FAIRFIELD COUNTY ENGINEER

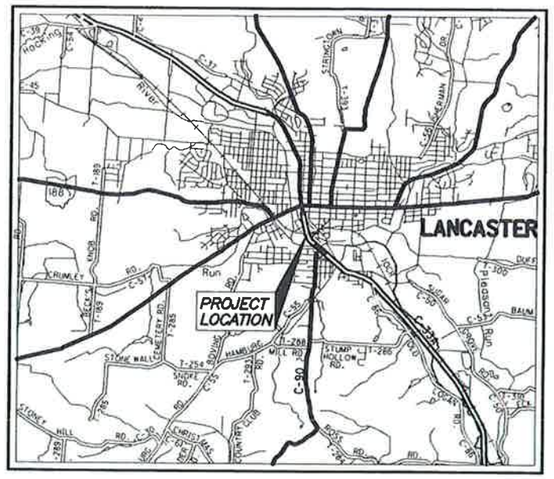
FAI-C.R.33A-4.02 (7.125)

CITY OF LANCASTER

C.R. 33A OVER INDIANA AND OHIO CENTRAL RAILROAD

BRIDGE NO. HOC-43

BEARINGS REPLACEMENT PLAN


LANCASTER
PROJECT LOCATION
Hocking River
Rush Run
Indian Run
Ohio Central Railroad
Indiana and Ohio Central Railroad
Memorial Drive
Mill Rd.
Stump Hollow Rd.
Smoke Rd.
Stone Hill Rd.
Crumley Rd.
Beck Rd.
Stone Wall Rd.
Sugar Grove Rd.
Madison Rd.
Balm Rd.
Duke Rd.
Sherman Ave.
Rockmill Rd.
Columbus Lancaster Rd.
Chalk Hill Rd.
Chalk Hill Rd.
Cumberland Trail
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GENERAL NOTES

DESIGN SPECIFICATIONS:

THE NEW BEARINGS CONFORM THE TO "LRFD BRIDGE DESIGN SPECIFICATIONS" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 2012, INCLUDING THE 2013 INTERIM SPECIFICATIONS AND THE ODOT BRIDGE DESIGN MANUAL, 2007.

DESIGN DATA:

OPERATIONAL IMPORTANCE: A LOAD MODIFIER OF 1.0 HAS BEEN ASSUMED FOR THE DESIGN OF THIS STRUCTURE IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, ARTICLE 1.3.5 AND THE ODOT BRIDGE DESIGN MANUAL, 2007.

BEARING DESIGN LOADING:

HL-93 AND (EXISTING + FUTURE) WEARING SURFACE (FWS) OF 0.060 KSF

PROPOSED WORK:

REPLACE ABUTMENT BEARINGS WITH ITEM 516, BEARING (PTFE) (TEFLON), AS PER PLAN.

REPLACE PIER 1 & 3 BEARINGS WITH ITEM 516, ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE).

PAINT STEEL PORTIONS, EXCEPT STAINLESS STEEL, OF ALL NEW BEARINGS.

EXISTING STRUCTURE PLANS:

EXISTING BRIDGE PLANS ARE AVAILABLE FROM THE COUNTY ENGINEER'S OFFICE.

ITEM 516, JACKING AND TEMPORARY SUPPORT OF SUPERSTRUCTURE, AS PER PLAN:

THIS WORK CONSISTS OF RAISING OR RE-POSITIONING EXISTING STRUCTURES TO THE DIMENSIONS AND REQUIREMENTS DEFINED IN THE PROJECT PLANS.

SUBMIT CONSTRUCTION PLANS IN ACCORDANCE WITH CMS 501.05.

IF, DURING THE JACKING OPERATIONS, CRACKING OF THE CONCRETE SUPERSTRUCTURE, SEPARATION OF THE CONCRETE DECK FROM THE STEEL STRINGERS, OR OTHER DAMAGE TO THE STRUCTURE IS VISUALLY OBSERVED, IMMEDIATELY CEASE THE JACKING OPERATION AND INSTALL SUPPORTS TO THE SATISFACTION OF THE ENGINEER. ANALYZE THE DAMAGE AND SUBMIT A METHOD OF CORRECTION TO THE ENGINEER FOR APPROVAL. EPOXY INJECT ALL BEAMS THAT SEPARATE FROM THE DECK FOR THE DISTANCE OF THE SEPARATION IN ACCORDANCE WITH CMS 512.07. THE OWNER WILL NOT PAY FOR THE COST OF THIS EPOXY INJECTION OR OTHER REQUIRED REPAIRS. THE BRIDGE BEARINGS SHALL BE FULLY SEATED AT ALL CONTACT AREAS. IF FULL SEATING IS NOT ATTAINED, SUBMIT A REPAIR PLAN TO THE ENGINEER. THE OWNER WILL NOT PAY FOR THE REPAIR COSTS TO ENSURE FULL SEATING ON BEARINGS. THE OWNER WILL MEASURE THIS WORK ON A LUMP SUM BASIS. THE OWNER WILL PAY FOR THE ACCEPTED QUANTITIES AT THE CONTRACT PRICE FOR ITEM 516, JACKING AND TEMPORARY SUPPORT OF SUPERSTRUCTURE, AS PER PLAN.

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 OBSERVATIONS 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 PRE BID EXAMINATION OF THE EXISTING STRUCTURE. HOWEVER, THE OWNER WILL PAY FOR ALL PROJECT WORK BASED UPON ACTUAL DETAILS AND DIMENSIONS THAT HAVE BEEN VERIFIED IN THE FIELD.

PROTECTION OF PERSONS AND PROPERTY:

THE CONTRACTOR SHALL COLLECT, REMOVE, AND DISPOSE OF ALL DISCARDED MATERIALS AND SHALL LEAVE THE JOB SITE IN A CLEAN MANNER AND CONDITION. WHEN OR WHERE ANY DIRECT OR INDIRECT DAMAGE OR INJURY IS DONE TO PUBLIC OR PRIVATE PROPERTY THE CONTRACTOR SHALL RESTORE AT HIS OWN EXPENSE, SUCH PROPERTY TO A CONDITION SIMILAR OR EQUAL TO THAT EXISTING BEFORE SUCH DAMAGE OR INJURY WAS DONE.

PRIOR INSPECTION OF WORK:

PROSPECTIVE BIDDERS ARE REQUIRED TO MAKE AN INSPECTION OF THE BRIDGE IN THE FIELD AND TO REVIEW THE PLANS AND SPECIFICATIONS BEFORE SUBMITTING BIDS. SEE SECTION 102.05 OF THE CONSTRUCTION AND MATERIAL SPECIFICATIONS.

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GENERAL NOTES - 1

BRIDGE NO. FAI-CR33A-4.02L/R

C.R. 33A OVER INDIANA AND OHIO CENTRAL RAILROAD

FAI-C.R.33A-4.02

GENERAL NOTES (CONTINUED)

ITEM 516 - ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), AS PER PLAN (10"x1'-4½"x2¼") (PTFE):

1. DESCRIPTION

THIS WORK CONSISTS OF PREPARING SHOP DRAWINGS AND FURNISHING ALL MATERIALS, SERVICES, LABOR, TOOLS, EQUIPMENT AND INCIDENTALS NECESSARY TO FABRICATE, TEST AND INSTALL ELASTOMERIC BEARINGS WITH INTERNAL LAMINATES, STEEL LOAD PLATES AND PTFE (POLYTETRAFLUOROETHYLENE) IN ACCORDANCE WITH ITEM 516, THE PROJECT PLANS, ALL APPLICABLE SECTIONS OF SUPPLEMENTAL SPECIFICATION 869 AND THIS SPECIFICATION. UNLESS MODIFIED BY THIS SPECIFICATION, THE REQUIREMENTS OF ITEM 516 AND THE PROJECT PLANS SHALL APPLY.

SEE SHEETS 5 / 5 FOR BEARING DETAILS AND ADDITIONAL REQUIREMENTS.

2. MATERIAL REQUIREMENTS

MATERIAL REQUIREMENTS SHALL BE GOVERNED BY ITEM 516, THE PROJECT PLANS, THESE SPECIFICATIONS AND ALL APPLICABLE SECTIONS OF SUPPLEMENTAL SPECIFICATION 869.

PTFE - FINISHED DIMPLED UNFILLED PTFE SHEET SHALL BE MADE FROM 100 PERCENT VIRGIN PTFE RESIN.

FOR ELASTOMERIC BEARINGS WITH INTERNAL LAMINATES, LOAD PLATES AND BACKING PLATES - SEE ITEM 516 AND SHEET 5 / 5 .

3. FABRICATION

A. ATTACHMENT OF SHEET PTFE TO THE SUBSTRATE, LUBRICATION, ATTACHMENT OF SHEET STAINLESS STEEL, WELDING AND TOLERANCES SHALL MEET THE REQUIREMENTS OF ALL APPLICABLE SECTIONS OF SUPPLEMENTAL SPECIFICATION 869.

B. CORROSION PROTECTION

GALVANIZE ACCORDING TO CMS 711.02 ALL STEEL SURFACES (INCLUDING ANCHOR RODS), EXCEPT STAINLESS STEEL SURFACES. LOAD PLATES SHALL BE GALVANIZED PRIOR TO ATTACHING STAINLESS STEEL PLATES. DAMAGED GALVANIZED AREAS AT SHOP AND FIELD WELDS SHALL BE REPAIRED ACCORDING TO CMS 711.02.

4. TESTING

IN ADDITION TO THE TESTING REQUIREMENTS OF CMS 516, THE TESTING REQUIRED BY ALL APPLICABLE SECTIONS OF SUPPLEMENTAL SPECIFICATION 869 SHALL BE PERFORMED.

5. SHIPPING AND PACKING

SHIPPING AND PACKING SHALL MEET THE REQUIREMENTS OF SECTION 869.19 OF SUPPLEMENTAL SPECIFICATION 869.

ASSIGN A MARK NUMBER TO EACH BEARING COMPONENT AND SHOW THE MARK NUMBER AND PLACEMENT LOCATION ON THE SHOP DRAWINGS. MARK ALL BEARINGS PRIOR TO SHIPPING. THE MARKS SHALL INCLUDE THE BEARING LOCATION (I.E. REAR ABUTMENT, PIER 6 REAR, PIER 9 FORWARD, ETC.), GIRDER NUMBER, AND A DIRECTION ARROW THAT POINTS UPSTATION. ALL MARKS SHALL BE PERMANENT AND BE VISIBLE AFTER THE BEARING IS INSTALLED.

6. INSTALLATION

FIELD WELDING OF BEARING ASSEMBLIES TO THE EMBEDDED STEEL SOLE PLATES SHALL MEET THE REQUIREMENTS OF ITEM 516, THE PROJECT PLANS AND ALL APPLICABLE SECTIONS OF SUPPLEMENTAL SPECIFICATION 869.

FIELD REPAIR GALVANIZED COATING IN ACCORDANCE WITH CMS 711.02.

7. METHOD OF MEASUREMENT

THE UNIT BID PRICE INCLUDES ALL MATERIALS, LABOR, TESTING AND INCIDENT NECESSARY TO FURNISH AND INSTALL ELASTOMERIC BEARINGS INCLUDING HP POSTS, STEEL LOAD PLATES, STAINLESS STEEL PLATES, PTFE, BACKING PLATE, MASONRY PLATE, ANCHOR RODS, PAINTING AND FABRIC PADS. PAYMENT WILL BE INCLUDED WITH THE APPROPRIATE 516 ITEM. THE COST FOR REMOVAL OF EXISTING BEARINGS ARE INCLUDED WITH ITEM 516.

8. BASIS OF PAYMENT

THE DEPARTMENT WILL PAY FOR ACCEPTED QUANTITIES AT THE CONTRACT PRICES AS FOLLOWS:

ITEM	UNIT	DESCRIPTION
516	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), AS PER PLAN (10"x1'-4½"x2¼") (PTFE)

NO SEPARATE PAYMENT WILL BE MADE FOR TESTING BEARINGS AS DESCRIBED IN SECTION 4 OF THIS SPECIFICATION. THIS WORK SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE BEARINGS.

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GENERAL NOTES - 2

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C.R. 33A OVER INDIANA AND OHIO CENTRAL RAILROAD

FAI-C.R.33A-4.02

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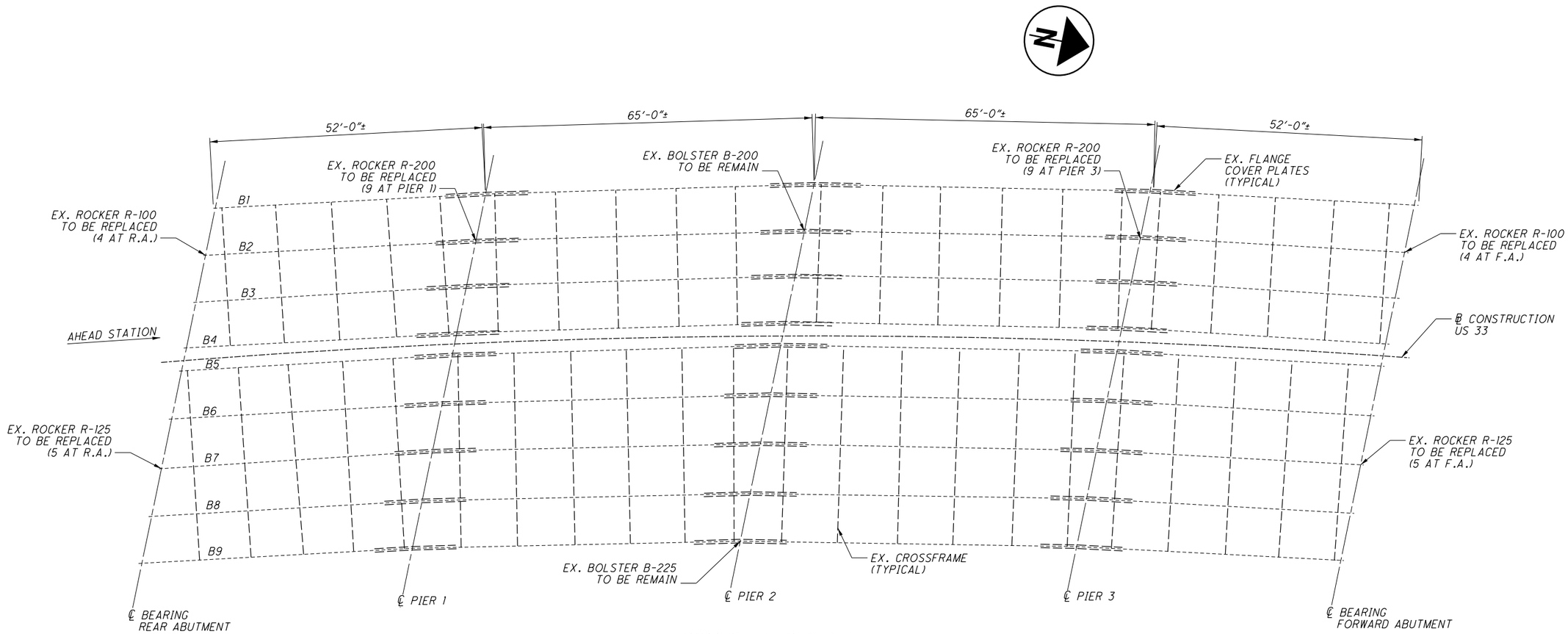

EXISTING FRAMING PLAN

ESTIMATED QUANTITIES

CALC.	DATE	CHK'D	DATE
SJA	3/26/15	XAC	4/07/15

ITEM	ITEM EXT.	TOTAL	UNIT	DESCRIPTION	ABUTMENTS.	PIERS	GENERAL	SHT. REF.
516	44101	18	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOADPLATE (NEOPRENE), AS PER PLAN (10" x 1'-4½" x 2¼") (PTFE)	18			5 / 5
516	44300	18	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOADPLATE (NEOPRENE) (1'-4" x 1'-6" x 5") (EXPANSION)		18		5 / 5
516	47001	LUMP	LUMP	JACKING AND TEMPORARY SUPPORT OF SUPERSTRUCTURE, AS PER PLAN			LUMP	

NOTES:

FOR BEARING DETAILS SEE SHEET 5 /5 .

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ESTIMATED QUANTITIES AND FRAMING PLAN
BRIDGE NO. FAI-CR33A-4.02L/R
C.R. 33A OVER INDIANA AND OHIO CENTRAL RAILROAD

FAI-C.R.33A-4.02

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LAMINATED ELASTOMERIC BEARINGS

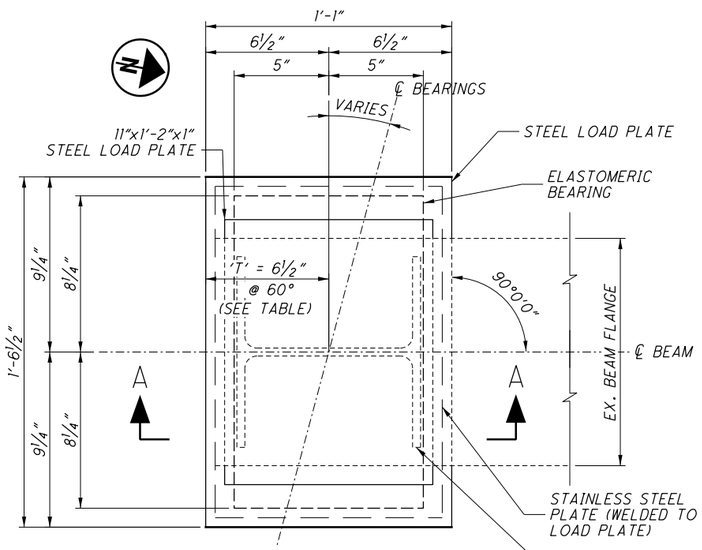
LOCATION	BEARING TYPE	BEARING DIMENSIONS ti	te	T	N	HP POST HEIGHT*	REACTIONS (KIPS) DL	LL	MAXIMUM DESIGN REACTION (KIPS)
REAR ABUTMENT (B1-B4)	EXP.	0.559"	0.350"	2¼"	3	11"	38	64	102
REAR ABUTMENT (B5-B9)	EXP.	0.559"	0.350"	2¼"	3	12"	39	67	106
PIER 1 (ALL BEAMS)	EXP.	0.507"	0.350"	5"	8	1'-1"	130	107	237
PIER 3 (ALL BEAMS)	EXP.	0.507"	0.350"	5"	8	1'-1"	130	107	237
FORWARD ABUTMENT (B1-B4)	EXP.	0.559"	0.350"	2¼"	3	11"	38	64	102
FORWARD ABUTMENT (B5-B9)	EXP.	0.559"	0.350"	2¼"	3	12"	39	67	106

ti = THICKNESS OF INTERNAL LAMINATE
te = THICKNESS OF EXTERNAL LAMINATE
T = TOTAL THICKNESS OF ELASTOMERIC BEAING

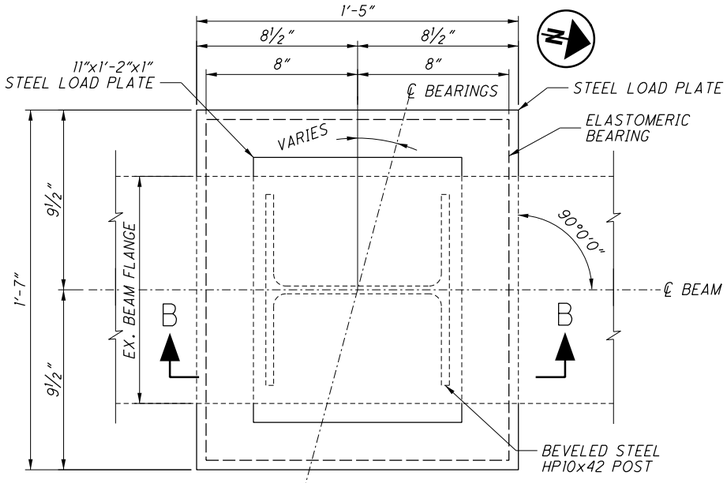
N = NO. OF STEEL LAMINATES
INTERNAL STEEL LAMINATE THICKNESS = 0.0747"
DUROMETER OF ELASTOMER = 50 DUROMETER

ABUTMENT DISTANCE 'T'

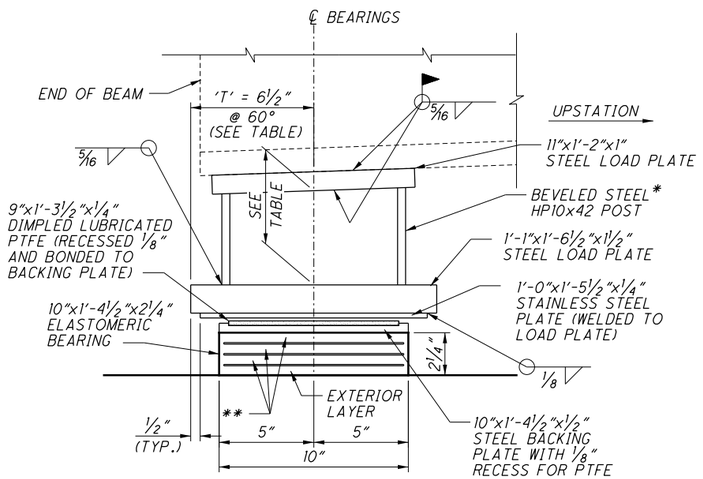
SETTING TEMPERATURE	DISTANCE 'T'
30°F	6⅛"
40°F	6¼"
50°F	6⅜"
60°F	6½"
70°F	6⅝"
80°F	6¾"
90°F	6 7/8"



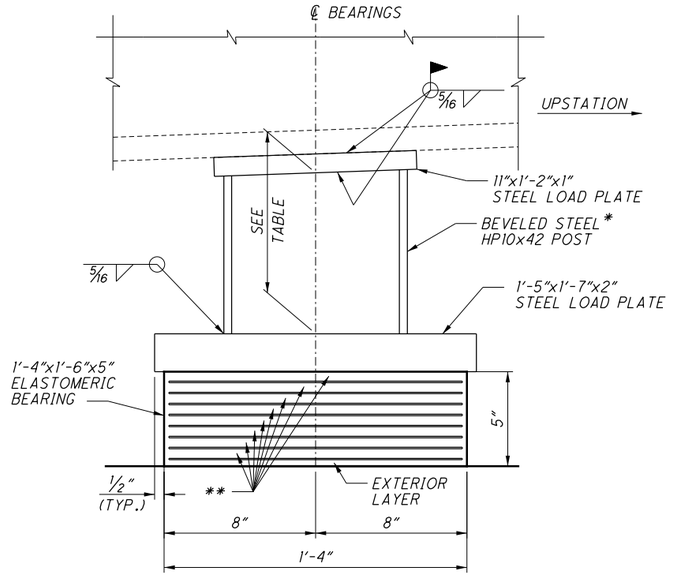
ABUTMENT - BEARING PLAN
(LOAD PLATE POSITION SHOWN IS AT 60°F)



PIERS 1 & 3 - BEARING PLAN



SECTION A-A
(REAR ABUTMENT SHOWN)
(FORWARD ABUTMENT SIMILAR)



SECTION B-B
(TYPICAL FOR PIERS 1 & 3)

LEGEND:

* POST HEIGHT TO BE FIELD MEASURED AND CUT TO FIT EXISTING CONDITIONS. POST HEIGHT IN TABLE IS APPROXIMATELY 4 INCHES LONGER THAN REQUIRED.

** INTERIOR ELASTOMERIC LAYER

NOTES:

EACH BEARING ASSEMBLY SHALL BE SHOP MARKED WITH THE FOLLOWING INFORMATION: TOP, FORWARD STATION DIRECTION, AND LOCATION (REAR ABUTMENT, PIER NUMBER, FORWARD ABUTMENT).

ABUTMENT AND PIER ELASTOMERIC BEARINGS:
THE ELASTOMER SHALL HAVE A HARDNESS OF 50 DUROMETER. THE BEARINGS WERE DESIGNED IN ACCORDANCE WITH SECTION 14.7.6 (METHOD A) OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS. THE LONG-TERM COMPRESSION PROOF LOAD TEST (AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, DIVISION II, SECTION 18.7.2.6) IS NOT REQUIRED.

PIERS 1 & 3 - BEARING REPOSITIONING:
IF BEARINGS ARE INSTALLED AT AN AMBIENT TEMPERATURE HIGHER THAN 80°F OR LOWER THAN 40°F AND THE BEARING SHEAR DEFLECTION EXCEEDS 1/6 OF THE BEARING HEIGHT AT 60°F ± 10°F, THE BEAMS SHALL BE RAISED TO ALLOW THE BEARINGS TO RETURN TO THEIR UNDEFORMED SHAPE AT 60°F ± 10°F.

WELDING:
CONTROL WELDING SO THAT THE PLATE TEMPERATURE AT THE ELASTOMER BONDED SURFACE DOES NOT EXCEED 300° F AS DETERMINED BY USE OF PYROMETRIC STICKS OR OTHER TEMPERATURE MONITORING DEVICES.

STEEL MATERIAL:
THE HP POSTS, STEEL LOAD PLATE, BACKING PLATE AND MASONRY PLATE SHALL BE ASTM A709 GRADE 50 STEEL, SHOP PRIMED, PAINTED PER 514 AND INCLUDED WITH ITEM 516 FOR PAYMENT.

THE STEEL LOAD PLATES, STEEL BACKING PLATES AND STEEL MASONRY PLATES AS APPLICABLE SHALL BE BONDED BY VULCANIZATION TO THE ELASTOMER DURING THE MOLDING PROCESS.

BASIS OF PAYMENT:
THE UNIT BID PRICE INCLUDES ALL MATERIALS, LABOR, TESTING AND INCIDENTALS NECESSARY TO FURNISH AND INSTALL ELASTOMERIC BEARINGS INCLUDING HP POSTS, STEEL LOAD PLATES, STAINLESS STEEL PLATES, PTFE, BACKING PLATE, MASONRY PLATE, ANCHOR RODS, PAINTING AND FABRIC PADS. PAYMENT WILL BE INCLUDED WITH THE APPROPRIATE 516 ITEM. THE COST FOR REMOVAL OF EXISTING BEARINGS ARE INCLUDED WITH ITEM 516.

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BEARING DETAILS 1
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