VALUE ENGINEERING PROPOSAL

PROPOSAL NO: S-7 PAGE NO: 1 OF 5

DESCRIPTION: Use a Precast Post Tensioned Concrete Star Pile

ORIGINAL DESIGN:

Specified 14" precast concrete piles. (750 per gate). (See Drawing No 1).

PROPOSED DESIGN:

Design a concrete pile, pentagonal shape. (See Drawing No 2). The 5 sided pile is 28" in diameter and is tapered. This pile has been used successfully in Europe in a marine environment. The rational behind the design is to increase the friction co-efficient and reduce the overall number of piles. (See Drawing No 3)

ADVANTAGES:

1. Overall reduction in project costs.
2. Fewer piles to drive.

DISADVANTAGES:

1. A different design.
2. Increased unit costs

JUSTIFICATION:

The overall justification for this proposal is the reduction in project costs and the reduction in construction requirements. The star pile is larger in diameter and has increased load capacity.

NOTE: This proposal describes a design change and has not been subject to a rigorous structural analysis. The dimensions are approximate and must be verified against geotechnical information, little of which was considered when this proposal was developed. Additionally, no estimate for concrete pile was available at the time of this proposal.

VALUE ENGINEERING PROPOSAL

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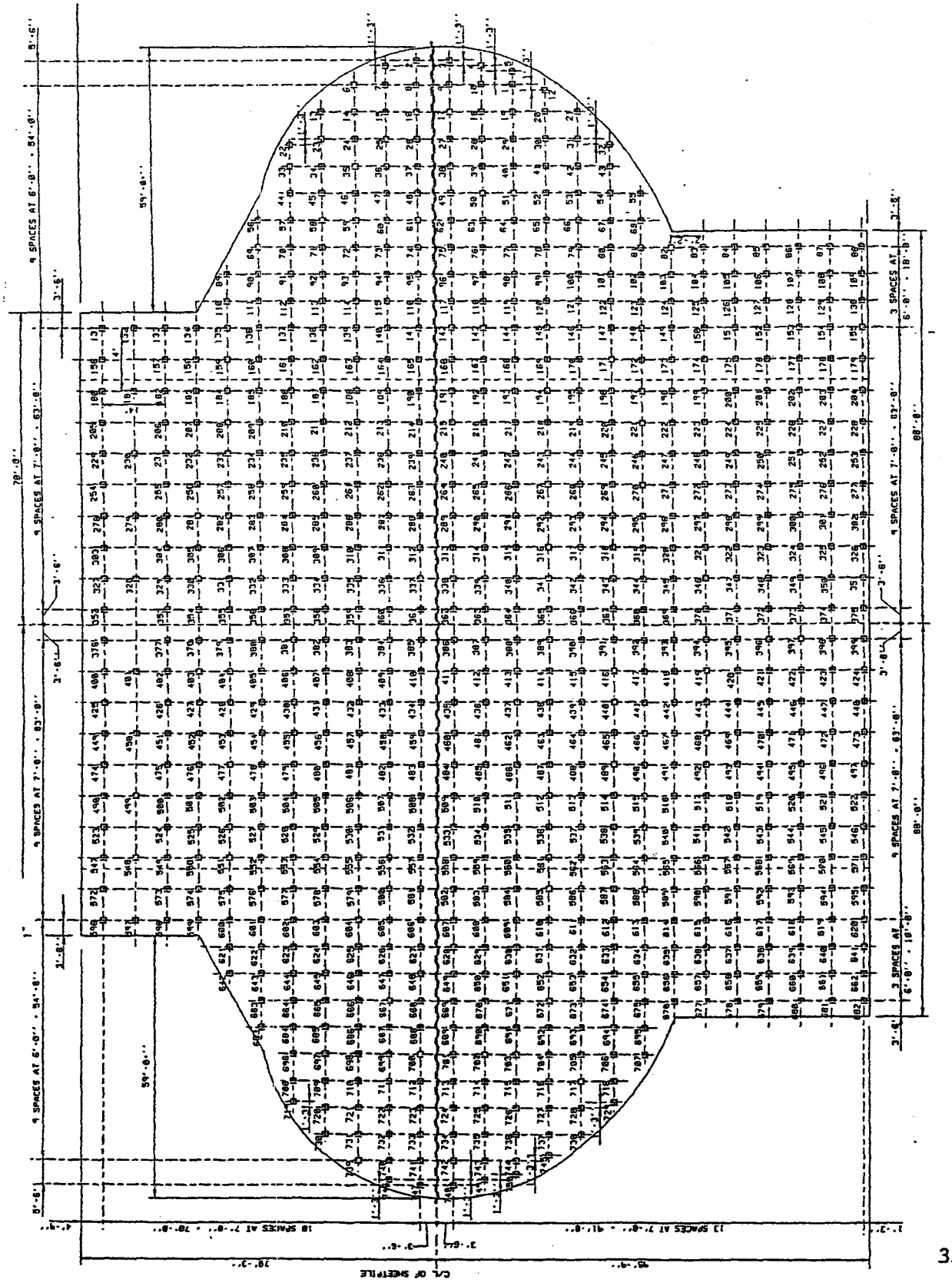
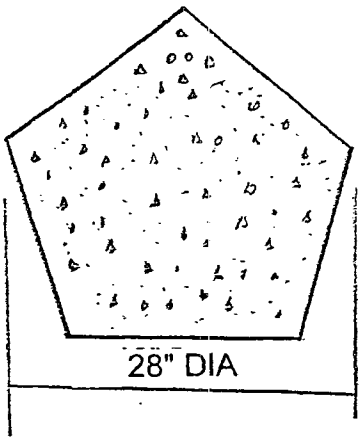
DRAWING NO. 1



750 Pile Foundation Plan

DRAWING NO. 2

## PROPOSED STAR SHAPED PILE

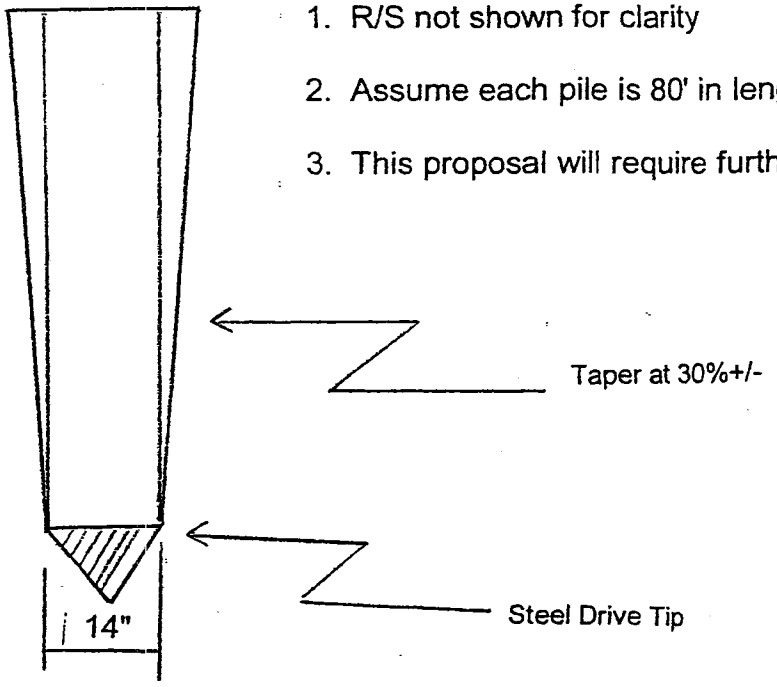



**PLAN VIEW**

**NOT TO SCALE**

**Notes:**

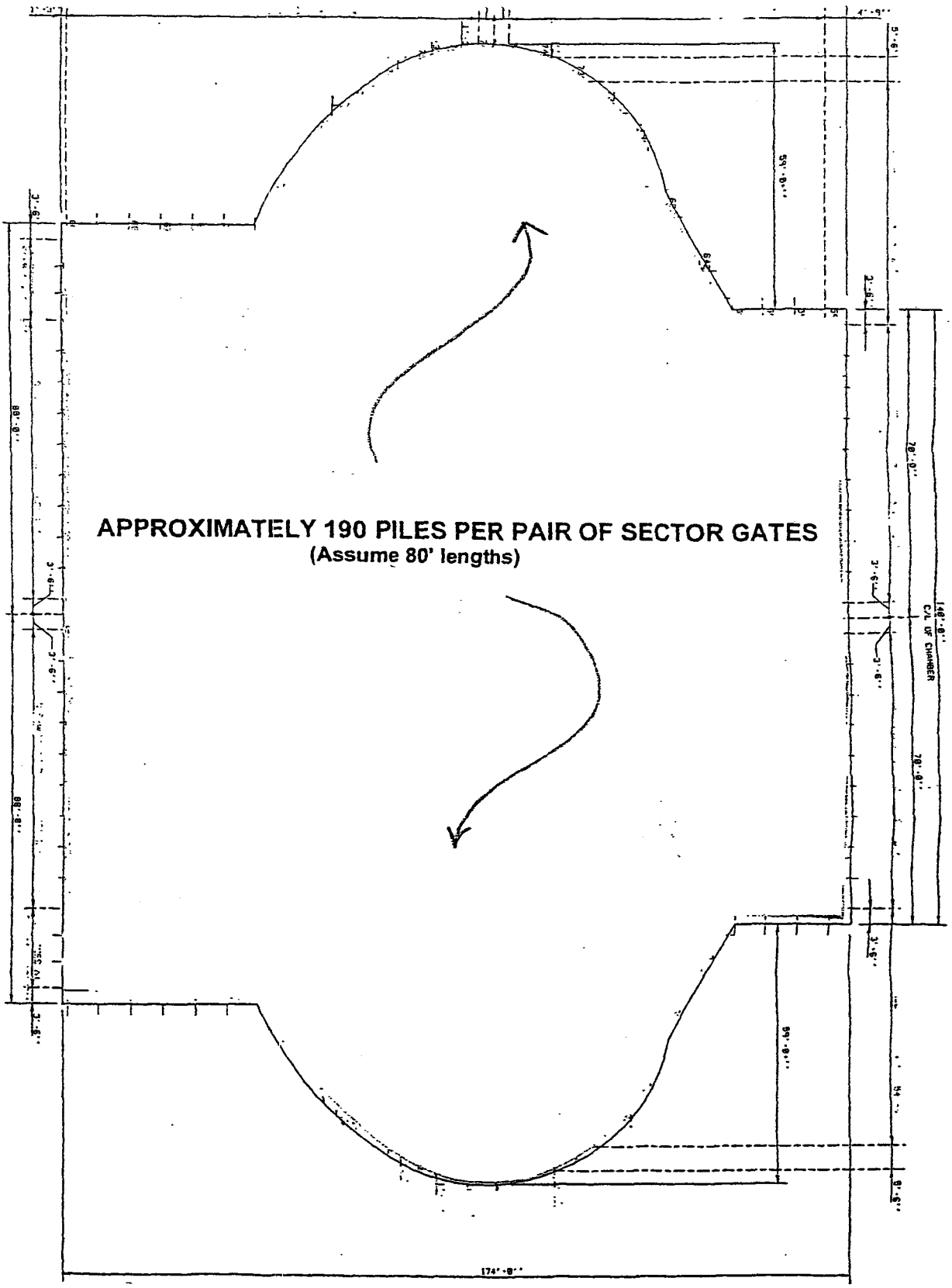
1. R/S not shown for clarity
2. Assume each pile is 80' in length.
3. This proposal will require further structural analysis




**ELEVATION VIEW**

**NOT TO SCALE**

DRAWING NO. 3


APPROXIMATELY 190 PILES PER PAIR OF SECTOR GATES
(Assume 80' lengths)
C/L OF CHAMBER

## COST ESTIMATE WORKSHEET

PROPOSAL NO.: S-7



### DELETIONS

| ITEM | UNITS | QUANTITY | UNIT COST | TOTAL |
|---|---|---|---|---|
| 750 Precast Piles | LF | 120,000 | $12.00 | $1,440,000 |
| Assume 80' Pile Lengths 750 Piles/Gate | | | | |
| x 2 Gates = 1500 | | | | |
| | | Total Deletions | | $1,440,000 |

### ADDITIONS

| ITEM | UNITS | QUANTITY | UNIT COST | TOTAL |
|---|---|---|---|---|
| Star Pile | LF | 30,400 | $22.00 | $668,800 |
| Assume 80' Lengths | | | | |
| | | Total Additions | | $668,800 |
| | | Net Savings | | $771,200 |
| | * | Markups | 25.00% | $192,800 |
| | | Total Savings | | $964,000 |

* Markups include: Contingency; Escalation; Engineerin/Design; and SIOH