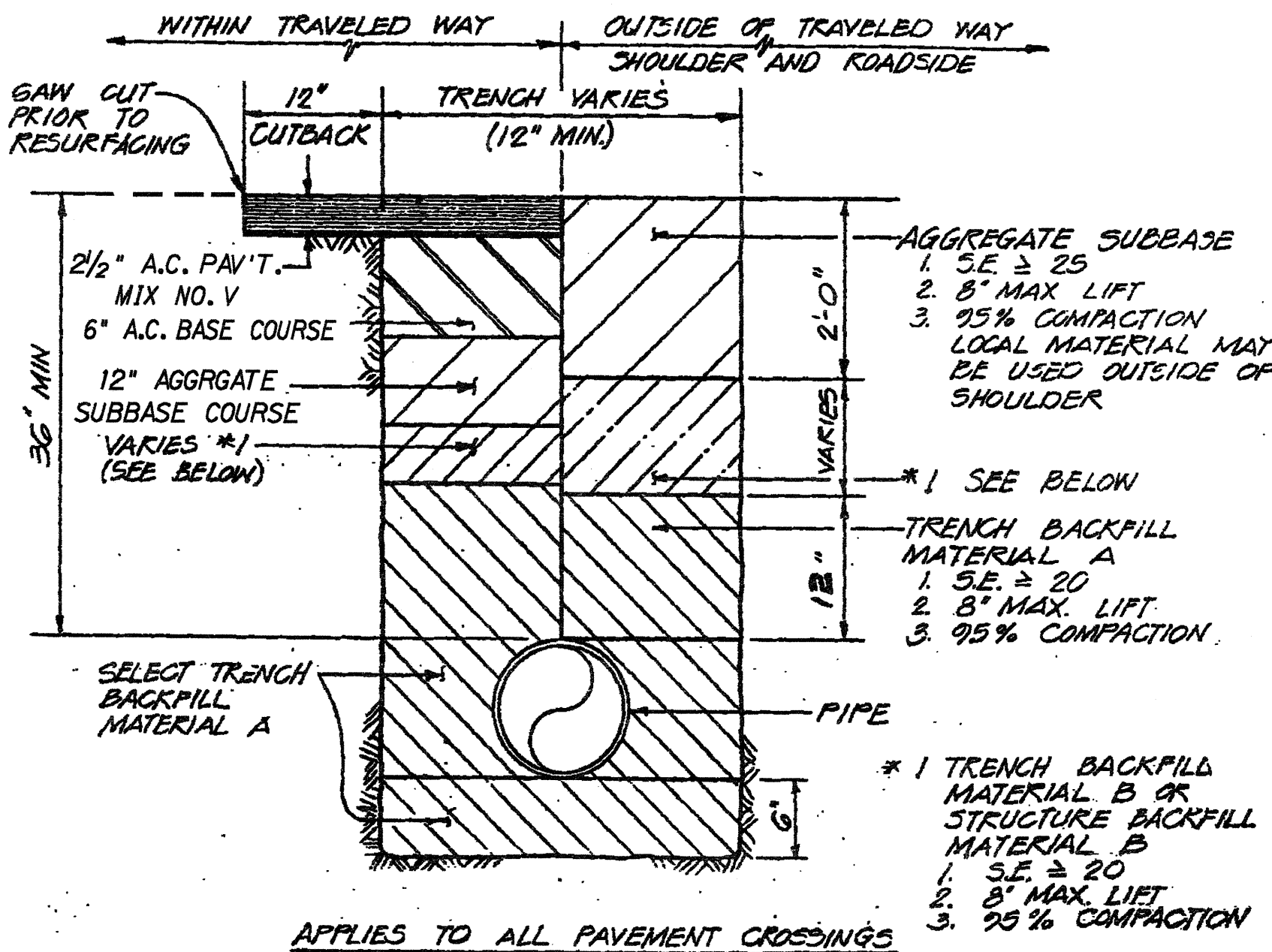
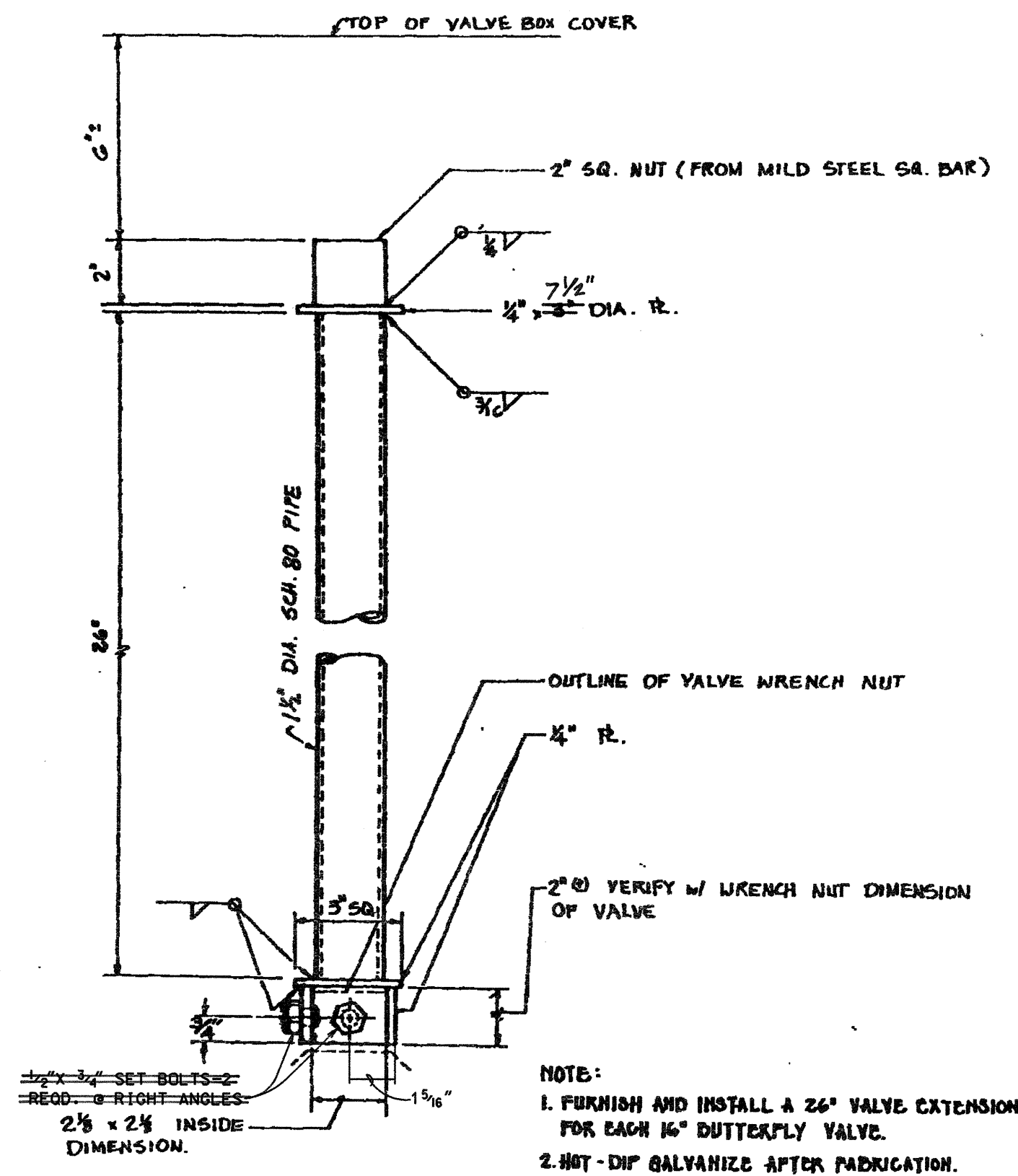


FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	130B-01-91	1991	6	26



TYPICAL TRENCH AND PAVEMENT
REPAIR SECTION
NOT TO SCALE



VALVE WRENCH EXTENSION DETAIL
SCALE: 3"=1'0"

WATER LINE NOTES

- All work shall conform to the Department of Water Supply "Water System Standards" Volumes 1 and 2, dated 1985, as amended and the Hawaii Standard Specifications for Road and Bridge Construction, 1985.
- The Contractor shall inform the DWS Engineer 72 hours prior to the beginning of any water line work and one week prior to any connection, chlorination, shut-off or relocation work.
- The water line shall be tested at minimum of 225 psi, at the low point under DWS supervision after installation and ~~after~~ paving ~~is~~ completed.
prior to being
- The Contractor shall be responsible for the chlorination of the water system and shall bear all cost. The persons engaged to do the chlorination work must be licensed by the State of Hawaii and approved by the Department of Health.
- All connections to existing water lines shall be done by DWS. The Contractor shall perform all excavation, backfill, road repair, traffic control, and provide equipment necessary to complete the connection.
- Minimum horizontal clearance between water lines and other utilities shall be 8 feet unless otherwise specified. Minimum vertical clearance between water lines and other utilities shall be 12 inches provided concrete jackets are used, and 18 inches if no concrete jackets are used. In all instances, the water lines shall be at a grade higher than other utilities.
- All fittings (Class 250) and all gate valves (Class 200) shall be cast iron, or ductile iron with mechanical joints unless specified otherwise.
- All pipe lines, 4 inches and larger in diameter shall be ductile iron, push on joint Class 52.
- Butterfly valves shall be Class 150 and be furnished with mechanical joints.
- All existing water lines, water line appurtenances and other utility locations shown on the plans are obtained from latest reliable sources. The Contractor shall be responsible to verify the exact location of all utilities in the field and shall bear all costs for damages done during the contract period.
- Trench excavation, backfill, concrete blocks, pavement and driveway repairs, pavement marking repairs, pipe nipples, and furnishing and installing other materials as called for in the plans that are not included in the proposal schedule shall be considered incidental to installing the new 16-inch ductile iron pipe water line.
- Existing water meter at Sta. 8+20± left shall be relocated as shown on the plan. Work shall include removing existing meter box, extending and connecting 2 1/2-inch copper service lateral, installing a new 2-inch meter box and other incidentals necessary to complete the work. This work will be paid under Item No. 624.2300 - Relocating water meter at Sta. 8+20± (left).
- Backfill material for copper service lateral shall be No. 4 Manufactured Sand.
- All affected manholes shall be adjusted to new pavement grade.
- Lead free solder and flux.

CONCRETE THRUST BLOCK DETAILS

NOTES:

- Areas shown in Table are based on a line pressure of 250 psi, to determine minimum bearing areas for pressures other than 250 psi, multiply the area obtained in the Table by the ratio of the pressure to 250.
- In the absence of a soils report an allowable lateral bearing pressure of 2,000 psf shall be assumed.
- All bearing surfaces to be carried to undisturbed earth.
- Minimum concrete compressive strength = 2,500 psi.

TYPE OF SOIL CONDITION	LATERAL BEARING PRESSURE
A. Soft clay; fine loose sand	500 lbs. per sq. ft.
B. Silts; hard clays	1,000 lbs. per sq. ft.
C. Gravelly silts or gravelly clay	2,000 lbs. per sq. ft.
D. Gravel; decomposed rock	3,000 lbs. per sq. ft.
E. Hard rock	4,000 lbs. per sq. ft.

MINIMUM BEARING AREAS (SQ. FT.) FOR CONCRETE THRUST BLOCKS						
PIPE SIZE	PIPE BEND	TYPE OF SOIL CONDITION				
		A	B	C	D	E
16"	TEES, CAPS, WYES	100.0	50.7	24.9	16.9	12.4
	90°	142.0	71.1	35.6	24.0	17.8
	45°	77.3	38.2	19.6	12.4	9.8
	22 1/2°	39.1	19.6	9.8	6.2	5.3
	11 1/4°	20.4	9.8	5.3	3.6	2.7

APPROVED:

H. Williams *Surah* 5/22/91
MANAGER, Department of Water Supply
COUNTY OF HAWAII DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WATER NOTES AND DETAILS

KEAAU-PAHOA RD. IMPROVEMENTS
Vicinity of Keau School
PROJECT NO. 130B-01-91

Scale: As Shown Date: May, 1991

SHEET No. 1 OF 1 SHEETS

"AS-BUILT"