

GENERAL NOTES

SPECIFICATIONS:

ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE 2009 OKLAHOMA STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, EXCEPT AS MODIFIED BY THE PLANS AND SPECIAL PROVISIONS.

DRIVEN PILES:

DRIVING EQUIPMENT: USE A PILE DRIVING HAMMER OF THE SIZE AND TYPE CAPABLE OF CONSISTENTLY DELIVERING THE EFFECTIVE DYNAMIC ENERGY SUFFICIENT TO DRIVE THE PILES TO THE REQUIRED TIP ELEVATION AND TO ACHIEVE THE FACTORED PILE CAPACITY WITHOUT EXCEEDING THE LIMITATIONS SET ON THE ALLOWABLE DRIVING STRESSES IN ACCORDANCE WITH SECTION 514.03.A.(2) OF THE STANDARD SPECIFICATIONS.

MATERIAL: ALL DRIVEN PILES SHALL BE AASHTO M270 GRADE 50.

PILING CAPACITY:

ABUTMENTS: THE FACTORED REACTION FOR EACH HP 12X53 PILE AT ABUTMENT NO. 1 IS 67.0 TONS AND AT ABUTMENT NO. 2 IS 98.0 TONS.

PIERS: THE FACTORED REACTION FOR EACH HP 14X73 PILE AT PIER NO. 1 IS 110.0 TONS AND AT PIER NO. 2 IS 127.0 TONS.

THE FOLLOWING FORMULA (GATES EQUATION) SHALL BE USED TO DETERMINE THE AXIAL LOAD RESISTANCE OF THE DRIVEN FOUNDATION PILES:

$$\text{AXIAL LOAD RESISTANCE (TONS)} = \phi \left[(0.875 \sqrt{E} \text{ LOG}_{10}(10N)) - 50J \right]$$

WHERE:

ϕ - RESISTANCE FACTOR OF 0.4

E - ENERGY PRODUCED BY THE HAMMER PER BLOW IN FOOT-POUNDS. FOR GRAVITY AND SINGLE ACTING DIESEL HAMMERS, THE VALUE IS BASED ON THE ACTUAL RAM STROKE OBSERVED IN THE FIELD AND MEASURED IN FEET MULTIPLIED BY THE RAM WEIGHT IN POUNDS.

N - AVERAGE NUMBER OF HAMMER BLOWS PER INCH OF PILE PENETRATION FOR THE LAST 10 TO 20 BLOWS DELIVERED TO THE PILE HEAD.

THE ABOVE FORMULA IS APPLICABLE ONLY WHEN:

- THE PILE DRIVING HAMMER HAS A FREE FALL (GRAVITY & SINGLE ACTING HAMMERS ONLY),
- THE HEAD OF THE PILE IS NOT BROOMED, CRUSHED, OR OTHERWISE DAMAGED,
- THE PENETRATION IS QUICK AND UNIFORM,
- THERE IS NO APPRECIABLE REBOUND OF THE HAMMER, AND
- A FOLLOWER IS NOT USED.

THE NUMBER OF BLOWS PER INCH OF PILE PENETRATION MAY BE MEASURED EITHER DURING INITIAL DRIVING OR BY RE-DRIVING WITH A WARM HAMMER OPERATED AT FULL ENERGY AFTER A PILE SET PERIOD, AS DETERMINED BY THE ENGINEER.

IF WATER JETS ARE USED IN CONNECTION WITH THE DRIVING, DETERMINE THE AXIAL LOAD RESISTANCE BY THE FORMULA SHOWN ONLY AFTER THE JETS HAVE BEEN WITHDRAWN.

PRESTRESSED CONCRETE BEAMS:

CONCRETE: SEE P.C. BEAM DETAILS FOR MIN. 28 DAY STRENGTH REQUIREMENTS & MIN. CONCRETE STRENGTH AT TRANSFER OF PRESTRESS.

FINISH: TOP OF BEAMS TO BE ROUGH FLOATED. AT APPROXIMATELY THE TIME OF INITIAL SET, ENTIRE TOP OF BEAM SHALL BE SCRUBBED TRANSVERSELY WITH COARSE WIRE BRUSH TO REMOVE ALL LAITANCE AND TO PRODUCE A ROUGHENED SURFACE FOR BONDING SLAB UNLESS OTHERWISE SHOWN OR NOTED.

CHAMFER REQUIREMENTS: CHAMFER ALL EXPOSED EDGES OF P.C. BEAMS 3/4" UNLESS OTHERWISE NOTED.

SPECIFICATIONS FOR STEEL STRANDS: GRADE 270, 7-WIRE, UNCOATED, LOW RELAXATION STEEL STRAND SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M203 (ASTM A-416) AND SUPPLEMENT I.

STRAND: ALL STRANDS SHALL BE THE SIZE AND TYPE AS SHOWN ON THE PLANS. INITIAL LOAD PER STRAND SHALL BE 75% OF THE BREAKING STRENGTH OF THE STRAND FOR LOW RELAXATION STRAND.

TREATMENT OF CUT STRANDS: ALL PRETENSIONING STRANDS SHALL BE CUT OFF FLUSH WITH THE END OF THE BEAM. ALL CUT OFF STRANDS THAT WILL BE EXPOSED ARE TO BE COATED WITH TWO COATS OF AN APPROVED ZINC RICH PAINT (MINIMUM 6 MILS).

SHOP DRAWINGS: THE CONTRACTOR SHALL HAVE HIS PRESTRESSED CONCRETE BEAM FABRICATOR FURNISH THE BRIDGE ENGINEER, FOR HIS APPROVAL, TWO SETS OF CHECKED SHOP DRAWINGS. SHOP DRAWINGS SHALL SHOW THE CASTING LENGTH CENTER TO CENTER OF BEARINGS, AND THE CALCULATED PRESTRESS SHORTENING. ONE COPY SHALL BE RETURNED TO THE FABRICATOR WITH ANY DESIRED CORRECTIONS INDICATED. THE FABRICATOR SHALL THEN FURNISH THE BRIDGE ENGINEER WITH AS MANY, GENERALLY SEVEN, CORRECTED COPIES OF THE SHOP DRAWINGS FOR APPROVAL AND DISTRIBUTION. THE APPROVAL OF THE SHOP DRAWINGS IN NO WAY RELIEVES THE CONTRACTOR OR HIS FABRICATOR OF THE RESPONSIBILITY FOR MISTAKES ON THE SHOP DRAWINGS.

ANCHOR PLATES - GENERAL: ANCHOR PLATES (WITH BUILT-UP CONTACT ANGLES SHOP WELDED) FOR P.C. BEAM BEARING ASSEMBLY SHALL BE MATCH-MARKED, SHIPPED LOOSE, AND FIELD WELDED TO THE ENCASED SOLE PLATE IN ORDER THAT ANY NECESSARY MINOR HORIZONTAL ADJUSTMENT OF THE BEARING PAD LOCATION CAN BE MADE. METAL USED IN THE FIELD WELD WILL NOT BE MEASURED FOR PAYMENT.

ANCHOR PLATES - SLOTTED FOR EXPANSION: ANCHOR PLATES SHALL HAVE OVSIZED SLOTS TO ALLOW FOR TOTAL MOVEMENT OF THE BRIDGE. THE ANCHOR ASSEMBLY SHALL BE INSTALLED WITH THE SLOT CENTERED OVER THE ANCHOR BOLT AS SHOWN IN THE PLANS.

P.C. BEAM STRUCTURAL STEEL PAY ITEMS: WEIGHT OF DIAPHRAGM BOLT ASSEMBLY FOR PRESTRESSED GIRDER BRIDGES IS INCLUDED IN THE STRUCTURAL STEEL QUANTITIES. ALL COST OF MATERIAL, LABOR, EQUIPMENT, AND INCIDENTALS NECESSARY TO INSTALL DIAPHRAGM BOLT ASSEMBLY WILL BE PAID FOR AT THE UNIT PRICE BID FOR STRUCTURAL STEEL.

BEARING PADS: ALL COSTS OF ELASTOMERIC BEARING PADS LOCATED BETWEEN THE BOTTOM SURFACE OF THE BEAMS AND THE TOPS OF THE PEDESTALS WILL BE INCLUDED IN THE UNIT PRICE BID FOR "STAINLESS STEEL FIXED BEARING ASSEMBLY" AND "STAINLESS STEEL EXPANSION BEARING ASSEMBLY".

ANCHOR BOLTS:

INSTALLATION: ANCHOR BOLTS MAY BE PRE-SET AT THE TIME THE CONCRETE IS POURED.

IF THE CONTRACTOR ELECTS TO PLACE THE ANCHOR BOLTS AFTER THE CONCRETE IS POURED, THE SETTING OF THE ANCHOR BOLTS SHALL BE IN ACCORDANCE WITH SUBSECTION 509.04.D.(3) OF THE STANDARD SPECIFICATIONS.

SIZING: THE MINIMUM REQUIREMENT FOR ANCHOR BOLT SIZE AND LENGTH SHALL BE 1 1/2" DIA. BOLT - SET 15" MINIMUM FOR PRE-SET OR 22.5" MINIMUM FOR ANCHORED INTO CONCRETE FOR ALL SPAN LENGTHS.

CONCRETE INTERMEDIATE DIAPHRAGMS:

ONCE THE CONCRETE HAS BEEN PLACED FOR THE CONCRETE END & INTERMEDIATE DIAPHRAGMS, WAIT A MINIMUM OF 24 HOURS BEFORE REMOVING THE SIDE FORMS. DO NOT REMOVE THE BOTTOM FORM FOR A MINIMUM OF 3 DAYS, OR AT THE DISCRETION OF THE ENGINEER. THIS TIME CAN BE SHORTENED IF THE CONCRETE HAS ATTAINED 80% OF THE SPECIFIED COMPRESSIVE STRENGTH. DO NOT PLACE THE CONCRETE FOR THE DECK SLAB OR APPLY OTHER MASSIVE LOADS TO THE BEAMS OR DIAPHRAGMS UNTIL THE CONCRETE IN THE DIAPHRAGMS HAS BEEN IN PLACE FOR A MINIMUM OF 10 DAYS, OR AT THE DISCRETION OF THE ENGINEER. THIS TIME MAY BE SHORTENED IF THE CONCRETE HAS ATTAINED 80% OF THE SPECIFIED COMPRESSIVE STRENGTH.

DECK HAUNCHES:

PLAN QUANTITY FOR CLASS AA CONCRETE INCLUDES 24.3 CU. YDS. FOR HAUNCHES OVER GIRDERS AND DIAPHRAGMS ON BRIDGE "A". THE HAUNCH HEIGHTS WILL BE SET AFTER ERECTION OF GIRDERS TO PROVIDE FOR DEAD LOAD DEFLECTION AND GRADE ADJUSTMENT BUT THE PAY QUANTITY FOR HAUNCHES WILL BE AS SHOWN ABOVE.

STAY-IN-PLACE FORMS:

STAY-IN-PLACE STEEL DECK FORMS MAY BE USED IF THE MINIMUM DECK SLAB THICKNESS OF 8" IS OBTAINED BY MEASURING FROM THE TOP OF THE DECK SLAB TO THE TOP PORTION OF THE STEEL CORRUGATION. ADDITIONAL WEIGHT OF THE STEEL & CONCRETE FROM THE USE OF STAY-IN-PLACE FORMS SHALL NOT EXCEED 5 P.S.F.

STAY-IN-PLACE PRESTRESSED CONCRETE DECK FORMS MAY BE USED IF THE FOLLOWING CONDITIONS ARE MET:

- SHOP DRAWINGS AND STRUCTURAL CALCULATIONS FOR THE FORMS ARE SUBMITTED TO THE BRIDGE ENGINEER FOR APPROVAL.
- A NEW STRUCTURAL DESIGN, STRUCTURAL CALCULATIONS AND A NEW REINFORCING SCHEDULE FOR THE DECK SLAB IS SUBMITTED TO THE BRIDGE ENGINEER FOR APPROVAL.
- SHOP DRAWINGS, NEW DECK SLAB REINFORCING SCHEDULE, STRUCTURAL DESIGNS AND CALCULATIONS SHALL BE PREPARED BY AND SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF OKLAHOMA.

ALL COSTS ASSOCIATED WITH THE USE OF STAY-IN-PLACE FORMS INCLUDING ALL MATERIALS, LABOR, EQUIPMENT, INCIDENTALS AND PROFESSIONAL SERVICES SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE OF "CLASS AA CONCRETE". FOR ADDITIONAL INFORMATION CONCERNING THE USE OF STAY-IN-PLACE FORMS, SEE SECTION 502 OF THE 2009 STANDARD SPECIFICATION.

PENETRATING WATER REPELLENT SURFACE TREATMENT:

A PENETRATING WATER REPELLENT SURFACE TREATMENT SHALL BE APPLIED TO THE FOLLOWING CONCRETE SURFACES OF THE BRIDGE:

- EDGES AND UNDERSIDE OF CANTILEVER PORTION OF THE BRIDGE DECK
- THE OUTER FACE AND BOTTOM OF THE EXTERIOR P.C. BEAM
- THE ROADWAY FACE, TOP AND BACK FACE OF THE CONCRETE PARAPET AND INSIDE SURFACES OF DRAIN OPENINGS
- ALL EXPOSED SURFACES OF THE PIER CAP AND COLUMNS
- THE EXPOSED VERTICAL FACE OF THE ABUTMENT SEAT AND ABUTMENT BACKWALL ON THE FRONT AND SIDES.

SEE PENETRATING WATER REPELLENT SURFACE TREATMENT DETAILS FOR ADDITIONAL INFORMATION AT ABUTMENTS AND SUPERSTRUCTURE.

EXPANSION BEARING ASSEMBLIES (AT PIERS):

PROVIDE AND INSTALL EXPANSION BEARING ASSEMBLIES OF THE SIZE, SHAPE AND LOCATION AS DETAILED IN THE PLANS. THERE IS AN ESTIMATED TOTAL OF 3,630 POUNDS OF STAINLESS STEEL FOR THE EXPANSION BEARING ASSEMBLIES ON BRIDGE "A".

ALL COSTS ASSOCIATED WITH PROVIDING AND INSTALLING THE EXPANSION BEARING ASSEMBLIES AS SHOWN IN THE PLANS INCLUDING ELASTOMERIC BEARING PADS, ANCHOR PLATES, BUILT-UP CONTACT ANGLES, ANCHOR BOLTS, NUTS, WASHERS, LABOR, MATERIALS, EQUIPMENT AND INCIDENTALS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR "STAINLESS STEEL EXPANSION BEARING ASSEMBLY".

FIXED BEARING ASSEMBLIES (AT ABUTMENTS):

PROVIDE AND INSTALL FIXED BEARING ASSEMBLIES OF THE SIZE, SHAPE AND LOCATION AS DETAILED IN THE PLANS. THERE IS AN ESTIMATED TOTAL OF 1,590 POUNDS OF STAINLESS STEEL FOR THE FIXED BEARING ASSEMBLIES ON BRIDGE "A".

ALL COSTS ASSOCIATED WITH PROVIDING AND INSTALLING THE FIXED BEARING ASSEMBLIES AS SHOWN IN THE PLANS INCLUDING ANCHOR PLATES, BUILT-UP CONTACT ANGLES, ANCHOR BOLTS, NUTS, WASHERS, LABOR, MATERIALS, EQUIPMENT AND INCIDENTALS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR "STAINLESS STEEL FIXED BEARING ASSEMBLY".

APPROACH SLABS:

CLASS AA CONCRETE SHALL BE USED IN THE APPROACH SLABS. THE QUANTITY GIVEN IS BASED ON THE ACTUAL SQUARE YARDS OF THE APPROACH SLABS. ALL COSTS OF CONCRETE, REINFORCING STEEL, RAPID CURE JOINT SEALANT, EXCAVATION, LABOR, EQUIPMENT AND OTHER INCIDENTALS NECESSARY TO COMPLETE THE WORK AS SPECIFIED SHALL BE INCLUDED IN THE PRICE BID PER SQUARE YARD OF "APPROACH SLAB".

REMOVAL OF EXISTING BRIDGE STRUCTURE:

ITEM "REMOVAL OF EXISTING BRIDGE STRUCTURE" CONSISTS OF REMOVAL AND DISPOSAL OF THE 5-SPAN BRIDGE (34.25'SIMPLE-3-82.75'CONT.-34.25'SIMPLE PLATE GIRDER SPANS) x 31'-0" CLEAR ROADWAY AT CENTERLINE SURVEY STATION 27+06.70, FAP NO. I-35-2(68)052. ITEMS TO BE REMOVED INCLUDE THE CONCRETE DECK ON STEEL GIRDERS WITH CONCRETE ABUTMENTS, CONCRETE PIERS, CONCRETE APPROACH SLABS AND CONCRETE SLOPE WALL, ALL IN ACCORDANCE WITH SECTION 619.04.B.(2) OF THE STANDARD SPECIFICATIONS AND IN A MANNER APPROVED BY THE ENGINEER. THE STRUCTURE CONTAINS APPROXIMATELY 219,820 LBS. OF STRUCTURAL STEEL. THE SUBSTRUCTURE IS TO BE REMOVED TO THE ELEVATIONS AS SHOWN ON THE BRIDGE REMOVAL SHEET 80. THIS ELEVATION IS FOR BIDDING PURPOSES ONLY. THE ENGINEER WILL REQUIRE THAT THIS CUT-OFF BE AT LEAST ONE (1) FOOT BELOW THE NATURAL GROUND, OR REMOVAL TO AN ELEVATION THAT WILL NOT CONFLICT WITH OTHER CONSTRUCTION OR USE OF THE RIGHT-OF-WAY, WHICHEVER IS LOWER. THE EXISTING STRUCTURAL STEEL IS PAINTED WITH LEAD BASED PAINT. THE CONTRACTOR MUST TAKE ALL NECESSARY PRECAUTIONS AND FOLLOW ALL NECESSARY REGULATIONS IN HANDLING AND TRANSPORTING ANY STRUCTURAL STEEL CONTAINING LEAD BASED PAINT. THE STRUCTURE SHALL BECOME THE PROPERTY OF THE CONTRACTOR. ALL COSTS NECESSARY TO REMOVE THE EXISTING BRIDGE AS DESCRIBED ABOVE INCLUDING LABOR, EQUIPMENT AND INCIDENTALS SHALL BE INCLUDED IN THE PRICE BID PER LUMP SUM OF "REMOVAL OF EXISTING BRIDGE STRUCTURE".

CONTRACTOR SHALL SUBMIT A BRIDGE REMOVAL PLAN FOR APPROVAL PRIOR TO ANY DEMOLITION ACTIVITIES. REMOVAL PLAN SHALL BE SIGNED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF OKLAHOMA.

CONTRACTOR WILL BE RESPONSIBLE FOR REMOVING THE PREPASS SENSOR FROM THE NORTH SIDE OF THE EXISTING BRIDGE AND DELIVERING IT, UNDAMAGED, TO THE WEIGH STATION SOUTH OF THE PROJECT ON I-35 PRIOR TO ANY DEMOLITION ACTIVITIES. PREPASS PERSONNEL WILL BE RESPONSIBLE FOR INSTALLING THE SENSOR ON THE NEW BRIDGE. THE CONTRACTOR SHALL COORDINATE HIS WORK WITH THE PREPASS REPRESENTATIVE:

DREW BRUNSON
SENIOR ENGINEER
COMMERCIAL VEHICLE OPERATIONS PREPASS
OFFICE: (602) 412-2045
CELL: (602) 369-6997
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30363(04)		PAY QUANTITIES		
0200 BRIDGE "A"		65'-135'-135' TYPE III & TYPE J P.C. BEAM SPANS		
ITEM	DESCRIPTION	UNIT	QUANTITY	
501(B)	1307 SUBSTRUCTURE EXCAVATION COMMON (BR-1)	C.Y.	601.0	
501(G)	6309 CLSM BACKFILL (BR-1)	C.Y.	350.0	
503(A)	1312 PRESTRESSED CONCRETE BEAMS (TYPE III) (BR-1)	L.F.	258.4	
503(A)	6290 PRESTRESSED CONCRETE BEAMS (TYPE J BT) (BR-1)	L.F.	1,076.0	
504(A)	1304 APPROACH SLAB (BR-1)	S.Y.	252.8	
504(B)	1305 SAW-CUT GROOVING (BR-1)	S.Y.	1,427.6	
504(C)	6250 SEALED EXPANSION JOINT (BR-1)	L.F.	33.0	
504(E)	6190 42" F-SHAPED PARAPET (BR-1)	L.F.	803.0	
506(A)	1322 STRUCTURAL STEEL (BR-1)	LB.	2,550.0	
507(A)	6170 STAINLESS STEEL FIXED BEARING ASSEMBLY (BR-1)	EA.	8.0	
507(B)	6174 STAINLESS STEEL EXPANSION BEARING ASSEMBLY (BR-1)	EA.	16.0	
509(A)	1326 CLASS AA CONCRETE (BR-1)	C.Y.	349.6	
509(B)	1328 CLASS A CONCRETE (BR-1)	C.Y.	313.2	
510(C)	6138 SLOPE WALL (5") (BR-1)	S.Y.	797.0	
511(A)	1332 REINFORCING STEEL (BR-1)	LB.	22,970.0	
511(B)	6010 EPOXY COATED REINFORCING STEEL (BR-1)	LB.	152,440.0	
514(A)	6010 PILES, FURNISHED (HP 10X42)	L.F.	582.0	
514(A)	6011 PILES, FURNISHED (HP 12X53)	L.F.	1,485.0	
514(A)	6012 PILES, FURNISHED (HP 14X73)	L.F.	1,152.0	
514(B)	6292 PILES, DRIVEN (HP 10X42)	L.F.	582.0	
514(B)	6294 PILES, DRIVEN (HP 12X53)	L.F.	1,485.0	
514(B)	6296 PILES, DRIVEN (HP 14X73)	L.F.	1,152.0	
514(L)	6220 PILE SPLICE, H-PILE (NON-BIDDABLE)	EA.	1.0	
515(A)	6013 WATER REPELLENT (VISUALLY INSPECTED) (BR-1)	S.Y.	2,033.0	
523(A)	6550 SEALER CRACK PREPARATION (BR-1)	L.F.	32.0	
523(B)	6560 SEALER RESIN (BR-1)	GAL.	0.4	
613(H)	6204 6" PERFORATED PIPE UNDERDRAIN ROUND (BR-1)	L.F.	160.0	
613(I)	6207 6" NON-PERF. PIPE UNDERDRAIN RND.	L.F.	101.0	
619(D)	1397 REMOVAL OF EXISTING BRIDGE STRUCTURE	L.SUM	1.0	

BR-1: PAYMENT FOR THIS ITEM WILL BE BASED ON THE PLAN QUANTITIES ONLY. SEE SECTION 109.01.B OF THE STANDARD SPECIFICATIONS.

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DESIGN		ROCK CRUSHER RD. OVER I-35	MURRAY COUNTY
DRAWN		BRIDGE "A"	
CHECKED		SUMMARY OF PAY QUANTITIES (BRIDGE)	
APPROVED			
SQUAD	G/K ENGR.	JOB PIECE NO. 30363(04)	SHEET NO. 7