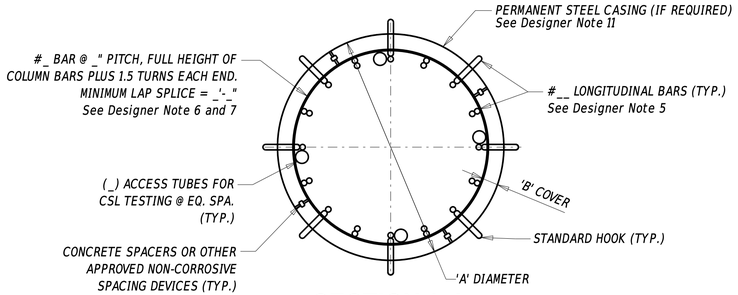
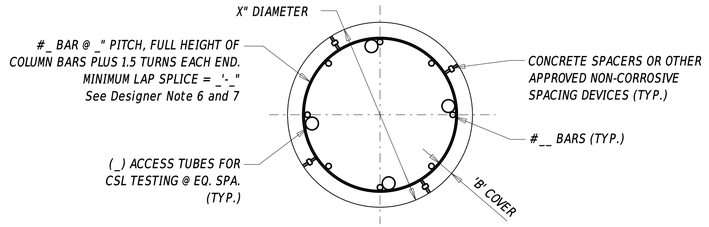
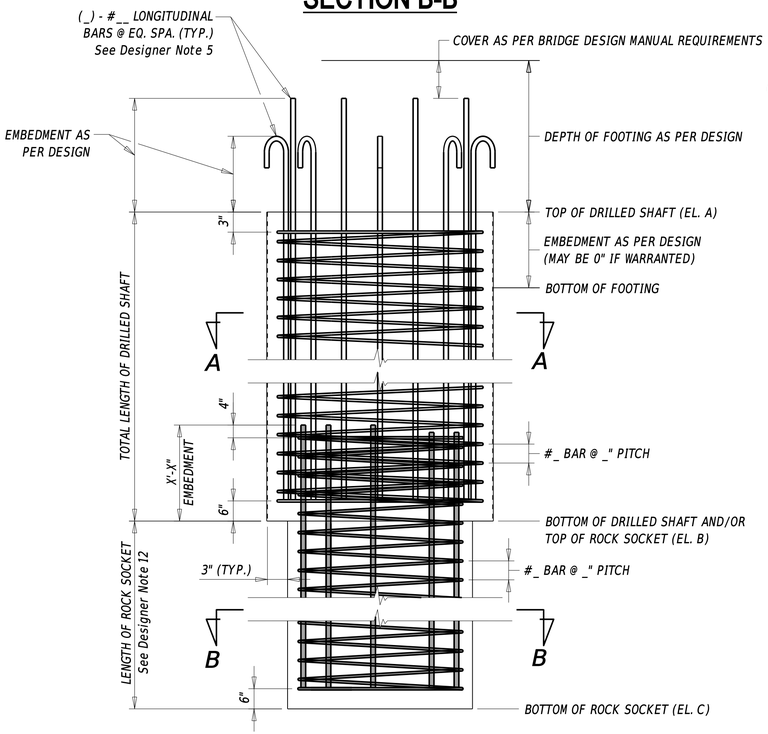


SECTION A-A



SECTION B-B



ELEVATION

NOTE: POTENTIAL BUNDLED BARS, ACCESS TUBES, AND SPACERS NOT SHOWN FOR CLARITY. ROCK SOCKET REINFORCEMENT SHADED FOR CLARITY.

DRILLED SHAFT DETAILS FOR BRIDGE STRUCTURES

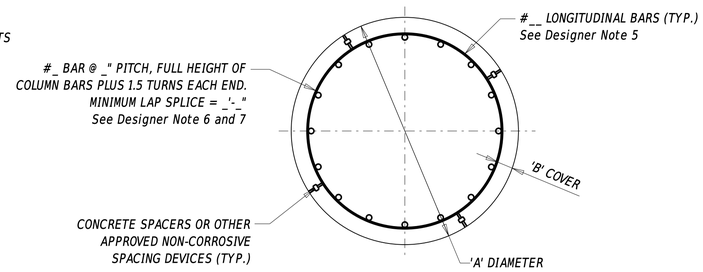
DRILLED SHAFT SIZES

DRILLED SHAFT SIZE 'A'	MINIMUM CONCRETE COVER 'B'
30"	3"
36"	3"
42"	4"
48"	4"
54"	4"
60"	6"
66"	6"
72"	6"

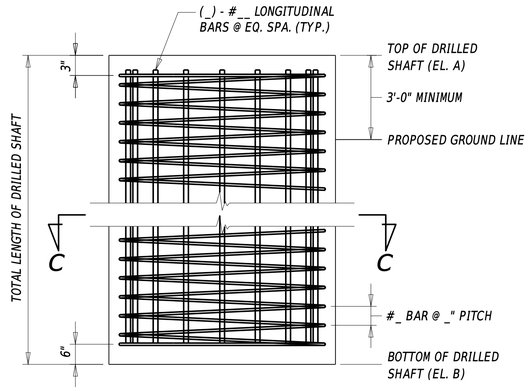
NOTE:
- THE MINIMUM CONCRETE COVER 'B' ARE FOR LONGITUDINAL BARS. THE MINIMUM CONCRETE COVER FOR TRANSVERSE BARS MAY BE LESS THAN REQUIRED FOR LONGITUDINAL BARS BY NO MORE THAN 0.5".
- LONGITUDINAL BARS MAY BE BUNDLED (IN MAXIMUM OF TWO'S).
- IF HOOKED LONGITUDINAL BARS ARE BUNDLED, THE SECOND LONGITUDINAL BAR MUST BE STRAIGHT.
- BUNDLE LONGITUDINAL BARS IN THE RADIAL DIRECTION.
- BUNDLE TRANSVERSE BARS VERTICALLY.
- THE DEPARTMENT PREFERS THAT HOOKED LONGITUDINAL BARS ARE USED AT APPROXIMATELY 50% OF LOCATIONS. HOWEVER IF JUSTIFIED BY DESIGN, HOOKED LONGITUDINAL BARS MAY BE SUBSTITUTED FOR STRAIGHT OR 90° BEND BARS.
- THE NUMBER OF LOCATIONS OF LONGITUDINAL BARS MUST MEET THE REQUIREMENTS OF A5.12.9.5.2.
- Also see Designer Notes 3-6.

DRILLED SHAFT INSTALLATION DATA

SHAFT NO. or SUBSTRUCTURE UNIT	DESIGN DATA			ACTUAL FIELD DATA	
	EL. A	ESTIMATED EL. B	ESTIMATED EL. C	ACTUAL EL. B	ACTUAL EL. C



SECTION C-C



ELEVATION

NOTE: POTENTIAL BUNDLED BARS AND SPACERS NOT SHOWN FOR CLARITY.

DRILLED SHAFT DETAILS FOR SIGN STRUCTURES

PROJECT SPECIFIC DRILLED SHAFT NOTES

1. *THIS PROJECT WILL UTILIZE __" DIA. DRILLED SHAFTS.*
2. *THE LONGITUDINAL BARS WILL BE #__ BARS AND WILL or WILL NOT BE BUNDLED. THE TRANSVERSE BARS WILL BE #_ BARS SPIRALED SPACED AT __" PITCH AND WILL or WILL NOT BE BUNDLED. See Designer Note 3.*
3. *THE MINIMUM CONCRETE COVER IS _".*
4. *THE ESTIMATED LENGTH FOR DRILLED SHAFT IN SOIL IS __'.*
5. *DRILLED SHAFTS WILL REQUIRE _" THICK PERMANENT CASING.*
6. *ROCK SOCKETS WITH LENGTH OF __' WILL BE REQUIRED. REFER TO SECTION 606.3.7 OF STANDARD SPECIFICATIONS.*
7. *INSTALL A TOTAL OF _ TECHNIQUE SHAFT(s) IN ACCORDANCE WITH SECTION 606.3.12. OF STANDARD SPECIFICATIONS.*
8. *LOAD TEST A TOTAL OF _ TECHNIQUE SHAFT(s) or DRILLED SHAFT(s) IN ACCORDANCE WITH SECTION 606.3.13 OF STANDARD SPECIFICATIONS.*
9. *PERFORM EXPLORATORY DRILLING IN ACCORDANCE WITH SECTION 606.3.14. OF STANDARD SPECIFICATIONS.*
10. *DRILLED SHAFTS ARE ESTIMATED TO HAVE A BEARING RESISTANCE OF ___ KIPS USING A RESISTANCE FACTOR OF ____.*

GENERAL DRILLED SHAFT NOTES

1. *FOR MORE INFORMATION REGARDING PLACEMENT, MATERIALS, AND FABRICATON OF DRILLED SHAFTS, REFER TO SECTION 606 - DRILLED SHAFTS OF THE STANDARD SPECIFICATIONS.*
2. *VERIFY ALL ELEVATIONS IN THE FIELD PRIOR TO FABRICATION AND CONSTRUCTION.*
3. *EPOXY COAT ALL REINFORCEMENT IN THE DRILLED SHAFT.*
4. *INSTALL CONCRETE SPACERS OR OTHER APPROVED NON-CORROSIVE SPACING DEVICES IN ACCORDANCE WITH SECTION 606.3.8 OF THE STANDARD SPECIFICATIONS.*
5. *INSTALL ACCESS TUBES FOR CROSSHOLE SONIC LOG (CSL) TESTING IN ACCORDANCE WITH SECTION 606.3.11 OF THE STANDARD SPECIFICATIONS.*

DESIGNER NOTES

1. 'PROJECT SPECIFIC DRILLED SHAFT NOTES' AND 'GENERAL DRILLED SHAFT NOTES' ARE REQUIRED TO BE SHOWN ON THE PLAN SETS. NOTES LISTED THAT ARE NOT REQUIRED FOR THE PROJECT SHOULD BE DELETED.

2. NOTES UNDER 'PROJECT SPECIFIC DRILLED SHAFT NOTES' ARE GENERAL. ADDITIONAL PROJECT SPECIFIC NOTES UNIQUE TO THE PROJECT SHOULD BE ADDED AS THE CONDITIONS DICTATE.

3. UNDER 'PROJECT SPECIFIC DRILLED SHAFT NOTES', NOTE 2, WHILE BOTH LONGITUDINAL AND TRANSVERSE REINFORCEMENT ARE REQUIRED FOR THE FULL DEPTH OF THE DRILLED SHAFT IN ORDER TO MAINTAIN STABILITY OF THE REBAR CAGE DURING TRANSPORTATION AND PLACEMENT, THE DESIGNER MAY SPECIFY AN ACCEPTABLE REDUCTION IN REINFORCEMENT BEYOND THE DEPTH OF AT LEAST 3*DIAMETERS BELOW THE DEPTH OF MOMENT FIXITY. THE POINT OF MOMENT FIXITY MAY BE OBTAINED VIA THE P-Y METHOD.

4. IN THE 'DRILLED SHAFT SIZES' TABLE, THE MINIMUM CONCRETE COVER SPECIFIED ARE FOR UNCASED SHAFTS. IF THE SHAFT IS CASED, THE DESIGNER HAS THE OPTION TO USE REDUCED MINIMUM CONCRETE COVER AS SPECIFIED IN TABLE 205.10.1-1.

5. MINIMUM SIZE OF LONGITUDINAL BARS IS #5 IN ACCORDANCE WITH A5.6.4.2. THE RECOMMENDED AREA OF REINFORCEMENT ABOVE THE MOMENT FIXITY SHOULD BE BETWEEN 1% TO 2% OF THE CROSS-SECTION OF THE DRILLED SHAFT. THE REDUCED AREA AS DESCRIBED IN DESIGNER NOTE #3 MAY BE BELOW 1%, BUT STILL MUST MEET MINIMUM REINFORCEMENT REQUIREMENTS IN A5.6.4.2.

6. MINIMUM SIZE OF TRANSVERSE (SPIRAL) BARS IS #3. THE MAXIMUM PITCH OF THE SPIRAL REINFORCEMENT MUST BE 6" DOWN TO THE DEPTH OF AT LEAST 3*DIAMETERS PLUS 12" BELOW THE DEPTH OF MOMENT FIXITY. BUT IN ALL CASES, THE MINIMUM REINFORCEMENT REQUIREMENTS IN A5.6.4.6 MUST BE MET.

7. ALTERNATIVELY, THE DESIGNER MAY CONSIDER USE OF HOOPS IN LIEU OF SPIRAL REINFORCEMENT FOR SIGN STRUCTURE FOUNDATION.

8. THE ANCHOR BOLT AND ANCHOR PLATE DETAILS ARE OMITTED FROM THIS SHEET AT THE 'DRILLED SHAFT FOR SIGN STRUCTURES' ELEVATION VIEW. THESE DETAILS CAN BE FOUND IN SECTION 365.01 - SIGN STRUCTURES.

9. THE DRILLED SHAFT INSTALLATION DATA' TABLE SHOULD BE USED FOR ALL PROJECTS. THE 'ACTUAL FIELD DATA' INFORMATION SHOULD BE FILLED OUT BY THE FIELD INSPECTOR AND INCLUDED IN THE AS-BUILT DRAWINGS.

10. THE DESIGNER MUST EVALUATE THE STRUCTURAL CAPACITY OF THE DRILLED SHAFT FOR THE CONTROLLING LOADS AS PART OF DRILLED SHAFT SIZING SELECTION.

11. IF PERMANENT CASING IS USED, AND IS GREATER THAN ⅛" THICK, IT MAY BE CONSIDERED AS PART OF THE REINFORCEMENT AND AS BEING STRUCTURALLY EFFECTIVE TO RESIST AXIAL LOADS AND BENDING MOMENTS IN ACCORDANCE WITH A5.12.9.5.2. HOWEVER, A MINIMUM OF 1/16" MUST BE DEDUCTED FROM THE CASING THICKNESS IN CORROSIVE ENVIRONMENTS, BUT THE DESIGNER SHOULD ALSO GIVE FURTHER CONSIDERATION ON INCREASING THE REDUCTION FOR CASINGS THAT ARE DIRECTLY EXPOSED TO SALT WATER, PARTICULARLY IN SPLASH ZONES.

12. THE DESIGNER MUST EVALUATE THE NEED FOR ROCK SOCKETS IN ALL CASES WHERE THE DRILLED SHAFTS COME INTO CONTACT WITH THE ROCK BED.

13. FOR PILE BENTS, THE DESIGNER MUST DETERMINE THE POINT OF FIXITY IN ACCORDANCE WITH A10.8.3.9 AND SECTION 107.5.4. FURTHERMORE, THE DESIGNER MUST CONSIDER THE SLENDERNESS RATIO WHEN SELECTING THE DRILLED SHAFT SIZE.

14. REFER TO SECTION 107.3.4.6 AND PUBLICATION NO. FHWA-NHI-10-016 (FHWA GEC 010) - 'DRILLED SHAFTS: CONSTRUCTION PROCEDURES AND LRFD DESIGN METHODS' FOR MORE INFORMATION ON DRILLED SHAFTS.

15. FOR CERTAIN TYPES OF CONSTRUCTION SUCH AS ACCELERATED BRIDGE CONSTRUCTION WITH PRECAST CONCRETE SUBSTRUCTURES, CONSIDER ADDING A NEW NOTE UNDER 'PROJECT SPECIFIC NOTES' ASSIGNING A VALUE OF LESS THAN 3 INCHES SPECIFIED IN SECTION 605.3.4.B.9 OF STANDARD SPECIFICATIONS FOR MAXIMUM ALLOWABLE VARIATION AT THE TOP OF THE PILE IN ANY DIRECTION FROM THE LOCATION SHOWN IN THE CONTRACT DOCUMENTS.