

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	65B-01-01M	2001	53	58

GENERAL NOTES

- The Existence And Location Of Overhead and Underground Utilities And Facilities as Shown on the Plans Are From Existing Records with Various Degrees of Accuracy and is Not Guaranteed as Shown or that Other Obstacles May Not Be Encountered During the Course Of the Work. The Contractor Shall Exercise Extreme Caution Whenever Construction Crosses or is in Close Proximity of Underground Lines and Shall Maintain a Minimum 13'-0" Clearance When Operating Equipment Within or Under any Overhead Lines. The Contractor Shall be Responsible And Shall Pay For All Damages To The Existing Utilities, As Well As Adjust Electrical Work To Account For Any Encountered Conflict With Existing Utilities As Incidental Costs.

Telephone/
Catv Lines:

Contractor To Obtain Excavation Clearance 3 Working Days Prior To Any Excavation Work. Use Extreme Caution During Excavation.

Water Lines:

Contractor To Call Board Of Water Supply, City And County Of Honolulu For Field Locations Of Water Mains And Appurtenances A Minimum Of 48 Hours Before Starting Project Excavation.

Sewer Lines:

Contractor To Call Division Of Sewers, City And County Of Honolulu For Field Locations Of Sewer Lines And Laterals A Minimum Of 48 Hours Before Starting Project Excavation.
- The Minimum Clearance Between Fire Hydrants And Utility Poles Or Light Standards Shall Be 3'-0".
- The Contractor Shall Obtain All Necessary Permits. The Contractor Shall Contact HECO's Mapping and Records Division located at 820 Ward Avenue, 4th Floor, Two Weeks Prior to Starting Construction For Field Verification of HECO's Underground Facilities.
- The Contractor Shall Be Liable For Any Damages To Hawaiian Electric Co.'s Facilities And Shall Immediately Report Such Damages to Hawaiian Electric Co.'s Trouble Dispatcher At 548-7961.
- The Contractor Shall Comply With The Directives Of The State of Hawaii Occupational Safety And Health Law (DOSH). Any Citation (fine) Received By The State For Noncompliance By The Contractor Shall Be Deducted From The Progress Payments.
- For Verifying The Location Of Underground Ductlines And For Assistance In Providing Proper Support And Protection Of The Underground Ductlines, The Contractor Is To Contact Hawaiian Electric Co. Underground Division at 548-7395 a Minimum Of 72 Hours In Advance. The Cost For HECO's Assistance Will Be At The Contractor's Cost.
- The Contractor shall exercise extreme caution when the excavation and construction crosses or is in close proximity of underground telephone and signal cable facilities and shall maintain adequate clearance for his equipment while working close to and/or under overhead facilities. Any damages to the existing underground facilities shall be repaired and paid for by the Contractor.

- When trench excavation is adjacent to existing structures or facilities, the Contractor is responsible for properly sheeting and bracing the excavation and stabilizing the existing ground to render it safe and secure from possible slides, cave-ins, and settlement, and facilities with beams, struts, or underpinning to fully protect it from damage. This work shall be considered incidental to various contract items.

HECO NOTES

- The Existence And Location Of HECO's Overhead And Underground Facilities As Shown On The Plans Are From Existing Records Of Varying Degrees Of Accuracy And Are Not Guaranteed As Shown. Therefore, The Contractor Is To Exercise Extreme Caution When The Excavation Crosses Or Is In Close Proximity Of Underground Electrical Facilities And Maintain A Minimum 13'-0" Clearance While Working Close To And/Or Under HECO's Overhead Facilities.
- The Contractor Shall Comply With The State Of Hawaii's Occupational Safety And Health Laws (DOSH) Including All Amendments.
- When Trench Excavation Is Adjacent To Or Beneath HECO's Existing Structures Or Facilities, The Contractor Is Responsible For:

a) Sheetting And Bracing The Excavation To Prevent Slides, Cave-ins And Settlements.

b) Protecting Existing Structures Or Facilities With Beams, Struts Or Under-Pinnings.
- For Pole Bracing Instructions, The Contractor Shall Call The HECO District Construction Superintendent at Waiau, Phone 455-6233, A Minimum Of 72 Hours In Advance.
- Any Work Required To Relocate HECO Facilites Shall Be Done By HECO And The Contractor Shall Be Responsible For All Coordination And For Cost If Applicable.
- Should It Become Necessary To Temporarily Relocate Any HECO Facilities To Enable The Contractor To Perform His Work In A Safe And Expeditious Manner In Fulfilling His Contract Obligations, These Temporary Relocations Will Be Done By HECO Or By The Contractor Under HECO's Supervision, With All Cost Being Borne By The Contractor.
- The Contractor Shall Be Liable For Any Damages To HECO's Facilities. Any Damages To HECO's Facilities Will Be Reported Immediately To HECO's Trouble Dispatcher At 543-7874.
- Existing HECO Overhead And Underground Facilities As Shown On These Plans Or Whose Approximate Locations Within The Project Boundaries Have Been Made Known By Any Reasonable Means At Any Time To The Contractor Shall Be Protected At All Times By The Contractor During Construction. Costs For Damages To HECO Facilities Shall Be Borne By The Contractor. This Repair Work Shall Be Done By HECO.
- The Contractor Shall Obtain All Necessary Permits. The Contractor Shall Contact HECO's Mapping And Records Division Located At 820 Ward Avenue, 4th Floor, Two (2) Weeks Prior To Starting Construction For Field Verification Of HECO's Underground Facilities.
- All Existing Utility Facilities Shall Remain In Place Until The Proposed Temporary Or Permanent Facilities Are Completed.

- All Existing Facilities Shown Are Approximate Only. Contractor Shall Verify Their Locations And Make Adjustemnts To Any New Or Existing Facilities As Directed By The Engineer.
- All Proposed Manholes, Pullboxes, Conduits/Ductlines, Including Riser Bends, Manhole Frames And Covers, And Ground Rods Required Within The Road Right-Of-Way Shall Be Installed By The Contractor.
- The Term "Engineer" For The Utility Companies Shall Also Mean His Delegated Representative And/Or Utilities Inspector Of Record.
- The Term "Pullbox" Shall Mean Splice Can, Splice Or Service Box, Pullbox Or Handhole.
- The Term "Manhole" Shall Mean Any Subsurface Enclosure In Which Men Must Enter To Work.
- The Contractor Shall Stakeout All Facilities For Verification By The Utility Involved And/Or Affected Before Proceeding.
- The Location And Depth Of All Manholes And Pullboxes And The Routing Of All Ductlines Shall Be Verified By The Utilites Before Excavation Starts.
- The Contractor Shall Furnish And Install All Materials To Complete The Construction Of The Underground Ductline System Unless Otherwise Specified.
- All Manholes, Pullboxes, And Ductlines To Be Installed In Concrete Shall Be Inspected And Approved By The Utility Company Before Placing Concrete. All HECO Ducts Shall Be Encased In Concrete Jacket Unless Otherwise Specified. For HECO Facilities, Notify HECO's Inspection Division (Phone: 543-5668) 48 Hours Before Placing Concrete.
- Manhole Depths Shown On Plans Refer To Inside Depth of Manhole.
- The Minimum Depth of Ductlines From Finish Grade To Top Of Concrete Encasement Or Cover Is As Follows:

a) Within Roadway: 3'-0"

b) Within Sidewalk Area: 3'-0"
- All Completed Ductlines Shall Be Mandrel Tested By The Contractor In The Presence Of The Utility Company's Inspector Using The Utility Company's Standard Practice.
- The Contractor Shall Furnish And Install A 1/8" Polyolefin Pull Line In All Completed Ductlines After Mandrel Testing Is Completed.

Approved:

Verizon Hawaii Inc. 5/2/01
Date

Hawaiian Electric Company
Date

DRAWING REVIEW

Reviewed for HECO's Facilities Only
Date 5/1/01 By *AK*
Engineering Department
Hawaiian Electric Company, Inc.

HECO's review of these drawings shall in no way relieve the Customer, its Consultant, its Contractor or anyone acting on the Customer's behalf from the responsibility for engineering, design, materials and any other liability associated with this project.



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

C. Iam

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
**GENERAL ELECTRICAL AND
UTILITY NOTES**

MOKAPU SADDLE ROAD SLOPE STABILITY
Vicinity of Mikiola Dr. to Kahinani Place
Project No. 65B-01-01M

Scale: None Date: May, 2001

SHEET No. 1 OF 4 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	65B-01-01M	2001	54	58

HECO NOTES CONT

24. The Contractor Shall Furnish His Construction Schedule To HECO At Least Forty-Five (45) Working Days Prior To Starting Any HECO Work.
25. The Contractor Shall Give HECO At Least Forty-Five (45) Working Days Notice To Proceed With Its Portion Of The Work.
26. The Contractor Shall Give HECO At Least Seventy-Five (75) Working Days Notice For Any Relocation Work Not Shown On The Plans. HECO Shall Not Be Responsible For Delays That Are Beyond Their Control. All HECO Temporary Relocations Not Shown On The Plans Are At The Contractor's Cost.
27. Barricading Of HECO's Facilities, If Required, Shall Be Done By Contractor. Breaking Into Existing HECO Facilities Shall Be Done By HECO.
28. HECO Shall Remove All Existing HECO Facilities Except As Noted On The Plans.
29. Special Note:
The Existing Electrical Cables In The Area Are Energized And Will Remain Energized During Construction. Only HECO Personnel Are To Handle These Cables And Erect Temporary Guards To Protect These Cables From Damage. The Contractor Shall Exercise Due Care And Precautions To Avoid Disturbance Of Energized Cables And Temporary Guards And Shall Work Cautiously At All Times To Avoid Accidents. The Contractor Shall Coordinate His Work With HECO's Underground Division And Inspection Division. (Phone: 543-7871)
30. Powerlines Running In Parallel With HTC Co Ductline Shall Not Be Installed Above Or Below HTC Co Ductline.
31. For Assistance In Providing Proper Support And Protection Of Underground Ductlines, The Contractor Shall Contact HECO's Underground Division at 543-7871, A Minimum Of 72 Hours In Advance. The Cost For HECO's Assistance Will be At The Contractor's Cost.
32. The Contractor Shall Install Schedule 80 PVC Conduit For All HECO Ductline. No Split Ducts Will Be Allowed. No Notching Of HECO Boxes Will Be Allowed.
33. When Excavating Near Utility Poles, The Contractor Shall Protect, Support, Secure And Take All Other Precautions To Prevent Damage To Or Leaning Of These Poles. Contractor Is Responsible For All Costs Associated To Repair Or Straighten Pole.
34. The Contractor Shall Provide To HECO Two (2) Sets of As-Built Drawings Showing The Offsets, Stationing And Vertical Elevation Of The Ductline(s) Constructed.

VERIZON HAWAII NOTES

1. The Contractor shall procure and pay for all licenses and permits and shall give all notices necessary and incident to the due and lawful prosecution of the work.
2. The Contractor shall obtain an excavation permit and toning request from Verizon Hawaii's Excavation Permit Section, located at 3239 Ualena Street, Third Floor, two weeks prior to the start of construction. Hours of business are 7:00 a.m. to 10:45 a.m. and 11:30 a.m. to 2:45 p.m. Monday through Friday, except holidays.
3. Prior to the excavation of the ductline, the Contractor shall request Verizon Hawaii to locate existing ductline wherever required. For underground cable locating and marking, five (5) working days advance notice is required. Three (3) working days advance notice is required for any inspection by a designated representative.

4. The locations of existing utilities are approximate only. The Contractor shall exercise extreme caution and shall maintain proper clearances whenever construction crosses or is in close proximity of Verizon Hawaii facilities. The Contractor shall verify their locations and shall be liable for any damages to Verizon Hawaii facilities. Any damages shall be reported immediately to Verizon Hawaii's Repair Section at #611 (24 hours) or to the Excavation Permit section at 840-1444 (normal working hours, Monday through Friday, except holidays). As a result of his operations, adjustment to the new ductline alignment, if required, shall be made to provide the required clearance.
5. The Contractor shall take necessary precaution not to damage existing cables or ducts. A Verizon Hawaii inspector or designated representative is required to be at any job site wherever there will be a breakage into or entry into any structure that contains Verizon Hawaii facilities. Temporary cable and duct supports shall be provided wherever necessary.
6. The Contractor shall notify Verizon Hawaii's inspector or designated representative minimum of 72 hours prior to excavation, bracing, or backfilling of Verizon Hawaii's structures or facilities.
7. All applicable construction work shall be done in accordance with the "Verizon Hawaii Standard Specifications for Placing Underground Telephone Systems" dated March 1999, all subsequent amendments and additions, and all other pertinent standards for telephone construction. Contractor shall familiarize his personnel by obtaining applicable specifications.
8. When excavation is adjacent to or beneath Verizon Hawaii's existing structures or facilities, the contractor shall:
A) Sheet and/or brace the excavation to prevent slides, cave-ins, or settlements to ensure no movement to Verizon Hawaii's structures or facilities.
B) Protect existing structures and/or facilities with beams, struts, or underpinning while excavating beneath them to ensure no movement to Verizon Hawaii's structures or facilities.
9. The Contractor shall brace all poles or light standards near the new ductline, manhole, or handhole during his operations.
10. The Contractor shall saw-cut A.C. pavement and concrete gutter wherever new manholes, handholes, or ductlines are to be placed and shall restore to existing condition or better.
11. The Contractor shall comply with the policy adopted by the Department of Planning and Permitting, City and County of Honolulu, concerning the replacement of concrete sidewalks after excavation work.
12. The underground pipes, cables, or ductlines known to exist by the Engineer from his search of records are indicated on the plans. The Contractor shall verify the locations and depths of the facilities and exercise proper care in excavating the area. Wherever connections of new utilities to existing utilities are shown on the plans, the Contractor shall expose the existing lines at the proposed connections to verify their locations and depths prior to excavation for the new lines.
13. Wherever connections to existing utilities are shown on the plans, the Contractor shall expose the existing lines prior to excavation of the main trenches to verify their locations and depths.
14. The Contractor, at his own expense, shall keep the project and surrounding area free from dust nuisance. The cost for supplementary measures, which will be required by the City and County, shall be borne by the Contractor.
15. The Contractor shall pump all manholes dry during final inspection. Cost shall be considered incidental to utility relocation charge.

16. The Contractor shall notify the Verizon Hawaii inspector 24 hours prior to the pouring of concrete or backfilling.
17. When connecting to manhole walls, all existing reinforcing bars shall be left intact. Ducts shall be adjusted in the field in order to clear reinforcing.
18. The Contractor shall be responsible for laying out all required lines and grades and shall preserve all bench marks and working points necessary to lay out the work correctly. The new ductline shall be adjusted by the Contractor to suit the existing conditions and the details as described in the plans.
19. Minimum concrete strength shall be:
For Ductline: 2500 psi at 28 days
For Manhole: 3000 psi at 28 days or as specified in design notes
20. Bends in the duct alignment, due to changes in grade shall have a minimum radius of 25 feet. All 90 degree C-bends at a pole or at the building floor slab penetration shall have a bend radius of ten times the diameter of the duct or greater.
21. After ductline has been completed, a mandrel with a square front not less than 12" long and having a diameter of 1/4" less than the inside diameter of the duct, shall be pulled through each duct after which a brush with stiff bristles shall be pulled through to make certain that no particles of earth, sand, or gravel have been left inside. Ducts shall be completely dry and clean.
22. All ducts and conduits shall have an 1800# polyester mule-tape (NEPTCO, WP1800P, Verizon Hawaii material Code No. 571154) installed throughout its entire length. All ducts shall be capped to prevent entry of foreign material during construction and at the completion of installation. Cost shall be considered incidental to duct and conduit installation.

Approved:

Verizon Hawaii Inc. Date 5/2/01

Hawaiian Electric Company Date

DRAWING REVIEW

Reviewed for HECO's Facilities Only

Date 5/1/01 By Akh
Engineering Department
Hawaiian Electric Company, Inc.

HECO's review of these drawings shall in no way relieve the Customer, its Consultant, its Contractor or anyone acting on the Customer's behalf from the responsibility for engineering, design, materials and any other liability associated with this project.



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C. K. M.

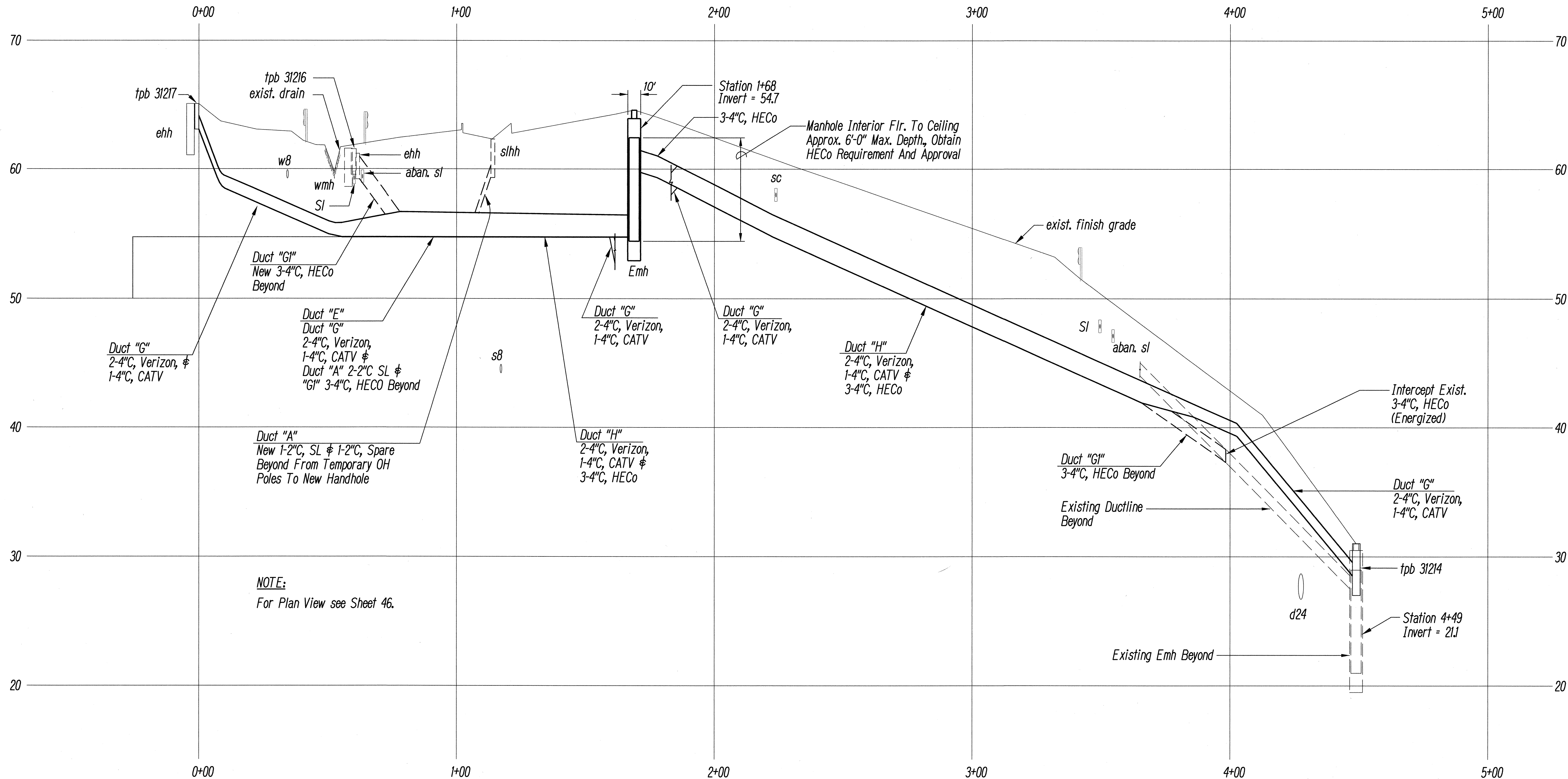
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
**GENERAL ELECTRICAL AND
UTILITY NOTES**

MOKAPU SADDLE ROAD SLOPE STABILITY
Vicinity of Mikiola Dr. to Kahinani Place
Project No. 65B-01-01M

Scale: None Date: May, 2001

SHEET No. 2 OF 4 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	65B-01-01M	2001	55	58



Approved:

Wagdy Salamoun 5/15/01
 Chief, Wastewater Branch, DPP Date

Joe M. Lee 5/15/01
 Verizon Hawaii Inc. Date

Leona L. Porun 5/15/01
 Hawaiian Electric Company Date

Leona L. Porun 5/15/01
 Oceanic Cable Date

PROFILE - HANDHOLE NO. 31217 TO 31214

Horizontal Scale: 1" = 20'

Vertical Scale: 1" = 4'

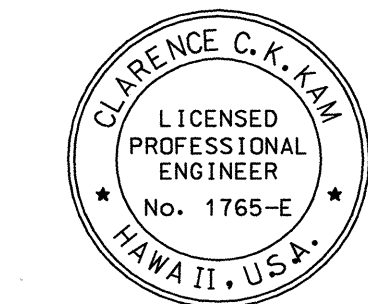
DRAWING REVIEW

Reviewed for HECO's Facilities Only

Date 5/11/01 By *John C. Lee*

Engineering Department
 Hawaiian Electric Company, Inc.

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 OR UNDER MY SUPERVISION.

C. Kim

STATE OF HAWAII

DEPARTMENT OF TRANSPORTATION

HIGHWAYS DIVISION

ELECTRICAL PROFILE

MOKAPU SADDLE ROAD SLOPE STABILITY

Vicinity of Mikiola Dr. to Kahinani Place

Project No. 65B-01-01M

Scale: As Shown

Date: May, 2001

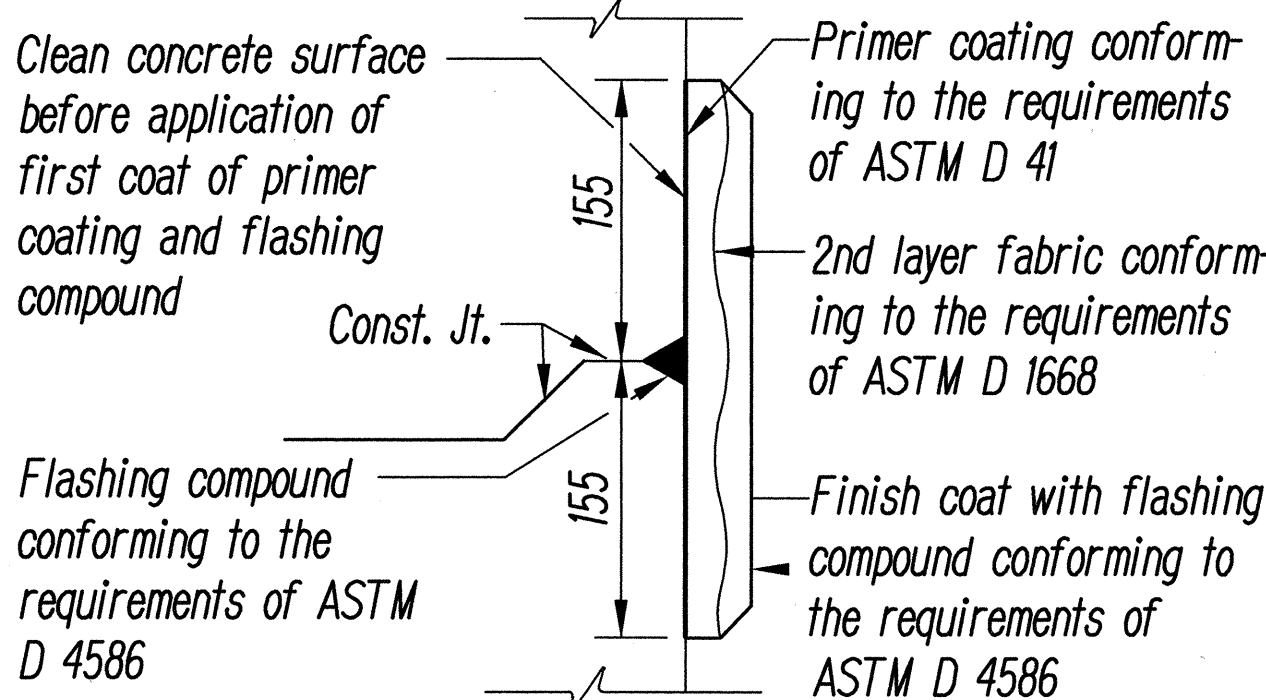
SHEET No. 3 OF 4 SHEETS

55

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	65B-01-01M	2001	56	58

GENERAL NOTES

- Provide a minimum of one 16 dia. x 2.5m Copperweld Ground Rod in each pullbox. When directed by the Traffic Signal Inspector/Engineer, install additional Ground Rods. Cost of Ground Rods shall be incidental to the pullboxes.
- All pre-cast concrete pullboxes shall be manufactured in two pieces.
- The pullbox w/ cover shall be capable of supporting an MS 18 Loading.
- The max. weight of the pullbox cover shall not exceed 27 kilograms.
- The openings for the conduits on all pullboxes shall be pre-cast concrete knockouts.
- After installing the conduits in the openings of the pullboxes, Contractor shall fill the excess opening in the pre-cast knockouts with conc. mortar.
- Prior to installing the pullboxes, the Contractor shall level the bottom of the trench and achieve a minimum of 95% relative compaction of the bottom of the trench.
- All concrete shall be Class A (21MPa/3000 P.S.I., min.).
- Rebars shall be Grade 300 and all lapped splices shall be 360mm min.
- The #57 or #67 sized aggregate shall conform to latest version of AASHTO M43 (ASTM D 448).
- Type "C" Pullbox shall be installed in a location protected from vehicular traffic (i.e. raised sidewalk, behind A.C. curbs, traffic signal standard or pipe guards).



TYPICAL FLASHING COMPOUND WATERPROOFING DETAILS

Not to Scale



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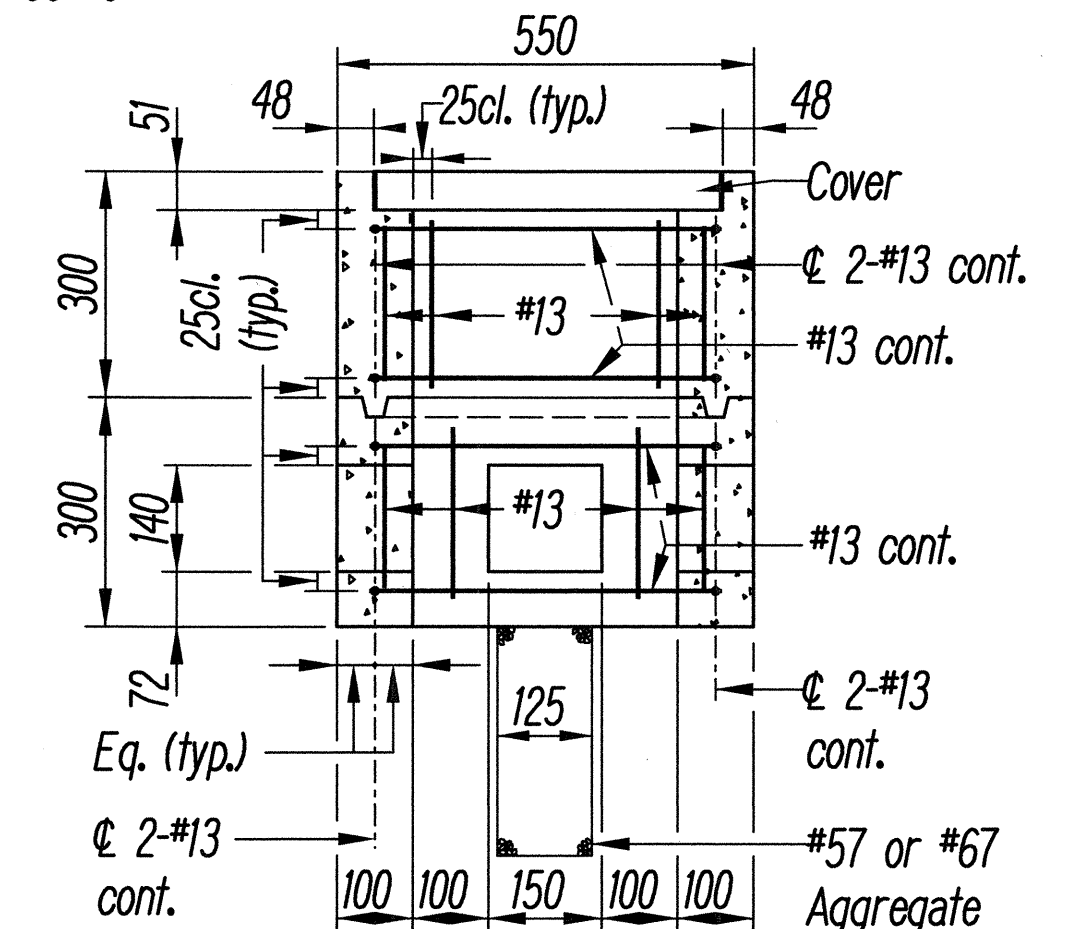
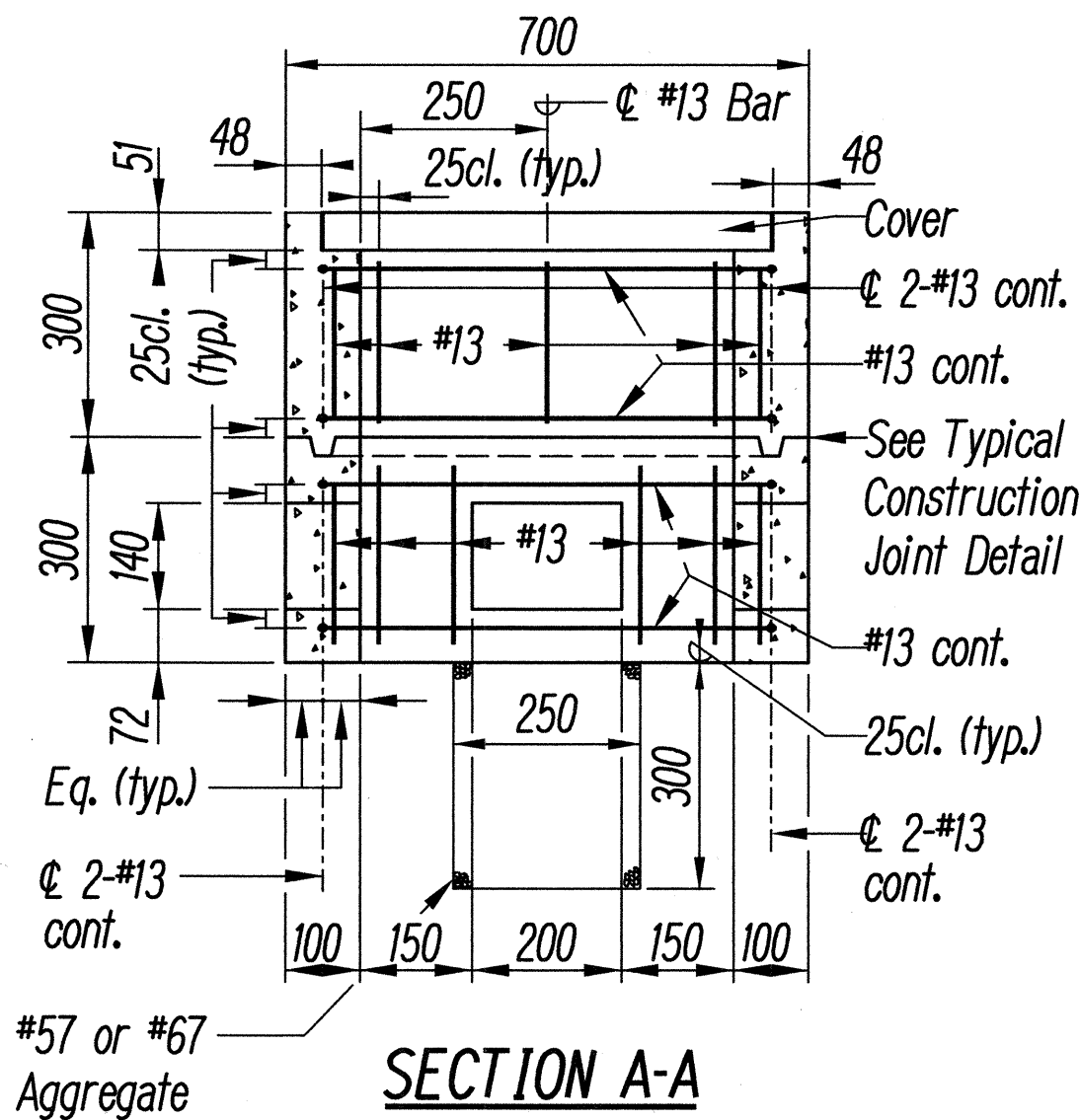
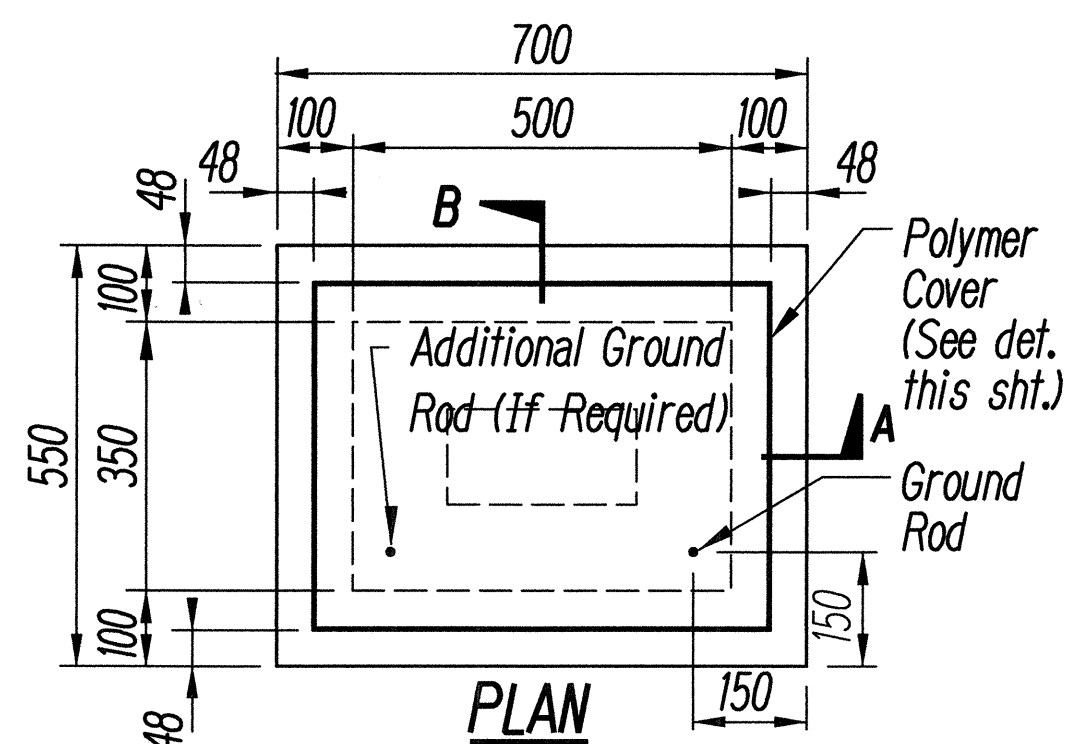
C. Yam

PULLBOX & COVER DETAILS

MOKAPU SADDLE ROAD SLOPE STABILITY
Vicinity of Mikiola Dr. to Kahinani Place
Project No. 65B-01-01M

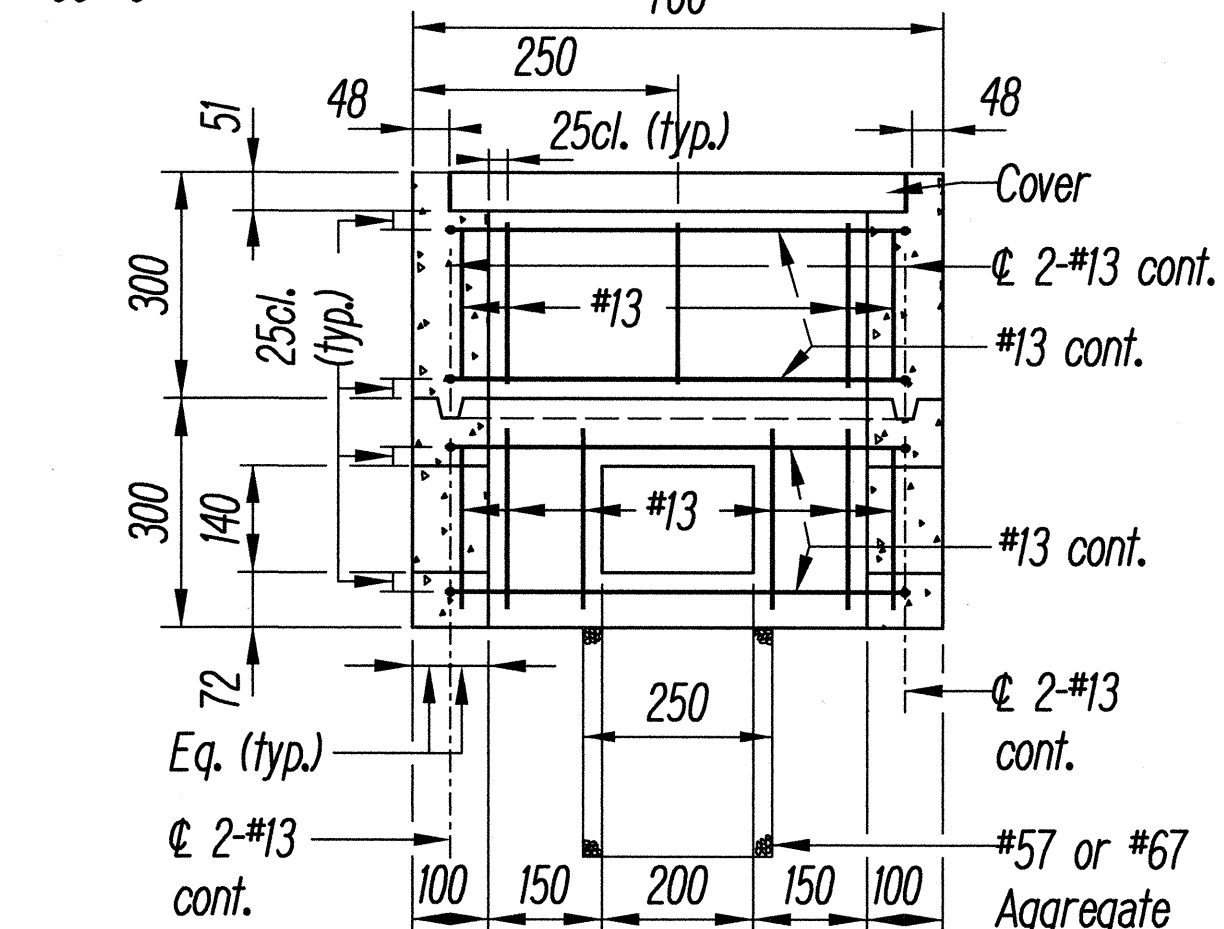
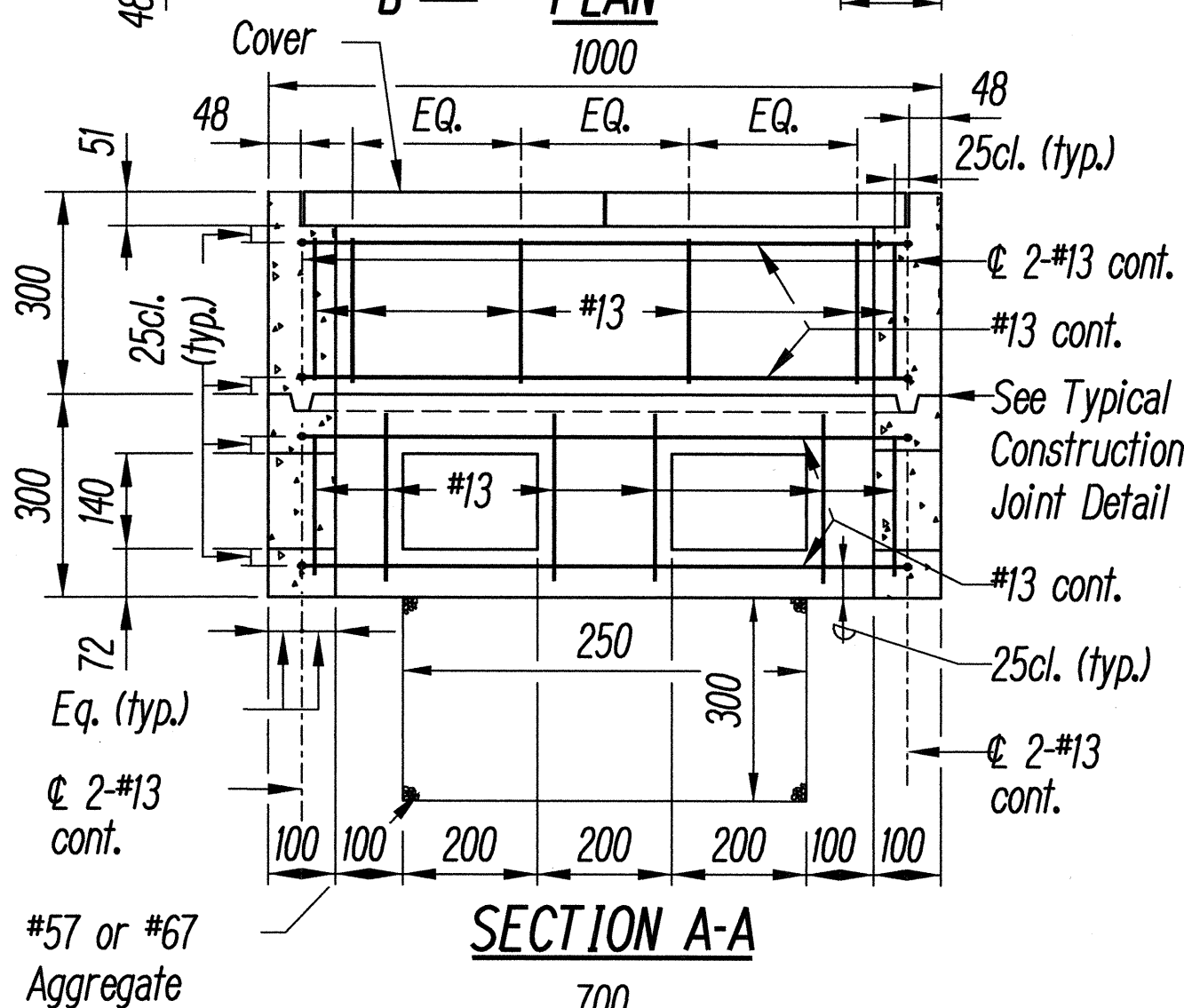
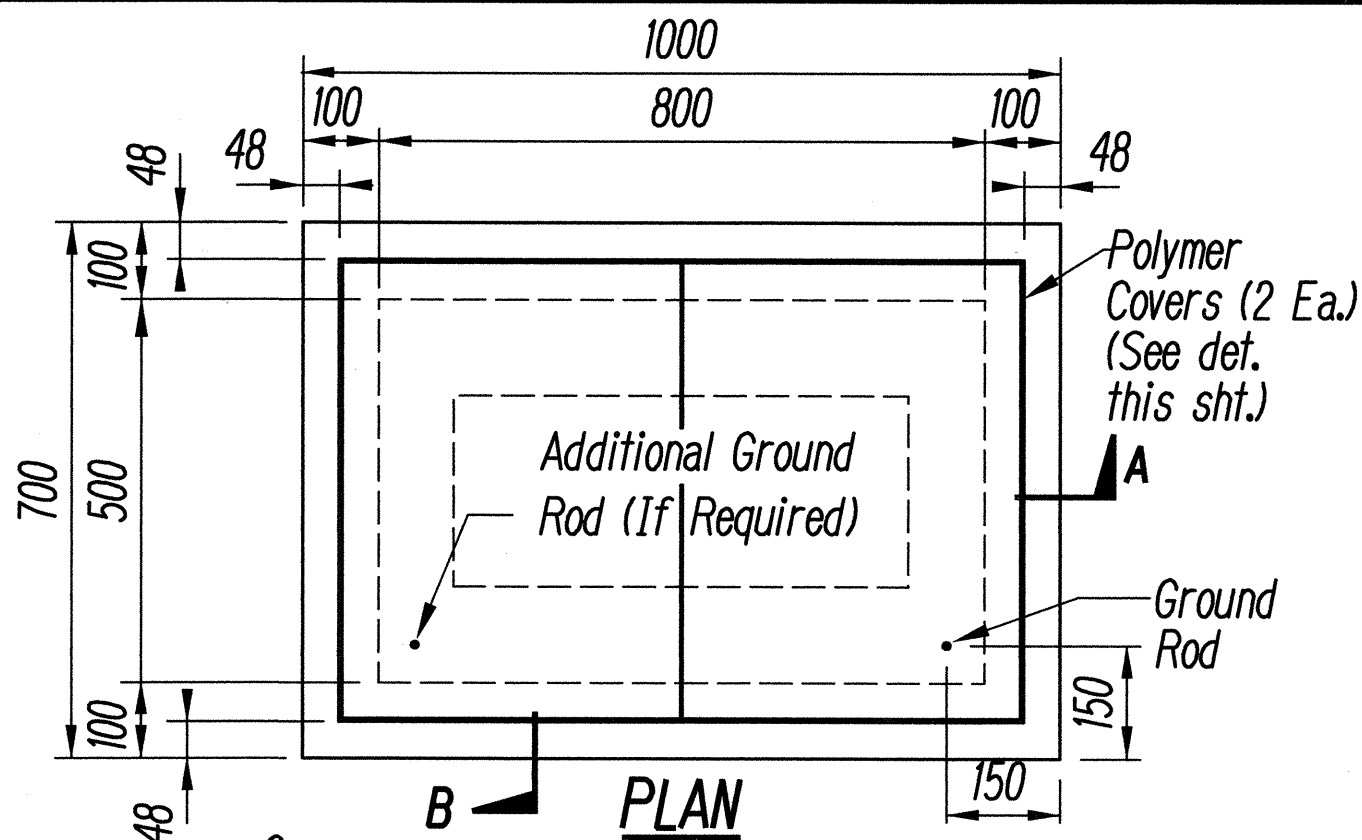
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SHEET No. 4 OF 4 SHEETS



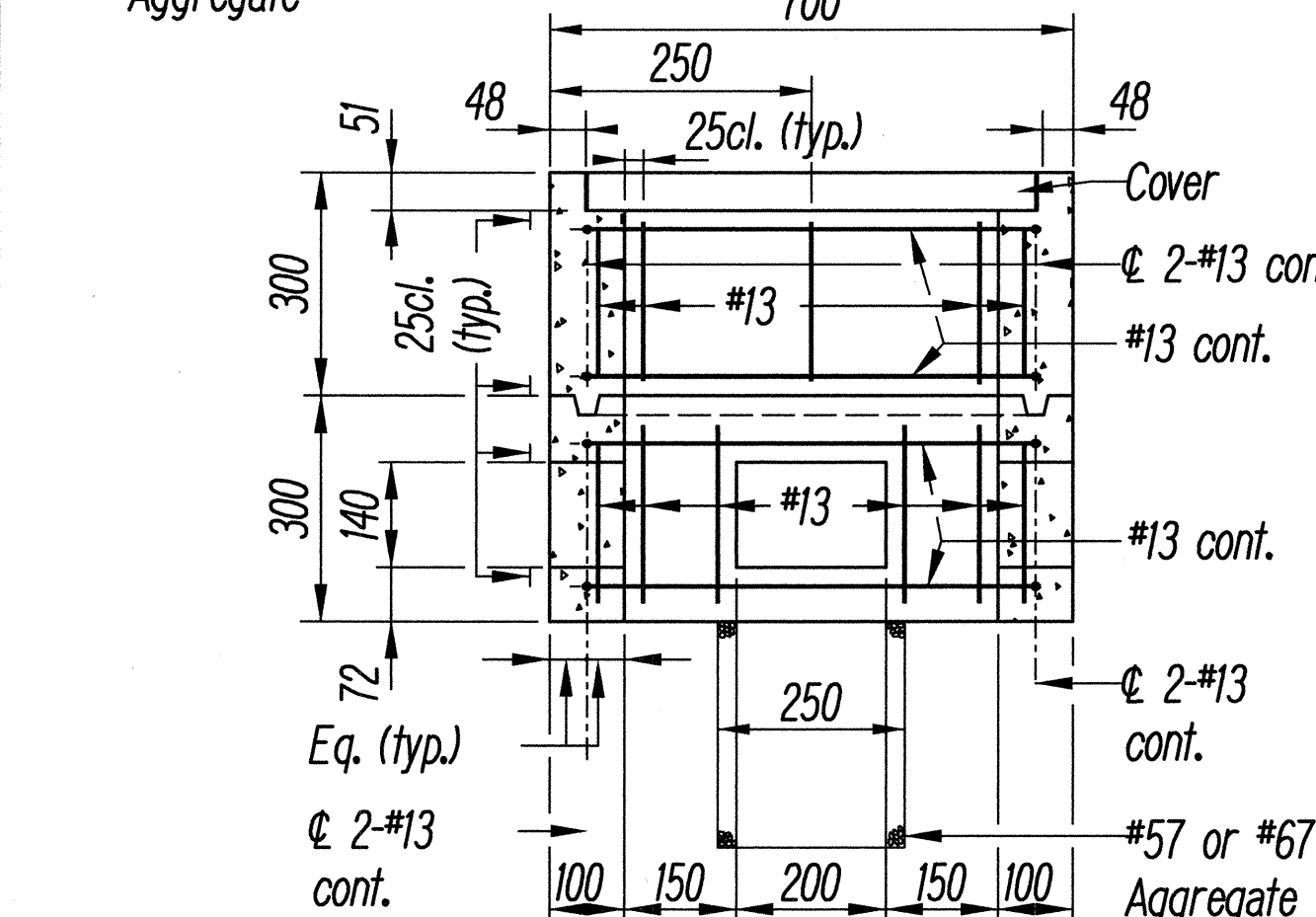
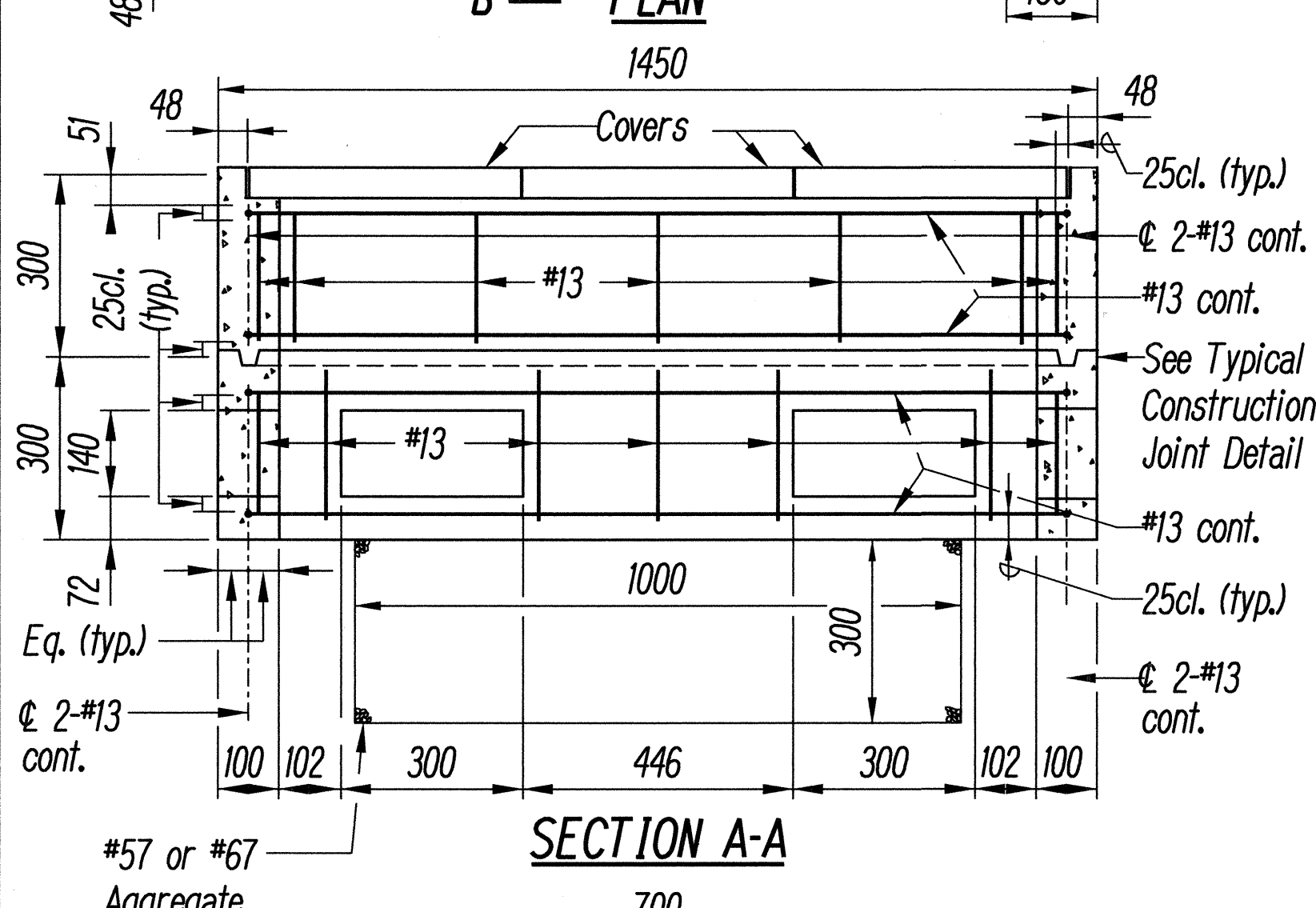
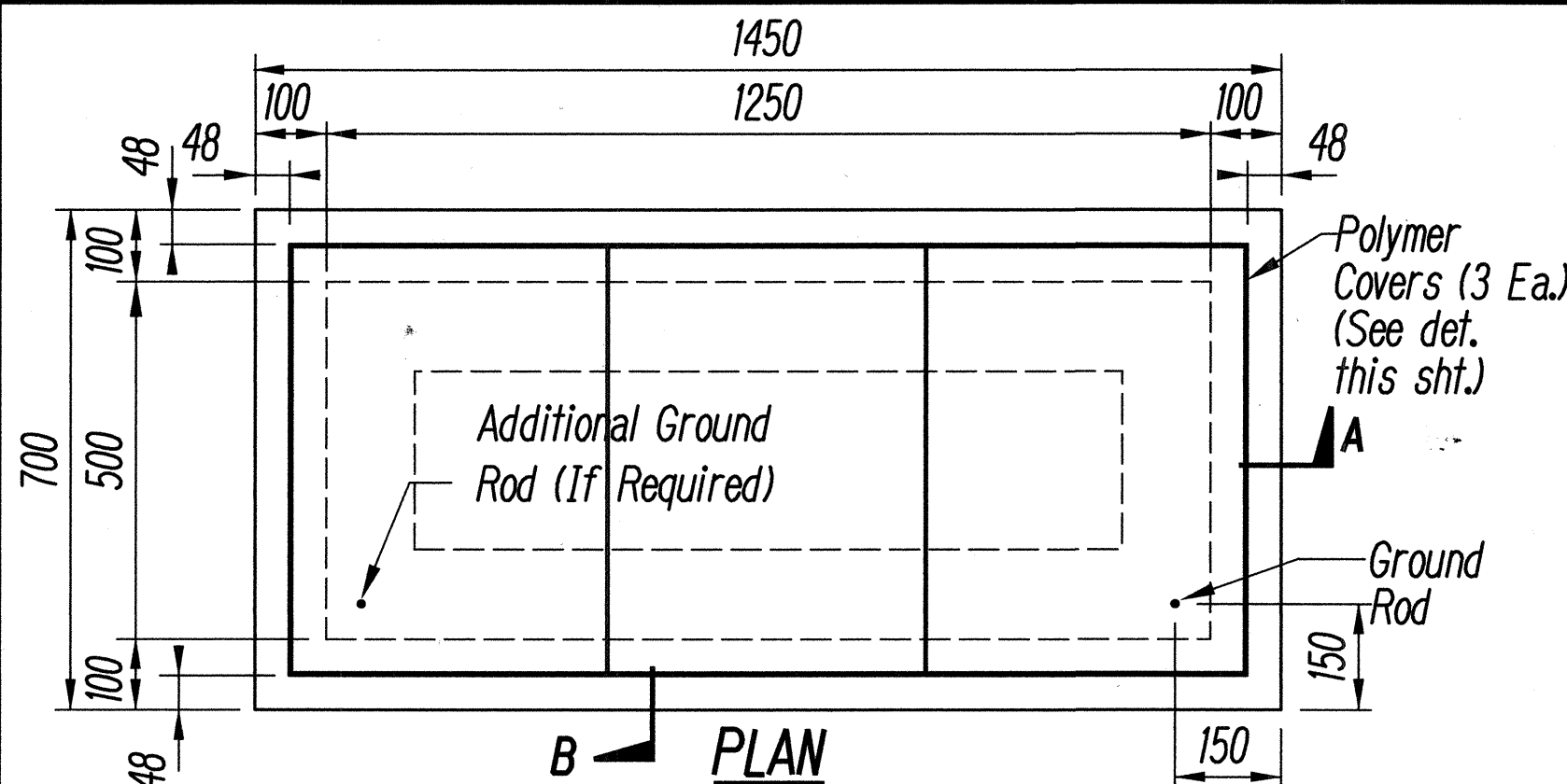
TYPE "A" PULLBOX (Old Type "B")

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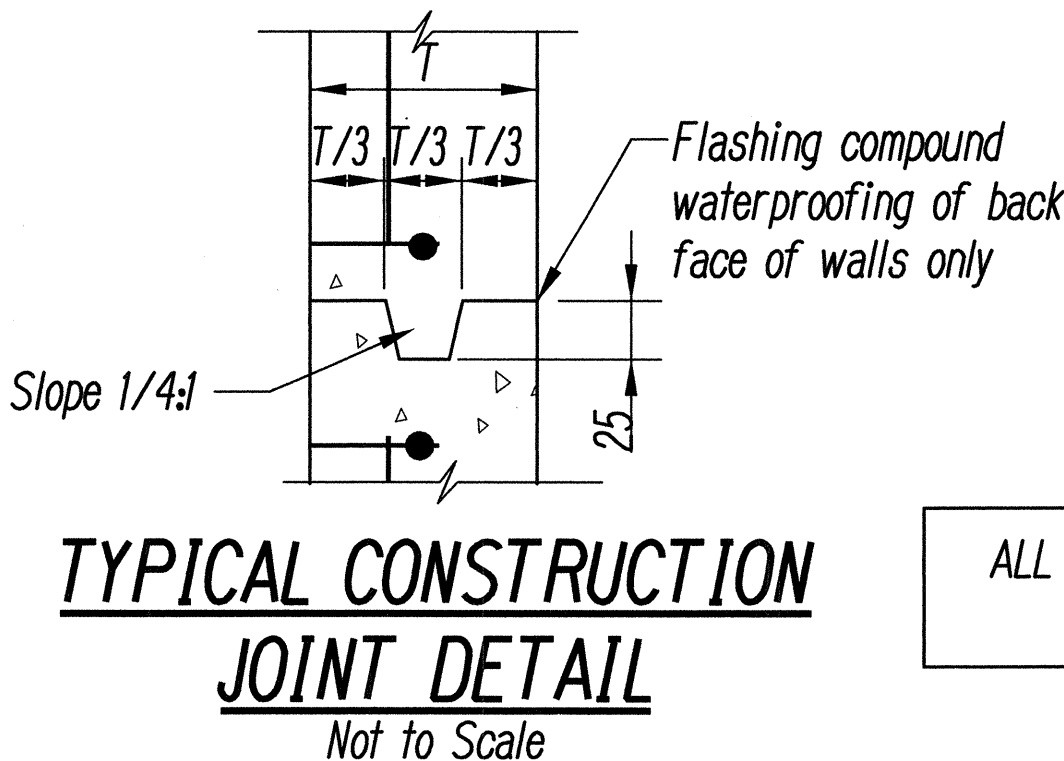
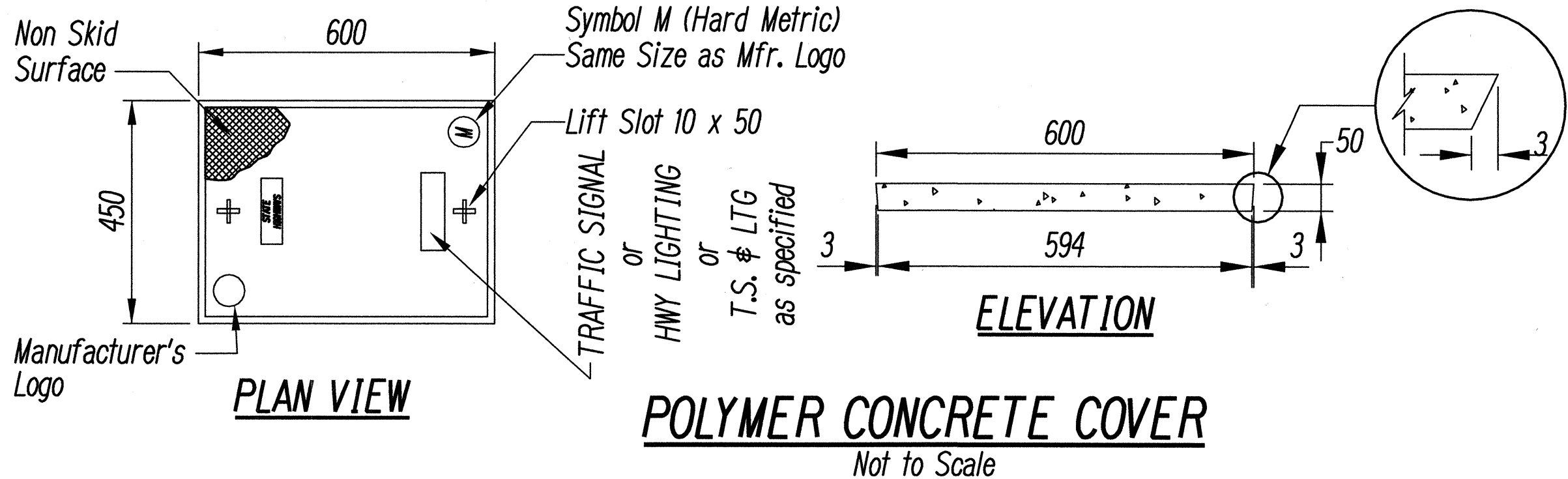
TYPE "B" PULLBOX (Old Type "C")

Scale: 1:10



TYPE "C" PULLBOX (Old Type "D")

Scale: 1:10



ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN