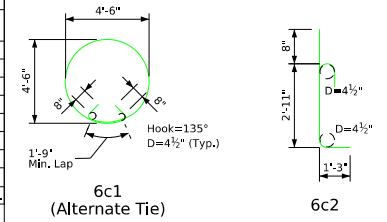
Drilled Shaft Quantities

Truss Length	Shaft Length 'L'	Epoxy Coated Rebar	Structural Concrete
30 ft.	24 ft.	4531 lbs.	17.45 C.Y.
32 ft.	25 ft.	4701 lbs.	18.18 C.Y.
34 ft.	27 ft.	5041 lbs.	19.63 C.Y.
36 ft.	29 ft.	5381 lbs.	21.09 C.Y.
38 ft.	31 ft.	5721 lbs.	22.54 C.Y.
40 ft.	33 ft.	6061 lbs.	24.00 C.Y.

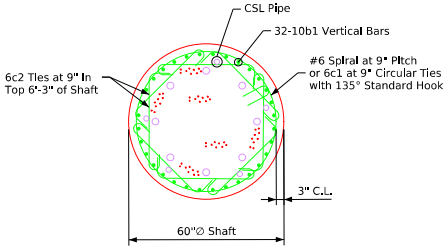
Reinforcing Bar List - Epoxy Coated

Bar	Location	Shape	Tabulated Value For L = 24'-0"			Each Additional 1'-0" of L		
			No.	Length	Weight	No.	Length	Weight
10b1	Shaft Vertical		32	23'-3"	3201	32	1'-0"	138
6c1	Shaft Circular Ties (Alternate)		32	18'-1"	0	1.33	18'-1"	0
6c2	Shaft Ties		72	4'-10"	522	0	4'-10"	0
#6	Shaft Spiral		1	487'-11"	733	1	19'-2"	29
	Spiral Spacer L 1"x 1"x ⅛"		4	23'-3"	75	4	1'-0"	3
					total 4531 lbs.			total 170 lbs.

Bent Bar Details

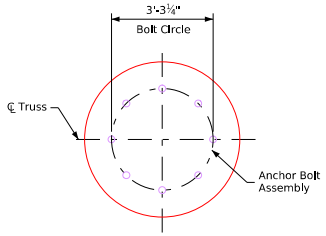


Note: All dimentions are out to out. D = Pin Diameter.

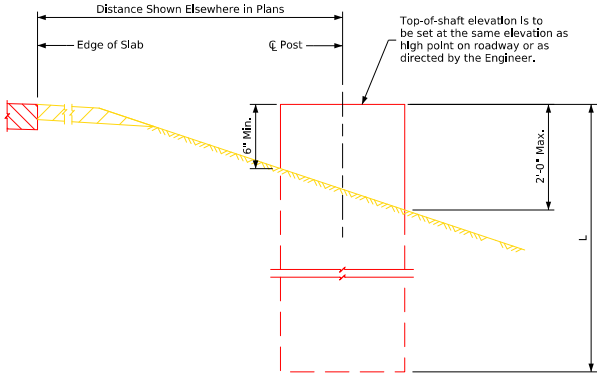


Section N-N

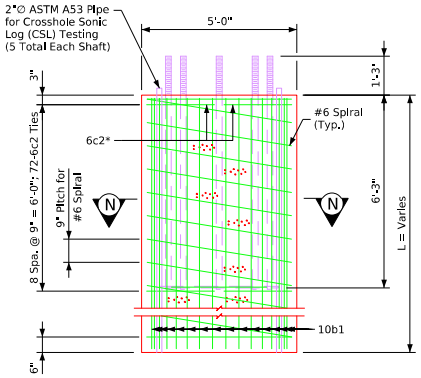
8 - 6c2 ties are to be placed with every layer of #6 spiral/6c1 circular ties in the top 6'-3" of the shaft.



Top View



Elevation - Top of Shaft and Backfill



Elevation

* Not all 6c2 ties are shown.

General Notes:

Structural Concrete, Class C, shall be used for the drilled shaft.

All exposed corners 90° or sharper shall be filleted with a ¾" dressed and beveled strip.

Spiral reinforcing is to be No. 6 bar with a 4'-6" outside diameter and 9" pitch with 4 equally spaced L 1"x 1"x ⅛" spacers punched to hold spirals. Spirals are to have 1½ extra turns at top and bottom of shaft.

The spiral reinforcing may be spliced by lapping 3'-1". The length of the spiral shown does not include the lapped length of the splices. The cost of the laps at splices is to be included in the price bid for other reinforcement.

Circular ties may be substituted for the spiral reinforcement. Payment will be based on the weight of spiral reinforcement. No adjustments in reinforcing steel pay weight will be allowed. See bent bar details for alternate tie configuration.

All reinforcing is to be securely wired in place before concrete is poured.

One anchor bolt assembly including anchor plate, template, nuts (5 per bolt) and washers (2 per bolt) are required per foundation.

All anchor bolt materials and galvanizing shall be in accordance with the requirements of Article 4187.01, C, 3 of the Standard Specifications.

The foundation details shown are based on common cohesive soil conditions (silty or sandy clay) with an average unconfined compressive strength (q_u) of at least 1.25 ton/ft². These properties must be confirmed by soil investigations at the site prior to project letting. When other conditions are indicated, the boring data will be included in the plans and the foundation embedment will be the result of site specific designs.

If the soil conditions encountered are different than those required in these General Notes, the Contractor shall notify the Engineer to determine if the foundation embedment needs to be modified. If the embedment is revised by more than 12" by the Contractor, "As-built" plans shall be prepared and submitted to the Iowa DOT for future reference.

Design embedment lengths listed in the shaft embedment table are based on a soil undrained cohesion of 0.625 ton/ft², a soil effective unit weight of 57.6 lb/ft², and a soil strain factor (E50) of 0.007.

Excavations shall be dewatered before concrete placement at no additional cost to the State.

Concrete shall be placed monolithically without construction joints.

General Notes (Continued):

Drilled shaft shall have crosshole sonic logging (CSL) pipes as shown. CSL pipes shall be placed in a pattern so that each pipe is spaced the maximum distance possible from adjacent pipes.

A normal surface finish followed by a concrete sealer application is required on concrete surfaces above the lowest elevation 6" below finished ground line.

Price bid for contract items shall include all labor and materials necessary to construct cantilever sign truss foundation as detailed hereon. The cost of furnishing and installing rodent guard shall be included in the price bid for "Structural Concrete (Miscellaneous)" and no separate payment will be made. The cost of furnishing anchor bolt assembly shall be included in the price bid for "Anchor Bolt Assembly--Furnish". (Note that this is a special bid item.) The cost of accurately installing and surveying anchor bolt assembly shall be included in the price bid for "Anchor Bolt Assembly--Install and Survey". (Note that this is a special bid item.) See structural alignment/ tolerance notes on Standard Sheet SCST-01-17 for anchor bolt assembly alignment documentation requirements. Contract items for cantilever sign truss foundation construction are:

- Reinforcing Steel, Epoxy Coated - pounds
- Reinforcing Steel - pounds
- Structural Concrete (Miscellaneous) - cubic yards
- Concrete Drilled Shaft, 60 in. diameter - linear feet
- Class 20 Excavation - cubic yards
- Anchor Bolt Assembly--Furnish (special bid item) - pounds
- Anchor Bolt Assembly--Install and Survey (special bid item) - each

11-2025
Latest Revision Date

Approved by Bridge Engineer

IOWA DOT

Standard Design

Steel Cantilever Sign Truss

July, 2017

Foundation Details - Drilled Shaft

SCST-09-17

- Revised 03-2018: Updated Bridge Engineer signature.
- Revised 03-2019: Added notes including bid item note to improve clarity. New bid item list includes two special bid items ("Anchor Bolt Assembly--Furnish" and "Anchor Bolt Assembly--Install and Survey") to clarify Contractor responsibility to accurately install anchor bolt assembly. Reordered notes to improve readability. Modified alternate 6c1 shaft circular ties to include 135° hooks.
- Revised 11-2025: This sheet reissued, sheet format update. Changed concrete drilled shaft diameter from 30 in. to 60 in. in Contract Item list to match dimension shown in Section N-N. Modified soil condition note to clarify that a soil confirmation boring is required prior to contract letting.
- SteelCantileversignTruss.dgn - SCST-09-17 - this sheet issued 07-2017.