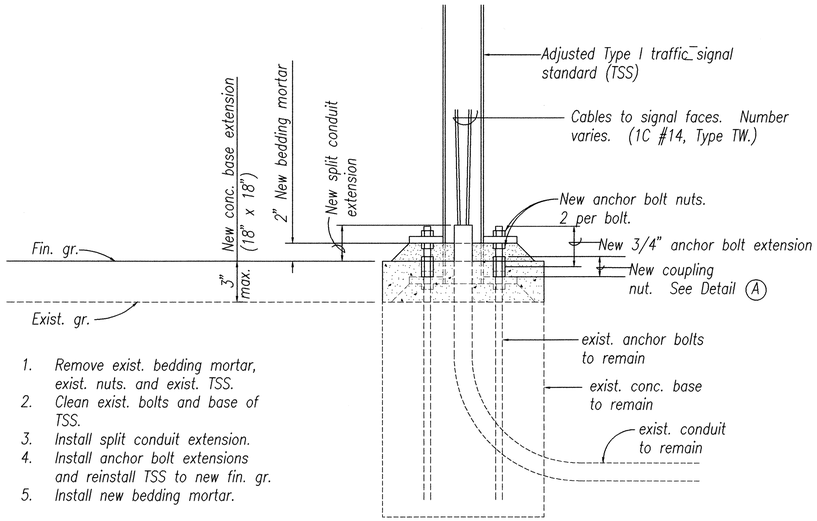
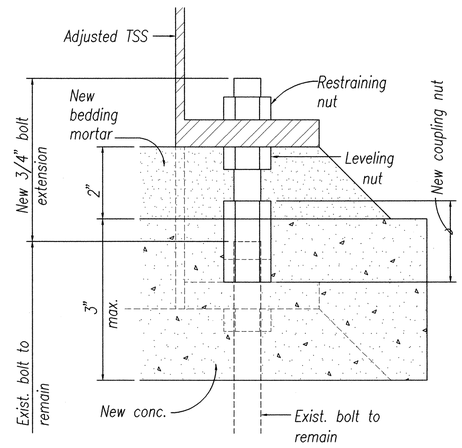
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	30ABC-01-97M	1997	47	51



1. Remove exist. bedding mortar, exist. nuts. and exist. TSS.
2. Clean exist. bolts and base of TSS.
3. Install split conduit extension.
4. Install anchor bolt extensions and reinstall TSS to new fin. gr.
5. Install new bedding mortar.

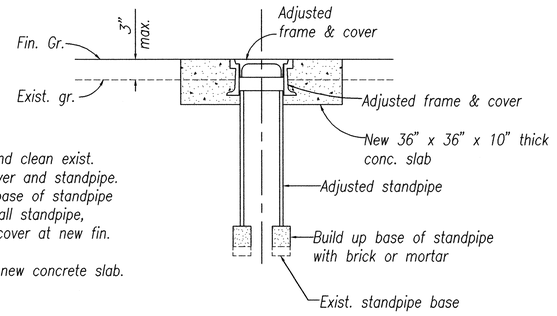
ADJUSTED TSS
(traffic signal standard)

Scale: 1-1/2" = 1' 0"



DETAIL (A)

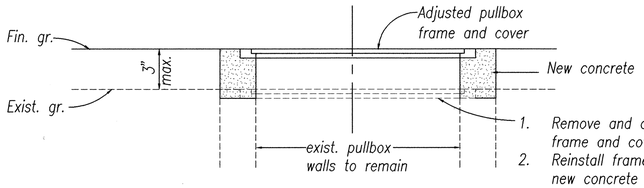
Scale: 6" = 1' 0"



1. Remove and clean exist. frame, cover and standpipe.
2. Build up base of standpipe and reinstall standpipe, frame & cover at new fin. grade.
3. Construct new concrete slab.

ADJUSTED WV
(water valve box)

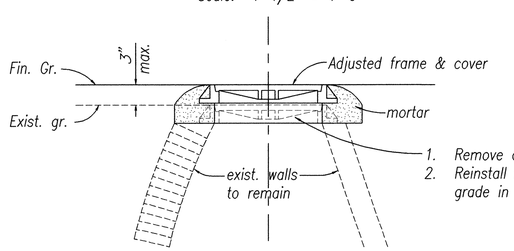
Scale: 3/4" = 1' 0"



1. Remove and clean exist. pullbox frame and cover.
2. Reinstall frame and cover in new concrete at new fin. gr.

ADJUSTED TSPB
(traffic signal pullbox)

Scale: 1-1/2" = 1' 0"



1. Remove and clean exist. frame & cover.
2. Reinstall frame & cover at new fin. grade in bed of new mortar.

AT BRICK MANHOLE AT P.C. CONC. MANHOLE

ADJUSTED
SMH (sewer manhole)
WMH (water manhole)

Scale: 3/4" = 1' 0"

GENERAL NOTES ON ADJUSTMENT OF UTILITY STRUCTURES:

1. Unless noted otherwise, new concrete shall be Class A with maximum aggregate size of 3/4".
2. All contact surfaces between existing concrete and new concrete or mortar shall be cleaned, roughened and treated with a 3 component bonding compound prior to the placement of new concrete or mortar:

   Components A & B shall contain epoxy resins. Component C shall contain portland cement and selected fillers.

   Mixture properties shall be as follows:

Compressive strength @ 28 days (ASTM C 109):	10,200 psi
Flexural strength @ 28 days (ASTM C 340):	1,250 psi
Splitting tensile strength @ 28 days (ASTM C 496):	600 psi
Bonding strength to old concrete @ 14 days (ASTM C 882):	2,000 psi

3. New bolts and coupling nuts shall conform to ASTM A 307.
4. Removal work, demolition, excavation, backfill, concrete work, furnishing and installation of bolts, nuts and conduit extensions, and application of bonding compound will not be paid for directly but shall be considered incidental to the adjustment of the various utility structures of which they are a part.

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

PAUL T. TANIGUCHI * LICENSED PROFESSIONAL ENGINEER NO. 864-C * HAWAII, U.S.A.

THIS WORK WAS DONE BY ME OR UNDER MY SUPERVISION

BY _____

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

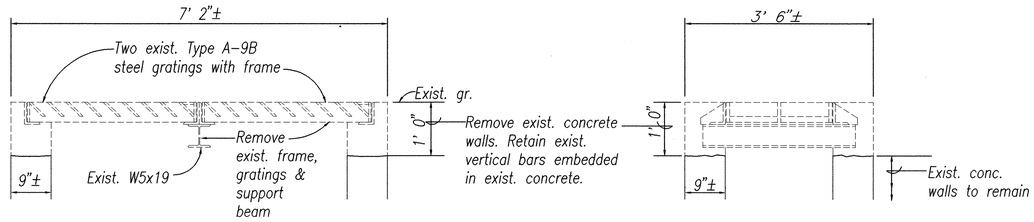
MISCELLANEOUS
UTILITY DETAILS

HONOAPIILANI HIGHWAY RESURFACING
Puamana to Kaanapali
Project No. 30ABC-01-97M

SCALE: DATE: April, 1997

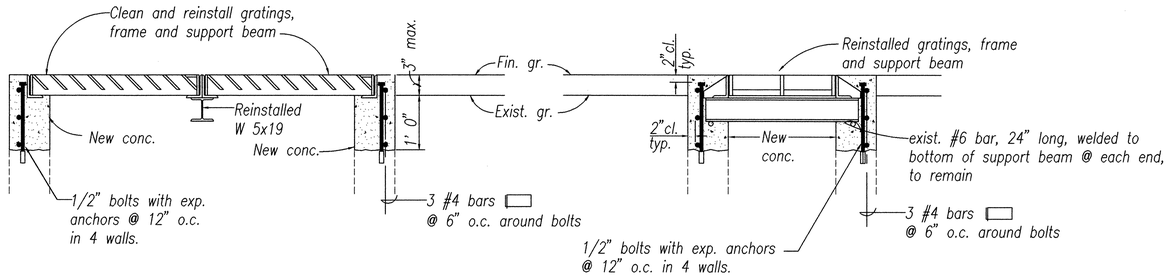
SHEET NO. 1 OF 3 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	30ABC-01-97M	1997	48	51



LONGITUDINAL SECTION THROUGH EXISTING GRATED INLET

TRANSVERSE SECTION THROUGH EXISTING GRATED INLET



LONGITUDINAL SECTION THROUGH ADJUSTED GRATED INLET

TRANSVERSE SECTION THROUGH ADJUSTED GRATED INLET

ADJUSTED CGI
(concrete grated inlet)

GENERAL NOTES ON ADJUSTMENT OF UTILITY STRUCTURES:

1. Unless noted otherwise, new concrete shall be Class A with maximum aggregate size of 3/4".

2. All contact surfaces between existing concrete and new concrete or mortar shall be cleaned, roughened and treated with a 3 component bonding compound prior to the placement of new concrete or mortar:

   Components A & B shall contain epoxy resins. Component C shall contain portland cement and selected fillers.

   Mixture properties shall be as follows:

Compressive strength @ 28 days (ASTM C 109):	10,200 psi
Flexural strength @ 28 days (ASTM C 340):	1,250 psi
Splitting tensile strength @ 28 days (ASTM C 496):	600 psi
Bonding strength to old concrete @ 14 days (ASTM C 882):	2,000 psi

3. New reinforcing steel, where called for, shall conform to Section 709.01, Grade 40.

4. New bolts, where called for, shall conform to ASTM A 307.

5. Expansion anchors shall be of the multi-set type and shall conform to GSA Specifications FF-325, Group VIII, Type 1, with the following properties:

Ultimate pullout load:	6,200 lbs. for 1/2" size
Ultimate shear load:	6,500 lbs. for 1/2" size

6. Removal work, demolition, excavation, backfill, concrete work, furnishing and installation of reinforcing bars, bolts, nuts and anchors, and application of bonding compound will not be paid for directly but shall be considered incidental to the adjustment of the various utility structures of which they are a part.

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

PAUL T. TANIGUCHI
LICENSED PROFESSIONAL ENGINEER NO. 844-C
HAWAII, U.S.A.

THIS WORK WAS DONE BY ME OR UNDER MY SUPERVISION
BY _____

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

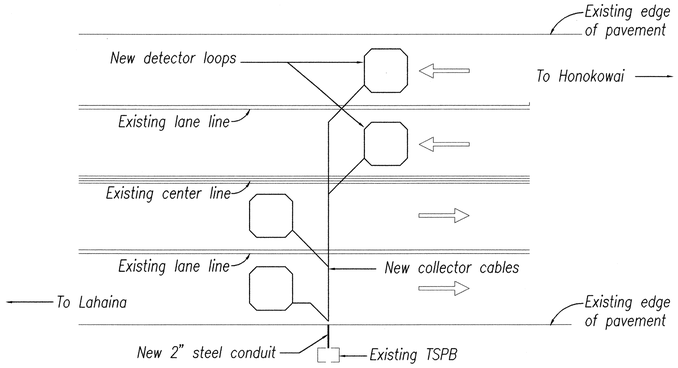
MISCELLANEOUS
UTILITY DETAILS

HONOAPIILANI HIGHWAY RESURFACING
Puamana to Kaanapali
Project No. 30ABC-01-97M

SCALE: As shown DATE: April, 1997

SHEET NO. 2 OF 3 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	30ABC-01-97M	1997	49	51

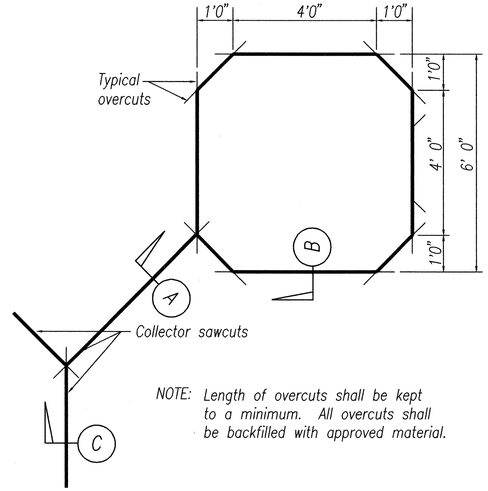


LOOP DETECTOR LAYOUT

Not to Scale

NOTES:

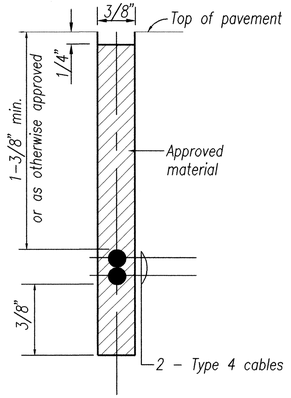
1. Center detector loops in lanes.
2. Collector cables shall be twisted 2 turns per foot.
3. Number of loops and locations vary. See project plans.
4. Number and locations of collector sawcuts may be varied in the field to suit.
5. Type 4 cable shall be loop sensor cable, solid No. 12, single conductor conforming to IMSA SPEC 51-5.



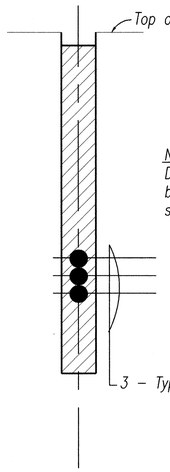
NOTE: Length of overcuts shall be kept to a minimum. All overcuts shall be backfilled with approved material.

TYPICAL DETECTOR LOOP SAWCUT DETAIL

Not to Scale

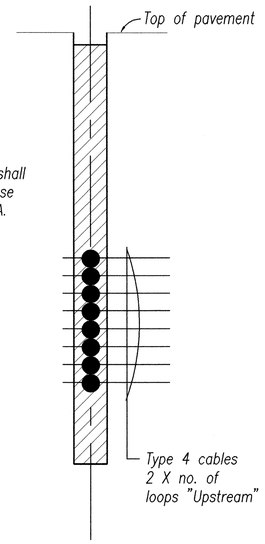


SECTION A
Not to Scale

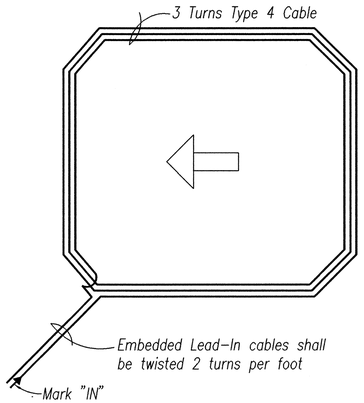


Note:
Details not noted shall be identical to those shown in Section A.

SECTION B
Not to Scale

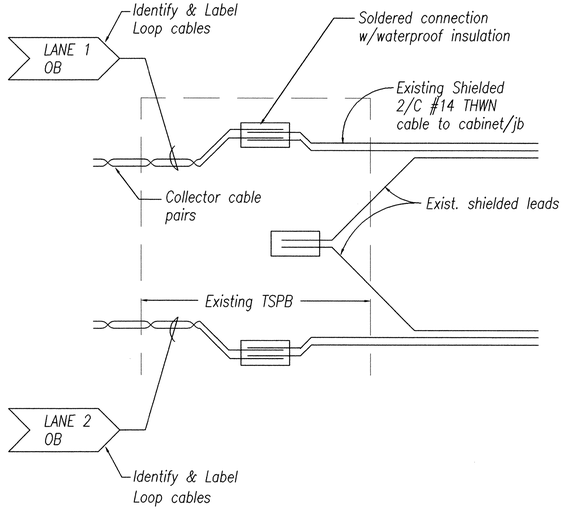


SECTION C
Not to Scale



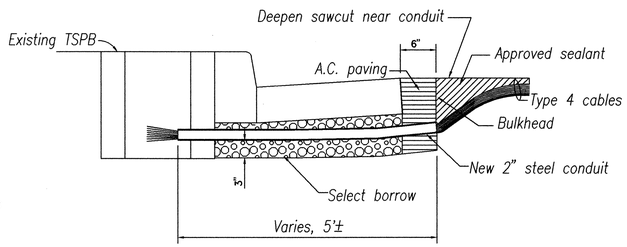
TYPICAL DETECTOR LOOP WIRING DIAGRAM

Not to Scale



TYPICAL SPLICE DETAIL

Not to Scale



NOTES ON CONSTRUCTION AT END OF SAWCUT

1. Seal roadway end of conduit after installation of conductors.
2. Install bulkhead across conduit trench.
3. Place sealant in sawcut.
4. Backfill over conduit with new asphalt concrete.
5. Conduit may be installed by tunneling under curb and gutter, where they exist.

DETAIL OF LOOP INSTALLATION AT EDGE OF ROADWAY

Not to Scale

GENERAL NOTES:

1. Contractor shall identify and mark the existing 2/C #14 cables running from the TSPB to the cabinet/junction box prior to performing any work on the detector loops. Cables shall be identified by lane no. and direction of flow.
2. Loop and collector cables shall be one continuous wire. Collector cables from the same loop shall be twisted in pairs, two turns per foot. DO NOT twist a cable from one loop with that from another.
3. Continuity of detector cables shall be tested and warranted for one year from the date of acceptance.
4. All new collector cables shall be identified and labeled by lane number and direction of traffic flow.
5. All new cables terminating within the pullbox shall have a minimum of 12" of slack.
6. Old cables shall be cut off and abandoned in place. New collector cables shall be connected to the appropriate lead-in cables to the cabinet/junction box. Connections shall be soldered and covered with waterproof insulation.

ORIGINAL PLAN
NOTE BOOK NO. ____
SURVEY PLOTTED BY ____ DATE
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PAUL T. TANIGUCHI
LICENSED PROFESSIONAL ENGINEER NO. 864-C
Hawaii, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MISCELLANEOUS UTILITY DETAILS

HONOAPIILANI HIGHWAY RESURFACING
Puamana to Kaanapali
Project No. 30ABC-01-97M

SCALE: As shown DATE: April, 1997

SHEET NO. 3 OF 3 SHEETS