

| FED. ROAD<br>DIST. NO. | STATE | FEDERAL - AID<br>PROJ. NO. | FISCAL<br>YEAR | SHEET<br>NO. | TOTAL<br>SHEETS |
|------------------------|-------|----------------------------|----------------|--------------|-----------------|
| HAWAII                 | HAW.  | NH-A311(4)                 | 2006           | 61           | 180             |

| I T E M N O.                  |                             | 206<br>2025                                      |  |  |  |  |  |  | 503<br>0022                          | 503<br>0023                                    |  |  | 603<br>0010                                 | 603<br>6552 | 603<br>6553 | 604<br>0706                                         |  | 605<br>0006                          | 605<br>0106                              | 605<br>2000 | 605<br>3000       |                                                                                                                                                                           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------------|-----------------------------|--------------------------------------------------|--|--|--|--|--|--|--------------------------------------|------------------------------------------------|--|--|---------------------------------------------|-------------|-------------|-----------------------------------------------------|--|--------------------------------------|------------------------------------------|-------------|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| U N I T U S E D               |                             | C.Y.                                             |  |  |  |  |  |  | EA.                                  | EA.                                            |  |  | C.Y.                                        | L.F.        | L.F.        | EA.                                                 |  | L.F.                                 | L.F.                                     | EA.         | EA.               |                                                                                                                                                                           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Baseline<br>Station<br>(From) | Baseline<br>Station<br>(To) | Structure Excavation<br>for<br>Drainage Culverts |  |  |  |  |  |  | Concrete Headwall for<br>24" Culvert | Concrete Inlet<br>Structure for<br>48" Culvert |  |  | Bed Course Material<br>For Drainage Culvert | 24" Culvert | 48" Culvert | 61614P Grated<br>Drop Inlet<br>7.00 Ft. to 7.99 Ft. |  | 6-Inch Perforated<br>Underdrain Pipe | 6-Inch Non-Perforated<br>Underdrain Pipe | Cleanout    | Underdrain Outlet | NOTE:<br>Quantities shown are approximate and for the Engineer's use only. The Contractor shall determine the necessary quantities for bidding and construction purposes. |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1+14 (D/W)                    | 1+14 (D/W)                  | 59                                               |  |  |  |  |  |  | 2                                    |                                                |  |  | 10                                          | 48          |             |                                                     |  |                                      |                                          |             |                   |                                                                                                                                                                           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 328+50                        | 328+50 (o\s 84' Lt.)        | 93                                               |  |  |  |  |  |  | 1                                    |                                                |  |  | 18                                          | 90          |             | 1                                                   |  |                                      |                                          |             |                   |                                                                                                                                                                           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 5+05 NB                       | 5+05 (o\s 49' Lt.)          | 91                                               |  |  |  |  |  |  | 1                                    |                                                |  |  | 16                                          | 74          |             | 1                                                   |  |                                      |                                          |             |                   |                                                                                                                                                                           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 14+21 NB (o/s 79' Rt.)        | 14+00 (o\s 53' Lt.)         | 427                                              |  |  |  |  |  |  |                                      | 1                                              |  |  | 38                                          |             | 136         |                                                     |  |                                      |                                          |             |                   |                                                                                                                                                                           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                               |                             |                                                  |  |  |  |  |  |  |                                      |                                                |  |  |                                             |             |             |                                                     |  |                                      |                                          |             |                   |                                                                                                                                                                           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                               |                             |                                                  |  |  |  |  |  |  |                                      |                                                |  |  |                                             |             |             |                                                     |  |                                      |                                          |             |                   |                                                                                                                                                                           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                               |                             |                                                  |  |  |  |  |  |  |                                      |                                                |  |  |                                             |             |             |                                                     |  |                                      |                                          |             |                   |                                                                                                                                                                           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                               |                             |                                                  |  |  |  |  |  |  |                                      |                                                |  |  |                                             |             |             |                                                     |  |                                      |                                          |             |                   |                                                                                                                                                                           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                               |                             |                                                  |  |  |  |  |  |  |                                      |                                                |  |  |                                             |             |             |                                                     |  |                                      |                                          |             |                   |                                                                                                                                                                           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 318+25                        | 319+25                      |                                                  |  |  |  |  |  |  |                                      |                                                |  |  |                                             |             |             |                                                     |  | 200                                  | 4                                        | 2           | 0                 |                                                                                                                                                                           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 319+25                        | 323+90                      |                                                  |  |  |  |  |  |  |                                      |                                                |  |  |                                             |             |             |                                                     |  | 930                                  | 130                                      | 7           | 1                 |                                                                                                                                                                           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 323+90                        | 328+50                      |                                                  |  |  |  |  |  |  |                                      |                                                |  |  |                                             |             |             |                                                     |  | 920                                  | 159                                      | 7           | 1                 |                                                                                                                                                                           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 328+50                        | 331+75                      |                                                  |  |  |  |  |  |  |                                      |                                                |  |  |                                             |             |             |                                                     |  | 975                                  | 138                                      | 11          | 0                 |                                                                                                                                                                           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 331+75                        | 5+00 NB                     |                                                  |  |  |  |  |  |  |                                      |                                                |  |  |                                             |             |             |                                                     |  | 975                                  | 120                                      | 10          | 1                 |                                                                                                                                                                           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 5+00 NB                       | 11+00 NB                    |                                                  |  |  |  |  |  |  |                                      |                                                |  |  |                                             |             |             |                                                     |  | 600                                  | 61                                       | 6           | 0                 |                                                                                                                                                                           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 5+00 NB                       | 11+50 SB                    |                                                  |  |  |  |  |  |  |                                      |                                                |  |  |                                             |             |             |                                                     |  | 620                                  | 88                                       | 5           | 1                 |                                                                                                                                                                           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 11+00 NB                      | 14+00 NB                    |                                                  |  |  |  |  |  |  |                                      |                                                |  |  |                                             |             |             |                                                     |  | 300                                  | 48                                       | 4           | 1                 |                                                                                                                                                                           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 14+25 NB                      | 15+50 NB                    |                                                  |  |  |  |  |  |  |                                      |                                                |  |  |                                             |             |             |                                                     |  | 125                                  | 56                                       | 3           | 0                 |                                                                                                                                                                           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 11+50 SB                      | 16+00 SB                    |                                                  |  |  |  |  |  |  |                                      |                                                |  |  |                                             |             |             |                                                     |  | 900                                  | 136                                      | 12          | 0                 |                                                                                                                                                                           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 18+00 NB                      | 21+50 NB                    |                                                  |  |  |  |  |  |  |                                      |                                                |  |  |                                             |             |             |                                                     |  | 350                                  | 115                                      | 4           | 1                 |                                                                                                                                                                           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 18+00 SB                      | 21+90 SB                    |                                                  |  |  |  |  |  |  |                                      |                                                |  |  |                                             |             |             |                                                     |  | 780                                  | 97                                       | 7           | 1                 |                                                                                                                                                                           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |



CLIFFORD M. ARAKAWA  
LICENSED  
PROFESSIONAL  
ENGINEER  
No. 1864-C  
HAWAII U.S.A.

*Clifford M. Arakawa*

THIS WORK WAS PREPARED BY  
ME OR UNDER MY SUPERVISION

04/30/06

EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**DRAINAGE SUMMARY**

**MOKULELE HIGHWAY WIDENING**

*Vicinity of Kealia Pond Driveway*  
*To*  
*Piilani Highway*

*Federal - Aid Project No. NH-A311(4)*

*Scale: NONE                      Date: July 2005*

PROJ. NO.: M9901.00  
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2/11/04