

Cost Estimate - Antenna Pedestal

STATINTL

$$\text{concrete} = [15' \times 3.5' \times 2.25'] \times 2 = 236.25 \text{ ft}^3$$

reinforcing steel:

$$\begin{aligned} L_1 &= 4(11 \times (3.5 - .5)) = 132 \text{ ft.} \\ L_2 &= 4(3 \times (15 - .5)) = 174 \text{ ft.} \\ &306 \text{ ft.} \end{aligned}$$

$$\text{wght/ft} = \pi R^2 L = \pi \left(\frac{7/8}{2}\right)^2 \times 12 \times .28356 = 2.046 \#$$

$$\text{wght} = 306 \times 2.046 = 626.1 \#$$

ASB 10" x 4 5/8" x 25.4#/ft

$$\text{wght} = 13 \times 9 \times 25.4 = 2971.8 \#$$

ASB 5" x 3" x 14.75#/ft

$$\text{wght} = 14.75 [(13 \times 3) + 4.5(5)] = 907.1 \#$$

angle 6" x 3 1/2" x 9.8#/ft

$$\text{wght} = 9.8 \times 2 [20.5 + 19] = 774.2 \#$$

column base plates = 12 [1.5 x 16 x 16 x .28356] = 217.8#

columns 10" x 10" x 60.95#/ft

$$\begin{aligned} L_1 &= 11'-3" \times 3 = \\ L_2 &= 10 \times 3 = \end{aligned} \left. \vphantom{\begin{aligned} L_1 \\ L_2 \end{aligned}} \right\} 63.75 \text{ ft}$$

$$\text{wght} = 60.95 \times 63.75 = 3885.6 \#$$

3/8" steel plate

$$L = 13' + 5" + 5" = 13.83'$$

$$A = L^2 = [13.83 \times 12]^2 = 27556 \text{ in}^2$$

$$\text{wght} = [27556 \times \frac{3}{8} \times .28356] = 2930.2 \#$$

grating

$$\text{Area} = [3 \times 20.5 \times 2] + [3 \times 13] + [4.5 \times 13] = 220.5 \text{ ft}^2$$

$$\text{Borden grating size 8 style B} = 11.6 \#/\text{ft}^2$$

$$\text{wght} = 11.6 \times 220.5 = 2557.8 \#$$

Reinforcement bolts

$$\text{wght} = \pi \left(\frac{1.5}{2}\right)^2 12 \times (48) (.28356) = 288.6 \#$$

$$\text{excavation } 2.25 \times 3.5 \times 15 \times 2 = 236.25 \text{ ft}^3 \text{ for footings}$$

excavation for crushed stone

$$1 \times 3.5 \times 15 \times 2 = 105 \text{ ft}^3$$

$$\text{crushed stone} = 105 \text{ ft}^3$$

1) excavation

by hand with pick & shovel in heavy soil
 labor only = \$27/c.Y. = $\frac{236.25 + 105}{27} \times 27 =$ \$341.25

tamping with vibrating plate $\frac{236.25 + 105}{27} \times 1.50 =$
 $12.64 \times 1.50 =$ \$18.96

trim sides and bottom
 for concrete pour in handpan \$76/ft²

$$A = [(15 \times 3.5) + (2.25 \times 15 \times 2) + (3.5 \times 2.25 \times 2)] \times 2$$

A = 271.5

cost = $271.5 \times \$76 =$ \$206.34

hauling G.C.Y. dump truck 4mi round trip =

$2.85/c.Y \times 12.64 =$ \$36.02

total =

add 300% mobilization, contingencies, size of job

\$602.57
 \$1807.71

general contractors O & P = 30%

723.08
 \$3133.36

excavation = \$3150.00

Reinforced concrete footings

formwork spread footings 1 use

$$= 15' \times 3.5' \times 2 \times \$2.50 = \$262.50$$

reinforcing in place heavy base = \$550/ton

$$\text{cost} = \frac{\$550}{2000\#} \times 626.1\# = \$172.18$$

$$\text{concrete } \frac{\$135}{\text{C.Y.}} \times \frac{236.25}{27} = \$1181.25$$

anchor bolts (use 1 1/2" ϕ x 18" long @ \$18 ea)

$$\text{cost} = 48 \text{ bolts} \times \$18 = \$864$$

add 50% for mobilization, size of job + contingencies

$$\text{total} = \$2479.93$$

$$\$1239.97$$

30% general contractors O+P =

$$1115.97$$

$$\underline{\$4835.87}$$

concrete footings = \$4850.00

Structural Steel

Welded rigid frame 1 story minimum #880/ton

wght = 10" x 4 ⁵ / ₈ " beam =	2971.8
5" x 3" beam =	907.1
6" x 3 ¹ / ₂ " L	774.2
brace plates	217.8
columns	3885.6
3/8" plate	2930.2
grating	2557.8
	<u>14244.5</u>

add 15% for welds + connections =	2136.68
	<u>16381.2#</u>

cost of steel = $\frac{16381.2}{2000} \times 880 =$	# 7207.73
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add 60% for mobilization, contingencies, size of job	# 4324.64
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add 30% for O+P for general contractor	# <u>3459.71</u>
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	# 14992.08
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structural steel = #15000

Cost Summary (excluding ladder & railing)

- 1) concrete footings #4850 ✓
- 2) excavation #3150 ✓
- 3) structural steel #15000
- #23,000.⁰⁰

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Additions to original estimate

excavation for stair foundations:

$$\frac{1.5 \times 2.5 \times 4.5 \times 2}{27} = 1.25 \text{ C.Y. negligible}$$

concrete negligible

steel 2 channels 20' x 15#/ft x 2 = 600#

columns 2 WF shape. 16#/ft x 2 x 12 = 384#

misc 15% 148

1132#

$$\text{Cost} = \frac{1132}{2000} \times 880 = \$500$$

60% contingency = \$300

30% O&P = \$240

\$1040

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Painting

structural steel 1 field cost = $\$.19 / SF$

we are requiring 1 shop coat } $4 \times .19 = .76 SF$
 3 field coats }

$$A_1 = 19 \times 18.83 = 348.3 \text{ ft}^2$$

$$A_2 = 348.3$$

$$A_3 = 2' \times (19 \times 2 + 18.83 \times 2) = 151.32 \times 8 = 1210.6$$

$$A_4 = .83 \times 12 \times 24 = \underline{240}$$

$$2147.2$$

$$\text{cost} = 2147.2 \times .76 =$$

$$\begin{array}{r} \$ \\ 1632 \end{array}$$

100 ~~500~~ % for contingencies etc

$$1632$$

$$6118$$

30% O&P =

$$979$$

$$\underline{2541}$$

$$\begin{array}{r} \$ \\ 2541 \end{array}$$

$$4243$$

Stair removal

5 men working 1 day @ $\$30 / hr$

$$5 \times 8 \times 30 =$$

$$\begin{array}{r} \$ \\ 1200 \end{array}$$

100 ~~500~~ % contingency =

$$\begin{array}{r} \$ \\ 1200 \end{array}$$

30% O&P =

$$\begin{array}{r} \$ \\ 720 \end{array}$$

$$\begin{array}{r} \$ \\ 3120 \end{array}$$

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Summary

concrete footings	#4850
excavation	#3150
structural steel	#16000
painting	#4250
stain removal & misc site work	<u>#3150</u>
	#31400
add 10% to the total for security requirements, access limitations, remote location etc	#3140
	<u><u>#34540</u></u>

Total Cost = \$34,500

Say \$35k