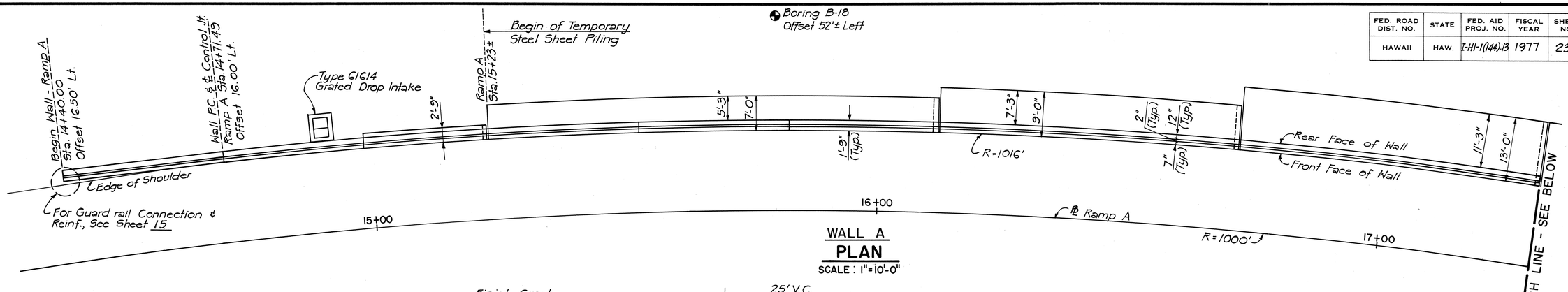
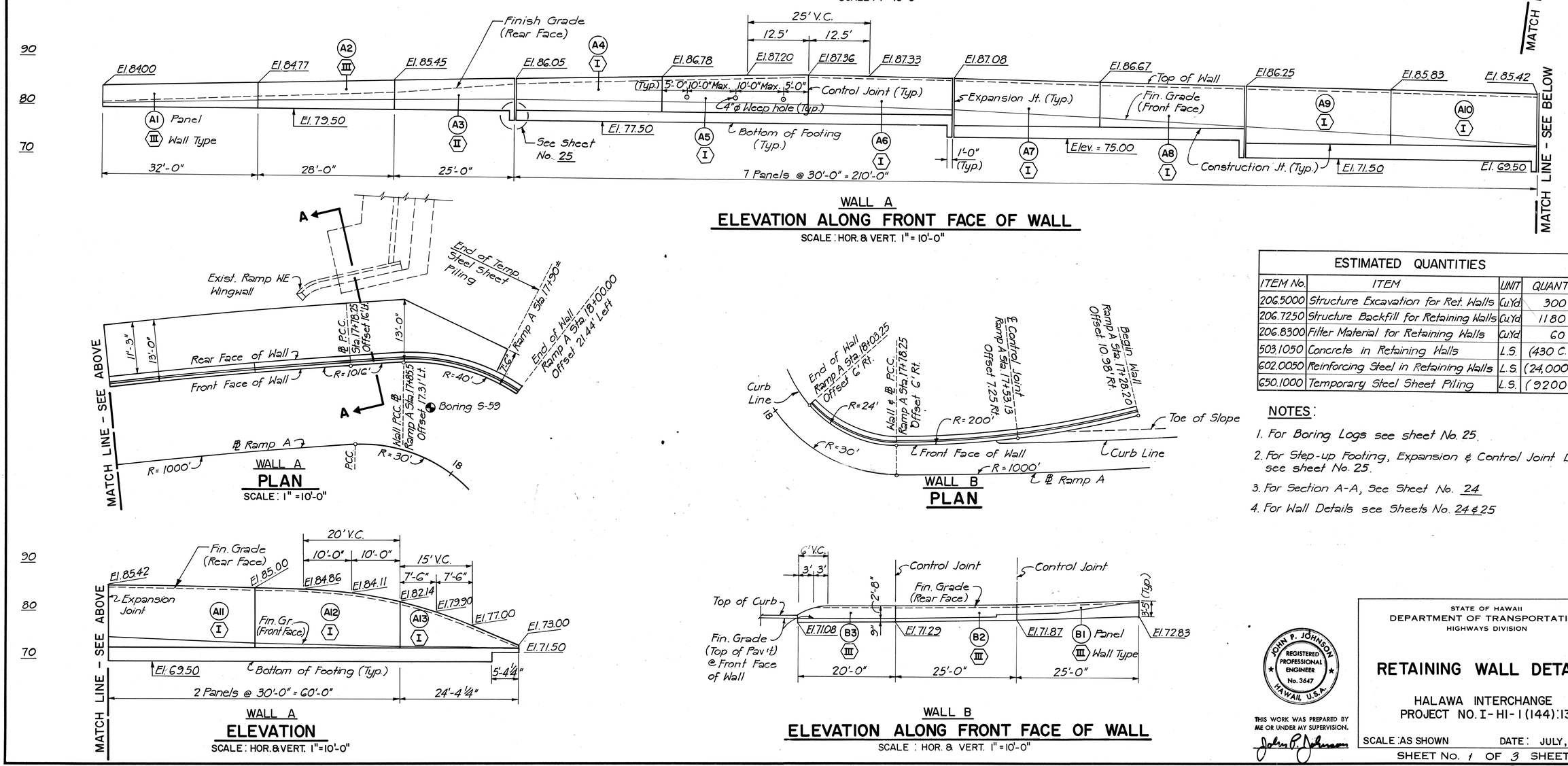
| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|
| HAWAII | HAW. | I-HI-1(144):13 | 1977 | 23 | 52 |




WALL A
## PLAN
SCALE : 1"=10'-0"




WALL A
## ELEVATION ALONG FRONT FACE OF WALL
SCALE : HOR. & VERT. 1" = 10'-0"




WALL A
## PLAN
SCALE : 1" =10'-0"




WALL A
## ELEVATION
SCALE : HOR. & VERT. 1"=10'-0"




WALL B
## PLAN




WALL B
## ELEVATION ALONG FRONT FACE OF WALL
SCALE : HOR. & VERT. 1" = 10'-0"

## ESTIMATED QUANTITIES

| ITEM No. | ITEM | UNIT | QUANTITY |
|---|---|---|---|
| 206.5000 | Structure Excavation for Ret. Walls | Cu.Yd. | 300 |
| 206.7250 | Structure Backfill for Retaining Walls | Cu.Yd. | 1180 |
| 206.8300 | Filter Material for Retaining Walls | Cu.Yd. | 60 |
| 503.1050 | Concrete in Retaining Walls | L.S. | (430 C.Y.) |
| 602.0050 | Reinforcing Steel in Retaining Walls | L.S. | (24,000 lbs.) |
| 650.1000 | Temporary Steel Sheet Piling | L.S. | (9200 S.F.) |

NOTES:

1. For Boring Logs see sheet No. 25.
2. For Step-up Footing, Expansion & Control Joint Details see sheet No. 25.
3. For Section A-A, See Sheet No. 24
4. For Wall Details see Sheets No. 24 & 25

| ORIGINAL PLAN | SURVEY PLOTTED BY | DATE |
|---|---|---|
| | DRAWN BY | |
| | TRACED BY | |
| NOTE BOOK | DESIGNED BY | |
| No. | QUANTITIES BY | |
| | CHECKED BY | |

JOHN P. JOHNSON
REGISTERED PROFESSIONAL ENGINEER
No. 3647
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

John P. Johnson

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

# RETAINING WALL DETAILS

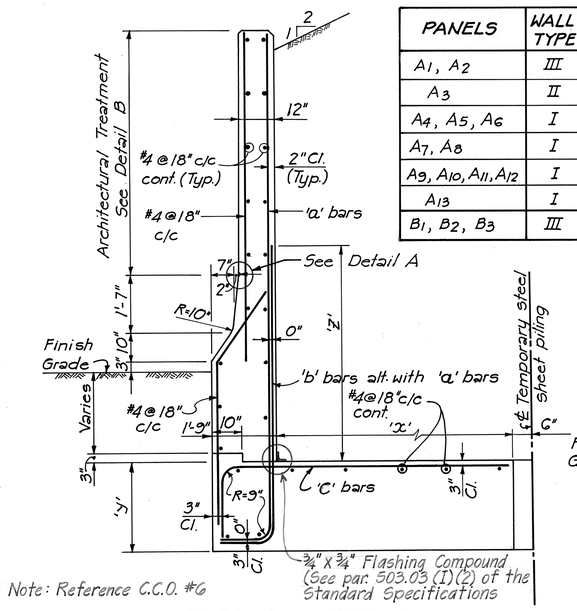
HALAWA INTERCHANGE
PROJECT NO. I-HI-1(144):13

SCALE : AS SHOWN DATE : JULY, 1977

SHEET No. 1 OF 3 SHEETS

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|
| HAWAII | HAW. | ~~I-HI-1(14)~~ 13 | 1977 | 24 | 52 |

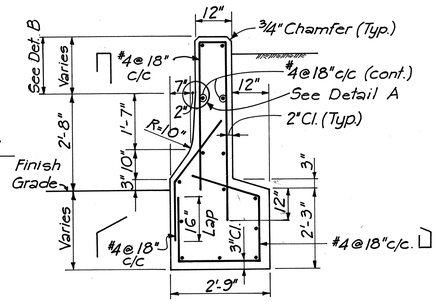
| PANELS | WALL TYPE | 'X' | 'Y' | 'Z' | 'a' bars | 'b' bars Alt. W. 'a' bars | 'c' bars | |
|---|---|---|---|---|---|---|---|---|
| A1, A2 | III | — | — | — | — | — | — | WALL A |
| A3 | II | — | — | — | — | — | — | |
| A4, A5, A6 | I | 5'-3" | 2'-0" | — | #4 @ 15" | — | #5 @ 15" | |
| A7, A8 | I | 7'-3" | 2'-3" | 4'-0" | #4 @ 18" | #4 @ 18" | #6 @ 9" | |
| A9, A10, A11, A12 | I | 11'-3" | 2'-6" | 6'-0" | #6 @ 18" | #6 @ 18" | #9 @ 9" | |
| A13 | I | Varies | 2'-6" | 4'-0" | #4 @ 18" | #4 @ 18" | #6 @ 9" | |
| B1, B2, B3 | III | — | — | — | — | — | — | WALL 'B' |




Note: Reference C.C.O. #6

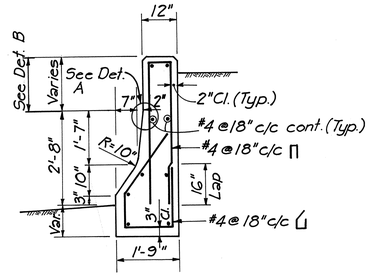
## WALL TYPE I - SECTION

SCALE : ½" = 1'-0"




## WALL TYPE II - SECTION

SCALE : ½" = 1'-0"




## WALL TYPE III - SECTION

SCALE : ½" = 1'-0"

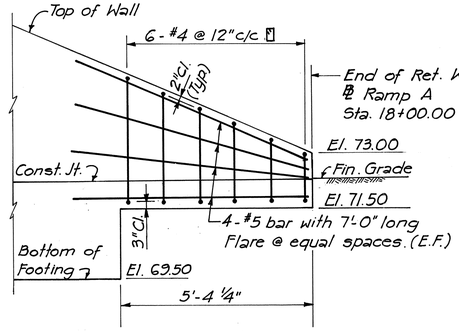
### DESIGN STRESSES

1. Ultimate Compressive Stress - (28 days conc.)
   f'c = 3000 psi
   fc = 1200 psi
2. Reinforcement Steel - (ASTM A 615, Grade 40)
   fs = 20,000 psi

### NOTE :

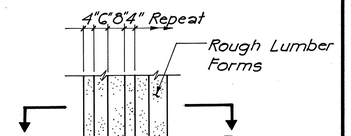
The Contractor shall submit to the Engineer for approval, Plans & Engineering Calculations for the design of temporary sheeting. Plans & Engineering Calculations submitted by the Contractor shall be prepared by or under the supervision of a Structural Engineer registered in the State of Hawaii. The following Criteria shall be used for the design of temporary sheeting:

1. Minimum equivalent fluid pressure for granular soil = 38 psf (Level backfill)
2. Maximum Cohesion (c = 1500 psf) for Cohesive soil below Elevation 77.0 (to be verified in Field)
3. Minimum Factor of Safety = 1.5
4. If appropriate, water pressure & buoyant weight of soil shall be considered.



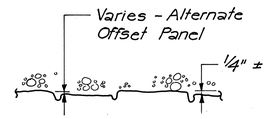

## WALL END DETAIL

SCALE : ½" = 1'-0"




## DETAIL B

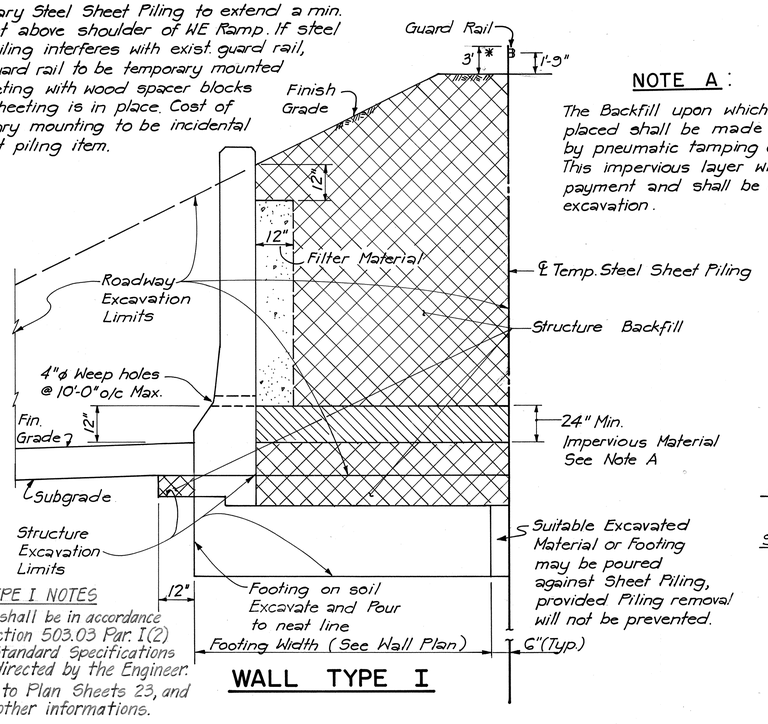
N.T.S.




## SECTION B-B

N.T.S.

* Temporary Steel Sheet Piling to extend a min. of 3' feet above shoulder of WE Ramp. If steel sheet piling interferes with exist. guard rail, exist. guard rail to be temporary mounted on sheeting with wood spacer blocks while sheeting is in place. Cost of temporary mounting to be incidental to sheet piling item.



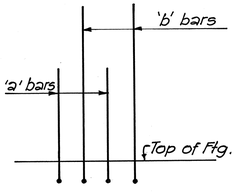

### WALL TYPE I NOTES

1. Work shall be in accordance with Section 503.03 Par. I(2) of the Standard Specifications and as directed by the Engineer.
2. Refer to Plan Sheets 23, and 25 for other informations.

## WALL TYPE I

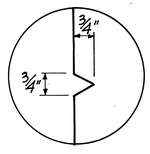
### NOTE A :

The Backfill upon which filter material is to be placed shall be made as impervious as possible by pneumatic tamping or other approved method. This impervious layer will not be measured for payment and shall be incidental to roadway excavation.



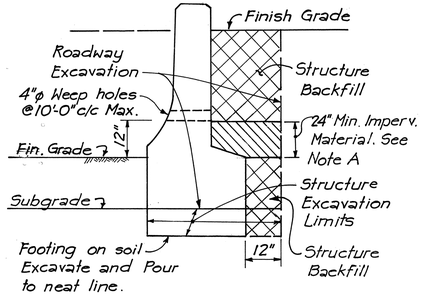

## VERTICAL REINF. STEEL ARRANGEMENT

N.T.S.

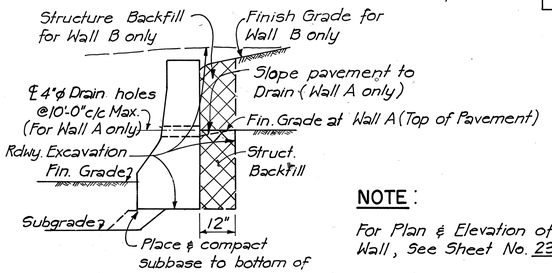



## DETAIL A

N.T.S.



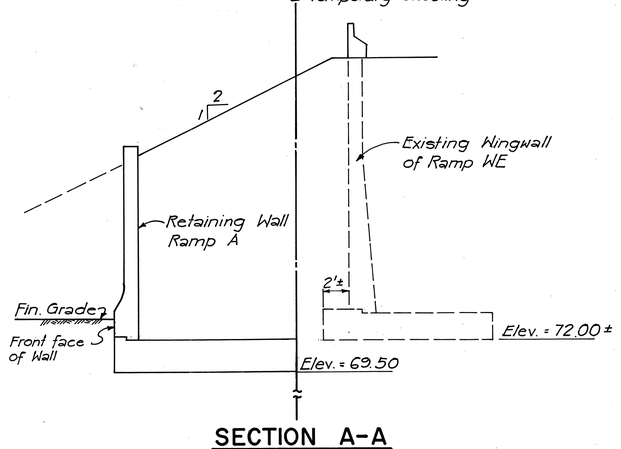

## WALL TYPE II




## WALL TYPE III

### NOTE :

For Plan & Elevation of Wall, See Sheet No. 23




## SECTION A-A

SCALE : 3/16" = 1'-0"

# STRUCTURAL EXCAVATION AND DRAINAGE DETAILS

NOT TO SCALE

SURVEY PLOTTED BY
DRAWN BY
TRACED BY
DESIGNED BY
QUANTITIES BY
CHECKED BY
DATE
ORIGINAL PLAN
NOTE BOOK
No.

JOHN P. JOHNSON REGISTERED PROFESSIONAL ENGINEER No. 3647 HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

John P. Johnson

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

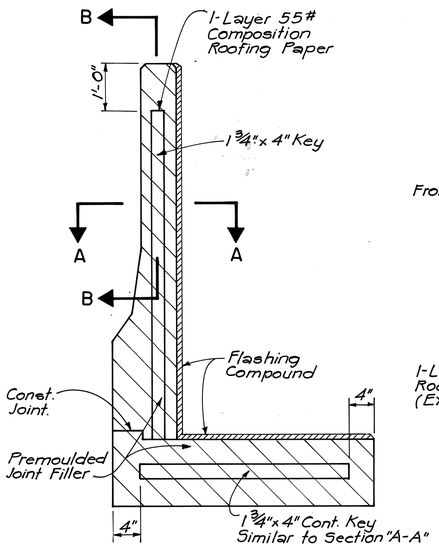
## RETAINING WALL DETAILS

HALAWA INTERCHANGE
PROJECT NO. I-HI-1(144): 13

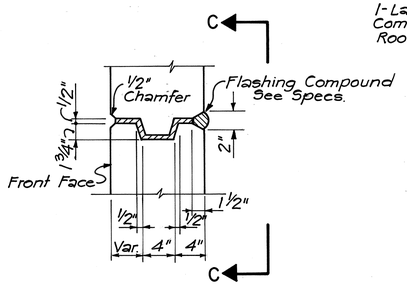
SCALE: AS SHOWN DATE: JULY, 1977

SHEET No. 2 OF 3 SHEETS

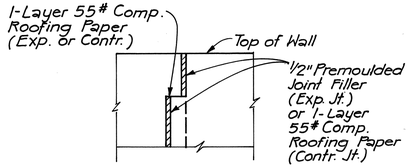
| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|
| HAWAII | HAW. | I-HI-1(144):13 | 1977 | 25 | 52 |



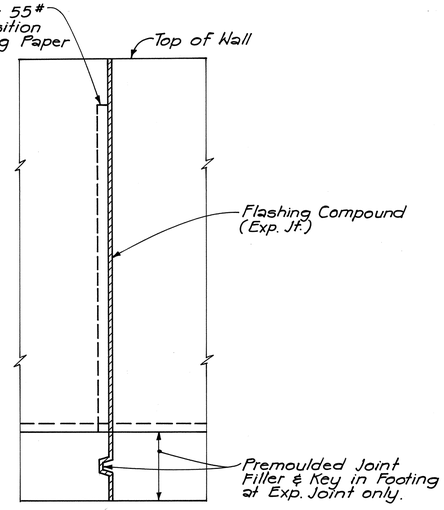

JOINT ELEVATION
N.T.S.




SECTION A-A
N.T.S.

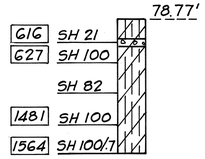



SECTION B-B
N.T.S.

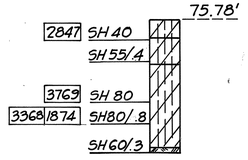



SECTION C-C
N.T.S.

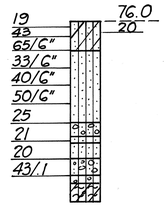
B-18




B-19




S-59




BORING LOGS
SCALE : AS NOTED

## GENERAL NOTES

1. Number adjacent to Borings represent blows of a 140 lb. hammer falling 30" per foot of penetration of sampler, either Split Spoon (2" O.D. 1-⅜" I.D.) or Shelby Tube, identified by "SP" or SH" respectively. Where neither "SP" nor "SH" is listed, then use of Split Spoon sampler is understood.
2. Vertical Scale for Borings : 1" = 20'.
3. 362 Cohesion value from unconfined compression test. (PSF)
4. Soil symbol represents a generalized classification. See Boring Logs for detailed classification.
5. Number listed at top of each boring is original ground surface elevation at time of boring, not existing ground.

## LEGEND

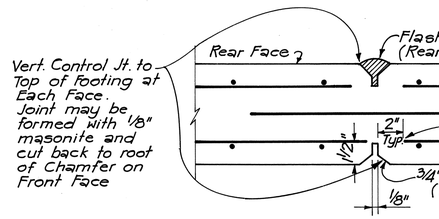
- Gravel/boulders
- Scoriaceous lava
- Sand
- Silt
- Clay
- Tuff

* Cohesion values are shown for 'B'-Series Borings only. Additional values for the 'S'-Series Borings based on unconfined compression & triaxial compression tests are available for Contractor's use.

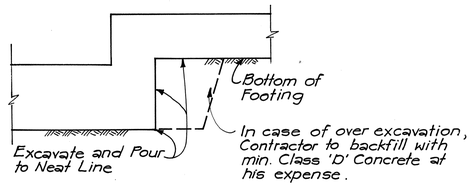
Probing Logs are not depicted. Inspector's boring & probing logs are available for Contractor's use.

Logs of additional borings made at sites of future structures are available for Contractor's use.

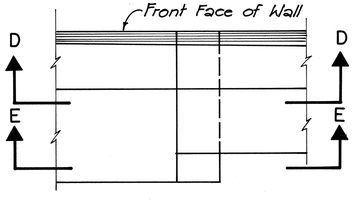
For boring locations see sheets 6 & 23



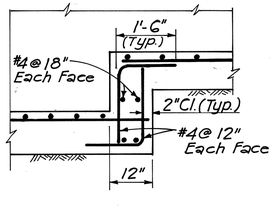

ALTERNATE CONTROL JOINT
N.T.S.



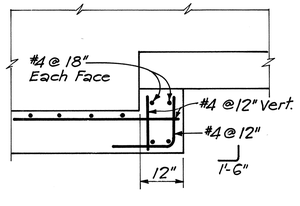

TYPICAL EXCAVATION FOR CONTINUOUS FOOTING STEP-UP
N.T.S.




PLAN

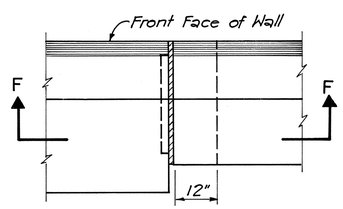



SECTION D-D

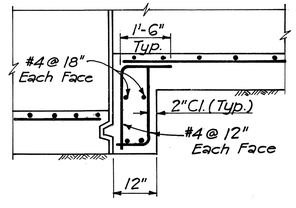



SECTION E-E

AT CONTINUOUS FOOTING




PLAN




SECTION F-F

AT EXPANSION JOINT

TYPICAL FOOTING STEP-UP DETAILS
N.T.S.

| ORIGINAL PLAN | SURVEY PLOTTED BY | DATE |
|---|---|---|
| | DRAWN BY | |
| | TRACED BY | |
| NOTE BOOK | DESIGNED BY | |
| | QUANTITIES BY | |
| NO. | CHECKED BY | |

JOHN P. JOHNSON REGISTERED PROFESSIONAL ENGINEER No. 3647 HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

John P. Johnson

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

# RETAINING WALL DETAILS & BORING LOGS

HALAWA INTERCHANGE
PROJECT NO. I-HI-1(144):13

SCALE : 1" = 50' DATE : JULY, 1977

SHEET No. 3 OF 3 SHEETS