#### REFER

TO THE FOLLOWING STANDARD BRIDGE DRAWINGS: GSD-1-96 (DATED 1/18/2019)

## **DESIGN SPECIFICATIONS**

DESIGN SPECIFICATIONS: THIS STRUCTURE CONFORMS TO THE 8TH EDITION OF THE "LRFD BRIDGE DESIGN SPECIFICATIONS" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 2017, AND THE ODOT BRIDGE DESIGN MANUAL, 2020.

#### **EXISTING STRUCTURE VERIFICATION**

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

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

## DESIGN DATA

STRUCTURAL STEEL - ASTM A709 GRADE 50W - YIELD STRENGTH 50 KSI

# **EXISTING PLANS**

THE FOLLOWING EXISTING PLANS MAY BE INSPECTED IN THE ODOT DISTRICT 3 OFFICE IN ASHLAND, OHIO:

STRUCTURE NAME: ASD-89-4.31 ERI-2-24.03R ERI-13-3.67 ERI-101-6.20 HUR-250-4.92 HUR-303-1.97	EXISTING PLAN NAME: ASD-89-(2.99)(3.58) ERI-2-22.24 ERI-299-2.25 ERI-2-4.02 ERI-2-2.866 HUR-20-10.51 HUR-18-15.23/HUR-250-4.92 HUR-303-1.72	DATE: 1958 1972 1959 1961 1999 1965 2016 1953
LOR-2-3.33L/R	LOR-2-0.00	1972

# <u>ITEM 202 - PORTIONS OF STRUCTURE REMOVED, OVER 20</u> <u>FOOT SPAN, AS PER PLAN</u>

THE PROVISIONS OF ITEM 202 APPLY EXCEPT AS SPECIFIED BY THE FOLLOWING NOTES. PERFORM WORK CAREFULLY DURING DECK AND MAIN MEMBER REMOVALS TO AVOID DAMAGING STRUCTURAL MEMBERS THAT ARE TO REMAIN. THE USE OF EXPLOSIVES, HEADACHE BALLS AND/OR HOE RAM TYPE OF EQUIPMENT IS PROHIBITÉD. SUBMIT CONSTRUCTION PLANS ACCORDING TO CMS

THE CONTRACTOR MAY REMOVE CONCRETE BY CUTTING AND BY MEANS OF HAND OPERATED PNEUMATIC HAMMERS EMPLOYING POINTED OR BLUNTED CHISEL TYPE TOOLS. FOR REMOVALS OVER STRUCTURAL MEMBERS (I-BEAM, STEEL BEAM, STEEL GIRDER, ETC.) THE CONTRACTOR MAY USE A HAMMER HÉAVIER 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

DECK CONCRETE REMOVAL: THIS ITEM INCLUDES THE REMOVAL OF THE UNDERSIDE OF THE EXISTING DECK CONCRETE IN LOCATIONS AS SHOWN IN THE PLANS. REMOVE DECK CONCRETE AS NEEDED TO EXPOSE BEAM FLANGE IN ORDER TO ALLOW FOR PROPOSED STIFFENER INSTALLATION.

MAIN MEMBER REMOVAL: THIS ITEM INCLUDES THE REMOVAL OF THE EXISTING MAIN BEAM MEMBERS TO THE LIMITS SHOWN IN THE PLANS. FLAME OR SAW CUT THE EXISTING MEMBERS TO WITHIN 1/8 INCH OF THE EXISTING MATERIAL USING A MECHANICAL GUIDE ACCORDING TO C&MS 513.12. PROVIDE SHIELDING AS NECESSARY TO PREVENT DAMAGE TO MAIN OR SECONDARY MATERIALS THAT REMAIN. GRIND THE EXISTING MAIN OR SECONDARY MEMBER SMOOTH IN PREPARATION FOR COMPLETE PENETRATION OR FILLET WELDING. PROVIDE A SURFACE FINISH ACCORDING TO ANSI B46.1 OF 250 MIL (TO ACCOMODATE THE PROPOSED REPLACEMENT MATERIALS).

THE DEPARTMENT WILL MEASURE THE QUANTITY OF REMOVALS 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, OVER 20 FOOT SPAN, AS PER PLAN.

#### ITEM 202 - BRIDGE RAILING REMOVED FOR REUSE, AS PER PLAN

THIS ITEM SHALL BE USED TO REMOVE ONE 12.5 FOOT PANEL OF THE EXISTING BRIDGE RAILING AT THE PROPOSED CONCRETE REPAIR LOCATION TO ALLOW FOR CONCRETE REPAIRS TO BE PERFORMED. EXISTING BRIDGE RAILING POSTS, BASE PLATES AND ANCHOR BOLTS SHALL NOT BE DISTURBED. AFTER THE CONCRETE REPAIRS ARE COMPLETED, THE BRIDGE RAILING SHALL BE REINSTALLED. THE REMOVAL AND REPLACEMENT OF THE BRIDGE RAILING SHALL BE PERFORMED IN THE SAME DAY.

PAYMENT FOR ALL OF THE ABOVE SHALL BE AT THE UNIT PRICE BID PER FOOT FOR ITEM 202 - BRIDGE RAILING REMOVED FOR REUSE, AS PER PLAN, WHICH SHALL INCLUDE ALL LABOR, EQUIPMENT, MATERIALS, AND INCIDENTALS NECESSARY TO COMPLETE THE ABOVE WORK.

## ITEM 202 - REMOVAL MISC .: JOINT SEALER

THIS ITEM SHALL BE USED TO REMOVE THE EXISTING JOINT SEALER LOCATED BETWEEN THE APPROACH SLAB AND THE DECK OR BACKWALL.

PAYMENT FOR ALL OF THE ABOVE SHALL BE AT THE UNIT PRICE BID PER FOOT FOR THE ABOVE ITEM, WHICH WILL INCLUDE ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS NECESSARY TO COMPLETE THE ABOVE WORK.

# ITEM 202 - REMOVAL MISC .: STEEL BAR

THIS ITEM SHALL BE USED TO REMOVE THE EXISTING STEEL BAR TO THE LIMITS AS SHOWN IN THE PLANS AND TO PROVIDE A CLEAN AND SMOOTH SURFACE TO WELD THE PROPOSED BAR TO.

PAYMENT FOR ALL OF THE ABOVE SHALL BE AT THE UNIT PRICE BID PER FOOT FOR THE ABOVE ITEM, WHICH WILL INCLUDE ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS NECESSARY TO COMPLETE THE ABOVE WORK.

# ITEM 513 - STRUCTURAL STEEL MEMBERS, LEVEL UF, AS PER PLAN

ALL REQUIREMENTS OF 513 APPLY TO SHOP FABRICATED MEMBERS. PERFORM WORK FOR FIELD FABRICATED MEMBERS ACCORDING TO ITEM 513, EXCEPT AS MODIFIED HEREIN. THE DEPARTMENT WILL NOT REQUIRE THE CONTRACTOR PERFORMING FIELD FABRICATION TO BE PRE-QUALIFIED AS SPECIFIED IN SUPPLEMENT 1078. SUBMIT A WRITTEN LETTER OF MATERIAL ACCEPTANCE, SUPPLEMENT 1078. SUBMIT A WRITTEN LETTER OF MATERIAL ACCEPTANCE, 501.06, TO THE ENGINEER. PROVIDE SHOP DRAWINGS ACCORDING TO 513.06 OR SUPPLY THE ENGINEER WITH "AS-BUILT" DRAWINGS MEETING 513.06 AFTER COMPLETION OF FIELD FABRICATION. THE ENGINEER WILL REVIEW THE SUBMITTED DRAWINGS FOR CONCURRENCE WITH THE FINAL AS-BUILT CONDITION. IF NECESSARY, THE ENGINEER MAY CONTACT THE OFFICE OF STRUCTURAL ENGINEERING FOR TECHNICAL ASSISTANCE. IF THE ENGINEER IS SATISFIED WITH THE "AS-BUILT" DRAWINGS AND THE DELIVERED MATERIALS, SUPPLY A COPY OF THE DRAWINGS, STAMPED AND DATED, ALONG WITH MICROFILM, TO THE STRUCTURAL, WELDING AND METALS SECTION OF THE OFFICE OF MATERIAL MANAGEMENT FOR RECORD PURPOSES.

SURFACES BETWEEN EXISTING STEEL AND NEW STEEL SHALL BE PREPARED IN ACCORDANCE WITH THE "PENCIL ABRASIVE BLASTING" GENERAL NOTE PRIOR TO INSTALLATION OF NEW MATERIAL. NEW STEEL SHALL NOT BE PAINTED.

FIELD DRILLED COPE HOLES ARE TO BE PROVIDED ACCORDING TO PLAN DETAILS. GRIND COPE HOLES SMOOTH ACCORDING TO C&MS 513.19.

WELDING IS TO BE PERFORMED ACCORDING TO PLAN DETAILS. PREPARE THE MATERIAL FOR WELDING, PROVIDE RUNOFF TABS FOR ALL COMPLETE PENETRATION WELDS. PERFORM COMPLETE PENETRATION WELDS ACCORDING TO C&MS 513 USING APPROVED ELECTRODES, PROCEDURES AND WELDERS.
REMOVE RUNOFF TABS AND GRIND THE COMPLETED EDGES SMOOTH. GRIND THE REMOVE RUNOFF TABS AND GRIND THE COMPLETED EDGES SMOOTH. GRIND THE COMPLETED WELDS SMOOTH AND FLUSH WITH THE ADJACENT SURFACES TO PROVIDE A SURFACE FINISH ACCORDING TO ANSI B46.1 OF 250 MIL. DO NOT OVER GRIND AS TO REDUCE THE MATERIAL THICKNESS OR WIDTH OF THE NEW OR EXISTING MATERIALS. PREPARE ALL REENTRANT CORNERS WITH A ONE INCH RADIUS. REMOVE WELDING, START AND STOP DISCONTINUITIES. RADIOGRAPHIC TEST THE FINISHED WELDS ACCORDING TO C&MS 513.25A AND SUBMIT COPIES OF THE REPORTS TO THE ENGINEER. THE ENGINEER MAY OBTAIN TECHNICAL ASSISTANCE FROM THE OFFICE OF MATERIALS MANAGEMENT.

WELD EACH SECONDARY MEMBER ACCORDING TO PLAN DETAILS. MAGNETIC PARTICLE INSPECT ALL FILLET WELDS ACCORDING TO C&MS 513.25B.

GRINDING EXISTING STEEL MEMBERS, SUCH AS PITTED BOTTOM FLANGES, TO PROVIDE A SMOOTH SURFACE FOR FITTING PROPOSED STIFFENERS SHALL BE CONSIDERED INCIDENTAL AND INCLUDED WITH THIS PAY ITEM.

FIELD DRILLING OF HOLES IN EXISTING STEEL TO PREPARE SURFACE FOR THE PROPOSED BOLTED PLATING SHALL BE CONSIDERED INCIDENTAL AND INCLUDED WITH THIS PAY ITEM

PAKMENT POR ALLY OF THE ABOVES SHALL BE AT THE UNIT PRICES BID PER POUND FOR THE ABOVE ITEMS WHICH SHALL INCLUDE ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS NECESSARY TO COMPLETE THE ABOVE WORK.

#### <u> ITEM 513 - STRUCTURAL STEEL, MISC.: CROSSFRAME</u> REMOVAL AND REPLACEMENT

THIS ITEM SHALL BE USED TO REMOVE AND REPLACE EXISTING CROSSFRAME MEMBERS AT LIMITS AND LOCATIONS AS INDICATED IN THE PLANS.

LOCATIONS WHERE EXISTING ANGLES ARE REMOVED SHALL BE GROUND SMOOTH TO ENSURE A CLEAN SURFACE FOR REPLACEMENT ANGLES. REPLACEMENT ANGLES SHALL BE ASTM A709 GR50W STEEL.

PAYMENT FOR ALL OF THE ABOVE WILL BE AT THE LUMP SUM BID PRICE AND IS TO INCLUDE ALL LABOR, EQUIPMENT, MATERIALS, AND INCIDENTALS NECESSARY TO COMPLETE THE ABOVE WORK.

#### ITEM 513 - STRUCTURAL STEEL, MISC .: DRILLING STRUCTURAL STEEL, GRINDING, AND NDT

THIS WORK CONSISTS OF DRILLING HOLES AT THE ENDS OF CRACKS, GRINDING TO SMOOTH HOLES, AND NON-DESTRUCTIVE TESTING (NDT) IN THE BEAM WEB AS SHOWN IN THE PLANS AND AS DIRECTED BY THE ENGINEER

DRILL HOLES TO REMOVE ENTIRE CRACKS OR THE APPARENT ENDS OF THE CRACKS REVEALED BY THE INITIAL NDT OR VISUAL INSPECTION AT LOCATIONS INDICATED IN THE PLANS. GRIND SMOOTH THE EXPOSED CIRCUMFERENCE OF EACH DRILLED HOLE PER 513.19 AND CAREFULLY INSPECT FOR CRACKS AROUND THE PERIMETER OF THE HOLE USING MAGNETIC PARTICLE EXAMINATION AND/OR DYE PENETRATION. CONTINUE DRILLING, GRINDING, AND TESTING UNTIL ALL CRACK ENDS ARE REMOVED.

CRACK ENDS SHALL BE REMOVED BY A SINGLE HOLE IN THE LOCATIONS AS INDICATED IN THE PLANS. ENDS OF CRACKS SHALL BE DRILLED WITH MINIMUM 1-INCH DIAMETER DRILL BIT.

THE LOCATION OF ALL HOLES SHALL BE DETERMINED BY AND DRILLED UNDER THE DIRECTION OF THE ENGINEER.

PAYMENT FOR ALL LABOR, MATERIALS, AND EQUIPMENT, INCLUDING DRILLING, GRINDING, AND TESTING SHALL BE INCLUDED IN THE CONTRACT BID PRICE PER EACH FLOORBEAM LOCATION FOR ITEM 513 - STRUCTURAL STEEL, MISC.: DRILLING STRUCTURAL STEEL, GRINDING, AND NDT.

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

THIS WORK CONSISTS OF THE FOLLOWING:

-TEMPORARY SUPPORT OF THE CRACKED BEAM (ASD-89-4.31) -TEMPORARY SUPPORT OF THE CORRODED BEAM WEB (ERI-13-3.67) -LATERALLY REPOSITIONING CRACKED WEB IF MISALIGNED (ERI-101-6.20) -TEMPORARY SUPPORT OF THE DETERIORATED AND CRUSHED BEAM WEBS

-RAISING OR REPOSITIONING EXISTING STRUCTURES TO THE DIMENSONS AND REQUIREMENTS DEFINED IN THE PROJECT PLANS - BEARING RESETS (ERI-13-3.67, ERI-101-6.20, AND LOR-2-3.33 L&R)

SUBMIT CONSTRUCTION PLANS IN ACCORDANCE WITH C&MS 501.05. THE CONTRACTOR SHALL PREPARE ALL TEMPORARY SUPPORT PLANS, JACKING PLANS, AND CONSTRUCTION SEQUENCES ASSOCIATED WITH THE ABOVE DESCRIBED WORK. MAIN LOAD CARRYING MEMBERS SHALL BE ADEQUATELY SUPPORTED DURING CONSTRUCTION OPERATIONS SUCH THAT THE EXISTING STRUCTURE SHALL INCUR NO DAMAGE.

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 DEPARTMENT 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 DEPARTMENT WILL NOT PAY FOR THE REPAIR COSTS TO ENSURE FULL SEATING ON BEARINGS.

THE DEPARTMENT WILL MEASURE THIS WORK ON A LUMP SUM BASIS.

THE DEPARTMENT WILL PAY FOR THE ACCEPTED QUANTITIES AT THE CONTRACT PRICE FOR ITEM 516 - JACKING AND TEMPORARY SUPPORT OF SUPERSTRUCTURE, AS PER PLAN.

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				LS						LS		513	95020	LS		STRUCTURAL STEEL, MISC.: CROSSFRAME REMOVAL AND REPLACEMENT	4
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																STRUCTURE REPAIR (HUR-303-1.97)	
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EX. WEB

EX. WEB

PREP FOR CP WELD

EX. CRACK/HOLE

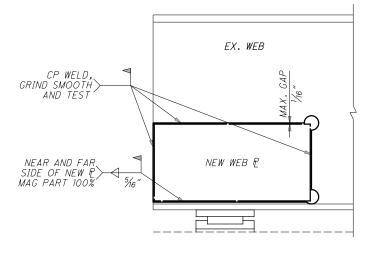
OFF REMOVAL LIMITS

PREP FOR CP WELD

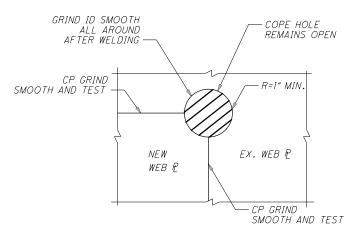
GRIND SMOOTH

SEE SUGGESTED CONSTRUCTION
SEQUENCE NOTES 3 & 4

# FORWARD ABUTMENT DETAIL



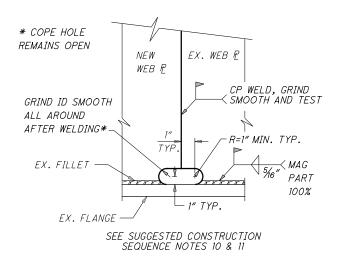
SEE SUGGESTED CONSTRUCTION SEQUENCE NOTES 7-11



SEE SUGGESTED CONSTRUCTION SEQUENCE NOTES 10 & 11

# SUGGESTED CONSTRUCTION SEQUENCE

- 1.) SET UP TEMPORARY SUPPORT.
- 2.) REMOVE PORTIONS OF END CROSSFRAME FOR ACCESS.
- 3.) MARK REMOVAL AREA DETERMINE LIMITS USING MAGNETIC PARTICLE TESTING.
- 4.) DRILL 2 CORNER HOLES 1" DIAMETER.
- 5.) SAW OR FLAME CUT TO REMOVED DAMAGED WEB PLATE USING A MECHANICAL GUIDE.
- 6.) PREP EXISTING MEMBER, BEVEL EDGES FOR COMPLETE PENETRATION AND FILLET WELDS.
- 7.) CUT AND BEVEL NEW PLATE, FOR COMPLETE PENETRATION AND FILLET WELDS.
- 8.) CHECK FIT OF NEW PLATE, NO GAPS EXCEEDING 1/16".
- 9.) PERFORM WELDING COORDINATE WITH TEMPORARY SUPPORT OF BEAM AS NEEDED.
- 10.) GRIND WELDS SMOOTH AND PROVIDE A SURFACE FINISH ACCORDING TO ANSI B46.1 OF 250 MIL.
- 11.) GRIND THE INSIDE SURFACE OF ALL DRILLED CORNER HOLES TO A 1" RADIUS AND PROVIDE A SURFACE FINISH ACCORDING TO ANSI B46.1 OF 250 MIL.
- 12.) INSTALL NEW STIFFENER PLATES AND PROPERLY TEST FILLET WELDS.
- 13.) REMOVE TEMPORARY SUPPORT.



WEB PLATE DETAILS

SEE SUGGESTED CONSTRUCTION SEQUENCE

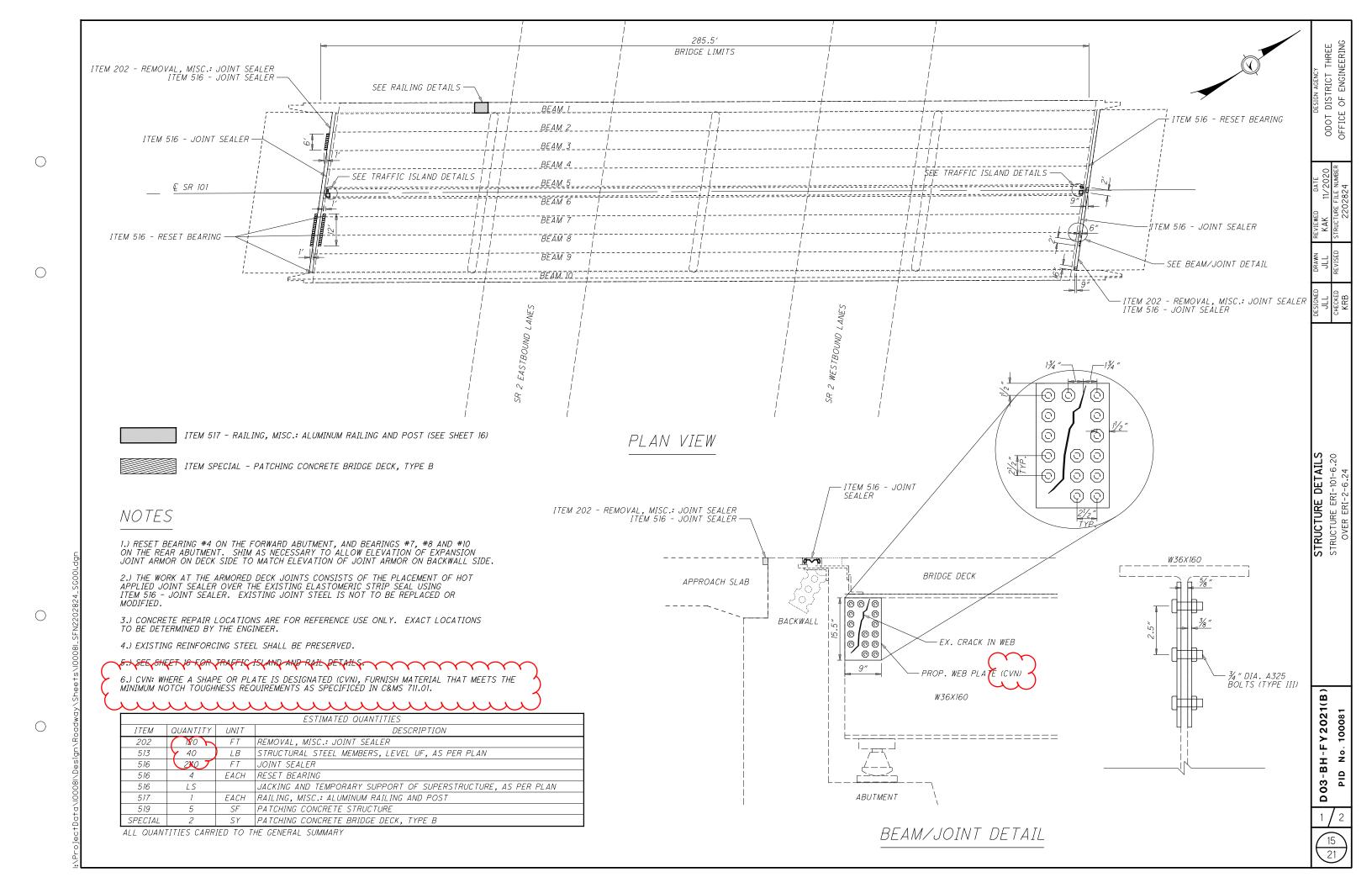
D03-BH-FY2021(B)

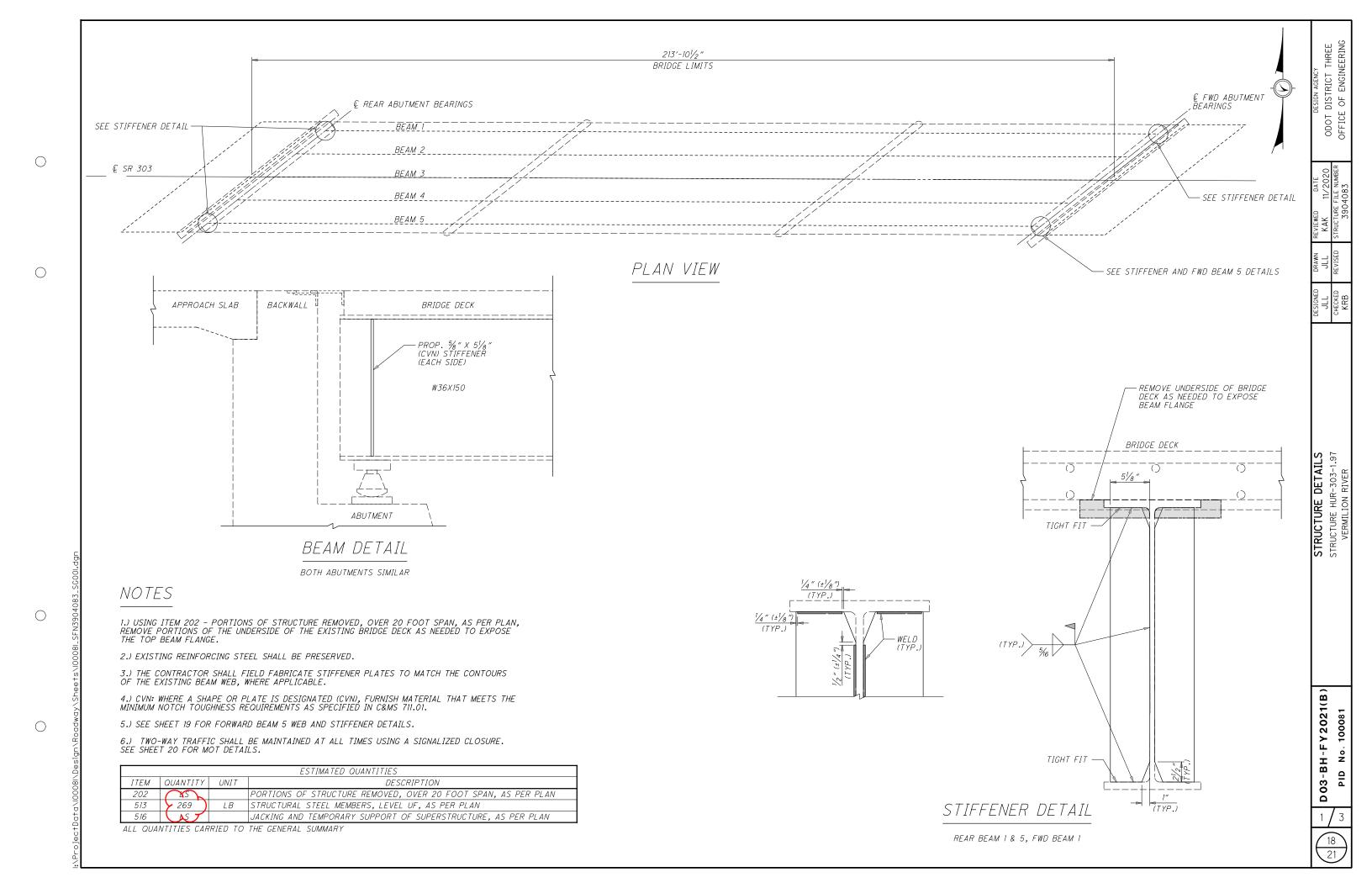
STRUCTURE DETAILS
STRUCTURE ERI-13-3.67
OVER N&S RR

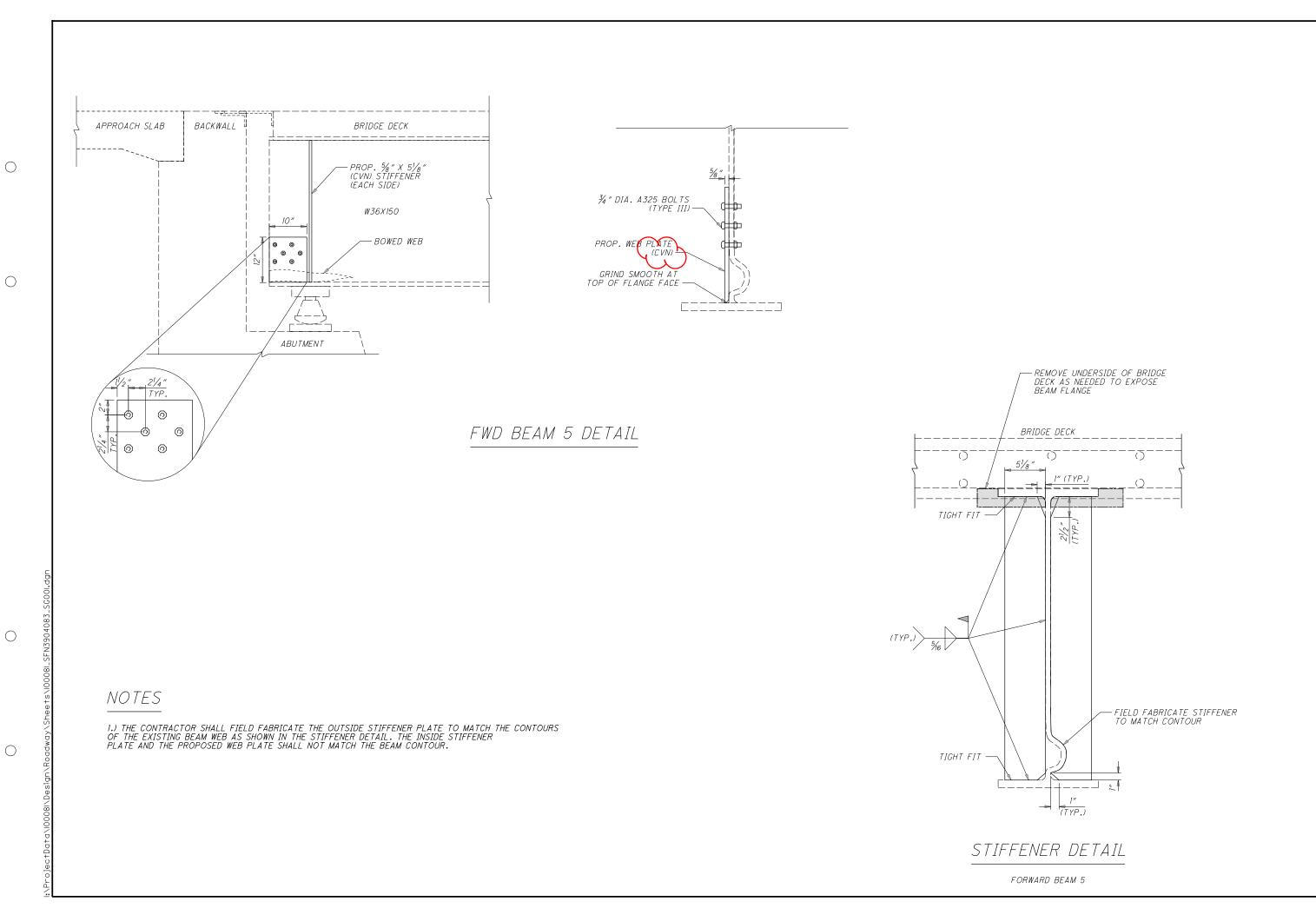
ODOT DISTRICT THREE OFFICE OF ENGINEERING

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DESIGN AGENCY
ODOT DISTRICT THREE
OFFICE OF ENGINEERING

STRUCTURE DETAILS STRUCTURE HUR-303-1.97 VERMILION RIVER

D03-BH-FY2021(B)