

To: Richard Fleming
 From: Michael Holstine
 Date: March 24, 1993
 Subject: GBT Site Control Building

An estimate has been completed for the construction of the above-referenced building and is attached. It must be noted that this estimate is in no way a guarantee that this building can be constructed for the prices given due to the fact that the actual equipment content of the structure is unknown. Variations in construction seasons and pricing must also be considered.

The building shown and estimated is 66' x 48' in size containing 3168 square feet. This figure was compiled utilizing the areas contained in the AOC for the GBT control room and GBT equipment room. The area of these rooms totalled 2509 square feet with no inclusion of office or utility space. Modest space for these rooms brought the GBT Site Building to the above noted 3168 sq. ft..

The estimate is broken into three(3) sections; the first section deals with a Bill of Materials for structural items, the second deals with Utilities to serve the structure, and the third deals with a motor-generator or UPS system for the installed equipment. It is proposed that the building be constructed of split-face concrete block sealed on the exterior and painted on the interior. The split-face block is \$.25 higher than standard block but is prefinished with a natural cut-stone look on the exterior that will require no additional finish. The interior partition walls will be constructed of 2" x 4" lumber covered with painted drywall. The building will contain 1 - 3' wide entrance door and 1 - 6' wide double door for equipment placement and removal, 5 - 4' high x 2' wide windows, 1 - 5' wide kitchenette, 2 - 8' x 10' offices, 1 utilities room, and 1 bathroom with 1 urinal, 1 toilet stall, and a vanity washbasin. The roof will be constructed of prefabricated wood trusses on 4' centers with a 50' clear span to allow for an open work area inside the building and the roof will be covered with color-coated tin sheeting. Tile will be used to cover the concrete slab floor in the work area while carpeting will be utilized in the offices.

The Utilities needed to serve the structure consist of a well or water supply source, a septic system, electric service with a transformer, and heating, ventilation and air conditioning(HVAC). These items are necessary regardless of the type or size of building that is ultimately constructed at the site.

The power source for the equipment contained within the building will require conditioning through the use of either a motor-generator or a UPS system. Therefore, this is the item included in the third section of the estimate.

Lastly, labor for the construction project was estimated utilizing a standard construction crew, with partial equipment time for site work, for a two(2) month construction period with pay estimated under the Davis-Bacon Wage provisions.

The subtotals for the above-mentioned sections are as follows:

| | |
|---------------------|------------------|
| 1) Materials ----- | \$23,666.50 |
| 2) Utilities ----- | 51,500.00 |
| 3) M-G or UPS ----- | 25,000.00 |
| 4) Labor ----- | <u>71,450.00</u> |

Total construction cost **\$171,616.50**

The total price per square foot of construction = \$54.17

It should be noted that this price per square foot does not have a linear relationship to the total size of the building. Although the construction materials may decrease if the building size decreases many of these materials are estimated on a cubic foot basis and not on a square foot basis. Additionally, most of the items included in the Utilities section of the estimate will not change in any way with regards to the size of the related structure. For these reasons, it is safe to assume a cost of construction for a building of smaller size utilizing the existing estimate figures with a suitable factor (in this case, approximately .75).

Should a building of approximately half the size of that proposed be desired, an estimate of construction cost would be about 3/4 of the full size structure at \$128,400.00. Other building size costs could be estimated in the same manner.

Should you have any questions concerning the above, please let me know.

GBT CONTROL BUILDING @ GBT SITE

AOC GBT control room - 55' x 25' = 1375 sq. ft.
 AOC GBT equipment room - 57' x 21' = 1197 - 63 = 1134 sq. ft.
 Total = 2509 sq. ft. without office or utility space

Proposed building size: 66 x 48 equals 3168 sq.ft.

Construction:

- Raft (slab with footers)
- Split-face concrete block walls - 12 inch - natural finish
- 2"x4" interior stud walls w/painted drywall finish
- 1 - 6' wide steel double door
- 1 - 3' wide steel entrance door
- 5 - 4' high x 2' wide windows
- 1 - water closet
- 1 - vanity wash basin
- 1 - urinal
- 1 - 30 gal. hot water tank
- 1 - 5' wide kitchenette
- 4 - 10' long x 12" shelves
- 3/12 pitch roof w/yellow pine trusses - 50' clear span

Bill Of Materials

| | | | | | | | | | | | | | | | |
|-----------------|-----------------|---|----|----|------|--------|--------------|-----------|--------------------|----------|-----------------|----|--------|----|-------------------|
| Footers: | 2 x 2'w x 2' d: | 8 | x | 67 | plus | 8 | x | 47 | equals | 912 | c.f. | 55 | equals | 34 | cubic yards |
| Slab: | .5' | x | 64 | x | 46 | equals | 1472 | cu.ft | or | 89 | cubic yards | 55 | equals | | |
| | | | | | | | Total | 89 | cubic yards | x | \$62.50; | | | | \$5,562.50 |

Reinforcing:

| | | | | | | | | | | |
|----------|----------------|------|-----------------|-----|----------------|---------------|---------|---------|--------|----------|
| Footers- | #4 rebar | 14 | plus | 10 | equals | 24 -20' rods@ | \$4.00 | each | equals | \$96.00 |
| Slab- | 6 gauge wire - | 3168 | s.f. divided by | 750 | sf/roll equals | 4 | rolls a | \$86.30 | equals | \$345.20 |

Stone: .5' x 68 x 50 equals 1700 c.ft. x 100 lbs/c.ft equals 170000 lbs/2000 equals \$1,275.00
 Foundation Drain: 2 x 70 plus 52 x 2 plus 100' equals 344 ft. x \$2.50 equals \$860.00

Block Structure: 2500 blocks x \$1.35 /block equals \$3,375.00
 57 bags of mortar x \$4.90 /bag equals \$279.30
 6 tons of sand x \$18.00 /ton equals \$108.00

Roof: Tin - 3' x 16'- 23 x \$25.00 equals \$575.00
 2" x 4" purlins- 6(12) x 16 equals 96 x \$5.00 equals \$480.00
 50' trusses - 4' o.c. - 17 x \$160.00 equals \$2,720.00

Partition Walls: 2" x 4" x 8'- 60 x \$3.25 equals \$195.00 (firing strips included)
 Drywall - 56 x \$3.00 equals \$168.00

Doors & Windows: Windows - 5 x \$300 equals \$1,500.00
 Doors - Ext.- 1 x \$200 equals \$200.00 (3' steel)
 1 x \$350 equals \$350.00 (6' steel double)
 Doors - Int.- 5 x \$60 equals \$300.00 (prehung)

Furnishings: Water closet -- 1 \$110.00
 Urinal -- 1 \$125.00
 Stall -- 1 \$120.00
 Vanity sink -- 1 \$160.00
 Hot water tank -- 1 \$200.00
 Kitchenette -- 1 \$600.00

Floor finish: Tile -- 2650 sf x \$0.65 equals \$1,722.50
 Adhesive -- 10 gal x \$75 equals \$750.00
 Carpet -- 310 sq.ft./ 35 x \$18.00 equals 35 sq.yds. \$630.00

Paint:

Enamel/gloss - 20 x \$18.00 equals \$360.00
Gals.-
Ext. sealant - 20 x \$25.00 equals \$500.00

Sub-total - material \$23,666.50

Utilities:

Well -- \$3,000.00
Septic -- \$3,500.00
Electric -- \$5,000.00
HVAC -- \$30,000.00
Transformer -- \$10,000.00

Sub-total - utilities \$51,500.00

Motor-generator or UPS system:

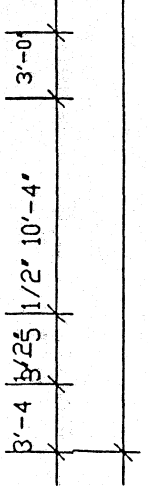
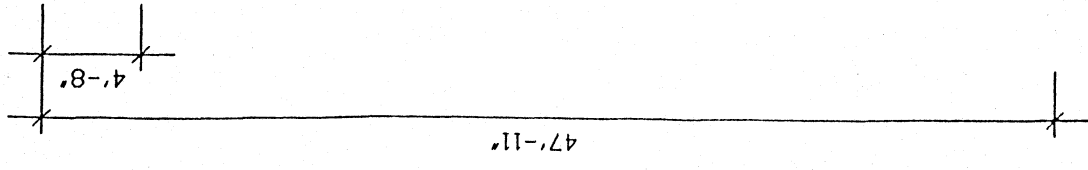
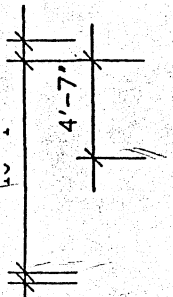
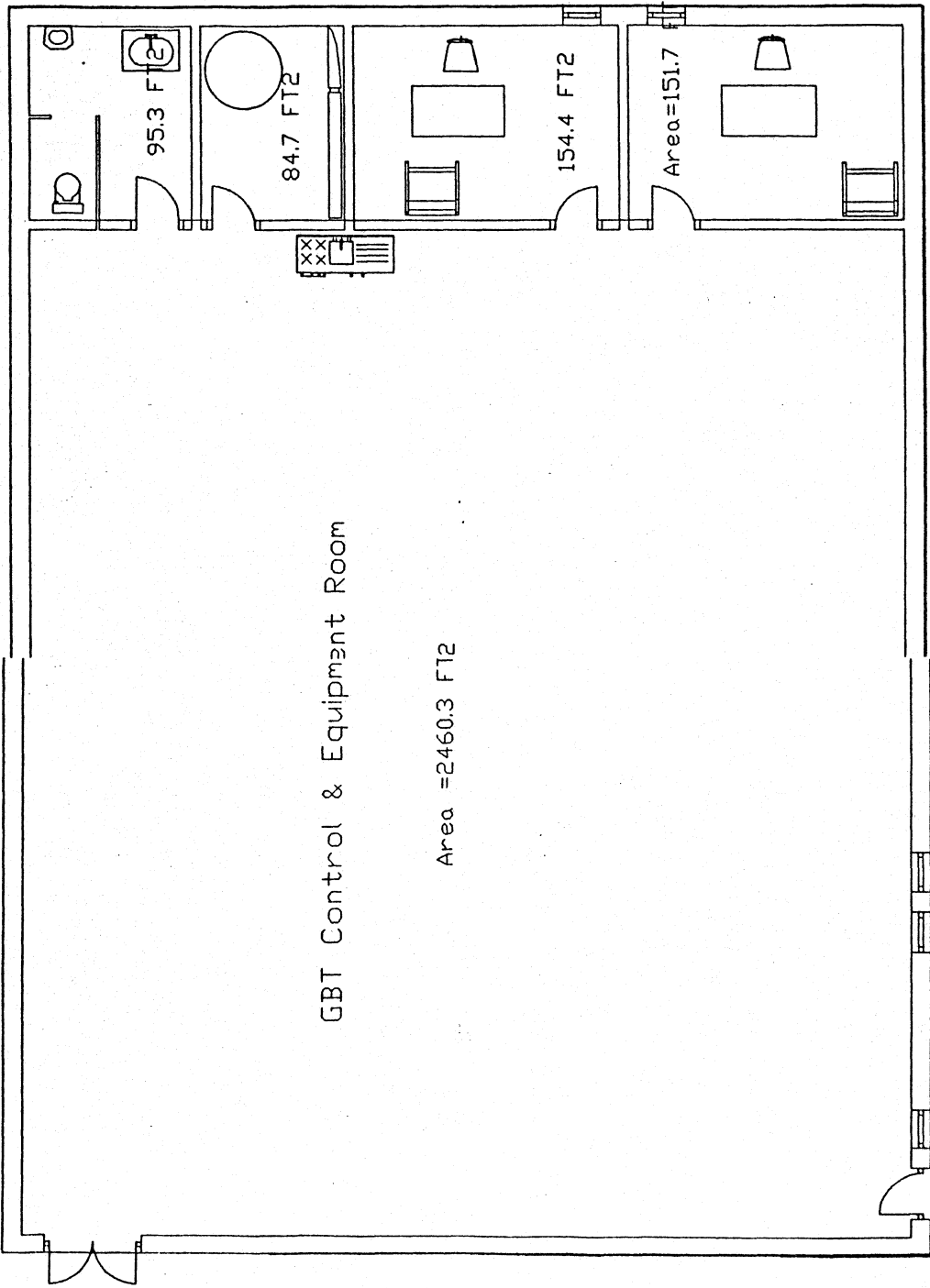
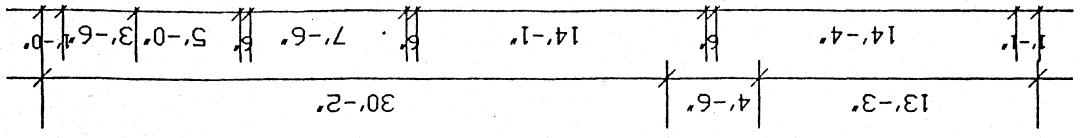
\$25,000.00

Sub-total - mat., util., M-G set \$100,166.50

Labor \$71,450.00 (8 man crew, 2 months const. time, 2 weeks equip. usage, \$20/hr. avg.)

Total construction cost \$171,616.50

Cost / sq. ft. : \$171,616.50 / 3168 sq. ft. equals \$54.17 / sq. ft.



66'-0"

GBT Control & Equipment Room

Area = 2460.3 FT2

95.3 FT2

84.7 FT2

154.4 FT2

Area=151.7 FT2