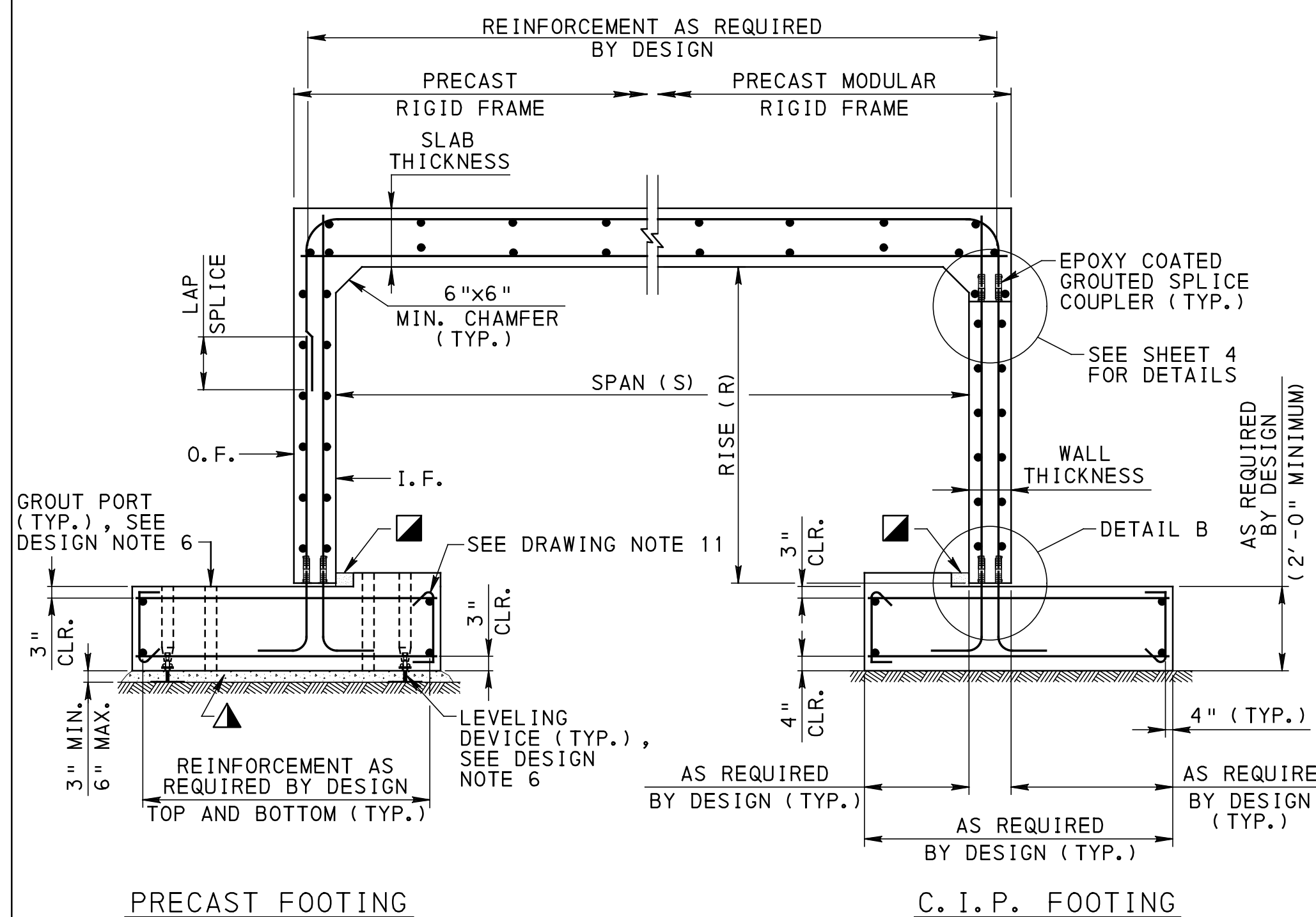


PRECAST FOOTING C. I. P. FOOTING
TYPICAL RIGID FRAME SECTION (PINNED SUPPORT)



PRECAST FOOTING C. I. P. FOOTING
TYPICAL RIGID FRAME SECTION (FIXED SUPPORT)

LEGEND

- C. I. P. : DENOTES CAST-IN-PLACE
- I. F. : DENOTES INSIDE FACE
- O. F. : DENOTES OUTSIDE FACE
- ▲ : FLOWABLE BACKFILL, TYPE C
- : PROVIDE GAP (3" MIN. WIDTH) TO FACILITATE INSTALLATION OF SPLICE COUPLER GROUT. FILL GAP WITH NON-SHRINK GROUT AFTER POST-TENSIONING.

GENERAL NOTES

1. USE OF THIS STANDARD REQUIRES PERMISSION FROM THE DISTRICT BRIDGE ENGINEER. THE STANDARD IS INTENDED TO BE UTILIZED BY DESIGNERS OF ACCELERATED BRIDGE CONSTRUCTION PROJECTS AND BY CONTRACTORS FOR VALUE ENGINEERING OR DESIGN-BUILD PROJECTS.
2. DESIGN SPECIFICATIONS: AASHTO LRFD "BRIDGE DESIGN SPECIFICATIONS" AND AS SUPPLEMENTED BY THE DESIGN MANUAL, PART 4, STRUCTURES.
3. IN PRECAST CONCRETE, PROVIDE 1 1/2" CONCRETE COVER ON REINFORCEMENT BARS AND GROUDED SPLICE COUPLERS, EXCEPT AS NOTED IN THE INSTRUCTIONS BELOW.
4. PLACE FOOTINGS IN ACCORDANCE WITH DESIGN MANUAL, PART 4.
5. INDICATE MAXIMUM FACTORED DESIGN FOUNDATION PRESSURE AND FACTORED BEARING RESISTANCE ON PLANS.
6. PRECAST AND C. I. P. FOOTING TYPES SHOWN ARE INTERCHANGABLE WITHIN THE PRECAST RIGID FRAME TYPES SHOWN.
7. FOR DETAILS A AND B, SEE SHEET 2.
8. FOR PRECAST RIGID FRAMES "AT GRADE" (I.E. ≤ 2'-0" OF FILL OR PAVEMENT) AN ADDITIONAL 5" MINIMUM CAST IN PLACE REINFORCED CONCRETE DECK MAY BE REQUIRED BY THE DISTRICT BRIDGE ENGINEER. FOR DECK CONNECTION DETAILS, SEE SHEET 3.
9. FOR DECK CONNECTION DETAIL FOR VARIABLE DEPTH CONCRETE DECKS, THE DECK REINFORCEMENT WILL BE INDEPENDENT OF ANCHOR HOOK AND MUST MAINTAIN CLEARANCE AND FOLLOW CROSS SLOPE.
10. DETAILS SHOWN ARE FOR REINFORCING STEEL BARS. IF WELDED WIRE FABRIC REINFORCEMENT IS USED, FOLLOW MATERIAL REQUIREMENTS AND PLACEMENT DETAILS ON BD-632M SHEET 4, AS APPLICABLE.
11. FOR HYDRAULIC DESIGN REFER TO DESIGN MANUAL, PART 2.
12. DESIGN PRECAST REINFORCED CONCRETE RIGID FRAMES TO HAVE A MINIMUM VERTICAL CLEARANCE OF 3'-0" FROM THE STREAM BED.
13. POST-TENSIONING DUCTS MAY BE PLACED AT EITHER CORNER OR HAUNCH TO SATISFY DESIGN AND CONSTRUCTION REQUIREMENTS. FOR HAUNCH AND POST-TENSIONING DETAILS, SEE SHEET 5 AND BC-798M. ALSO, POST-TENSIONING DUCTS MAY BE PLACED IN THE WALLS OR SLAB AS REQUIRED BY DESIGN.
14. SPECIFY 4'-0" MINIMUM SEGMENT LENGTH ON THE CONTRACT DRAWINGS.
15. USE THIS STANDARD DRAWING IN CONJUNCTION WITH THE APPLICABLE ROADWAY CONSTRUCTION STANDARDS FOR GUIDE RAIL.
16. MODIFIED STRUCTURE MOUNTED GUIDE RAIL BARRIER HAS BEEN GRANTED TL3 DESIGNATION BY FHWA AND MAY BE USED ON STRUCTURES ON NON-NHS ROADWAYS ONLY. WHERE BRIDGE BARRIERS WITH DESIGNATIONS GREATER THAN TL3 ARE PROVIDED, A SEPARATE DESIGN IS REQUIRED.
17. FOR WINGWALL CONNECTION CORNER DETAILS, REFER TO BD-632M.
18. FOR BURIED STRUCTURES, A HEADWALL DESIGN IS REQUIRED.
19. IF PAVING NOTCH IS REQUIRED, REFER TO BD-632M.
20. FOR A PRECAST RIGID FRAME, THE FABRICATOR SHALL CHECK TRANSPORTATION AND ERECTION STRESSES, AND IF NECESSARY, PROVIDE ADDITIONAL STRUCTURAL CAPACITY TO MEET DEMAND OR INDICATE THAT TEMPORARY INTERNAL BRACING IS REQUIRED IN THE CONTRACT DOCUMENTS.
21. PEDESTALS MAY BE REQUIRED FOR DEEP FOOTING CONSTRUCTION.

DESIGN NOTES

1. DESIGN SPECIFICATIONS: AASHTO LRFD "BRIDGE DESIGN SPECIFICATIONS" AND AS SUPPLEMENTED BY THE DESIGN MANUAL, PART 4, STRUCTURES.
2. IN PRECAST CONCRETE, PROVIDE 1 1/2" CONCRETE COVER ON REINFORCEMENT BARS AND GROUDED SPLICE COUPLERS, EXCEPT AS NOTED IN THE INSTRUCTIONS BELOW.
3. PLACE FOOTINGS IN ACCORDANCE WITH DESIGN MANUAL, PART 4.
5. INDICATE MAXIMUM FACTORED DESIGN FOUNDATION PRESSURE AND FACTORED BEARING RESISTANCE ON PLANS.
6. PRECAST AND C. I. P. FOOTING TYPES SHOWN ARE INTERCHANGABLE WITHIN THE PRECAST RIGID FRAME TYPES SHOWN.
7. FOR DETAILS A AND B, SEE SHEET 2.
8. FOR PRECAST RIGID FRAMES "AT GRADE" (I.E. ≤ 2'-0" OF FILL OR PAVEMENT) AN ADDITIONAL 5" MINIMUM CAST IN PLACE REINFORCED CONCRETE DECK MAY BE REQUIRED BY THE DISTRICT BRIDGE ENGINEER. FOR DECK CONNECTION DETAILS, SEE SHEET 3.
9. FOR DECK CONNECTION DETAIL FOR VARIABLE DEPTH CONCRETE DECKS, THE DECK REINFORCEMENT WILL BE INDEPENDENT OF ANCHOR HOOK AND MUST MAINTAIN CLEARANCE AND FOLLOW CROSS SLOPE.
10. DETAILS SHOWN ARE FOR REINFORCING STEEL BARS. IF WELDED WIRE FABRIC REINFORCEMENT IS USED, FOLLOW MATERIAL REQUIREMENTS AND PLACEMENT DETAILS ON BD-632M SHEET 4, AS APPLICABLE.
11. FOR HYDRAULIC DESIGN REFER TO DESIGN MANUAL, PART 2.
12. DESIGN PRECAST REINFORCED CONCRETE RIGID FRAMES TO HAVE A MINIMUM VERTICAL CLEARANCE OF 3'-0" FROM THE STREAM BED.
13. POST-TENSIONING DUCTS MAY BE PLACED AT EITHER CORNER OR HAUNCH TO SATISFY DESIGN AND CONSTRUCTION REQUIREMENTS. FOR HAUNCH AND POST-TENSIONING DETAILS, SEE SHEET 5 AND BC-798M. ALSO, POST-TENSIONING DUCTS MAY BE PLACED IN THE WALLS OR SLAB AS REQUIRED BY DESIGN.
14. SPECIFY 4'-0" MINIMUM SEGMENT LENGTH ON THE CONTRACT DRAWINGS.
15. USE THIS STANDARD DRAWING IN CONJUNCTION WITH THE APPLICABLE ROADWAY CONSTRUCTION STANDARDS FOR GUIDE RAIL.
16. MODIFIED STRUCTURE MOUNTED GUIDE RAIL BARRIER HAS BEEN GRANTED TL3 DESIGNATION BY FHWA AND MAY BE USED ON STRUCTURES ON NON-NHS ROADWAYS ONLY. WHERE BRIDGE BARRIERS WITH DESIGNATIONS GREATER THAN TL3 ARE PROVIDED, A SEPARATE DESIGN IS REQUIRED.
17. FOR WINGWALL CONNECTION CORNER DETAILS, REFER TO BD-632M.
18. FOR BURIED STRUCTURES, A HEADWALL DESIGN IS REQUIRED.
19. IF PAVING NOTCH IS REQUIRED, REFER TO BD-632M.
20. FOR A PRECAST RIGID FRAME, THE FABRICATOR SHALL CHECK TRANSPORTATION AND ERECTION STRESSES, AND IF NECESSARY, PROVIDE ADDITIONAL STRUCTURAL CAPACITY TO MEET DEMAND OR INDICATE THAT TEMPORARY INTERNAL BRACING IS REQUIRED IN THE CONTRACT DOCUMENTS.
21. PEDESTALS MAY BE REQUIRED FOR DEEP FOOTING CONSTRUCTION.

DRAWING NOTES

1. PROVIDE MATERIALS AND PERFORM WORK IN ACCORDANCE WITH THE CURRENT VERSION OF THE PENNSYLVANIA DEPARTMENT OF TRANSPORTATION PUBLICATION 408.
2. DEAD LOADS: INCLUDE A SURFACE AREA WEIGHT OF 30 P.S.F. ON THE TOP SLAB FOR FUTURE WEARING SURFACE.
3. PROVIDE GRADE 60 DEFORMED REINFORCING STEEL BARS THAT MEET THE REQUIREMENTS OF ASTM A 615, A 996 OR A 706. DO NOT WELD REINFORCING STEEL BARS UNLESS SPECIFIED. DO NOT USE RAIL STEEL (A 996) REINFORCING BARS WHERE BENDING OR WELDING OF REINFORCEMENT BARS IS INDICATED.
4. PROVIDE MINIMUM EMBEDMENT AND SPLICE LENGTHS IN ACCORDANCE WITH STANDARD DRAWING BC-736M, UNLESS OTHERWISE INDICATED.
5. USE EPOXY COATED REINFORCEMENT BARS IN THE FOLLOWING LOCATIONS:
 - IN THE CAST IN PLACE DECK IF A DECK IS USED.
 - IN THE TOP SLAB IF A CAST IN PLACE DECK IS NOT USED.
 - ALL CURBS AND BARRIERS.
 - WHERE THE BARS ARE SPLICED WITH EPOXY COATED GROUDED SPLICE COUPLERS.
 - ALL J-BARS AND L-BARS PROTRUDING FROM THE FOOTING INTO THE WALL.
6. USE EPOXY BONDING COMPOUND WHERE EVER CAST-IN-PLACE CEMENT CONCRETE COMES IN CONTACT WITH PRECAST CEMENT CONCRETE. THE EPOXY BONDING COMPOUND IS TYPE 2, GRADE 2, AS DESCRIBED IN ASTM-C881-90
7. PROVIDE WATERPROOFING MEMBRANE AS PER PUB.408, SECTION 680.2(c) OR 680.2(b) FOR THE ENTIRE TOP WIDTH AND LENGTH OF THE RIGID FRAME AND 2'-0" MIN. WIDTH ALONG THE SIDE JOINTS. FOR ADDITIONAL WATERPROOFING DETAILS, SEE SHEET 2 AND BC-788M. OMIT ON TOP SLAB WHEN A CAST IN PLACE DECK IS USED.
8. USE 4"Ø FORMED WEEPHOLES, AT A MAXIMUM SPACING OF 15'-0", PLACED AT A MINIMUM 6" ABOVE NORMAL FLOW LINE, FOR DETAILS, SEE BC-751M. FOR WEEPHOLE PLACEMENT, THE WEEPHOLE LOCATION MAY BE ADJUSTED BY A MAXIMUM OF 2" IN ANY DIRECTION, OR RELOCATE REINFORCEMENT BY A MAXIMUM OF 1/2". DO NOT CUT REINFORCEMENT BARS. NO ADDITIONAL WEEPHOLE REINFORCEMENT WILL BE REQUIRED.
9. THREADED INSERTS TO BE INCORPORATED IN PRECAST RIGID FRAME AND DETAILED BY THE FABRICATOR.
10. FOR BRIDGE RAILING POSTS, THOROUGHLY COAT ALL SURFACES OF THE BASE PLATES IN CONTACT WITH CONCRETE WITH CAULKING COMPOUND PRIOR TO ERECTION. AFTER ERECTION AND ALIGNMENT, SEAL OPENINGS BETWEEN THE METAL SURFACES AND THE CONCRETE WITH CAULKING COMPOUND MEETING THE REQUIREMENTS OF SECTION 705, PUB. 408.
11. FOR FOOTINGS, TIE TOP AND BOTTOM MATS OF REINFORCING STEEL WITH #4 TIE BARS AT A MAXIMUM SPACING OF 4'-0" IN BOTH DIRECTIONS. PROVIDE TIE BARS WITH 90° HOOK AT ONE END AND 135° HOOK AT THE OTHER END. ALTERNATE 90° AND 135° HOOKS AT TOP IN ALTERNATE TIES.

DESIGN DATA:

- f'c = 5,000 P.S.I. MINIMUM FOR PRECAST CONCRETE
- f'c = 3,000 P.S.I. MINIMUM FOR C. I. P. CONCRETE IN FOOTING (USE CLASS A CEMENT CONCRETE).
- f'c = 4,000 P.S.I. MINIMUM FOR C. I. P. CONCRETE IN REINFORCED CONCRETE DECK (USE CLASS AAAP CEMENT CONCRETE).
- fy = 60,000 P.S.I. FOR STEEL REINFORCING BARS

INSTRUCTIONS:

- MINIMUM WALL THICKNESS = 12"
- MINIMUM SLAB THICKNESS = 12"
- MINIMUM COVER FOR TOP REINFORCEMENT IN TOP SLAB OF PRECAST RIGID FRAME = 2" EXCEPT USE 2 1/2" WHEN SLAB IS AT GRADE AND CAST-IN-PLACE DECK IS NOT PROVIDED.

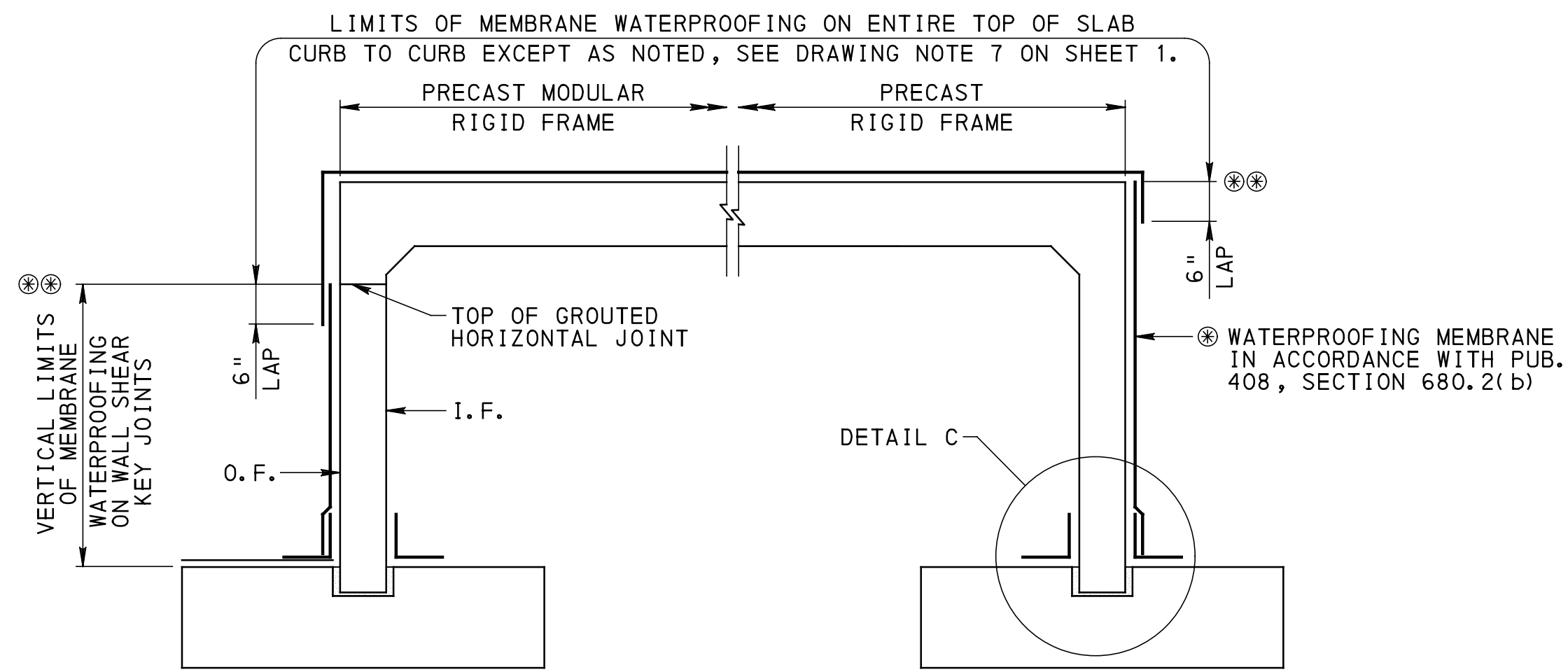
**COMMONWEALTH OF PENNSYLVANIA
 DEPARTMENT OF TRANSPORTATION
 BUREAU OF PROJECT DELIVERY**

**STANDARD
 ACCELERATED BRIDGE CONSTRUCTION
 DETAILS FOR PRECAST RIGID FRAME**

RC-11M	CLASSIFICATION OF EARTHWORK FOR STRUCTURES
RC-12M	BACKFILL AT STRUCTURES
RC-50M	GUIDE RAIL TRANSITION AT END OF STRUCTURE
RC-52M	TYPE 2 STRONG POST GUIDE RAIL
BD-609M	PA STRUCTURE MOUNTED GUIDE RAIL BARRIER
BD-628M	BRIDGE APPROACH SLABS
BD-632M	R. C. BOX CULVERT
BC-706M	PA STRUCTURE MOUNTED GUIDE RAIL BARRIER
BC-734M	ANCHOR SYSTEMS
BC-736M	REINFORCEMENT BAR FABRICATION DETAILS
BC-751M	BRIDGE DRAINAGE
BC-788M	TYPICAL WATERPROOFING AND EXPANSION DETAILS
BC-798M	MECHANICAL CONNECTION DETAILS

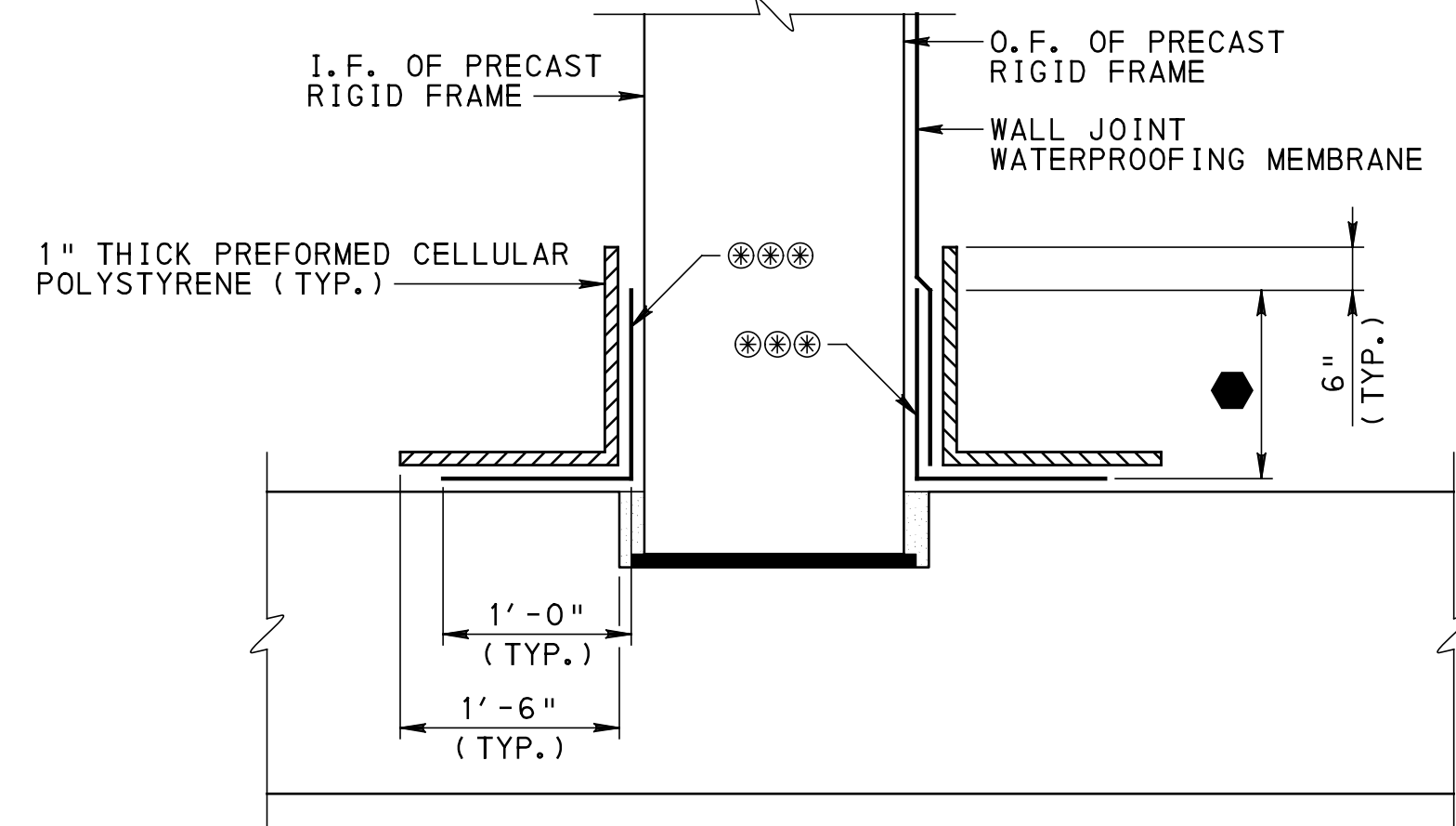
REFERENCE DRAWINGS

RECOMMENDED _____	RECOMMENDED _____	SHEET 1 OF 6
CHIEF BRIDGE ENGINEER _____	DIRECTOR, BUR. OF PROJECT DELIVERY _____	BD-637M



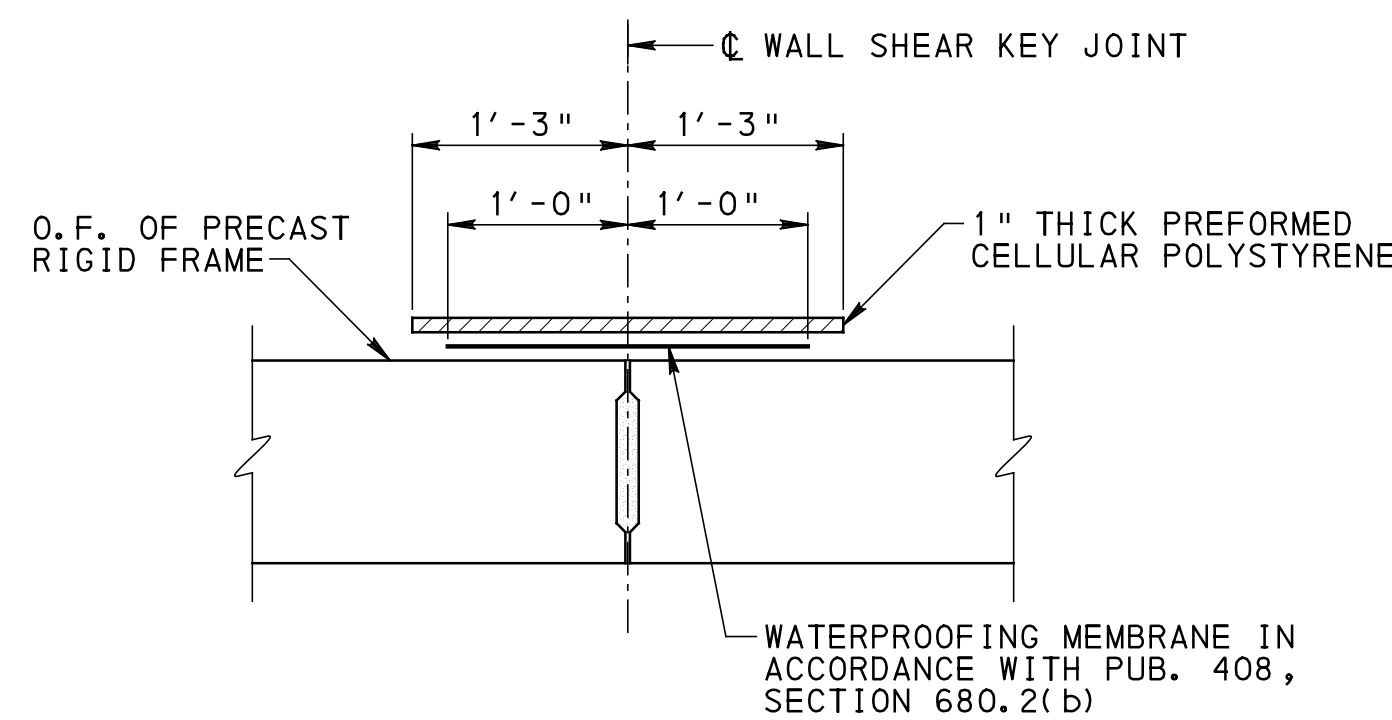
- ⊗ PROVIDE 2'-0" WIDTH MEMBRANE WATERPROOFING AS PER PUB. 408, SECTION 680.3 ALONG OUTSIDE FACE OF ALL WALL JOINTS. PLACE THE MEMBRANE WATERPROOFING ON THE WALLS BEFORE PLACING IT ON TOP OF THE RIGID FRAME.
- ⊗⊗ EXTEND WATERPROOFING MEMBRANE TO TOP OF CAST-IN-PLACE SLAB WHERE APPLICABLE.

TYPICAL RIGID FRAME SECTION



- ⊗⊗⊗ MEMBRANE WATERPROOFING BENT TO FIT WALL AND TOP OF FOOTING AS SHOWN, FULL LENGTH.
- 1'-0" OR, WHERE APPLICABLE, 6" ABOVE EPOXY COATED GROUTED SPLICE COUPLER GROUT PORTS MINIMUM.

DETAIL C



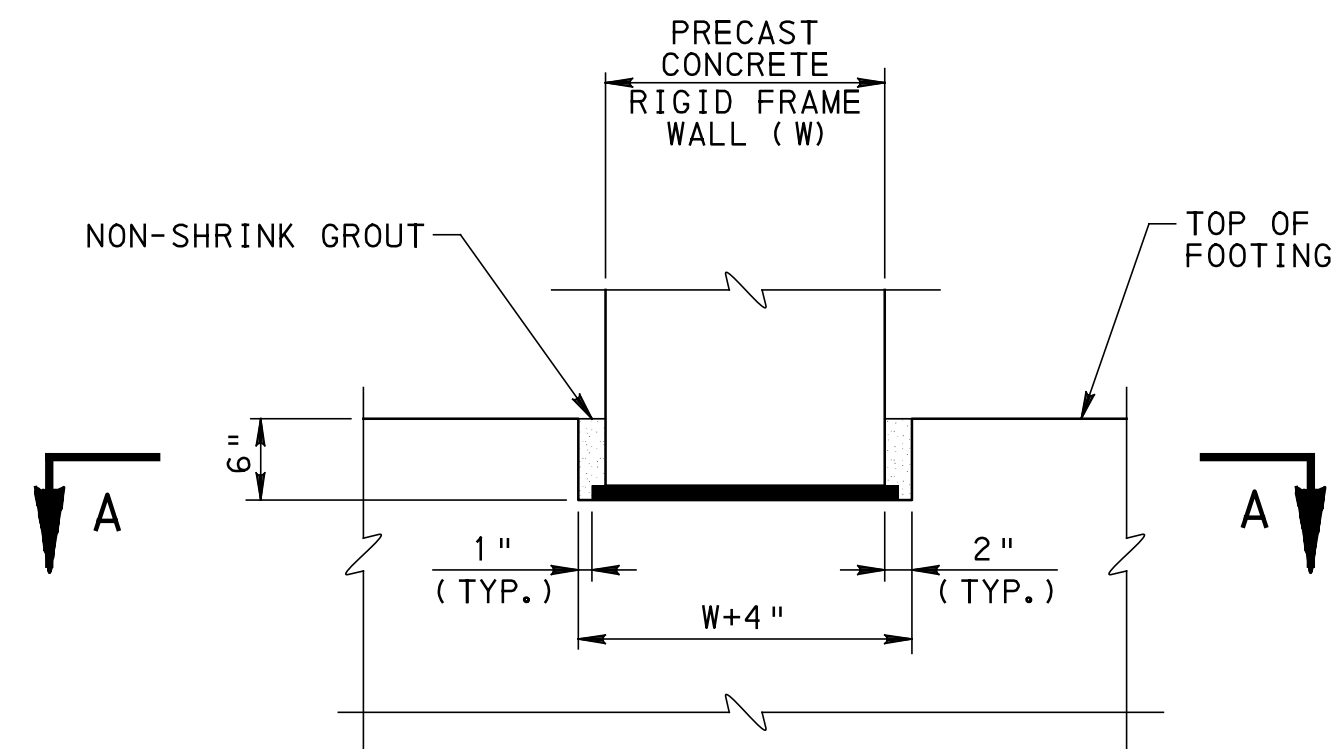
TYPICAL SECTION AT WALL SHEAR KEY JOINT

WATERPROOFING DETAILS

PINNED SUPPORT SHOWN, FIXED SUPPORT SIMILAR.

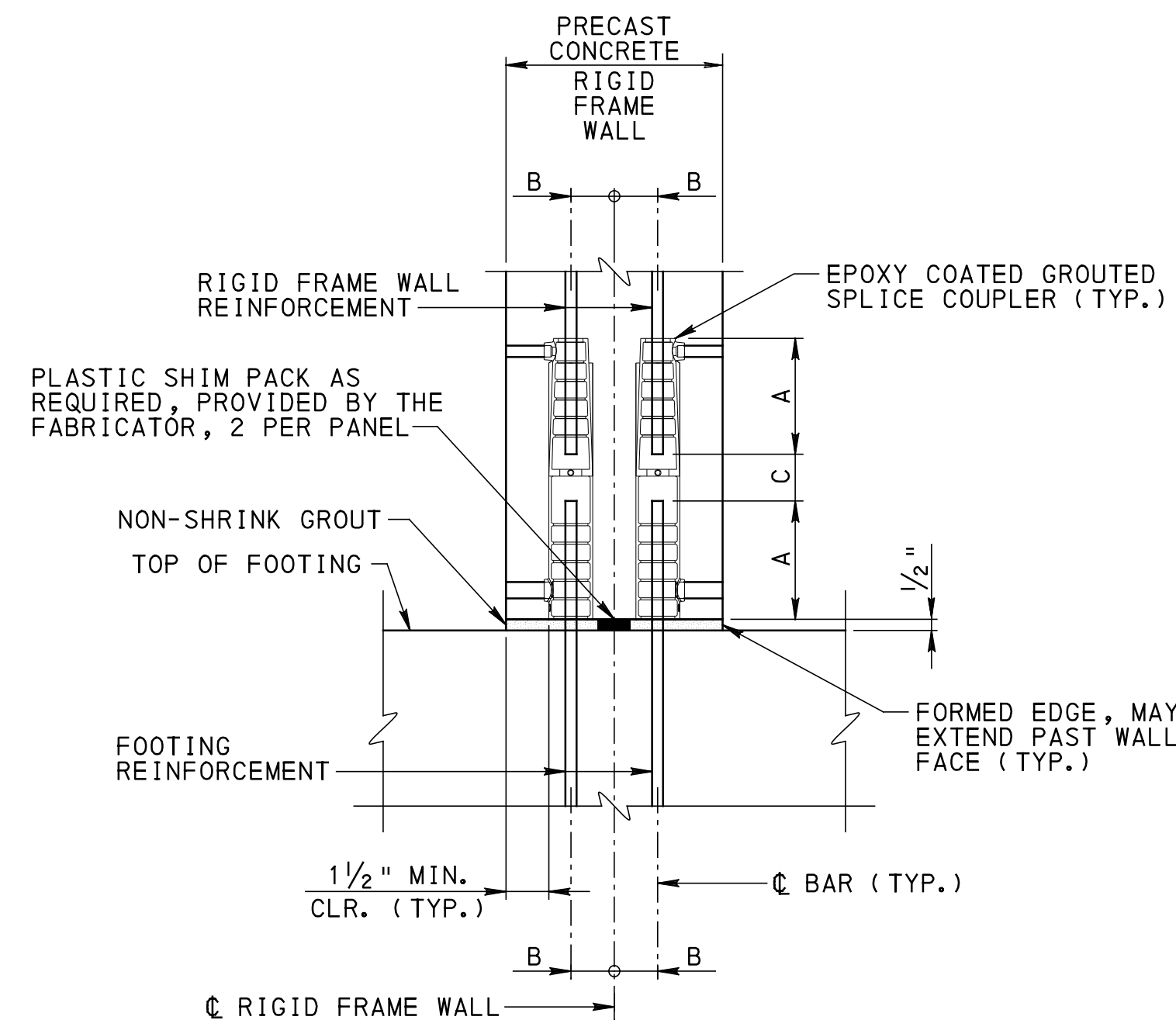
SUGGESTED CONSTRUCTION SEQUENCE NOTES FOR PRECAST MODULAR RIGID FRAME:

1. INSTALL/CONSTRUCT FOOTINGS.
2. SET AND BRACE WALL PANELS.
3. GROUT TOP SLAB PANELS ONTO WALL PANELS.
4. GROUT SLAB TO WALL CONNECTION SPLICE COUPLERS.
5. (FOR FIXED SUPPORT CONDITION ONLY) GROUT WALL TO FOOTING CONNECTION SPLICE COUPLERS.
6. GROUT KEYED JOINTS BETWEEN PANELS.
7. REMOVE WALL BRACING.
8. POST-TENSION RIGID FRAME.
9. (FOR PINNED SUPPORT CONDITION ONLY) PLACE GROUT IN FOOTING RECESS.
10. (FOR FIXED SUPPORT CONDITION ONLY) PLACE GROUT BETWEEN FOOTING AND I.F. WALLS.
11. INSTALL WATERPROOFING MEMBRANE.
12. BACKFILL.
13. PLACE OVERLAY OR CONSTRUCT C.I.P. CONCRETE DECK.



NOTE : PROVIDE (W+2") x 6" x 1/2" NEOPRENE LEVELING PADS/SHEAR KEY GROUT STOPS. PLACE PADS AT THE ENDS OF EACH SEGMENT, AS REQUIRED. FILL RECESS WITH NON-SHRINK EPOXY GROUT AFTER POST-TENSIONING.

DETAIL A

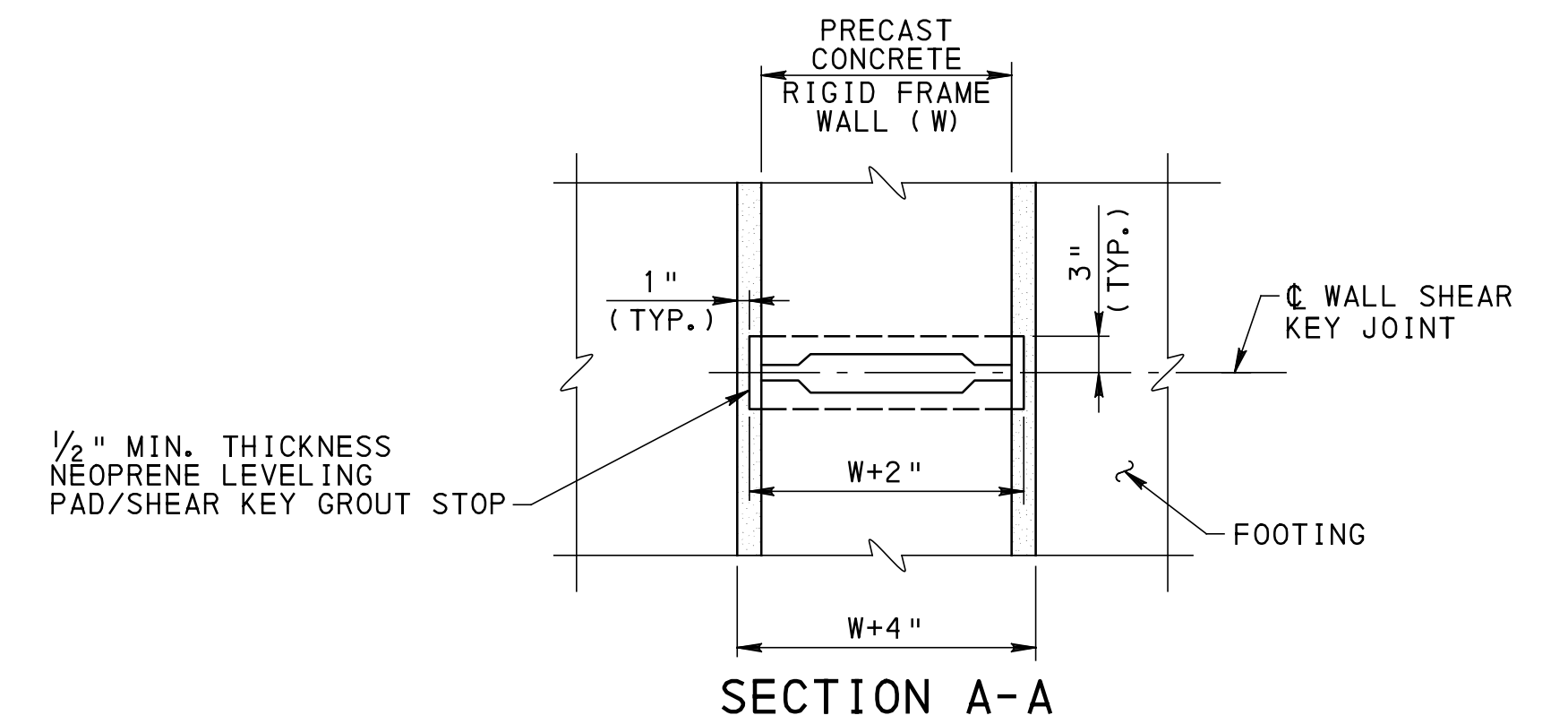


NOTE : NON-SHRINK GROUT IN FRONT OF I.F. WALL NOT SHOWN FOR CLARITY.

DETAIL B

SUGGESTED CONSTRUCTION SEQUENCE NOTES FOR PRECAST RIGID FRAME:

1. INSTALL/CONSTRUCT FOOTINGS.
2. SET RIGID FRAME SECTIONS IN PLACE.
3. (FOR FIXED SUPPORT CONDITION ONLY) GROUT WALL TO FOOTING CONNECTION SPLICE COUPLERS.
4. GROUT KEYED JOINTS BETWEEN SECTIONS.
5. POST-TENSION RIGID FRAME.
6. (FOR PINNED SUPPORT CONDITION ONLY) PLACE GROUT IN FOOTING RECESS.
7. (FOR FIXED SUPPORT CONDITION ONLY) PLACE GROUT BETWEEN FOOTING AND I.F. WALLS.
8. INSTALL WATERPROOFING MEMBRANE.
9. BACKFILL.
10. PLACE OVERLAY OR CONSTRUCT C.I.P. CONCRETE DECK.



EPOXY COATED GROUTED SPLICE COUPLER NOTES :

- USE MATCHING TEMPLATES FOR PLACEMENT OF PRECAST MODULAR RIGID FRAME REINFORCEMENT, FOOTING REINFORCEMENT, AND EPOXY COATED GROUTED SPLICE COUPLERS TO ENSURE PROPER FIT-UP.
- CONSULT MANUFACTURER OF EPOXY COATED GROUTED SPLICE COUPLER FOR FINAL DIMENSIONS, TOLERANCES, AND INSTALLATION RECOMMENDATIONS.
- USE A COUPLER FROM A BULLETIN 15 APPROVED MANUFACTURER.
- PLACE NON-SHRINK GROUT SLIGHTLY HIGHER THAN PLASTIC SHIMS TO ENSURE FULL CONTACT BETWEEN CONNECTED SURFACES.

EPOXY COATED GROUTED SPLICE COUPLER DIMENSION TOLERANCES		
A	EMBEDMENT LENGTH	CONSULT MANUFACTURER
B	LOCATIONS OF REINFORCEMENT AND GROUTED SPLICE COUPLER AS MEASURED FROM C WALL	± 1/4"
C	GAP BETWEEN REINFORCEMENT BARS	CONSULT MANUFACTURER

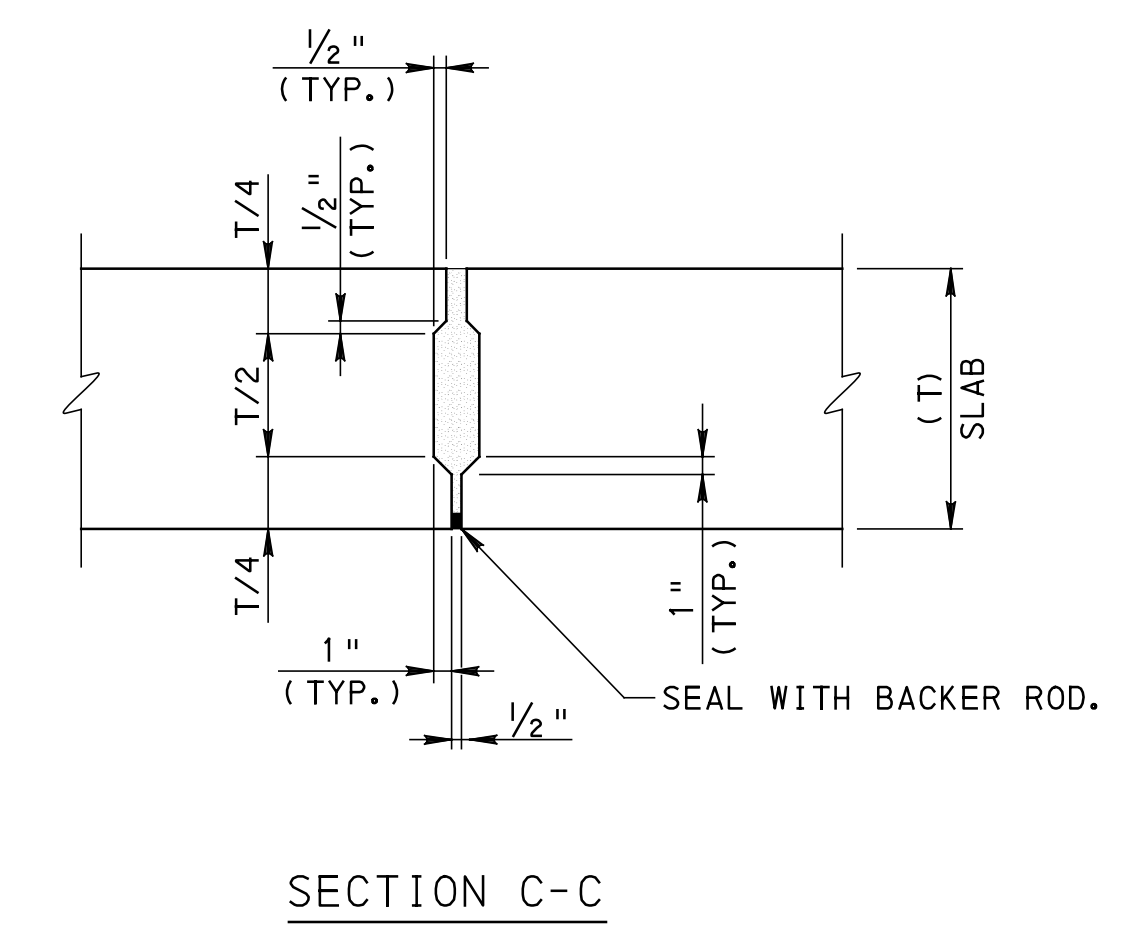
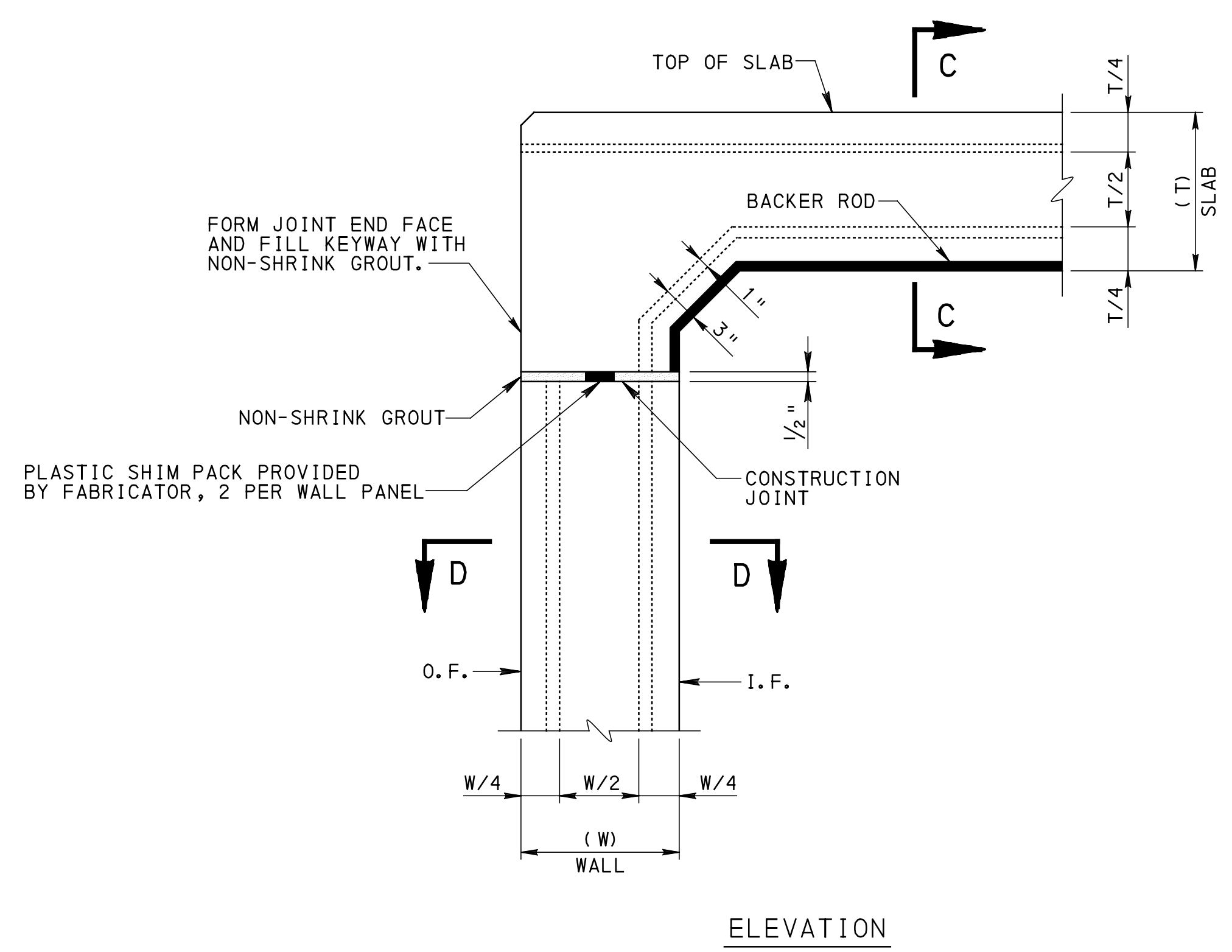
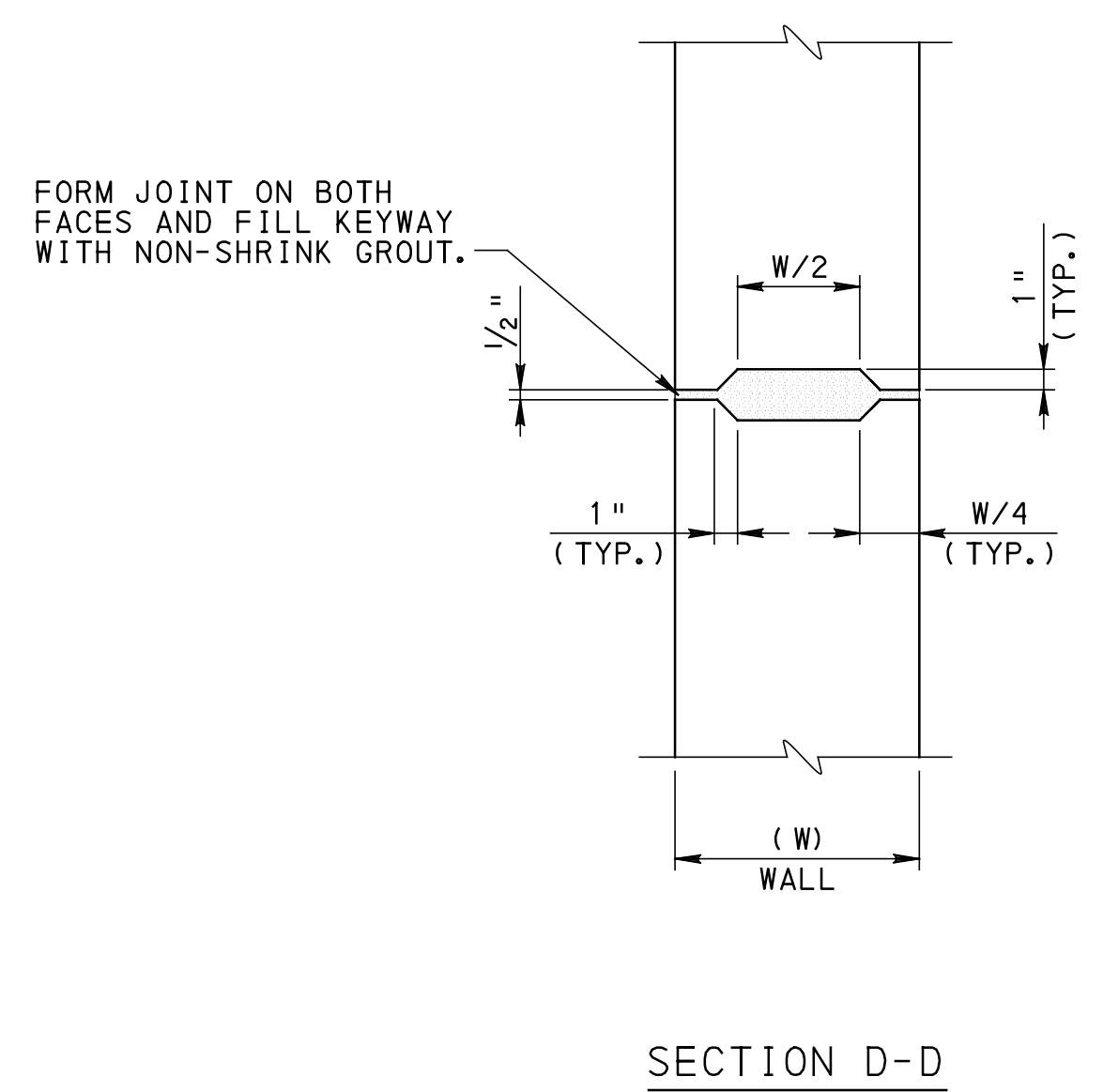
NOTES :

1. FOR LOCATION OF DETAILS A AND B, SEE SHEET 1.

**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY**

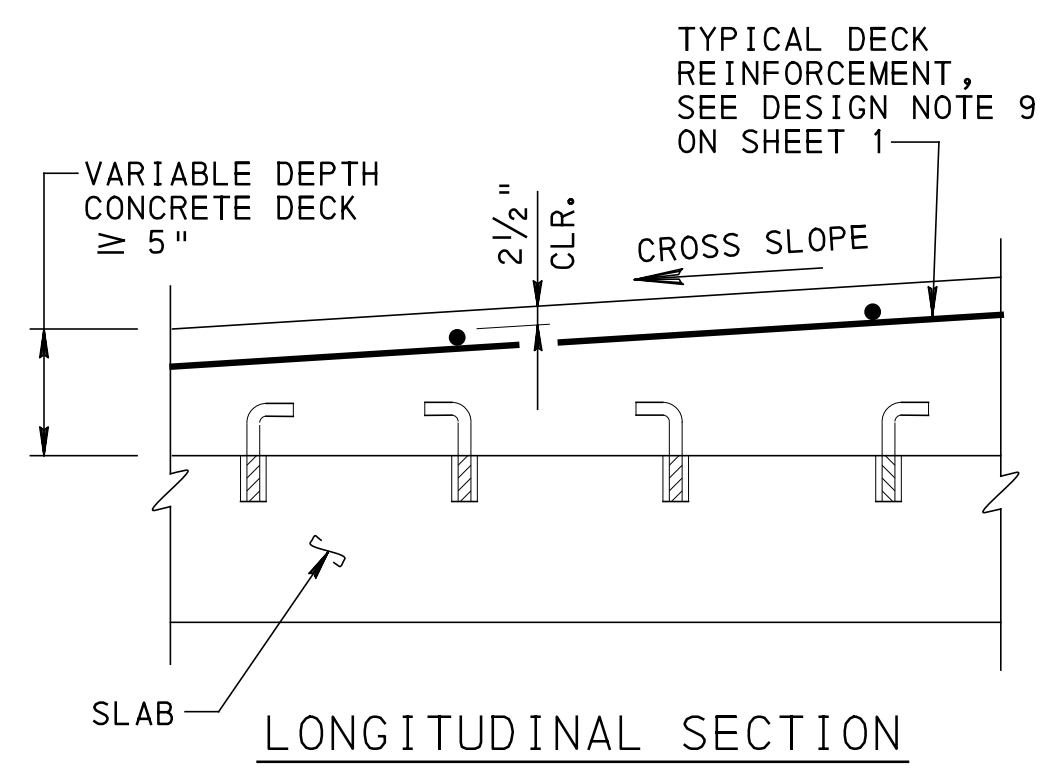
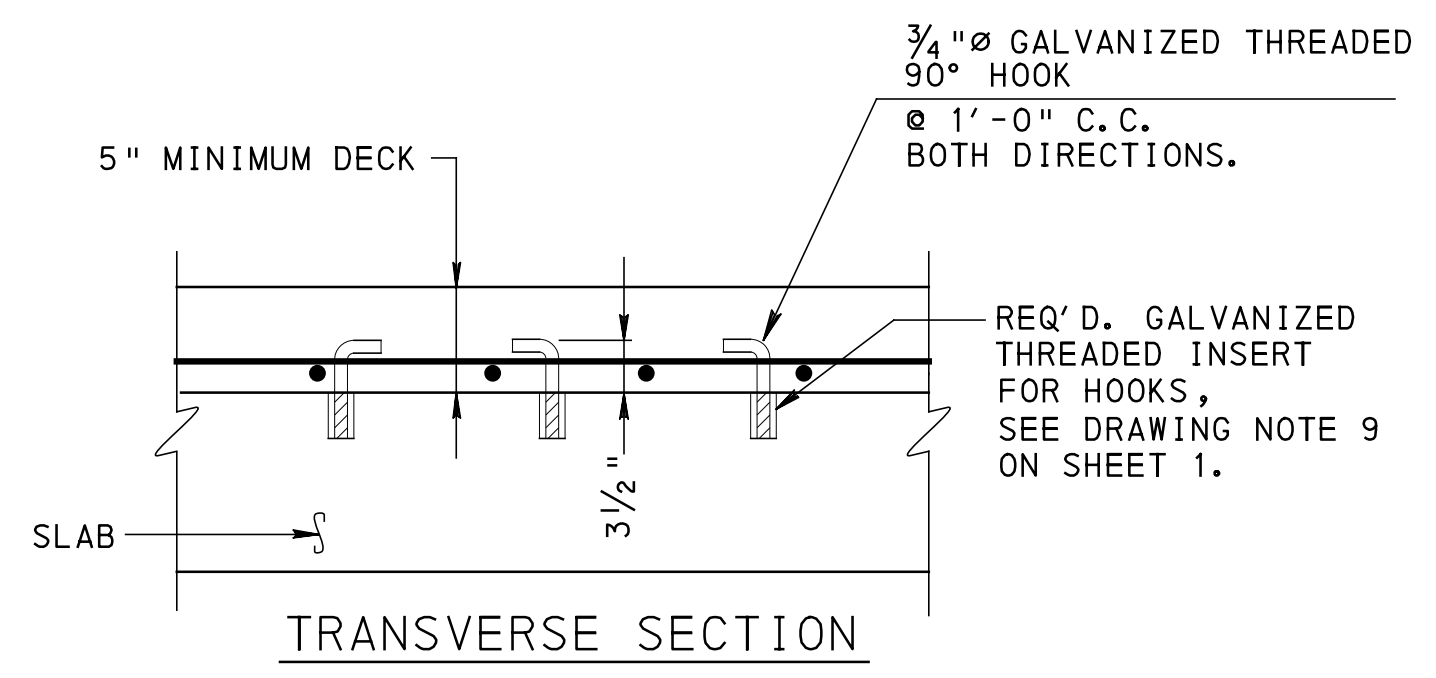
**STANDARD
ACCELERATED BRIDGE CONSTRUCTION
DETAILS FOR PRECAST RIGID FRAME
CONSTRUCTION NOTES, WATERPROOFING
& FOOTING CONNECTION DETAILS**

RECOMMENDED _____	RECOMMENDED _____	SHEET 2 OF 6
CHIEF BRIDGE ENGINEER	DIRECTOR, BUR. OF PROJECT DELIVERY	BD-637M



NOTE : REINFORCEMENT AND POST-TENSIONING SYSTEM ELEMENTS NOT SHOWN FOR CLARITY.

PRECAST SHEAR KEY DETAILS



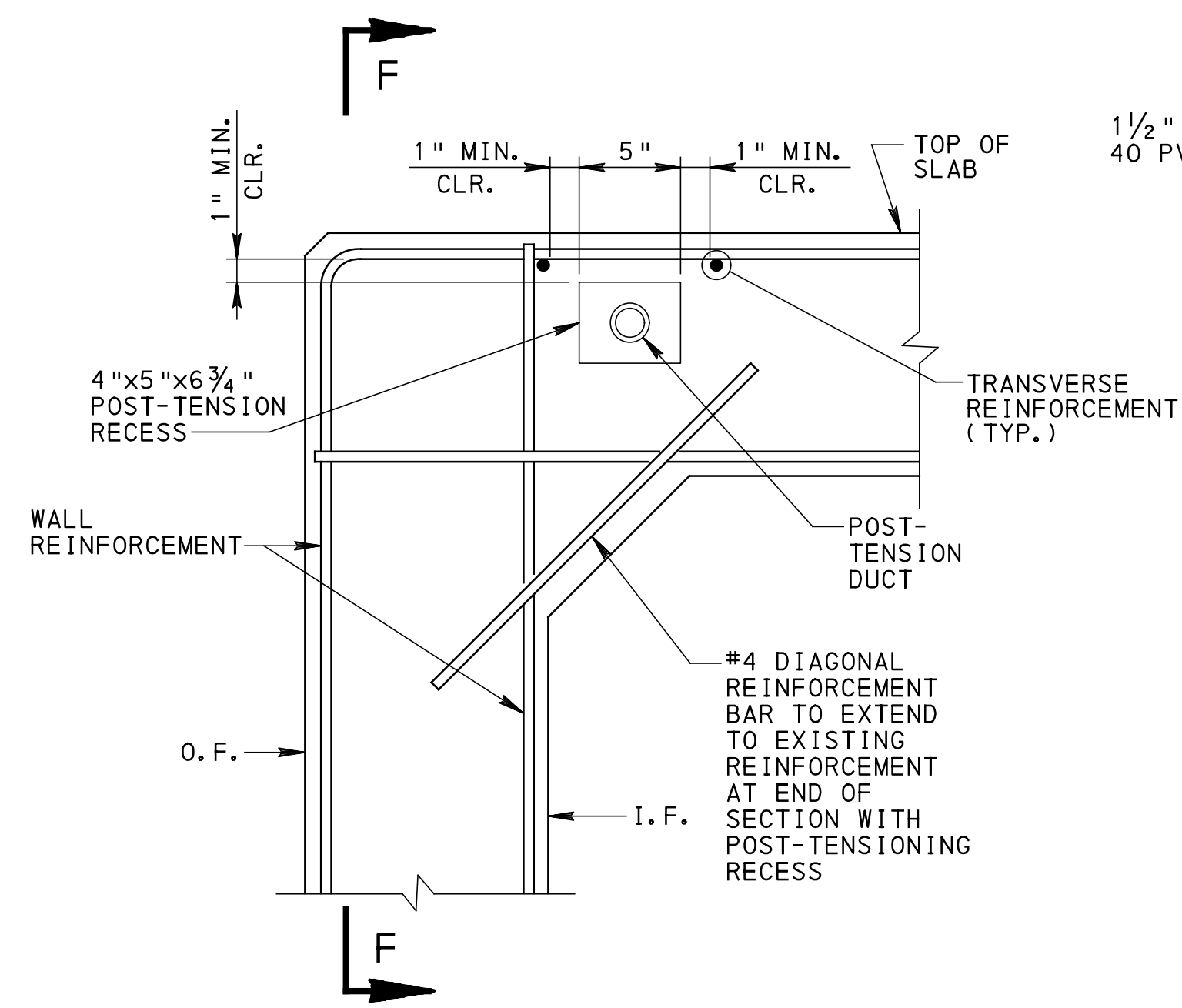
NOTE : FOR TYPICAL CAST-IN-PLACE DECK REINFORCEMENT, SEE BD-632M.

DECK CONNECTION DETAILS

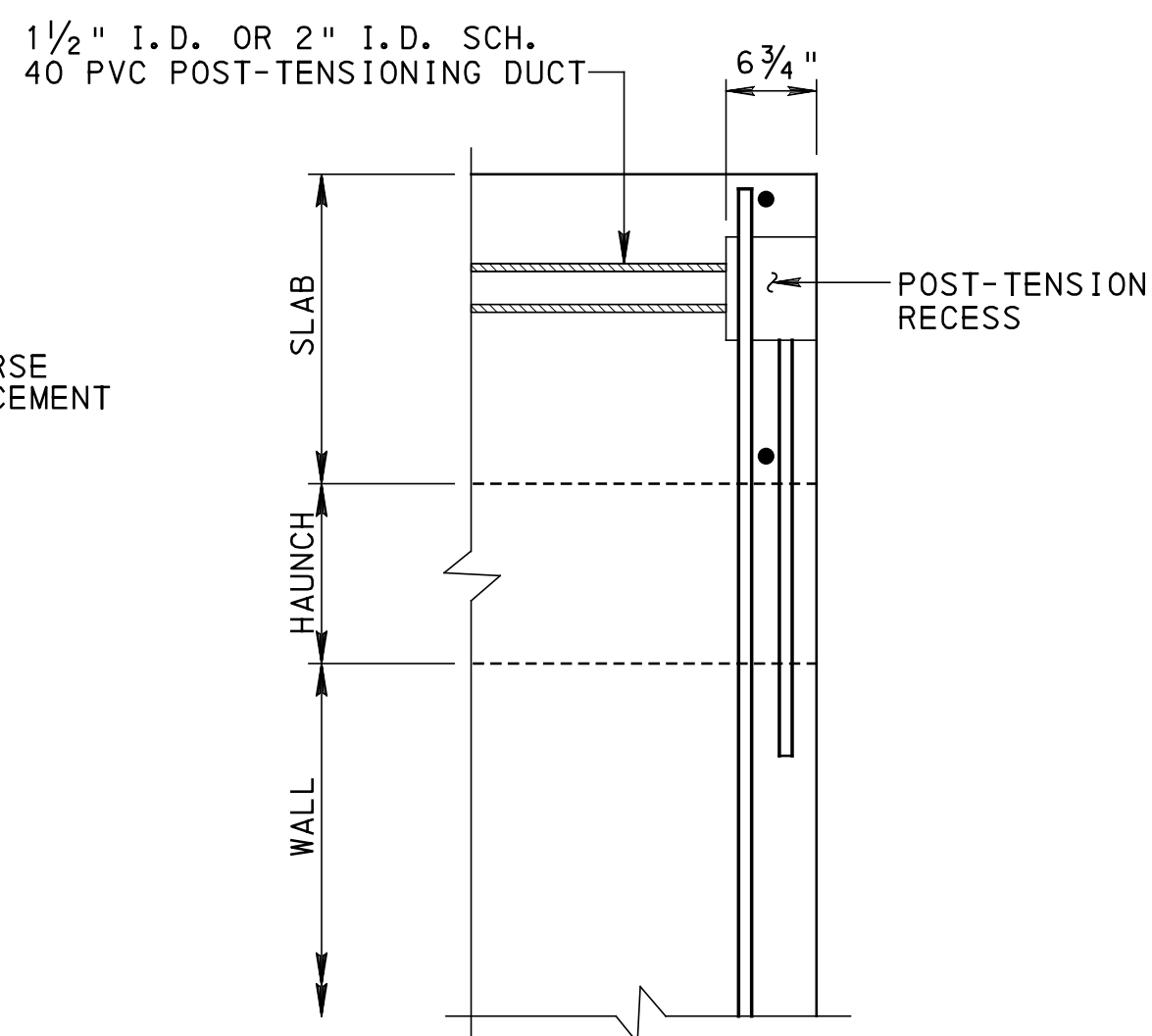
NOTES :

1. THE INSIDE FACES OF ALL SHEAR KEYS AND ASSOCIATED POST-TENSIONING DUCT HAND HOLES SHALL HAVE AN EXPOSED AGGREGATE FINISH.
2. FOR ADDITIONAL DETAILS AND NOTES, SEE BC-798M.
3. PROVIDE FORMWORK FOR GROUTING WHICH IS LIQUID TIGHT.

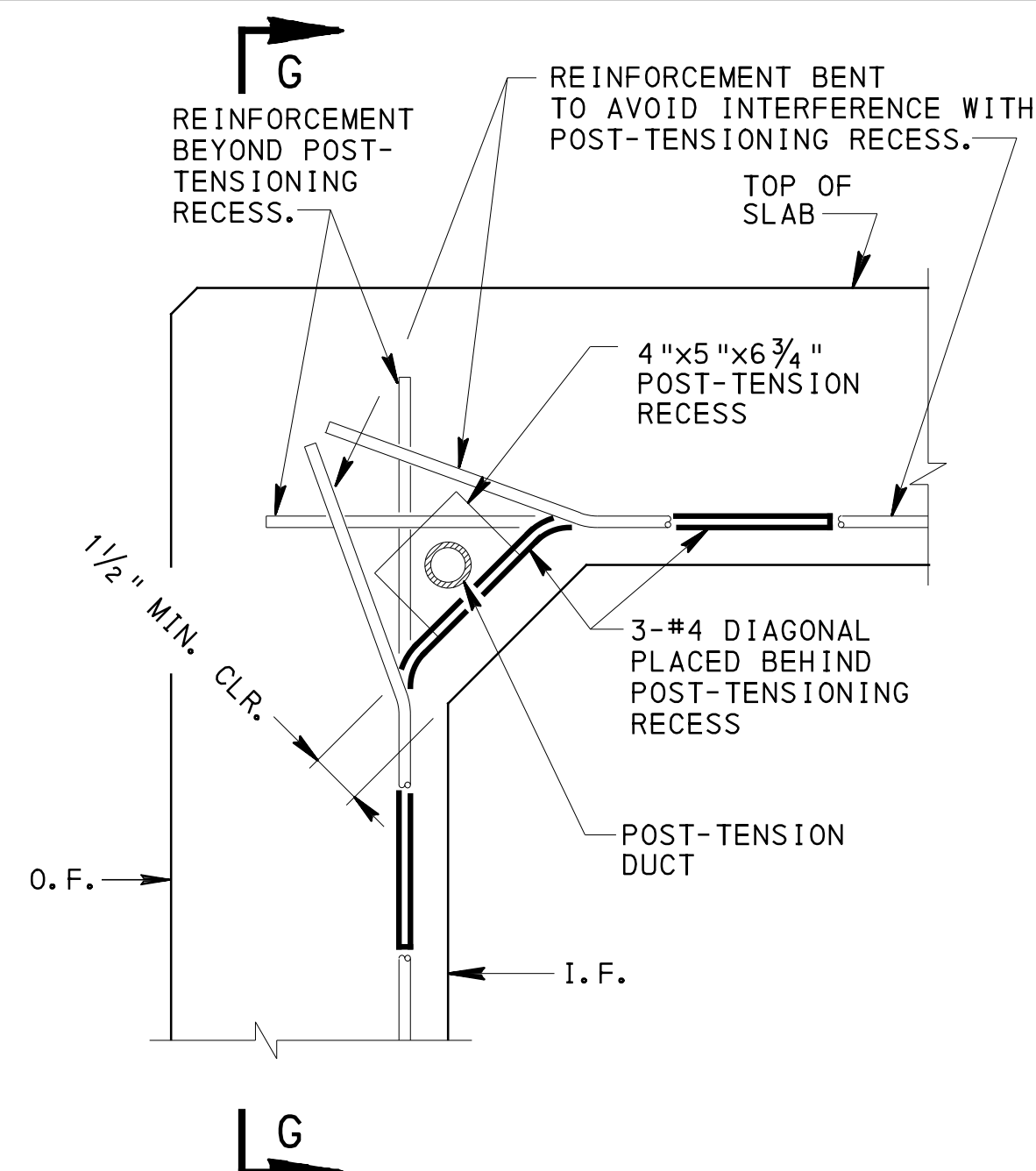
COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION BUREAU OF PROJECT DELIVERY		
STANDARD ACCELERATED BRIDGE CONSTRUCTION DETAILS FOR PRECAST RIGID FRAME DECK CONNECTION & SHEAR KEY DETAILS		
RECOMMENDED _____	RECOMMENDED _____	SHEET 3 OF 6
CHIEF BRIDGE ENGINEER	DIRECTOR, BUR. OF PROJECT DELIVERY	BD-637M



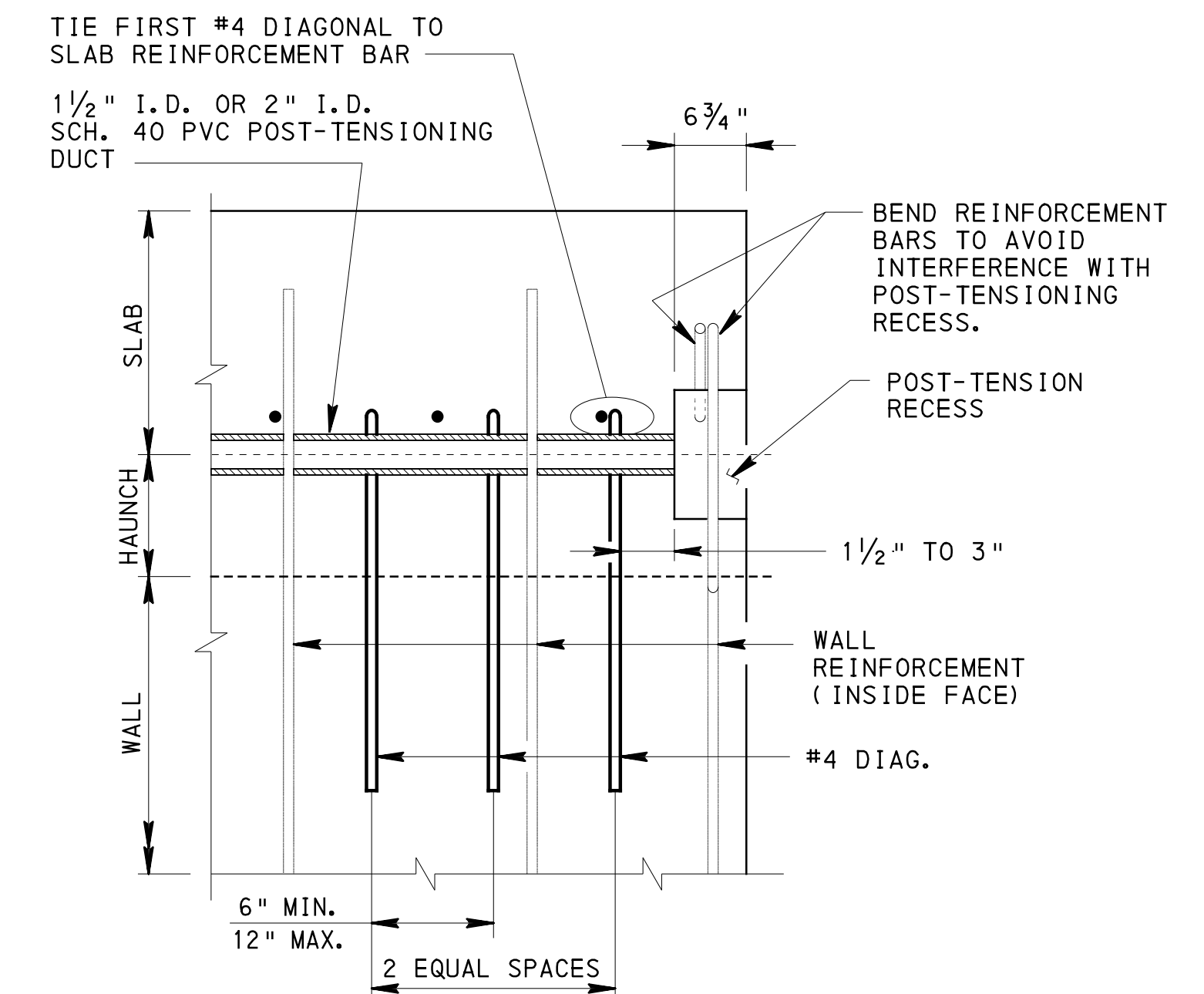
ELEVATION



SECTION F-F



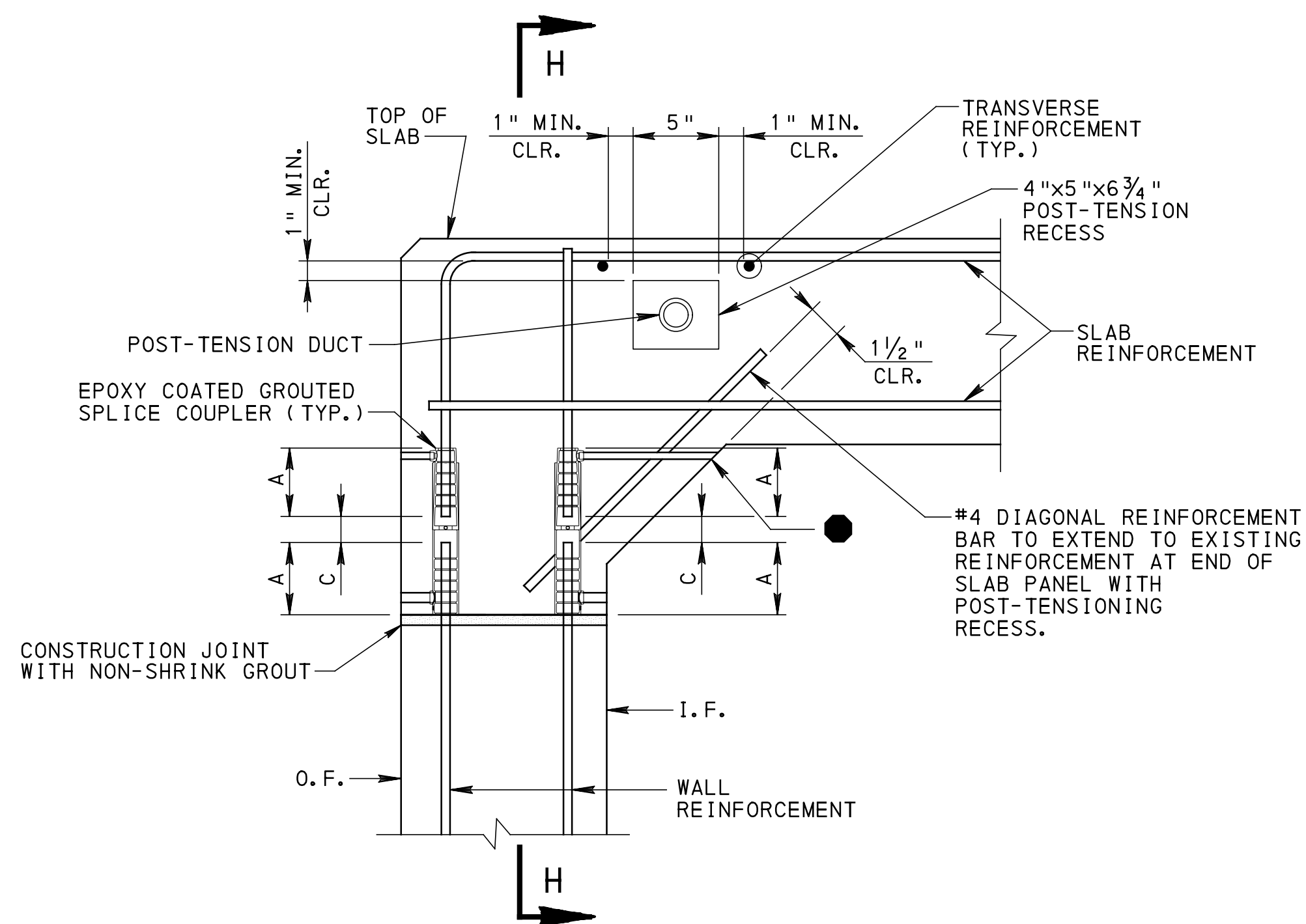
ELEVATION



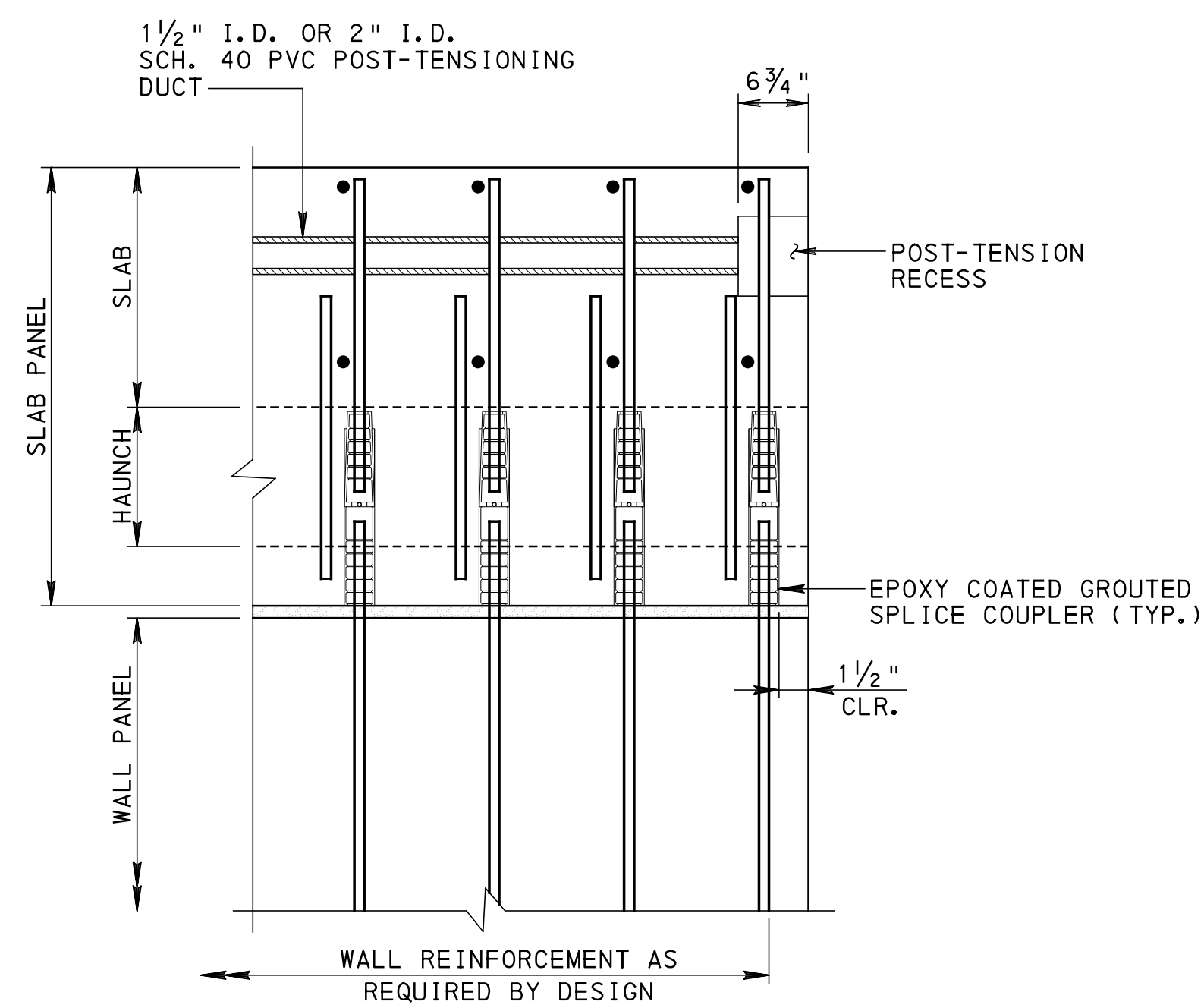
SECTION G-G

TYPICAL HAUNCH DETAIL
ON PRECAST RIGID FRAME

ALTERNATE HAUNCH DETAIL
ON PRECAST RIGID FRAME



ELEVATION



SECTION H-H

● EPOXY COATED GROUDED SPLICE COUPLER MAY BE RE-ORIENTED WITH GROUDED PORTS TO O.F. OF SLAB WHERE REQUIRED TO AVOID INTERFERENCE WITH POST-TENSIONING SYSTEM OR HAUNCH.

NOTE : PLACE NON-SHRINK GROUT SLIGHTLY HIGHER THAN PLASTIC SHIMS TO ENSURE FULL CONTACT BETWEEN CONNECTED SURFACES.

TYPICAL HAUNCH DETAIL ON PRECAST MODULAR RIGID FRAME

NOTES :

1. FOR EPOXY COATED GROUDED SPLICE COUPLER DETAILS, SEE SHEET 2.
2. FOR POST-TENSIONING DETAILS AND NOTES, SEE SHEET 5.
3. MODULAR RIGID FRAME INSIDE FACE AND OUTSIDE FACE GROUDED SPLICE COUPLERS MAY NOT NECESSARILY BE THE SAME SIZE; THEREFORE, THEIR RESPECTIVE "A" AND "C" DIMENSIONS, AS SHOWN HERE, MAY NOT BE THE SAME.
4. CHAMFER EXPOSED EDGES OF PRECAST CONCRETE 3/4" BY 3/4".

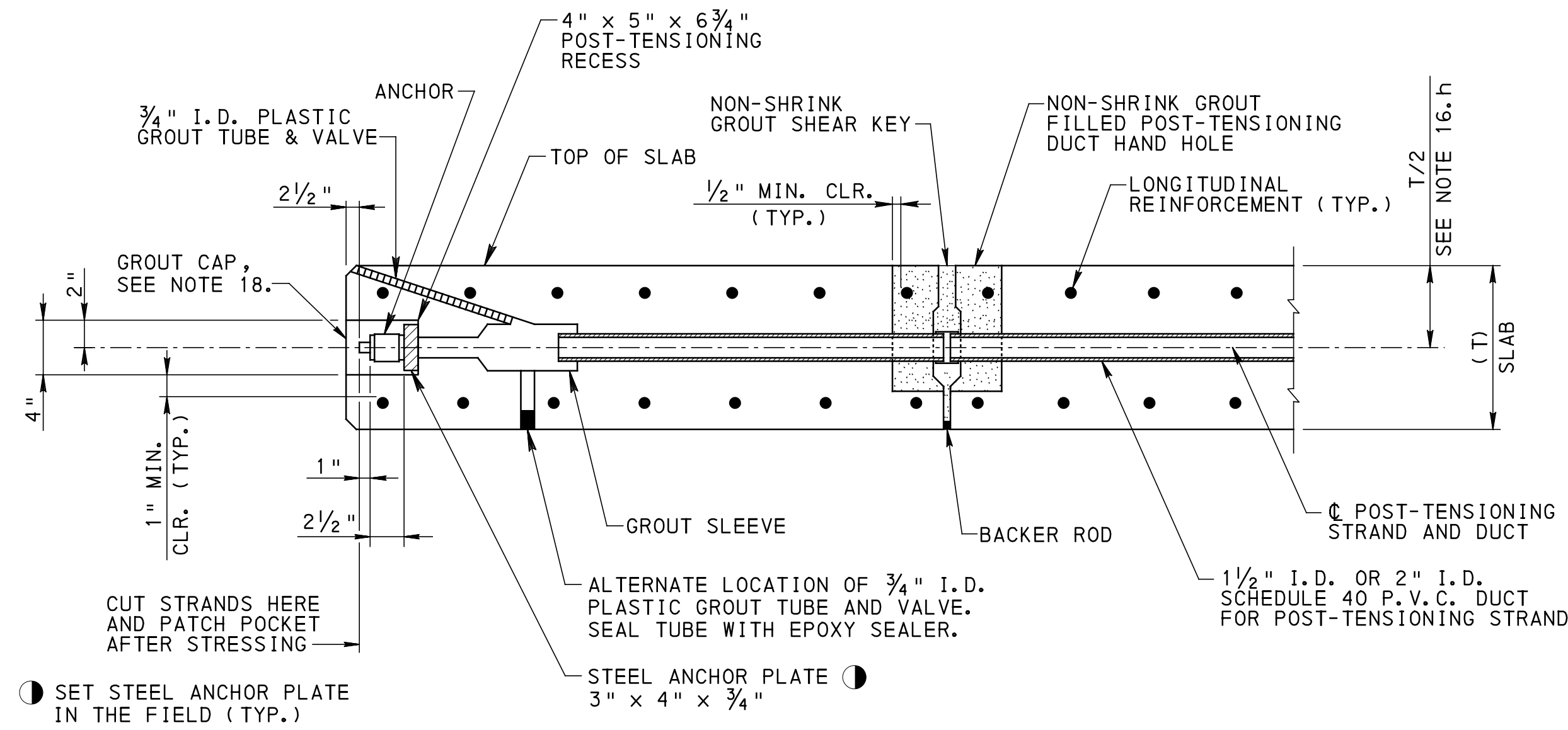
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

STANDARD
ACCELERATED BRIDGE CONSTRUCTION
DETAILS FOR PRECAST RIGID FRAME

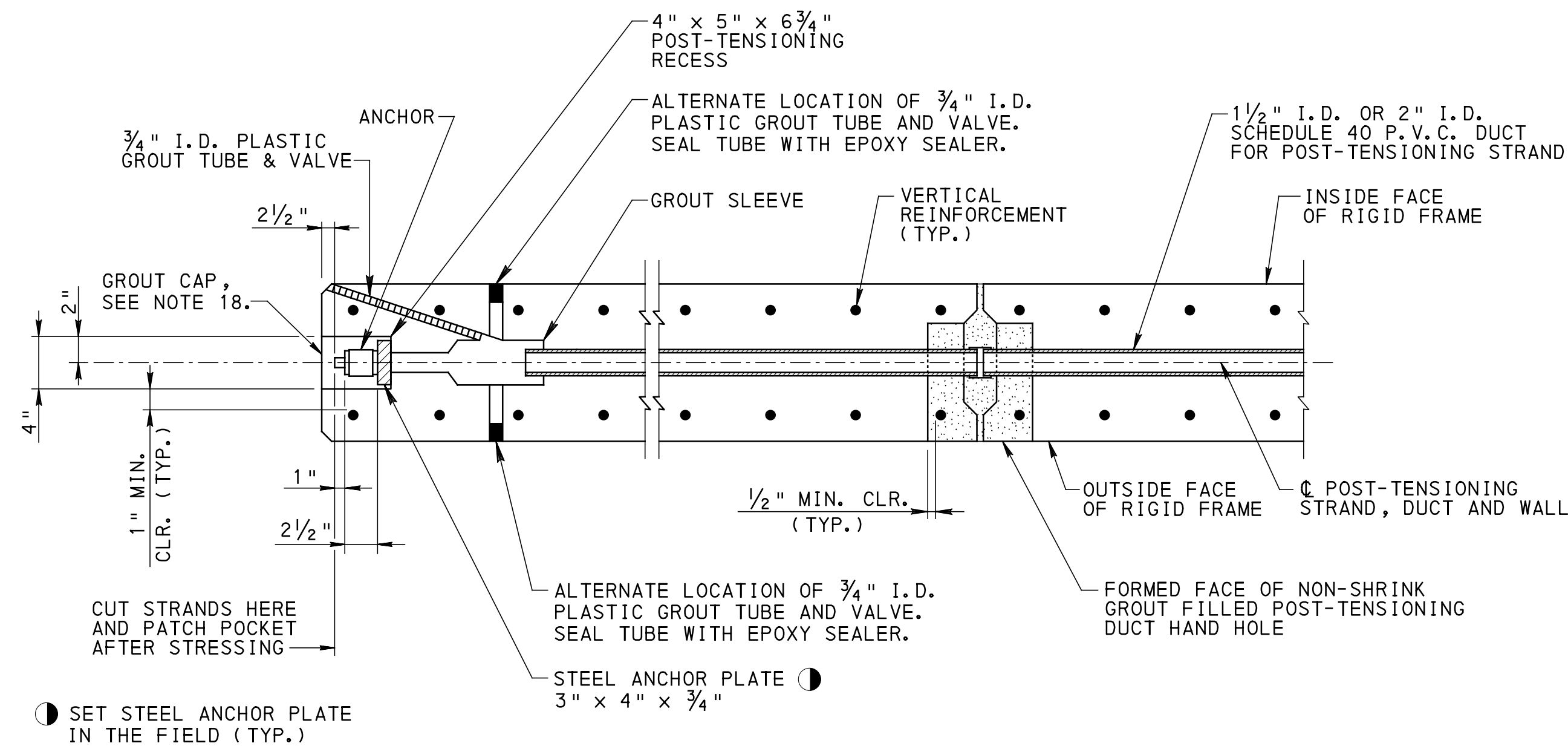
HAUNCH DETAILS

RECOMMENDED _____	RECOMMENDED _____	SHEET 4 OF 6
CHIEF BRIDGE ENGINEER _____	DIRECTOR, BUR. OF PROJECT DELIVERY _____	BD-637M

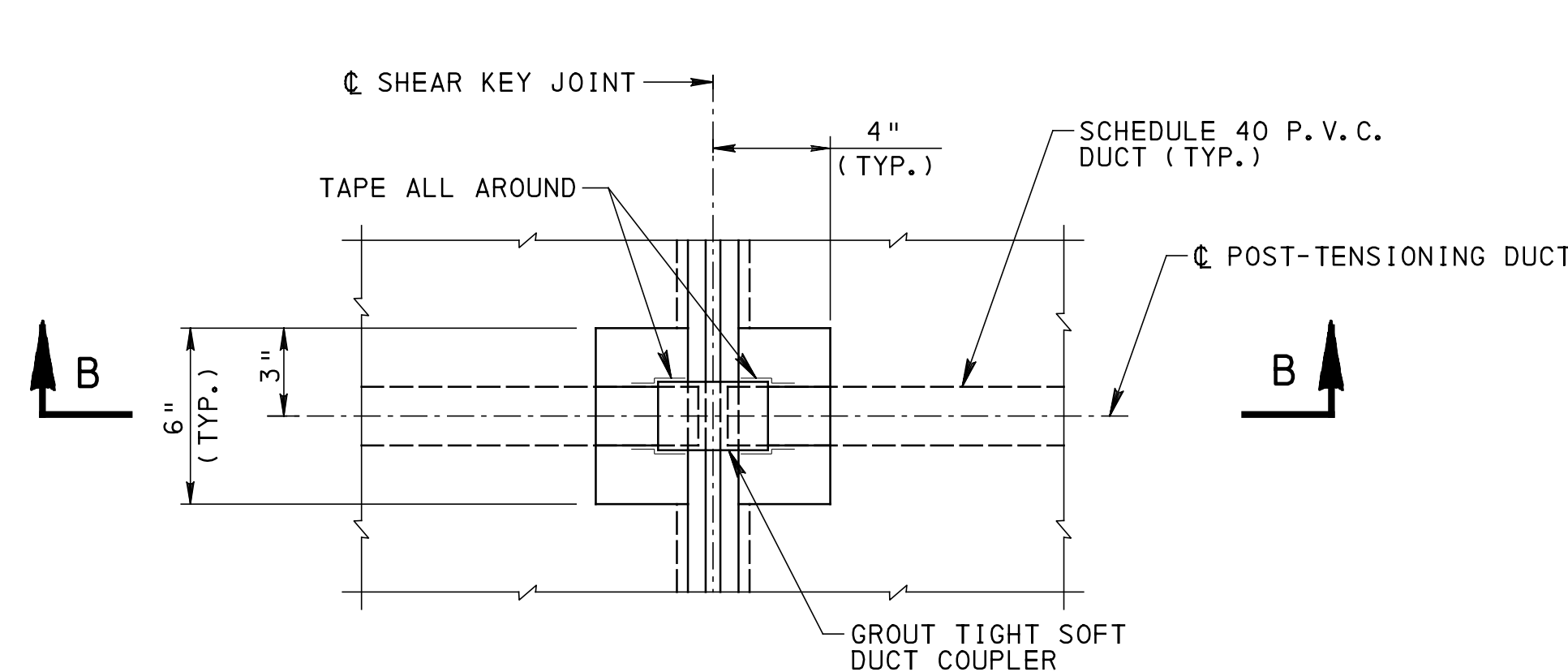
INSTRUCTIONS FOR POST-TENSIONING



SLAB POST-TENSIONING CONNECTION DETAILS

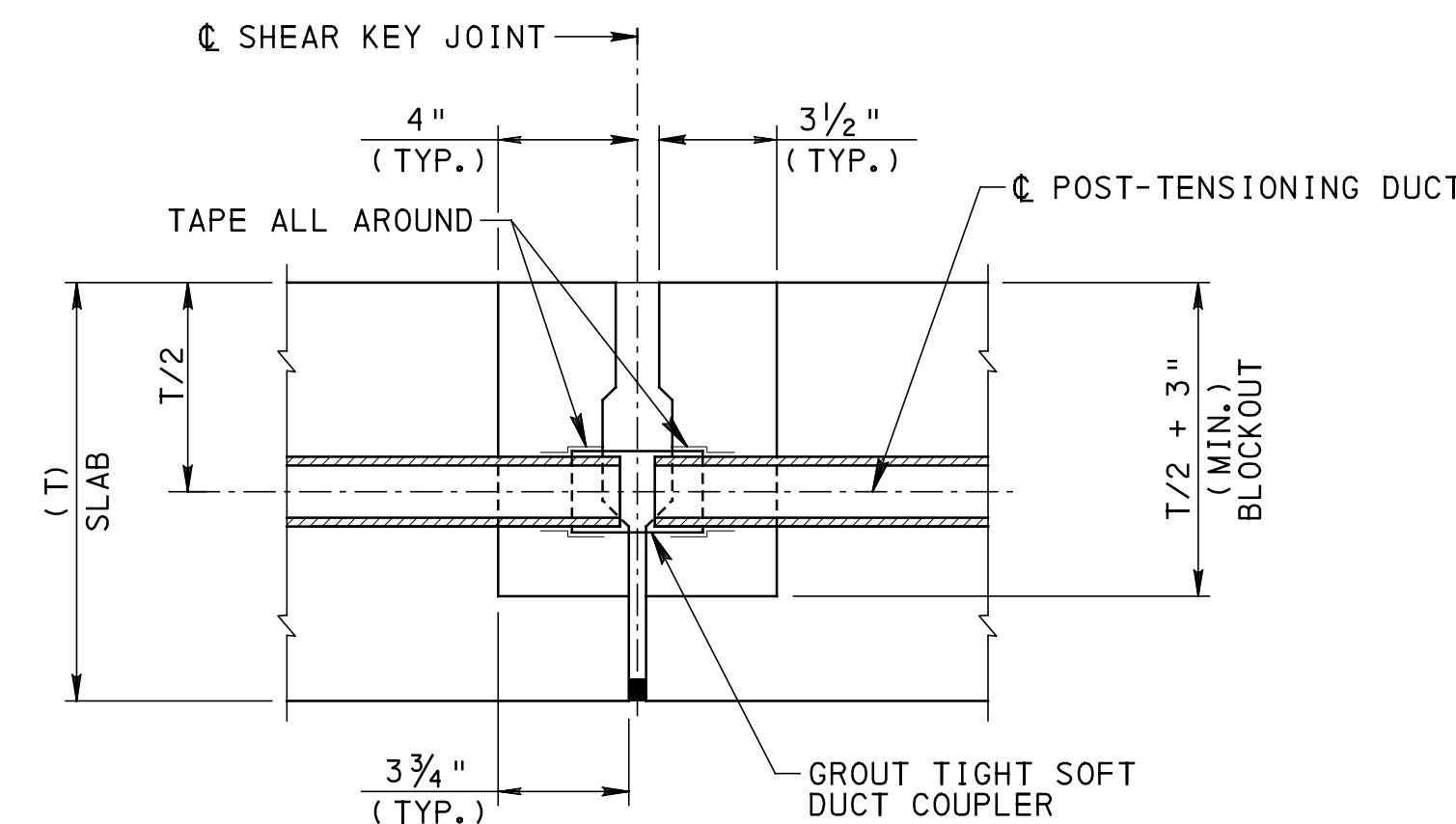


WALL POST-TENSIONING CONNECTION DETAILS



NOTE: HAND HOLE IN SLAB SHOWN, HAND HOLE IN WALL SIMILAR. REINFORCEMENT NOT SHOWN FOR CLARITY.

POST-TENSIONING DUCT HAND HOLE PLAN



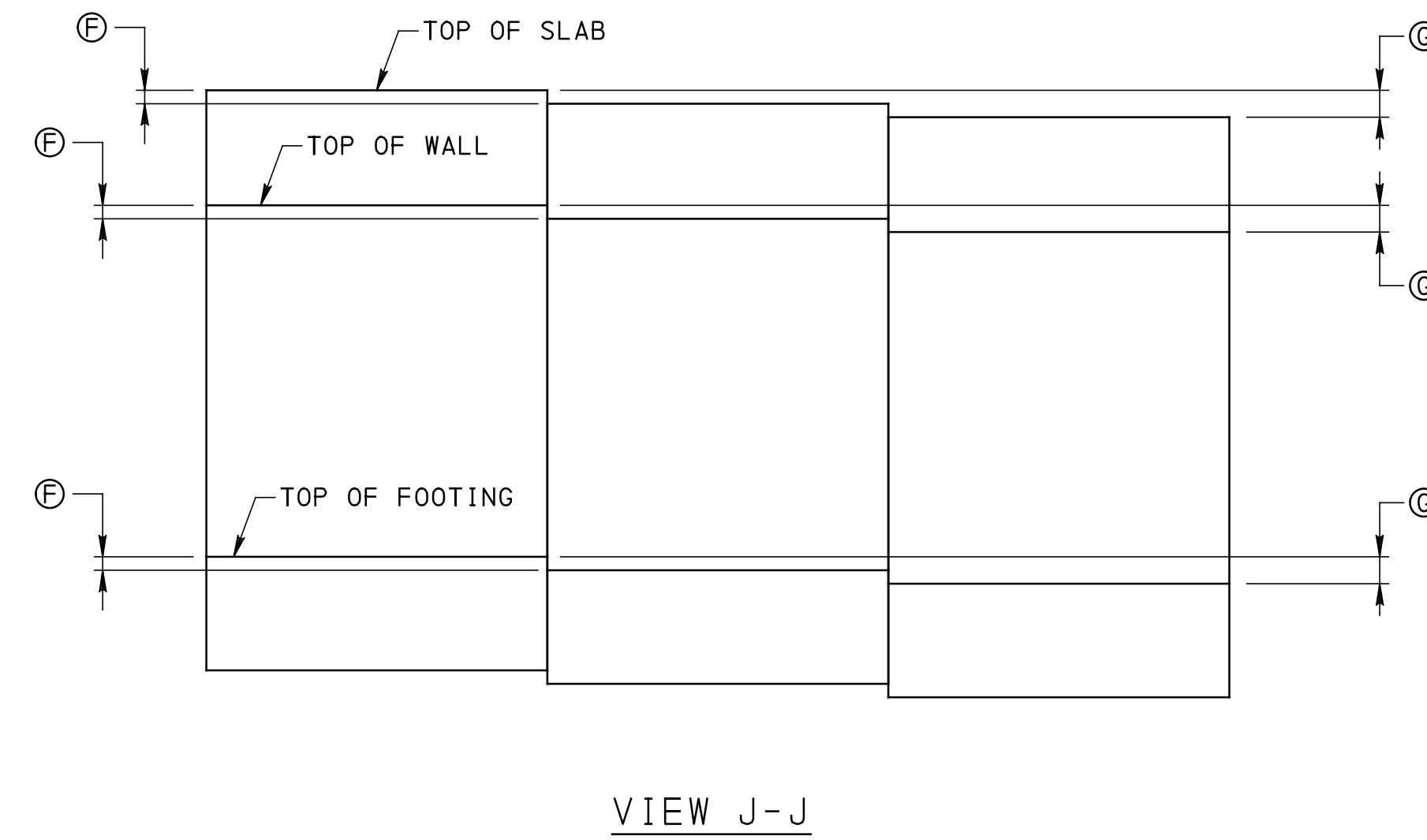
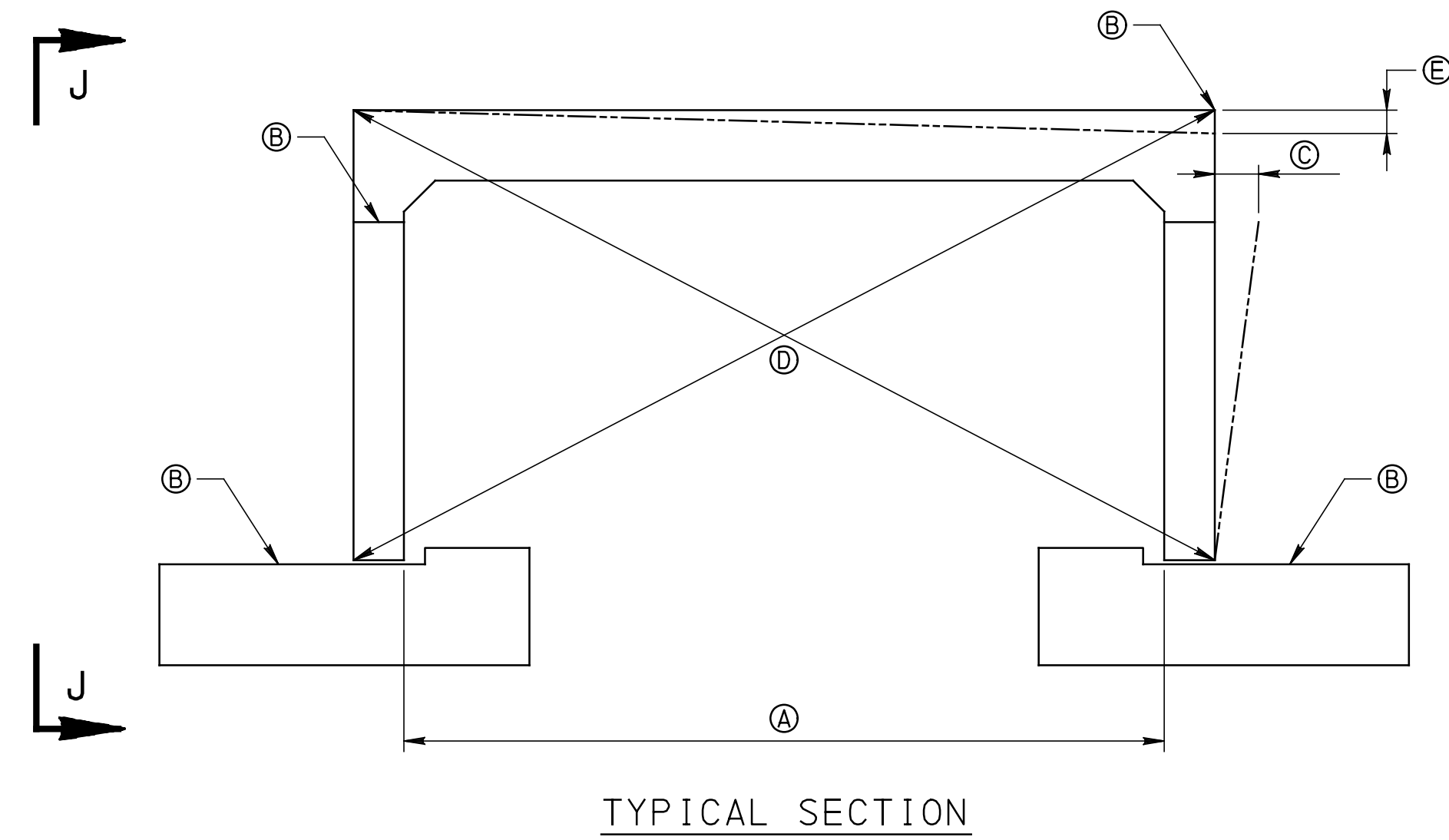
NOTE: REINFORCEMENT NOT SHOWN FOR CLARITY.

SECTION B-B

1. PROVIDE POST-TENSIONING OPERATIONS AND MATERIALS IN ACCORDANCE WITH PUB. 408, SECTION 1108. SHOP DRAWINGS ARE REQUIRED.
2. SHOW ALL POST-TENSIONING CONNECTION DETAILS OF PRECAST RIGID FRAME SEGMENTS ON THE SHOP DRAWINGS.
3. THE CONTRACTOR IS RESPONSIBLE FOR THE FINAL POST-TENSIONING DESIGN, LAYOUT, AND SEQUENCE.
4. SUBMIT POST-TENSIONING COMPUTATIONS WITH A PLAN FOR POST-TENSIONING TO THE DEPARTMENT FOR REVIEW AND ACCEPTANCE WITH THE SHOP DRAWINGS IN ACCORDANCE WITH PUB. 408, SECTION 1108. DESIGN MUST BE SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE COMMONWEALTH OF PENNSYLVANIA.
5. GROUT DUCT HAND HOLES ALONG WITH THEIR ASSOCIATED SHEAR KEYWAYS.
6. POST-TENSION AFTER THE SHEAR KEY JOINTS ARE FILLED WITH NON-SHRINK GROUT AND CURED A MINIMUM OF 24 HOURS.
7. PROVIDE THE INSIDE OF THE SHEAR KEYWAYS AND HAND HOLES WITH AN EXPOSED AGGREGATE FINISH TO IMPROVE THE BOND WITH THE NON-SHRINK GROUT. BEFORE SHIPPING, SAND OR WATER BLAST THE ENTIRE SHEAR KEYWAY AREA PROVIDING A ROUGH TEXTURE, AND COMPLETELY REMOVE ALL OIL, GREASE, DIRT, OR MATERIAL THAT WOULD PREVENT BONDING. JUST BEFORE ERECTION, CLEAN THE BLASTED SURFACE WITH COMPRESSED AIR, CLEAN STIFF-BRISTLE FIBER BRUSHES, OR VACUUM. BLAST CLEANING IS NOT TO BE USED WHERE THERE IS COATED PROJECTING REINFORCEMENT.
8. PROVIDE A BULLETIN 15 APPROVED, PREMIXED, NON-SHRINK GROUT (NON-METALLIC, NON-STAINING) WITH A 24 HOUR MINIMUM COMPRESSIVE STRENGTH $\geq 3,750$ P.S.I. AND A 28 DAY MINIMUM COMPRESSIVE STRENGTH $\geq 10,000$ P.S.I. CURE THE GROUT IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. DO NOT PERMIT CONSTRUCTION ACTIVITY OR OTHER LOADINGS ON THE RIGID FRAME UNTIL POST-TENSIONING OPERATIONS ARE COMPLETE. FOR VEHICULAR LOADING, SECTION 1080.3(d)5 OF PUB. 408 APPLIES.
9. PROVIDE $\frac{1}{2}$ " DIAMETER POLY STRANDS OR APPROVED EQUAL HAVING A YIELD STRENGTH OF 270 K.S.I.
10. INSTALL STRANDS IN PRECAST SECTIONS. STRESS EACH STRAND IN ACCORDANCE WITH THE APPROVED POST-TENSIONING DESIGN. CHECK RAM AREA AND CALIBRATION CURVES OF EQUIPMENT FURNISHED FOR GAGE PRESSURES.
11. TENSION THE STRANDS IN ACCORDANCE WITH SECTION 1108.03(e) OF PUB. 408 EXCEPT ACCOMPANY JACK GAGES WITH A CURRENT, CERTIFIED CALIBRATION CHART, NOT OLDER THAN 6 MONTHS.
12. TENSION STRAND AT CENTERLINE OF SPAN FIRST AND THEN PROGRESS UP FRAME WALLS TOWARD ENDS OF SPAN. ALTERNATE LEFT AND RIGHT OF CENTERLINE.
13. AFTER STRESSING, GROUT ALL STRAND DUCTS. REFER TO PUB. 408 SECTION 1085.3(c)1 FOR TIME LIMITATIONS ASSOCIATED WITH GROUTING.
14. PLACE GROUT MIX INTO TUBING USING PRESSURE GROUT.
15. BASE THE POST-TENSIONING DESIGN UPON THE FOLLOWING CRITERIA:
 - a. THE TOTAL POST-TENSION FORCE IS THE FORCE REQUIRED TO CREATE A PRESSURE OF 10 P.S.I. OVER THE CROSS SECTION OF THE RIGID FRAME.
 - b. MAXIMUM TOTAL POST-TENSION FORCE SHOULD NOT CREATE A PRESSURE GREATER THAN 100 P.S.I. OVER THE CROSS SECTION OF ANY SEGMENT.
 - c. MINIMUM TOTAL POST-TENSION FORCE IS 100 KIPS.
 - d. MAXIMUM LOAD ON A $\frac{1}{2}$ " DIAMETER STRAND IS 29 KIPS. USE 0.6" DIAMETER STRAND WITH HIGHER LOAD WHEN PERMITTED.
 - e. PLACE STRANDS SYMMETRICALLY ABOUT THE CENTERLINE OF THE RIGID FRAME.
 - f. USE A MINIMUM OF 5 STRANDS.
 - g. MINIMUM STRAND SPACING IS 2'-0".
 - h. PLACE CORNER STRANDS AT THE LOCATION OF CENTERLINES BETWEEN WALL AND SLAB OR AT A MAXIMUM DISTANCE OF 2'-0" FROM THIS LOCATION.
 - i. LOCATE STRANDS SO AS TO NOT INTERFERE WITH REINFORCEMENT DETAILS.
16. PROVIDE SEALS AT THE DUCT JOINTS TO MAKE JOINTS GROUT TIGHT.
17. ALL POST-TENSIONING MUST BE WITNESSED BY THE ENGINEER.
18. AFTER POST-TENSIONING IS APPROVED, CUT STRANDS TO PROVIDE A MINIMUM OF $2\frac{1}{2}$ " CLEAR FROM OUTSIDE FACE OF CONCRETE AND COAT RECESS WITH EPOXY BONDING COMPOUND. FILL ALL RECESSES WITH AN APPROVED PRODUCT LISTED IN BULLETIN 15 UNDER MISCELLANEOUS POLYMER MODIFIED AND SPECIAL CEMENTS, MORTARS AND CONCRETE TO FORM A SEAL AND CAP.
19. POST-TENSION AND GROUT ALL DUCTS BEFORE BACKFILLING AND PLACING TRAFFIC OVER THE RIGID FRAME.
20. ALL POST-TENSIONING CHUCKS MUST BE OF THE REUSABLE TYPE. OPERATORS MUST EXERCISE PROPER PRECAUTIONS WHEN RE-ALIGNING WEDGES AFTER RELEASE OF TENDONS AND PRIOR TO RETENSIONING AND RE-SEATING.
21. REMOVE A MINIMAL AMOUNT OF POLYSTRAND TO ACCOMMODATE SPLICES AT STAGED CONSTRUCTION JOINT ENDS, IF APPLICABLE.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

STANDARD
ACCELERATED BRIDGE CONSTRUCTION
DETAILS FOR PRECAST RIGID FRAME
MECHANICAL CONNECTION DETAILS



RIGID FRAME ERECTION TOLERANCE DETAILS
 PRECAST MODULAR RIGID FRAME SHOWN, PRECAST RIGID FRAME SIMILAR.

RIGID FRAME ERECTION TOLERANCES		
A	CLEAR SPAN LENGTH BETWEEN WALL SEGMENTS	± 1/2"
B	MAXIMUM VARIATION FROM CONTRACT DRAWING VALUE IN TOP OF FOOTING, WALL, OR SLAB SEGMENT ELEVATION	± 0.01'
C	MAXIMUM VERTICAL VARIATION OVER HEIGHT OF WALL (MODULAR SECTION)	PLUMB *
D	MAXIMUM SQUARE VARIATION	± 1/2"
E	MAXIMUM LEVEL VARIATION ACROSS SPAN OF SLAB SEGMENTS	± 1/8"
F	MAXIMUM TOP OF WALL, SLAB, OR FOOTING ELEVATION BETWEEN ADJACENT SEGMENTS	± 1/4"
G	MAXIMUM TOP OF WALL, SLAB, OR FOOTING ELEVATION BETWEEN ANY TWO SEGMENTS	± 1/4"

* FOR NON-MODULAR SECTIONS, "C" DIMENSION SHALL BE ± 1/8"

NOTES :

1. FOR EPOXY COATED GROUTED SPLICE COUPLER TOLERANCES, SEE SHEET 2.
2. FOR FABRICATION TOLERANCES, SEE PENNSYLVANIA DEPARTMENT OF TRANSPORTATION PUBLICATION 145, "INSPECTION OF PRESTRESSED/PRECAST CONCRETE PRODUCTS AND REINFORCED CONCRETE PIPE".

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
 BUREAU OF PROJECT DELIVERY

STANDARD
 ACCELERATED BRIDGE CONSTRUCTION
 DETAILS FOR PRECAST RIGID FRAME
 ERECTION TOLERANCES

RECOMMENDED _____	RECOMMENDED _____	SHEET 6 OF 6
CHIEF BRIDGE ENGINEER	DIRECTOR, BUR. OF PROJECT DELIVERY	BD-637M