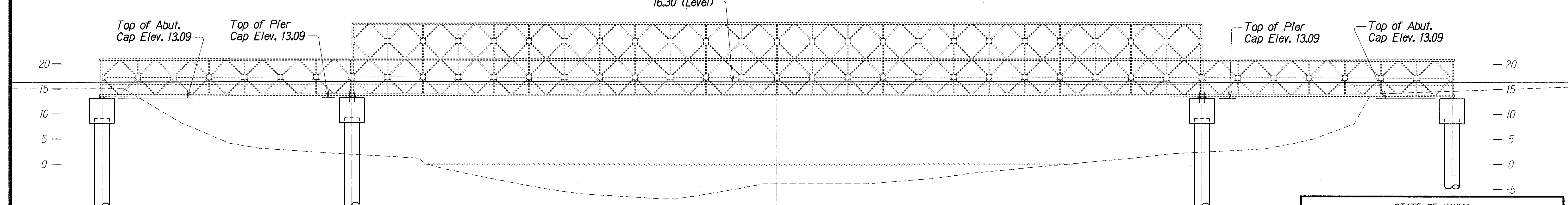
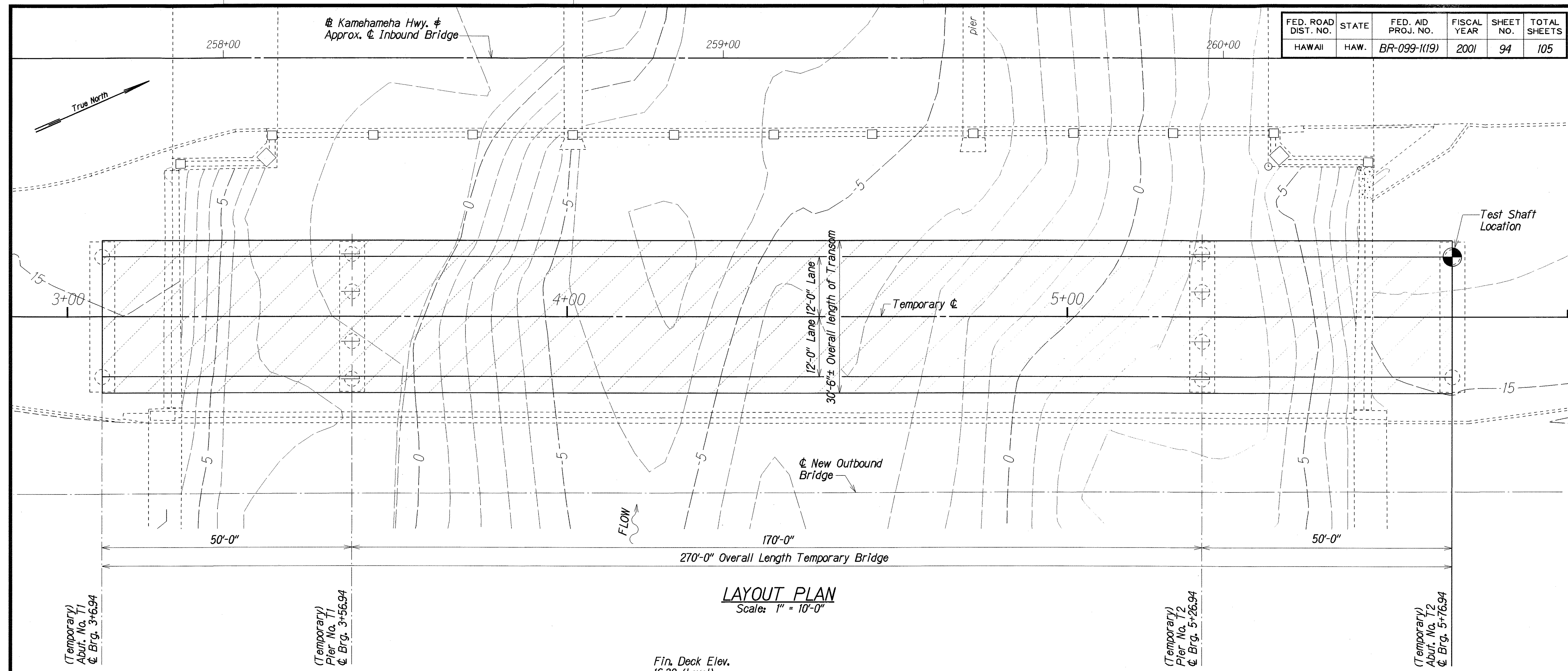


| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | BR-099-1(19)       | 2001        | 94        | 105          |



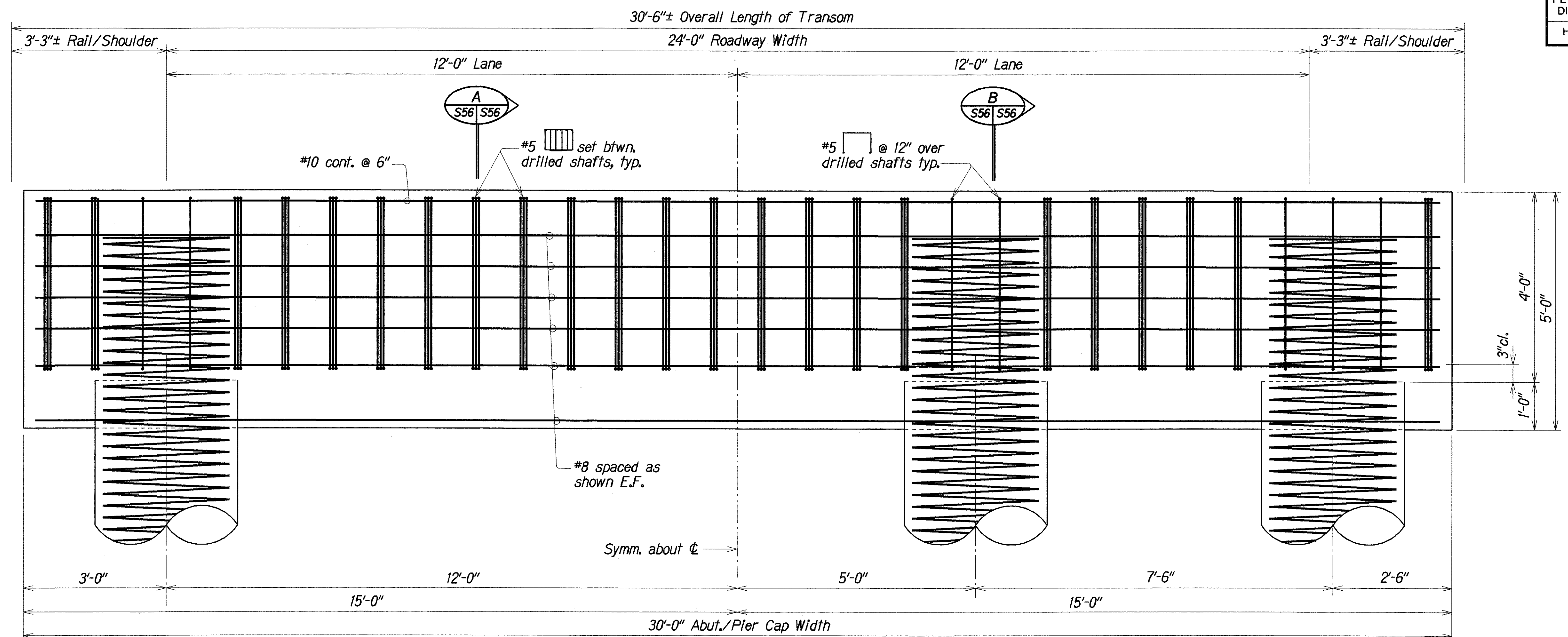
**NOTE:** Pre-drilling required for all drilled shafts for Temporary Stream Crossing Structure, including test shaft.

# **TEMPORARY STREAM CROSSING STRUCTURE**

|             |          |
|-------------|----------|
| DESIGNED BY | DATE     |
| TRACED BY   | AUG 2000 |
| NOTED BY    | AUG 2000 |
| CHECKED BY  | AUG 2000 |
| IN CHARGE   | AUG 2000 |

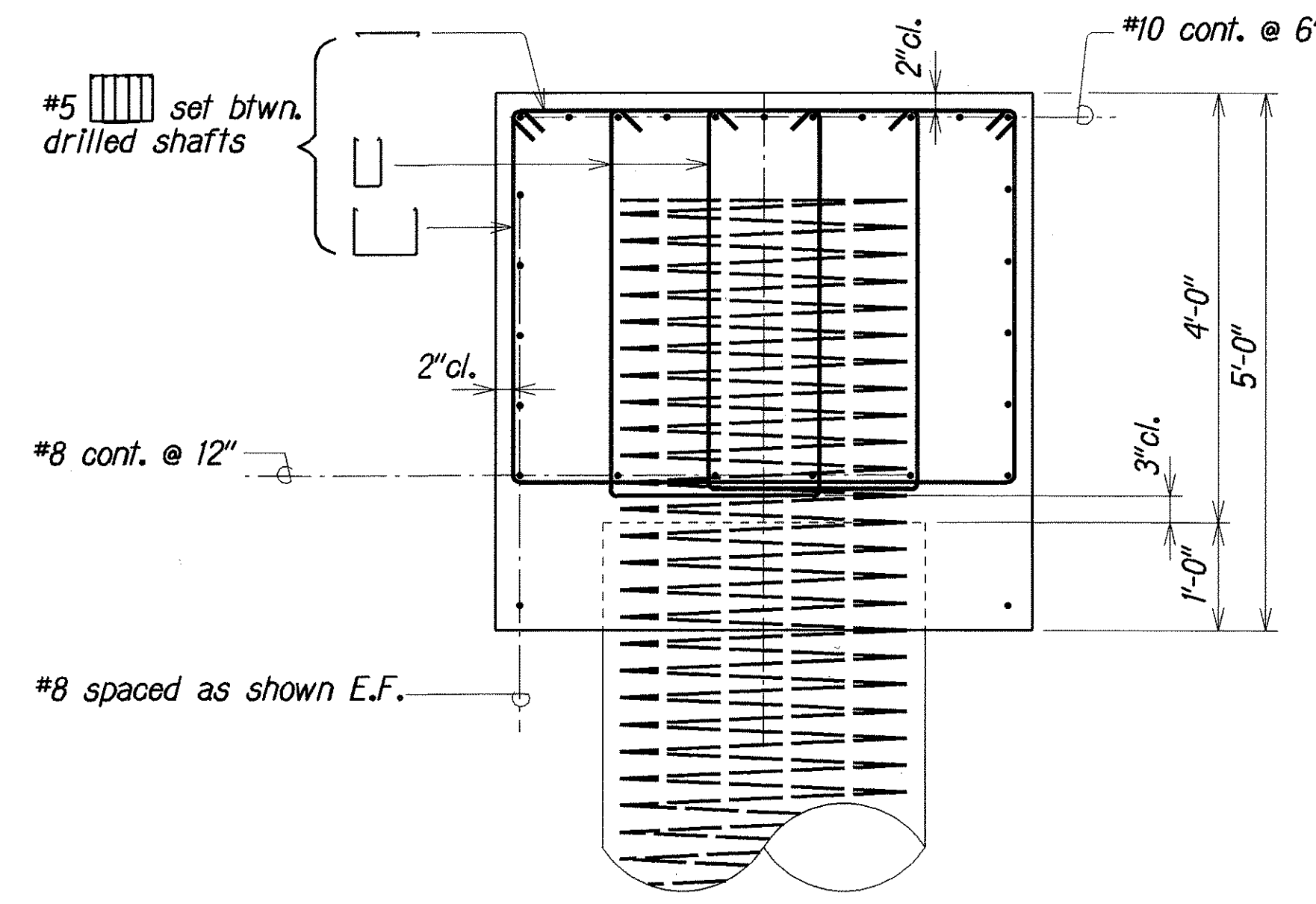
STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION  
**HALAWA STREAM BRIDGE**  
**TEMPORARY STREAM CROSSING STRUCTURE**  
PLAN and ELEVATION  
KAMEHAMEHA HIGHWAY  
HALAWA STREAM BRIDGE REPLACEMENT  
Federal Aid Project No. BR-099-1(19)  
Scale: As Noted Date: Aug, 2000  
SHEET No. 555 OF 57 SHEETS

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | BR-099-1(19)       | 2001        | 95        | 105          |

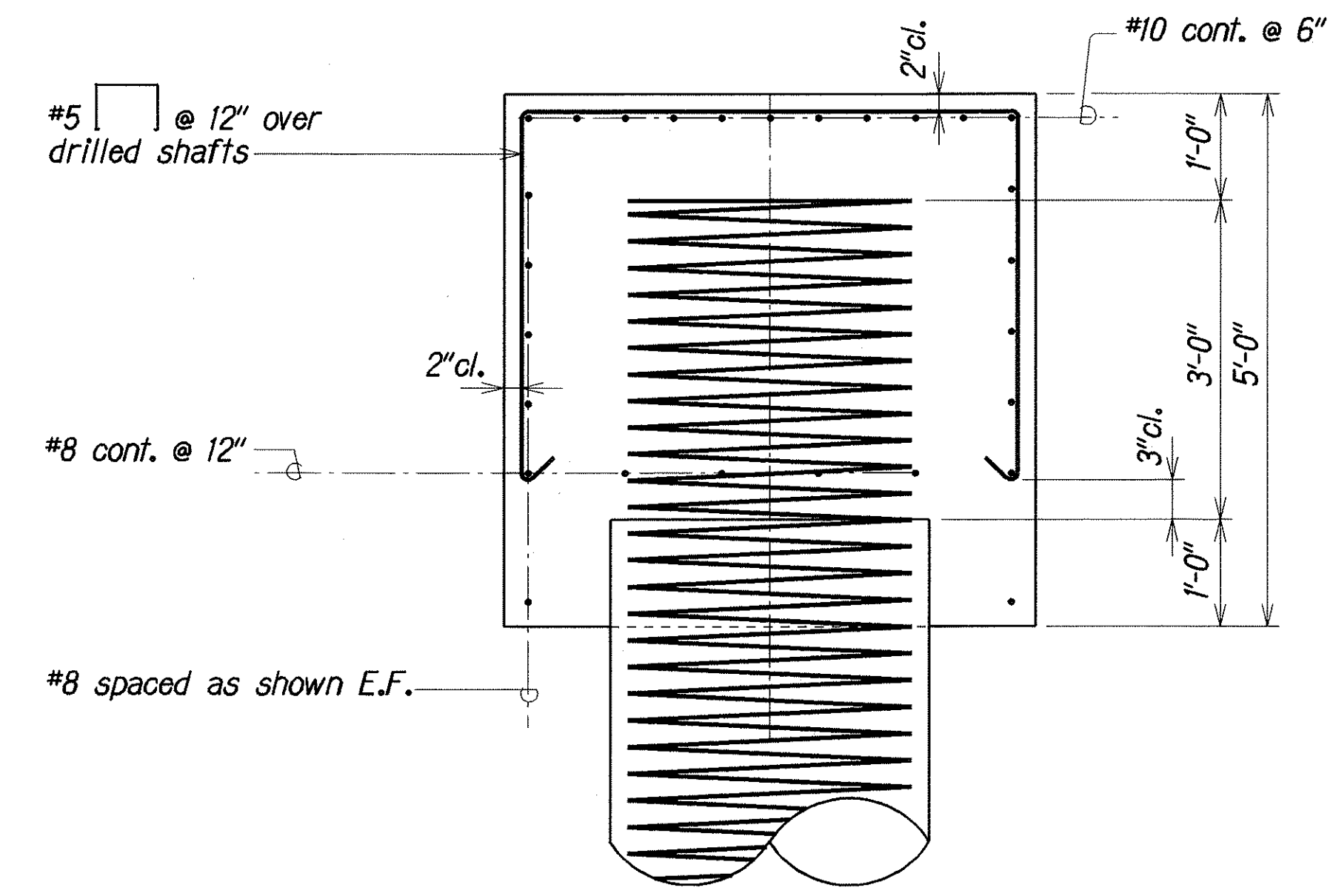


**TYPICAL ABUTMENT ELEVATION**  
Scale: 3/4" = 1'-0"

**TYPICAL PIER ELEVATION**  
Scale: 3/4" = 1'-0"



**TYPICAL SECTION BETWEEN DRILLED SHAFTS**  
Scale: 3/4" = 1'-0"



**TYPICAL SECTION OVER DRILLED SHAFTS**  
Scale: 3/4" = 1'-0"

**TEMPORARY STREAM CROSSING STRUCTURE  
PIER and ABUTMENT**

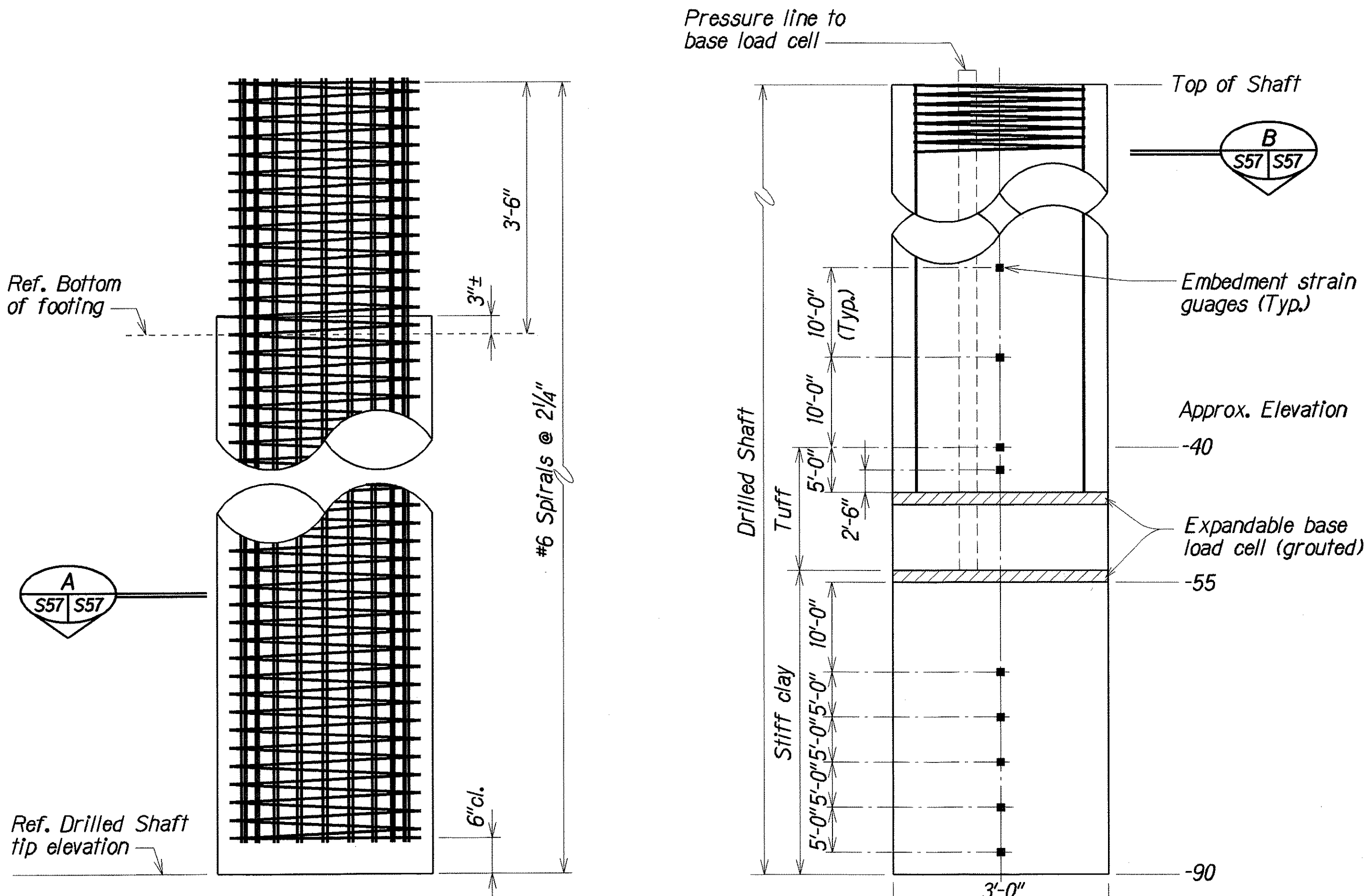
|               |          |
|---------------|----------|
| ORIGINAL PLAN | DATE     |
| DESIGNED BY   | AUG 2000 |
| DRAWN BY      | AUG 2000 |
| CHECKED BY    | AUG 2000 |
| IN CHARGE     | AUG 2000 |

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION  
**HALAWA STREAM BRIDGE**  
**TEMPORARY STREAM CROSSING STRUCTURE**  
PIER and ABUTMENT  
KAMEHAMEHA HIGHWAY  
HALAWA STREAM BRIDGE REPLACEMENT  
Federal Aid Project No. BR-099-1(19)  
Scale: As Noted Date: Aug. 2000

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | BR-099-1(19)       | 2001        | 96        | 105          |

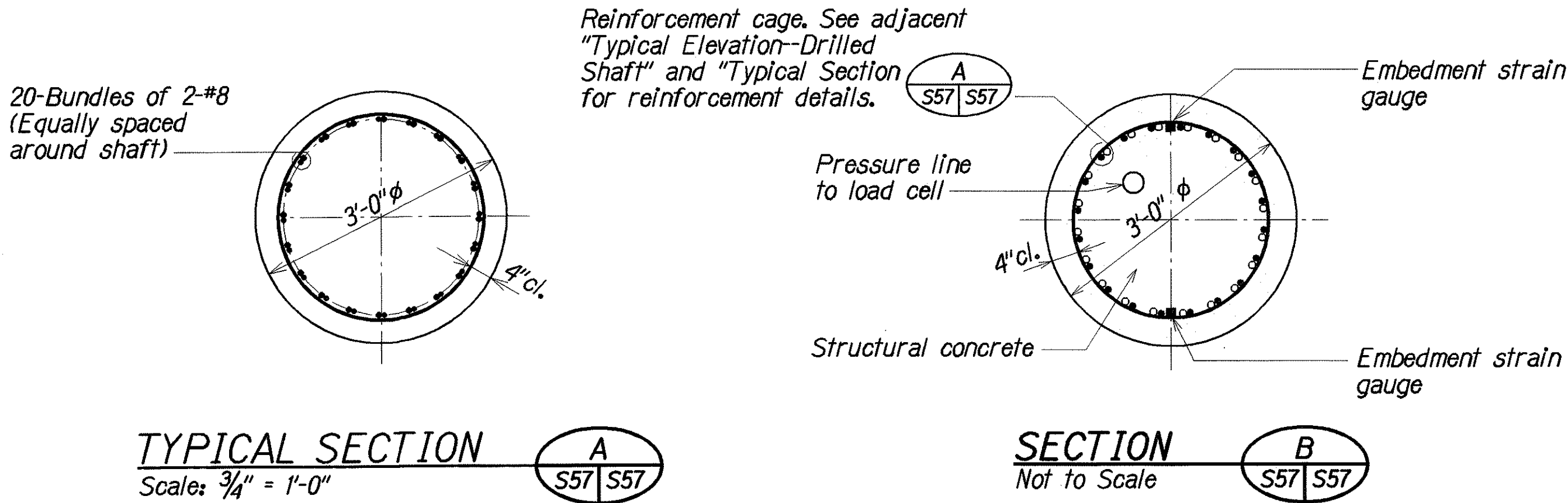
### TEMPORARY STREAM CROSSING DRILLED SHAFT CONSTRUCTION NOTES:

- Use of permanent casing or temporary casing shall be the choice of the Contractor, except for the Test Shaft. The permanent casing tip elevation for the Test Shaft shall be at -30-feet MSL.
- Drilled shaft concrete shall be f'c = 5,000 psi strength at 28 days with W/C ratio of 0.45 or less.
- Lap splice length for #6 spiral reinforcement is 3'-0"
- Concrete or other non-corrosive spacing devices shall be used to maintain the reinforcement cage in position within the shaft.
- fy = 60,000 psi.
- Discontinuous spirals shall be terminated with a 135° hook around vertical reinforcement.
- The cost of Drilled Shaft, Casing and Pre-Drilling for the Temporary Stream Crossing Structure shall be included in the cost for Item No. 660,0000--Temporary Stream Crossing Structure. Any additional length of Drilled Shaft and Pre-Drilling as may be required by the Engineer shall be paid at the unit price per linear foot under Item Nos. 511,0000--Drilled Shaft; and 511,5000--Pre-Drilling for Drilled Shafts.
- Vertical Bar Splices:
  - No lap splices.
  - Butt weld or mechanical splices only.
  - Stagger splice points not more than 1/3 of total bars at one point.
  - Minimum of 30" vertically between splice points.
- Reference is made to and incorporated into these plans and specifications; "Structural Foundation Investigation Report--Kamehameha Highway Replacement of Halawa Stream Bridge, F.A.P. No. BR-099-1(19)" dated April 12, 2000 with subsequent Addendum Nos. 1 and 2.
- Pre-drill every drilled shaft location with a 4-inch hole to elevation shown in Schedule below or as directed by the Engineer. Depending on the soil conditions encountered, the depth of pre-drilled holes may be modified by the Engineer. Drilling rig and equipment shall be capable of drilling to elevation -100 feet MSL. Perform standard penetration test at 5-foot intervals below elevation -10-feet MSL.
- Provide a log of pre-drilling to the Engineer for each drilled shaft group within five working days after completion of pre-drilling. Drilled shaft group is defined as all of the drilled shafts at an individual pier or abutment. The final tip elevations of drilled shafts in each drilled shaft group will be determined by the Engineer within ten working days of receiving the pre-drilling logs.
- For Test Drilled Shafts with approximate tip elevations of -90-feet MSL, rifle drilled shaft sidewall with a grooving tool or overreaming bucket from -55-feet MSL elevation to drilled shaft tip elevation.
- Rifle drilled shaft sidewall to provide grooves of at least 2-inches deep by 3-inches wide running spirally along the shaft circumference at a pitch of 12-inches. Sidewall rifling shall be considered incidental to drilled shaft construction.
- Due to the close proximity of adjacent shaft locations, the Contractor shall phase the drilling and concrete placement operation. All costs incurred by a multiple phase operation shall be considered incidental to "Unclassified Shaft Excavation". No drilling of drilled shafts shall take place until the Engineer provides the final tip elevation of the drilled shafts.
- Fabrication of drilled shaft reinforcing steel cage shall not start until tip elevations are provided by the Engineer based on pre-drilling. If the Contractor starts fabrication before tip elevations are given, it is done at the Contractor's own volition and the State may order changes at no additional cost.



**TYPICAL ELEVATION--DRILLED SHAFT**  
Scale: 3/4" = 1'-0"

**LOAD TEST INSTRUMENTATION DETAIL FOR TEST SHAFT**  
Not to Scale



**TYPICAL SECTION**  
Scale: 3/4" = 1'-0"

**SECTION**  
Not to Scale

### DRILLED SHAFT SCHEDULE

| Drilled Shaft Location                           | Abutment ① | Pier ① | Pier ② | Abutment ② | Test Shaft |
|--------------------------------------------------|------------|--------|--------|------------|------------|
| Drilled Shaft Diameter (inches)                  | 36         | 36     | 36     | 36         | 36         |
| Approximate Drilled Shaft Tip Elevation (feet)   | -35        | -40    | -60    | -60        | -90        |
| Approximate Pre-Drilling Bottom Elevation (feet) | -35        | -40    | -60    | -60        | -90        |

|               |          |
|---------------|----------|
| ORIGINAL PLAN | DATE     |
| DESIGNED BY   | QCT 2000 |
| TRACED BY     | QCT 2000 |
| NOTED BY      | QCT 2000 |
| QUANTITIES BY | QCT 2000 |
| CHECKED BY    | QCT 2000 |
| APPROVED BY   | QCT 2000 |

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION  
**HALAWA STREAM BRIDGE**  
**TEMPORARY STREAM CROSSING STRUCTURE**  
**DRILLED SHAFT DETAILS and SCHEDULE**  
KAMEHAMEHA HIGHWAY  
HALAWA STREAM BRIDGE REPLACEMENT  
Federal Aid Project No. BR-099-1(19)  
Scale: As Noted Date: Aug, 2000