



SECTION I

BASIS OF DESIGN TECHNICAL MEMORANDUM

LAKEVIEW LIFT STATION RENOVATION PROJECT

FOR

**COMMUNITY SERVICES AREA 64
SPRING VALLEY LAKE, CA.**

**PROJECT NO.: 30.30.0023
PART 1**



Lakeview Sewer Lift Station Rehabilitation - Phase I

Basis of Design Technical Memorandum

CSA 64 - Spring Valley, CA

Prepared for:

San Bernardino County

Department of Public Works

Special Districts

Prepared by.

Kimley»Horn

April 12, 2022

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ACRONYMS

APN	Assessor's Parcel Number
CSA	County Service Area
DIP	Ductile Iron Pipe
FPS	Feet Per Second
GAL	Gallons
GPD	Gallons Per Day
GPM	Gallons Per Minute
IN	Inches
KH	Kimley-Horn
MIN	Minutes
MGD	Million Gallons Per Day
PSE	Plans, Specifications, and Estimates
RTU	Remote Telemetry Unit
SCADA	Supervisory Control and Data Acquisition
VCP	Vitrified Clay Pipe
VVWRA	Victor Valley Water Reclamation Authority

BASIS OF DESIGN TECHNICAL MEMO

To: San Bernardino County
Department of Public Works - Special Districts

From: Sarp Sekeroglu, P.E.
Renee Chuang, P.E.
Sam Wuellner, E.I.T.
Kimley-Horn and Associates, Inc.

Date: April 12, 2022

Subject: Lakeview Sewer Lift Station Rehabilitation

I. INTRODUCTION

Background

This Preliminary Design Report outlines the preliminary design for the rehabilitation of the Lakeview Sewer Lift Station in CSA 64 (Project). Kimley-Horn has been retained by San Bernardino County Department of Public Works - Special Districts (DPW-SD) to complete the design report and final design PS for the rehabilitated lift station.

The Lakeview Lift Station is located on a 0.12-acre parcel, APN 0480-241-01, between Spring Valley Lake and Lakeview Drive. A vicinity map is presented in **Exhibit A**. The sewer lift station was constructed in 1971 and consists of two existing concrete wet well structures with hatches, screw pumps, electrical equipment, and a SCADA system. The sewage is intercepted in Lakeview Drive and flows by gravity into the wet well. After it is pumped towards grade, the sewage flows by gravity back into Lakeview Drive where it continues flowing northwest, connecting to the downstream CSA 64 system and eventually discharging to the Victor Valley Water Reclamation Authority (VVWRA) system for ultimate treatment. The two manholes in Lakeview Drive are connected by a sewer bypass to accommodate sewage flow during construction or maintenance to the lift station.

The County has received several complaints of odors coming from the sewer lift station. During several site visits, it was observed that the screw pumps create high turbulence flows that may contribute to the malodorous conditions. Odors were not observed when the pumps were not running. Further, the sewer lift station screw pumps have a history of failure and surrounding equipment show signs of rust and corrosion. Kimley-Horn had previously prepared an Odor and Corrosion Control Study (Study) in 2018, for the Lakeview Lift Station in response to several

complaints from residences of odor. The Study also observed that odors were only detectable during pump operation.

The sewer lift station will be rehabilitated in two phases. Phase I will involve replacing the existing screw pumps and submersible pump with new submersible pumps and additional electrical connections. Photos of the lift station from Kimley-Horn's initial site visit are included in **Appendix A**. Phase II will include installation of a dedicated odor control system. The lift station odor and any new complaints will be monitored after the installation of submersible pumps to determine if an additional odor control system, or Phase II, is necessary.

Existing Conditions

The existing sewer lift station currently serves the residents around Spring Valley Lake (approximately 4,215 residential lots). From the lift station, the sewer flows northwest on Lakeview Drive to Tahoe Lane where it continues beyond the sewer shed and connects to an existing sewer system. The existing sewershed is presented in **Exhibit E**. As built plans provided by the DPW-SD depicting the existing lift station and surrounding sewer infrastructure are included in **Appendix B**.

Future Conditions

Future connections to the existing sewer lift station within CSA #4 include: Victory Valley College, Victor Valley College Stadium, Lakeview Middle School, Endeavour School of Exploration, Excelsior Charter School, 39 additional residential lots, and a gas station. The sewer feasibility studies for the future connections are included in **Appendix C**. These additional flows will be included in the lift station rehabilitation design, discussed further in Section II of this report.

II. RECOMMENDATIONS AND CONCLUSIONS

Existing Flow Analysis – SCADA Data

Kimley-Horn obtained and reviewed SCADA data provided by DPW-SD. The SCADA data provided contains the number of starts and runtime per pump from 2017-2021. By determining pump runtime, number of daily starts for the pumps, and volume of the pump operating range within the wet well, the average sewer flow was calculated. The findings are summarized in **Table 1** and detailed in **Appendix D**.

Table 1 – SCADA Data Sewer Flow

Average Runtime/Start	2.29	min
Operating Range Volume	307.60	gal
Average Existing Sewer Flow	0.19	mgd

Future Flow Analysis

Projected sewer flow for the future connections to the sewer lift station were previously calculated by Webb Associates are included in the sewer feasibility studies in **Appendix C**. Additionally, the future flows are displayed in **Table 2**.

Table 2 - Future Sewer Flow

Victor Valley College (without stadium)	147000	gpd
Lakeview Middle School	8820	gpd
Endeavour School of Exploration	8330	gpd
Excelsior Charter School	14700	gpd
Residential Lots (APN 0482-031-01,-02,-07,-08)	13280	gpd
Gas Station (APN 0482-043-08)	4920	gpd
Victor Valley College Stadium	24824	gpd
Total Future Sewer Flow	0.22	mgd

The projected peak flow was calculated by summing up the existing and future flows and applying a peaking factor. The DPW-SD Standards for Sanitary Sewer (November 13, 2012) specifies a peaking factor of 2.8 for average flows ranging between 0.3 and 0.5 mgd. The peak future sewer flow is displayed in **Table 3**.

Table 3 - Future Peak Sewer Flow

Total Average Flow	0.4 mgd
Peaking Factor	2.8 unitless
Peak Flow	1.05 mgd

Lift Station Upgrades

Kimley-Horn identified three rehabilitation alternatives taking into consideration cost, constructability, and maintenance. All alternatives include:

- Replacing the existing screw pumps with two submersible pumps. See **Appendix F** for preliminary pump design calculations and pump curve.
- Leveling out the wet well base to accommodate the pumps. This will allow a larger operating volume in the existing wet well.
- Discharging via ductile iron pipe (DIP) force main with restrained joints into the existing 21-inch vitrified clay pipe (VCP) that connects the discharge structure to the downstream manhole in Lakeview Drive. The expected velocities in the force main at design conditions are approximately 3.78 fps.

The three alternatives are detailed below.

Alternative 1 – Pump Replacement, Low Operating Range (KH Recommended)

Alternative 1 consists of locating the submersible pumps under the existing 48" X 48" access hatch. An operating range of 1.5' will result in a cycle frequency to 16.8 cycles per hour. Despite the pump cycle frequency being above the typical design target of 6 cycles per hour, we confirmed with the pump manufacturer that the proposed pumps can accommodate up to 30 cycles per hour without jeopardizing the pump warranty. The pumps will alternate starts, alleviating the overuse of a single pump. A backup pump shall be held at the nearest maintenance yard. A breakdown of the costs for Alternative 1 is presented in **Appendix E**. Alternative 1 is depicted in **Exhibit A**.

Alternative 2 – Pump Replacement, High Operating Range

Alternative 2 proposes the same pump layout as Alternative 1, but with an operating range of 3' and a cycle frequency of 8.3 cycles per hour. This operating range will result in a surcharge of the upstream pipes. This alternative minimizes structural rework and optimizes the frequency of pump starts and stops. In case of pump failure, a backup pump shall be held at the nearest maintenance yard, similar to Alternative 1. The layout and operating range of Alternative 2 is depicted in **Exhibit C**. Based on discussions with DPW-SD staff, the high operating range of Alternative 2 was not preferred, therefore a cost estimate was not performed.

Alternative 3 – Full Lift Station Rebuild

Alternative 3 consists of fully reconstructing the existing wet well to increase the base depth, preventing surcharging up the upstream pipes. Additionally, reconstructing the wet well allows for a more typical submersible pump wet well layout. This alternative, however, faces constructability concerns such as extensive shoring and dewatering resulting in substantially higher construction costs compared to Alternatives 1 & 2.

Piping Upgrades

Kimley-Horn utilized Bentley's Flowmaster to analyze pipe flow for the existing 21-inch (VCP) connecting the sewer lift station to the discharge manhole in Lakeview Drive. The results are displayed in **Table 4**.

Table 4 - Bentley Flowmaster Results

Discharge	925 gpm
Pipe Material	VCP
Pipe Diameter	21 in
Channel Slope	0.5 %
Velocity	3.55 fps
Normal Depth	6.1 in

In accordance with the DPW-SD Standards for Sanitary Sewer (November 13, 2012), the sewer velocity is above 2 FPS when flowing at less than 50% full. Therefore, no piping upgrades are required to accommodate the increase in sewer discharge.

Odor Control Upgrades

Phase I of the Lakeview Lift Station Rehabilitation Project does not include any odor control measures. Kimley-Horn anticipates elimination of odor complaints by replacing the sewer pumps for submersible pumps. Coupons will be installed to monitor for any corrosion issues within the lift station wet wells. Corrosion coupons, typically consisting of stainless steel or similar metal, will be installed to monitor for any corrosion issues within the wet well lift station. The coupons can be periodically checked for significant signs of corrosion. If present, then this can indicate to operators that there is a buildup of corrosive gases in the lift station wet well that may need to be mitigated. While it is intended that Phase II – Odor Control Upgrades will not be required after the installation of submersible pumps, they will be accounted for in Phase I of the design to minimize future efforts if odor issues still arise. These design considerations will include future odor control systems by reviewing power requirements, providing conduit for electrical connections or chemical feeds, and reviewing space requirements for installing the odor control system.

Electrical Upgrades

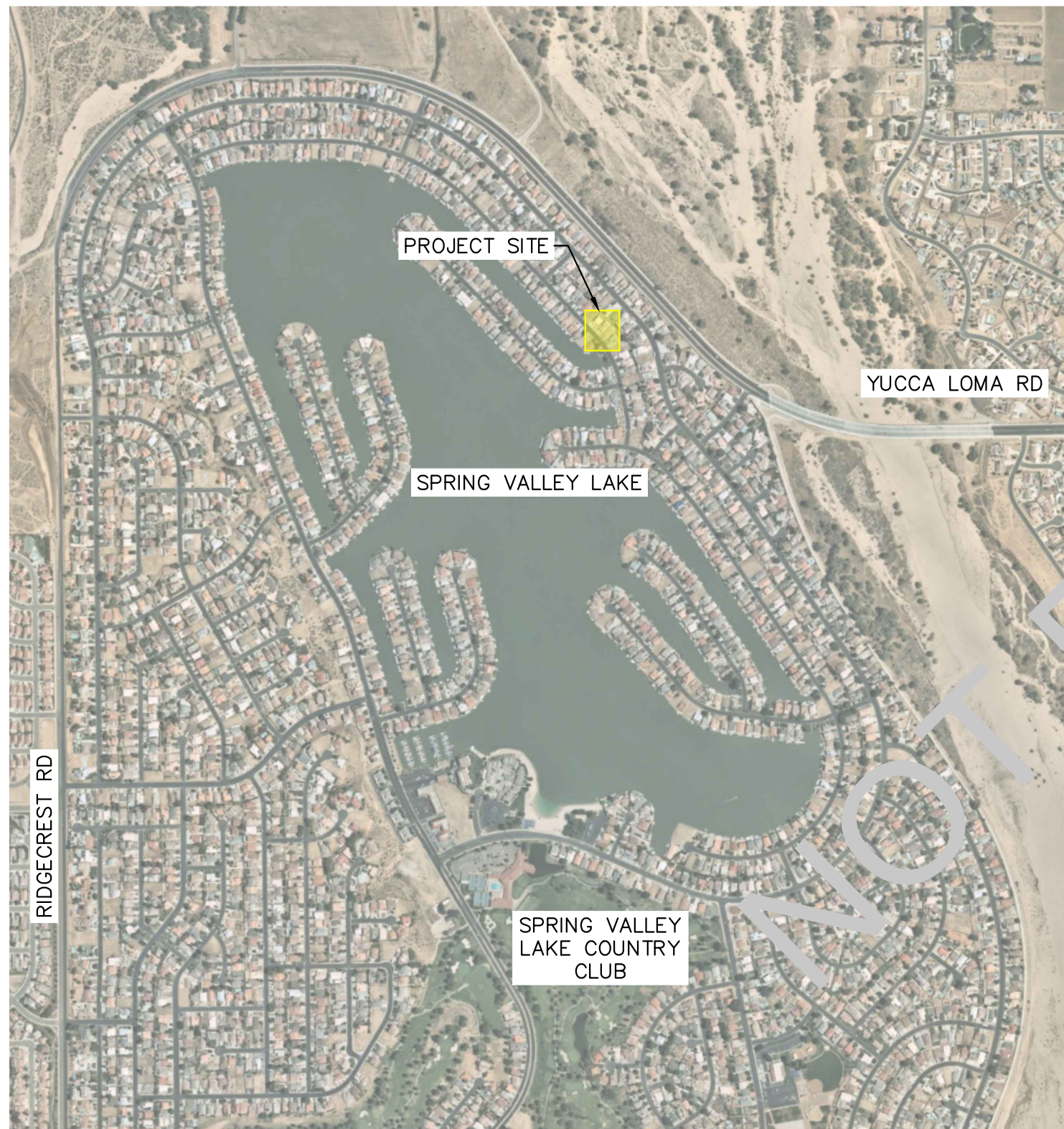
Kimley-Horn recommends installing a new electrical control panel, a new RTU panel, and a disconnect to provide power for the pumps, level transducers, backup floats, and the upgraded SCADA system, which will be integrated by County operators. A backup electrical generator is not required for this upgrade. The downstream sewer bypass in Lakeview Drive will accommodate sewer flow during construction or maintenance.



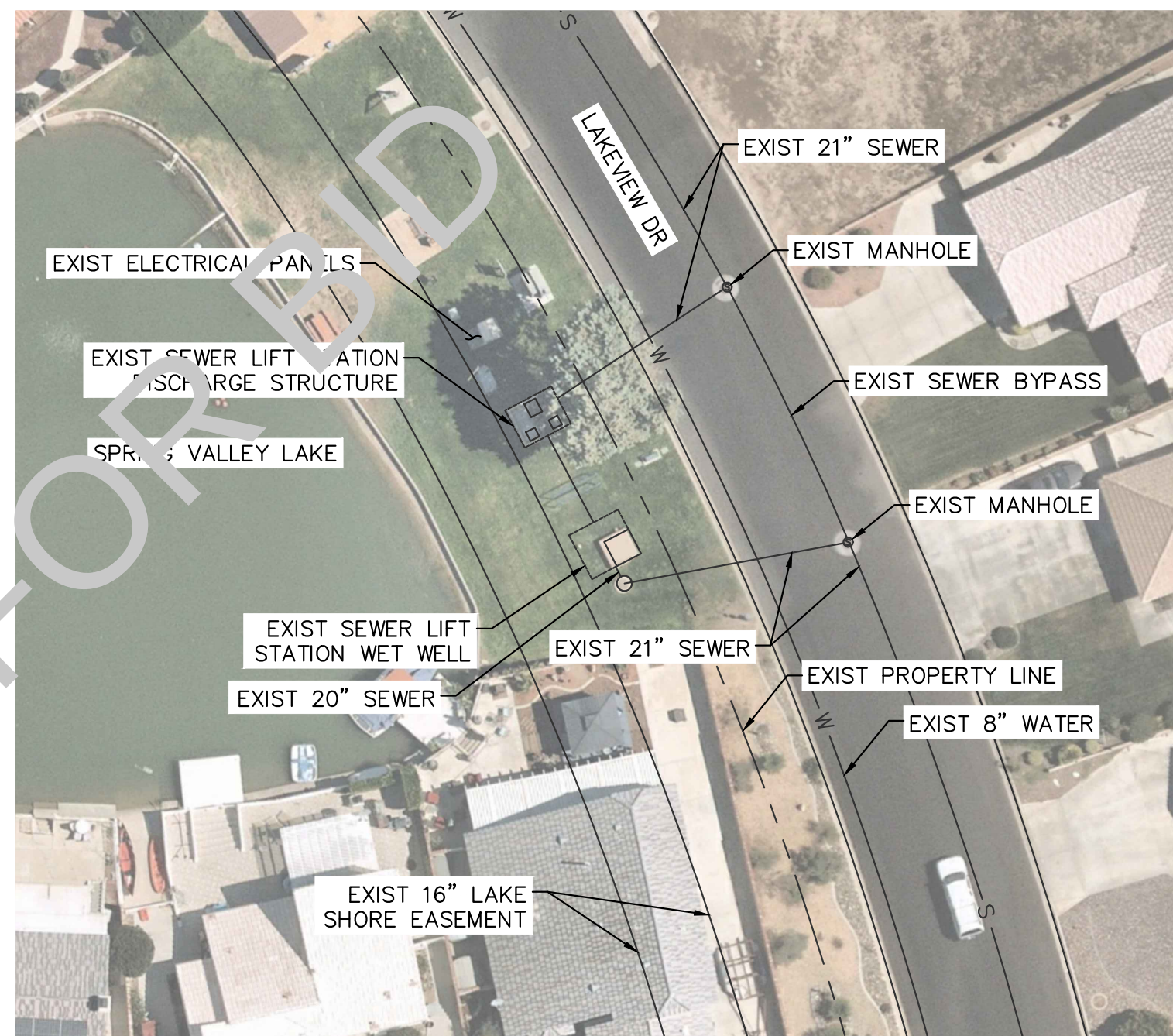
Sarp Sekeroglu, P.E.
C 71474 Exp. 12/31/23

FIGURES

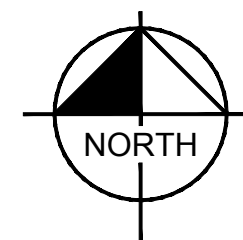
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VICINITY MAP
SCALE: 1"=1000'



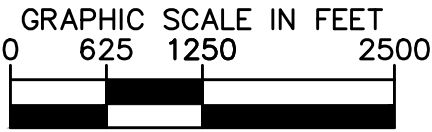
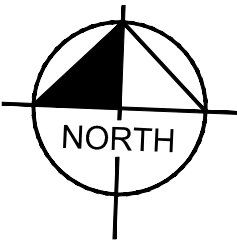
PROJECT SITE
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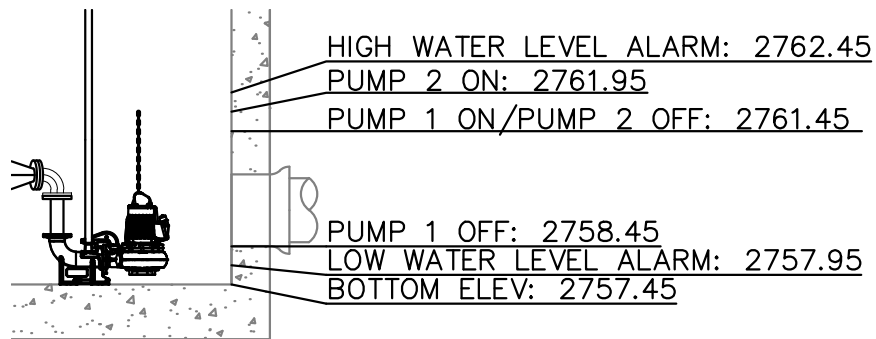




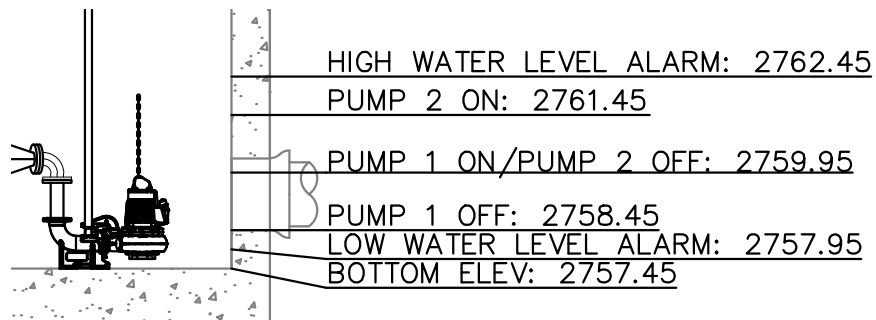
LEGEND

- GRAVITY MAIN ———
- FORCE MAIN - - - - -

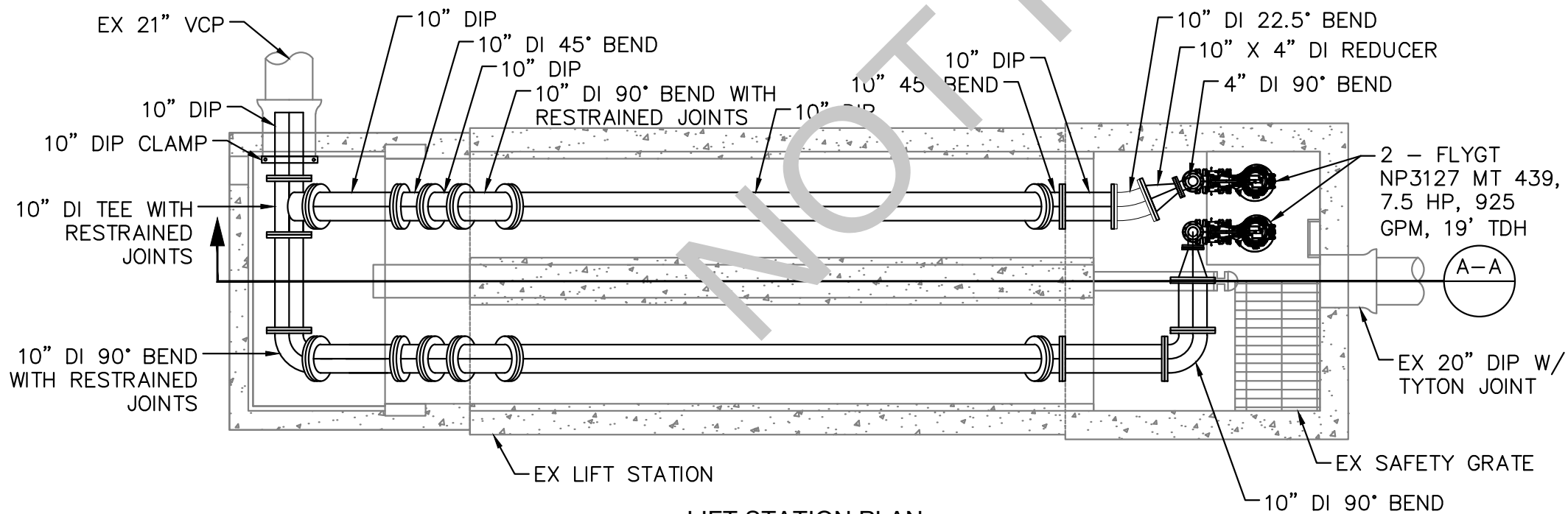




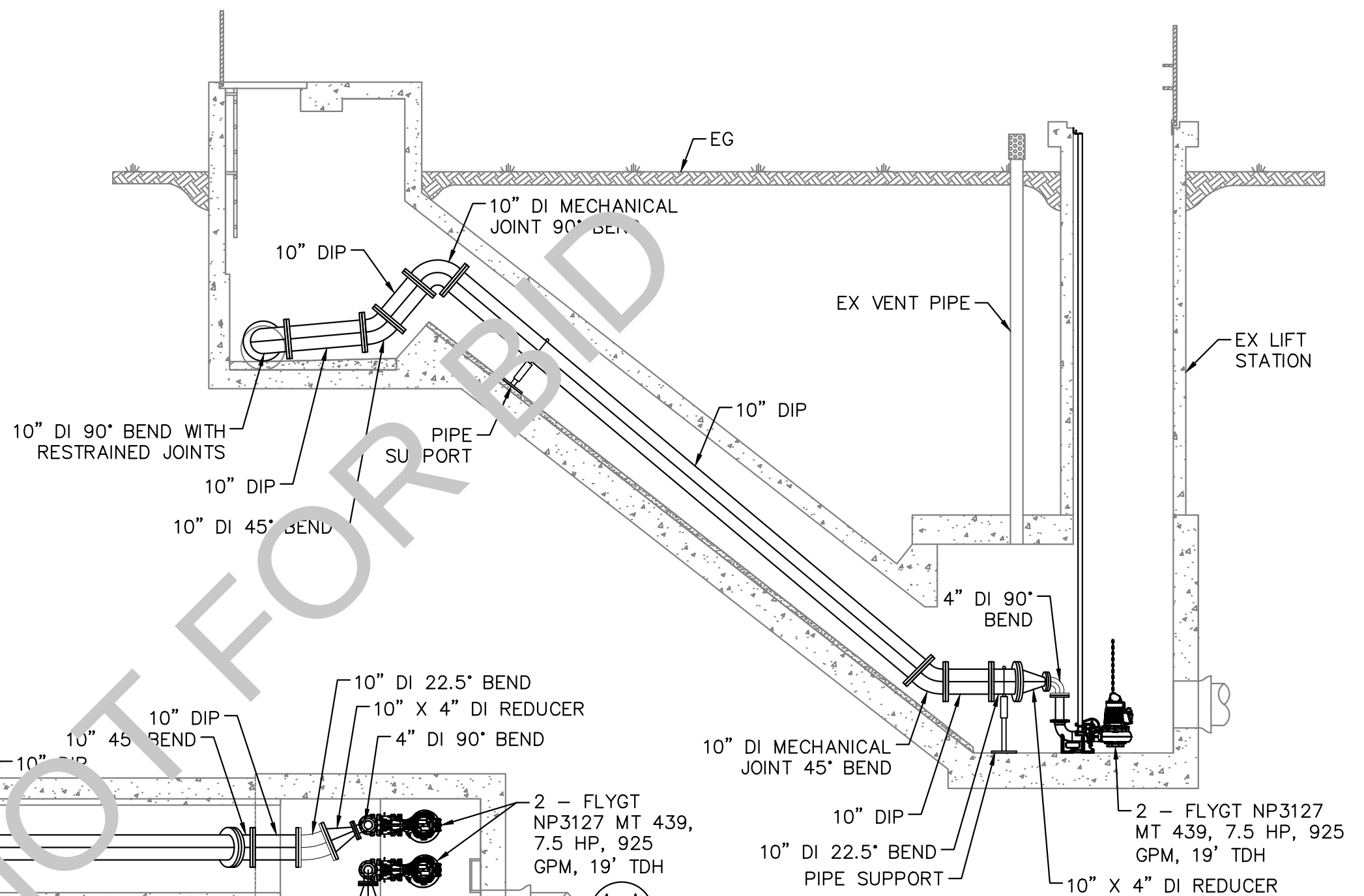
ALTERNATIVE 2 - PUMP LEVELS
SCALE: 1"=5'



ALTERNATIVE 1 - PUMP LEVELS
SCALE: 1"=5'



LIFT STATION PLAN
SCALE: 1"=5'



SECTION A-A
SCALE: 1"=5'

NOT FOR BID

APPENDIX A

SITE VISIT PHOTOS

NOT FOR BID





Discharge Structure Cover



Wet Well Hatch and Riser

Kimley»Horn

401 B Street, Suite 600
San Diego, CA 92101
Phone: (619) 234-9411

Site Visit Photos

Project:
Lakeview Sewer Lift Station
Rehabilitation
Client: San Bernardino County Special
Districts Department

Job No. 195068122

Not to Scale

Page 1 of 3



Discharge Structure and Screw Pump

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Site Visit Photos

Project:
Lakeview Sewer Lift Station
Rehabilitation
Client: San Bernardino County Special
Districts Department

Job No. 195068122

Not to Scale

Page 2 of 3



Discharge Structure and Screw Pumps

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Phone: (619) 234-9411

Site Visit Photos

Project:
Lakeview Sewer Lift Station
Rehabilitation
Client: San Bernardino County Special
Districts Department

Job No. 195068122

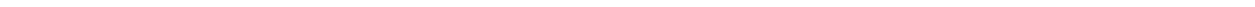
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Page 3 of 3

APPENDIX B

LIFT STATION AS-BUILTS

NOT FOR BID



IMPROVEMENT PLANS

FOR

SAN BERNARDINO COUNTY SPECIAL DISTRICTS

COUNTY SERVICE AREA 64

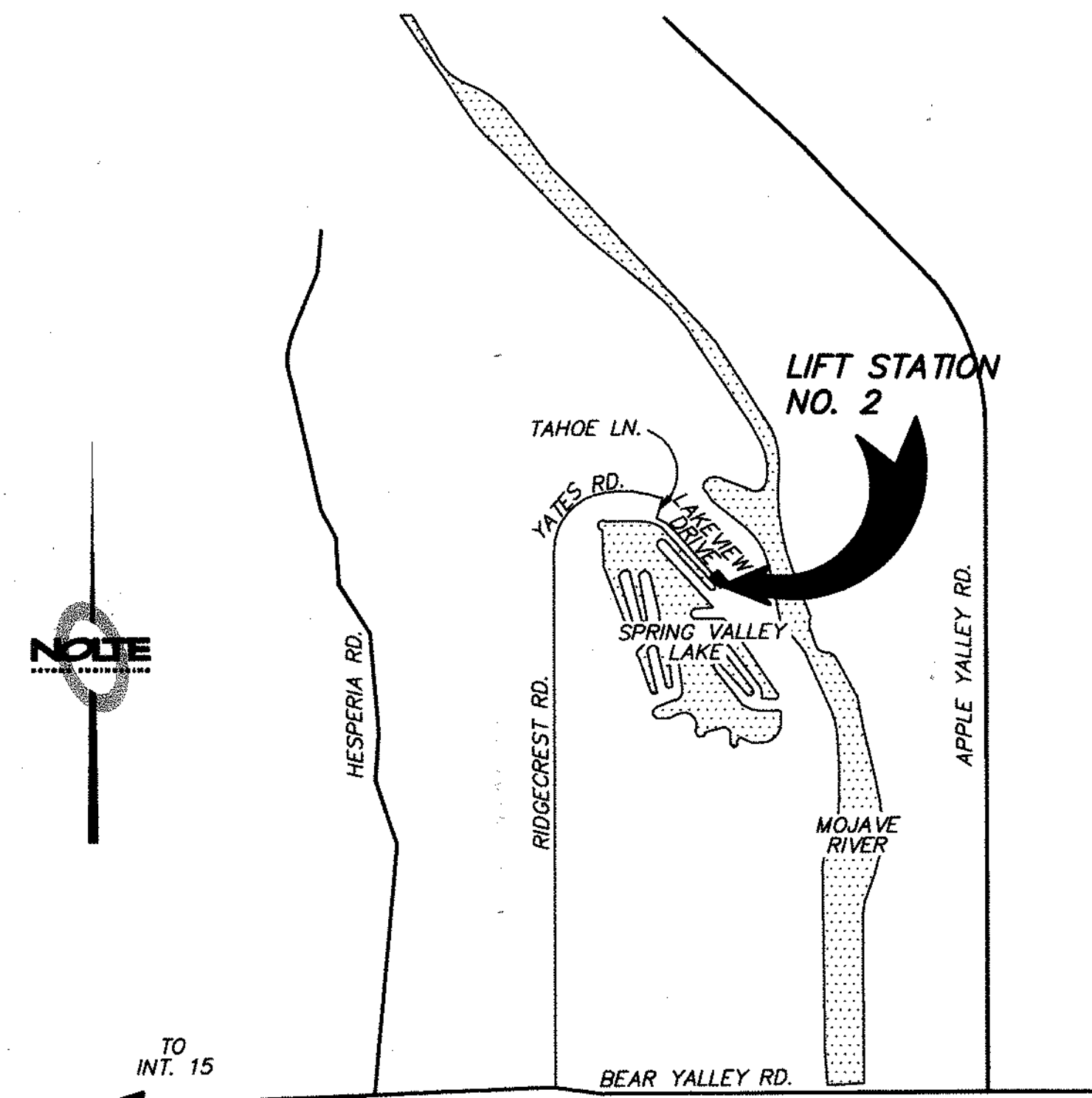
LAKE VIEW LIFT STATION

GENERAL NOTES:

1. THE ACCURACY OF THE LOCATION OF OR THE EXISTENCE OR NONEXISTENCE OF ANY UTILITY PIPE OR STRUCTURE WITHIN THE LIMITS OF THIS PROJECT DOES NOT CONSTITUTE RESPONSIBILITY BY THE ENGINEER.
2. ALL WORK SHALL CONFORM TO SPECIFICATIONS AND RULES & REGULATIONS OF SAN BERNARDINO COUNTY SERVICE AREA NO. 64, THESE PLANS AND SPECIFICATIONS.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING HIS OPERATIONS WITH OTHER CONTRACTORS AND UTILITY COMPANIES IN THE CONSTRUCTION AREA.
4. THE CONTRACTOR SHALL NOTIFY THE COUNTY SERVICE AREA ENGINEER, AND INSPECTOR ONE WEEK IN ADVANCE OF WHEN HE PLANS TO START CONSTRUCTION. AT THAT TIME OR ANY SUCH TIME PRIOR TO THAT AS MAY BE SPECIFIED BY THE ENGINEER, THE CONTRACTOR SHALL SUBMIT A SCHEDULE OF HIS WORK SHOWING PRINCIPAL OPERATIONS AND THEIR ESTIMATED STARTING DATES. WHEN INSPECTIONS OR ENGINEERING JUDGEMENTS BECOME NECESSARY AS SET FORTH IN THE SPECIFICATIONS, THE CONTRACTOR SHALL GIVE AT LEAST TWENTY FOUR (24) HOURS NOTICE TO THE COUNTY SERVICE AREA ENGINEER.
5. NO REVISIONS SHALL BE MADE IN THESE PLANS WITHOUT THE APPROVAL OF THE ENGINEER.

PROJECT NOTES:

1. THE CONTRACTOR SHALL ENFORCE ALL SAFETY MEASURES. THE CONTRACTOR SHALL DESIGN, CONSTRUCT, AND MAINTAIN ALL SAFETY DEVICES, INCLUDING SHORING, AND SHALL BE SOLELY RESPONSIBLE FOR CONFORMING TO ALL LOCAL, STATE, AND FEDERAL SAFETY AND HEALTH STANDARDS, LAWS, AND REGULATIONS.
2. CONTRACTOR SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY. THIS REQUIREMENT SHALL OCCUR CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY MONUMENTATION AND/OR BENCHMARKS WHICH MAY BE DISTURBED OR DESTROYED BY CONSTRUCTION. SUCH POINTS SHALL BE REFERENCED AND REPLACED WITH APPROPRIATE MONUMENTATION BY A LICENSED LAND SURVEYOR OR A REGISTERED CIVIL ENGINEER AUTHORIZED TO PRACTICE LAND SURVEYING. A CORNER RECORD OR RECORD OF SURVEY, AS APPROPRIATE, SHALL BE FILED BY THE LICENSED LAND SURVEYOR OR REGISTERED CIVIL ENGINEER AS REQUIRED BY THE LAND SURVEYORS ACT.
4. CONTRACTOR SHALL PREVENT DEBRIS FROM ENTERING SPRING VALLEY LAKE DURING CONSTRUCTION.
5. CONTRACTOR SHALL REPLACE OR REPAIR IN KIND ALL HARDSCAPE, LANDSCAPE, IRRIGATION, PAVEMENT, STRIPING, HEADWALLS, ETC.
6. THE CONTRACTOR SHALL ENSURE THAT CONTINUOUS SEWER AND WATER SERVICES ARE PROVIDED DURING CONSTRUCTION OF THESE IMPROVEMENTS TO ALL FACILITIES SERVED BY THE WATER AND SEWER LINES.
7. ALL MATERIAL WHICH IS NOT SUITABLE FOR USE ON THIS PROJECT SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE SITE AND DISPOSED OF IN A MANNER, AND AT A LOCATION ACCEPTABLE TO ALL COGNIZANT AGENCIES, AT CONTRACTOR'S OWN COST.
8. THE CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH THE SITE AND SHALL BE SOLELY RESPONSIBLE FOR ANY DAMAGE TO EXISTING FACILITIES RESULTING DIRECTLY OR INDIRECTLY FROM HIS OPERATIONS, WHETHER OR NOT SUCH FACILITIES ARE SHOWN ON THESE PLANS.
9. SHOULD THE PROJECT REQUIRE ANY ROAD WORK/REPAIR DURING CONSTRUCTION FROM EQUIPMENT, THE CONTRACTOR SHALL REPAIR THE ROAD PER COUNTY TRANSPORTATION DEPARTMENT (SEE SPECIFICATIONS).



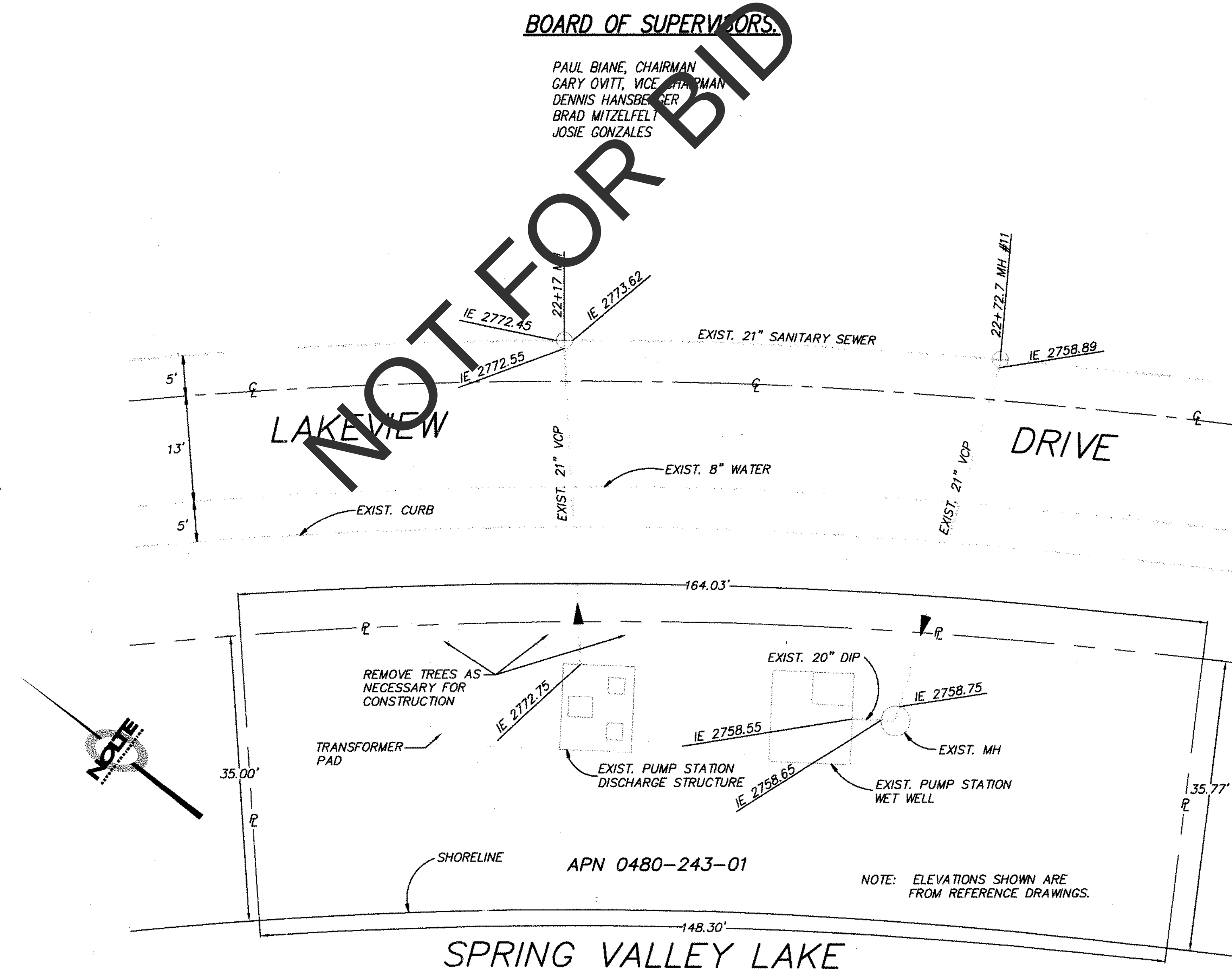
LOCATION MAP
N.T.S.

INDEX OF DRAWINGS:

TITLE	SHEET NUMBER
TITLE SHEET & SITE PLAN	1
STRUCTURAL DETAILS	2
ELECTRICAL PLANS & DIAGRAMS	3

REFERENCE DRAWINGS:

TITLE	SHEET NUMBER
LIFT STATION 2, SITE PLAN, VICINITY MAP & LOCATION MAP	1
LIFT STATION 2, PLAN SECTIONS AND DETAILS	2
LIFT STATION 2, STRUCTURAL DETAILS	3
LIFT STATION 2, ELECTRICAL DETAILS	4



SITE PLAN
NTS

NOTE: PROPERTY LINE INFORMATION SHOWN ON SHEET 1 OF ATTACHED AS-BUILT PLANS.

CALL BEFORE YOU DIG - AT LEAST 2 DAYS IN ADVANCE 1-800-227-2600

DATE: 5/25/07	TIME: 12:31:54 PM
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DESIGNER: CLG	PROJ. MGR: JFA

COUNTY OF SAN BERNARDINO - SPECIAL DISTRICTS DEPARTMENT	COUNTY SERVICE AREA 64
APPROVED BY: <i>[Signature]</i>	DATE: 6/15/07
JIM ORRIS, ENGINEERING MANAGER	
<i>[Signature]</i>	DATE: 6/14/07
GARY MARTIN, DIVISION ENGINEER	

NOLTE
BEYOND ENGINEERING
15070 AVENUE OF SCIENCE, SUITE 100
SAN DIEGO, CA 92128
858.385.0500 TEL. 858.385.0400 FAX
WWW.NOLTE.COM

COUNTY OF SAN BERNARDINO SPECIAL DISTRICTS DEPARTMENT	COUNTY SERVICE AREA 64
157 W. 5TH ST. 2ND FLOOR SAN BERNARDINO, CA 92415	
LAKE VIEW LIFT STATION TITLE SHEET & NOTES	
SHEET NUMBER 1 OF 3 SHEETS	SCALE: VERTICAL: 1"=N/A HORIZONTAL: 1"=N/A
JOB NUMBER SDB025602	

GENERAL NOTES:

1. NOTIFY THE OWNER OF ANY DISCREPANCIES FOUND BEFORE PROCEEDING WITH THE WORK
2. THE CONTRACTOR SHALL NOTIFY THE OWNER OF ANY SITE CONDITIONS NOT REFLECTED ON THE DRAWINGS; OF DISCREPANCIES IN MIN. DIMENSIONS INDICATED, SUCH AS GREATER RETAINED EARTH HEIGHTS, CONFLICT IN GRADES, EXTENTS OF BAD SOIL, HEIGHT OF GROUND WATER, DEPTHS OF FOUNDATIONS, ETC., AND ESPECIALLY OF UNCOVERED AND UNEXPECTED UTILITY LINES
3. DIMENSIONS, LOCATIONS AND SIZES OF OPENINGS IN FLOORS AND WALLS SHALL BE COORDINATED BY THE CONTRACTOR WITH ALL APPLICABLE DRAWINGS. ALL PENETRATIONS MAY NOT BE INDICATED ON STRUCTURAL DRAWINGS
4. ALL WORK NOT DETAILED OR NOTED SHALL BE CONSTRUCTED IN ACCORDANCE WITH OTHER SIMILAR WORK SHOWN ON THE DRAWINGS AND ON TYPICAL DETAILS.
5. NO PIPES OR DUCTS SHALL BE PLACED IN SLABS OR WALLS UNLESS SPECIFICALLY DETAILED OR APPROVED BY THE OWNER
6. DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEANS AND METHODS OF CONSTRUCTION INCLUDING DEWATERING, SHORING, FORMING, AND TEMPORARY BRACING. HE SHALL UNDERTAKE ALL NECESSARY MEASURES TO INSURE SAFETY OF ALL PERSONS AND STRUCTURES AT THE SITE. OBSERVATION VISITS TO THE SITE BY THE OWNER SHALL NOT INCLUDE REVIEW OF THESE MEASURES.
7. UNLESS OTHERWISE SHOWN, LOCATION OF ALL CONSTRUCTION JOINTS SHALL HAVE THE APPROVAL OF THE ENGINEER. IN FLUID RETAINING STRUCTURES, PVC WATERSTOPS SHALL BE PROVIDED IN ALL CONSTRUCTION JOINTS.

REINFORCING STEEL

1. DETAILING, FABRICATION AND PLACEMENT OF REINFORCING BARS (UNLESS OTHERWISE NOTED) MUST FOLLOW THE A.C.I. MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES, A.C.I. 315 LATEST EDITION.
2. ALL REINFORCING BARS SHALL CONFORM TO THE STANDARD SPECIFICATION FOR DEFORMED BILLET-STEEL BARS FOR CONCRETE REINFORCEMENT, ASTM DESIGNATION A615-85: GRADE 60 EXCEPT #3 RE-BARS SHALL BE GRADE 40.
3. LAP ALL SPLICES IN CONCRETE AS "CLASS B" SPLICES MINIMUM, UNLESS OTHERWISE SHOWN.
4. REINFORCING STEEL SHALL HAVE A MINIMUM CONCRETE COVER AS TABULATED BELOW UNLESS OTHERWISE NOTED.
A. FOOTINGS AND SLABS CAST AGAINST EARTH 3-IN.
B. WALLS EXPOSED TO SOIL 2-IN.
5. WHERE CONTINUOUS BARS ARE CALLED OUT, PROVIDE CONTACT SPLICES (AS REQUIRED) IN ACCORDANCE WITH REINFORCING STEEL NOTE NO. 3.
6. WELDING OF MILD STEEL SHALL BE PROHIBITED.
7. BOTTOM STEEL OF SLABS, FOOTINGS AND GRADE BEAMS SHALL BE SUPPORTED OFF OF THE EARTH OR FORMS BY PRECAST CONCRETE BLOCKS WIRE TIED TO THE REINFORCEMENT.

CONCRETE

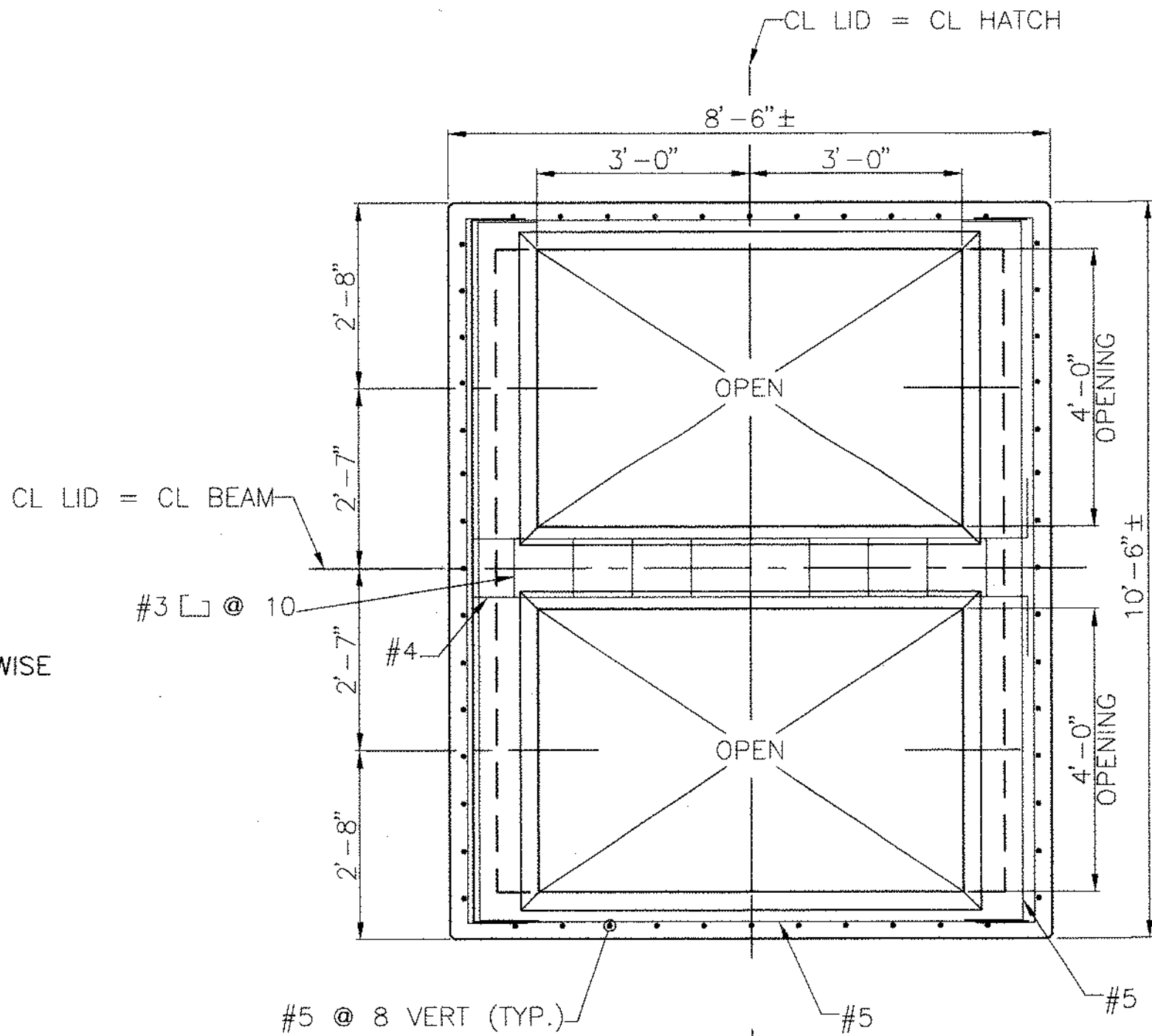
1. CONCRETE WORK SHALL CONFORM TO THE REQUIREMENTS OF CHAPTER 19 OF THE UBC, 1997 EDITION.
2. ALL REINFORCING BARS, ANCHOR BOLTS AND INSERTS SHALL BE WELL SECURED PRIOR TO POURING CONCRETE.
3. STRUCTURAL CONCRETE COMPRESSIVE DESIGN STRENGTH AT 28 (f'c) DAYS SHALL BE AS FOLLOWS:
ALL - 2500 PSI (SPECIAL INSPECTION NOT REQUIRED)
4. ALL EXPOSED CONCRETE EDGES SHALL HAVE 3/4" CHAMFER.

SOIL & FOUNDATIONS

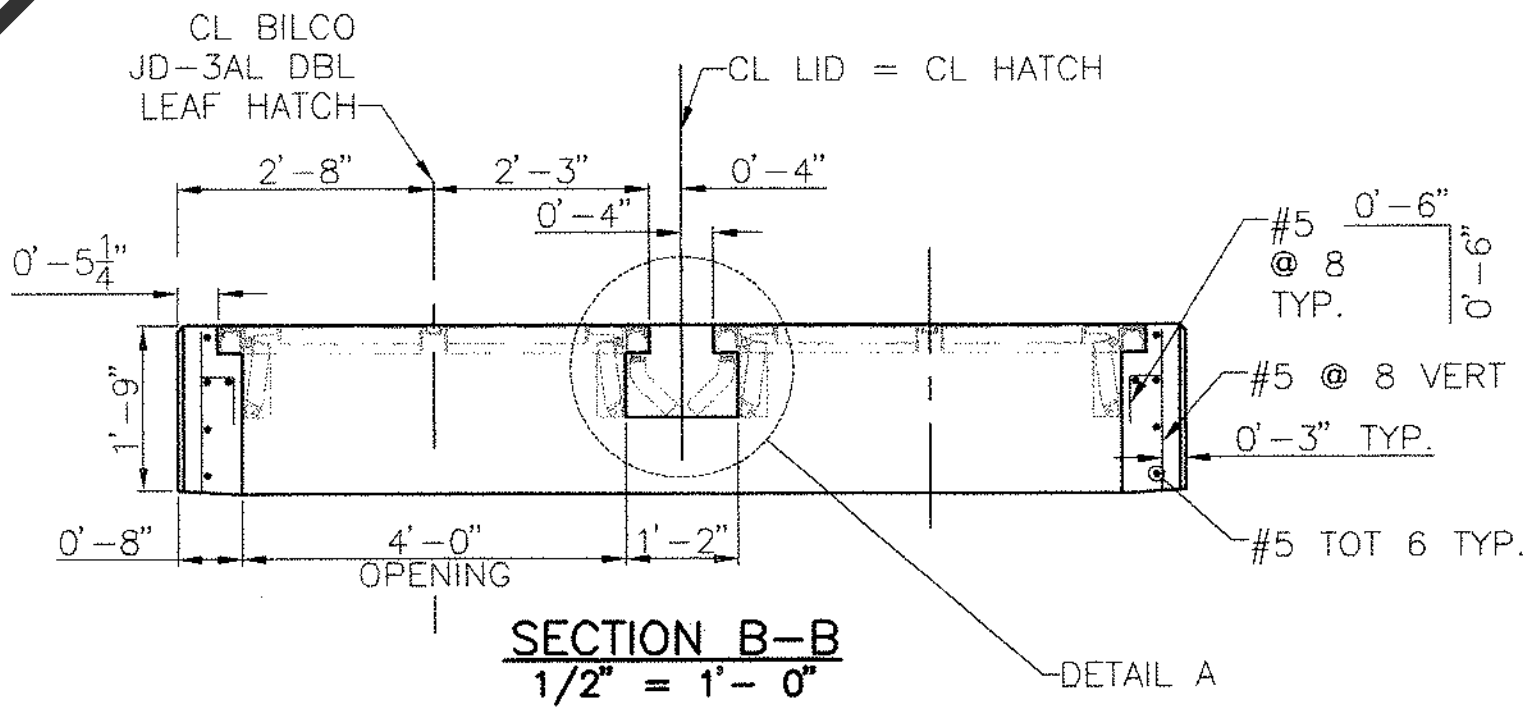
1. CHARACTER OF SOIL: COMPRESSIBLE ALLUVIAL SOILS
2. ALLOWABLE SOIL BEARING PRESSURE: N/A
3. NO CONCRETE OR REBAR SHALL BE PLACED IN ANY FOUNDATION UNTIL THE EXCAVATION HAS BEEN INSPECTED BY THE OWNER.

ABBREVIATIONS

AB	ANCHOR BOLT
ALUM	ALUMINUM
C L	CENTERLINE
CLR	CLEAR
CONC	CONCRETE
CONT	CONTINUOUS
EF	EACH FACE
EMB	EMBEDMENT
EW	EACH WAY
EXIST	EXISTING
FS	FAR SIDE
GALV.	GALVANIZED
MTL	MATERIAL
MAX	MAXIMUM
MIN.	MINIMUM
N.T.S.	NOT TO SCALE
NS	NEAR SIDE
T & B	TOP AND BOTTOM
TOT	TOTAL
O.C.	ON CENTER
(TYP.)	TYPICAL
UNO	UNLESS NOTED OTHERWISE
VERT	VERTICAL
WS	WATER STOP
W/	WITH
Ø	DIAMETER

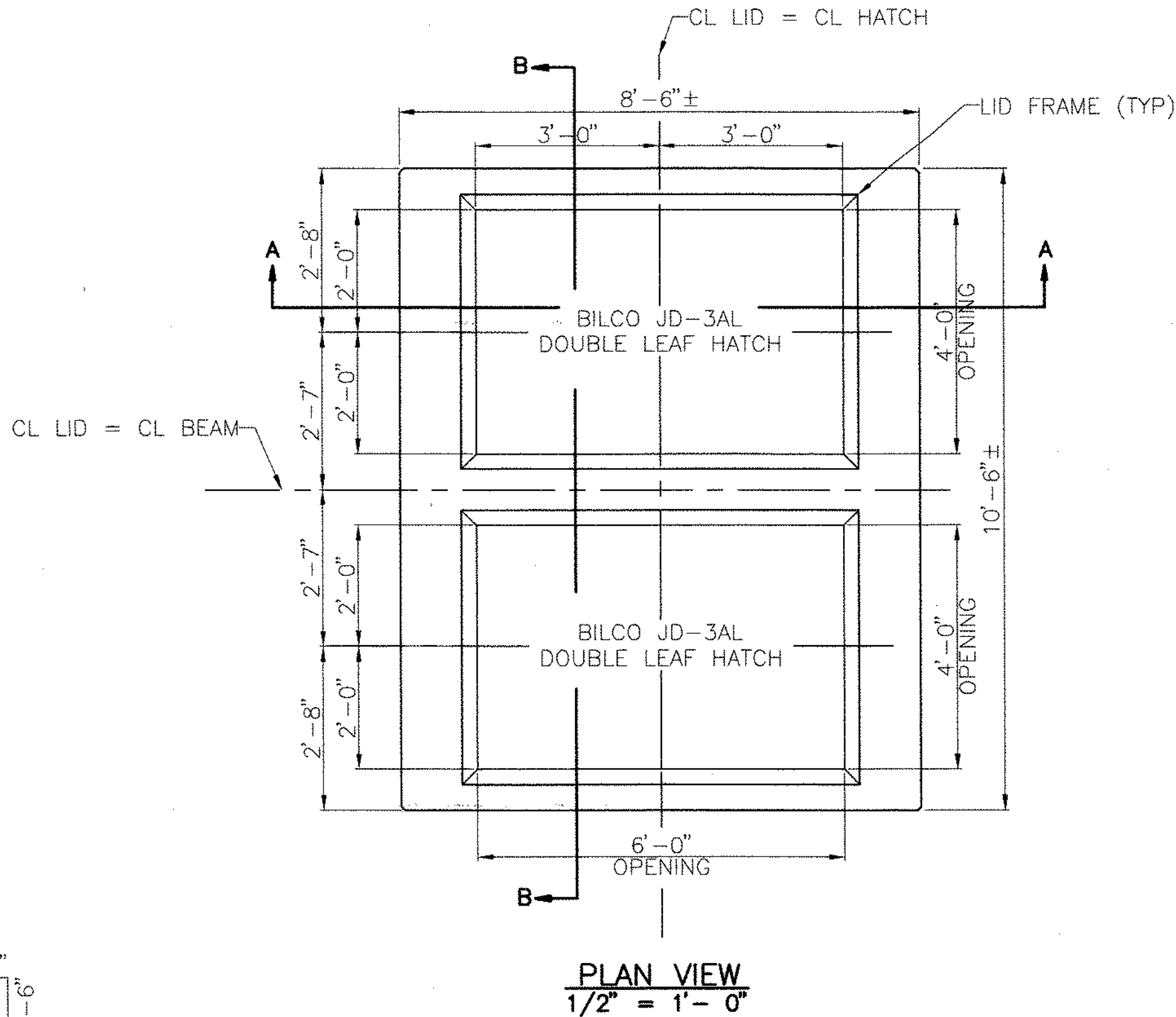


ROOF SLAB
1/2" = 1'-0"

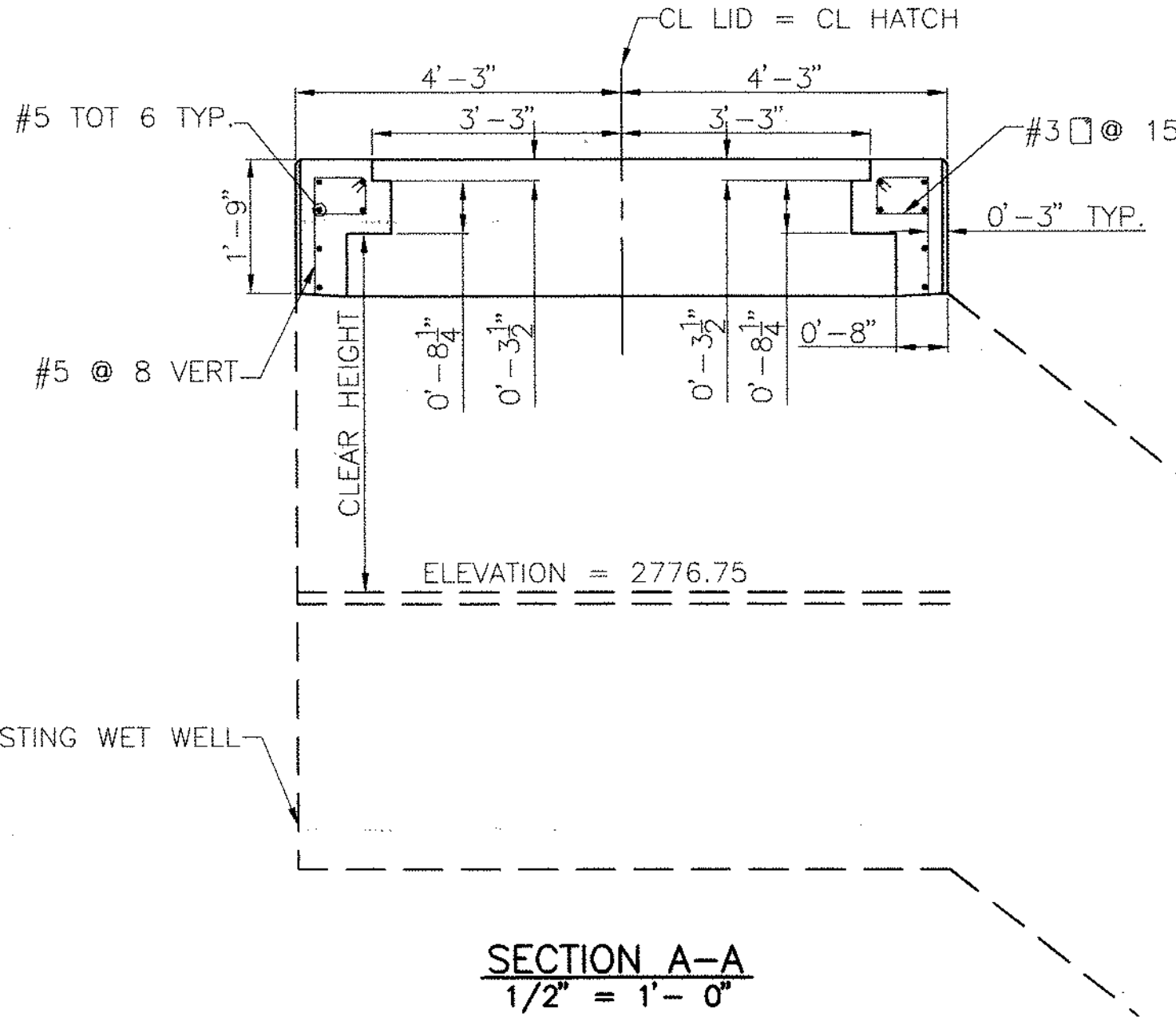


SECTION B-B
1/2" = 1'-0"

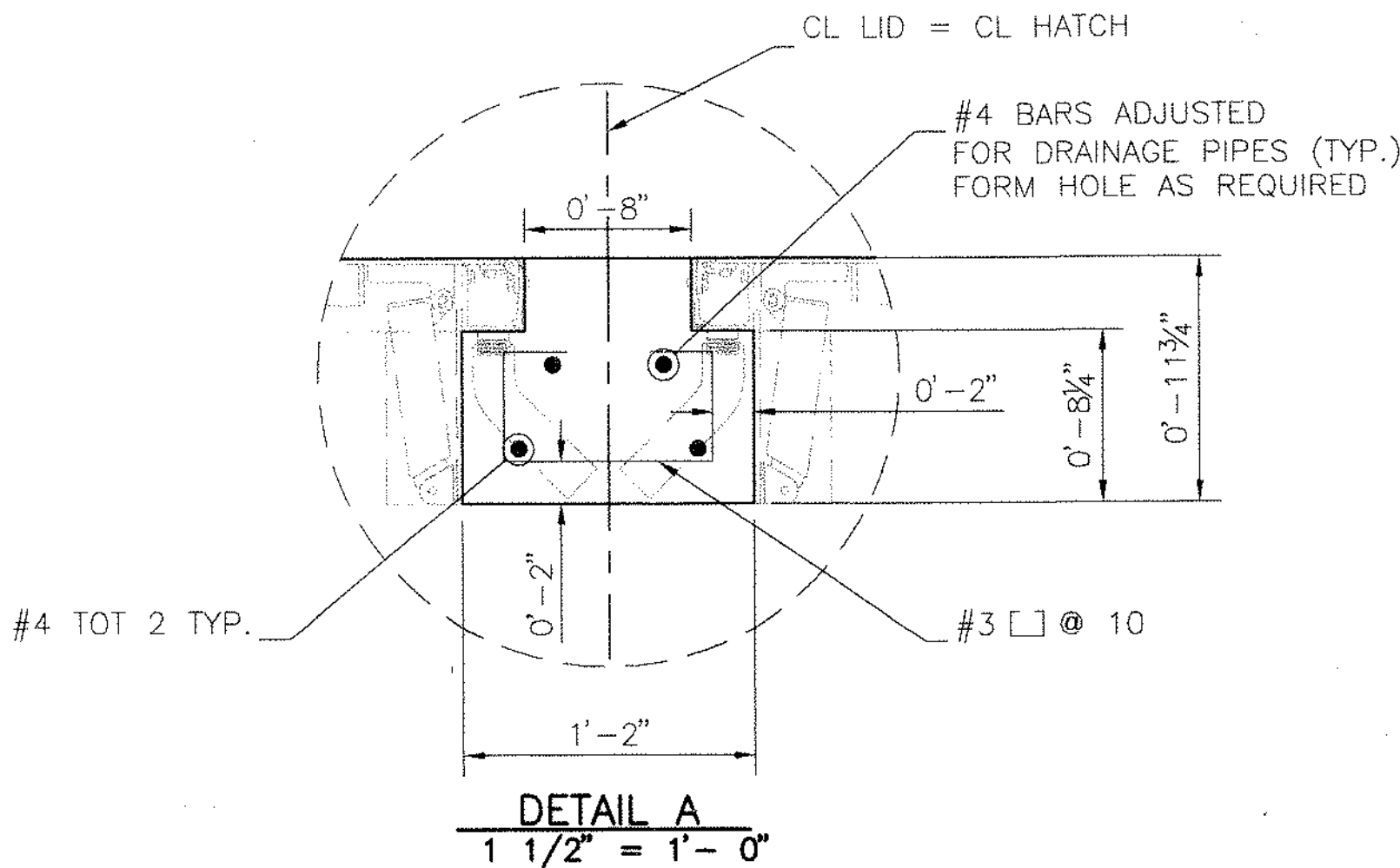
- NOTES:
1. REINFORCEMENT SYMMETRICAL ABOUT BEAM CL.
 2. SEE SPECIFICATION SECTION 08310 FOR HATCH AND LOCKING INFORMATION.



PLAN VIEW
1/2" = 1'-0"



SECTION A-A
1/2" = 1'-0"



DETAIL A
1 1/2" = 1'-0"

REFERENCE DRAWINGS:

1. FOR REINFORCEMENT DETAILS OF EXISTING WETWELL SEE REFERENCE DRAWING SHEETS.

DEMOLITION:

1. CONTRACTOR SHALL REMOVE AND DISPOSE OF EXISTING REMOVABLE CONCRETE TOP STRUCTURE AS IDENTIFIED ON REFERENCE DRAWING SHEET 3, VERTICAL SECTION-UPPER END.



CALL BEFORE YOU DIG - AT
LEAST 2 DAYS IN ADVANCE
1-800-227-2600

DATE: 5/25/07	TIME: 12:32:47 PM	NO.	BY	DATE	REVISIONS:
SERIAL: NONE	LAYOUT: Layout1				
PATH: N:\SDB025602\DELV\20070523\DRAWINGS					
DRAWING NAME: IF02.DWG					
PAGE SETUP: SDP2					
DESIGNER: CLG	PROJ. MGR: JFA				

COUNTY OF SAN BERNARDINO - SPECIAL DISTRICTS DEPARTMENT
COUNTY SERVICE AREA 64

APPROVED BY: *James P. Graves*
JIM GRAVES, ENGINEERING MANAGER
DATE: 6/15/07

Gary Martin
GARY MARTIN, DIVISION ENGINEER
DATE: 5/14/07

NOLTE
BEYOND ENGINEERING

15070 AVENUE OF SCIENCE, SUITE 100
SAN DIEGO, CA 92128
658.385.0500 TEL 658.385.0400 FAX
WWW.NOLTE.COM

COUNTY SERVICE AREA 64

COUNTY OF SAN BERNARDINO
SPECIAL DISTRICTS DEPARTMENT

157 W. 5TH ST. 2ND FLOOR
SAN BERNARDINO, CA 92415

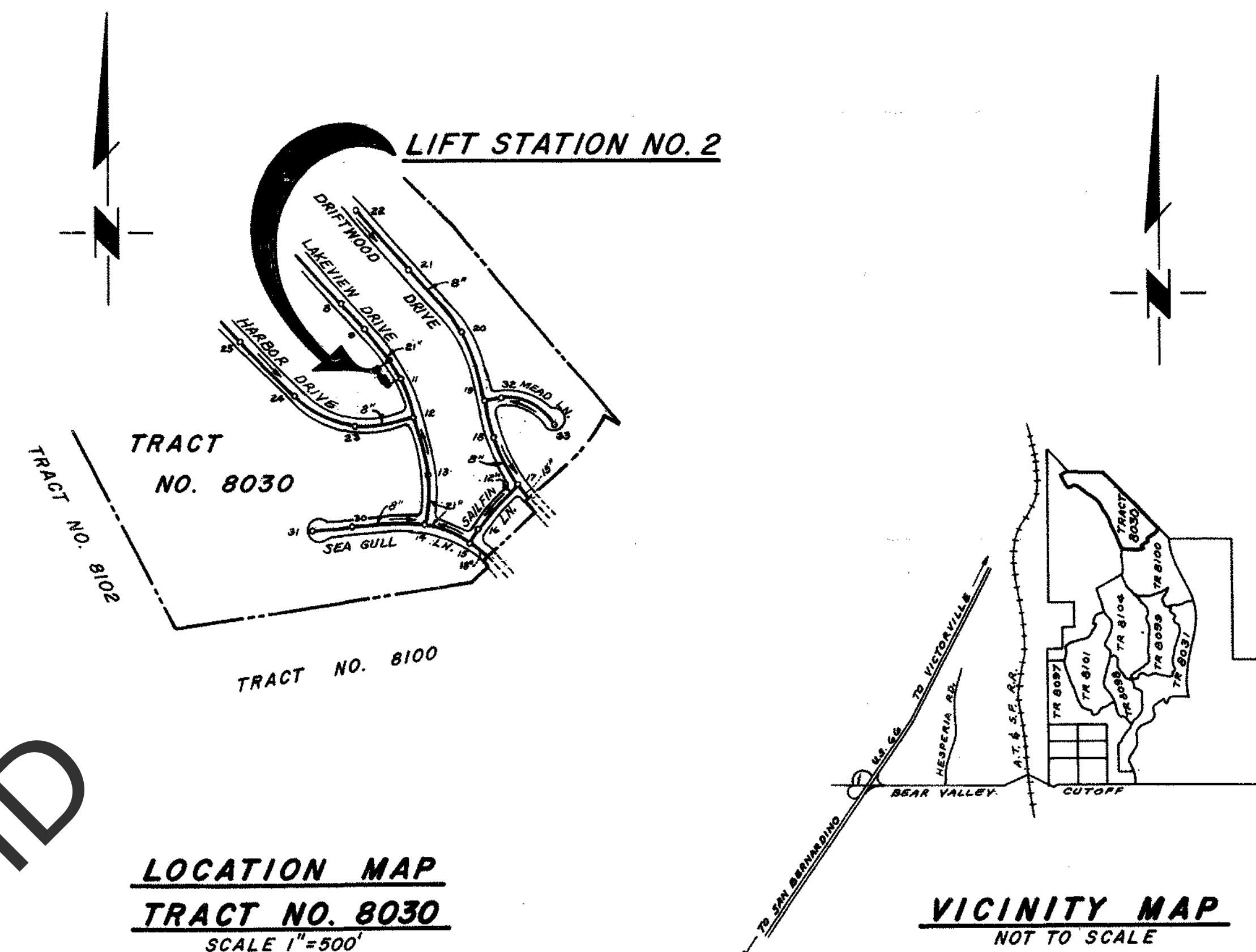
**LAKE VIEW LIFT STATION
STRUCTURAL DETAILS**

SHEET NUMBER
2
OF
3 SHEETS

SCALE
VERTICAL: 1"=N/A
HORIZONTAL: 1"=N/A

JOB NUMBER
SDB035300

CAUTION: The engineer preparing these plans will not be responsible for, or liable for, unauthorized changes to or uses of these plans. All changes to the plans must be in writing and must be approved by the preparer of these plans.



LOCATION MAP
TRACT NO. 8030
SCALE 1"=500'

VICINITY MAP
NOT TO SCALE

1. THE ACCURACY OF THE LOCATION OF OR THE EXISTENCE OR NONEXISTENCE OF ANY UTILITY PIPE OR STRUCTURE WITHIN THE LIMITS OF THIS PROJECT DOES NOT CONSTITUTE RESPONSIBILITY BY THE ENGINEER.
2. ALL WORK SHALL CONFORM TO SPECIFICATIONS AND RULES & REGULATIONS OF SAN BERNARDINO COUNTY SERVICE AREA NO. G4.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING HIS OPERATIONS WITH OTHER CONTRACTORS AND UTILITY COMPANIES IN THE CONSTRUCTION AREA.
4. THE CONTRACTOR SHALL NOTIFY THE COUNTY SERVICE AREA ENGINEER AND INSPECTOR ONE WEEK IN ADVANCE OF WHEN HE PLANS TO START CONSTRUCTION. AT THAT TIME OR ANY SUCH TIME PRIOR TO THAT AS MAY BE SPECIFIED BY THE ENGINEER, THE CONTRACTOR SHALL SUBMIT A SCHEDULE OF HIS WORK SHOWING PRINCIPAL OPERATIONS AND THEIR ESTIMATED STARTING DATES. WHEN INSPECTIONS OR ENGINEERING JUDGEMENTS BECOME NECESSARY AS SET FORTH IN THE SPECIFICATIONS, THE CONTRACTOR SHALL GIVE AT LEAST TWENTY-FOUR (24) HOURS NOTICE TO THE COUNTY SERVICE AREA ENGINEER.
5. NO REVISIONS SHALL BE MADE IN THESE PLANS WITHOUT THE APPROVAL OF COUNTY SERVICE AREA NO. G4.
6. PIPE SHALL BE VITRIFIED CLAY OR DUCTILE IRON, CLASS G.
7. MANHOLES SHALL BE PRECAST CONCRETE.

NICK CARO
Construction Manager
Boise Cascade
Spring Valley Lake

AS BUILT
DATE AD 5/1/97
BY Rock Cars

NOTE
EASEMENTS AND FACILITIES CONVEYED TO COUNTY
SERVICE AREA NO. 64 BY DOCUMENTS RECORDED
IN BOOK _____ PAGE _____, O.R.

COUNTY SERVICE AREA NO. 64
SAN BERNARDINO COUNTY, CALIFORNIA

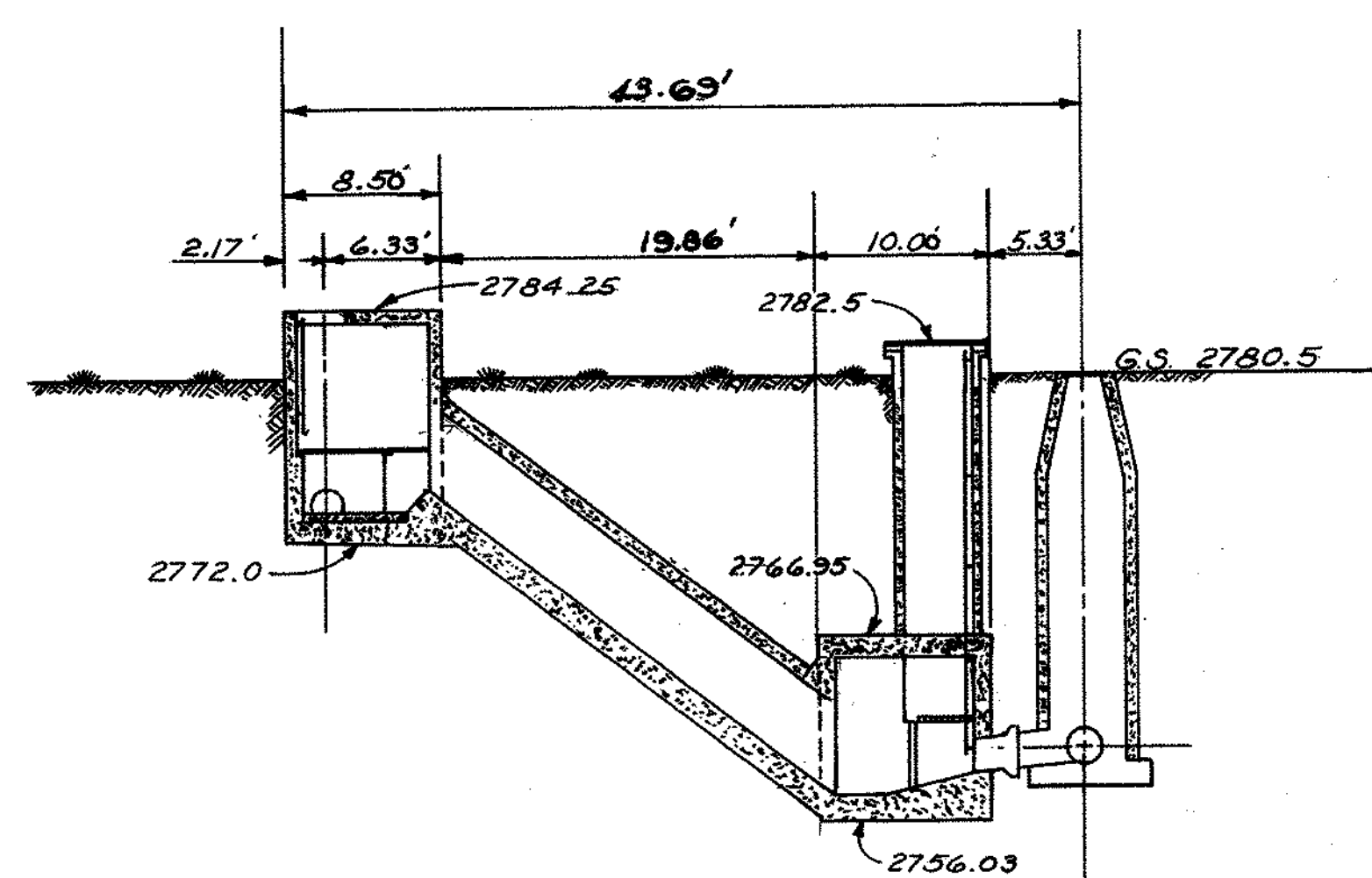
LIFT STATION NO. 2, TRACT NO. 8030
SITE PLAN, VICINITY MAP & LOCATION MAP

Kenneth L. Mulla 9692 8/12/77
DCE No. DATE

KENNETH I. MULLEN
CONSULTING ENGINEER
ARCADIA • VENTURA, CALIFORNIA

SHEET
1
OF 4 SHEETS

See Boise Ltr dated May 31, 1973, file
568-011.010 re: Temporary Pump.



ELEVATION
SCALE 1" = 10'

BENCH MARK

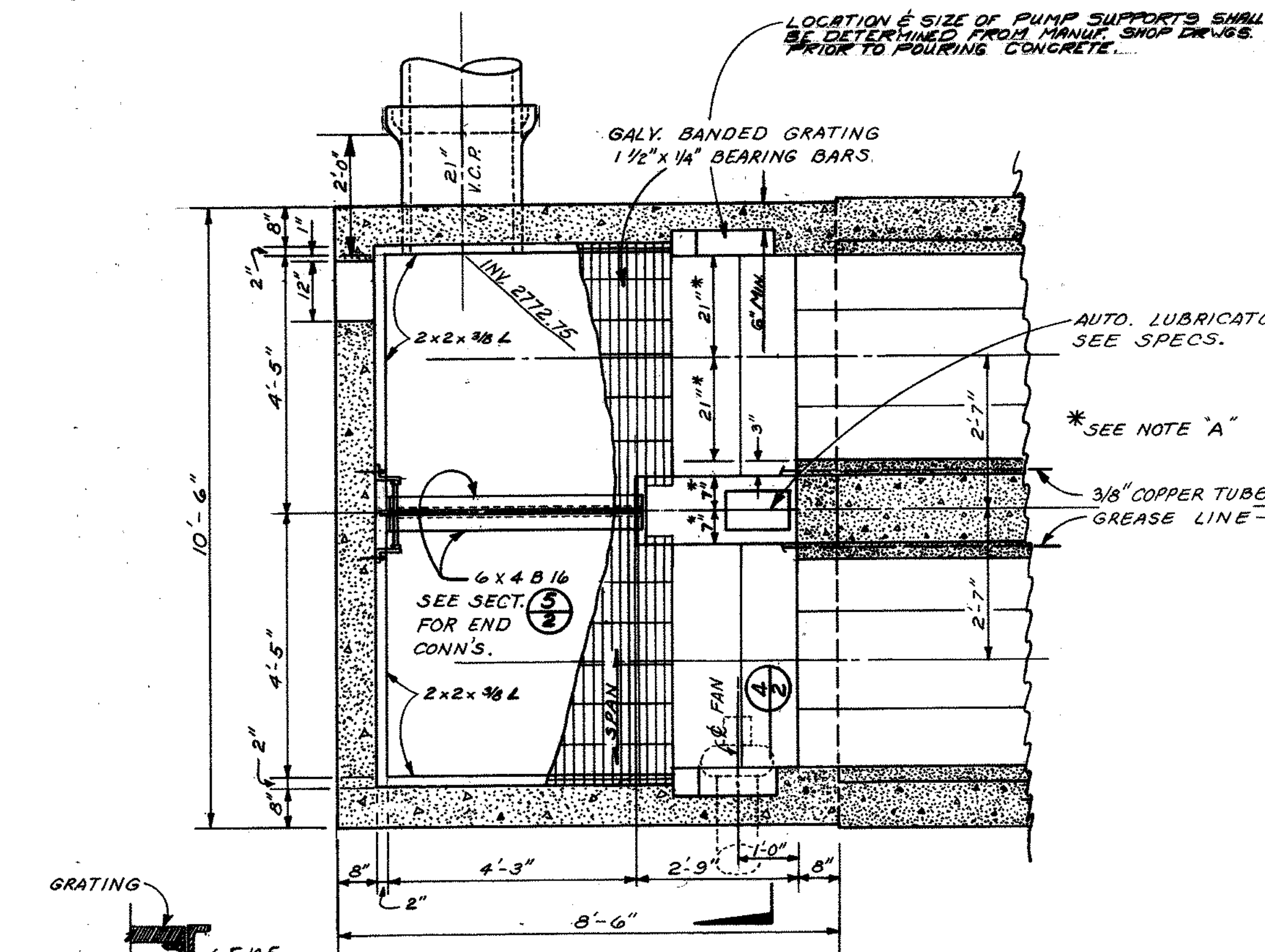
USCGS M41 ELEV. 2983.144
0.3 MILE SOUTH OF INT. BEAR
VALLEY RD. AND AT 65FRR
442' WEST OF WEST RAIL OF
WEST TRACK, 11' SOUTH OF TEL.
POLE 41GE41.

COUNTY APPROVAL:
February 28, 1972 DATE
J. H. Morgan / W. C. Carter
Asst. Director, Dept. of Building Services

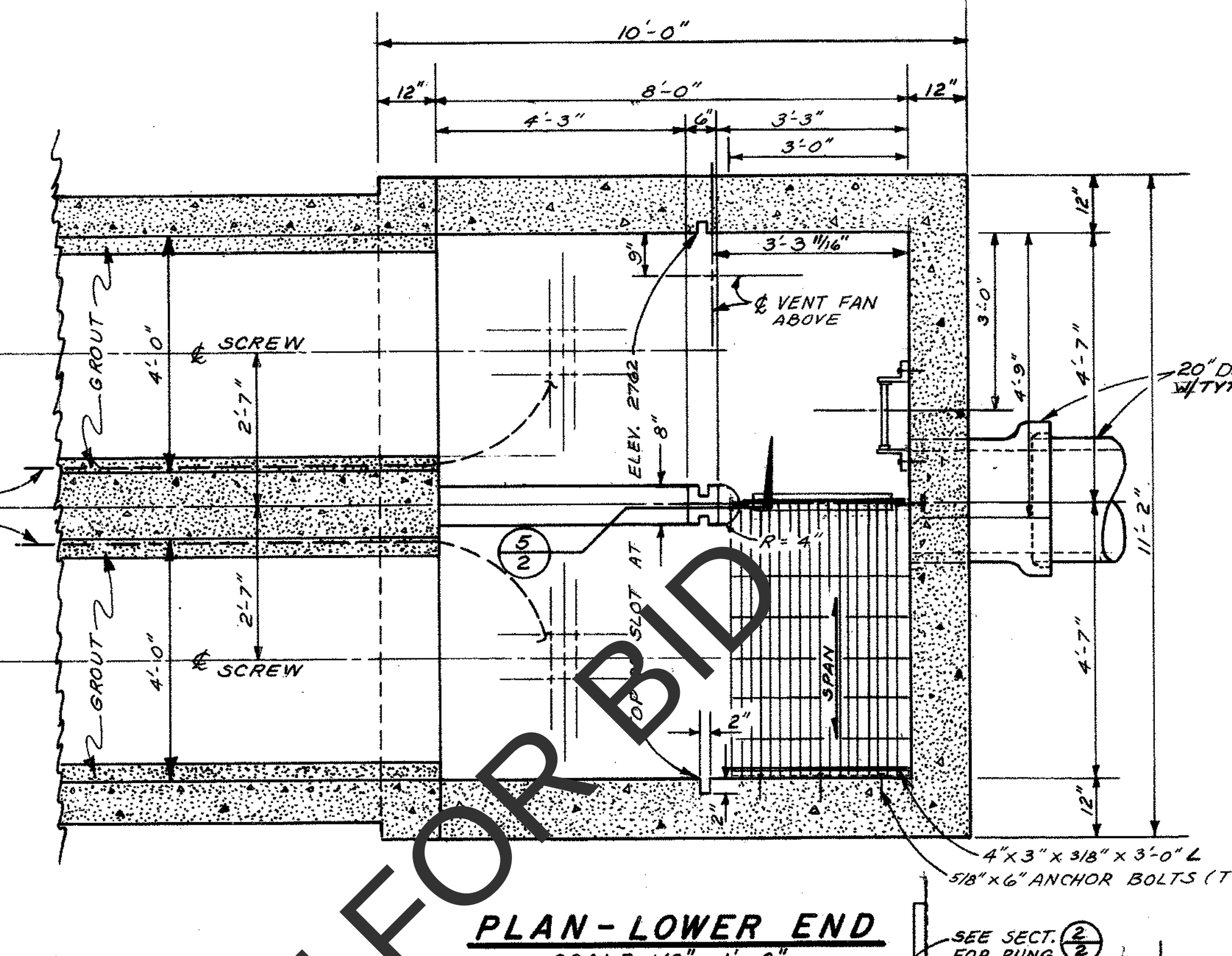
APPROVED: 2/25/72 DATE _____
Norman A. Neste
 NORMAN A. NESTE
 DISTRICT ENGINEER

[illegible]

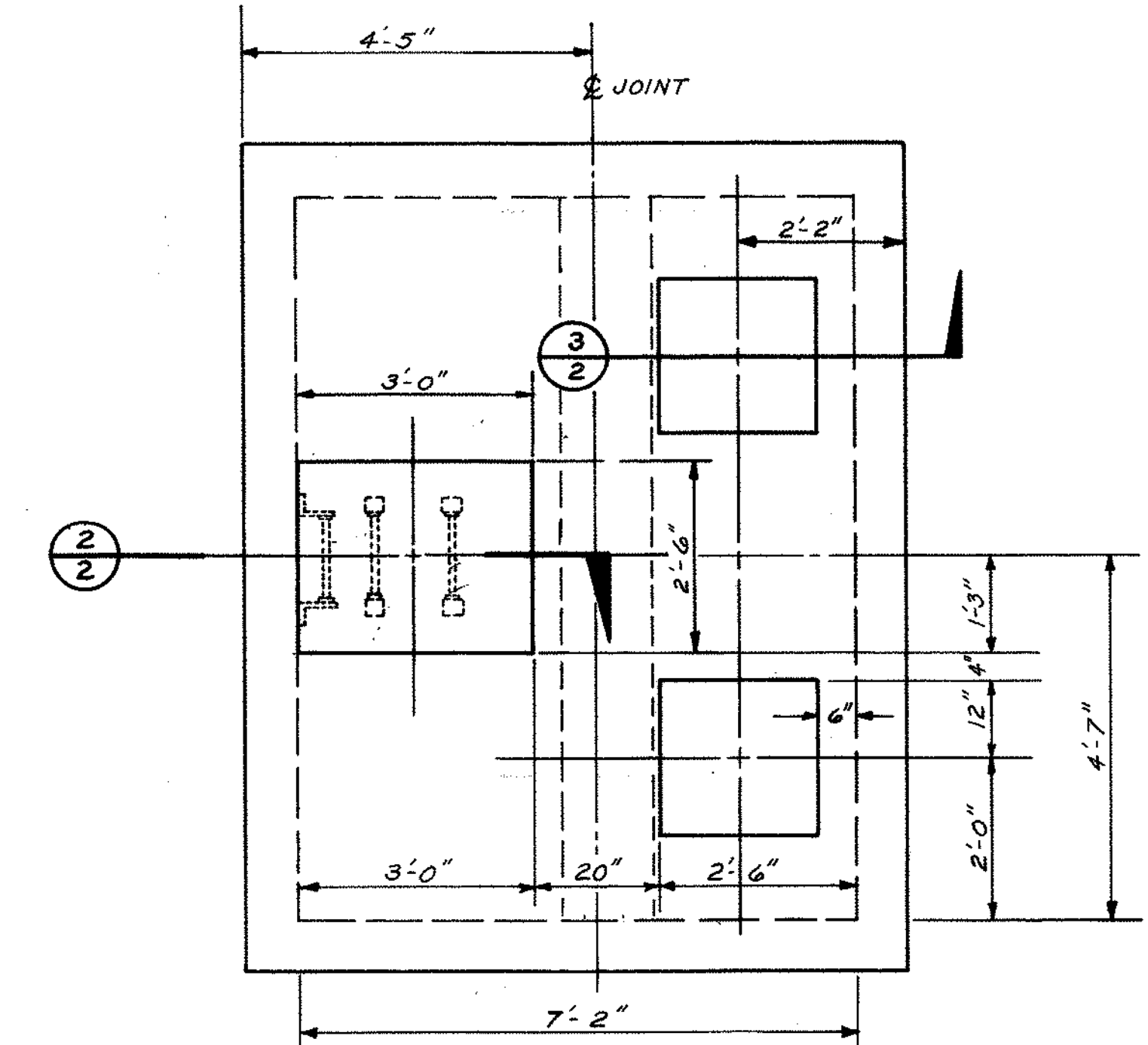
SCALE AS NOTED
DESIGNED KIM
DRAWN JMC
CHECKED KIM



PLAN-UPPER END
SCALE 1/2" = 1'-0"

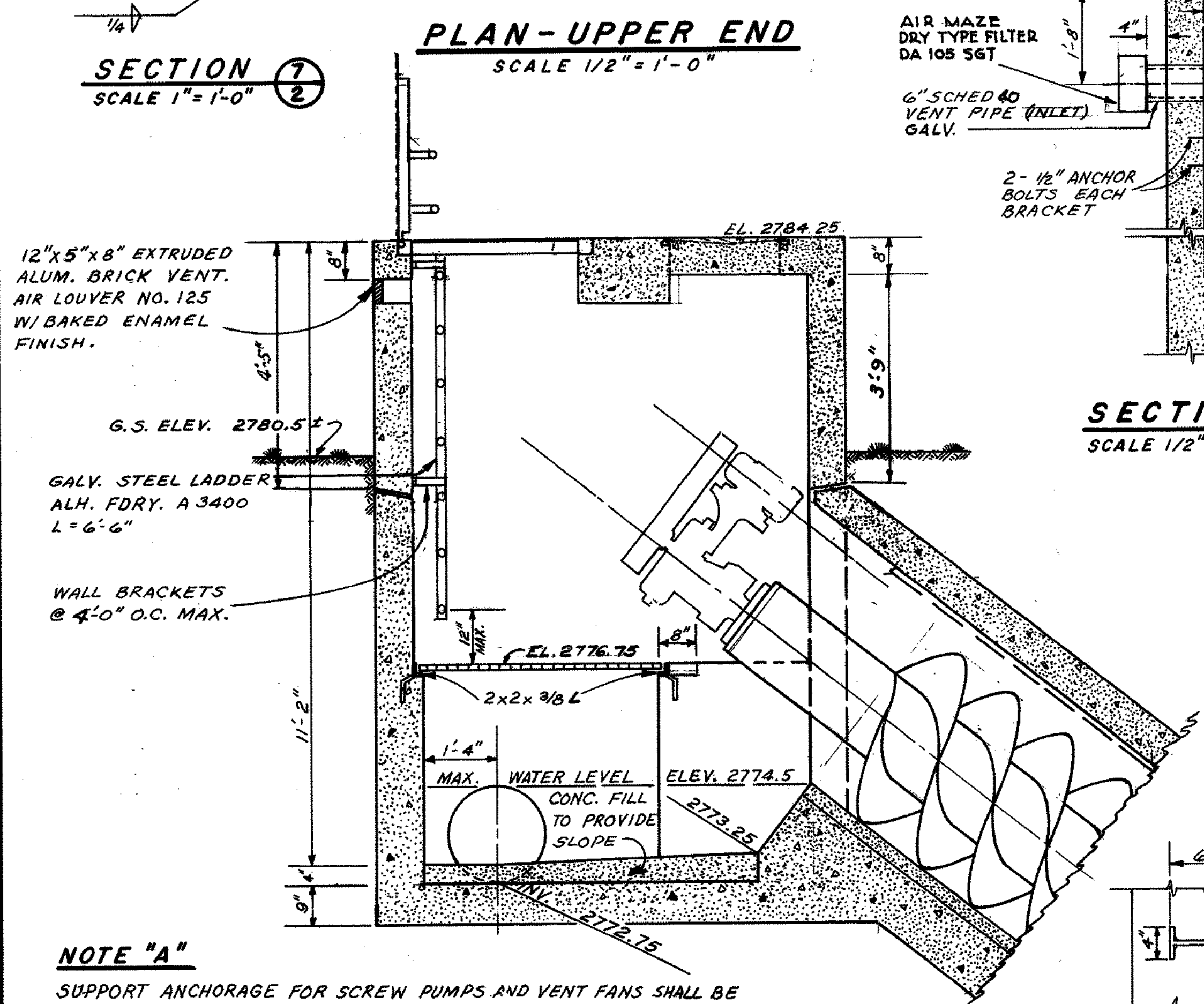


PLAN-LOWER END
SCALE 1/2" = 1'-0"

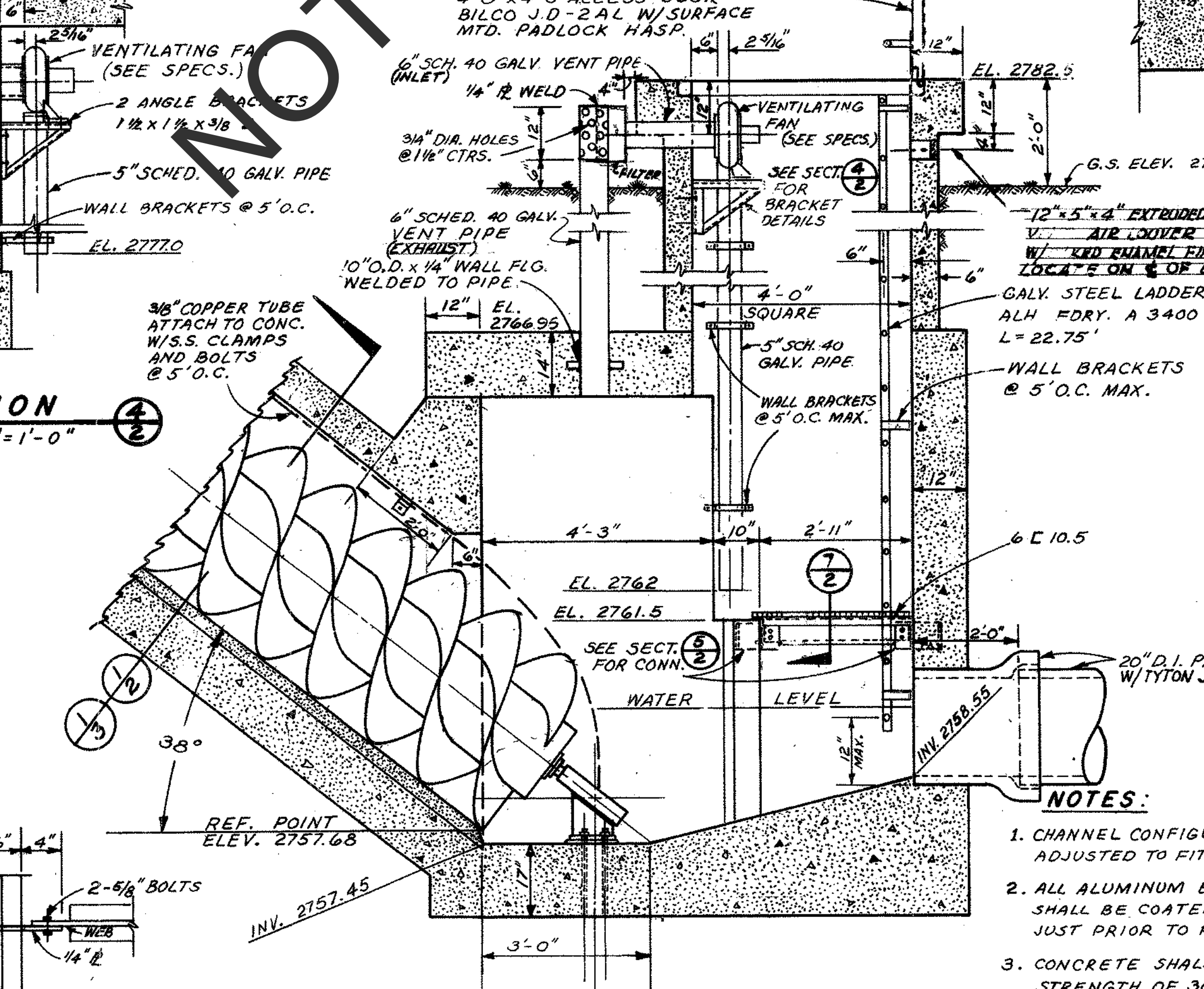


ROOF PLAN-UPPER END
SCALE 1/2" = 1'-0"

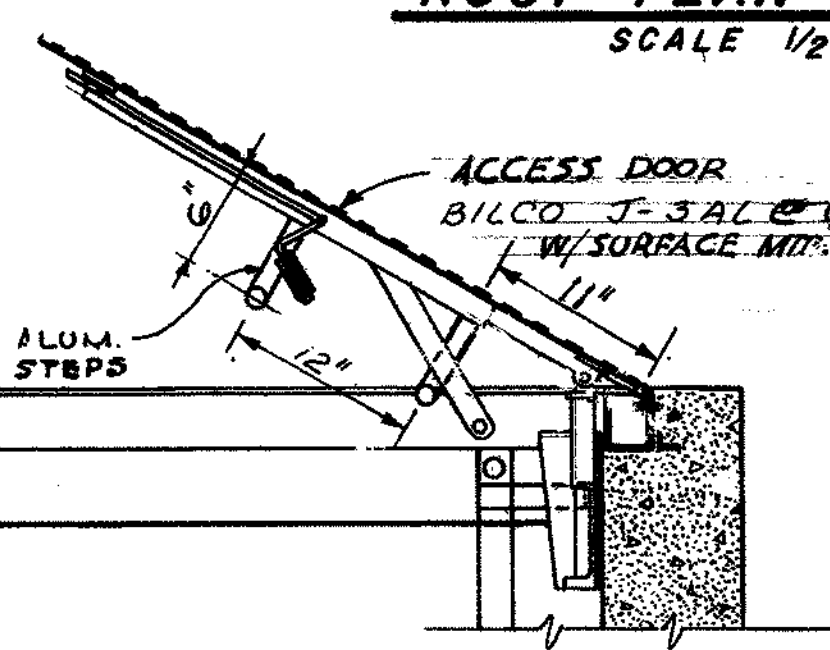
SECTION 1
SCALE 1" = 1'-0"



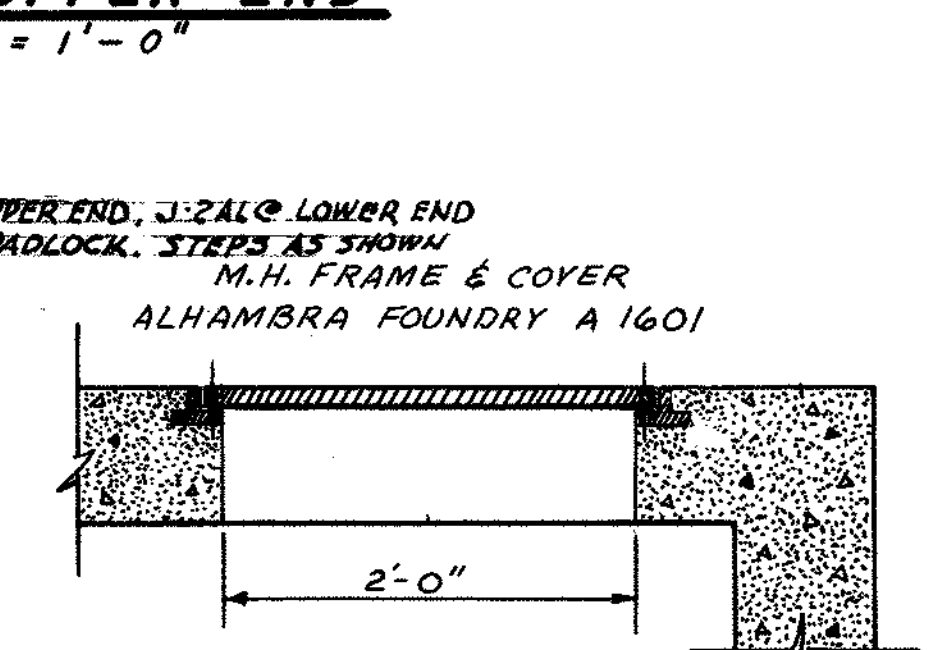
SECTION 2
SCALE 1/2" = 1'-0"



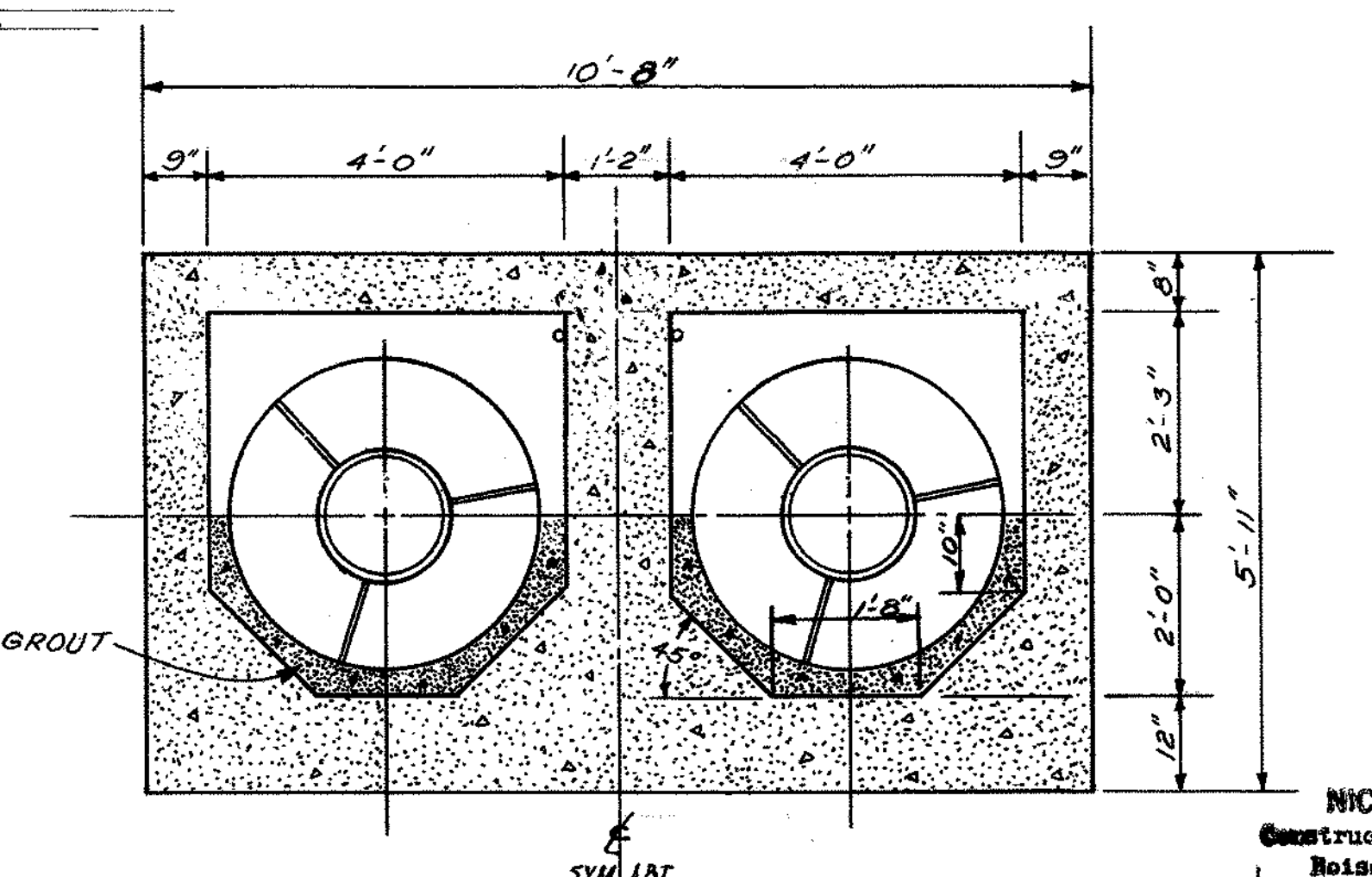
SECTION 3
SCALE 1" = 1'-0"



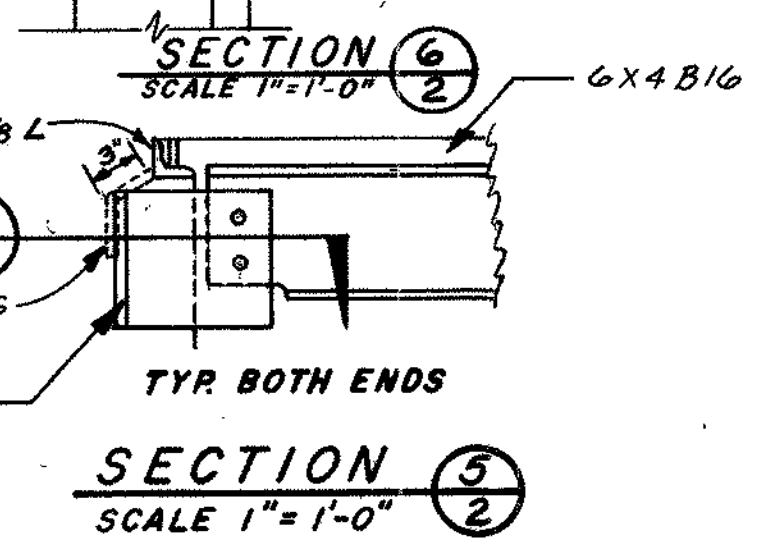
SECTION 4
SCALE 1" = 1'-0"



SECTION 5
SCALE 1/2" = 1'-0"



ELEVATION-LOWER END
SCALE 1/2" = 1'-0"



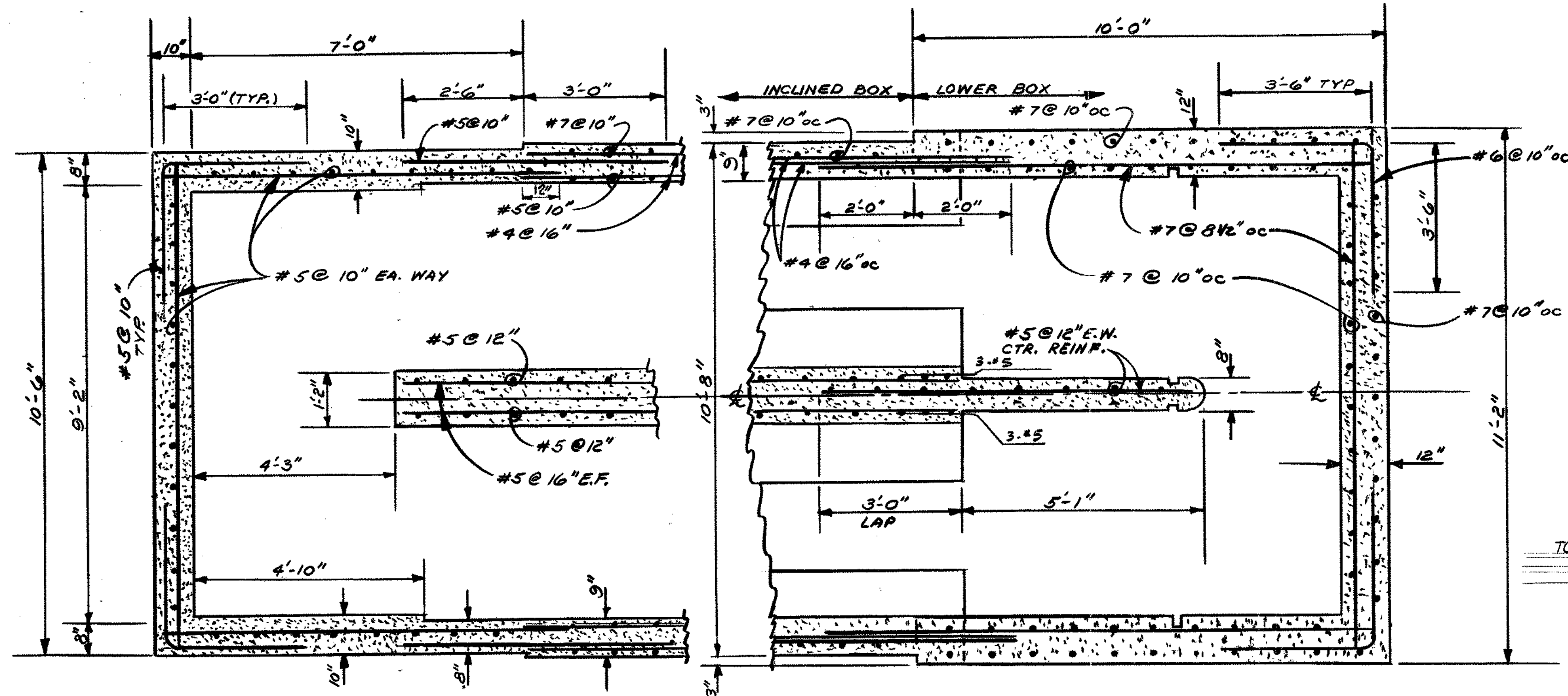
ELEVATION-UPPER END
SCALE 1/2" = 1'-0"

NOTE "A"
SUPPORT ANCHORAGE FOR SCREW PUMPS AND VENT FANS SHALL BE DETERMINED FROM MANUFACTURERS CERTIFIED SHOP DWGS. DO NOT POUR CONCRETE UNTIL ANCHORAGE DETAILS ARE VERIFIED.

- NOTES:**
1. CHANNEL CONFIGURATION SHALL BE ADJUSTED TO FIT EQUIPMENT FURNISHED.
 2. ALL ALUMINUM EMBEDDED IN CONCRETE SHALL BE COATED WITH AMERCOAT #66 JUST PRIOR TO PLACING CONCRETE.
 3. CONCRETE SHALL HAVE A COMPRESSIVE STRENGTH OF 3000 PSI @ 28 DAYS.
 4. #5 AND LARGER REINF. BARS SHALL HAVE A MIN. YIELD STRENGTH OF 60,000 PSI. #4 AND SMALLER SHALL HAVE A MIN. YIELD STRENGTH OF 40,000 PSI.

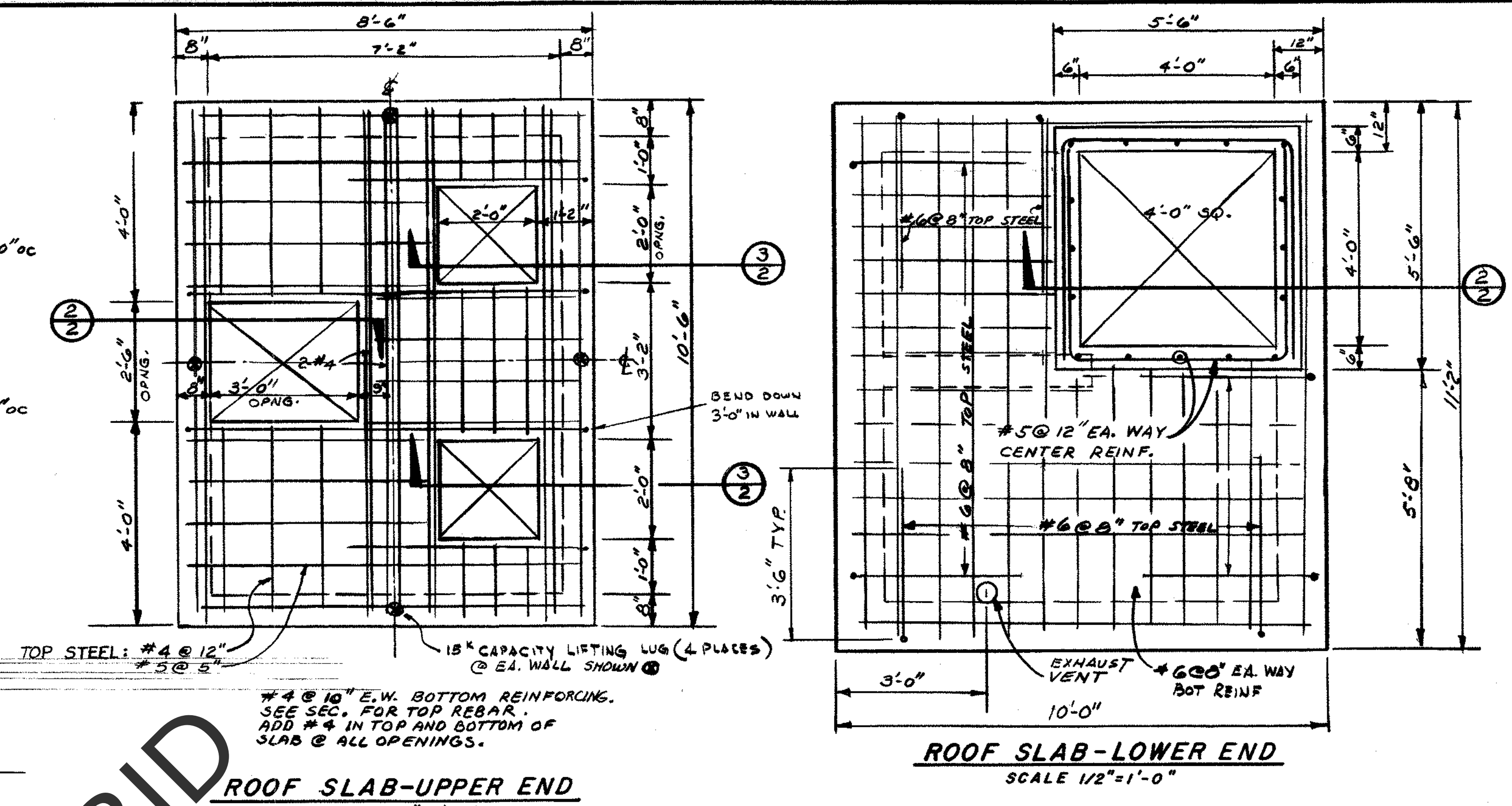
AS BUILT

COUNTY APPROVAL: 2/28/72 DATE		APPROVED: 2/25/72 DATE Norman A. Nette		SCALE AS NOTED		SHEET 2	
See Sheet No. 1		NORMAN A. NETTE DISTRICT ENGINEER		DESIGNED KIM		KIM	
				DRAWN JMC		KENNETH I. MULLEN CONSULTING ENGINEER ARCADIA - VENTURA, CALIFORNIA	
				CHECKED KIM		9692 R.C.E. No. 2/12/71	



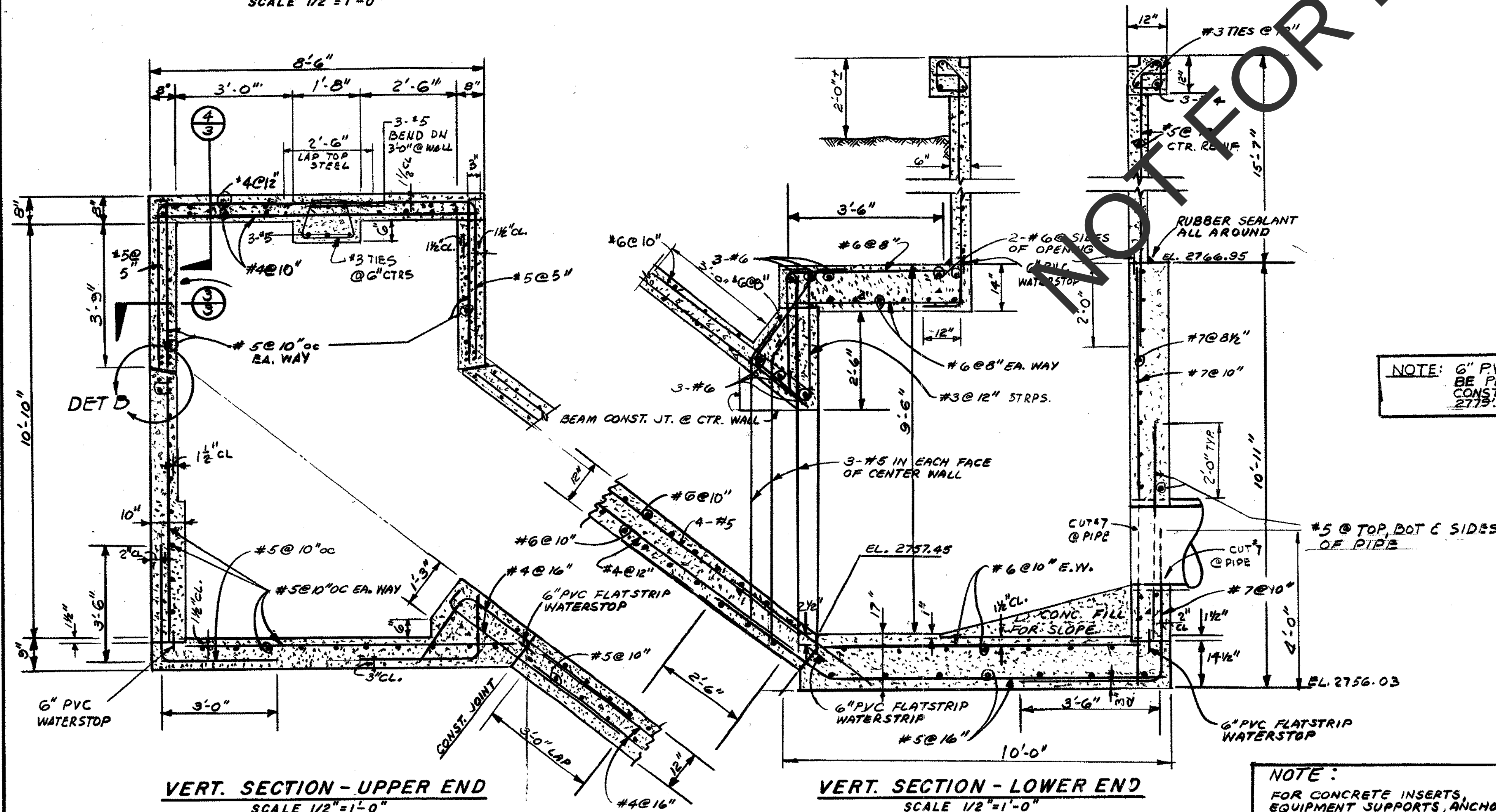
PLAN SECTION - UPPER END
SCALE 1/2"=1'-0"

PLAN SECTION - LOWER END
SCALE 1/2"=1'-0"



ROOF SLAB - UPPER END
SCALE 1/2"=1'-0"

ROOF SLAB - LOWER END
SCALE 1/2"=1'-0"

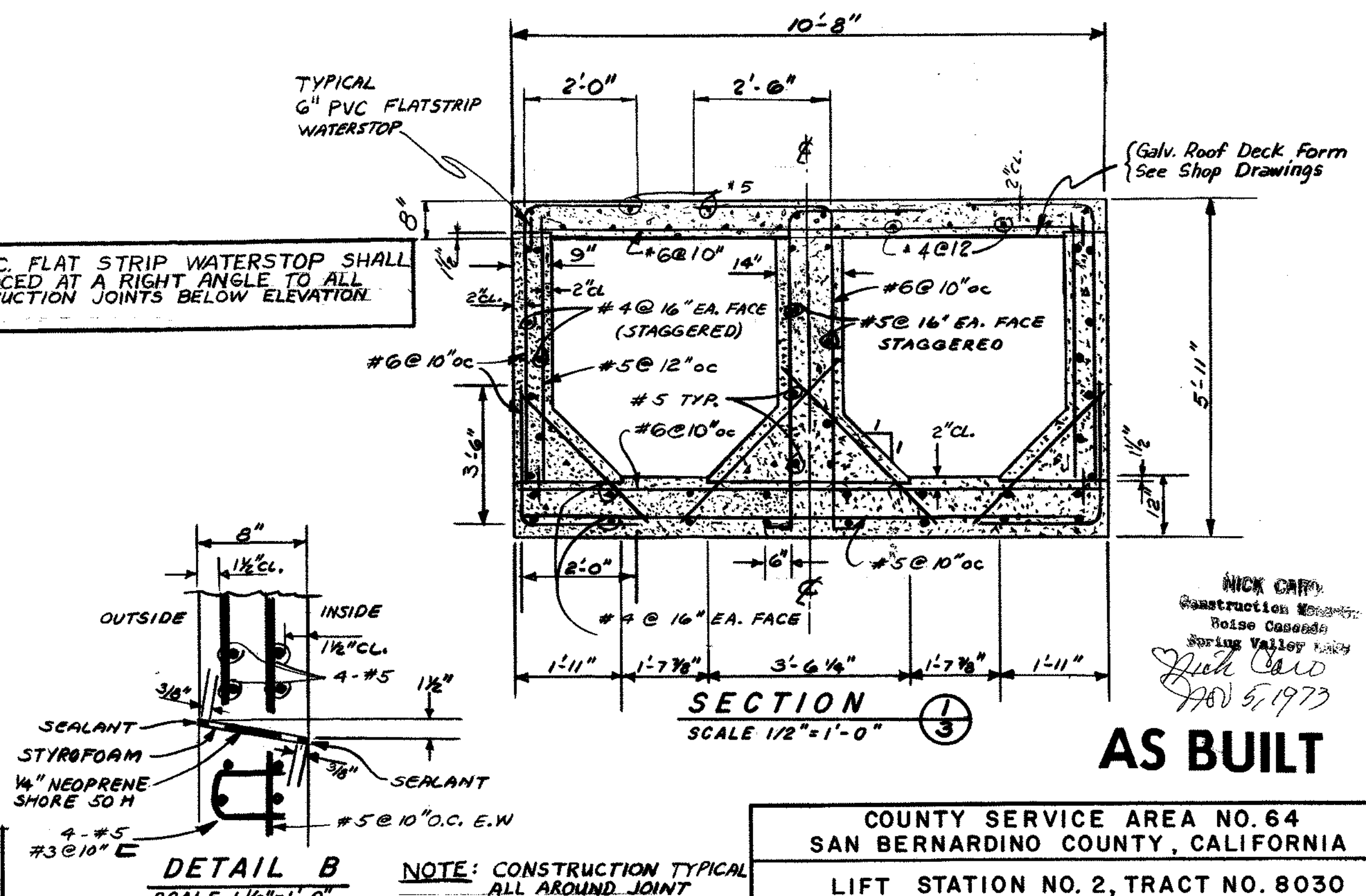


VERT. SECTION - UPPER END
SCALE 1/2"=1'-0"

VERT. SECTION - LOWER END
SCALE 1/2"=1'-0"

NOTE: 6" PVC FLAT STRIP WATERSTOP SHALL BE PLACED AT A RIGHT ANGLE TO ALL CONSTRUCTION JOINTS BELOW ELEVATION 2779.

NOTE: FOR CONCRETE INSERTS, EQUIPMENT SUPPORTS, ANCHOR BOLTS, ETC. SEE SHEET 2.

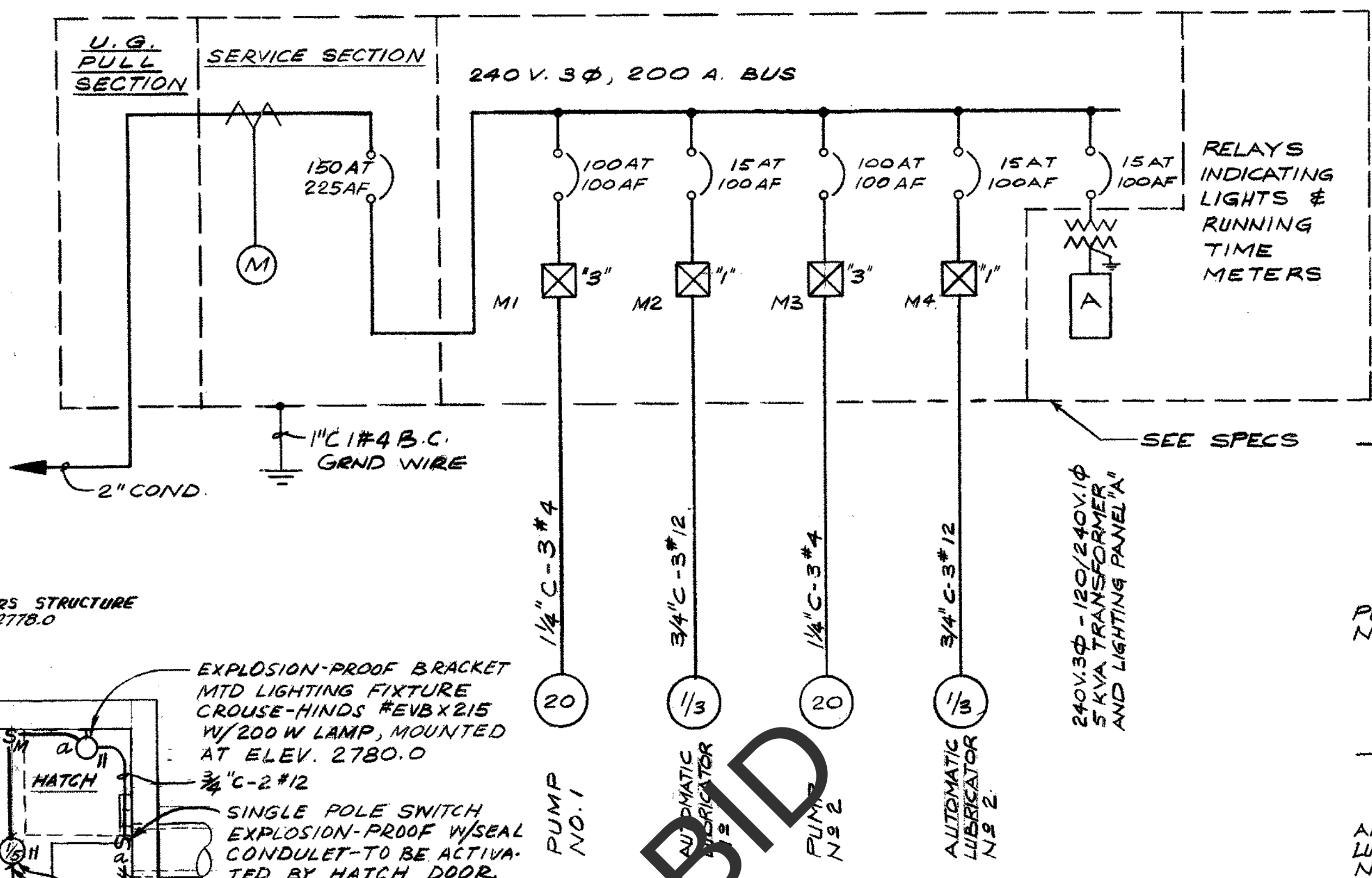
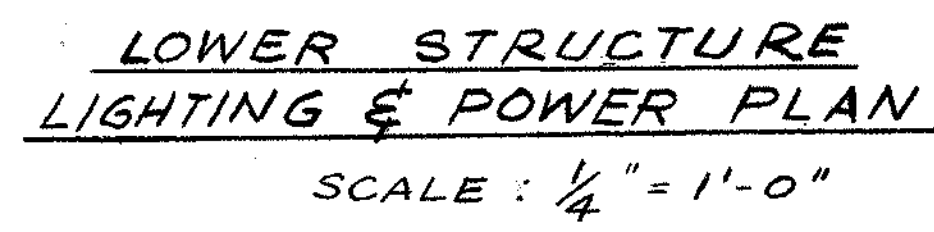
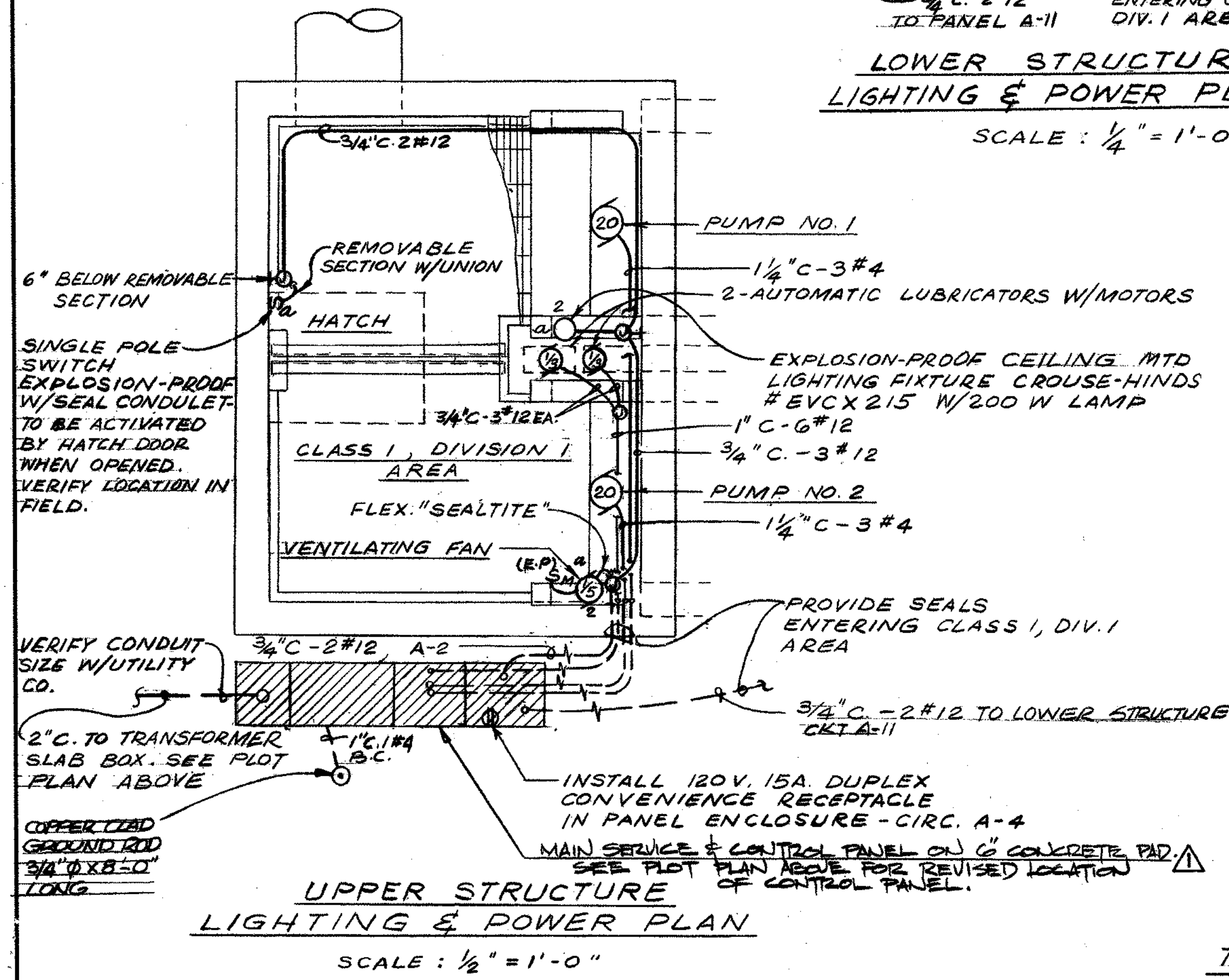
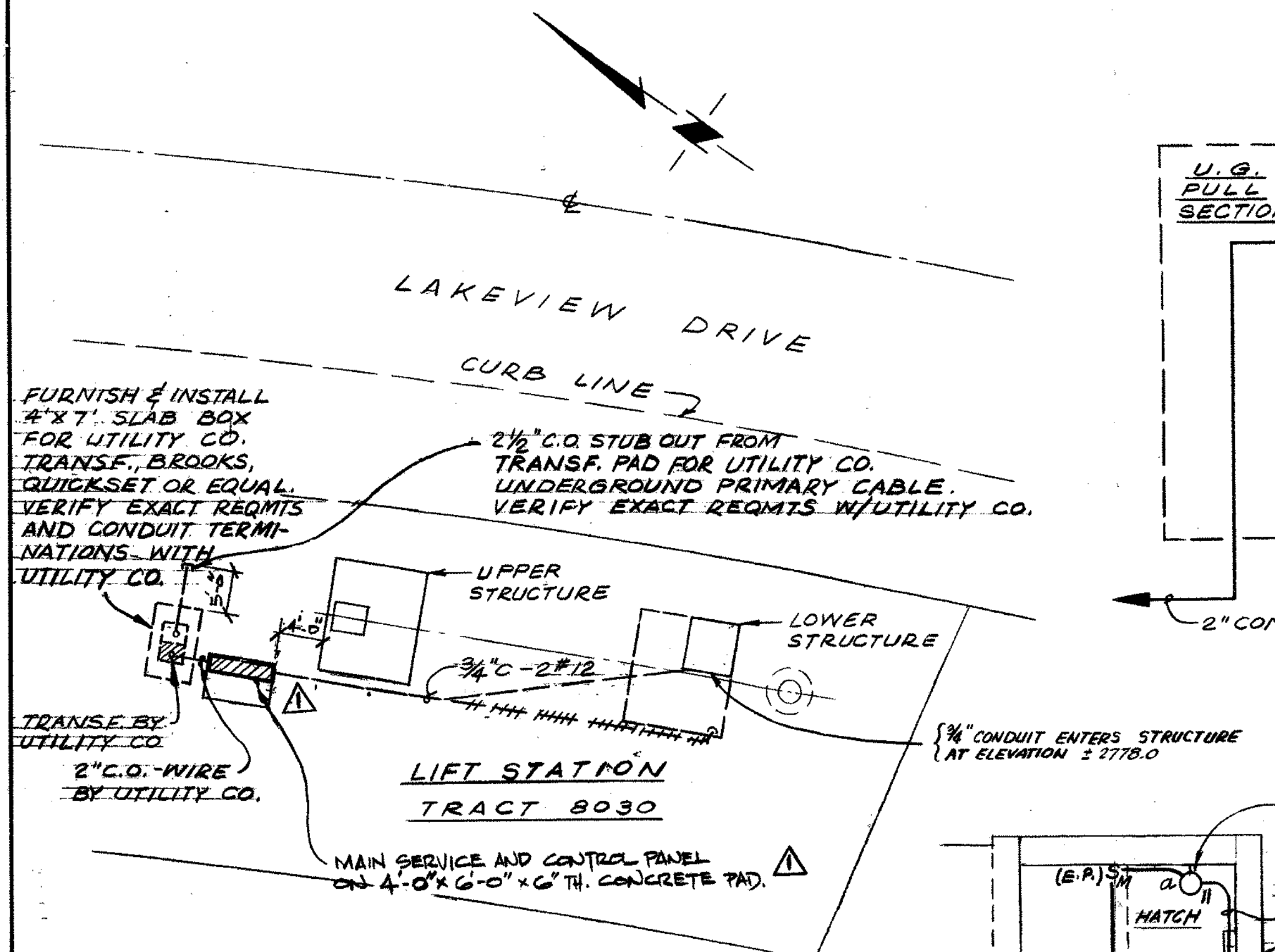


DETAIL B
SCALE 1/2"=1'-0"

NOTE: CONSTRUCTION TYPICAL ALL AROUND JOINT

AS BUILT

COUNTY APPROVAL: 2/28/72 DATE		APPROVED: 2/25/72 DATE		SCALE AS NOTED		DESIGNED: KIM		DRAWN: JMC		CHECKED: KIM		SHEET 3 OF 4 SHEETS	
See Sheet No. 1		NORMAN A. NESTE DISTRICT ENGINEER		KIM		KENNETH I. MULLEN CONSULTING ENGINEER ARCADIA - VENTURA, CALIFORNIA		COUNTY SERVICE AREA NO. 64 SAN BERNARDINO COUNTY, CALIFORNIA		LIFT STATION NO. 2, TRACT NO. 8030		STRUCTURAL DETAILS	

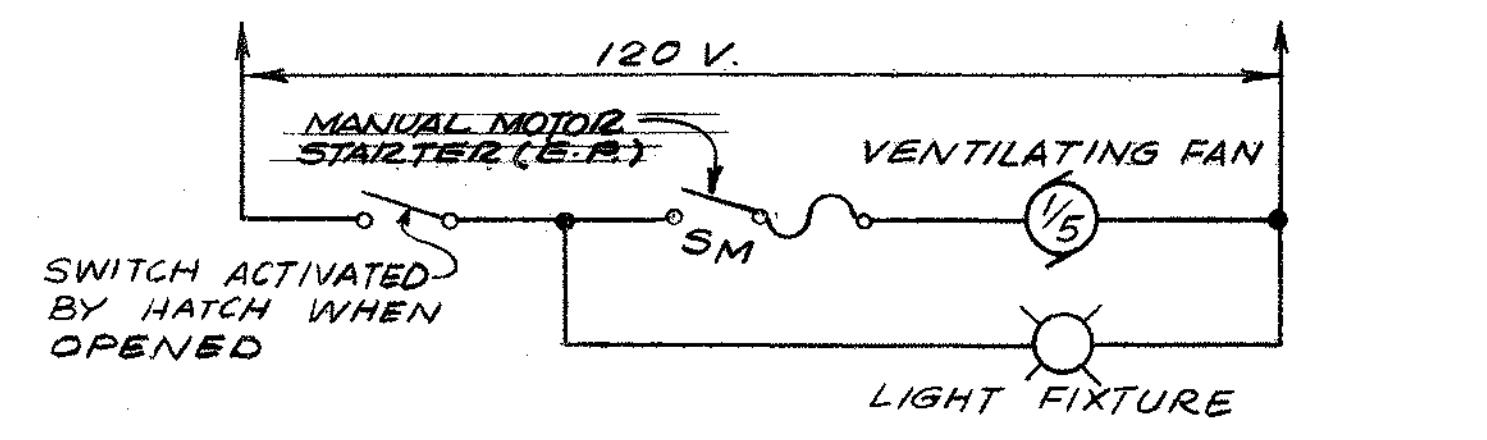


PANEL "A"

CIR. NO.	CIR. BRKR.	OUTLET	REMARKS	WATTS
1	7 20	1	MOTOR CONTROL CKT 200	
2	1	1	LIGHT EXHAUST FAN - UPPER B20	
3	1	1	SPACE	
4	1	1	CONV. RECEPTACLE	180
5	1	1	SPACE	
6	1	1	SPACE	
7	1	1	SPACE	
8	1	1	SPACE	
9	1	1	SPACE	
10	1	1	SPACE	
11	1	1	LIGHTS DOWNER - LOWER	320
12	1	1	SPACE	
TOTAL WATTS 2020				1020 1000
3.3 AMPERES @ 120/240 VOLTS • 1 PHASE • 60 CYCLES S W. S. N.				
COND. W/4 #10				
CABLES • LOC.				
MAIN LUGS				
MOUNT IN MOTOR CONTROL CENTER				

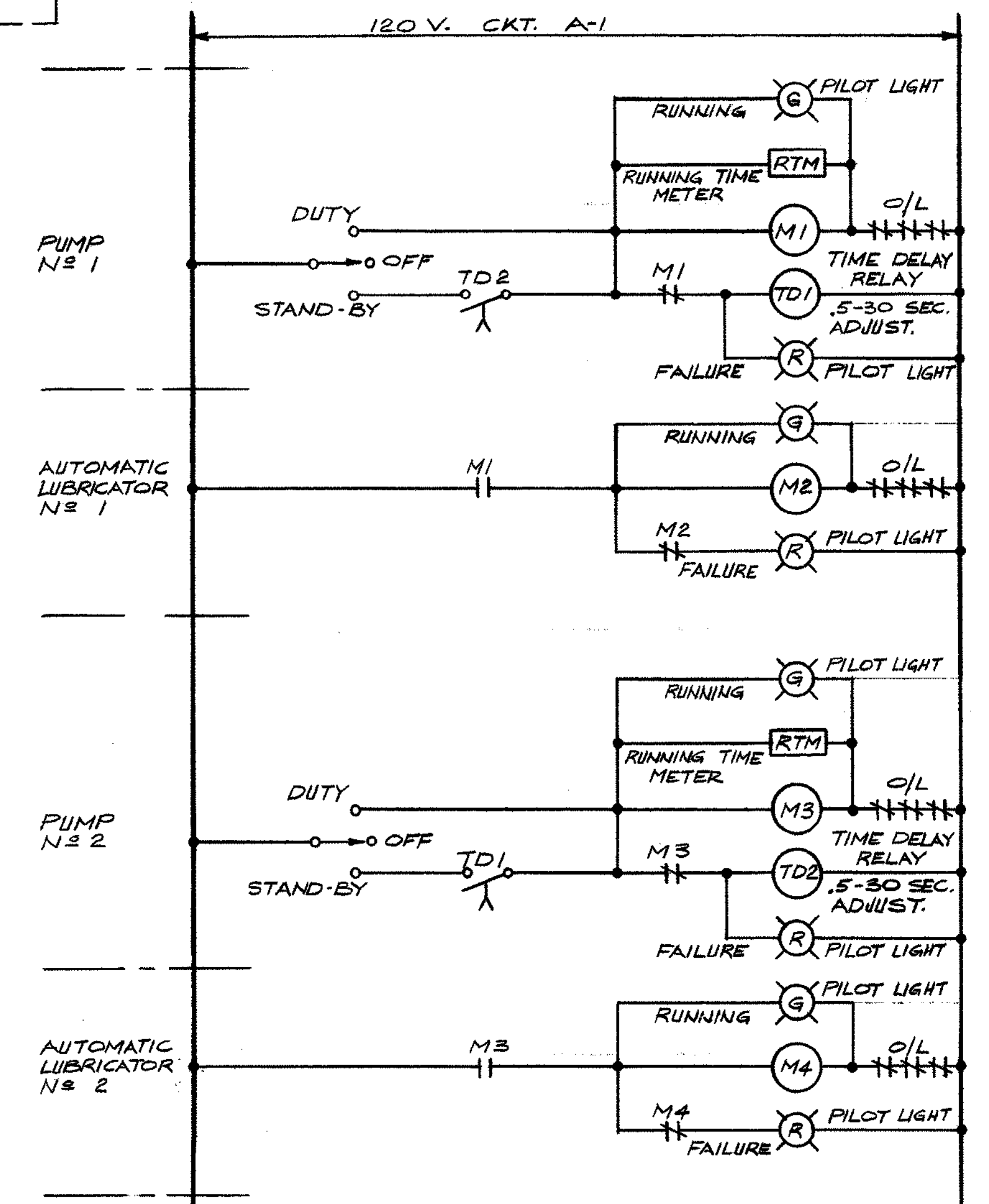
NOTES:

- ALL ELECTRICAL EQUIPMENT INSIDE UPPER AND LOWER STRUCTURES SHALL BE EXPLOSION-PROOF.



PUMPING SEQUENCE:

- PUMP NO. 1 OR PUMP NO. 2 SHALL BE THE DUTY PUMP. THE 2ND PUMP NOT ON DUTY SHALL SERVE AS THE STAND-BY PUMP.
- DUTY PUMP SHALL BE ON CONTINUOUSLY. SELECTION OF DUTY AND STAND-BY PUMP SHALL BE BY MANUAL SELECTION OF DUTY-OFF-STANDBY SELECTOR SWITCH.
- FAILURE OF THE DUTY PUMP SHALL AUTOMATICALLY BRING ON THE STAND-BY PUMP THROUGH EITHER RELAY TD-1 OR TD-2.
- STARTING OF EITHER PUMP WILL AUTOMATICALLY START ASSOCIATED AUTOMATIC LUBRICATOR MOTOR.



LEGEND:

- CONDUIT RUN EXPOSED
- CONDUIT RUN UNDERGROUND
- CONDUIT BENDING TOWARD OBSERVER
- CONDUIT BENDING AWAY FROM OBSERVER
- POWER COMPANY METERING
- MAGNETIC MOTOR STARTER, FULL VOLTAGE NONREVERSING, NEMA SIZE "1" OR "3" AS INDICATED. M1 REFERS TO COIL DESIGNATION SHOWN ON SCHEMATIC DIAGRAM.
- CURRENT TRANSFORMER
- SQUIRREL CAGE INDUCTION MOTOR, 20 H.P.
- MANUAL MOTOR STARTER
- PILOT "G" INDICATES GREEN "R" INDICATES RED

AS BUILT

NICK CARO
Construction Manager
Boise Cascade
Spring Valley, CA

AS BUILT

COUNTY SERVICE AREA NO. 64
SAN BERNARDINO COUNTY, CALIFORNIA
LIFT STATION NO. 2, TRACT NO. 8030
ELECTRICAL DETAILS

DATE: 12/10/72
REVISED: 1/10/73
APPROVED: [Signature]
DESCRIPTION: Revised Transformer & Control Panel Location.

KIM
KENNETH I. MULLEN
CONSULTING ENGINEER
ARCADIA • VENTURA, CALIFORNIA

SHEET **4** OF 4 SHEETS

APPENDIX C

WEBB ENGINEERING SEWER FEASIBILITY STUDIES

NOT FOR BID

Corporate Headquarters
3788 McCray Street
Riverside, CA 92506
951.686.1070

Palm Desert Office
74967 Sheryl Avenue
Palm Desert, CA 92260
951.686.1070

Murrieta Office
41870 Kalmia Street #160
Murrieta, CA 92562
T: 951.686.1070

November 29, 2021

Mr. Nelson Sarti, P.E.

Project Manager

SAN BERNARDINO COUNTY

DEPARTMENT OF PUBLIC WORKS, SPECIAL DISTRICTS

PO Box 11969

San Bernardino, CA 92423

RE: Sewer Study Letter for APN 0482-011-01, -02, -07, and -08
, located on the southwest corner of the intersection of Pahute Avenue
and Tamarisk Road.

Dear Mr. Sarti:

Pursuant to the District's request, we have performed a sewer study for the above referenced project that includes a review of how the proposed project affects the District's existing facilities and identifies any required system improvements. The proposed project consists of 39 residential lots and is located west of Tamarisk Road and south of Pahute Avenue in the City of Victorville, as shown in **Figure 1**. The proposed facility is requesting sewer service from County Service Area 64.

Project Wastewater Generation

The project's wastewater flow generation is calculated using comparable wastewater generation factors. A sewer generation value of 100 gpd/capita was used in the calculation of the proposed project's sewer generation, as specified in the County of San Bernardino Special Districts Department Standards for Sanitary Sewer (November 13, 2012). According to the U.S. Census Bureau data from 2015-2019, there is a density of 3.60 people per household in the city of Victorville. Therefore, the proposed development's calculated sewer generation is calculated below.

Total Residential Households = 39 homes

Population Density = 3.60 people/home

Sewer Generation Rate = 100 gpd/person

$$\text{Sewer Generation}_{\text{Average}} = (39 \text{ homes}) \times \left(3.60 \frac{\text{people}}{\text{home}}\right) \times \left(100 \frac{\text{gpd}}{\text{person}}\right) = 14,040 \text{ gpd}$$

The estimated peak flow for this project is 28,080 gpd or 19.5 gpm based on the peaking factor consistent with the sewer monitoring study.

Project Connection Point

In preparation of this sewer study, we have reviewed available data related to the proposed sewer connection point. Available data includes District atlas maps and a hydraulic model of the existing CSA 64 sewer system created by WEBB to perform previous studies. There are existing 8-in sewers in Tamarisk Road and Pahute Avenue fronting the project boundaries. No interior sewer plan has been developed yet. A likely sewer connection point to the existing CSA 64 sewer system would be located either on Tamarisk Road or Pahute Avenue in the public right-of-way.

Hydraulic Model Information

A hydraulic model of the CSA 64 Easterly Sewer System was created by WEBB to perform a previous sewer study dated October 20, 2017. In 2021, WEBB was asked to perform two additional sewer studies, and in each study, WEBB recommended field flow monitoring in the CSA 64 easterly system to verify if current field sewer flows match WEBB's 2017 hydraulic model flows. Field flow monitoring was conducted from June to July 2021, and the hydraulic model was re-calibrated in August 2021 after the field flow monitoring. The re-calibrated CSA 64 sewer model is used for this analysis. Please see the attached analysis for the re-calibrating the sewer model using the field flow monitoring.

Analysis Load Input

To include the proposed project flows in the system's existing model, an average daily sewer load of 0.0140 MGD, as calculated above, was applied to the 8-inch diameter sewer line in Tamarisk Road. In addition, the following model point wastewater loads summarized in **Table 1** were added to the system's model to account for other development in the CSA 64 system. **Figure 1** shows a map of the proposed project location, point load locations, and the system's model sewer lines.

Table 1

Point Load Source	Sewer Flow (gpd) – Average Flow	Sewer Flow (gpm) – Peak Flow
Victor Valley College (w/o Stadium) ⁽¹⁾	147,000	204.17
Lakeview Middle School ⁽¹⁾	8,820	12.25
Endeavour School of Exploration ⁽¹⁾	8,330	11.57
Excelsior Charter School ⁽¹⁾	14,700	20.42
APN 0482-043-08 ⁽³⁾	4,950	6.88
Victor Valley College Stadium ⁽²⁾	N/A	47.22

¹ From the CSA 64 Easterly Sewer System Modeling/Hesperia Sewer Study (10/20/2017)

² From the CSA 64 Victor Valley College – New Stadium and Education Event Center Sewer Study (04/09/2021)

³ From the CSA 64 APN 0482-043-08 Sewer Study (11/29/2021)

Analysis Results

The model's sewer pipelines from the proposed development location to the downstream Lakeview Lift Station were analyzed for high depth-over-Diameter (d/D) ratios. The downstream pipelines with the highest d/D ratios are listed in **Table 2** below.

Table 2

Pipe ID	Diameter (in)	Total Flow (mgd)	d/D
12-8030-11	21	2.138	0.509
14-8030-13	21	2.107	0.492
13-8030-12	21	2.211	0.490
15-8030-14	21	2.17	0.455
1-8099-6	15	0.935	0.455
6-8099-5	15	0.935	0.455

The peak flow at the Lakeview Lift Station is estimated at 2.34 MGD or 3.62 cfs. The model analysis concludes that downstream sewer pipe segments from the proposed development experience flow d/D ratios that are below the maximum d/D standards, with the model inputs summarized in this letter. The District can consider accepting sewage flows from these proposed projects without upgrading the existing collection system pipelines, however the Lakeview Lift Station should be reviewed in detail for its capability for this increased flowrate.

Should you have any questions, please call me.

ALBERT A. WEBB ASSOCIATES



Bradley Sackett, Webb Associates
Senior Engineer



cc: Gustavo Gomez, Webb Associates
Bruce Davis, Webb Associates

