

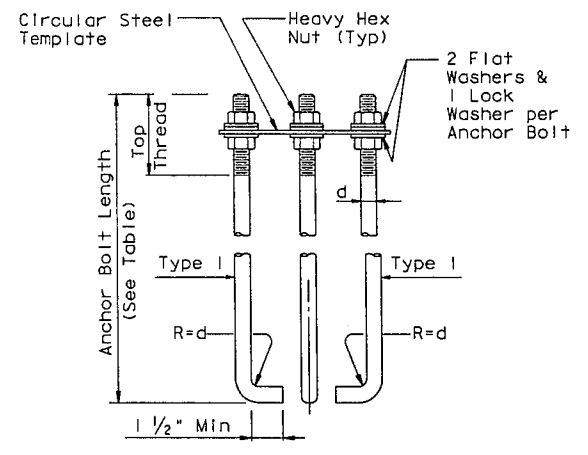
Orient panel for optimum exposure to sunlight (Face to the South). Prior to installation the location should be checked to ensure there is no overhead obstruction that would block the solar panel from receiving full sunlight. Unless specified elsewhere, mount a minimum of 14' above grade.

FDN TYPE	DRILLED SHAFT DIA	REINFORCING STEEL		DRILLED SHAFT LENGTH-ft	ANCHOR BOLT DESIGN				FOUNDATION DESIGN LOAD	
		VERT BARS	SPIRAL & PITCH		ANCHOR BOLT DIA	Fy (ksi)	BOLT CIR DIA	ANCHOR TYPE	MOMENT K-ft	SHEAR Kips
24-A	24"	4- #5	#2 at 12"	6	3/4"	36	12 3/4"	1	10	1

**NOTES:**  
 ① Anchor bolt design develops the foundation capacity given under Foundation Design Loads.  
 ② Foundation Design Loads are the allowable moments and shears at the base of the structure.

ANCHOR BOLT & TEMPLATE SIZES						
BOLT DIA IN.	③ BOLT LENGTH	TOP THREAD	BOTT THREAD	BOLT CIRCLE	R <sub>2</sub>	R <sub>1</sub>
3/4"	1'-6"	3"	—	12 3/4"	7 1/8"	5 5/8"

③ Min dimensions given, longer bolts are acceptable.

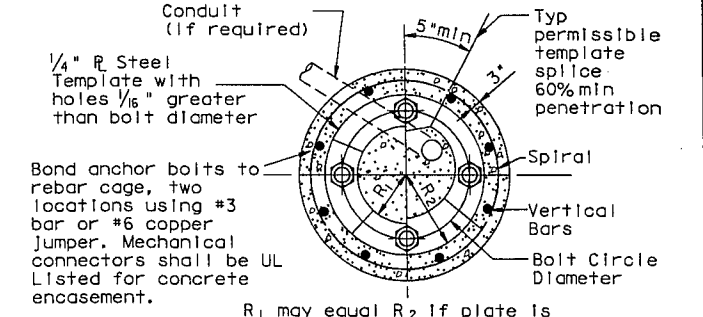


**HOOKED ANCHOR (TYPE I)  
ANCHOR BOLT ASSEMBLY**

**INSTALLATION PROCEDURE:**  
 Threads of anchor bolts shall be coated with pipe joint compound prior to installation of upper nuts when erecting pole. After pole is plumbed and in permanent alignment, the exposed threads of painted bolts shall be cleaned and an additional coating of zinc-rich paint applied to seal the bolt thread-nut joint.

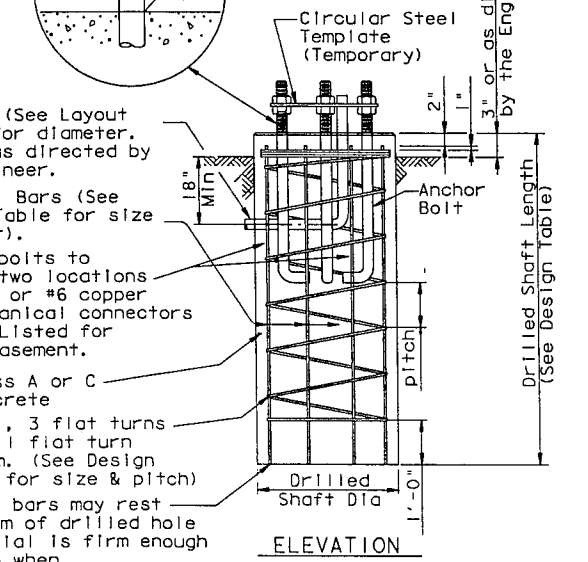
**GENERAL NOTES:**

Design conforms to 1994 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals and Interim revisions thereto. Concrete shall be Class A or C. Threads for anchor bolts and nuts shall be rolled or cut threads of unified national coarse thread series except for A193B7 bolts which shall have 8 pitch thread series. Bolts and nuts shall have Class 2A and 2B fit tolerances. Galvanized nuts shall be tapped after galvanizing. Anchor bolts that are 1" in diameter or less shall conform to ASTM A36. Galvanize all anchor bolts unless otherwise noted. Exposed nuts shall be galvanized or coated with zinc-rich paint. Washers shall be galvanized. Templates and embedded nuts need not be galvanized.



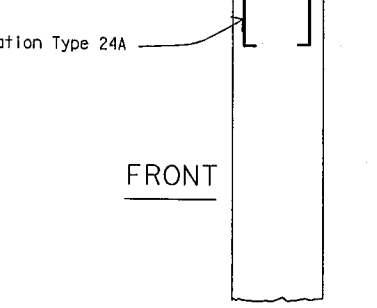
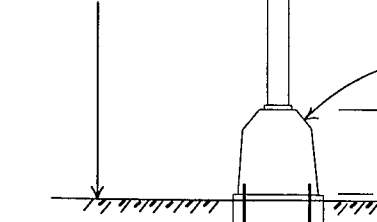
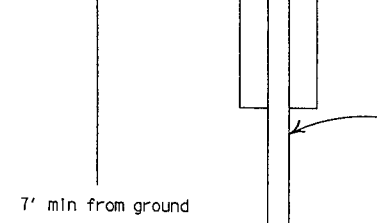
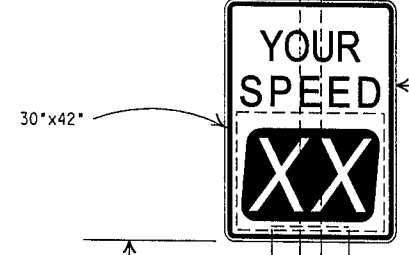
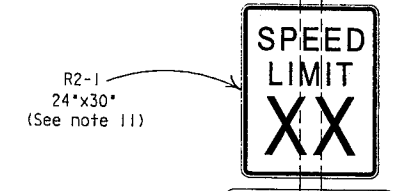
**TOP VIEW**

1/4" R Steel Template with holes 1/16" greater than bolt diameter. Bond anchor bolts to rebar cage, two locations using #3 bar or #6 copper jumper. Mechanical connectors shall be UL Listed for concrete encasement. R<sub>1</sub> may equal R<sub>2</sub> if plate is welded of 3 or more segments.

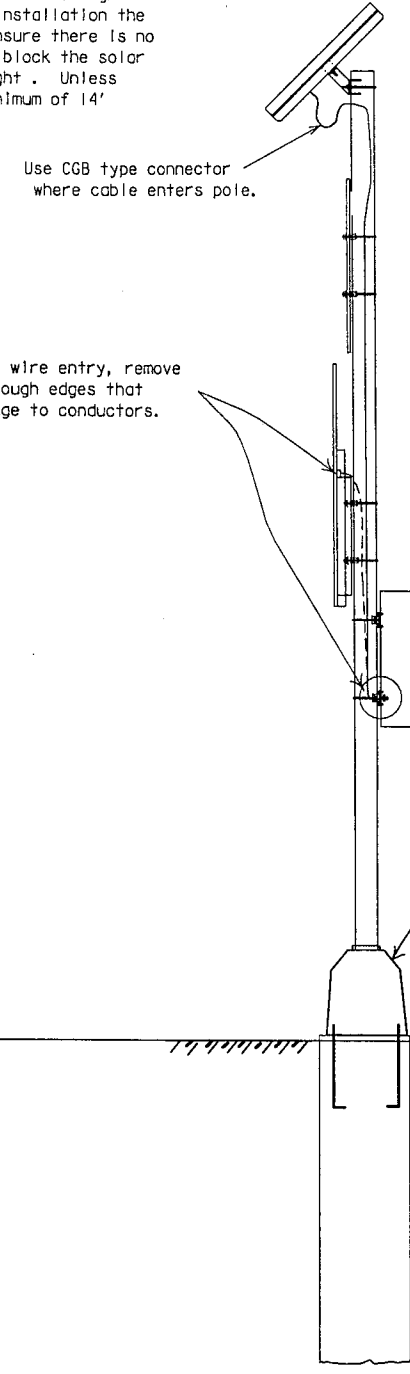


**ELEVATION  
FOUNDATION DETAILS**

Conduit (See Layout Sheets for diameter. Orient as directed by the Engineer). Vertical Bars (See Design Table for size & number). Bond anchor bolts to rebar cage, two locations using #3 bar or #6 copper jumper. Mechanical connectors shall be UL Listed for concrete encasement. Class A or C Concrete. Spiral, 3 flat turns top & 1 flat turn bottom. (See Design Table for size & pitch). Vertical bars may rest on bottom of drilled hole if material is firm enough to do so when concrete is placed.



FRONT



SIDE

- NOTES:**
- Details show a typical sign, other arrangements are possible.
  - Use 24 in. Drilled Shaft Foundation as shown.
  - Use materials specifically designed for attaching cabinets, solar panels, etc., to poles.
  - Per manufacturer's recommendations, engage all threads on the pedestal pole base and pipe unless the pipe is fully seated into base. In high winds, use a pole and base collar assembly to add strength and prevent loosening on connection.
  - Provide non-fused watertight breakaway electrical connectors for breakaway poles. (Bussmann HET, Littelfuse LET, Ferraz-Shawmut FEBN, or approved equal).
  - When required, install batteries in the cabinet. Provide the number of batteries as required. Wire batteries according to manufacturer's recommendations.
  - Provide clearance as shown above the sidewalk or pavement grade at the edge of the road. Mount the sign at least 7 ft. above the sidewalk or pavement grade at the edge of the road.
  - Pole shaft shall be one piece, schedule 40 Aluminum pipe, ASTM B429 or B221 (Alloy 6061-T6 only). Aluminum conduit will not develop the necessary strength and will not be allowed.
  - When required, provide 120/240VAC electrical service in accordance with current City of Houston standards and local power company requirements.
  - Orient the solar panel as shown above.
  - Confirm speed limit requirement with the City of Houston.

NO.	DATE	REVISION	BY:	CHKD:	APPROVAL (SIGNATURE):

**CITY OF HOUSTON**

PUBLIC WORKS & ENGINEERING DEPARTMENT  
 TRAFFIC SIGNAL ENGINEERING  
 AND OPERATIONS SECTION



**RADAR SPEED SIGN ASSEMBLY  
TYPICAL DETAILS**