

SEWER NOTES

1. Existing sewer lines shown on the plans are based on existing records of varying degrees of accuracy and completeness, verified wherever possible by field surveys. The Contractor shall verify actual location and inverts of existing lines, and shall be required to make adjustment to any new or existing sewer system wherever directed by the Engineer.

2. Adjust existing sewer manholes and manhole frames and covers within proposed roadway to fit new roadway finished grades.

3. If laterals other than those shown on the plans are exposed during construction, the same shall be cut and plugged, or extended and reconnected as required.

4. All services connected to existing sewer mains which are to be abandoned or removed shall be reconnected to new sewer mains if services are required.

5. All work involved in installation of new sewer mains, connection of existing house sewers to new sewer line, construction of concrete jackets around sewer mains, extension of laterals to new property line, and cutting and plugging of abandoned sewer lines and laterals shall be performed in accordance with the latest City and County Standard Sewer Details and Specifications and under the supervision of an inspector or representative of the Division of Sewers, City and County of Honolulu.

6. Concrete blocks and cradles shall be placed for all sewer mains and laterals.

7. Salvaged 24 inch diameter manhole frames and covers may be used only for manholes at end of lines and only if the depth of manholes are 5 feet or less. All salvaged 24 inch frames and covers shall be used before 24 inch frames and covers are used.

8. All services shall be maintained at all times during construction. Alterations to service lines shall be done with the least amount of disturbance to the existing services to the various houses.

9. All trees, lawns, shrubbery, fences, etc., disturbed in the process of performing work on sewer service lines, shall be restored by the Contractor to the satisfaction of the Engineer. Such restoration work will not be paid for separately, but shall be considered as incidental to the various contract items for the sewer system.

10. Contractor shall notify the Division of Sewers five (5) days prior to commencement of sewer work.

WATER NOTES

1. The Contractor shall notify the Board of Water Supply in writing one week prior to commencing work on water system.

2. The locations of existing water mains and appurtenances shown on the plans are approximate only. Any adjustment to the water mains and appurtenances whether shown on the construction plans or not shall be made and paid for by the project.

3. The utility lines shown on these plans are located from the best sources available. The Contractor shall check and verify the exact location and depth of same. Exposing of existing water main to be done by hand excavation.

4. Utility lines other than B.W.S. Lines and Sewer Dept. Lines are shown for the Contractors convenience only. For layout of other utilities, see respective utility plans.

5. All excavation and backfill shall be done by the Contractor, including excavation for the relocation and lowering or raising of existing main and excavation for meter to house service connections.

6. The Contractor shall arrange with the Board of Water Supply to cut off existing unused service laterals and remove meter boxes and appurtenances prior to commencement of clearing and grading operations. Contractor to provide all necessary excavations.

7. All Water System are tied to Baseline and Roadway Stationing unless otherwise noted.

8. Any blasting work in the vicinity of the existing water systems shall be kept at a minimum.

9. Any water mains adjacent to pile driving operation shall be kept exposed during the progress of the work.

10. Any damage incurred to the water system from blasting and pile driving shall be the responsibility of the Contractor.

11. Items indicated as "SALVAGE" on the plans shall be removed, cleaned and returned to B.W.S. Kalihii Store Yard by the Contractor.

12. Items indicated as "RELOCATE" on the plans shall be removed, cleaned, painted and reinstalled at the new location by the Contractor unless otherwise specified.

13. Asterisk (*) indicates work to be performed by B.W.S. Materials to be furnished by the Contractor or State unless specified as "RELOCATE".

14. Wherever a corporation stop shown tapping into a new main is larger than that allowed by B.W.S. standards, a double hub fitting with boss tapped for appropriate size corporation shall be used.

15. The minimum clearance between fire hydrants and utility poles or light standards shall be 3.0 feet.

16. Items noted thus "(State)" indicate materials furnished by the State.

17. The Contractor shall plug the ends of abandoned water mains with Class "C-1" Concrete. Payment for Class "C-1" Concrete used as plugs shall be considered incidental to the various contract items for the water system.

18. 16" and 24" C.I. Fittings shall be either Class D (Leadjoints) or Class 150 (Mechanical Joints).

19. Contractor shall provide adequate size sleeves thru walls, as directed by the Engineer to facilitate B.W.S. extension of water service pipe into customers property and reconnection.

20. For service connections to Sprinkler System, see Sprinkler System Plan Sheet Nos. 158 to 165 inclusive.

L E G E N D			
	Existing Type "A" Water Manhole		New Water Meter
	New Type "A" Water Manhole		Existing Sewer Line (Sizes Indicated)
	Existing Water Valve Manhole		New Sewer Line (Sizes Indicated)
	New Water Valve Manhole		Cut and Plug Existing Water, Sewer or Gas
	Existing Water Line (Sizes Indicated)		Existing Gas Line (Sizes Indicated)
	New Water Line (Sizes Indicated)		New Gas Lines (Sizes Indicated)
	Existing Fire Hydrant		Existing H.E. Co. & H.T. Co. UNDERGROUND DUCT LINES
	New Fire Hydrant		New H.E. Co. & H.T. Co. UNDERGROUND DUCT LINES
	Existing Water Meter		Catch Basin

WATAE DRIVE-IN THEATER

CONNECT TO EXIST 12" MAIN
14" 12" Sleeve, 14" Long (State)
14" L.F. 12" C.I. Pipe, C.I. 200
TEMP. FOR TESTING:
1-12" C.I. Plug (Relocated from previous test)
1-2" Cleanout
1-Conc. block

END OF F.A.I. PROJ.
NO. I-HI-1(6) UNIT 2
B.P.O.G. STA. 149+58

BEG. OF F.A.I. PROJ.
NO. I-HI-1(6) UNIT 3
B.P.O.G. STA. 140+83.71

APPROVED:

[Signature]
DIRECTOR, DIVISION OF SEWERS
[Signature]
ASS'T. CHIEF ENGINEER, B.W.S.

8-22-66
DATE
8-22-66
DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

UTILITIES
WATER AND SEWER

INTERSTATE HIGHWAY (LUNALILO Fwy.)
F.A.I. PROJ. No. I-HI-1(6) UNIT 3

SCALE: 1" = 20' FEB. 1966

SHEET No. 1 OF 17 SHEETS

ORIGINAL PLAN	DATE
PLAN	
TRACED BY	
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	

SEWER NOTES

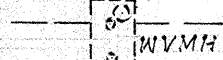
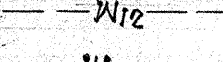
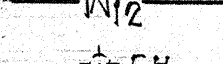
- Existing Sewer Lines shown on the plans are based on existing records of varying degrees of accuracy and completeness, verified wherever possible by field surveys. The Contractor shall verify actual location and inverts of existing lines, and shall be required to make adjustment to any new or existing sewer system wherever directed by the Engineer.
- Adjust existing sewer manholes and manhole frames and covers within proposed roadway to fit new roadway finished grades.
- If laterals other than those shown on the plans are exposed during construction, the same shall be cut and plugged, or extended and reconnected as required.
- All services connected to existing sewer mains which are to be abandoned or removed shall be reconnected to new sewer mains if services are required.
- All work involved in installation of new sewer mains, connection of existing house sewers to new sewer line, construction of concrete jackets around sewer mains, extension of laterals to new property line, and cutting and plugging of abandoned sewer lines and laterals shall be performed in accordance with the latest City and County Standard Sewer Details and Specifications and under the supervision of an Inspector or representative of the Division of Sewers, City and County of Honolulu.
- Concrete blocks and cradles shall be placed for all sewer mains and laterals.
- Salvaged 21 inch diameter manhole frames and covers may be used only for manholes at end of lines and only if the depth of manholes are 5 feet or less. All salvaged 24 inch frames and covers shall be used before 21 inch frames and covers are used.
- All services shall be maintained at all times during construction. Alterations to service lines shall be done with the least amount of disturbance to the existing services to the various houses.
- All trees, lawns, shrubbery, fences, etc., disturbed in the process of performing work on sewer service lines, shall be restored by the Contractor to the satisfaction of the Engineer. Such restoration work will not be paid for separately, but shall be considered as incidental to the various contract items for the sewer system.
- Contractor shall notify the Division of Sewers five(5) days prior to commencement of sewer work.

WATER NOTES

- The Contractor shall notify the Board of Water Supply in writing one week prior to commencing work on water system.
- The locations of existing water mains and appurtenances shown on the plans are approximate only. Any adjustment to the water mains and appurtenances whether shown on the construction plans, or not shall be made and paid for by the project.
- The utility lines shown on these plans are located from the best sources available. The Contractor shall check and verify the exact location and depth of same. Exposing of existing water main to be done by hand excavation.
- Utility lines other than B.W.S. Lines and Sewer Dept. Lines are shown for the Contractors convenience only. For layout of other utilities, see respective utility plans.
- All excavation and backfill shall be done by the Contractor, including excavation for the relocation and lowering or raising of existing main and excavation for meter to house service connections.
- The Contractor shall arrange with the Board of Water Supply to cut off existing unused service laterals and remove meter boxes and appurtenances prior to commencement of clearing and grading operations. Contractor to provide all necessary excavations.
- All Water System are tied to Baseline and Roadway Stationing, unless otherwise noted.
- Any blasting work in the vicinity of the existing water systems shall be kept at a minimum.
- Any water mains adjacent to pile driving operation shall be kept exposed during the progress of the work.
- Any damage incurred to the water system from blasting and pile driving shall be the responsibility of the Contractor.
- Items indicated as "SALVAGE" on the plans shall be removed, cleaned and returned to BWS Kalihi Store Yard by the Contractor.

- Items indicated as "RELOCATE" on the plans shall be removed, cleaned, painted and reinstalled at the new location by the Contractor unless otherwise specified.
- Asterisk (*) indicates work to be performed by B.W.S. Materials to be furnished by the Contractor or State unless specified as "RELOCATE".
- Wherever a corporation stop shown tapping into a new main is larger than that allowed by BWS standards, a double hub fitting with boss tapped for appropriate size corporation shall be used.
- The minimum clearance between fire hydrants and utility poles or light standards shall be 3.0 feet.
- Items noted thus "(State)" indicate materials furnished by the State.

- The Contractor shall plug the ends of abandoned water mains with Class "C-1" Concrete. Payment for Class "C-1" Concrete used as plugs shall be considered incidental to the various contract items for the water system.
- 16" and 24" C.I. Fittings shall be either Class D (Leadjoints) or Class 150 (Mechanical Joints).
- Contractor shall provide adequate size sleeves thru walls, as directed by the Engineer to facilitate BWS extension of water service pipe into customers property and reconnection.
- For service connections to Sprinkler System, see Sprinkler System Plan Sheet Nos. 158 to 165 inclusive.

<u>LEGEND</u>			
	Existing Type "A" Water Manhole		New Water Meter
	New Type "A" Water Manhole	—S ₈ —	Existing Sewer Line (Sizes Indicated)
	Existing Water Valve Manhole	—S ₈ —	New Sewer Line (Sizes Indicated)
	New Water Valve Manhole	—#—	Cut and Plug Existing Water, Sewer, or Gas
—W ₁₂ —	Existing Water Line (Sizes Indicated)	—G ₂ —	Existing Gas Line (Sizes Indicated)
—W ₁₂ —	New Water Line (Sizes Indicated)	—G ₄ —	New Gas Lines (Sizes Indicated)
	Existing Fire Hydrant	—UE, UT—	Existing H.E.Co. & H.T.Co. UNDERGROUND DUCT LINES
	New Fire Hydrant	—UE, UT—	New H.E.Co. & H.T.Co. UNDERGROUND DUCT LINES
WM □	Existing Water Meter	C B	Catch Basin

MAIALAE DRIVE-IN THEATER

CONNECT TO EXIST. 12" MAIN
 * 1-12" Sleeve, 14" Long (State)
 * 6-L.F. 12" C.I. Pipe, C.I. 200
 TEMP. FOR TESTING:
 1-12" C.I. Plug (Relocated from previous test)
 1- 2" Cleanout
 1-Conc. block

Revised May 5, 1967

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
UTILITIES
WATER AND SEWER
 INTERSTATE HIGHWAY (LUNALILO FWY)
 F.A.I. PROJ. No. I-HI-1(6) UNIT 3
 SCALE: 1" = 20'
 MAY, 1967

APPROVED:

 DIRECTOR, DIVISION OF SEWERS

 ASST. CHIEF ENGINEER, B.W.S.

DATE 8-22-66
 DATE 2-22-66

SHEET No. 1 OF 17 SHEETS

65 IR

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

TRUE NORTH
SCALE: 1" = 20'

JOLLY ROGER

WAIALAE
SHELL SERVICE

RENEKE
BUILDING

8 STA. 149+43
RELOCATED FH #1474
1- FH (Relocated)
1- 12"x6" Tee (gate)
1- 6" G.V., 150' # (Relocated)
1- Type 'C' MH 65' Deep
2- L.F. 6" C.I. Pipe
2- Conc. Blocks
1- 20" MH Frame & Cover (Relocated)
TO BE RELOCATED
1- FH #1474
1- 20" MH Frame & Cover
1- 6" G.V., 150' #
DEMOLISH
1- Type 'C' MH

STA. 146+23
1-12" C.I. 1/2 Bend (Bot. Vert.)
1-Conc. Block

SEE SHEET #73 FOR
DETAIL OF 12" WATER
LINE UNDER EXISTING
BOX DRAIN

Adjust SMH
Frame & cover -

Exist. 30" S.D. to remain

Existing Sanitary Sewer Easement

8 1 R/W Line 5

~~"E" LATERAL~~
~~TYPE III~~

R/W Line

Center Line

1- 12" C.I. 1/32 Bend (Top Vert.)
1- Conc. Block

32 L.F. REINF.
CONC. JACKET

Connection of exist. Lat. to new main,
relocation of meter, & construction of
meter boxes to be done by BWS.
Contractor shall tap and install 2"x2½"
corporation stop.

Connection of exist. lat. to new main,
relocation of meter, & construction
of meter boxes to be done by BWS

Contractor shall tap and install
2"x2 1/2" corporation stop.

FRONTAGE ROAD

NEW 12" C.I. WATER - CLASS 200

Abandon Ex

146

Wiz

148

150

Existing 24" Water to remain

Exist. 24" Water
(To remain)

STA. 147 + 05 /
1 - 24" C.I. 1/6 Bend
1 - Conc. Block

OUTBOUND

FRONTAGE ROAD

M.L. STA. 145+00

SAM SPOONE'S

BARRY'S UNION SERVICE

E STA. 146+80
CONNECTION
8 LF. 24" C.I. Pipe, Class 150
1-24" C.I. 1/4 Bend
1-24" C.I. Sleeve, 15' Long
1-2" Air Valve (Min. Work. Press. 105 psi.)
(BWS to install Corp. stop
furn. by Contr.)
1 Type "B" M.H. 11.0 Deep
1 Conc. Bk. (w/struct. strut).
1 20" M.H. Fr. & Cover

1- STA. 147 + 60
 1- 24" x 12" Tee
 1- 12" G.V. 150' # (Relocated)
 1- 24" BGGV./4" By-Pass, 150' # (Relocated)
 1- Type 'A' M.H. for 24 BGGV. 2.5' Deep
 1- Type 'B' M.H. 2.0' Deep 7.0'
 100 L.F. 24" C.I. Pipe, CL. 150
 16 L.F. 12" C.I. Pipe, Class 200
 1- 12" Cleave, 14' Long (Grate)
 1- 20" M.H. Fr. E' Cover (Relocated)
 1- 20" M.H. Fr. S' Cover
 1- Conc. Block & Cover
 2- 20" M.H. Fr. E' & S' Cover
 TO BE RELOCATED
 1- 24" BGGV./4" By-Pass
 1- 12" G.V. 150' #
 1- 20" M.H. Fr. E' Cover
 DEMOLISH
 1- Type 'A' & 'B' M.H.

HUNAKAI ST.

148 + 07
~~TA. 147 + 00~~
 x 12" Top

LSON, OKAMOTO, OKA, INC.
 PARK ASSOCIATES, INC.
 ARCHITECTS & ENGINEERS

STA. 149+00
 1- 3/4" Air Valve (Min. Working
 Press. 150 psi) 4.4'
 1- Type 'C' M.H., ~~6.5'~~ deep
 1- 20" M.H. Frame & Cover

APPROVED
H. C. Francis
ASSISTANT CHIEF ENGINEER, B.W.S.
McNamee
DIRECTOR, DIVISION OF SEWERS

9-12-66
DATE

2-2-65
DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

UTILITIES
WATER AND SEWER

INTERSTATE HIGHWAY (LUNALILO FREEWAY)
F.A.T. PROJ. NO. I-HI-1 (6) UNIT 3

SHEET No. 2 OF 17 SHEETS

PRINTED ON CLEARPRINT 1000-H

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F.H. 1(6)	1967	67R	235

Revised May 5, 1967

- STA. 155+05.97
 RELOCATED F.H. #1475
 * 1-F.H. (Relocated)
 * 1-6" C.I. 1/4 Bend
 * 55 L.F. 6" C.I. Pipe
 * 1-6" G.V., 150' (Relocated)
 1-Type "C" M.H. 6.5' Deep
 1-20" M.H. Frame and Cover (Relocated)
 1- Concrete Block
 TO BE RELOCATED:
 * 1-F.H. #1475
 * 1-6" G.V.
 1-20" M.H. Frame and Cover
 DEMOLISH
 1-1/2-Type "C" M.H. 1 Only

- STA. 155+32
 CONNECTION
 * 1-12" C.I. 1/4 Bend (State)
 * 3 L.F. 12" C.I. Pipe Class 200
 * 12" C.I. Sleeve, 14' Long (State)
 1-Concrete Block
 TEMP. FOR TESTING
 1-12" Plug (Relocated from Previous Test)
 1-2" Cleanout
 1-Concrete Block

- STA. 155+05
 1-12" C.I. 1/4 Bend (State)
 1-Conc. Block

- STA. 155+79
 1-24" BGGV/4" By-Pass 150'
 (Relocated) 8.0
 1-Type "A" M.H. 8.5' Deep
 1-20" M.H. Frame and Cover
 2-6" M.H. Frame and Cover
 TO BE RELOCATED
 1-24" BGGV/4" By Pass, 150'
 DEMOLISH
 1-Type "A" M.H.

- STA. 155+72 CONNECTION
 1-24" x 8" B.O. Tee (8 on top)
 * 12 L.F. 8" C.I. Pipe
 * 1-8" Sleeve, 15' Long
 1-Conc. Block
 1-8" Plug (Temporary)
 1-2" Cleanout (Temporary)

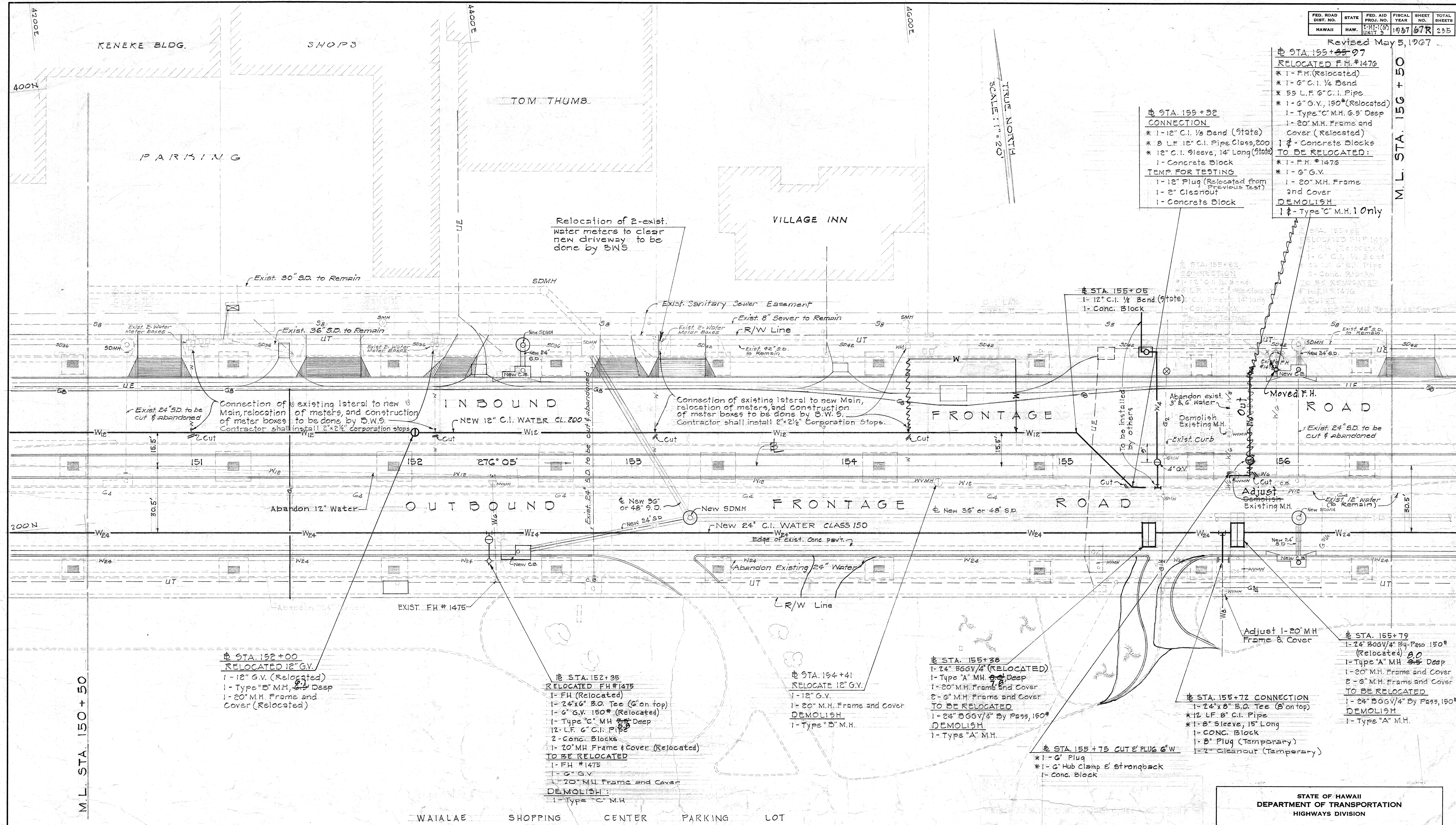
- STA. 155+75 CUT & PLUG 6" W
 * 1-6" Plug
 * 1-6" Hub clamp & Strongback
 1-Conc. Block

- STA. 155+38
 1-24" BGGV/4" (RELOCATED)
 1-Type "A" M.H. 8.5' Deep
 1-20" M.H. Frame and Cover
 2-6" M.H. Frame and Cover
 TO BE RELOCATED
 1-24" BGGV/4" By Pass, 150'
 DEMOLISH
 1-Type "A" M.H.

- STA. 154+41
 RELOCATE 12" G.V.
 1-12" G.V.
 1-20" M.H. Frame and Cover
 DEMOLISH
 1-Type "B" M.H.

- STA. 152+35
 RELOCATED F.H. #1475
 1-F.H. (Relocated)
 1-24" x 6" B.O. Tee (6 on top)
 1-6" G.V. 150' (Relocated)
 1-Type "C" M.H. 6.5' Deep
 12-L.F. 6" C.I. Pipe
 2-Conc. Blocks
 1-20" M.H. Frame & Cover (Relocated)
 TO BE RELOCATED
 1-F.H. #1475
 1-6" G.V.
 1-20" M.H. Frame and Cover
 DEMOLISH:
 1-Type "C" M.H.

- STA. 152+00
 RELOCATED 12" G.V.
 1-12" G.V. (Relocated)
 1-Type "B" M.H. 8.5' Deep
 1-20" M.H. Frame and Cover (Relocated)



APPROVED
 H. O. French
 ASSISTANT CHIEF ENGINEER, B.W.S.
 DATE: 5.15.66

WILSON, OKAMOTO, OKA, INC.
 PARK ASSOCIATES, INC.
 ARCHITECTS & ENGINEERS

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
 UTILITIES
 WATER AND SEWER
 INTERSTATE HIGHWAY (LUNALILO FWY)
 F.A.I. PROJ. NO. I-HI-1(6) UNIT 3
 SCALE: 1" = 20'
 DATE: MAY 1967
 SHEET No. 3 OF 17 SHEETS

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

G 8 IR

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1-1(16)	1966	68	235

IND. FRONT RD STA. 203+18
 1-12" x 6" Tee (State)
 1-6" G.V. (Relocated)
 1-Type "C" M.H. 5'-0" Deep
 1-20" M.H. Frame and Cover (Relocated)
 1-6" Tee
 1-6" C.I. 1/4 Bend
 1-6" C.I. 1/2 Bend
 1-6" Roundnose Plug Tapped for 2 1/2" I.P.T.
 55-L.F. 6" C.I. Pipe
 4-Conc. Blocks

WAILALAE
 SKATELAND

M.L. STA 162+00

Sta. 161+30
 Cut & Plug exist. 6" water
 1-6" Plug
 1-6" Hub Clamp & Strongback, bolts, & nuts
 1-Concrete block

New 6" Sewer Lateral Extension shall be reconnected as shown on typical house sewer connection detail

Adjust SMH Frame and Cover

Sta. 161+05
 1-24" x 12" Tee
 1-12" x 12" Tee
 1-12" C.I. 1/4 Bend (State)
 1-12" G.V. 150# (Relocated)
 1-12" G.V. 150# (Relocate)
 1-12" Sleeve, 14" Long
 2-24" BGGV/4" By-Pass, 150# (Relocated)
 2-Type "A" M.H. for 24" BGGV 12.5 Deep
 8-Conc. Blocks-2 to be precast
 2-20" M.H. Frame and Cover (Relocated)
 2-20" M.H. Frame and Cover
 2-Type "B" M.H. 6'-0" Deep

4-6" C.I. 1/2 Bend
 1-12" x 6" Reducer S.E.D. (State)
 1-6" Sleeve, 13" Long
 26-L.F. 6" C.I. Pipe
 4-6" M.H. Frame and Cover
 1-12" Cap (Temp. for test.)

Sta. 160+50
 1-12" x 6" Tee
 1-6" G.V. 150# (Relocate)
 1-F.H. (Relocate)
 1-12" Sleeve
 6-Lin. ft. 12" C.I. Pipe C.I. 200
 60-Lin. ft. 6" C.I. Pipe C.I. 250
 1-Type "C" M.H. 5'-0" Deep
 1-20" M.H. Frame and Cover (Relocated)
 2-Conc. Blocks
 2 to be Relocated
 1-F.H. #1477
 1-6" G.V.
 1-20" M.H. Frame and Cover
 Demolish
 1-Type "C" M.H.

IND. AND OUTB. FRONTAGE RD.
 STA. 159+05.05 (BACK) =
 IND. AND OUTB. FRONTAGE RD.
 STA. 200+00 (FORWARD)

TRUE NORTH
 SCALE: 1"=20'

INBOUND

OUTBOUND

FRONTAGE

ROAD

FRONTAGE

ROAD

Sta. 158+19
 CONNECTION
 1-12" C.I. 1/2 Bend (Top Vert.)
 1-6" L.F. 12" C.I. Pipe Class 200
 1-12" Sleeve, 14" Long (State)
 1-Conc. Block (Precast-See Detail)

TEMPORARY FOR TESTING
 1-24" Plug
 1-2" Cleanout
 1-Conc. Block
 Not Necessary Move to O.B. Fr. Rd. 203+20.1 C.O. #14

CONNECTION
 1-24" Sleeve, 15" Long

TEMPORARY FOR TESTING
 1-24" Plug
 1-2" Cleanout
 1-Conc. Block

Sta. 158+31 R.I.
 1-12" C.I. 1/2 Bend (Bottom Vert.)
 1-Conc. Block

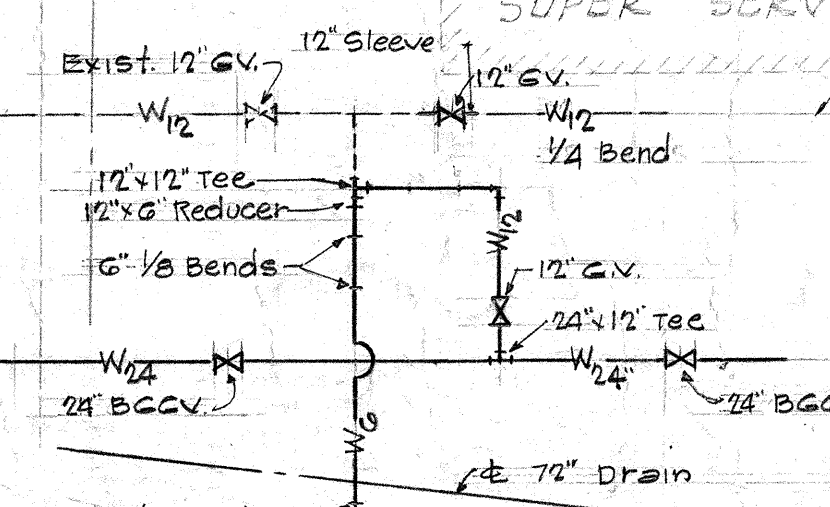
Sta. 159+38
 1-24" x 12" C.I. Tee
 16-L.F. 16" C.I. Pipe, Class 150
 1-16" Sleeve, 15" Long
 8-L.F. 16" C.I. Pipe Class 150
 1-Conc. Block
 TEMP. FOR TESTING
 1-16" Plug
 1-2" Cleanout
 1-Conc. Block

Sta. 158+50
 CONNECTION
 1-12" C.I. 1/2 Bend (Top Vert.)
 1-12" Sleeve, 14" Long
 1-Conc. Block (Precast-See Detail)

Sta. 159+38
 Adjust 8" M.H. "B" Frame & Covers

ADJUST Type "A" WMMH Top Slab Incl. Frames & Covers

ADJUST
 2-20" M.H. Frame & Cover TO BE RELOCATED
 2-24" BGGV/4" By-Pass, 150#
 1-12" G.V. 150#
 1-20" M.H. Frame & Cover
 DEMOLISH
 2-Type "A" M.H.
 1-Type "B" M.H.



CONNECTION DETAIL
 @ Sta. 161+05

WILSON, OKAMOTO, OKA, INC.
 PARK ASSOCIATES, INC.
 ARCHITECTS & ENGINEERS

APPROVED
H. B. Smith
 ASSISTANT CHIEF ENGINEER, BWS

9-12-66
 DATE

DIRECTOR, DIVISION OF SEWERS

8-2-65
 DATE

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

UTILITIES
 WATER AND SEWER

INTERSTATE HIGHWAY (LUNALILO FWY.)
 FAI PROJ. No. 1-HI-1(6) UNIT 3

SCALE: 1"=20' DATE: FEB. 1966

SHEET No. 4 OF 17 SHEETS

GS

ORIGINAL PLAN	DATE
DESIGNED BY	
CHECKED BY	
NO.	

The BWS shall furnish and install the complete Meter and Valve assembly up to the limits shown on these Plans. All labor, material and equipment necessary to complete the work shall be included in this item except that the contractor shall perform all necessary excavation and backfill.

For details of 8" pipe to be installed through Reinf. Conc. Retaining Wall #14, see Sheet No. 37.

- INB'D FRONT. RD. STA. 210+20**
 RELOCATED FH #1663
 1-FH (Relocated)
 1-12" x 6" Tee
 1-6" G.V. 150' (Relocated)
 1-Type "C" M.H. 7'-0" Deep
 16-L.F. 6" C.I. Pipe
 2-Conc. Blocks
 1-20" M.H. Frame & Cover (Relocated)
TO BE RELOCATED
 1-FH
 1-20" M.H. Frame & Cover
 1-6" G.V. 150'
DEMOLISH
 1-Type "C" M.H.

- TEMP. FOR TESTING**
 1-12" Plug (State)
 1-2" Cleanout
 1-Conc. Block

- INB'D FRONTAGE ROAD STA. 209+82**
 1-10" x 8" Tee
 2-12" G.V. (Relocated)
 1-6" G.V. (Relocated)
 2-Type "B" M.H. 5'-1" Deep
 1-Type "C" M.H. 5'-2" Deep
 16-L.F. 6" C.I. Pipe
 3-20" M.H. Frames & Cover (Relocated)
 1-Conc. Block

- INB'D FRONTAGE ROAD STA. 211+33**
 1-12" C.I. 1/2 Bend
 1-Conc. Block

- CONNECTION**
 1-12" C.I. Sleeve, M.J.
 Provide 1" Clearance between Spigot ends

- INB'D FRONTAGE ROAD STA. 213+03**
 1-12" C.I. 1/2 Bend (State)
 1-Conc. Block

- STA. 173+18**
CONNECTION TO EXIST. 12" MAIN
 * 1-12" C.I. 1/2 Bend
 * 1-12" C.I. 1/2 Bend
 * 1-12" Sleeve, 14" Long
 * 3-L.F. 12" C.I. Pipe
 2-Conc. Blocks
TEMP. FOR TESTING
 1-12" C.I. Plug (State)
 1-2" Cleanout
 1-Conc. Block

- TEMP. FOR TESTING**
 1-12" Plug
 1-2" Cleanout
 1-Conc. Block

- INB'D FRONT. RD. STA. 209+30**
 1-3/4" Air Valve (Min. Working Press. 150')
 1-Type "C" M.H. 4'-9" Deep
 1-20" M.H. Frame & Cover

- TO BE RELOCATED**
 1-6" G.V. 150'
 1-20" M.H. Frame & Cover
DEMOLISH
 1-Type "C" M.H.

- INB'D FRONTAGE ROAD STA. 211+22**
 1-12" C.I. 1/2 Bend (State)
 1-Conc. Block

Conc. Slab Sec. Detail Sht. 74
 Pipe Hangers 8" o.c. Sec. Detail on Sht. #232
 12" C.I. PIPE, M.J. OR SLIP JT. (CLASS 200)

- STA. 172+35**
 1-12" C.I. 1/2 Bend (State)
 1-Conc. Block

- OUTB'D FRONT. RD. STA. 212+93**
 1-24" C.I. 1/2 Bend (Bott. Vert.)
 1-Conc. Block

STA. 172+26
 Adjust 1 Type "A" W.V.M.H. Top Slab incl. Frames and Covers

- OUTB'D FRONT. STA. 213+16 = STA. 172+12**
CONNECTION TO EXIST. 24" MAIN
 1-24" C.I. 1/2 Bend (Top Vert.)
 * 10-L.F. 24" C.I. Pipe, Class 150
 * 1-24" C.I. Sleeve, 15" long
 1-Conc. Block

- TEMP. FOR TESTING:**
 1-24" C.I. Plug (Relocated from previous Test)
 1-2" Cleanout
 1-Conc. Block

- OUTB'D FRONTAGE ROAD STA. 211+78**
 1-24" C.I. 1/2 Bend (Top Vert.)
 1-Conc. Block

- OUTB'D FRONTAGE ROAD STA. 212+87**
 1-24" C.I. 1/2 Bend (Bott. Vert.)
 1-Conc. Block

- OUTB'D FRONTAGE ROAD STA. 209+25**
 1-2" Air Valve (Min. Working Press. 150')
 1-Type "B" M.H. 7'-0" Deep
 1-20" M.H. Frame & Cover (Relocated)

- STA. 168+76**
TO BE RELOCATED
 1-6" G.V.
 2-12" G.V.
 3-20" M.H. Frames & Covers
DEMOLISH
 1-Type "C" M.H.
 2-Type "B" M.H.

ORIGINAL	DATE
SUPPLY PLOTTED BY	
PLAN	
DESIGNED BY	
NOTE BOOK	
CHECKED BY	
NO.	

APPROVED
[Signature]
 ASSISTANT CHIEF ENGINEER, BWS

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

UTILITIES

WATER AND SEWER

INTERSTATE HIGHWAY (LUALILU FREEWAY)
 F.A.I. PROJ. NO. I-HI-1(6) UNIT 3

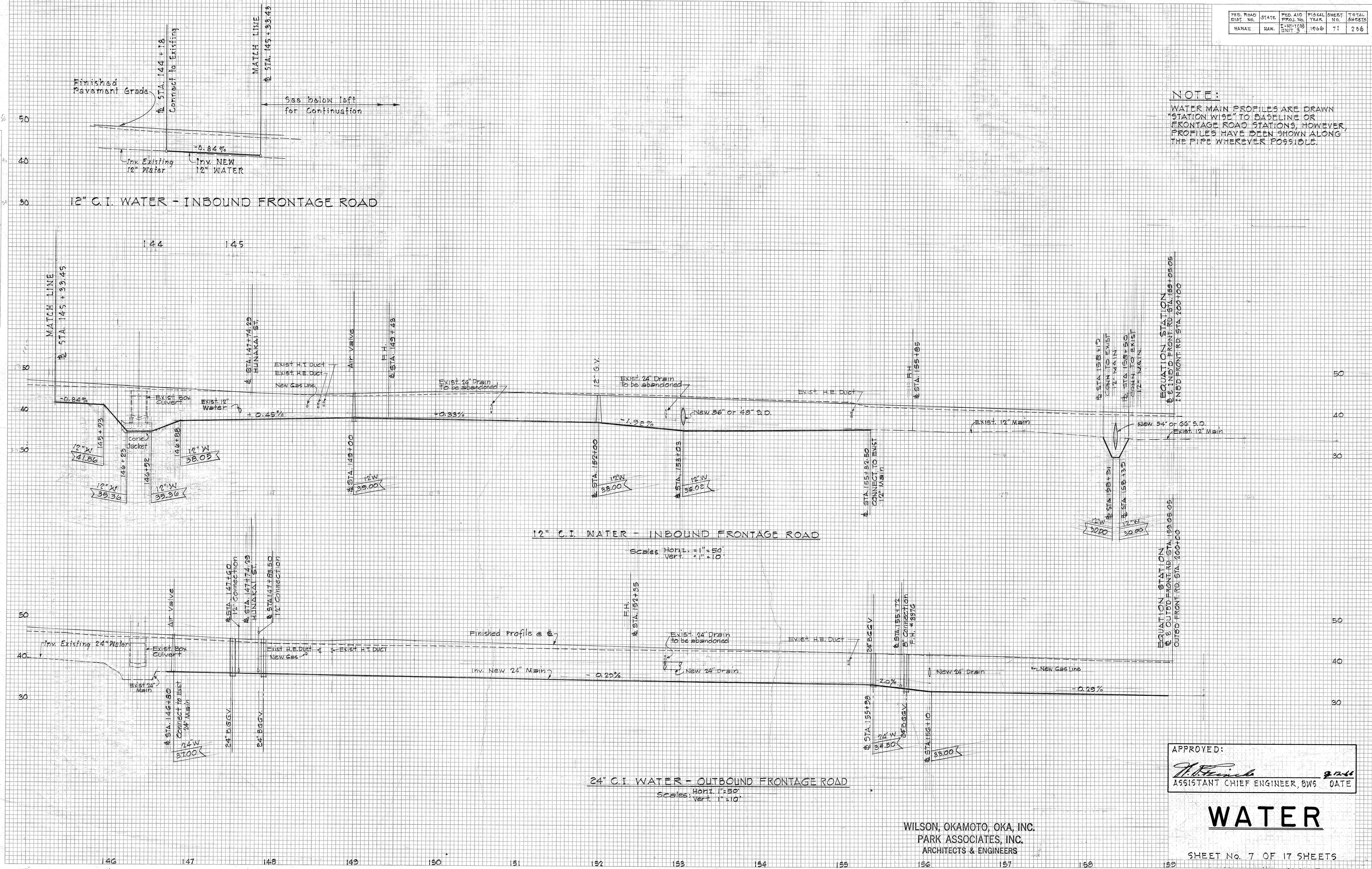
SCALE: 1" = 10' DATE: FEB. 1966
 SHEET NO. 6 OF 17 SHEETS

MILSON CHARLTONS OKA, INC.
 IN ASSOCIATION WITH
 ARCHITECTS & ENGINEERS

NOTE:
WATER MAIN PROFILES ARE DRAWN "STATION WISE" TO BASELINE OR FRONTAGE ROAD STATIONS. HOWEVER, PROFILES HAVE BEEN SHOWN ALONG THE PIPE WHEREVER POSSIBLE.

FINAL SURVEY
DATE
BY
SURVEYED
PLATTED
NOTE BOOK
AREAS CHECKED

ORIGINAL SURVEY
DATE
BY
SURVEYED
PLATTED
NOTE BOOK
AREAS CHECKED



APPROVED:
[Signature]
ASSISTANT CHIEF ENGINEER, BWS
DATE 9/2/66

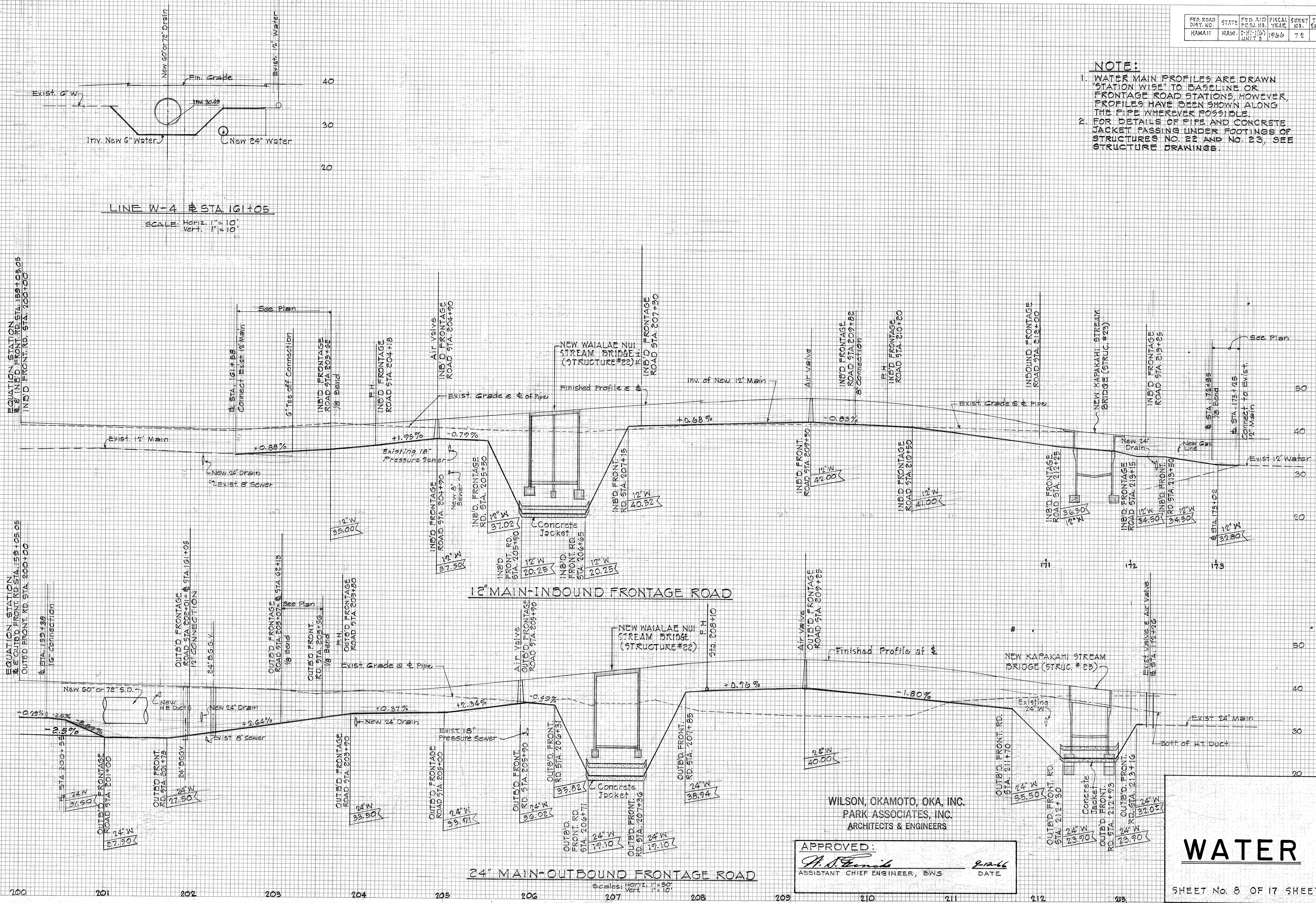
WATER

SHEET No. 7 OF 17 SHEETS

WILSON, OKAMOTO, OKA, INC.
PARK ASSOCIATES, INC.
ARCHITECTS & ENGINEERS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1-11-1(6)	1966	72	235

- NOTE:**
1. WATER MAIN PROFILES ARE DRAWN "STATION WISE" TO BASELINE OR FRONTAGE ROAD STATIONS, HOWEVER, PROFILES HAVE BEEN SHOWN ALONG THE PIPE WHEREVER POSSIBLE.
 2. FOR DETAILS OF PIPE AND CONCRETE JACKET PASSING UNDER FOOTINGS OF STRUCTURES NO. 22 AND NO. 23, SEE STRUCTURE DRAWINGS.



FINAL SURVEY

DATE: _____

BY: _____

REVIEWED: _____

PLOTTED: _____

NOTE BOOK: _____

AREAS CHECKED: _____

NO. _____

ORIGINAL SURVEY

DATE: _____

BY: _____

REVIEWED: _____

PLOTTED: _____

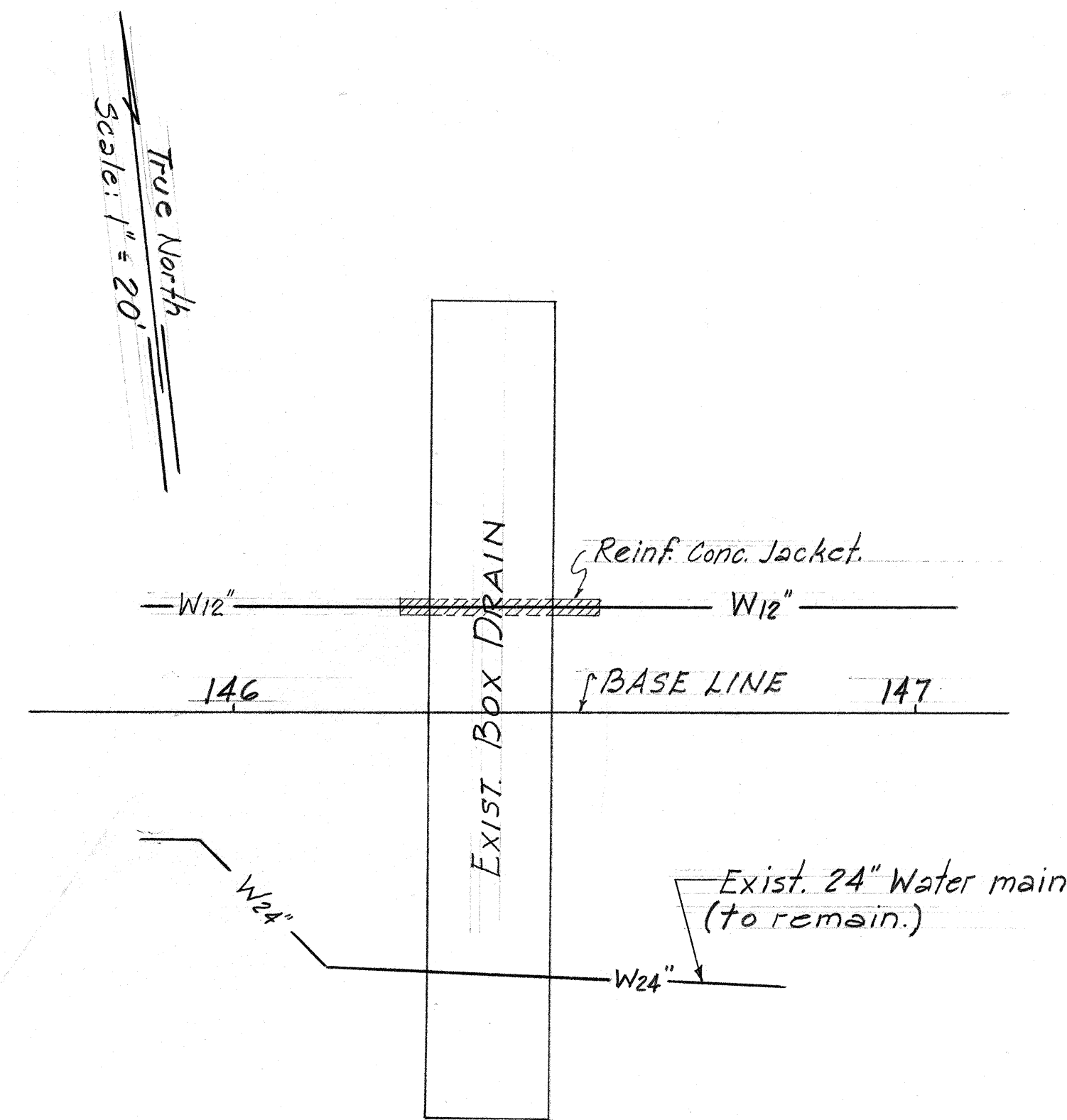
NOTE BOOK: _____

AREAS CHECKED: _____

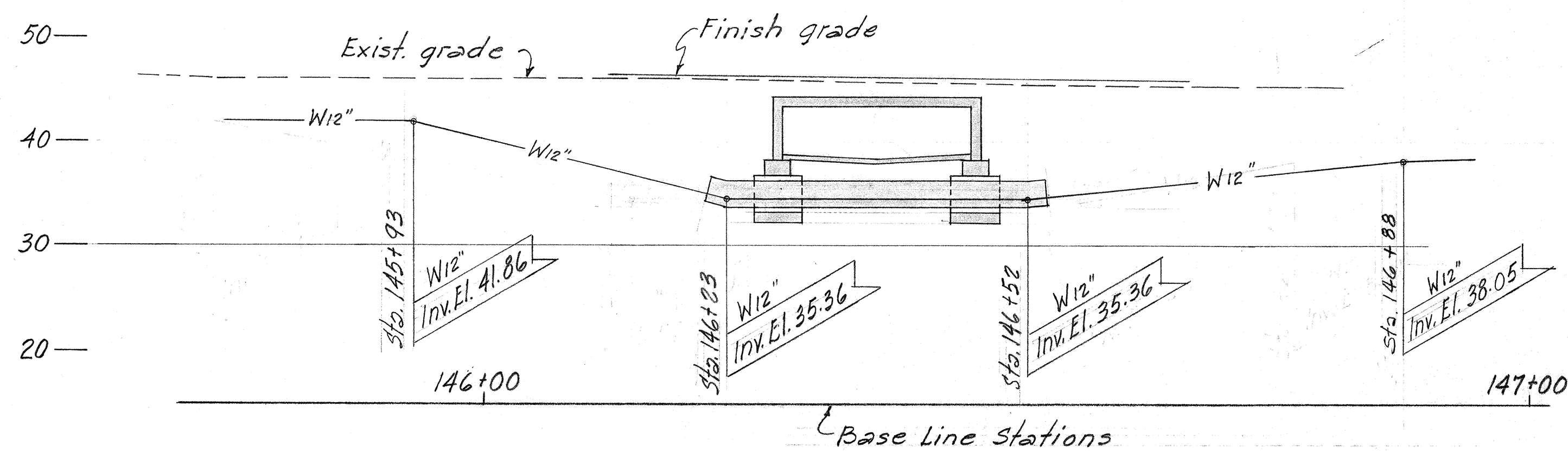
NO. _____

PLATE 3 CROSS SECTION D. P. R. & E. STANDARD
 100% AND PAPER, MADE AND PRINTED IN U. S. A.
 EUGENE DIETZEN CO.

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1-HI-1(6)	1966	73	235

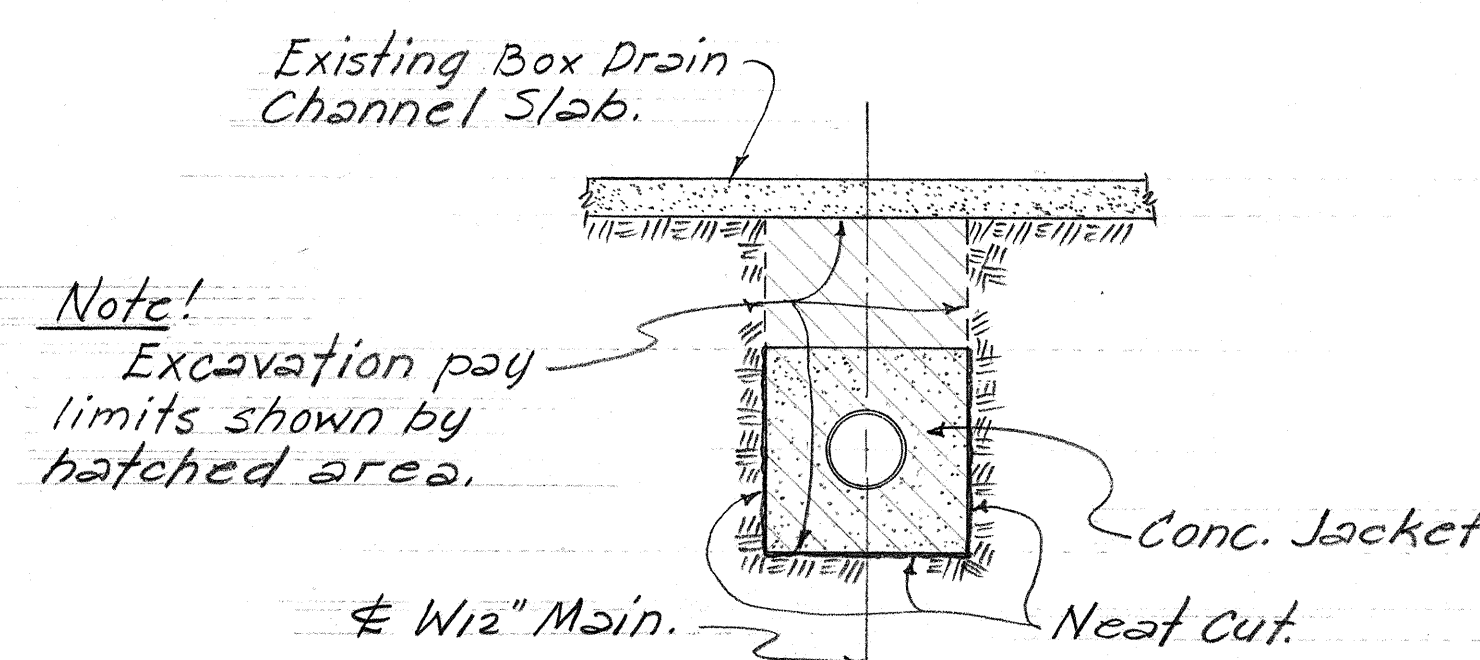


LAYOUT PLAN



12" MAIN PROFILE

Scale: 1" = 10'-0"

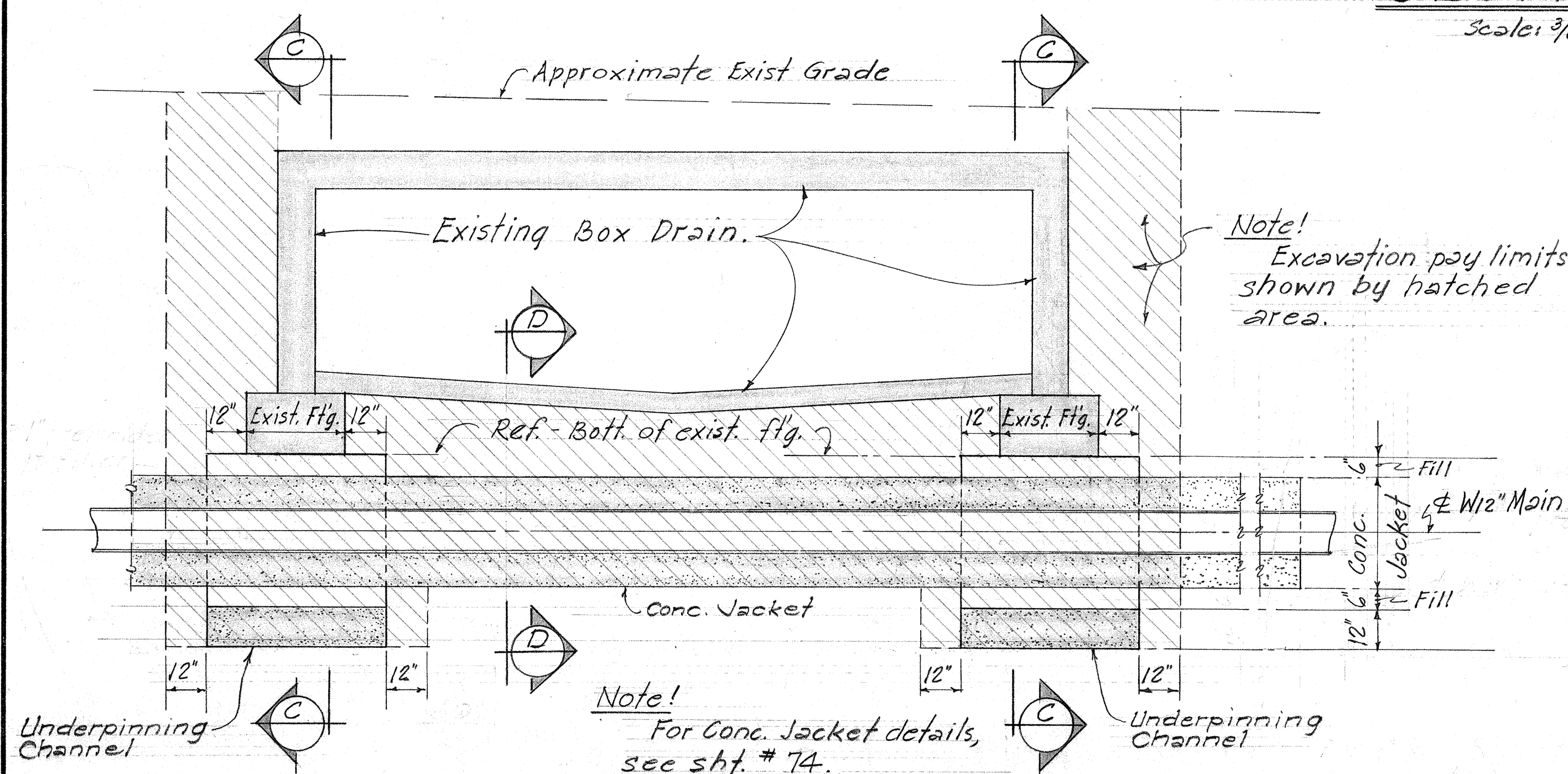


SECTION D

Scale: 3/8" = 1'-0"

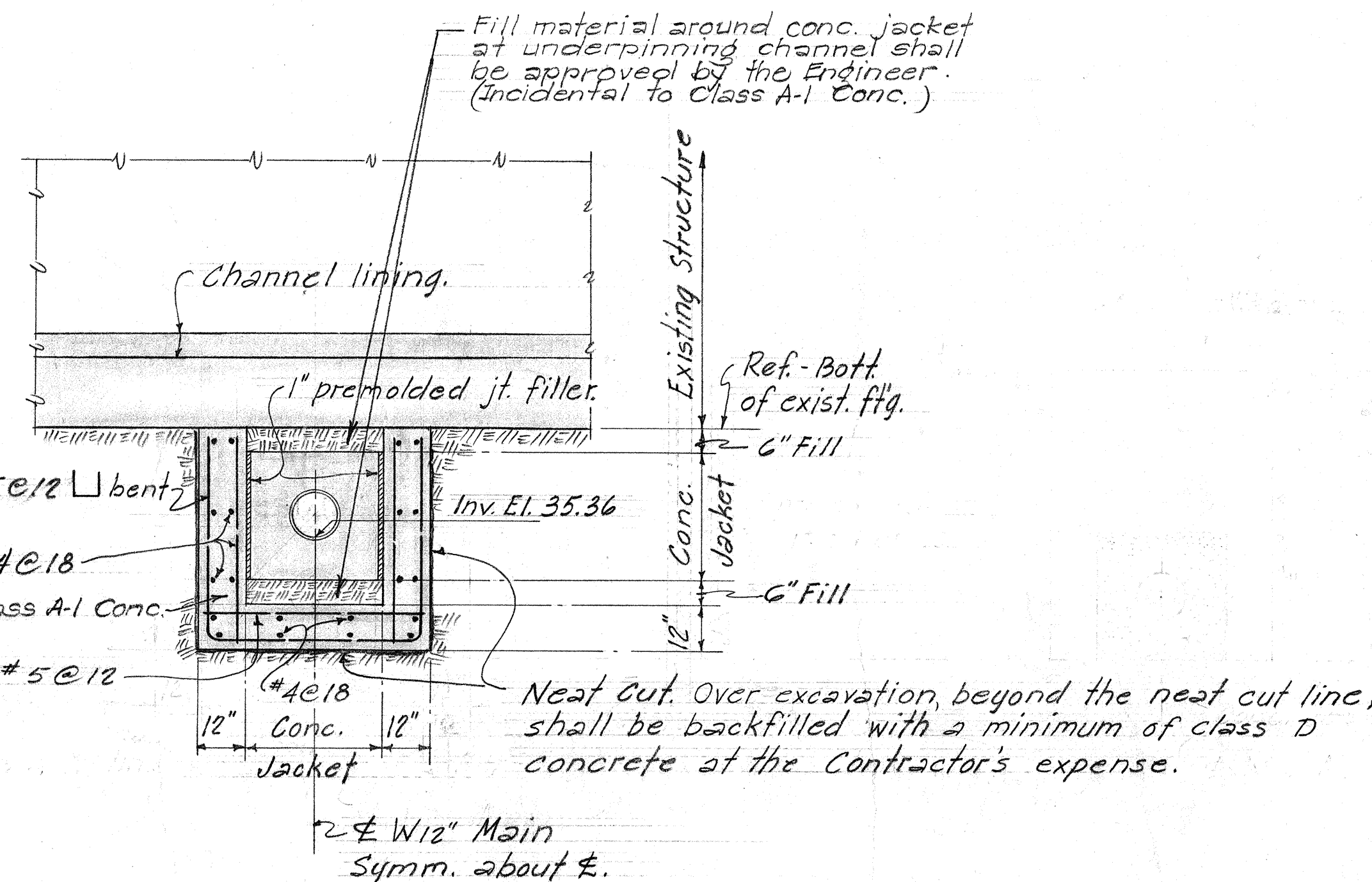
N O T E

If any part of the existing invert slab is removed for installation of the 12" main, it shall be restored as much as possible to original condition (with proper reinforcement) as directed by the Engineer. Concrete shall be Class A-1. Materials and labor for removal and restoration of the slab shall be incidental to the various contract items.



SECTION ALONG 12" WATER MAIN

Scale: 3/8" = 1'-0"



SECTION C

Scale: 3/8" = 1'-0"

APPROVED:

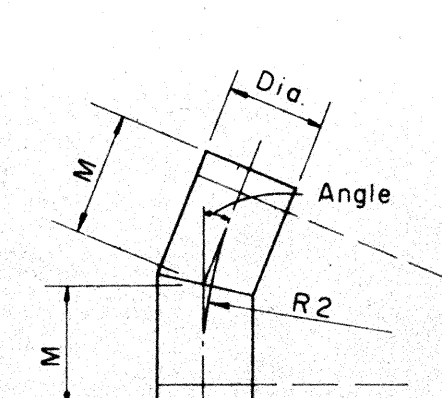
M. Stenile 7-12-66
ASSISTANT CHIEF ENGR, BWS DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
DETAILS OF NEW 12" C.I.
WATER MAIN UNDER EXIST.
18' x 5.32' BOX CULVERT AT
WAIALAE MAJOR STORM DRAIN

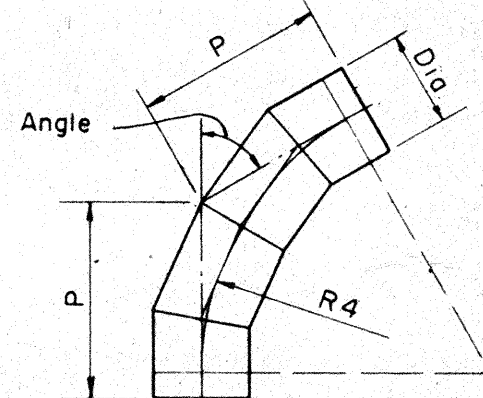
INTERSTATE HWY (LUNALILO FREEWAY)
F.A.I. PROJ. NO. 1-HI-1(6), UNIT 3
SCALE: AS NOTED DATE: JULY, 1966

SHEET No. 9 OF 17 SHEETS

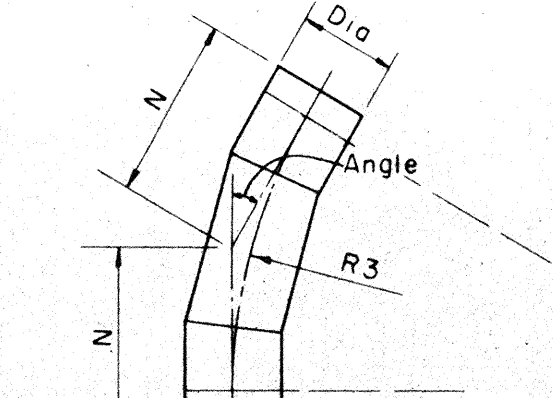
DESIGNED BY	DATE
DRAWN BY	7-12-66
CHECKED BY	
NOTED BY	
ORIGINAL	
PLAN	
NOTE BOOK	
No.	



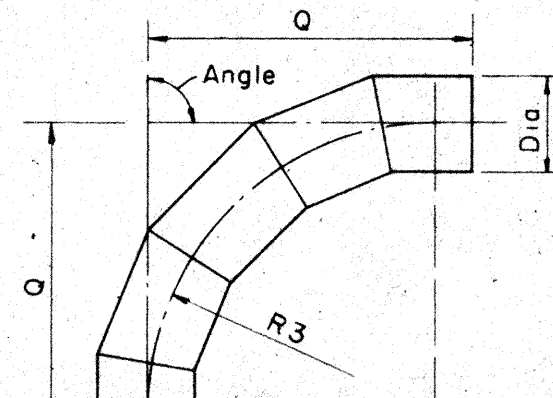
2 PIECE ELBOW
0° to 22 1/2° Inclusive



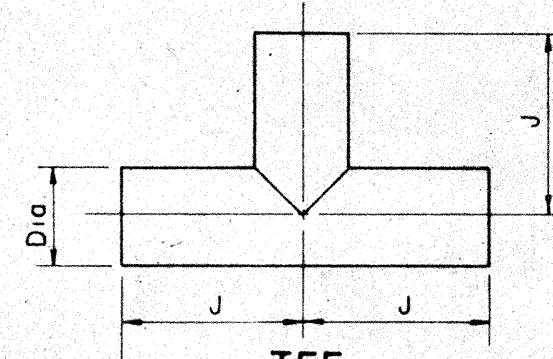
4 PIECE ELBOW
Over 45° to 67 1/2° Inclusive



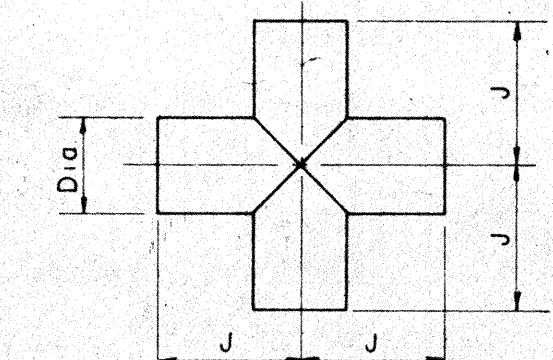
3 PIECE ELBOW
Over 22 1/2° to 45° Inclusive



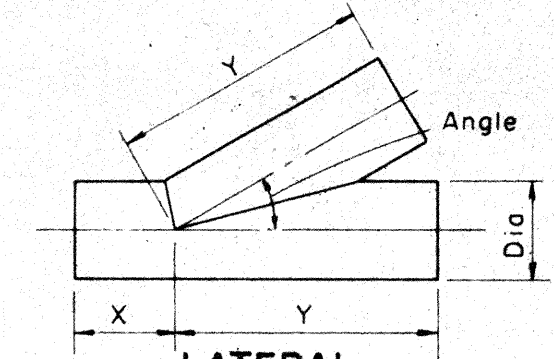
5 PIECE ELBOW
Over 67 1/2° to 90° Inclusive



TEE

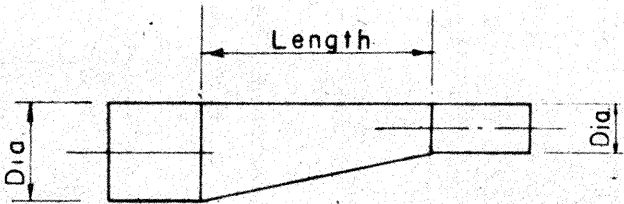


CROSS



LATERAL

30° Minimum - 75° Maximum



REDUCER

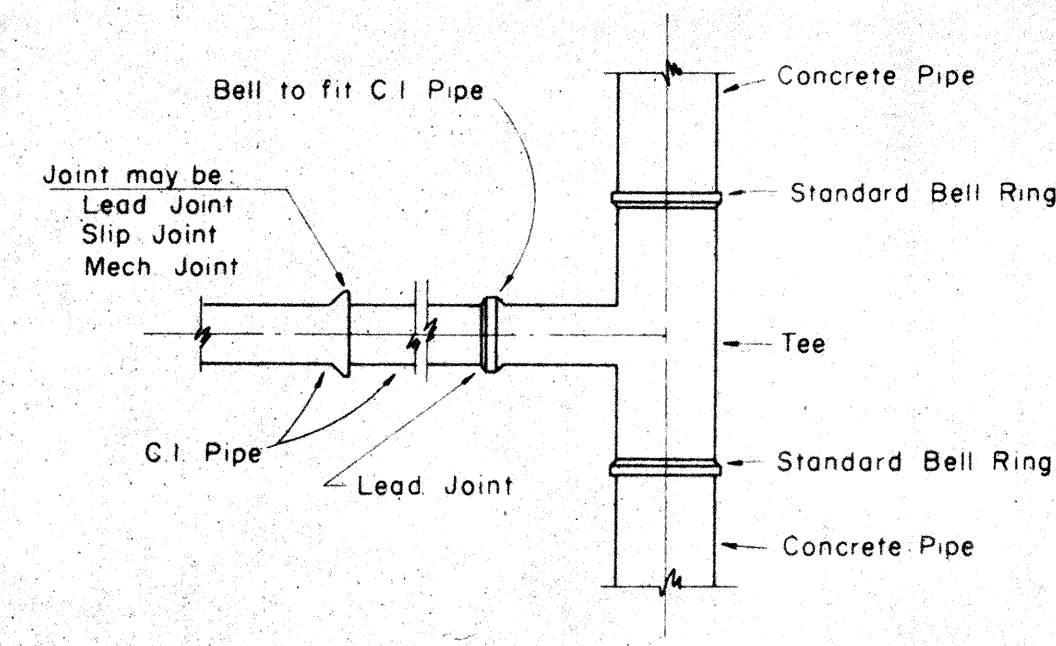
STANDARD FITTING DIMENSIONS												
DIAMETER	TEE		CROSS (Both Ways)	LATERAL (30° to 75°)	ELBOWS (Center to End)							
	Run J+J	Outlet J			2 Piece (up to 22 1/2°)	3 Piece (22 1/2° to 45°)	4 Piece (45° to 67 1/2°)	5 Piece (67 1/2° to 90°)				
	Run X+Y	Outlet Y			M	R2	N	R3	P	R4		
16"	34"	17"	34"	62"	52"	12"	60"	18"	44"	26"	39"	34"
18"	36"	18"	36"	66"	56"	12"	60"	19"	47"	27"	41"	36"
20"	38"	19"	38"	72"	60"	13"	65"	20"	49"	28"	42"	39"
22"	40"	20"	40"	78"	66"	13"	65"	21"	51"	30"	45"	41"
24"	42"	21"	42"	84"	72"	14"	70"	22"	54"	32"	48"	44"
30"	60"	30"	60"	96"	84"	15"	75"	25"	61"	37"	51"	51"
36"	66"	33"	66"	110"	96"	16"	80"	27"	66"	40"	60"	56"

DIMENSIONS FOR ECCENTRIC REDUCER REDUCING SECTION

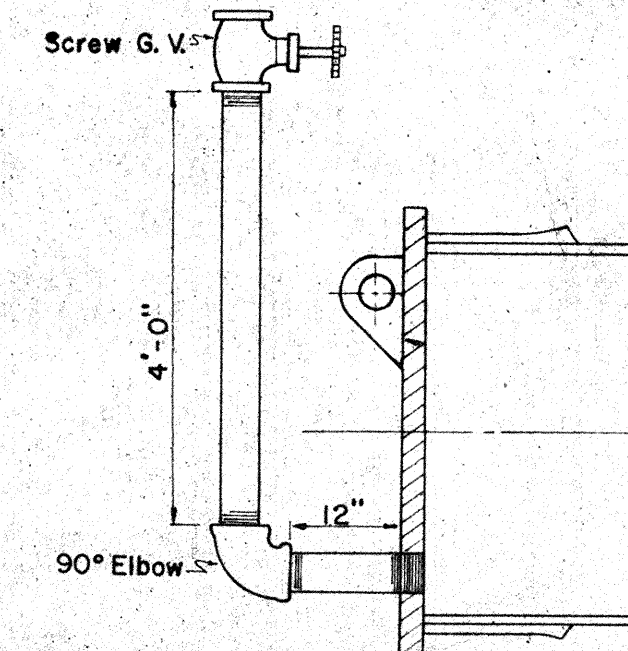
36" X 30" Eccentric Reducer - Length 66"
30" X 24" Eccentric Reducer - Length 66"
24" X 20" Eccentric Reducer - Length 26"
20" X 16" Eccentric Reducer - Length 26"

NOTE:

All dimensions shown are laying lengths.
All fittings and specials shall be fabricated independent from pipe sections and in accordance with the dimensions shown.
All fittings and specials shall be all bell unless otherwise noted.
All tees, wyes, crosses and reducers 16-inch in diameter and larger shall be reinforced with steel ribs or steel crotch plates welded continuously to the cylinder or by other methods to withstand the longitudinal crushing effect caused by the test pressure as called for in the plans.

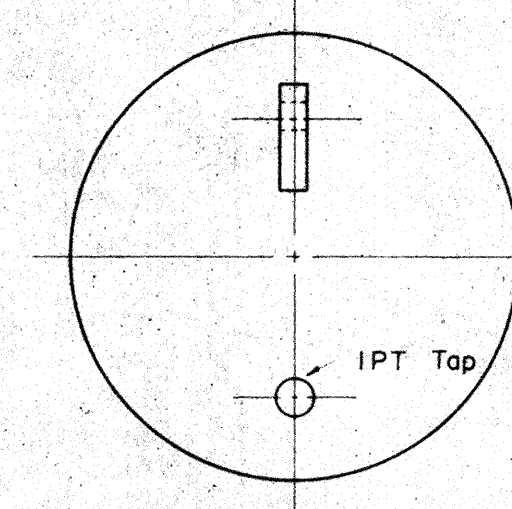


TYPICAL CAST IRON PIPE CONNECTION TO CONCRETE CYLINDER PIPE

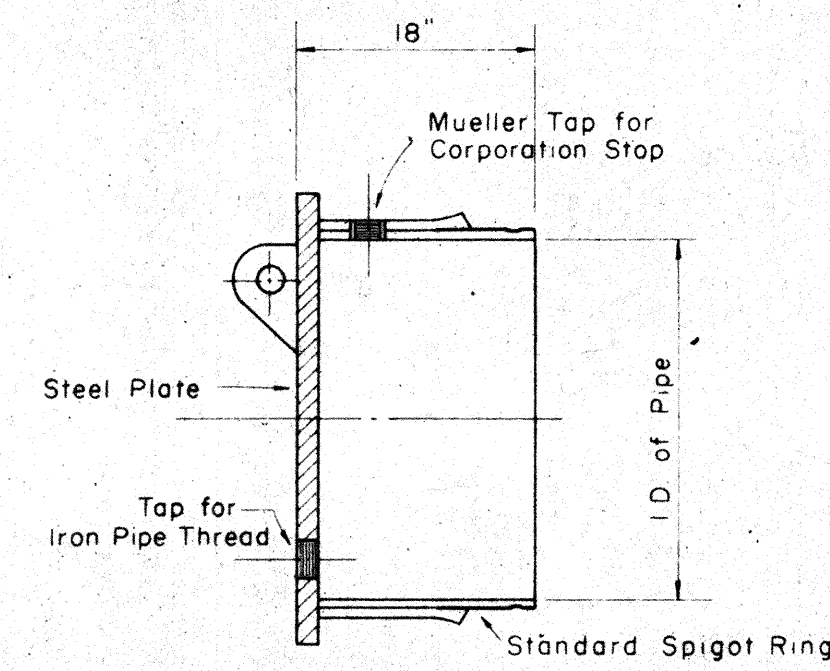


TYPICAL SECTION OF TEMPORARY CLEANOUT

NOTE:
For Pipe Sizes 12" and Below - 2 1/2" Cleanout
For Pipe Sizes 16" and Above - 4" Cleanout

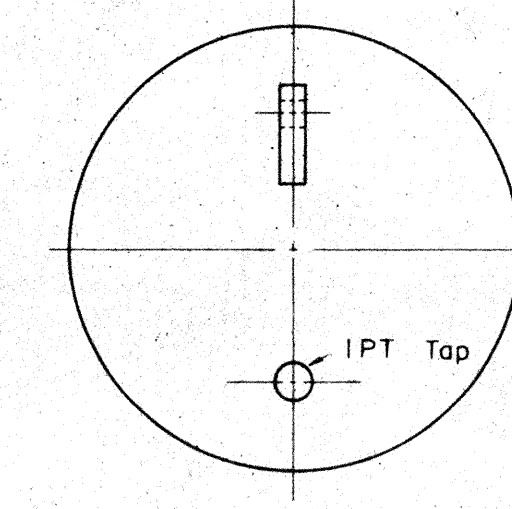


PLAN OF STEEL PLATE

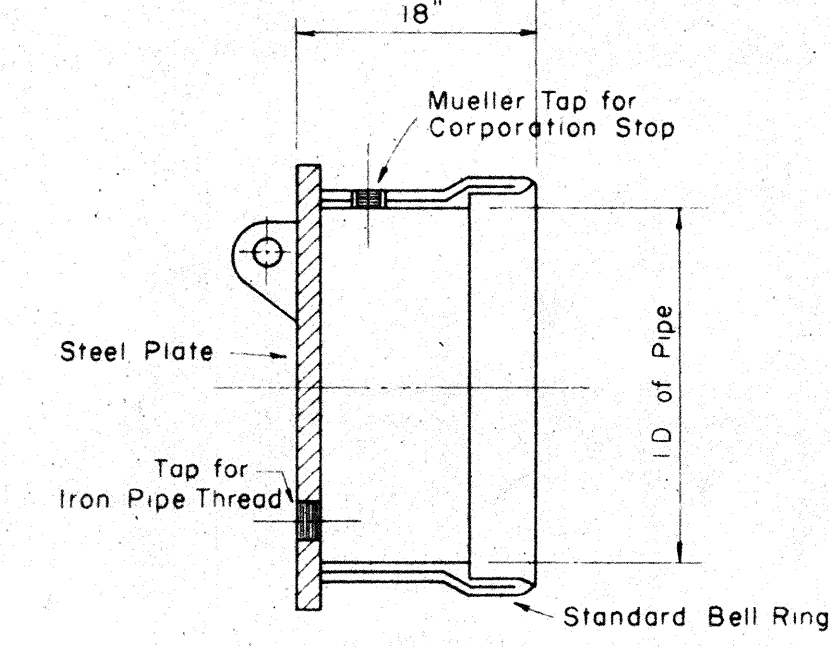


SECTION

DETAIL OF PLUG

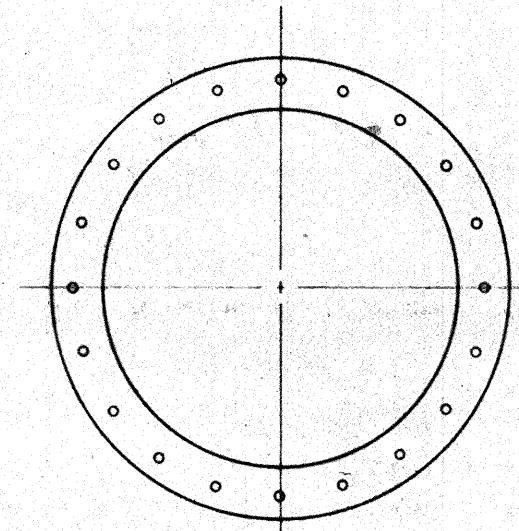


PLAN OF STEEL PLATE



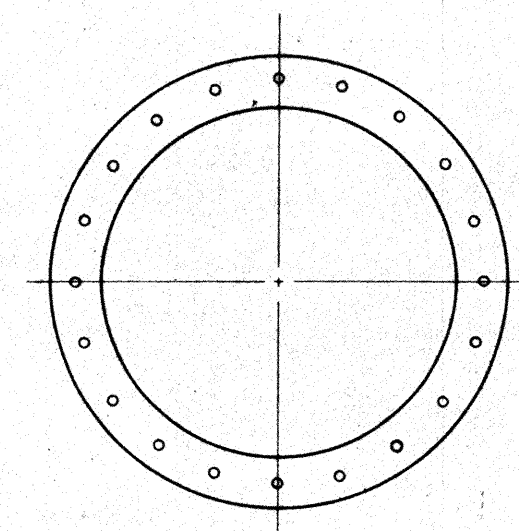
SECTION

DETAIL OF CAP



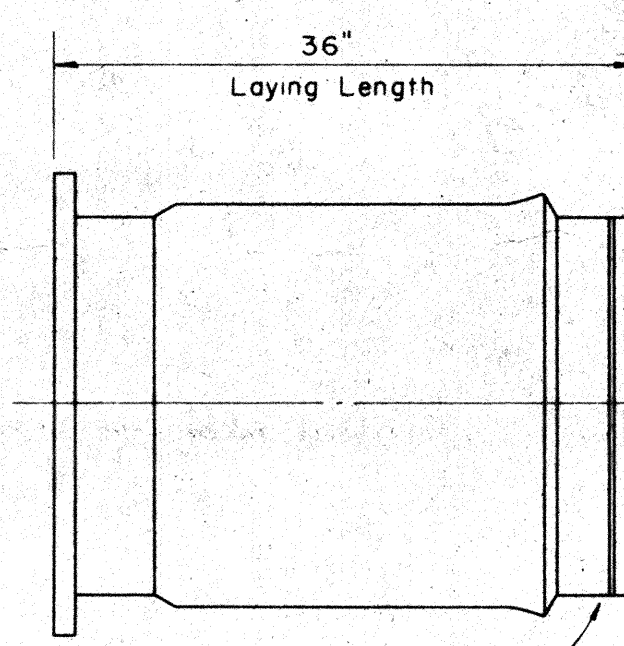
FLANGE

See Specs. for Flange Class

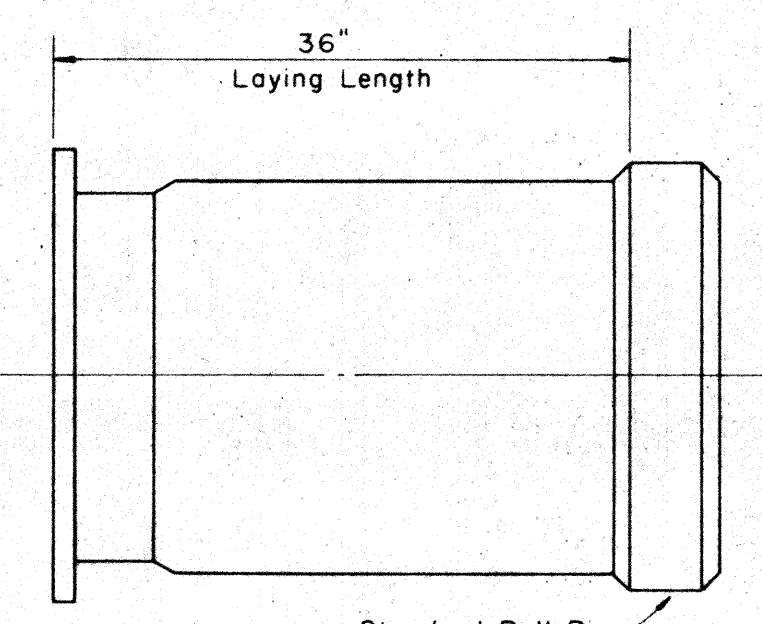


FLANGE

See Specs. for Flange Class

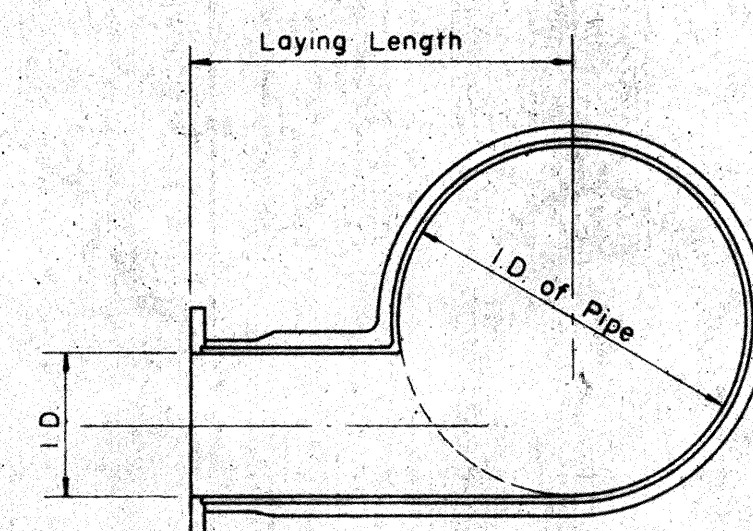


Standard Spigot Ring

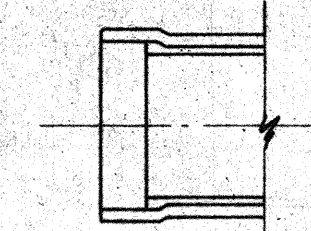


Standard Bell Ring

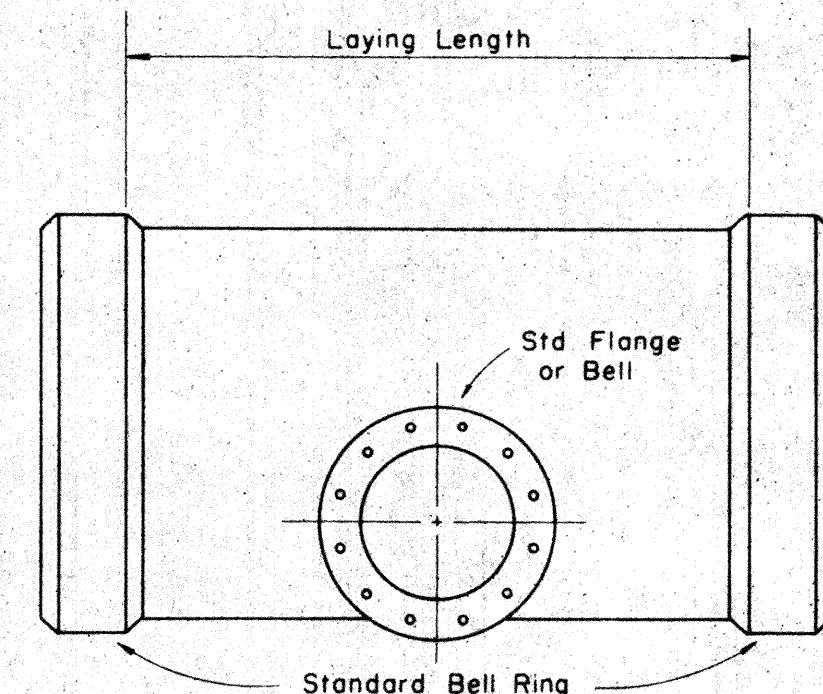
TYPICAL DETAIL OF ADAPTER



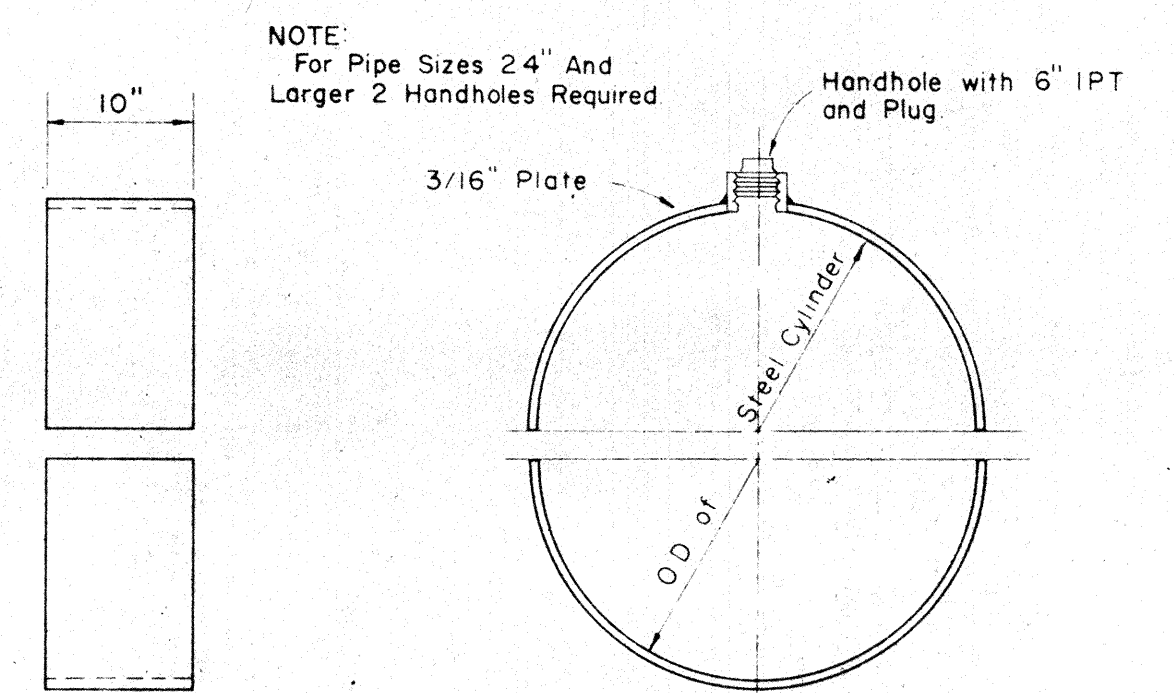
SECTION



BELL SECTION



TYPICAL DETAIL OF BLOW-OFF TEE



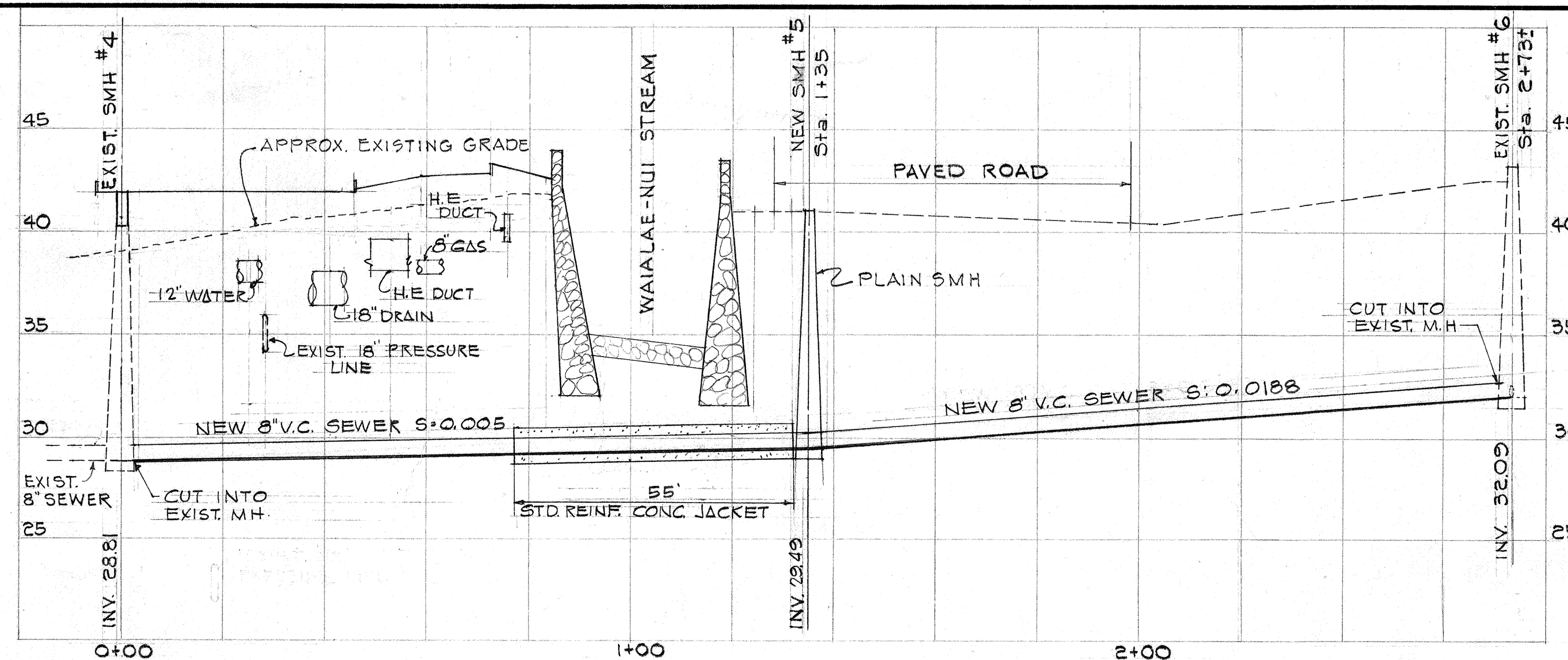
DETAIL OF SPLIT BUTT STRAP

CONCRETE CYLINDER PIPE MISCELLANEOUS DETAILS

APPROVED:	ASSISTANT CHIEF ENGINEER	POCKET	FOLDER	NO.
SCALE	No Scale	DATE	April 25, 1962	
BOARD OF WATER SUPPLY				
HONOLULU, HAWAII				
SHEET	OF	SHEETS	FIELD BOOK NO.	

74A-S

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1-11-1(6) Unit 3	1966	75	235

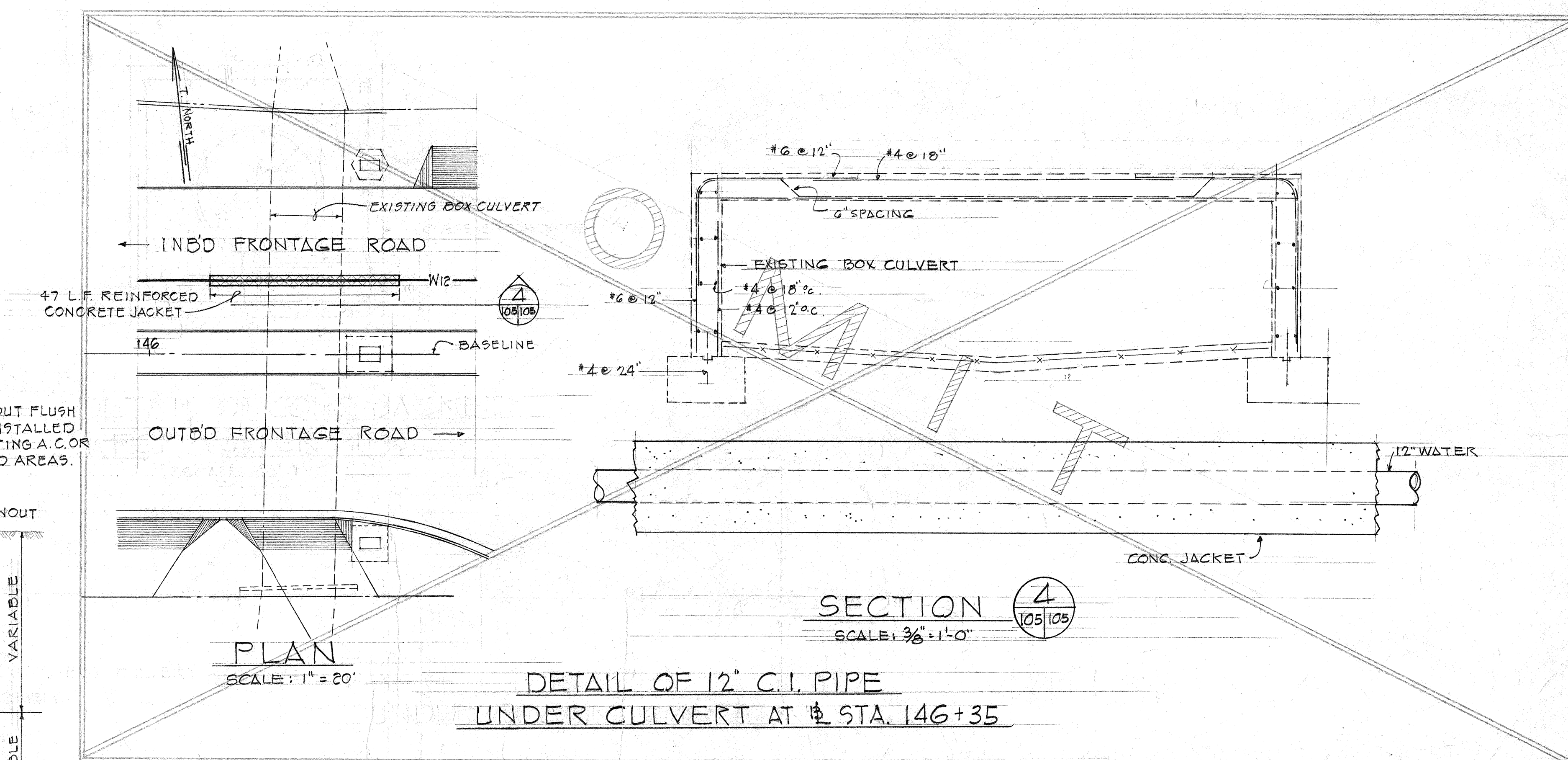


SEWER PROFILE (A)

SCALE: HOR. 1" = 20'
VERT. 1" = 5'

NOTE:

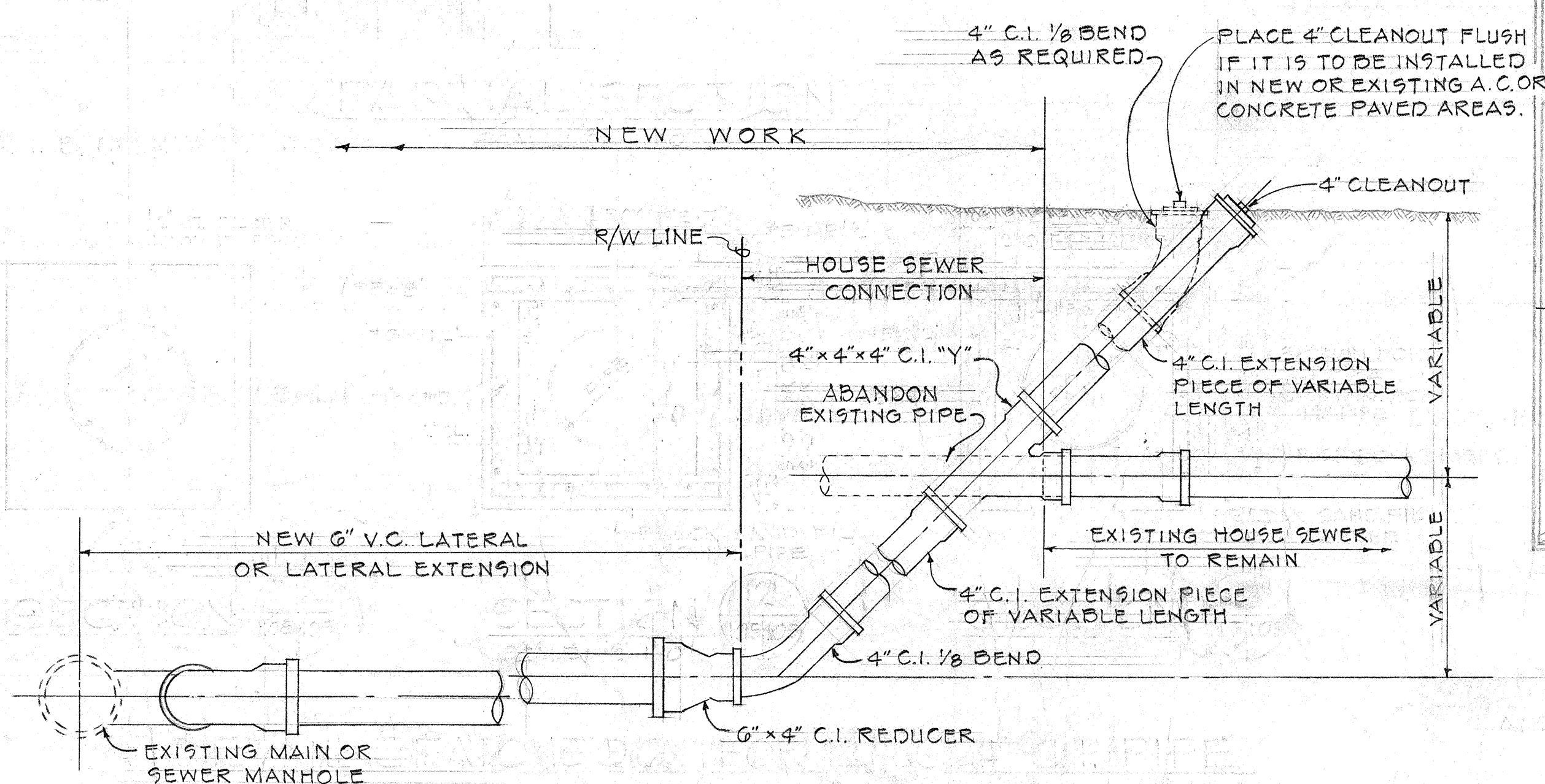
CONSTRUCTION OF SEWER STRUCTURES SHALL CONFORM TO CITY & COUNTY OF HONOLULU, DIVISION OF SEWER STANDARDS.



SECTION 4

SCALE: 3/8" = 1'-0"

DETAIL OF 12" C.I. PIPE UNDER CULVERT AT STA. 146+35



TYPICAL DETAIL OF HOUSE SEWER CONNECTION

SCALE: 3/4" = 1'-0"

APPROVED:

WILSON, OKAMOTO, OKA, INC.
PARK ASSOCIATES, INC.
ARCHITECTS & ENGINEERS

DATE: 2-2-65

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
UTILITIES
SEWER PROFILE (A)
AND
MISC. DETAILS

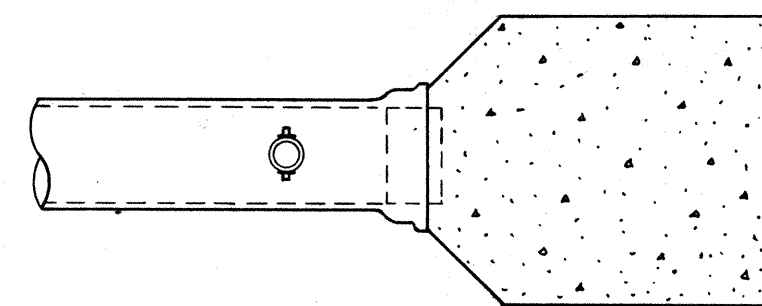
INTERSTATE HIGHWAY (LUNALILO FREEWAY)
FAI. PROJ. NO. I-HI-1(6) UNIT 3

SCALE: AS SHOWN DATE: FEB. 1966
SHEET No. 11 OF 17 SHEETS

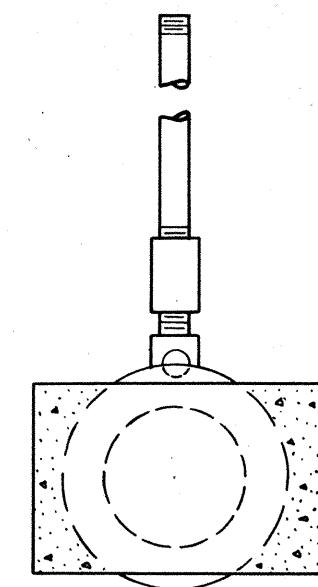
FED. AID DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	I-HI-1(6) UNIT 3	1966	76	235

NOTE:

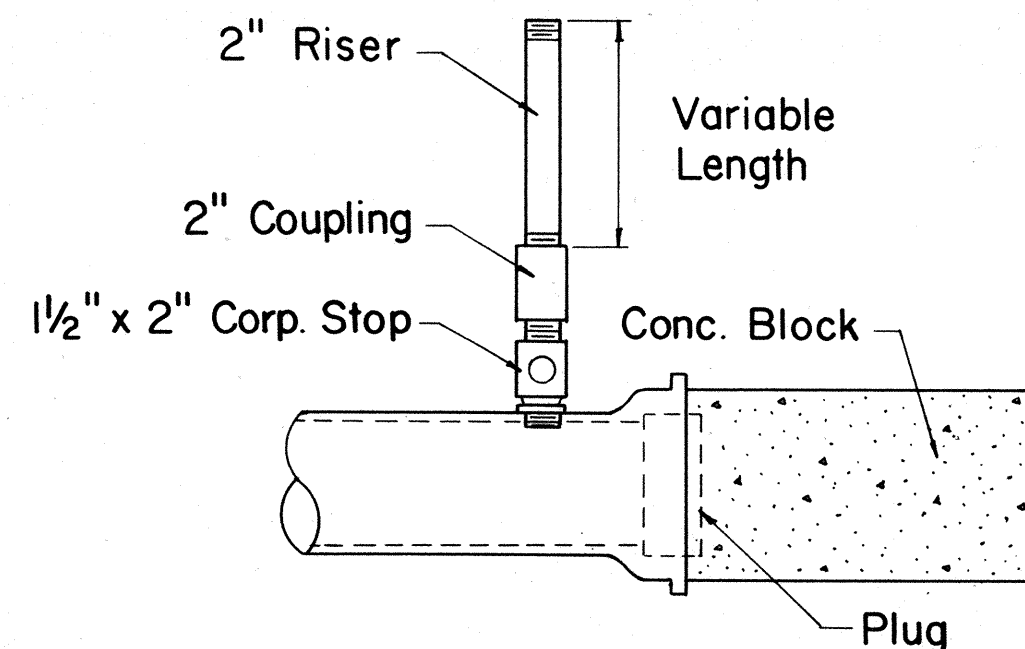
Contractor to furnish 1/2" brass plug (Tapered thread) to replace corporation stop upon completion of chlorination.



TOP VIEW



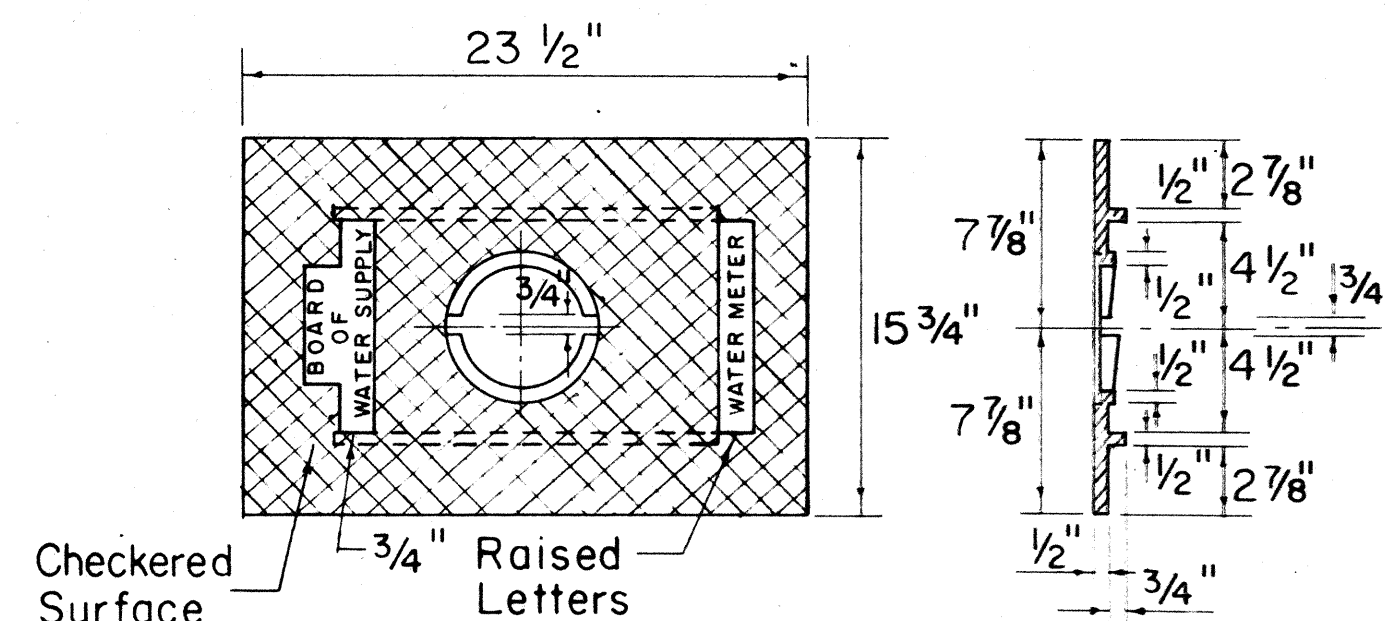
END VIEW



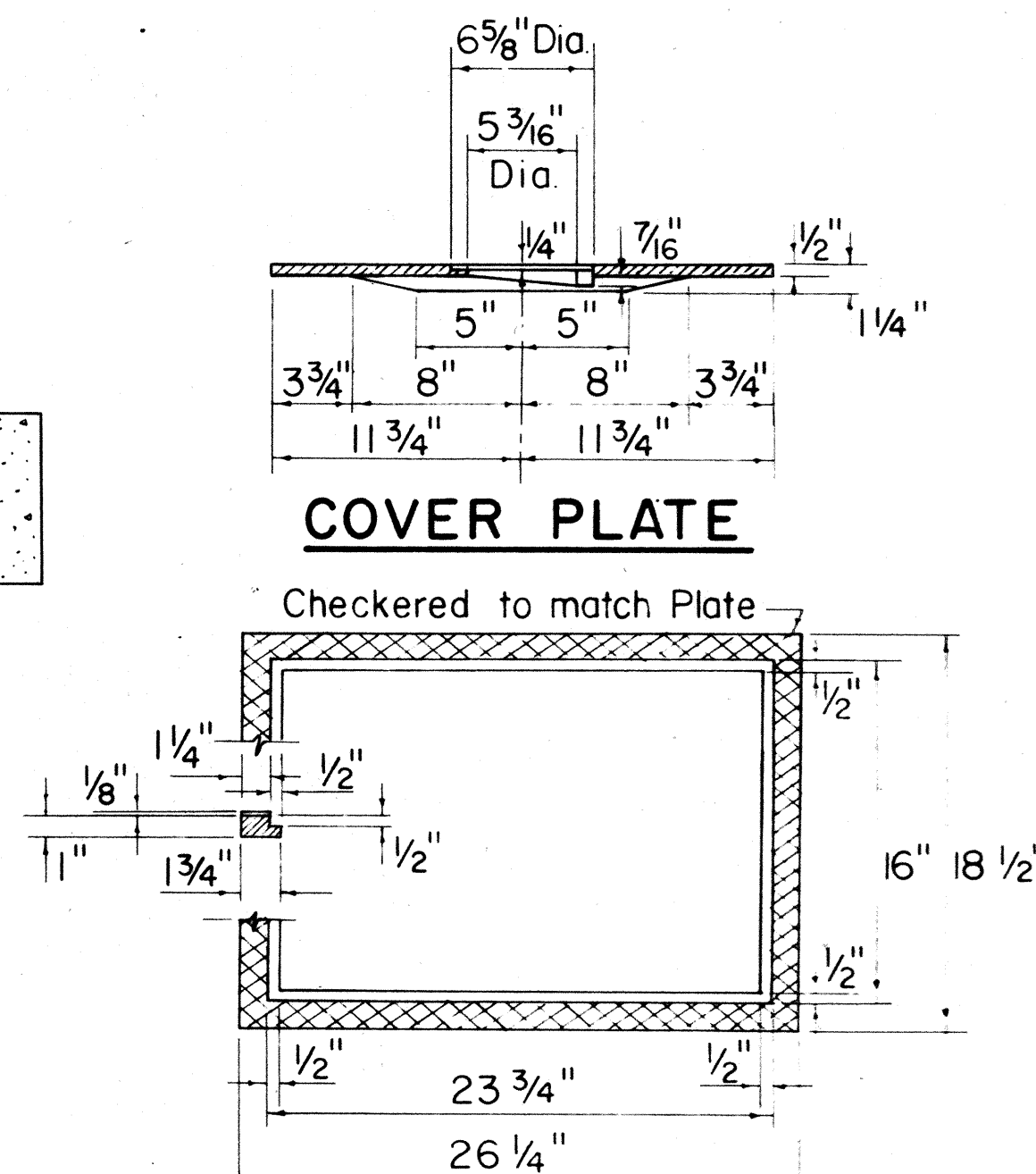
SIDE VIEW

DETAIL OF TEMPORARY 2" CLEANOUT

Not to Scale

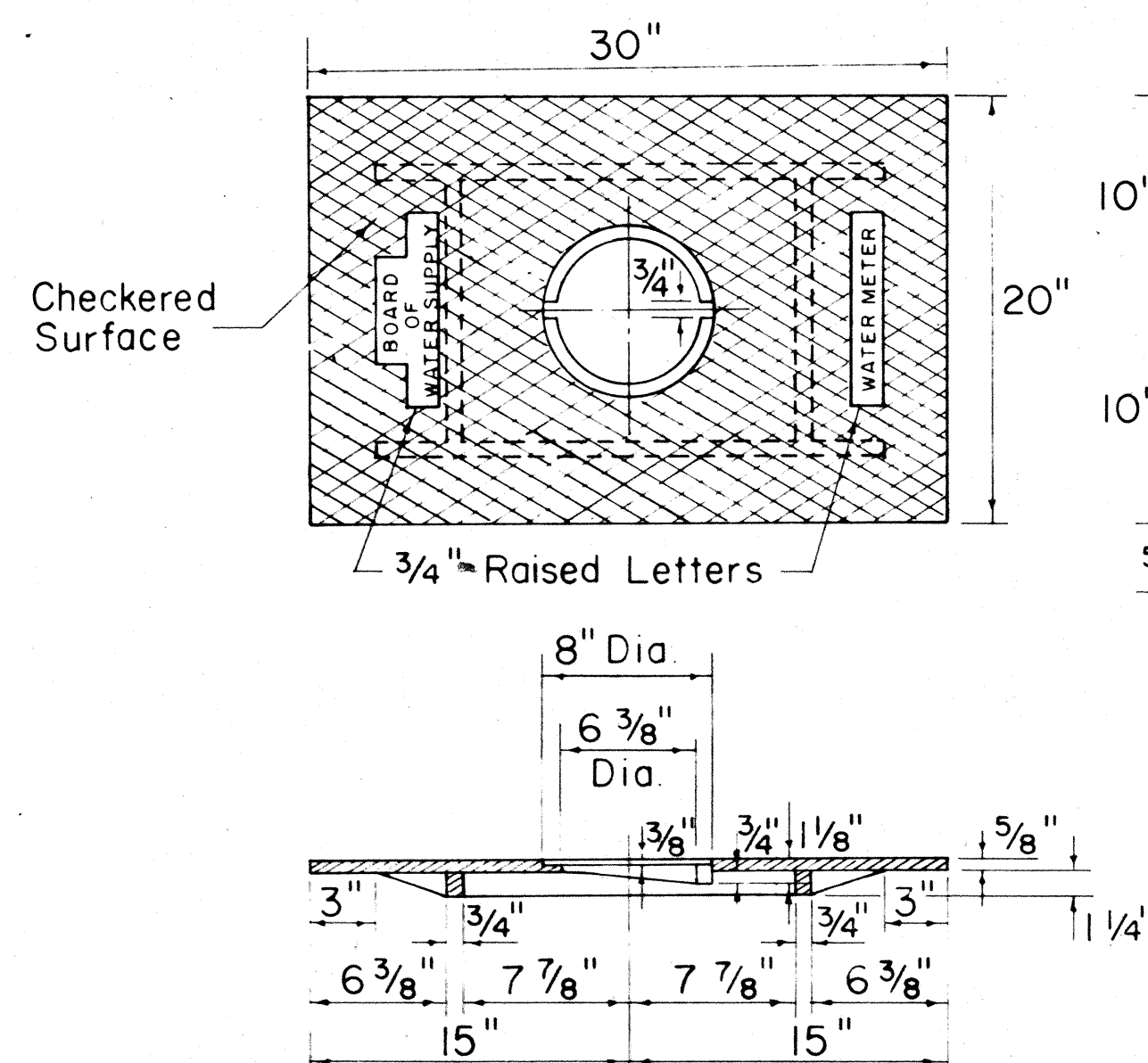


COVER PLATE



FRAME CAST IRON FRAME AND PLATE TYPE II

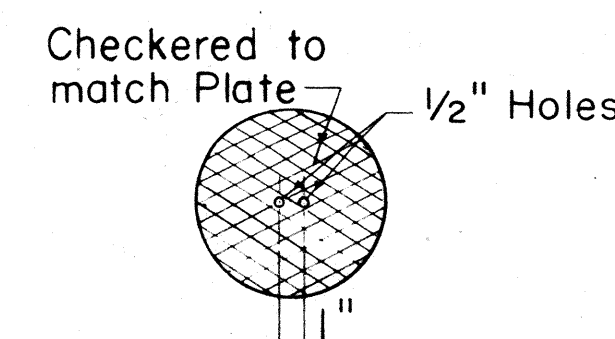
Scale: 1 1/2" = 1'-0"



COVER PLATE

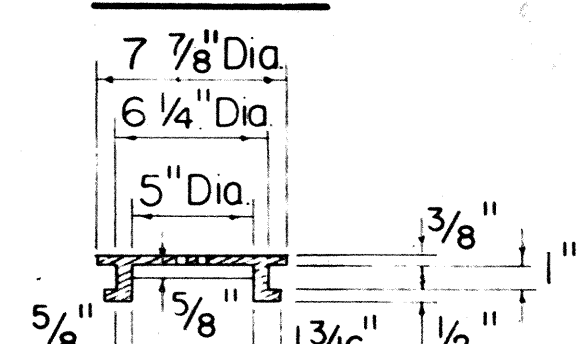
CAST IRON FRAME, PLATE AND COVER TYPE III

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



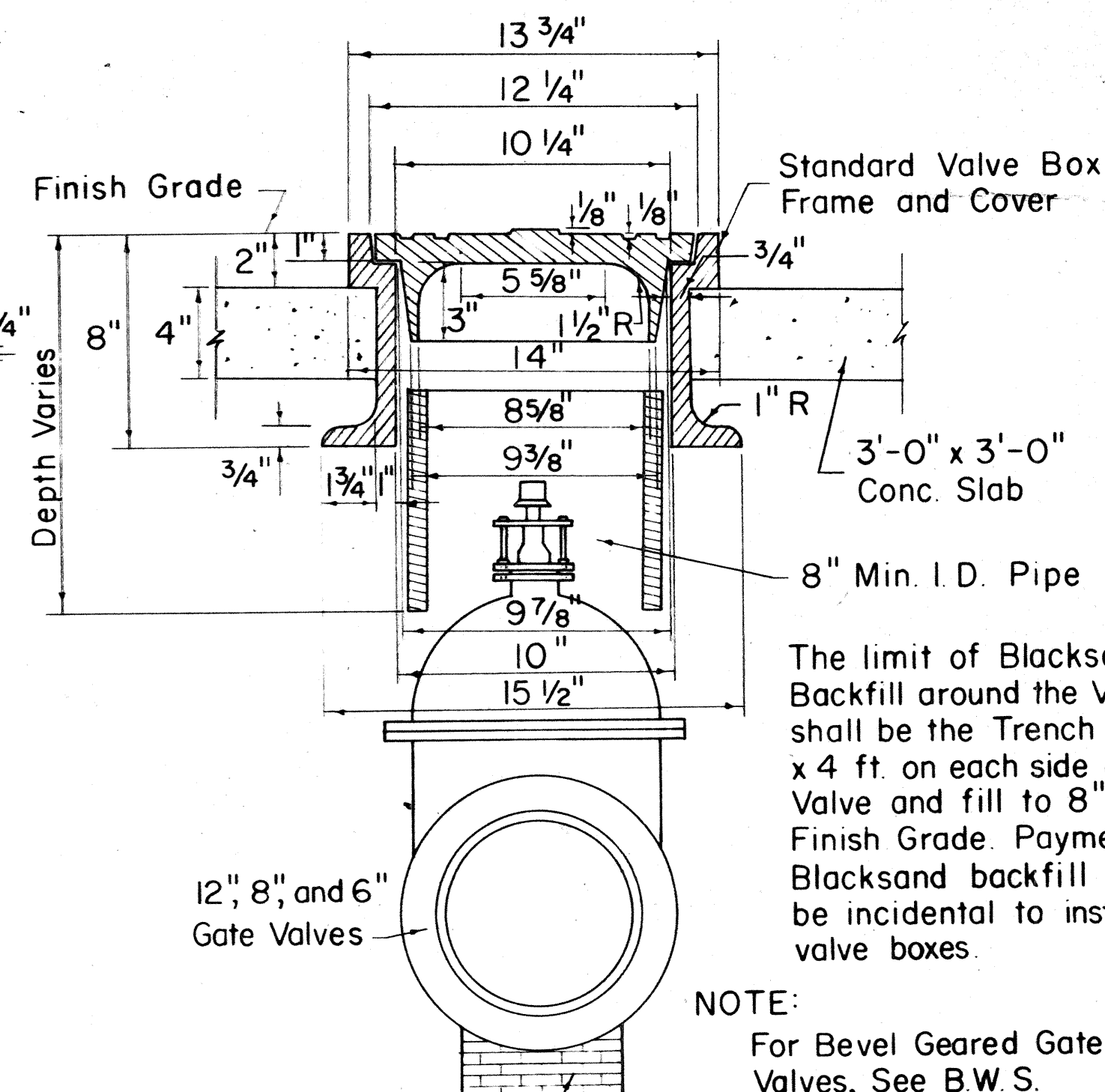
READING COVER

FRAME



READING COVER CHECKERED PATTERN CAST IRON COVER FOR TYPE II FRAME

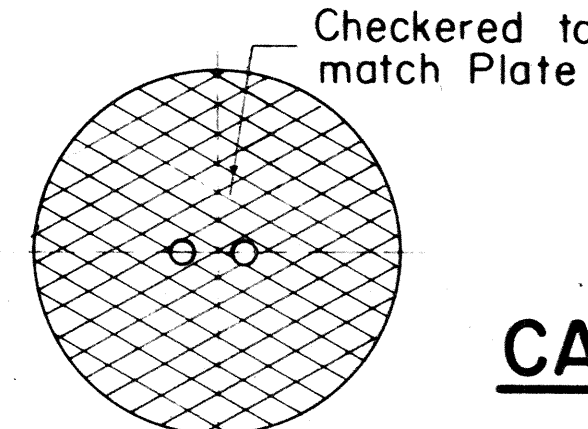
Not to Scale



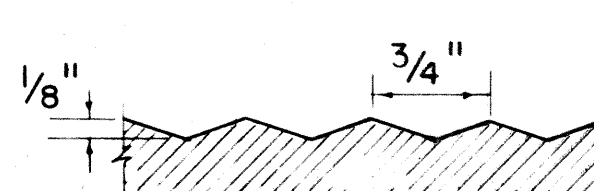
Concrete Pedestal or Brick Pedestal Cement Mortared Under Valves

INSTALLATION OF VALVE BOX FOR GATE VALVES

Not to Scale



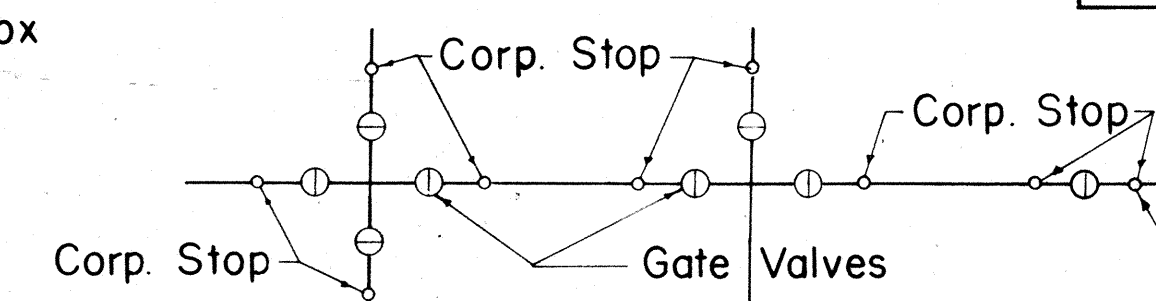
READING COVER



CHECKERED PATTERN

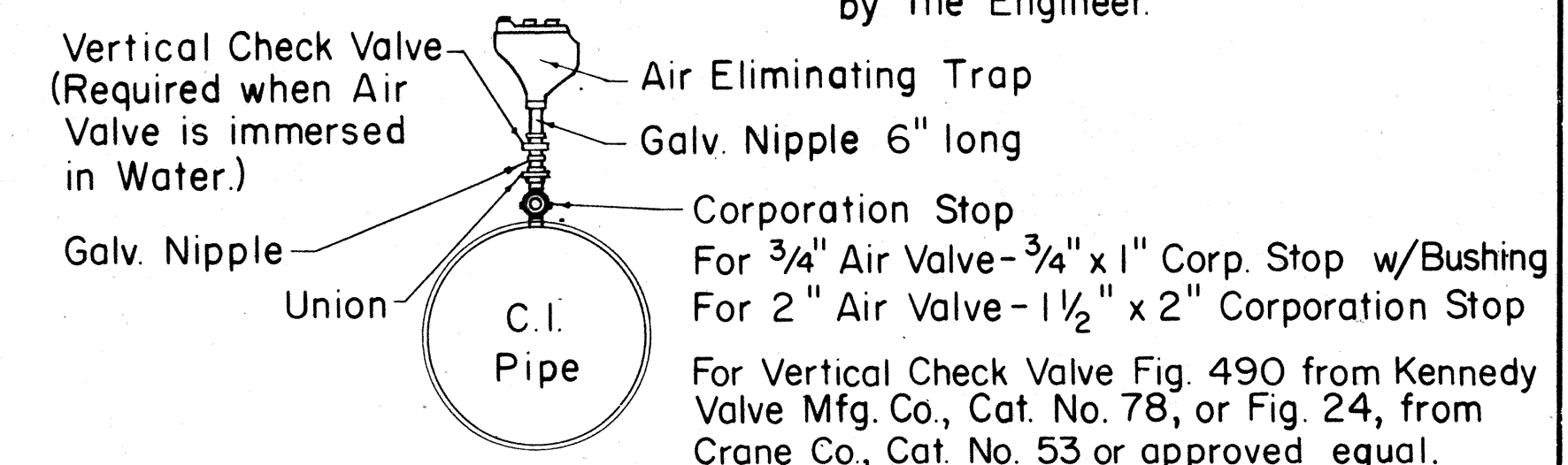
CAST IRON COVER FOR TYPE II FRAME

Not to Scale



CORP. STOP LAYOUT

Not to Scale



DETAIL OF CONNECTION FOR AIR ELIMINATING TRAP

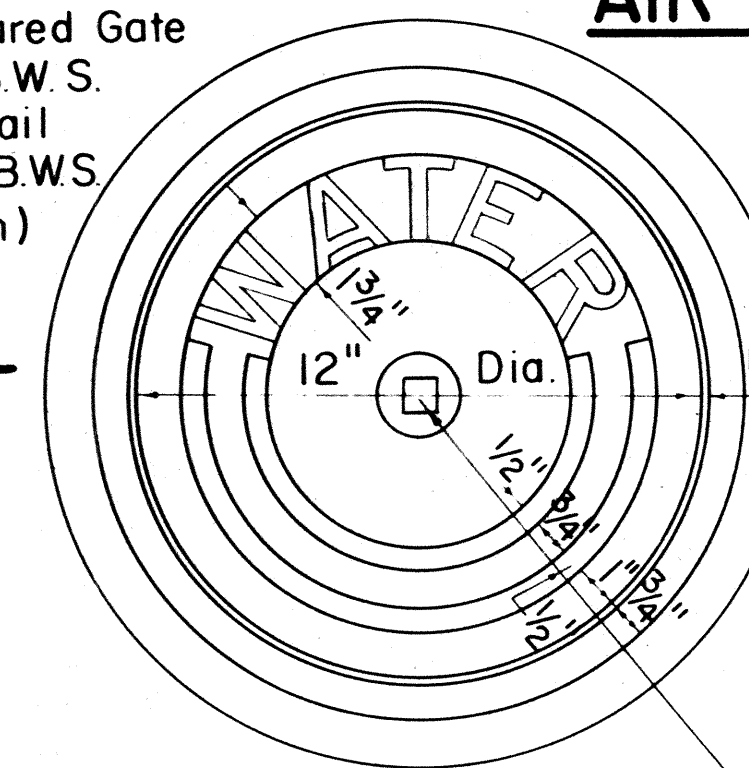
Not to Scale

Offset word "WATER" 1 3/4" high, 1/8" deep

NOTE:

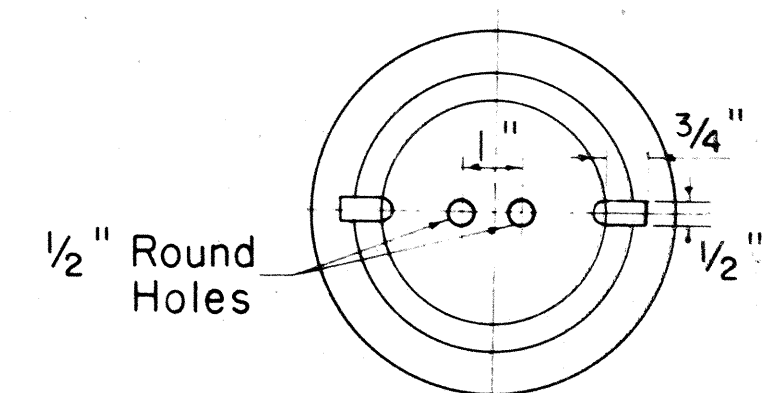
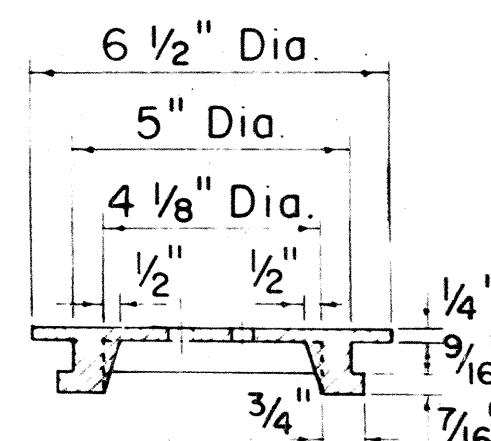
All castings shall be made accurately to the dimensions shown. Seat and Cover shall be ground where necessary to secure flat and true surfaces. The Cover shall not rattle in any position.

Minor changes in dimensions may be made to suit foundry conditions provided such changes are approved by the Board of Water Supply.

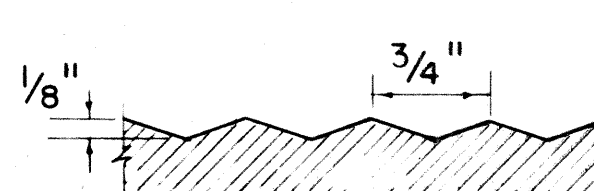


CAST IRON FRAME AND COVER

Scale: 3" = 1'-0"



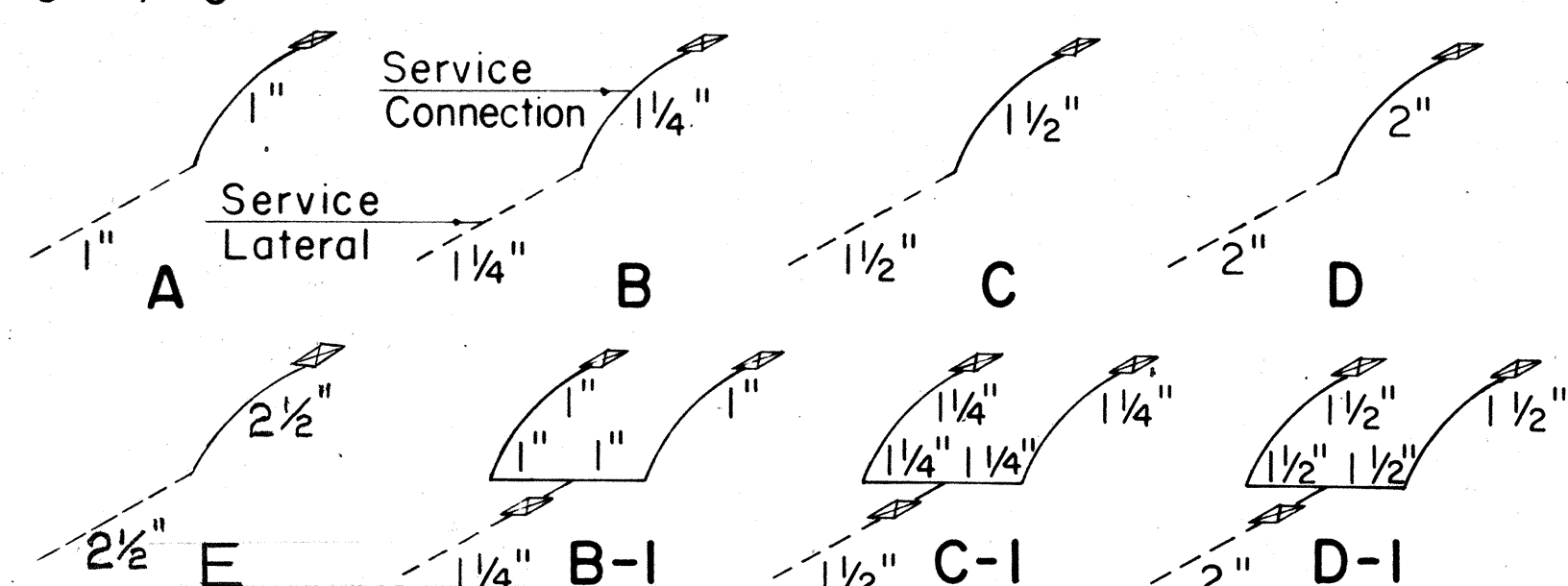
READING COVER



CHECKERED PATTERN

CAST IRON COVER FOR TYPE II FRAME

Not to Scale



TYPICAL LAYOUT OF SERVICE LATERALS AND CONNECTIONS

Not to Scale

APPROVED:

ASSISTANT CHIEF ENGINEER
BOARD OF WATER SUPPLY

DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BOARD OF WATER SUPPLY
CITY & COUNTY OF HONOLULU

STANDARD DETAILS

INTERSTATE HIGHWAY (LUNALILO FRWY)
F.A.I. PROJ. NO. I-HI-1(6) UNIT 3
Scale: As Noted Date: Aug. 1966

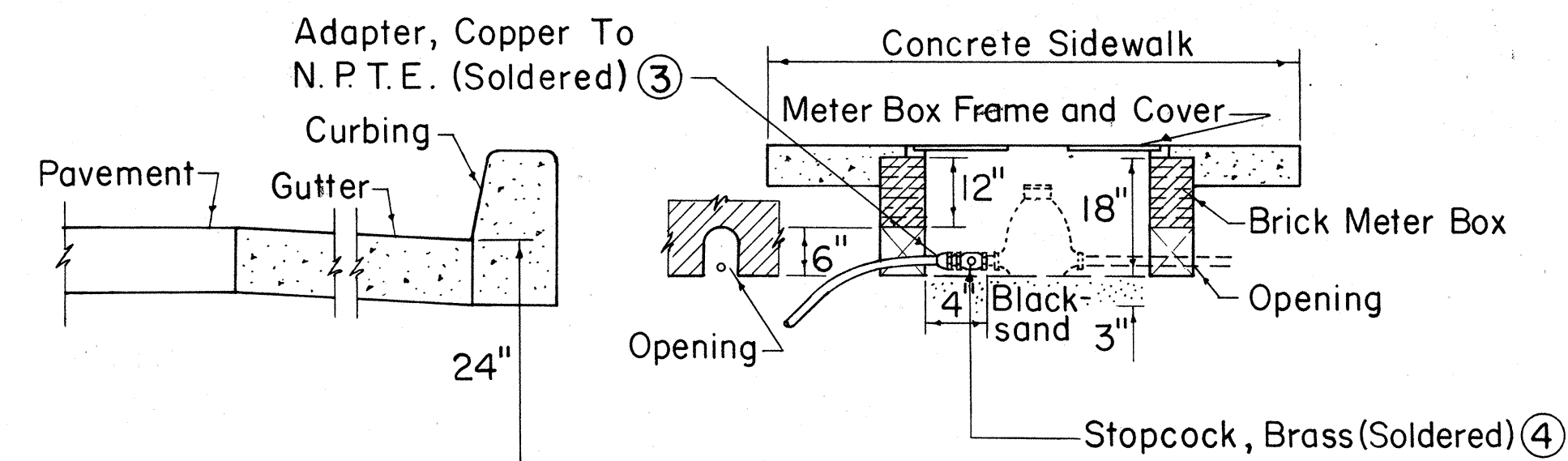
SHEET NO. 12 OF 17 SHEETS

FED. AID DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	I-HI-1(6) UNIT 3	1966	77	235

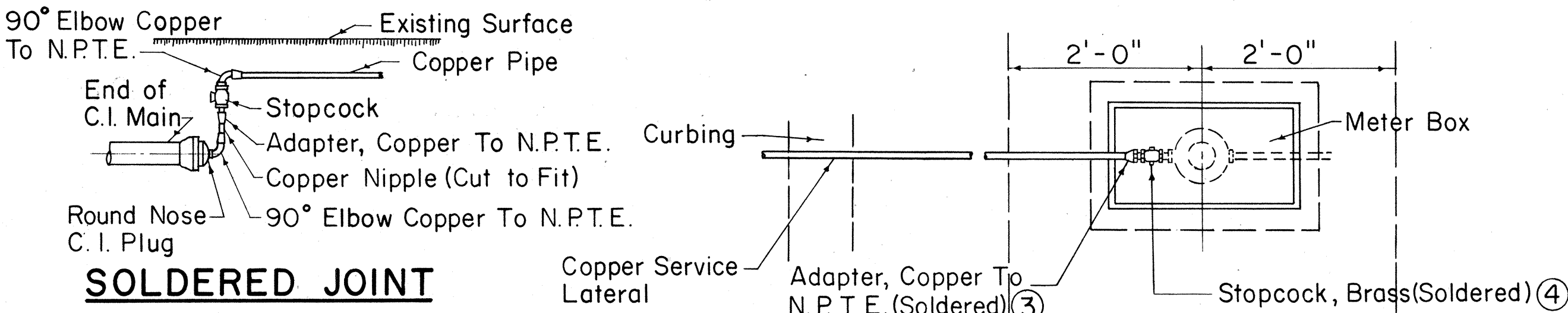
SCHEDULE OF COPPER FITTINGS
(SOLDERED JOINT)

ITEM NO.	DESCRIPTION	SINGLE SERVICE CONN.	MULTIPLE SERV. CONN.	
			TWO SERVICES	THREE SERVICES
1	Corporation Stop Brass (H-10003)	1	1	1
2	Ground Joint Union (Style Copper To N.P.T.E. No. C-109)	1	1	1
3	Adapter, Copper To N.P.T.E. (Style No. C-101)	2	1	1
4	Stopcock Brass (BWS Standard)	1	1	1
5	Fitting Adapter, (Style Fitting To N.P.T.E. No. C-104)	—	1	1
6	Tee, Copper To Copper To Copper (Style No. T-300)	—	1	1
7	Bushings, Fitting To Copper (Style No. C-103)	—	2	2
8	90° Elbow, Copper To Copper (Style No. C-200)	—	2	2
9	Adapter, Copper To N.P.T.E. (Style No. C-101)	1	2	3
10	Stopcock Brass (BWS Standard)	1	2	3
11	Reducing Tee, Copper To Copper To Copper (Substitute For Items Number 6 and 7). (Style No. T-300)	—	1	1
12	Tee, Copper To Copper To Copper (Style No. T-300)	—	—	1
13	Bushing, Fitting To Copper (Style No. C-103)	—	—	1
14	Reducing Tee, Copper To Copper To Copper (Substitute For Items Number 12 and 13) (Style No. T-300)	—	—	1

NOTE:
Reference Numbers shown thus (H-10003) are from Mueller Co. Catalog "H" and (Style No. T-300) are from Mueller Brass Co. "Streamline" Catalog S-354. Approved Equal may be used.

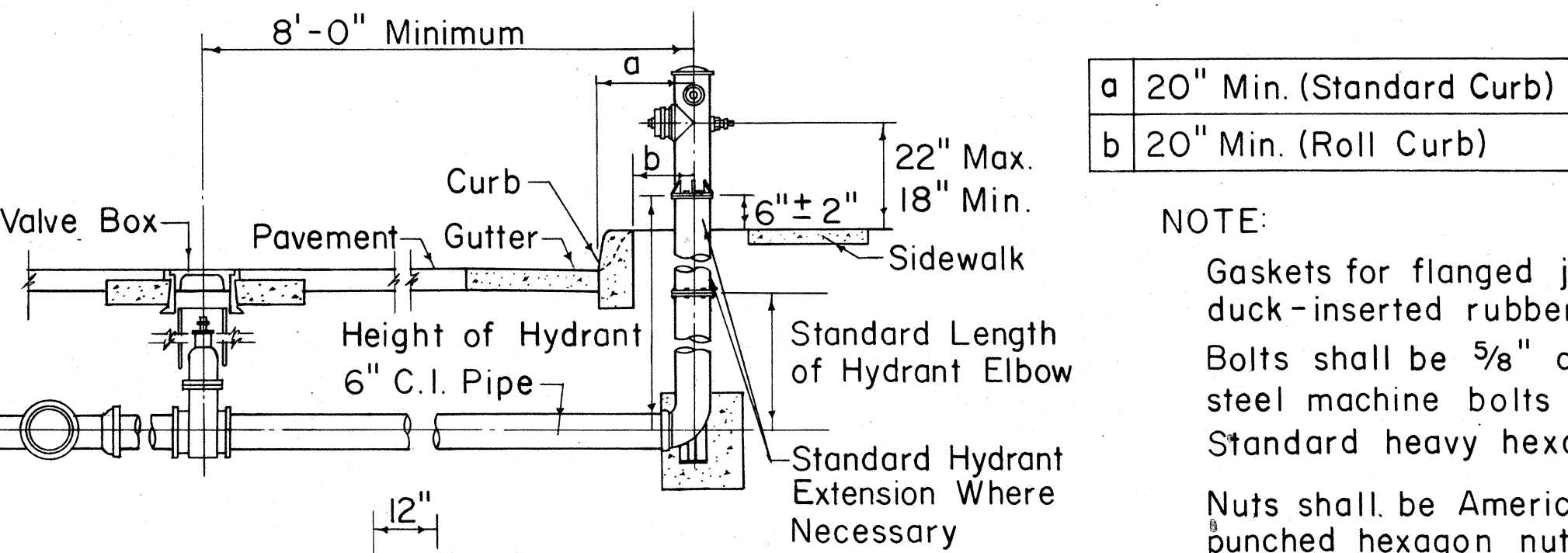


LONGITUDINAL SECTION



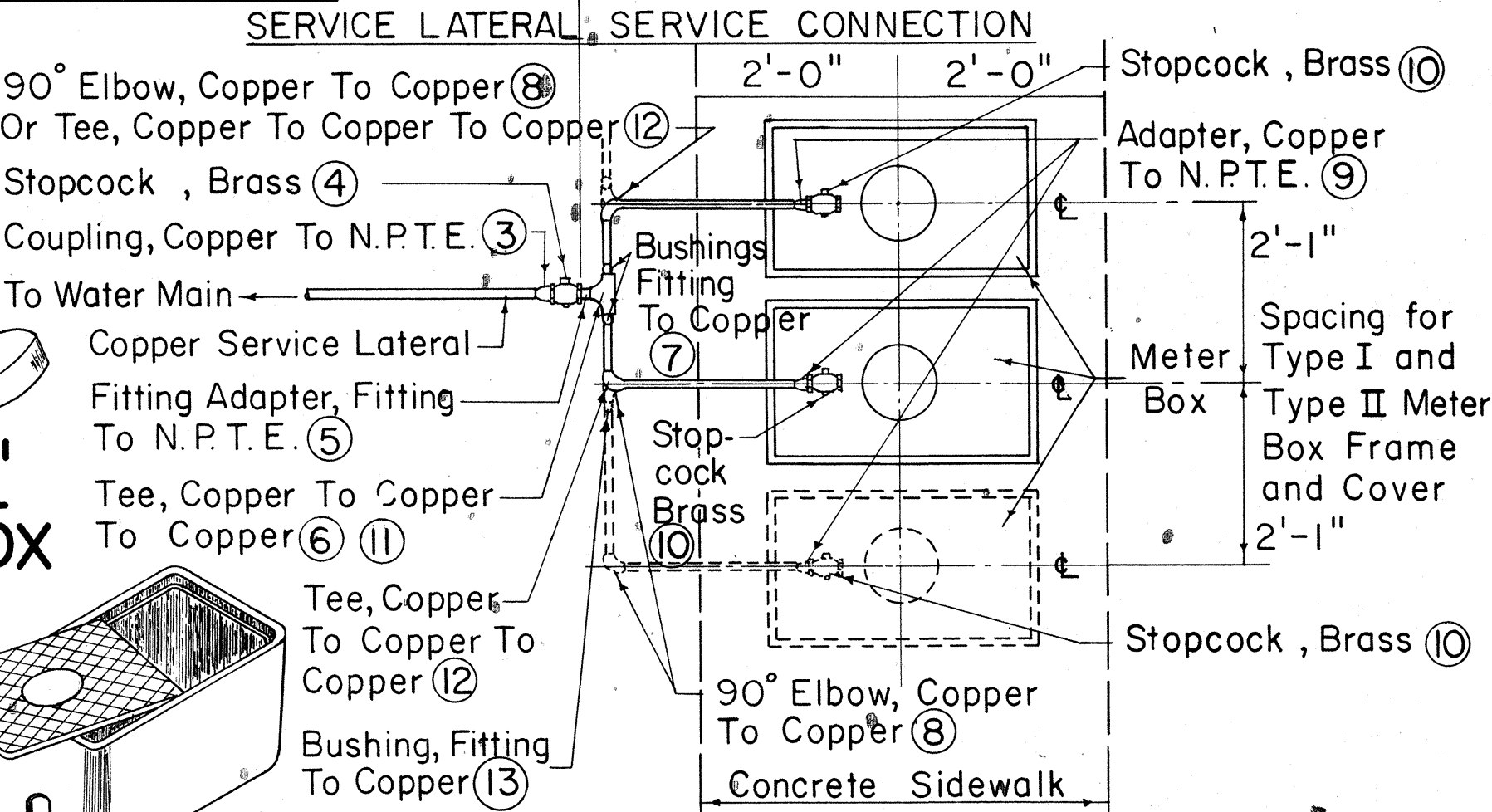
SOLDERED JOINT

SERVICE LATERAL CONNECTION AT END OF LINE

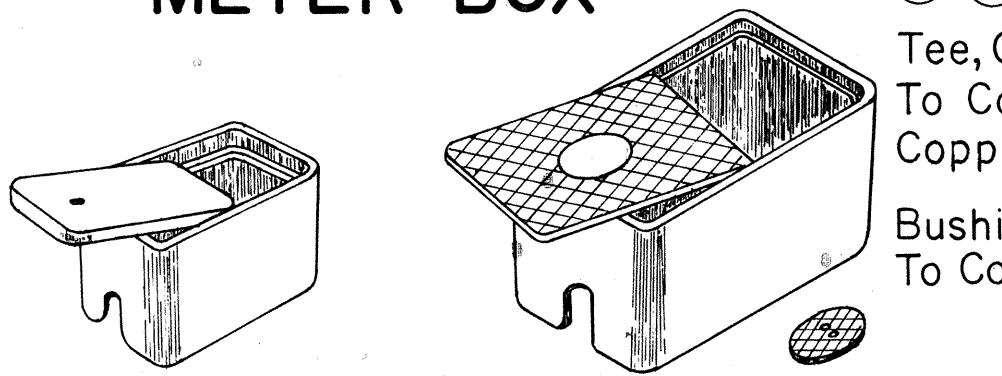


NOTE:
Gaskets for flanged joints shall be 1/16 inch duck-inserted rubber packing Garlock No. 19. Bolts shall be 5/8" diameter x 2 3/4" long steel machine bolts with cut threads, American Standard heavy hexagon heads, galvanized. Nuts shall be American Standard heavy cold punched hexagon nuts, galvanized.

SINGLE SERVICE CONNECTION



TYPE "A" METER BOX

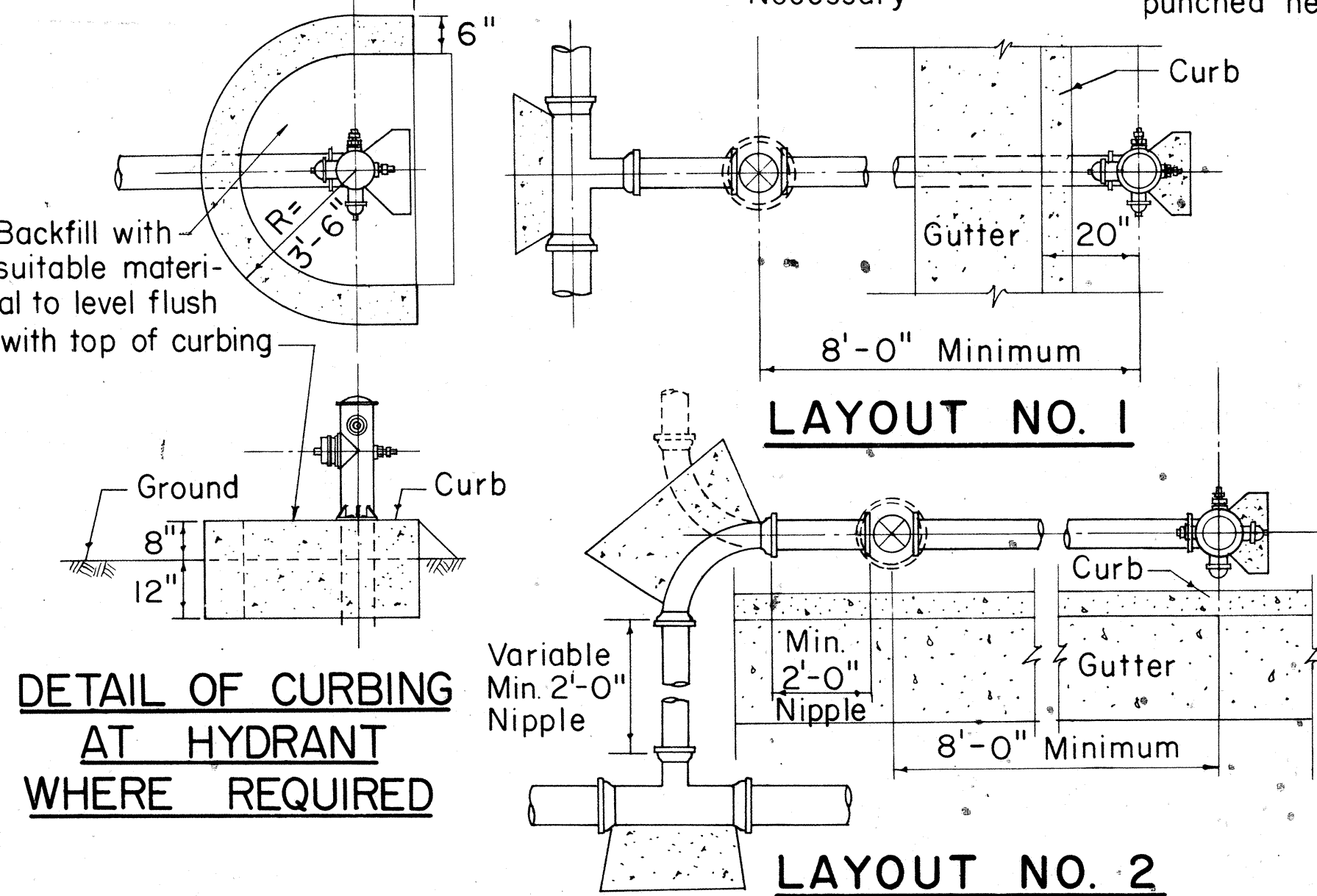


TYPE "B" METER BOX TYPE "X" METER BOX

MULTIPLE SERVICE CONNECTION
SOLDERED JOINTS

STANDARD LENGTHS FOR HYDRANT ELBOWS	
	30"
	36"
	42"
	48"

Standard Hydrant Extensions are available in the following Lengths:
6 to 30 inches long in increments of 6 inches



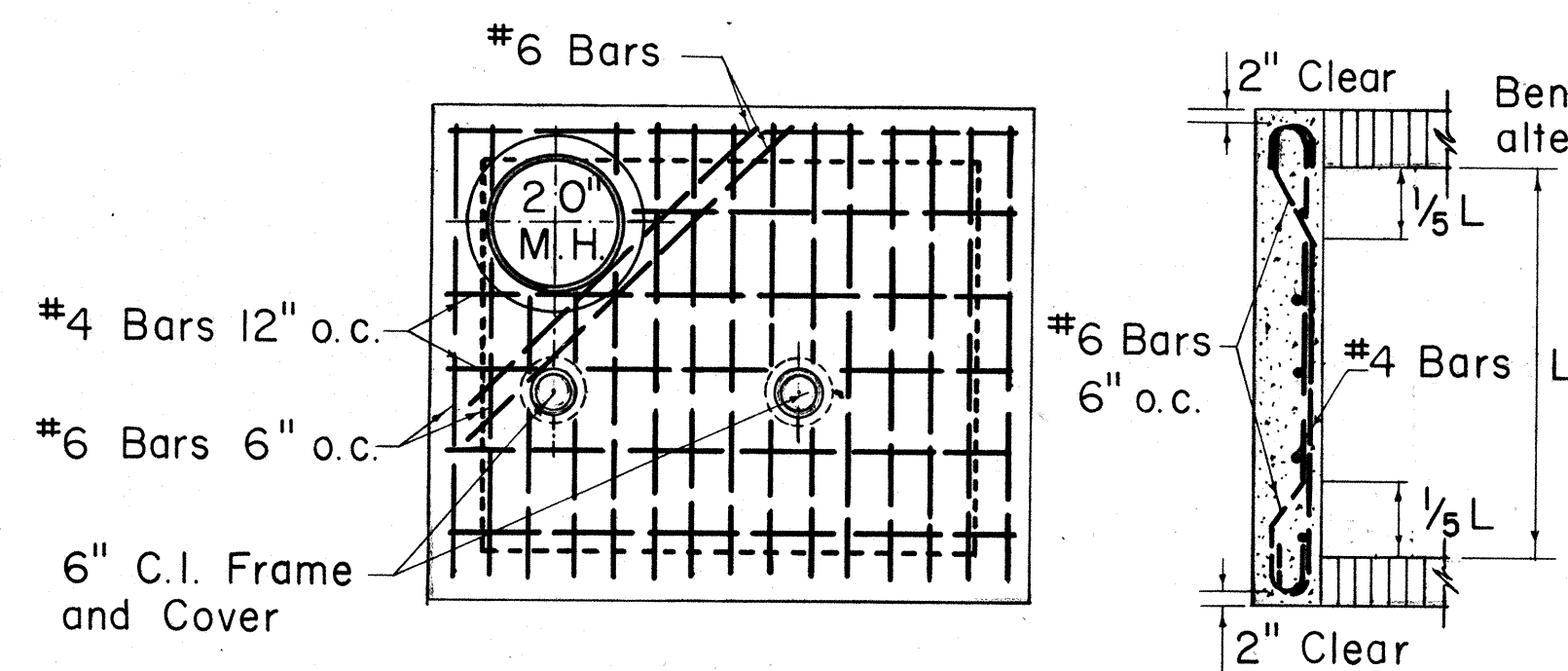
STANDARD FIRE HYDRANT LAYOUT

METER BOX DATA					
TYPE METER BOX	METER SIZES	OVERALL DIMENSIONS AT BOTTOM	OVERALL DIMENSIONS AT TOP	COMPLETE WEIGHT	OVERALL DIMENSIONS OF LID
A	5/8" or 3/4" Without Valve	7 1/4" x 7 1/4"	10" x 10"	45 lbs.	7 3/8" Dia.
B	5/8" or 3/4"	9 1/2" x 16"	12 1/4" x 18 3/8"	82 lbs.	8 3/4" x 14 1/2"
X		14 1/2" x 23 1/2"	16" x 25"	143 lbs.	13 1/8" x 22 1/8"

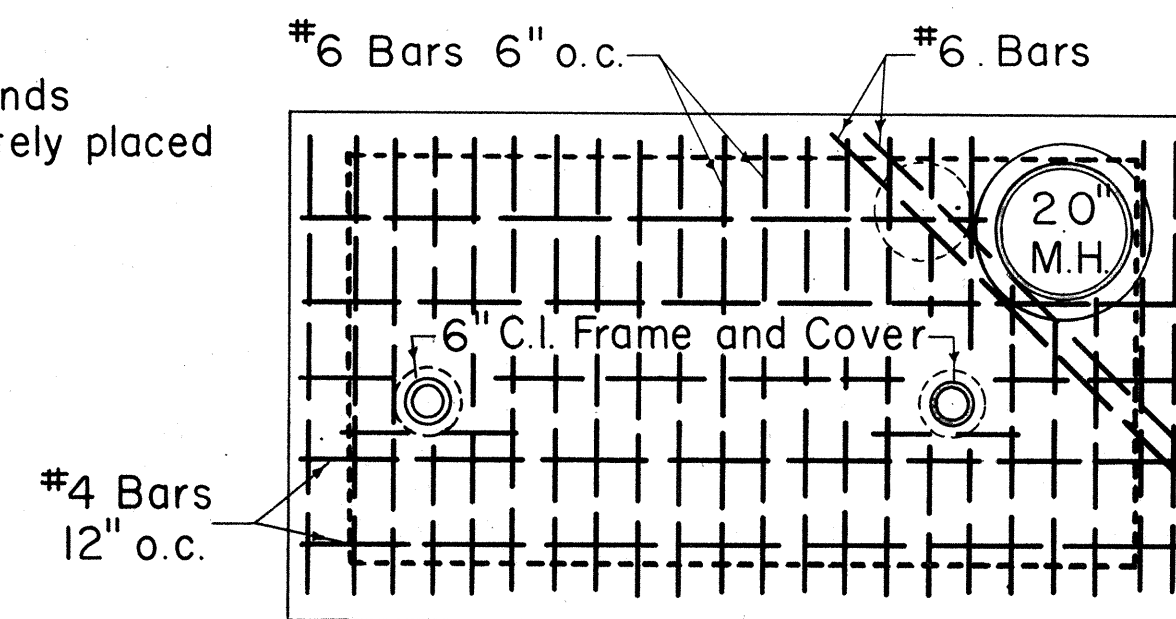
APPROVED:

H. D. Smith 9-12-66
ASSISTANT CHIEF ENGINEER DATE
BOARD OF WATER SUPPLY

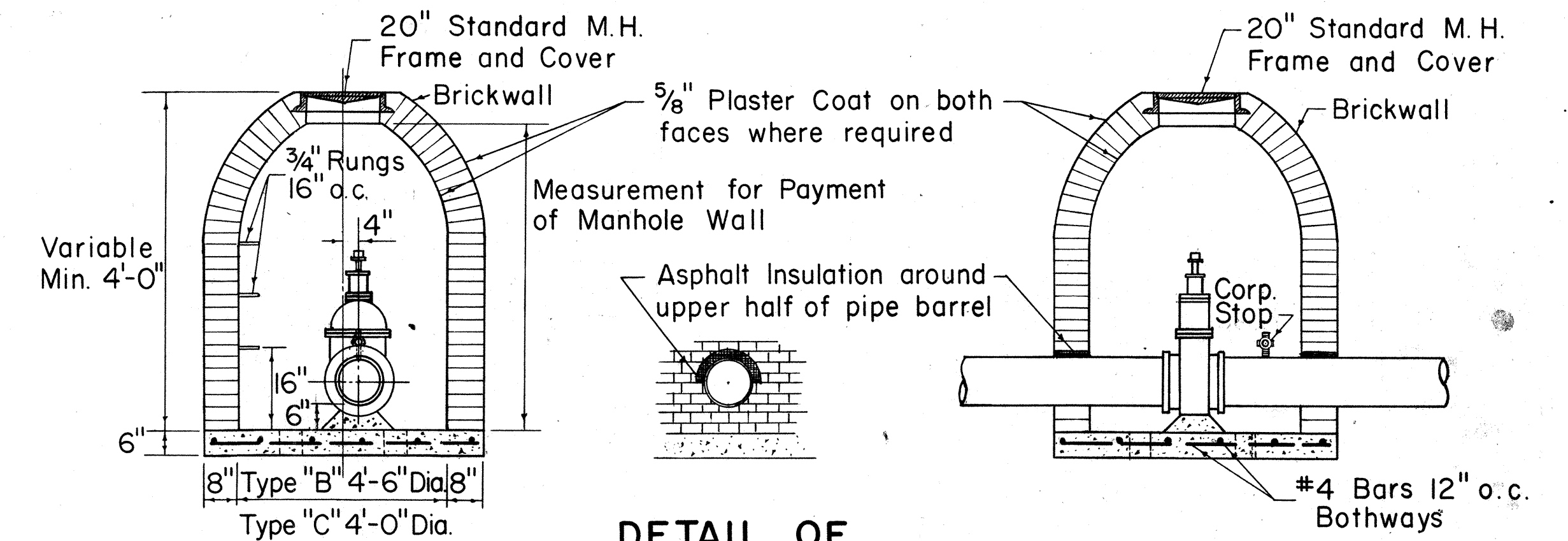
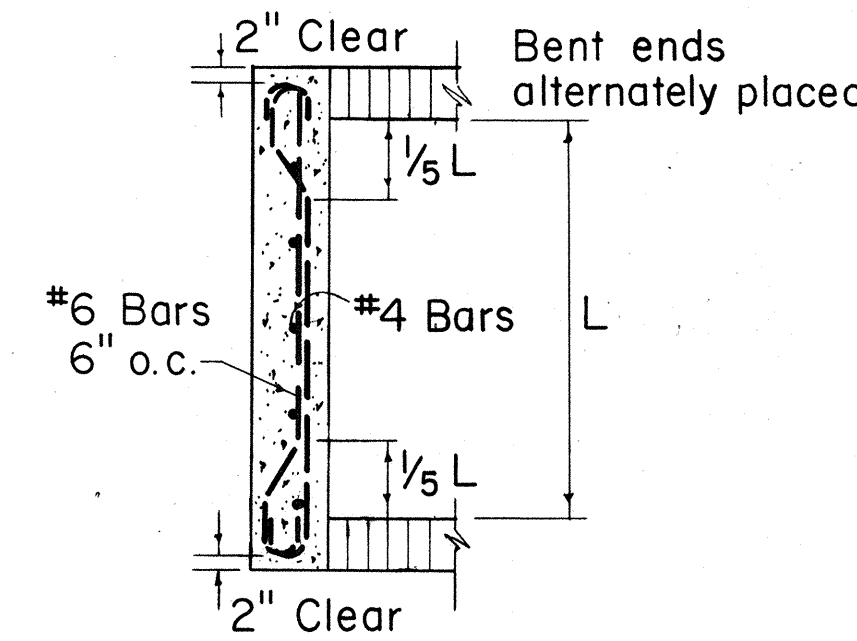
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
BOARD OF WATER SUPPLY
CITY & COUNTY OF HONOLULU
STANDARD DETAILS
INTERSTATE HIGHWAY (LUNALILO FRWY)
F.A.I. PROJ. NO. I-HI-1(6) UNIT 3
Not to Scale Date: Aug. 1966
SHEET NO. 13 OF 17 SHEETS



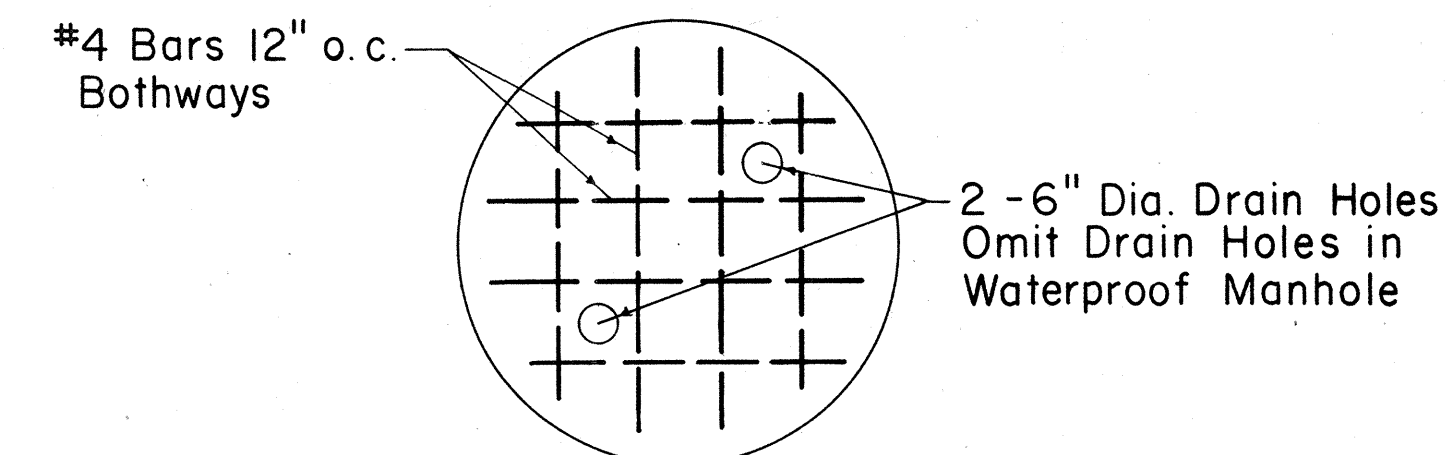
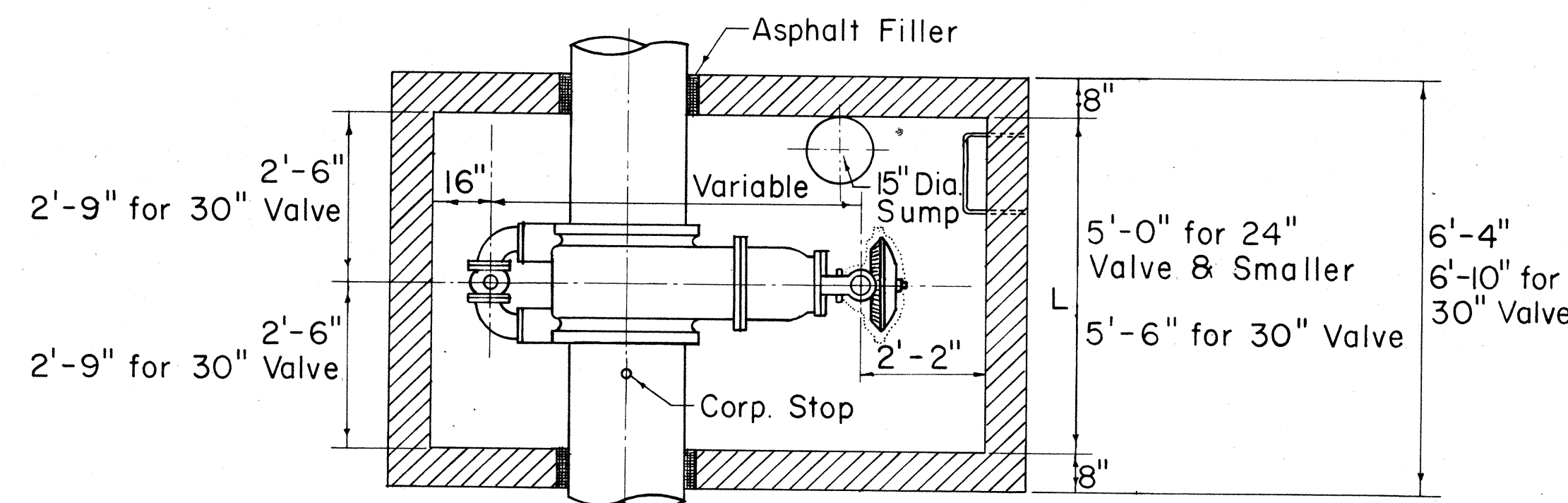
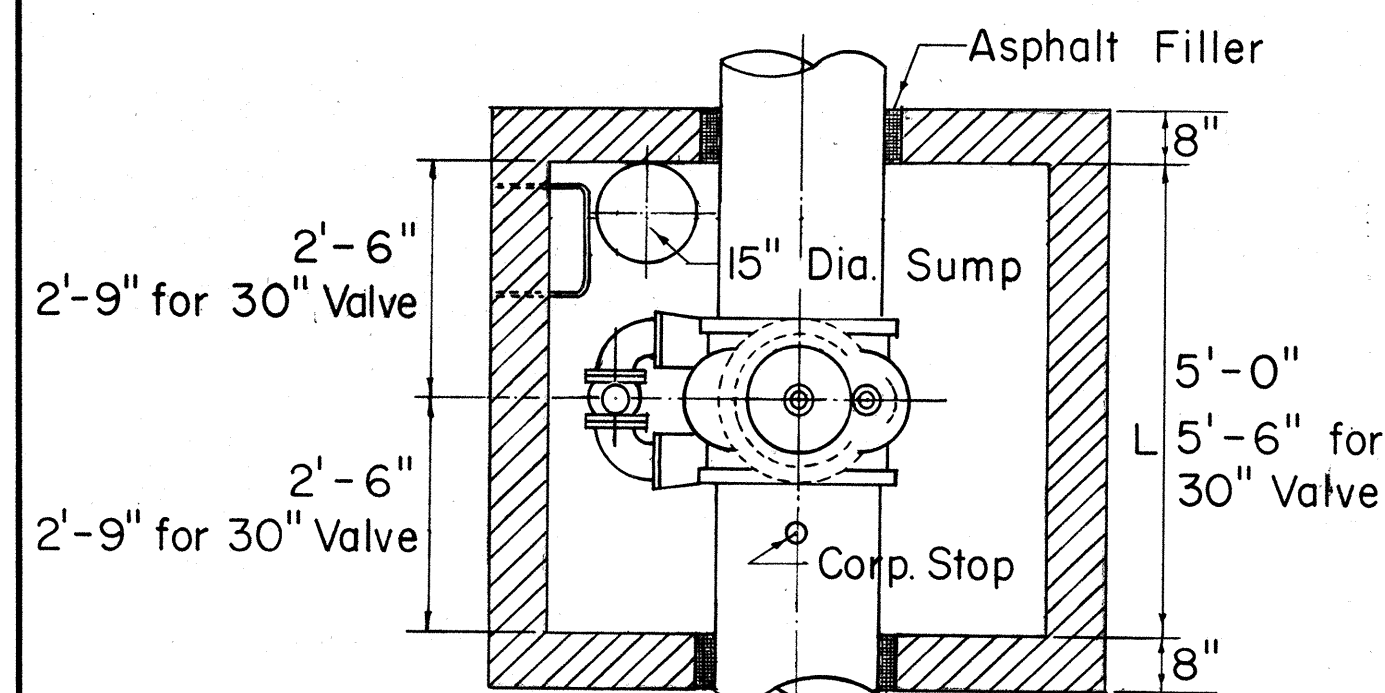
PLAN OF TOP SLAB



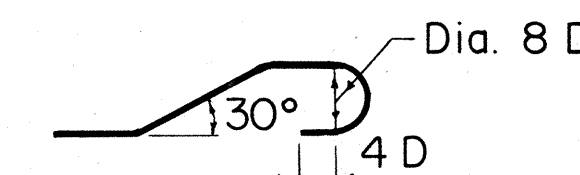
PLAN OF TOP SLAB



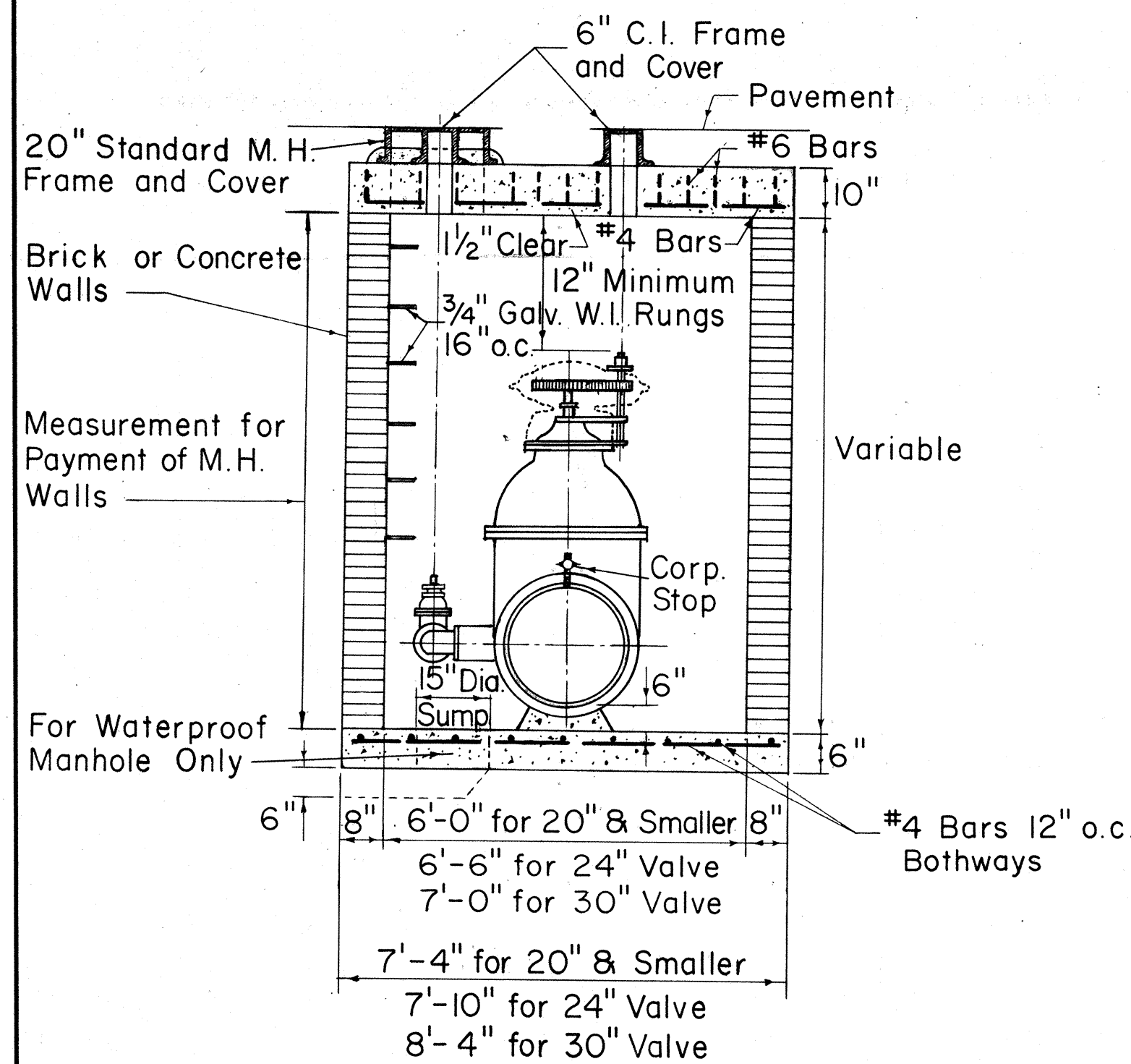
DETAIL OF ASPHALT FILLER



STEEL DETAIL IN BOTTOM SLAB

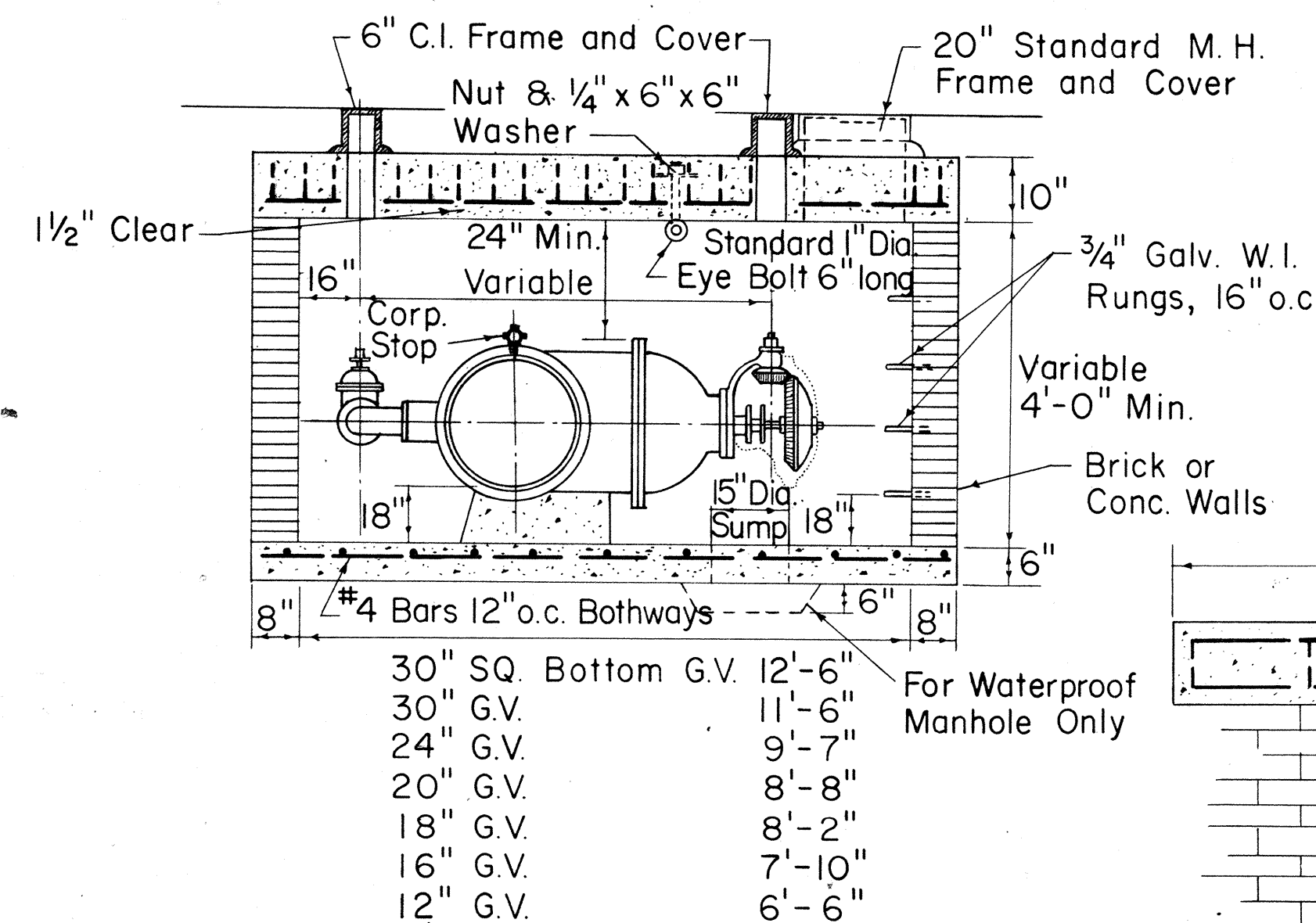


BAR BENDING DETAIL



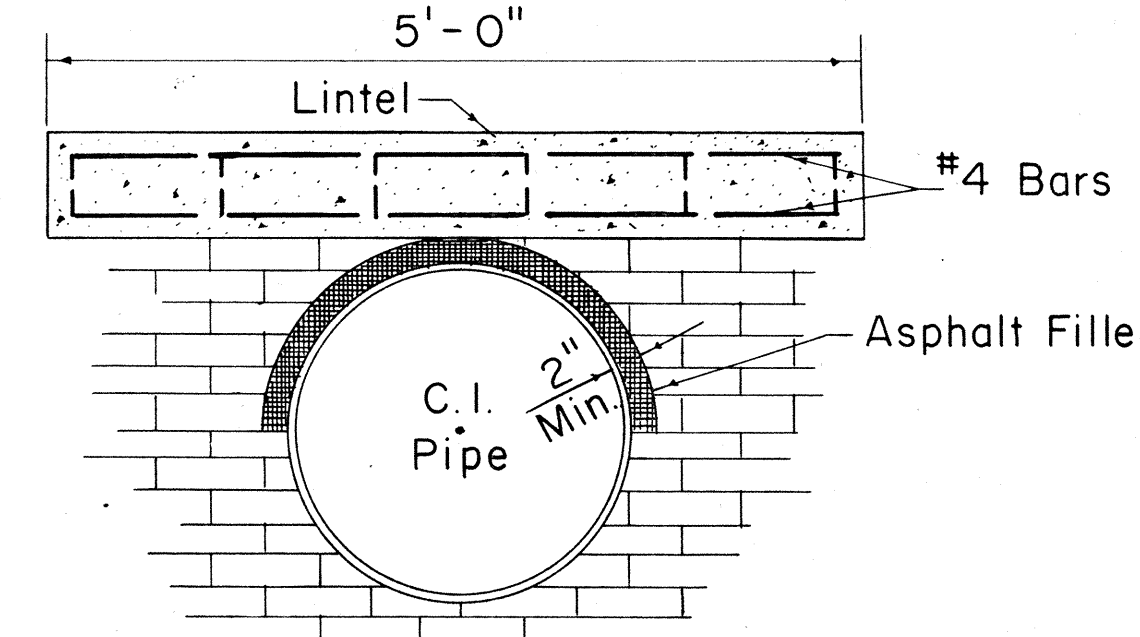
SECTION

TYPE "A" MANHOLE FOR SPUR GEARED GATE VALVES

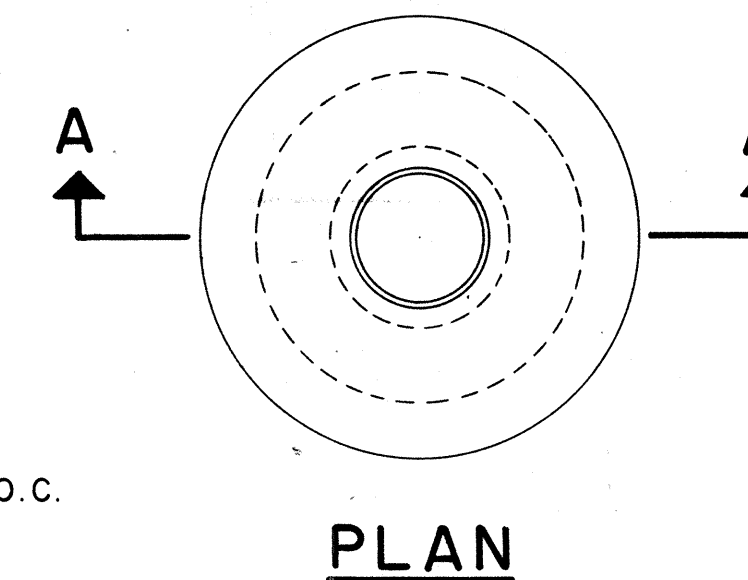


SECTION

TYPE "A" MANHOLE FOR BEVEL GEARED GATE VALVES



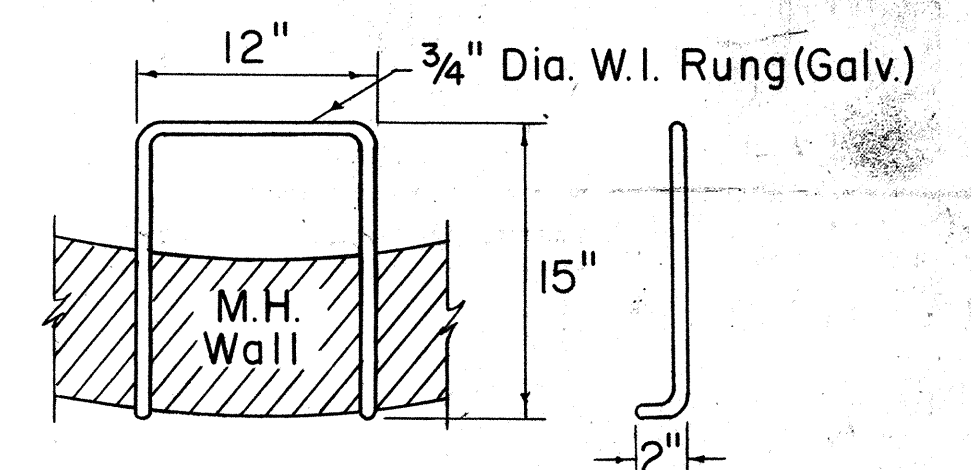
DETAIL OF LINTEL AND ASPHALT FILLER



TYPE "B" AND "C" MANHOLES
TYPE "B" 4'-6" DIA. (FOR 12" G.V.)
TYPE "C" 4'-0" DIA. (FOR 6" & 8" G.V.)

TABLE "A"
REQUIRED CORPORATION STOP SIZES AT GATE VALVE

DIA. OF MAIN INCHES	SIZE OF CORP STOP
4	1" x 1 1/4"
6	1" x 1 1/4"
8	1" x 1 1/4"
12	1" x 1 1/4"
16	1" x 1 1/4"
20	1" x 1 1/4"
24	1 1/2" x 2"
36	1 1/2" x 2"
42	1 1/2" x 2"



DETAIL OF RUNG

APPROVED:

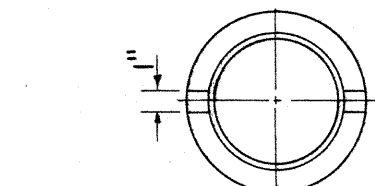
[Signature]
ASSISTANT CHIEF ENGINEER
BOARD OF WATER SUPPLY
DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
BOARD OF WATER SUPPLY
CITY & COUNTY OF HONOLULU
STANDARD DETAILS
INTERSTATE HIGHWAY (LUNALILO FRWY)
F.A.I. PROJ. NO. I-HI-1(6) UNIT 3
Not to Scale Date: Aug. 1966
SHEET NO. 14 OF 17 SHEETS

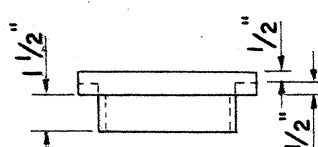
FED. AID DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO	TOTAL SHEETS
HAWAII	HAWAII	I-HI-1(6) UNIT 3	1966	80	235

Cast Iron 1/8" Raised Letters

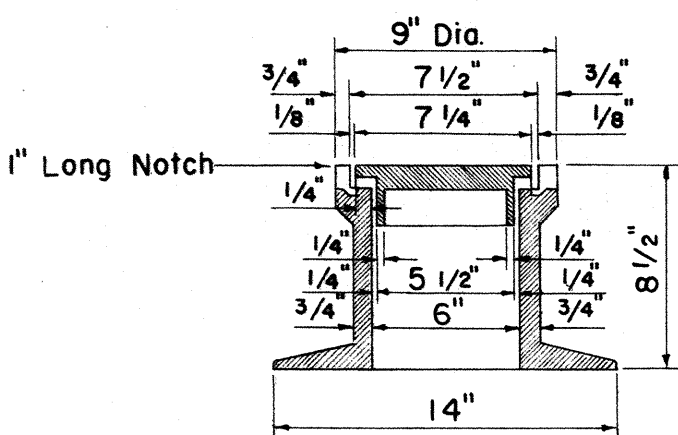
PLAN OF COVER



BOTTOM OF COVER



ELEVATION



SECTION

DROP MANHOLE CHIMNEY CASTINGS

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

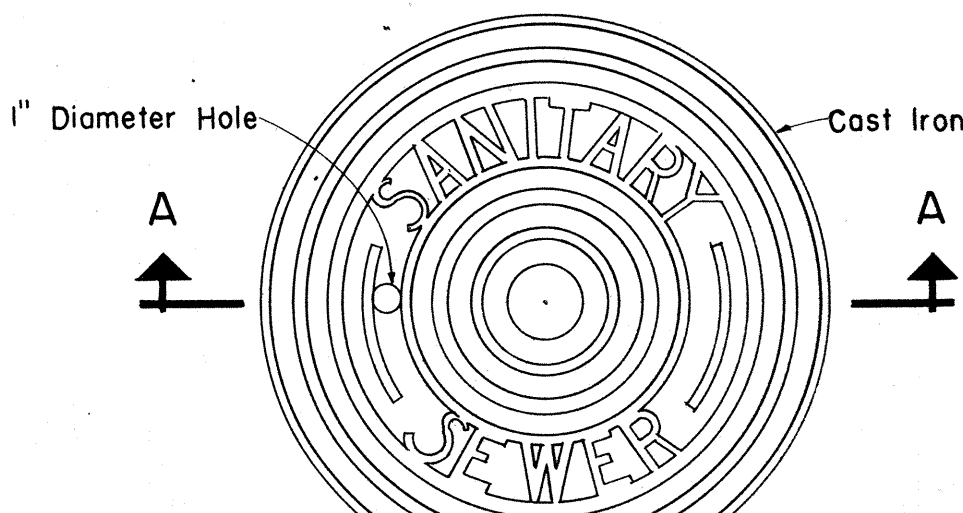
APPROVED:

[Signature] 8-22-66
SEWER SYSTEM DIRECTOR, DATE
DIVISION OF SEWERS

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
DIVISION OF SEWERS
CITY & COUNTY OF HONOLULU
STANDARD DETAILS
SEWERS-MANHOLE RUNGS,
CHIMNEY CASTINGS AND
FRAME AND COVER DETAILS
INTERSTATE HIGHWAY (LUNALILO FRWY)
F.A.I. PROJ. NO. I-HI-1(6) UNIT 3
Scales: As Noted Date: Aug. 1966

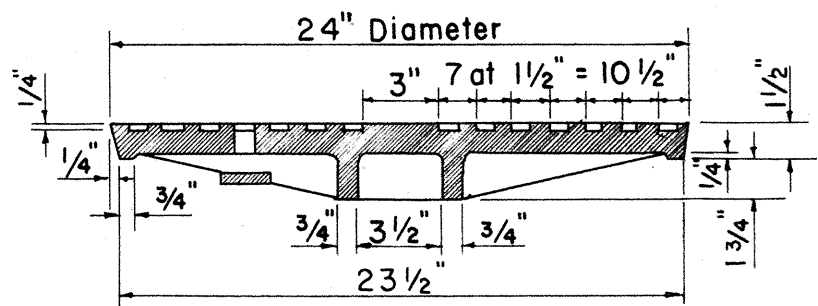
SHEET NO. 16 OF 17 SHEETS

S O



PLAN OF MANHOLE COVER

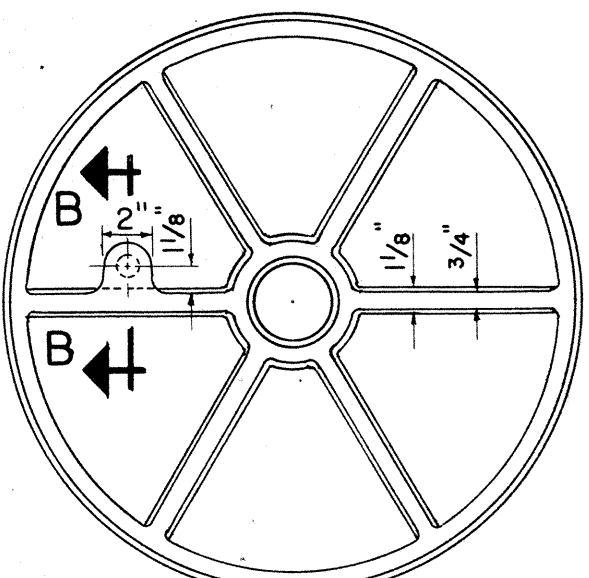
Scale: 1 1/2" = 1'-0"



SECTION A-A

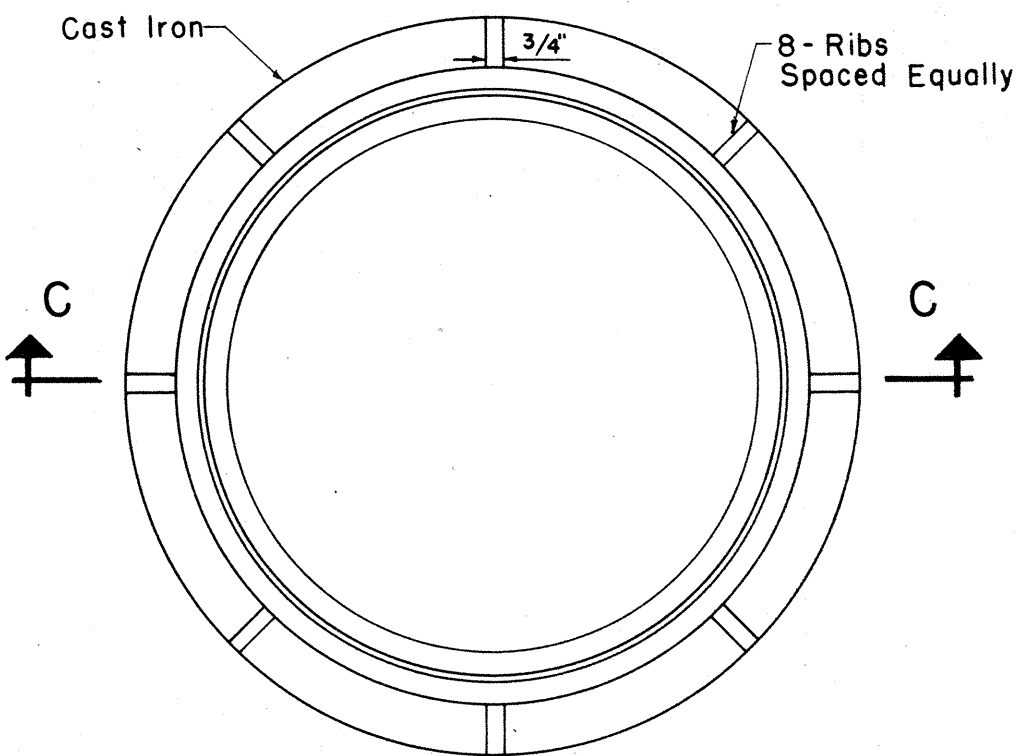
Scale: 1 1/2" = 1'-0"

NOTE:
This cover is used with
the "SA" or "SD" frame



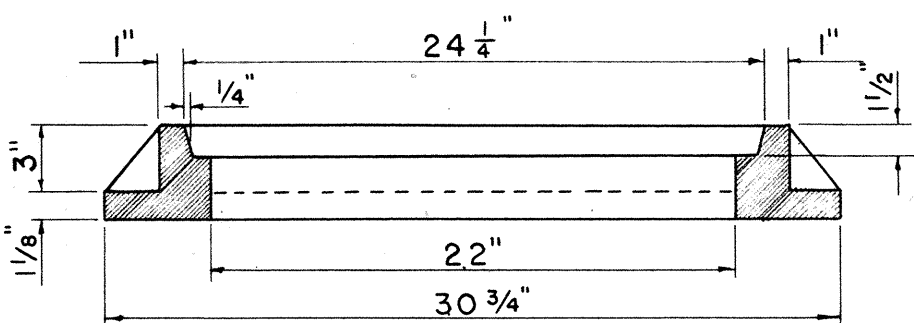
BOTTOM VIEW OF COVER

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



PLAN OF MANHOLE FRAME

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

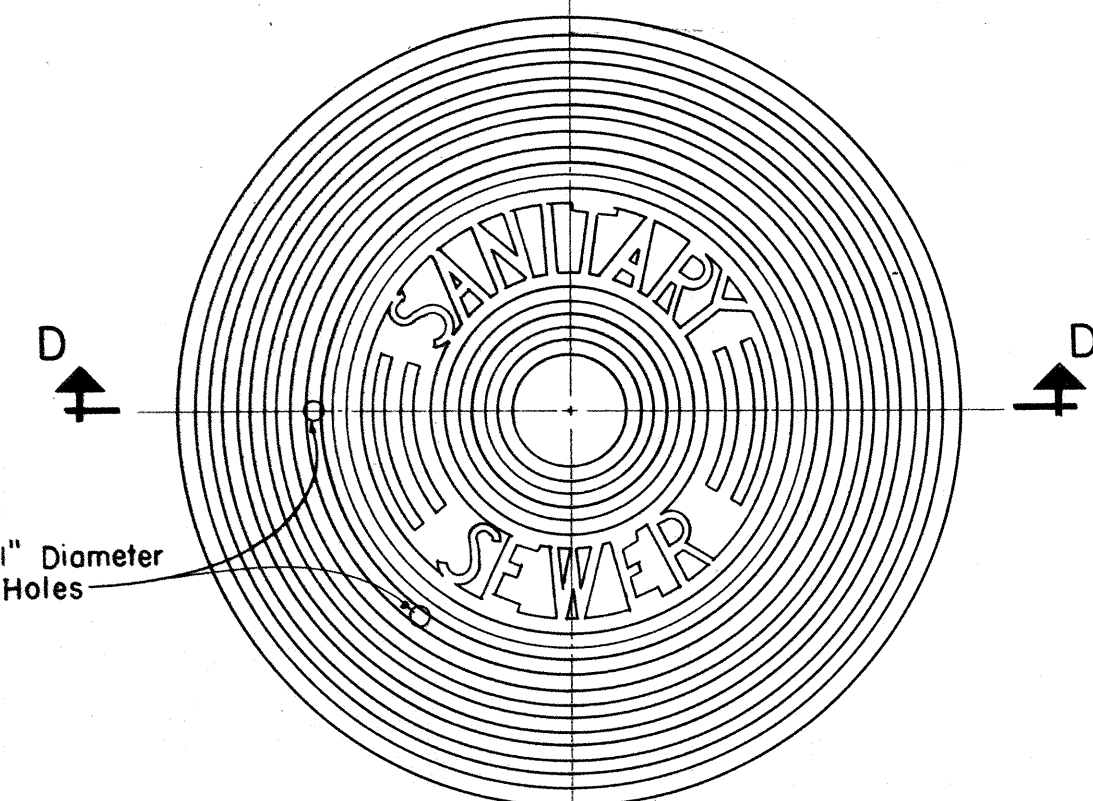


SECTION C-C

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

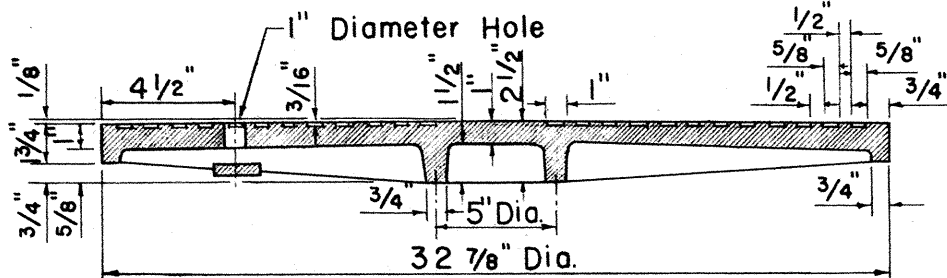
TYPE "SA" SEWER MANHOLE
FRAME AND COVER

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



PLAN
SPECIAL MANHOLE COVER

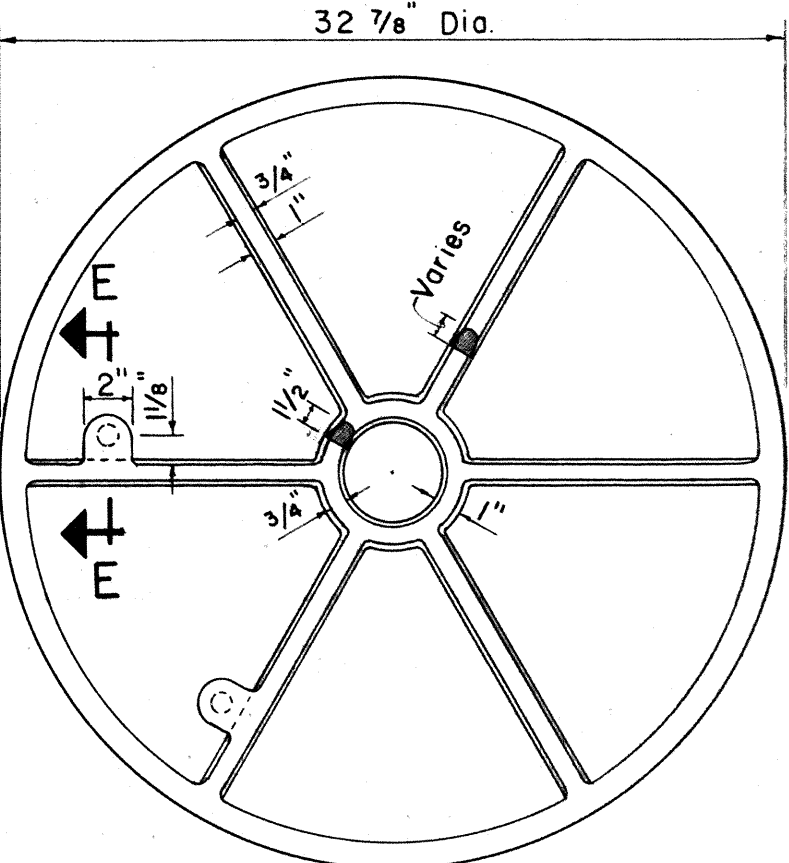
Scale: 1 1/2" = 1'-0"



SECTION D-D

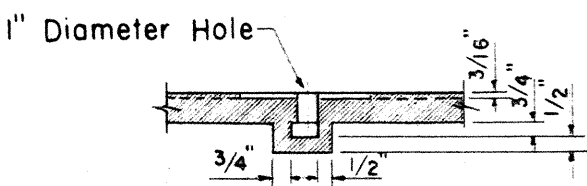
Scale: 1 1/2" = 1'-0"

Approx. Weight 260 Pounds



BOTTOM VIEW OF COVER

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

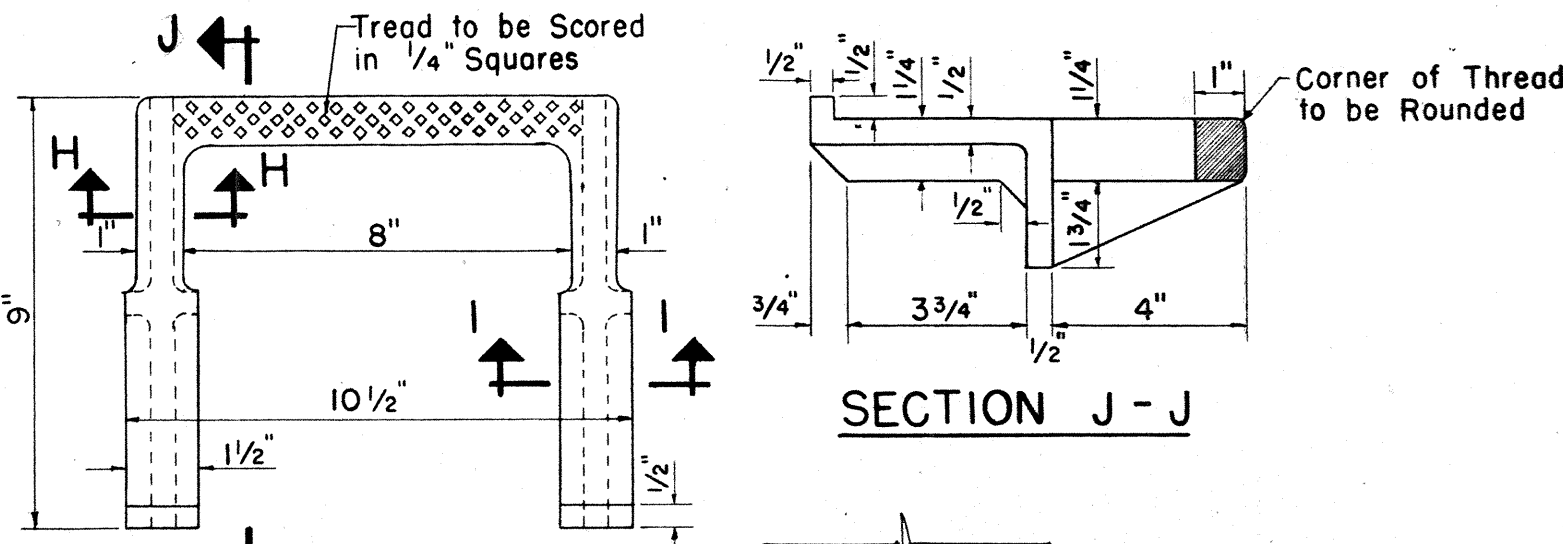


SECTION E-E

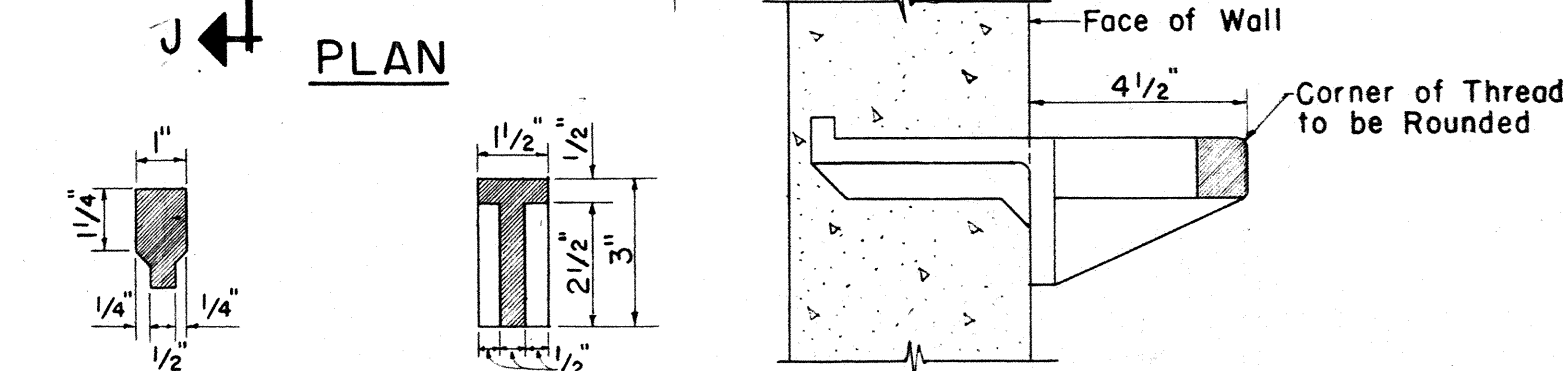
Scale: 1 1/2" = 1'-0"

TYPE "SB" SEWER MANHOLE FRAME AND COVER

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



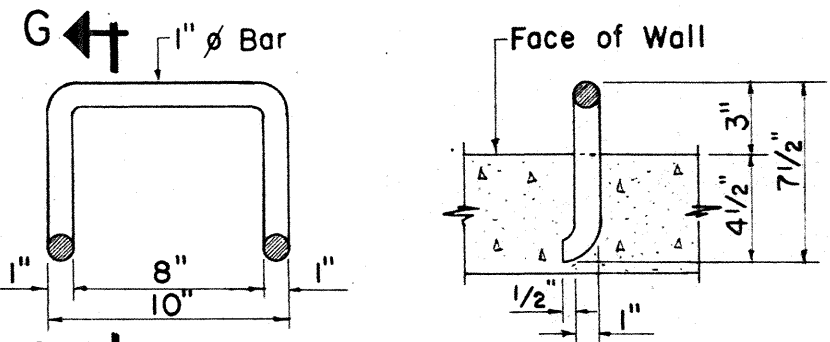
SECTION J-J



METHOD OF
INSTALLATION

TYPE "SB" MANHOLE RUNGS (CAST IRON)

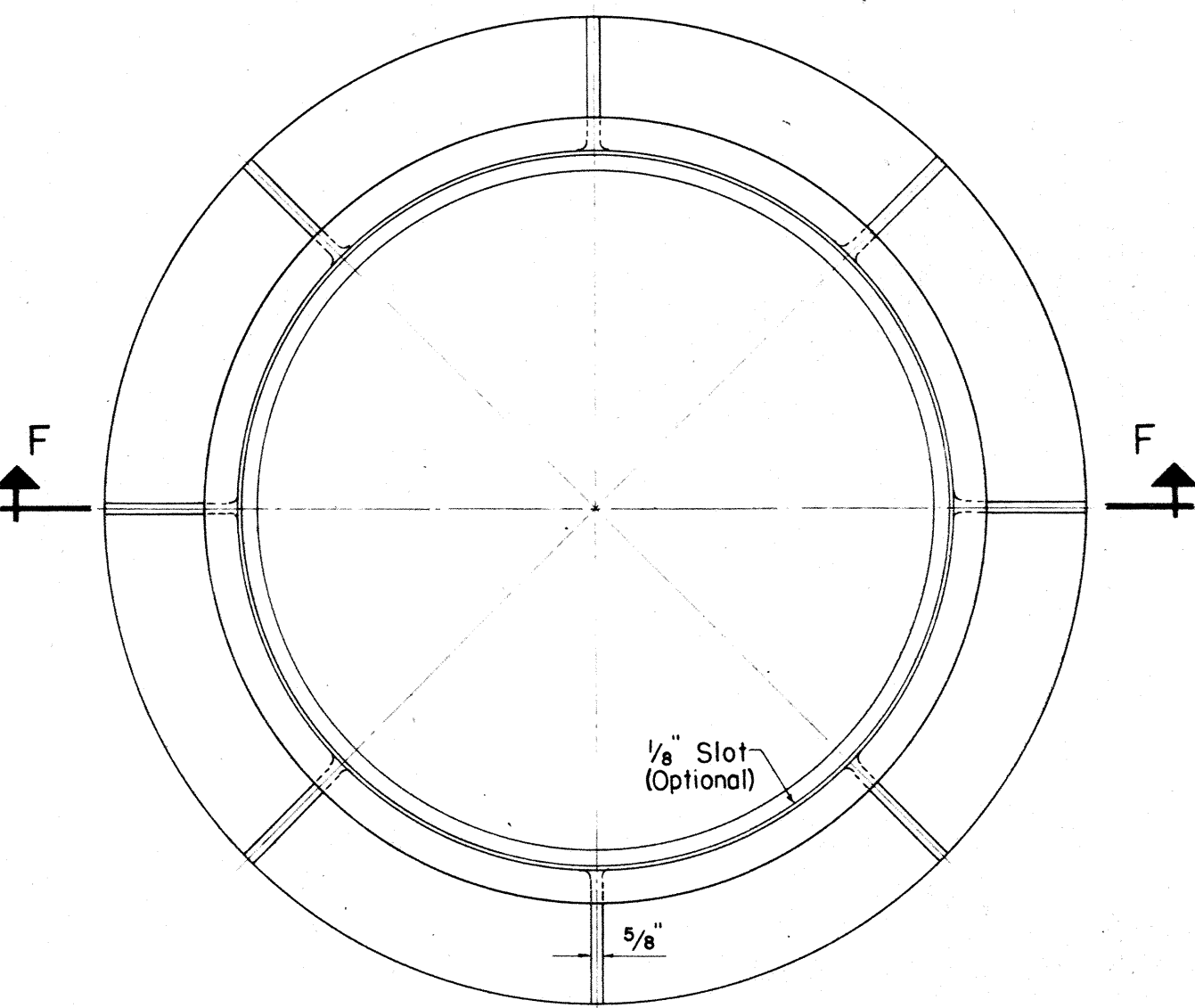
Scale: 3" = 1'-0"



SECTION G-G

TYPE "SA" MANHOLE RUNGS (WROUGHT IRON)

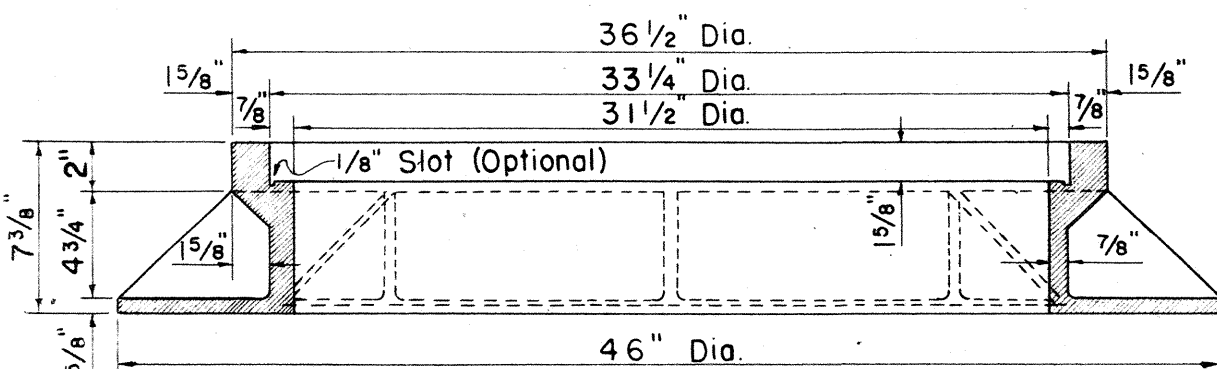
Scale: 1 1/2" = 1'-0"



PLAN
SPECIAL MANHOLE FRAME

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

Approx. Weight 437 Pounds

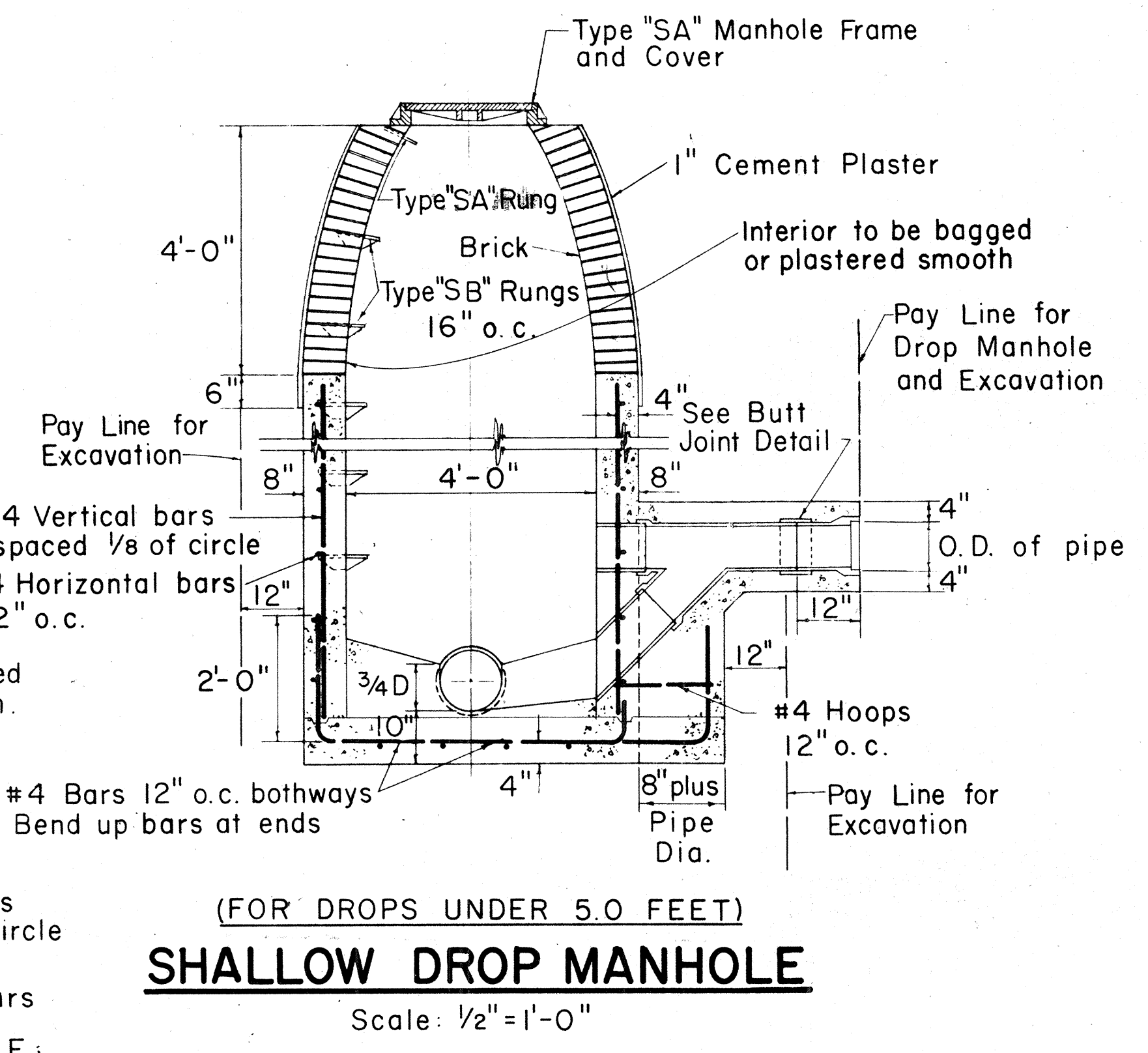
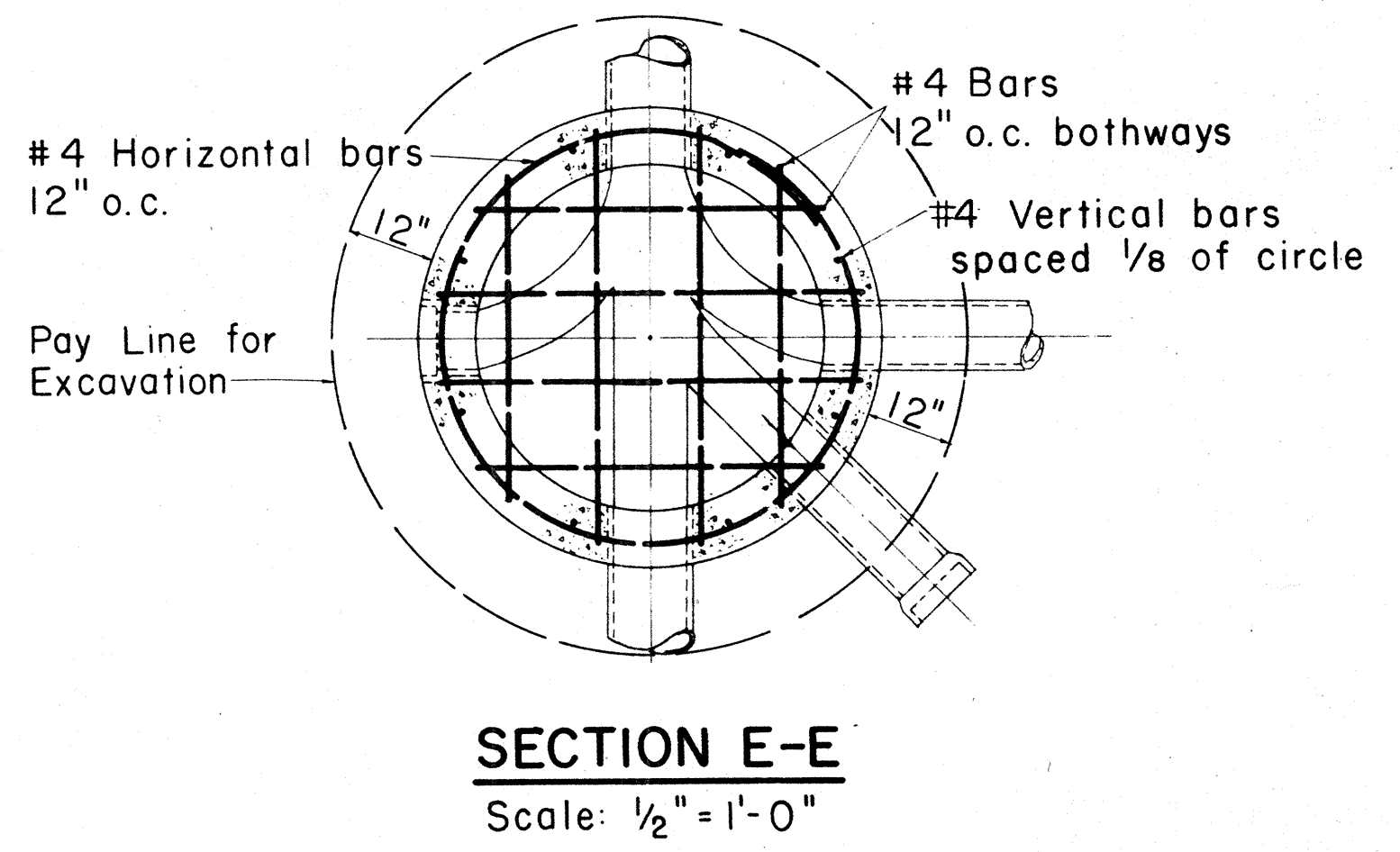
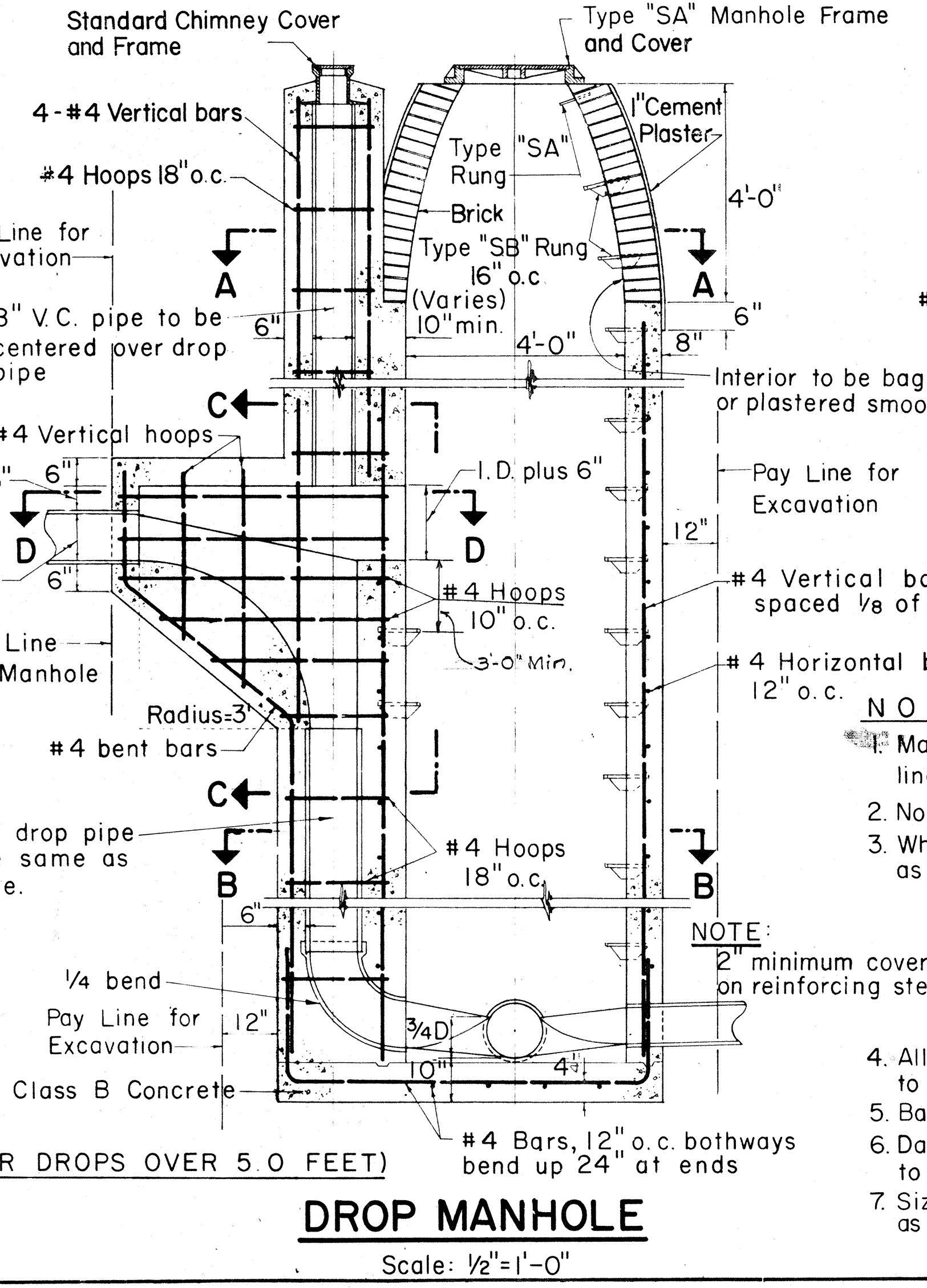
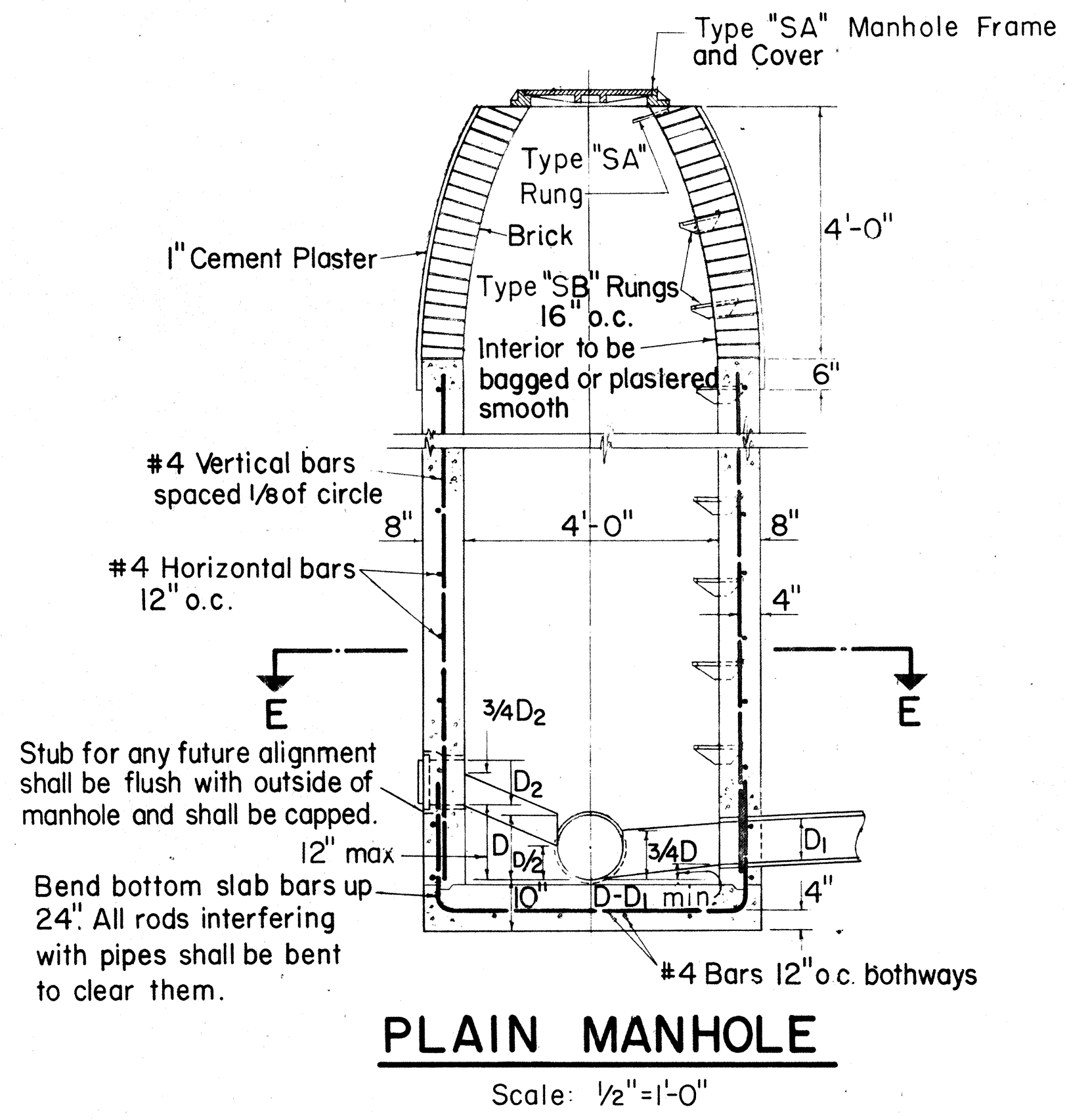
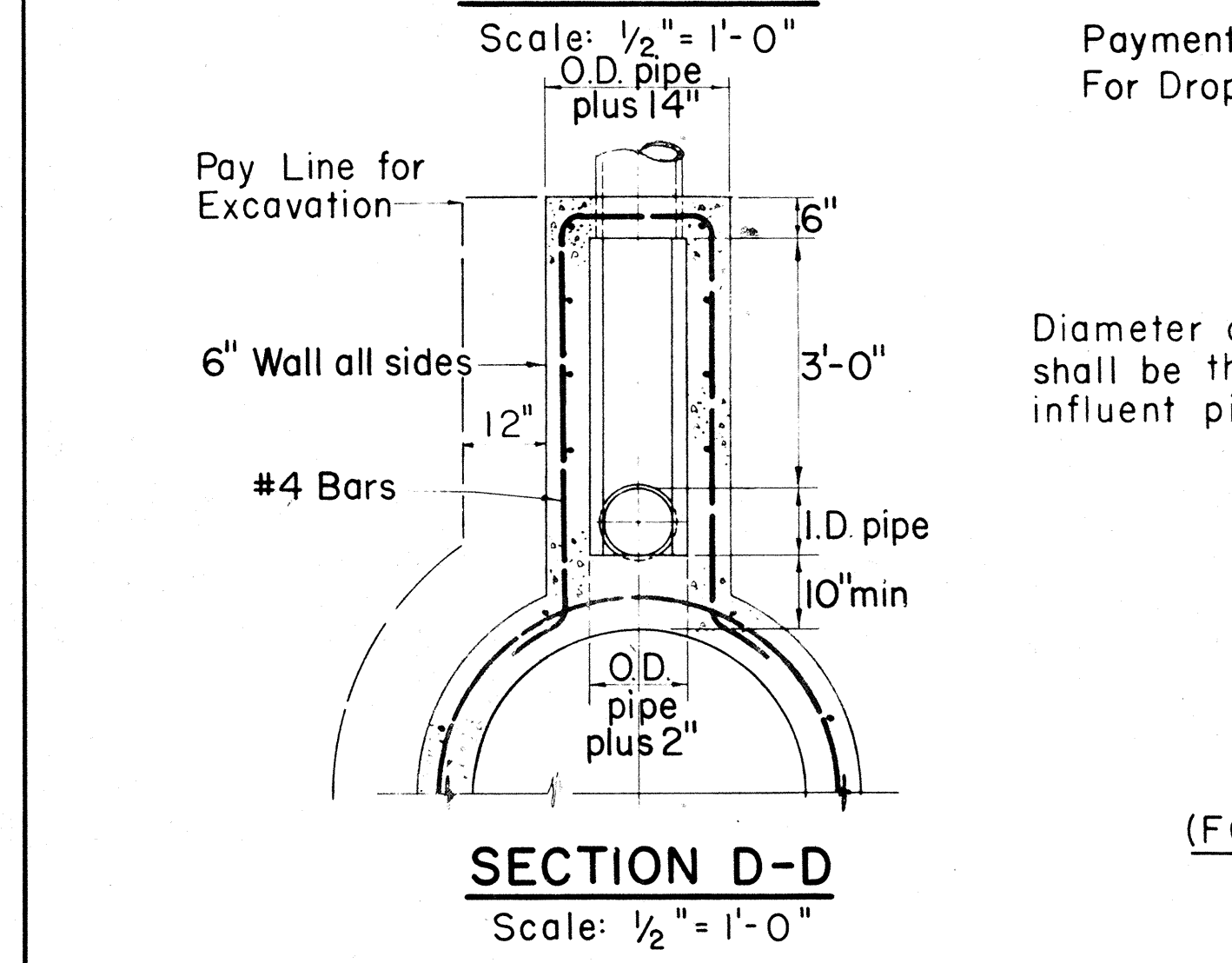
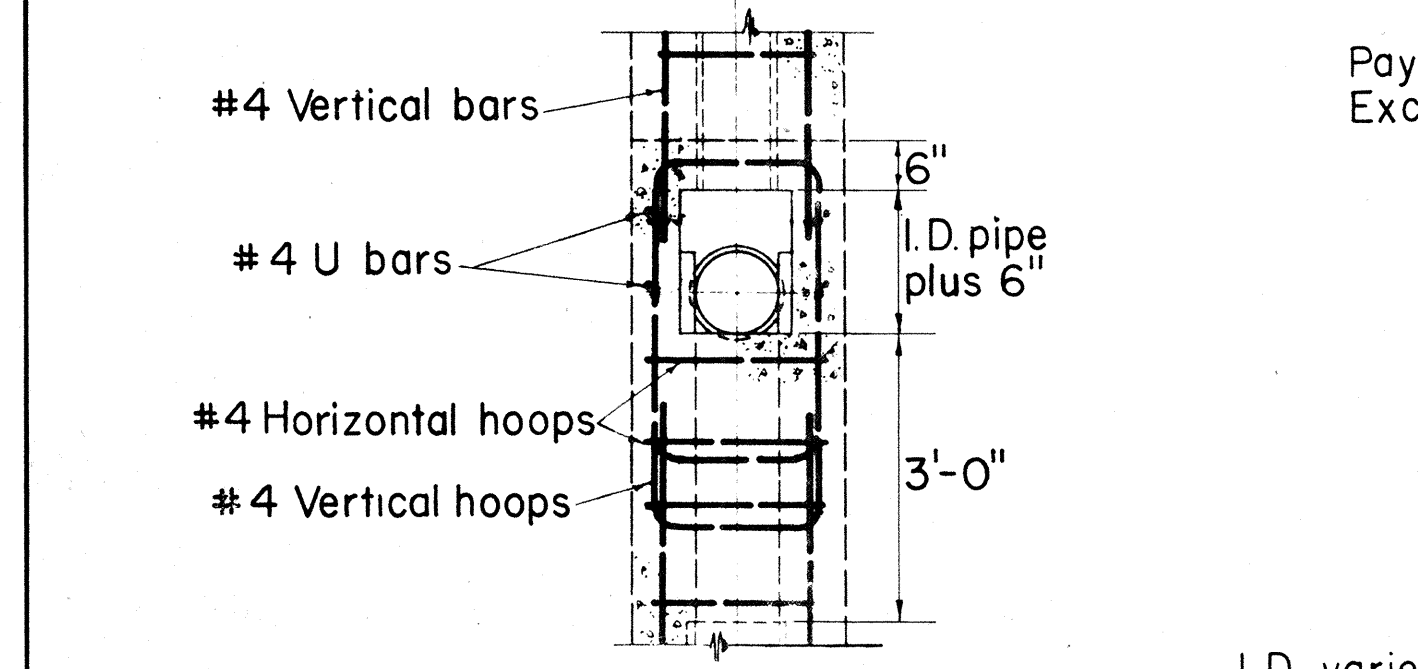
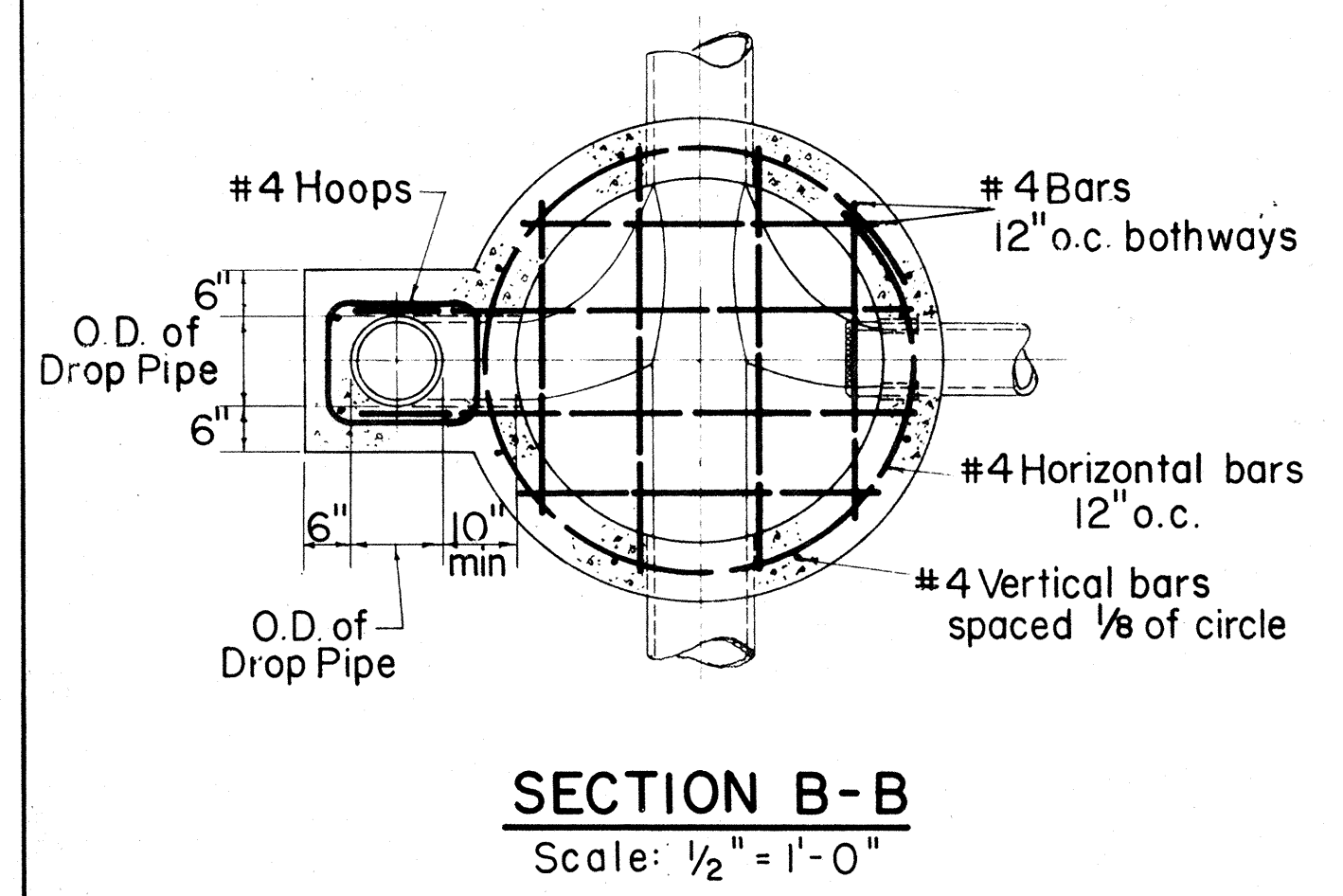
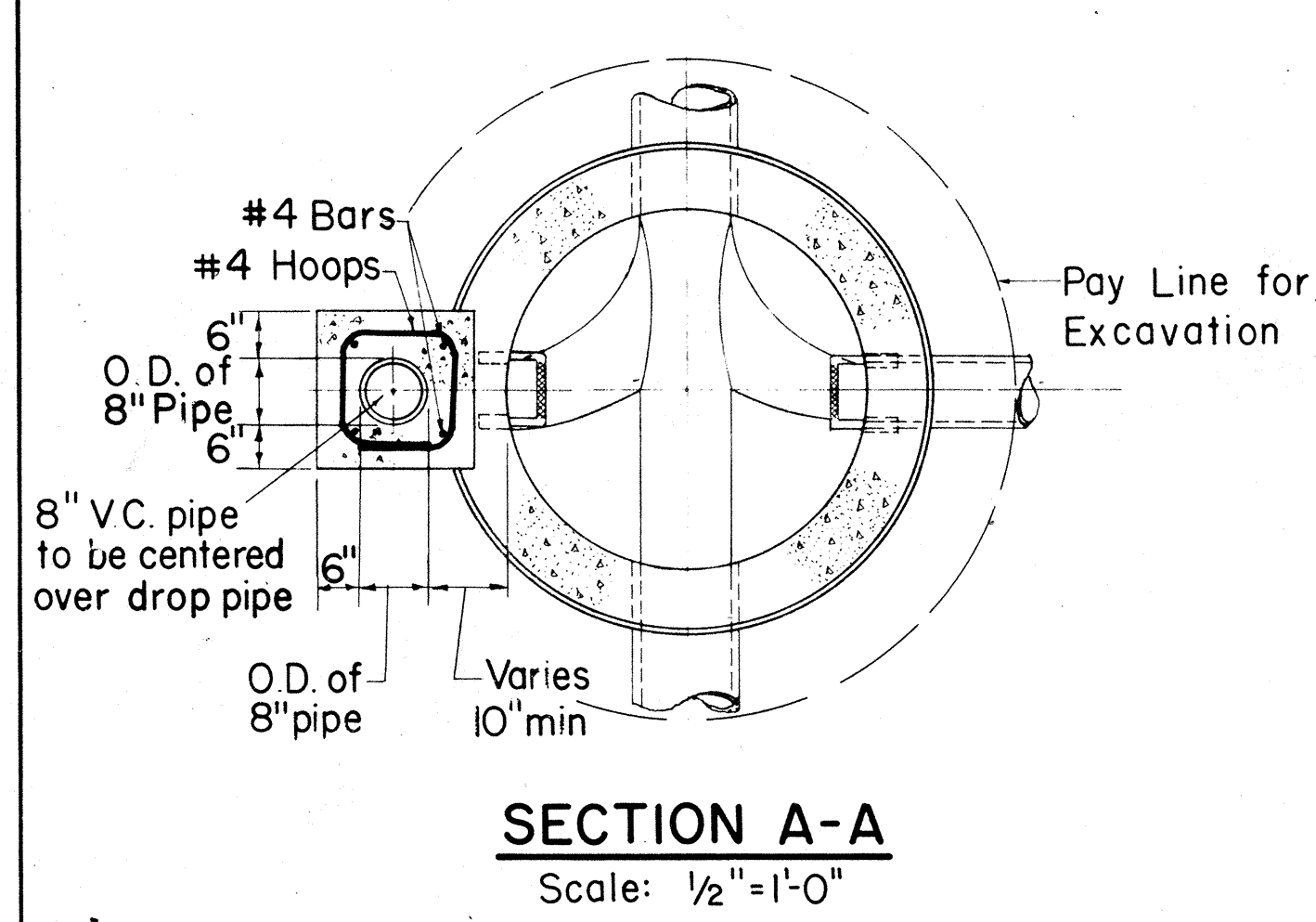


SECTION F-F

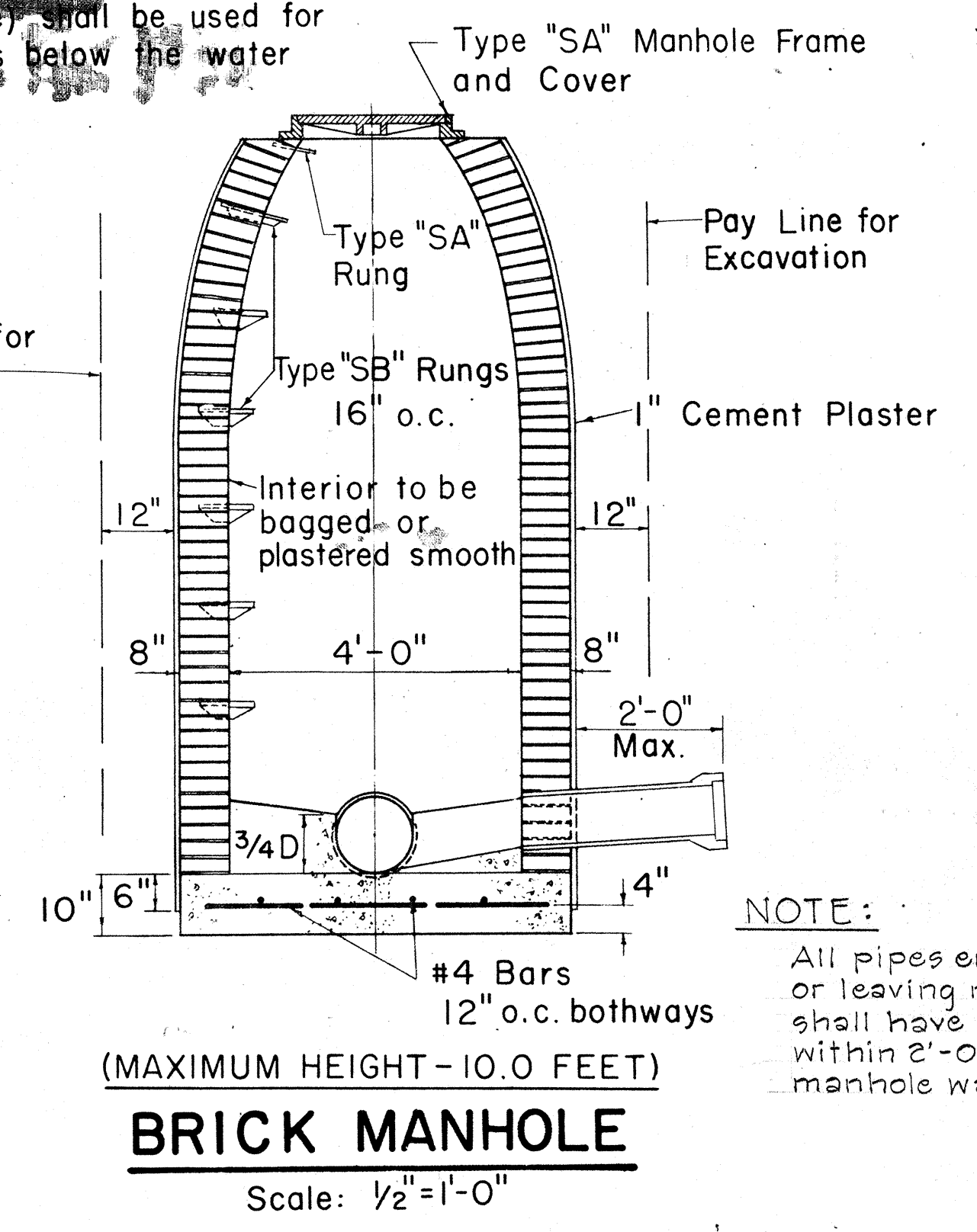
Scale: 1 1/2" = 1'-0"

DESIGNED BY	DATE
CHECKED BY	1-5-65
NOTED BY	1-5-65
ORIGINAL	PLAN
NO.	

FED. AID DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	I-HI-1(6) UNIT 3	1966	81	235



NOTE:
Reinforced concrete manhole walls (See detail of plain manhole) shall be used for portions below the water table.



NOTE:
All pipes entering or leaving manholes shall have a joint within 2'-0" of the manhole wall.

Payment for excavation for manholes shall be made under unit price for trench excavation and shall be measured to one foot outside of walls from original ground elevation to authorized bottom elevation.
Payment for manhole walls (brick, or cast-in-place concrete) shall include brick, mortar, concrete, reinforcing steel, cast-iron steps, galvanized wrought iron rungs, and plastering.

- NOTE:**
- Manhole rungs shall not be aligned above any flow line except in drop manhole.
 - No rungs shall be installed in manholes less than 3' high.
 - When not otherwise noted, manhole stubs shall be sloped as follows:

Pipe Size	Rise Per Foot
6"	1/8"
8"	3/32"
10"	1/16"
12"	1/16"

- NOTE:**
- All reinforcing rods interfering with pipes shall be bent to clear them.
 - Bar lap to be 40 diameters in length.
 - Data for special manholes not shown shall be similar to that for plain manholes.
 - Size of drop pipe in all Drop Manholes shall be same as influent line.

- Manhole wall to be of reinforced concrete to height 1' above normal ground water table.

APPROVED:

SEWER SYSTEM DIRECTOR,
DIVISION OF SEWERS

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
DIVISION OF SEWERS
CITY & COUNTY OF HONOLULU

STANDARD DETAILS

SEWERS - DROP MANHOLE AND BRICK MANHOLE DETAILS

INTERSTATE HIGHWAY (LUNALILO FREEWAY)
F.A.I. PROJ. NO. I-HI-1(6) UNIT 3
Scale: As Noted Date: Aug. 1966

SHEET NO. 17 OF 17 SHEETS