

NOTES

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW RELAXATION GRADE 270 STRANDS AND SHALL CONFORM TO AASHTO M203 EXCEPT FOR SAMPLING REQUIREMENTS WHICH SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ALL REINFORCING STEEL CAST WITH THE BOX BEAM SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE BOX BEAMS.

RECESSES FOR TRANSVERSE POST-TENSIONED STEEL BAR SHALL BE GROUDED AFTER THE TENSIONING OF THE BARS.

THE 2 1/2" Ø DOWEL HOLES AT FIXED ENDS OF SLAB SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT. THE 2 1/2" Ø DOWEL HOLES AT EXPANSION ENDS OF SLAB SECTIONS SHALL BE FILLED WITH JOINT SEALER MATERIAL TO 1/2" ABOVE THE TOP OF DOWELS AND THEN FILLED WITH GROUT.

THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF TYPE SL LOW MODULUS SILICONE SEALANT. THE DOWEL BAR MATERIAL SHALL CONFORM TO ASTM A311 GRADE 1018.

WHEN BOX BEAMS ARE CAST, A POSITIVE HOLD-DOWN SYSTEM SHALL BE EMPLOYED TO PREVENT VOIDS FROM RISING OR MOVING SIDEWAYS. THIS SYSTEM SHALL BE DESIGNED TO BE LEFT IN PLACE UNTIL THE CONCRETE HAS REACHED RELEASE STRENGTH. AT LEAST THREE WEEKS PRIOR TO CASTING BOX BEAMS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW AND COMMENT, DETAILED DRAWINGS OF THE PROPOSED HOLD-DOWN SYSTEM. IN ADDITION TO STRUCTURAL DETAILS, LOCATION AND SPACING OF THE HOLD-DOWNS SHALL BE INDICATED.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE BOX BEAM UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 5000 PSI.

ALL REINFORCING STEEL IN CONCRETE PARAPET SHALL BE EPOXY COATED.

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE BOX BEAM UNIT ENDS.

APPLY EPOXY PROTECTIVE COATING TO BOX BEAM UNIT ENDS. FOR EPOXY PROTECTIVE COATING, SEE SPECIAL PROVISIONS.

THE TOP SURFACE OF THE BOX BEAM SHALL BE RAKED TO A DEPTH OF 3/8".

VERTICAL GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE CONCRETE PARAPET AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A VERTICAL CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN CONCRETE PARAPET EXPANSION JOINTS.

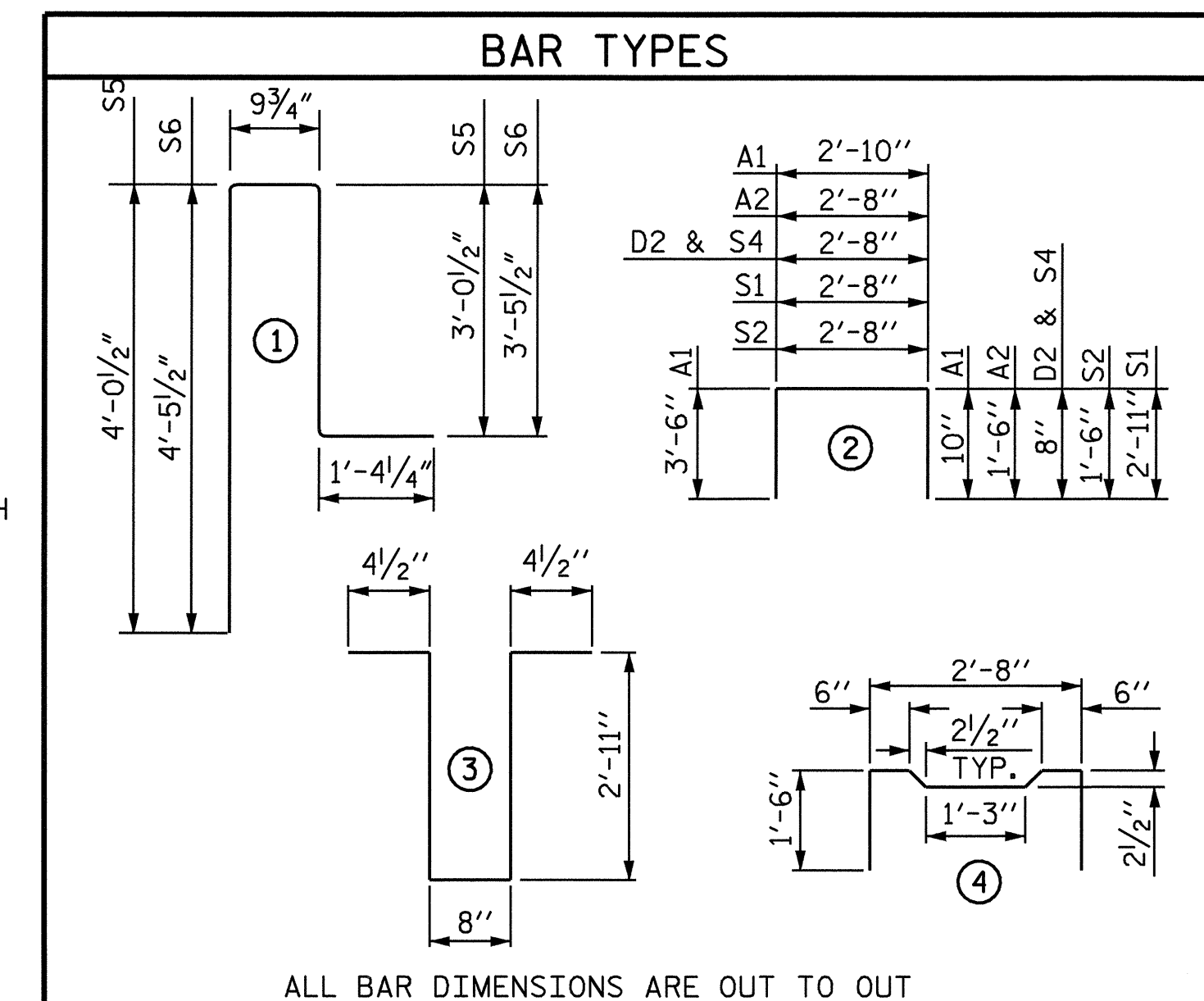
FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

FOR PRESTRESSED CONCRETE BOX BEAMS, SEE SPECIAL PROVISIONS.

FOR ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.

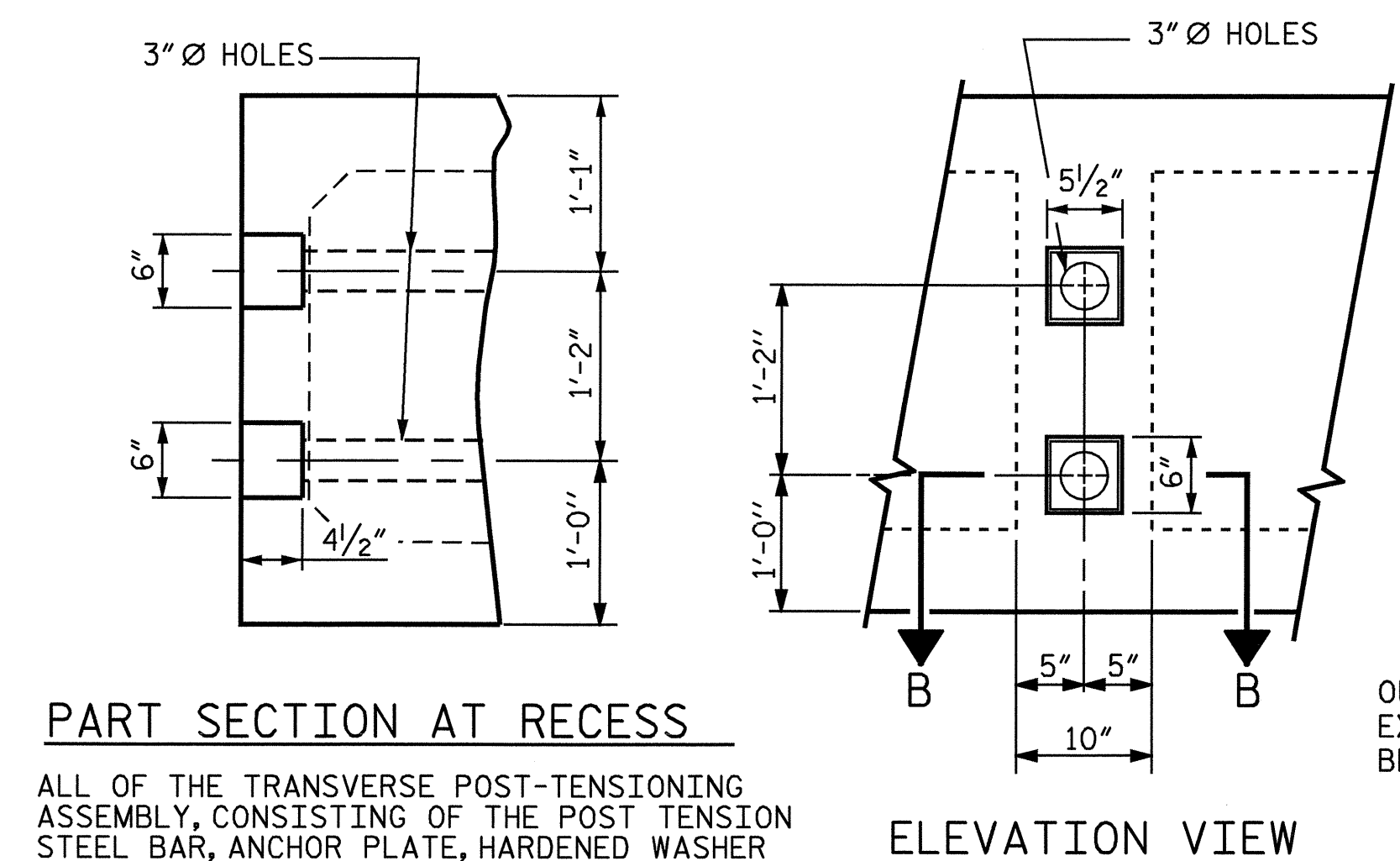
ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.

| GRADE 270 STRANDS | |
|---------------------------------------|-------------|
| | 0.6" Ø L.R. |
| AREA (SQUARE INCHES) | 0.217 |
| ULTIMATE STRENGTH (LBS. PER STRAND) | 58,600 |
| APPLIED PRESTRESS (LBS. PER STRAND) | 44,000 |

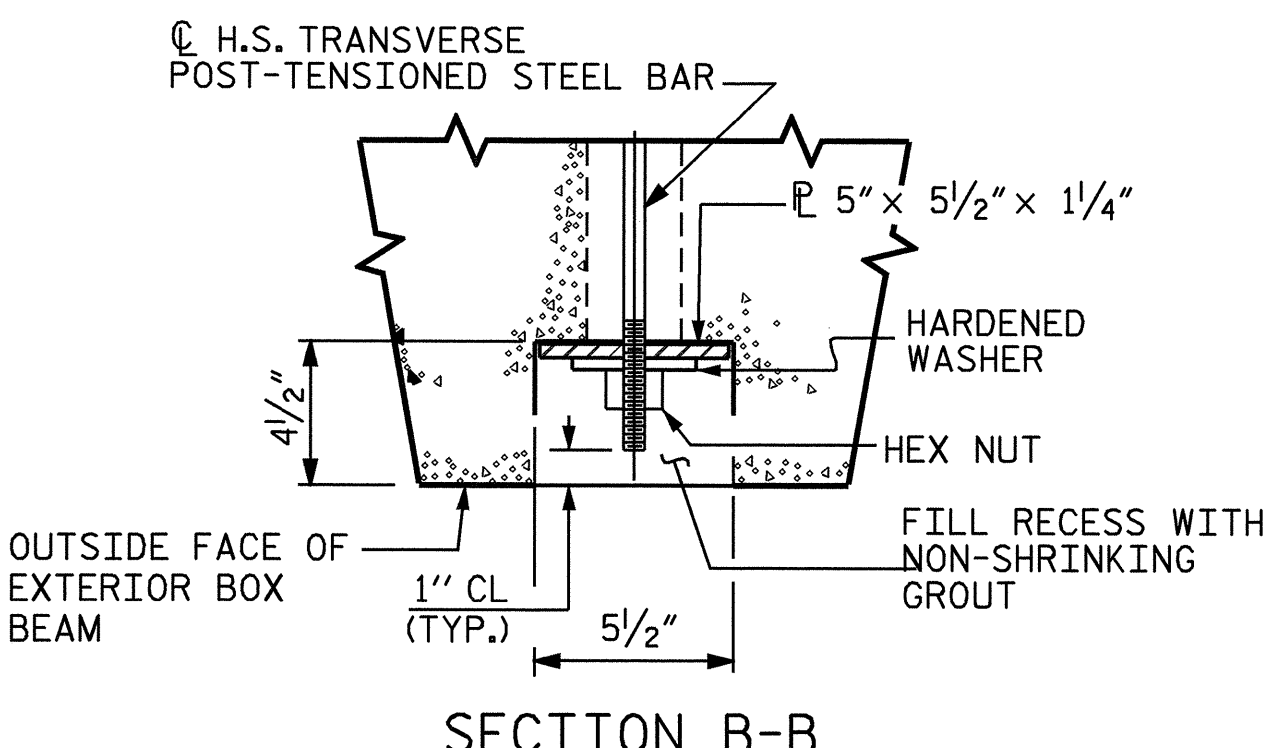


ALL BAR DIMENSIONS ARE OUT TO OUT

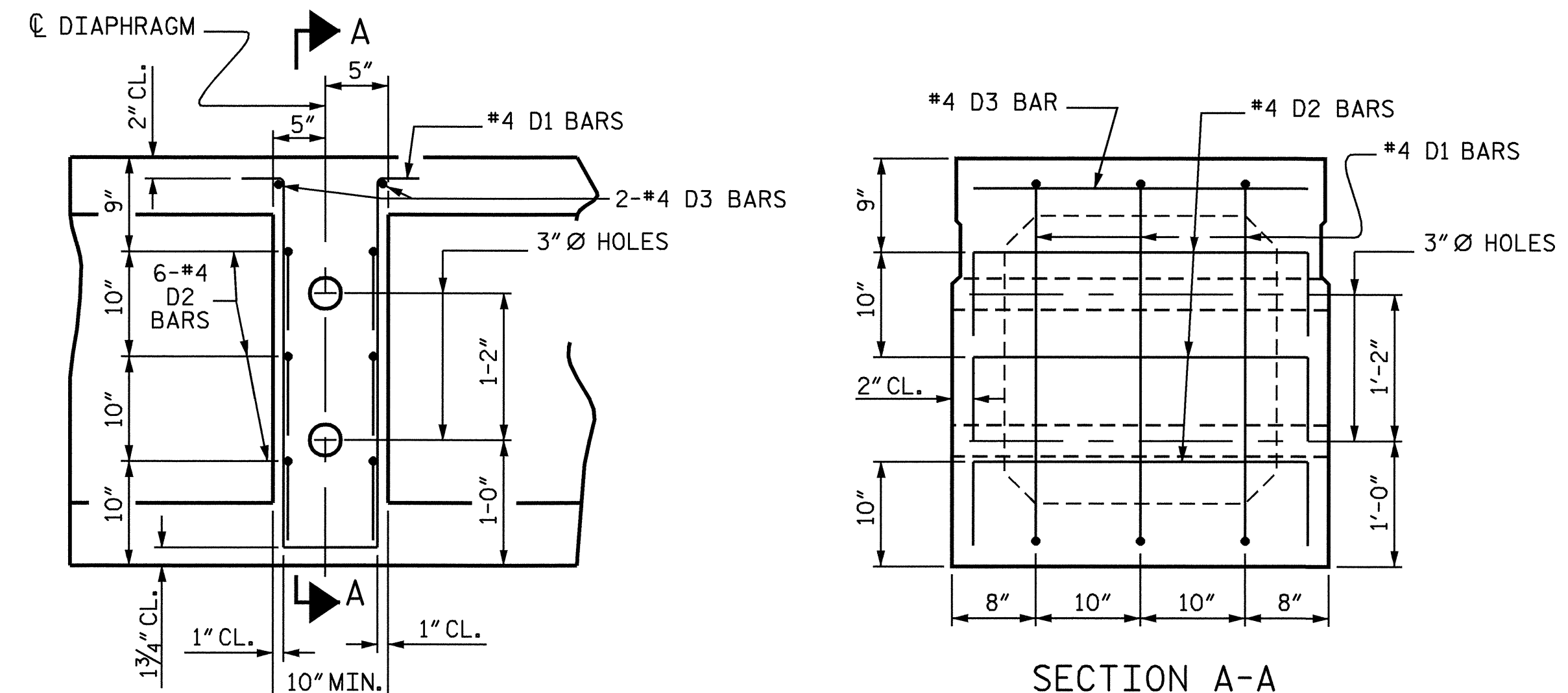
| BILL OF MATERIAL FOR ONE BOX BEAM SECTION | | | | | | | | | |
|---|--------|------|------|---------------------------|---------------------------|----------------------------|----------------------------|----------------------|----------------------|
| BAR | NUMBER | SIZE | TYPE | LEFT EXTERIOR UNIT LENGTH | LEFT EXTERIOR UNIT WEIGHT | RIGHT EXTERIOR UNIT LENGTH | RIGHT EXTERIOR UNIT WEIGHT | INTERIOR UNIT LENGTH | INTERIOR UNIT WEIGHT |
| A1 | 10 | 5 | 2 | 7'-2" | 75 | 7'-2" | 75 | 7'-2" | 75 |
| A2 | 14 | 4 | 2 | 5'-8" | 53 | 5'-8" | 53 | 5'-8" | 53 |
| B1 | 12 | 5 | STR | 49'-11" | 625 | 49'-11" | 625 | 49'-11" | 625 |
| D1 | 15 | 4 | 3 | 7'-3" | 73 | 7'-3" | 73 | 7'-3" | 73 |
| D2 | 30 | 4 | 2 | 4'-0" | 80 | 4'-0" | 80 | 4'-0" | 80 |
| D3 | 10 | 4 | STR | 2'-8" | 18 | 2'-8" | 18 | 2'-8" | 18 |
| S1 | 78 | 4 | 2 | 8'-6" | 443 | 8'-6" | 443 | 8'-6" | 443 |
| S2 | 78 | 4 | 2 | 5'-8" | 295 | 5'-8" | 295 | 5'-8" | 295 |
| S3 | 59 | 4 | 4 | 5'-10" | 230 | 5'-10" | 230 | 5'-10" | 230 |
| S4 | 137 | 4 | 2 | 4'-0" | 369 | 4'-0" | 369 | 4'-0" | 369 |
| * S5 | 146 | 4 | 1 | 9'-3" | 902 | | | | |
| * S6 | 146 | 4 | 1 | | | 10'-1" | 983 | | |
| REINFORCING STEEL | | | | | LBS. 2260 | | 2260 | | 2260 |
| * EPOXY COATED REINFORCING STEEL | | | | | LBS. 902 | | 983 | | |
| 6000 P.S.I. CONCRETE | | | | | CU. YDS. 18.92 | | 18.92 | | 18.92 |
| 0.6" Ø L.R. STRANDS | | | | | No. 22 | | 22 | | 22 |



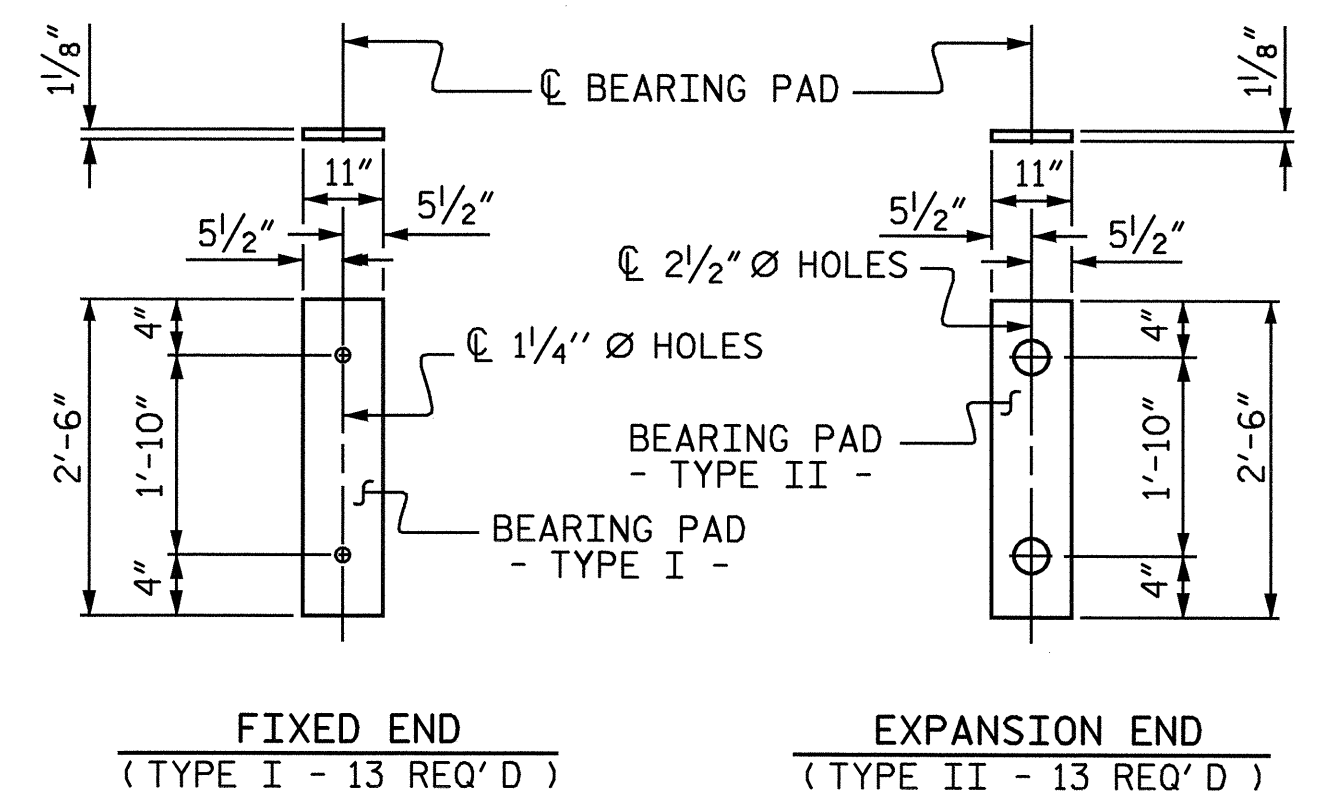
PART SECTION AT RECESS
ALL OF THE TRANSVERSE POST-TENSIONING ASSEMBLY, CONSISTING OF THE POST TENSION STEEL BAR, ANCHOR PLATE, HARDENED WASHER (BEVELED WASHER) AND THE HEX NUT SHALL BE GALVANIZED.



DOUBLE GROUDED RECESS AT END OF POST-TENSIONED STEEL BAR



BOX BEAM UNIT DIAPHRAGM DETAILS



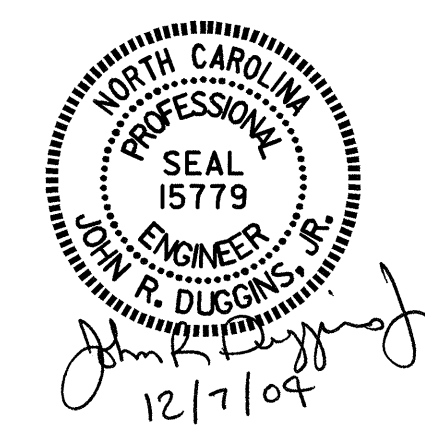
ELASTOMERIC BEARING DETAILS

| POST-TENSIONED STEEL BAR DIAMETER (in) | 1 |
|--|-----------------|
| AREA (in*in) | 0.85 |
| ULTIMATE STRESS fpu (ksi) | 150 |
| MAX. JACKING FORCE (klps) | 102 |
| DESIGN PRESTRESSING FORCE (klps) | 76.5 |
| ANCHOR PLATE SIZE(IN X IN X IN) | 5X5 1/2 X 1 1/4 |
| 1" Ø 150 ksi POST-TENSIONED STEEL ROD | 38'-10" EA. 10 |

| DEAD LOAD DEFLECTION AND CAMBER | |
|---|-----------|
| CAMBER (BEAM ALONE IN PLACE) | 2 1/8" ↑ |
| DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD ** | 1 5/16" ↓ |
| FINAL CAMBER | 1 3/16" ↑ |

** INCLUDES FUTURE WEARING SURFACE

| CONCRETE WEARING SURFACE | |
|--------------------------|--------------|
| CONCRETE WEARING SURFACE | 3568 SQ. FT. |
| GROOVING BRIDGE FLOORS | |
| BRIDGE DECK | 3264 SQ. FT. |
| APPROACH SLABS | 1619 SQ. FT. |
| TOTAL | 4883 SQ. FT. |



PROJECT NO. B-3522
WAKE COUNTY
STATION: 26+10.50 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
3'-0" X 3'-3"
PRESTRESSED CONCRETE
BOX BEAM

| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|-----------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-7 |
| 1 | | | 3 | | | TOTAL SHEETS 21 |
| 2 | | | 4 | | | |

ASSEMBLED BY : M. POOLE DATE : 10/24/04
CHECKED BY : J.K. WILKINS DATE : 11/04
DRAWN BY : RWW 10/04
CHECKED BY : ADDED 10/04