

**GENERAL NOTES (BRIDGE "B")**

**SPECIFICATIONS:**

COMPLY WITH THE REQUIREMENTS OF THE ODOT 2009 STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, EXCEPT AS MODIFIED BY THE PLANS AND SPECIAL PROVISIONS.

**ABUTMENT PILING CAPACITY:**

THE FACTORED REACTION FOR EACH HP14x102 PILE AT EACH ABUTMENT ON BRIDGE "B" IS 72.0 TONS.

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

$$\text{AXIAL LOAD RESISTANCE} = \phi [(0.875 \sqrt{E} \log_{10}(10N)) - 50] \quad (\text{TONS})$$

WHERE:

- $\phi$  = 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 ONLY APPLICABLE 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IN CONNECTION WITH THE DRIVING, DETERMINE THE AXIAL LOAD RESISTANCE BY THE FORMULA SHOWN ONLY AFTER THE JETS HAVE BEEN WITHDRAWN.

**PILE 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.

**PILOT HOLES FOR ABUTMENT PILE:**

A 30" DIAMETER PILOT HOLE SHALL BE DRILLED FOR EACH HP14x102 ABUTMENT PILE. PILOT HOLES SHALL BE DRILLED TO A MINIMUM ELEVATIONS SHOWN ON SHEET NO. 26 SHALL BE NO LESS THAN 18'-0" INTO THE BEDROCK. ONCE EACH PILE WITHIN THE PILOT HOLE HAS BEEN SEATED INTO THE BEDROCK AND VERIFIED FOR REQUIRED BEARING CAPACITY, THE CONTRACTOR SHALL THEN ENCASE EACH PILE WITH CLASS "AA" CONCRETE TO THE TOP OF BEDROCK. ALL COSTS INCLUDING LABOR, EQUIPMENT, AND INCIDENTALS SHALL BE INCLUDED IN THE PRICE BID FOR FOR "(PL) PILOT HOLES".

**DECK SLAB CONSTRUCTION AND STAY-IN-PLACE FORMS:**

IN THE EVENT OF AN EMERGENCY, HALT THE PLACEMENT OF CONCRETE BY FORMING AN EMERGENCY CONSTRUCTION JOINT MADE PERPENDICULAR TO THE DIRECTION OF TRAFFIC OR AS DIRECTED BY THE ENGINEER. DO NOT PLACE ANY HEAVY EQUIPMENT ON THE FINISHED DECK SLAB WITHIN 5' OF ANY CONSTRUCTION JOINT UNTIL CONCRETE IS IN PLACE ON BOTH SIDES OF THE RESPECTIVE JOINT AND AT LEAST 48 HOURS HAS ELAPSED SINCE CONCRETE PLACEMENT. SEAL ALL DECK SLAB CONSTRUCTION JOINTS WITH HIGH MOLECULAR WEIGHT METHACRYLATE IN ACCORDANCE WITH SECTION 523 OF THE STANDARD SPECIFICATIONS. INCLUDE ALL COST OF EQUIPMENT AND LABOR FOR THE INSTALLATION OF THE HIGH MOLECULAR WEIGHT METHACRYLATE SEALER IN THE PRICE BID FOR OTHER ITEMS OF WORK. THE DEPARTMENT WILL NOT MEASURE THE PREPARATION AND SEALER OF EMERGENCY CONSTRUCTION JOINTS FOR PAYMENT.

THE DECK SLAB SHALL BE POURED AT ONE TIME.

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. NO ADDITIONAL CONCRETE WEIGHT OF THE DECK SLAB IS PERMITTED. ADDITIONAL STEEL WEIGHT OF THE DECK FORMS MAY BE USED IF THE FOLLOWING CONDITIONS ARE MET:

- (1) SHOP DRAWINGS AND STRUCTURAL CALCULATIONS FOR THE FORMS ARE SUBMITTED TO THE ENGINEERING FOR APPROVAL.
- (2) THE NEW STRUCTURAL DESIGN, STRUCTURAL CALCULATIONS, AND A NEW REINFORCING SCHEDULE FOR THE DECK SLAB, SUPERSTRUCTURE COMPONENTS AND SUBSTRUCTURE COMPONENTS ARE SUBMITTED THE ENGINEER FOR APPROVAL.
- (3) SHOP DRAWINGS, NEW DECK SLAB REINFORCING SCHEDULE ANDS STRUCTURAL DESIGNS AND CALCULATIONS SHALL BE PREPARED BY AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF OKLAHOMA.

ALL COSTS ASSOCIATED WITH THE USE OF STAY-IN-PLACE FORMS, INCLUDING ALL PROFESSIONAL SERVICES, MATERIAL, LABOR, EQUIPMENT AND INCIDENTALS, SHALL BE AT THE CONTRACTOR'S EXPENSE. FOR ADDITIONAL INFORMATION CONCERNING THE USE OF STAY-IN-PLACE FORMS, SEE SECTION 502 OF THE STANDARD SPECIFICATIONS.

**STRUCTURAL STEEL FOR SUPERSTRUCTURE:**

ALL NEW STRUCTURAL STEEL FOR SUPERSTRUCTURE SHALL BE AASHTO M270 (GRADE 36).

**STRUCTURAL STEEL FOR SUBSTRUCTURE:**

ALL NEW STRUCTURAL STEEL FOR SUBSTRUCTURE SHALL BE AASHTO M270 (GRADE 50).

**RIPRAP:**

A 24" THICK LAYER OF TYPE I-A PLAIN RIPRAP WITH A 6" THICK LAYER OF TYPE I-A FILTER BLANKET SHALL BE PLACED AT THE ABUTMENTS AS SHOWN ON THE PLANS. THE FILTER BLANKET SHALL BE PLACED IN ONE LAYER. EARTHWORK QUANTITIES INCLUDE THE EXCAVATION REQUIRED FOR THE RIPRAP LADLES AT THE ABUTMENTS. ANY OTHER EXCAVATIONS REQUIRED FOR THE PLACEMENT OF RIPRAP, NOT INCLUDED IN THE EXCAVATION QUANTITIES, SHALL BE CONSIDERED INCIDENTAL TO THE PRICE BID FOR "TYPE I-A PLAIN RIPRAP".

**REMOVAL OF EXISTING BRIDGE STRUCTURE:**

THE PRICE BID FOR "REMOVAL OF EXISTING BRIDGE STRUCTURE" CONSISTS OF THE REMOVAL OF THE EXISTING 29.9' LG. BY 21.1' WIDE BRIDGE, CONSISTING OF ONE (1) STEEL I-BEAM SPAN WITH A CONCRETE DECK, ASPHALT OVERLAY, AND CONCRETE AND ROCK ABUTMENTS AT  $\mathcal{C}$  SURVEY STA. 14+58.27.

THE REMOVAL OF THE EXISTING BRIDGE SHALL BE IN ACCORDANCE WITH SECTION 619.04.B.2 OF THE STANDARD SPECIFICATIONS AND IN A MANNER APPROVED BY THE ENGINEER. THE BEAMS ARE TO BE SALVAGED, NEATLY STACKED ON THE RIGHT-OF-WAY, AND SHALL BECOME THE PROPERTY OF LOGAN COUNTY. ALL OTHER MATERIALS REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTOR.

THE EXISTING STEEL BEAMS MAY BE COATED WITH A LEAD BASED PAINT. MEASURES SHALL BE TAKEN TO ENSURE WORKER SAFETY IN ACCORDANCE WITH 29 CFR 1926.62 AND ALL APPLICABLE OSHA STANDARDS. ANY PAINT REMOVED DURING THE SEQUENCE OF WORK SHALL BE COLLECTED AND DISPOSED OF IN ACCORDANCE WITH SECTION 512 OF THE STANDARD SPECIFICATIONS. ALL COSTS TO BE INCLUDED IN THE PRICE BID FOR "REMOVAL OF EXISTING BRIDGE STRUCTURE".

**DRAINS AT END OF BRIDGE:**

SEE ROADWAY SHEETS FOR ASPHALT SHOULDER WIDENING AND GUARDRAIL DETAILS. ALL COSTS OF ASPHALT SHOULDER WIDENING SHALL BE INCLUDED IN THE ROADWAY PAY ITEMS.

THERE IS AN ESTIMATED 0.20 CUBIC YARDS OF CLASS "AA" CONCRETE AND 30.00 POUNDS OF REINFORCING STEEL REQUIRED TO CONSTRUCT THE 6" CONCRETE BASES AT THE WEST END OF BRIDGE. ALL COSTS FOR THE 6" CONCRETE BASES, CONCRETE, REINFORCING STEEL, EXCAVATIONS, AND BACKFILL INCLUDING ALL MATERIALS, LABOR, EQUIPMENT, AND INCIDENTALS NECESSARY TO COMPLETE THE WORK AS SHOWN IN THE PLANS SHALL BE INCLUDED IN THE PRICE BID FOR "CLASS AA CONCRETE".

THERE IS AN ESTIMATED 2.00 CUBIC YARDS OF CLASS "C" CONCRETE AND 360.00 POUNDS OF REINFORCING STEEL REQUIRED TO CONSTRUCT THE 6" CONCRETE CURBS AT BOTH ENDS OF THE BRIDGE. ALL COSTS FOR THE 6" CONCRETE CURBS, CONCRETE, REINFORCING STEEL, EXCAVATIONS, AND BACKFILL INCLUDING ALL MATERIALS, LABOR, EQUIPMENT, AND INCIDENTALS NECESSARY TO COMPLETE THE WORK AS SHOWN IN THE PLANS SHALL BE INCLUDED IN THE PRICE BID FOR "CLASS C CONCRETE".

**PERFORATED AND NON-PERFORATED PIPE UNDERDRAINS:**

FOR LOCATIONS OF 6" PERFORATED AND NON-PERFORATED PIPE UNDERDRAINS, SEE SHEET NOS. 30, 31 AND 32, AND REFER TO SHEET NO. 41 AND STD. CB26.32-C-SK30-ABUT-MISC FOR INSTALLATION DETAILS AND NOTES. EXTENT, LOCATION AND LENGTH OF 6" NON-PERFORATED PIPE UNDERDRAIN MAY BE ADJUSTED BY THE ENGINEER DURING CONSTRUCTION.

UNDERDRAIN COVER MATERIAL(S) SHALL BE SEPARATED FROM OTHER SOIL, SAND, AND/OR AGGREGATE SURFACES WITH A FILTER FABRIC IN ACCORDANCE WITH SECTION 510.02.

ALL COARSE PIPE UNDERDRAIN COVER MATERIAL SHALL BE IN ACCORDANCE WITH SECTION 703.06.

ALL COSTS OF TRENCH EXCAVATION, PIPE UNDERDRAIN COVER MATERIAL, FILTER FABRIC, APPURTENANCES, 6" PERFORATED AND NON-PERF. PIPE UNDERDRAIN ROUND, LABOR, MATERIALS AND OTHER INCIDENTALS SHALL BE INCLUDED IN PRICE BID FOR "6" PERFORATED PIPE UNDERDRAIN ROUND" AND "6" NON-PERF. PIPE UNDERDRAIN RND.".

**RETAINING WALL:**

RETAINING WALLS HAVE BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 7TH EDITION, 2014 WITH 2015 AND 2016 INTERIMS, EXCEPT AS MODIFIED BY THE PLANS.

**PILOT HOLES FOR SOLDIER PILE:**

A 30" DIAMETER PILOT HOLE SHALL BE DRILLED FOR EACH HP14x117 SOLDIER PILE. PILOT HOLES SHALL BE DRILLED TO A MINIMUM ELEVATIONS SHOWN ON SHEET NO. 43 AND SHALL BE NO LESS THAN 12'-0" INTO THE BEDROCK. THE CONTRACTOR SHALL ENCASE EACH PILE IN THE PILOT HOLE WITH CLASS "AA" CONCRETE TO THE TOP OF BEDROCK. ALL COSTS INCLUDING LABOR, EQUIPMENT, AND INCIDENTALS SHALL BE INCLUDED IN THE PRICE BID FOR FOR "(PL) PILOT HOLES".

**STRUCTURAL STEEL FOR RETAINING WALL:**

ALL NEW STRUCTURAL STEEL FOR RETAINING WALL SHALL BE AASHTO M270 (GRADE 50), UNLESS OTHERWISE NOTED.

**SHEET PILING:**

SHEET PILING SHALL BE MADE FROM STEEL CONFORMING TO AASHTO M160 (GR. 50W). SHEET PILING SHALL BE 10 GAGE, 0.134 INCHES THICK, WEIGHING 10.80 POUNDS PER LINEAR FOOT OF PILE OR 7.2 POUNDS PER SQUARE FOOT OF WALL. SHALL HAVE A SECTION MODULUS OF 2.72 INCHES^3 PER SECTION AND A MOMENT OF INERTIA OF 4.05 INCHES^4 PER SECTION. ALL COST FOR SHEET PILING SHALL BE INCLUDED IN PRICE BID FOR "SHEET PILING, FURNISHED".

**RECYCLED STEEL BEAMS:**

RECYCLED CROSSTOWN BRIDGE BEAMS ARE LOCATED AT: 13600 WEST COUNTY ROAD #71, CRESCENT, OK 73028

RECYCLED CROSSTOWN BRIDGE BEAMS TO BE USED ARE MARKED:

- E67.1
- E67.2
- E67.3
- E67.5

ALL COSTS FOR HAULING AND ERECTING BEAMS, CUTTING OF THE BEAMS TO FIT, LABOR, MATERIALS, ADDING/REPLACING SHEAR CONNECTORS TO THE BEAMS, AND OTHER INCIDENTALS SHALL BE INCLUDED IN PRICE BID FOR "HAUL AND ERECT STEEL BEAMS".

**COARSE COVER AGGREGATE:**

ALL COARSE COVER AGGREGATE MATERIAL SHALL BE IN ACCORDANCE WITH SECTION 703.06.B(1).

COARSE COVER AGGREGATE SHALL BE COMPACTED IN ACCORDANCE WITH SECTION 501 OF THE STANDARD SPECIFICATIONS.

ALL COST FOR COARSE COVER AGGREGATE, LABOR, MATERIALS, TOOLS AND OTHER INCIDENTALS SHALL BE INCLUDED IN PRICE BID FOR "STANDARD BEDDING MATERIAL, CLASS B".

**GRANULAR BACKFILL:**

ALL GRANULAR BACKFILL MATERIAL SHALL BE IN ACCORDANCE WITH SECTION 703.07.

GRANULAR BACKFILL SHALL BE COMPACTED IN ACCORDANCE WITH SECTION 501 OF THE STANDARD SPECIFICATIONS.

ALL COST FOR GRANULAR BACKFILL, LABOR, MATERIALS, TOOLS AND OTHER INCIDENTALS SHALL BE INCLUDED IN PRICE BID FOR "GRANULAR BACKFILL".

**CLAY PLATING:**

CLAY PLATING SHALL BE COMPACTED IN ACCORDANCE WITH SECTION 208 OF THE STANDARD SPECIFICATIONS.

FOR CLAY PLATING DETAILS, SEE SHEETS NO. 41.

ALL COST FOR CLAY PLATING, LABOR, MATERIALS, TOOLS AND OTHER INCIDENTALS SHALL BE INCLUDED IN PRICE BID FOR "SELECT BACKFILL".

**GEOTECHNICAL REPORT:**

ALL BORING LOG DATA AND INFORMATION CAN BE REFERENCED IN THE PROJECT SPECIAL PROVISIONS AND/OR CONTRACT DOCUMENTS.

PAY QUANTITIES - BRIDGE "B"					
0201 BRIDGE "B" 50" STEEL GIRDER SPAN, 26'-0" CLR. RDWY. W/ CONC. TRAFFIC RAILS (TR3), SKEWED 30° L.F.					
ITEM	PES NO.	DESCRIPTION	UNIT	QUANTITY	
501(B)	1307	SUBSTRUCTURE EXCAVATION COMMON	(1)(2) CY	1,498.00	
501(E)	6354	SELECT BACKFILL	(1) CY	13.00	
501(F)	6352	GRANULAR BACKFILL	(1) CY	82.00	
504(D)	6239	CONCRETE RAIL (TR3)	(1) LF	100.00	
506(A)	1322	STRUCTURAL STEEL	(1) LB	26,440.00	
509(A)	1326	CLASS AA CONCRETE	(1) CY	139.40	
509(D)	1331	CLASS C CONCRETE	CY	2.00	
511(B)	6010	EPOXY COATED REINFORCING STEEL	(1) LB	12,630.00	
514(A)	6017	PILES, FURNISHED (HP 14x102)	(3) LF	540.00	
514(A)	6018	PILES, FURNISHED (HP 14x117)	(3) LF	800.00	
514(B)	6298	PILES, DRIVEN (HP 14x102)	LF	18.00	
514(H)	6355	SHEET PILING, FURNISHED	SY	364.00	
514(I)	6360	SHEET PILING, DRIVEN	SY	364.00	
514(K)	6260	(PL) PILOT HOLES	LF	1,126.00	
535	6225	HAUL AND ERECT STEEL BEAMS	LSUM	1.00	
601(B)	1353	TYPE I-A PLAIN RIPRAP	TON	189.00	
601(C)	1355	TYPE I-A FILTER BLANKET	TON	46.00	
613(H)	6204	6" PERFORATED PIPE UNDERDRAIN ROUND	(1) LF	226.00	
613(I)	6207	6" NON-PERF. PIPE UNDERDRAIN RND.	(1) LF	6.00	
613(S)	1186	STANDARD BEDDING MATERIAL, CLASS B	CY	321.00	
619(D)	1397	REMOVAL OF EXISTING BRIDGE STRUCTURE	LSUM	1.00	

**PAY QUANTITY NOTES**

- (1) PAYMENT FOR THIS ITEM WILL BE BASED ON PLAN QUANTITIES. SEE THE 2009 STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION SECTION 109.01.B "PLAN QUANTITIES".
- (2) ROCK MAY BE ENCOUNTERED WITHIN THE LIMITS SHOWN FOR SUBSTRUCTURE EXCAVATION AT BOTH ABUTMENTS. PRICE BID FOR "SUBSTRUCTURE EXCAVATION COMMON" SHALL INCLUDE ALL REQUIRED ROCK EXCAVATION WITHIN THESE LIMITS. REFER TO FOUNDATION REPORT SHEET NO. 28 FOR ADDITIONAL INFORMATION.
- (3) ALL PILING SHALL BE AASHTO M270 GRADE 50 STEEL.

**PAY QUANTITIES AND GENERAL NOTES (BRIDGE "B" AND RETAINING WALLS)**