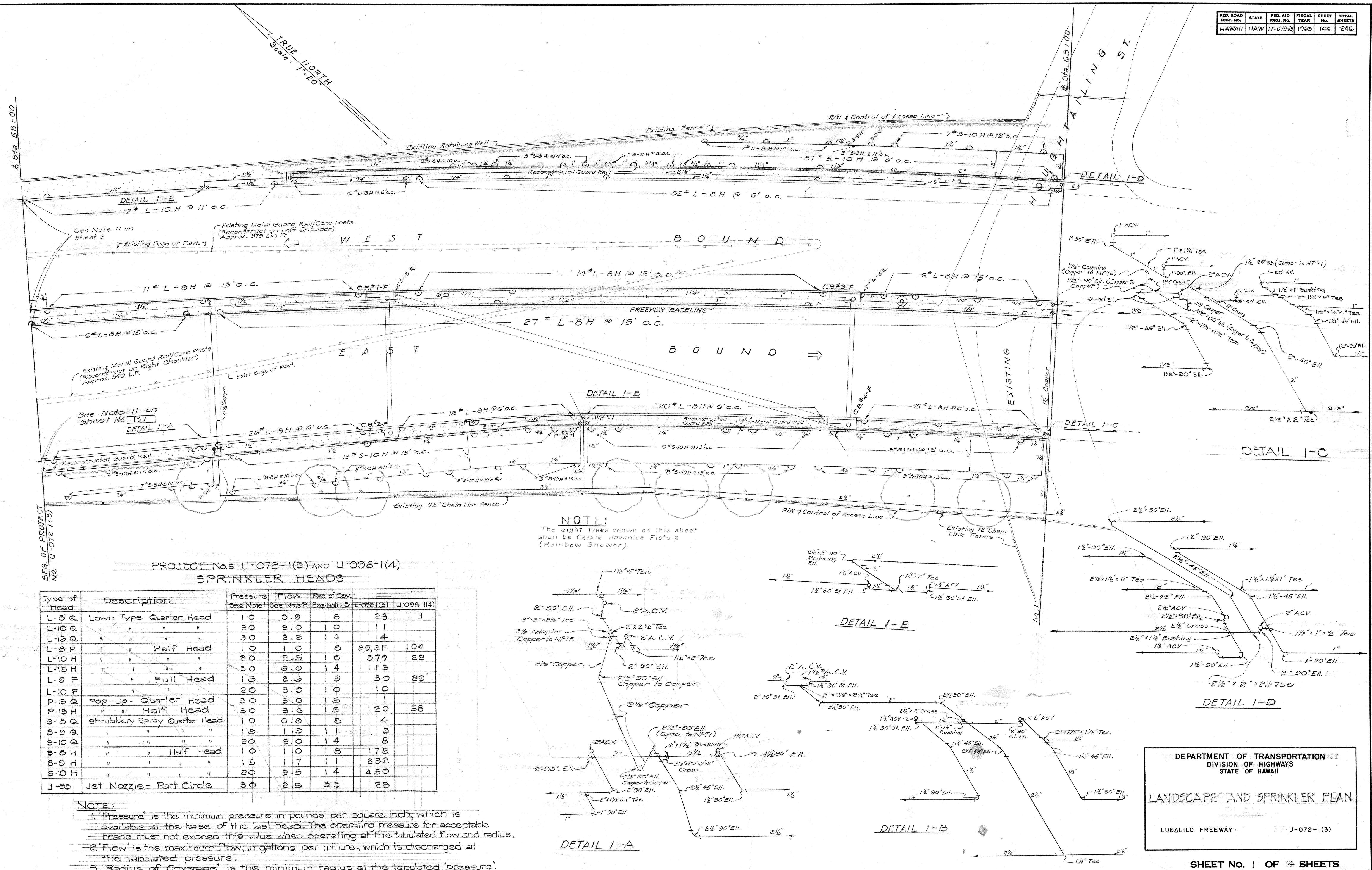




NOTE:
The eight trees shown on this sheet shall be Cassia Javanica Fistula (Rainbow Shower).

PROJECT Nos U-072-1(3) AND U-098-1(4)
SPRINKLER HEADS

Type of Head	Description	Pressure See Note 1	Flow See Note 2	Rad. of Cov. See Note 3	U-072-1(3)	U-098-1(4)
L-8 Q	Lawn Type Quarter Head	10	0.9	8	23	1
L-10 Q	" " " "	20	2.0	10	11	
L-15 Q	" " " "	30	2.5	14	4	
L-8 H	" " Half Head	10	1.0	8	20, 31	104
L-10 H	" " " "	20	2.5	10	37	82
L-15 H	" " " "	30	3.0	14	115	
L-9 F	" " Full Head	15	2.5	9	30	29
L-10 F	" " " "	20	3.0	10	10	
P-15 Q	Pop-Up Quarter Head	30	3.0	15	1	
P-15 H	" " Half Head	30	3.6	15	120	58
S-8 Q	Shrubbery Spray Quarter Head	10	0.9	8	4	
S-9 Q	" " " "	15	1.5	11	3	
S-10 Q	" " " "	20	2.0	14	8	
S-8 H	" " Half Head	10	1.0	8	175	
S-9 H	" " " "	15	1.7	11	232	
S-10 H	" " " "	20	2.5	14	450	
J-33	Jet Nozzle- Part Circle	30	2.5	33	28	

NOTE:
1. "Pressure" is the minimum pressure, in pounds per square inch, which is available at the base of the last head. The operating pressure for acceptable heads must not exceed this value when operating at the tabulated flow and radius.
2. "Flow" is the maximum flow, in gallons per minute, which is discharged at the tabulated "pressure".
3. "Radius of Coverage" is the minimum radius at the tabulated "pressure".

DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
STATE OF HAWAII

LANDSCAPE AND SPRINKLER PLAN

LUNALILO FREEWAY U-072-1(3)

GENERAL NOTES

- All pipes under pavements including risers are to be of copper.
- All copper pipes shall be connected with solder type fittings of bronze casting or wrought copper. Solder type fittings and copper pipes shall be "Streamline" or approved equal.
- In water piping diagrams solder type fittings are shown. Pipes not noted as Copper are to be galvanized iron screw pipes and fittings not noted as Copper to "are to be galvanized malleable iron fittings."
- Risers for "Lawn Type" and "Shrubbery Type" sprinkler heads shall be 1/2" galvanized pipe. Risers for "Pop-up and Jet Nozzle" sprinkler heads shall be not less than required to fit sprinkler head.
- After complete installation of the sprinkler system, each sprinkler shall be adjusted to the satisfaction of the Engineer.
- Unless otherwise stipulated or directed by the Engineer, feeder lines shall be located 3" from its & to the back of conc. curbs at the median strip and shoulder and 12" from its & to fence line.
- All sprinkler heads for shrubbery shall be raised 12" above finished grade.
- Sprinkler heads along opposite edges of median strips shall be staggered at one half distance.
- Average pressure at the mains 60 p.s.i.
- For Typical Sprinkler System Details, see: sheet No. 207 for pipe connections at retaining walls.
- Summary of models and characteristics of the Sprinkler Heads is shown on sheet No. 126
- Connection at & station 58+00 shall be made as indicated if Sprinkler system for Project 3F-072-110 is in place, if not in place, thread and cap pipe and mark location with 1 x 2 1/2 redwood marker.
- For sprinkler feed lines off existing water mains B.W.S. will tap main and install corporation stop (furnished by Contractor) and be paid for by State. Contractor to excavate and install all sprinkler lines except the installation of Meters. Meters to be installed by B.W.S. and be paid for by State.

PLANT LIST

Key	Name	Quant.	Quant.	Ht.	Cont.	Spacing
	*1 Cassia javanica fistula Rainbow Shower (Pink)	8 Ea.	1 Ea.	4'-6"	5 Gal.	
	*1 Cassia javanica fistula Rainbow Shower (Golden Yellow)	7 Ea.	1 Ea.	4'-6"	5 Gal.	
	*1 Cassia javanica fistula Rainbow Shower (Pale Yellow)	8 Ea.	1 Ea.	4'-6"	5 Gal.	
	*1 Cassia javanica fistula Rainbow Shower (Watermelon Pink)	7 Ea.	1 Ea.	4'-6"	5 Gal.	
	*2 Ligustrum texanum Texas Privet	257 Ea.		12"-18"	1 Qt.	8' O.C.
	Ligustrum ovalifolium Privet		27 Ea.	12"-18"	1 Gal.	6' O.C.
	Wedelia trilobata Wedelia	12,240 Ea.		10"-12"	Runners	1 Gal. 4' O.C.
	Cynodon dactylon Bermuda Grass	238,280 Sq. Ft.	21,900 Sq. Ft.			

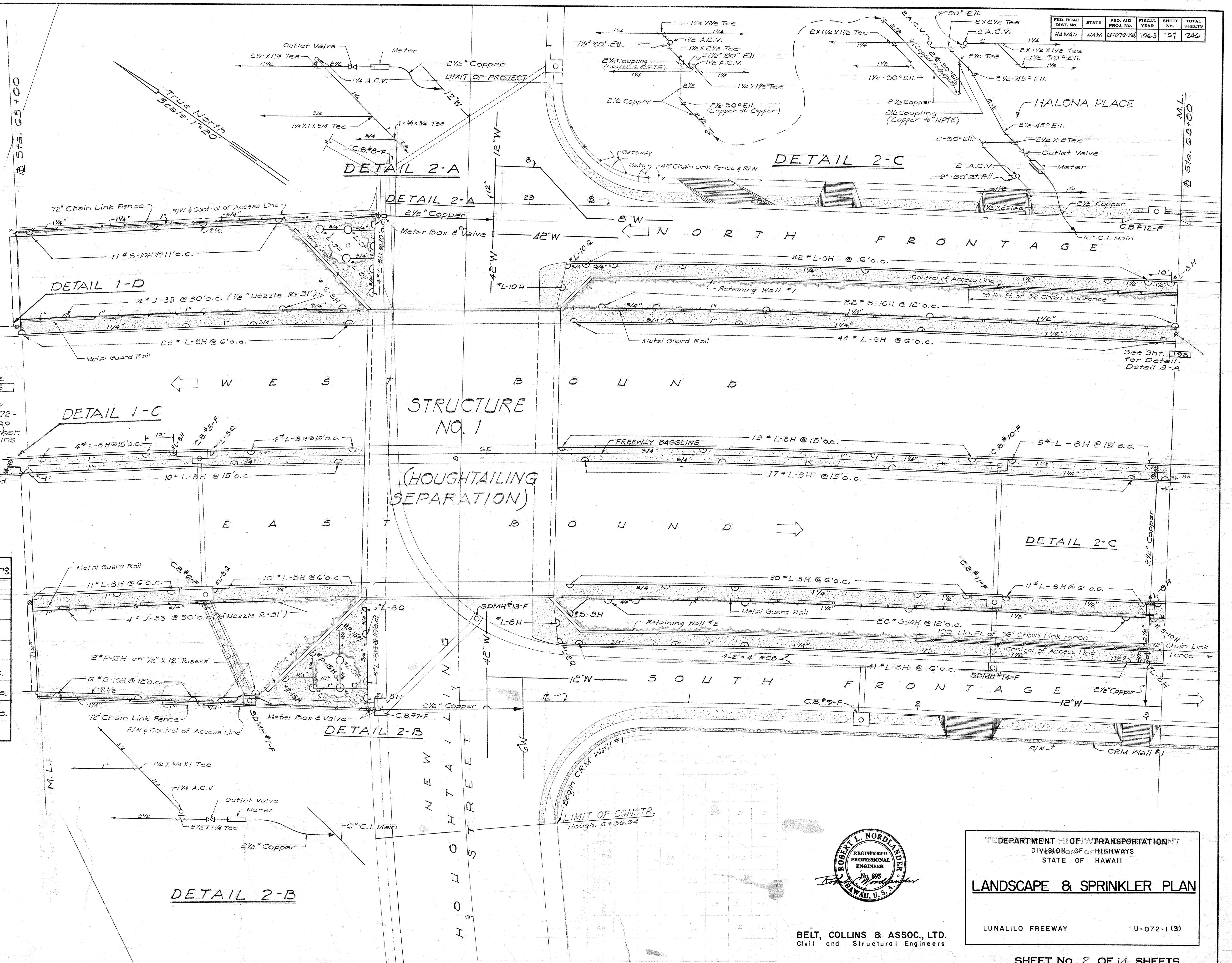
NOTE:

- Trees shall be planted so that no two trees of same color are adjacent.
- Plant single row along center line of medial strip (no symbol) full length to Station 75+35±

TABLE FOR MAXIMUM TAP

4" Main	3/4" x 1" Corp.
6" Main	1" x 1 1/4" Corp.
8" Main	1 1/4" x 1 1/2" Corp.
12" Main	1 1/2" x 2" Corp.

Where size of Tap exceeds that given in above table, provide double hub fittings with Boss tapped for required corporation stop.



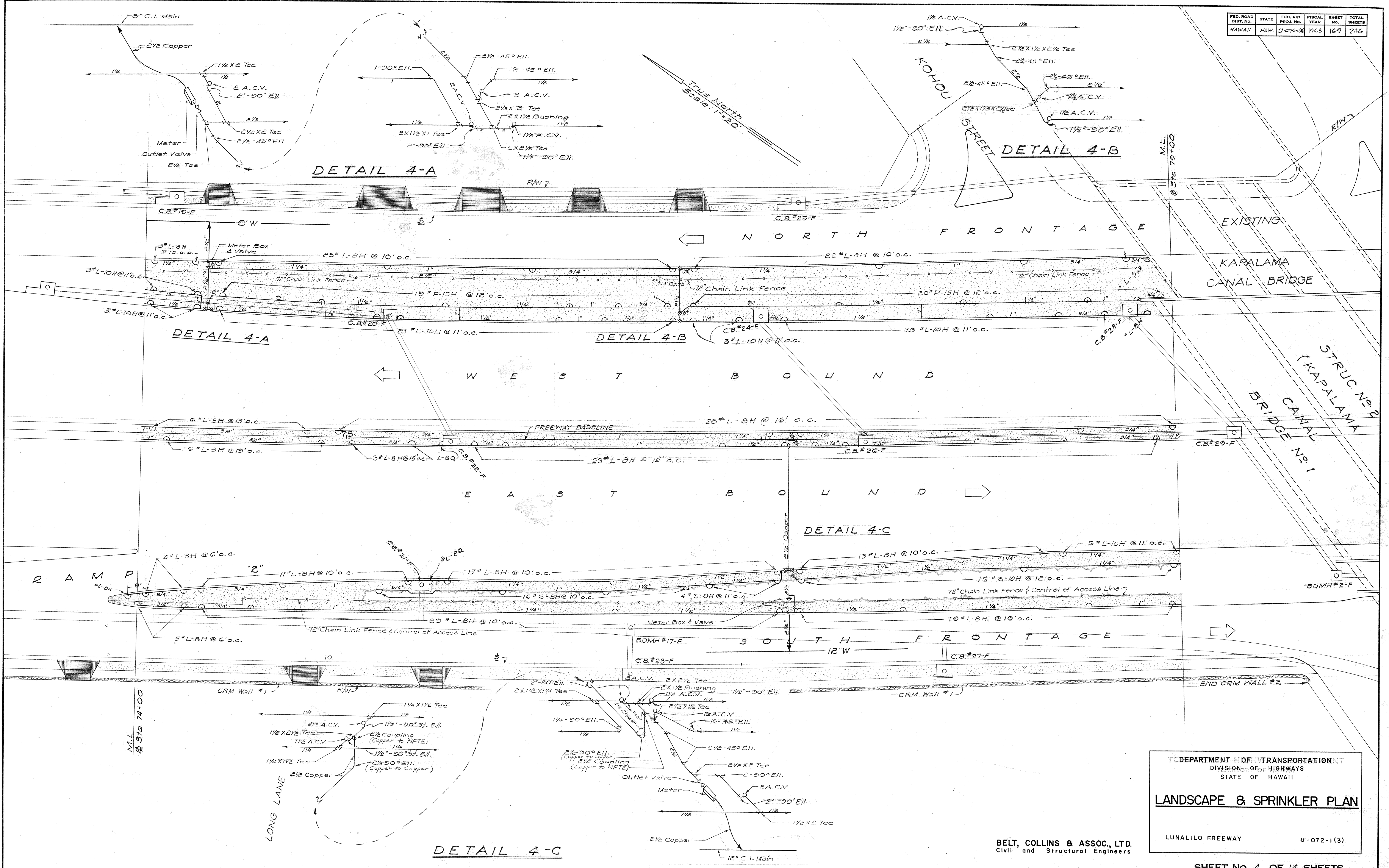
BELT, COLLINS & ASSOC., LTD.
Civil and Structural Engineers

DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
STATE OF HAWAII

LANDSCAPE & SPRINKLER PLAN

LUNALILO FREEWAY U-072-1(3)

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	U-072-1(3)	1963	169	246



SURVEY PLOTTED BY	DATE
DESIGNED BY	
DRAWN BY	
CHECKED BY	
NOTE BOOK	
QUANTITIES CHECKED BY	
NO.	

THE DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
STATE OF HAWAII

LANDSCAPE & SPRINKLER PLAN

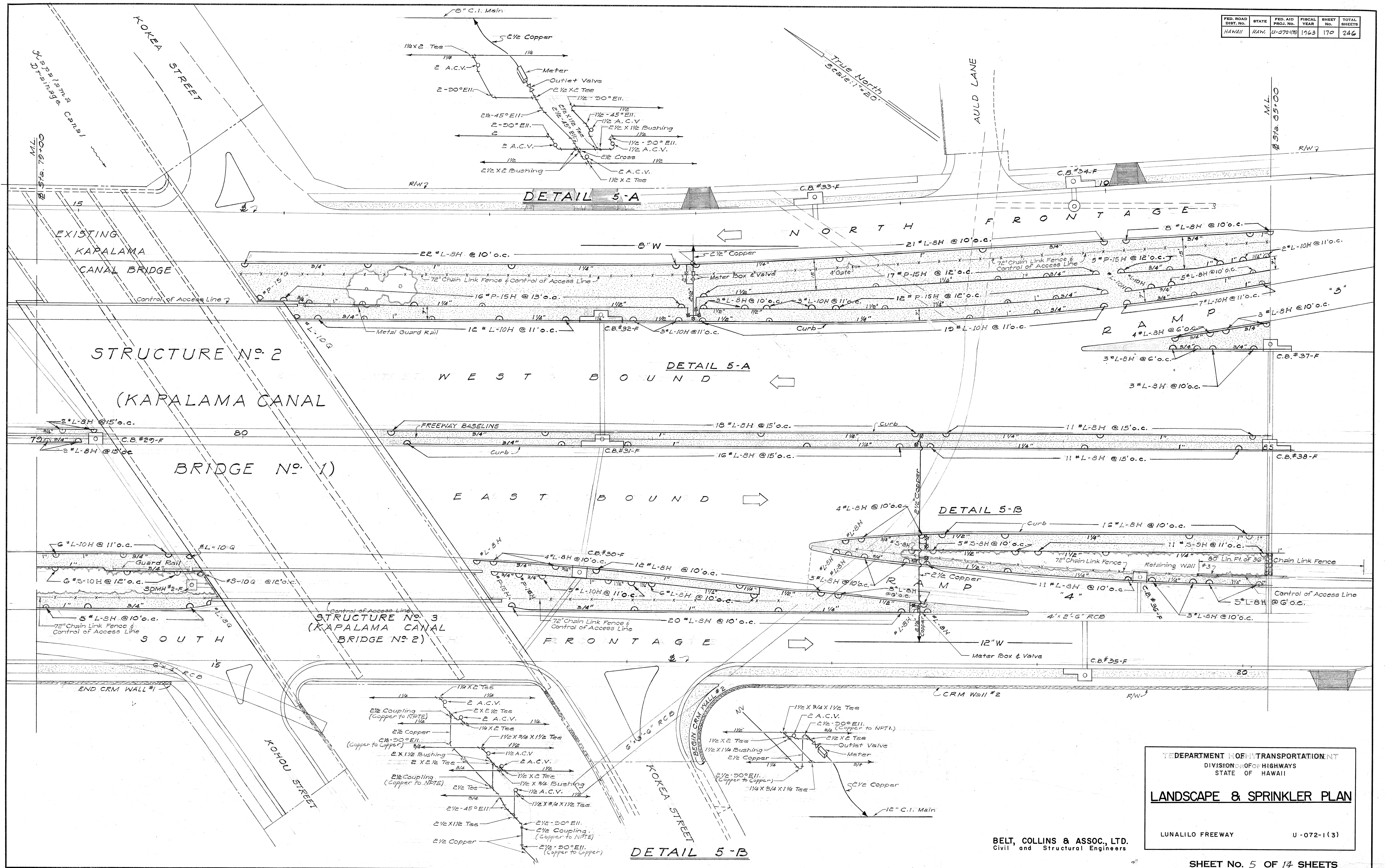
LUNALILO FREEWAY U-072-1(3)

BELT, COLLINS & ASSOC., LTD.
Civil and Structural Engineers

SHEET NO. 4 OF 14 SHEETS

007210300.169 199

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	U-072-1(3)	1963	170	246

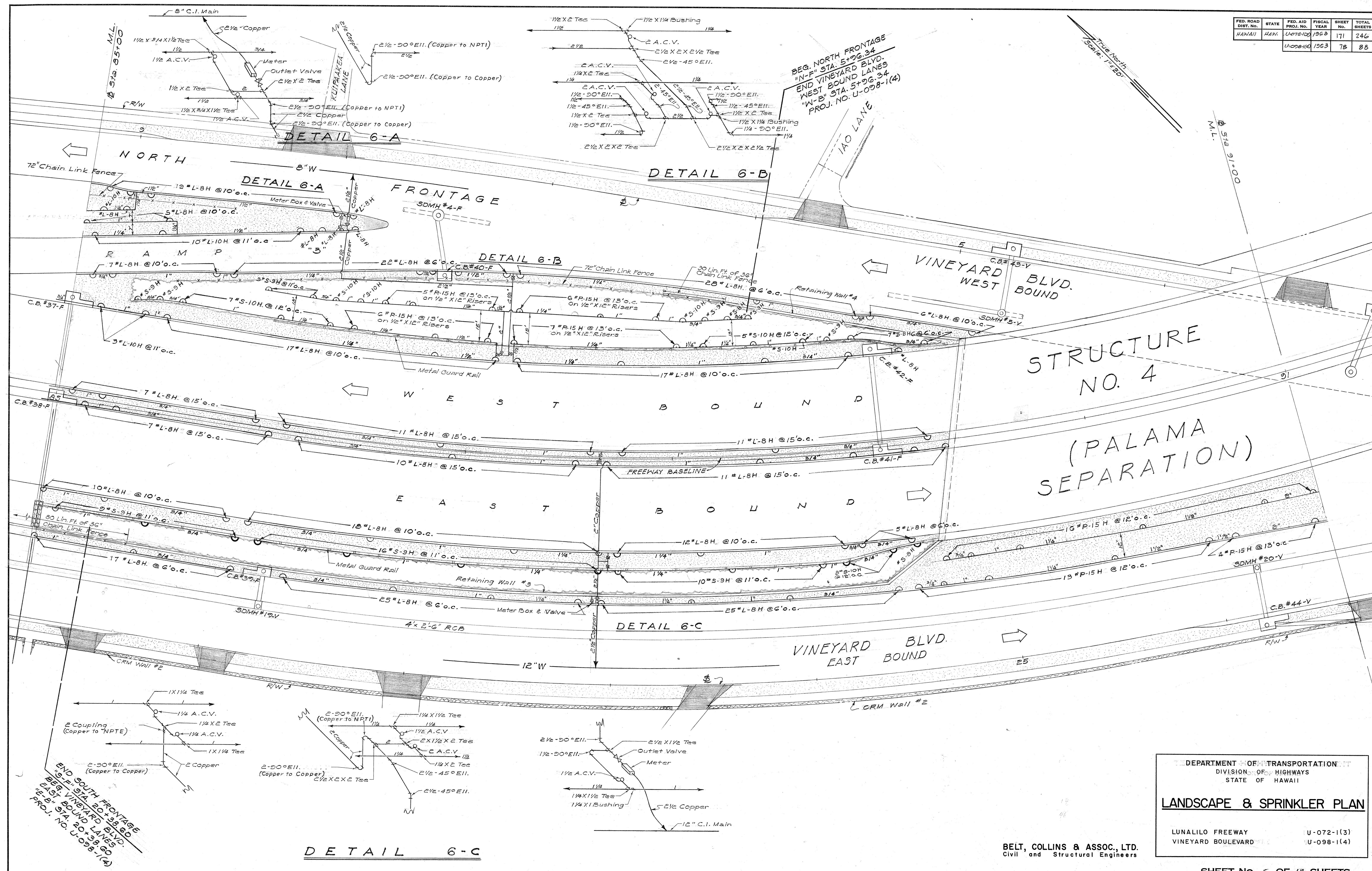


SURVEY PLOTTED BY: DATE: 11/15/63
 DESIGNED BY: P. J. COLLINS
 DRAWN BY: J. L. COLLINS
 CHECKED BY: J. L. COLLINS
 ORIGINAL PLAN NO. 170
 NOTE BOOK NO. 170

THE DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 STATE OF HAWAII
LANDSCAPE & SPRINKLER PLAN
 LUNALILO FREEWAY U-072-1(3)

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FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	U-072-1(3)	1963	171	246
		U-098-1(4)	1963	78	88



SURVEY PLOTTED BY: DATE: _____
 DESIGNED BY: _____
 DRAWN BY: _____
 CHECKED BY: _____
 NOTE BOOK NO. _____
 QUANTITIES CHECKED BY: _____
 CUSTODY BY: _____

DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 STATE OF HAWAII
LANDSCAPE & SPRINKLER PLAN
 LUNALILO FREEWAY U-072-1(3)
 VINEYARD BOULEVARD U-098-1(4)

BELT, COLLINS & ASSOC., LTD.
 Civil and Structural Engineers

SHEET NO. 6 OF 14 SHEETS

ORIGINAL PLAN	SURVEY PLOTTED BY <i>W. Messersch-P.H.</i>	DATE
	DESIGNED BY <i>S. G. H. - G. A. B.</i>	
	DRAWN BY <i>S. G. H. - G. A. B.</i>	
	TRACED BY <i>G. A. B.</i>	
NOTE BOOK	QUANTITIES BY	
	QUANTITIES CHECKED BY	
No.	CHECKED BY	

ED ON DIEPO 1000H CLEARPRINT

(PALAMA
SEPARATION)

TRUE SCALE: 1" = 20'

R/W & Control of Access Line

✓ FREEWAY BASELINE

DETAIL 7

2 1/2" COPP

3/4" 11" L.A.H @ 6' o.c.

3/4" 11" L.A.H @ 6' o.c.

VINEYARD BLVD

WEST BOUND

DETAIL -

10'

9 * L-5H @ 10' o.c. —

LEYARD BLVD
AST BOUND

BEG. VINEYARD BLVD.
WEST BOUND LANES
PROJ. NO. U-098-1(4)
"W-B" 0+00=
"P-S" 0+48.09=
+ "V-B" 80+47.80

END VINEYARD BLVD.
EAST BOUND LANES
PROJ. NO. U-098-1(4)
"E-B" 29+61.56 =
"P-S" 0+48.30 =
"K-B" 86+56.07

DETAIL 7-A

DETAIL 7-B

DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
STATE OF HAWAII

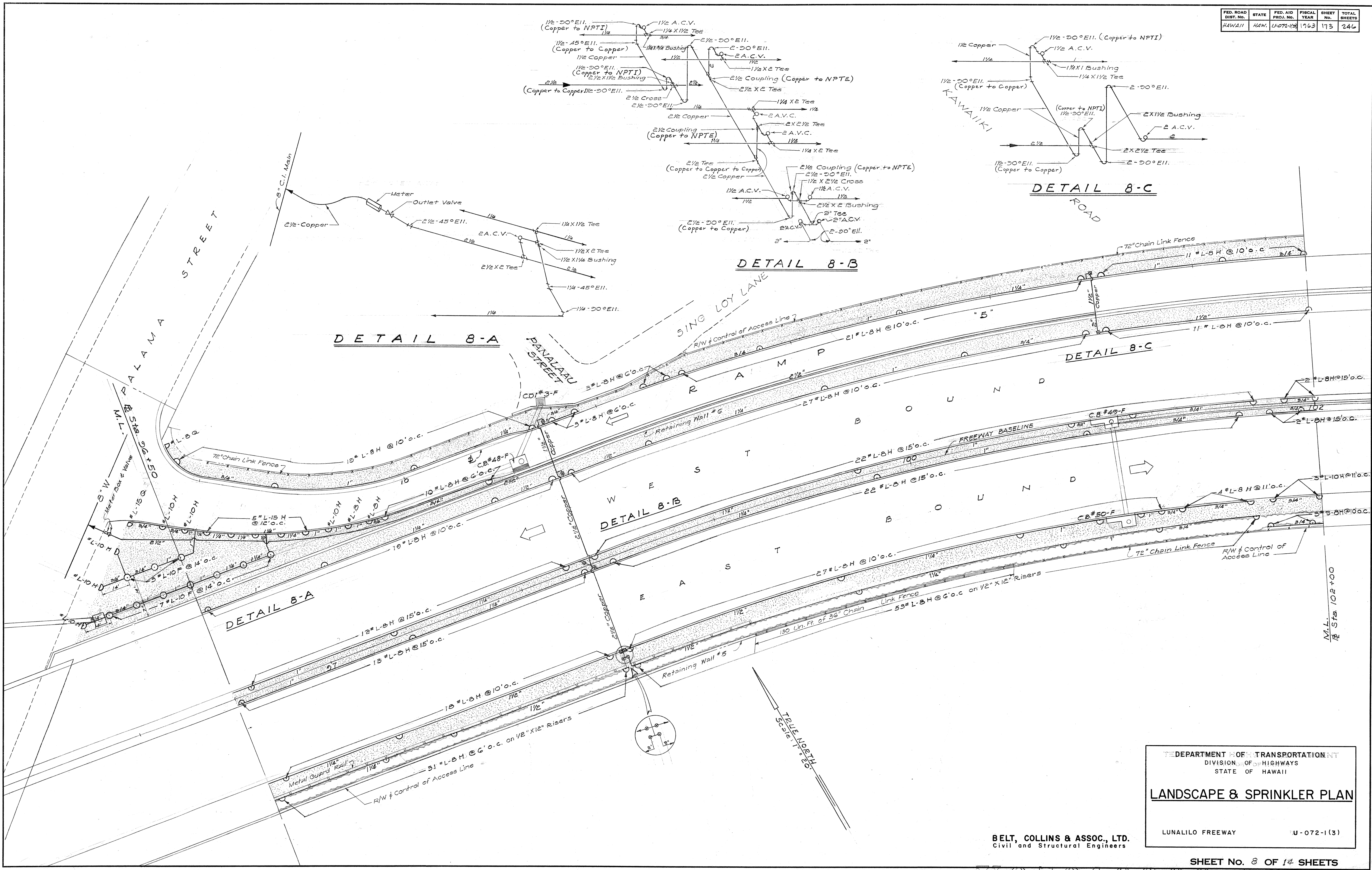
LANDSCAPE & SPRINKLER PLAN

BELT, COLLINS & ASSOC., LTD.
Civil and Structural Engineers

SHEET No. 7 OF 14 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	U-072-1(3)	1963	173	246

SURVEY PLOTTED BY	DATE
ORIGINAL PLAN	
NOTE BOOK	
QUANTITIES CHECKED BY	
CHECKED BY	



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Civil and Structural Engineers

THE DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

STATE OF HAWAII

LANDSCAPE & SPRINKLER PLAN

LUNALILO FREEWAY

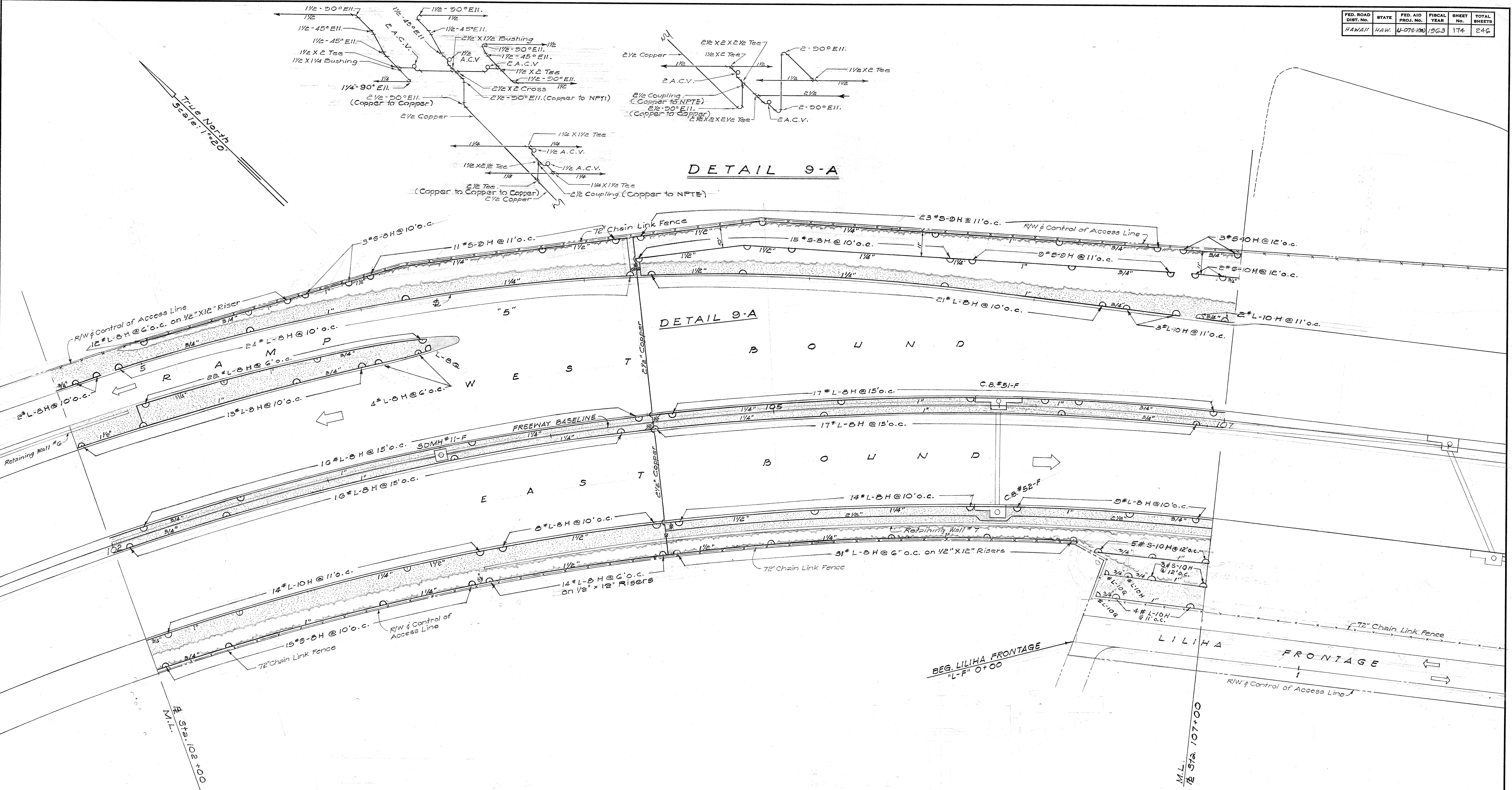
U-072-1(3)

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	U-072-1(3)	1963	174	246

True North
Scale: 1"=20'

DETAIL 9-A

DETAIL 9-A



DATE	12-24-64
ORIGINAL PLAN	BY S. A. COLLINS
TRACED BY	BY S. A. COLLINS
QUANTITIES CHECKED BY	BY S. A. COLLINS
CHECKED BY	BY S. A. COLLINS

DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
STATE OF HAWAII

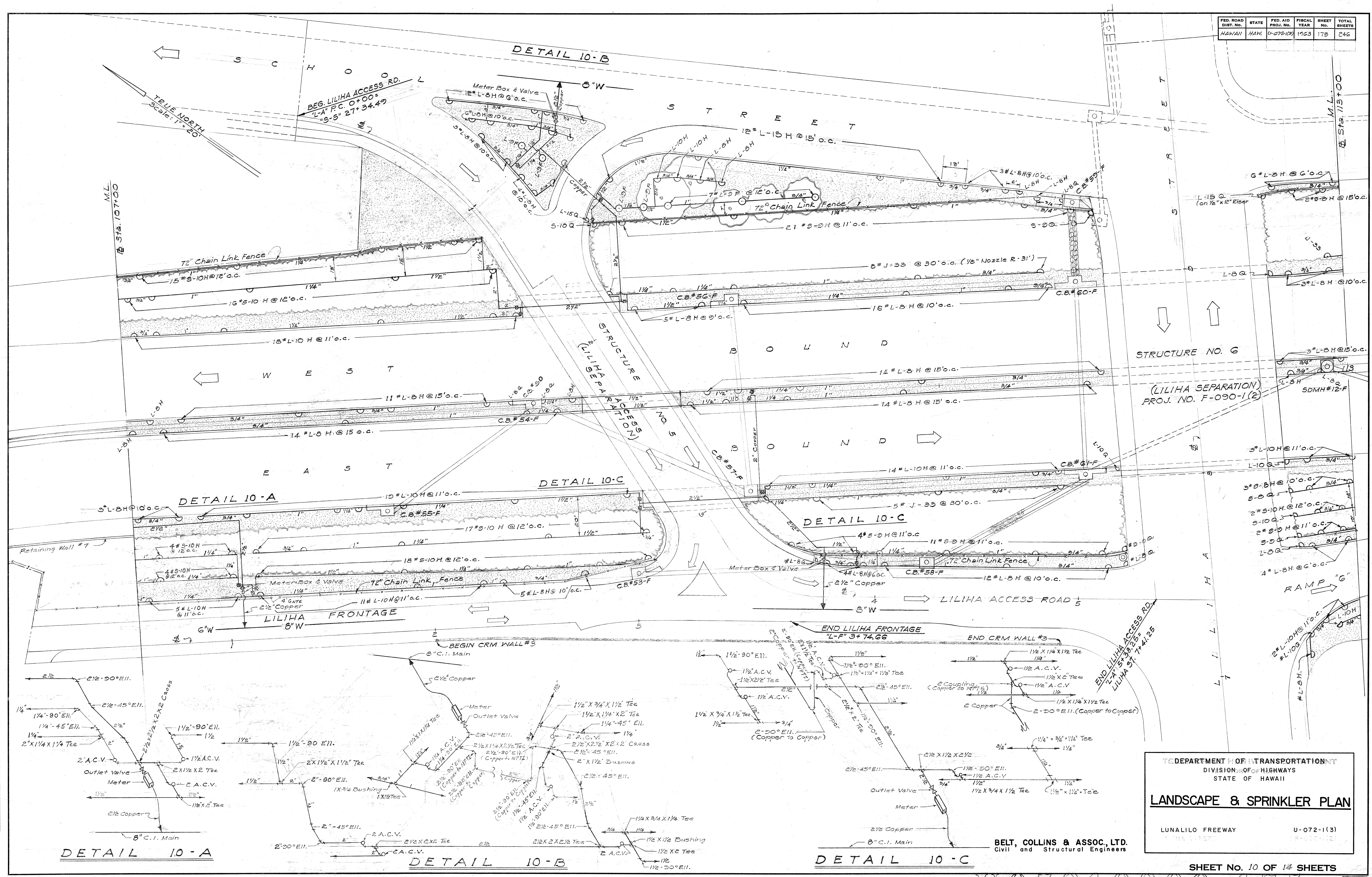
LANDSCAPE & SPRINKLER PLAN

LUNALILO FREEWAY U-072-1(3)

BELT, COLLINS & ASSOC., LTD.
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FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW	U-072-1(3)	1963	175	246

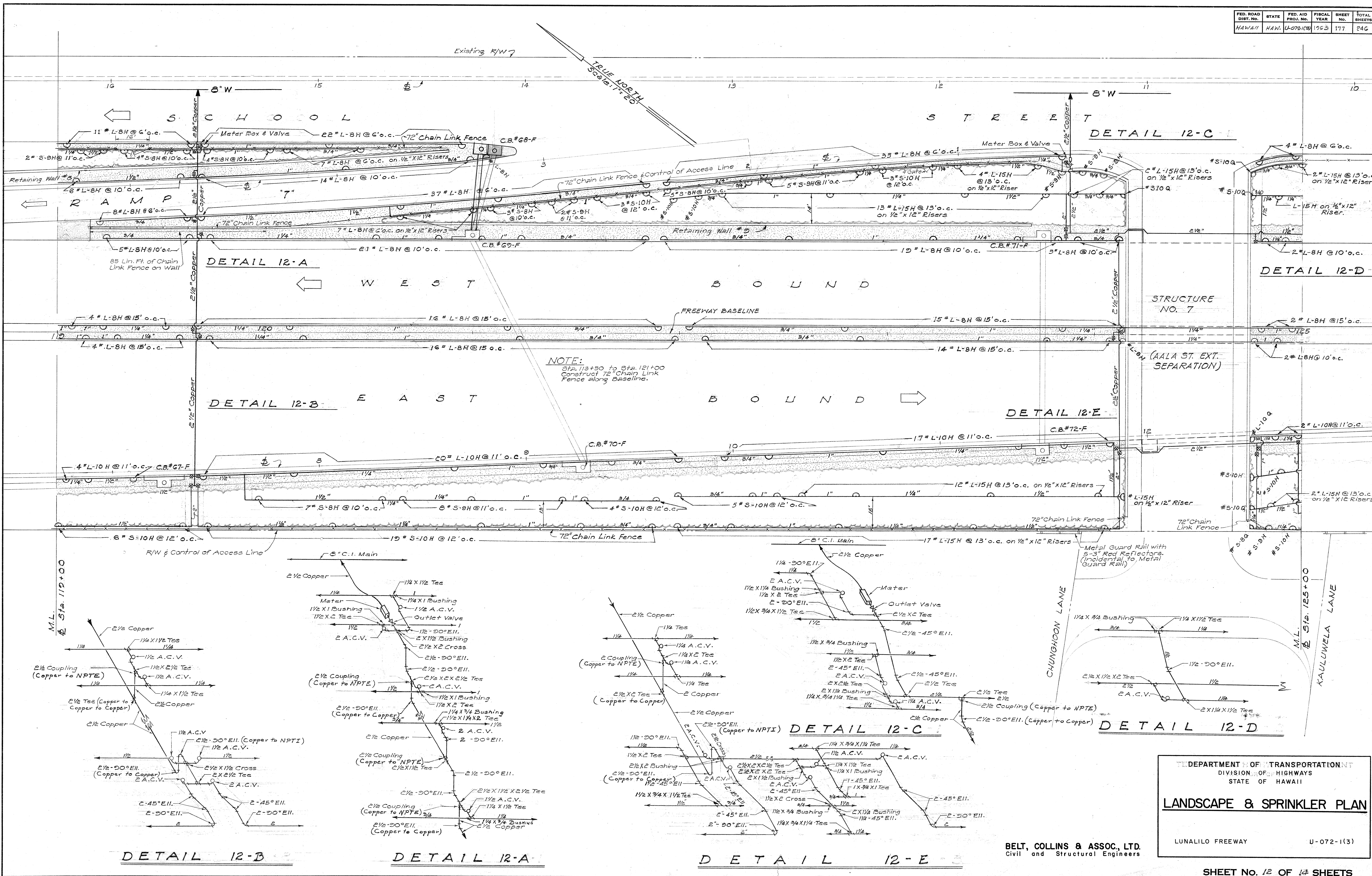
SURVEY PLOTTED BY:
 DATE:
 ORIGINAL PLAN:
 DRAWN BY:
 CHECKED BY:
 QUANTITIES CHECKED BY:
 NOTE BOOK NO.:



DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 STATE OF HAWAII
LANDSCAPE & SPRINKLER PLAN
 LUNALILO FREEWAY
 U-072-1(3)

BELT, COLLINS & ASSOC., LTD.
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FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	U-072-1(3)	1963	177	246



NOTE:
Sta. 113+90 to Sta. 121+00
Construct 72" Chain Link
Fence along Baseline.

DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
STATE OF HAWAII

LANDSCAPE & SPRINKLER PLAN

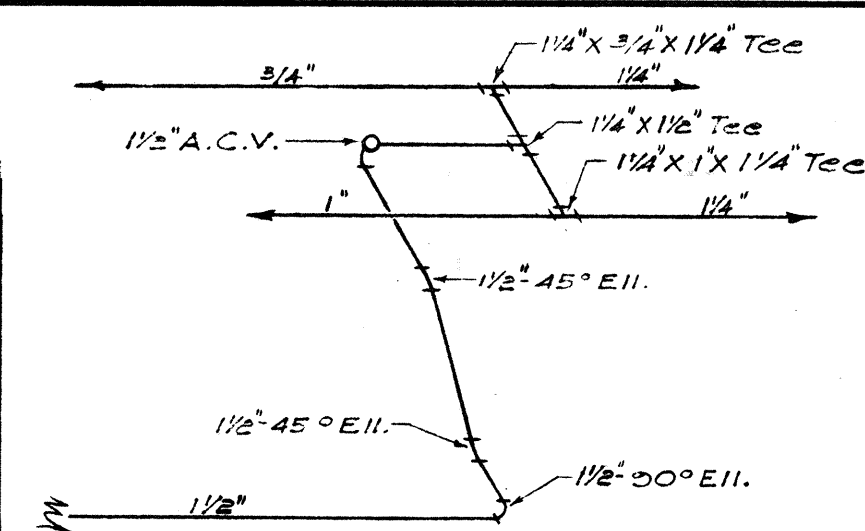
LUNALILO FREEWAY U-072-1(3)

BELT, COLLINS & ASSOC., LTD.
Civil and Structural Engineers

DATE: 11/15/63
DRAWN BY: S. Kato
CHECKED BY: S. Kato
QUANTITIES CHECKED BY: S. Kato
NOTE BOOK NO.:

08

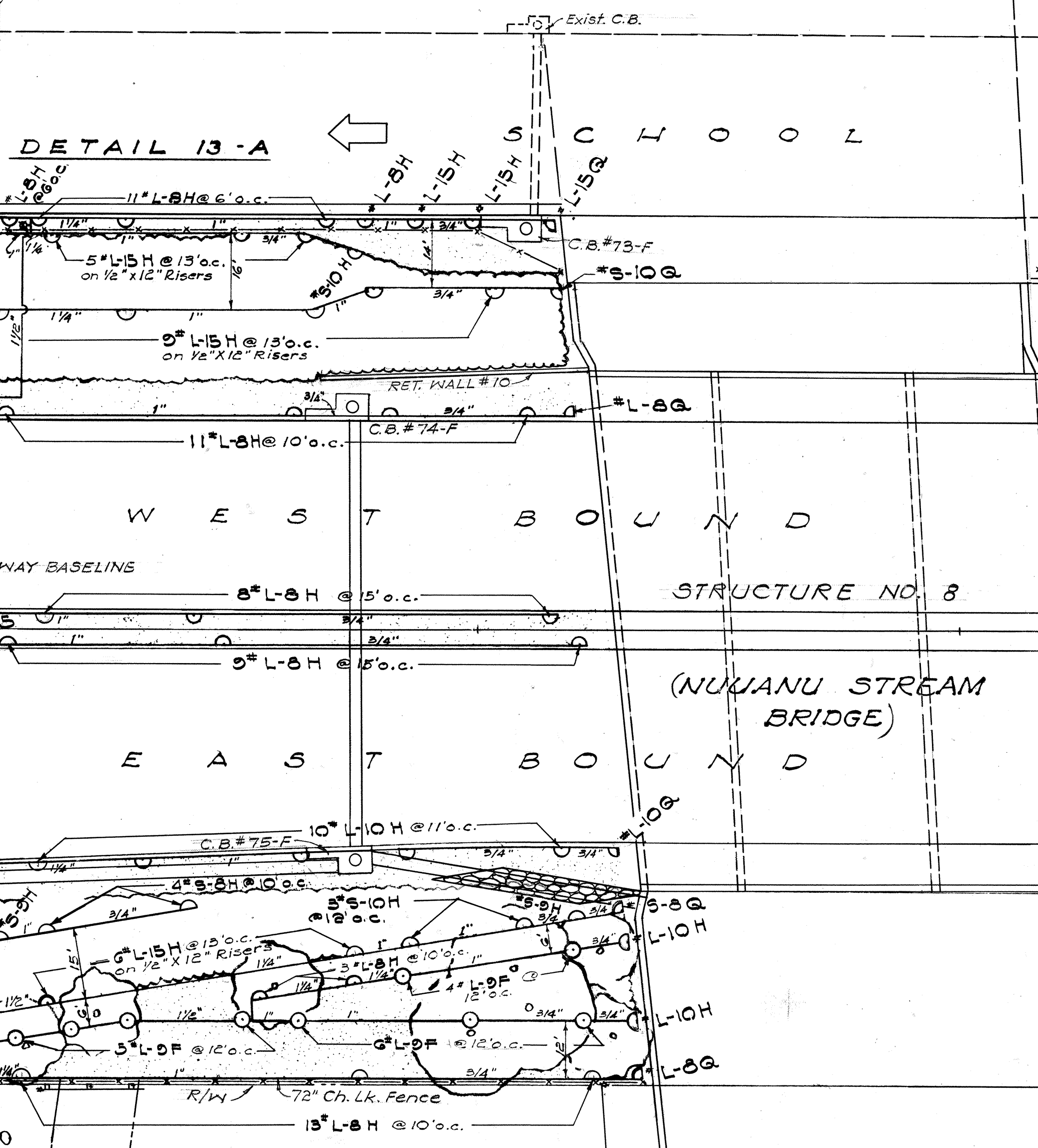
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HAWAII	HAW.	U-072-1(3)	1963	178	240



DETAIL 13-A

DETAIL 13-A

STRUCTURE NO. 7
(AALA ST. EXT. SEPARATION)



END OF PROJ. NO. U-072-1(3)
@ STA. 127 + 19.95 =
END OF NUUANU STREAM BRIDGE
BEG. PROJ. NO. F-072-1(11)

ORIGINAL PLAN	DESIGNED BY	DATE
NOTE BOOK	DRAWN BY	
	CHECKED BY	

KAULUNELA LANE

TRUE NORTH
Scale 1"=20'

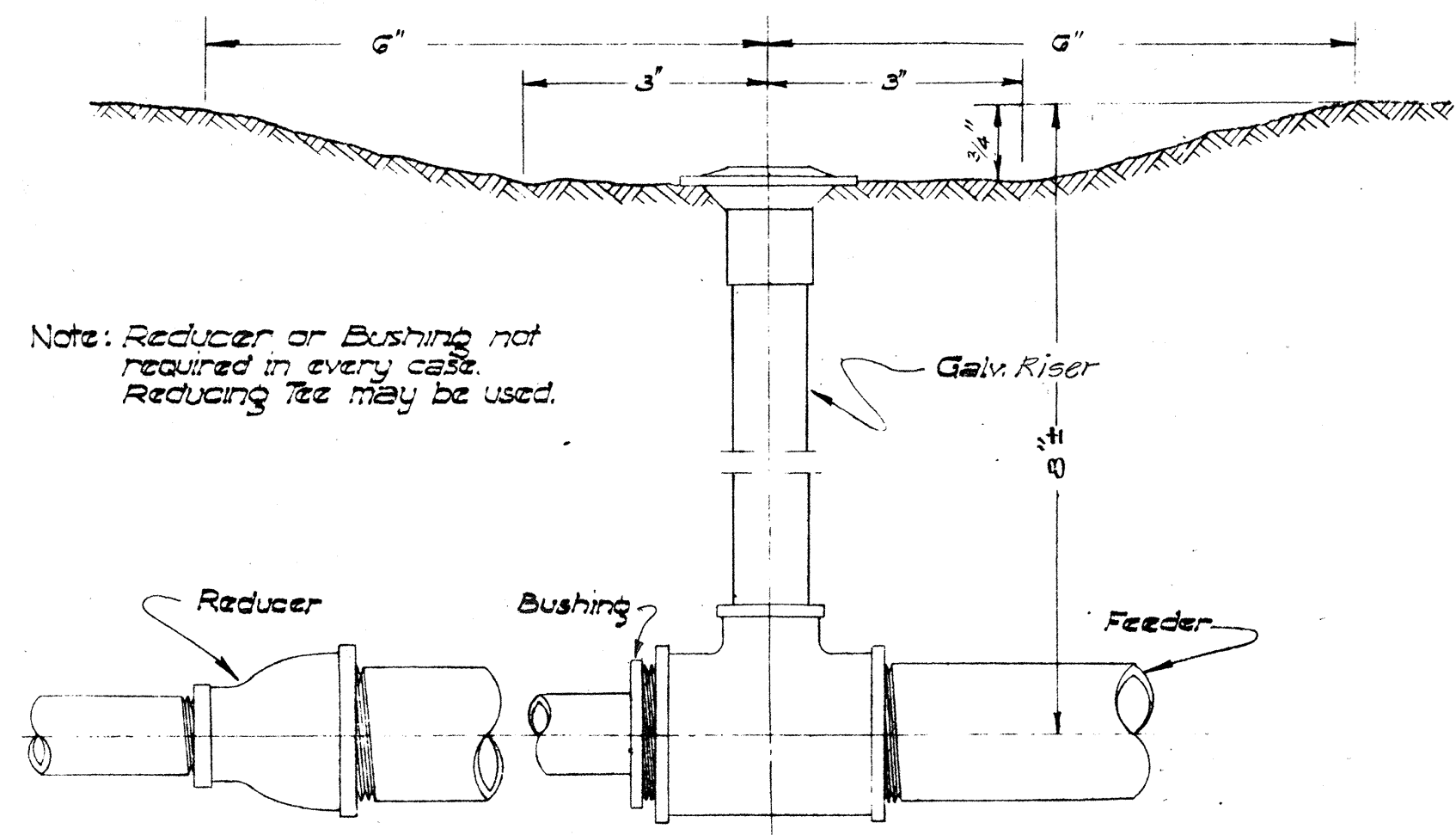
NUUANU
STREAM

DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
STATE OF HAWAII

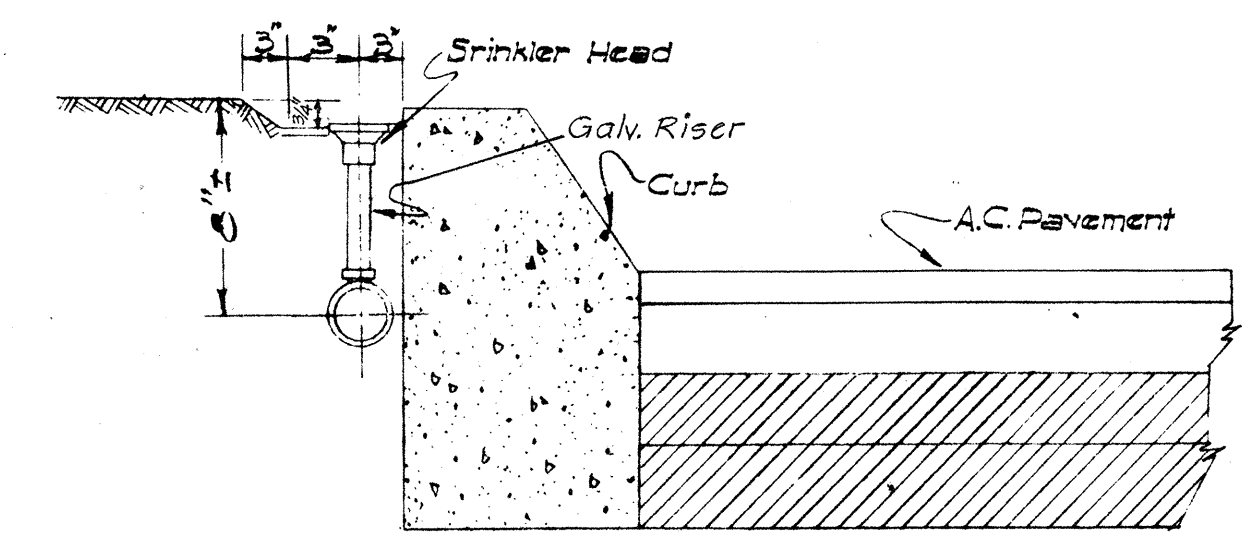
LANDSCAPE & SPRINKLER PLAN

LUNALILO FREEWAY U-072-1(3)

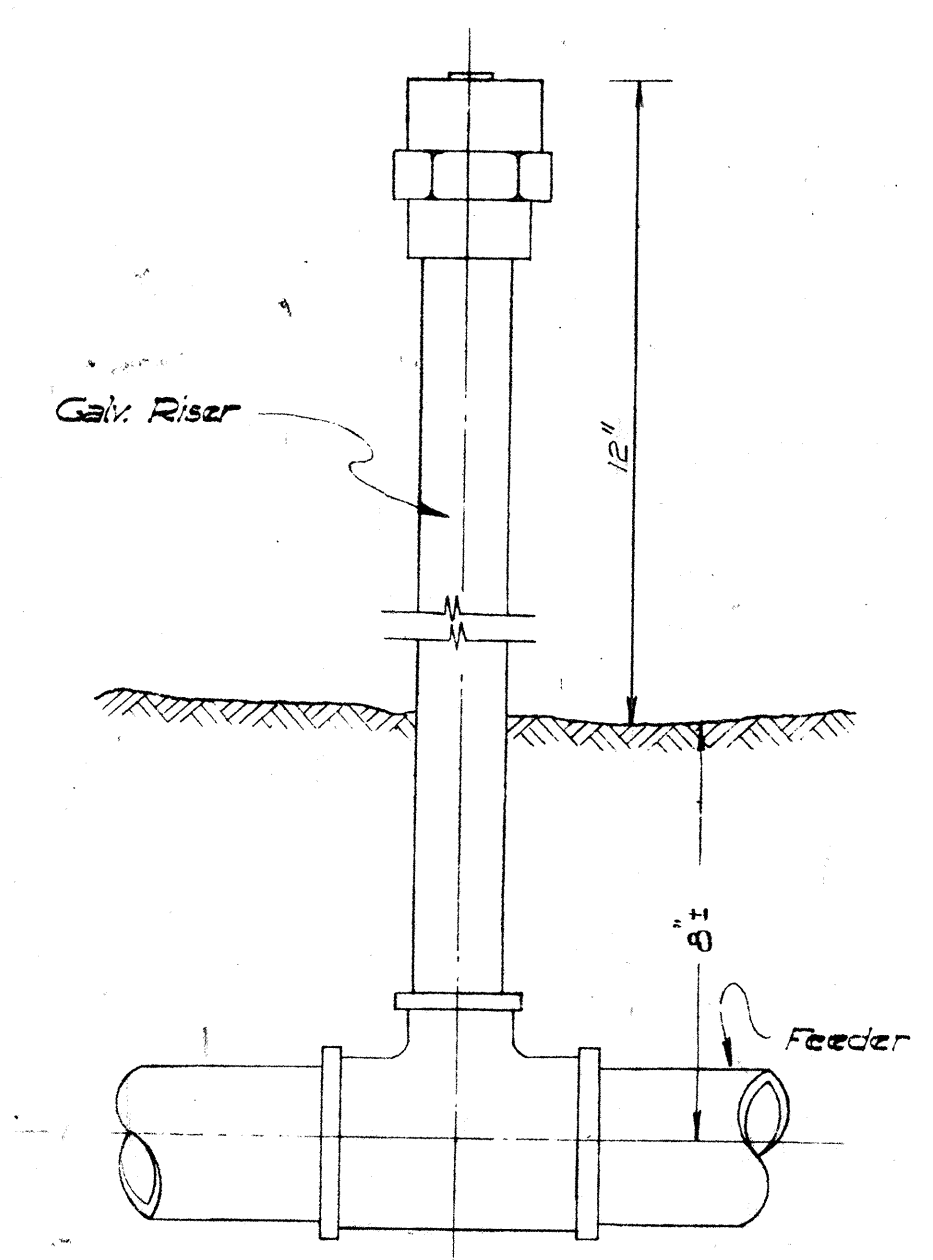
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	U-028-1(4)	1963	170	242



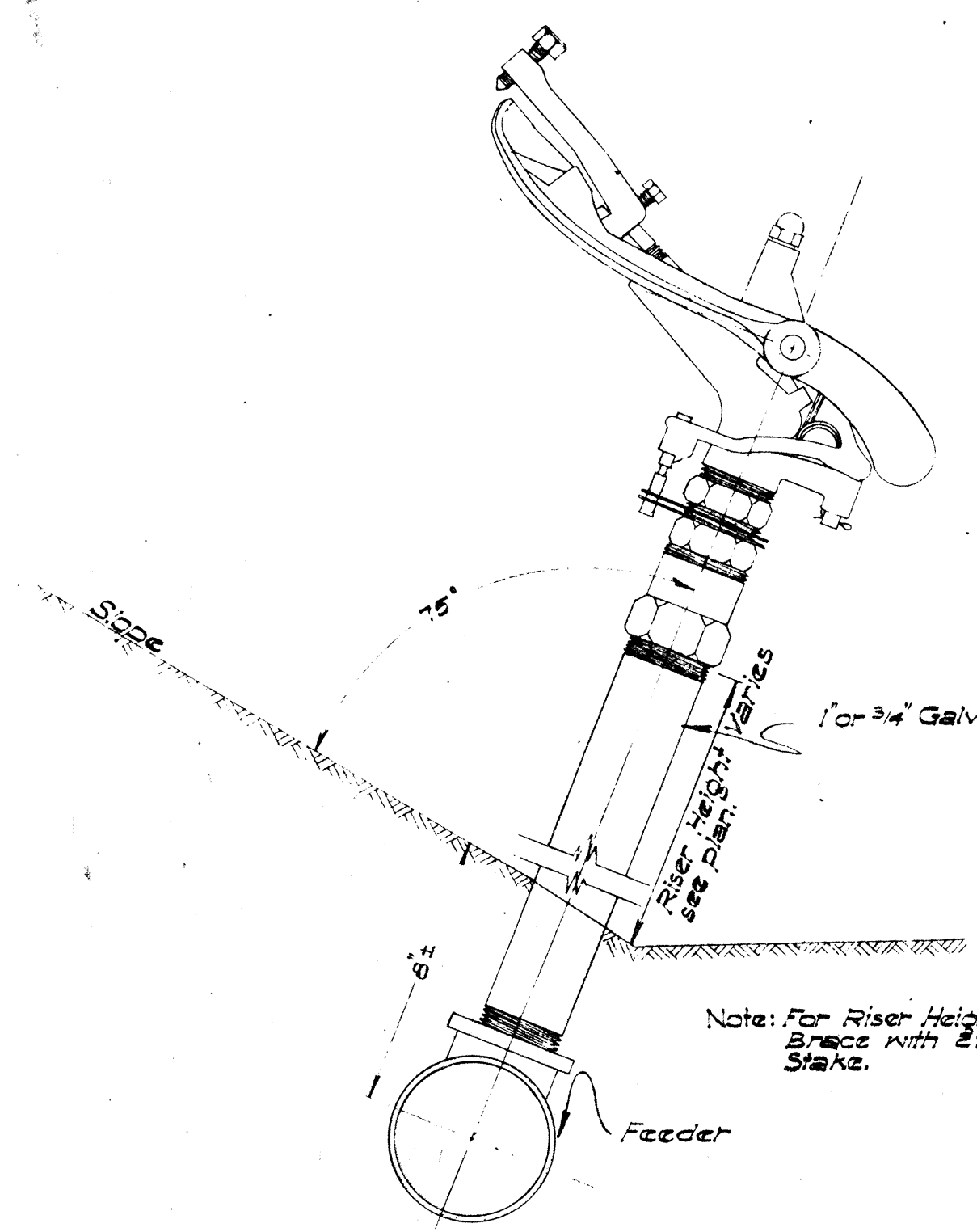
CONNECTION OF SPRINKLER HEAD TO FEEDER PIPE
Not to Scale



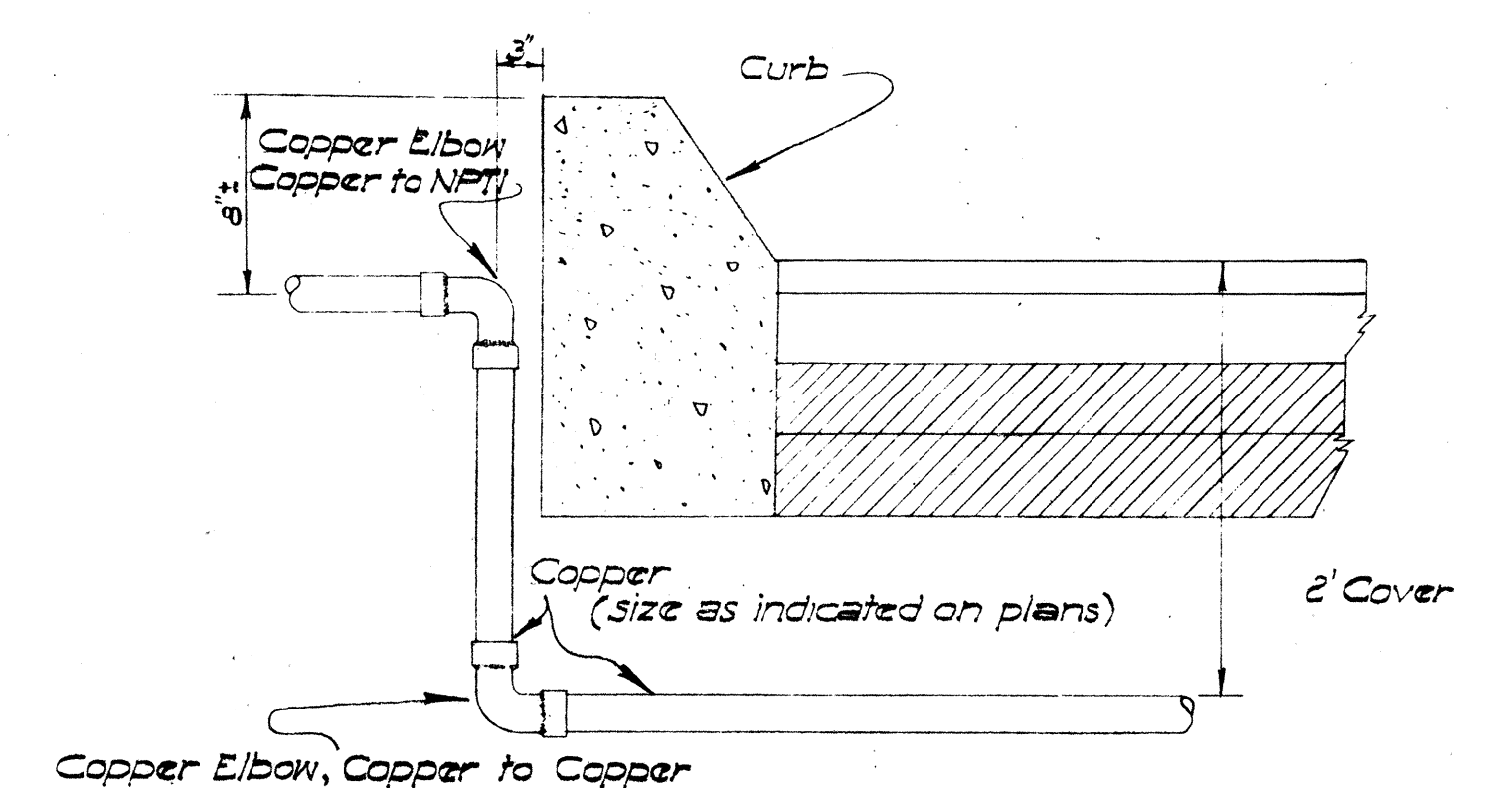
TYPICAL DETAIL OF SPRINKLER AT CONC. CURB
Not to Scale



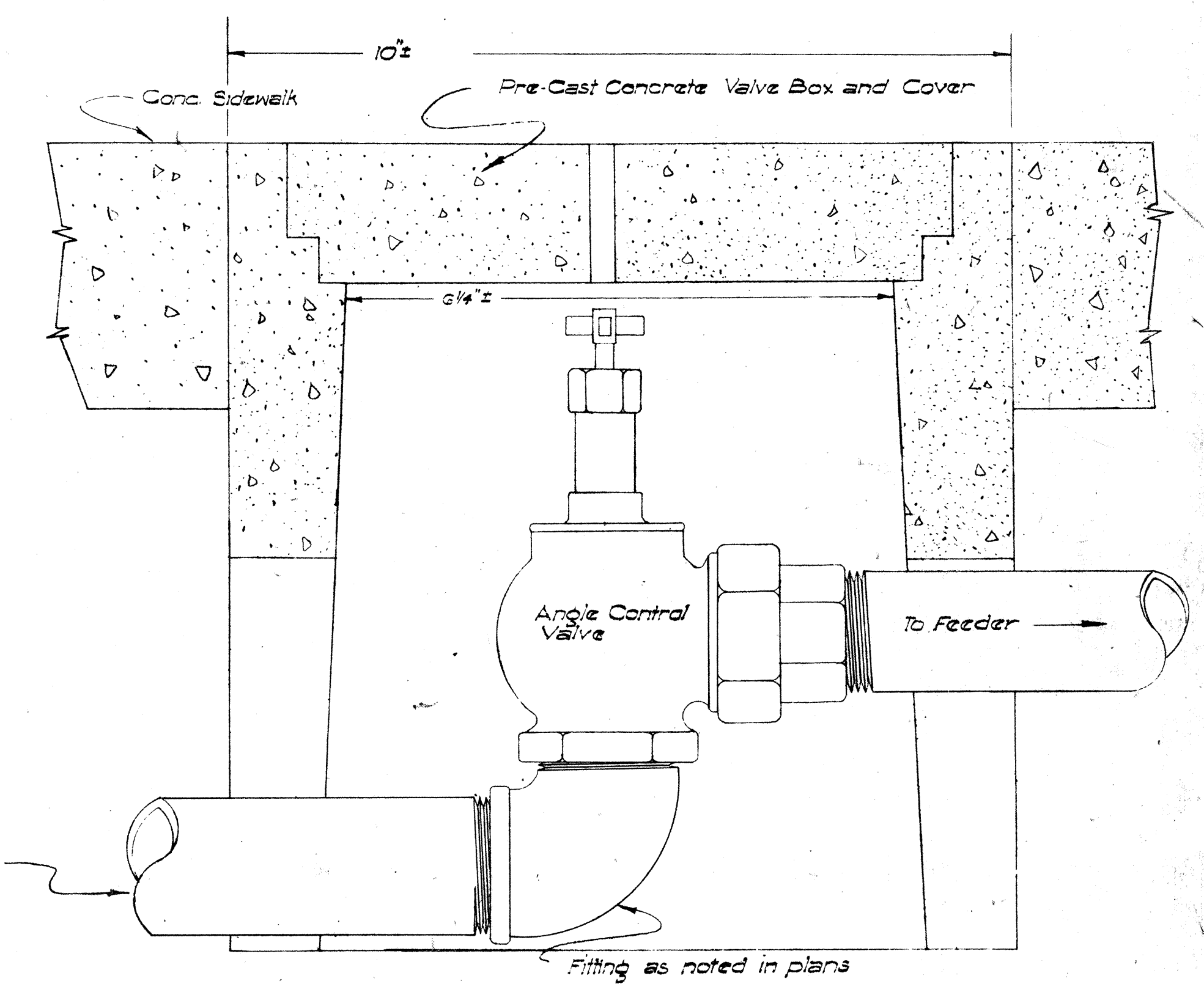
DETAIL OF SHRUBBERY HEAD
Not to Scale



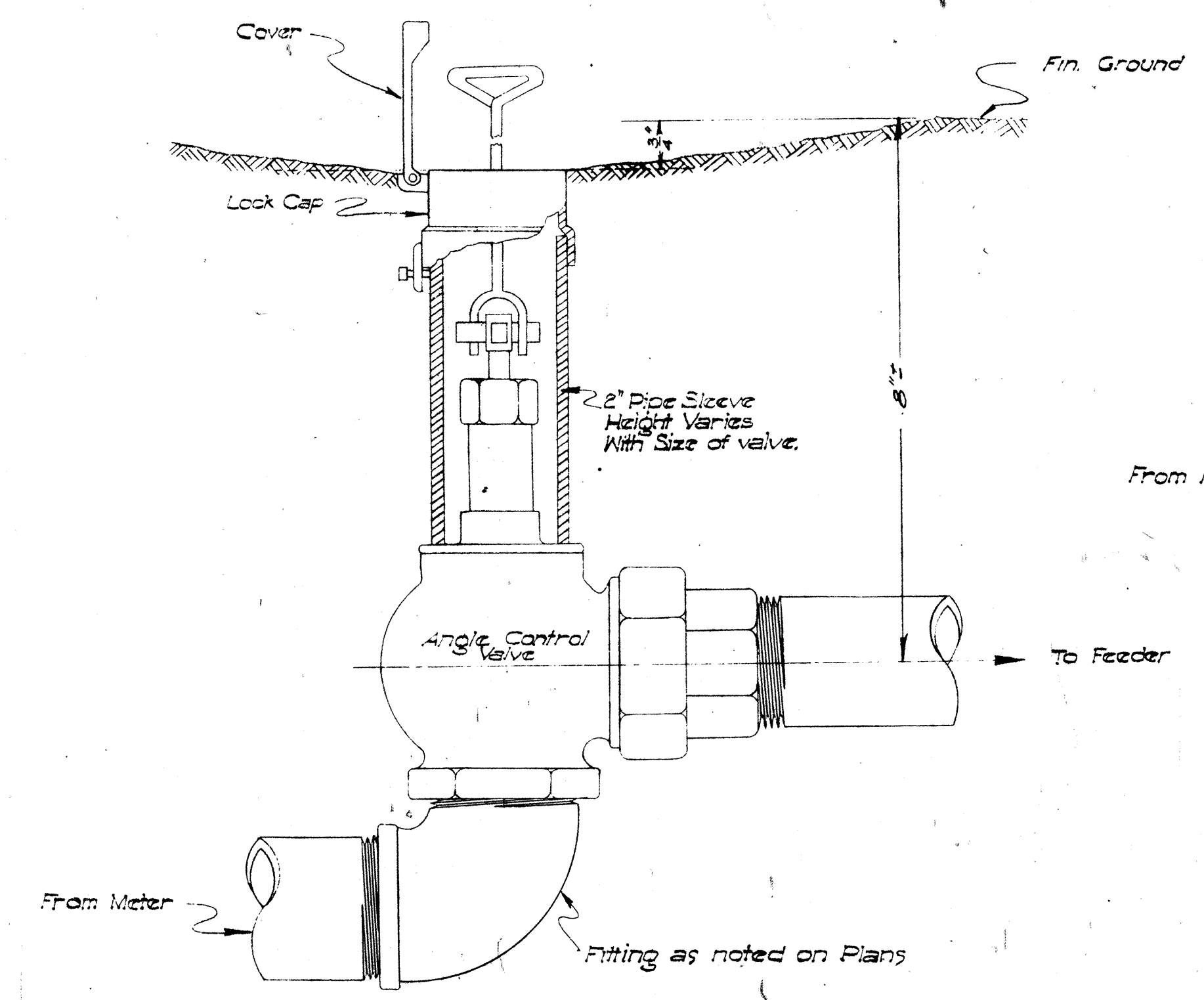
INSTALLATION OF JET SPRINKLER ON SLOPE
Not to Scale



TYPICAL DETAIL OF ROADWAY CROSSING
Not to Scale



ANGLE CONTROL VALVE IN SIDEWALK AREA
Not to Scale



ANGLE CONTROL VALVE HOUSING & CAP
Not to Scale

GENERAL NOTES

1. All copper pipes shall be connected with solder type fittings of bronze castings or wrought copper.
2. Pipes not noted "Copper" are to be Galvanized Iron Screw Pipes, and fittings not noted "Copper" are to be Galvanized Malleable Iron Fittings.
3. After complete installation of the sprinkler system, each sprinkler head shall be adjusted to the satisfaction of the Engineer.

APPROVED: _____ DATE: Aug. 26, 1959
STATE HIGHWAY ENGINEER

DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
STATE OF HAWAII

STANDARD DETAILS
SPRINKLER SYSTEM

Not to Scale

SHEET No. 14 OF 14 SHEETS

DESIGNED BY	DATE
DRAWN BY	
CHECKED BY	
NOTED BY	
QUANTITIES CHECKED BY	
NO.	

U09S10400.S0

U07210300.179