Appendix R

Sea Chest Screen Conceptual Design

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812 W. Wabash Avenue, Eureka, CA 95501-2138

Reference: 016240.005

August 6, 2021

Adam Wagschal
Humboldt Bay Harbor, Recreation, and Conservation District
601 Startare Dr.
Eureka, CA 95501

Subject: Humboldt Bay Intake Screen Conceptual Designs, Redwood Marine Terminal II and Red Tank Dock, Samoa, California–Revision 03

Adam Wagschal:

SHN is submitting this revised letter, at your request, describing proposed intake screen designs for two intake locations: Redwood Marine Terminal II (RMT II), and "Red Tank" Dock in Samoa, California, owned and operated by the Humboldt Bay Harbor, Recreation, and Conservation District (District). Existing intake structures located at each dock (RMT II and Red Tank Dock) require new intake screens capable of supplying bay water to potential industrial tenants while meeting design criteria to prevent fish entrapment and impingement. Appendix 1, Figure 1 includes a site location map identifying the location of the RMT II dock and Red Tank dock.

Design Criteria

General intake screen design criteria are outlined in the National Marine Fisheries Service (NMFS) document: *Fish Screening Criteria for Anadromous Salmonids* (NMFS, 1997). Through consultation with the California Department of Fish and Wildlife (CDFW; personal communication with Arn Aarreberg, Environmental Scientist, CDFW–Marine Region), it has been determined that intake screens must meet the design criteria assuming the presence of anadromous salmonid fry and juvenile longfin smelt. Applicable design criteria for fish screens from NMFS (1997) are summarized below.

A. Flow Rate

Maximum Intake Flow Rate:
RMT II Dock intake Screen: 5,500 gallons per minute (gpm)
Red Tank Dock Intake Screen: 2,750 gpm
Total: 8,250 gpm

B. Structure Placement

a. The screened intake shall be designed to withdraw water from the most appropriate elevation, considering juvenile fish attraction, appropriate water temperature control downstream, or a combination thereof. The design must accommodate the expected range of water surface elevations.

b. Where possible, intakes should be located off shore to minimize fish contact with the facility. Water velocity from any direction toward the screen shall not exceed the allowable approach velocity. Where possible, locate intakes where sufficient sweeping velocity exists. This minimizes sediment accumulation in and around the screen, facilitates debris removal, and encourages fish movement away from the screen face.

C. Maximum Approach Velocity

a. Self-cleaning screens: 0.2 feet per second (fps)

b. Non self-cleaning screens: 0.05 fps

c. The screen design must provide for uniform flow distribution over the surface of the screen, thereby minimizing approach velocity.

D. Screen Orientation

For screen lengths greater than six feet, screen-to-flow angle must be less than 45 degrees.

E. Screen Face Material

a. Perforated plate: screen openings shall not exceed 3/32 inches (2.38 millimeters [mm]), measured in diameter.

b. Profile bar: screen openings shall not exceed 0.0689 inches (1.75 mm) in width.

c. Woven wire: screen openings shall not exceed 3/32 inches (2.38 mm), measured diagonally. (e.g.: 6-14 mesh).

d. Screen material shall provide a minimum of 27% open area.

e. The screen material shall be corrosion resistant and sufficiently durable to maintain a smooth and uniform surface with long term use.

F. Civil Works and Structural Features

a. The face of all screen surfaces shall be placed flush with any adjacent screen bay, pier noses, and walls, allowing fish unimpeded movement parallel to the screen face.

b. Structural features shall be provided to protect the integrity of the fish screens from large debris. Trash racks, log booms, sediment sluices, or other measures may be needed. A reliable on-going preventive maintenance and repair program is necessary to ensure facilities are kept free of debris and the screen mesh, seals, drive units, and other components are functioning correctly.

G. Operations and Maintenance

a. Fish Screens shall be automatically cleaned as frequently as necessary to prevent accumulation of debris. The cleaning system and protocol must be effective, reliable, and satisfactory to NMFS. Proven cleaning technologies are preferred.

b. The head differential to trigger screen cleaning for intermittent type systems shall be a maximum of 0.1 feet (0.03 m), unless otherwise agreed to by NMFS.

c. The completed screen and bypass facility shall be made available for inspection by NMFS, to verify compliance with design and operational criteria.

d. Screen and bypass facilities shall be evaluated for biological effectiveness and to verify that hydraulic design objectives are achieved.

Following consultation with CDFW, the District contracted with Tenera Environmental (May 2021) to complete an entrainment study evaluating the potential for the proposed screens to entrain marine organisms. This study suggests that decreasing the slot opening width of a woven wire screen mesh material from 1.75 mm (the NMFS maximum slot opening specified above for profile bar material) to 1.0 mm would reduce the potential for entrainment. Therefore, it is recommended that 1.0 mm be used as the maximum allowable slot opening width for profile bar or woven wire screen materials.

Design Conditions

Site-specific design conditions include minimum and maximum water depths; and elevation of the pier where the pumps, blowers, and mounting equipment will be located. Appendix 1 presents figures with conceptual site plans and elevations of each intake structure. Elevations reported below in Table 1 for the RMT II dock intake structure are from the original design drawing included in Appendix 2 (Georgia-Pacific Corporation, 1966). Elevations reported below in Table 1 for the Red Tank dock intake structure are from manual measurements collected April 1, 2020, at 8:15 a.m. in reference to the tidal water surface elevation reported from the NOAA North Spit tide station (9418767).

Table 1. Tidal Data[a] and Intake Structure Elevations RMT II Dock and Red Tank Dock, Samoa, California

Description	Abbreviation	RMT II Dock Elevation (feet, NAVD88) [b]	Red Tank Dock Elevation (feet, NAVD88)
Existing Pump Base Elevation	N/A[c]	13.68	11.20 +/-
Existing Pump Discharge Pipe Center Line Elevation	N/A	9.93	N/A
Highest Astronomical Tide, December 31, 1986	HAT	8.52	8.52
Mean Higher High Water	MHHW	6.51	6.51
Mean High Water	MHW	5.80	5.80
Mean Sea Level	MSL	3.36	3.36
Mean Low Water	MLW	0.91	0.91
North American Vertical Datum of 1988	NAVD88	0.00	0.00
Mean Lower Low Water	MLLW	-0.34	-0.34
Lowest Astronomical Tide, May 25, 1990	LAT	-2.73	-2.73
National Geodetic Vertical Datum of 1929	NGVD29	-3.32[d]	-3.32

Table 1. Tidal Data[a] and Intake Structure Elevations RMT II Dock and Red Tank Dock, Samoa, California

Description	Abbreviation	RMT II Dock Elevation (feet, NAVD88) [b]	Red Tank Dock Elevation (feet, NAVD88)
Existing Intake Structure Invert Elevation	N/A	-8.82	-4.38 +/-
Bay Bottom Adjacent to Intake Structure	N/A	-14.82	-5.90 +/-

[a] National Oceanic and Atmospheric Administration (NOAA) Station 9418767 North Spit, CA
[b] NAVD88: North American vertical datum, 1988
[c] N/A: not applicable
[d] NGVD29 is 1.013 meters (3.32 feet) lower than NAVD88 according to the NOAA VERTCON orthometric height conversion tool (https://www.ngs.noaa.gov/cgi-bin/VERTCON/vert_con.prl) for 40.804624 North Latitude, 124.193127 West Longitude.

Original design elevations for the RMT II dock were given in reference to the National Geodetic Vertical Datum of 1929 (NGVD29). Current design elevations are typically in reference to the North American Vertical Datum of 1988 (NAVD88). NGVD29 is 1.013 meters (3.32 feet) lower than NAVD88 at RMT II (NOAA, 2019); that is, NAVD88 = NGVD29 – 3.32 feet. Table 1 includes tide elevations and existing intake structure elevations.

Proposed Intake Screen Design

The RMT II dock and Red Tank dock intake structures are currently designed with openings on the face of the structures with vertical guide channels to hold flat screens over the intake openings. Based on the required intake flow rates, flat screens will not be of sufficient surface area to provide the required intake flow rates. Therefore, the District is proposing to install tee-style intake screens over the intake openings. The tee screens would be mounted to flat plates that can be slid down into place over the intake openings, providing significantly greater screen surface area. The proposed intake screens also include an automated air burst self-cleaning system, which greatly increases the allowable approach velocity and, thus, the intake flow rates.

Appendix 3 includes a product information sheet for a tee screen manufacturer (Hendrick Screen Company) that specializes in intake screen design. The manufacturer has provided a preliminary design for an intake screen that meets the design criteria described above (Appendix 4 includes a preliminary design drawing of the intake screen). A similar intake screen design is proposed for both locations with the exception that the RMT II Dock screen will be 36-inch diameter with a maximum intake flow rate of 5,500 gpm, and the Red Tank Dock screen will be 24-inch diameter with a maximum intake flow rate of 2,750 gpm.

The proposed screens include the following features:

- 316 stainless steel woven wire screen material; 1.0 mm spacing between bars
- 36% open area on screen material
- 0.2-feet per second (fps) maximum approach velocity at maximum intake flow rate
- Compressed air automatic self-cleaning system
- Flow modifier to evenly distribute intake flow rates and velocities over the entire screen face

The screen manufacturer indicates head loss through the screen will be approximately 0.17 pounds per square inch (psi) at design conditions; 0.44 feet. Therefore, the water level inside the intake structure will be a minimum of 0.44 feet lower than the tidal water level outside the structure. As material builds up on the screen, head loss will increase, and the water level inside the intake structure will decrease accordingly, until the air burst cleaning system clears the screen of obstructions. The setpoint for when the air burst cleaning system actuates will be manually adjusted to clean the screen when the head difference inside and outside the intake structure is a maximum of 0.1 feet greater than the design head difference of 0.44 feet, for a total maximum head difference of 0.54 feet prior to automated screen cleaning.

Proposed RMT II Dock Intake Structure Conceptual Design

The existing RMT II dock intake structure is constructed of wood that has become deteriorated. The wooden structure will likely need repairs to seal cracks that would allow flow into the intake structure other than through the intake screen. Appendix 1, Figure 2 includes a proposed plan view of the new intake screen location. The direction of tidal flow in the bay channel varies 180-degrees, four times per day. The proposed orientation of the new screen is parallel to the direction of tidal flow.

Appendix 1, Figure 3 includes an elevation view of the proposed RMT II dock intake screen relative to tidal elevations and the existing intake structure. The proposed design puts the intake screen approximately 3 feet above the invert elevation of the existing intake structure. The bottom elevation of the bay outside of the intake structure is approximately 6 feet below the bottom of the intake structure, and may vary over time as sediment moves; however, there is sufficient depth between the invert of the existing structure and the mean lower low water (MLLW) elevation to provide 3 feet of clearance between the bottom of the new screen and the invert of the existing intake structure. This will provide room for sediment accumulation and prevent the new screen from drawing sediment from the bottom of the bay while maintaining complete submergence during all tides. The manufacturer recommends a minimum of 18 inches clear water be maintained above and below the top and bottom of the screen. Note the proposed intake elevation is also below the lowest astronomical tide level, which is the lowest expected water level at this location.

The proposed RMT II dock intake structure design will include up to four vertical turbine pumps, with a maximum combined flow rate of 5,500 gpm. The existing wood and concrete pump pad will likely need to be replaced to accommodate additional vertical turbine pumps. The pumps will operate on variable speed drives in order to provide a variable flow rate depending on demand and pipe pressure. The four intake pumps will include redundant/backup pumps and duty pumps. The new compressor can be installed on the dock, adjacent to the new pumps. The compressor should be located as close as

possible to the intake screen to minimize headloss through the compressed air piping. A new pump house is recommended to house all of the new equipment and protect it from the harsh marine environment.

New discharge piping will be required. SHN recommends that stainless steel and PVC piping be used for this application due to the severe marine environment.

The new intake screen will be bolted to a large, square steel plate that will slide into the vertical guide channels, creating a seal to cover the 8-foot-tall by 3-foot-2-inch-wide structure opening, restricting the opening to the inner diameter of the intake screen flange. This will allow the new tee screen to be lowered and raised using a crane or hoist located above on the pier.

The RMT II dock intake screen is located between the pier and the shore of the bay such that large logs and debris that may damage the screen are unlikely to occur at this location. However, if it is determined that large debris is of concern, piles or other protective measures may be placed around the outside of the screen to prevent damage.

Proposed Red Tank Dock Intake Structure Conceptual Design

The existing Red Tank dock intake structure is concrete and appears to be in functional condition. Minor maintenance repairs or cleaning may be necessary to bring this structure back into service. Red Tank dock is located approximately 0.5 miles north of the RMT II dock. Up to two water pipes may be used to supply bay water from Red Tank dock to land to support various uses. A conceptual site plan is included in Appendix 1, Figure 4. The direction of tidal flow in the bay channel varies 180-degrees, four times per day. The proposed orientation of the new screen is parallel to the direction of tidal flow.

Appendix 1, Figure 5 includes a conceptual elevation view of the proposed Red Tank dock intake structure and screen. Accumulated sediment inside the structure that is higher than the sediment outside of the structure. Approximately 3 feet of sediment (approximately 6.3 cubic yards) will be removed prior to placing pumps into the structure to allow sufficient depth for placing the pumps to prevent sediment from damaging the pumps.

The new intake screen will be placed approximately 1 foot off of the existing bay bottom which will put the top of the screen near the lowest astronomical tide elevation. The manufacturer recommends a minimum of 12 inches clear water be maintained above and below the top and bottom of the screen. The tidal water level will need to be monitored to ensure the intake pumps do not operate if the water level drops below 12 inches above the top of the screen. Leaving 1 foot between the bottom of the intake screen and the bay bottom will reduce the potential for pumps to draw sediment into the interior of the intake structure.

The Red Tank dock intake structure is currently configured to house up to two intake pumps mounted above the intake structure on a concrete pad. The proposed design includes up to two new vertical turbine pumps, providing up to a maximum of 2,750 gpm. The pumps will operate on variable speed drives in order to provide a variable flow rate depending on demand and pipe pressure.

The new compressor can be installed on the dock, adjacent to the new pumps. The compressor should be located as close as possible to the intake screen to minimize headloss through the compressed air piping. A new pump house is recommended to house all of the new equipment and protect it from the harsh marine environment.

New intake piping will be required. SHN recommends that stainless steel and PVC piping be used for this application due to the severe marine environment.

The new intake screen will be bolted to a large, square steel plate that will slide into the vertical guide channels, creating a seal to cover the 4-foot-tall by 2-foot-wide structure opening, restricting the opening to the inner diameter of the intake screen flange. This will allow the new tee screen to be lowered and raised using a crane or hoist located above on the pier. Red Tank dock intake structure currently includes two openings: one opening is proposed to be used for the new screen, and the second opening will be sealed off using a blank steel plate.

The Red Tank dock intake screen is located on the open channel side of the dock, exposed to possible damage from large logs and debris that may flow by the structure in the channel of the bay. It may be necessary to place piles or other protective measures around the perimeter of the intake screen to prevent impacts and damage from logs and debris floating by, or from vessels unaware of the location of the screen.

Please call us at (707) 441-8855 if you have any questions.

Sincerely,

SHN

Mike Foget, PE
Senior Engineer

Chuck Swanson, EIT
Staff Engineer

MKF:CRS:lam

c. w/Attach.: Larry Oetker, HBHRCD
Chris Mikkelsen, HBHRCD

Appendices:
1. Figures
2. Sea Chest Drawing D-12-226
3. Tee Screen Data Sheet
4. Tee Screen Drawing

References

Aarreberg, Arn, Environmental Scientist, CDFW–Marine Region. (2020). Consultation with the California Department of Fish and Wildlife regarding intake structure design criteria.

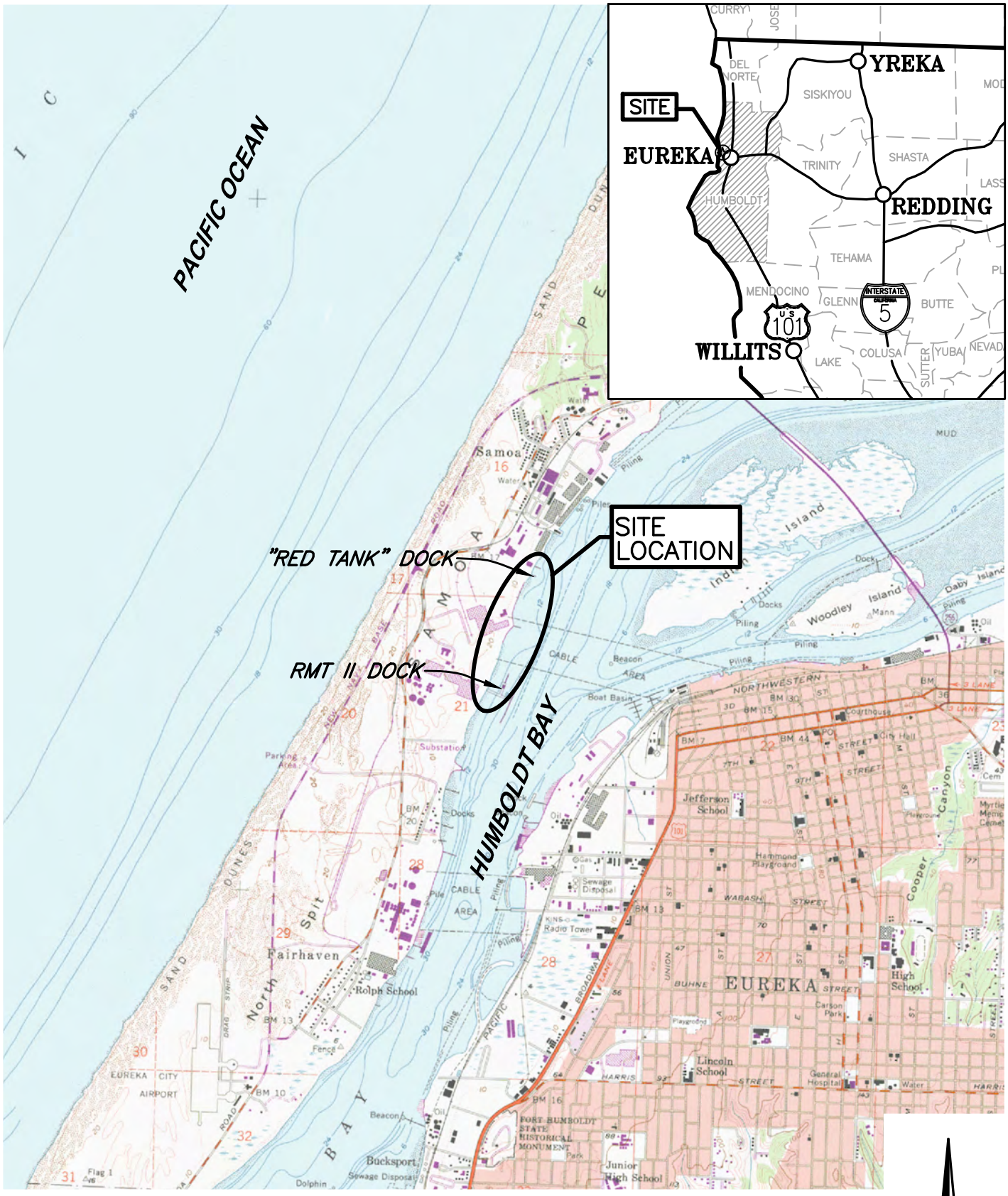
Georgia-Pacific Corporation. (1966). *Water Supply and Distribution Water Treatment Plant Sea Water Intake; Drawing Number D-12-226*. Georgia-Pacific Corporation, Paper Division-Samoa, California. Eureka, CA:Georgia Pacific Corp.

National Marine Fisheries Service. (1997) *Fish Screening Criteria for Anadromous Salmonids*. NR:NMFS.

National Oceanic and Atmospheric Administration. (2019). *NOAA VERTCON orthometric height conversion tool for 40.804624 North Latitude, 124.193127 West Longitude*. Accessed at: https://www.ngs.noaa.gov/cgi-bin/VERTCON/vert_con.prl.

Tenera Environmental. (May 13, 2021). *Empirical Transport Modeling of Potential Effects on Ichthyoplankton Due to Entrainment at the Proposed Samoa Peninsula Master Bay Water Intakes*. San Luis Obispo, CA: Tenera Environmental.

Figures 1



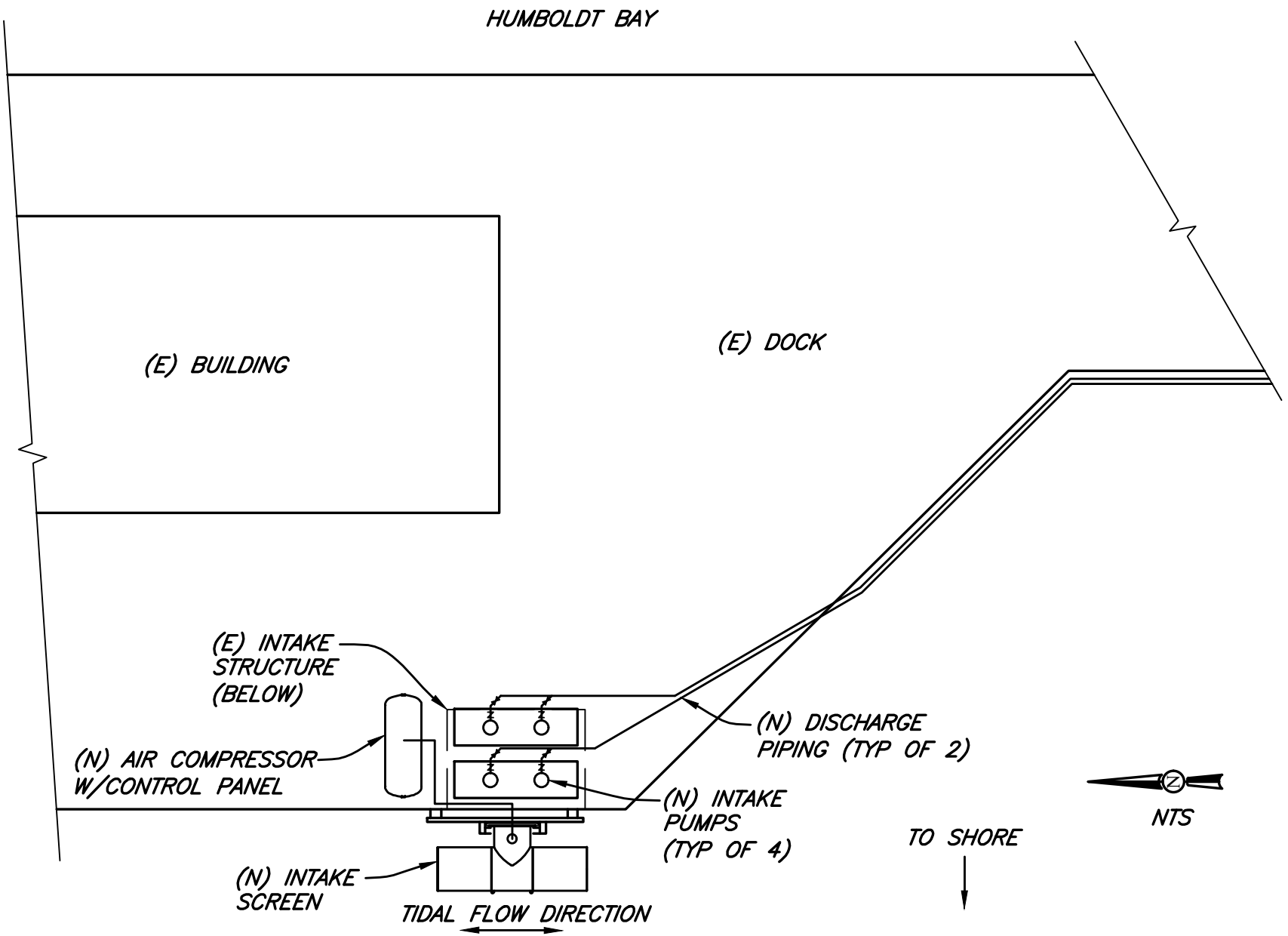
SOURCE: EUREKA USGS
7.5 MINUTE QUADRANGLE

N

1"=3,000'±

SHN	Humboldt Bay Harbor District Sea Chest Intake Screens Samoa, California	Project Location SHN 016240.003
	April 2020 | 016240-003-LOC	Figure 1

\\Eureka\Projects\2016\016240-Engr-HBHRCD\003-RMT-II-EPA-TB\Dwgs, SAVED: 4/27/2020 4:26 PM CSWANSON, PLOTTED: 4/27/2020 4:26 PM, CHUCK SWANSON



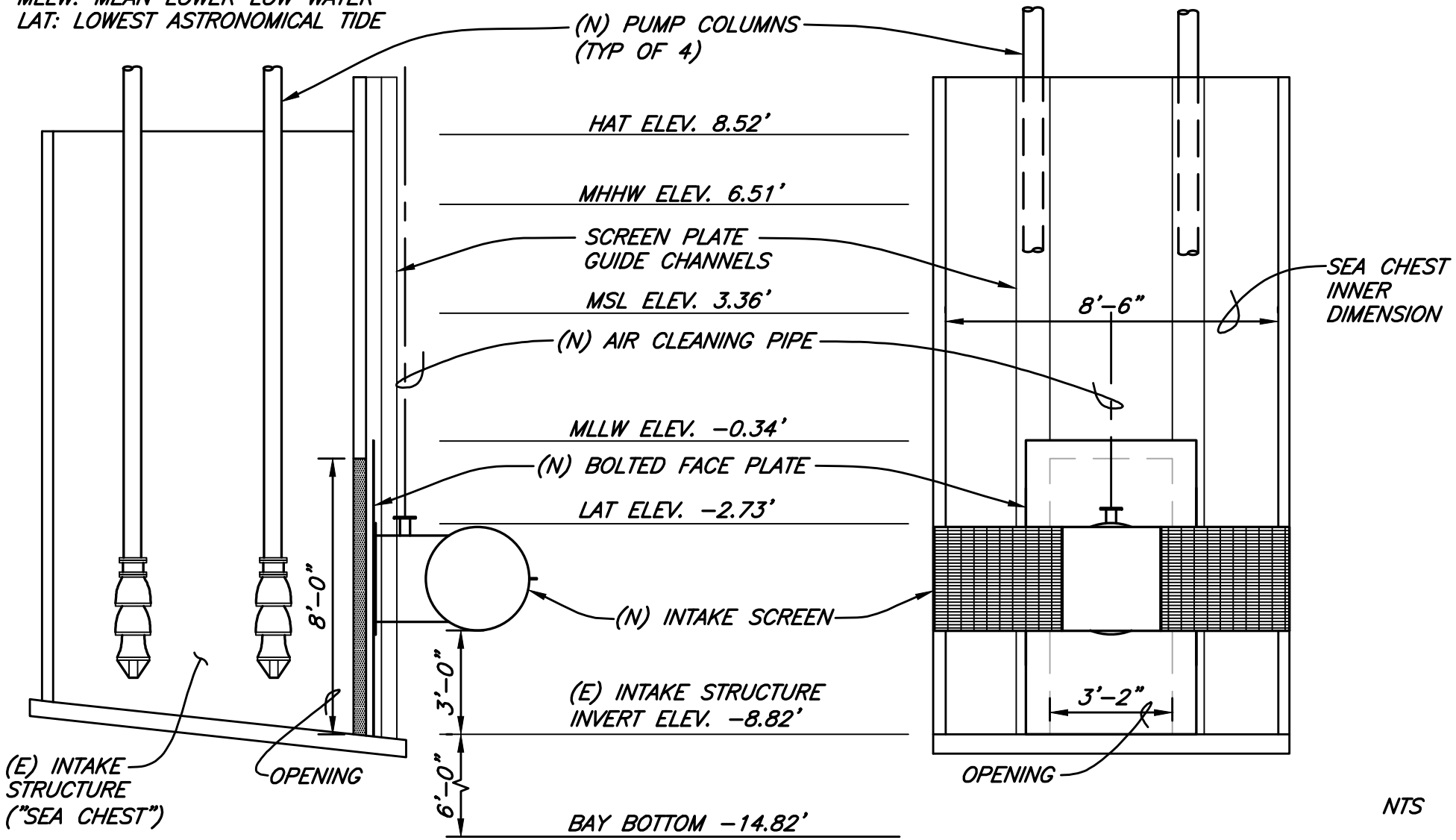
SHN	Humboldt Bay Harbor District Sea Chest Intake Screens Samoa, California	RMT II Intake Screen Conceptual Site Plan SHN 016240.003
	April 2020	016240-003-SEA-CHEST	Figure 2

DEFINITIONS

HAT: HIGHEST ASTRONOMICAL TIDE
MHHW: MEAN HIGHER HIGH WATER
MSL: MEAN SEA LEVEL
MLLW: MEAN LOWER LOW WATER
LAT: LOWEST ASTRONOMICAL TIDE

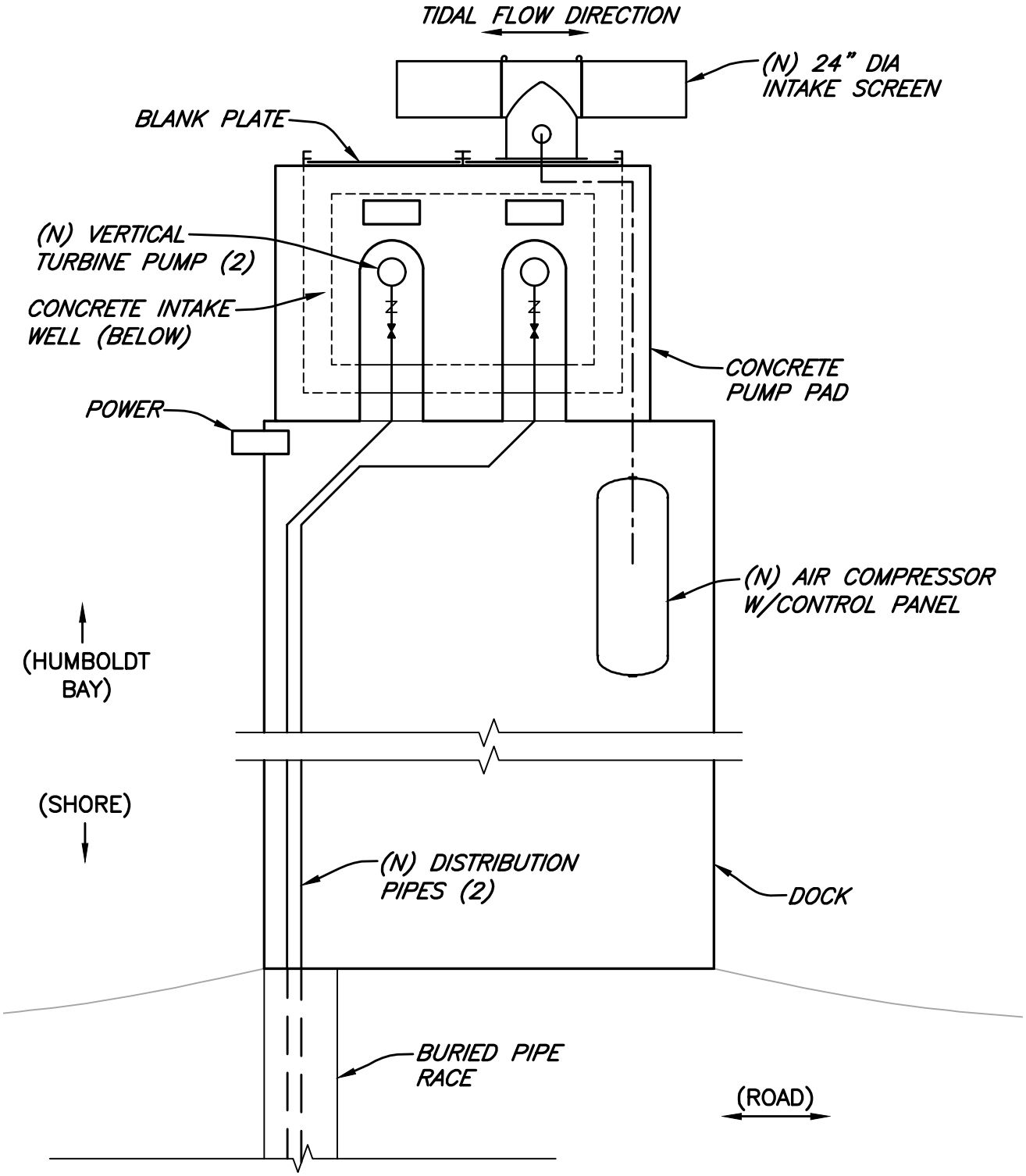
NOTES

ELEVATIONS IN REFERENCE TO NORTH AMERICAN VERTICAL DATUM OF 1988



NTS

	Humboldt Bay Harbor District Sea Chest Intake Screens Samoa, California	RMT II Intake Screen Conceptual Elevations SHN 016240.003
	March 2020	016240-003-SEA-CHEST	Figure 3



PLAN

NTS

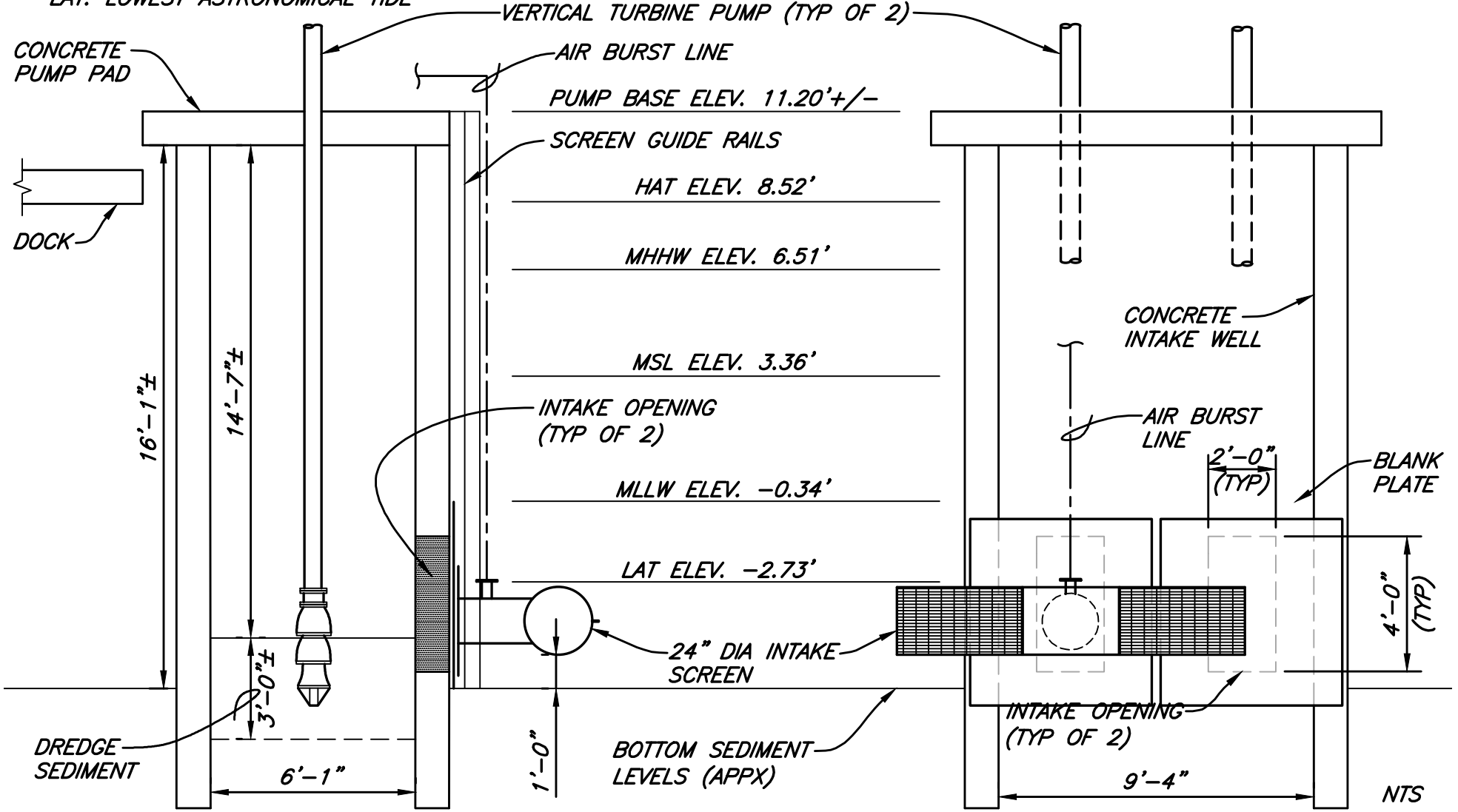
	Humboldt Bay Harbor District Sea Chest Intake Screens Samoa, California	Red Tank Dock Intake Screen Conceptual Site Plan SHN 016240.003
	May 2020	016240-REDTANKDOCK	Figure 4

DEFINITIONS

HAT: HIGHEST ASTRONOMICAL TIDE
MHHW: MEAN HIGHER HIGH WATER
MSL: MEAN SEA LEVEL
MLLW: MEAN LOWER LOW WATER
LAT: LOWEST ASTRONOMICAL TIDE

NOTES

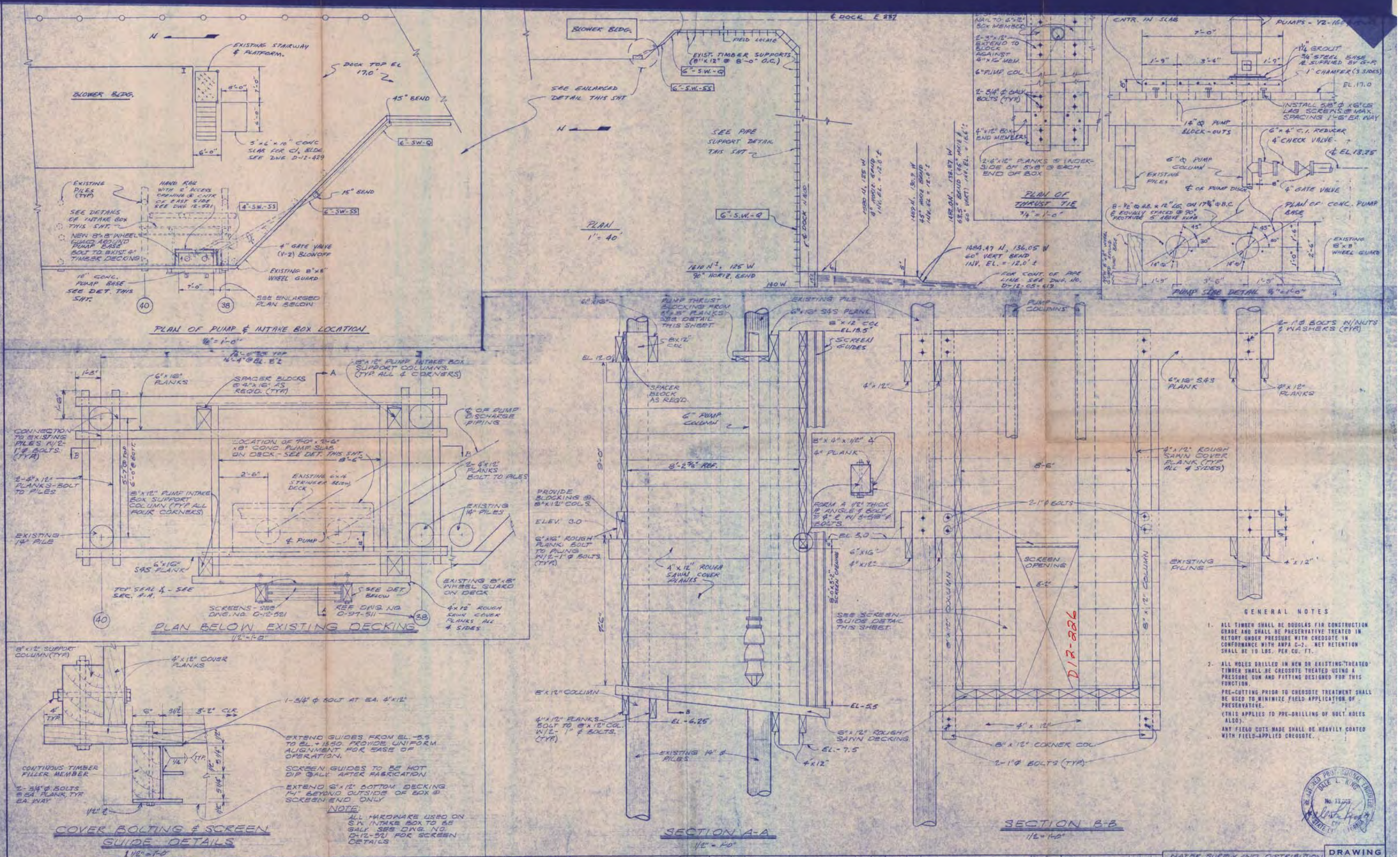
ELEVATIONS IN REFERENCE TO NORTH AMERICAN VERTICAL DATUM OF 1988



SHN	Humboldt Bay Harbor District Sea Chest Intake Screens Samoa, California	Red Tank Dock Intake Screen Conceptual Elevation SHN 016240.003
	May 2020	016240-REDTANKDOCK	Figure 5

Sea Chest Drawing
D-12-226

2



GENERAL NOTES

1. ALL TIMBER SHALL BE DOUGLAS FIR CONSTRUCTION GRADE AND SHALL BE PRESERVATIVE TREATED IN RETORT UNDER PRESSURE WITH CREOSOTE IN CONFORMANCE WITH AWPA C-2. NET RETENTION SHALL BE 10 LBS. PER CU. FT.

2. ALL HOLES DRILLED IN NEW OR EXISTING TREATED TIMBER SHALL BE CREOSOTE TREATED USING A PRESSURE GUN AND FITTING DESIGNED FOR THIS FUNCTION.

PRE-CUTTING PRIOR TO CREOSOTE TREATMENT SHALL BE USED TO MINIMIZE FIELD APPLICATION OF PRESERVATIVE.

(THIS APPLIES TO PRE-DRILLING OF BOLT HOLES ALSO).

ANY FIELD CUTS MADE SHALL BE HEAVILY COATED WITH FIELD-APPLIED CREOSOTE.

		MO.	DAY	YR.
SCALE	AS SHOWN			
DRAWN	JCC	6	3	66
CHECKED	REY	6	3	66
APPROVED	NEW	6	3	66

WATER SUPPLY AND DISTRIBUTION
WATER TREATMENT PLANT
SEA WATER INTAKE

GEORGIA-PACIFIC CORPORATION
PAPER DIVISION - SAMOA, CALIF.

DRAWING NUMBER
D-12-226

NEW 8/11/66

Tee Screen Data Sheet 3

Hendrick
SCREEN COMPANY

Cutting Edge Metal Solutions

Profile Bar* & Wedge Wire Screens

Water Intake Screens

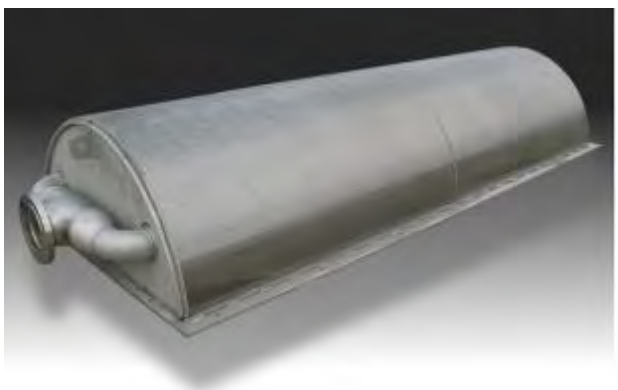
Hendrick produces passive water intake screens for with-drawing water from lakes, rivers, streams and reservoirs. Our proprietary Profile Bar and Resistance Welded designs lead to less debris and clogging for a smoother water flow. We have solutions for any situation you encounter. Our screens are 316(b) compliant and are approved by NMFS.

OPTIONS

- T-Intakes
- Half-Barrel Intakes
- Drum Screens
- Flat Panels
- Airburst Cleaning Systems

HALF-BARREL INTAKE SCREEN

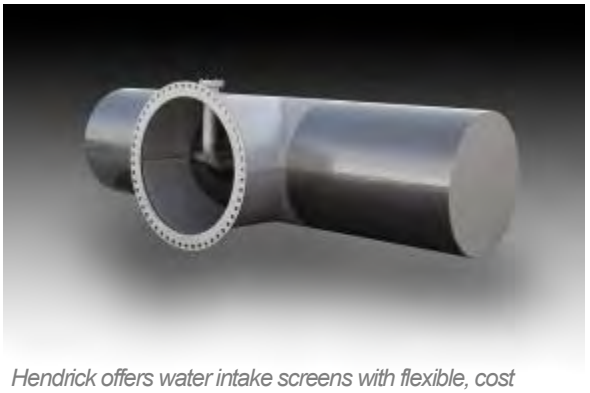
Shallow Water Solution



For shallow water conditions, Hendrick offers a patented half-barrel intake screen. With the same flow characteristics of our T-Intake screens, the bottom discharge outlet allows complete functionality in low water. Ideal for shallow creeks or rivers where a full T-Intake screen won't work.*

*U.S. Patent HSC 003 UAUS1

T-INTAKE SCREENS



Hendrick offers water intake screens with flexible, cost effective designs. Our flow modifiers are designed to maximize flow equalization, reduce head loss and minimize costs.

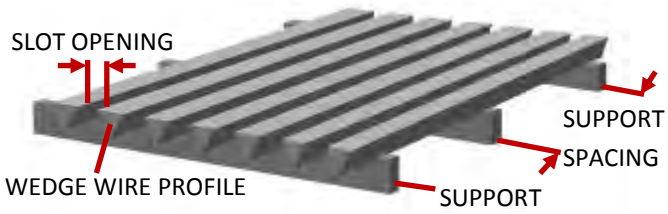
AIRBURST CLEANING SYSTEMS

Assure trouble-free, uninterrupted operations with Hendrick's Airburst Cleaning systems. It's fully customizable to your needs with automatic or manual controls.

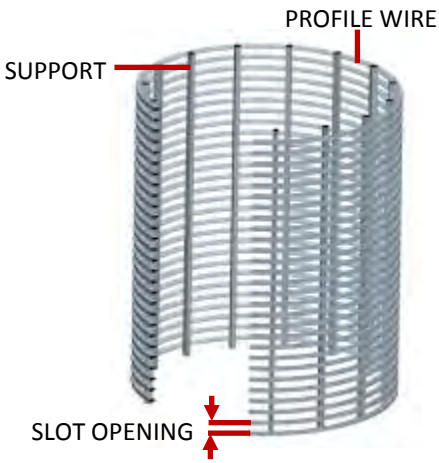
Wedge Wire Construction

Intake Screen, Drum Screen and Half-Barrel Construction

FLATTENED VIEW



CYLINDRICAL VIEW

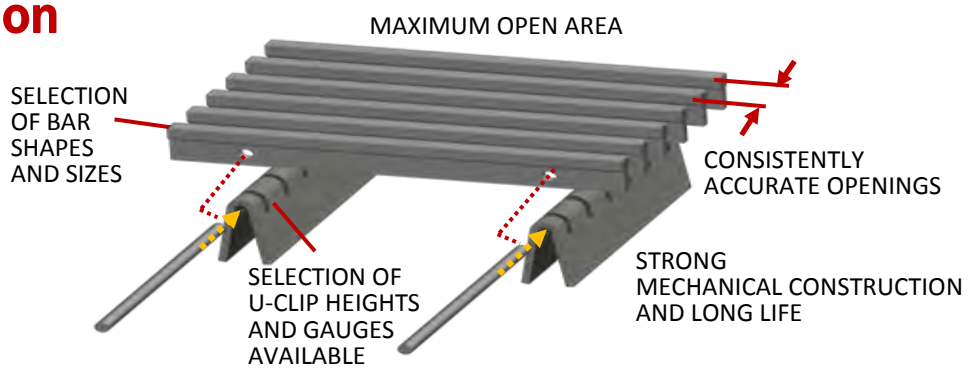


Wedge Wire Profile *Images are not to scale*	30V	47V	60V	69SV	69V	90V	125V	130V
Width	.032	.047	.060	.069	.069	.090	.125	.130
Height	.075	.098	.100	.125	.185	.150	.200	.310
Relief Angle	6.5°	10°	13°	10°	6°	13°	13°	8°

Support *Images are not to scale*	.070 x .50	.070 x .75	.070 x 1	90Q	L90Q	130Q	130QT	.118 x .185
Width	.070	.070	.070	.090	.090	.118	.118	.118
Height	.500	.750	1.000	.160	.125	.197	.272	.185

Profile Bar Construction

Optional Construction for Flat Panels



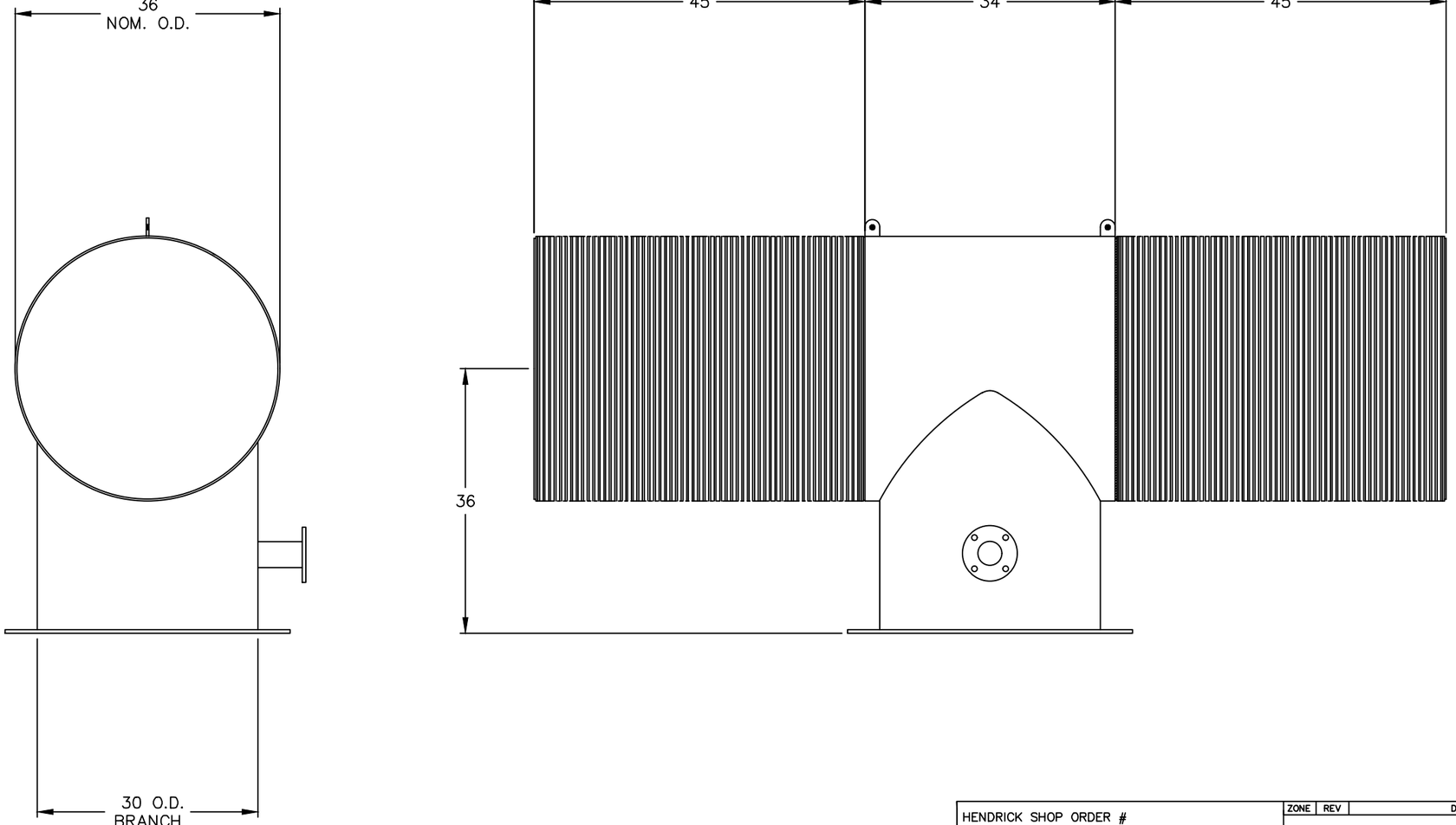
Profile Bar *Images are not to scale*	B69	B6S	B6	B9S	B9	B12	T9M	T9	F12	T12	T16	T24
Width	.069	.093	.093	.140	.140	.187	.140	.140	.187	.187	.250	.500
Height	.290	.290	.375	.320	.375	.500	.453	.453	.500	.500	.750	.750
Cap Height	.080	.080	.093	.110	.125	.156	.125	.203	.185	.188	.250	.250

Tee Screen Drawing 4

ITEM	NO. REQ'D.	NAME

BILL OF MATERIAL

PART #	QTY.	DESCRIPTION	MAT'L.	REMARKS



ALL DIMENSIONS IN INCHES UNLESS OTHERWISE SPECIFIED

DRAWING STATUS

HENDRICK SHOP ORDER #

DIMENSIONAL TOLERANCES (FLAT & CURVED PANELS)		DIMENSIONAL TOLERANCES (CYLINDERS)	
FRACTIONAL:	UNDER 60" +OR- 1/8" 60" TO 120" +OR- 3/16" OVER 120" +OR- 1/4"	FRACTIONAL:	UNDER 60" +OR- 1/8" 60" TO 120" +OR- 3/16" OVER 120" +OR- 1/4"
DECIMAL:	2 PLACES +OR- .050" 3 PLACES +OR- .010"	DECIMAL:	2 PLACES +OR- .050" 3 PLACES +OR- .010"
DIAGONAL:	SHALL BE EQUAL WITHIN: 1/8" UP TO 36" 3/16" OVER 36" THRU 72" 1/4" OVER 72"	DIAMETER:	24" AND UNDER +OR- 1/8" OVER 24" TO 48" +OR- 1/4" OVER 48" +OR- 3/8"
FLATNESS:	SCREENS TO BE FLAT WITHIN 1/4" ALL PLANES		CYLINDER ENDS SHALL BE CUT SQUARE WITHIN 1/8"

ZONE	REV	DESCRIPTION	BY/DATE	APPV'D
		REVISIONS		

DRAWN BY	RAW
DATE	1/3/20
APP'D.	BSW
DATE	1/3/20
MATERIAL	316ss
DESIGN No.	Sample
SCALE	NTS

Q:\Engineering\Borders\Hendrick_Logo_A1.JPG

TITLE

SHN Consulting Engineers
T-INTAKE SCREEN 36 O.D.

DRAWING No. Sample | SHT. 1 OF 1 | REV.