CODES AND DESIGN SPECIFICATIONS:

1. AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS LRFD BRIDGE DESIGN SPECIFICATIONS 2007 4TH EDITION.
2. TEXAS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MAINTENANCE OF HIGHWAYS, STREETS AND BRIDGES

DESIGN LIVE LOADING:

1. BRIDGE DECK ..... AASHTO HL-93
2. OUTBOARD BRIDGE WALK ..... 85 PSF
3. AASHTO LRFD SEISMIC ZONE 1

COLLATERAL LOADING:

1. FUTURE OVERLAY DEAD LOAD ..... 20 PSF

CONCRETE STRENGTH REQUIREMENTS:

1. STRUCTURAL CONCRETE SHALL CONFORM TO THE REQUIREMENTS OF TXDOT SPECIFICATION ITEM 421.
2. PROVIDE NORMAL WEIGHT CONCRETE HAVING THE FOLLOWING MINIMUM 28 DAY COMPRESSIVE STRENGTHS:

USAGE	CLASS	MIN. 28 DAY COMPRESSIVE STRENGTH (PSI)
BRIDGE DECK	H	6,000
BUTTRESS & PIER CAP	H	5,000
PIERS AS NOTED	H	5,000
ALL OTHER	H	4,000

CONCRETE REINFORCEMENT:

1. REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS OF TXDOT SPECIFICATION ITEM 440.
2. REINFORCING STEEL SHALL BE DEFORMED BARS CONFORMING TO ASTM A615 GRADE 60.
3. REINFORCING STEEL IN THE BRIDGE DECK ONLY SHALL BE EPOXY COATED.
4. PROVIDE CORNER BARS AT ALL INTERSECTING REINFORCING MEMBERS IN WALLS AND BEAMS. CORNER BARS SHALL BE THE SAME SIZE AS THE LARGER INTERSECTING BAR AND SHALL HAVE THE MINIMUM LAP LENGTH SPECIFIED BY AASHTO (30 BAR DIAMETER MINIMUM).
5. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCEMENT:
   - A. BRIDGE DECK SLAB ..... 2" CLEAR
   - B. PIERS ..... 3" CLEAR
   - C. PILASTERS ..... 1½" CLEAR
   - D. ABUTMENT WALLS ..... 1½" CLEAR
   - E. BUTTRESS ..... 2" CLEAR

DRILLED REINFORCED CONCRETE SHAFTS:

1. DRILLED REINFORCED CONCRETE SHAFTS SHALL CONFORM TO THE REQUIREMENTS OF TXDOT SPECIFICATION ITEM 416.
2. DRILLED SHAFT DESIGN IS BASED ON AN ALLOWABLE VALUE OF 18,000 PSF END BEARING, 2,000 PSF SIDE FRICTION (COMPRESSION) AND 1,200 PSF SIDE FRICTION (TENSION) AS RECOMMENDED IN THE SUBSURFACE REPORT PREPARED BY GEOTEL ENGINEERING, INC. THEIR REPORT NO. E07-312, DATED DECEMBER 3, 2007.
3. DRILLED SHAFTS SHALL BE FOUNDED IN THE GRAY UN-WEATHERED SHALE BEARING STRATA WITH THE MINIMUM PENETRATION AS NOTED ON THE PLANS.
4. BOTTOM OF ALL SHAFT HOLES SHALL BE SMOOTH, DRY AND FREE OF ALL LOOSE MATERIAL BEFORE PLACING CONCRETE.
5. INCLINED SHAFTS MAY REQUIRE TEMPORARY CASING TO MAINTAIN SHAFT DIAMETER AND PREVENT SLOUGHING.
6. THE CONTRACTOR SHALL VERIFY THE DEPTH OF THE SHAFT PRIOR TO CUTTING REINFORCING CAGES. REINFORCING STEEL SHALL BE DELIVERED TO THE JOBSITE IN STANDARD LENGTHS AND CUT AS REQUIRED. 30 BAR DIAMETER LAPS WILL BE ALLOWED IN THE PIER STEEL IF NO MORE THAN 50 PERCENT OF THE BARS ARE LAPPED IN ANY 8 FOOT LENGTH OF THE PIER.
7. REINFORCING STEEL SHOP DRAWINGS SHALL INDICATE PLACING DRAWINGS FOR TEMPLATES TO SET DOWELS AND ANCHOR BOLTS. REINFORCING CAGES SHALL BE ADEQUATELY SUPPORTED TO PROVIDED CLEARANCES INDICATED ON THE DRAWINGS.
8. SHAFT HOLES SHALL BE CONCRETED WITHIN 8 HOURS OF DRILLING.
9. IF SUBSURFACE WATER CONDITIONS ARE SUCH THAT THE SHAFT HOLES CANNOT BE INSTALLED IN THE DRY CONDITION, THE CONTRACTOR SHALL INSTALL TEMPORARY CASING TO CONTROL WATER INTRUSION.

STRUCTURAL STEEL:

1. STRUCTURAL STEEL FABRICATION AND ERECTION SHALL CONFORM TO THE REQUIREMENTS OF TXDOT SPECIFICATION ITEM 441, 442, 445, 448 & 449.
2. ALL STRUCTURAL STEEL SHALL BE ASTM A709 AND HAVE A MINIMUM YIELD STRENGTH OF 50 KSI.

PT BAR HANGERS AND CONNECTIONS (BASE BID):

1. HANGERS SHALL BE 2½" MIN. DIA. ZINC COATED SMOOTH BARS WITH A MINIMUM YIELD STRENGTH OF 150 KSI
2. TOP CONNECTION CLEVIS AND BOTTOM CONNECTION STRESSING HARDWARE SHALL PROVIDE, AS A MINIMUM, FOR THE LOADS INDICATED ON THE DRAWINGS.

STRUCTURAL STRAND (ALTERNATE BID):

1. STRUCTURAL STRAND SHALL MEET THE REQUIREMENTS OF ASTM A586, BE 2½" MIN. DIA., GALVANIZED AND FURNISH A MINIMUM 365 TON BREAKING STRENGTH.
2. STRUCTURAL STRAND COATING SHALL BE CLASS A FOR ALL WIRES OR AN EQUIVALENT SUBMITTED TO THE ENGINEER OF RECORD FOR REVIEW AND APPROVAL.
3. AS AN ALTERNATE, CHOSEN BY THE OWNER, STRUCTURAL STRAND COATING CAN BE CLASS A INNER WIRES AND CLASS C OUTER WIRES FOR ENHANCED CORROSION PROTECTION.

NOTES TO THE CONTRACTOR:

1. THE CONSTRUCTION CONTRACT WILL NOT BE AWARDED TO ANY CONTRACTOR THAT CANNOT DEMONSTRATE THROUGH PRIOR EXPERIENCE OR THROUGH THE EXPERIENCE OF THE CONTRACTOR'S FULL-TIME DESIGNATED ON-SITE PERSONNEL THAT SIMILAR PROJECTS HAVE BEEN CONSTRUCTED BY THE CONTRACTOR OR THEIR DESIGNEE.
2. THE CONTRACTOR SHALL CAREFULLY STUDY AND COMPARE ALL DISCIPLINES OF THE CONTRACT DOCUMENTS AND SHALL AT ONCE REPORT TO THE ENGINEER ANY ERROR, INCONSISTENCY OR OMISSION HE MAY DISCOVER PRIOR TO FABRICATION OF ANY MATERIALS OR COMMENCEMENT OF CONSTRUCTION.
3. THE CONTRACTOR SHALL COORDINATE ALL LEAVE-OUTS, DEPRESSIONS, SLEEVES AND OTHER SLAB PENETRATIONS WITH ALL CONTRACT DRAWINGS PRIOR TO CONSTRUCTION.
4. THE CONTRACTOR SHALL SUBMIT TO THE STRUCTURAL ENGINEER, WITH SUCH PROMPTNESS AS TO CAUSE NO DELAY IN HIS WORK OR IN THAT OF ANY OTHER CONTRACTOR, ELECTRONIC COPIES OF ALL SHOP AND/OR SETTING DRAWINGS AND SCHEDULES REQUIRED FOR THE WORK OF THE VARIOUS TRADES. THE SHOP DRAWINGS SHALL CONTAIN ALL OF THE INFORMATION NECESSARY TO FABRICATE MATERIALS AND SHALL NOTE ANY SPECIAL PROVISIONS CONCERNING ERECTION AND/OR PLACEMENT.
5. STRUCTURAL ENGINEER WILL REVIEW THE SHOP DRAWINGS AND APPROVE OR NOTE CORRECTIONS NECESSARY WITHIN 7 CALENDAR DAYS OF RECEIPT. THE CONTRACTOR SHALL MAKE CORRECTIONS NOTED AND UTILIZE THE APPROVED AND STAMPED SHOP DRAWINGS FOR FABRICATION AND CONSTRUCTION. THE CONTRACTOR SHALL MAINTAIN AN APPROVED SET OF THE SHOP DRAWING ON THE CONSTRUCTION SITE AT ALL TIMES.
6. THE STRUCTURAL ENGINEER'S APPROVAL OF THE SHOP DRAWINGS OR SCHEDULES SHALL NOT RELIEVE THE CONTRACTOR FROM RESPONSIBILITY FOR DEVIATIONS FROM THE CONTRACT DOCUMENTS, NOR SHALL IT RELIEVE HIM FROM THE RESPONSIBILITY OF ERRORS OF ANY SORT IN THE SHOP DRAWINGS OR SCHEDULES.

BRIDGE DECK POST-TENSIONING STEEL:

1. POST-TENSIONING SHALL CONFORM TO THE REQUIREMENTS OF TXDOT SPECIFICATION ITEM 426.
2. POST-TENSIONING STEEL SHALL BE SEVEN WIRE STRESS RELIEVED OR LOW RELAXATION STRAND FOR POST-TENSIONED CONCRETE MANUFACTURED IN ACCORDANCE WITH ASTM A-416 AND FREE FROM CORROSION HAVING A GUARANTEED MINIMUM ULTIMATE TENSILE STRENGTH OF 270 KSI.

NOMINAL DIAMETER	=	0.5"
AREA	=	0.153 SQ. IN.
MODULUS OF ELASTICITY	=	28,000 KSI
ULTIMATE STRENGTH	=	41.3 KIPS
MAX. TEMPORARY FORCE	=	33.0 KIPS
ANCHORING FORCE	=	28.7 KIPS

3. POST-TENSIONING STRAND SHALL BE UNCOATED AND INSTALLED IN A GALVANIZED FLAT DUCT. THE DUCT SIZE SHALL BE APPROPRIATE FOR HOUSING THE MINIMUM NUMBER OF REQUIRED STRANDS.
4. ALL ANCHORING HARDWARE SHALL MEET THE MINIMUM REQUIREMENTS SET FORTH FOR THE FLAT DUCT SYSTEM AND SHALL PROVIDE FOR THE MINIMUM NUMBER OF STRANDS REQUIRED TO PROVIDE THE EFFECTIVE FORCE SHOWN ON THE PLANS.
5. ANCHOR CASTINGS SHALL BE APPROPRIATE FOR THE FLAT DUCT SYSTEM.
6. APPROPRIATE ANCHOR CASTINGS FOR THE FLAT DUCT SYSTEM SHALL HAVE SHOP PRE-SEATED WEDGES AND PROVIDE FOR ALL NON-STRESS, FIXED-ENDS.
7. TENDONS SHALL BE FABRICATED WITH SUFFICIENT LENGTH BEYOND THE EDGE FORM TO ALLOW STRESSING. A MINIMUM LENGTH OF 12" AT EACH STRESSING END IS REQUIRED.
8. TENDONS SHALL BE CLEARLY IDENTIFIED BY CODE AND CALLED FOR ON PLACING DRAWINGS TO FACILITATE PLACEMENT.
9. SUFFICIENT SUPPORT BARS AND CHAIRS SHALL BE PROVIDED TO MAINTAIN PROPER DRAPE PROFILE THROUGHOUT THE CONCRETE PLACEMENT. ALL CHAIRS TO BE STAPLED TO FORM WITH GALVANIZED STAPLES IMMEDIATELY AFTER PLACEMENT.
10. THE TENDON PROFILE SHOWN ON PLANS INDICATES DIMENSIONS AT ALL SUPPORTS AND AT MID-SPAN BETWEEN SUPPORTS. THESE DIMENSIONS LOCATE THE CENTER OF TENDON RELATIVE TO THE SOFFIT OF THE BEAM OR SLAB.
11. CONCRETE SHALL BE PLACED IN SUCH A MANNER AS TO INSURE THAT ALIGNMENT OF POST-TENSIONING TENDONS REMAINS UNCHANGED. SPECIAL PROVISION SHALL BE MADE TO INSURE PROPER VIBRATION OF CONCRETE AROUND ANCHORAGES.
12. INSTALL WEDGES SIDE BY SIDE, NOT ONE UNDER, ONE OVER.
13. ALL STRESSING WILL BE PERFORMED UNDER THE SUPERVISION OF QUALIFIED PERSONNEL.
14. THE STRESSING OPERATION SHALL NOT COMMENCE UNTIL CONCRETE TEST CYLINDERS, CURED UNDER JOBSITE CONDITIONS, HAVE BEEN TESTED AND INDICATE THAT CONCRETE IN THE SLAB HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 4,500 PSI.
15. ALL POST-TENSIONING STEEL SHALL BE STRESSED BY MEANS OF HYDRAULIC JACKS, EQUIPPED WITH ACCURATE READING, CALIBRATED HYDRAULIC PRESSURE GAUGES. A CALIBRATION CHART WILL ACCOMPANY EACH JACK. MEASURED ELONGATION AND JACK GAUGE READING AGREEMENT OF WITHIN 10 % SHALL BE SATISFACTORY.
16. THE MAXIMUM JACKING FORCE TO OVERCOME FRICTION SHALL NOT EXCEED 80 % OF THE ULTIMATE FORCE OF THE TENDON (41.3X.80 = 33.0 KIPS). TENDONS SHALL BE ANCHORED AT A FORCE NOT TO EXCEED 70 % OF THE ULTIMATE FORCE OF THE TENDON (41.3X.70 = 28.9 KIPS).
17. AFTER STRESSING IS COMPLETED AND WITH FINAL APPROVAL FROM THE STRUCTURAL ENGINEER, TENDONS SHALL BE CUT TO WITHIN 1" FROM THE FACE OF CONCRETE.
18. STRESSING POCKETS SHALL BE FILLED FLUSH WITH A NON-SHRINK GROUT WITHIN 7 DAYS AFTER STRESSING.
19. VERTICAL PLACEMENT TOLERANCES IN TENDONS SHALL BE LIMITED TO ±1/4".
20. BURSTING BAR REINFORCEMENT SHALL BE PROVIDED.
21. AFTER COMPLETION OF STRESSING, THE FLAT DUCTS SHALL BE FILLED WITH GROUT IN ACCORDANCE PTI SPECIFICATION FOR GROUTING OF POST-TENSIONED STRUCTURES. GROUT SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH AT 7 DAYS OF 3000 PSI AND A MINIMUM COMPRESSIVE STRENGTH OF 5000 PSI AT 28 DAYS. COMPRESSIVE STRENGTH SHALL BE CONFIRMED ON THE BASIS OF GROUT CUBE SPECIMENS.

STATE OF TEXAS
VICTOR LISSIAK, JR.
30545
LICENSED
PROFESSIONAL ENGINEER
11/25/09

TEXAS FIRM REG. # F-2658

NO.	REVISION	BY	DATE
	PRELIMINARY-FOR REVIEW ONLY		01/25/09

TOWN OF ADDISON
DALLAS COUNTY, TEXAS

VITRUVIAN PARK BRIDGES

VEHICULAR BRIDGE GENERAL NOTES

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PROJECT	DESIGN	DRAWN	DATE	FILE	SHEET
2007.144	VL	NERF	NOV. 25 2009	-	SB100