COMMERICAL INSPECTION
for
EUREKA FLOATING DRY DOCK
REVISION 1

Prepared For

PUGLIA ENGINEERING INC.

SAN FRANCISCO, CALIFORNIA

Prepared By

HEGER DRY DOCK, INC.
HOLLISTON, MASSACHUSETS

JANUARY 2017
Job# 3978-D

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1.0 INTRODUCTION

HEGER DRY DOCK, INC. has inspected floating dry dock EUREKA at Puglia Engineering's shipyard in San Francisco, California. The purpose of this inspection was to conduct a material condition survey in accordance with USCG SFLC STD SPEC 8634, 2014. The results of the inspection survey as well as accompanying UT surveys will be used in potentially certifying the floating dry dock Eureka.

The inspection was conducted from January 9th, 2017 to January 13th, 2018 by Waleed Sayed, Project Engineer, and Andres Fuentes, Engineer, both employed by Heger Dry Dock, Inc.

Mr. Sayed has been involved with the design, operation and inspection of dry docks since 2001. Mr. Sayed's resume is enclosed in Appendix A of this report.

2.0 CONDUCT OF SURVEY

This inspection survey consisted of the following:

- Visual inspection of all ballast tanks,
- Visual inspection of all void tanks,
- Visual observation of all exterior portions of the dock with exception of the underwater areas,
- Visual observation of both safety decks and wing decks.

NOTEWELL: Operational test of the dry dock could not be conducted due to loss of power.

3.0 HISTORY

The "EUREKA" dry dock, formerly known as "STEADFAST" (AFDM 14), was built by Pollock-Stockton Shipbuilding in Stockton, California. The dock was completed in July of 1945.

The dock is a Frederick Harris design three piece welded steel sectional dock capable of self-docking. At the time of construction, the dock was designated as YFD 71 and rated capable of lifting a maximum ship of 14,000 long tons. On February 1, 1983 the dock was reclassified as an AFDM.

The dock was operated at the Naval Station in San Diego, California before it was obtained by the city of San Francisco in 1998. The dock was previously operated by BAE Systems, but as of January 2017 it is operated by Puglia Engineering.

4.0 **GENERAL DESCRIPTION**

PRINCIPAL CHARACTERISTICS OF THE DOCK

Length Over pontoons	528'-0"
Length Overall	569'-0"
Breadth Overall	118'-0"
Width Between Wing Walls (molded)	90'-0"
Clear Width Between Fenders	86'-0"
Height Overall	52'-2"
Height of Wing Deck above Pontoon Deck	36'-0"
Height of Pontoon Deck at Centerline	16'-2"
Design Draft over Pontoon Deck at CL	33'-0"

NOTEWELL: Could not verify the achievable maximum draft of the dock because a submergence test was not conducted during the course of the survey. The dock crew has reported that the maximum achievable submergence draft of the dock has decreased to about 12ft over the pontoon deck due to sediment accumulation in the submergence pit.

For the general arrangement of the dock, see *Appendix B - General Arrangement.*

The three pontoon sections are divided into a total of 16 ballast compartments (8 per side) and 12 centerline void tanks.

Ballasting is accomplished through gravity flooding. Each ballast tank has one flood valve. Each tank is connected to an adjacent tank longitudinal via suction valves. There are 4 emergency crossover valves that connect adjacent tanks transversely.

De-ballasting of the 8 ballast tanks in the center section is accomplished with four 30 inch, 25,000gpm ballast pumps, two on the port side and two on the starboard side. Each pump is driven by a 200 HP electric motor.

De-ballasting of the 4 ballast tanks in each end section is accomplished with two 18 inch, 12,000gpm ballast pumps, one on the port side and one on the starboard side. Each pump is driven by a 100 HP electric motor.

The operation of the main ballast pumps and valves is carried out by remote control from the control house located on the starboard wing deck.

A removable flying bridge is installed at the fwd end of the dry dock.

A sonar pit is located on the offshore section. It is 87 feet long, 41 feet 10 inches wide and 6 feet-

6 inches deep.

A rudder pit is located on the center section. It is 56 feet long, 16 feet-10 inches wide and 3 feet-6 inches deep.

5.0 MATERIAL CONDITION SURVEY

5.1 Pontoon Ballast Tank Compartments:

The general condition of the pontoon ballast tanks is as follows:

- The pontoon deck plate protective paint coating is <50% intact.
- The overhead stiffeners protective paint coating is 40% intact.
- The bulkheads protective paint coating is 80% intact.
- The transverse frames protective paint coating is 65% intact.
- Overhead stiffeners have medium to heavy rust scale on the inside edges of serrated cut outs and on the surrounding web plate area.
- Corrosion of structure and plate throughout the entire tank, with most stiffeners exhibiting knife-edge flanges.
- Upper diagonals of K shaped frames exhibit medium to heavy rust scale, especially on their flanges.
- All anodes are fully wasted and/or covered to the point of inadequacy.
- The top three rungs of almost every tank access ladder have corroded significantly since last reported in 2015.

For exceptions to the general condition, see Appendix C *Material Condition Survey Deficiencies*. For more detail regarding HEGERS corrosion ratings, see Appendix D *Corrosion Ratings.*

5.2 Wing Ballast Tanks Compartments:

The general condition of the wing tanks is as follows:

- Medium rust scale on 60% of tank, especially on the longitudinal stiffeners and on the transverse frames.
- Shell plate paint coating 80% intact with isolated areas of light to medium rust scale.
- Pontoon bottom paint coating was 90% intact with the paint coating blistering throughout the entirety of the tank.
- The end bulkheads protective paint coating is 80% intact, with isolated areas of light to medium rust scale.
- Heavy rust scale on the wing shell transverse stiffeners above the 7th stiffener from the pontoon bottom. These stiffeners also exhibit medium to heavy material loss throughout their entire lengths; Knife-edged thinning of the flanges, reduced depth of the web at the serrated area, and reduced flange width.

- The majority of the protective zinc anodes are fully wasted, covered in mud, detached/partially detached, or rendered useless through other means.

For exceptions to the general condition, see Appendix C *Material Condition Survey Deficiencies*.

5.3 Void Tanks

The general condition of the void tanks is as follows:

- The protective paint coating has failed on around 10% of the tanks interior, with light rust bubbles throughout the entirety of the tank
- Fresh or salt standing water left in the tank.
- Overhead paint 85% intact with light rust bubbles.
- The top three rungs of almost every tank access ladder have corroded significantly since last reported in 2015.

For exceptions to the general condition, see Appendix C *Material Condition Survey Deficiencies*.

5.4 Pontoon Deck

The pontoon deck plate thickness is significantly deteriorating. In general, the pontoon deck plate is very susceptible to metal loss due to work on the ship in dock, the cyclical loading nature of vehicular traffic, and the high exposure to weathering effects like rain and sun.

The reduction in pontoon deck plate thickness is of significant concern because the pontoon deck acts as one of the critical structural components in a docking evolution and in day to day operations. A reduction in pontoon deck thickness on a longitudinally stiffened pontoon deck, such as Eurekas, exponentially decreases the compressive buckling strength of the dock.

The 6' by 6' Ultrasonic Thickness (UT) grid survey preformed in May 2015 by International Inspection (See Appendix G) showed a significant number of readings (nearly half of all readings) with corrosion in the range of 25% - 50% on the original 7/16-inch pontoon deck plating. The corroded plate in its current condition drastically reduces the transverse strength of the dock.

There were numerous holes scattered throughout the pontoon deck, with some tanks having as many as 12 holes (See Appendix C *Material Condition Survey Deficiencies*, Tank 6 Pontoon for more information). The majority of these holes were due to stress 'hot spots' caused by the serrated cut out corners of the stiffeners. Holes in the pontoon deck ranged from small pinsized holes to 12" long openings, with the majority of the holes being <3" in diameter.

The serrated pontoon deck stiffeners were once installed to optimize ratio of steel material to strength. However, this design is susceptible to stress concentration induced failures at the corners of the serrated notches. These stress induced failures occurred all throughout the dock,

at varying degrees as severity. The map of all pontoon deck fractures can be found on Appendix G - *Pontoon Deck Fractures Map and UT Survey.* The fatigue failures are common throughout all tanks although tanks which resist both head pressure and cyclical vehicular loading are most impacted.

5.5 Safety and Wing Decks

The safety deck areas on both the port and starboard wingwalls were inspected and were found to be in good condition. Throughout the safety deck, the compartment is finished with insulation, carpet, and linoleum. Where the steel members were exposed, the internal structural appeared to be in good condition with pain 98% intact. Overhead lights used to illuminate the safety deck compartments were intact and working. The offices, bathrooms and old quarters appeared to be in good condition; however, they are no longer used.

The wing (top) decks on both wingwalls are in fair to good condition with some localized areas of moderate rust scale and pitting. The deck plating has paint approximately 75% intact.

5.6 Dock Exterior

The vertical exterior wing shells paint is intact with some localized areas of paint failure and light rust film. There was light to medium rust scale along the wind and water line around the exterior of the dock. There were numerous areas of heavy rust bubbles and medium rust scale.

The columns supporting the overhanging wing wall have medium to heavy rust scale.

The south west rectangular sea chest grating was caved in.

The northwest inboard end timber fender has a section rotting away. The north east bulkhead has broken timber pieces in the fender. This should be repaired.

All exterior zincs are wasted away. These should be repaired.

All four corner draft marks are readable.

The vertical sides of the pontoon are in good condition with minimal marine growth.

The underwater section of the pontoon was inspected by DRS Marine in December of 2016. Results can be found in Appendix H - *DRS Marine Report*. The underwater portions of the dock have medium marine growth.

5.7 Aprons

The apron appears to be in fair condition with light to medium rust scaling under the decking. There is one bent horizontal diagonal.

5.8 Moorings

There are three mooring points that moor the port side of the dock to the pier. Two mooring points resist transverse loads and one mooring resists both longitudinal and transverse loads. The mooring system and the vertical columns on the dock are all in fair to good condition. The brackets are comprised of flanged plates, similar to Tee's. The coating system is breaking down, particularly on the flanges. The protective paint coating of the flanges of the mooring system are beginning to fail, resulting in medium to heavy rust scale and light to moderate loss of material thickness.

5.9 Back-up Power

The back-up generator is located on the mid port side's pier. A test of the generator was NOT conducted.

5.10 Deflection Monitoring System

A deflection monitoring system is installed on the wing wall to monitor the docks deflection during a docking evolution. The system was NOT inspected.

5.11 Keel and Side Blocks

The 42"x48"x5' concrete/timber composite keel blocks and side blocks are in adequate condition. There is some minor sparing in the concrete and the timber is showing signs of aging.

6.0 SUBMERGENCE TEST

Due to a weather related power loss, the shipyard was not able to fully operate the dock in a safe manner. Therefore, a submergence test was not conducted in our inspection.

7.0 UT THICKNESS SURVEY REVIEW

HEGER received DRS Marines Eureka Dry Dock Ultrasonic Thickness Inspection Report, dated December 2016 and International Inspection's May, 2015 UT report. Areas of plate exhibiting a loss of thickness greater than 25% must be replaced or shown via engineering calculations that the remaining plate is adequate for the capacity, head pressure, and wheel loads. All replaced

steel shall be fully welded and then primed and painted. Areas exhibiting 25% or greater loss are as follows:

- The 6' by 6' Ultrasonic Thickness (UT) survey grid preformed in May 2015 by INTERNATIONAL INSPECTION showed a significant number of readings (nearly half of all readings) with corrosion in the range of 25% - 50% on the original 7/16-inch pontoon deck plating. See Appendix G *Pontoon Deck Stiffener Fracture Map and UT Report*

- The underside of the pontoon bottom has spots where the plate is beginning to corrode past 25%. See Appendix H *DRS Marine UT Report* for specific readings.

- The west wingwall top deck had one reading where the percent corrosion was 46%. More readings should be taken in this area to confirm that this is indeed heavily deteriorated plate rather than a localized area of corrosion. See Appendix H *DRS Marine UT Report* for specific readings.

8.0 CONCLUSIONS

In our opinion, Floating Dry Dock "Eureka" is unsafe for operations. The two main issues regarding the dry dock Eureka is the condition of the pontoon deck and its underlying stiffeners. There are also hazardous conditions which impact the safety of personnel on the dock.

The pontoon deck is a key structural component when it comes to the strength of the dock. Referencing International Inspections May, 2015 report, a significant number of readings have 25%-50% corrosion. The corroded plate in its current condition has drastically reduced the transverse strength of the dock.

The docks extensively corroded pontoon deck plating is also coupled with widespread fractures in the longitudinal serrated stiffeners. These fractures are due to the serrated design of the longitudinal stiffeners. These serrations lead to areas of high stress concentration and decades of cyclical loading and unabated corrosion have caused widespread structural failure of these members. These stiffeners are responsible for resisting transverse bending loads, local head pressure loading, and vehicular loading, and when compromised they significantly decrease the docks overall structural capacity.

The only viable long term solution for the aforementioned pontoon deck structural issues is a complete pontoon deck replacement. Smaller local repairs can be done to marginally increase the docks structural capacity, but HEGER recommends the entire pontoon deck be replaced.

Stiffener repair must be completed in accordance with Appendix I *Deck Stiffener Repairs*. Specific locations regarding fractured stiffeners can be found in Appendix G *Pontoon Deck Stiffener Fracture Map and UT Report*.

If sections of pontoon deck stiffeners, or even all of the pontoon deck stiffeners, are replaced, there will still be limited transverse strength and head pressure capacities due to the pontoon deck plate thickness. Therefore, the prescribed repair plan is a temporary solution to the observed fractured stiffeners and not a viable long term solution, due to the excessively corroded pontoon deck plate.

Future certification at a specified capacity and allowable head pressure will be based on performance of an engineered repair plan to repair or replace sections of the pontoon deck and. On-site inspection of the repairs and a successful submergence of the dock will be required for future certification.

NOTEWELL: Vehicles may not travel over any area of the pontoon deck that has been identified to have cracked or separated stiffeners without a temporary 1" thick doubler plate. See Appendix G *Pontoon Deck Stiffener Fracture Map and UT Report*. The use of a doubler plate on the pontoon deck is intended only to facilitate access to areas in need of repair. It is not an approved method of repair.

NOTEWELL: The top three rungs of almost every tank access ladder have corroded significantly since reported in 2015. These must be repaired immediately and prior to any further access, except to affect repairs to the ladder. Consider inserting the rung through the vertical flat bar.

NOTEWELL: A small area of the pontoon deck, Frame 29, Tank 9 in way of the ramp over the electric utility crossover, is demonstrating a final mode of plate failure in which the deck stiffeners are ineffective due to being cracked, leaving the unsupported and corroded plate to support the local vehicle load which is now tearing at the edge of the Frame 29 in way of Tank 9. Vehicle travel in this area is prohibited until repaired using an approved method.

Heger Dry Dock, Inc.
January 2017

APPENDIX A

RESUME OF SURVEYOR

Resume for Waleed Sayed

- Dry Dock Engineer -

wally@hegerdrydock.com
www.hegerdrydock.com

Experience:

Heger Dry Dock, Inc., Holliston, MA 7/2007-Present
Dry Dock Engineer, Safety Manager

Primary responsibilities as Dry Dock Engineer are in support of Heger's maritime clientele, both Naval and commercial, in the various aspects of design, inspection and certification of dry dock facilities. Design responsibilities include longitudinal and transverse bending calculations for floating dry docks, as well as structural design and analysis of dry dock support equipment. Other design duties support the launching and dry docking of ships and submarines by determining dry dock and launch way loading, as well as ship stability/righting arm calculations. Customized programs are written in order to serve each clients unique circumstances and specific requests. Additionally, on-site surveys are conducted in accordance with US Naval and commercial standards in order to verify compliance prior to issuing dock rated certifications. This includes facility testing and compilation of UT readings in order to calculate actual load capacities.

Secondary responsibilities as Safety Manager include the development and implementation of an in-house safety training program. In compliance with OSHA standards, the training program includes confined space entry, fire safety and hazard communication.

Metro Machine Corp., Norfolk, VA 5/2001-6/2007
Design Engineer, Asst. Dock Master

Primary responsibilities as Design Engineer supported Metro's Production Department. This included systems analyses of existing facility/utility equipment, custom design of new facility equipment as well as R&D. Additional support was provided as Rigging/Heavy Lift Engineer, responsible for coordinating all critical heavy lifts with the Rigging Foreman. This included full structural analysis in addition to design engineering custom lifting rigs and lugs to facilitate lifting operations.

Accepted into Metro's Dockmaster Training program in order to gain the practical experience necessary to become a NAVSEA certified Dockmaster/Facilities Operation Supervisor (FOS). This included a working knowledge of graving and floating dock operations, ship handling methods and procedures, as well as dock loading and ship stability/righting arm calculations. Assigned as Lead Engineer responsible for troubleshooting and programming a Siemens Programmable Logic Controller (PLC) associated with a dry dock ship hauling system. This system is designed to control, haul and center a ship within the dry dock during docking evolutions.

Education:

Old Dominion University, Norfolk, VA 5/2001
Bachelor of Science in Mechanical Engineering with an emphasis on mechanical design, and a minor in Engineering Management.

Affiliations:

- ASNE, American Society of Naval Engineers
- AISC, American Institute of Steel Construction

Skills:

- SAP 2000 Finite Element Analysis (FEA)
- OSHA Safety Training
- General Hydrostatics (GHS)
- MS Office; Word, Excel, etc.
- C++ for Engineers
- MS Project 98
- AutoCAD, Mechanical Desktop, Inventor
- NASTRAN
- PATRAN
- Siemens PLC training for Troubleshooting 1 & 2, and Programming 2

Additional Information:

- Passed Virginia's FE/EIT Exam, April 2002
- Working knowledge of NAVSEA Ch. 997 and MIL-STD-1625, USCG STD SPEC 8634, and ABS Rules for Steel Floating Dry Docks.
- Working knowledge of NSTM Chapter 582 and NAVFAC DM 26-6 for the mooring, towing and heavy lifting of vessels.
- Working knowledge of AWS D1.1 welding standards, ASME Y14.5M drafting standards, AISC design standards, and OSHA design requirements for facilities.
- Passed NAVSEA’s Dry Dock Safety Course, January 2005.
- Bauer Compressor certified compressor technician for breathing and industrial air, as well as nitrogen generation compressors.
- Press brake and shear training by Fabricators and Manufacturers Association, International.
- Weld geometry and joint configuration training by ARCET.

Major Projects:

Alaska Ship and Dry Dock, Ketchikan, AK

- Project Engineer responsible for conducting surveys of two steel floating dry docks in accordance with USCG Standard Specification 8634.

American Society of Civil Engineers (ASCE),
Coasts, Oceans, Ports and Rivers Institute (COPRI)

- Co-author assisting with the development of ASCE Manuals and Reports on Engineering Practice No. 121, "Safe Operation and Maintenance of Dry Dock Facilities".

General Dynamics - Electric Boat, Groton, CT

- Project Engineer for docking Caisson Gate #3 in a floating dock using a floating derrick to assist.
- Project Engineer providing guidance for NAVSEA certification during reconstruction of Graving Dock #1 and #2.
- Project Engineer responsible for conducting surveys of three graving docks in accordance with NAVSEA ML-STD-1625.

Guam Shipyard, Apra Harbor, Guam

- Dry Dock Engineer providing calculations, blocking plans and technical assistance for numerous dockings of MSC vessels in a steel floating dry dock.
- Technical on-site advisor during the salvage and recovery operation of a sunken 35,000 LT dry dock.

Keppel AMFELS, Brownsville, TX

- Technical on-site advisor for docking and undocking numerous semi-submersible and jack-up oil rigs.

Keppel BrasFELS, Angra dos Reis, Brazil

- Technical on-site advisor during the testing and commissioning of a 30,000 LT steel floating dry dock.
- Technical on-site advisor for docking and conversion/jumboization of a drill ship on a steel floating dry dock.

Metro Machine Corporation, Norfolk, VA

- Project/Heavy Lift Engineer for U.S. Navy FFG class emergency diesel generator and A/C plant upgrade installations.
- Project Engineer for design of a waste water collection and transfer system for a 40,000 LT steel floating dry dock.

North Florida Shipyard, Jacksonville, FL

- Project Engineer responsible for conducting surveys of a concrete floating dry dock in accordance with USCG Standard Specification 8634.
- Dry Dock Engineer providing calculations, blocking plans and technical assistance for numerous dockings of USCG cutters in a concrete floating dry dock.
- Dry Dock Engineer providing calculations, blocking plans and technical assistance for numerous dockings of USCG cutters using a Travel Lift.

Portsmouth Naval Shipyard, Kittery, ME

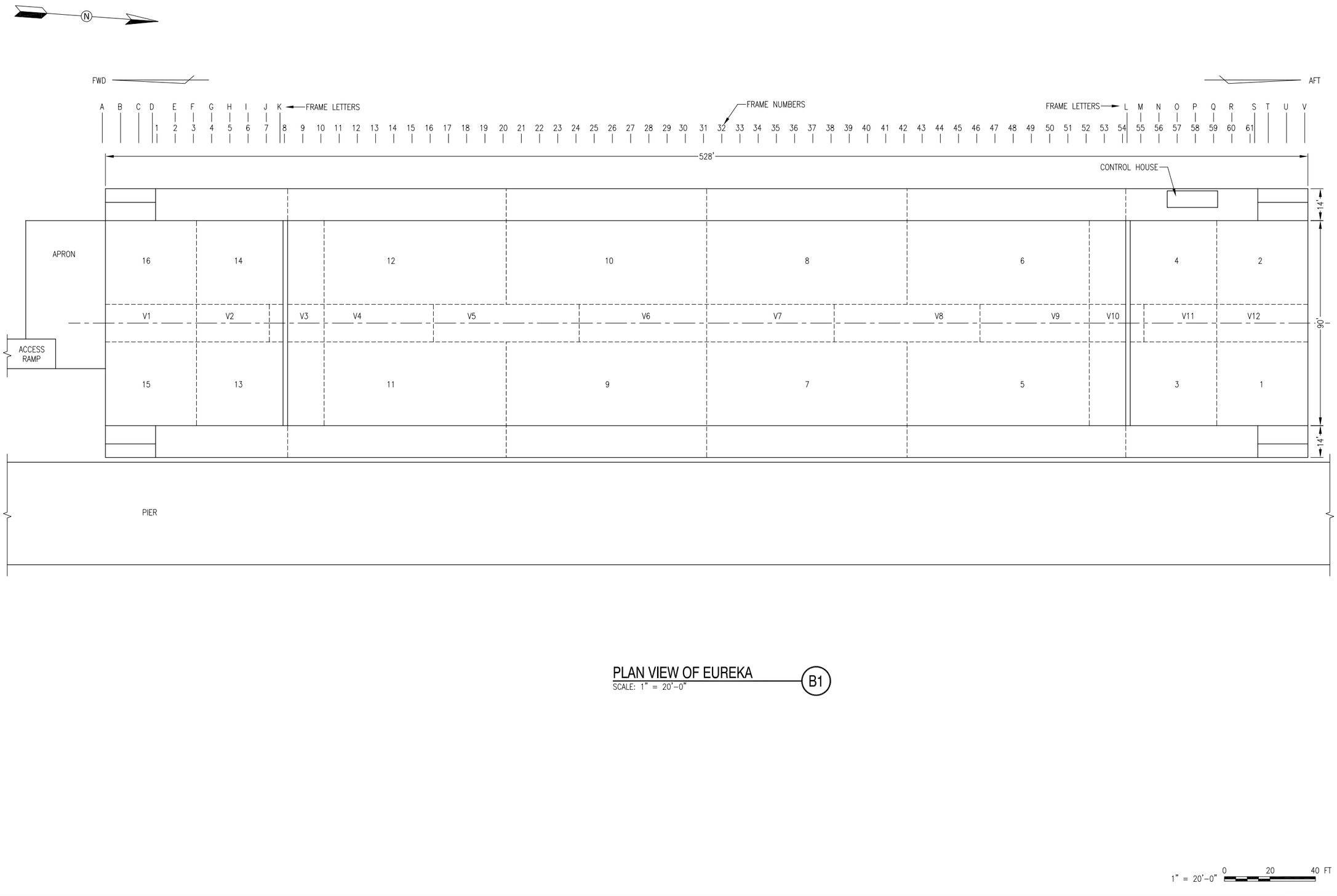
- Project Manager for the design, build and installation of Caisson #2.

SENESCO, North Kingstown, RI

- Project Engineer responsible for conducting surveys of a steel floating dry dock in accordance with USCG Standard Specification 8634.

APPENDIX B

GENERAL ARRANGEMENT



PLAN VIEW OF EUREKA

SCALE: 1" = 20'-0"

B1

1" = 20'-0" 0 20 40 FT

SYM	DESCRIPTION	DATE	APPR

HEGER
DRY DOCK, Inc.

DRY DOCK ENGINEERS
DESIGN, INSPECTION AND CERTIFICATION
531 CONCORD STREET
HOLLISTON, MA 01746
(508) 429-1800

SEAL

DES	DRW JJB	CHK MDN	
CHIEF ENG.	WALEED SAYED		
DATE:	1/109/2017		

CLIENT NAME AND ADDRESS:
PUGLIA MARINE
SAN FRANCISCO, CA.

PROJECT TITLE:
2017 COMMERCIAL INSPECTION OF EUREKA FDD (EX AFDM 14)

DRAWING TITLE:
GENERAL ARRANGEMENT

SCALE:	AS NOTED
PROJECT NO.:	3978-D
CONSTR. CONTR. NO.	
SHEET	2 OF –

A-001

FILE NAME: L:\CLIENTS\PUGLIA ENGINEERING\3978-D 2017 Commercial Inspection of Eureka FDD\Dwgs\0-3978-D Current Heger Design Drawings\A-001.dwg LAYOUT NAME: A-001 PLOTTED: Friday, January 20, 2017 - 1:35pm USER: Trevor

APPENDIX "C"

MATERIAL CONDITION SURVEY DEFICIENCIES

Appendix C: Material Condition Survey Deficiencies

Tank 1 Pontoon:

- Frame (Fr) Q/R:
  - Longitudinals (L) L11-13 off the non-watertight (NWT) bulkhead have corroded at the serrated section of the stiffener causing a 45° crack of varying length to form outward from the corner of the stiffener. See photo 2, in Appendix F *Selected Photographs,* for an example of a typical notched stiffener. This notched corrosion will be referred to as "notched".
- Fr R/S:
  - L11-17 from the watertight (WT) bulkhead are notched.
- In general, all overhead stiffeners have medium to heavy rust scale on the inside edge of the serrated cutout.
- Loss of material throughout the entire tank, with most stiffeners exhibiting knife-edged flanges.
- Upper diagonal of K shaped frame exhibits medium to heavy rust scale on its flanges.

Tank 1 Wing:

- Typical condition

Tank 2 Pontoon:

- Throughout the entirety of the tank, MRS on the serrated areas of the stiffeners with medium lamination and paint blistering.
- Fr Q/R:
  - 1"x1/2" hole in the pontoon deck between L1&2 off the non-watertight (NWT) bulkhead.
  - L3-7 off the NWT bulkhead are notched.
  - L2-4 off the watertight (WT) bulkhead are notched.
- Fr R/S:
  - L1&3 off the WT bulkhead are notched.
- Fr S/T
  - L3 off the WT bulkhead is notched.
- Fr U/V:
  - L1-4 off the WT bulkhead are notched.
- Fr T/U:
  - L1, 3&4 off the WT bulkhead are notched.
  - L6&7 off the NWT bulkhead are notched.

Tank 2 Wing:

- Anodes throughout the entire tank are shot

- Fr T/U:
    - Inboard wing shell insert repair detail is not satisfactory. Must be fixed, see photo 4080.
    - Top 3 wing ladder rungs are in bad condition.

Tank 3 Pontoon:

- All overhead stiffeners exhibit medium to heavy rust scaling and knife-edged flanges in way of the stiffener serrations.
- Throughout the dock overhead plate and stiffeners the protective paint coating is <50% intact.
- Paint blisters cover the entire area below the approximated 4' water line.
- All anodes are fully wasted and/or covered to the point of inadequacy.

Tank 3 Wing:

Overhang: Heavy lamination on all plate edges. Paint 60% intact with light rust scale and light rust bubbles throughout the entirety of the tank.

Tank 4 Pontoon:

- Typical overhead stiffer condition in tanks 1-4.
- Under the pit, the overhead stiffeners exhibit medium to heavy rust scale at the serrated areas.
- Fr L/M:
    - End connection to Fr L is suspect.
- Fr M/N:
    - L8-11 from the WT bulkhead are notched.
- Fr N/O:
    - L10-13 from the WT bulkhead are notched.
    - 2" dia. Hole in at L12 in way of Fr O.
- Fr O/P:
    - 2" dia. hole between L16, 17 and Fr L.
    - L9-13 from the WT bulkhead are notched.

Tank 4 Wing:

- Fr M/N:
    - L3-5 from the pontoon bottom OTBD are notched.
    - L3 from the pontoon bottom INBD is notched.
- Overhang: Same condition as tank 3W overhang except with large sheets of heavy rust scale ready to fall off.

Tank 5 Pontoon:

- Heavy rust scale on the pontoon access ladder. Inspect and replace all of the heavily corroded and thinned rungs.
- Fr 50/51:
  - L1-17 from the WT bulkhead are notched.
- Fr 49/50:
  - L3-l15 from the WT bulkhead are notched.
- Fr 47/48
  - Hole in the weld for the circular insert between longitudinals L1&2 and L5&6
  - L2&3 from the WT bulkhead severely corroded at the serrated section of the stiffener, extending to the welded connection of the stiffener to the overhead pontoon deck plating. This extensive corrosion will be referred to as "in severe condition". See photo 1 in Appendix *F Selected Photographs* for an example of a severely corroded stiffener.
  - L7-16 from the WT bulkhead are notched.
- Fr 46/47:
  - Holes in the pontoon deck in way of L8, 9, and 12.
  - L2-16 from the WT bulkhead are notched.
- Fr 45/46:
  - Hole in the pontoon deck in way of L7 and 9.
  - L2-17 from the WT bulkhead are notched.
- Fr 44/45:
  - L1-17 from the WT bulkhead are notched.
- Fr 42/43:
  - L3-17 from the WT bulkhead are notched.

Tank 5 Wing:

- Fr 43/44:
  - L2&3 from the pontoon bottom on the outboard wing shell (OTBD) are notched.
  - L7&9 from the pontoon bottom on the inboard wing shell (INBD) are notched.
- Fr 44/45:
  - L3-7 from the pontoon bottom OTBD are notched.
- Fr 46/47:
  - L6 from the pontoon bottom INBD is detached from INBD.
- Fr 49/50:
  - L6, 7, 9, 10 from the pontoon bottom INBD are notched.
  - L3-9 from the pontoon bottom OTBD are notched.

Tank 5A Pontoon:

- Fr 52/23:
  - L6, 7 from the WT bulkhead are not fully welded to insert plate.
  - L8-12 from the WT bulkhead are in severe condition.
  - L13-16 from the WT bulkhead are notched.
- Fr 53/43:
  - L6, 9, 10, 14, 15 from the WT bulkhead are notched.
  - Pin sized hole at L10 in way of Fr 52.

Tank 5A Wing Section:

- Paint <50% intact with heavy rust bubbles and light rust scale throughout the entirety of the tank.

Tank 6 Pontoon:

- Fr 42/43:
  - Hole between L3-4 off the WT bulkhead.
- Fr 33/44:
  - Holes between L6-7, L9-10
- Fr 42/43:
  - Hole in a ballast pipe, approximately the size of a hand print, at L3 off of the NWT bulkhead.
  - L2-6 off the NWT bulkhead are notched.
  - Hole in the pontoon deck/Fr42 connection at L5 off the NWT bulkhead.
  - Two holes in the pontoon deck at L6 off the NWT bulkhead.
  - L7-10 off the NWT bulkhead are in severe condition.
  - L3-6 off the WT bulkhead are notched.
  - L7 off the WT bulkhead is non-existent.
  - Hole in the pontoon deck between L4-5 off the WT bulkhead.
- Fr 43/44:
  - L2-6 from the NWT bulkhead are notched.
  - L7-10 from the NWT bulkhead are in severe condition.
  - Hole in the pontoon deck between L8-9 off the NWT bulkhead.
- Fr44/45:
  - Hole in the pontoon deck between the NWT bulkhead and L1.
  - L2, 3, 5-11 off the NWT bulkhead are notched.
- Fr 45/46:
  - L3-8 off the NWT bulkhead are notched.
- Fr 46/47:
  - All longitudinals except L6 off the WT bulkhead are notched.
- Fr 47/48:
  - Hole in the pontoon deck at L4 off the NWT bulkhead.

    - L3-9 off the NWT bulkhead are notched.
    - L5-6 off the WT bulkhead are notched.
- Fr 48/49:
    - L3 off the NWT bulkhead is notched
- Fr 49/50:
    - Hole in the pontoon deck L9 off the NWT bulkhead.
    - L3&4 off the NWT bulkhead are notched.
- Fr 51/50:
    - Hole in the pontoon deck at L3 off the NWT bulkhead.
    - L4-6 off the NWT bulkhead are notched.
    - L7-10 off the NWT bulkhead are in severe condition.
    - L3-8 off the WT bulkhead are notched.
- Fr 51/52:
    - L5-7 off the NWT bulkhead are notched.
    - L3-10 off the WT bulkhead are notched.

Tank 6 Wing:

- Fr 42-43:
    - L5-6 down from the safety deck INBD are notched.
- Fr45/46
    - L7/8 from the pontoon bottom INBD are notched.
    - L8 from the pontoon bottom OTBD is notched.
- Fr48/49:
    - L5/6 from the pontoon bottom OTBD are notched.
- Fr 49/50:
    - L7&9 from the pontoon bottom OTBD are notched.

Tank 7 Pontoon:

- L1-6 off the WT bulkhead are full stiffeners for the entire tank.
- Fr32/33:
    - L1-6 off the WT bulkhead are full stiffeners.
    - L2-7 off the NWT bulkhead are notched.
    - L8 off the NWT bulkhead is in severe condition.
- Fr 33/34:
    - L3-7 off the NWT bulkhead are notched.
- Fr 34/35:
    - L3-8, 10 off the NWT bulkhead are notched.
- Fr 35/36:
    - L3-6, 8 off the NWT bulkhead are notched.
- Fr36/37:

    - L2 off the WT bulkhead is in severe condition.
- Fr 37/38:
    - L1&2 off the NWT bulkhead in severe condition. These stiffeners are completely disconnected from the overhead doubler plate.
- Fr 38/39:
    - L1&2 off the NWT bulkhead are in severe condition.
- Fr 40/41:
    - L1&2 off the NWT bulkhead are in severe condition.
- Fr 41/42:
    - L5 off the WT bulkhead is notched.

Tank 7 Wing:

- Fr38/37:
    - L6 from the pontoon bottom INBD notched.
- Fr 37/36:
    - L8 from the pontoon bottom INBD notched.
- Fr 33/34:
    - L6 from the pontoon bottom INBD notched.
    - L4 from the pontoon bottom OTBD notched.

Tank 8 Pontoon:

- Fr 31-38: L3-8 from the NWT bulkhead are full stiffeners.
- Fr 32/33:
    - L2, 4, 5 from the WT bulkhead are notched.
- Fr 33/34:
    - L2, 4 from the NWT bulkhead are notched.
    - L1-2 from the WT bulkhead are notched.
- Fr 34/35:
    - L2-3 from the WT bulkhead are notched.
    - L6-7 from the WT bulkhead are notched.
    - Hole in the pontoon deck at L8-9 from the WT bulkhead.
- Fr 36-37:
    - Hole in the pontoon deck from L9-10 off the NWT bulkhead.
    - L2, 5, 6 from the WT bulkhead are notched.
- Fr 37-38:
    - Hole in the pontoon deck at L6 from the NWT bulkhead.
    - L3-6 from the NWT bulkhead are notched.
    - L7-11 from the NWT bulkhead are in severe condition.
    - L1-4 from the WT bulkhead are notched.

- Fr 38/39:
  - Hole in the pontoon deck at L7 and L8 from the NWT bulkhead.
  - L3-5 from the NWT bulkhead are notched.
  - L6-11 from the NWT bulkhead are in severe condition.
  - L1, 3, 4, 6 from the WT bulkhead are notched.
- Fr 39/40:
  - Three holes in the pontoon deck at L1 from the WT bulkhead.
  - Hole in the pontoon deck between L3-4 from the WT bulkhead.
  - L4-8, 10 from the NWT bulkhead are notched.
  - L3, 5 from the WT bulkhead are in severe condition.
- Fr 40/41:
  - Hole in the pontoon deck at L6 and L8-9 off the NWT bulkhead.
  - L4-9 off the NWT bulkhead are notched.
  - L2, 4 off the NWT bulkhead are notched.
- Fr41/42:
  - L5-11 off the NWT bulkhead are notched.
  - Hole in the pontoon deck at L5-6 off the NWT bulkhead.
  - L4&5 off the WT bulkhead are in severe condition.

Tank 8 Wing:

- Fr 40/39:
  - L6-8 from the pontoon bottom INBD are notched.
  - L3, 4, 5 from the pontoon bottom OTBD are notched.
- Fr 39/38:
  - L5, 6, 8 from the pontoon bottom OTBD are notched.
- Fr 36-37:
  - L3, 4, 5, 6 from the pontoon bottom OTBD are notched.
- Fr 36-35:
  - L3, 4, 5, 6 from the pontoon bottom OTBD are notched.
- Fr 35-34:
  - L5, 6, 7, 8 from the pontoon bottom OTBD are notched.
- Fr 34-33:
  - L6-7 from the safety deck OTBD are notched.
- Fr 32-31:
  - L4-5 from the pontoon bottom OTBD are notched.

Tank 9 Pontoon:

- Multiple holes and tear in the pontoon deck in way of the ramp over the utility cross over. No vehicle traffic should be allowed over pontoon tank 9.
- The solid stiffeners found in this tank are stitch welded, and there is local corrosion at the stiffener and pontoon deck connection where there is no weld.

- Fr 31/30:
  - L1-3 are solid stiffeners. L4-6 have only one serration.
  - L7-17 from the WT bulkhead are notched and have an unsatisfactory termination detail.
- Fr 30/29:
  - L1-6 are solid except L1&2 have a serration at the mid-span to accommodate the hatch.
  - L8, 9 from the WT bulkhead are beginning to notch.
  - L12-17 from the WT bulkhead are in severe condition.
    Pin sized hole in the pontoon deck at L3 from the WT bulkhead.
- Fr 29/28:
  - L1-6 from the WT bulkhead are solid.
  - L7& 9 from the WT bulkhead are notched.
- Fr 28/27:
  - L1-6 from the WT bulkhead are solid.
  - 12" dia. Hole in the pontoon deck in way of the NWT bulkhead (beneath the cable tray).
- Fr 27/26:
  - L1-6 from the WT bulkhead are solid.
  - L7-9 from the WT bulkhead are notched.
  - L12-15 from the WT bulkhead are in severe condition.
- Fr 26/25:
  - L1-6 from the WT bulkhead are solid.
  - L8-17 from the WT bulkhead are notched.
- Fr 25/24:
  - L1-6 from the WT bulkhead are solid.
  - L7, 9, 11-17 from the WT bulkhead are notched.
- Fr 24/23:
  - L1-17 from the WT bulkhead are solid.
- Fr 23/22:
  - L1-17 from the WT bulkhead are solid.
- Fr 22/21:
  - L1-6 from the WT bulkhead are solid.
  - L7, 8-14 from the WT bulkhead are notched.
  - Pin sized hole in the pontoon deck at L3 in way of Fr 21.
  - 1" dia. Hole at L17 in way of the NWT bulkhead.
- Fr 21/20:
  - L1-6 from the WT bulkhead are solid except for a serration at Fr 20 only.
  - L7-15 from the WT bulkhead are in severe condition.
  - 2" dia. Hole at L16 in way of Fr 21.

  - Pin sized holes at L9 in way of Fr 22/21, and L9 in way of Fr22/23 (both sides of Fr 22).
  - 3" dia. Hole at L13 in way of Fr 29.
  - 1" dia. Hole at L13 in way of Fr 31.

Tank 9 Wing:

- Fr22/23:
  - L3, 4 from the pontoon bottom OTBD are notched.
- Fr25/26:
  - L6, 7, 8 from the pontoon bottom OTBD are notched.
  - L3, 4 from the pontoon bottom INBD are notched.
- Fr 28/29:
  - L7-10 from the pontoon bottom INBD are notched.
  - L7 from the pontoon bottom OTBD is notched.
- Fr 29/30:
  - L6 from the pontoon bottom INBD is notched.
- Fr 32:
  - Transverse stiffeners 7-9 from the pontoon bottom are notched.

Tank 10 Pontoon:

- 3ft of residual water.
- Fr 31/30:
  - Bad stiffener termination at the watertight bulkhead.
  - L1, 6-16 from the WT bulkhead are notched.
- Fr 30/29:
  - L1, 7, 9-16 from the WT bulkhead are notched.
- Fr28/27:
  - L10 off the WT bulkhead in way of Fr 28 is cracked.
  - L9 & 11 off the WT bulkhead are notched
- Fr 27/26:
  - L1, 2, 3, 11-15 from the WT bulkhead are notched.
- Fr 26/25:
  - L2, 6, 10-14 from the WT bulkhead are notched.
- Fr 25/24:
  - L1-3, 6-10, 12-16 from the WT bulkhead are notched.
- Fr 24/23:
  - L1-4, 6, 7, 9-15 from the WT bulkhead are notched
- Fr 23/22:

    - L1-4, 7, 10-15 from the WT bulkhead are notched. L10-15 are double notched, meaning there are two notches at the serrated section of the cut out.
- Fr 22/21:
    - L3, 4, 6-16 from the WT bulkhead are notched.
- Fr 21/20 (WT transverse bulkhead):
    - L1-5, 7, 8, 11, 13, 15, 16 from the WT bulkhead are notched.
    - L1-16 from the WT bulkhead termination detail with the watertight transverse bulkhead is unsatisfactory.

Tank 10 Wing:

- Fr21/22:
    - L5-8 from the pontoon bottom OTBD are notched.
    - L6, 7, 9, 10 from the pontoon bottom INBD are notched.
- Fr 22/23:
    - L3, 4, 5, 9, 10 from the pontoon bottom OTBD are notched.
- Fr 23/24:
    - L1, 3, 4, 7 from the pontoon bottom OTBD are severely notched.
- Fr24/25:
    - L1, 2, 4-7 from the pontoon bottom OTBD are notched.
- Fr 25/26:
    - L2-5 from the pontoon bottom OTBD are notched.
    - L8 from the pontoon bottom INBD is notched.
- Fr 26/27:
    - L1-5, 7, 8, 9 from the pontoon bottom are notched.
- Fr 27,28:
    - L5-7 from the pontoon bottom OTBD are notched.
- Fr 29/30:
    - L1-7 from the pontoon bottom OTBD are notched.
- Fr 30/31:
    - L1-3 from the pontoon bottom OTBD are notched.

Tank 11 Pontoon:

- Frames 12.5-15 the stiffeners change from serrated cut-out stiffeners to solid stiffeners.
- Fr 10/10.5:
    - L4-17 from the WT bulkhead are notched, especially at WT Fr 10.
    - There is a hole in the pontoon deck between L8-9 from the WT bulkhead.
- Fr 10.5/11:
    - L4-7, 12-17 from the WT bulkhead are notched.

    - L7-11 from the WT bulkhead are in severe condition, and have detached from the pontoon deck.
- Fr 11/11.5:
    - L4-9 from the WT bulkhead are notched.
    - L9-14 from the WT bulkhead are in severe condition.
- Fr 11.5/12:
    - L4-10 from the WT bulkhead are notched.
    - L9-14 from the WT bulkhead are in severe condition.
- Fr 12/12.5:
    - All longitudinals are heavily corroded where the corner of the notch is welded to the pontoon deck.
- Fr 13.5/14:
    - Two holes in the pontoon deck in way of the inboard wing shell.
    - L5, 7-11 from the WT bulkhead have single notches in way of their weld seams to the pontoon deck.
- Fr 16/17:
    - L2, 3, 5-17 from the WT bulkhead are cracked.
- Fr 17/18:
    - L2-17 from the WT bulkhead are cracked.
    - Hole in the pontoon deck in way of L11.
- Fr 18/19:
    - L1-17 cracked.
- Fr 19/20:
    - L1-17 cracked.
    - L11 from the WT bulkhead in severe condition.

Tank 11 Wing:

- Medium to heavy rust scale on the wing shell stiffeners beginning at L3 and above.

Tank 12 Pontoon:

- Fr 20/19:
    - L3-5 from the NWT bulkhead are notched.
    - L6-12 from the NWT bulkhead are in severe condition.
    - L1-3 from the WT bulkhead are in severe condition.
- Fr19/18:
    - L2-3 from the NWT bulkhead are notched.
    - L4-14 from the NWT bulkhead are in severe condition.
    - Hole in the pontoon deck at L4 from the NWT bulkhead in way off the serrated cut out.

  - Hole in the pontoon deck at L8 from the NWT bulkhead in way of the serrated cut out.
  - L4 from the WT bulkhead notched.
  - L2 from the WT bulkhead in severe condition.
- Fr 18/17:
  - L3 from the NWT bulkhead notched
  - L4 and the remaining longitudinal stiffeners in this section are in severe condition.
  - L6 from the NWT bulkhead has a hole in the pontoon deck in way of the serrated cut out.
  - L12 from the NWT bulkhead has a hole in the pontoon deck in way of the serrated cut out.
  - Hole in the insert plate, L3 off of the watertight bulkhead.
- Fr 17/16:
  - L3&4 off the NWT bulkhead are notched.
  - L5-14 off the NWT bulkhead are in severe condition.
  - L1 off the WT bulkhead is in severe condition.
  - L6 from the NWT bulkhead has a hole in the pontoon deck in way of the serrated cut out.
  - L8 from the NWT bulkhead has a hole in the pontoon deck in way of the serrated cut out.
  - L2 from the WT bulkhead has a hole in the pontoon deck in way of the serrated cut out.
  - Bottom L1-3 off WT bulkhead are notched.
- Fr 16/15:
  - L3&4 off the WT bulkhead are notched.
  - L5 and the remaining longitudinal stiffeners in this section are in severe condition.
  - L8 from the NWT bulkhead has a hole in the pontoon deck in way of the serrated cut out.
  - L11 from the NWT bulkhead has a hole in the pontoon deck in way of the serrated cut out.
- Fr 15/14.5:
  - L2-5 off the NWT bulkhead are notched.
  - L6 and the remaining longitudinal stiffeners, except for the last, off the NWT bulkhead are in severe condition.
  - L4&5 from the WT bulkhead have a hole in the pontoon deck in way of the serrated cut out.
  - Hole in the pontoon deck between L1 and the WT bulkhead.
- Fr 14.5-/14:

    - L2-4 off the NWT bulkhead are notched.
    - L5 and the remaining stiffeners, excluding the last two, off the NWT bulkhead are in severe condition.
    - L4 from the NWT bulkhead has a hole in the pontoon deck in way of the serrated cut out.
- Fr 14/13.5:
    - Stiffeners have become non-serrated after L2 off the NWT bulkhead. These non-serrated stiffeners are skip welded and have light to medium rust scale and bubbles at the un-welded web to pontoon deck connections. This condition is typical for these full longitudinal stiffeners.
    - L2 off the NWT bulkhead is notched.
- Fr 13.5/13:
    - L2 off the NWT bulkhead is notched.
    - Full longitudinal stiffeners, in typical condition, from L3 onwards.
- Fr 13/12.5:
    - L1&2 off the NWT bulkhead are notched.
    - Full longitudinal stiffeners, in typical condition, from L3 onwards.
- Fr12.5/11:
    - L1&2 off the NWT bulkhead are notched.
    - Full longitudinal stiffeners, in typical condition, from L3 onwards.
- Fr 11/10.5:
    - L1&2 off the NWT bulkhead are notched.
    - Full longitudinal stiffeners with heavy rust scale at the non-welded lengths in way of the pontoon deck.

Tank 12 Wing:

- Overall paint is <50% intact. The inboard and outboard shells and frames have medium to heavy rust bubbles throughout. The serrated sections of the stiffeners have light rust scale, as well as the stiffeners weld to the shell plate.
- Numerous zincs have rotted or detached from the wall.
- Fr 17/18:
    - L5 up from the pontoon bottom OTBD is notched. See photo 4047.
    - See photos 4044 & 4045 for the typical condition of the zinc anodes.
- Fr 15/16:
    - L4 & 5 up from the pontoon bottom WT in way of frame 15 are notched. See photo 4048/9.

Tank 13 Pontoon:

- Between frames 8 and 7 (Fr 8/7):
    - L4 off the NWT bulkhead is notched.

  - L5-9 off the NWT bulkhead are notched.
  - Hole in the pontoon deck at L5-6 off of the watertight (WT) bulkhead.

- Fr 7/6:
  - L6-L10 off the WT bulkhead are in severe condition.
  - L11-12 off the WT bulkhead are notched.
  - L2-4 off the NWT are in severe condition.
- Fr 6/5:
  - L3-7off the NWT bulkhead are notched.
  - L8-14 off the NWT bulkhead are in severe condition.
- Fr 5/4:
  - L5-8 off the NWT bulkhead notched.
  - L9-12 off the NWT bulkhead are in severe condition.
  - L13-15 off the NWT bulkhead are notched.
- Fr 4/3:
  - L4, 7, 8 off the NWT bulkhead are notched.
  - L9- WT bulkhead off the NWT bulkhead are in severe condition. These stiffeners pass through the adjacent transverse frames at their thin serrated section.

Tank 13 Wing:

- Protective paint coating is less than 50% intact, with light and medium rust bubbles throughout the entirety of the tank.
- All lower zincs are covered with mud and are ineffective.

Tank 14 Pontoon:

- <3/4" paint blisters on 100% of the pontoon bottom and lower 3' of the shell plating.
- Ladder heavily corroded, must be replaced.
- Fr 3/4:
  - L3-5 from the WT bulkhead are notched.
- Fr 4/5
  - L3-13 from the WT bulkhead are in severe condition.
- Fr 5/6:
  - L9-13 from the WT bulkhead are notched
- Fr 6/7:
  - L11 from the WT bulkhead is notched
- Fr 7/8:
  - L7-15 from the WT bulkhead is notched.

Tank 14 Wing:

- General wing condition

Tank 15 Pontoon:

- Paint <50% intact throughout the entirety of the tank.
- Medium rust bubbles and medium to heavy rust scale throughout the entire tank
- Fr A/B:
    - L4-9 from the WT bulkhead are in severe condition.
- Fr C/D:
    - 2x ½"holes in the pontoon deck in way of the NWT bulkhead.
    - L1-7 from the WT bulkhead are in severe condition.
    - L8-17 from the WT bulkhead could are in potentially severe condition and require further investigation.
    - Heavy corrosion at the pontoon deck in way of the stiffener welds.
- Fr D/E:
    - L1-7 from the WT bulkhead are in severe condition
- Fr E/F:
    - Same as frame D/E.

Tank 15 Wing:

- Top 3 rungs of the access ladder are heavily wasted.

Tank 16 Pontoon:

- Frame B/C:
    - L7 from the NWT bulkhead is notched
- Fr C/D
    - L4-L10 from the NWT bulkhead are notched.
    - Hole in the pontoon deck between L8 and L9 from the NWT bulkhead.
- Fr D/E
    - L3, 6, 7, and 12 from the NWT bulkhead are notched.
    - L15-17 from the NWT bulkhead are in severe condition.
    - L8 from the NWT bulkhead has heavy rust scale.
- Fr E/F
    - L5-L10 from the NWT bulkhead are notched.
- All frames H have light to medium rust scale on their flanges.

Tank 16 Wing:

- Fr B/C:
    - L4 from the pontoon bottom OTBD is notched
- All lower and bottom zincs are covered with mud and are ineffective.

- Fr A:
    - Overhead boards left behind, remove.
- The paint coating is 50% intact, with the majority of the coating failure occurring on the stiffeners.
- Pontoon bottom and lower 3ft of the shell plating are completely covered in paint blisters smaller than 0.75".

Void Tanks:

General Void Tank Condition:

- The protective paint coating has failed on over 30% of the tanks interior, with light to medium rust bubbles throughout the entirety of the tank.
- 16" of standing water left in the tank.
- Overhead paint 85% intact with light rust bubbles.
- See photo 4042 and 4043 for the typical condition of Void 4.

Void 1:

- Hole in the pontoon deck at the aft end of the tank between L4 – 5 off the NWT bulkhead.
- Hole in one of the access hatch plates.
- Paint 95% intact throughout the entirety of the tank.
- Paint blisters on the bottom transverse stiffeners throughout the entirety of the tank.

Void 2:

- 6" of residual water remains in the tank at all times.
- Protective paint coating is 75% intact with light rust bubbles, light rust film and minor pitting mostly throughout the lower 3' of the tank.

Void 4:

- The protective paint coating has failed on over 90% of the tanks interior, with light to medium rust bubbles throughout the entirety of the tank.
- 16" of standing water left in the tank.
- Overhead paint 85% intact with light rust bubbles.
- See photo 4 and 5 in Appendix F - *Selected Photographs*

Void 5:

- Same condition as Void tank 4.

Void 6:

- L7 and below from the pontoon bottom have light to medium rust scale.
- Paint blisters on the pontoon bottom and on the transverse frames throughout the entirety of the tank.

Void 7:

- Water just below the level of the walkway inside of the void.
- Leak through the inserts (2) in way of Fr 34.
- Leak at Fr 32 inside of the CHT tank, with active flow.

Void 8:

- Residual water 1" over the transverse girder.
- Light rust scale over 50% of the entirety of the tank, mostly on the bottom half of the tank.

Void 9:

- Typical condition:
- 2' of residual water with light to medium rust bubbles on the frame and stiffeners with light rust scale on the framing.
- Ladders heavily corroded and should be replaced.

Void 10A:

- Not safe for entry.

Void 10:

- General void condition.

Void 11:

- General void condition.

Void 12:

- Not safe for entry.

External (Boat Ride):

- South west rectangular sea chest grating caved in.
- Light to medium rust scale at wind water line. Numerous isolated areas of heavy rust bubbles and medium rust scale.
- Columns supporting the overhanging wing arm have medium to heavy rust scale.
- North east bulkhead & bulkhead, broken timber pieces in the timber fender.
- North west inboard end timber fender section rotted away.
- All exterior zincs are wasted away.

APPENDIX "D"

CORROSION RATINGS

CORROSION RATING

(In order of severity)

Light Rust Film	Rust colored staining of steel.
Rust colored staining of steel	Light rust powder on steel.
Heavy Rust Film	Heavy rust powder on steel.
Rust Bubbles	Small bubbles of rust in isolated areas of plate that has most of its protective coating still intact. Can vary from light, a few bubbles of rust over a large area, to heavy, and many bubbles almost touching.
Pitting	Small indentations (pits) in the plate that do not extend completely through the plate. Can vary from light, a few pits over a large area, to heavy, and many pits almost touching one another.
Light Rust Scale	Thin sheet of rust formed on steel, sheet can be broken off in small pieces with hammer. Minor loss of metal thickness from original.
Moderate Rust Scale	Thicker sheets of rust formed on steel, sheets can be broken off in larger pieces with hammer. Moderate loss of metal thickness from original.
Heavy Rust Scale	Multiple, thick sheets of rust formed on steel, sheets may have pulled away from steel under their own weight, large sheets of rust can be peeled away with hand. Significant loss of metal thickness from original.
Isolated Hole	Small hole in steel due to corrosion.
"Lace Curtain" Holes	Large number of small to medium size holes in plate creating a "lace curtain" effect.
Complete wastage	Large holes in plate or structural member with significant portion gone.

APPENDIX E

USCG Check-off Sheets

INSPECTION CHECKLIST FOR GENERAL REQUIREMENTS (ALL TYPES)

INSPECTED BY HEGER DRY DOCK **DATE** 1/10/2017

FACILITY ID. Puglia Engineering "EUREKA" **SHEET NO.** 2 **OF** 8

ITEMS INSPECTED	CONDITION					REMARKS
	U	M	NA	NI	S	
Block Hauling Mechanism						(Mark all that apply)
Sheaves	☐	☐	✓	☐	☐	
Tracks	☐	☐	✓	☐	☐	
Chain/cable	☐	☐	✓	☐	☐	
Pawls	☐	☐	✓	☐	☐	
Structural members	☐	☐	✓	☐	☐	
Ratchets	☐	☐	✓	☐	☐	
Hauling winches/motors	☐	☐	✓	☐	☐	
Slides	☐	☐	✓	☐	☐	
Communication Systems (One of the below is required)						(Mark all that apply – Pass/Fail)
Public address system	☐	☐	☐	☐	✓	
Radios	☐	☐	☐	☐	✓	
Alarms	☐	☐	☐	✓	☐	
Sound powered phones	☐	☐	☐	✓	☐	
Dial telephone	☐	☐	☐	☐	✓	
Bull Horn	☐	☐	☐	✓	☐	

U-Unsatisfactory M-Marginal NA-Not applicable NI- Not inspected S-Satisfactory

NOTE: All marginal and unsatisfactory items shall be addressed in remarks. Attach additional sheets as necessary.

INSPECTION CHECKLIST FOR GENERAL REQUIREMENTS (ALL TYPES), CONTINUED

INSPECTED BY HEGER DRY DOCK **DATE** 1/10/2017

FACILITY ID. Puglia Engineering "EUREKA" **SHEET NO.** 3 **OF** 8

ITEMS INSPECTED	CONDITION U	M	NA	NI	S	REMARKS
Electrical Systems and Equipment Electrical power system shall support maximum load, developed by simultaneous operation of the dewatering pumps, fire protection pumps, valve opening and closing mechanisms, hauling machinery, communications equipment, lighting, alarms, and any other support equipment or systems necessary for the safe operation of the facility.						
Main power source (One of the below is required)						(Required)
Shore power	✓					Outage
Diesel gen. Set			✓			
Back-up power source						(Optional)
Shore power			✓			
Diesel gen. Sets				✓		
Electrical power distribution				✓		(Required)
Lighting for operations & security				✓		(Required)
Ship grounding straps				✓		(Required)
Welding machine grounds				✓		(Required)
FIRE PROTECTION SYSTEM (One of the below is required)						(Required)
Installed fire protection system compliant with Occupational Safety and Health Administration (OSHA) regulations			✓			
Memorandum of agreement with a local fire department ensuring that that fire department can arrive at the facility within 30 minutes of receiving the alarm.					✓	

U-Unsatisfactory M-Marginal NA-Not applicable NI- Not inspected S-Satisfactory

NOTE: All marginal and unsatisfactory items shall be addressed in remarks. Attach additional sheets as necessary.

INSPECTED BY HEGER DRY DOCK DATE 1/10/2017

INSPECTION CHECKLIST FOR GENERAL REQUIREMENTS (ALL TYPES), CONTINUED

FACILITY ID. Puglia Engineering "EUREKA" **SHEET NO.** 4 **OF** 8

ITEMS INSPECTED	CONDITION U	M	NA	NI	S	REMARKS
FITTINGS/CONNECTIONS						(Mark all that apply)
Cleats					✓	(46) 42" Cleats
Bollards			✓			
Chocks			✓			
Gratings					✓	on FWD Fly Bridge
Ringbolts			✓			
Platforms					✓	
Watertight doors, hatches, portlights and manholes					✓	
Gudgeon and pintle connections			✓			
Bolted connections					✓	
Attachments			✓			
Reinforcements			✓			
SHIP/DOCK HANDLING SYSTEMS AND EQUIPMENT (One of the below is required)						(Mark all that apply)
Capstans				✓		Power Outage
Winches			✓			
Trolleys			✓			
Translation chains and cables			✓			
UNDERWATER INSPECTION Has there been an inspection performed within the last 5 years?					✓	(Required) Last completed December of 2016.

U-Unsatisfactory M-Marginal NA-Not applicable NI- Not inspected S-Satisfactory

NOTE: All marginal and unsatisfactory items shall be addressed in remarks. Attach additional sheets as necessary.

INSPECTION CHECKLIST FOR FLOATING DRYDOCKS

INSPECTED BY HEGER DRY DOCK **DATE** 1/10/2017

FACILITY ID. Puglia Engineering "EUREKA" **SHEET NO.** 5 **OF** 8

General Description. Attach a drawing of the dock showing general construction. Supply on the drawing, or in a table, all tank sizes, volumes and locations. Electronic geometry files showing the drydock geometry, including tanks, are acceptable. Examples of acceptable files include but are not limited to: AutoCAD, GHS, SHCP or HECSALV models.

Age of Dock (yrs)	72
LOA (ft)	569
BOA (ft)	118
Distance between wing walls (ft)	90
Wing wall height (ft)	36
Wing wall length (ft)	528
Pontoon height (ft)	16.167
Pontoon width (ft)	118
The maximum water depth over the pontoon deck accounting for silt and tidal changes. (ft) The bottom dock must maintain 12 inches clearance above the harbor bottom when fully submerged.	Max Depth over pontoon deck: n/i Depth of harbor: n/i Tidal Range: n/i
Maximum wind and current under which docking and undocking can be safely conducted. Determined by Contractor's SOP.	Max Wind: n/i Max Current: n/i
Maximum rated capacity of the drydock and the maximum load per foot.	Max Capacity (LT): n/i Max LT/FT: n/i
Maximum differential water levels permitted on tank bulkheads.	FT: n/i
A current estimated weight & KG shall show the drydock in the light operating condition with all ballast tanks at the residual water levels. A correction shall be added for deck load, marine growth and silt accumulation in the tanks.	Current WT (LT): n/i Current KG: n/i

INSPECTED BY HEGER DRY DOCK DATE 1/10/2017

INSPECTION CHECKLIST FOR FLOATING DRYDOCKS, CONTINUED

FACILITY ID. Puglia Engineering "EUREKA" **SHEET NO.** 6 **OF** 8

ITEMS INSPECTED	CONDITION U	M	NA	NI	S	REMARKS
BALLASTING SYSTEM						(Required)
Do pumps operate?	☐	☐	☐	☑	☐	(Pass/Fail) Dock unable to perform operational test
Ballast and deballast in less than eight hours.	☐	☐	☐	☑	☐	(Pass/Fail) Dock unable to perform operational test
Do valves operate?	☐	☐	☐	☑	☐	(Pass/Fail) Dock unable to perform operational test
DEFLECTION DETECTION SYSTEM (Describe system if applicable)	☐	☐	☐	☑	☐	(Optional) Dock unable to perform operational test
DRAFT BOARDS Draft boards showing depth of water over pontoon deck at the wingwalls near the four inboard corners and at mid-length on the port and starboard sides.	☐	☐	☐	☐	☑	(Required - Pass/Fail)
METHOD FOR DETERMINING TANK LEVELS						(Mark all that apply. One of the below is required)
Tank level indicators	☐	☐	☐	☑	☐	Dock unable to perform operational test
Sounding tubes	☐	☐	☐	☑	☐	Dock unable to perform operational test
HULL STRUCTURE Metal structural members shall have no more than 25% wastage. Wood structural members shall be free of wood rot, marine bores and deemed in good condition.						
Pontoon deck	☑	☐	☐	☐	☐	Heavily Corroded Plate and Stff Fractures
Pontoon sides/ends	☐	☐	☐	☐	☑	
Pontoon bottom	☐	☐	☐	☐	☑	
Wingwalls sides/ends	☐	☐	☐	☐	☑	
Wingwall top deck	☐	☐	☐	☐	☑	
Safety/machinery decks	☐	☐	☐	☐	☑	
Interior Ballast/trim/ buoyancy tanks	☐	☑	☐	☐	☐	Deteriorating condition due to local corrosion

U-Unsatisfactory M-Marginal NA-Not applicable NI- Not inspected S-Satisfactory

Note: All marginal and unsatisfactory items shall be addressed in remarks. Attach additional sheets as necessary.

INSPECTED BY HEGER DRY DOCK DATE 1/10/2017

INSPECTION CHECKLIST FOR FLOATING DRYDOCKS, CONTINUED

FACILITY ID. Puglia Engineering "EUREKA" **SHEET NO.** 7 **OF** 8

ITEMS INSPECTED	CONDITION U	M	NA	NI	S	REMARKS
HULL STRUCTURE (cont.)						
Trusses/girders/frames/ beams	☐	☐	☐	☐	✓	
Longitudinals	✓	☐	☐	☐	☐	Fractured Deck Stiffeners
Swash bulkheads	☐	☐	☐	☐	✓	
Watertight bulkheads	☐	☐	☐	☐	✓	
Fuel/water tanks	☐	☐	☐	☐	✓	
Coatings	☐	✓	☐	☐	☐	
MOORING SYSTEM (dock to shore)						(Required)
Condition of mooring	☐	☐	☐	☐	✓	
SECURE WT HANDLING EQUIPMENT The weight handling securing systems shall be demonstrated to verify that these systems are adequate to hold under conditions of maximum list and trim.	☐	☐	☐	✓	☐	(If applicable)
STABILITY AND BUOYANCY CRITERIA Docking facility shall meet the following freeboard and buoyancy characteristics.						(Mark as applicable)
OPEN-ENDED DOCKS The minimum freeboard of the pontoon deck of the drydock (excluding pits) with the rated maximum load lifted shall be 12 inches.	☐	☐	☐	✓	☐	Dock unable to perform operational test

U-Unsatisfactory M-Marginal NA-Not applicable NI- Not inspected S-Satisfactory

Note: All marginal and unsatisfactory items shall be addressed in remarks. Attach additional sheets as necessary.

INSPECTED BY HEGER DRY DOCK DATE 1/10/2017

INSPECTION CHECKLIST FOR FLOATING DRYDOCKS, CONTINUED

FACILITY ID. Puglia Engineering "EUREKA" **SHEET NO.** 8 **OF** 8

ITEMS INSPECTED	CONDITION					REMARKS
	U	M	NA	NI	S	
CLOSE-ENDED DRY DOCK Minimum freeboard with the rated maximum load lifted shall be nine inches, measured from the sill of the stern (or bow) gates.	☐	☐	☐	☐	☐	
FLOATING DRYOCKS IN THE FULLY BALLASTED DOWN CONDITION During controlled ballasting of the drydock, the minimum freeboard (measured from the top deck at side) shall be 12 inches.	☐	☐	☐	☑	☐	Required (Pass/Fail) Dock unable to perform operational test
EMERGENCY PUMPING PLAN The facility must have an emergency plan or data demonstrating that failure of a pump or loss of pumping capacity will neither put the drydock out of operation nor cause damage to either the drydock or a ship in drydock.	☐	☐	☐	☑	☐	Required (Pass/Fail)

U-Unsatisfactory M-Marginal NA-Not applicable NI- Not inspected S-Satisfactory

Note: All marginal and unsatisfactory items shall be addressed in remarks. Attach additional sheets as necessary.

APPENDIX F

SELECTED PHOTOGRAPHS

Appendix F - Selected Photographs:

Photo 1: Multiple stiffeners in "severe condition" (as referenced in Appendix F *Material Condition Survey Deficiencies)*.

Photo 2: Typical notched condition of a stiffener.

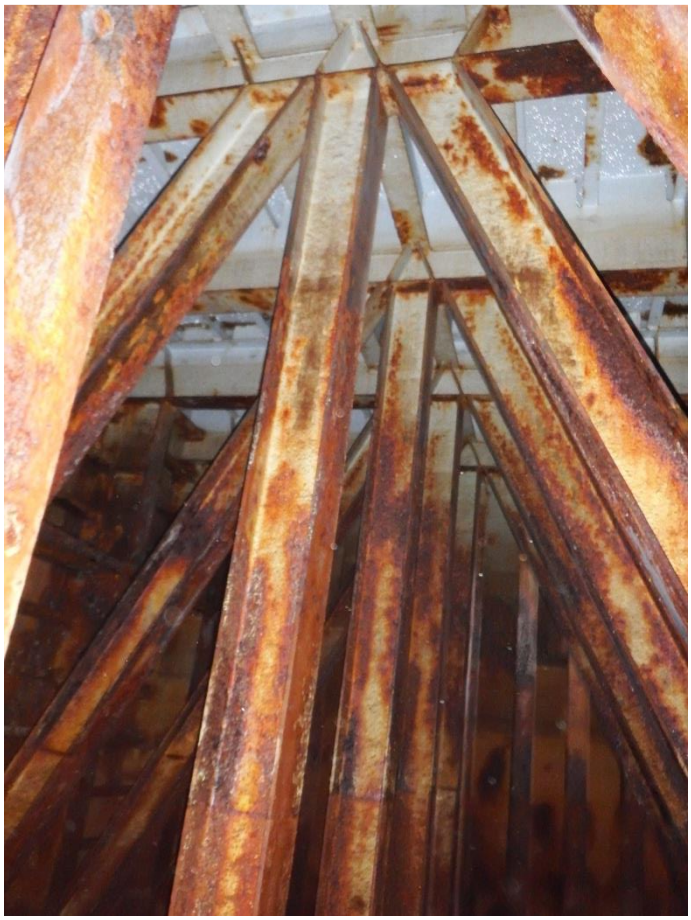


Photo 3: Condition of a corroding void tank.

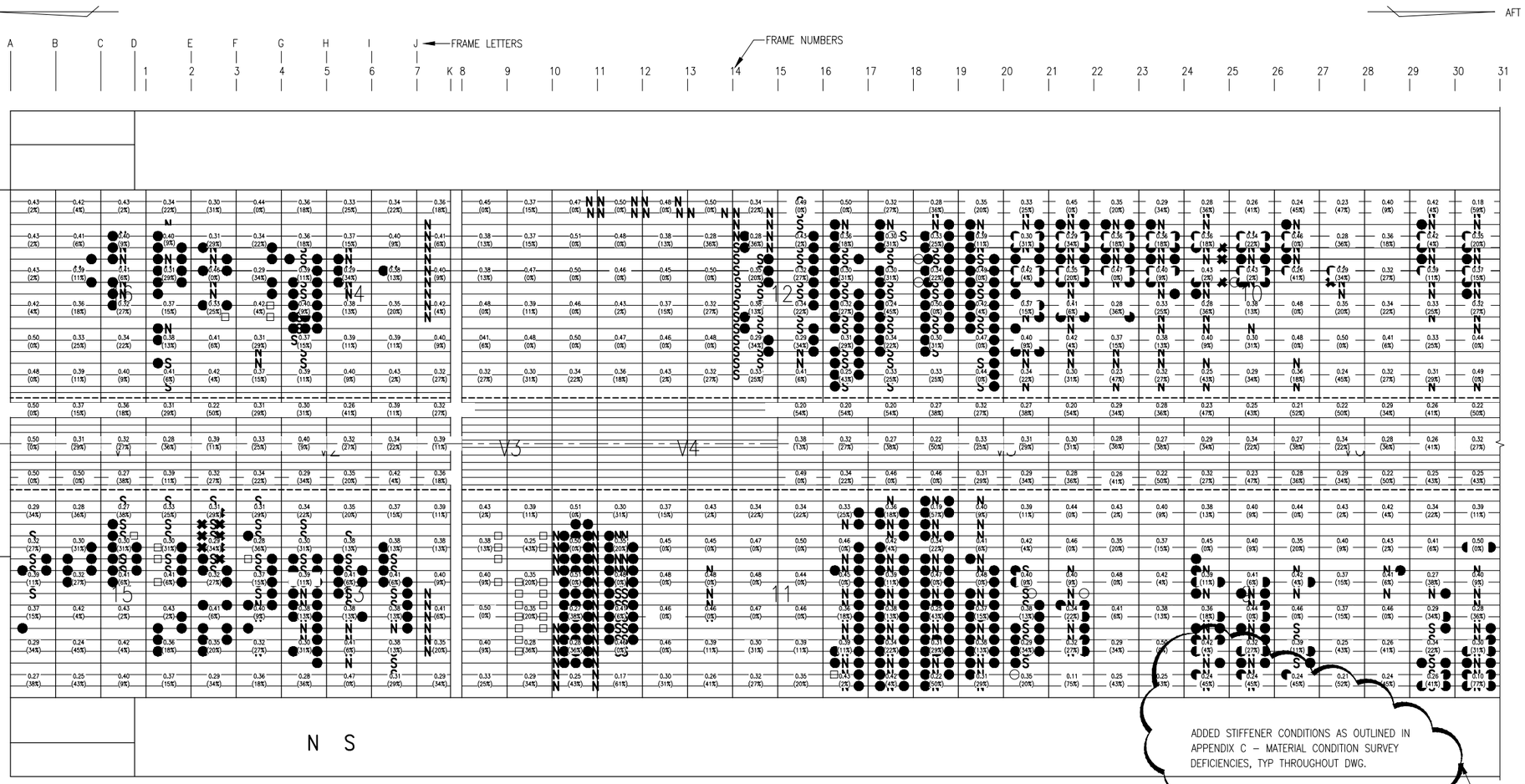
Photos 4 and 5: Typical condition of zinc anodes throughout the dock.

Photo 5: Typical condition of solid stiffeners. Notice skip welding and corrosion at unwelded contact between the stiffener and pontoon deck.

Photo 6: Tension crack over tank 9.

APPENDIX G

Pontoon Deck Stiffener Fracture Map and UT Report



ADDED STIFFENER CONDITIONS AS OUTLINED IN APPENDIX C – MATERIAL CONDITION SURVEY DEFICIENCIES, TYP THROUGHOUT DWG.

1

PLAN VIEW OF EUREKA

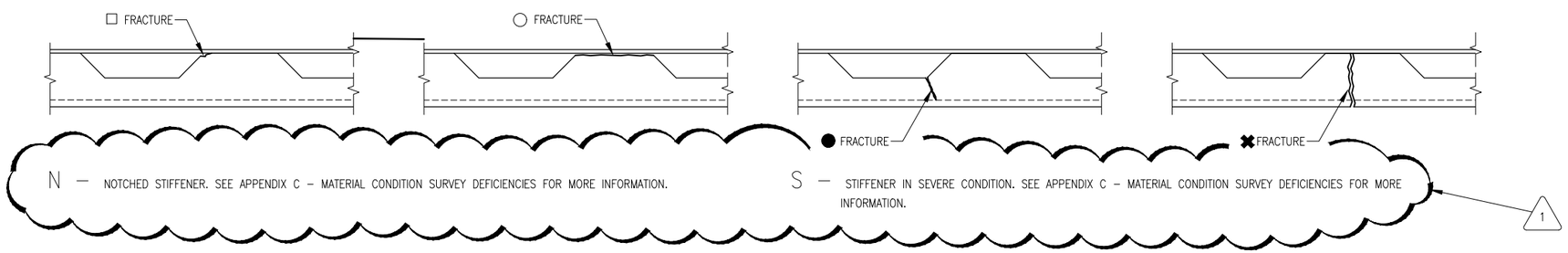
SCALE: 3/32" = 1'-0"

C1

NOTES:

1.) DRAWING REFLECTS FRACTURES AND UT READINGS IDENTIFIED IN INTERNATIONAL INSPECTIONS UT/VT SURVEY CONDUCTED IN MAY 2015

2.) REFER TO HEGER'S 3996-D SKETCHES FOR AN ACCEPTABLE TEMPORARY REPAIR PLAN



SYMBOLS KEY

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

A1

1 1/2" = 1'-0" 0 1 1 1/2 FT

3/32" = 1'-0" 0 4 8 16 24 FT

NO.	DESCRIPTION	DATE	APPR
1	ADDED STIFFENER CONDITION OUTLINED IN APPENDIX C – MATERIAL CONDITION SURVEY REFERENCES	1/24/2017	WS

HEGER DRY DOCK, Inc.

DRY DOCK ENGINEERS
DESIGN, INSPECTION AND CERTIFICATION
531 CONCORD STREET
HOLLISTON, MA 01746
(508) 429-1800

SEAL

DES – DRW ARF CHK MDN
CHIEF ENG. WALEED SAYED
DATE: 1/109/2017

CLIENT NAME AND ADDRESS:
PUGLIA MARINE
SAN FRANCISCO, CA.

PROJECT TITLE:
2017 COMMERCIAL INSPECTION OF EUREKA FDD (EX AFDM 14)

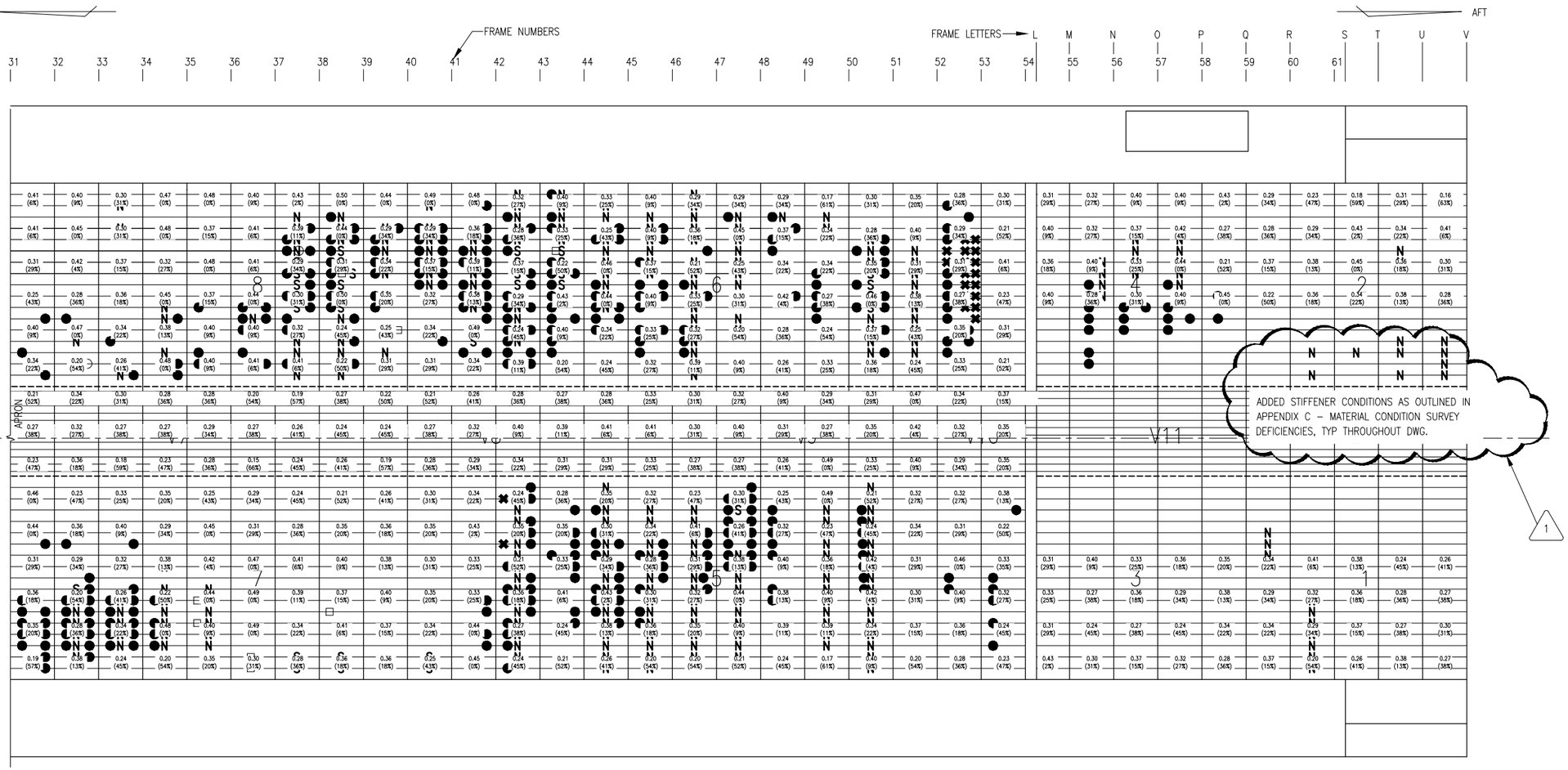
DRAWING TITLE:
PONTOON DECK STIFFENER FRACTURE MAP & UT SURVEY 1 OF 2

SCALE: AS NOTED
PROJECT NO.: 3978-D
CONSTR. CONTR. NO.

SHEET 8 OF –

A-011

FILE NAME: L:\CLIENTS\PUGLIA ENGINEERING\3978-D 2017 Commercial Inspection of Eureka FDD\Dwgs\0-3978-D Current Heger Design Drawings\A-011.dwg LAYOUT NAME: A-011 PLOTTED: Friday, February 24, 2017 – 12:49pm USER: Trevor



PLAN VIEW OF EUREKA

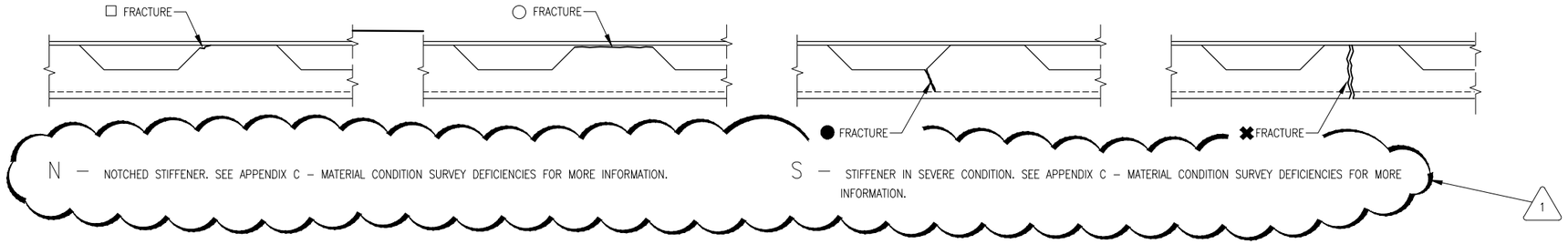
SCALE: 3/32" = 1'–0"

C1

NOTES:

1.) DRAWING REFLECTS FRACTURES AND UT READINGS IDENTIFIED IN INTERNATIONAL INSPECTIONS UT/VT SURVEY CONDUCTED IN MAY 2015

2.) REFER TO HEGER'S 3996–D SKETCHES FOR AN ACCEPTABLE TEMPORARY REPAIR PLAN



SYMBOLS KEY

SCALE: 1 1/2"=1'–0"

A1

1 1/2" = 1'–0" 0 1 1 1/2 FT

1" = 20'–0" 0 20 40 FT

MK	DESCRIPTION	DATE	APPR
1	ADDED STIFFNER CONDITIONS AS OUTLINED IN APPENDIX C – MATERIAL CONDITION SURVEY DEFICIENCIES	1/24/2017	WS

HEGER DRY DOCK, Inc.

DRY DOCK ENGINEERS
DESIGN, INSPECTION AND CERTIFICATION
531 CONCORD STREET
HOLLISTON, MA 01746
(508) 429-1800

SEAL

DES – | DRW ARF | CHK MDN
CHIEF ENG. WALEED SAYED
DATE: 1/109/2017

CLIENT NAME AND ADDRESS:
PUGLIA MARINE
SAN FRANCISCO, CA.

PROJECT TITLE:
2017 COMMERCIAL INSPECTION OF EUREKA FDD (EX AFDM 14)

DRAWING TITLE:
PONTOON DECK STIFFENER FRACTURE MAP & UT SURVEY 2 OF 2

SCALE: AS NOTED
PROJECT NO.: 3978–D
CONSTR. CONTR. NO.

SHEET 9 OF –

A-012

FILE NAME: L:\CLIENTS\PUGLIA ENGINEERING\3978–D 2017 Commercial Inspection of Eureka FDD\Dwgs\0–3978–D Current Heger Design Drawings\A–012.dwg LAYOUT NAME: A–012 PLOTTED: Friday, February 24, 2017 – 12:52pm USER: Trevor

APPENDIX H

DRS Marine UT Report

DRS MARINE INC.

COMMERCIAL DIVERS
DAMS, POWERHOUSES
U/W PILE REPAIRS
U/W BURNING & WELDING
ROVS

525 CHESTNUT STREET
VALLEJO, CA 94590
BUS: 707-648-3483
FAX: 707-648-2006
WWW.DRSMARINE.COM

COMPLETE DIVING SERVICES

EUREKA DRY DOCK

ULTRASONIC THICKNESS INSPECTION
PREPARED FOR

BAE SYSTEMS
SAN FRANCISCO

December, 2016

DRS MARINE INC.
COMPLETE DIVING SERVICES
drsmarine@aol.com

525 Chestnut Street
Vallejo, CA 94590
PH 707/648-3483
FX 707/648-2006

December 30, 2016

BAE SYSTEMS

ATTN: Justin Gleaton

RE: Dry dock 2 ULTRA SONIC Thickness Gauging

Project site: EUREKA Dry Dock
Date of work: 12/27/16 - 12/29/16
Inspection Site: Pier 80 San Francisco Ca.

INTRODUCTION

DRS marine was contracted to conduct an ultra sonic thickness testing on EUREKA Dry Dock. An inspection and cleaning of the intake/discharge screens will also be completed and details provided to BAE along with pictures in a written report. Underwater readings will be conducted by a 3 man dive team. A man lift will be provided by BAE to allow DRS Marine to reach the areas needed to take readings above the waterline along the inside and outside of the wing walls.

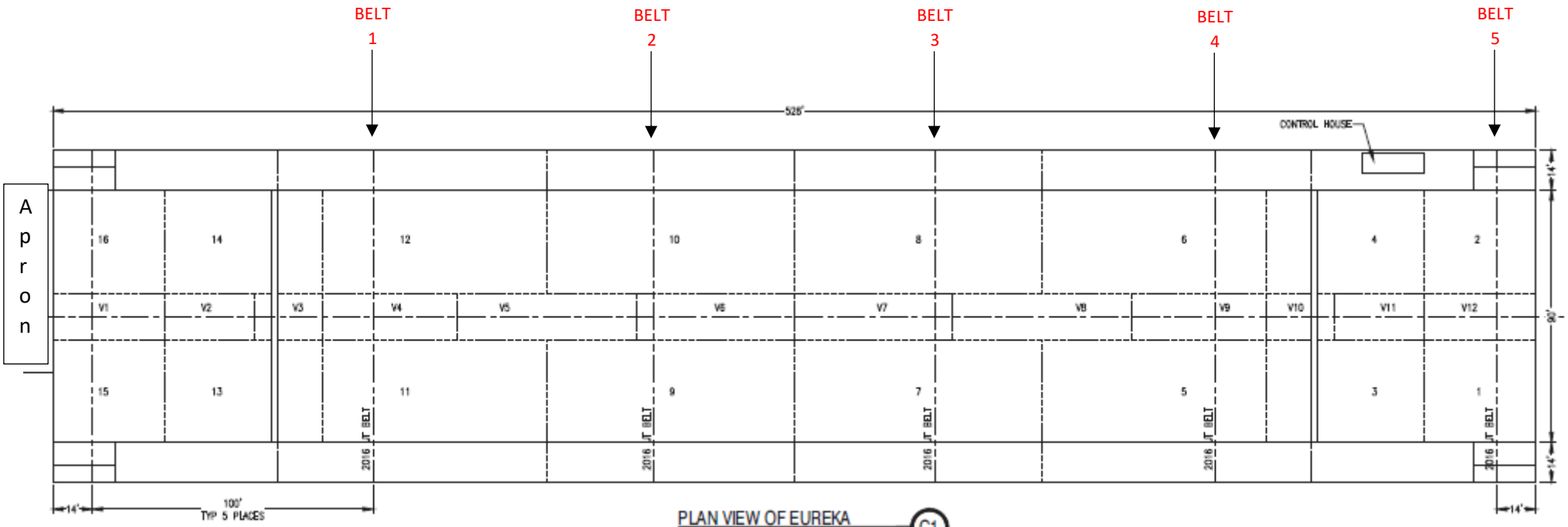
UT GRID PATTERN

The testing would be done along five belts around the dry dock. See ***Drawing A*** on next page. The test hits are to be taken every 5 feet along each belt. Testing will also be conducted along the Apron at designated locations that are to be provided by BAE.

METHOD

For readings that were needed to be taken underwater, DRS marine used a three man dive crew with surface supplied air diving equipment and a low-pressure diving compressor. The dive crew used a CYGNUS 3 Ultrasonic thickness gauge that was checked for calibration every morning and at mid-day.

EUREKA DRYDOCK



PLAN VIEW OF EUREKA C1
SCALE: 1" = 20'-0"

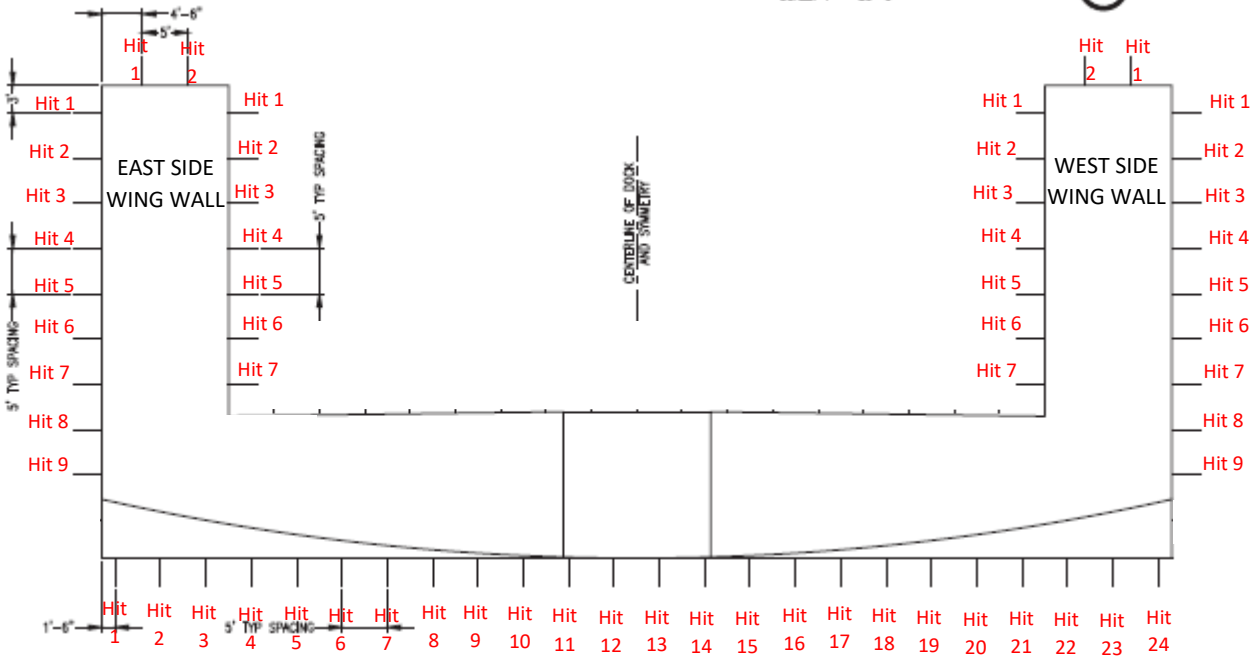


TABLE OF CONTENTS

1.0 TESTING ALONG THE 5 BELTS

East Wingwall Top Deck Hit 1 is 4' 5" from outside edge of wall

LOCATION		ORIGINAL THICKNESS	PRESENT THICKNESS	CHANGE	CHANGE PERCENTAGE
BELT 1	1	0.437	0.407	0.030	0.07
	2	0.437	0.394	0.043	0.10
BELT 2	1	0.437	0.380	0.057	0.13
	2	0.437	0.375	0.062	0.14
BELT 3	1	0.437	0.364	0.073	0.17
	2	0.437	0.446	-0.009	-0.02
BELT 4	1	0.437	0.387	0.050	0.11
	2	0.437	0.371	0.066	0.15
BELT 5	1	0.437	0.446	-0.009	-0.02
	2	0.437	0.450	-0.013	-0.03

East Outside Wingwall Hit 1 is 3' down from top of wing wall

LOCATION		ORIGINAL THICKNESS	PRESENT THICKNESS	CHANGE	CHANGE PERCENTAGE
BELT 1	1	0.375	0.392	-0.017	-0.05
	2	0.375	0.396	-0.021	-0.06
	3	0.375	0.360	0.015	0.04
	4	0.375	0.328	0.047	0.13
	5	0.375	0.302	0.073	0.19
	6	0.375	0.306	0.069	0.18
	7	0.375	0.344	0.031	0.08
	8	0.437	0.500	-0.063	-0.14
	9	0.437	0.502	-0.065	-0.15
BELT 2	1	0.375	0.396	-0.021	-0.06
	2	0.375	0.382	-0.007	-0.02
	3	0.375	0.360	0.015	0.04
	4	0.375	0.366	0.009	0.02
	5	0.375	0.358	0.017	0.05
	6	0.375	0.352	0.023	0.06
	7	0.375	0.456	-0.081	-0.22
	8	0.437	0.498	-0.061	-0.14
	9	0.437	0.501	-0.064	-0.15
BELT 3	1	0.375	0.372	0.003	0.01
	2	0.375	0.366	0.009	0.02
	3	0.375	0.366	0.009	0.02
	4	0.375	0.370	0.005	0.01
	5	0.375	0.354	0.021	0.06
	6	0.375	0.348	0.027	0.07
	7	0.375	0.444	-0.069	-0.18
	8	0.437	0.452	-0.015	-0.03
	9	0.437	0.468	-0.031	-0.07

East Outside Wingwall ...*Continued*

Hit 1 is 3' down from top of wing wall

LOCATION		ORIGINAL THICKNESS	PRESENT THICKNESS	CHANGE	CHANGE PERCENTAGE
BELT 4	1	0.375	0.394	-0.019	-0.05
	2	0.375	0.352	0.023	0.06
	3	0.375	0.370	0.005	0.01
	4	0.375	0.380	-0.005	-0.01
	5	0.375	0.356	0.019	0.05
	6	0.375	0.360	0.015	0.04
	7	0.375	0.464	-0.089	-0.24
	8	0.437	0.498	-0.061	-0.14
	9	0.437	0.444	-0.007	-0.02
BELT 5	1	0.375	0.402	-0.027	-0.07
	2	0.375	0.364	0.011	0.03
	3	0.375	0.344	0.031	0.08
	4	0.375	0.366	0.009	0.02
	5	0.375	0.370	0.005	0.01
	6	0.375	0.380	-0.005	-0.01
	7	0.375	0.362	0.013	0.03
	8	0.437	0.446	-0.009	-0.02
	9	0.437	0.424	0.013	0.03

Bottom of dry dock

Hit 1 is 1' 6" from the east side

LOCATION		ORIGINAL THICKNESS	PRESENT THICKNESS	CHANGE	CHANGE PERCENTAGE
BELT 1	1	0.437	0.428	0.009	0.02
	2	0.437	0.416	0.021	0.05
	3	0.437	0.416	0.021	0.05
	4	0.437	0.382	0.055	0.13
	5	0.437	0.348	0.089	0.20
	6	0.437	0.400	0.037	0.08
	7	0.437	0.396	0.041	0.09
	8	0.437	0.380	0.057	0.13
	9	0.437	0.370	0.067	0.15
	10	0.437	0.364	0.073	0.17
	11	0.437	0.366	0.071	0.16
	12	0.437	0.394	0.043	0.10
	13	0.437	0.330	0.107	0.24
	14	0.437	0.354	0.083	0.19
	15	0.437	0.318	0.119	0.27
	16	0.437	0.482	-0.045	-0.10
	17	0.437	0.486	-0.049	-0.11
	18	0.437	0.470	-0.033	-0.08
	19	0.437	0.448	-0.011	-0.03
	20	0.437	0.502	-0.065	-0.15
	21	0.437	0.412	0.025	0.06
	22	0.437	0.414	0.023	0.05
	23	0.437	0.438	-0.001	0.00
	24	0.437	0.426	0.011	0.03

Bottom of dry dock…….continued Hit 1 is 1' 6" from the east side

LOCATION		ORIGINAL THICKNESS	PRESENT THICKNESS	CHANGE	CHANGE PERCENTAGE
BELT 2	1	0.437	0.422	0.015	0.03
	2	0.437	0.420	0.017	0.04
	3	0.437	0.412	0.025	0.06
	4	0.437	0.402	0.035	0.08
	5	0.437	0.416	0.021	0.05
	6	0.437	0.412	0.025	0.06
	7	0.437	0.418	0.019	0.04
	8	0.437	0.328	0.109	0.25
	9	0.437	0.358	0.079	0.18
	10	0.437	0.338	0.099	0.23
	11	0.437	0.404	0.033	0.08
	12	0.437	0.424	0.013	0.03
	13	0.437	0.398	0.039	0.09
	14	0.437	0.394	0.043	0.10
	15	0.437	0.380	0.057	0.13
	16	0.437	0.436	0.001	0.00
	17	0.437	0.380	0.057	0.13
	18	0.437	0.330	0.107	0.24
	19	0.437	0.426	0.011	0.03
	20	0.437	0.386	0.051	0.12
	21	0.437	0.496	-0.059	-0.14
	22	0.437	0.498	-0.061	-0.14
	23	0.437	0.388	0.049	0.11
	24	0.437	0.348	0.089	0.20
BELT 3	1	0.437	0.438	-0.001	0.00
	2	0.437	0.402	0.035	0.08
	3	0.437	0.412	0.025	0.06
	4	0.437	0.336	0.101	0.23
	5	0.437	0.384	0.053	0.12
	6	0.437	0.374	0.063	0.14
	7	0.437	0.374	0.063	0.14
	8	0.437	0.372	0.065	0.15
	9	0.437	0.396	0.041	0.09
	10	0.437	0.426	0.011	0.03
	11	0.437	0.386	0.051	0.12
	12	0.437	0.420	0.017	0.04
	13	0.437	0.382	0.055	0.13
	14	0.437	0.342	0.095	0.22
	15	0.437	0.410	0.027	0.06
	16	0.437	0.382	0.055	0.13
	17	0.437	0.410	0.027	0.06
	18	0.437	0.418	0.019	0.04
	19	0.437	0.408	0.029	0.07
	20	0.437	0.414	0.023	0.05
	21	0.437	0.480	-0.043	-0.10
	22	0.437	0.480	-0.043	-0.10
	23	0.437	0.482	-0.045	-0.10
	24	0.437	0.416	0.021	0.05

Bottom of dry dock…….continued Hit 1 is 1' 6" from the east side

LOCATION		ORIGINAL THICKNESS	PRESENT THICKNESS	CHANGE	CHANGE PERCENTAGE
BELT 4	1	0.437	0.498	-0.061	-0.14
	2	0.437	0.478	-0.041	-0.09
	3	0.437	0.466	-0.029	-0.07
	4	0.437	0.386	0.051	0.12
	5	0.437	0.336	0.101	0.23
	6	0.437	0.374	0.063	0.14
	7	0.437	0.436	0.001	0.00
	8	0.437	0.398	0.039	0.09
	9	0.437	0.396	0.041	0.09
	10	0.437	0.366	0.071	0.16
	11	0.437	0.388	0.049	0.11
	12	0.437	0.440	-0.003	-0.01
	13	0.437	0.396	0.041	0.09
	14	0.437	0.302	0.135	0.31
	15	0.437	0.328	0.109	0.25
	16	0.437	0.346	0.091	0.21
	17	0.437	0.422	0.015	0.03
	18	0.437	0.502	-0.065	-0.15
	19	0.437	0.398	0.039	0.09
	20	0.437	0.354	0.083	0.19
	21	0.437	0.392	0.045	0.10
	22	0.437	0.490	-0.053	-0.12
	23	0.437	0.492	-0.055	-0.13
	24	0.437	0.404	0.033	0.08
BELT 5	1	0.437	0.314	0.123	0.28
	2	0.437	0.370	0.067	0.15
	3	0.437	0.374	0.063	0.14
	4	0.437	0.370	0.067	0.15
	5	0.437	0.312	0.125	0.29
	6	0.437	0.340	0.097	0.22
	7	0.437	0.382	0.055	0.13
	8	0.437	0.412	0.025	0.06
	9	0.437	0.326	0.111	0.25
	10	0.437	0.384	0.053	0.12
	11	0.437	0.328	0.109	0.25
	12	0.437	0.302	0.135	0.31
	13	0.437	0.326	0.111	0.25
	14	0.437	0.412	0.025	0.06
	15	0.437	0.352	0.085	0.19
	16	0.437	0.310	0.127	0.29
	17	0.437	0.368	0.069	0.16
	18	0.437	0.330	0.107	0.24
	19	0.437	0.390	0.047	0.11
	20	0.437	0.372	0.065	0.15
	21	0.437	0.436	0.001	0.00
	22	0.437	0.442	-0.005	-0.01
	23	0.437	0.442	-0.005	-0.01
	24	0.437	0.448	-0.011	-0.03

West Wingwall Top Deck

Hit 1 is 4' 5" from outside edge of wall

LOCATION		ORIGINAL THICKNESS	PRESENT THICKNESS	CHANGE	CHANGE PERCENTAGE
BELT 1	1	0.437	0.504	-0.067	-0.15
	2	0.437	0.235	0.202	0.46
BELT 2	1	0.437	0.488	-0.051	-0.12
	2	0.437	0.343	0.094	0.22
BELT 3	1	0.437	0.366	0.071	0.16
	2	0.437	0.448	-0.011	-0.03
BELT 4	1	0.437	0.478	-0.041	-0.09
	2	0.437	0.434	0.003	0.01
BELT 5	1	0.437	0.455	-0.018	-0.04
	2	0.437	0.438	-0.001	0.00

West Outside Wingwall

Hit 1 is 3' down from top of wing wall

LOCATION		ORIGINAL THICKNESS	PRESENT THICKNESS	CHANGE	CHANGE PERCENTAGE
BELT 1	1	0.375	0.385	-0.010	-0.03
	2	0.375	0.385	-0.010	-0.03
	3	0.375	0.345	0.030	0.08
	4	0.375	0.340	0.035	0.09
	5	0.375	0.305	0.070	0.19
	6	0.375	0.495	-0.120	-0.32
	7	0.375	0.505	-0.130	-0.35
	8	0.437	0.505	-0.068	-0.16
	9	0.437	0.466	-0.029	-0.07
BELT 2	1	0.375	0.380	-0.005	-0.01
	2	0.375	0.375	0.000	0.00
	3	0.375	0.335	0.040	0.11
	4	0.375	0.320	0.055	0.15
	5	0.375	0.285	0.090	0.24
	6	0.375	0.350	0.025	0.07
	7	0.375	0.428	-0.053	-0.14
	8	0.437	0.568	-0.131	-0.30
	9	0.437	0.530	-0.093	-0.21
BELT 3	1	0.375	0.375	0.000	0.00
	2	0.375	0.365	0.010	0.03
	3	0.375	0.370	0.005	0.01
	4	0.375	0.375	0.000	0.00
	5	0.375	0.315	0.060	0.16
	6	0.375	0.330	0.045	0.12
	7	0.375	0.543	-0.168	-0.45
	8	0.437	0.576	-0.139	-0.32
	9	0.437	0.520	-0.083	-0.19

West Outside Wingwall …*Continued*

Hit 1 is 3' down from top of wing wall

LOCATION		ORIGINAL THICKNESS	PRESENT THICKNESS	CHANGE	CHANGE PERCENTAGE
BELT 4	1	0.375	0.380	-0.005	-0.01
	2	0.375	0.395	-0.020	-0.05
	3	0.375	0.375	0.000	0.00
	4	0.375	0.350	0.025	0.07
	5	0.375	0.335	0.040	0.11
	6	0.375	0.315	0.060	0.16
	7	0.375	0.555	-0.180	-0.48
	8	0.437	0.533	-0.096	-0.22
	9	0.437	0.483	-0.046	-0.11
BELT 5	1	0.375	0.390	-0.015	-0.04
	2	0.375	0.360	0.015	0.04
	3	0.375	0.370	0.005	0.01
	4	0.375	0.390	-0.015	-0.04
	5	0.375	0.370	0.005	0.01
	6	0.375	0.360	0.015	0.04
	7	0.375	0.597	-0.222	-0.59
	8	0.437	0.576	-0.139	-0.32
	9	0.437	0.584	-0.147	-0.34

West Inside Wingwall

Hit 1 is 3' down from top of wing wall

LOCATION		ORIGINAL THICKNESS	PRESENT THICKNESS	CHANGE	CHANGE PERCENTAGE
BELT 1	1	0.375	0.440	-0.065	-0.17
	2	0.375	0.434	-0.059	-0.16
	3	0.375	0.393	-0.018	-0.05
	4	0.375	0.424	-0.049	-0.13
	5	0.375	0.410	-0.035	-0.09
	6	0.375	0.421	-0.046	-0.12
	7	0.375	0.410	-0.035	-0.09
BELT 2	1	0.375	0.452	-0.077	-0.21
	2	0.375	0.457	-0.082	-0.22
	3	0.375	0.403	-0.028	-0.07
	4	0.375	0.480	-0.105	-0.28
	5	0.375	0.449	-0.074	-0.20
	6	0.375	0.425	-0.050	-0.13
	7	0.375	0.420	-0.045	-0.12
BELT 3	1	0.375	0.406	-0.031	-0.08
	2	0.375	0.420	-0.045	-0.12
	3	0.375	0.377	-0.002	-0.01
	4	0.375	0.442	-0.067	-0.18
	5	0.375	0.406	-0.031	-0.08
	6	0.375	0.414	-0.039	-0.10
	7	0.375	0.407	-0.032	-0.09

West Inside Wingwall ...*Continued*

Hit 1 is 3' down from top of wing wall

LOCATION		ORIGINAL THICKNESS	PRESENT THICKNESS	CHANGE	CHANGE PERCENTAGE
BELT 4	1	0.375	0.400	-0.025	-0.07
	2	0.375	0.434	-0.059	-0.16
	3	0.375	0.433	-0.058	-0.15
	4	0.375	0.426	-0.051	-0.14
	5	0.375	0.383	-0.008	-0.02
	6	0.375	0.372	0.003	0.01
	7	0.375	0.415	-0.040	-0.11
BELT 5	1	0.375	0.433	-0.058	-0.15
	2	0.375	0.461	-0.086	-0.23
	3	0.375	0.436	-0.061	-0.16
	4	0.375	0.430	-0.055	-0.15
	5	0.375	0.445	-0.070	-0.19
	6	0.375	0.438	-0.063	-0.17
	7	0.375	0.420	-0.045	-0.12

East Inside Wingwall

Hit 1 is 3' down from top of wing wall

LOCATION		ORIGINAL THICKNESS	PRESENT THICKNESS	CHANGE	CHANGE PERCENTAGE
BELT 1	1	0.375	0.485	-0.110	-0.29
	2	0.375	0.446	-0.071	-0.19
	3	0.375	0.363	0.012	0.03
	4	0.375	0.420	-0.045	-0.12
	5	0.375	0.385	-0.010	-0.03
	6	0.375	0.368	0.007	0.02
	7	0.375	0.454	-0.079	-0.21
BELT 2	1	0.375	0.450	-0.075	-0.20
	2	0.375	0.444	-0.069	-0.18
	3	0.375	0.361	0.014	0.04
	4	0.375	0.461	-0.086	-0.23
	5	0.375	0.313	0.062	0.17
	6	0.375	0.441	-0.066	-0.18
	7	0.375	0.422	-0.047	-0.13
BELT 3	1	0.375	0.462	-0.087	-0.23
	2	0.375	0.430	-0.055	-0.15
	3	0.375	0.327	0.048	0.13
	4	0.375	0.461	-0.086	-0.23
	5	0.375	0.432	-0.057	-0.15
	6	0.375	0.427	-0.052	-0.14
	7	0.375	0.348	0.027	0.07
BELT 4	1	0.375	0.464	-0.089	-0.24
	2	0.375	0.434	-0.059	-0.16
	3	0.375	0.448	-0.073	-0.19
	4	0.375	0.455	-0.080	-0.21
	5	0.375	0.420	-0.045	-0.12
	6	0.375	0.445	-0.070	-0.19
	7	0.375	0.454	-0.079	-0.21
BELT 5	1	0.375	0.422	-0.047	-0.13
	2	0.375	0.444	-0.069	-0.18
	3	0.375	0.455	-0.080	-0.21
	4	0.375	0.482	-0.107	-0.29
	5	0.375	0.451	-0.076	-0.20
	6	0.375	0.445	-0.070	-0.19
	7	0.375	0.420	-0.045	-0.12

2.0 TESTING ON THE APRON

All testing locations for thickness were provided by BAE. Original thickness was not provided.

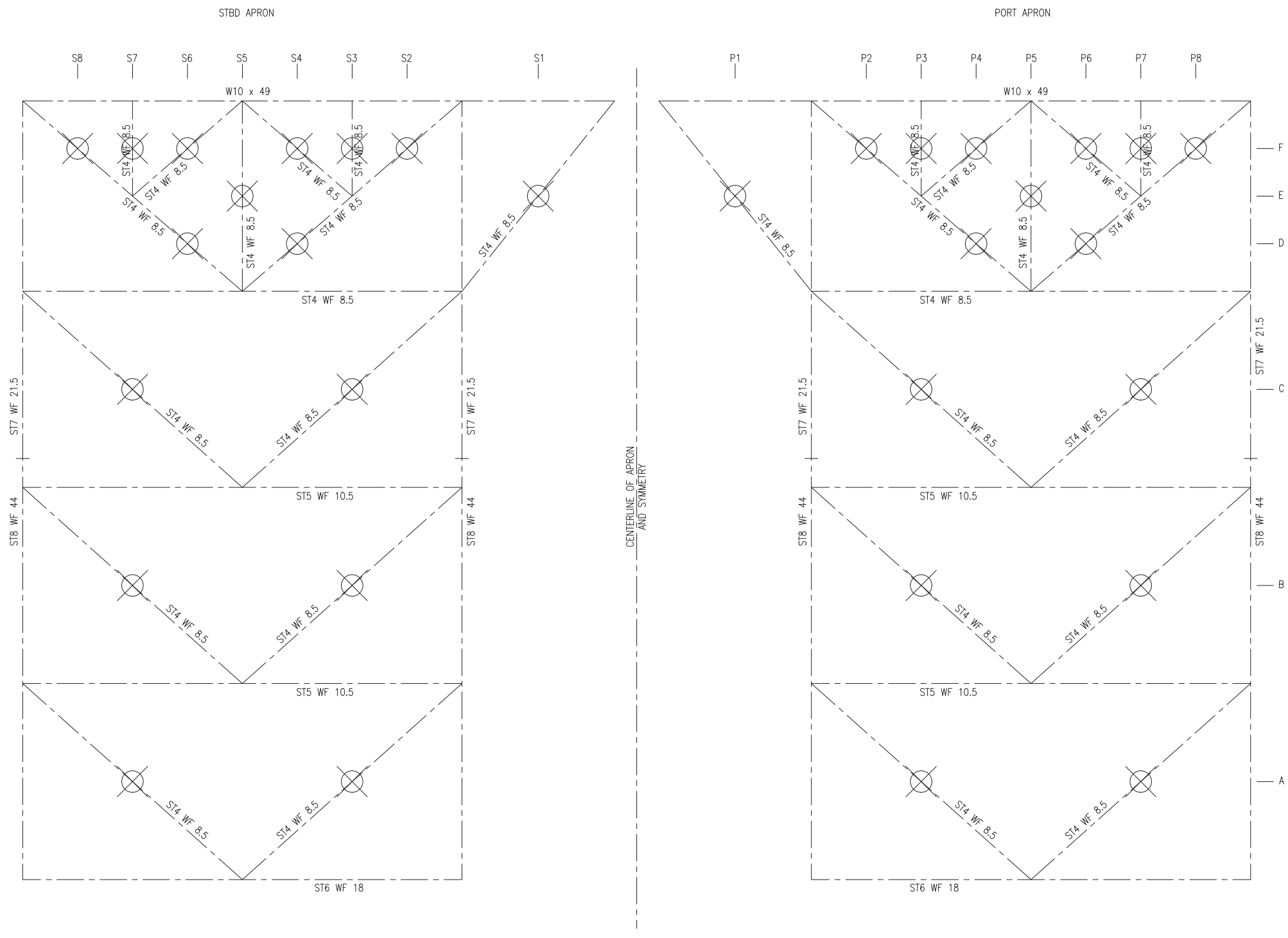
APRON DECK

				UT
S	3	A	Web	0.542
S	3	B	Flange	0.485
S	3	C	Web	0.531
S	3	D	Flange	0.517
S	2	A	Web	0.497
S	2	B	Flange	0.217
S	2	C	Web	0.502
S	2	D	Flange	0.551
S	1	A	Web	0.505
S	1	B	Flange	0.568
S	1	C	Web	0.596
S	1	D	Flange	0.587
C	L	A	Web	0.385
C	L	B	Flange	0.389
C	L	C	Web	0.289
C	L	D	Flange	0.336

SEE A1 on Sheet A-005

				UT
P	1	A	Web	0.55
P	1	B	Flange	0.545
P	1	C	Web	0.592
P	1	D	Flange	0.581
P	2	A	Web	0.553
P	2	B	Flange	0.502
P	2	C	Web	0.494
P	2	D	Flange	0.49
P	3	A	Web	0.529
P	3	B	Flange	0.543
P	3	C	Web	0.552
P	3	D	Flange	0.427

SEE A1 on Sheet A-005



SECTION
SCALE: 3/8"=1'-0"
A-003 A1

⊕ — INDICATES THE LOCATION OF TWO UT MEASUREMENTS TAKEN ON STRUCTURAL MEMBERS ONE TAKEN ON THE FLANGE AND ONE TAKEN ON THE WEB.

3/8" = 1'-0" 0 1 2 4 6 FT

SYM	DESCRIPTION	DATE	APPR

HEGER
DRY DOCK, Inc.
DRY DOCK ENGINEERS
DESIGN, INSPECTION AND CERTIFICATION
531 CONCORD STREET
HOLLISTON, MA 01746
(508) 429-1800

SEAL

DES | DRW JJB | CHK MDN
CHIEF ENG. WALEED SAYED
DATE: 11/16/2016

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CLIENT NAME AND ADDRESS:
BAE SYSTEMS
SAN FRANCISCO, CA.

PROJECT TITLE:
COMMERCIAL INSPECTION OF EUREKA FDD (EX AFDM 14)

DRAWING TITLE:
ORIGINAL EUREKA APRON STRUCTURE 3 OF 3

SCALE: AS NOTED
PROJECT NO.: 3978-D
CONSTR. CONTR. NO.

SHEET 6 OF 7
A-005

FILE NAME: L:\CLIENTS\BAE\BAE San Francisco\3978-D Comercial Inspection of Eureka FDD\Dwgs\0-3978-D Current Heger Design Drawings\A-005.dwg LAYOUT NAME: 6 A-005 PLOTTED: Tuesday, November 15, 2016 - 3:57pm USER: Mike

3.0 TESTING LONG TRUSS (locations provided by BAE

STBD - OUTOARD - MAIN TRUSS

	UT
A 1 Web	0.412
A 1 Flange	0.462
A 2 Web	0.36
A 2 Flange	0.517
A 3 Web	0.575
A 3 Flange	0.876
B 1 Web	0.356
B 1 Flange	0.496
B 2 Web	0.403
B 2 Flange	0.589
B 3 Web	0.547
B 3 Flange	0.859
C 1 Web	0.359
C 1 Flange	0.485
C 2 Web	0.363
C 2 Flange	0.471
C 3 Web	0.377
C 3 Flange	0.58
D 1 Web	0.344
D 1 Flange	0.477
D 2 Web	0.345
D 2 Flange	0.576

SEE A5 on Sheet A-003

STBD - INBOARD - MAIN TRUSS

	UT
A 1 Web	0.4
A 1 Flange	0.5
A 2 Web	0.4
A 2 Flange	0.5
A 3 Web	0.6
A 3 Flange	0.4
B 1 Web	0.3
B 1 Flange	0.3
B 2 Web	0.3
B 2 Flange	0.4
B 3 Web	0.6
B 3 Flange	0.9
C 1 Web	0.3
C 1 Flange	0.4
C 2 Web	0.3
C 2 Flange	0.4
C 3 Web	0.3
C 3 Flange	0.6
D 1 Web	0.4
D 1 Flange	0.4
D 2 Web	0.3
D 2 Flange	0.6

SEE A5 on Sheet A-003

STBD - INBOARD - W10x21

	UT
A Web	0.285
Flange	0.359
B Web	0.308
Flange	0.36
C Web	0.378
Flange	0.298
D Web	0.305
D Flange	0.325

SEE B1 on Sheet A-003

STBD - FWD - W10x49

	UT
S2 Web	0.311
Flange	0.205
S1 Web	0.316
Flange	0.387

SEE B1 on Sheet A-003

PORT - INBOARD - W10x21

	UT
A Web	0.317
Flange	0.377
B Web	0.32
Flange	0.377
C Web	0.316
Flange	0.401
D Web	0.317
D Flange	0.297

SEE B1 on Sheet A-003

PORT - FWD - W10x49

	UT
P1 Web	0.335
Flange	0.163
P2 Web	0.333
Flange	0.347
P2 Web	
Flange	

SEE B1 on Sheet A-003

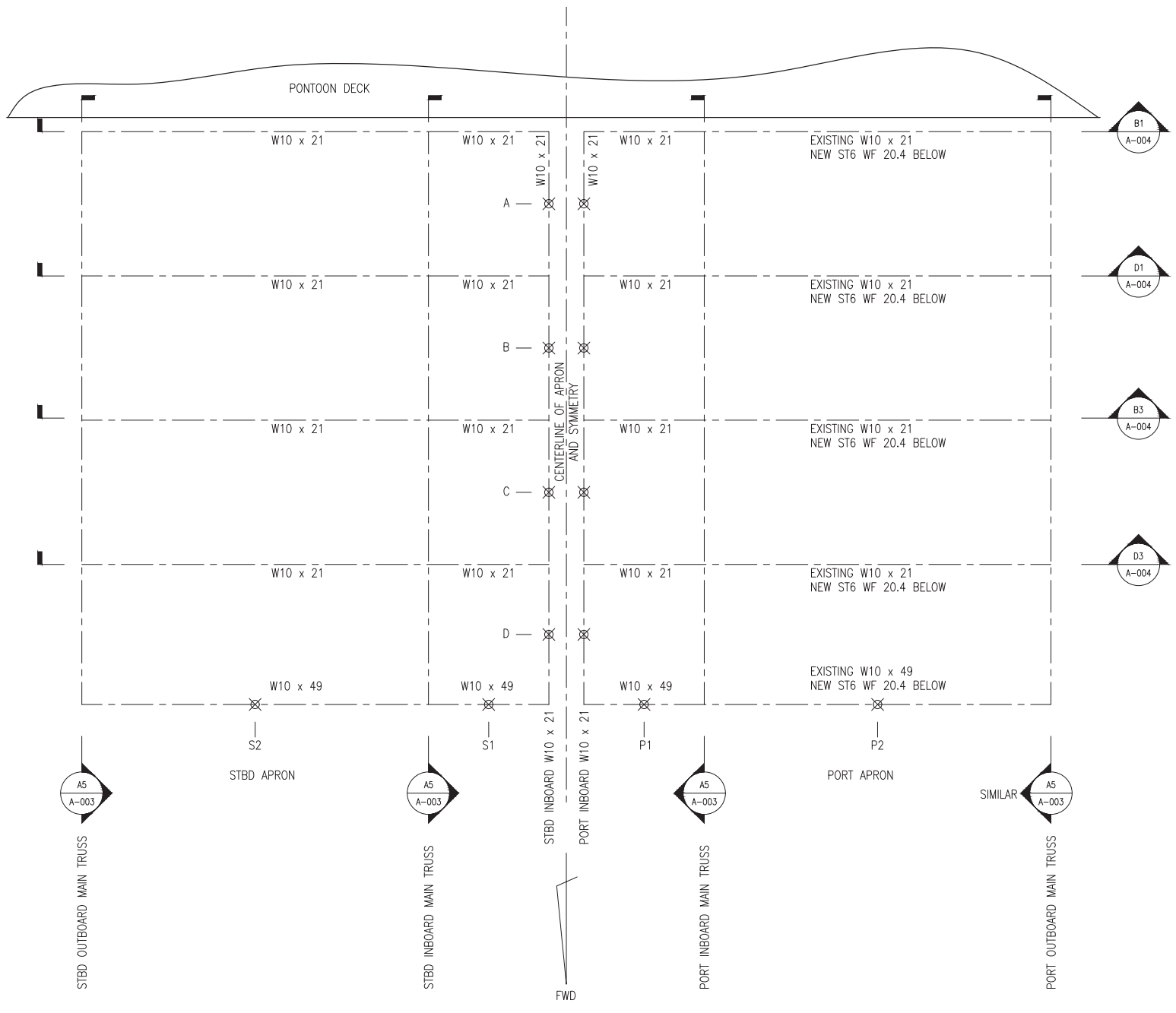
PORT - INBOARD - MAIN TRUSS

	UT
A 1 Web	0.387
A 1 Flange	0.461
A 2 Web	0.281
A 2 Flange	0.479
A 3 Web	0.623
A 3 Flange	0.875
B 1 Web	0.325
B 1 Flange	0.283
B 2 Web	0.279
B 2 Flange	0.466
B 3 Web	0.563
B 3 Flange	0.89
C 1 Web	0.351
C 1 Flange	0.323
C 2 Web	0.344
C 2 Flange	0.463
C 3 Web	0.378
C 3 Flange	0.582
D 1 Web	0.334
D 1 Flange	0.296
D 2 Web	0.375
D 2 Flange	0.553

PORT - OUTBOARD - MAIN TRUSS

	UT
A 1 Web	0.388
A 1 Flange	0.447
A 2 Web	0.357
A 2 Flange	0.506
A 3 Web	0.604
A 3 Flange	0.852
B 1 Web	0.339
B 1 Flange	0.25
B 2 Web	0.294
B 2 Flange	0.464
B 3 Web	0.56
B 3 Flange	0.881
C 1 Web	0.291
C 1 Flange	0.307
C 2 Web	0.296
C 2 Flange	0.465
C 3 Web	0.368
C 3 Flange	0.617
D 1 Web	0.346
D 1 Flange	0.377
D 2 Web	0.371
D 2 Flange	0.595

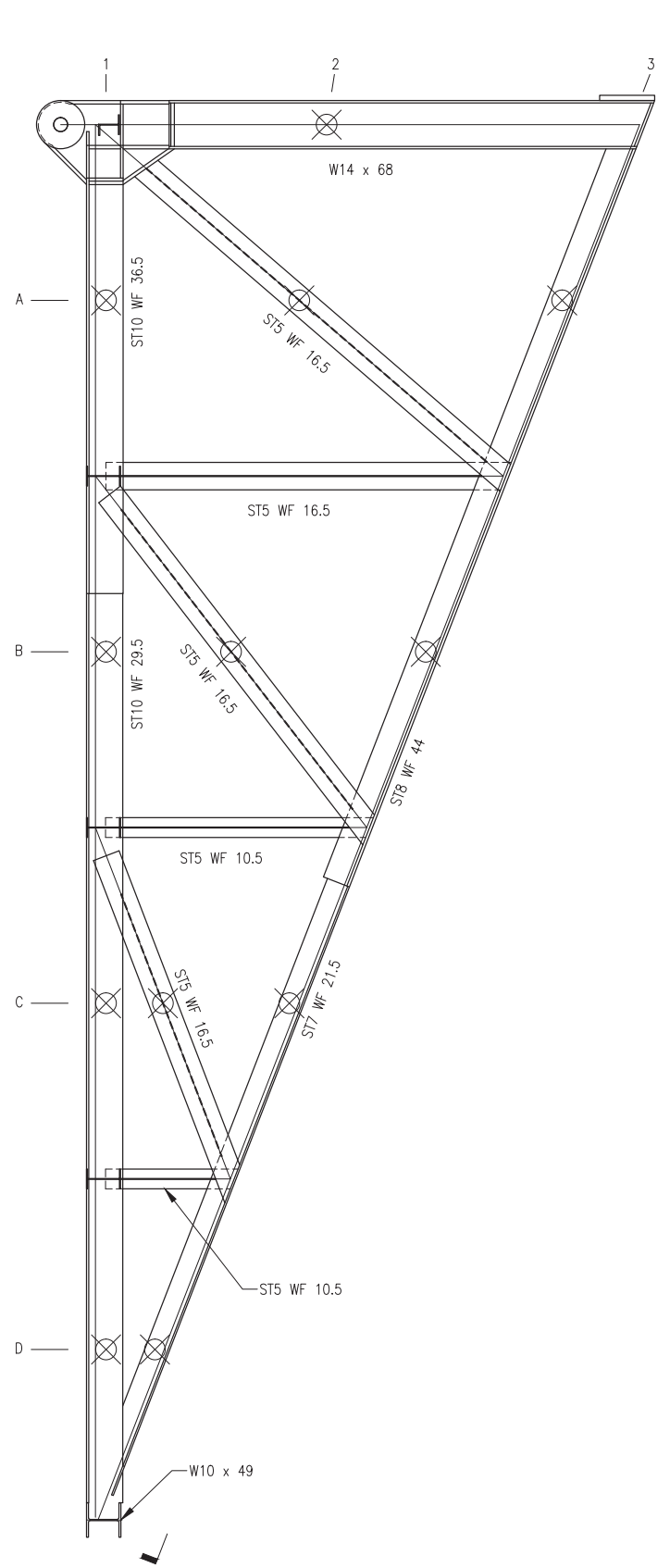
SEE A5 on Sheet A-003



PLAN VIEW OF EUREKA APRON - ORIGINAL STRUCTURE

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

B1



SECTION - MAIN TRUSS

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

A-003 A5

— INDICATES THE LOCATION OF TWO UT MEASUREMENTS TAKEN ON STRUCTURAL MEMBERS ONE TAKEN ON THE FLANGE AND ONE TAKEN ON THE WEB.

1/2" = 1'-0" 0 1 2 4 FT

1/4" = 1'-0" 0 1 2 4 8 FT

APPR | DATE | SYM | DESCRIPTION

HEGER DRY DOCK, Inc.

DRY DOCK ENGINEERS
DESIGN, INSPECTION AND CERTIFICATION
531 CONCORD STREET
HOLLISTON, MA 01746
(508) 429-1800

SEAL

DES | DRW JJB | CHK MDN
CHIEF ENG. WALEED SAYED
DATE: 11/16/2016

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CLIENT NAME AND ADDRESS: BAE SYSTEMS SAN FRANCISCO, CA.

PROJECT TITLE: COMMERCIAL INSPECTION OF EUREKA FDD (EX AFDM 14)

DRAWING TITLE: ORIGINAL EUREKA APRON STRUCTURE 2 OF4

SCALE: AS NOTED
PROJECT NO.: 3978-D
CONSTR. CONTR. NO.

SHEET 4 OF 7

A-003

FILE NAME: L:\CLIENTS\BAE\BAE San Francisco\3978-D Commercial Inspection of Eureka FDD\Dwgs\0-3978-D Current Heger Design Drawings\A-003.dwg LAYOUT NAME: 4 A-003 PLOTTED: Tuesday, November 15, 2016 - 3:57pm USER: Mike

1st Transverse Truss

				UT
S	6	C	Web	0.483
S	6	C	Flange	0.742
S	5	A	Web	0.314
S	5	A	Flange	0.304
S	5	C	Web	0.314
S	5	C	Flange	0.58
S	5	D	Web	0.386
S	5	D	Flange	0.423
S	4	C	Web	0.338
S	4	C	Flange	0.526
S	3	A	Web	0.311
S	3	A	Flange	0.325
S	3	C	Web	0.362
S	3	C	Flange	0.526
S	3	D	Web	0.364
S	3	D	Flange	0.401
S	2	C	Web	0.486
S	2	C	Flange	0.723
S	1	A	Web	0.319
S	1	A	Flange	0.261
S	1	C	Web	0.31
S	1	C	Flange	0.471

SEE B1 on Sheet A-004

				UT
P	1	A	Web	0.334
P	1	A	Flange	0.255
P	1	C	Web	0.393
P	1	C	Flange	0.637
P	2	C	Web	0.505
P	2	C	Flange	0.806
P	3	A	Web	0.325
P	3	A	Flange	0.231
P	3	B	Web	0.247
P	3	B	Flange	0.54
P	3	C	Web	0.391
P	3	C	Flange	0.583
P	3	D	Web	0.337
P	3	D	Flange	0.414
P	4	C	Web	0.379
P	4	C	Flange	0.566
P	5	A	Web	0.306
P	5	A	Flange	0.388
P	5	B	Web	0.32
P	5	B	Flange	0.526
P	5	C	Web	0.42
P	5	C	Flange	0.693
P	5	D	Web	0.354
P	5	D	Flange	0.436
P	6	C	Web	0.507
P	6	C	Flange	0.797

SEE B1 on Sheet A-004

2nd Transverse Truss

				UT
S	6	C	Web	0.285
S	6	C	Flange	0.52
S	5	A	Web	0.318
S	5	A	Flange	0.138
S	5	C	Web	0.209
S	5	C	Flange	0.353
S	5	D	Web	0.376
S	5	D	Flange	0.404
S	4	C	Web	0.233
S	4	C	Flange	0.366
S	3	A	Web	0.305
S	3	A	Flange	0.263
S	3	C	Web	0.29
S	3	C	Flange	0.375
S	3	D	Web	0.365
S	3	D	Flange	0.402
S	2	C	Web	0.377
S	2	C	Flange	0.604
S	1	A	Web	0.33
S	1	A	Flange	0.359
S	1	C	Web	0.262
S	1	C	Flange	0.321

SEE D1 on Sheet A-004

				UT
P	1	A	Web	0.315
P	1	A	Flange	0.319
P	1	C	Web	0.304
P	1	C	Flange	0.457
P	2	C	Web	0.356
P	2	C	Flange	0.504
P	3	A	Web	0.321
P	3	A	Flange	0.408
P	3	B	Web	0.133
P	3	B	Flange	0.55
P	3	C	Web	0.204
P	3	C	Flange	0.37
P	3	D	Web	0.335
P	3	D	Flange	0.391
P	4	C	Web	0.301
P	4	C	Flange	0.369
P	5	A	Web	0.33
P	5	A	Flange	0.358
P	5	B	Web	0.37
P	5	B	Flange	0.51
P	5	C	Web	0.328
P	5	C	Flange	0.328
P	5	D	Web	0.354
P	5	D	Flange	0.421
P	6	C	Web	0.339
P	6	C	Flange	0.585

SEE D1 on Sheet A-004

3rd Transverse Truss

				UT
S	6	C	Web	0.353
S	6	C	Flange	0.613
S	5	A	Web	0.317
S	5	A	Flange	0.237
S	5	C	Web	0.28
S	5	C	Flange	0.381
S	5	D	Web	0.278
S	5	D	Flange	0.325
S	4	C	Web	0.27
S	4	C	Flange	0.439
S	3	A	Web	0.314
S	3	A	Flange	0.162
S	3	C	Web	0.295
S	3	C	Flange	0.352
S	3	D	Web	0.294
S	3	D	Flange	0.358
S	2	C	Web	0.313
S	2	C	Flange	0.46
S	1	A	Web	0.306
S	1	A	Flange	0.221
S	1	C	Web	0.276
S	1	C	Flange	0.379

SEE B3 on Sheet A-004

				UT
P	1	A	Web	0.334
P	1	A	Flange	0.152
P	1	C	Web	0.302
P	1	C	Flange	0.394
P	2	C	Web	0.363
P	2	C	Flange	0.469
P	3	A	Web	0.341
P	3	A	Flange	0.207
P	3	B	Web	0.385
P	3	B	Flange	0.52
P	3	C	Web	0.355
P	3	C	Flange	0.381
P	3	D	Web	0.245
P	3	D	Flange	0.38
P	4	C	Web	0.331
P	4	C	Flange	0.414
P	5	A	Web	0.355
P	5	A	Flange	0.311
P	5	B	Web	0.339
P	5	B	Flange	0.461
P	5	C	Web	0.23
P	5	C	Flange	0.37
P	5	D	Web	0.252
P	5	D	Flange	0.378
P	6	C	Web	0.359
P	6	C	Flange	0.49

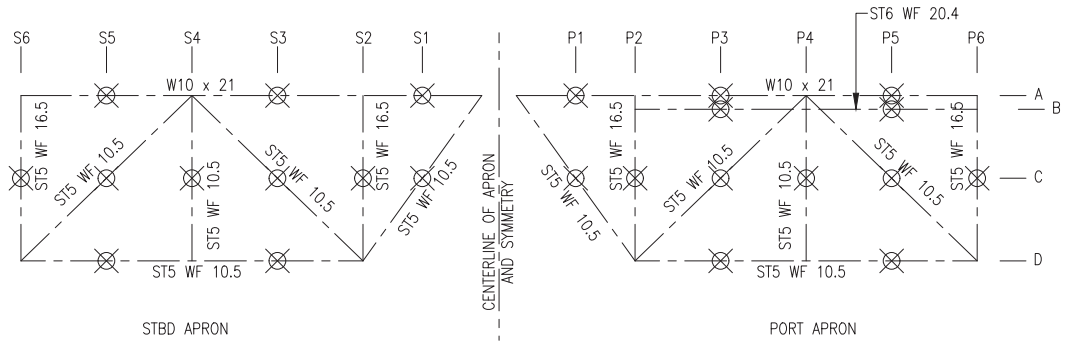
SEE B3 on Sheet A-004

4th Transverse Truss

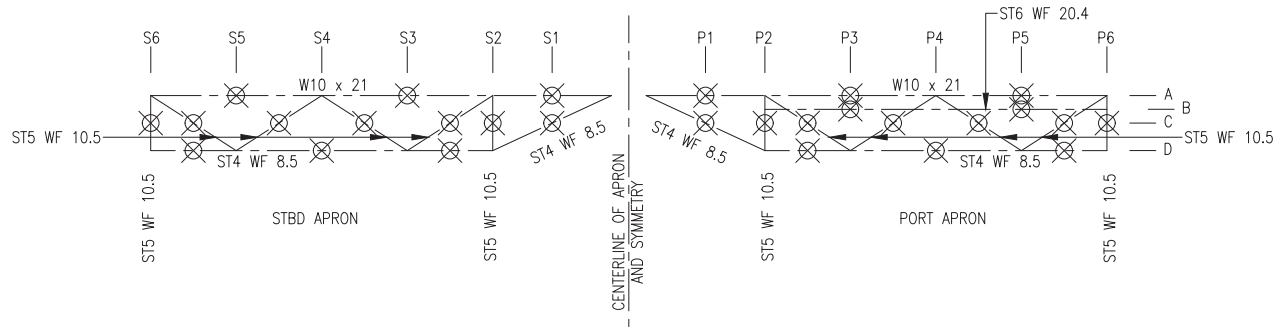
				UT
S	6	C	Web	0.33
S	6	C	Flange	0.297
S	5.5	C	Web	0.29
S	5.5	C	Flange	0.335
S	5.5	D	Web	0.282
S	5.5	D	Flange	0.328
S	5	A	Web	0.327
S	5	A	Flange	0.342
S	4.5	C	Web	0.286
S	4.5	C	Flange	0.326
S	4	D	Web	0.342
S	4	D	Flange	0.297
S	3.5	C	Web	0.264
S	3.5	C	Flange	0.354
S	3	A	Web	0.311
S	3	A	Flange	0.385
S	2.5	C	Web	0.293
S	2.5	C	Flange	0.333
S	2.5	D	Web	0.323
S	2.5	D	Flange	0.355
S	2	C	Web	0.356
S	2	C	Flange	0.525
S	1	A	Web	0.301
S	1	A	Flange	0.235
S	1	C	Web	0.298
S	1	C	Flange	0.351

				UT
P	1	A	Web	0.338
P	1	A	Flange	0.356
P	1	C	Web	0.23
P	1	C	Flange	0.335
P	2	C	Web	0.342
P	2	C	Flange	0.584
P	2.5	C	Web	0.302
P	2.5	C	Flange	0.337
P	2.5	D	Web	0.254
P	2.5	D	Flange	0.36
P	3	A	Web	0.336
P	3	A	Flange	0.305
P	3	B	Web	0.148
P	3	B	Flange	0.551
P	3.5	C	Web	0.259
P	3.5	C	Flange	0.338
P	4	D	Web	0.286
P	4	D	Flange	0.367
P	4.5	C	Web	0.27
P	4.5	C	Flange	0.369
P	5	A	Web	0.367
P	5	A	Flange	0.37
P	5	B	Web	0.153
P	5	B	Flange	0.487
P	5.5	C	Web	0.273
P	5.5	C	Flange	0.342
P	5.5	D	Web	0.29
P	5.5	D	Flange	0.364
P	6	C	Web	0.346
P	6	C	Flange	0.588

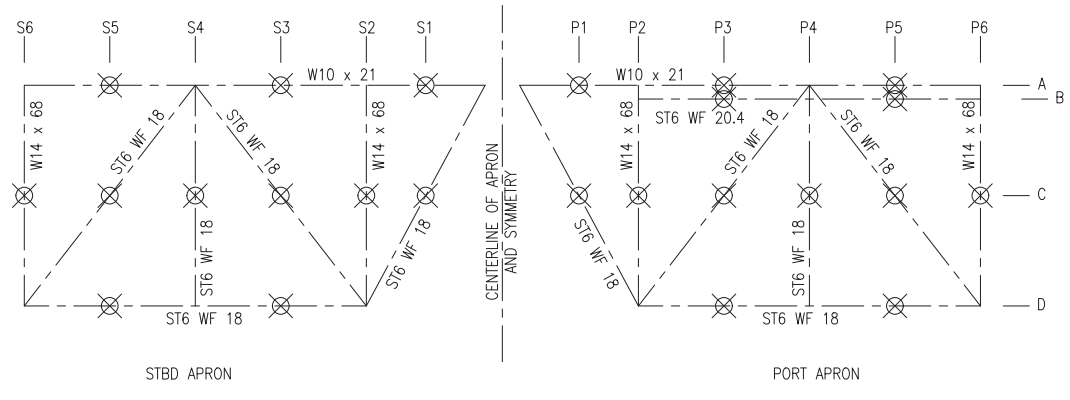
SEE B3 on Sheet A-004



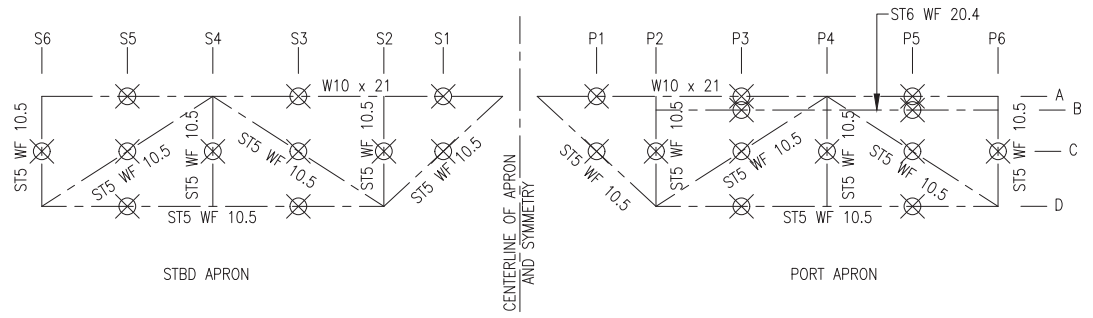
SECTION
SCALE: 3/16"=1'-0"
A-003 D1



SECTION
SCALE: 3/16"=1'-0"
A-003 D3



SECTION
SCALE: 3/16"=1'-0"
A-003 B1



SECTION
SCALE: 3/16"=1'-0"
A-003 B3

⊕ — INDICATES THE LOCATION OF TWO UT MEASUREMENTS TAKEN ON STRUCTURAL MEMBERS ONE TAKEN ON THE FLANGE AND ONE TAKEN ON THE WEB.

3/16" = 1'-0" 0 2 4 8 12 FT

APPR | DATE | SYM | DESCRIPTION

HEGER
DRY DOCK, Inc.
DRY DOCK ENGINEERS
DESIGN, INSPECTION AND CERTIFICATION
531 CONCORD STREET
HOLLISTON, MA 01746
(508) 429-1800

SEAL

DES | DRW JJB | CHK MDN
CHIEF ENG. WALEED SAYED
DATE: 11/16/2016

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CLIENT NAME AND ADDRESS:
BAE SYSTEMS
SAN FRANCISCO, CA.

PROJECT TITLE:
COMMERCIAL INSPECTION OF EUREKA FDD (EX AFDM 14)

DRAWING TITLE:
ORIGINAL EUREKA APRON STRUCTURE 2 OF 3

SCALE: AS NOTED
PROJECT NO.: 3978-D
CONSTR. CONTR. NO.

SHEET 5 OF 7

A-004

FILE NAME: L:\CLIENTS\BAE\BAE San Francisco\3978-D Commercial Inspection of Eureka FDD\Dwgs\0-3978-D Current Heger Design Drawings\A-004.dwg LAYOUT NAME: 5 A-004 PLOTTED: Tuesday, November 15, 2016 - 3:57pm USER: Mike

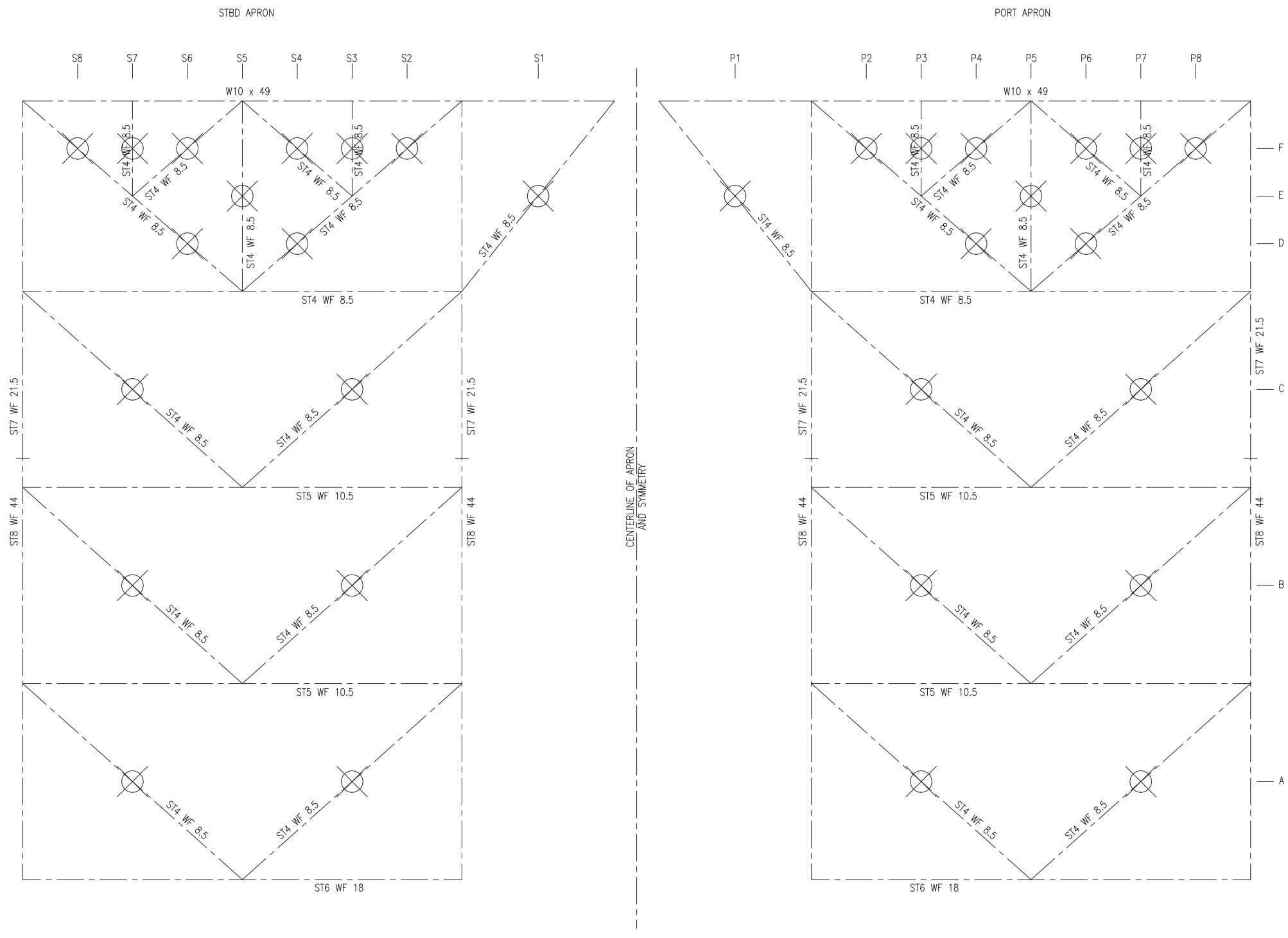
BOTTOM CHORD

				UT
S	8	F	Web	0.316
S	8	F	Flange	0.27
S	7	F	Web	0.342
S	7	F	Flange	0.293
S	7	C	Web	0.361
S	7	C	Flange	0.307
S	7	B	Web	0.363
S	7	B	Flange	0.318
S	7	A	Web	0.319
S	7	A	Flange	0.37
S	6	F	Web	0.307
S	6	F	Flange	0.275
S	6	D	Web	0.285
S	6	D	Flange	0.271
S	5	E	Web	0.313
S	5	E	Flange	0.294
S	4	F	Web	0.266
S	4	F	Flange	0.243
S	3	F	Web	0.332
S	3	F	Flange	0.278
S	3	C	Web	0.298
S	3	C	Flange	0.296
S	3	B	Web	0.387
S	3	B	Flange	0.311
S	2	A	Web	0.351
S	2	A	Flange	0.382
S	1	E	Web	0.307
S	1	E	Flange	0.286
S	2	F	Web	0.311
S	2	F	Flange	0.284
S	4	D	Web	0.313
S	4	D	Flange	0.265

SEE A1 on Sheet A-005

				UT
P	8	F	Web	0.302
P	8	F	Flange	0.356
P	7	F	Web	0.278
P	7	F	Flange	0.29
P	7	C	Web	0.327
P	7	C	Flange	0.36
P	7	B	Web	0.326
P	7	B	Flange	0.289
P	7	A	Web	0.314
P	7	A	Flange	0.382
P	6	F	Web	0.318
P	6	F	Flange	0.226
P	6	D	Web	0.313
P	6	D	Flange	0.372
P	5	E	Web	0.288
P	5	E	Flange	0.304
P	4	F	Web	0.273
P	4	F	Flange	0.301
P	3	D	Web	0.313
P	3	D	Flange	0.384
P	3	F	Web	0.282
P	3	F	Flange	0.258
P	3	C	Web	0.316
P	3	C	Flange	0.305
P	3	B	Web	0.355
P	3	B	Flange	0.315
P	1	E	Web	0.327
P	1	E	Flange	0.359
P	2	F	Web	0.287
P	2	F	Flange	0.229
P	4	D	Web	0.312
P	4	D	Flange	0.306

SEE A1 on Sheet A-005



SECTION
SCALE: 3/8"=1'-0"
A-003 A1

⊕ — INDICATES THE LOCATION OF TWO UT MEASUREMENTS TAKEN ON STRUCTURAL MEMBERS ONE TAKEN ON THE FLANGE AND ONE TAKEN ON THE WEB.

3/8" = 1'-0" 0 1 2 4 6 FT

SYM	DESCRIPTION	DATE	APPR

HEGER
DRY DOCK, Inc.
DRY DOCK ENGINEERS
DESIGN, INSPECTION AND CERTIFICATION
531 CONCORD STREET
HOLLISTON, MA 01746
(508) 429-1800

SEAL

DES | DRW JJB | CHK MDN
CHIEF ENG. WALEED SAYED
DATE: 11/16/2016

THESE DESIGNS AND SPECIFICATIONS ARE NOW AND SO REMAIN THE PROPERTY OF HEGER DRY DOCK, INC. USE OF THESE DESIGNS OR REPRODUCTION OF THESE DESIGNS WITHOUT OUR EXPRESS WRITTEN PERMISSION IS PROHIBITED.

CLIENT NAME AND ADDRESS:
BAE SYSTEMS
SAN FRANCISCO, CA.

PROJECT TITLE:
COMMERCIAL INSPECTION OF EUREKA FDD (EX AFDM 14)

DRAWING TITLE:
ORIGINAL EUREKA APRON STRUCTURE 3 OF 3

SCALE: AS NOTED
PROJECT NO.: 3978-D
CONSTR. CONTR. NO.

SHEET 6 OF 7
A-005

FILE NAME: L:\CLIENTS\BAE\BAE San Francisco\3978-D Comercial Inspection of Eureka FDD\Dwgs\0-3978-D Current Heger Design Drawings\A-005.dwg LAYOUT NAME: 6 A-005 PLOTTED: Tuesday, November 15, 2016 - 3:57pm USER: Mike

6.0 CLEANING OF INTAKE & DISCHARGE SCREENS

METHOD

A dive crew consisting of 3 men, with surface supplied air diving equipment and using a low-pressure diving compressor will send a diver in the water with surface to diver communications to pressure wash the intake/discharge screens on the Eureka dry dock with a 5000 PSI pressure washer to remove the soft and hard growth from the screens. The diver will inspect and report his findings on the screens.

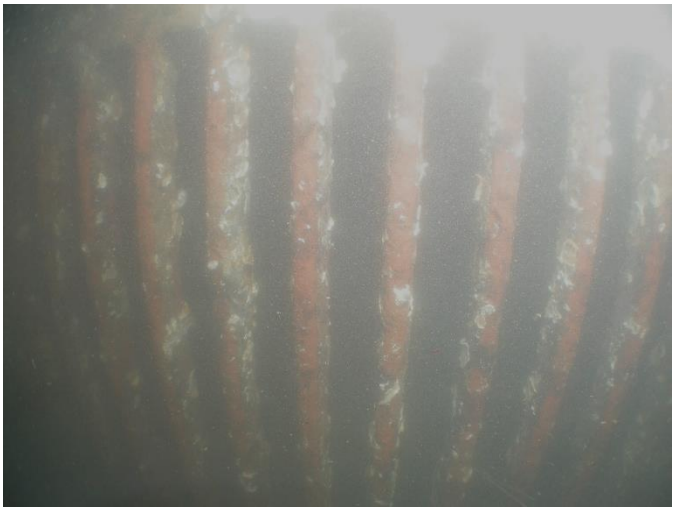
DIVERS FINDINGS

The dive crew cleaned the screens. The screens had mostly hard growth and were clogged up to 90%. All the screens were pressure washed and the marine growth was removed.

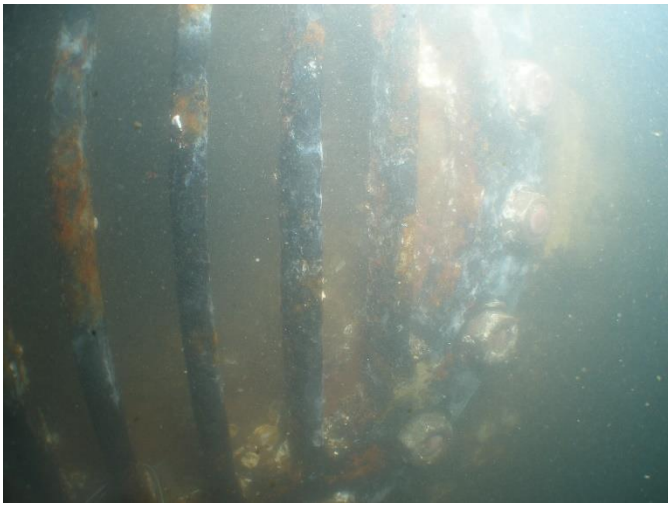
Typical condition of a screen (90% clogged with marine growth)

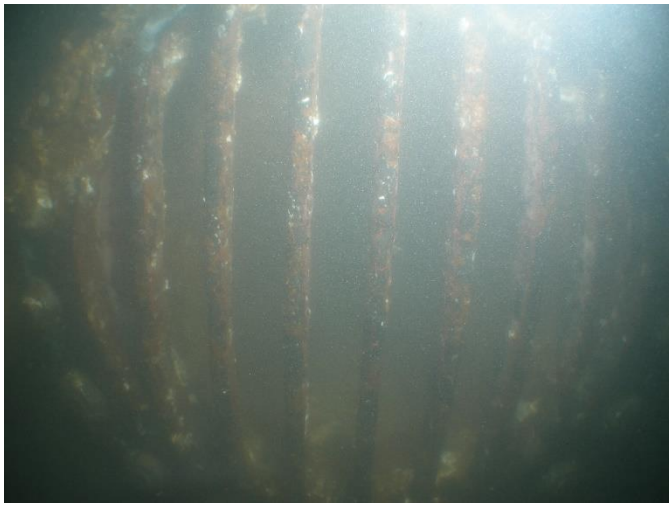
Diver checked each screen again after cleaning and found one screen that has a bent bar which is identified in ***Drawing B***. All other screens are securely fastened to dry dock and in good condition. Below are pictures of a few screens which are typical of all screens after cleaning.

Two intake screen pictures below are “typical” of all intake screens

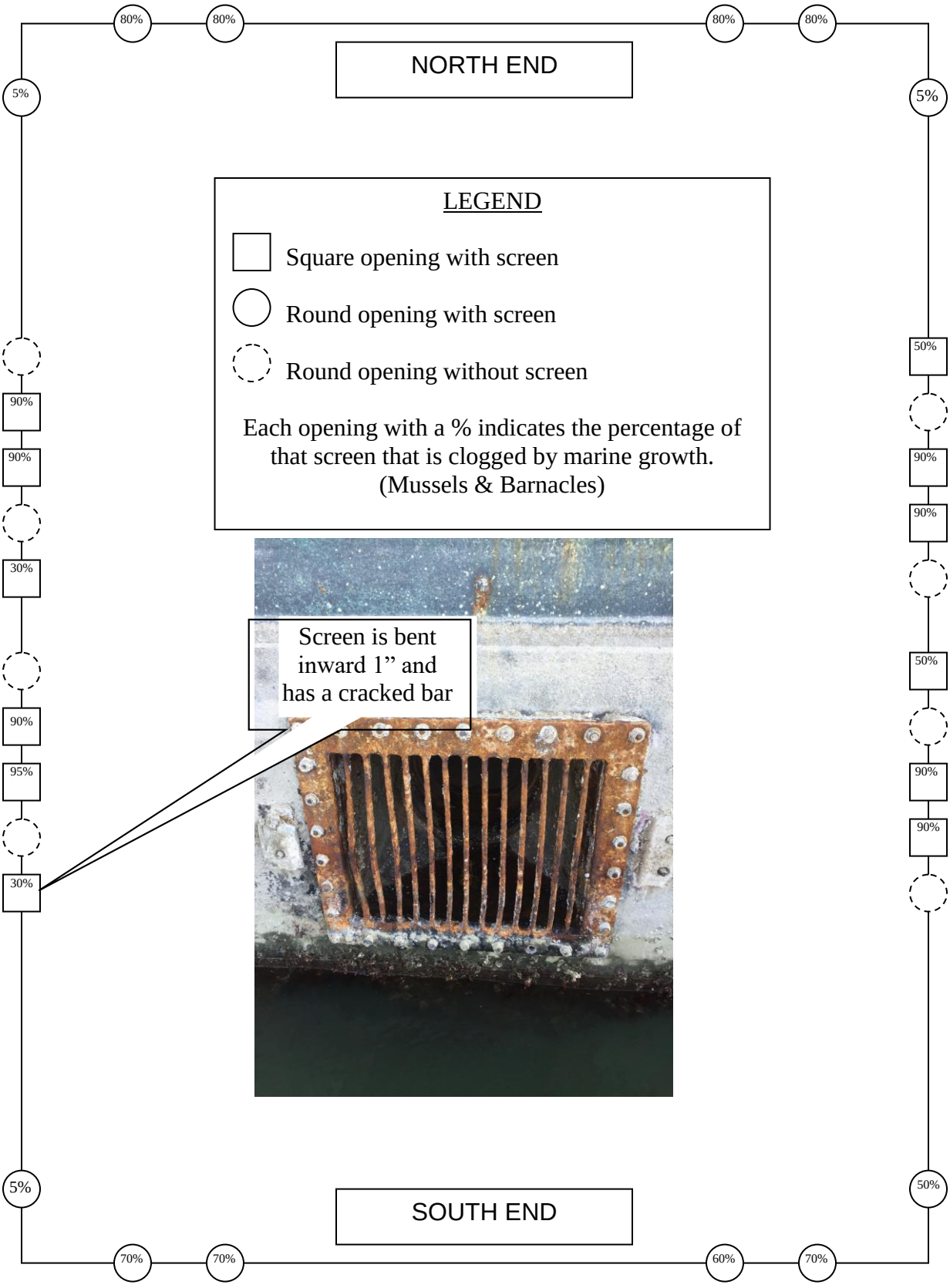


Two discharge screen pictures below are “typical” of all discharge screens





DRAWING B % of marine growth on each screen

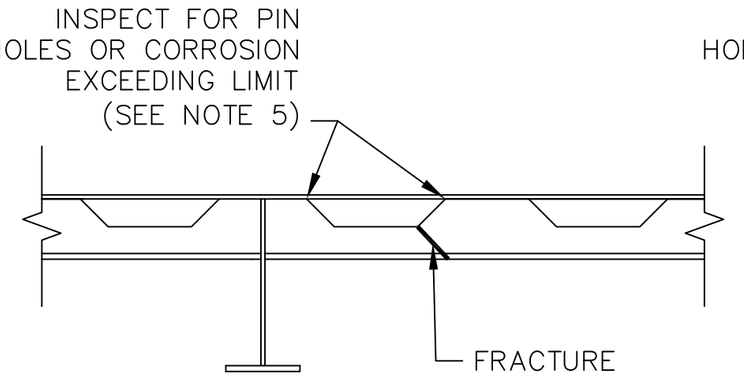


END OF REPORT

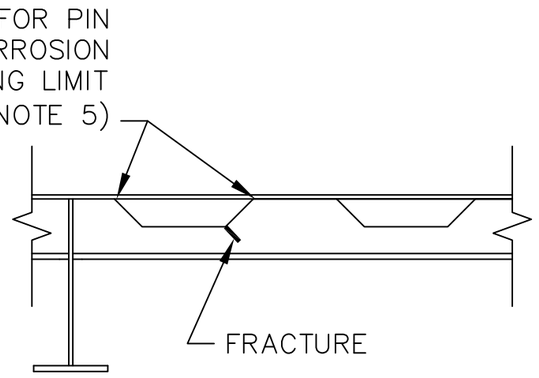
APPENDIX I

Deck Stiffener Repairs

REVISIONS			
REV	ZONE	DESCRIPTION	DATE:



TYPE 1a
FRACTURE IN WAY OF
CHANNEL CUT OUT–FLANGE DETERIORATED
EXISTING CONDITION



TYPE 1b
FRACTURE IN WAY OF
CHANNEL CUT OUT–FLANGE OK
EXISTING CONDITION

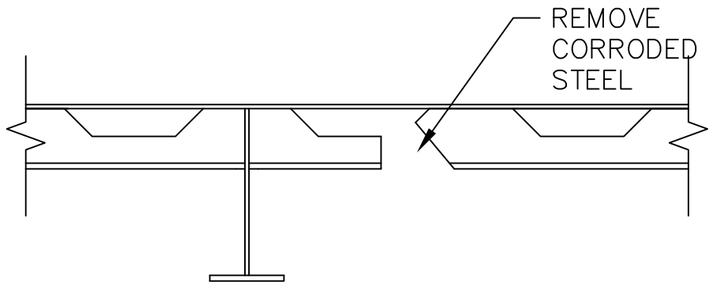
NOTES:
1.) REMOVE CORRODED STEEL BACK TO GOOD METAL – STEEL WITH LESS THAN 15% CORROSION

2.) REMOVE SCALE & PAINT IN REPAIRED AREA

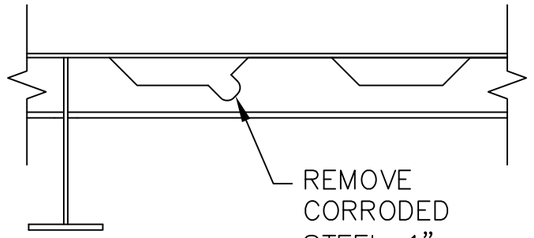
3.) REPAINT REPAIRED AREA

4.) CRACK MAY BE BUTT WELDED IF SURROUNDING STEEL HAS LESS THAN 15% THICKNESS LOSS

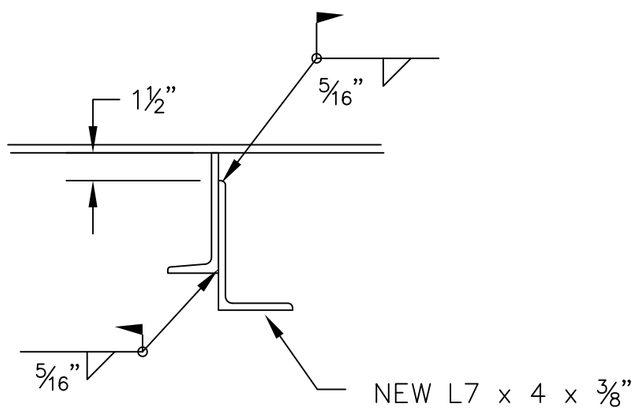
5.) IF DECK PLATING HAS PIN HOLES OR CORROSION EXCEEDING LIMIT SEE SHEET SK 5–5 FOR ALTERNATIVE REPAIR METHOD



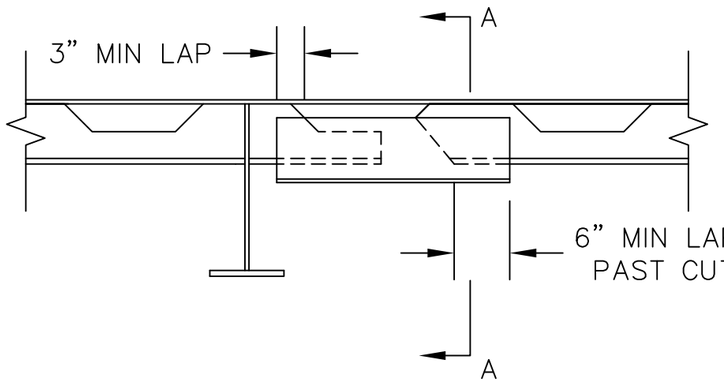
TYPE 1a
REPAIR STEP 1



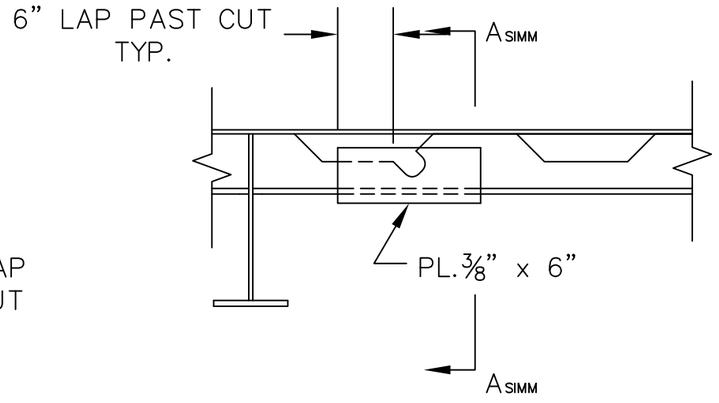
TYPE 1b
REPAIR STEP 1



SECTION A–A



TYPE 1a
REPAIR STEP 2



TYPE 1b
REPAIR STEP 2

No. REQ.	PART No.	DESCRIPTION	REMARKS

LIST OF MATERIALS

CLIENT
PUGLIA MARINE
SAN FRANCISCO, CA

PROJECT
REPAIRS TO
EUREKA DRY DOCK

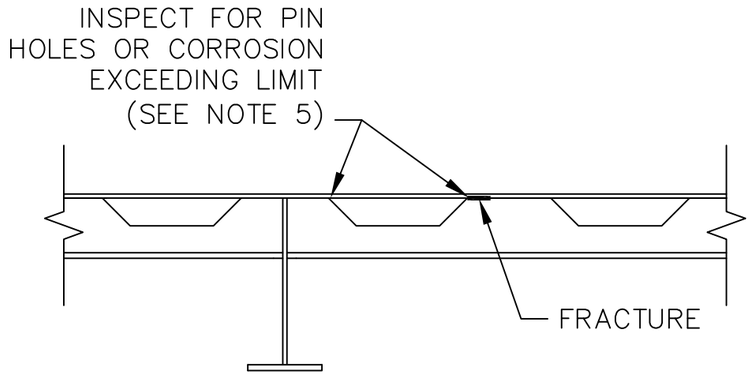
PROJECT No.	DATE	
3996–D	1/19/2017	
CHECKED BY	SCALE	DRAWING UNITS
	AS NOTED	INCH
SUPERVISOR	CAD FILE NAME	SHEET SIZE
W. SAYED	3996–D SK 1–5	D–22 x 34
DRAWN BY	DIMSCALE	LTSCALE
M. NAYLOR	16	6

HEGER DRY DOCK, Inc.
DRY DOCK ENGINEERS
DESIGN, INSPECTION, DIVING AND CERTIFICATION
13 WATER STREET
HOLLISTON, MA 01746
(508) 429-1600

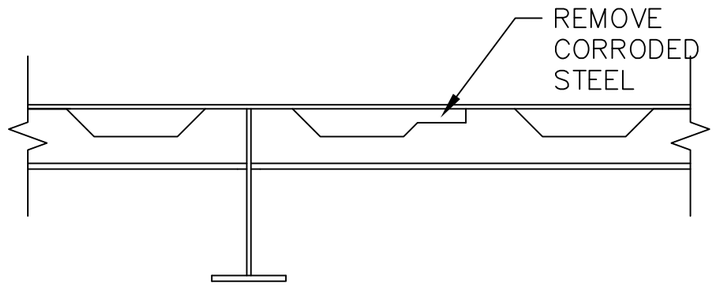
TITLE
DECK STIFFENER
REPAIRS
TYPE 1

DRAWING No.	SHEET	OF	ISSUE
3996–D–SK1	1	5	A

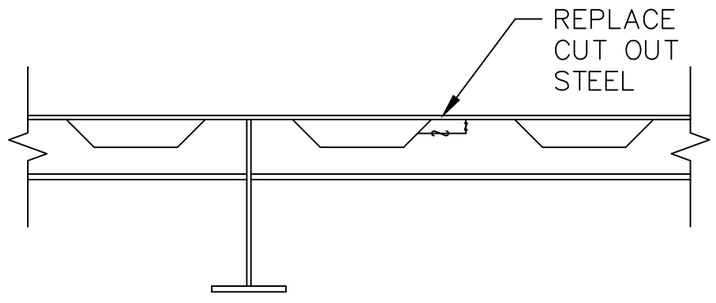
REVISIONS			
REV	ZONE	DESCRIPTION	DATE:



TYPE 2
FRACTURE IN WAY OF
WRAP WELD
EXISTING CONDITION



TYPE 2
FRACTURE IN WAY OF
WRAP WELD
REPAIR STEP 1



TYPE 2
FRACTURE IN WAY OF
WRAP WELD
REPAIR STEP 2

NOTES:

1.) REMOVE CORRODED STEEL BACK TO GOOD METAL – STEEL WITH LESS THAN 15% CORROSION

2.) REMOVE SCALE & PAINT IN REPAIRED AREA

3.) REPAINT REPAIRED AREA

4.) CRACK MAY BE BUTT WELDED IF SURROUNDING STEEL HAS LESS THAN 15% THICKNESS LOSS

5.) IF DECK PLATING HAS PIN HOLES OR CORROSION EXCEEDING LIMIT SEE SHEET SK 5–5 FOR ALTERNATIVE REPAIR METHOD

No. REQ.	PART No.	DESCRIPTION	REMARKS

LIST OF MATERIALS

CLIENT
PUGLIA MARINE
SAN FRANCISCO, CA

PROJECT
REPAIRS TO
EUREKA DRY DOCK

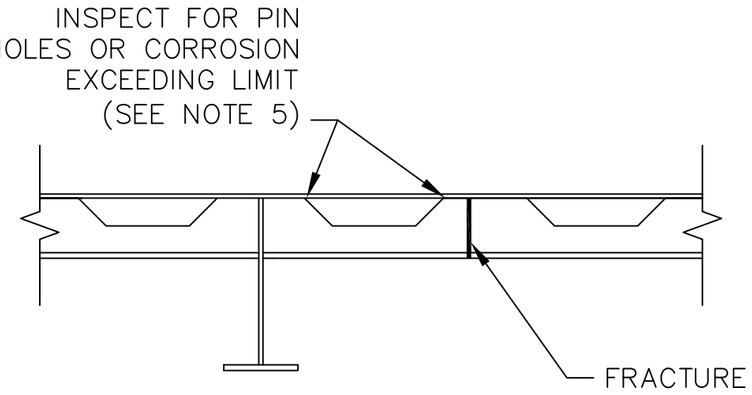
PROJECT No.	DATE	
3996–D	1/19/2017	
CHECKED BY	SCALE	DRAWING UNITS
	AS NOTED	INCH
SUPERVISOR	CAD FILE NAME	SHEET SIZE
W. SAYED	3996–D SK 1–5	D–22 x 34
DRAWN BY	DIMSCALE	LTSCALE
M. NAYLOR	16	6

HEGER DRY DOCK, Inc.
DRY DOCK ENGINEERS
DESIGN, INSPECTION, DIVING AND CERTIFICATION
13 WATER STREET
HOLLISTON, MA 01746
(508) 429-1800

TITLE
DECK STIFFENER
REPAIRS
TYPE 2

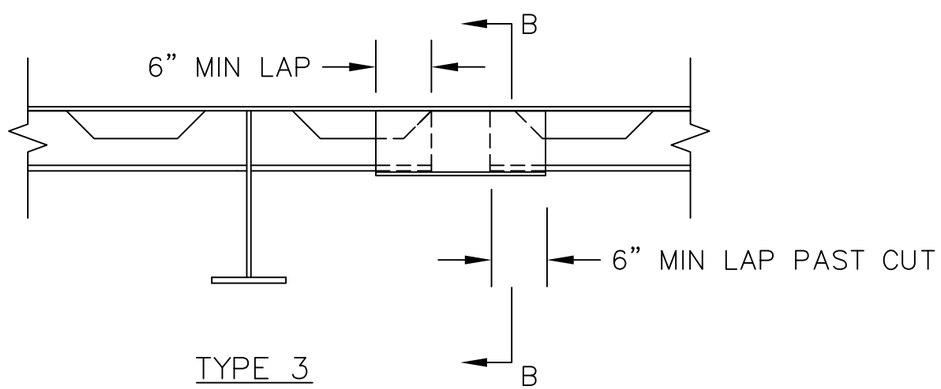
DRAWING No.	SHEET	OF	ISSUE
3996–D–SK2	2	5	A

REVISIONS			
REV	ZONE	DESCRIPTION	DATE:



TYPE 3
FRACTURE IN WEB
AND FLANGE
EXISTING CONDITION

TYPE 3
FRACTURE IN WEB
AND FLANGE
REPAIR STEP 1



TYPE 3
FRACTURE IN WEB
AND FLANGE
REPAIR STEP 2

NOTES:

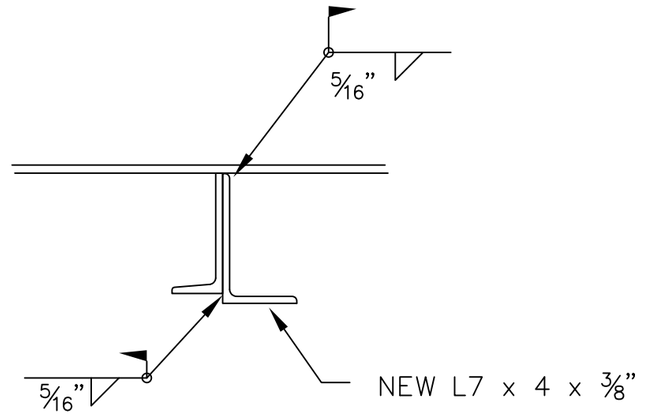
1.) REMOVE CORRODED STEEL BACK TO GOOD METAL – STEEL WITH LESS THAN 15% CORROSION

2.) REMOVE SCALE & PAINT IN REPAIRED AREA

3.) REPAINT REPAIRED AREA

4.) CRACK MAY BE BUTT WELDED IF SURROUNDING STEEL HAS LESS THAN 15% THICKNESS LOSS

5.) IF DECK PLATING HAS PIN HOLES OR CORROSION EXCEEDING LIMIT SEE SHEET SK 5–5 FOR ALTERNATIVE REPAIR METHOD



SECTION B–B

No. REQ.	PART No.	DESCRIPTION	REMARKS

LIST OF MATERIALS

CLIENT
PUGLIA MARINE
SAN FRANCISCO, CA

PROJECT
REPAIRS TO
EUREKA DRY DOCK

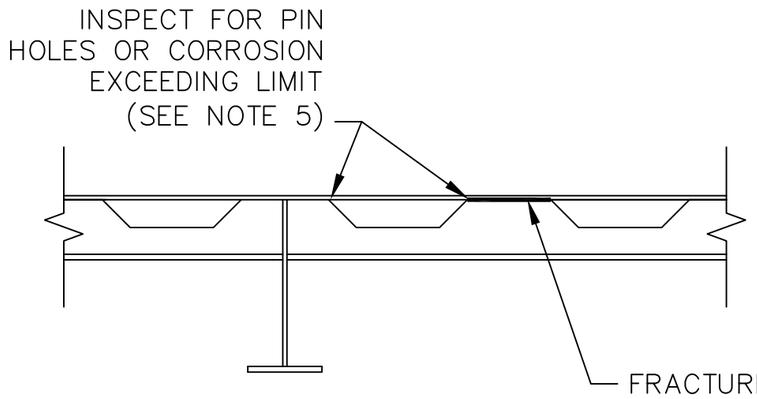
PROJECT No.	DATE	
3996–D	1/19/2017	
CHECKED BY	SCALE	DRAWING UNITS
	AS NOTED	INCH
SUPERVISOR	CAD FILE NAME	SHEET SIZE
W. SAYED	3996–D SK 1–5	D–22 x 34
DRAWN BY	DIMSCALE	LTSCALE
M. NAYLOR	16	6

HEGER DRY DOCK, Inc.
DRY DOCK ENGINEERS
DESIGN, INSPECTION, DIVING AND CERTIFICATION
13 WATER STREET
HOLLISTON, MA 01746
(508) 429-1800

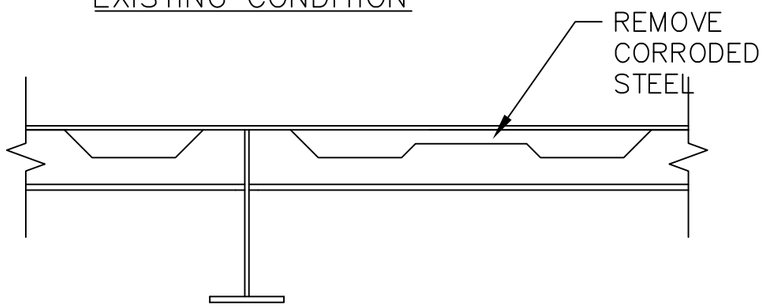
TITLE
DECK STIFFENER
REPAIRS
TYPE 3

DRAWING No.	SHEET	OF	ISSUE
3996–D–SK3	3	5	A

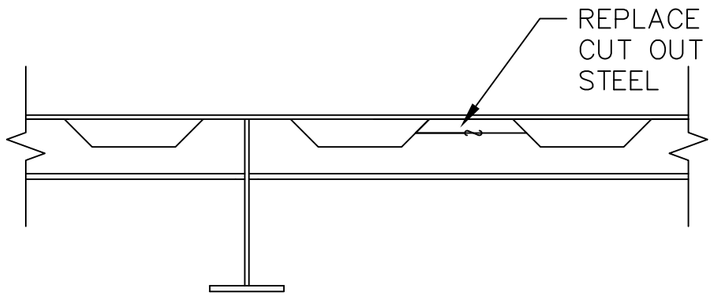
REVISIONS			
REV	ZONE	DESCRIPTION	DATE:



TYPE 4
FRACTURE AT
ATTACHMENT WELD
EXISTING CONDITION



TYPE 4
FRACTURE AT
ATTACHMENT WELD
REPAIR STEP 1



TYPE 4
FRACTURE AT
ATTACHMENT WELD
REPAIR STEP 2

NOTES:

1.) REMOVE CORRODED STEEL BACK TO GOOD METAL – STEEL WITH LESS THAN 15% CORROSION

2.) REMOVE SCALE & PAINT IN REPAIRED AREA

3.) REPAINT REPAIRED AREA

4.) CRACK MAY BE BUTT WELDED IF SURROUNDING STEEL HAS LESS THAN 15% THICKNESS LOSS

5.) IF DECK PLATING HAS PIN HOLES OR CORROSION EXCEEDING LIMIT SEE SHEET SK 5–5 FOR ALTERNATIVE REPAIR METHOD

No. REQ.	PART No.	DESCRIPTION	REMARKS

LIST OF MATERIALS

CLIENT
PUGLIA MARINE
SAN FRANCISCO, CA

PROJECT
REPAIRS TO
EUREKA DRY DOCK

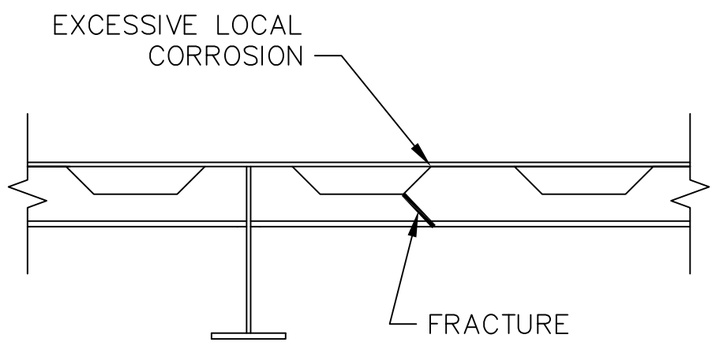
PROJECT No.	DATE	
3996–D	1/19/2017	
CHECKED BY	SCALE	DRAWING UNITS
	AS NOTED	INCH
SUPERVISOR	CAD FILE NAME	SHEET SIZE
W. SAYED	3996–D SK 1–5	D–22 x 34
DRAWN BY	DIMSCALE	LTSCALE
M. NAYLOR	16	6

HEGER DRY DOCK, Inc.
DRY DOCK ENGINEERS
DESIGN, INSPECTION, DIVING AND CERTIFICATION
13 WATER STREET
HOLLISTON, MA 01746
(508) 429-1800

TITLE
DECK STIFFENER
REPAIRS
TYPE 4

DRAWING No.	SHEET	OF	ISSUE
3996–D–SK4	4	5	A

REVISIONS			
REV	ZONE	DESCRIPTION	DATE:



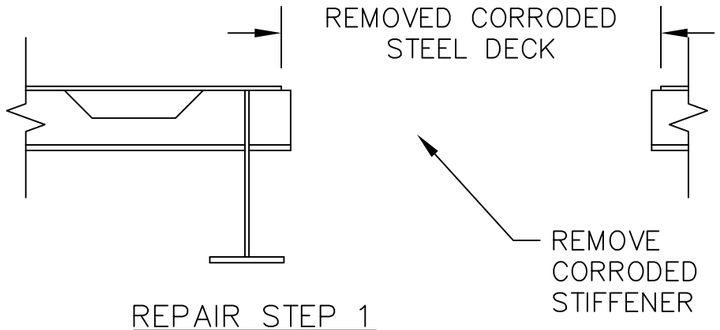
ALTERNATIVE REPAIR METHOD

NOTES:
1.) REMOVE CORRODED STIFFENER STEEL BACK TO GOOD METAL – STEEL WITH LESS THAN 15% CORROSION

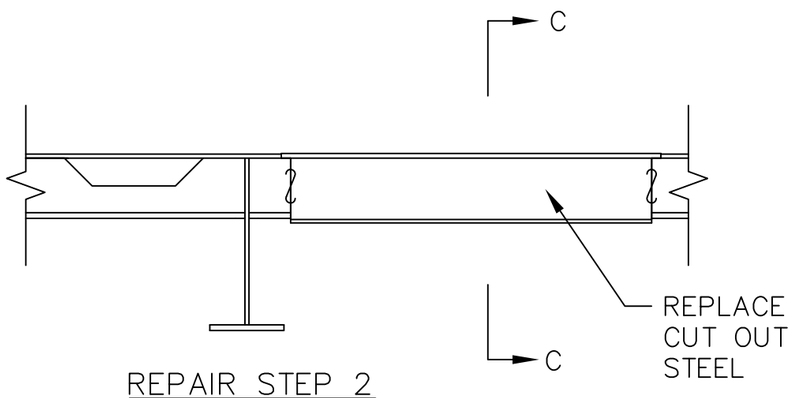
2.) REMOVE CORRODED STEEL DECK BACK TO ACCEPTABLE LIMITS – STEEL WITH LESS THAN 30% CORROSION RECOMMENDED

2.) REMOVE SCALE & PAINT IN REPAIRED AREA

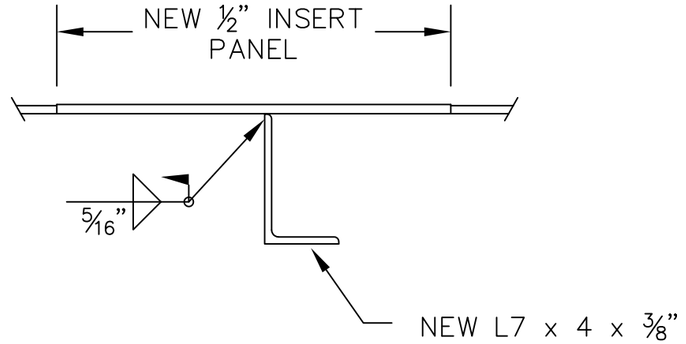
4.) REPAINT REPAIRED AREA



REPAIR STEP 1



REPAIR STEP 2



SECTION C–C

No. REQ.	PART No.	DESCRIPTION	REMARKS

LIST OF MATERIALS

CLIENT
PUGLIA MARINE
SAN FRANCISCO, CA

PROJECT
REPAIRS TO
EUREKA DRY DOCK

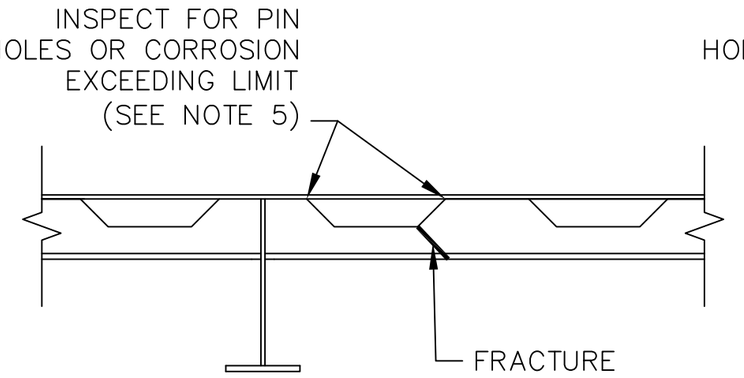
PROJECT No.	DATE	
3996–D	1/19/2017	
CHECKED BY	SCALE	DRAWING UNITS
	AS NOTED	INCH
SUPERVISOR	CAD FILE NAME	SHEET SIZE
W. SAYED	3996–D SK 1–5	D–22 x 34
DRAWN BY	DIMSCALE	LTSCALE
M. NAYLOR	16	6

HEGER DRY DOCK, Inc.
DRY DOCK ENGINEERS
DESIGN, INSPECTION, DIVING AND CERTIFICATION
13 WATER STREET
HOLLISTON, MA 01746
(508) 429-1600

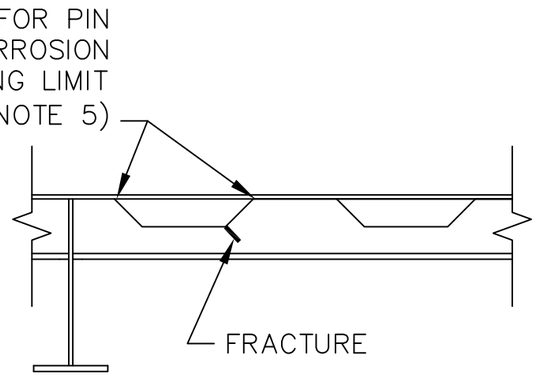
TITLE
DECK STIFFENER
REPAIRS
ALTERNATIVE REPAIR METHOD

DRAWING No.	SHEET	OF	ISSUE
3996–D–SK5	5	5	A

REVISIONS			
REV	ZONE	DESCRIPTION	DATE:



TYPE 1a
FRACTURE IN WAY OF
CHANNEL CUT OUT–FLANGE DETERIORATED
EXISTING CONDITION



TYPE 1b
FRACTURE IN WAY OF
CHANNEL CUT OUT–FLANGE OK
EXISTING CONDITION

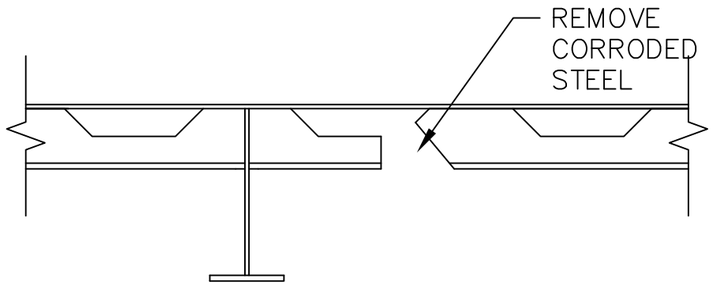
NOTES:
1.) REMOVE CORRODED STEEL BACK TO GOOD METAL – STEEL WITH LESS THAN 15% CORROSION

2.) REMOVE SCALE & PAINT IN REPAIRED AREA

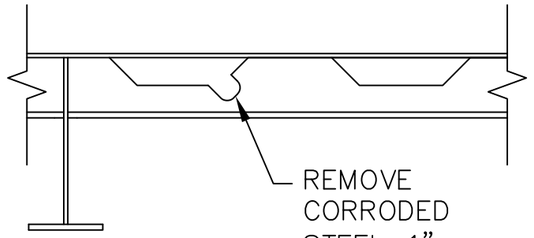
3.) REPAINT REPAIRED AREA

4.) CRACK MAY BE BUTT WELDED IF SURROUNDING STEEL HAS LESS THAN 15% THICKNESS LOSS

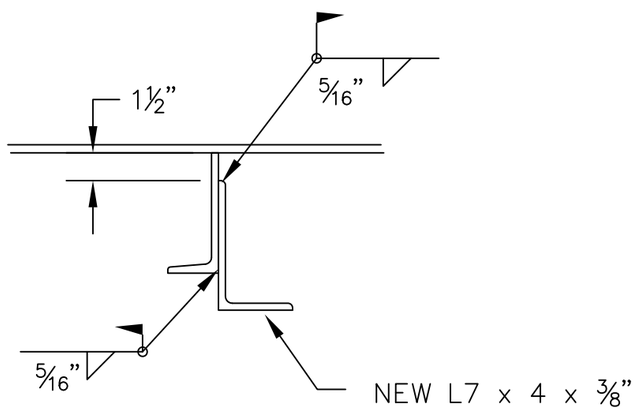
5.) IF DECK PLATING HAS PIN HOLES OR CORROSION EXCEEDING LIMIT SEE SHEET SK 5–5 FOR ALTERNATIVE REPAIR METHOD



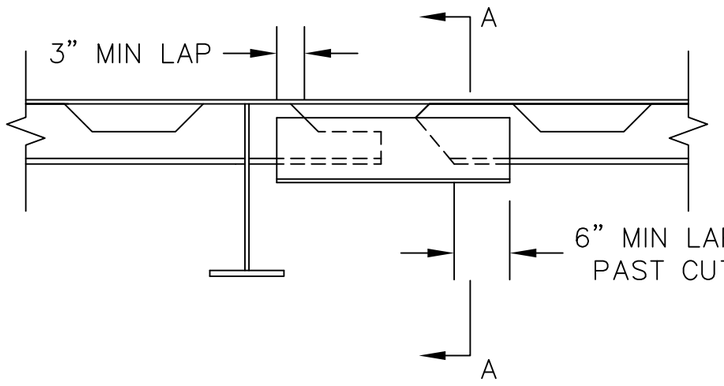
TYPE 1a
REPAIR STEP 1



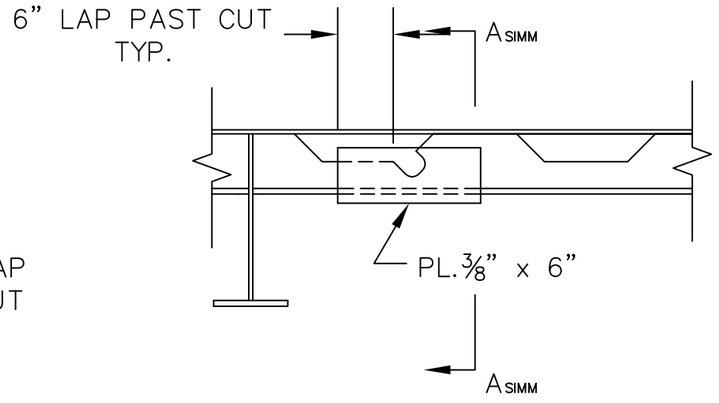
TYPE 1b
REPAIR STEP 1



SECTION A–A



TYPE 1a
REPAIR STEP 2



TYPE 1b
REPAIR STEP 2

No. REQ.	PART No.	DESCRIPTION	REMARKS

LIST OF MATERIALS

CLIENT
PUGLIA MARINE
SAN FRANCISCO, CA

PROJECT
REPAIRS TO
EUREKA DRY DOCK

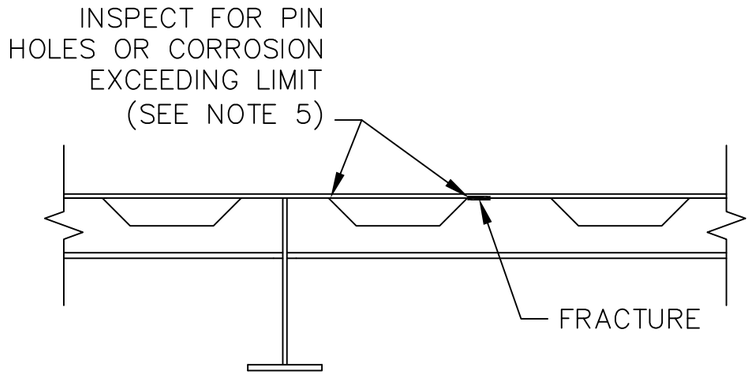
PROJECT No.	DATE	
3996–D	1/19/2017	
CHECKED BY	SCALE	DRAWING UNITS
	AS NOTED	INCH
SUPERVISOR	CAD FILE NAME	SHEET SIZE
W. SAYED	3996–D SK 1–5	D–22 x 34
DRAWN BY	DIMSCALE	LTSCALE
M. NAYLOR	16	6

HEGER DRY DOCK, Inc.
DRY DOCK ENGINEERS
DESIGN, INSPECTION, DIVING AND CERTIFICATION
13 WATER STREET
HOLLISTON, MA 01746
(508) 429-1600

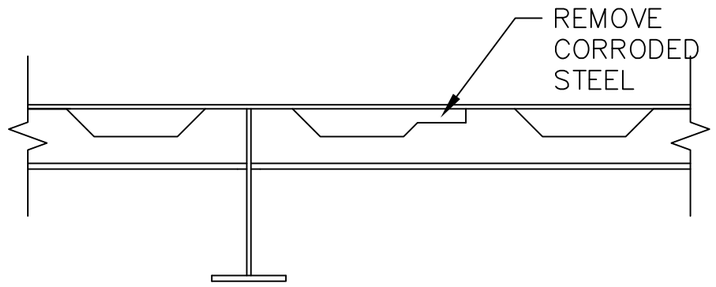
TITLE
DECK STIFFENER
REPAIRS
TYPE 1

DRAWING No.	SHEET	OF	ISSUE
3996–D–SK1	1	5	A

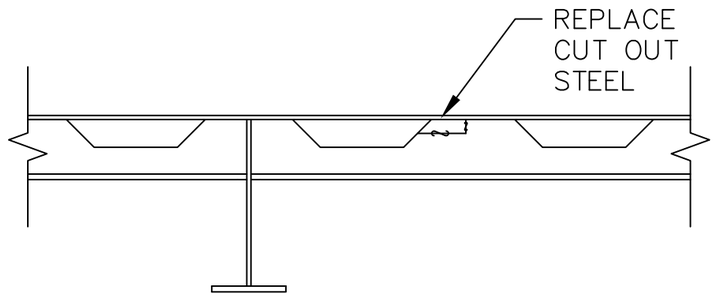
REVISIONS			
REV	ZONE	DESCRIPTION	DATE:



TYPE 2
FRACTURE IN WAY OF
WRAP WELD
EXISTING CONDITION



TYPE 2
FRACTURE IN WAY OF
WRAP WELD
REPAIR STEP 1



TYPE 2
FRACTURE IN WAY OF
WRAP WELD
REPAIR STEP 2

NOTES:

1.) REMOVE CORRODED STEEL BACK TO GOOD METAL – STEEL WITH LESS THAN 15% CORROSION

2.) REMOVE SCALE & PAINT IN REPAIRED AREA

3.) REPAINT REPAIRED AREA

4.) CRACK MAY BE BUTT WELDED IF SURROUNDING STEEL HAS LESS THAN 15% THICKNESS LOSS

5.) IF DECK PLATING HAS PIN HOLES OR CORROSION EXCEEDING LIMIT SEE SHEET SK 5–5 FOR ALTERNATIVE REPAIR METHOD

No. REQ.	PART No.	DESCRIPTION	REMARKS

LIST OF MATERIALS

CLIENT
PUGLIA MARINE
SAN FRANCISCO, CA

PROJECT
REPAIRS TO
EUREKA DRY DOCK

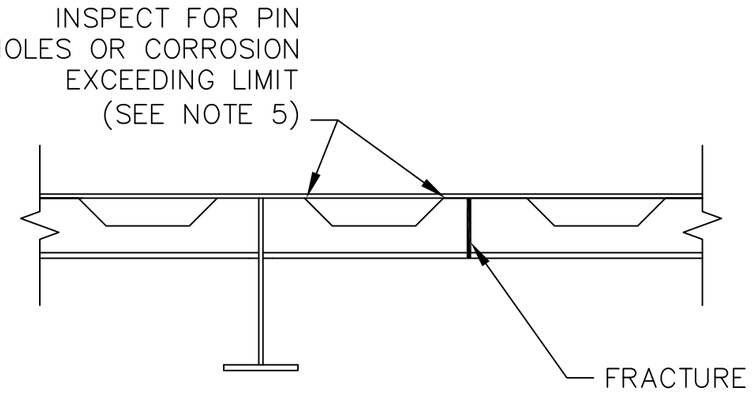
PROJECT No.	DATE	
3996–D	1/19/2017	
CHECKED BY	SCALE	DRAWING UNITS
	AS NOTED	INCH
SUPERVISOR	CAD FILE NAME	SHEET SIZE
W. SAYED	3996–D SK 1–5	D–22 x 34
DRAWN BY	DIMSCALE	LTSCALE
M. NAYLOR	16	6

HEGER DRY DOCK, Inc.
DRY DOCK ENGINEERS
DESIGN, INSPECTION, DIVING AND CERTIFICATION
13 WATER STREET
HOLLISTON, MA 01746
(508) 429-1800

TITLE
DECK STIFFENER
REPAIRS
TYPE 2

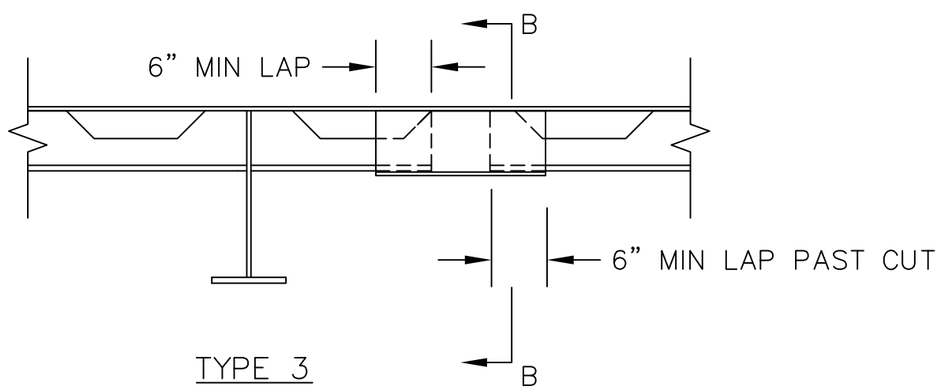
DRAWING No.	SHEET	OF	ISSUE
3996–D–SK2	2	5	A

REVISIONS			
REV	ZONE	DESCRIPTION	DATE:



TYPE 3
FRACTURE IN WEB
AND FLANGE
EXISTING CONDITION

TYPE 3
FRACTURE IN WEB
AND FLANGE
REPAIR STEP 1



TYPE 3
FRACTURE IN WEB
AND FLANGE
REPAIR STEP 2

NOTES:

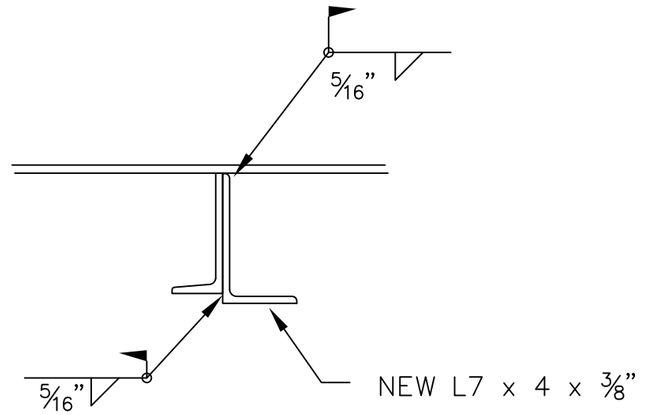
1.) REMOVE CORRODED STEEL BACK TO GOOD METAL – STEEL WITH LESS THAN 15% CORROSION

2.) REMOVE SCALE & PAINT IN REPAIRED AREA

3.) REPAINT REPAIRED AREA

4.) CRACK MAY BE BUTT WELDED IF SURROUNDING STEEL HAS LESS THAN 15% THICKNESS LOSS

5.) IF DECK PLATING HAS PIN HOLES OR CORROSION EXCEEDING LIMIT SEE SHEET SK 5–5 FOR ALTERNATIVE REPAIR METHOD



SECTION B–B

No. REQ.	PART No.	DESCRIPTION	REMARKS

LIST OF MATERIALS

CLIENT
PUGLIA MARINE
SAN FRANCISCO, CA

PROJECT
REPAIRS TO
EUREKA DRY DOCK

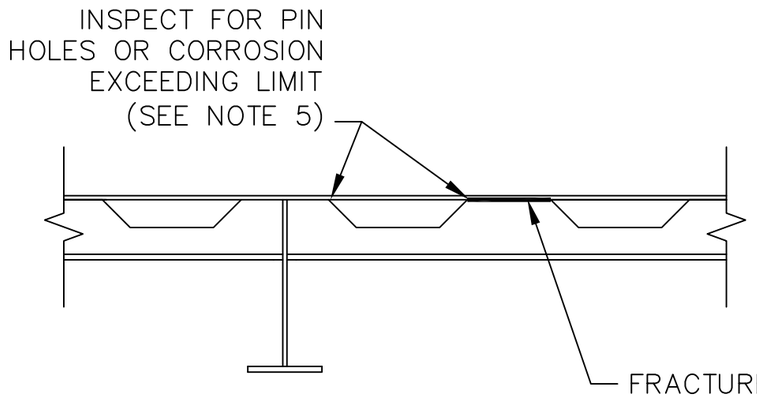
PROJECT No.	DATE	
3996–D	1/19/2017	
CHECKED BY	SCALE	DRAWING UNITS
	AS NOTED	INCH
SUPERVISOR	CAD FILE NAME	SHEET SIZE
W. SAYED	3996–D SK 1–5	D–22 x 34
DRAWN BY	DIMSCALE	LTSCALE
M. NAYLOR	16	6

HEGER DRY DOCK, Inc.
DRY DOCK ENGINEERS
DESIGN, INSPECTION, DIVING AND CERTIFICATION
13 WATER STREET
HOLLISTON, MA 01746
(508) 429-1800

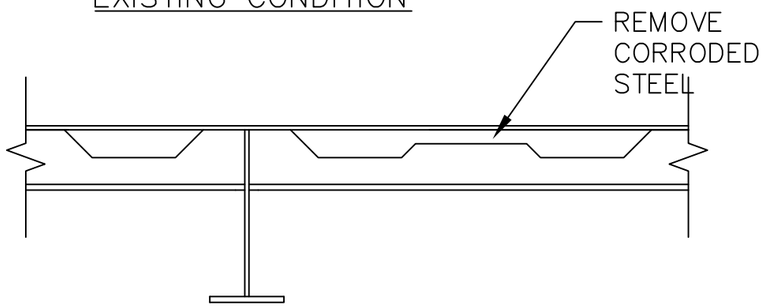
TITLE
DECK STIFFENER
REPAIRS
TYPE 3

DRAWING No.	SHEET	OF	ISSUE
3996–D–SK3	3	5	A

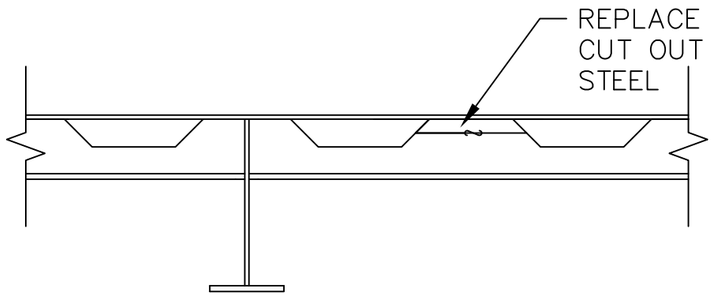
REVISIONS			
REV	ZONE	DESCRIPTION	DATE:



TYPE 4
FRACTURE AT
ATTACHMENT WELD
EXISTING CONDITION



TYPE 4
FRACTURE AT
ATTACHMENT WELD
REPAIR STEP 1



TYPE 4
FRACTURE AT
ATTACHMENT WELD
REPAIR STEP 2

NOTES:

1.) REMOVE CORRODED STEEL BACK TO GOOD METAL – STEEL WITH LESS THAN 15% CORROSION

2.) REMOVE SCALE & PAINT IN REPAIRED AREA

3.) REPAINT REPAIRED AREA

4.) CRACK MAY BE BUTT WELDED IF SURROUNDING STEEL HAS LESS THAN 15% THICKNESS LOSS

5.) IF DECK PLATING HAS PIN HOLES OR CORROSION EXCEEDING LIMIT SEE SHEET SK 5–5 FOR ALTERNATIVE REPAIR METHOD

No. REQ.	PART No.	DESCRIPTION	REMARKS

LIST OF MATERIALS

CLIENT
PUGLIA MARINE
SAN FRANCISCO, CA

PROJECT
REPAIRS TO
EUREKA DRY DOCK

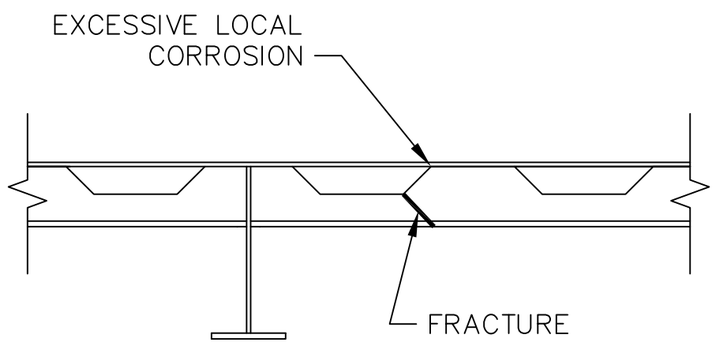
PROJECT No.	DATE	
3996–D	1/19/2017	
CHECKED BY	SCALE	DRAWING UNITS
	AS NOTED	INCH
SUPERVISOR	CAD FILE NAME	SHEET SIZE
W. SAYED	3996–D SK 1–5	D–22 x 34
DRAWN BY	DIMSCALE	LTSCALE
M. NAYLOR	16	6

HEGER DRY DOCK, Inc.
DRY DOCK ENGINEERS
DESIGN, INSPECTION, DIVING AND CERTIFICATION
13 WATER STREET
HOLLISTON, MA 01746
(508) 429-1800

TITLE
DECK STIFFENER
REPAIRS
TYPE 4

DRAWING No.	SHEET	OF	ISSUE
3996–D–SK4	4	5	A

REVISIONS			
REV	ZONE	DESCRIPTION	DATE:



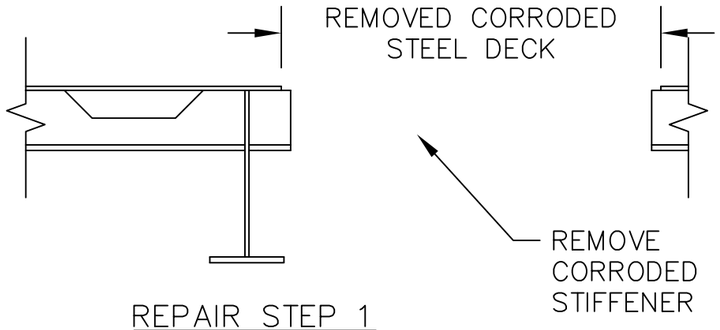
ALTERNATIVE REPAIR METHOD

NOTES:
1.) REMOVE CORRODED STIFFENER STEEL BACK TO GOOD METAL – STEEL WITH LESS THAN 15% CORROSION

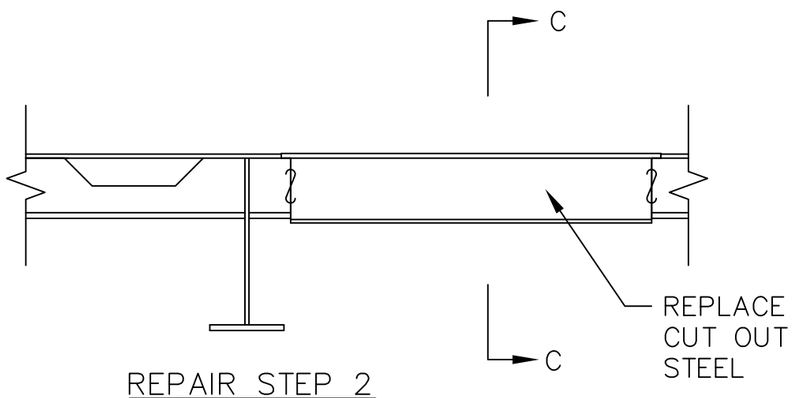
2.) REMOVE CORRODED STEEL DECK BACK TO ACCEPTABLE LIMITS – STEEL WITH LESS THAN 30% CORROSION RECOMMENDED

2.) REMOVE SCALE & PAINT IN REPAIRED AREA

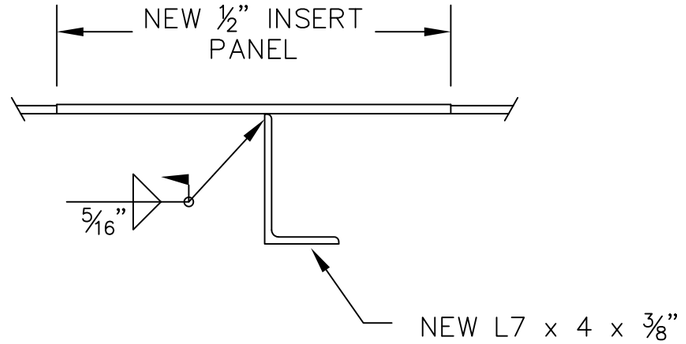
4.) REPAINT REPAIRED AREA



REPAIR STEP 1



REPAIR STEP 2



SECTION C–C

No. REQ.	PART No.	DESCRIPTION	REMARKS

LIST OF MATERIALS

CLIENT
PUGLIA MARINE
SAN FRANCISCO, CA

PROJECT
REPAIRS TO
EUREKA DRY DOCK

PROJECT No.	DATE	
3996–D	1/19/2017	
CHECKED BY	SCALE	DRAWING UNITS
	AS NOTED	INCH
SUPERVISOR	CAD FILE NAME	SHEET SIZE
W. SAYED	3996–D SK 1–5	D–22 x 34
DRAWN BY	DIMSCALE	LTSCALE
M. NAYLOR	16	6

HEGER DRY DOCK, Inc.
DRY DOCK ENGINEERS
DESIGN, INSPECTION, DIVING AND CERTIFICATION
13 WATER STREET
HOLLISTON, MA 01746
(508) 429-1600

TITLE
DECK STIFFENER
REPAIRS
ALTERNATIVE REPAIR METHOD

DRAWING No.	SHEET	OF	ISSUE
3996–D–SK5	5	5	A