

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(52)	1988	67	75

ELECTRICAL SYMBOLS

- FUTURE ROADWAY LUMINAIRE ON FARADAY SHIELD SUPPORT POLE, 150W HPS
- ELECTRIC MANHOLE, SIZE INDICATED
- POWER J.B. CAST METAL W.P.
- COMMUNICATION J.B., CAST METAL, W.P.
- CONDUIT EMBEDDED IN CONC. RAILING
- CONDUIT BELOW GRADE
- GRS GALVANIZED RIGID STEEL
- WP WEATHERPROOF

TRANS-KOOLAU TUNNEL

TRANS-KOOLAU TUNNEL

OMIT N.I.C.

ELECTRICAL PLAN
SCALE: 1" = 40'

- NOTE 1. COORDINATE ROUTING OF ELECTRICAL DUCTLINES & MANHOLE LOCATION W/ UTILITIES SHOWN ON CIVIL DWGS.
2. COORDINATE ROUTING OF DUCTLINE ALONG SERVICE ROAD W/ THE "MSRW" SYSTEM
3. PROVIDE MIN. 1' VERTICAL SEPARATION BETWEEN ATTENUATOR FOUNDATION AND 4" CONDUIT

INSERT "A"
N.T.S.

NOTE:
1. STUB CONDUITS THROUGH PARAPET WALL FOR SIGNAL & COMM.

Items deleted by CCO #32

NAKAMURA, KAWABATA & ASSOC., INC.
One Kapiolani Bldg., Suite 403
600 Kapiolani Boulevard
Honolulu, Hawaii 96813



THIS WORK WAS PREPARED BY
ME OR UNDER MY SUPERVISION

Glenn D. Oyama

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL PLAN

INTERSTATE ROUTE H-3
F.A.I. PROJECT NO. I-H3-1(52)

SCALE: 1" = 40' DATE: JULY 1988
SHEET No. E1 OF E6 SHEETS

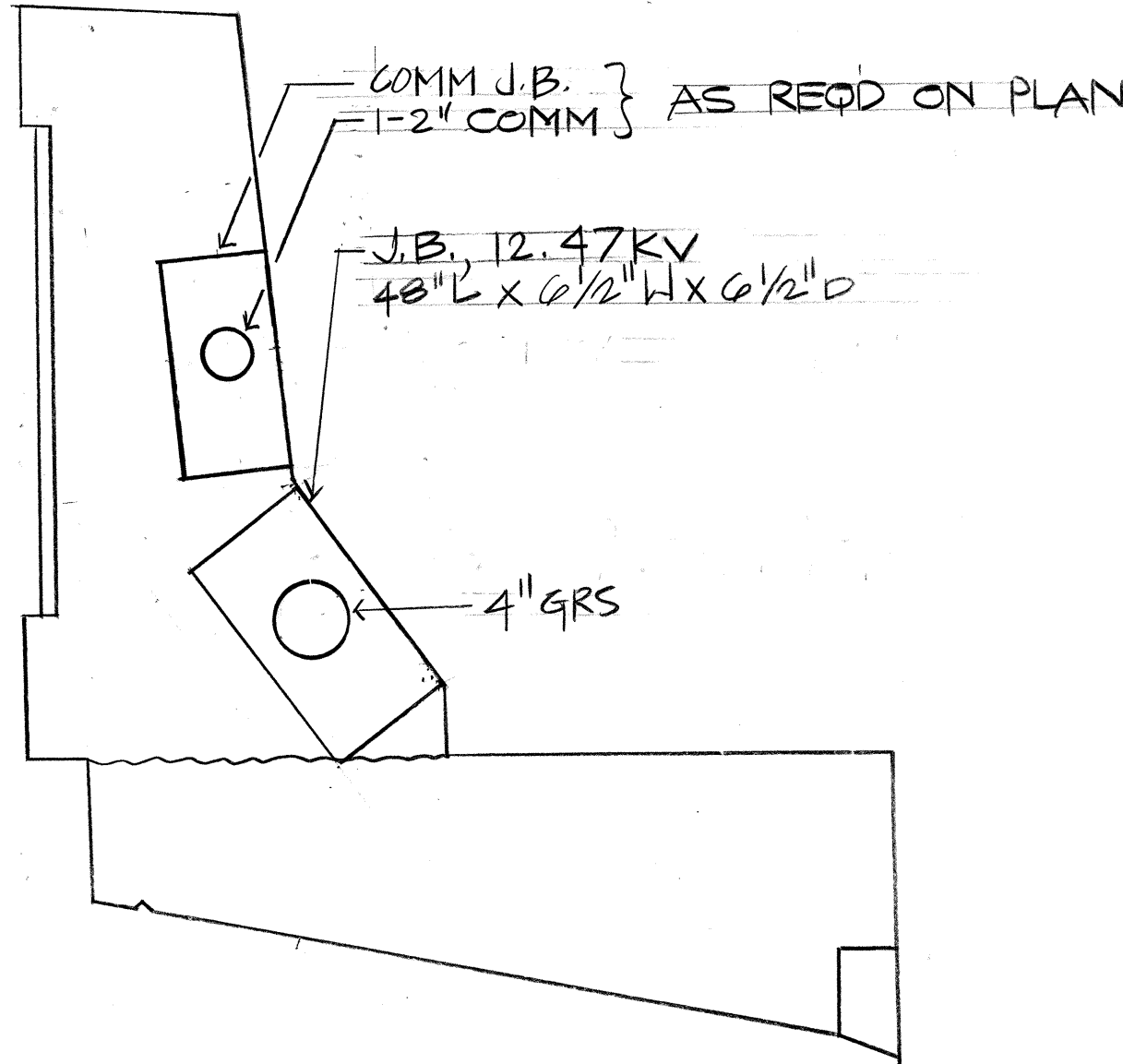
DATE	REVISION
6-8-90	REVISED INSERT "A"
6-8-90	RELOCATING MANHOLE TYPE "A-1"
7-7-89	LOCATING MANHOLE AT SERVICE ROAD
11-0-87	REVISED DUCTLINES

AS BUILT

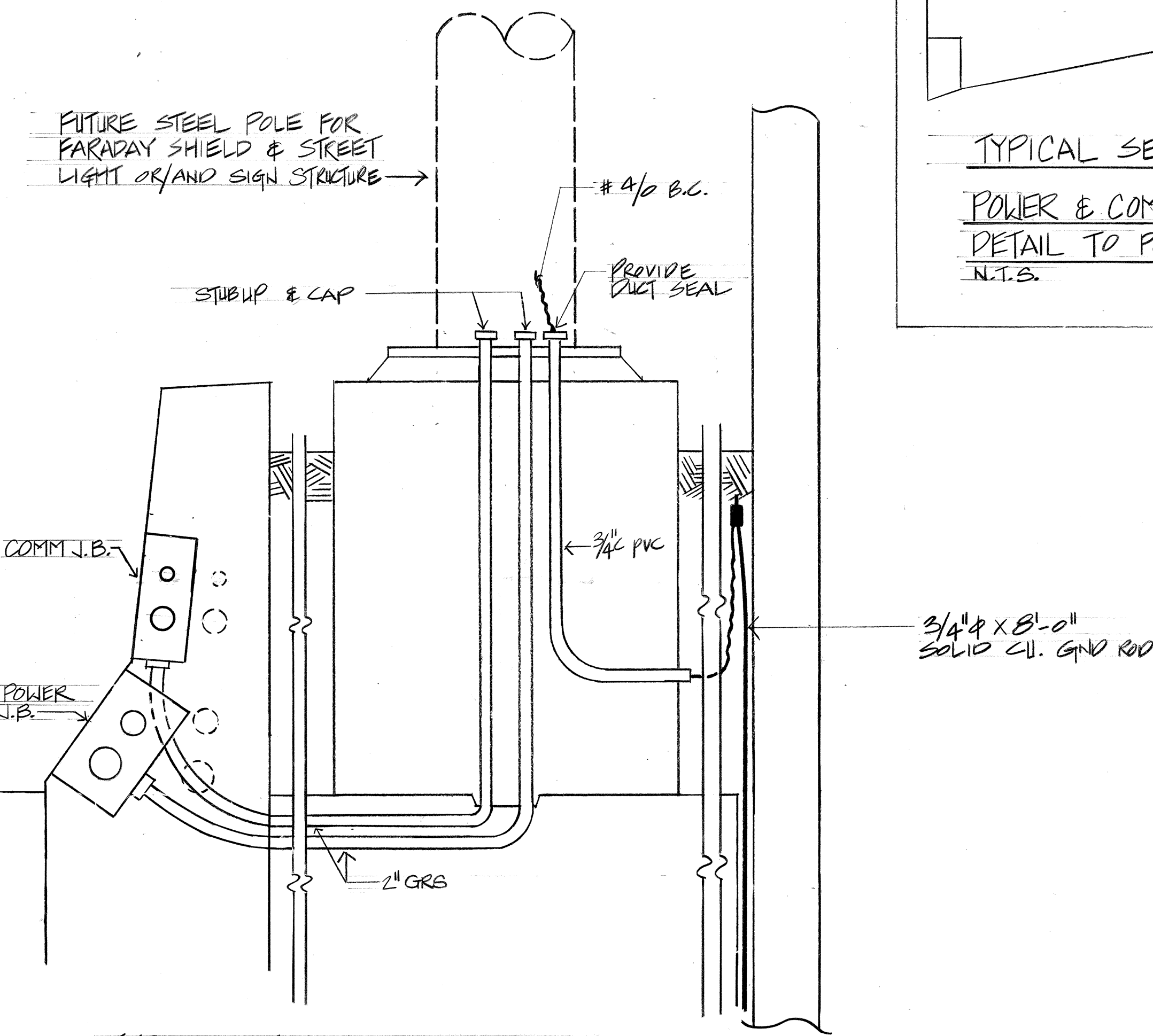
GO. ADD. 67

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(52)	1988	68	75

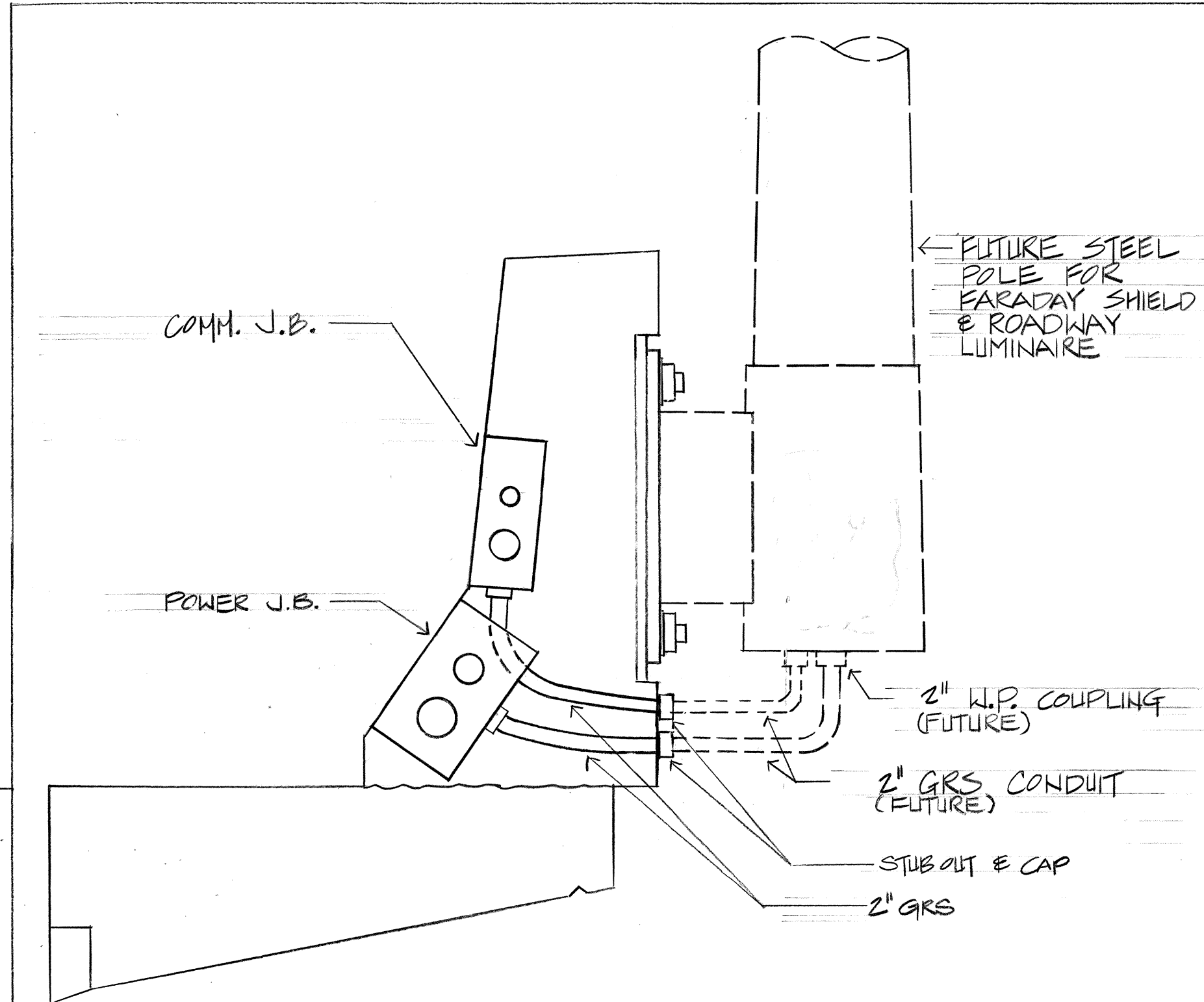


TYPICAL SECTION
12.47KV LINE & COMM.
N.T.S.

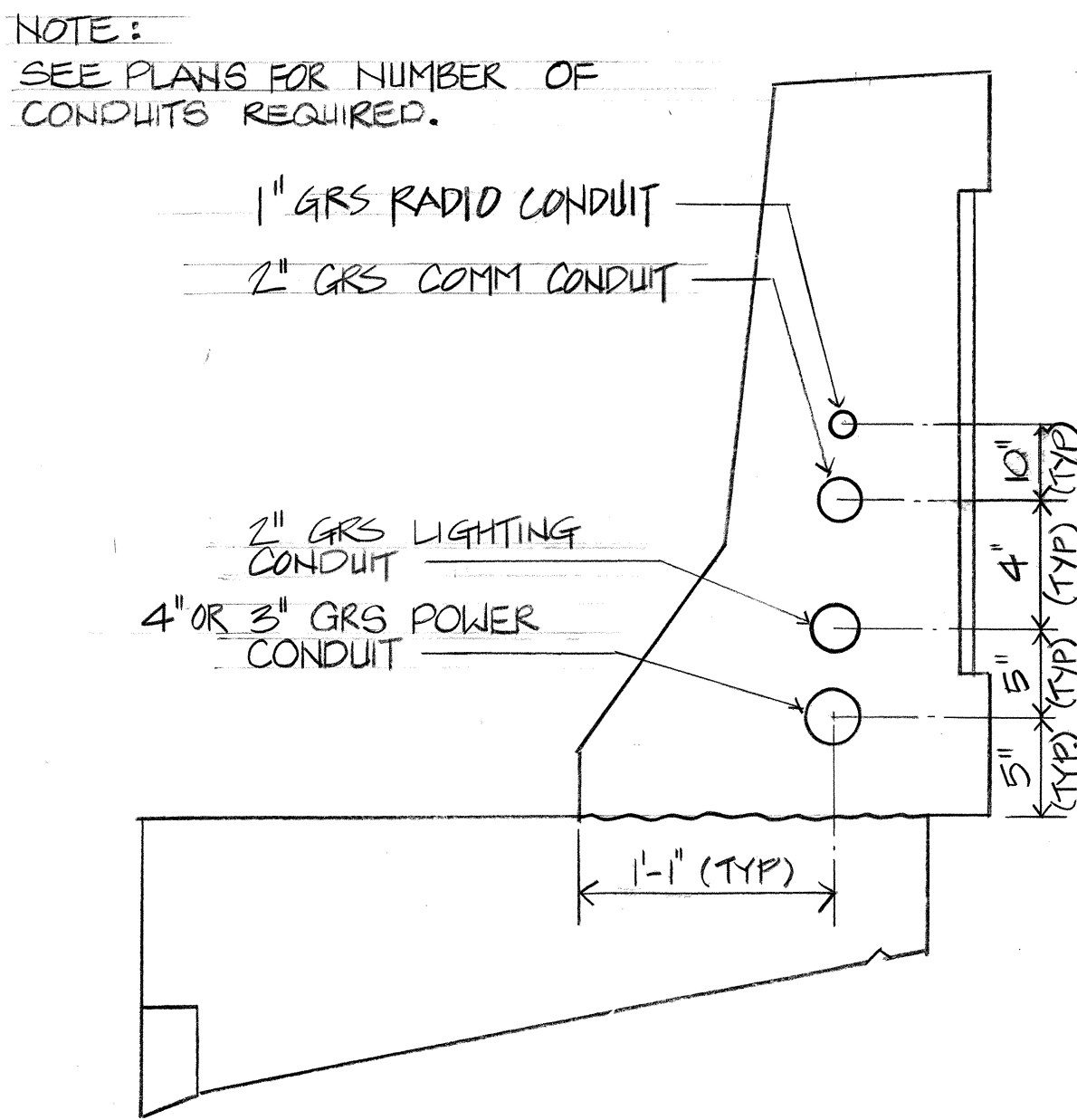


TYPICAL SECTION
POWER & COMMUNICATION JUNCTION BOX
CONNECTION DETAIL TO POLE ON GRADE
N.T.S.

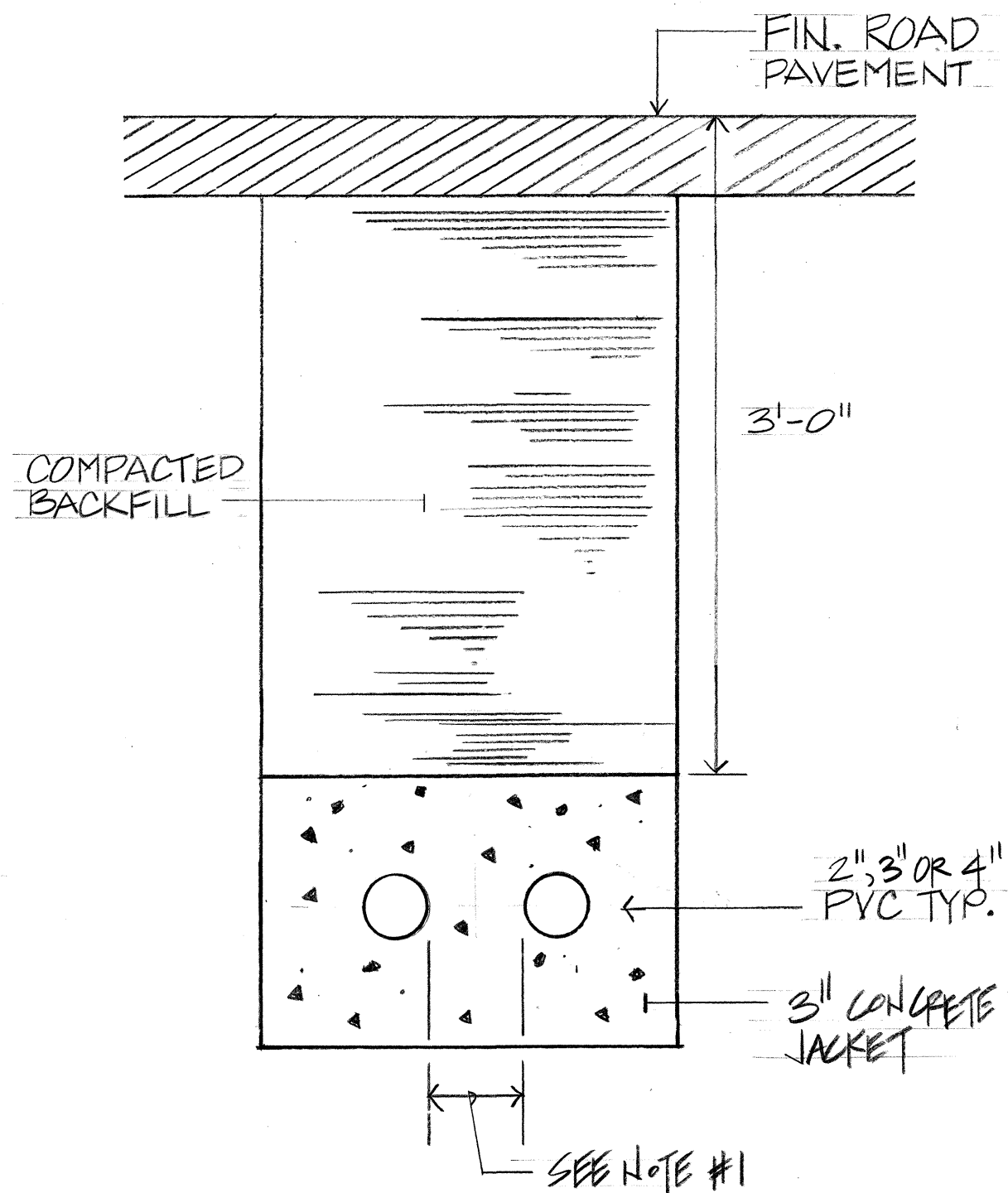
NOTE: SIMILAR FOR SIGN STRUCTURE



TYPICAL SECTION
POWER & COMMUNICATION JUNCTION BOX CONNECTION
DETAIL TO POLE ON PARAPET WALL
N.T.S.



TYPICAL DUCT LOCATION IN
PARAPET WALL
N.T.S.

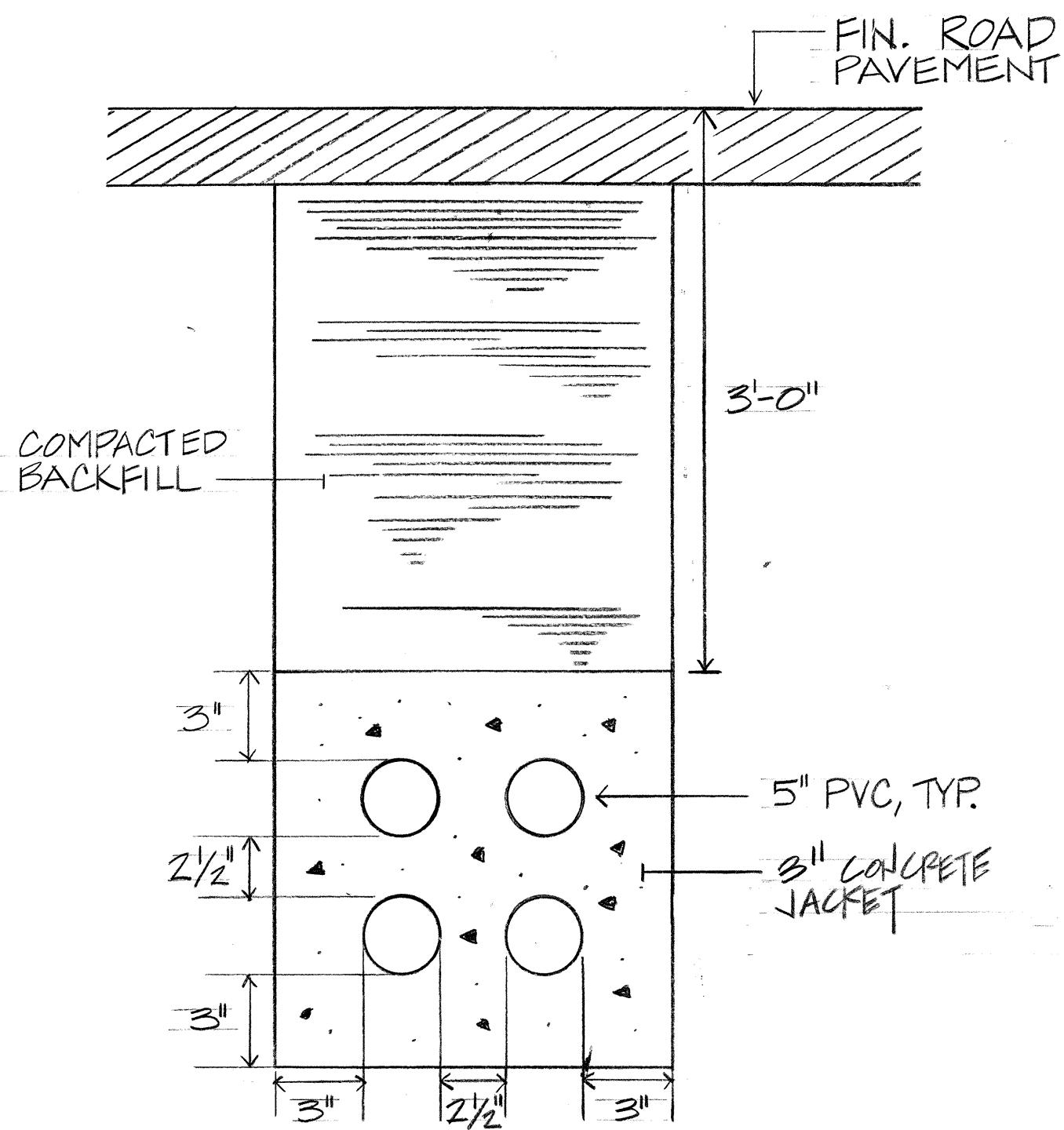


POWER, LIGHTING OR COMMUNICATION
DUCT SECTION
N.T.S.

- NOTES
1. MIN. SEPARATION OF 1 1/2" BETWEEN LIGHTING & POWER OR BETWEEN THEMSELVES
 2. MIN. SEPARATION OF 3" BETWEEN POWER & COMM.
 3. SEE PLAN FOR REQUIRED NUMBER OF CONDUITS

GENERAL NOTES

1. POWER PULLBOX SHALL BE CAST METAL, WEATHER PROOF TYPE WITH GASKET, 24" L X 10" W X 6" D
2. COMM PULLBOX SIMILAR EXCEPT 24" L X 8" W X 6" D



46KV DUCTLINE
DUCT SECTION
N.T.S.



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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DUCT SECTION DETAILS

INTERSTATE ROUTE H-3
F.A.I. PROJECT NO. I-H3-1(52):

SCALE: AS NOTED DATE: JULY 1988

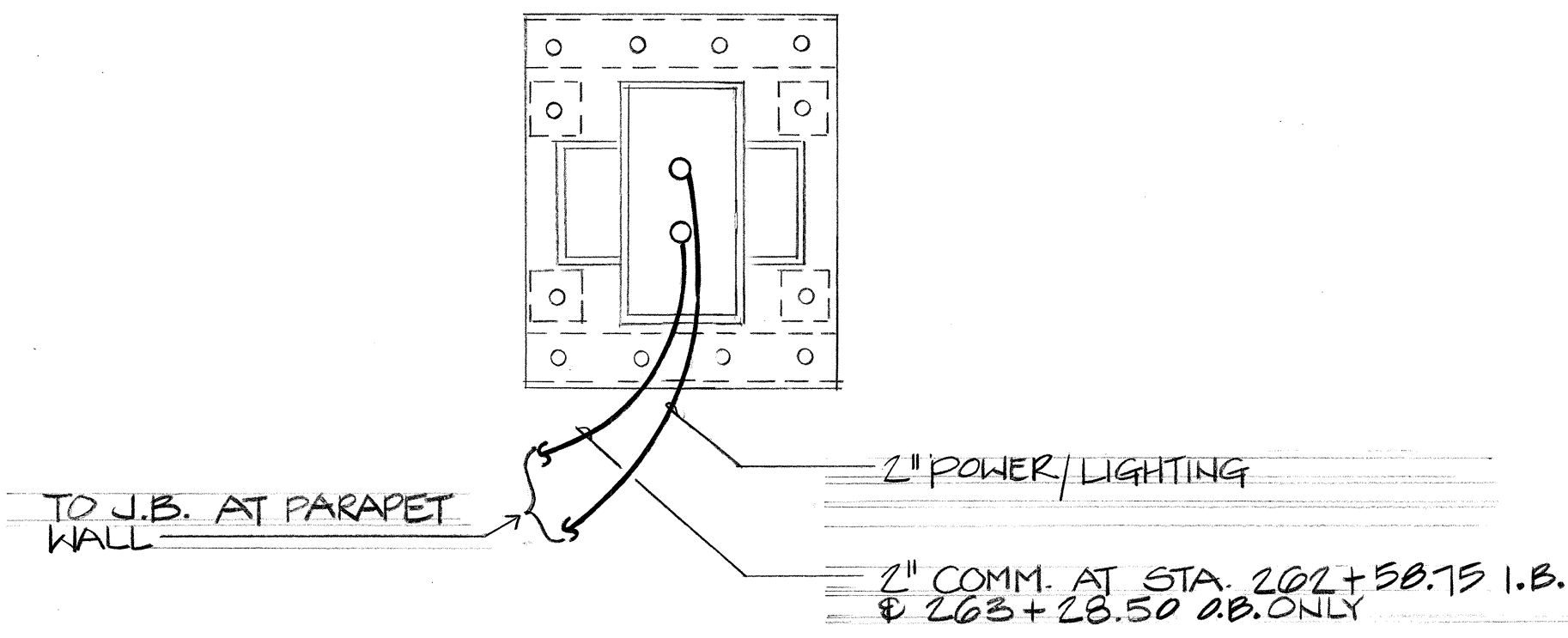
SHEET No. E2 OF E6 SHEETS

DATE	REVISION
6-8-90	REVISING PHF, LTG & COMM. DUCT SECTION
6-8-90	REVISING PULLBOX SIZES
1-10-89	REV. DETAILS

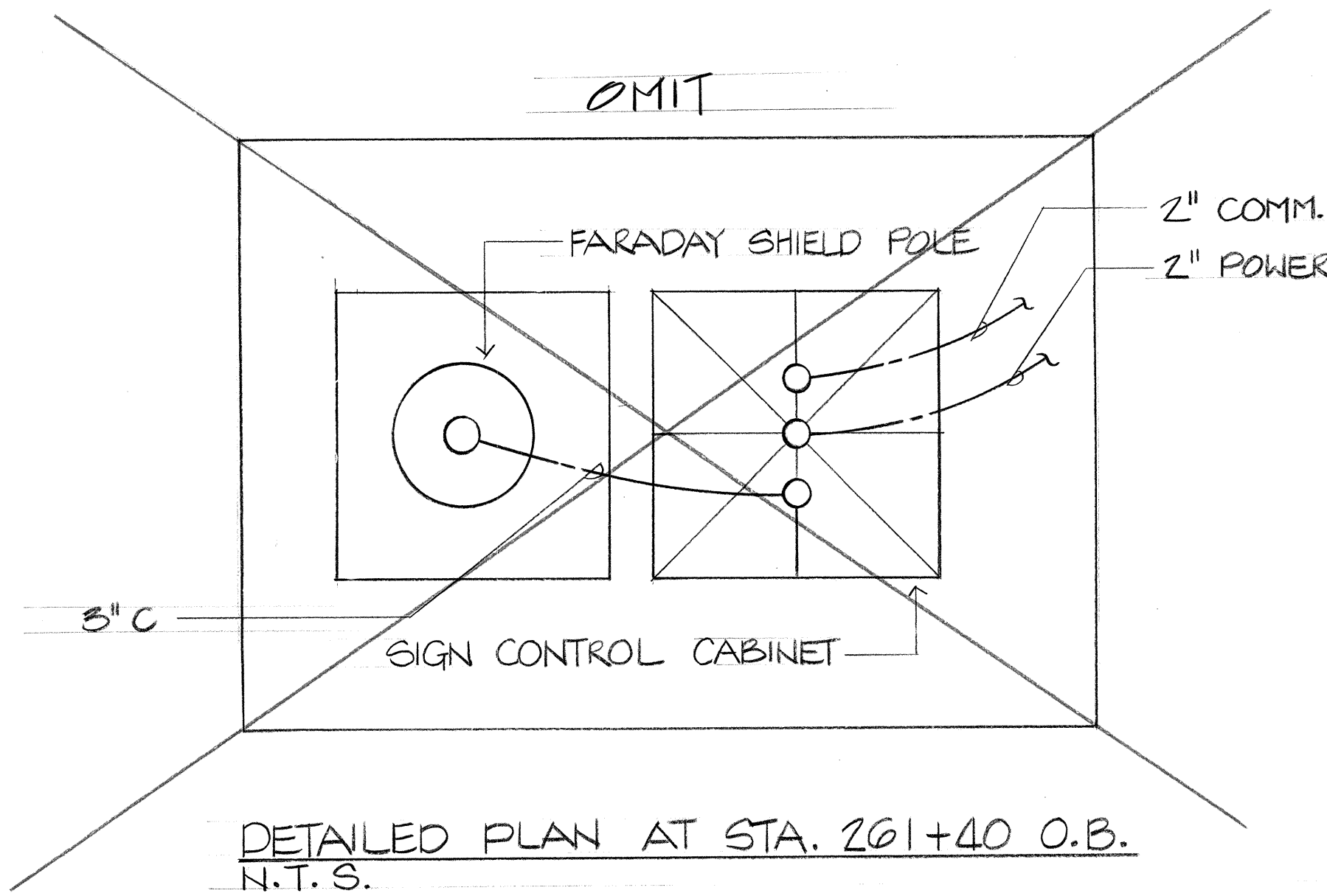
AS BUILT

CO. ADD.68

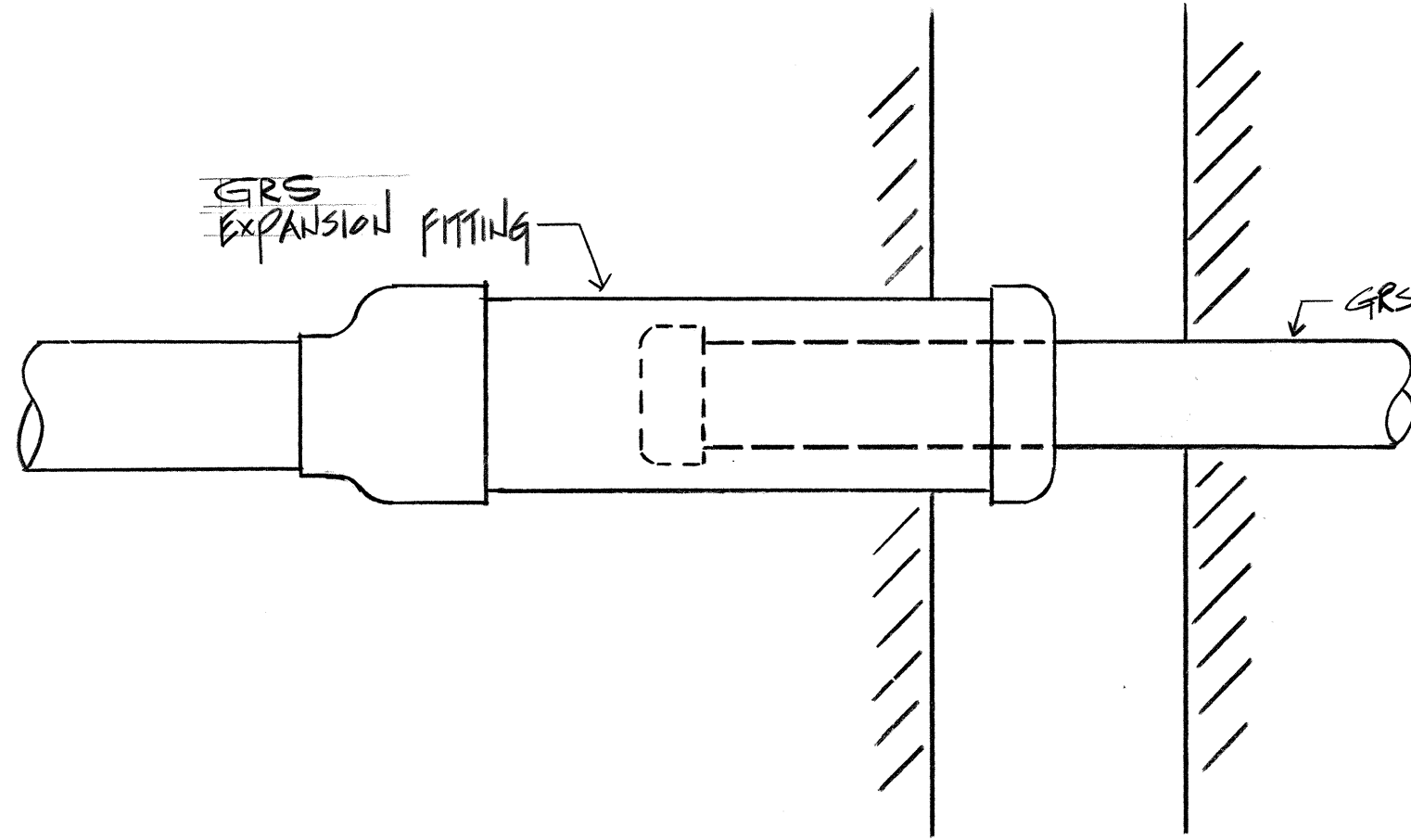
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(52)	1988	69	75



DETAILED PLAN AT O.B. STA. 202+42.18, 203+28.90
 I.B. STA. 202+58.19



DETAILED PLAN AT STA. 201+40 O.B.
 N.T.S.



TYPICAL EXPANSION FITTING DETAIL
 N.T.S.

NOTE:
 FITTING TO PROVIDE FOR 8" HORIZONTAL &
 1/4" VERTICAL MOVEMENT

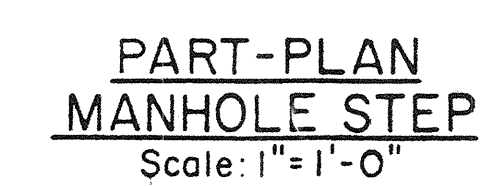
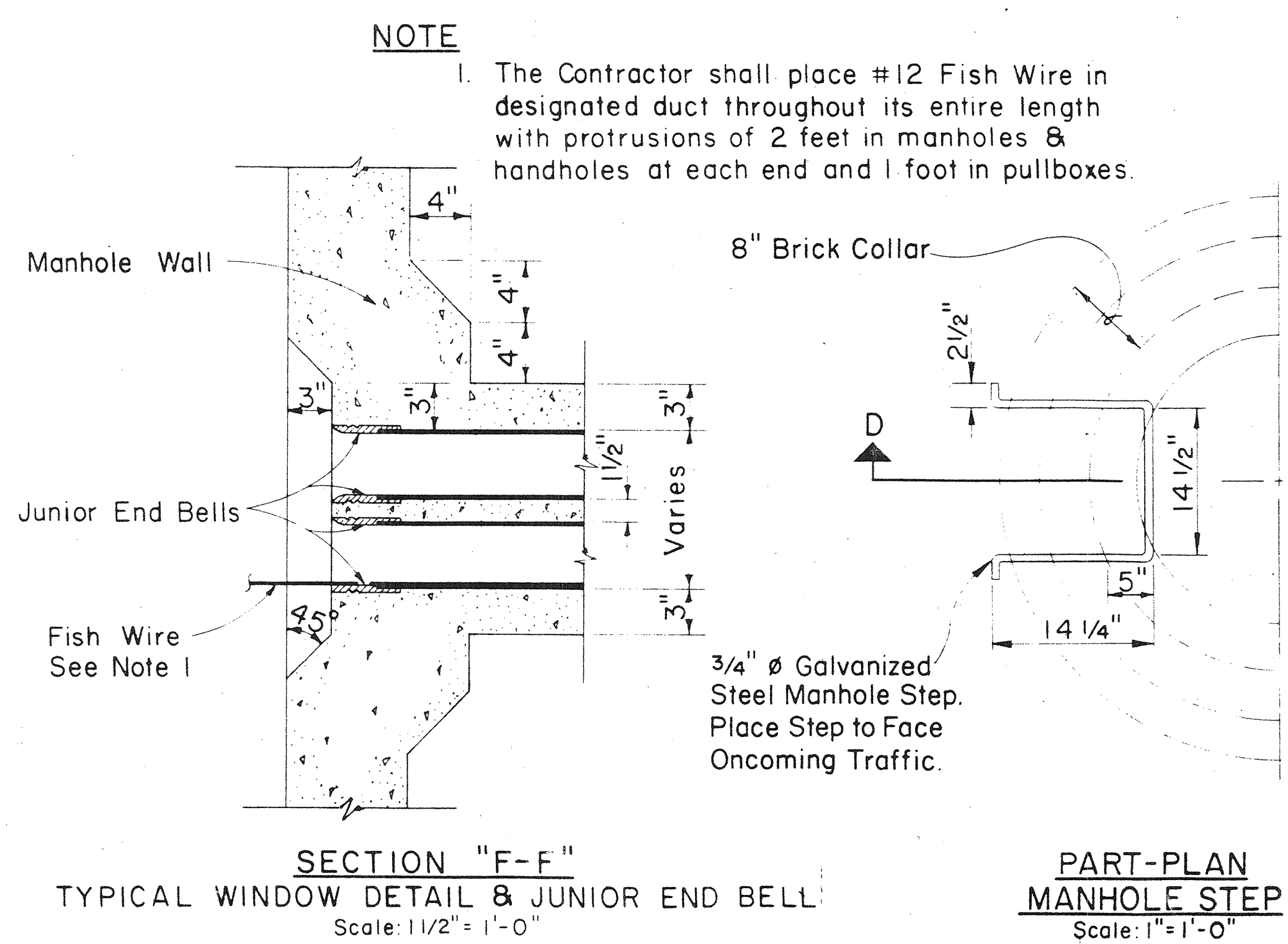
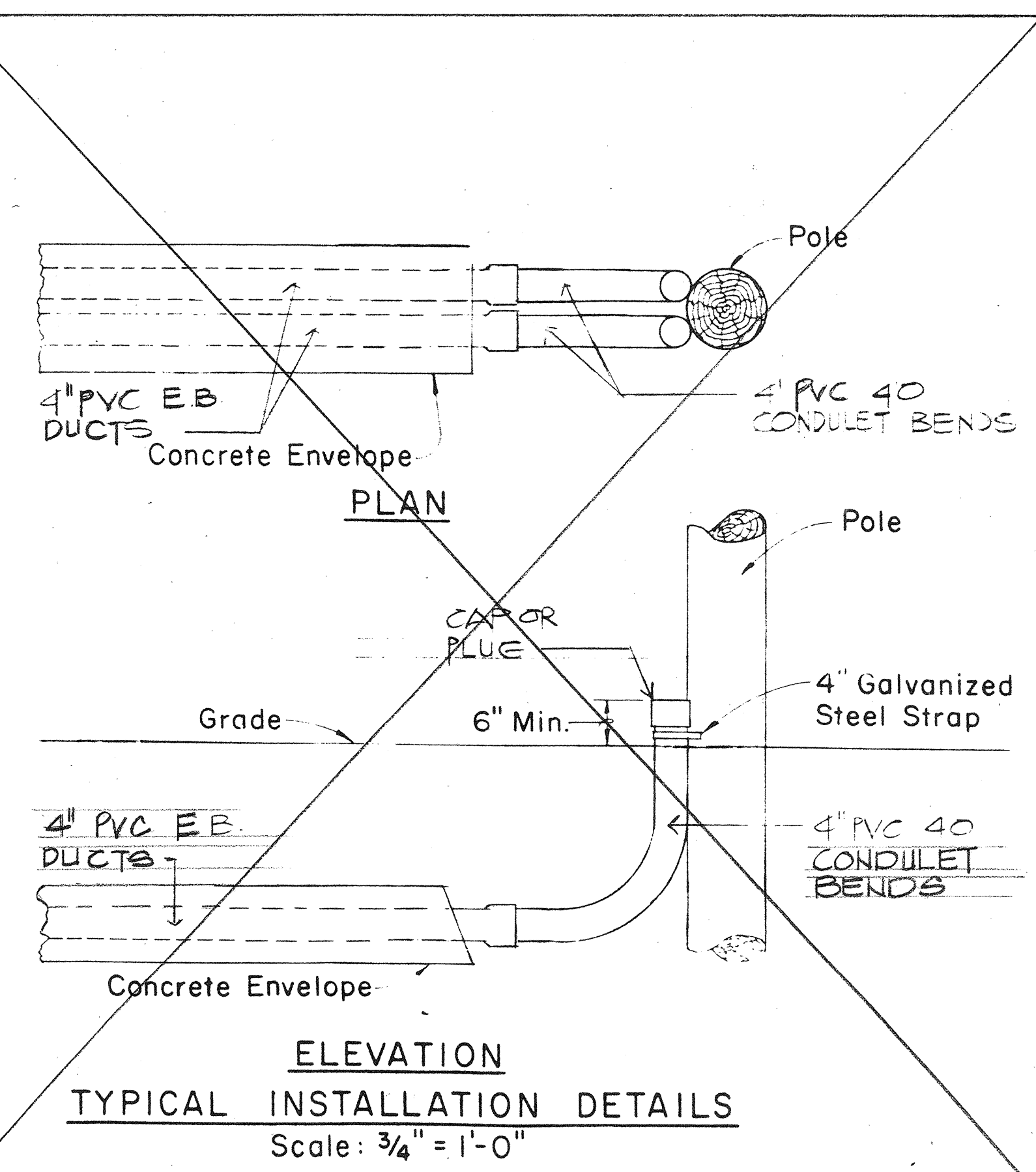
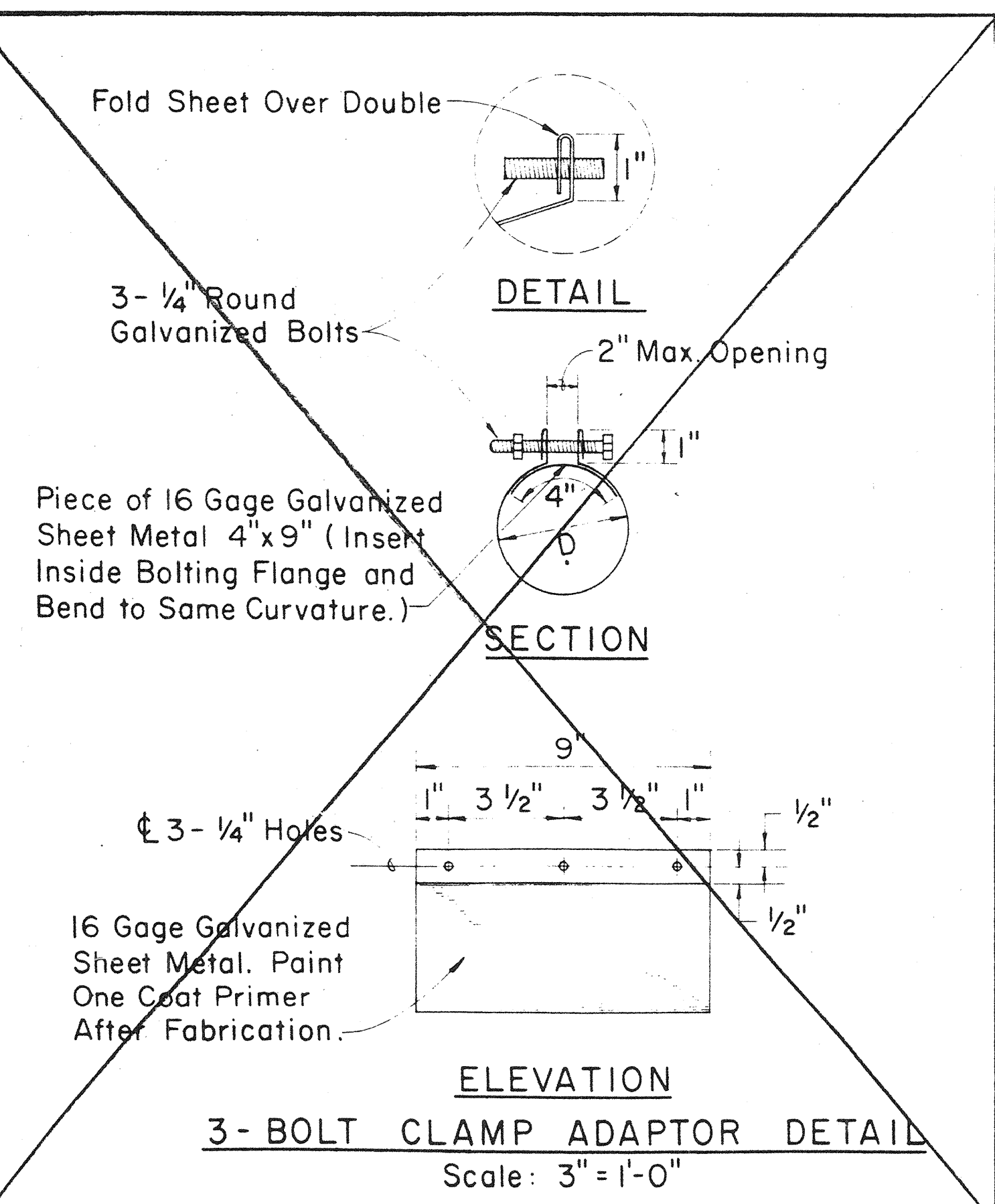
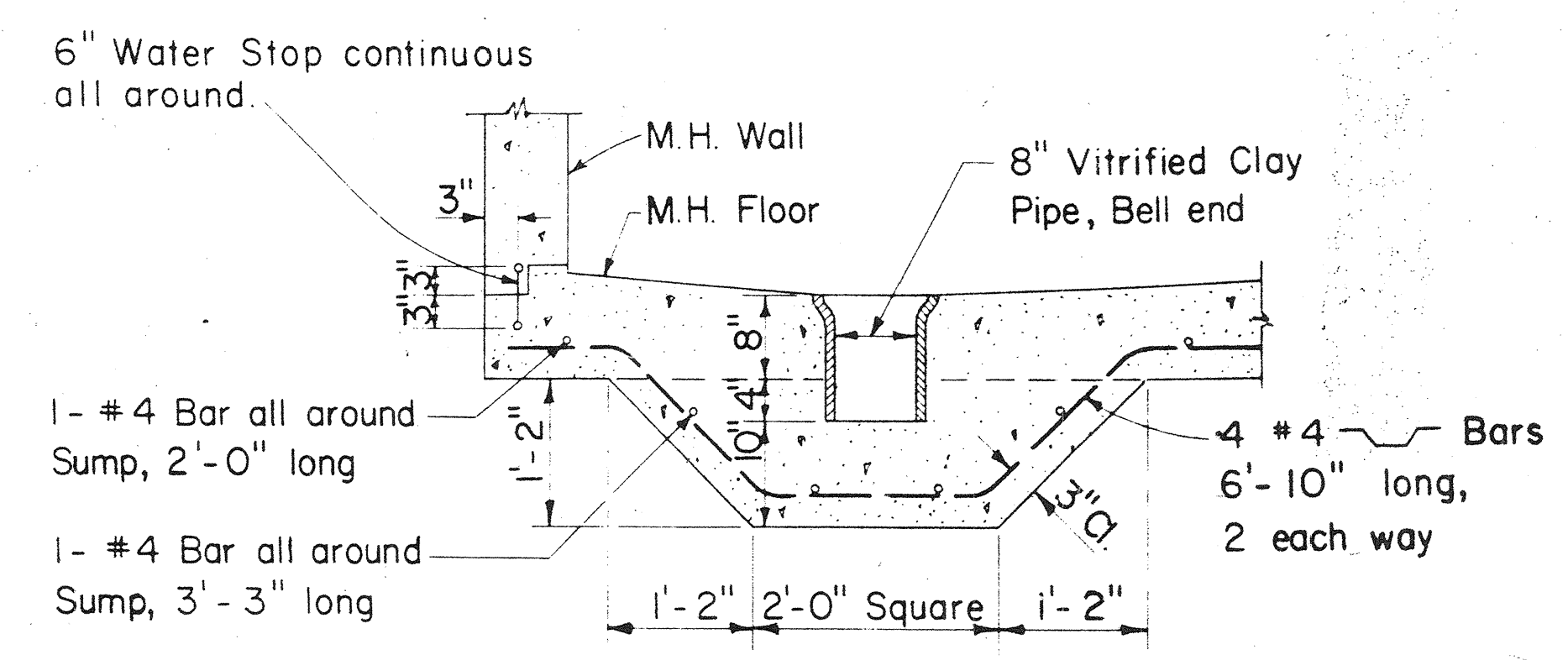
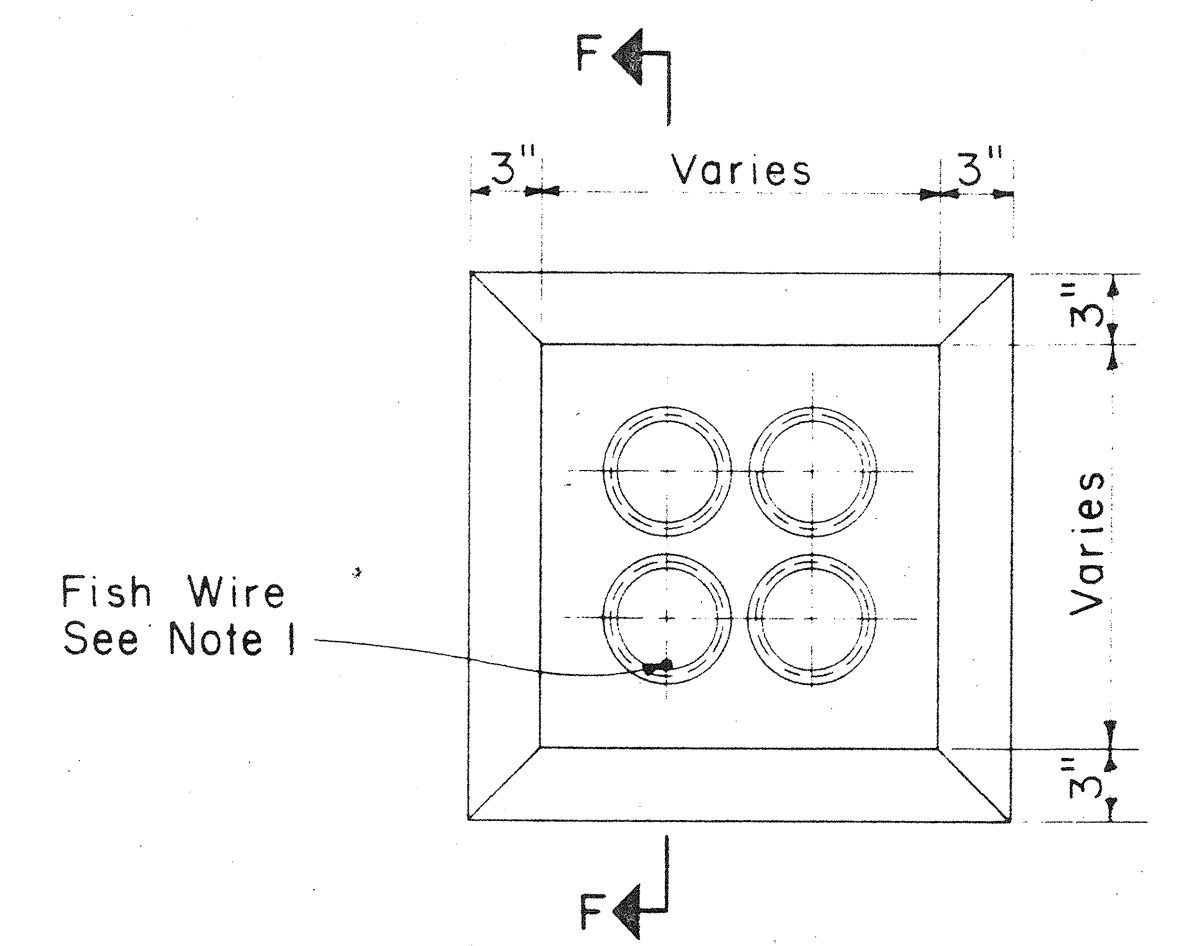
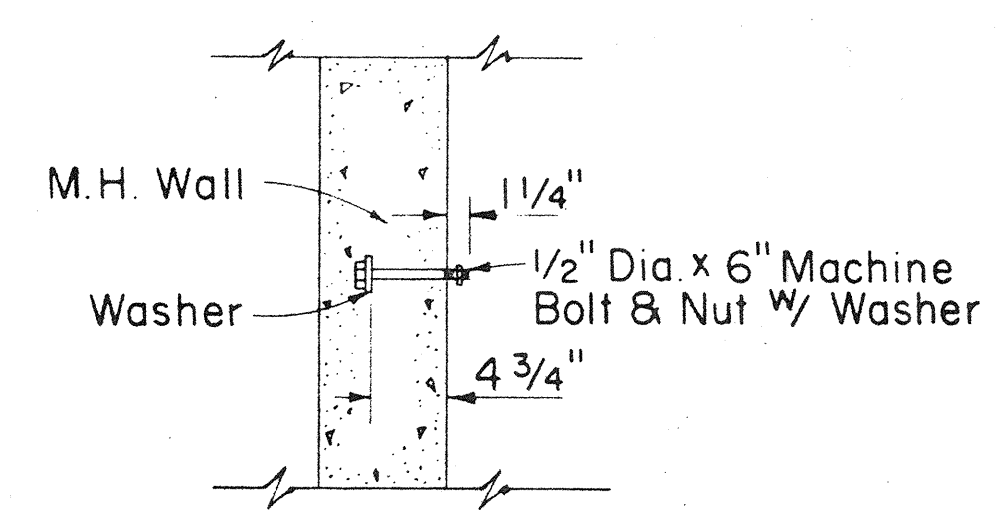
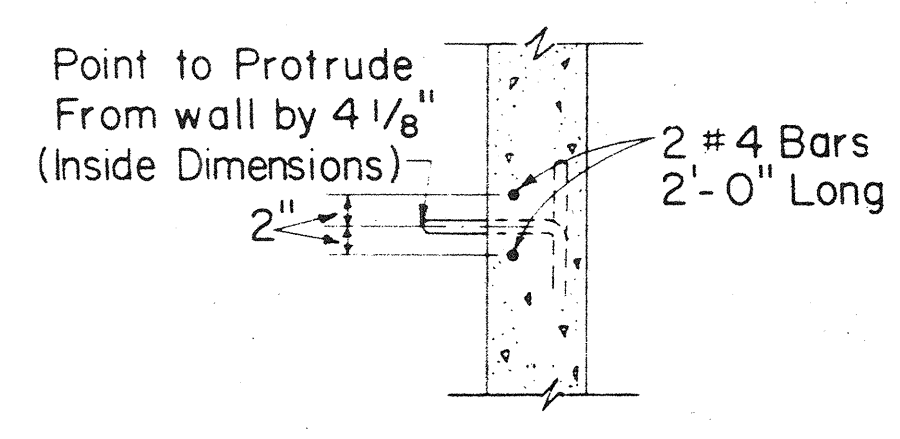
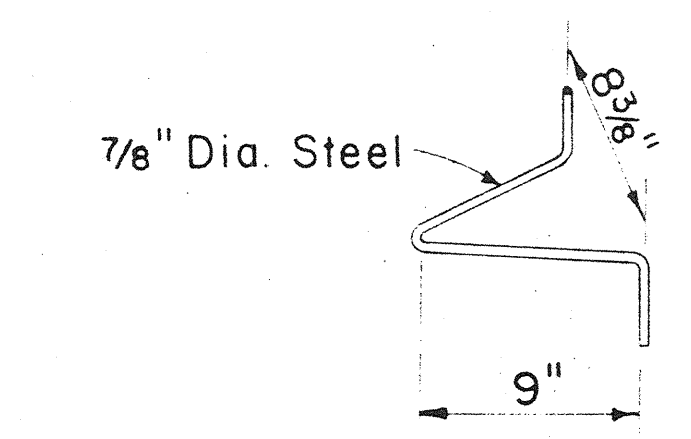
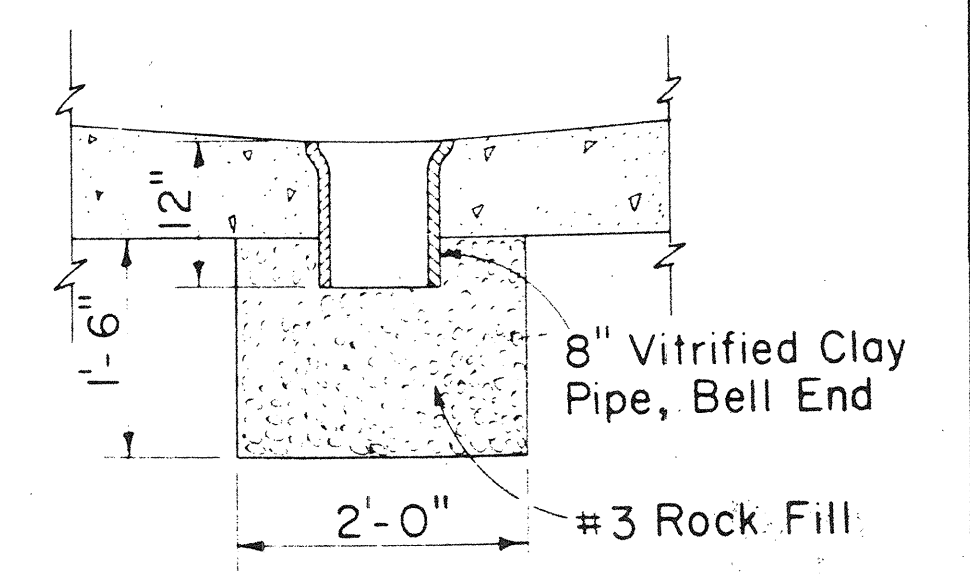
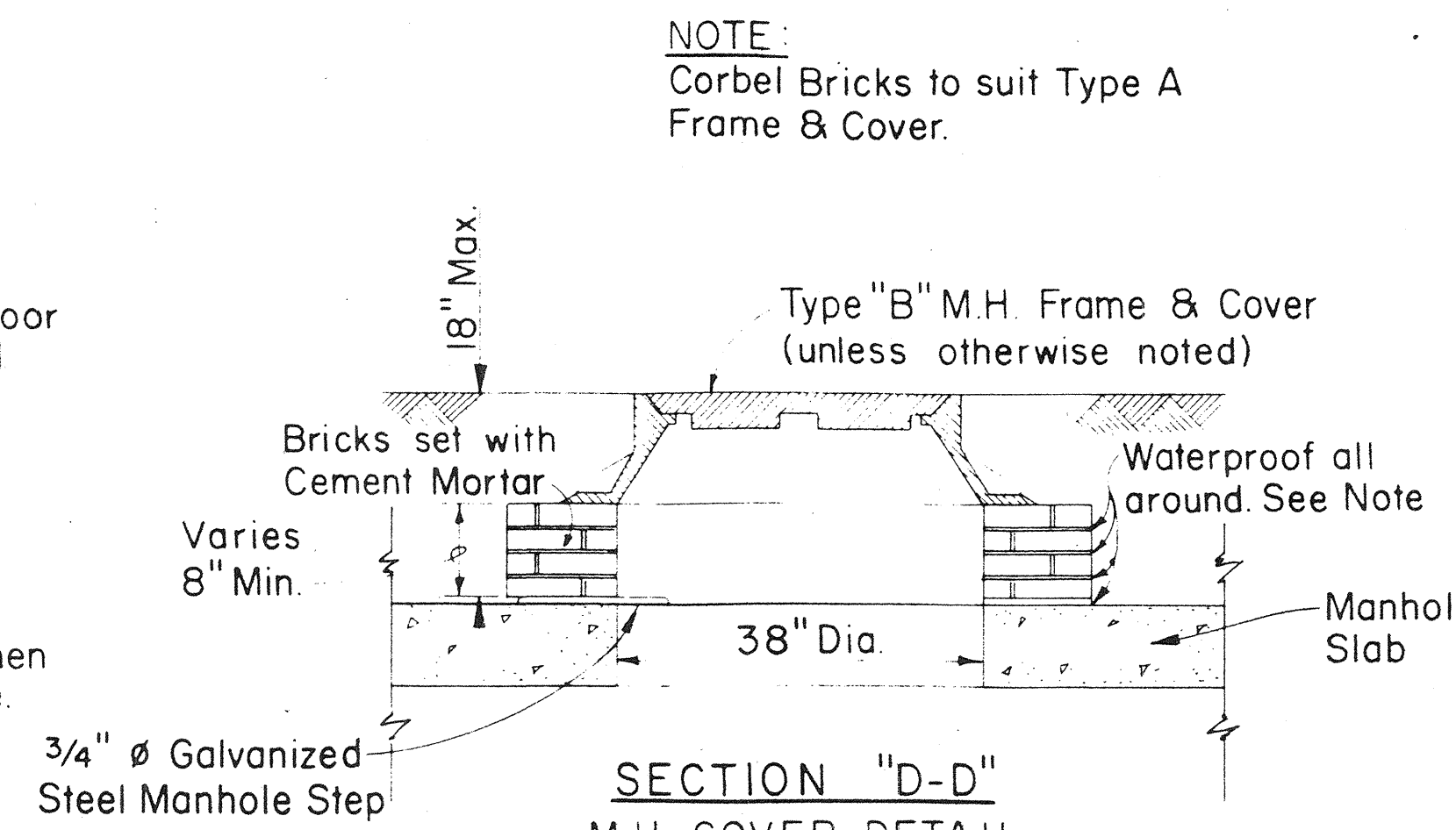
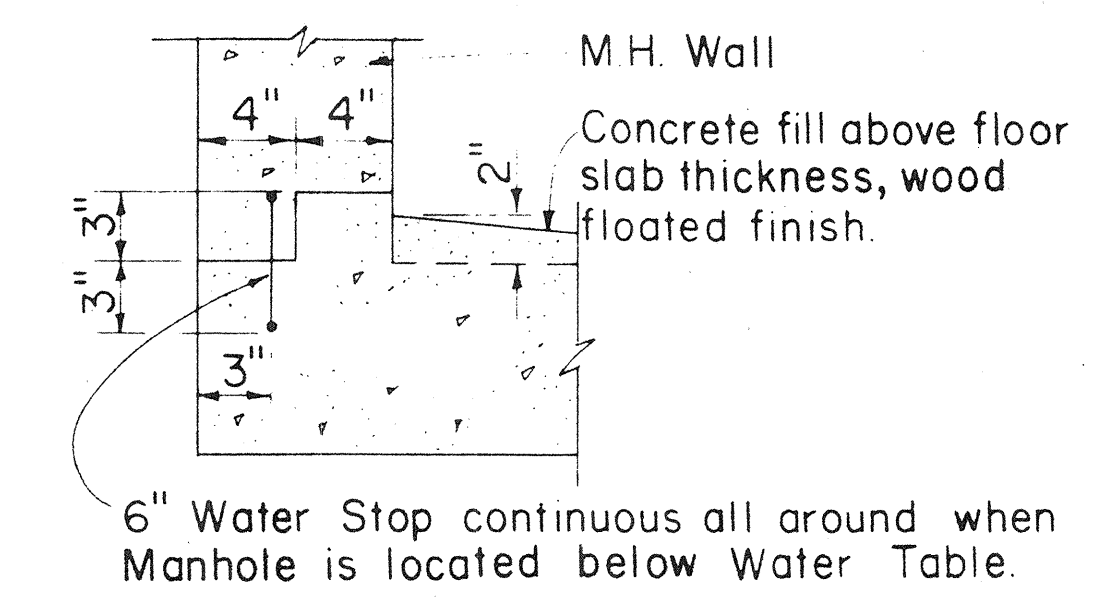
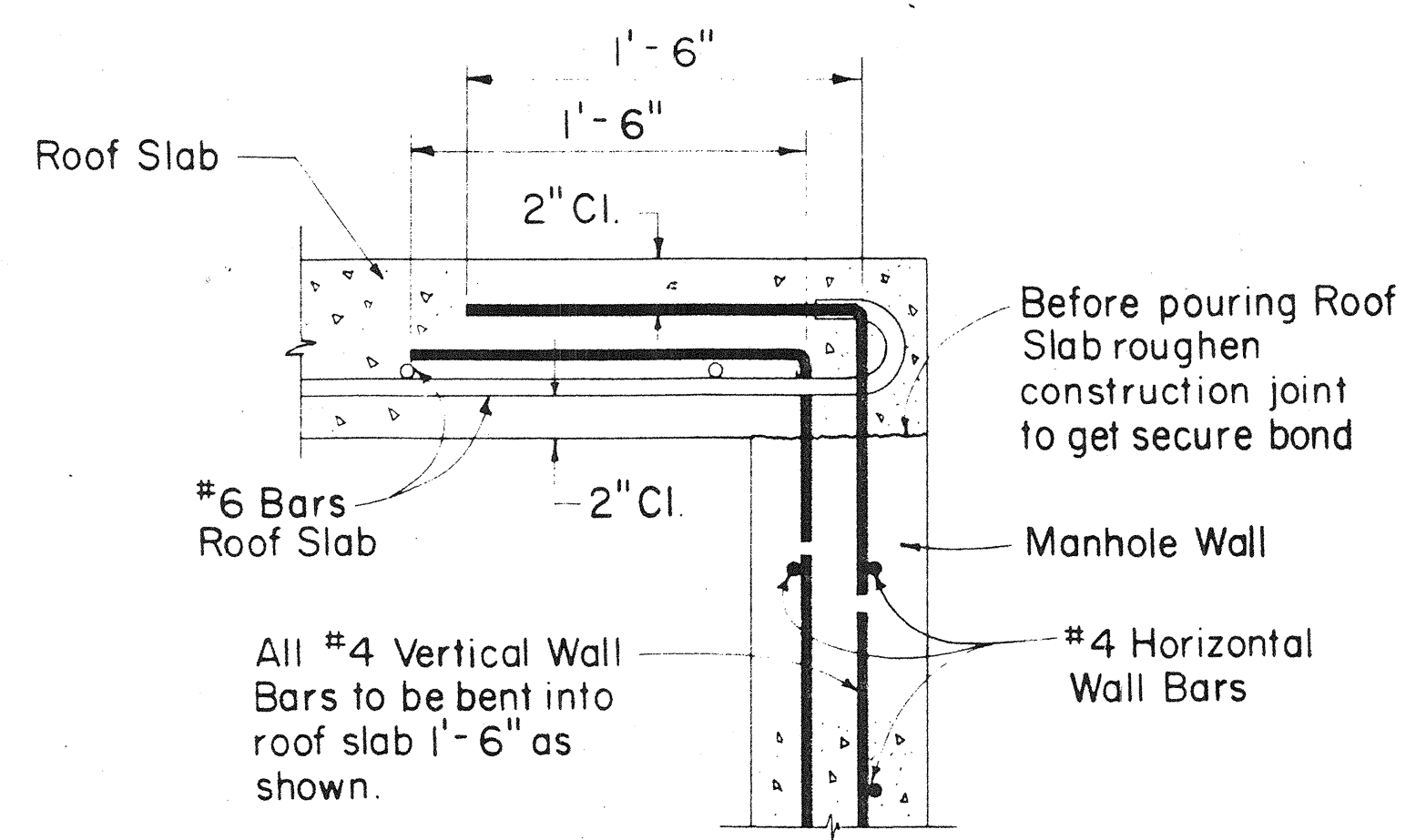
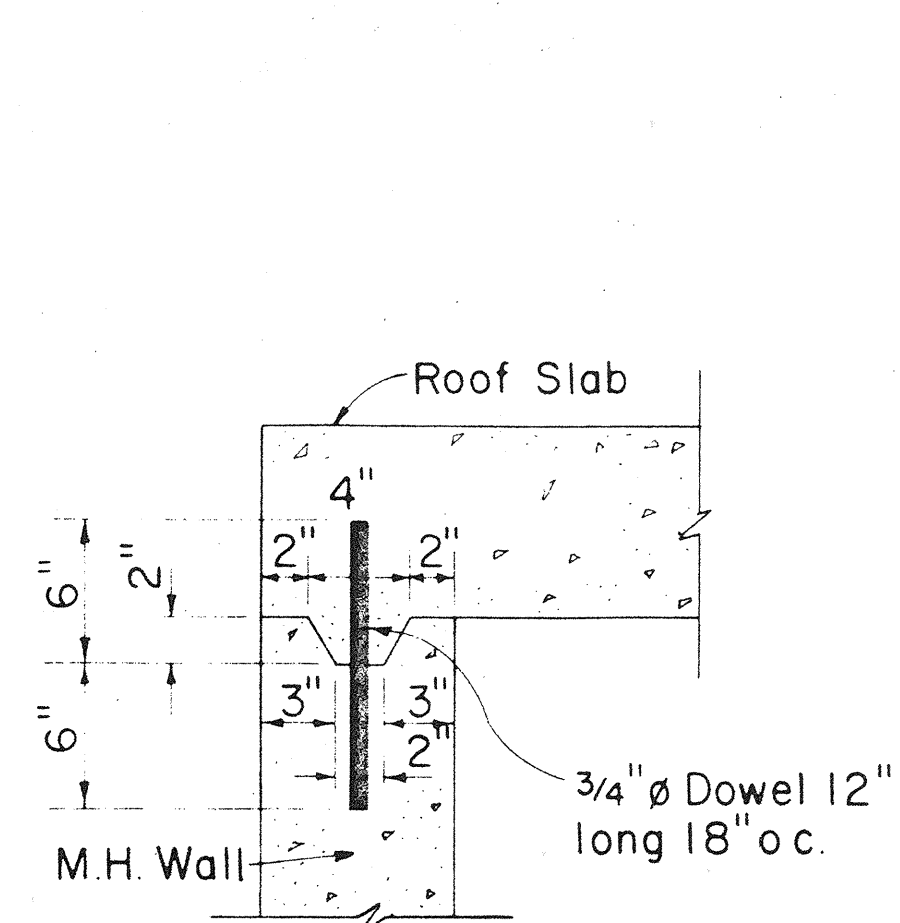
SURVEY PLOTTED BY	DATE
DRAWN BY	
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
No.	

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6-8-90 REVISED DETAILED PLAN 1-10-89 REV. DETAIL		STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
DATE REVISION		MISCELLANEOUS DETAILS	
INTERSTATE ROUTE H-3 F.A.I. PROJECT NO. I-H3-1(52)		SCALE: AS NOTED DATE: JULY 1988	
SHEET No. 63 OF 63 SHEETS		SHEET No. 63 OF 63 SHEETS	

AS BUILT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1-H3-152	1988	71	75



Supplement Sheet to Type "A-1"

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
TYPE "A-1" MANHOLE
AND MISCELLANEOUS
DUCTLINE DETAILS

Scale: As Noted Date:

SHEET No. 71 OF 75 SHEETS

AS BUILT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	I-H3-1(52)	1988	71	75

GENERAL NOTES

1. **EXCAVATION** : Excavate for manhole to accurate alignment, grades and dimensions as shown on drawings.
2. **BACKFILL** : Remove all debris before backfilling. Backfill in accordance with latest specifications of Division of Highways, State of Hawaii.
3. All work to be done in dry.
4. Concrete shall be Class A conforming to the requirements of Section 601 of the State Standard Specification.
5. **MIXING** : Ready-Mixed A.S.T.M. C-94-47.
6. **REINFORCING** : Round deformed bars (clean and new). Grade 40 Billet Steel per ASTM A615.
7. **SPLICE** : Lap 30 bar diameters unless otherwise shown.
8. **CURING** : Keep concrete moist at least 7 days after pouring (By approved method)
9. **FINISH** : All surfaces smooth and free from defects. Top of manhole - wood floated. Manhole floor - steel troweled. Inside walls and ceiling - cement washed.
10. Install all inserts, including pulling irons, ground rods, etc, before pouring concrete.
11. **POURING** : All concrete pouring shall be done in the presence of the Engineer.
12. **FORMS** : Make of good sound lumber, of sufficient strength, water tight and conforming to shape and dimensions indicated on drawings.
13. The Contractor to furnish and install, for each manhole:
 - A - 2-5/8" ϕ x 8'-0" copper-clad steel ground rods.
 - B - Standard 31" manhole frame and cover. (H.E. Standard)
14. Slope manhole floor down 1" toward sump.
15. All work shall be subject to inspection by the Division of Highways, State of Hawaii.
16. All materials shall be new and shall be manufactured in the United States of America
17. For number, size, and exact location of ducts entrances and pulling irons, refer to project drawings.
18. Waterstop shall conform to the requirements of Section 705 07 of the State Standard Specifications for Road & Bridge Construction.

REFERENCE DRAWINGS AND SPECIE

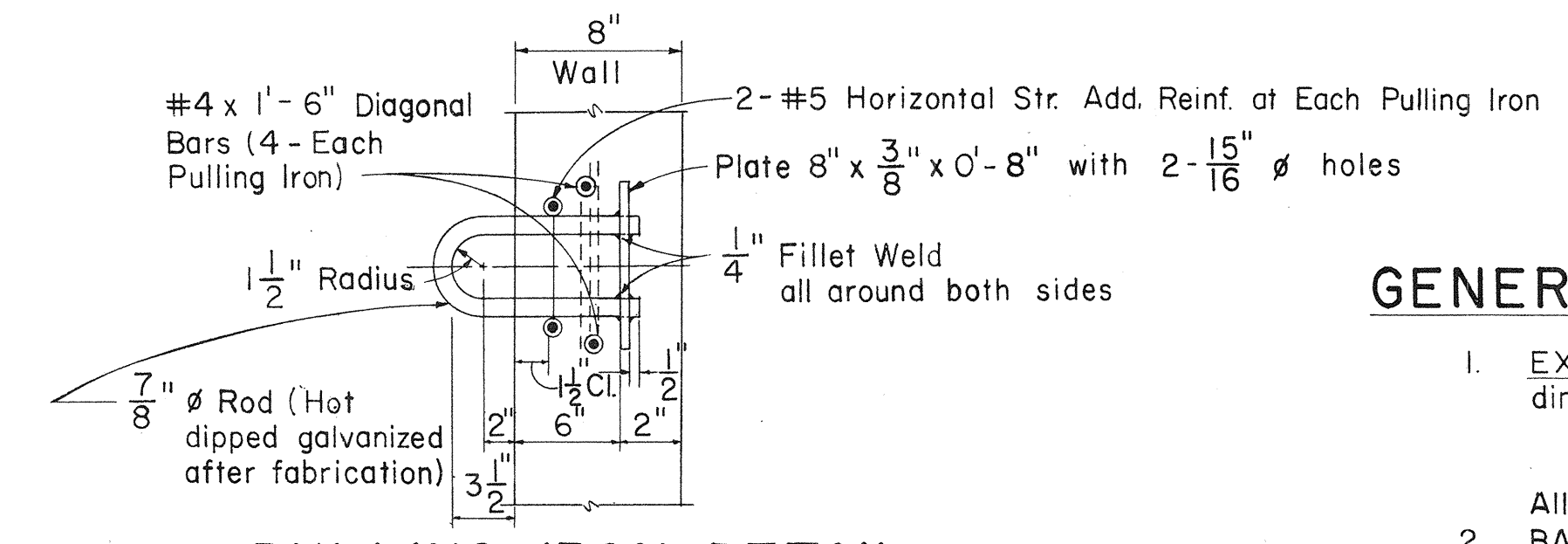
011327 & 011328 - Standard H.E.Co. 31" Manhole Frame and Cover.
 20191 & 18585 - Underground Ductline Construction Standards - Details.
 CS 7001-0- Construction of Underground Facilities- Specification

FOR USE IN AREAS SUBJECT TO VEHICULAR TRAFFIC

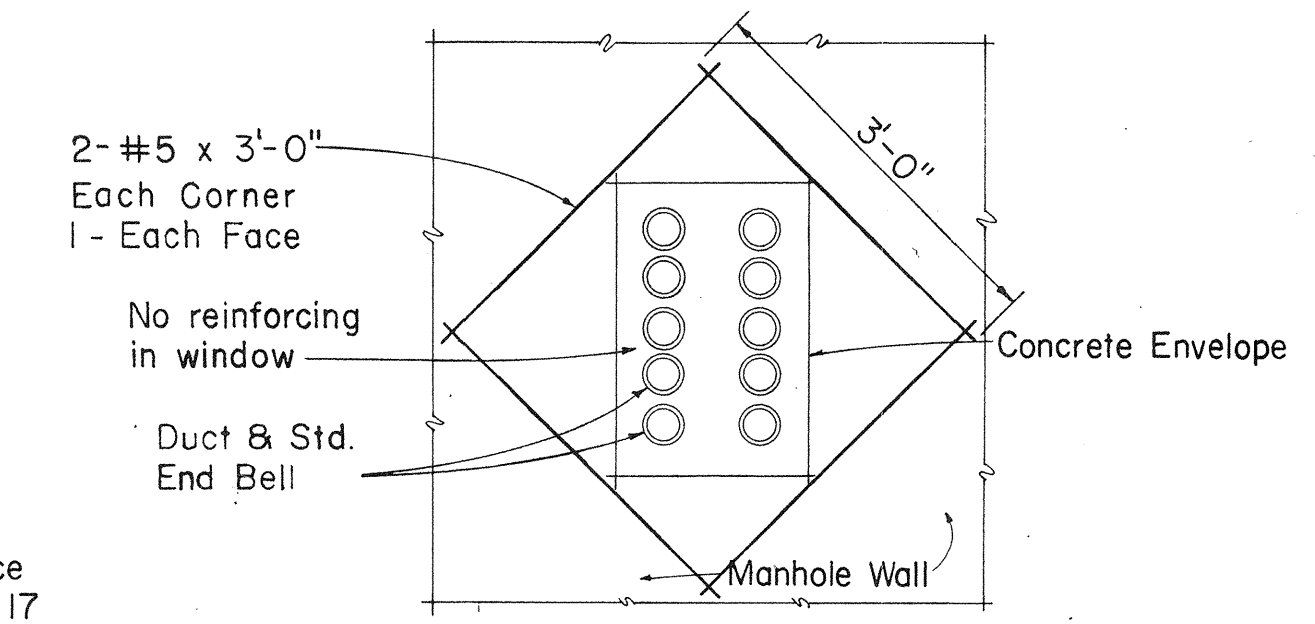
STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

STANDARD DETAILS
 MANHOLE TYPE No. 1
 (6'-0" x 11'-0")
 UNDERGROUND STANDARDS
 INTERSTATE ROUTE H-3
 F.A.I. PROJECT No I-H3-1(52)
 Scales: Not to Scale

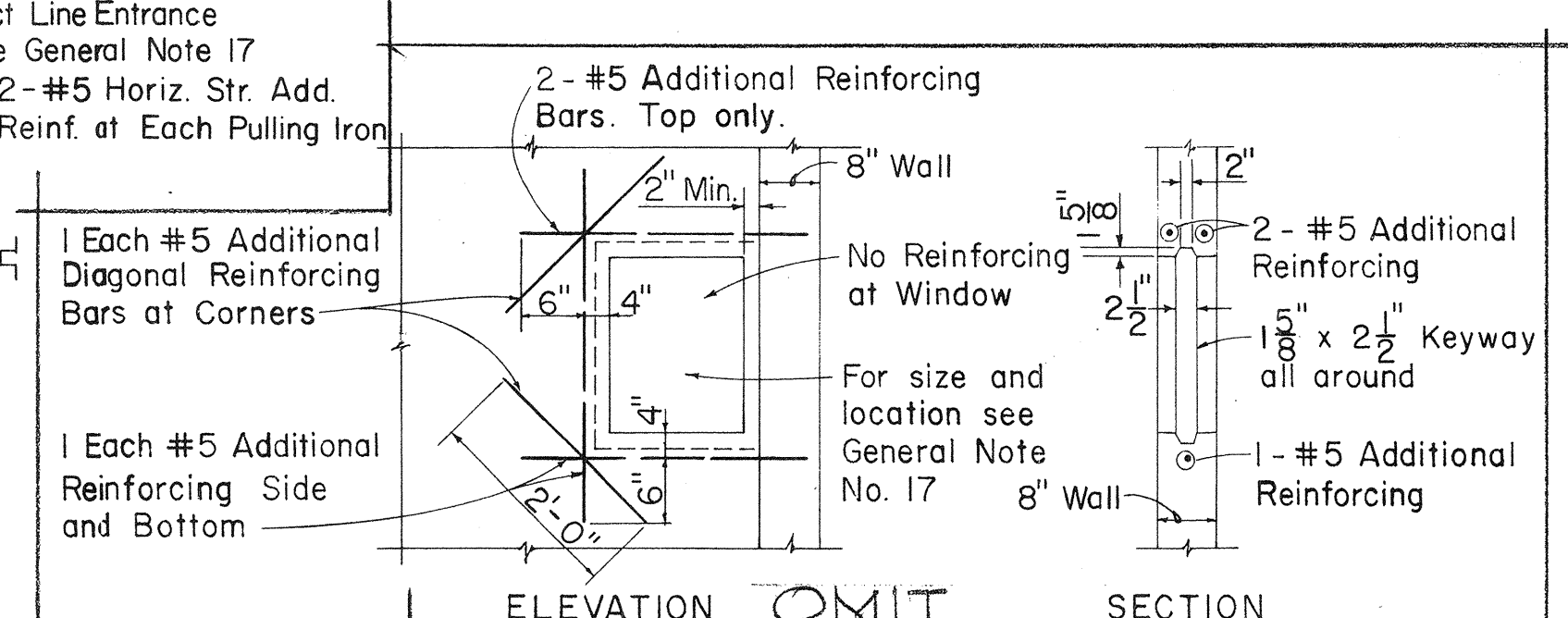
SHEET NO. 66 OF 66 SHEETS



PULLING IRON DETAIL



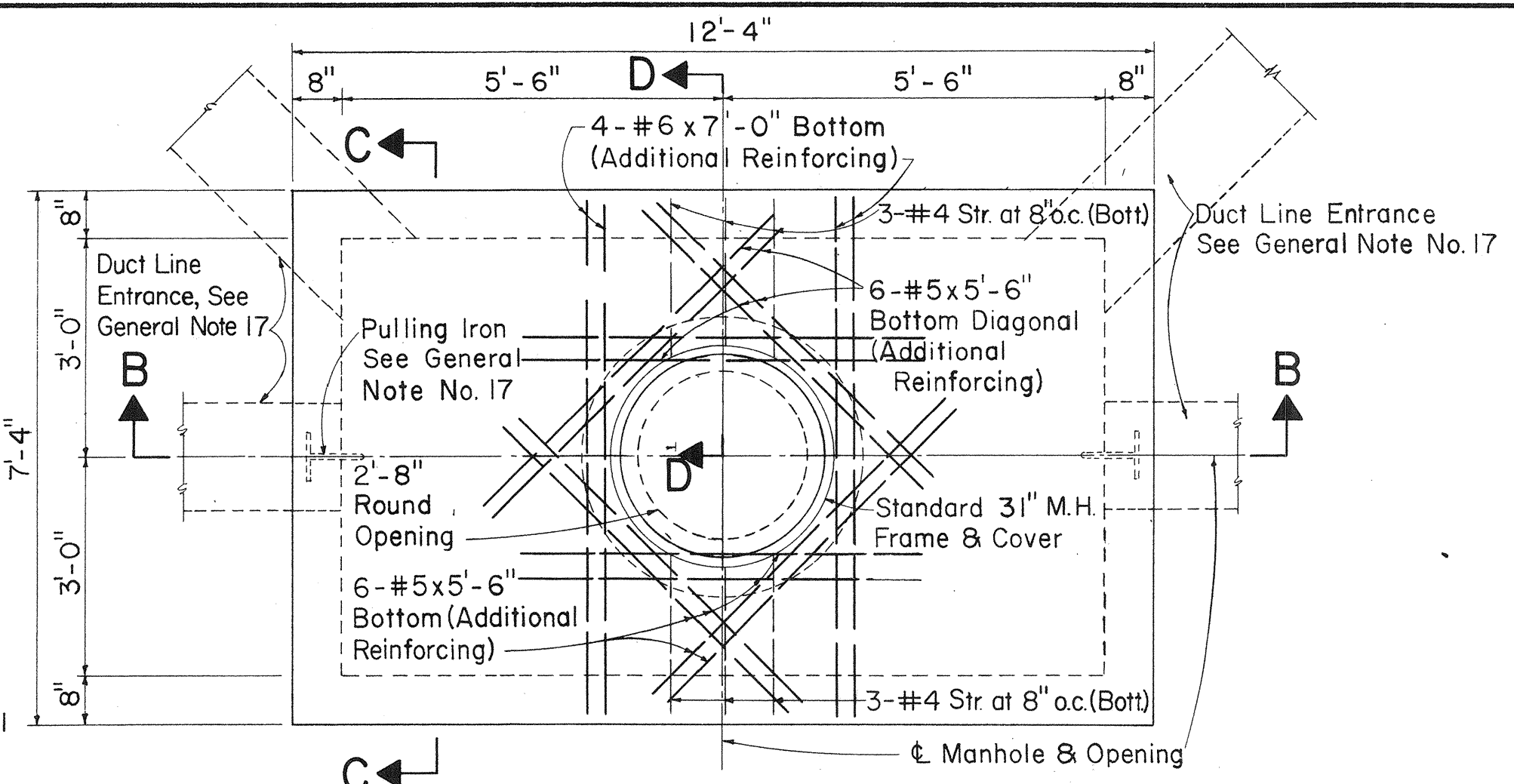
REINFORCING AT DUCT WINDOW



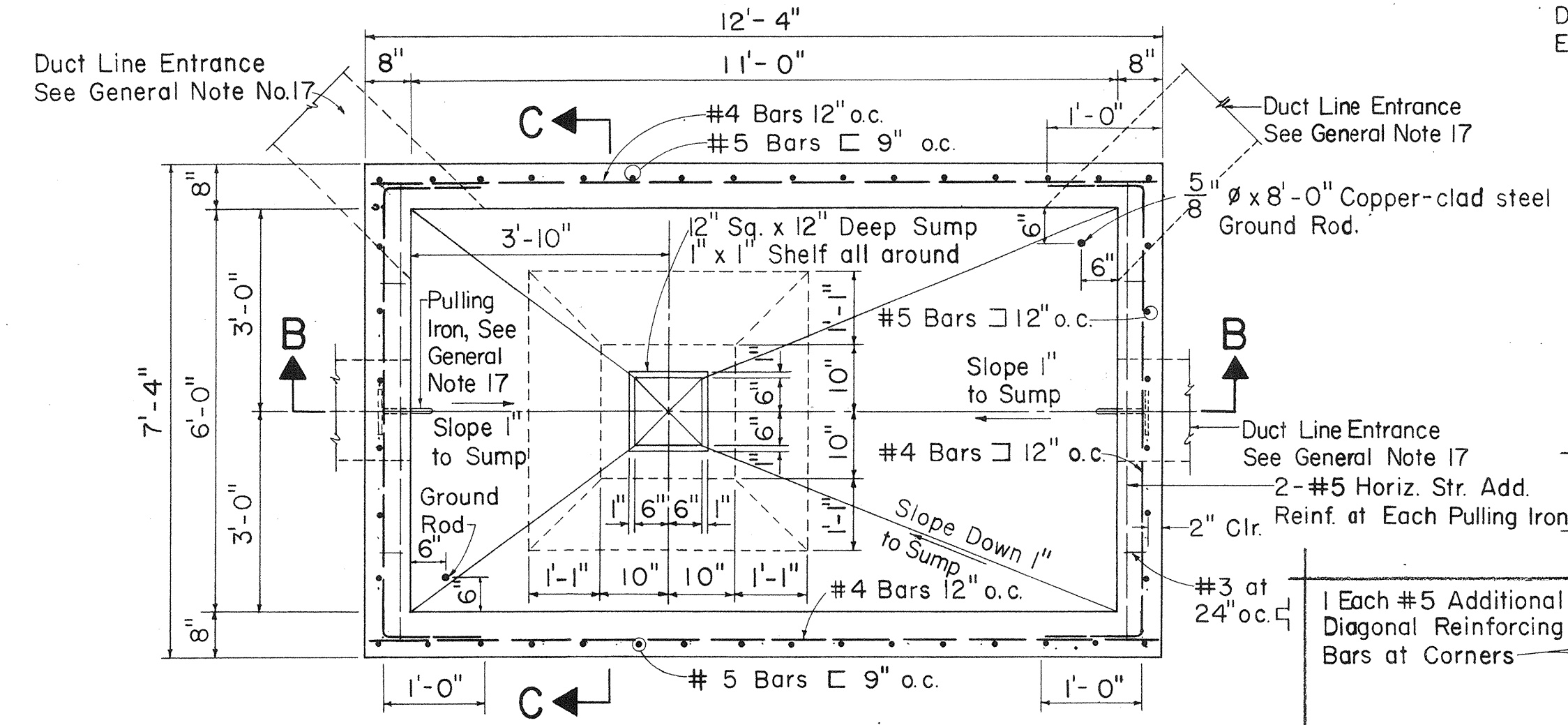
KNOCKOUT FOR FUTURE DUCT LINE

QUANTITY OF MATERIALS, (M.H. ONLY)
 * Concrete = 11.52 Cu.Yds.
 Reinf. Steel = 1444.61 lbs.
 Misc. Steel (Pulling Irons, ea.) = 10.90 lbs.
 ADDITIONAL QUANTITY OF MATERIALS FOR ALTERNATE NECK (Dim. "X" = 2'-0")
 Concrete = 0.50 Cu. Yds.
 Reinf. Steel = 40.0 lbs.
 * NOTE: Conc. for M.H. necks when used in lieu of bricks (for dim "X" < 1'-6") for anchor bolt installation is not included in above totals.

TYPICAL DETAIL OF CONSTRUCTION JOINT AND KEYWAY

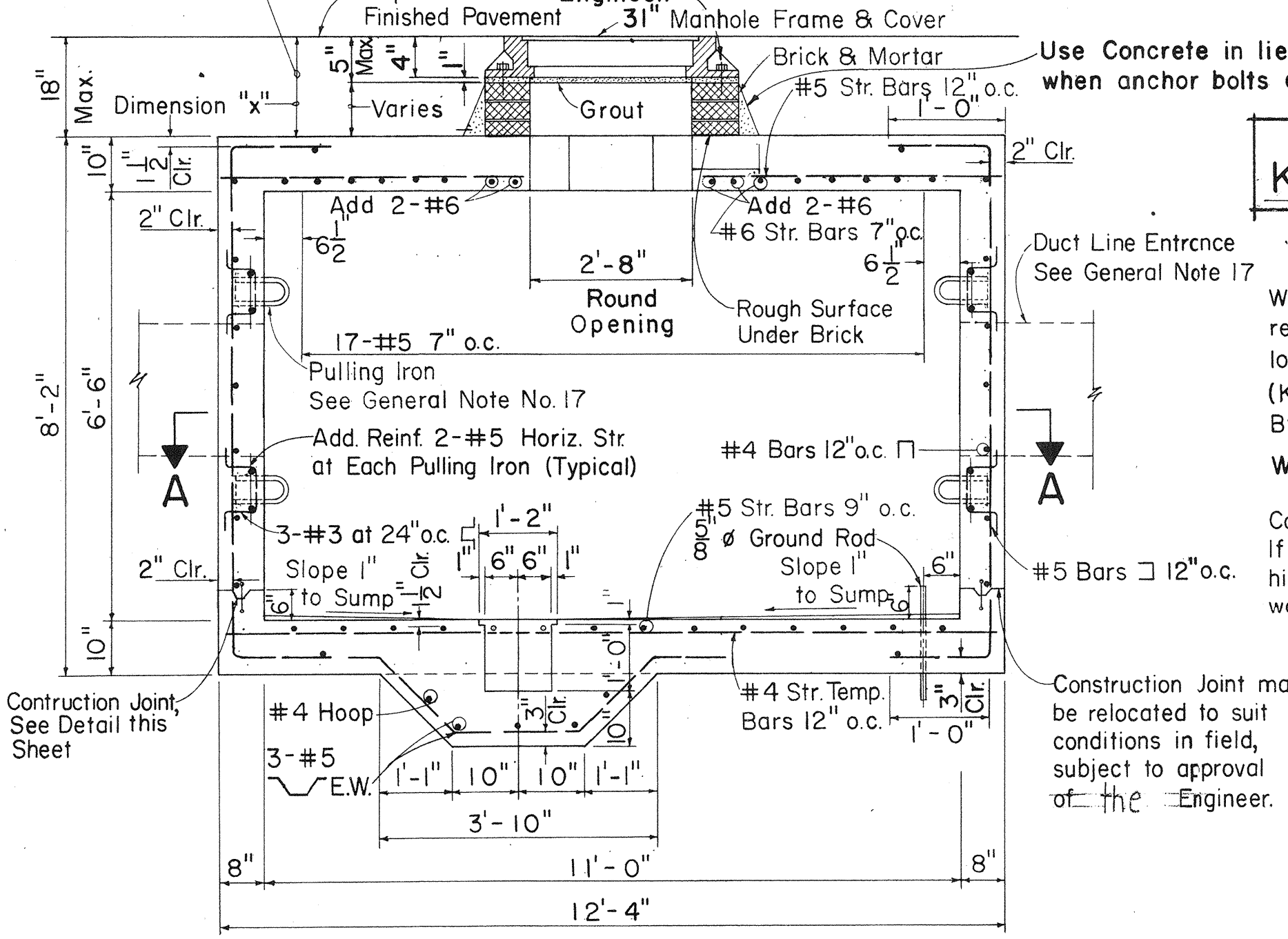


TOP PLAN

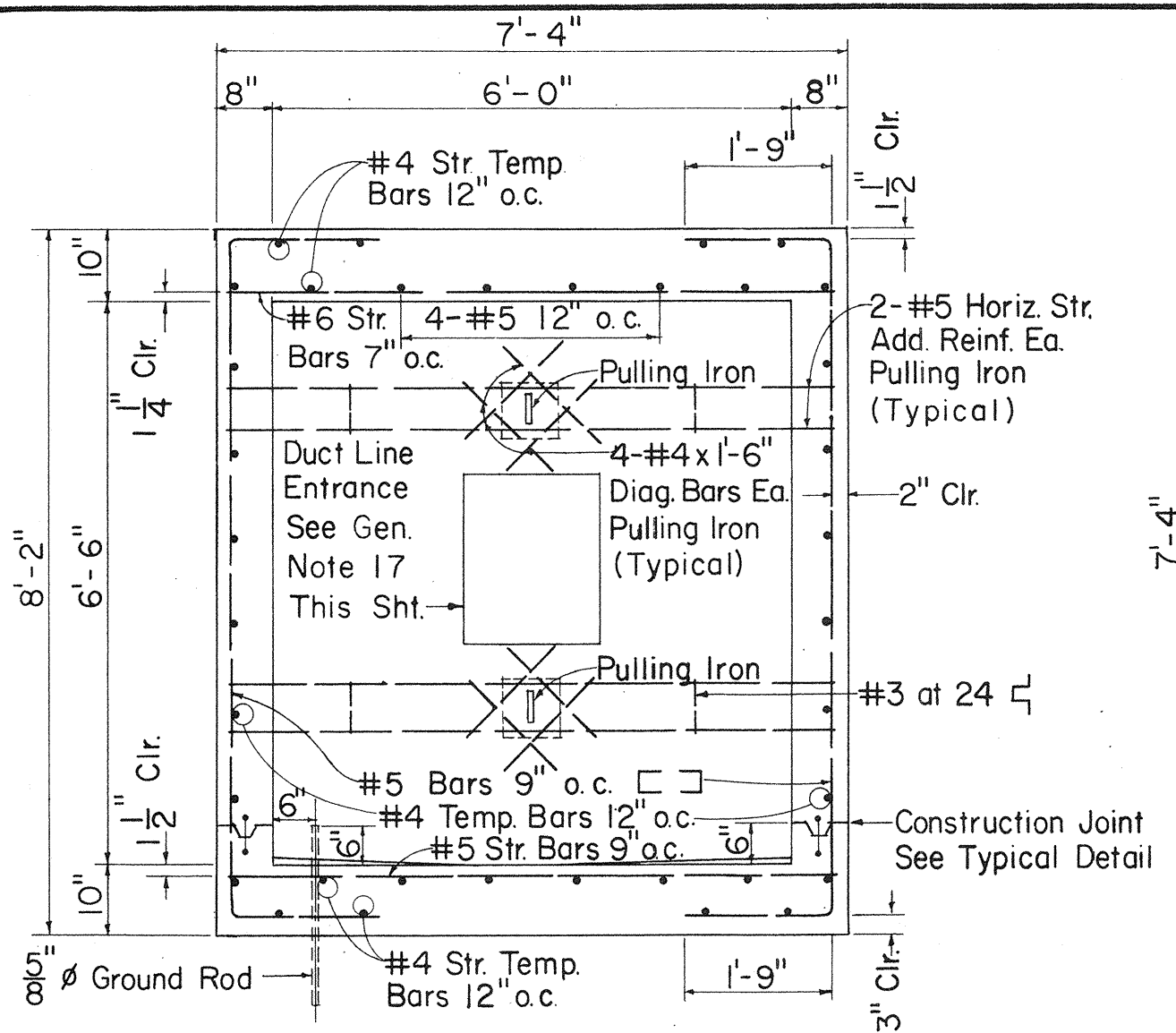


SECTIONAL PLAN A-A

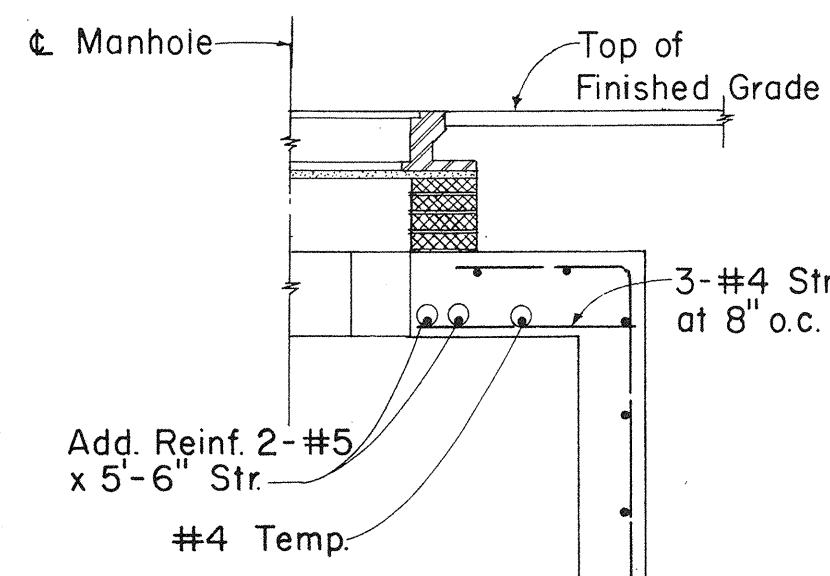
NOTE: Use alternate manhole neck only when dimension "x" is greater than 1'-6". Provide 4-5/8" ϕ x 0'-8" gal. bolts w/sq nuts & washers (proj. 2 1/2") when M.H. is installed in heavy traffic areas or as directed by the Engineer.



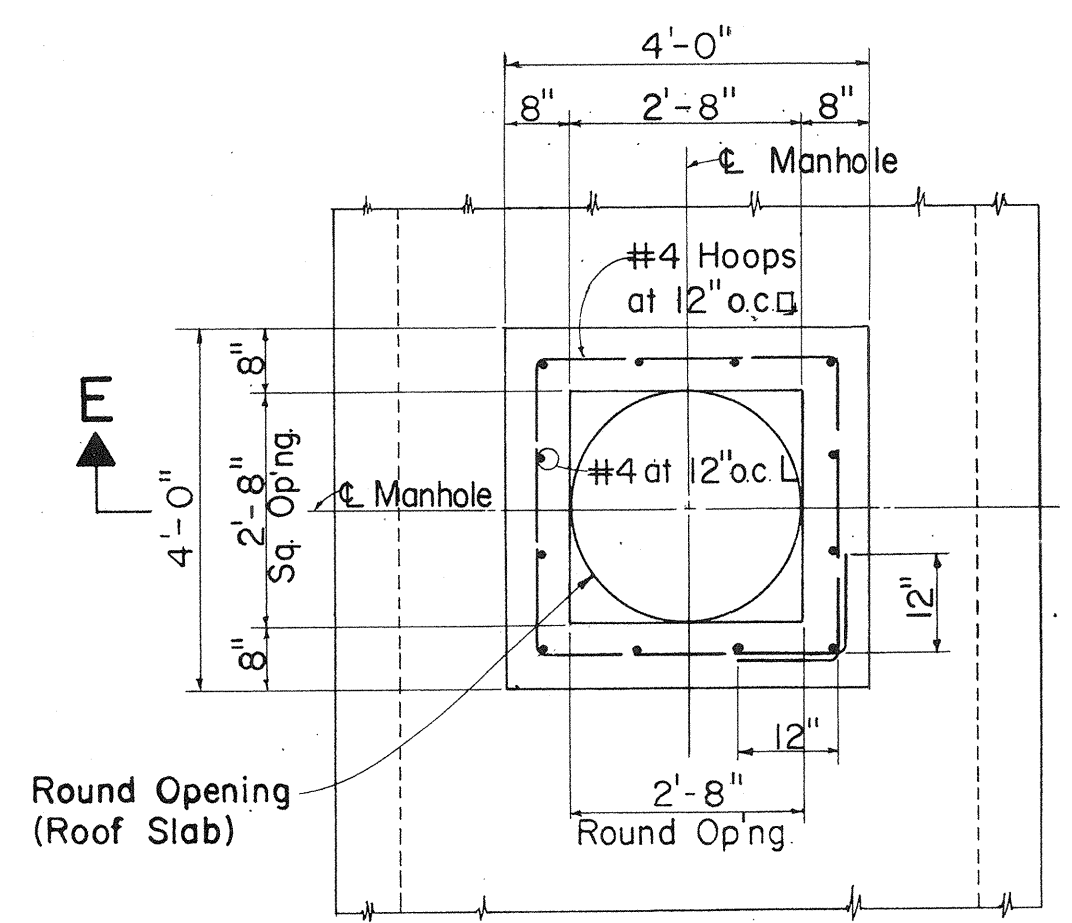
SECTION B-B



SECTION C-C

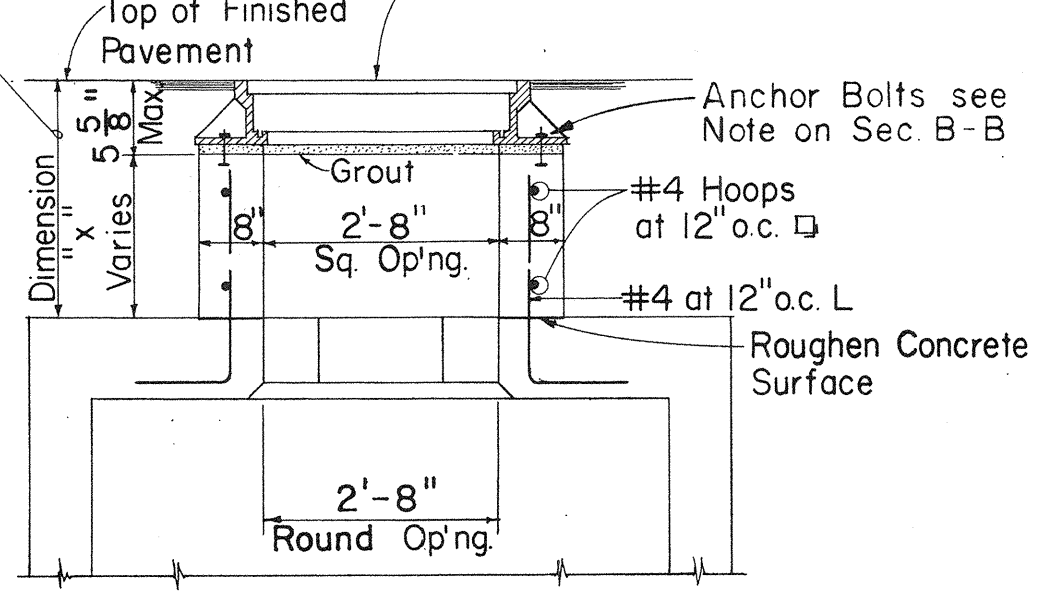


SECTION D-D



PLAN

NOTE: Use alternate manhole neck only when dimension "x" is greater than 1'-6". Std. 31" ϕ Manhole Frame and Cover



SECTION E-E

ALTERNATE MANHOLE NECK

DATE	DESIGNED BY	CHECKED BY
10-89	REV. NOTES & DETAILS	
	DATE	REVISION

AS BUILT

ADD. 72