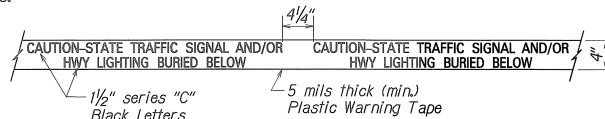


**Trench Backfill Material "A"**  
CLSM, Earth, or Earth and Gravel.  
If Earth and Gravel used, the maximum shall contain not more than 50% by volume of rock particles. Maximum 8" loose fill per lift. Obtain 95% compaction for each lift.

**Concrete**  
3000 psi compressive strength @ 3 days.

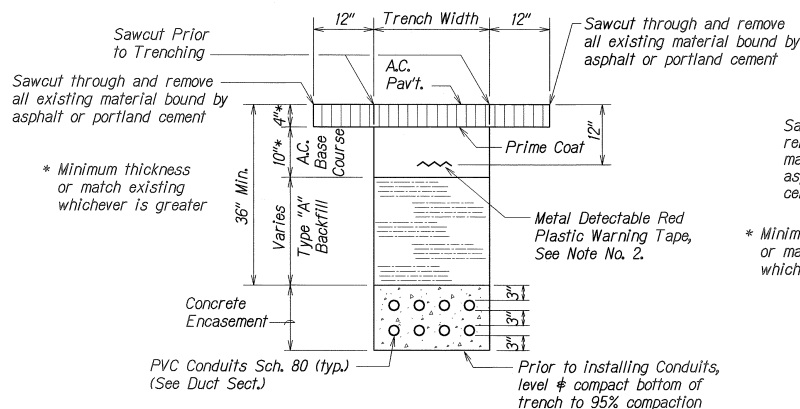
NOTE: Base Course & Sub-Base Course per 1994 State Standard Specifications for Highway Construction.

2. If trench is located on unpaved area, the Contractor shall replace 10" A.C. Base Course and 4" A.C. Pavement with Type "A" backfill material.
3. The Metal Detectable Red Plastic Warning Tape shall be a minimum 5 mils thick and 4" wide with a continuous metallic backing and corrosion resistant 1+ mil thick foil core. The message on the tape shall read, "CAUTION - STATE TRAFFIC SIGNAL AND/OR HWY LIGHTING BURIED BELOW," utilizing 1 1/2 inches series "C" black lettering. The message will be repeated with a 4 1/4" spacing between top line of message and start of next repeat.
4. The Contractor may begin backfilling the conduit trench when the concrete reaches 3000 psi compressive strength after 3 days.
5. Maximum four (4) Conduits per row for multiple conduit duct section.
6. For direct buried duct sections, the concrete jacket required at the conduit by-pass for various utilities, shall not be paid for separately but considered incidental to the direct buried conduits.
7. After installing all the traffic signal cables, the Contractor shall duct seal all conduits in the pullboxes, traffic signal standards and traffic signal controller cabinet concrete base. The duct seal material shall be approved by the Traffic Signal Inspector/Engineer and shall not be paid for separately but considered incidental to the direct buried and/or concrete encased conduits.



*For additional information see note no. 2.*

METAL DETECTABLE RED PLASTIC WARNING TAPE



*PVC Conduit Sch 80*

*See Backfill Section ①*

*Concrete Encasement*

*3"*

*3"*

*PVC Conduit Sch 80 (typ.)*

*See Backfill Section ①*

*Concrete Encasement*

*3"*

*3"*

*3"*

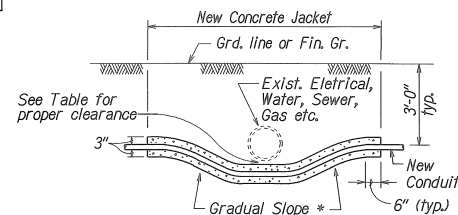
*1 1/2"*

*MULTIPLE CONDUIT*

DUCT SECTIONS - CONC. ENCASED

UTILITY	CLEARANCE
Water	See Note**
Sewer	24" Min. or Provide 6" Thick Reinforced Conc. Jacket
Drain	12" Min.
HECO/HTCO/CATV	3" Min.
AT#T	12" Min.

**\*\*At the electrical/signal ductline water crossing, install all electrical/signal ductline elevations to maintain 6" vertical clear separation from all waterlines (12" clear for all electrical/signal ductline structures larger than 16") at no cost to the Board of Water Supply.**

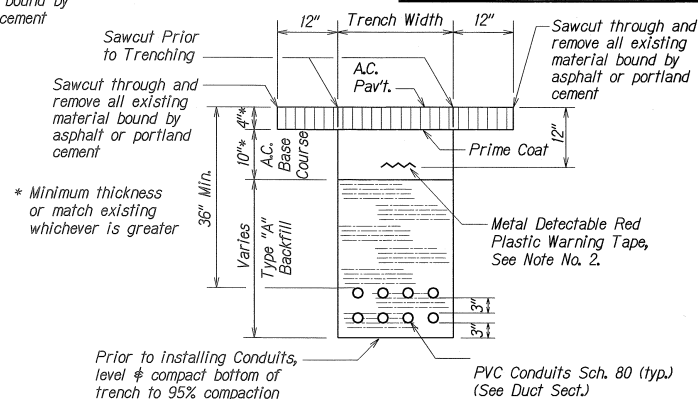


\* To be determined by County Electrical Inspector/Engineer

CONDUIT BY-PASS DETAIL AT VARIOUS UTILITIES

*Not to Scale*

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-037-1(23)R	2005	20	22



**Figure 1: Typical Installation Details**

The figure illustrates two typical installation details for a wall foundation. Both details show a cross-section of a wall and foundation with a 3-inch diameter PVC conduit (Sch 80) passing through them. The left detail shows a single vertical conduit, while the right detail shows a larger conduit containing multiple horizontal conduits. Both details indicate that the backfill should be Section 2.

SINGLE CONDUIT

MULTIPLE CONDUIT

DUCT SECTIONS - DIRECT BURIED

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**TRAFFIC SIGNAL DETAILS**

HALEKAKALA HIGHWAY  
Intersection Improvements at Makani Road  
F.A. Project No. STP-037-1(23)R

Scale: As Shown Date: May 2005

SHEET NO. TS7 OF 9 SHEETS