BEACH BLVD
NEWLAND ST
EDISON AVE
Mobile Home Park
PACIFIC COAST HIGHWAY
Ascon/Nesi Landfill
MAGNOLIA ST
Huntington Beach Channel
Pacific Holdings Storage Tank Facility
Huntington Beach Generating Station
Open Space/ Wetlands
1
Intake Pipe (1,840 ft off shore)
Outfall Pipe (1,500 ft off shore)
PACIFIC COAST HIGHWAY
Huntington Beach Desalination Plant
Intake and Outfall Pipes

Huntington Beach
Bathymetry Survey
May 24, 2006
Pipelines
Depth Contours - ft (mllw)
-9
-10
-11
-12
-13
-14
-15
-16
-17
-18
-19
-20
-21
-22
-23
-24
-25
-26
-27
-28
-29
-30
-31
-32
Manhole 1
Manhole 2
Manhole 3
Manhole 4
Manhole 5
Manhole 6
Discharge Structure
Intake Structure
0 50 100 200 300 400 Yards
0 50 100 200 300 400 Meters

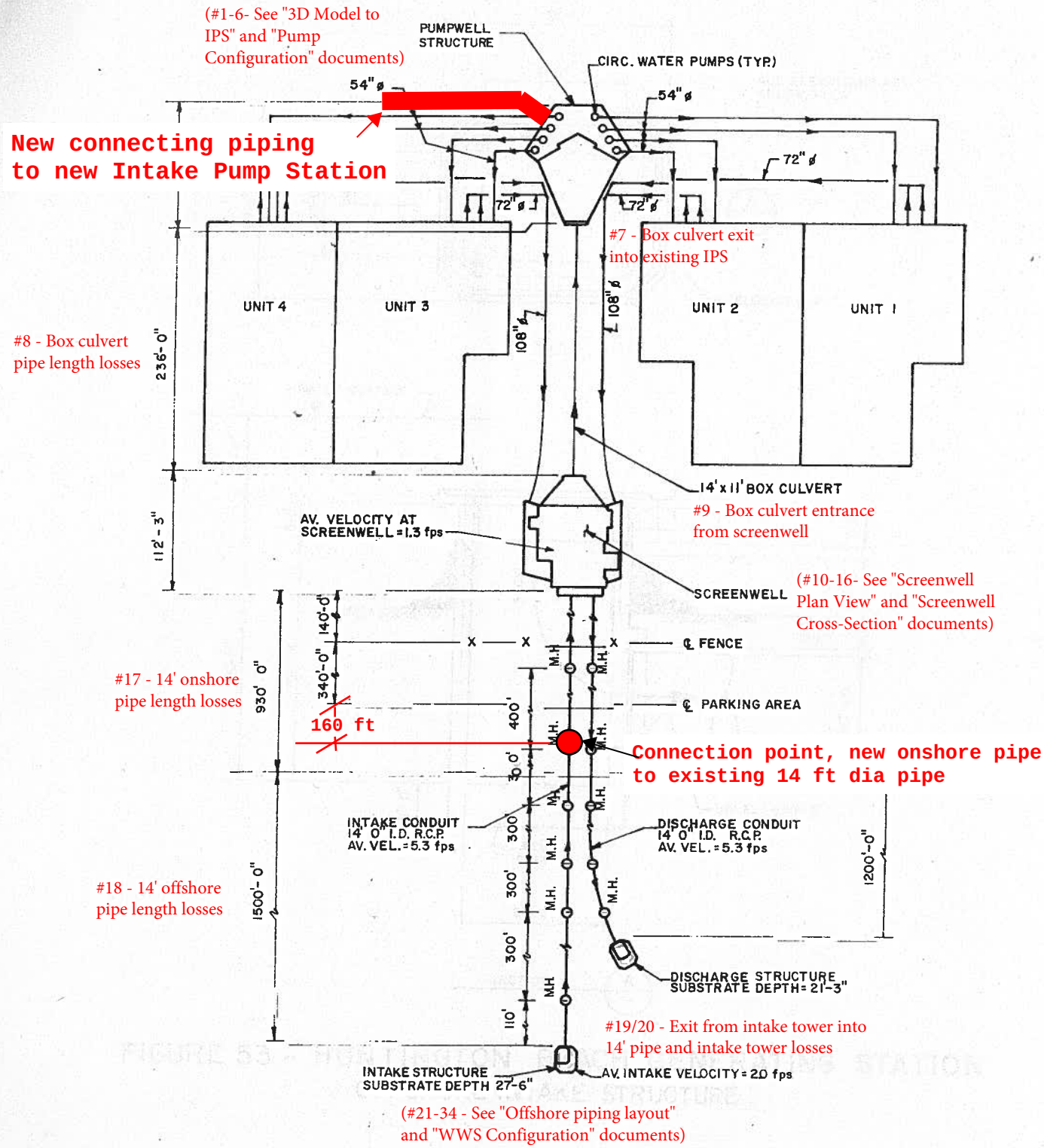
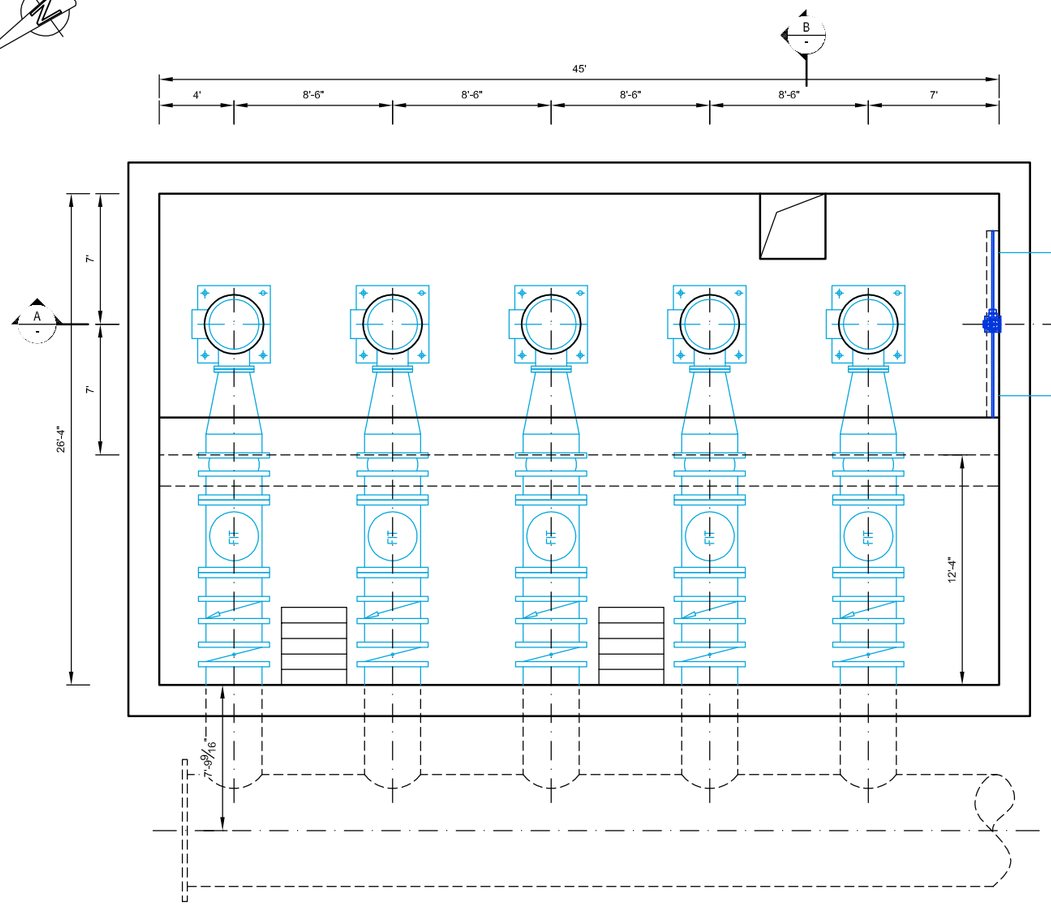



FIGURE 52.- HUNTINGTON BEACH GENERATING STATION
CIRCULATING WATER SYSTEM

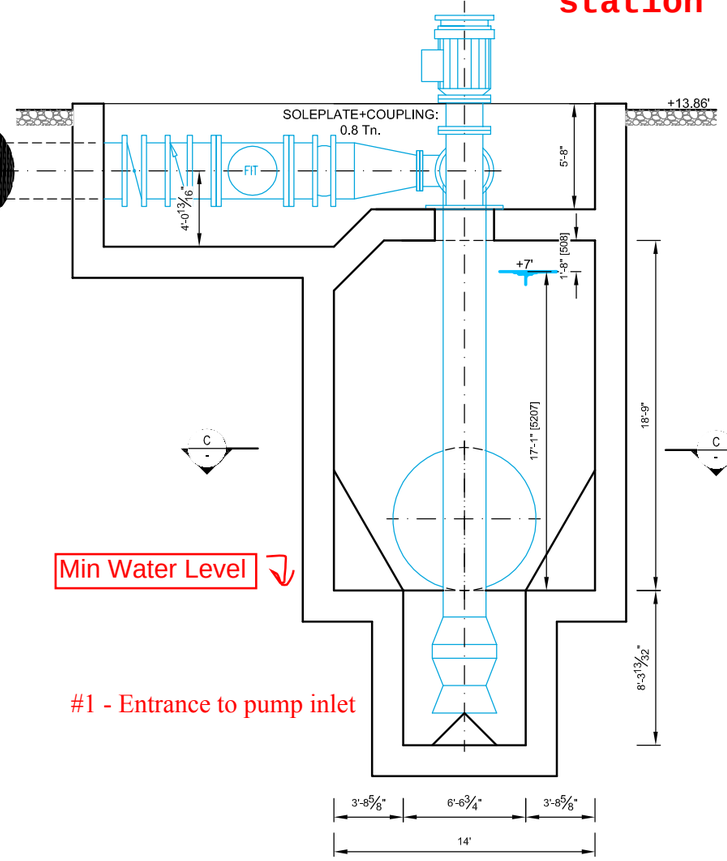
SCE REF. DWG. 559464



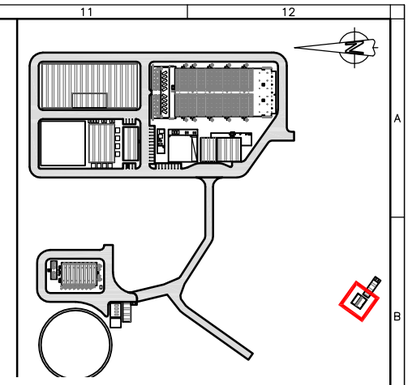

PLAN
SCALE 1/4" = 1'-0"

#2 - Exit from existing to proposed IPS

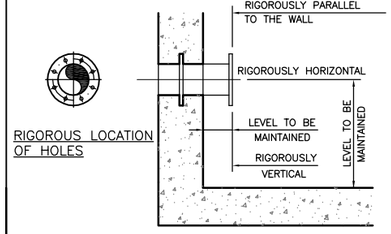
Connecting piping to existing intake pump station




SECTION B-B
SCALE 1/4" = 1'-0"



FLANGED PUDDLE PIPE LOCATION DETAIL




FRONT VIEW AND SECTION

- HOLES SCREW IN FLANGE WILL NOT MATCH WITH VERTICAL AND HORIZONTAL AXES , THESE WILL BE SYMMETRICAL
- THEY WILL BE PLACED RIGOROUSLY ALIGNED

(*) TO BE DEFINED BY CIVIL WORKS

BUILD " * " GROUP

| No. | REVISIONS: | DRN: | DATE: |
|---|---|---|---|
| | | | |

Notes:

Sheet:

Entity: KSD KIEWIT SHEA DESALINATION

Joint venture of: acciona Agua / TETRA TECH www.tetratech.com

| | | |
|---|---|---|
| Designed: | M.M.H. | 30th SEPTEMBER 2016 |
| Drawn: | A.R-L. | 30th SEPTEMBER 2016 |
| Reviewed: | M.M.H. | 30th SEPTEMBER 2016 |
| Approved: | J.I. | 30th SEPTEMBER 2016 |
| | Initials | Date |

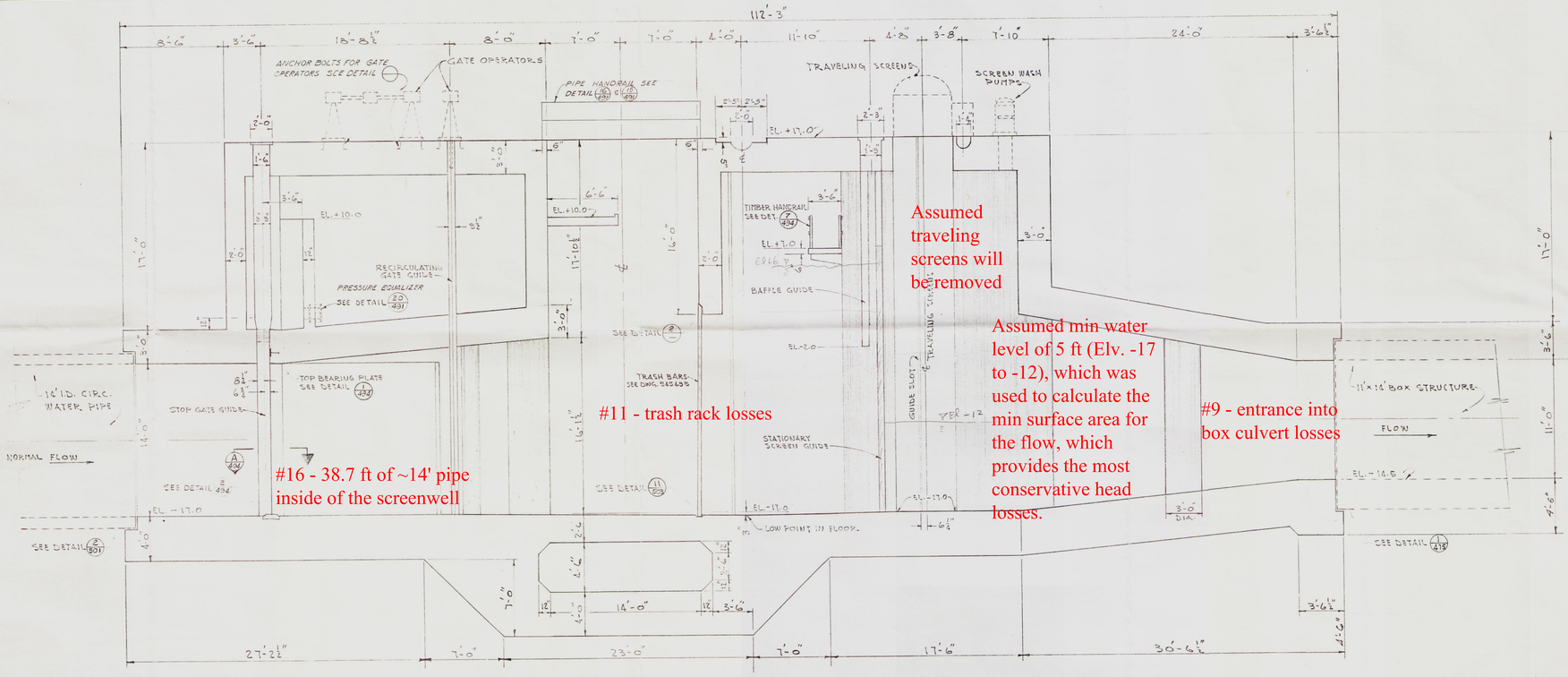
Scale: 1/4" = 1'-0"
Graf scale:

Site: HUNTINGTON BEACH SEA WATER DESALINATION PROJECT

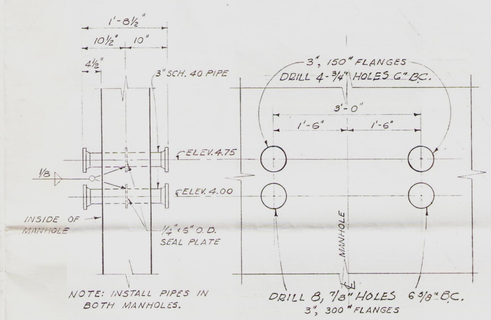
Title of plant: PUMP STATION PLAN AND SECTION

Sheet Size: D
Project Number: 1633124
Overhaul: A
Sheet Number: 1 of 1
Drawing Number: 04 130 000 0001
Type | Zone | Mat. | Array

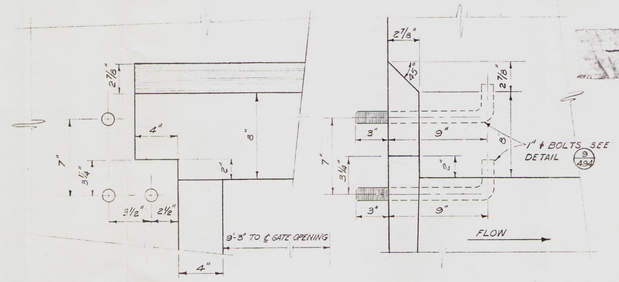
Cod.: 1633124_04_130_000_0001-CAPTACION




SECTION C
SCALE: 3/16" = 1'
REFERENCE DWG. 545488

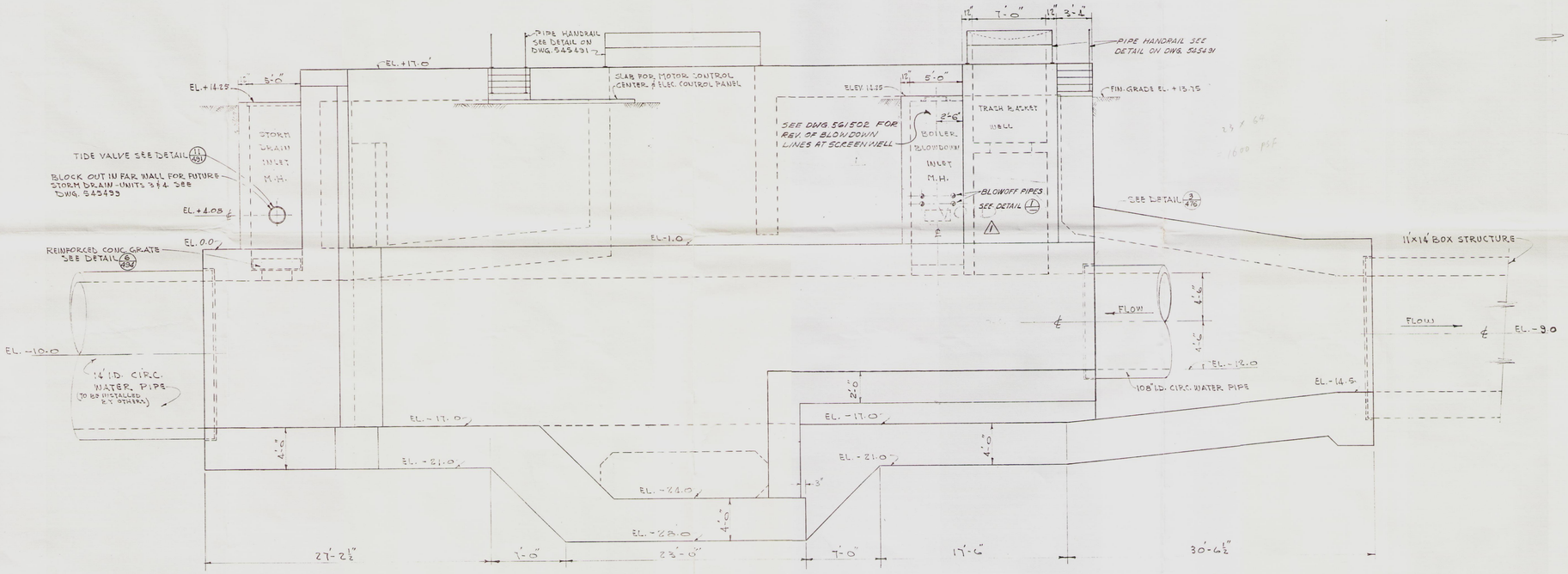



DETAIL 1
BOILER BLOWOFF PIPES
SCALE: ¾" = 1'-0"
MATERIAL: TYPE 316 STAINLESS STEEL
150# FLANGES 46 4 REQ'D
300# FLANGES 47 4 REQ'D




DETAIL 2
TRASH RACK GUIDE
SCALE: 2" = 1'-0"

NOTE: RECESS FOR OTHER SIDE OF GATE IS OPPOSITE HAND.




SECTION D
SCALE: 3/16" = 1'
REFERENCE DWG. 545488

NOTES:
1. FINISH GRADE ELEVATION ADJACENT TO SCREENWELL WILL BE 13.75' EXCEPT AT STAIR LANDINGS WHERE IT WILL BE 14.00'.

OFFICE FILE

ITEMS 46 & 47 ORDERED ON BH 2005

BECHTEL CORPORATION
ENGINEERS & CONTRACTORS
LOS ANGELES, CAL.
JOB # 2450
12-18-56 APPRO.

Robert H. Weight
ROBERT H. WEIGHT - CIVIL ENGINEER
CALIFORNIA LICENSE No. 5050

| DRWG. NO. | CROSS REFERENCES |
|---|---|
| 545494 | INTAKE SCREENWELL — MISC. DETAILS (2) |
| 545491 | INTAKE SCREENWELL — MISC. DETAILS (1) |
| 545490 | INTAKE SCREENWELL — HORIZ. SECTIONS |
| 545488 | INTAKE SCREENWELL — PLAN & TRANS. SECT. |

| No. | REVISIONS | DATE | APPROVED | O.K. | O.K. | CHECKED | MADE | J.O.No. |
|---|---|---|---|---|---|---|---|---|
| 1 | DELETED BOILER BLOWOFF PIPES. ADDED REF. DWG. FOR REV. OF BLOWOFF PIPES. | 3-24-60 | | | | | | |
| | | 12-18-56 | | | | | | |

| DESIGNED | TRACED | COMPARED |
|---|---|---|
| | KHW | BP |
| | KHW | B.G. |

| CHECKED | MADE | J.O.No. |
|---|---|---|
| B.P. | G.G.L. | 2200 |
| R.P. | H.C.M. | 2200 |

LOCATION HUNTINGTON BEACH STEAM STATION

INTAKE SCREENWELL
LONGITUDINAL SECTIONS

SOUTHERN CALIFORNIA EDISON COMPANY
LOS ANGELES, CALIF.

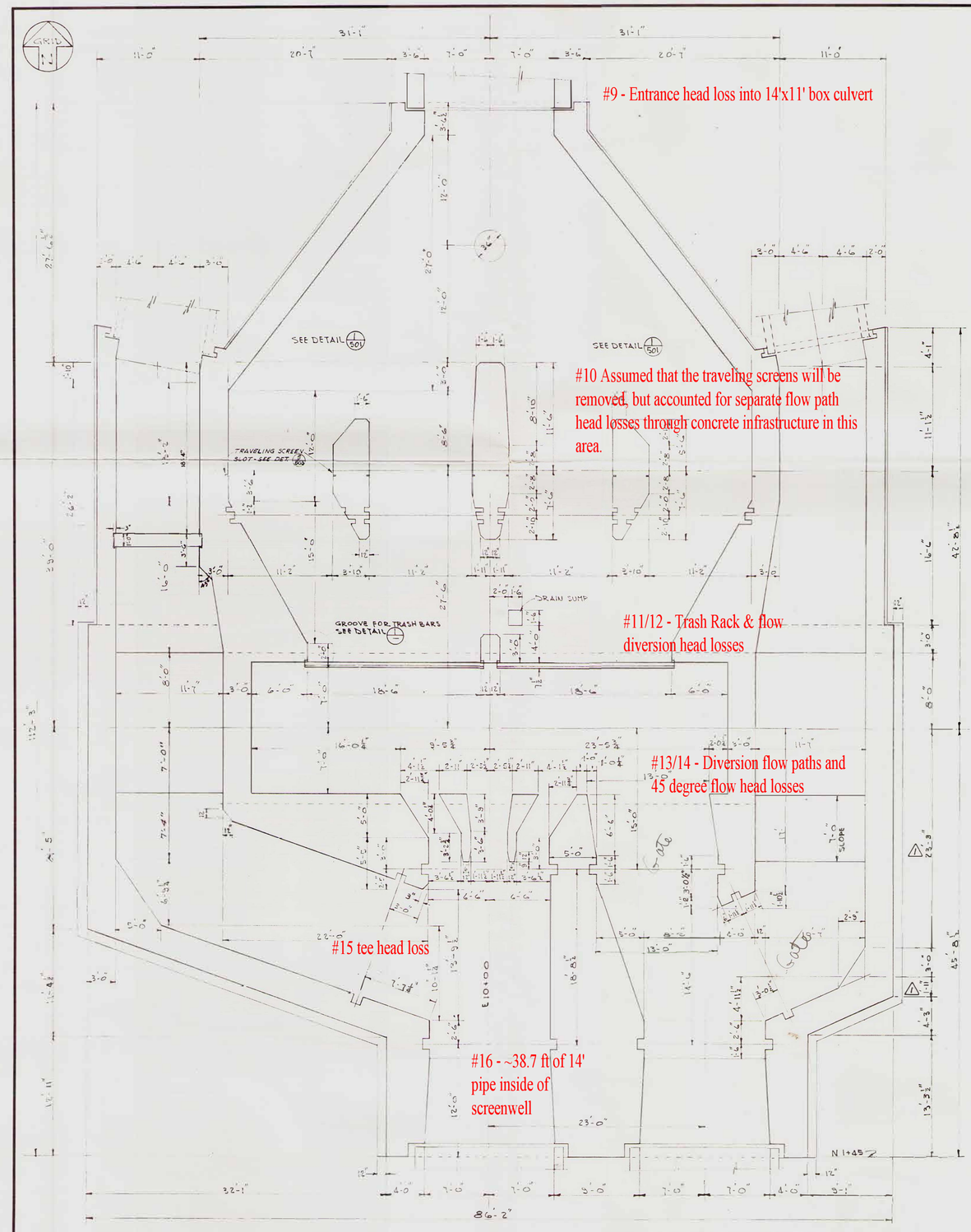
SCALE 3/16" = 1'

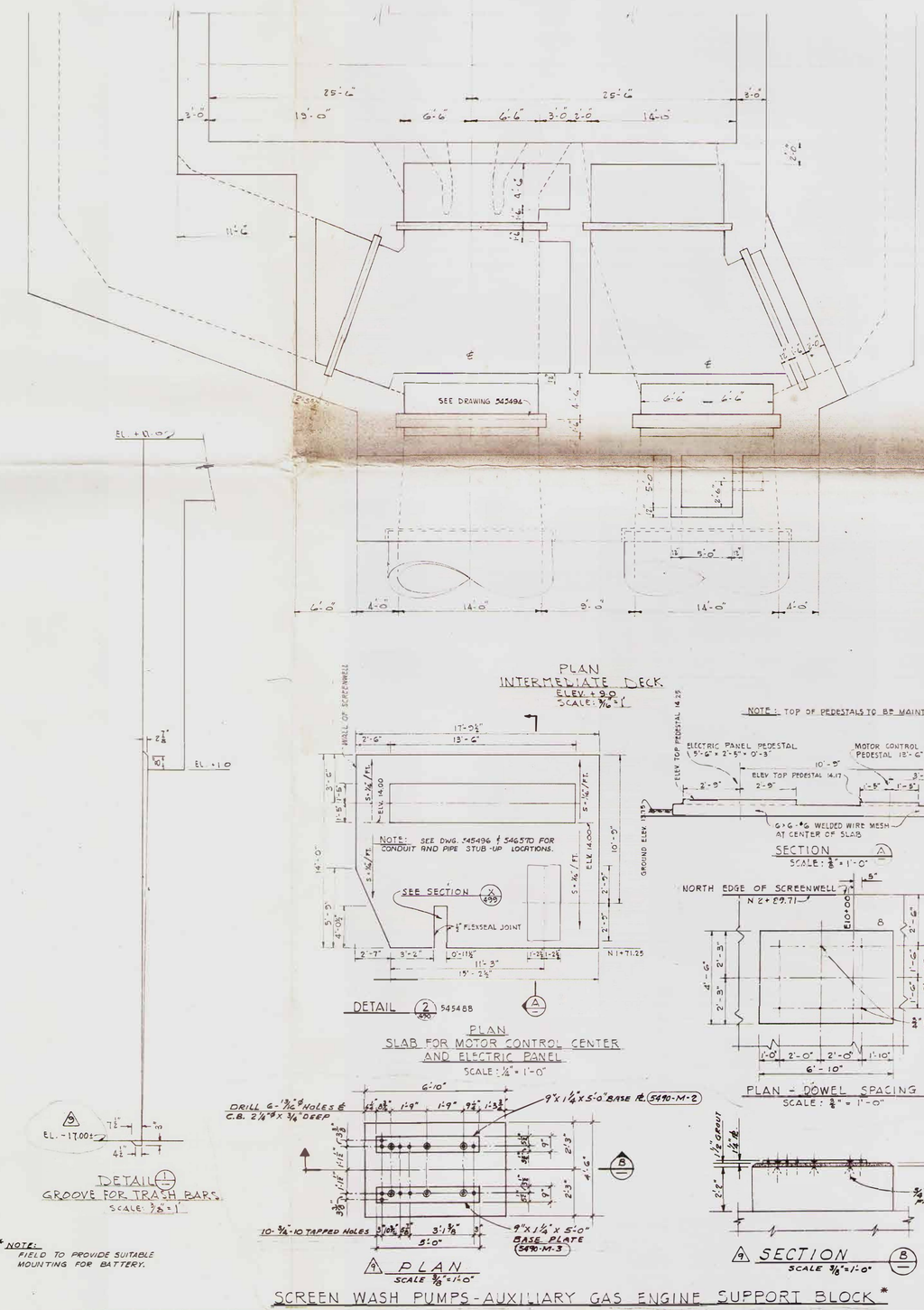
30-50

545489-1

SDCS

FORM OD 307 4M 2-55 PRINTED ON CLEARPRINT




*NOTE: FIELD TO PROVIDE SUITABLE MOUNTING FOR BATTERY.

BECHTEL CORPORATION
ENGINEERS & CONTRACTORS
SAN FRANCISCO
JOB #2450
12-18-56 APPD.

Robert H. Wright
ROBERT H. WRIGHT - CIVIL ENGINEER
CALIFORNIA LICENSE No. 6060

PLAN AT ELEV. -9.0
SCALE: 3/16"=1'

| DWG. NO. | CROSS REFERENCES | NO. | REVISIONS | DATE | APPROVED | O.K. | O.K. | CHECKED | MADE | J.O.No. |
|---|---|---|---|---|---|---|---|---|---|---|
| 545486 | INTAKE SCREENWELL-MISC. DETAILS (2) | 4 | REVISED SUPPORT BLOCK | 1-24-58 | RHW | B.G. | RLP | WPC | 2200 | |
| 545481 | INTAKE SCREENWELL-MISC. DETAILS (1) | 3 | EXTENDED SUPPORT BLOCK, REDUCE THICKNESS FOR GROUT | 8-13-57 | RHW | B.G. | RLP | M.K. | 2200 | |
| 545483 | INTAKE SCREENWELL-CONDUIT SECTIONS | 2 | EXTENDED SUPPORT BLOCK, RELOCATED ANC. BOLTS | 6-27-57 | RHW | B.G. | RLP | WPC | 2200 | |
| 545488 | INTAKE SCREENWELL-ARR'GT. PLAN & TRANS. SECT. | 1 | ADDED S.W.P. AUX. GAS ENGINE SUPPORT BLOCK | 6-7-57 | RHW | B.G. | RLP | M.K. | 2200 | |
| | | 5 | REVISION OF MOTOR CONTROL CENTER PEDESTAL | 5-14-57 | NTR | B.G. | RLP | M.K. | 2200 | |
| | | 4 | REVISION OF MOTOR CONTROL CENTER PEDESTAL | 4-3-57 | RHW | B.G. | RLP | M.K. | 2200 | |
| | | 3 | ADDED SLAB FOR MOTOR CONTROL CENTER & ELECTRIC PANEL | 3-14-57 | RHW | B.G. | RLP | M.K. | 2200 | |
| | | 2 | ADDED STOP GATE SLOTS | 1-22-57 | RHW | B.G. | RLP | W.P.H. | 2200 | |
| | | 1 | CHANGED DIMENSIONS | 1-4-57 | RHW | B.G. | RLP | WPC | 2200 | |
| | | | REVISIONS | 2-18-56 | RHW | B.G. | RLP | W.K.H. | 2200 | |
| | | | | DATE | APPROVED | O.K. | O.K. | CHECKED | MADE | J.O.No. |

LOCATION HUNTINGTON BEACH STEAM STATION

# INTAKE SCREENWELL HORIZONTAL SECTIONS

SOUTHERN CALIFORNIA EDISON COMPANY
LOS ANGELES, CALIF.
SCALE 3/16"=1'
5-1-8

545490-9

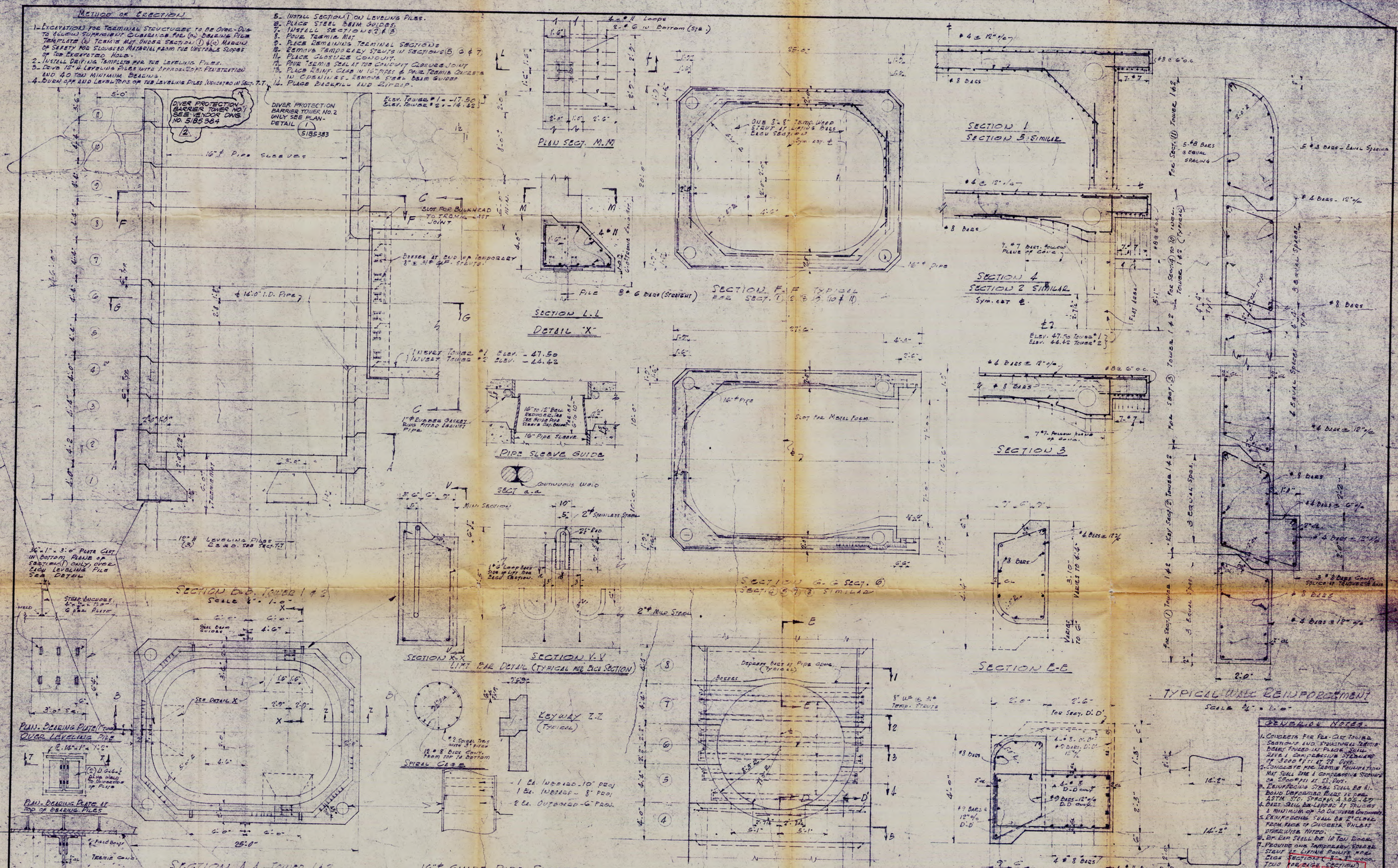
FIELD MARKS
DATE 6-7-57
REV. 6 RLP
M-1
DATE 1-10-58
REV. 9
M-2
M-3 O.D.C.

INDEXED

FORM OD 507 4M 2-58 PRINTED ON CLEARPRINT NO. 1000H

## METHOD OF ERECTION

1. EXCAVATION FOR TERMINAL STRUCTURES TO BE OVER-DUG TO ALLOW SUFFICIENT CLEARANCE FOR (a) BEARING PILE TEMPLATE (b) TREMIE MAT UNDER SECT. (1) & (2) MARGIN OF SAFETY FOR SLOUGHED MATERIAL FROM THE UNSTABLE SLOPES OF THE EXCAVATED HOLE.
2. INSTALL DRIVING TEMPLATE FOR THE LEVELING PILES.
3. DRIVE 12" H LEVELING PILES WITH APPROX. 50 FT. PENETRATION AND 40 TON MINIMUM BEARING.
4. SCRAPE OFF AND LEVEL TOPS OF THE LEVELING PILES INDICATED IN SECT. 7-7.
5. INSTALL SECTION (1) ON LEVELING PILES.
6. PLACE STEEL BEAM GUIDES.
7. INSTALL SECTIONS (2) & (3)
8. POUR TREMIE MAT
9. PLACE REMAINING TERMINAL SECTIONS
10. REMOVE TEMPORARY STRUTS IN SECTIONS (5) (6) & (7)
11. PLACE CLOSURE CONDUIT.
12. POUR TREMIE SEAL AT THE CONDUIT CLOSURE JOINT
13. PLACE REINF. CAGE IN 16" PIPES & POUR TREMIE CONCRETE IN OPENINGS. REMOVE STEEL BEAM GUIDES
14. PLACE BACKFILL AND RIPRAP.




* AFTER UPPER PORTION OF PLATE HAS BEEN REMOVED BY DIVER AT SPLICE, THE DEPTH OF PLATE NECESSARY TO BRING TOP OF ALL PILES LEVEL AT ELEV. -63.50 FOR TOWER #1 AND ELEV. -60.42 FOR TOWER #2 OR AS CLOSE TO THIS GRADE AS POSSIBLE IS TO BE DETERMINED. PLATES FABRICATED, THEN BOLTED TO TOP OF PILE BY DIVER.

| DWG. NO. | CROSS REFERENCES |
|---|---|
| 5185384 | DIVER PROTECTION BARRIER (WATER END) |
| 5185383 | DIVER PROTECTION BARRIER PLAN SECTIONS & DETAILS |
| 546936 | PLAN & PROFILE |

| No. | REVISIONS | DATE | APPROVED | O.K. | O.K. | CHECKED | MADE | J.O.No. |
|---|---|---|---|---|---|---|---|---|
| 2 | ADDED DIVER PROTECTION BARRIER | 2-2-68 | | | | | GK | WA | 6612 |
| 1 | ADDED DIVER PROTECTION BARRIER | 10-21-67 | | | | | GK | DS | 6612 |

DESIGNED — TRACED — COMPARED

LOCATION: HUNTINGTON BEACH GENERATING STATION

CIRCULATING WATER INLET & OUTLET TUNNELS SECTIONS & DETAILS

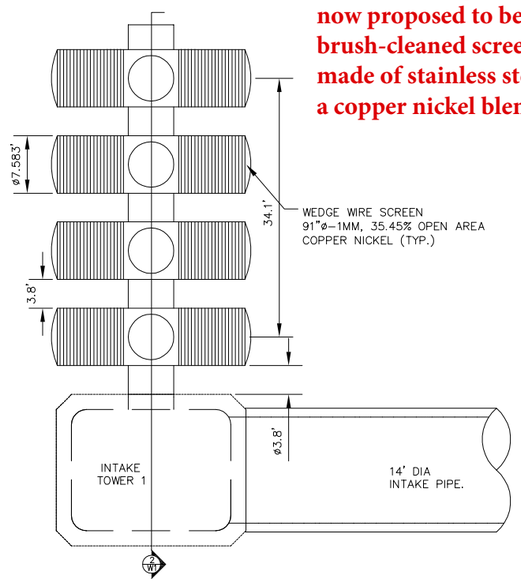
SOUTHERN CALIFORNIA EDISON COMPANY

SCALE: Noted — LOS ANGELES, CALIF.

OFFICE FILE

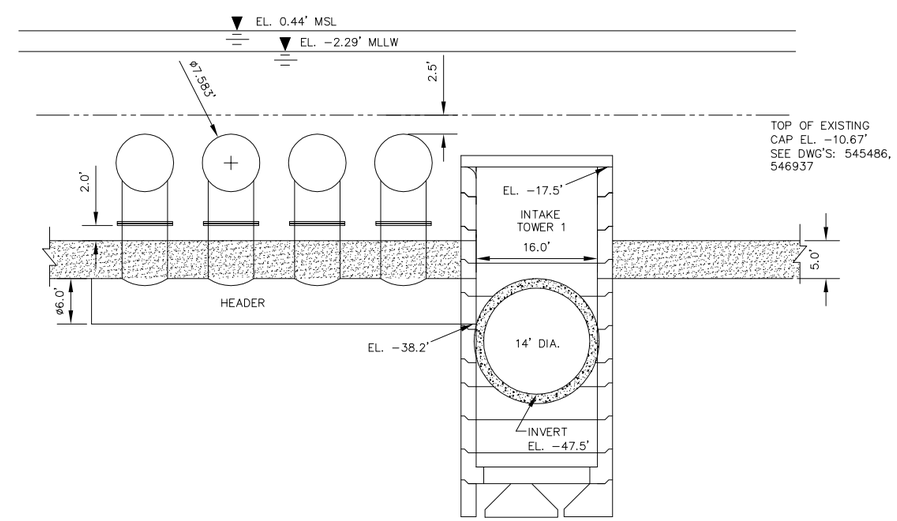
546937—2

**Note: the wedgewire screens are now proposed to be active rotating brush-cleaned screens and will be made of stainless steel as oppose to a copper nickel blend.**




1 W1 **PLAN**
Scale 1"=20'

0' 10' 20'




2 W1 **SECTION**
Scale 1"=20'

0' 10' 20'

INTAKE STRUCTURE
DESIGN FLOW: 106.7 MGD (165 CFS)
SCREEN OPENING: 1MM (BILFINGER T-SCREEN)
MATERIAL: COPPER NICKEL
POROSITY: 35.5% OPEN
SCREEN DIAMETER: 91"
EFFECTIVE SCREEN LENGTH: 104.75"
REQUIRED NUMBER OF SCREENS:
3, PLUS 1 REDUNDANT
SCREEN VELOCITY
4 CLEAN SCREENS: 0.28 FT/SEC.
4 15% BLOCKED SCREENS: 0.33 FT/SEC
6 FT DIAMETER HEADER VELOCITY: 5.8 FT/SEC
INTAKE LOCATION: 1840 FT± OFFSHORE

## Dredge Quantity Estimate

1. ASSUMES OPEN CUT DREDGING WITH 6:1 SIDE SLOPES
2. ASSUMES 5 FOOT OF COVER, 6 FOOT DIAMETER PIPE
3. APPROXIMATE DREDGE QUANTITY 2700 CY

REVISIONS:

| REVISION NUMBER | DATE | ISSUED FOR: |
|---|---|---|
| 0 | 11/4/15 | FOR REVIEW |
| 1 | 5/2/2019 | ADDED DREDGE VOLUME NOTE |

SF: –

| | NAME | DATE |
|---|---|---|
| DRAWN BY: | BJM | 11/4/15 |
| CHECKED BY: | | |
| APPROVED BY: | | |

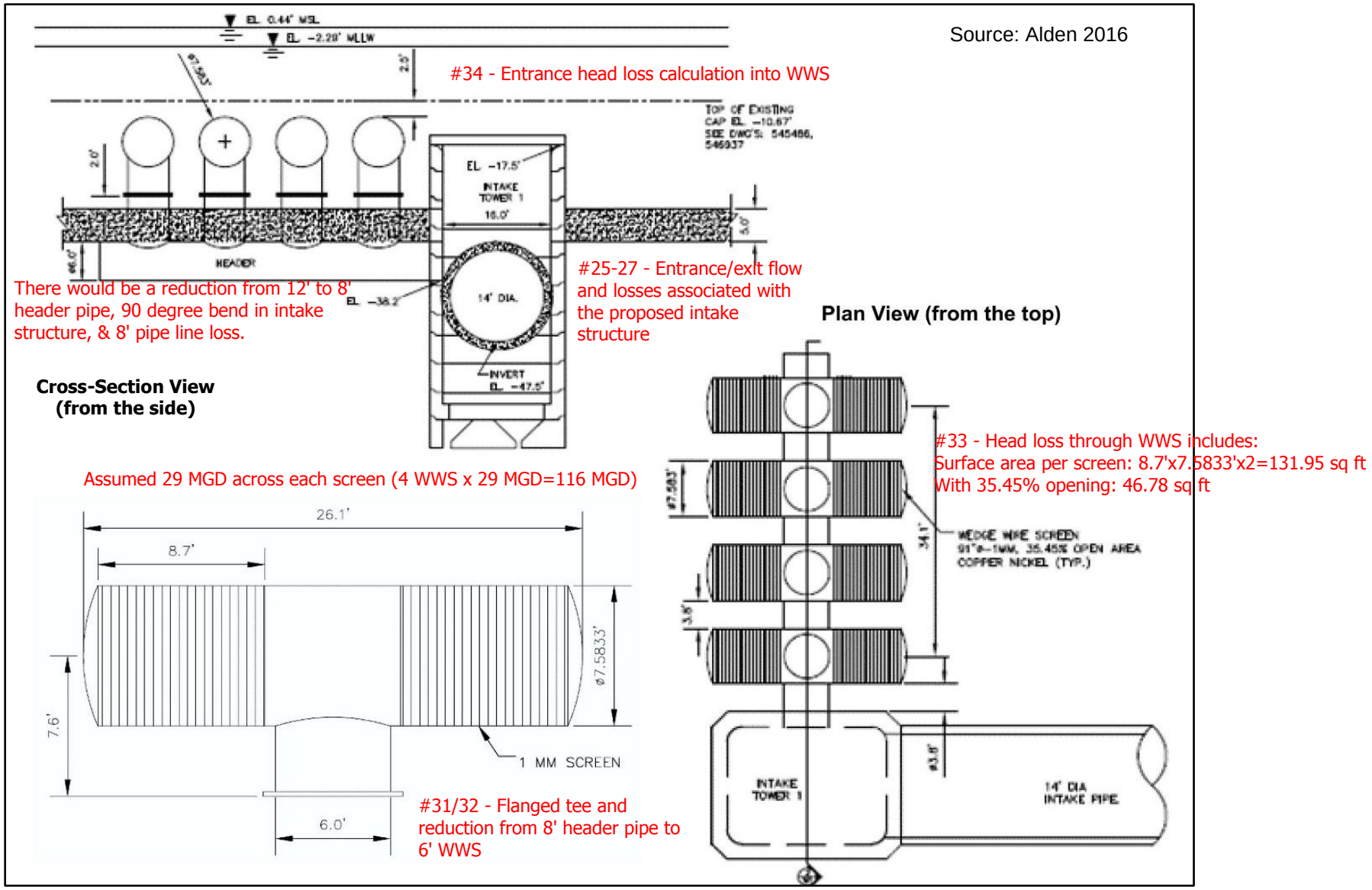
**ALDEN** Solving Flow Problems Since 1894
Alden Research Laboratory, Inc.
30 SHREWSBURY ST, HOLDEN, MA (508) 829-6000

PREPARED FOR: Poseidon Water
17011 Beach Boulevard, Suite 900
Huntington Beach, CA
Carlsbad, CA 92008

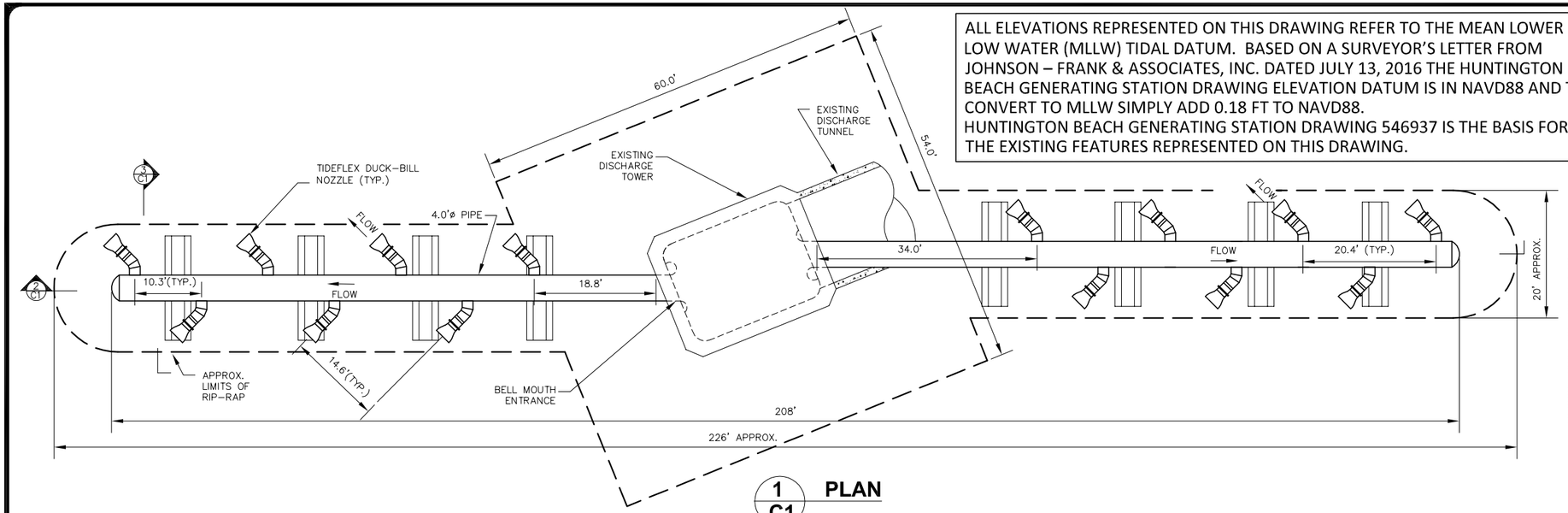
**Huntington Beach Desalination Facility**
**Proposed**
**INTAKE WEDGE WIRE SCREEN LAYOUT (BILFINGER)**
W1

DWG. NO.: C:\USERS\BMCMAHON\DESKTOP\POSEIDON FIGURE REVISION\TASK ORDER 3 HBDF- WEDGE WIRE DREDGE QUANTITIES ADDED.DWG

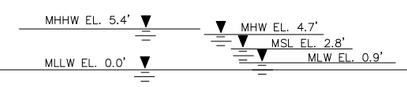
## Figure 2-7a. Wedgewire Screen Shape and Dimensions

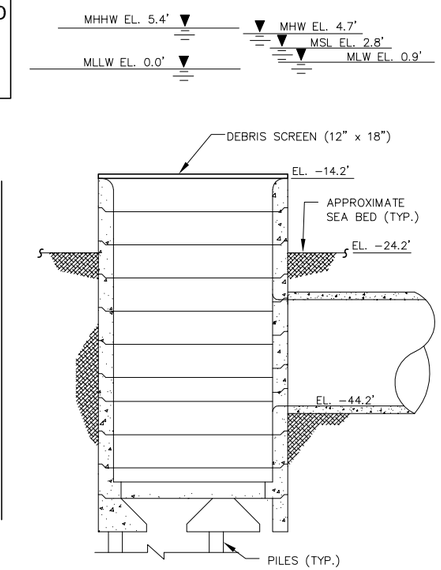


ALL ELEVATIONS REPRESENTED ON THIS DRAWING REFER TO THE MEAN LOWER LOW WATER (MLLW) TIDAL DATUM. BASED ON A SURVEYOR'S LETTER FROM JOHNSON – FRANK & ASSOCIATES, INC. DATED JULY 13, 2016 THE HUNTINGTON BEACH GENERATING STATION DRAWING ELEVATION DATUM IS IN NAVD88 AND TO CONVERT TO MLLW SIMPLY ADD 0.18 FT TO NAVD88.
HUNTINGTON BEACH GENERATING STATION DRAWING 546937 IS THE BASIS FOR THE EXISTING FEATURES REPRESENTED ON THIS DRAWING.

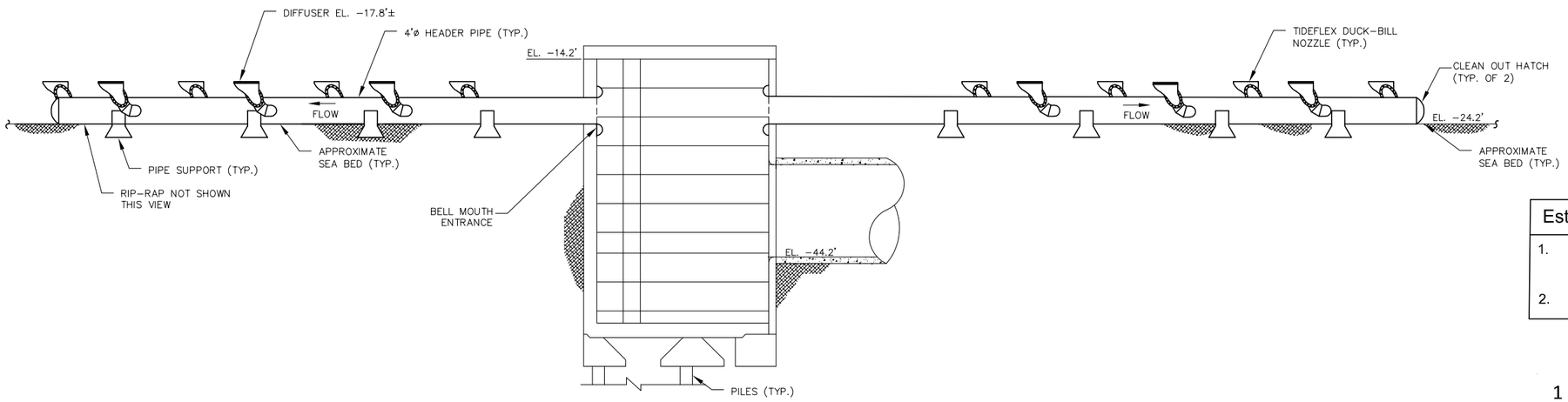



1 C1 **PLAN**

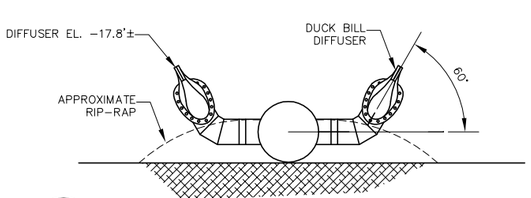


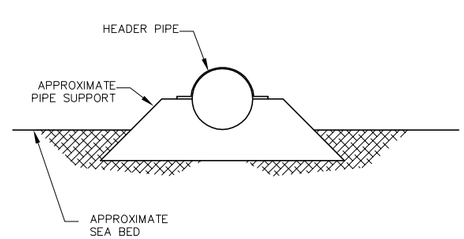

4 C1 **EXISTING DISCHARGE TOWER - ELEVATION**



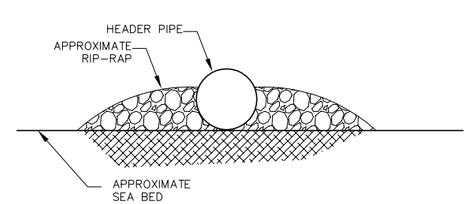

2 C1 **SECTION**




3 C1 **SECTION- DUCK BILL NOZZLE**




3 C1 **SECTION- PIPE SUPPORT**




3 C1 **SECTION- RIP-RAP**

| Estimated Sea Floor Leveling Quantity |
|---|
| 1. ASSUMES THAT UP TO 2 FEET OF SEA FLOOR MAY NEED TO BE LEVELED ALONG ALIGNMENT OF LINEAR DIFFUSER PRIOR TO SETTING PIPE SUPPORTS |
| 2. APPROXIMATE 300 CY |

**DIFFUSER DESIGN ASSUMPTIONS**

1 DESIGN FLOW CONDITIONS

| | FLOW (MGD) | SALINITY (PPT) |
|---|---|---|
| AVERAGE ANNUAL | 56.7 | 63.1 |
| PEAK DAILY | 62.5 | 62.4 |
| START UP & MAINTENANCE | 127 | 33.5 |

2 14 DISCHARGE PORTS
3 NOZZLE.: TIDEFLEX TBD, EQUIVALENT DIA.: 1.28'
4 ANGLE FROM HORIZONTAL: 60 DEG.
5 PORT DISCHARGE ELEVATION: -17.8' (MLLW)
6 APPROXIMATE RIP-RAP AREA: 6375 FT^2

| No. | Revision Description | Drwn | Chkd | Date |
|---|---|---|---|---|
| 1 | ADDED SEA FLOOR LEVELING NOTE | BJM | | 5/6/2019 |
| 0 | REVIEW | BJM | Chkd | 11/6/2018 |

Drwn By: BJM
Desg By: GEH
Chkd By: BJM
Aprvd By: GA
Date: -

ALDEN RESEARCH LABORATORY, INC.
30 SHREWSBURY ST, HOLDEN, MA
(508) 829-6000, WWW.ALDENLAB.COM

POSEIDON WATER
HUNTINGTON BEACH DESALINATION FACILITY
BRINE DISCHARGE LINEAR DIFFUSER

Job Number: POSEIDON

Drawing No: C-1

Sheet 1 of 1