROUTE 2 OVER HURON RIVER, NORFOLK SOUTHERN R.R. AND COUNTY RD. 126

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16/16

41/41