ALASKA INDUSTRIAL DEVELOPMENT AND EXPORT AUTHORITY
SKAGWAY ORE TERMINAL
SHIP LOADER STRUCTURAL INSPECTION
November 11, 12 and 13, 2013

R&M Consultants, Inc.

Extreme Access Inc.

December 17, 2013

Executive Summary

R&M Consultants, Inc. with sub-consultants Extreme Access Inc., performed a detailed visual inspection of the structural elements of the Skagway Ore Terminal Ship Loader November 11 through 13, 2013. The structural inspection was performed concurrently with the Spout Recertification Inspection performed by Crane Repair Services. The ship loader was found to be in need of extensive remedial repairs to bring the structural elements to a safe and usable condition that would allow use in loading ships for the near future until either a new ship loader is installed or the existing unit is completely rehabilitated for long term use.

The present structural condition is marginal and the facility should not be used for ship loading until remedial repairs are made to critical structural elements in the boom and guide towers.

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Introduction

R&M Consultants Inc. (R&M) was engaged by AIDEA to perform a detailed structural condition inspection of the Skagway Ore Terminal Ship Loader (SOT). This inspection was performed the week of November 11, 2013 and was done by a special inspection team formed by R&M with sub-consultant Extreme Access Inc. (EAI). The R&M team personnel included certified steel bridge inspections from EAI who are also technical climbers. The R&M team personnel included John K. Magee, P.E. of R&M (overall team leader), Scott Hibbs, P.E. of EAI (lead inspector), Peter Fralick of EAI (senior inspector) and John Gonzales of EAI (inspector).

The on-site inspection was performed November 11, 12 and 13, 2013 during a weather window in which temperatures were generally just above freezing, wind was sporadic and in the 3 to 5 mph range and no significant precipitation occurred. The climbing inspection by R&M/EAI was done concurrently with the spout certification inspection by Lance Gyldenege of Crane Repair Services (CRS), the Certified Spout Inspector who was under separate contract to AIDEA. Close coordination between R&M/EAI climber/inspectors and Mr. Gyldenege was maintained throughout the inspection which ensured the maximum inspection effectiveness and efficiency could be maintained. The weather deteriorated significantly on November 14th but the field inspection had been completed and the combined inspection team departed Skagway.

Facility Description

The ship loader is installed on a pile supported foundation comprising a reinforced concrete base slab/pile cap supported in turn by steel pipe piling driven into the harbor bottom. See **Appendix 2** for general views of the ore dock and ship loader. The Skagway Ore Terminal comprises a Concentrate Storage Building, truck unloading facility, reclaim, transfer, and ship loading conveyors and support facilities including equipment wash facility, laboratory building, two MCC's, vehicle repair/maintenance shop and office/lunch room/ shower and locker room. Electric power to operate the motors, controls and lights on the ship loader originate in the main MCC.

Aerial view of the Skagway Ore Terminal looking East

The ship loading conveyor is mounted on a shuttle frame that runs on I-beam runways at the tail and head of the conveyor and on carrier wheels supported by structural members within the plate girder boom. The boom is mounted in a hoisting cage frame that is raised and lowered to follow the hatch coaming as ship draft and tide levels change during ship load out. The hoisting cage is attached by cable to counterweights in the north and south guide towers and hoisting winches and guide sheaves are set on top of a hoisting equipment bridge spanning across the tops of the two guide towers and lower sheaves are mounted on the concrete base of the ship loader.

Ore Dock and SOT Ship Loader viewed from the water

Reference drawings of original construction of the ship loader facilities are included in **Appendix 6**.

Scope of inspection

The structural inspection scope included inspecting and evaluating the ship loader boom structure and hoist support tower structural members and reporting on the condition of the facility. The inspection was visual and included welded joints, bolted joints and tower column base plates and ancillary elements. No non-destructive testing/examination was done. Inspection of operating mechanical features was performed and report of findings was prepared by Crane Repair Services under separate contract with AIDEA.

Inspection Methods

Inspectors accessed the North and South hoist tower columns and frame panel points using rope and technical climbing equipment and techniques. This approach was adopted due to the flexibility of access for the inspectors. Use of bucket truck(s) or man lifts is not consistent with the flexible access needed due to the lack of access for equipment all around the ship loader due to condition of the ore dock and the need for inspectors to view areas not easily accessed by man lift or bucket truck.

Each element inspected was “scored” using structural Condition State (CS) descriptions based on accepted steel structure Condition State Descriptions for painted steel structures from the 2009 Oregon Department of Transportation Bridge Inspection Coding Guide. This Guide provides narrative descriptions and reference photographs of various coating and steel corrosion conditions and assigns a

number from CS1 (best) to CS5 (worst) along with notes on possible actions to be taken to remediate the condition. A copy of the reference table is included as **Appendix 1-1 and Appendix 1-2** shows a view of the East face of the Ship Loader with many of the structural joints with deficiencies indicated.

Each panel point/node in the structural system was examined and if the condition state was less than CS2 photographs were not taken. If the condition state was higher (more severe) the element was closely inspected by scraping away any loose paint, dirt, residual concentrate, rust scale, etc. and visually evaluating the structural material section loss, condition of metal surfaces, etc. Photos were then taken of the particular element and the condition logged with comments. The notes and accompanying photographs are included in **Appendices 3, 4 and 5**.

Inspection Activity

Inspection activities were as follows by date indicated:

November 11, 2013

Weather was fair, 39 degrees F, calm, clear and sunny with occasional light wind.

The R&M team arrived in Skagway by State Ferry mid-day November 11, 2013 where we were joined by the spout inspector. The combined inspection team (R&M/EAI/CRS) spent the afternoon assessing the structures to be inspected from the standpoint of access and safe work practices and reviewing and discussing the job safety plan and work plan with Dave Hunz and Gene Lindfors of MSI. This included operation of the ship loader boom luffing and hoist systems for spout inspection and to facilitate access by EAI personnel for safe inspection of the structural systems. The combined inspection team inspection visited the MCC with Dave Hunz to discuss LOTO to ensure the ship loader could be isolated from energy sources, “walked” the transfer conveyor to the ship loader cage platform, walked around the ship loader towers and looked at the hoisting system with MSI.

November 12, 2013

Weather was fair with temperatures around 39 degrees F all with moderate wind (4 to 10 mph) (wind chill 30 to 38 degrees F) all day and overcast.

The combined inspection team met with Dave Hunz and Gene Lindfors of MSI at about 0800 to get the pre-job safety and operation briefing and visitor passes from MSI. The safety plan was reviewed and the energy source for the ship loader and conveyor motors was locked out and tagged out (LOTO). At the safety meeting it was decided that while Lance Gyldenege was performing his initial inspection of the ship loader with the boom raised and parked, the EAI climbers would drop their climbing ropes down tower corners and the underside of the ship loader boom (bottom facing east) and would inspect the tower structures and boom girders and framing with the boom raised and parked as that would provide the best visibility of the structural members and joint connections in the boom. EAI assignments were Scott Hibbs on the boom, John Gonzales on the South Tower and Peter Fralick on the North Tower. John Magee walked the transfer and reclaim conveyors to perform an overall condition survey of the condition of the conveyors. Gene Lindfors, MSI was safety watch on the dock.

The gangway handling jib boom/hoist attached to the NE leg of the North Tower was found to be failed at the hinged connection bracket and with only one bolt still securing the assembly. MSI was notified and a man lift was moved to the SOT ship loader at the end of the climbing inspection for the day. MSI removed the hoist and jib boom. The mounting bracket assembly remaining on the column was removed by EAI the next day. Inspection of the NE column of the North Tower was not able to be done until this bracket was totally removed as it was not fastened to the column, presenting a hazard to personnel below.

November 13, 2013

Weather was around 32 degrees F all with moderate wind (3 to 5 mph) (wind chill 27 to 28 deg F) in morning and mostly cloudy to overcast, light snow cover from snow in the early morning, water on tower base and structure was frozen.

A safety meeting was held at 0800 in the facility lunch room and the work plan for the day was reviewed with all of the combined team including Dave Hunz. The work plan included the operation of the ship loader hoists and boom luffing system by CRS and the LOTO considerations on energy sources for protection of workers on the ship loader and tower. During the time the ship loader was being operated, EAI personnel would suspend their inspection and be off the ship loader and towers. CRS operating inspection would be done as soon as EAI had cleared any ropes and other climbing safety gear from boom structure in the raised and parked position. After the CRS operating inspection and re-establishment of the LOTO in energy sources, the EAI inspection of the boom and towers could resume with the boom in the lowered position. At the conclusion of the EAI climbing inspection, the ship loader boom would be raised and placed in the parked position.

After the safety meeting, the combined team returned to their inspection of the ship loader. Climber's ropes and gear were cleared from the boom and the LOTO was removed around 0900. The ship loader boom was raised by MSI and CRS commenced the operational inspection/evaluation of the ship loader. No operating (run) test of the ship loader conveyor was done due to possibility of discharging remnant concentrates to Skagway Harbor. Video of the operating ship loading conveyor is to be made by MSI at the next ship load-out and provided to AIDEA and CRS.

At the conclusion of the ship loader operational inspection, the LOTO was re-established and EAI completed their inspection of the ship loader boom structure and the north and south towers.

An exit meeting was held with MSI at the end of the day (around 1630) and the preliminary results of the overall inspection were reviewed with MSI. EAI collected their climbing equipment and the combined team began demobilization, arrangements were made to fly from Skagway to Juneau and onward to team member's respective home bases on Thursday 14 November.

November 14, 2013

Weather deteriorated overnight and by Thursday morning the wind was blowing around 34 mph with gusts to around 50 mph. Temperature was in the 40's and overcast with rain at Skagway. Haines winds were very turbulent. Juneau flights left on time but flights to Anchorage were diverted to Fairbanks for 7.5 hours to wait out freezing fog in Anchorage.

INSPECTION DETAILS AND RESULTS

Data Recording and Photographs

Inspectors recorded and photographed the condition of all elements and connections in the towers and ship loader boom system. Inspection of the mechanical equipment and hoisting system components was not in the R&M scope and is reported on separately by Crane Repair Services. Photographs are sorted by North Tower, South Tower and Ship Loader Boom and are present in tables with transcribed field notes to document the condition of the structural elements and connections. Each tower was inspected by a specific individual and photographs are in sets sorted by individual/date and location. The sets of photographs keyed to inspection notes are included in **Appendices 3, 4 and 5.**

Each photograph is identified by

- Main Component of the Ship Loader,
- Inspector/photographer-date-photo number-facility-main structure
- Location,
- Description - including transcribed notes by inspector relative to the photograph. Condition State, and any specific details noted.

The structure Condition State determinations were guided by the State of Oregon DOT Painted Steel Structures Condition State Descriptions, see **Appendix** 2.

Ship Loader Boom Structure

At welded joints between girders and lateral framing at the bottom plane of the ship loader boom, dirt, flaking paint and rust scale were removed using a glazers knife as a scraper and the condition of the underlying steel was visually evaluated. Each structural joint was assigned a condition state to define the extent of deterioration of the coating and steel elements. See photographs in **Appendix 3** for Boom inspection notes and record photographs.

Example of extreme CS5 deteriorated condition in boom conveyor support framing

It was found that virtually all of the 29 frame joints containing a diagonal frame element are **CS5** and frame joints where members that are in a horizontal position (when the boom is raised and parked)

including framing between the main girders of the boom and between the main girders and I-beam shuttle track/runway were all found to be **CS4/5** to **CS 5** condition in some portion of the element based on material loss in the structural materials. The extensive corrosion encountered could be explained by the boom being luffed up to a vertical position for parking/storage between uses. This position allows water, dirt and residual concentrates to accumulate in the pocket formed by the joint when in a vertical boom position which promoted failure of coatings and corrosion of the steel elements.

In short, the structural framing joints throughout the ship loader boom structural system are CS5 and require extensive remedial repairs for the equipment to operate safely.

Conveyor Shuttle Support Beams

The head chute/drive end of the ship loader conveyor is supported by steel wheels that run on the bottom inside of the I-beam flange. The wheels have a truncated cone shape and this induces a level of lateral thrust to the I-beam runway/track that supports the head chute assembly. The I-beam is laterally supported by the boom girder by way of transverse "blocking" provided by short sections of steel I-beam. Diagonal structural Tee members provide additional lateral support and essentially form a horizontal truss to maintain the left and right runway/track members in relationship one to the other and prevent change in gage that would allow the shuttle to drop through the open area of the spout shuttle slot at the outboard end of the ship loader boom. The right hand (south) shuttle runway track has reduced lateral support due to extreme deterioration and loss of steel section in some of the lateral support blocking and diagonal Tees. This has allowed the gage to increase so the shuttle has less bearing area to support the steel wheels. Also, the left half of the lower flange of the runway/track beam has been bent downward 5/8-inches and the right hand set of wheels on the head chute/drive end of the shuttle has less bearing than the design.

Right hand spout shuttle wheel, runway/track beam and failing lateral support.

The conveyor head chute/drive end shuttle needs urgent remedial repairs to restore the runway/track beams back to correct gage to maintain safe operating condition for the shuttle and head chute.

Ship Loader Guide Towers

The structural joints where the lateral framing members between the load bearing columns of the North and South Guide Towers of the Ship Loader are configured to catch and hold water, dirt and residual concentrate were found to have significant coating loss and steel corrosion in and around the joints; this is primarily framing in the West and East faces of the towers. This is caused by water, dirt and residual concentrates being trapped in pockets formed in the joints by structural member orientation in joints. In some cases joints forming pockets were provided with drain holes which greatly reduced the corrosion problem if the drain holes were large enough and were kept clear of material plugging the hole. ***However, in the two towers of the 44 joints of concern at least 23 are classed as CS4/5 or CS5. Another 28 are classed as CS 3/4 or CS 4.***

Table 1A North Tower – Occurrence of various Condition Status Levels for Tower frame joints
See photographs in Appendix 4.

North tower						
CS2	**CS2/3**	**CS3**	**CS3/4**	**CS4**	**CS4/5**	**CS5**
14	**2**	**10**	**8**	**16**	**7**	**0**

Table 1B South Tower – Occurrence of various Condition Status Levels for Tower frame joints
See photographs in Appendix 5.

South tower						
CS2	**CS2/3**	**CS3**	**CS3/4**	**CS4**	**CS4/5**	**CS5**
4	**1**	**2**	**5**	**6**	**9**	**7**

From the tabulations in Tables 1A and 1B it can be seen that in the lateral load resisting framing of the two guide towers, there are 7 occurrences of CS5, 16 occurrences of CS4/5 and 22 occurrences of CS4. The total number of frame joints requiring urgent remedial repairs is at least 23 (CS5 and CS4/5) and a portion of the CS22 joint conditions also are urgent to repair.

Typical tower frame joint of configuration that pools water; CS5.

Column base plates and bolted splices in the columns and diagonal bracing members need very close examination after removing the rust, coating and any deleterious materials down to bare metal. One concern is that the column-to-base plate welds are still competent based on visual examination. If there is doubt, magnetic particle and dye penetrant methods could be used to determine if there is lack of fusion and/or cracking in the welds. Missing bolts in splices and bolted connections need to be replaced and some existing bolting should be removed and replaced with new bolts.

Guide Tower structural elements urgently need remedial repairs and all joints where water can collect need drain hole of sufficient size to prevent pooling of water.

Guide Tower Base

The base plates of Guide Tower columns and all static and operating elements anchored to the pile cap/base slab need close attention to ensuring grounding strap cables are intact and providing competent ground. In at least one instance the ground cable has broken strands and is in marginal condition at the point it emerges from the base slab.

Example of partially failed ground strap at column base; CS5

Detailed inspection of the Grounding System was not done as part of this inspection, but, incidental observations indicate the system needs attention by qualified person(s).

Findings

Findings of the inspection and evaluation of the ship loader based on the November 11, 2013 through November 13, 2013 inspection are as follows; see Appendix 1-1 for Condition State guidelines and Appendix 1-2 for a view of the East face of the ship loader with boom parked and indication of the locations of urgent repairs for many of the deficiencies:

1. Structural elements and connections within the ship loader boom are in an advanced state of deterioration. Virtually all 29 welded structural connection points between beams and lateral support framing members that are configured to hold water and detritus when the boom is parked are regarded as in Condition State 5 (CS5) and urgently require rehabilitation and/or replacement before the next use of the facility in loading ships.

2. Approximately fifty two percent of welded structural connections between columns and lateral support framing members in the East and West frames of the ship loader towers are deemed as in Condition State 5 (CS5) and urgently require rehabilitation and/or replacement before the next use in loading ships.

3. Safety handrails on the ship loader boom have corroded at the base of posts/balusters and need replacement/rehabilitation to ensure safety of personnel.

4. Wire rope and sheaves need replacement and rehabilitation in accordance with the Crane Repair Services report.

Discussion

The findings of this inspection indicate little attention to structural maintenance has been done since 2007. The ship loader structural systems have deteriorated to the extent that critical connections must be rehabilitated/repaired. If this is done to allow loading ships beginning sometime in February, the critical connections will require attention over the next 45 days or so. To accomplish this, a welding/fabrication contractor would need to be engaged essentially immediately to perform the work needed to the critical connections and elements in the boom needing remediation.

The repair work can be done with the boom down or in the vertical parked position. If in the vertical position, scaffolding would need to be erected on the water side (east side) of the ship loader to allow access to the areas needing rehabilitation. A material hoisting system would need to be established to move structural materials to the point of installation. With the boom up in the parked position marine traffic along the ore dock would be minimally affected.

If done with the boom in the lowered (down) position, access to the work area would be from above and hanging scaffolding would need to be installed. With the boom down, marine traffic along the ore dock would be significantly affected.

Repair/rehabilitation will include removal of defective materials and replacement with new materials cut to fit and welded in place. Patching, flange and web reinforcement including stiffeners and gusset plates to reinforce weakened areas and provide a load path for structural loads will be used to remediate deficient areas. All remedial work will be coated with suitable field applied durable coating material.

To ensure minimal loss of time in effecting repairs, a full time structural engineer/inspector would need to be employed at the job site to be able to assess any problems encountered and establish a repair procedure working with the welding contractor.

Recommendations

Based on the results of this inspection, it is recommended that:

1. The ship loader NOT be operated to load ships until remedial work is done on the structural systems of the ship loader guide towers and the ship loader boom and ship loader conveyor (conveyor #3) shuttle support runway/track system; this includes any remedial work required to the tail roller section of the shuttle as well as the shuttle support beams (these support the carrier rollers for the conveyor shuttle frame) running from the tail end of the conveyor to the head chute.

2. Prepare a rehabilitation action plan that includes continuous inspection of the structural rehabilitation to ensure the remedial structural work is consistent with structural requirements and any hidden conditions can be addressed as they are discovered.

3. The electrical grounding system for the ship loader structure be closely inspected and tested and any broken, damaged or ground straps not in compliance with grounding requirements be replaced.

4. Ship Loader safety features such as hand rails and chains across openings be upgraded including re-securing hand rail posts/balusters to the deck beams of the ship loader.

5. Sand or grit blast the ship loader and boom structures and recoat with a suitable hi-tech coating system.

6. Perform remedial work on the ship loader described in the spout certification inspection report by Crane Repair Services.

7. Re-inspect the ship loader after completion of the work under the certification report and structural rehabilitation/remedial work is completed.

Closure

The results and findings of this inspection indicate the ship loader is in marginal condition at best but, can likely be repaired to provide a safe operating unit for the short term. It is very important to either replace the ship loader with new, modern equipment or perform major repairs and replacement to the present ship loader.

R&M Consultants, Inc. are available at your convenience to review this report and discuss possible means of accomplishing repairs to the facility to allow continuing support of load-out of concentrates.

Appendix 1

Condition State Guidelines and East Elevation View of Ship Loader showing portion of remedial work areas

Oregon DOT Painted Steel Structure Condition State Descriptions	
Condition State Descriptions and Feasible Actions *(Work Candidate Action in parentheses)* Note: Use % for each condition state.	***Note*****:** *The primary function of the Paint System is be a protective coating. Therefore, galvanizing and concrete cover on a Concrete Encased Steel Member are considered to be protective coating systems.* ***Analysis required if Section Loss > 10 % of plate thickness in critical load area.***
1. There is no evidence of corrosion and any paint systems are sound and functioning as intended to protect the metal surface. Do Nothing; Surface Clean *(Pr Maint)*	 ***CS1***
2. There is little or no active corrosion. Surface or freckled rust may have formed or is forming. The paint system may be chalking, peeling, curling, or showing other early evidence of paint system distress, but there is no exposure of metal. Do Nothing; Surface Clean (*Pr Maint)*; Clean And Paint *(Min Repair)*	 ***CS2***
3. Surface or freckled rust is moderate to heavy. There may be exposed metal, but there is no measurable loss of section. Do Nothing; Spot Blast, Clean And Paint *(Part Paint)*	 ***CS3***
4. The paint system has failed. Corrosion may be present but any section loss due to active corrosion does not yet warrant a structural analysis of the element or the bridge. Do Nothing; Spot Blast, Clean And Paint *(Part Paint)*; Replace Paint System *(Repl Paint)*	 ***CS4***
5. Corrosion has caused section loss and is sufficient to warrant structural analysis to ascertain the impact on the ultimate strength and/or serviceability of either the element or the bridge. Do Nothing; Rehab The Unit *(Rehab Elem)*; Replace The Unit *(Repl Elem)*	 ***CS5***

EAST FACE OF SHIP LOADER WITH BOOM IN PARKED POSITION – RED DOTS INDICATE SOME OF THE JOINTS REQUIRING URGENT REPAIR; NOTE THAT NOT ALL POINTS REQUIRING REPAIR ARE VISIBLE IN THIS PHOTOGRAPH

Appendix 2

General Views of Ore Dock, SOT and Ship Loader

SH-111213-00

LOCATION: SKAGWAY ORE DOCK

DESCRIPTION: STEEL STRUCTURE INSPECTORS FROM EXTREME ACCESS INC.

L TO R – PETER FRALICK, JOHN GONZALES

JM-111113-IMGP0281-

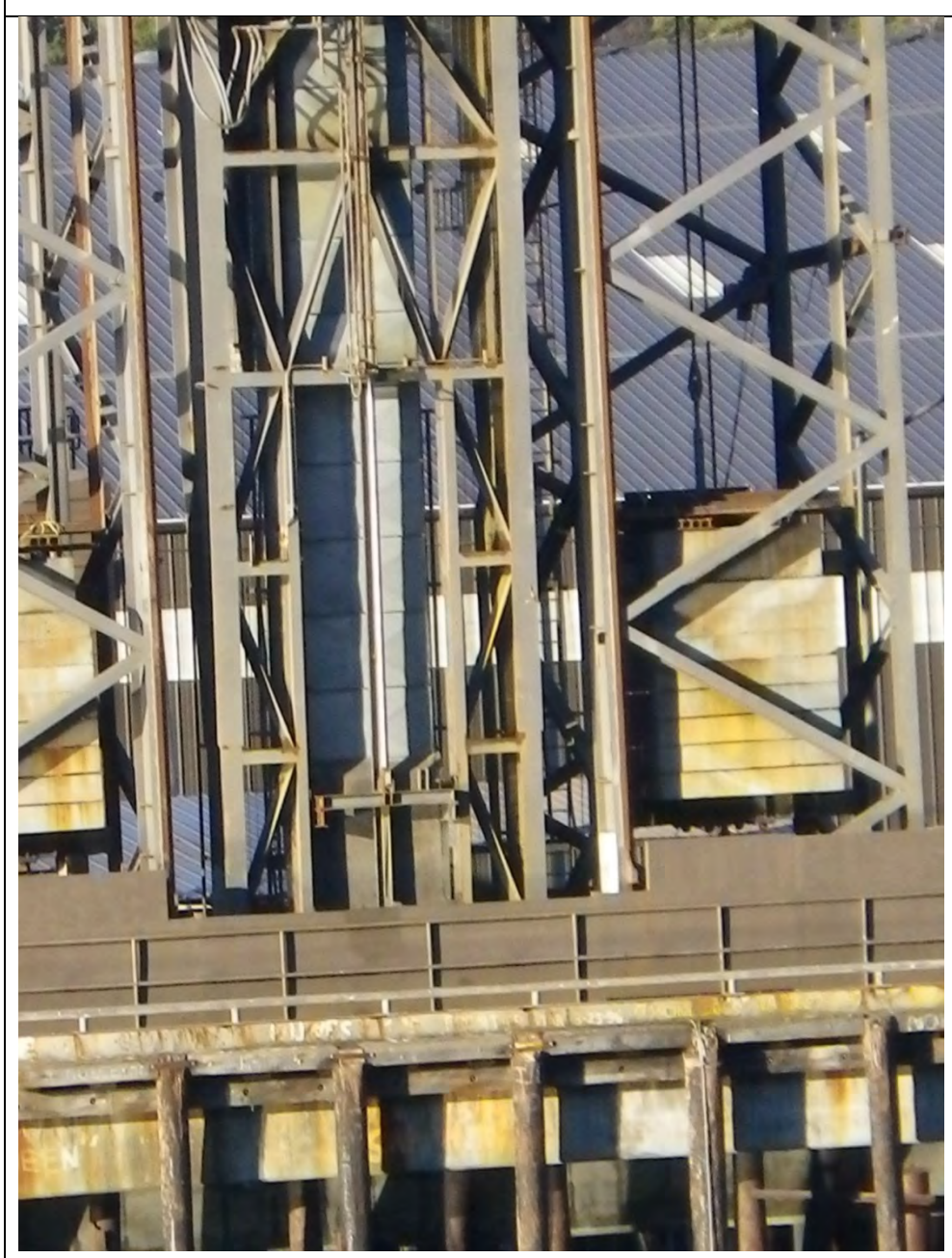
LOCATION: SKAGWAY ORE TERMINAL

DESCRIPTION: SHIP LOADER - VIEWED FROM WATER SIDE, BOOM RAISED AND PARKED. TOWER BRIDGE WITH HOISTING EQUIPMENT, BOOM PARKED, OPERATOR CAB AT RIGHT (NORTH) DISCHARGE SPOUT SHUTTLE SLOT VIEWED FROM BOTTOM OF STRUCTURE.

JM-111113-IMGP0280

LOCATION: SKAGWAY ORE TERMINAL

DESCRIPTION: SHIP LOADER - VIEWED FROM WATER SIDE, BOOM RAISED AND PARKED. TOWER BRIDGE NORTH END, NORTH TOWER AND HOISTING CAGE WITH BOTTOM OF CONVEYOR SHUTTLE (DUST PAN) SHOWING.



JM-111113-IMGP0279

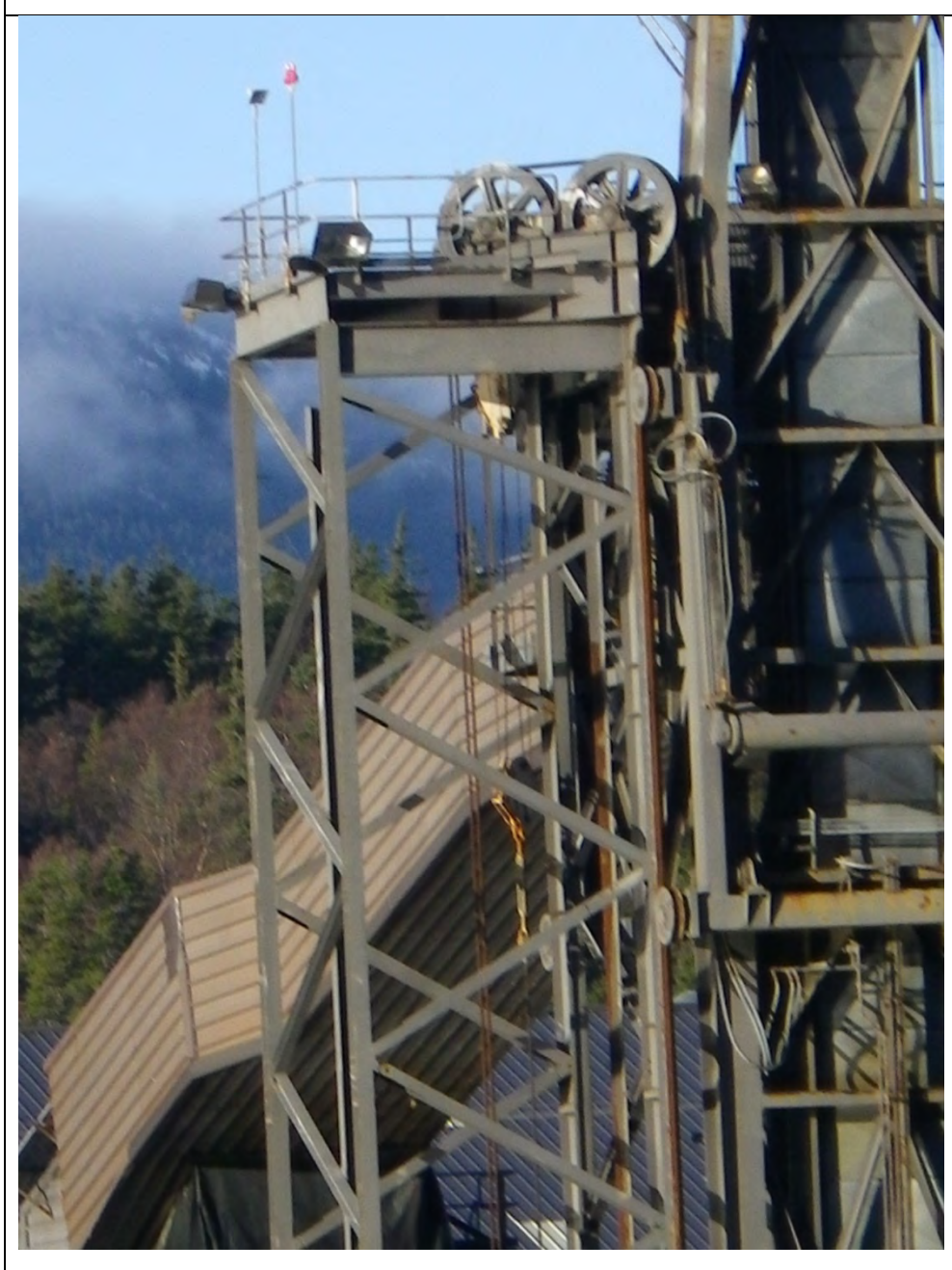
LOCATION: SKAGWAY ORE TERMINAL

DESCRIPTION: SHIP LOADER - VIEWED FROM WATER SIDE, BOOM RAISED AND PARKED. BOTTOM OF TOWERS, BOOM PARKED, NORTH AND SOUTH TOWER BOOM HOIST COUNTERWEIGHTS AND BOTTOM OF SHIP LOADING CONVEYOR (SHOWING DUST PANS)

JM-111113-IMGP0278

LOCATION: SKAGWAY ORE TERMINAL

DESCRIPTION: SHIP LOADER - VIEWED FROM WATER SIDE, BOOM RAISED AND PARKED. BOTTOM OF SOUTH TOWER SHOWING BOOM HOIST COUNTER WEIGHT.



JM-111113-IMGP0277

LOCATION: SKAGWAY ORE TERMINAL

DESCRIPTION: SHIP LOADER - VIEWED FROM WATER SIDE, BOOM RAISED AND PARKED. SOUTH TOWER, TRANSFER CONVEYOR GALLERY IN BACKGROUND.

JM-111113-IMGP0276

LOCATION: SKAGWAY ORE TERMINAL

DESCRIPTION: SHIP LOADER - OVERALL VIEW FROM THE WATER OF SHIP LOADER WITH BOOM RAISED AND PARKED, HOISTING CAGE, , SMECHANICAL HOISTING EQUIPMENT BRIDGE BETWEEN TOWERS, SPOUT SHUTTLE DISCHARGE SLOT, TRANSFER CONVEYOR IN BACKGROUND.

JM-111113-IMGP0275

LOCATION: SKAGWAY ORE TERMINAL

DESCRIPTION: SHIP LOADER - BOTTOM PORTIION OF SHIP LOADER TOWERS AND FOUNDATION PLATFORM.

JM-111113-IMGP0272

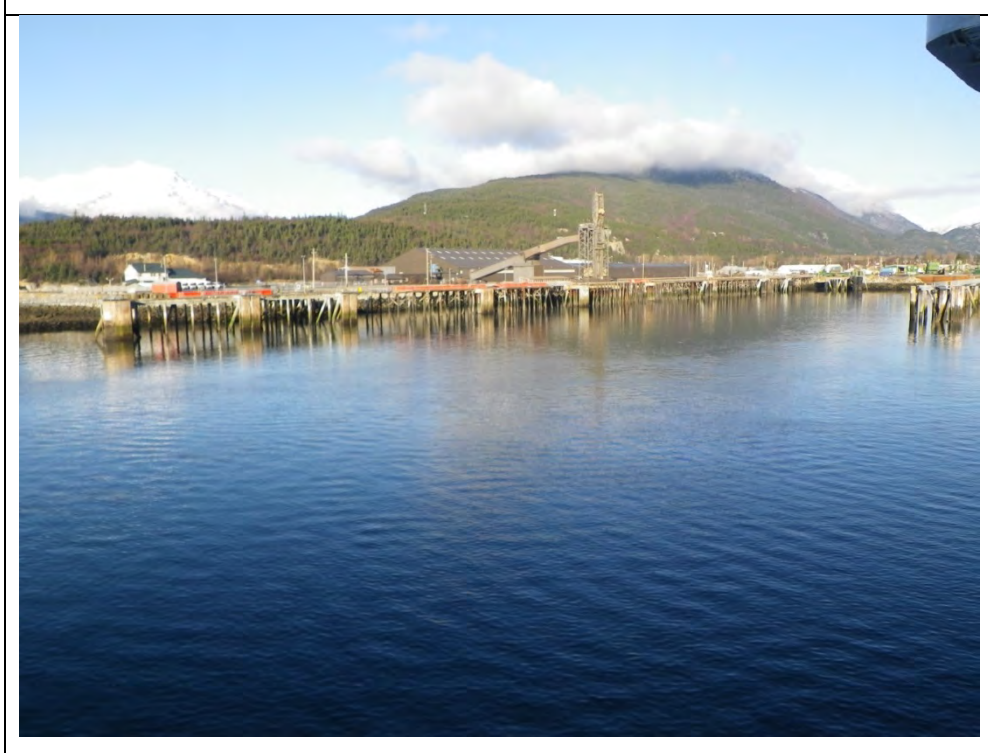
LOCATION: SKAGWAY ORE TERMINAL

DESCRIPTION: SHIP LOADER - OVERALL VIEW OF SHIP LOADER, TRANSFER CONVEYOR, MIDSPAN DRIVE TOWER AND CSB IN BACKGROUND.

JM-111113-IMGP0271

LOCATION: SKAGWAY ORE TERMINAL

DESCRIPTION: SHIP LOADER - OVERALL VIEW OF SHIP LOADER, TRANSFER CONVEYOR, MIDSPAN DRIVE TOWER AND CSB IN BACKGROUND.

	**JM-111113-IMGP0270** **LOCATION: SKAGWAY ORE TERMINAL** **DESCRIPTION: VIEW OF SOT AND SHIP LOADER FROM THE WATER (STATE FERRY)**
	**JM-111113-IMGP0269** **LOCATION: SKAGWAY ORE TERMINAL AND SHIP LOADER** **DESCRIPTION: DESCRIPTION: VIEW OF SOT AND SHIP LOADER FROM THE WATER (STATE FERRY)**
	**JM-111113-IMGP0268** **LOCATION: SKAGWAY ORE TERMINAL** **DESCRIPTION: DESCRIPTION: VIEW OF ORE DOCK, SOT AND SHIP LOADER FROM THE WATER (STATE FERRY).**

JKM-111213-IMGP0290

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: SHIP LOADER WITH NO. 3 CONVEYOR ON BOOM IN PARKED POSITION (RAISED). INSPECTORS VISIBLE JUST BELOW TRANSFER CONVEYOR ON WEST SIDE OF TOWERS.

JKM-111213-IMGP0291

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: TRANSFER CONVEYOR AND MIDSPAN TOWER/DRIVE TOWER.

JKM-111213-IMGP0288

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: CLOSEUP VIEW (LOOKING NORTH) OF SOUTH SIDE OF SHIP LOADER WITH NO. 3 CONVEYOR ON BOOM IN PARKED POSITION (RAISED). INSPECTOR VISIBLE AT TOP OF SOUTH TOWER ON WEST SIDE.

JKM-111213-IMGP0287

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: CLOSEUP VIEW OF INSPECTOR AT TOP OF SW COLUMN OF SOUTH TOWER. HYDRAULIC EQUIPMENT HOUSE AT LEFT.

JKM-111213-IMGP0286

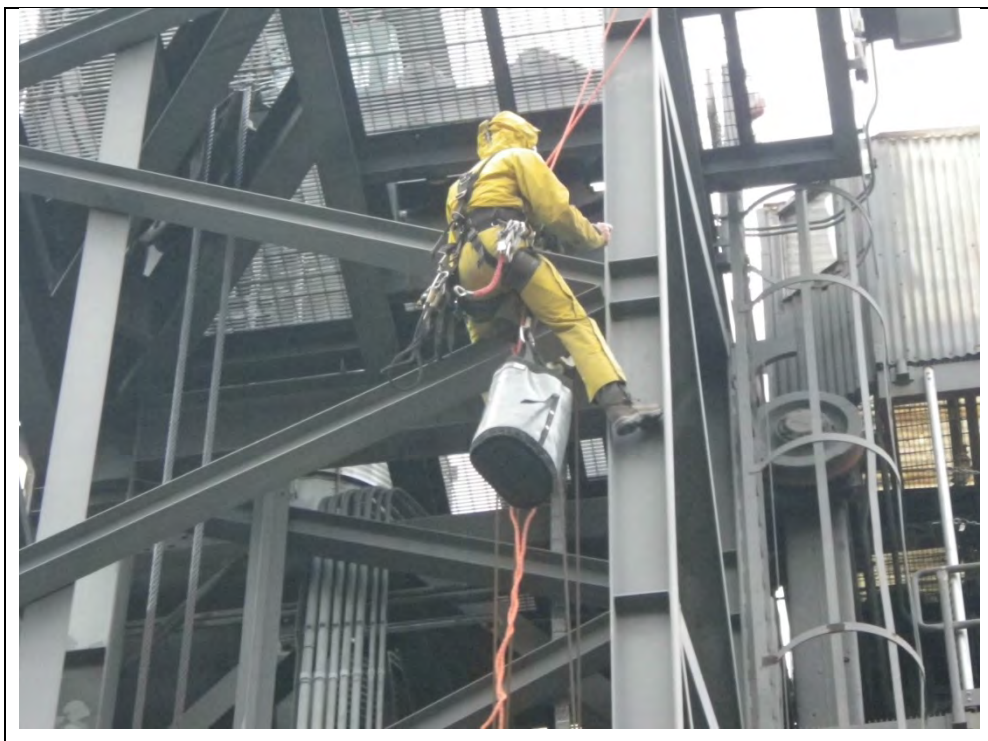
LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: INSPECTOR AT TOP OF SW COLUMN OF SOUTH TOWER. HYDRAULIC EQUIPMENT HOUSE AT LEFT.

JKM-111213-IMGP0285

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: CLOSEUP VIEW (LOOKING SOUTH) OF NORTH SIDE OF SHIP LOADER WITH NO. 3 CONVEYOR ON BOOM IN PARKED POSITION (RAISED). INSPECTOR VISIBLE NEAR TOP OF TOWER.



JKM-111213-IMGP0284

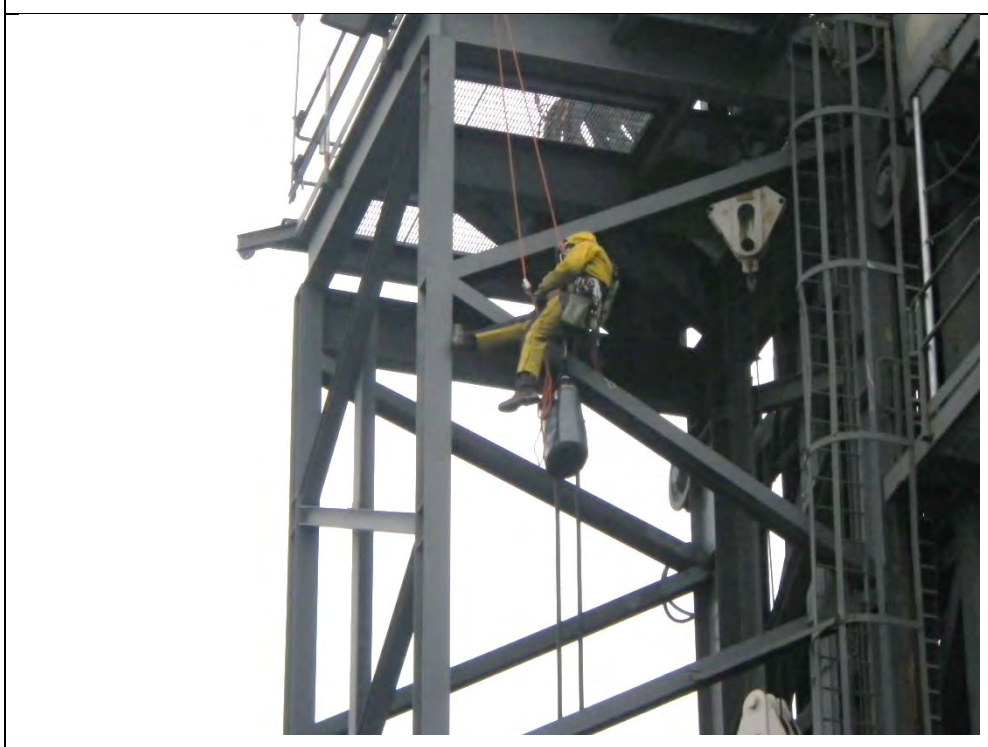
LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: INSPECTOR AT NW COLUMN OF NORTH TOWER

JKM-111213-IMGP0283

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: INSPECTOR RIGGED OFF OF SHIP LOADER BOOM CROSS FRAME BEGINNING BOOM STRUCTURAL INSPECTION.



JKM-111213-IMGP0282

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: INSPECTOR NEAR TOP OF NORTH TOWER AT NW CORNER COLUMN

JKM-111213-IMGP0291

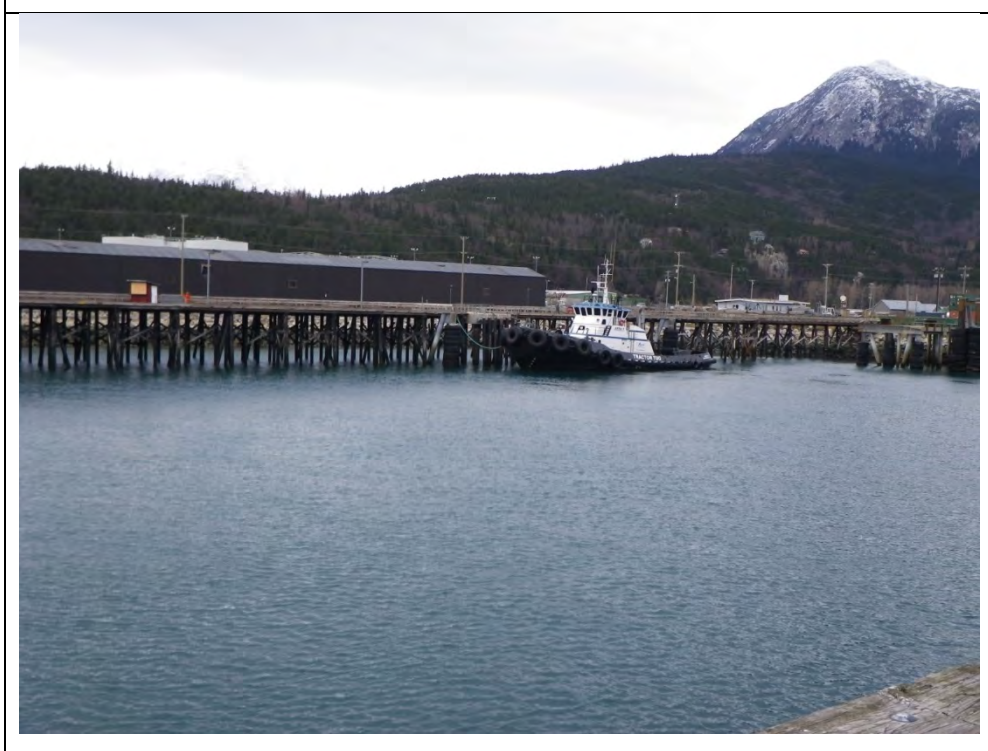
LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: MID SPAN TOWER.TRANSFER CONVEYOR DRIVE TOWER; SIDING HAS BEEN REPLACED SINCE MAY 2013

JKM-111213-IMGP0434

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

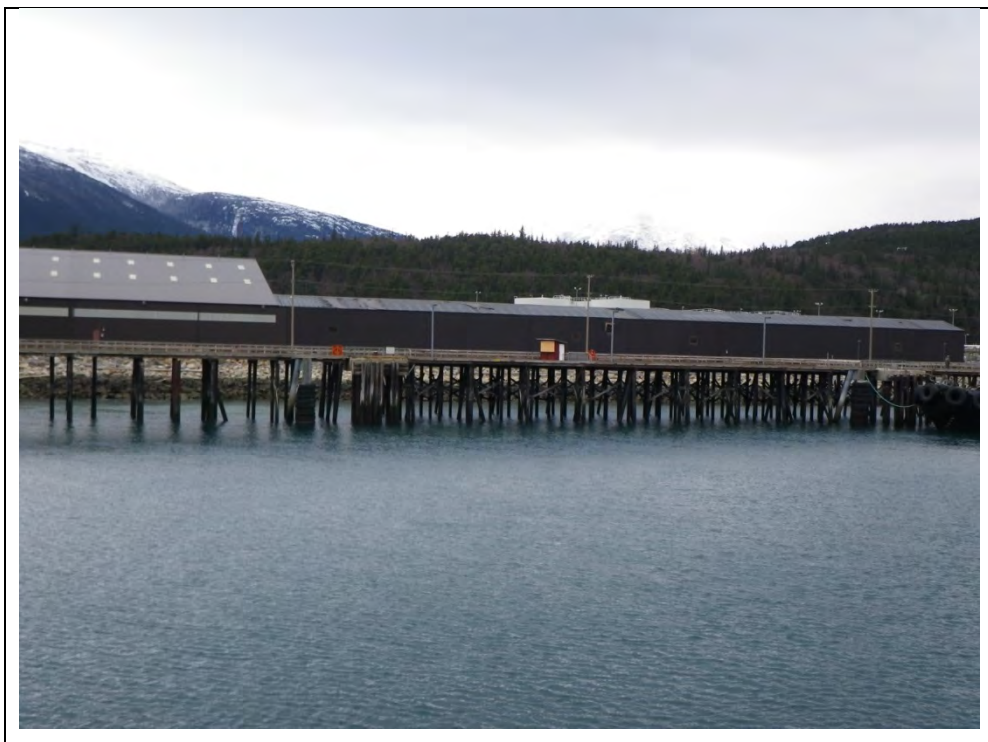
DESCRIPTION: INSPECTOR ON CONVEYOR BOOM AT LEFT (NORTH) GIRDER



JKM-111213-IMGP0433

LOCATION: SKAGWAY ORE TERMINAL ORE DOCK

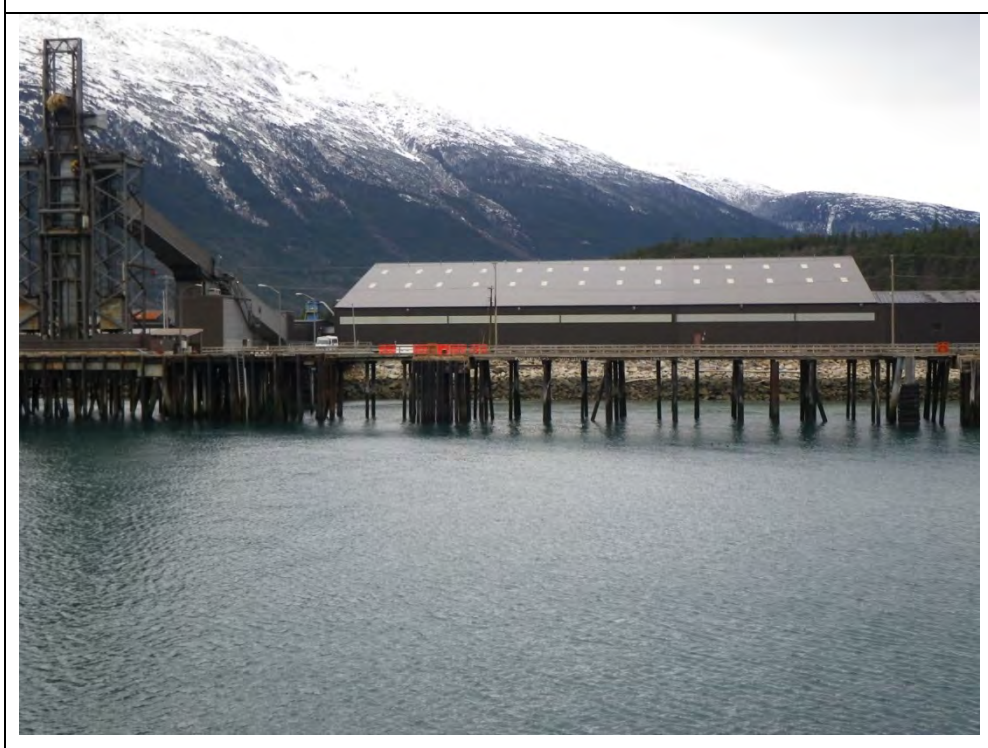
DESCRIPTION: TRACTOR TUG “ANNA T” LYING ALONGSIDE ORE DOCK



JKM-111213-IMGP0432

LOCATION: SKAGWAY ORE TERMINAL ORE DOCK

DESCRIPTION: ORE DOCK AS VIEWED FROM ACROSS HARBOR



JKM-111213-IMGP0431

LOCATION: SKAGWAY ORE TERMINAL ORE DOCK AND SHIP LOADER

DESCRIPTION: ORE DOCK AND SHIP LOADER GENERAL VIEW, INSPECTORS VISIBLE ON SHIP LOADER

JKM-111213-IMGP0430

LOCATION: SKAGWAY ORE TERMINAL ORE DOCK AND SHIP LOADER

DESCRIPTION: GENERAL VIEW OF SHIP LOADER FROM ACROSS HARBOE, INSPECTORS VISIBLE ON SHIP LOADER

JKM-111213-IMGP0429

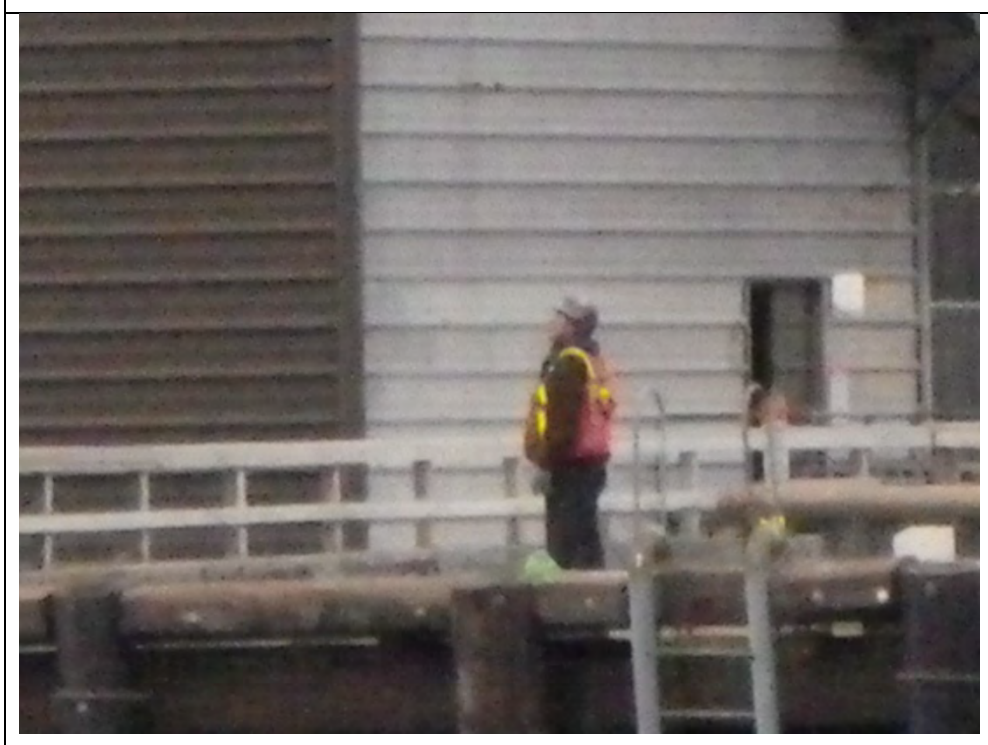
LOCATION: SKAGWAY ORE TERMINAL ORE DOCK

DESCRIPTION: ORE DOCK TO SOUTH OF SHIP LOADER AS VIEWED FROM ACROSS HARBOR

JKM-111213-IMGP0428

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: INSPECTOR ON SOUTH FACE OF SOUTH TOWER, INSPECTING STEEL MEMBERS AND CONNECTIONS



JKM-111213-IMGP0427

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

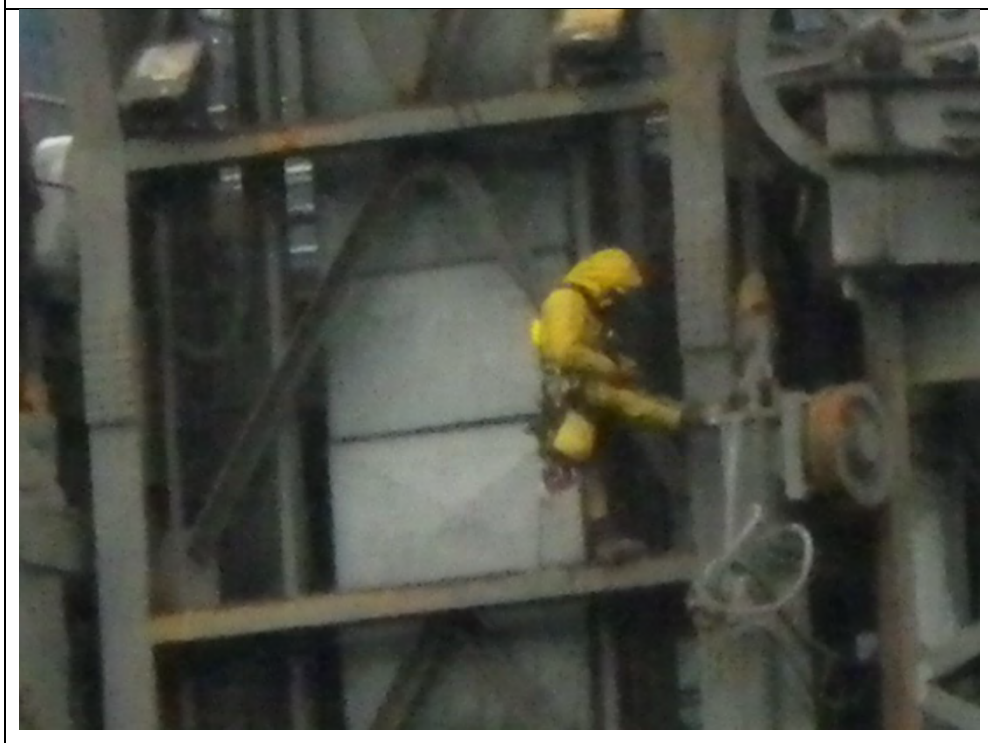
DESCRIPTION: MSI OBSERVER, GENE LINDFORS, ON DOCK, AS SAFETY WATCH OF CLIMBER/INSPECTORS.

JKM-111213-IMGP0426

LOCATION: SKAGWAY ORE TERRMINAL SHIP LOADER

DESCRIPTION: INSPECTOR AT NW COLUMN OF NORTH TOWER, INSPECTING STEEL MEMBERS AND CONNECTIONS;

NOTE HOIST ON JIB BOOM, THE ENTIRE BOOM AND HIOIST INSTALLATION WAS REMOVED BY MSI WHEN CLIMBERS DISCOVERED ATTACHMENT TO NE COLUMN OF NORTH TOWER WAS FAULTY AND ABOUT TO FAIL. INSPECTION OF THE NE TOWER COLUMN COULD NOT BE SAFELY PERFORMED WITH JIB BOOM IN PLACE. SEE PHOTO JKM-111313-IMGP0446 OF FAILED BRACKET.



JKM-111213-IMGP0425

LOCATION: SKAGWAY ORE TERRMINAL SHIP LOADER

DESCRIPTION: INSPECTOR AT LEFT (NORTH) GIRDER OF THE SHIP LOADER BOOM, BOOM RAISED, INSPECTING STRUCTURAL MEMBERS AND CONNECTIONS.

JKM-111213-IMGP0424

LOCATION: SKAGWAY ORE TERMINAL SKAGWAY ORE TERMINAL

DESCRIPTION: INSPECTOR AT LEFT (NORTH) GIRDER OF THE SHIP LOADER BOOM, BOOM RAISED, INSPECTING STRUCTURAL MEMBERS AND CONNECTIONS. INSPECTOR IN SAME LOCATION AS IN PHOTO JKM-111213-IMGP0425 .

JKM-111213-IMGP0423

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: AS VIEWED FROM ACROSS HARBOR; NOTE INSPECTORS ON THE SOUTH TOWER, BOOM AND NORTH TOWER (YELLOW SPECS).

JKM-111213-IMGP0422

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: INSPECTOR ON SOUTH FACE OF SOUTH TOWER

JKM-111213-IMGP0421

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

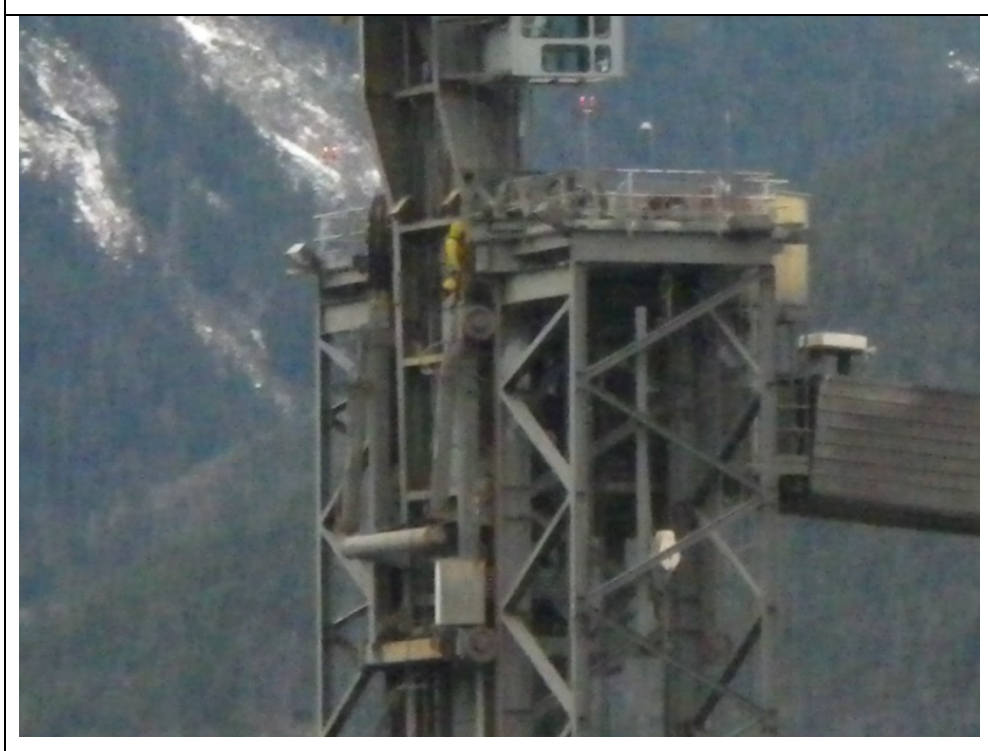
DESCRIPTION: INSPECTOR AT NE COLUMN OF NORTH TOWER; JIB BOOM AND HOIST USED FOR GANGWAYS IS ABOVE INSPECTOR.

NOTE FAILED JIB BOOM HINGE BRACKET INDICATED BY RED ARROW. BOOM, HOIST AND BRACKET ULTIMATELY REMOVED BY MSI TO ALLOW SAFE INSPECTION OF TOWER COLUMN.

JKM-111213-IMGP0420

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

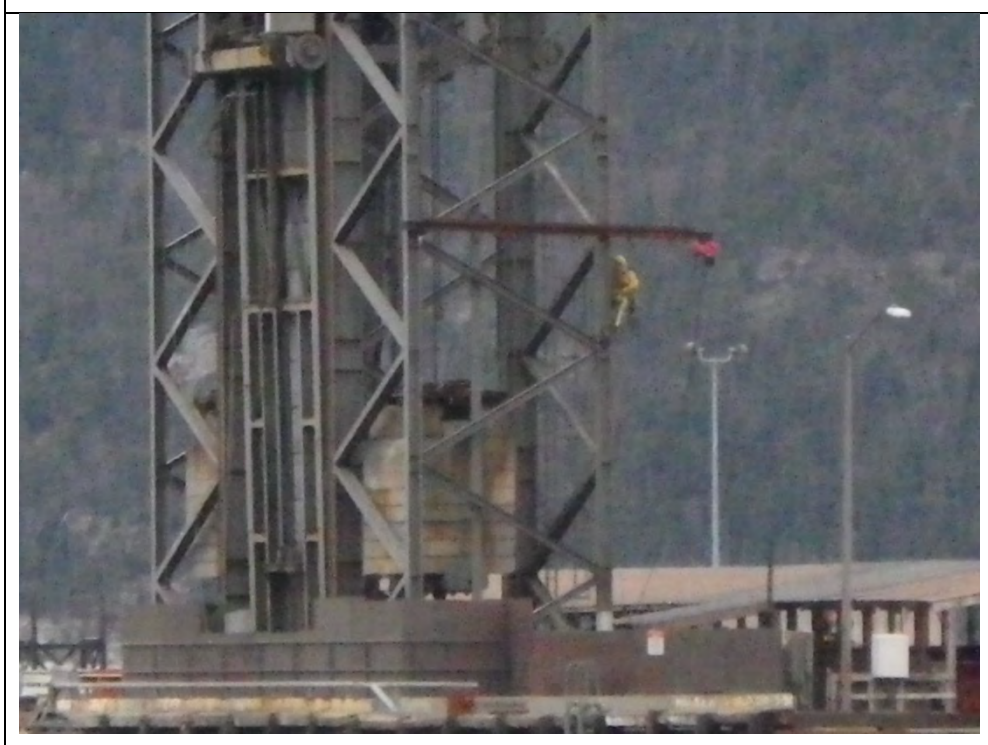
DESCRIPTION: INSPECTOR AT NORTH (LEFT) GIRDER OF SHIP LOADER BOOM.



JKM-111213-IMGP0419

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: INSPECTOR HIGHER ON SHIP LOADER NORTH (LEFT) BOOM GIRDER



JKM-111213-IMGP0418

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: INSPECTOR AT NE COLUMN OF NORTH TOWER OF SHIP LOADER.

NOTE JIB BOOM WITH HOIST SUSPENDED FROM THE NE COLUMN OF NORTH TOWER WAS FOUND TO HAVE FAILED CONNECTION TO THE TOWER COLUMN AND WAS REMOVED AFTER THIS PHOTO TAKEN.

JKM-111213-IMGP0417

LOCATION: SKAGWAY ORE TERMINAL SKAGWAY ORE TERMINAL

DESCRIPTION: INSPECTOR AT NE COLUMN OF NORTH TOWER OF SHIP LOADER

JKM-111213-IMGP0416

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: INSPECTORS ON NORTH TOWER AND BOOM

JKM-111213-IMGP0415

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: COUNTER WEIGHT DOWNHAUL CABLE CONNECTION.

JKM-111213-IMGP0414

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: COUNTER WEIGHT DOWNHAUL CABLE CONNECTION.

JKM-111213-IMGP0412

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: HOIST AND DOWNHAUL SHEAVE AT SHIP LOADER BASE

JKM-111213-IMGP0412

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: BASE OF SW COLUMN OF NORTH TOWER OF SHIP LOADER

JKM-111213-IMGP0411

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: BASE OF SW COLUMN OF NORTH TOWER OF SHIP LOADER

JKM-111213-IMGP0410

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: BASE OF SW COLUMN OF NORTH TOWER OF SHIP LOADER

JKM-111213-IMGP0409

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: FRAME CONNECTION AT BASE OF WEST FACE OF NORTH TOWER OF SHIP LOADER; NOTE DRAIN HOLE IN "POCKET" FORMED BY WF FLANGES

JKM-111213-IMGP0408

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: FRAME CONNECTION AT BASE OF WEST FACE OF NORTH TOWER OF SHIP LOADER; NOTE DRAIN HOLE IN "POCKET" FORMED BY WF FLANGES; THIS IS SAME AS PHOTO JKM-111213-IMGP0409 EXCEPT ROPE REMOVED FOR VISIBILITY.

JKM-111213-IMGP0407

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: COUNTER WEIGHT RIGGING SHEAVES, BASE OF NORTH TOWER.

JKM-111213-IMGP0406

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: COUNTER WEIGHT RIGGING SHEAVES, BASE OF NORTH TOWER.

JKM-111213-IMGP0405

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: NORTH TOWER BASE SE COLUMN, FRAMING AND BASE PLATE

JKM-111213-IMGP0404

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: BASE OF SE COLUMN NORTH TOWER

JKM-111213-IMGP0403

LOCATION: SKAGWAY ORE TERMINAL HIP LOADER

DESCRIPTION: TOWER FRAME CONNECTION, NOTE DRAIN HOLE

JKM-111213-IMGP0402

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: CLOSE UP OF DRAIN HOLE IN JOINT SHOWN IN PHOTO JKM-111213-IMGP0403

JKM-111213-IMGP0401

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: NORTH TOWER NE BASE FRAMING

JKM-111213-IMGP0400

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: NORTH TOWER NE BASE

JKM-111213-IMGP0399

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: NORTH TOWER COUNTER BALANCE RIGGING SHEAVES; SOUTH TOWER SHEAVES VSIBLE IN BACKGROUND.

JKM-111213-IMGP0398

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: COUNTER WEIGHT SHEAVES

JKM-111213-IMGP0397

LOCATION: SKAGWAY ORE TERMINAL SKAGWAY ORE TERMINAL

DESCRIPTION: NORTH TOWER SW COLUMN BASE AND ACCESS LADDER

JKM-111213-IMGP0396

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: NORTH TOWER SW COLUMN BASE

JKM-111213-IMGP0395

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: SW COLUMN BASE NORTH TOWER

JKM-111213-IMGP0394

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION:

JKM-111213-IMGP0393

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION:

JKM-111213-IMGP0392

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: NE COLUMN SOUTH TOWER BASE CONVEYOR BOOM PARKING LIMIT SWITCH

JKM-111213-IMGP0391

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: SOUTH COUNTER WEIGHT DOWN HAUL CABLE CONNECTION

JKM-111213-IMGP0390

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: SOUTH COUNTER WEIGHT DOWN HAUL CABLE CONNECTION

JKM-111213-IMGP0389

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: SOUTH COUNTER WEIGHT DOWN HAUL CABLE CONNECTION

JKM-111213-IMGP0388

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: SOUTH COUNTER WEIGHT DOWN HAUL CABLE CONNECTION; CABLE AND SOCKET CLEVIS

JKM-111213-IMGP0387

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: SOUTH COUNTER WEIGHT DOWN HAUL CABLE CONNECTION; CLEVIS AND CONNECTION TO COPUNTER WEIGHT BOTTOM

JKM-111213-IMGP0386

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: NORTH TOWER BASE FRAME CONNECTION

JKM-111213-IMGP0385

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION:SHIP LOADER BOOM PARKING STOOL AT BASE OF TOWER

JKM-111213-IMGP0384

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: TOWER COLUMN BASE

JKM-111213-IMGP0383

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: TOWER BASE FRMING, NOTE FLAME CUT DRAIN HOLE

JKM-111213-IMGP0382

LOCATION: SKAGWAY ORE TERMINAL SKAGWAY ORE TERMINAL

DESCRIPTION: TOWER COLUMN BASE, NOTER CORROSION AT COLUMN TO BASE PLATE JOINT

JKM-111213-IMGP0381

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: TOWER BASE FRAMING

JKM-111213-IMGP0380

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: SOUTH TOWER SE COLUMN BASE FRAMING??

JKM-111213-IMGP0379

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: SOUTH TOWER SE COLUMN AT BASE

JKM-111213-IMGP0378

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: SOUTH TOWER COUNTER WEIGHT HOIST/DOWN HAUL SHEAVES

JKM-111213-IMGP0377

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: SOUTH TOWER COUNTER WEIGHT HOIST/DOWN HAUL SHEAVES AND NE COLUMN OF SOUTH TOWER

JKM-111213-IMGP0376

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: SOUTH TOWER SOUTH SIDE OF SW COLUMN BASE

JKM-111213-IMGP0375

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: SOUTH TOWER NORTH SIDE OF SW COLUMN BASE

JKM-111213-IMGP0374

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: SW COLUMN OF SOUTH TOWER; SHOWING WATER TRA IN WF CONNECTION WITH DRAIN HOLE; AIR MONITOR UNIT IN BACK LEFT OF PHOTO

JKM-111213-IMGP0373

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: SW COLUMN OF SOUTH TOWER; SHOWING WATER TRA IN WF CONNECTION WITH DRAIN HOLE; AIR MONITOR UNIT IN BACK LEFT OF PHOTO

JKM-111213-IMGP0372

LOCATION: SKAGWAY ORE TERMINAL SKAGWAY ORE TERMINAL

DESCRIPTION: SOUTH TOWER NW COLUMN FRAMING IN NORTH FACE OF TOWER

JKM-111213-IMGP0371

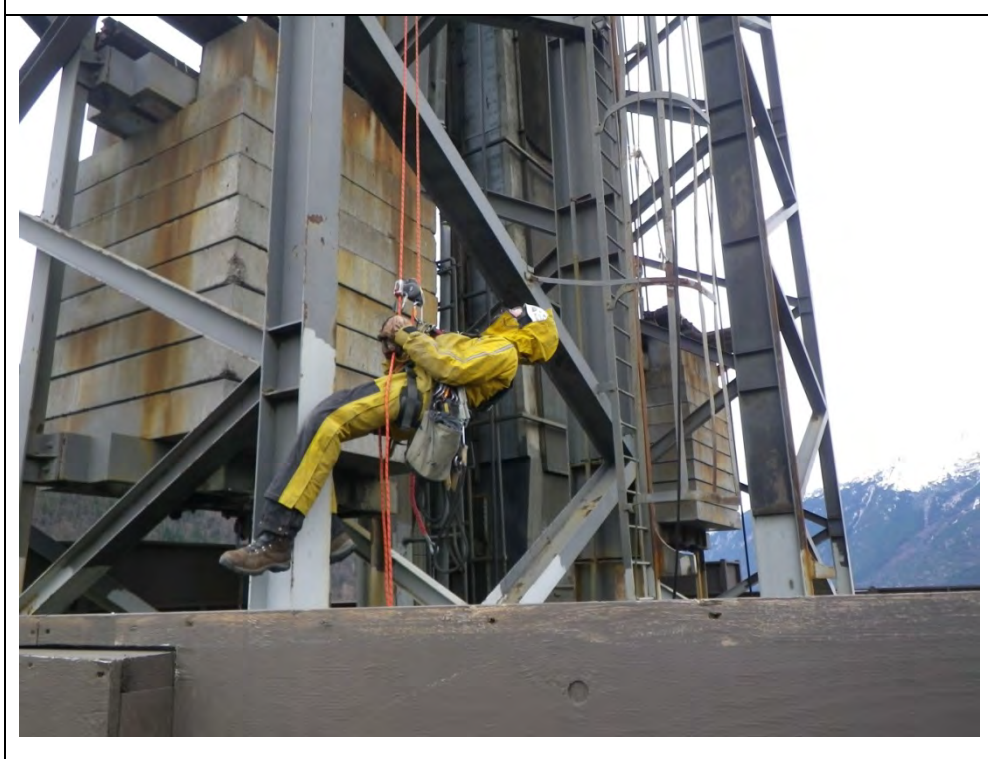
LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: SOUTH TOWER NW COLUMN AND FRAMING CONNECTION

JKM-111213-IMGP0370

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: SOUTH TOWER NW COLUMN BASE SOUTH FACE

	**JKM-111213-IMGP0369** **LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER** **DESCRIPTION: SOUTH TOWER NW COLUMN BASE NORTH FACE**
	**JKM-111213-IMGP0435** **LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER** **DESCRIPTION: INSPECTOR SUSPENDED AT BOTTOM OF NORTH TOWER NW COLUMN AFTER INSPECTION DESCENT**

	**JKM-111313-IMGP0480** **LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER** **DESCRIPTION: SHIP LOADER SHUTTLE BEAM LATERAL SUPPORT FROM GIRDER**
	**JKM-111313-IMGP0479** **LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER** **DESCRIPTION: SHIP LOADER BOOM SHUTTLE BEAM TO GIRDER FRAMING**
	**JKM-111313-IMGP0478** **LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER BOOM** **DESCRIPTION: SHUTTLE OPERATING RAM AND BOTTOM VIEW OF BOOM STRUCTURE AT THE TAIL END AS VIEWED FROM SHIP LOADER BASE WITH BOOM IN LOWEST OPERATING POSITION. SHUTTLE TRACK/RUNWAY BEAMS FRAMED TO BOOM GIRDERS. CONVEYOR DUST PANELS VISIBLE ABOVE THE HYDRAULIC RAM.**

JKM-111313-IMGP0477

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER LOADER BOOM

DESCRIPTION: UNDERSIDE OF BOOM AND CONVEYOR SHUTTLE LOOKING TOWARD DISCHARGE END OF CONVEYOR; NOT DAMAGED DUST CONTAINMENT PANELS.

JKM-111313-IMGP0476

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER BOOM

DESCRIPTION: LOOKING ALONG RIGHT GIRDER AND SHUTTLE SUPPORT BEAM AT HEAD END

JKM-111313-IMGP0475

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER SHIP LOADER BOOM

DESCRIPTION:

JKM-111313-IMGP0474

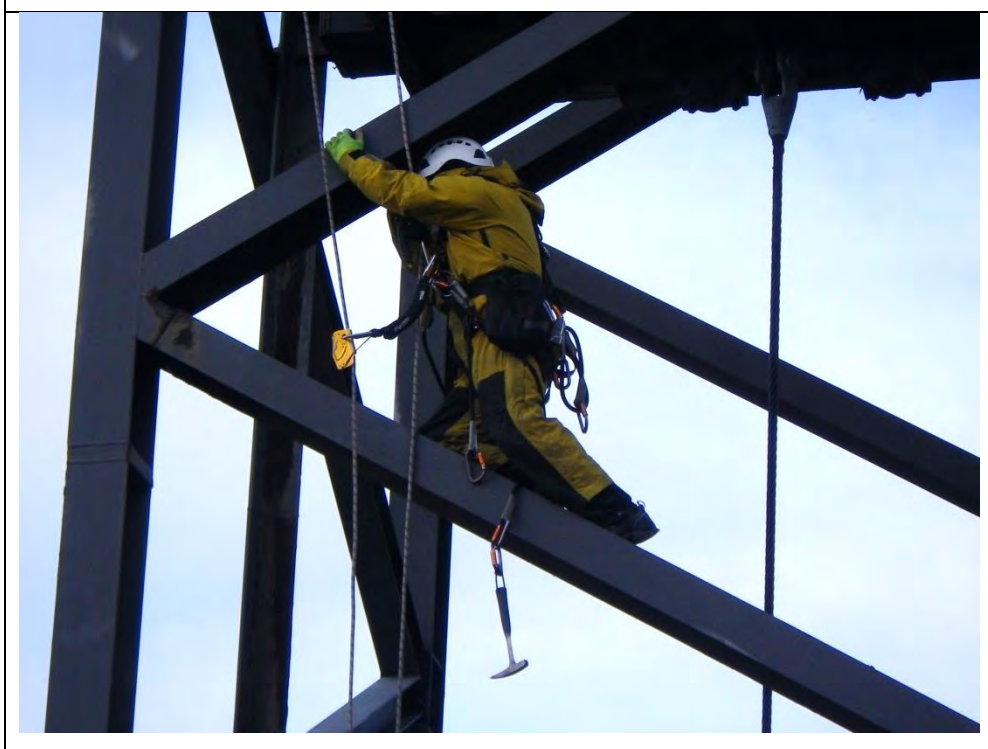
LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: INSPECTOR ON SOUTH TOWER SE COLUMN

JKM-111313-IMGP0473

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: SPOUT INSPECTOR EXAMINING DOWN HAUL CABLE ON NORTH TOWER COUNTER WEIGHT



JKM-111313-IMGP0472

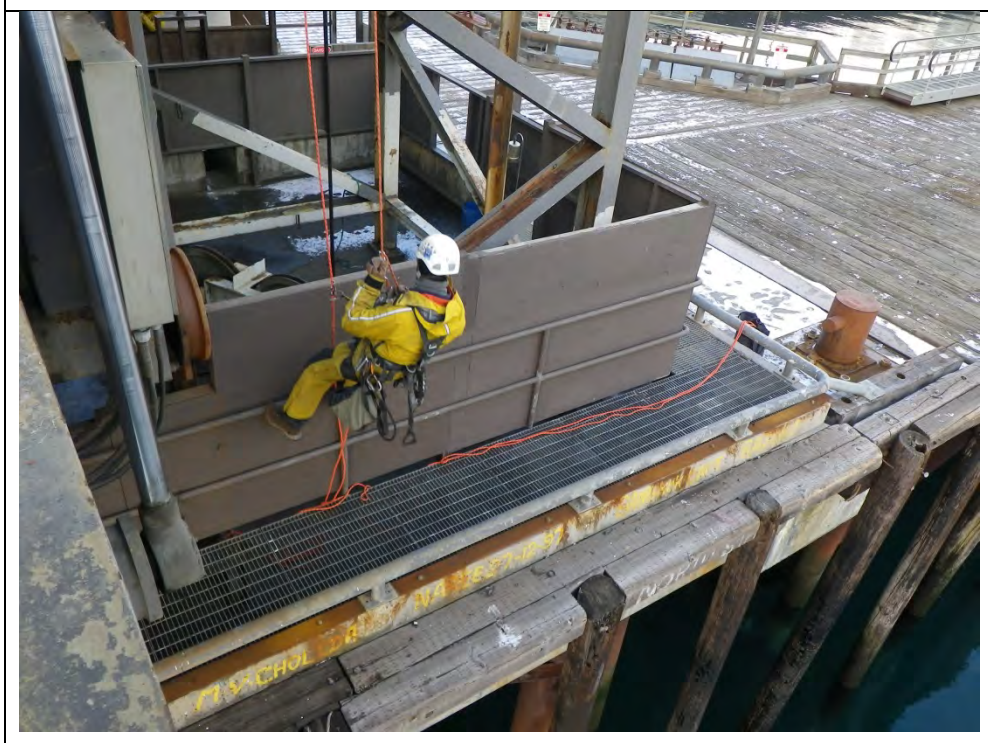
LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: INSPECTOR ON SOUTH TOWER SE COLUMN AREA

JKM-111313-IMGP0471

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER BOOM

DESCRIPTION: LATERAL SUPPORT FROM RIGHT (SOUTH) BOOM GIRDER TO RIGHT SHUTTLE SUPPORT BEAM/RUNWAY



JKM-111313-IMGP0470

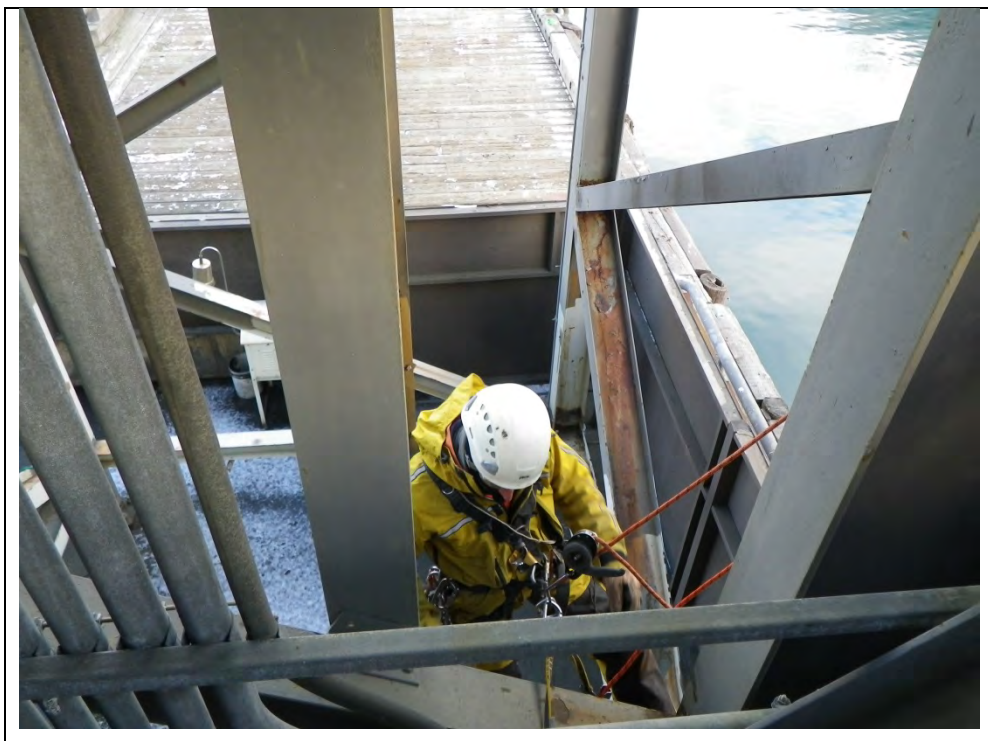
LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: INSPECTOR ON EAST FACE OF NORTH TOWER, SHIP LOADER CONVEYOR BOOM HOISTING CAGE VISIBLE AT LEFT

JKM-111313-IMGP0469

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: INSPECTOR ON SE COLUMN OF NORTH TOWER AS VIEWED FROM SHIP LOADER BOOM



JKM-111313-IMGP0468

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: INSPECTOR ON SE COLUMN OF NORTH TOWER AS VIEWED FROM SHIP LOADER BOOM; NE COLUMN IN BACKGROUND

JKM-111313-IMGP0467

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER BOOM

DESCRIPTION: RIGHT (SOUTH) SHUTTLE CARRIER WHEEL AND SHUTTLE SUPPORT BEAM AND RUNWAY. NOTE GAP BETWEEN WHEEL FLANGE AND RUNWAY BEAM FLANGE

JKM-111313-IMGP0466

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER BOOM

DESCRIPTION: RIGHT (SOUTH) SHUTTLE CARRIER WHEEL AND SHUTTLE SUPPORT BEAM AND RUNWAY. NOTE GAP BETWEEN WHEEL FLANGE AND RUNWAY BEAM FLANGE

JKM-111313-IMGP0465

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER BOOM

DESCRIPTION: SHUTTLE RUNWAY AND SUPPORT BEAM LATERAL SUPPORT TO BOOM GIRDER

JKM-111313-IMGP0464

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER BOOM

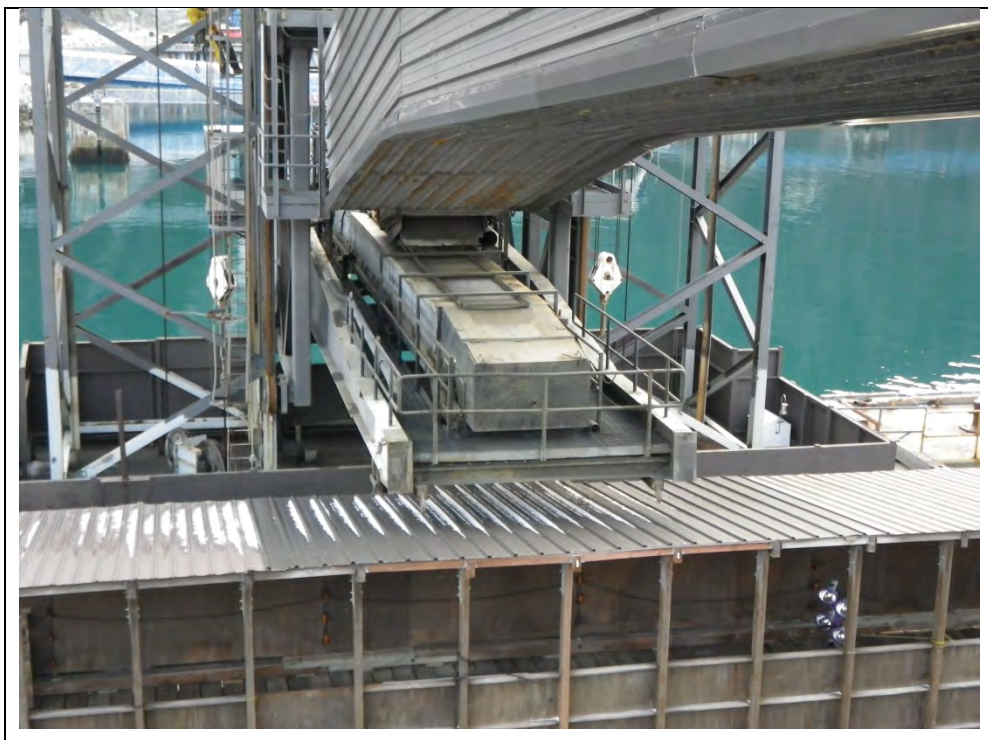
DESCRIPTION: SHUTTLE RUNWAY AND SUPPORT BEAM AT STIFFENER INBOARD FROM SHUTTLE CARRIER WHEEL LOCATION

JKM-111313-IMGP0463

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER BOOM

DESCRIPTION: SHUTTLE RUNWAY AND SUPPORT BEAM LATERAL SUPPORT TO BOOM GIRDER

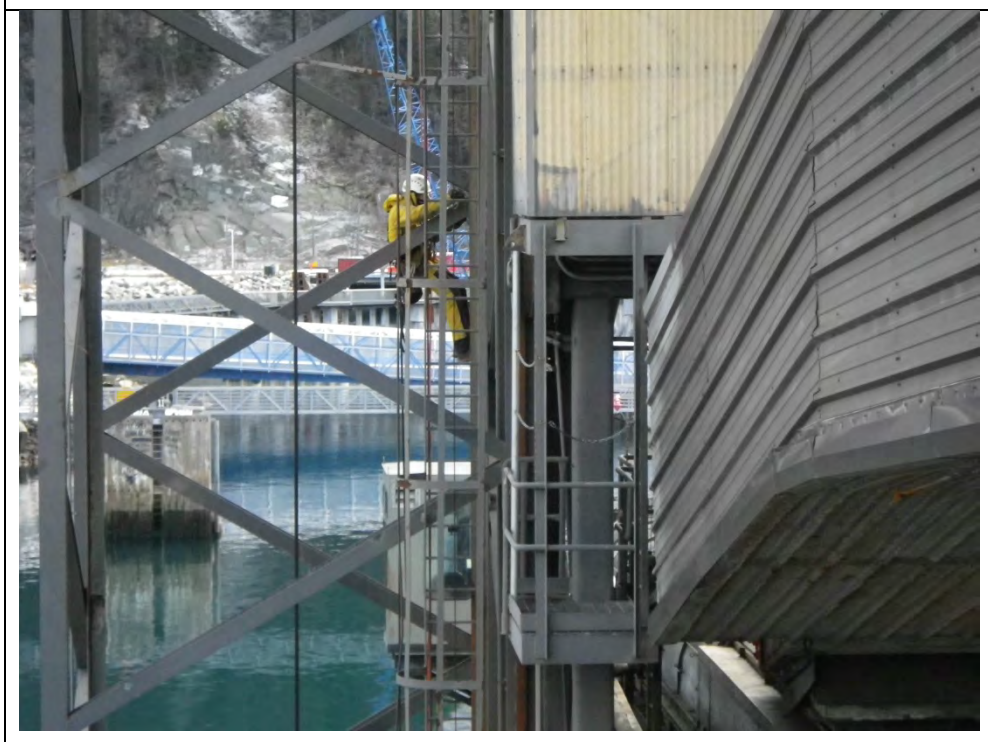
	**JKM-111313-IMGP0462** **LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER BOOM** **DESCRIPTION: LEFT SIDE SHUTTLE RUNWAY AND SUPPORT BEAM AND HANDRAIL; LEFT CARRIER WHEEL VISIBLE INSIDE CARRIER BEAM/RUNWAY**
	**JKM-111313-IMGP0461** **LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER BOOM** **DESCRIPTION: RIGHT SIDE SHUTTLE SUPPORT BEAM; RIGHT CARRIER WHEEL VISIBLE INSIDE CARRIER BEAM RUNWAY; NOTE WEAR ON BEAM FLANGE AND FLANGE BENT DOWNWARD TO SLOPE OF SHUTTLE WHEEL "TREAD"; FLANGE TO WHEEL FLANGE GAP EXCESSIVE.**
	**JKM-111313-IMGP0460** **LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER BOOM** **DESCRIPTION: RIGHT SIDE SHUTTLE SUPPORT BEAM; RIGHT CARRIER WHEEL VISIBLE INSIDE CARRIER BEAM RUNWAY; NOTE WEAR ON BEAM FLANGE AND FLANGE BENT DOWNWARD TO SLOPE OF SHUTTLE WHEEL "TREAD"; FLANGE TO WHEEL FLANGE GAP EXCESSIVE.**



JKM-111313-IMGP0459

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADERSHIP LOADER BOOM AND TRANSFER CONVEYOR

DESCRIPTION: BACK END OF SHIP LOADER AND CONVEYOR SHUTTLE WITH SHIPLOADER LOWERED TO LOWEST LEVEL. LEFT TOWER IS NORTH TOWER (INSHORE TOWER), RIGHT TOWER IS SOUTH TOWER (OFFSHORE TOWER); INSPECTOR AT SE COLUMN OF NORTH TOWER.



JKM-111313-IMGP0458

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER SHIP LOADER NORTH TOWER (INSHORE TOWER)

DESCRIPTION: EAI INSPECTOR EXAMINING TOWER FRAME MEMBERS AND CONNECTIONS.

JKM-111313-IMGP0457

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER BOOM

DESCRIPTION: SOUTH (RIGHTHAND) GIRDER AT EYE-BAR STAY CONNECTION AND BOOM SPLICE (BOLTED PLATES); DROP IN PROFILE OF GIRDER IS BEGINNING OF DISCHARGE END OF SHUTTLE AND DRIVE END OF CONVEYOR.

JKM-111313-IMGP0456

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: SHIP LOADER WITH BOOM DEPLOYED BUT RAISED TO TOP LEVEL OF RANGE; SOUTH SIDE (OFFSHORE) ELEVATION VIEW OF SHIPLOADER. EAI INSPECTORS VIEWING OPERATION OF SHIPLOADER BY SPOUT INSPECTOR FROM GANGWAY USED A BRIDGE ACROSS DAMAGE/MISSING SECTION OF ORE DOCK.

JKM-111313-IMGP0455

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: VIEW OF BASE OF SHIP LOADER AND ACCESS BRIDGE ACROSS DESTROYED SECTION OF ORE DOCK SOUTH OF SHIP LOADER.

JKM-111313-IMGP0454

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER BOOM

DESCRIPTION: BOTTOM FLANGE SPLICE PLATES ON NORTH (LEFT) GIRDER; FRAMING BETWEEN BOOM GIRDERS VISIBLE.

JKM-111313-IMGP0453

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER SHIP LOADER BOOM

DESCRIPTION: SPLICE PLATES ON NORTH (LEFT) GIRDER AND EYE BAR STAYS OF SHIP LOADER BOOM

JKM-111313-IMGP0452

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: SHIP LOADER BOOM HOISTING CAGE AND CONNECTION POINT OF TRANSFER CONVEYOR TO SHIP LOADER BOOM; HYDRAULIC LUFFING RAMS AND EYE BAR STAYS ALSO VISIBLE. SHIP LOADER BOOM AT LOWEST DEPLOYED POSITION

JKM-111313-IMGP0451

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: VIEW OF NORTH SIDE OF TRANSFER CONVEYOR AND MIDSPAN SUPPORT AND DRIVE TOWER.

JKM-111313-IMGP0450

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: VIEW OF NORTH SIDE OF SHIP LOADER, TRANSFER CONVEYOR, MIDSPAN SUPPORT AND DRIVE TOWER.

JKM-111313-IMGP0449

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: VIEW OF NORTH SIDE OF SHIP LOADER AND TRANSFER CONVEYOR

JKM-111313-IMGP0448

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: GANGWAY HANDLING JIB CRANE FAILED BOOM BRACKET

	**JKM-111313-IMGP0447** **LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER** **DESCRIPTION: GANGWAY HANDLING JIB CRANE FAILED BOOM BRACKET**
	**JKM-111313-IMGP0446** **LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER** **DESCRIPTION: GANGWAY HANDLING JIB CRANE FAILED BOOM BRACKET**
	**JKM-111313-IMGP0445** **LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER** **DESCRIPTION: INSPECTOR AT NW COLUMN OF NORTH TOWER; NOTE GANGWAY BOOM AND HOIST REMOVED.**

JKM-111313-IMGP0444

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: WEST SIDE OF SHIP LOADER INSPECTOR ON SE COLUMN OF NORTH TOWER. SHIP LOADER BOOM PARKED.

JKM-111313-IMGP0443

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: WEST SIDE OF SHIP LOADER INSPECTOR ON SE COLUMN OF NORTH TOWER. SHIP LOADER BOOM PARKED.

JKM-111313-IMGP0442

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: INSPECTOR ON SE COLUMN OF NORTH TOWER

JKM-111313-IMGP0441

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: SHIP LOADER POWER DISCONNECT IN MAIN MCC (MCC NO. 1) LOCKED OUT/TAGGED OUT

JKM-111313-IMGP0440

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: INSPECTOR ENTERING DOOR AT BASE OF TRANSFER CONVEYOR MID-SPAN SUPPORT AND DRIVE TOWER

JKM-111313-IMGP0439

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: SHIP LOADER AND TRANSFER CONVEYOR VIEWED FROM SHORE TO WEST OF THE ORE DOCK; INSPECTOR DESCENDING STAIWAY FROM DRIVE DECK TO BASE OF SUPPORT TOWER.

JKM-111313-IMGP0438

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: FRESH SNOW AT BASE OF SHIP LOADER; VIEW FROM NORTH TOWER TO SOUTH TOWER ALONG WEST SIDE OF SHIPLOADER TOWERS

JKM-111313-IMGP0437

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: NORTH SIDE OF NORTH TOWER (LOOKING SOUTH); BOOM PARKED. NOTE GUIDE WHEELS OF BOOM CAGE AT LEFT.

JKM-111313-IMGP0436

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER

DESCRIPTION: EAI INSPECTOR LOOKING DOWN FROM NORTH END OF HOIST DECK ON TOP OF SHIP LOADER TOWERS

Appendix 3

Ship Loader Boom Inspection Photos and Notes

SH-111213-29 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SHIP LOADER BOOM 12 SOUTH

DESCRIPTION: DIAGONAL DOWN TO 1/8-INCH THICK. 1/32-INCH SECTION LOSS TO MAIN WEB ALONG DIAGONAL WELD. SAME CONDITION AT 12 NORTH.

CONDITION STATE CS5

SH-111213-28 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SHIP LOADER BOOM 11 SOUTH V-BRACE

DESCRIPTION: DIAGONAL RUSTED THROUGH. SAME ON NORTH V-BRACE.

CONDITION STATE CS5

SH-111213-27 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SHIP LOADER BOOM 11 SOUTH INTERIOR

DESCRIPTION: BOTH WEBS HAVE 1/16-INCH LOSS AREA 8”X2” EACH

CONDITION STATE CS5

SH-111213-26 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SHIP LOADER BOOM 10 NORTH INTERIOR

DESCRIPTION: DIAGONAL WEB HAS 1/16-INCH REMAINING SECTION. MAIN GIRDER WEB HAS SECTION LOSS TO 1/8-INCH 10” TALL X 4” WIDE. TRANSVERSE WEB HAS SECTION LOSS TO 1/8-INCH 6”X6”.

CONDITION STATE CS5

SH-111213-25 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SHIP LOADER BOOM 10 SOUTH INTERIOR

DESCRIPTION: DIAGONAL WEB HAS 3/16-INCH REMAINING SECTION. MAIN GIRDER WEB & TRANSVERSE WEB HAS 1/16-INCH SECTION LOSS 4”X4” EACH.

CONDITION STATE CS5

SH-111213-24 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SHIP LOADER BOOM 9 NORTH INTERIOR

DESCRIPTION: DIAGONAL SECTION LOSS TO 1/8-INCH 4”X4” AREA. MAIN WEB SECTION LOSS TO 1/8-INCH 5”X5” AREA.

CONDITION STATE CS5

SH-111213-23 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SHIP LOADER BOOM 9 SOUTH INTERIOR

DESCRIPTION: DIAGONAL & MAIN GIRDER WEBS WITH SECTION LOSS TO 1/16-INCH IN 2 AREAS EACH 1”X5”.

CONDITION STATE CS5

SH-111213-22 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SHIP LOADER BOOM 8 SOUTH INTERIOR

DESCRIPTION: DIAGONAL RUSTED THROUGH. MAIN GIRDER WEB WITH SECTION LOSS TO 1/8-INCH I AREA 2”x6”. REMAINING WEB SECTION ON THE NORTH SIDE DIAGONAL IS 1/16-INCH (NOT RUSTED ALL THE WAY THROUGH)

CONDITION STATE CS5

SH-111213-21 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SHIP LOADER BOOM 7 SOUTH

DESCRIPTION: SECTION LOSS TO 1/16-INCH IN AREA 8”x8” IN WEB OF BOTH GIRDERS.

CONDITION STATE CS5

SH-111213-20 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SHIP LOADER BOOM STIFFENER 1-FOOT TOWARD WATER FROM SPLICE.

DESCRIPTION: HEAVY SECTION LOSS AT TRIAXIAL WELD TO 3/16-INCH IN AREA 2”X2”.

CONDITION STATE CS5

SH-111213-19 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SHIP LOADER BOOM STIFFENER 1-FOOT TOWARD WATER FROM SPLICE.

DESCRIPTION: HEAVY SECTION LOSS AT TRIAXIAL WELD TO 3/16-INCH IN AREA 2”X2”.

CONDITION STATE CS5

SH-111213-18 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SHIP LOADER BOOM SPLICE PLATE BETWEEN 6 & 7 NORTH EXTERIOR

DESCRIPTION: PACK RUST TO 7/8-INCH ON BOTTOM NEAR FLANGE ON WATER SIDE. MINIMAL ON DOCK/SHORE SIDE.

CONDITION STATE CS5

SH-111213-17 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SHIP LOADER BOOM SPLICE PLATE BETWEEN 6 & 7 NORTH INTERIOR

DESCRIPTION: PACK RUST TO 7/8-INCH ON BOTTOM NEAR FLANGE ON WATER SIDE. MINIMAL ON DOCK/SHORE SIDE.

CONDITION STATE CS4

SH-111213-16 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SHIP LOADER BOOM AT 7 NORTH

DESCRIPTION: TRANSVERSE GIRDER & AIN GIRDE SECTION LOSS TO 1/16-INCH OVER AREA 6”x6” TRANSVERSE GIRDERS & 4”X4” MAIN FLANGE

CONDITION STATE CS5

SH-111213-15 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SHIP LOADER BOOM SPLICE PLATE BETWEEN 6&7 NORTH

DESCRIPTION: EXTERIOR BOTTOM FLANGE HAS PACK RUST FORMING.

CONDITION STATE CS4

SH-111213-14 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SHIP LOADER BOOM SPLICE PLATE BETWEEN 6&7 NORTH

DESCRIPTION: EXTERIOR BOTTOM FLANGE HAS PACK RUST FORMING.

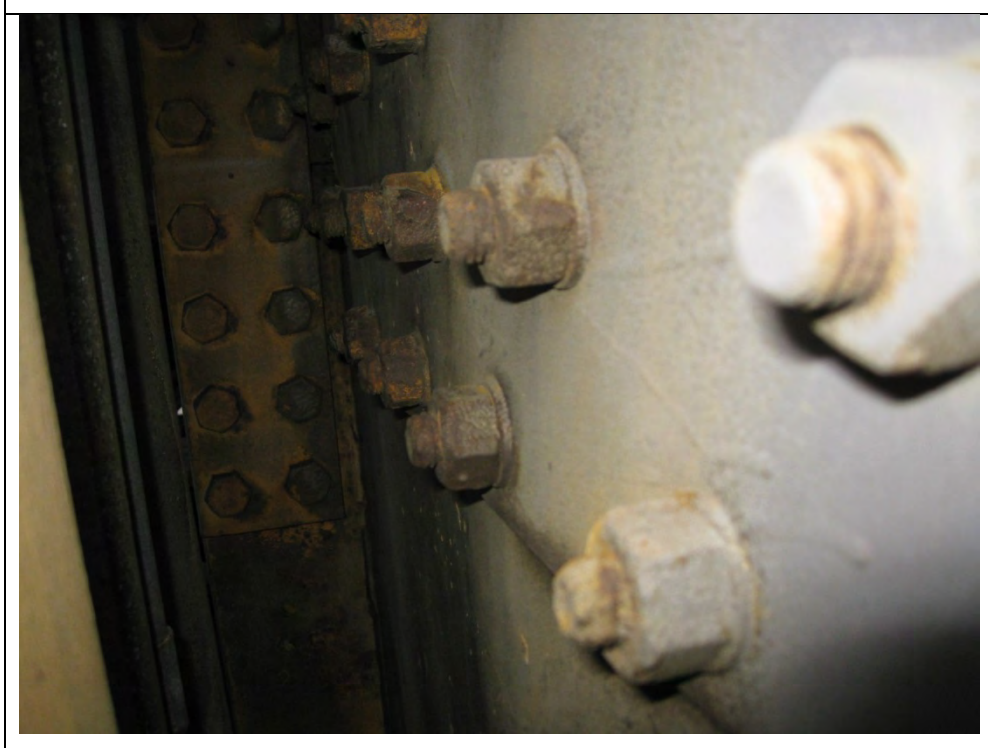
CONDITION STATE CS4

SH-111213-13 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SHIP LOADER BOOM SPLICE PLATE BETWEEN 6&7 NORTH

DESCRIPTION: INTERIOR NUTS RUSTED THROUGHOUT.

CONDITION STATE CS4



SH-111213-12 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SHIP LOADER BOOM SPLICE PLATE BETWEEN 6&7 NORTH

DESCRIPTION: INTERIOR NUTS RUSTED THROUGHOUT.

CONDITION STATE CS4

SH-111213-11 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SHIP LOADER BOOM SPLICE PLATE BETWEEN 6&7 NORTH

DESCRIPTION: INTERIOR NUTS RUSTED THROUGHOUT.

CONDITION STATE CS4

SH-111213-10 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SHIP LOADER BOOM SPLICE PLATE BETWEEN 6&7 NORTH

DESCRIPTION: PACK RUST TO 1-INCH ON BOTTOM OF SPLICE PLATE BOTH SIDES (STORE WATER SIDE WHEN DOWN. CAN'T MEASURE SECTION LOSS BUT LIKELY TO BE 1/12TH OF PACK THICKNESS. SIMILAR PACK RUST OUTBOARD WEB BUT ONLY ON SHORE SIDE!

CONDITION STATE CS4

SH-111213-09 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SHIP LOADER BOOM SPLICE PLATE BETWEEN 6&7 NORTH

DESCRIPTION: PACK RUST TO 1-INCH ON BOTTOM OF SPLICE PLATE BOTH SIDES (STORE WATER SIDE WHEN DOWN. CAN'T MEASURE SECTION LOSS BUT LIKELY TO BE 1/12TH OF PACK THICKNESS. SIMILAR PACK RUST OUTBOARD WEB BUT ONLY ON SHORE SIDE!

CONDITION STATE CS4

SH-111213-08 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: 6 CENTER

DESCRIPTION: 3/16-INCH LOSS TO V-BRACE WEBS, 3/32-INCH SECTION LOSS AT TRANSVERSE BRACE FLANGE FOR 36-INCH LENGTH.

CONDITION STATE CS5

SH-111213-07 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: 6 CENTER

DESCRIPTION: 3/16-INCH LOSS TO V-BRACE WEBS, 3/32-INCH SECTION LOSS AT TRANSVERSE BRACE FLANGE FOR 36-INCH LENGTH.

CONDITION STATE CS5

SH-111213-06 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: 6 SOUTH

DESCRIPTION: CS5 3/16 INCH SECTION LOSS IN AREA OF INTERSECTING WELDS, 12”x12” AREA TO 1/8-INCH LOSS IN AREA 8”X8”, LOCATION 6 IS JUST ABOVE SPLICE PLATE (ACTUALLY WITH BOOM DOWN THIS WOULD BE JUST OUTBOARD FROM SPLICE PLATE).

CONDITION STATE CS5

SH-111213-05 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: 5 SOUTH UNDERSIDE CHUTE

DESCRIPTION: CS4-5, HEAVY SECTION LOSS, HOLES THROUGHOUT.

CONDITION STATE CS4/5

SH-111213-04 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: 5 SOUTH

DESCRIPTION: SECTION LOSS 3/16-INCH OVER AREA 8”X8”. STIFFENER KNIFE EDGE NEAR FLANGE, SECTION LOSS TO STIFFENER, FLANGE & WEB. TYPICAL AT 3 & 4 & 5, NORTH SIDE AT 3, 4 & 5 SECTION LOSS ONLY 1/16-INCH TO 1/8-INCH

CONDITION STATE CS5

SH-111213-03 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: 5 SOUTH

DESCRIPTION: SECTION LOSS 3/16-INCH OVER AREA 8”X8”. STIFFENER KNIFE EDGE NEAR FLANGE, SECTION LOSS TO STIFFENER, FLANGE & WEB. TYPICAL AT 3 & 4 & 5, NORTH SIDE AT 3, 4 & 5 SECTION LOSS ONLY 1/16-INCH TO 1/8-INCH

CONDITION STATE CS4/5

SH-111213-02 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: 2 SOUTH

DESCRIPTION: CS 4 OR 5. SECTION LOSS 1/16-INCH TO 1/8-INCH IN AREA 6'X6". TYPICAL OF ALL INTERSECTIONS NORTH AND SOUTH SIDES. LOADER STORED IN UPRIGHT POSITION RESULTS IN TRAPPED WATER AT JOINTS.

CONDITION STATE CS3/4

SH-111213-01 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: 20-INCHES BELOW TOP OF BEAM ON SOUTH SIDE OF BOOM

DESCRIPTION: LOWER FLANGE OF BEAM/RUNWAY BENT 5/8-INCH OUT OF PLANE DUE TO ROLLER AT HEAD CHUTE (DISCHARGE END) OF SHIP LOADING CONVEYOR (TYPICAL).

CONDITION STATE CS3/4

LG-111213-01 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER BOOM

DESCRIPTION: SHUTTLE DISCHARGE SPOUT CARRIER RUNWAY/TRACK. NOTE BENT FLANGE IN I-BEAM TRACK AND COATING LOSS UNDER WHEEL.

	**LG-111213-02 SKAGWAY ORE TERMINAL SHIP LOADER** **LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER BOOM** **DESCRIPTION: SHUTTLE SLOT IN SHIP LOADER BOOM FOR DISCHARGE SPOUT. NOTE CARRIER RUNWAY/TRACK I-BEAM EACH SIDE OF SLOT. NOTE WEAR ON NORTH I- BEAM TRACK AND COATING LOSS UNDER WHEEL.**
	**LG-111213-03 SKAGWAY ORE TERMINAL SHIP LOADER** **LOCATION: SKAGWAY ORE TERMINAL SHIP LOADER BOOM** **DESCRIPTION: SHUTTLE SLOT IN SHIP LOADER BOOM FOR DISCHARGE SPOUT. NORTH CARRIER RUNWAY/TRACK I-BEAM, NOTE WEAR OF I- BEAM FLANGE (TRACK) AND WEB AND COATING LOSS ON TOP FLANGE, INSIDE BOTTOM FLANGE AND WEB.**

SH-111313-18 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SHIP LOADER TOWER S/NE FOOTING AREA GROUNDING CABLE

DESCRIPTION: 4 OF 7 STRANDS BROKEN. 3 OF 7 STRANDS BROKEN ON NW FOOTING.

CONDITION STATE CS5

SH-111313-17 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SHIP LOADER TOWER S/NW FOOTING

DESCRIPTION: FOOTING PLATE & WEB & FLANGES CS3 UNDER FAILED PAINT. HOLD DOWN BOLTS TOO SHORT FOR LOCK NUT.

CONDITION STATE CS3

SH-111313-16 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SHIP LOADER TOWER N BOOM STOP/PARKING STOOL

DESCRIPTION: HOLD DOWN NUTS WITH 95% SECTION LOSS! SOUTH BOOM STOP/PARKING STOOL IN SIMILAR CONDITION WITH 75% SECTION LOSS.

CONDITION STATE CS4/5

SH-111313-15 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SHIP LOADER TOWER N/SW FOOTING

DESCRIPTION:WEB CS4 IN 4”X4” AREA

CONDITION STATE CS4

SH-111313-14 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SHIP LOADER TOWER N/NE FOOTING

DESCRIPTION: HOLDOWN NUT NW IS CS4. PLATE IS CS3. N/NW HOLD DOWN (BASE) PLATE IS IN CS4 WITH FAILED JOINT AND SECTION LOSS 1/16-INCH.

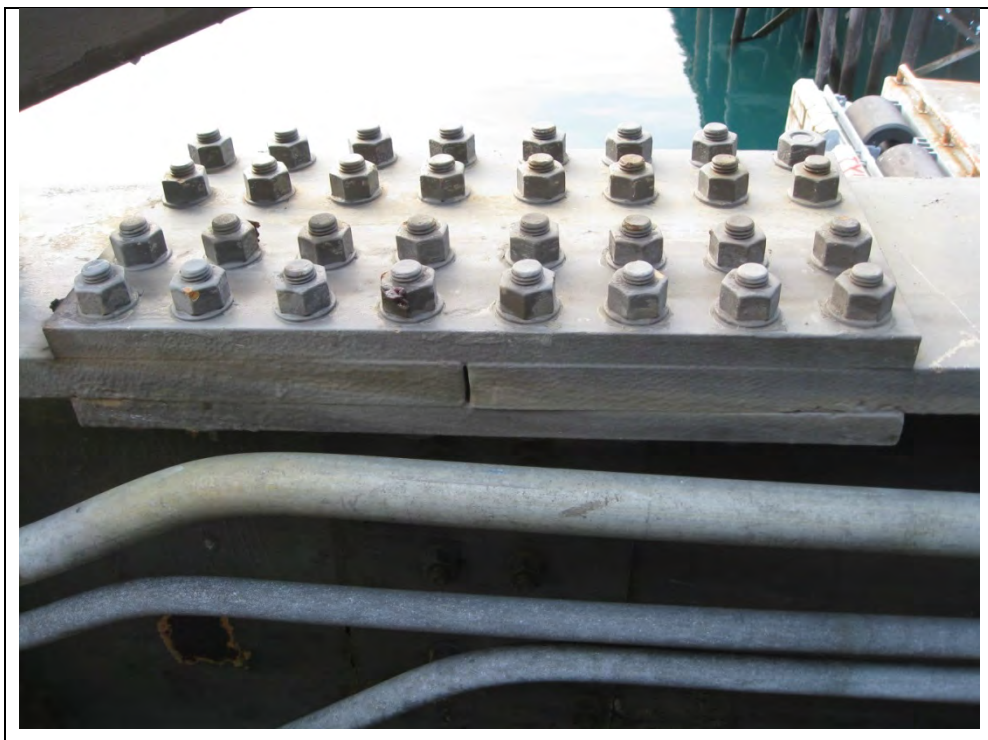
CONDITION STATE CS3/4

SH-111313-13 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SHIP LOADER BOOM SPLICE SOUTH EXTERIOR & TOP OF BOTTOM FLANGE,

DESCRIPTION: VIEW OF SPLICE PLATE CS2 SAVE FOR PACK RUST NEAR BOTTOM FLANGE NOTED IN PHOTOS 11/12/13,

CONDITION STATE CS2

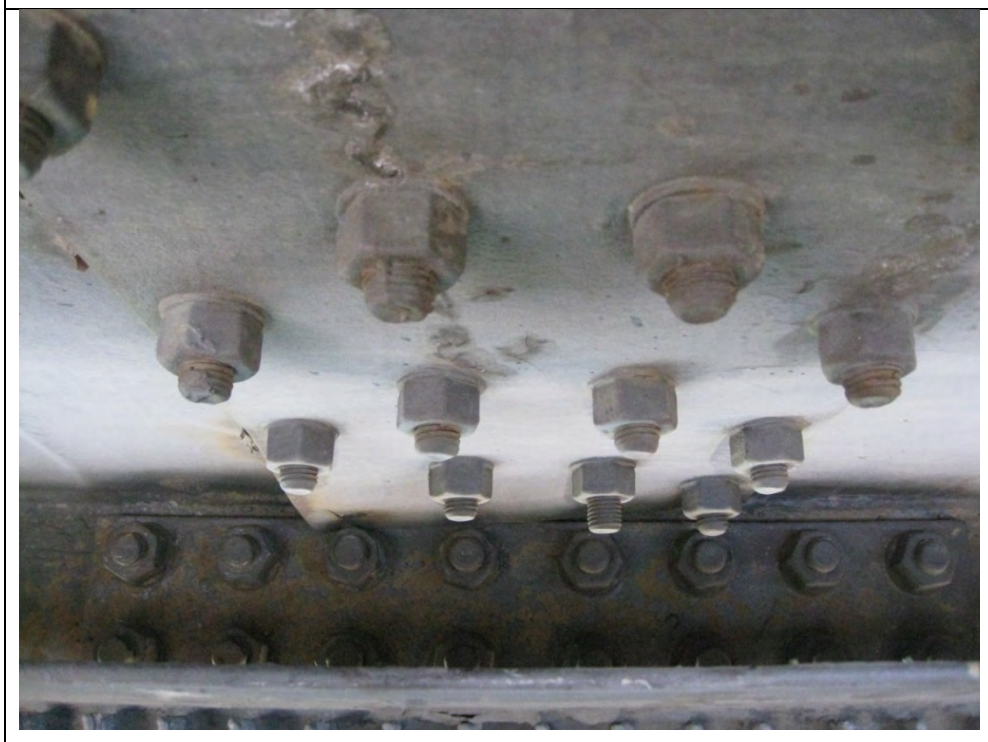


SH-111313-12 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SHIP LOADER BOOM GIRDER SPLICE TOP OF TOP FLANGE

DESCRIPTION: VIEW OF SPLICE PLATE CS2

CONDITION STATE CS2

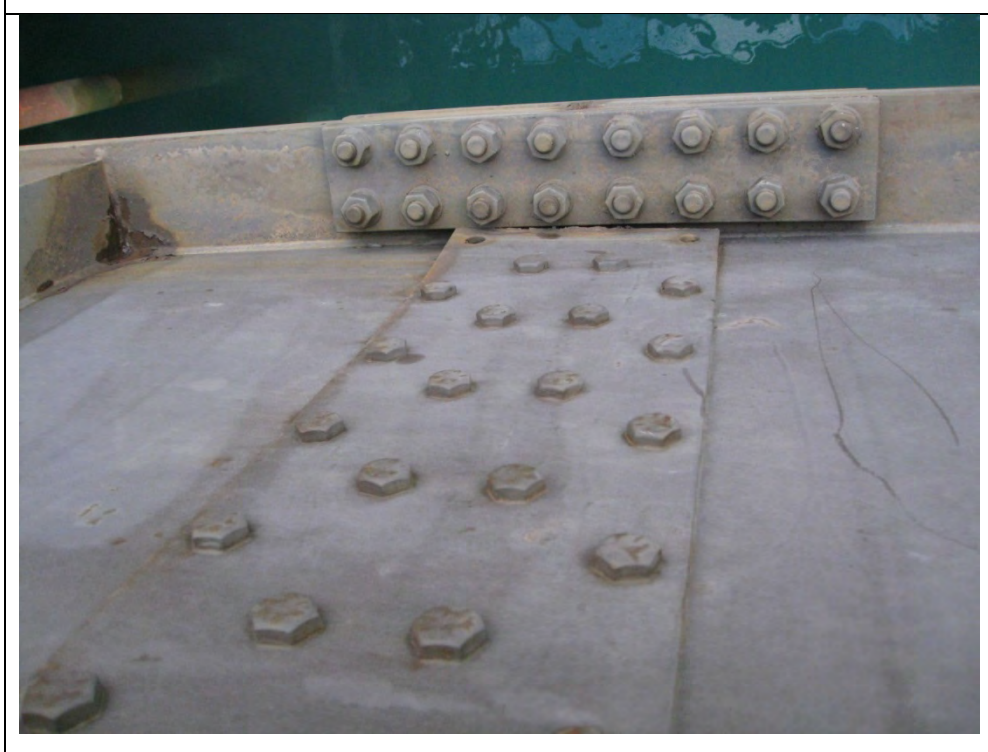


SH-111313-11 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SHIP LOADER BOOM SPLICE SOUTH INTERIOR

DESCRIPTION: VIEW OF SPLICE PLATE CS2 EXCEPT FOR PACK RUST NEAR LOWER FLANGE. SEE PHOTOS 11/12/13

CONDITION STATE CS2/3



SH-111313-10 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SHIP LOADER BOOM SPLICE NORTH EXTERIOR OF WEB AND TOP OF BOTTOM FLANGE

DESCRIPTION: VIEW OF SPLICE PLATES. CS2 EXCEPT FOR PACK RUST NEAR LOWER FLANGE. SEE PHOTOS 11/12/13

CONDITION STATE CS2/3

SH-111313-09 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SHIP LOADER BOOM SPLICE NORTH TOP

DESCRIPTION:VIEW OF GIRDER FLANGE SPLICE PLATE. CS2.

CONDITION STATE CS2

SH-111313-08 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SHIP LOADER BOOM SPLICE NORTH INTERIOR

DESCRIPTION:VIEW OF SPLICE PLATE , CS2 EXCEPT FOR PACK RUST NEAR LOWER FLANGE, SEE PHOTOS FROM 11/12/13.

CONDITION STATE CS2/3

SH-111313-07 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SHIP LOADER BOOM 2 NORTH INTERIOR

DESCRIPTION: HAND RAIL BASE HAS RUSTED THROUGH. VERY COMMON, 25% OF BASES ON BOOM HANDRAILS HAVE SIMILAR FAILURES. RUSTED FLANGE AT BOTTOM OF BEAM IS SHUTTLE RUNWAY AND RUSTED WEB IS WHERE SHUTTLE CARRIER WHEEL RUBS ON WEB.

CONDITION STATE CS3 SHUTTLE WHEEL RUNWAY

CONDITION STATE CS5 HANDRAIL

SH-111313-06 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SHIP LOADER 1 NORTH INTERIOR

DESCRIPTION: V-BRACE WEBS WITH REMAINING SECTION = 1/8-INCH AT WELD LINE

CONDITION STATE CS2/3

VIDEO

SH-111313-06 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SHIP LOADER BOOM LOWERING MOVIE

SH-111313-04 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SHIP LOADER WITH BOOM PARKED

DESCRIPTION: TOWERS WEST FACE

SH-111313-03 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SHIP LOADER BOOM 14 SOUTH OUTBOARD

DESCRIPTION: WEB OF DIAGONAL (CS5) IS 1/16-INCHREAR TOE OR BOTTOM OF WEB. 14 NORTH IS 3/16-INCH IN SAME LOCATION. MAIN GIRDER WEB & TRANSVERSE WEB BOTH HAVE SECTION LOSS TO 1/32-INCH GENERALLY (CS4)

CONDITION STATE CS 5

SH-111313-02 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SHIP LOADER BOOM 13 NORTH INBOARD

DESCRIPTION: WEB OF DIAGONAL BRACE SO THIN AS TO BE FUNCTIONALLY NON-EXISTENT. SAME ON 13 SOUTH INBOARD. CS5

CONDITION STATE CS5

SH-111313-01 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SHIP LOADER BOOM 13 SOUTH OUTBOARD

DESCRIPTION: TRANSVERSE & MAIN GIRDERS HAVE 1/16-INCH SECTION LOSS IN AREAS 2”X9” ALONG WELD SIMILAR BUT ONLY 1/32 TO 1/16-INCH LOSS ON 13 NORTH CS4/5

CONDITION STATE CS4/5

Appendix 4

Ship Loader North Guide Tower Inspection Photos and Notes

PF-111213-35 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: NORTH SHIP LOADER TOWER SW LEG WEST FACE #10 N/SW/W #10

DESCRIPTION: NSD

CONDITION STATE CS2

PF-111213-34 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: NORTH SHIP LOADER TOWER SW LEG SOUTH FACE #9 N/SW/S #9

DESCRIPTION: LIGHT PAINT FAILURE, LIGHT SURFACE RUST, NSD

CONDITION STATE CS2

PF-111213-33 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: NORTH SHIP LOADER TOWER SW LEG WEST FACE #8 N/SW/W #8

DESCRIPTION: POOLING WATER, LAMINAR RUST ABOUT 2/4-INCH, MINOR SECTION LOSS VISABLE ALONG EDGES ABOUT 1/8-INCH.

CONDITION STATE CS4/5

PF-111213-32 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: NORTH SHIP LOADER TOWER SW LEG SOUTH FACE #7 N/SW/S #7

DESCRIPTION: NSD

CONDITION STATE CS2

PF-111213-31 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: NORTH SHIP LOADER TOWER SW LEG WEST FACE #6 N/SW/W #6

DESCRIPTION: PSC 4 SMALL AREA RUST SCALE ABOUT ¼-INCH AREAS (MARKED IN PHOTO) WITH SECTION LOSS TO LEG WEB + FLANGE ABOUT 1/8-INCH 4”X8”

CONDITION STATE CS4

PF-111213-30 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: NORTH SHIP LOADER TOWER SW LEG WEST FACE #5 WEB STIFFENER N/SW/S #5

DESCRIPTION: PACK RUST ABOUT 3/8 INCH BETWEEN STIFFENER AND UNISTRUT

CONDITION STATE CS4

PF-111213-29 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: NORTH SHIP LOADER TOWER SW LEG SOUTH FACE #5 N/SW/S #5

DESCRIPTION: LOWER DIAGONAL HAS OUT OF PLANE BOND AT LEG CONNECTION ABOUT ½-INCH

CONDITION STATE CS4

PF-111213-28 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: NORTH SHIP LOADER TOWER SW LEG WEST FACE #4 N/SW/W/#4

DESCRIPTION: POOLING WATER – PCS 4 MODERATE RUST SCALE ABOUT 1/8-INCH IN AREA OF POOLING WATER. UNISTRUT FOR ELECTRICAL CONDUIT RUSTING OFF.

CONDITION STATE CS4/5

PF-111213-27 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: NORTH SHIP LOADER TOWER SW LEG SOUTH FACE #3 N/SW/S #3

DESCRIPTION: NSD AT DIAGONALS WEB STIFFFENER ON LEG HAS PAINT FAILURE LIGHT SURFACE RUST.

CONDITION STATE CS3

PF-111213-26 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: NORTH SHIP LOADER TOWER SW LEG WEST FACE #2 N/SW/W #2

DESCRIPTION: PCS 4 LOCALIZED TO WHERE WATER POOLS, MODERATE RUST SCALE ABOUT 1/8 INCH 2" TO 4" TALL 10" TO 12" LONG

CONDITION STATE CS4/5

PF-111213-25 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: NORTH SHIP LOADER TOWER SW LEG WEST FACE #0 N/SW/W #0

DESCRIPTION: PCS 3 ON HORIZONTAL RUST STAINING THROUGHOUT.

CONDITION STATE CS3

PF-111213-24 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: NORTH SHIP LOADER TOWER NW LEG WEST FACE #1

DESCRIPTION: VIEW BETWEEN DIAGONAL AND HORIZONTAL PCS 4 MODERATE RUST SCALE FLANGE + WEB

CONDITION STATE CS4/5

PF-111213-23 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: NORTH SHIP LOADER TOWER NW LEG WEST FACE #1 N/NW/W #1

DESCRIPTION: TOP SURFACE OFDIAGONAL WITH ADDED "FISH PLATE" VISIBLE PCS 3

CONDITION STATE CS3/4

PF-111213-22 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: NORTH SHIP LOADER TOWER NW LEG N FACE #2 INBOARD N/NW/N #2

DESCRIPTION: VIEW OF AREA OF SECTION LOSS TO FLANGE OF LEG ABOUT 2"X3"X1/8-INCH WITH RUST SCALE ABOUT 1/8-INCH.

CONDITION STATE CS4

PF-111213-21 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: NORTH SHIP LOADER TOWER NW LEG N FACE #2 INBOARD N/NW/N #2

DESCRIPTION: VIEW OF INBOARD SIDE #2 AMALL AREAS OD pcs 4 GENERAL PAINT FAILURE.

CONDITION STATE CS4

PF-111213-20 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: NORTH SHIP LOADER TOWER NW LEG WEST FACE #3 FROM ABOVE N/NW/W #3

DESCRIPTION: DRAIN HOLE PLUGGED WITH RUST AND PAINT DEBRIS, RUST SCALE ABOUT 1/8-INCH WEB AND FLANGES OF LEG AND DING 2" TO 5" HIGH.

CONDITION STATE CS4/5

PF-111213-19 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: NORTH SHIP LOADER TOWER NW LEG NORTH FACE #4 INBOARD N/NW/N #4

DESCRIPTION: WIEW OF LEG INBOARD AT LOWER WEB STIFFENER PCS4, SOME RUST SCALE

CONDITION STATE CS4

PF-111213-18 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: NORTH SHIP LOADER TOWER NW LEG NORTH FACE #4 INBOARD N/NW/N #4

DESCRIPTION: PCS 4 TO WEB + WEB STIFFENER. EXPOSED BASE METAL, SMALL AREAS OF MODERATE RUST SCALE ON INSIDE OF LEG ABOUT 3/16-INCH.

CONDITION STATE CS4

PF-111213-17 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: NORTH SHIP LOADER TOWER NW LEG WEST FACE #5 FROM BELOW DIAGONAL ON LEG N/NW/W #5

DESCRIPTION: PCS 4 EXPOSED BASE METAL ON WEB OF LEG, MODERATE SURFACE RUST

CONDITION STATE CS4

PF-111213-16 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: NORTH SHIP LOADER TOWER NW LEG WESST FACE #5 LOWER DIAGONAL

DESCRIPTION: VIEW OF SPLICE FROM BELOW PCS 4 SECTION LOSS TO BOLTS + NUTS AT SPLICE, LOCALIZED MODERATE SURFACE RUST ON WEB OF LOWER DIAGONAL.

CONDITION STATE CS4

PF-111213-15 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: NORTH SHIP LOADER TOWER NW LEG WEST FACE #5 N/NW/W #5

DESCRIPTION: POOLONG WATER BELOW SPLICE ON BASE OF DIAGONAL, RUST SCALE ABOUT ¼-INCH TO AREAS ON DIAGONAL WEB + FLANGE, NUTS +BOLT ENDS AT SPLICE, FLANGE AT SPLICE ON OUTBOARD SIDES APPEARS TO BE WIDER.

CONDITION STATE CS4/5

PF-111213-14 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: NORTH SHIP LOADER TOWER NW LEG NORTH FACE INBOARD LEG SPLICE

DESCRIPTION: PCS 4 LIGHT SURFACE RUST, LIGHT PITTING BOLT HEADS AND SPLICE PLATE

CONDITION STATE CS4

PF-111213-13 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: NORTH SHIP LOADER TOWER NW LEG NORTH FACE #6 SOUTH SIDE N/NW/N #6

DESCRIPTION: LOCALIZED PCS 4 AREASS OF EXPOSED BASE METAL AREAS ABOUT 4”X6”, LIGHT SURFACE RUST

CONDITION STATE CS4

PF-111213-12 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: NORTH SHIP LOADER TOWER NW LEG NORTH FACE #6 N/NW/N #6 SEE ALSO PHOTO F-111213-11 BELOW

DESCRIPTION: VIEW OFINBOARD SIDE OF LEG. MODERATE RUST SCALE ABOUT 3/16 INCH ON LEG FLANGES + WEB STIFFENER. LEG SPLICE JUST BELOW THIS LOCATION, UPPER DIAGONAL WELDED ON WEB AND TOP FLANGE ONLY, LOWER DIAGONAL HAS 2 BOLTS FOR CONNECTION.

CONDITION STATE CS4

PF-111213-11 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: NORTH SHIP LOADER TOWER NW LEG NORTH FACE #6 N/NW/N #6

DESCRIPTION: VIEW OFINBOARD SIDE OF LEG. MODERATE RUST SCALE ABOUT 3/16 INCH ON LEG FLANGES + WEB STIFFENER. LEG SPLICE JUST BELOW THIS LOCATION, UPPER DIAGONAL WELDED ON WEB AND TOP FLANGE ONLY, LOWER DIAGONAL HAS 2 BOLTS FOR CONNECTION.

CONDITION STATE CS4

PF-111213-10 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: NORTH SHIP LOADER TOWER NW LEG WEST FACE #7

DESCRIPTION: POOLING WATER (DRASIN HOLES IN WEBS CLOSED FROM BELOW) PCS 4 MODERATE SURFACE RUST AT WATER CONTACTING RUST SCALE ABOUT 3/16 INCH THICK.

CONDITION STATE CS4/5

PF-111213-09 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: NORTH SHIP LOADER TOWER NW LEG SOUTH FACE INBOARD #8 N/NW #8

DESCRIPTION: LOCAL AREAS OF EXPOSED BASE METAL, LIGHT SURFACE RUST, PCS 4 AREA ABOUT 6-INCHES x 10 INCHES.

CONDITION STATE CS4

PF-111213-08 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: NORTH SHIP LOADER TOWER NW LEG NORTH FACE #8 N/NW/N #8

DESCRIPTION: SMALL AREA OF PAINT FAILURE ON TOP SURFACE OF LOWER DIAGONAL, NOTE THAT OUTBOARD WEB STIFFENER ONLY WELDED ON TWO EDGES (INBOARD WELDED ON ALL THREE EDGES!)

CONDITION STATE CS2

PF-111213-07 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: NORTH SHIP LOADER TOWER NW LEG WEST FACE #9 N/NW/W #9

DESCRIPTION:VIEW OF INTERSECTING DIAGONALS, UPPER HAS LOCALIZED DCS 3 9”X24”, LIGHT SURFACE RUST.

CONDITION STATE CS3

PF-111213-06 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: NORTH SHIP LOADER TOWER NW LEG NORTH FACE #9

DESCRIPTION: VIEW OF IMPACT DAMAGE TO FLANGE OF LEG AT WEB STIFFENER,OUT OF PLAIN ABOUT 5/8-INCH X 2 INCHES.

CONDITION STATE CS1

PF-111213-05 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: NORTH SHIP LOADER TOWER NORTH WEST LEG WEST FACE #9 N/NW/W #9

DESCRIPTION: PCS 3, NOEXPOSED BASE METAL, RUST BLEED TYHROUGH, DRAIN HOLES ON EACH SIDE OF WEB, EAST SIDE PLUGGED)

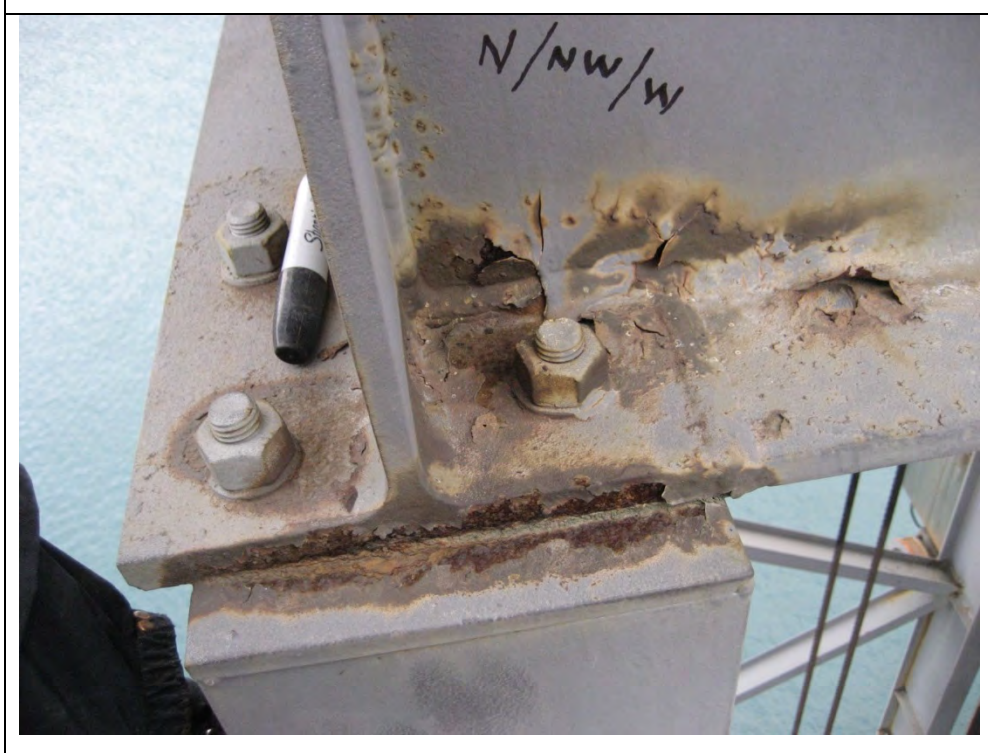
CONDITION STATE CS3

PF-111213-04 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: NORTH SHIP LOADER TOWER NORTH WEST LEG NORTH FACE #10 N/NW/N #10

DESCRIPTION: SOME FLAKING PAINT (PCS 3) LIGHT SURFACE RUST (ON SOUTH SIDE OF LEG)

CONDITION STATE CS3



PF-111213-03 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: NORTH SHIP LOADER TOWER NORTHWEST LEG WEST FACE N/NW/W

DESCRIPTION: PAINT CONDITION 3, LOCALIZED PAINT FAILURE EXPOSED BASE METAL, MODERATE SURFACE CORROSION

CONDITION STATE CS3

PF-111213-02 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: NORTH SHIP LOADER TOWER MACHINE DECK

DESCRIPTION: HOISTING EQUIPMENT COUNTERWEIGHT ROPE SHEAVES

CONDITION STATE CS N/A

PF-111213-01 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: NORTH SHIP LOADER TOWER MACHINE DECK

DESCRIPTION: CREW PHOTO AND HOISTING EQUIPMENT

CONDITION STATE CS N/A

PF-111313-31 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: NORTH SHIP LOADER TOWER WITH BOOM DEPLOYED

DESCRIPTION: VIEW LOOKING SOUTH ALONG ORE DOCK, TRANSFER CONVEYOR ARTICULATED SECTION AT RIGHT (WEST) OF SHIP LOADER TOWER.

CONDITION STATE CS N/A

PF-111313-30 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: NORTH SHIP LOADER TOWER SW LEG EAST SIDE #1 N/SW/S #1

DESCRIPTION: PCS 3 LIGHT SURFACE RUST. RUST STAINING.

CONDITION STATE CS3

PF-111313-29 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: NORTH SHIP LOADER TOWER SE LEG EAST SIDE #1 N/SE/S #1

DESCRIPTION: RUST STAINING, DRAIN HOLE OPEN, "FISH PLATE" VISIBLE ON DIAGONAL WEB, MINOR OUT OF PLANE BEND INBOARD FLANGE OF DIAGONAL.

CONDITION STATE CS3

PF-111313-28 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: NORTH SHIP LOADER TOWER NE LEG AT BASE

DESCRIPTION: NUTS AT NW CORNER LAMINAR RUST,MINOR SECTION LOSS

CONDITION STATE CS2/3

PF-111313-27 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: NORTH SHIP LOADER TOWER NE LEG NORTH SIDE #1 N/NE/N #1

DESCRIPTION: OUT OF PLANE BEND IN CROSS BRACE OF BOTTOM FLANGE ABOUT 1 ½-INCH X 8 INCHES LONG.

CONDITION STATE CS2

PF-111313-26 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: NORTH SHIP LOADER TOWER SE LEG SOUTH SIDE #2 N/SE/S #2

DESCRIPTION: LAMINAR RUST 4”X6” ABOUT 1/8-INCH THICK, MINOR SECTION LOSS TO FLANGE OF DIAGONAL

CONDITION STATE CS3

PF-111313-25 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: NORTH SHIP LOADER TOWER SE LEG EAST FACE #3 N/SE/S #3

DESCRIPTION: LAMINAR RUST ABOUT ¼-INCH WEB + FLANGES. INBOARD FLANGE DIAGONAL GOING TO KNIFE EDGE, ONE DRAIN HOLE PRESSOUT AND CLEAR

CONDITION STATE CS3/4

PF-111313-24 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: NORTH SHIP LOADER TOWER SE LEG SOUTH SIDE #4 N/SE/S #4

DESCRIPTION: INBOARD WEB STIFFENER ON LEG HAS LAMINAR RUST ABOUT ¼-INCH THICK ON LEG WEB + FLANGE, DIAGONAL AT #4 NSD.

CONDITION STATE CS3

PF-111313-23 IS A VIDEO OF SE LEG SOUTH SIDE #4

PF-111313-22 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: NORTH SHIP LOADER TOWER SE LEG EAST SIDE #5 N/SE/S #5

DESCRIPTION: VIEW AFTER LAMINAR RUST REMOVAL. FLANGE TO A KNIFE EDGE BELOW SPLICE, WEB SOUNDS PAPER THIN

CONDITION STATE CS4/5

PF-111313-21 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: NORTH SHIP LOADER TOWER SE LEG EAST SIDE #5 N/SE/S #5

DESCRIPTION: POOLING WATE, LAMINAR RUST ABOUT 3/8 =-INCH THICK ON FLANGE OF DIAGONAL

CONDITION STATE CS4/5

PF-111313-20 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: NORTH SHIP LOADER TOWER SE LEG MID HEIGHT SPLICE INBOARD SIDE N/SE/S MID LEG SPLICE

DESCRIPTION: PAINT FAILURE AND LAMINAR RUST ON PLATE OF SPLICE, RUST ABOUT 1/8 INCH THICK

CONDITION STATE CS3/4

PF-111313-19 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: NORTH SHIP LOADER TOWER SE LEG SOUTH FACE #6 N/SE/S #6

DESCRIPTION: MINOR PAINT FAILURE, LIGHT SURFACE RUST.

CONDITION STATE CS3

PF-111313-18 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: NORTH SHIP LOADER TOWER SE LEG EAST FACE #7 N/SE/E #7

DESCRIPTION: LAMINAR RUST ABOUT 3/8-INCH THICK OVER 10”X12” AREA. WEB + FLANGE IS OF BOTH LEG AND DIAGONAL

3/4

CONDITION STATE CS

PF-111313-17 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: NORTH SHIP LOADER TOWER SE LEG SOUTH FACE #8 N/SE/S #8

DESCRIPTION:PCS 2 NSD

CONDITION STATE CS2

PF-111313-16 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: NORTH SHIP LOADER TOWER SE LEG EAST FACE AT #9 N/SE/E #9

DESCRIPTION: LAMINAR RUST ABOUT 3/8-INCH TO WEB OF LEG AND FLANGE AT DIAGONAL.

CONDITION STATE CS3/4

PF-111313-15 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: NORTH SHIP LOADER TOWER SE LEG EAST FACE AT LEG TOP N/SE/E

DESCRIPTION: PACK RUST AABOUT 3/8-INCH BETWEEN LEG FLANGE AND ROLLER STOP (BOTH SIDES)

CONDITION STATE CS3/4

PF-111313-14 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: NORTH SHIP LOADER TOWER NE LEG EAST FACE #2 N/NE/N #2

DESCRIPTION: FROZEN POOLING WATER IN JOINT. PAINT CS4, LAMINAR RUST FORMING.

CONDITION STATE CS4

PF-111313-13 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: NORTH SHIP LOADER TOWER NE LEG NORTH FACE #3 N/NE/N #3

DESCRIPTION: SMALL AREAS OF PAINT FAILURE, LIGHT SURFACE RUST.

CONDITION STATE CS2

PF-111313-12 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: NORTH SHIP LOADER TOWER NE LEG EAST FACE #4 N/NE/E #4

DESCRIPTION: TWO TORCH-CUT DRAIN HOLES ABOUT 3/8 INCH DIAM IN WEB, LAMINAR RUST FORMING UNDER COATING, RUST STAINING.

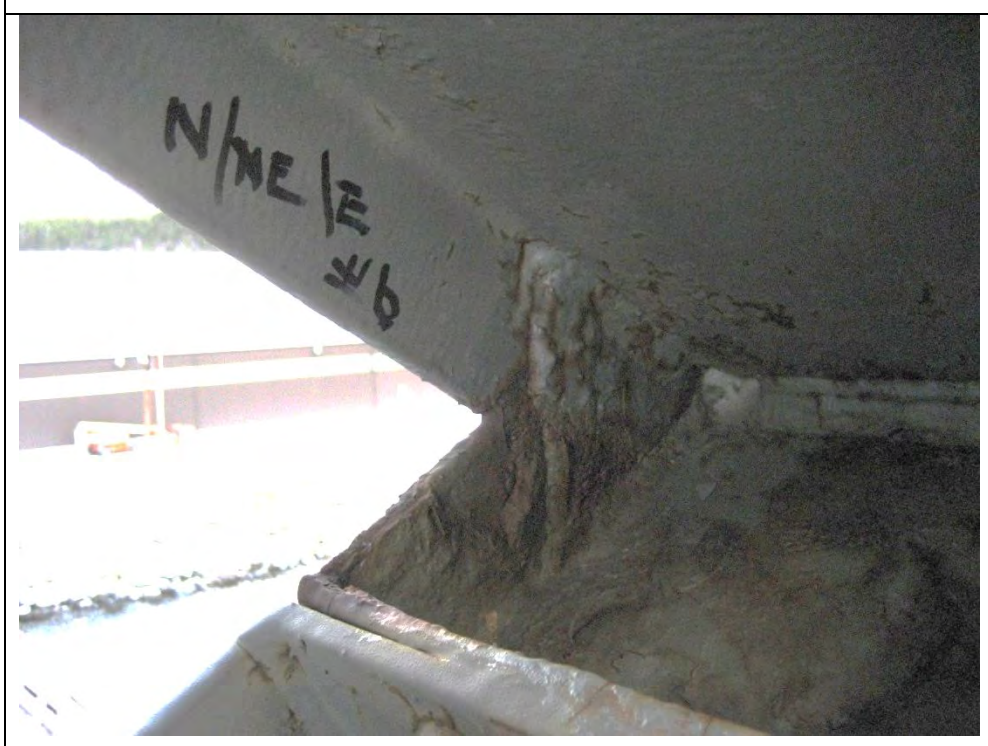
CONDITION STATE CS2

PF-111313-11 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: NORTH SHIP LOADER TOWER NE LEG NORTH FACE #5 N/NE/N #5

DESCRIPTION: MINOR SECTION LOSS BOUT 1/16 INCH X ½-INCH ON EDGE OF FLANGE FROM GANG WAY HANDLING JIB BOOM HOIST MOUNTING BRACKET (REMOVED) SMALL, AREA OF PAINT FAILURE, LIGHT SURFACE RUST.

CONDITION STATE CS2/3



PF-111313-10 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: NORTH SHIP LOADER TOWER NE LEG EAST FACE #6 N/NE/E #6

DESCRIPTION: LAMINAR RUST FORMING ON LOWER DIAGONAL ABOVE SPLICE. RUST STAINING.

CONDITION STATE CS3/4

PF-111313-09 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: NORTH SHIP LOADER TOWERNE LEG EAST FACE #6 N/NE/N #6

DESCRIPTION: DRAIN HOLES CLEAR, MINOR PAINT FAILURE, SOME RUST STAINING.

CONDITION STATE CS2

PF-111313-08 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: NORTH SHIP LOADER TOWER NE LEG #7 N/NE/N #7

DESCRIPTION: TORCHED HOLES IN LEG FLANGES BETWEEN WEB STIFFENERS ABOUT 2-INCH X 1-INCH EACH. LIGHT SURFATE RUST AROUND HOLES.

CONDITION STATE CS3/4

PF-111313-07 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: NORTH SHIP LOADER TOWER NE LEG NORTH FACE #7

DESCRIPTION:MINOR PAINT FAILURE, SOME RUST BLEED THROUGH

CONDITION STATE CS2.

PF-111313-06 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: NORTH SHIP LOADER TOWER NE LEG EAST FACE #8 – N/NE/E #8

DESCRIPTION: NO DRAIN HOLES. LAMINAR RUST ABOUT 3/16-INCH 2-INCHES HIGH 18-INCHES LONG WEB AND FLANGES OF LEG, LIGHT SURFACE RUST VISIBLE.

CONDITION STATE CS3

PF-111313-05 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: NORTH SHIP LOADER TOWER NE LEG NORTH FACE #9 –N/NE/N #9

DESCRIPTION:OUT OF PLAN BENDING ON FLANGE OF LEG BETWEEN WEB STIFFENERS ABOUT 5/8-INCH X 6-INCHES

CONDITION STATE CS2

PF-111313-04 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: NORTH SHIP LOADER TOWER NE LEG NORTH FACE #9

DESCRIPTION: FLAKING PAINT PCS3 EXPOES BACE METAL LIGHT SURFACE RUST (ON INBOARD SURFACES)

CONDITION STATE CS2

PF-111313-03 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: NORTH SHIP LOADER TOWER NE LEG EAST FACE TOP OF LEG

DESCRIPTION: PACK RUST ABOUT ¼-INCH BETWEEN TOP OF LEG AND FLOOR BEAM OF WORK DECK.

CONDITION STATE CS2

PF-111313-02 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: NORTH SHIP LOADER TOWER NE LEG – N/NE/E #10

DESCRIPTION: EAST FACE #10 RUST BLEED THROUGH NSD

CONDITION STATE CS2

PF-111313-01 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: NORTH SHIP LOADER TOWER NE LEG - N/NE/N #10

DESCRIPTION: TOP END OF LEG (COLUMN) NORTH SIDE SOME FLAKING PAINT, RUST BLEED THROUGH. NSD

CONDITION STATE CS2

Appendix 5

Ship Loader South Guide Tower Inspection Photos and Notes

JG-111213-25 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SOUTH SHIP LOADER TOWER W FACE AT SW CORNER PP# 3

DESCRIPTION: 2-INCHES WATER POOLING MODERATE TO HEAVY LSMINSR RUST FORMING UNDER FLAKING/PEELING PAINT. WAS ABLE TO CLEAN CEBRIS AND UNCLOG DRAIN.

CONDITION STATE CS4/5

JG-111213-24 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SOUTH SHIP LOADER TOWER COUNTER WEIGHT CABLE

DESCRIPTION: CABLE AT TURNBUCKLE, RUST BLEED OCCURING UNDER CABLE GREASE.

CONDITION STATE CS5

JG-111213-23 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SOUTH SHIP LOADER TOWER COUNTER WEIGHT CABLE

DESCRIPTION: CABLE AT TURNBUCKLE, RUST BLEED OCCURING UNDER CABLE GREASE.

CONDITION STATE CS4/5

JG-111213-22 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SOUTH SHIP LOADER TOWER COUNTER WEIGHT CABLE

DESCRIPTION: CABLE AT TURNBUCKLE, RUST BLEED OCCURING UNDER CABLE GREASE.

CONDITION STATE CS4/5

JG-111213-21 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SOUTH SHIP LOADER TOWER S FACE AT SW CORNER PP#4

DESCRIPTION: NSD

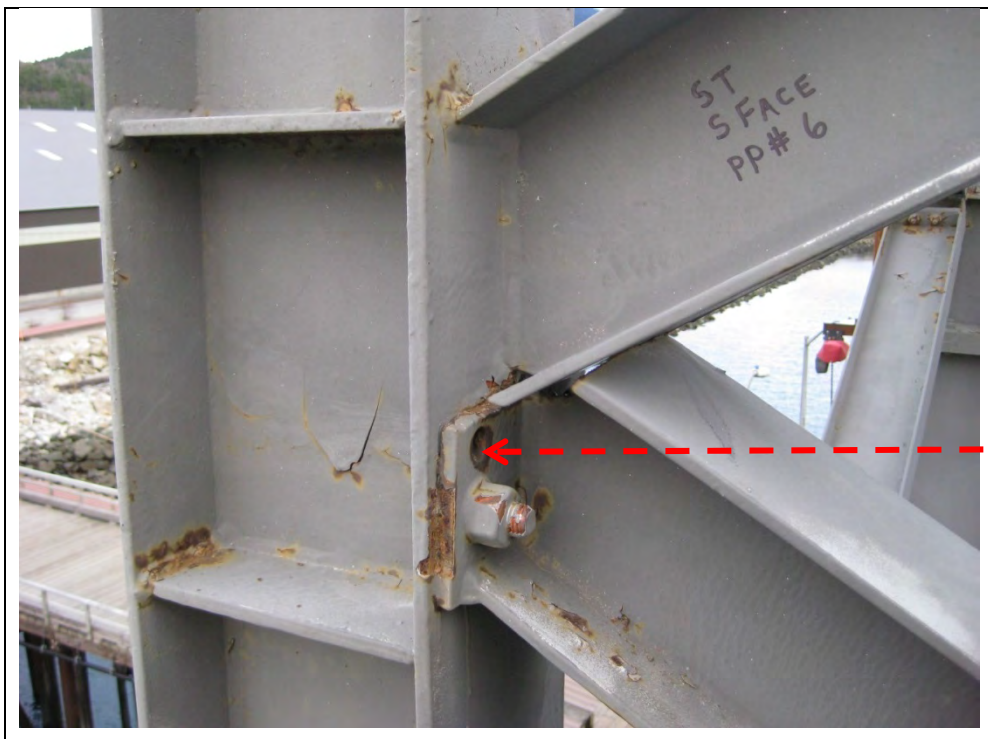
CONDITION STATE CS2

JG-111213-20 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SOUTH SHIP LOADER TOWER W FACE AT SW CORNER PP# 5

DESCRIPTION: TOP VIEW NO DRAING HOLE AT THIS LOCATION, HEAVY LAMINAR RUST FORMING UNDER PAINT (TYPICAL AT THESE LOCATIONS)

CONDITION STATE CS3/4



JG-111213-19 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SOUTH SHIP LOADER TOWER S FACE AT SW CORNER PP#6

DESCRIPTION: LOWER DIAGONAL BRACE IS BOLTED TO LEG. BOTH DIAGONAL BRACES HAVE RUST FORMING AROUND JOINT FACES AND WELDS (COMMON).

MISSING BOLT

CONDITION STATE CS3

JG-111213-18 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SOUTH SHIP LOADER TOWER W FACE AT SW CORNER PP# 7

DESCRIPTION: VIEW OF TORCH-CUT DRAINS AND COMMON SO FAR TO FIND MODERATE RUST FORMING UNDER PAINT AT THESE LOCATIONS.

CONDITION STATE CS3/4

JG-111213-17 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SOUTH SHIP LOADER TOWER SW FACE PP#7

DESCRIPTION: DEBRIS BUILT UP, PAINT IS CRACKING AND PEELING AWAY FROM STEEL WITH MODERATE RUST FORMING UNDER (TYPICAL)

CONDITION STATE CS3/4

JG-111213-16 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SOUTH SHIP LOADER TOWER SW CORNER LEG

DESCRIPTION: INBOARD JUST ABOVE S PANEL POINT #8 PAINT IS BUBBLED WITH HEAVY LAMINAR RUST FORMING UNDER.

CONDITION STATE CS4

JG-111213-15 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SOUTH SHIP LOADER TOWER S FACE PANEL POINT #8

DESCRIPTION:MODERATE RUST FORMED ON WELDS, NSD

CONDITION STATE CS2

JG-111213-14 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SOUTH SHIP LOADER TOWER SW FACE DIAGONAL BRACE BETWEEN PP 1O AND 9.

DESCRIPTION: COMMON TO FIND MODERATE RUST AND PAINT PEELING ALONG INBOARDFLANGES ON DIAGONALS.

CONDITION STATE CS2

JG-111213-13 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SOUTH SHIP LOADER TOWER SW PANEL POINT 10

DESCRIPTION:VIEW OF LIGHT LAMINAR RUST FORMING AT CONNECTION TO TOWER LEG.

CONDITION STATE CS2/3

JG-111213-12 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SOUTH SHIP LOADER TOWER SW PANEL POINT #10 SW FACE PP#10

DESCRIPTION:TOP SIDE OF DIAGONAL CONNECTION DIRT AND DEBRIS BUILTUP 8”X3” AREA WITH PAINT FAILURE EXPOSING STEEL THAT HAS MODERATE SURFACE RUST FORMING.

CONDITION STATE CS3/4

JG-111213-11

LOCATION: SOUTH SHIP LOADER TOWER SW PANEL POINT #10 SW FACE PP#10 (INCORRECTLY MARKED NW FACE)

DESCRIPTION:TOP SIDE OF DIAGONAL CONNECTION DIRT AND DEBRIS BUILTUP 8”X3” AREA WITH PAINT FAILURE EXPOSING STEEL THAT HAS MODERATE SURFACE RUST FORMING.

CONDITION STATE CS3/4

JG-111213-10 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SOUTH SHIP LOADER TOWER S PANEL POINT #11

DESCRIPTION: 1-INCH LONG AREA ALONG TOP WELD HAS MODERATE LAMINAR RUST FORMING UNDER PAINT AND LIGHT PITTING STARTING TO FORM. ELEMENT MISMARKED AS NT FACE)

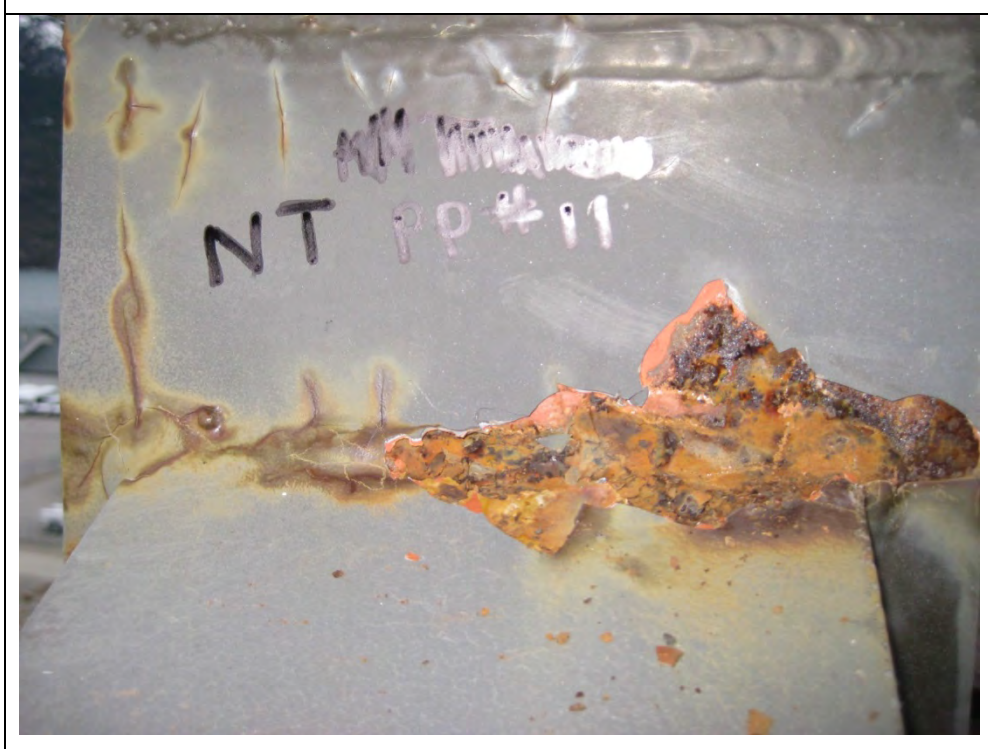
CONDITION STATE CS4

JG-111213-09 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SOUTH SHIP LOADER TOWER S PANEL POINT #11

DESCRIPTION: 1-INCH LONG AREA ALONG TOP WELD HAS MODERATE LAMINAR RUST FORMING UNDER PAINT AND LIGHT PITTING STARTING TO FORM. ELEMENT MISMARKED AS NT)

CONDITION STATE CS4



JG-111213-08 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SOUTH SHIP LOADER TOWER S PANEL POINT #11

DESCRIPTION: 1-INCH LONG AREA ALONG TOP WELD HAS MODERATE LAMINAR RUST FORMING UNDER PAINT AND LIGHT PITTING STARTING TO FORM. ELEMENT MISMARKED AS NT)

CONDITION STATE CS4

JG-111213-07 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SOUTH SHIP LOADER TOWER SW CORNER FACE OF MOTOR PLATFORM FLANGE (PHOTO MISMARKED AS NW FACE)

DESCRIPTION:WEST FACE TOP SIDE PLATFORM TOP SIDE OF FLANGE HAS 4”X12” AREA WITH PAINT PEELED AWAY AND MODERATE SURFACE RUST FORMING ON EXPOSED STEEL.

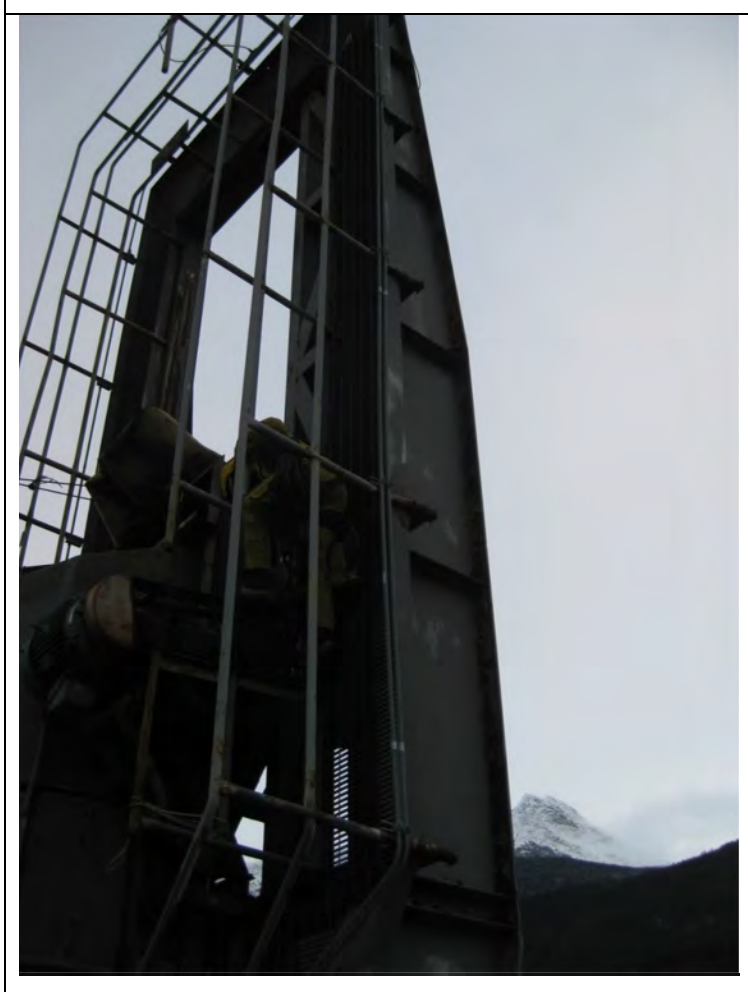
CONDITION STATE CS3

JG-111213-06 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SOUTH SHIP LOADER TOWER SHIP LOADER BOOM IN RAISE POSITION AS VIEWED FROM SOUTH TOWER.

DESCRIPTION: BOOM INSPECTOR RIGGING UP FOR BOOM INSPECTION

CONDITION STATE CS N/A



JG-111213-05 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SOUTH SHIP LOADER TOWER BOOM PARKED

DESCRIPTION: SOUTH FACE OF BOOM GIRDER SHOWING SHUTTLE SLOT FOR SPOUT, BOOM INSPECTOR RIGGING UP FOR BOOM INSPECTION

CONDITION STATE CS N/A

JG-111213-01 THRU 04 ARE GENERAL SCENERY PHOTOS, NOT INCLUDED IN CONDITION PHOTOS

JG-111313-19 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SOUTH SHIP LOADER TOWER EAST FACE AT PP#1

DESCRIPTION: FISH PLATE IN DIAGONAL TO STRENGTHEN WEB (HEAVY SECTION LOSS) DRAIN HOLE IS CLEAR, PAINT CS 4 WITH 1/64-INCH SECTION LOSS TO WEB AND FLANGES.

CONDITION STATE CS4

JG-111313-18 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SOUTH SHIP LOADER TOWER EAST FACE AT PP#5

DESCRIPTION: VIEW OF UNDERSIDE OF WEB. 6”X3” HOLE.

CONDITION STATE CS5

JG-111313-17 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SOUTH SHIP LOADER TOWER EAST FACE AT PP# 5

DESCRIPTION: DIAGONALBRACE AT SPLICE 3-INCHES OFF WATER POOLED ON TOP SIDEINBOARD FLANGE HAS HEAVY LAMINAR RUST WITH SECTION LOSS UP TO 1/8-INCH. WEB BETWEEN TOWER AND SPLICE HAS 6”X3” AREA WITH 100% SECTION LOSS.

CONDITION STATE CS5

JG-111313-16 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SOUTH SHIP LOADER TOWER EAST FACE AT PP# 5

DESCRIPTION: DIAGONALBRACE AT SPLICE 3-INCHES OFF WATER POOLED ON TOP SIDEINBOARD FLANGE HAS HEAVY LAMINAR RUST WITH SECTION LOSS UP TO 1/8-INCH. WEB BETWEEN TOWER AND SPLICE HAS 6”X3” AREA WITH 100% SECTION LOSS.

CONDITION STATE CS5

JG-111313-15 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SOUTH SHIP LOADER TOWER EAST FACE AT PP# 7

DESCRIPTION: WATER POOLING ON TOP SIDE OF DIAGONAL, HEAVY SECTION LOSS TO FLANGE ON INBOARD UP TO 1/8-INCH (COMMON TO FIND THIS TYPE CORROSION AT THESE LOCATIONS)

CONDITION STATE CS4/5

JG-111313-14 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SOUTH SHIP LOADER TOWER EAST FACE AT PP# 7

DESCRIPTION: WATER POOLING ON TOP SIDE OF DIAGONAL, HEAVY SECTION LOSS TO FLANGE ON INBOARD UP TO 1/8-INCH (COMMON TO FIND THIS TYPE CORROSION AT THESE LOCATIONS)

CONDITION STATE CS4/5

JG-111313-13 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SOUTH SHIP LOADER TOWER EAST FACE AT PP#6

DESCRIPTION: PACK RUST FORMING BETWEEN SEAM AT BOLTED CONNECTION. WATER POOLING ABOVE JOINT DUE TO NO DRAIN HOLE. HEAVY SECTION LOSS TO DIAGONAL FLANGES, UP TO 1/8 INCH.

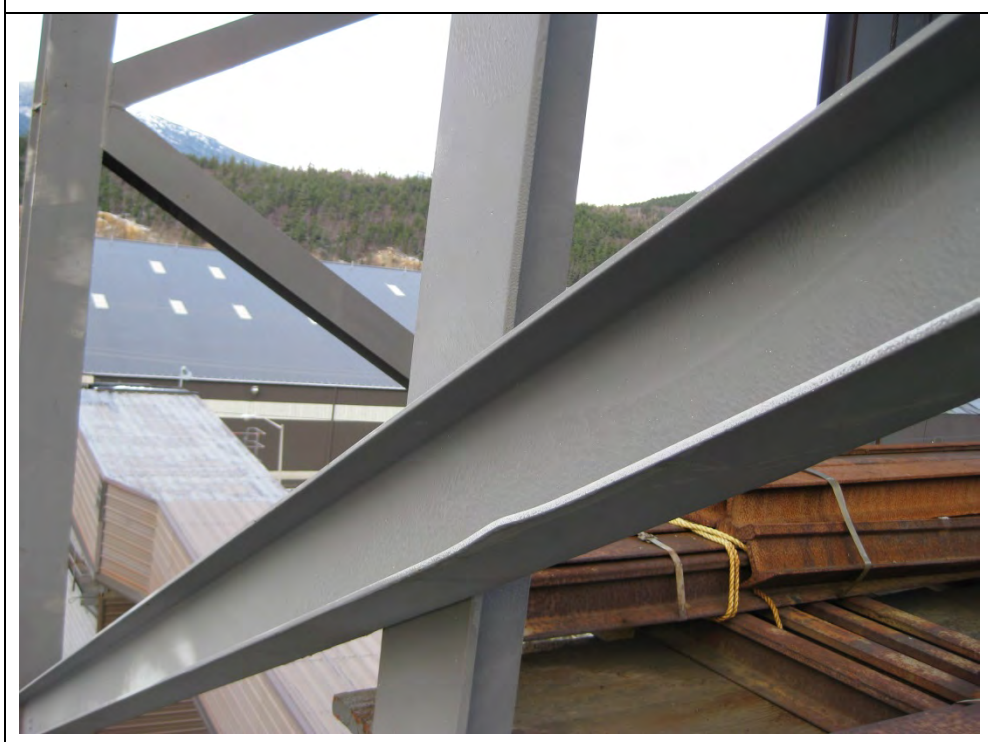
CONDITION STATE CS4/5

JG-111313-12 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SOUTH SHIP LOADER TOWER EAST FACE AT PP# 8

DESCRIPTION: OUTBOARD VERTICAL TOWER FLANGE IS BENT OUT OF PLANE UP TO ¼-INCH.

CONDITION STATE CS4



JG-111313-11 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SOUTH SHIP LOADER TOWER SOUTH FACE AT SE CORNER PP#9

DESCRIPTION: DIAGONAL BRACE BETWEEN PP#9 AND PP#?

3 FEET FROM PP#9 BOTTOM OUTBOARD FLANGE ISBENT OUT OF PLANE ½-INCH.

CONDITION STATE CS2

JG-111313-10 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SOUTH SHIP LOADER TOWEREAST FACE GIRDER BETWEEN NE AND SE TOWER LEGS

DESCRIPTION: MID SPSN 3'X2' AREA WITH HEAVY LAMINAR RUST FORMING BEHIND FAILED PAINT.

CONDITION STATE CS3

JG-111313-09 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SHIP LOADER BOOM VIEWED FROM ABOVE ON SOUTH TOWER

DESCRIPTION: BOOM STRUCTURE INSPECTION AT SHUTTLE SPOUT SLOT.

CONDITION STATE CS N/A

JG-111313-08 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SHIP LOADER BOOM VIEWED FROM ABOVE ON SOUTH TOWER

DESCRIPTION: BOOM STRUCTURE INSPECTION AT SHUTTLE SPOUT SLOT. NOTE RUSTED FLANGE AND WEB ON LEFT OF OPENING THAT IS CAUSED BY SHUTTLE WHEEL RUBBING.

CONDITION STATE CS N/A

JG-111313-07 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SOUTH SHIP LOADER TOWER COUNTER WEIGHT LIFT CABLE CONNECTION TO PULLEY AT TOP PLATFORM

DESCRIPTION: HEAVY CORROSION WITH SECTION LOSS AT THIMBLE.

CONDITION STATE CS5

JG-111313-06 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SOUTH SHIP LOADER TOWER COUNTER WEIGHT LIFT CABLE CONNECTION TO PULLEY AT TOP PLATFORM

DESCRIPTION: HEAVY CORROSION WITH SECTION LOSS AT THIMBLE.

CONDITION STATE CS5

JG-111313-05 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SOUTH SHIP LOADER TOWER W FACE AT NW CORNER PP#2

DESCRIPTION: HEAVY LAMINAR RUST WITH SECTION LOSS TO INBOARD FLANGE UP TO 1/8-INCH (COMMON TO FIND CORROSION AT THESE LOCATIONS)

CONDITION STATE CS4/5

JG-111313-04 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SOUTH SHIP LOADER TOWER W FACE AT NW CORNER AT PP#8

DESCRIPTION: WATER IS POOLING ON TOP[SIDE OF DIAGONAL BRACE. SECTION LOSS TO WEN ON TOWER UP TO 1/16-INCH. 12-INCH OUT FROM TOWER FLANGESS HAVE UP TO ¾-INCH SECTION LOSS. HEAVY CORROSION AT THIS PANEL POINT.

CONDITION STATE CS4/5

JG-111313-03 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SOUTH SHIP LOADER TOWER WEST FACE AT NW CORNER

DESCRIPTION: CABLES CONNECTED TO BOOM HOIST PLATFORM HAS HEAVY CORROSION WITH BROKEN STRANDS JUST UNDER THIMBLE SOCKET FITTING.

CONDITION STATE CS5

JG-111313-02 SKAGWAY ORE TERMINAL SHIP LOADER

LOCATION: SOUTH SHIP LOADER TOWER W FACE AT NW CORNER LEG PP# 10

DESCRIPTION: HEAVY RUST SCALE/LAMINAR RUST AT WELDS AND BOLTED CONNECTIONS ¼-INCH OF PACK RUST FORMING BETWEEN BOLTED CONNECTIONS.

CONDITION STATE CS4/5

JG-111313-01 SKAGWAY ORE TERMINAL SHIP LOADER

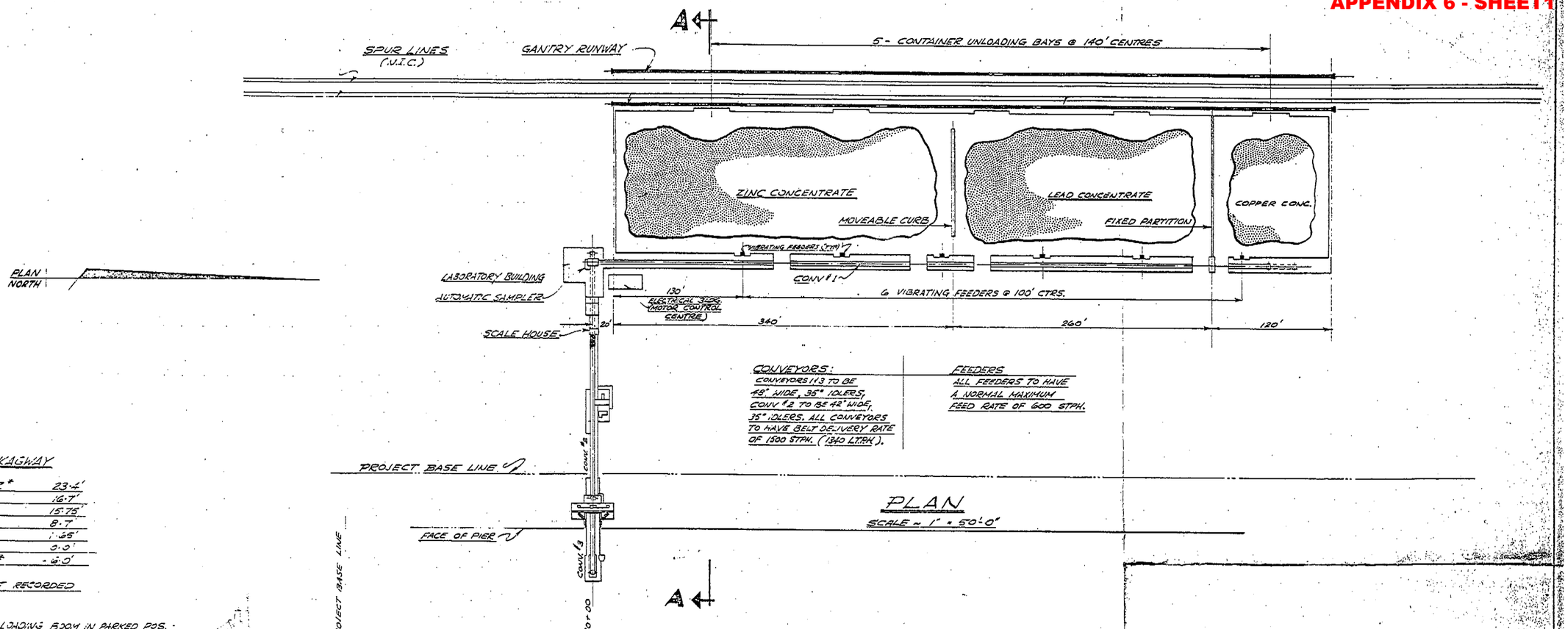
LOCATION: SOUTH SHIP LOADER TOWER W FACE AT NW CORNER LEG

DESCRIPTION: WEB ABOVE NW LEG HAS A 1 FOOT BY 2 FOOT AREA WITH 100% PAINT FAILURE WITH HEAVY LAMINAR RUST FORMING AND SECTION LOSS TO WEB.

CONDITION STATE CS4/5

Appendix 6

Ship Loader Reference Drawings



DRAWING REDUCED TO 45% OF ORIGINAL SIZE

SOT03-1969-AB-2555-GL-1, Site Plan & Elevation

STATE OF ALASKA
No. 13386
REGISTERED PROFESSIONAL ENGINEER

PACIFIC AND ARCTIC RAILWAY AND NAVIGATION COMPANY
ORE HANDLING TERMINAL -- PHASE II
SKAGWAY ALASKA

PREPARED BY:
WRIGHT ENGINEERS LIMITED
VANCOUVER — CANADA
REFERENCE: 528 100 101

TIPPETTS - ABBETT - McCARTHY - STRATTON
ENGINEERS AND ARCHITECTS
Seattle New York

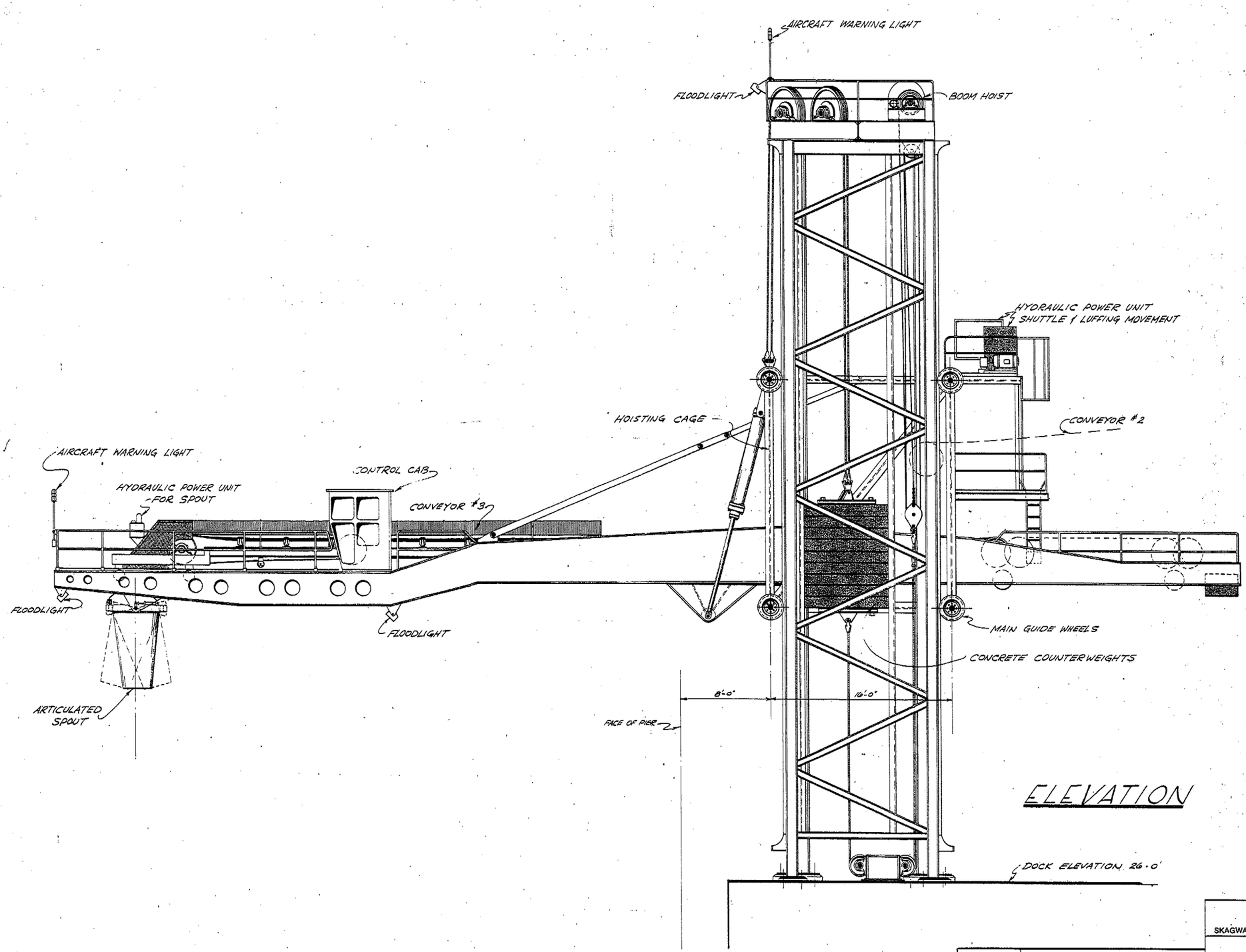
SITE PLAN & ELEVATION

DRAWN BY HLF
DATE MAY 1968
SCALE AS NOTED

DESIGNED BY
CHECKED BY

NO. BY DATE REVISION

12/15/2013



ELEVATION

DRAWING REDUCED TO 45% OF ORIGINAL SIZE

SOT03-1969-AB-2555-GL-2, Shiploader - General Arrangement Side Elevation

STATE OF ALASKA — No. 49TH — No. 1398-E — REGISTERED PROFESSIONAL ENGINEER

PROFESSIONAL ENGINEER OF M. LUCIER BRITISH COLUMBIA ENGINEER

PACIFIC AND ARCTIC RAILWAY AND NAVIGATION COMPANY
ORE HANDLING TERMINAL -- PHASE II
SKAGWAY ALASKA

TIPPETTS - ABBETT - McCARTHY - STRATTON
ENGINEERS AND ARCHITECTS
Seattle New York

PREPARED BY:
WRIGHT ENGINEERS LIMITED
VANCOUVER——CANADA

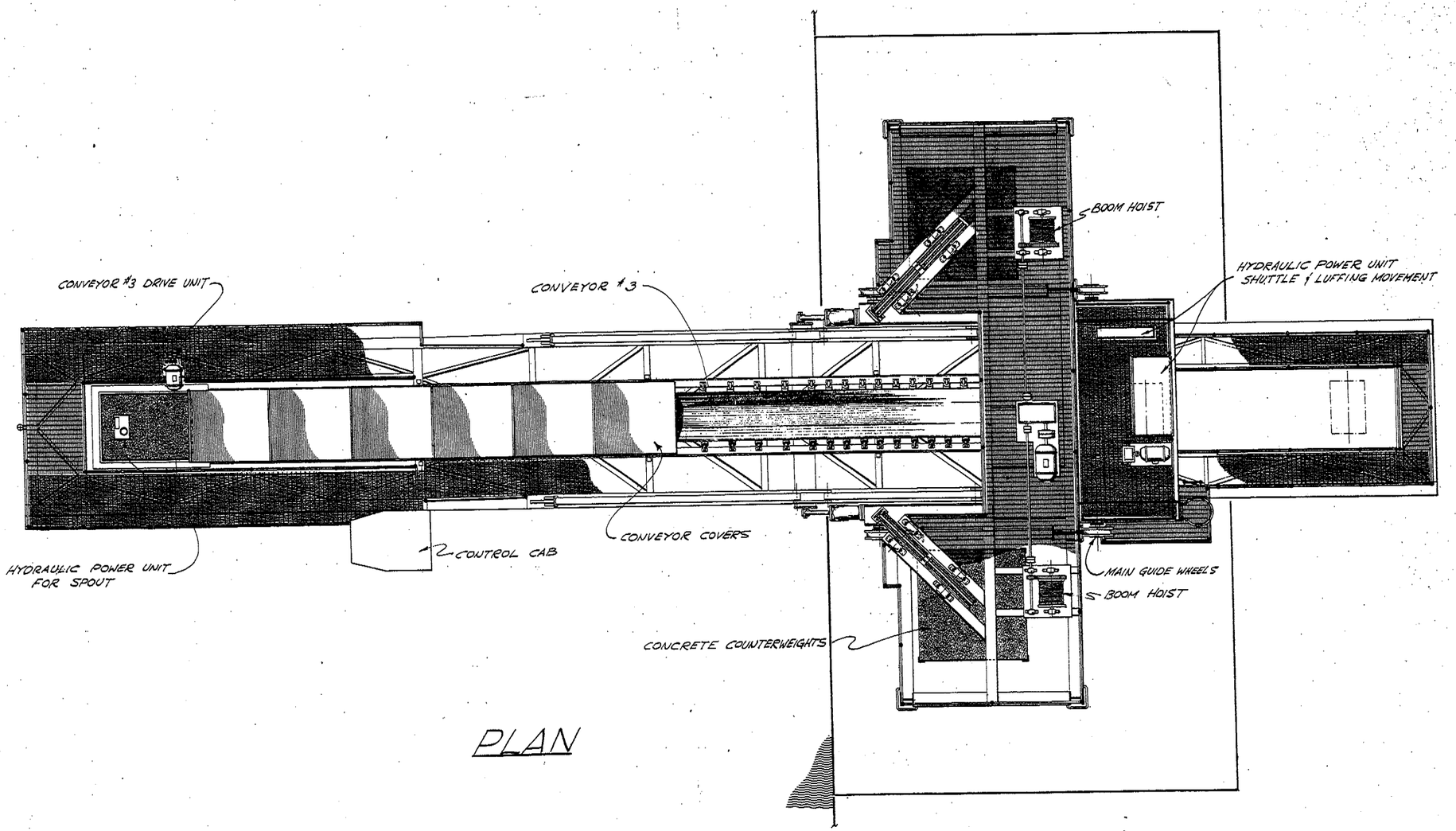
REFERENCE: 528 480 101

NO.	BY	DATE	REVISION

DESIGNED BY G.N.
CHECKED BY RHF

SHIPLOADER
GENERAL ARRANGEMENT
SIDE ELEVATION

DRAWN BY HOLT
DATE MAY 1968
SCALE 1/8"=1'-0"
DRAWING NUMBER 2516/2613



PLAN

DRAWING REDUCED TO 45% OF ORIGINAL SIZE

SOT03-1969-AB-2555-GL-3, Shiploader - General Arrangement Plan

STATE OF ALASKA No. 4918 REGISTERED PROFESSIONAL ENGINEER

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA

PACIFIC AND ARCTIC RAILWAY AND NAVIGATION COMPANY
ORE HANDLING TERMINAL -- PHASE II
SKAGWAY ALASKA

TIPPETTS - ABBETT - McCARTHY - STRATTON
ENGINEERS AND ARCHITECTS
Seattle New York

PREPARED BY:
WRIGHT ENGINEERS LIMITED
VANCOUVER——CANADA

REFERENCE: 528 | 480 | 102

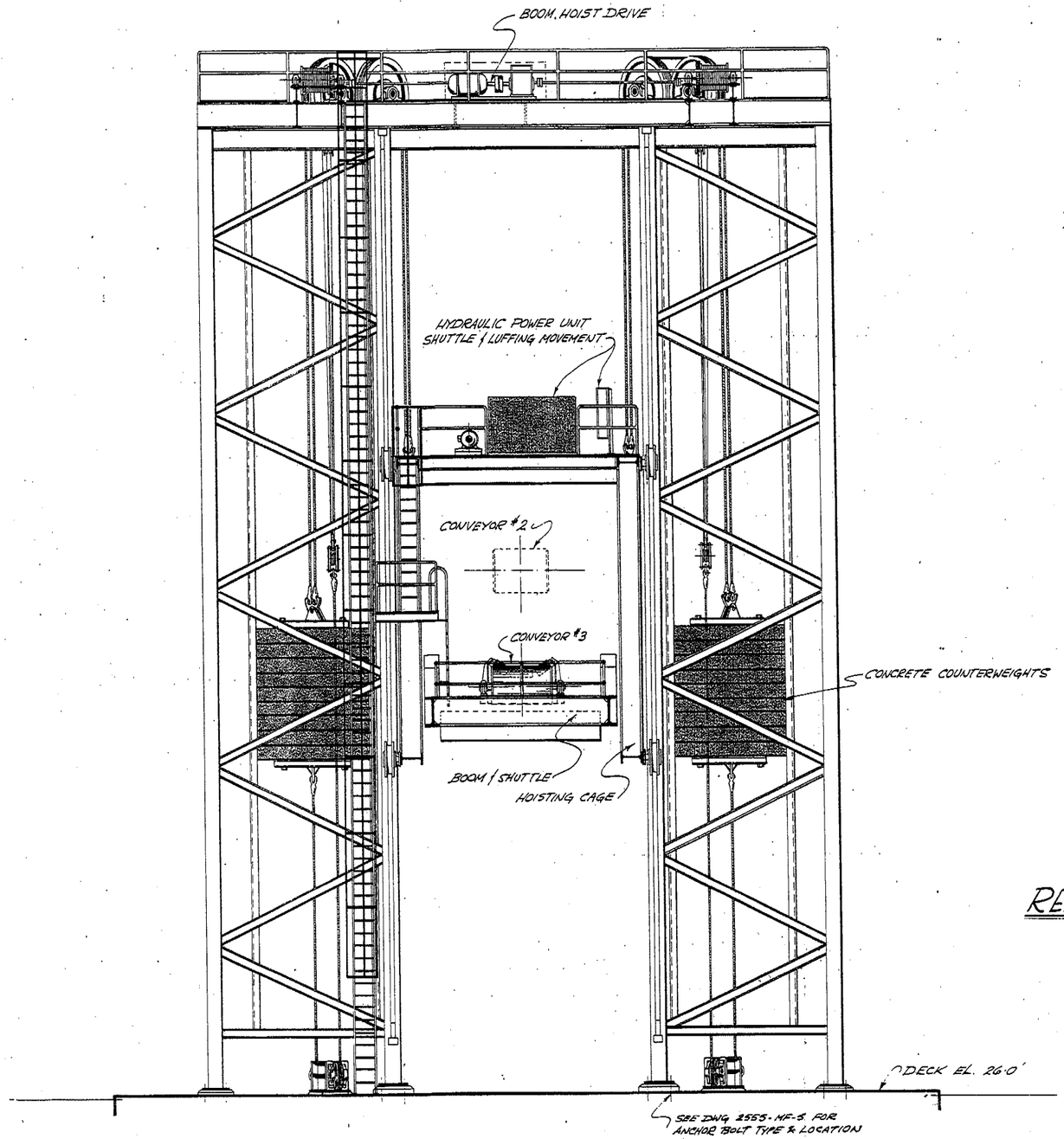
NO.	BY	DATE	REVISION

DESIGNED BY LN
CHECKED BY TAHE

SHIPLOADER
GENERAL ARRANGEMENT
PLAN

DRAWN BY: HOLT
DATE: MAY 1968
SCALE: 1/4"=1'-0"
2555 GL 3

12/16/2013



REAR ELEVATION

DRAWING REDUCED TO 45% OF ORIGINAL SIZE

SOT03-1969-AB-2555-GL-4, Shiploader - General Arrangement Rear Elevation

STATE OF ALASKA — REGISTERED PROFESSIONAL ENGINEER

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA

PACIFIC AND ARCTIC RAILWAY AND NAVIGATION COMPANY
ORE HANDLING TERMINAL -- PHASE II
SKAGWAY ALASKA

PREPARED BY: WRIGHT ENGINEERS LIMITED
VANCOUVER——CANADA
REFERENCE: 528 480 103

NO.	BY	DATE	REVISION

DESIGNED BY LCW
CHECKED BY AHF

TIPPETTS - ABBETT - McCARTHY - STRATTON
ENGINEERS AND ARCHITECTS
Seattle New York

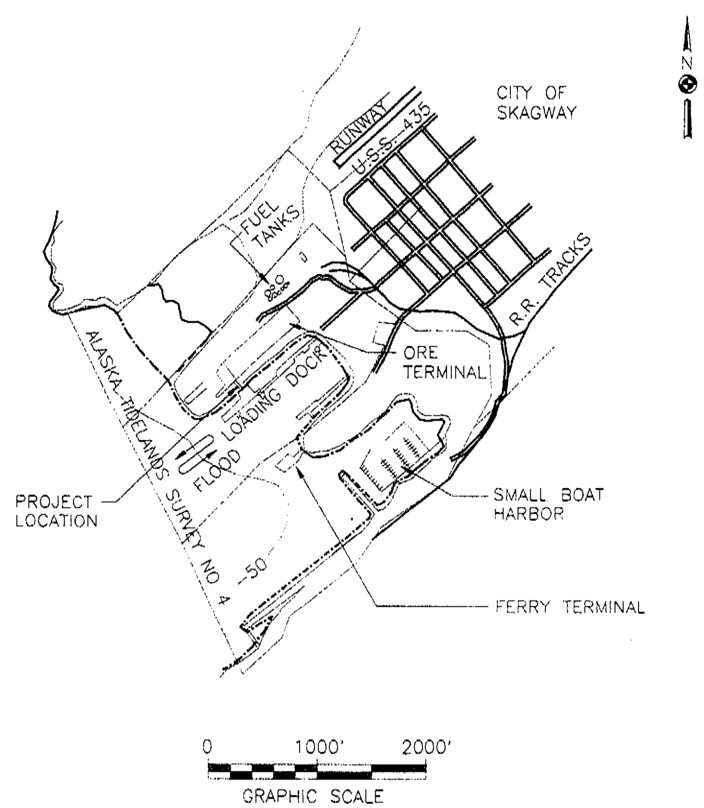
SHIPLOADER
GENERAL ARRANGEMENT
REAR ELEVATION

DRAWN BY AGT
DATE: MAY 1968
SCALE: 1/4" = 1'-0"
DRAWING NUMBER 2555-GL-4

12/6/2013

LOCATION MAP

VICINITY MAP



INDEX

ABBREVIATIONS

BOT.	BOTTOM
C.G.	CENTER OF GRAVITY
CLR	CLEAR
℄	CENTERLINE
CONC.	CONCRETE
CONT.	CONTINUOUS
DTL.	DETAIL
EA.	EACH
E.W.	EACH WAY
EXIST.	EXISTING
F.S.	FAR SIDE
HORIZ	HORIZONTAL
MAX.	MAXIMUM
M.L.L.W.	MEAN LOWER LOW WATER
M.I.	MALLABLE IRON
NO.	NUMBER
N.S.	NEAR SIDE
O.C.	ON CENTER
REINF	REINFORCEMENT
ℙ	PLATE
SP.	SPACE
STA.	STATION
STL.	STEEL
TEN.	TENSION OR TENSIONING
TYP.	TYPICAL
WWM	WELDED WIRE MESH

GENERAL NOTES

A. CONCRETE

1. MIXING AND PLACING OF CONCRETE AND SELECTION OF MATERIALS SHALL BE IN ACCORDANCE WITH THE AMERICAN CONCRETE INSTITUTE 318–89.
2. ALL REINFORCING STEEL SHALL BE NEW BILLET STOCK. ASTM A–615. GRADE 60. UNLESS OTHERWISE NOTED.
3. MINIMUM CLEAR COVER FOR REINFORCEMENT SHALL BE 2 INCHES FOR BARS UP TO #7, AND 2 1/2" FOR #8 OR LARGER UNLESS OTHERWISE NOTED.
4. CAST IN PLACE PROPERTIES

28 DAY COMPRESSIVE STRENGTH	3500 PSI
MAXIMUM AGGREGATE SIZE	3/4"
SLUMP	1–4

B. TENDONS

MAINTAIN STRESS SYMMETRY DURING JACKING.
JACKING STRESS 0.94(0.95)FPY = 205 KSI (5% ASSUMED ANCHOR FRICTION)
LONG TERM LOSSES = 25.0 KSI
FINAL PRESTRESS REQUIRED AT MIDSPAN
SHIP LOADER PLATFORM
ROW NO. 1 = 1140 KIPS
ROW NO. 2 = 315 KIPS
CONVEYOR PLATFORM
ROW NO. 1 = 500 KIPS

C. STRANDS

ALL PRESTRESSING STRANDS SHALL HAVE A CROSS–SECTIONAL AREA OF 0.153 IN^2

DESIGN BE DRAWN CW CHECK DHA APPROVED GCF

R&M ENGINEERING, INC.
6205 GLACIER HIGHWAY
P.O. BOX 34278
JUNEAU, ALASKA 99803
PH: (907) 780-6060

SOT03-1991-AB-S2, Location/Vicinity Map, Sheet Index, Abbreviation, General Notes

ALASKA INDUSTRIAL DEVELOPMENT & EXPORT AUTHORITY
SKAGWAY ORE TERMINAL STRUCTURAL REPAIRS
SKAGWAY, ALASKA

LOCATION/VICINITY MAP
INDEX, ABBREV., GEN. NOTES

DATE: DEC. 6, 1991
R&M NO. 901362.03
SCALE: AS NOTED

S2

STATE OF ALASKA 49TH Irvin George Porter No. 1841-E REGISTERED PROFESSIONAL ENGINEER

AS-BUILT

12/16/2013

SHEET 2 OF 18

STRUCTURAL
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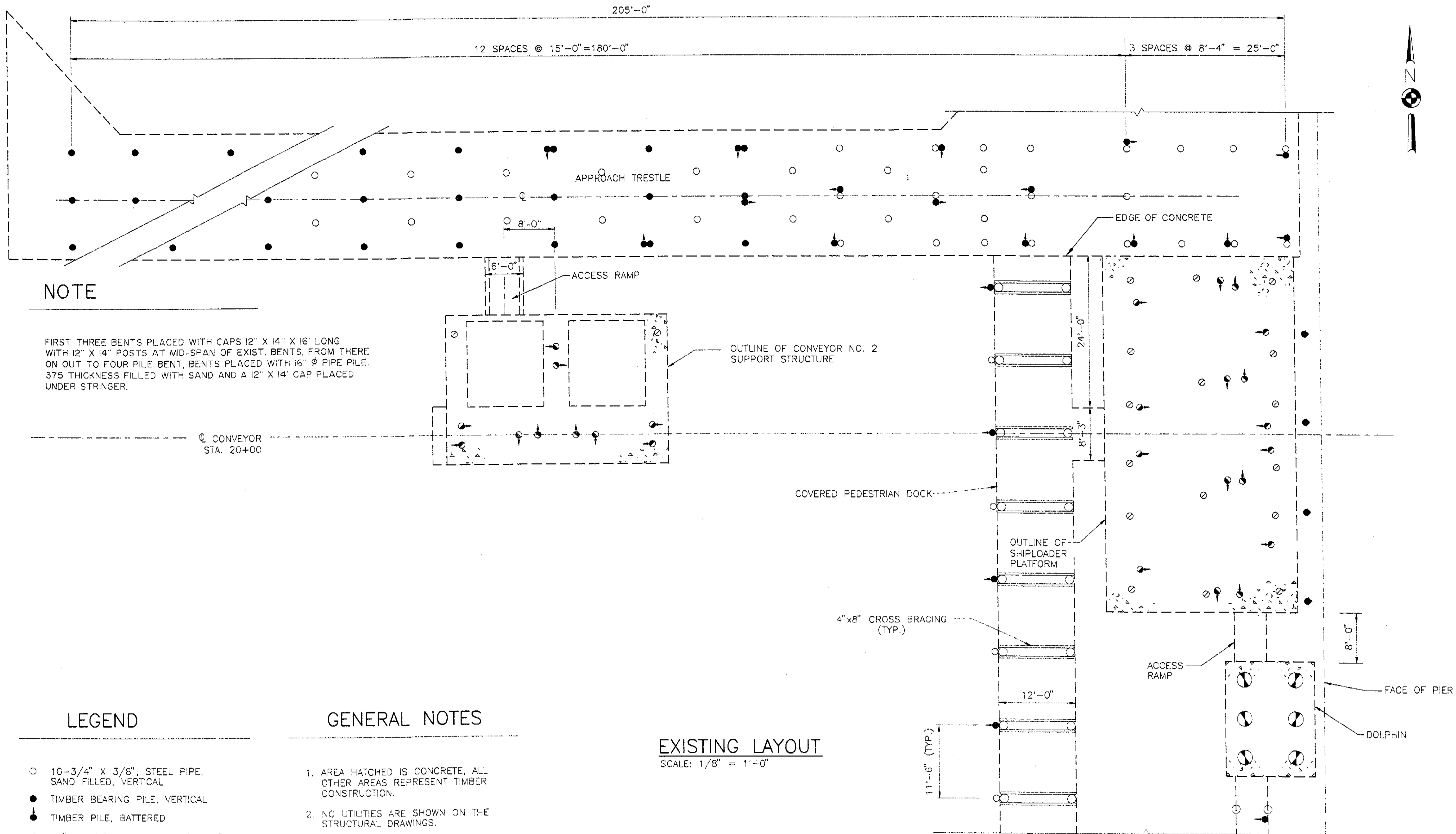
FILE NO. O.M.-365-2



NOTE

FIRST THREE BENTS PLACED WITH CAPS 12" X 14" X 16' LONG WITH 12" X 14" POSTS AT MID-SPAN OF EXIST. BENTS. FROM THERE ON OUT TO FOUR PILE BENT, BENTS PLACED WITH 16" Ø PIPE PILE. .375 THICKNESS FILLED WITH SAND AND A 12" X 14' CAP PLACED UNDER STRINGER.

LEGEND

- ○ 10-3/4" X 3/8", STEEL PIPE, SAND FILLED, VERTICAL
- ● TIMBER BEARING PILE, VERTICAL
- TIMBER PILE, BATTERED
- Ø 14"Øx 3/8" STEEL PIPE w/50'-0" H-TIP, VERTICAL
- 14"Øx 3/8" STEEL PIPE w/50'-0" H-TIP, BATTERED
- TIMBER FENDER
- 28"Ø STL. PIPE PILES

GENERAL NOTES

1. AREA HATCHED IS CONCRETE, ALL OTHER AREAS REPRESENT TIMBER CONSTRUCTION.
2. NO UTILITIES ARE SHOWN ON THE STRUCTURAL DRAWINGS.

EXISTING LAYOUT

SCALE: 1/8" = 1'-0"

e:05169-s3, 1=96, 12/05/91 at 09:09

STATE OF ALASKA 49TH Irvin George Porter No. 1841-E REGISTERED PROFESSIONAL ENGINEER

AS-BUILT

0 4 8 16 32
1/8"=1'-0" GRAPHIC SCALE IN FEET

DESIGN GCF
DRAWN MKA
CHECK DHA
APPROVED GCF

R&M ENGINEERING, INC.
6205 GLACIER HIGHWAY
P.O. BOX 34278
JUNEAU, ALASKA 99803
PH: (907) 780-6060

SOT03-1991-AB-S3, Existing Layout

ALASKA INDUSTRIAL DEVELOPMENT & EXPORT AUTHORITY
SKAGWAY ORE TERMINAL STRUCTURAL REPAIRS
SKAGWAY, ALASKA

EXISTING LAYOUT

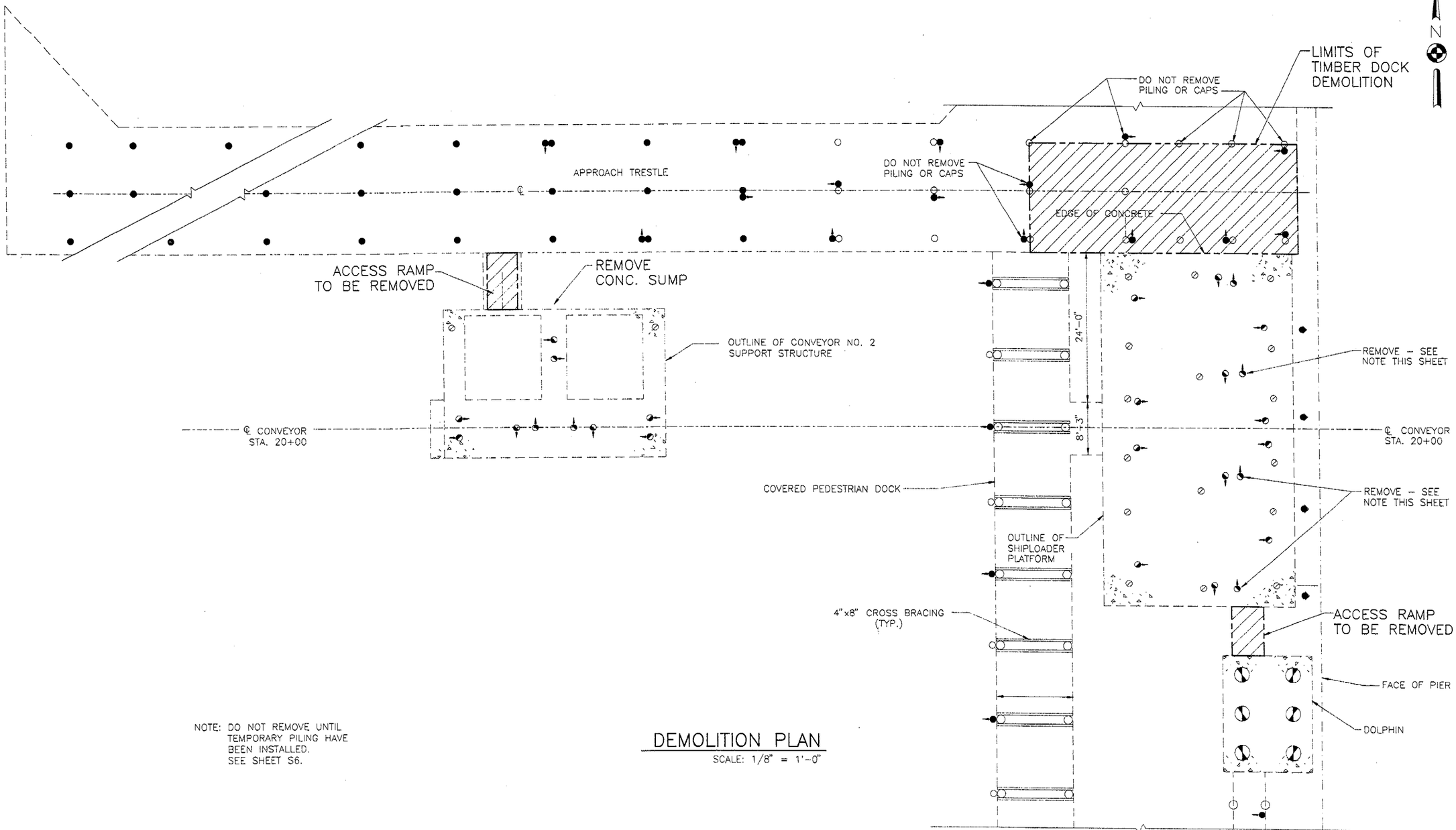
DATE: DEC. 6, 1991
R&M NO. 901362.03
SCALE: AS NOTED

S3

SHEET 3 OF 18

12/16/2013

FILE NO. O.M.-365-3



NOTE: DO NOT REMOVE UNTIL TEMPORARY PILING HAVE BEEN INSTALLED. SEE SHEET S6.

DEMOLITION PLAN

SCALE: 1/8" = 1'-0"

STATE OF ALASKA 49TH Irvin George Porter No. 1841-E REGISTERED PROFESSIONAL ENGINEER

AS-BUILT

0 4 8 16 32
1/8"=1'-0" GRAPHIC SCALE IN FEET

DESIGN GCF | DRAWN MKA | CHECK DHA | APPROVED GCF

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P.O. BOX 34278
JUNEAU, ALASKA 99803
PH: (907) 780-6060

STATE OF ALASKA Irvin George Porter No. 1841-E REGISTERED PROFESSIONAL ENGINEER

SOT03-1991-AB-S4, Demo Plan

ALASKA INDUSTRIAL DEVELOPMENT & EXPORT AUTHORITY
SKAGWAY ORE TERMINAL STRUCTURAL REPAIRS
SKAGWAY, ALASKA

DEMOLITION PLAN

DATE: DEC. 6, 1991
R&M NO. 901362.03
SCALE: AS NOTED

S4

SHEET 4 OF 18

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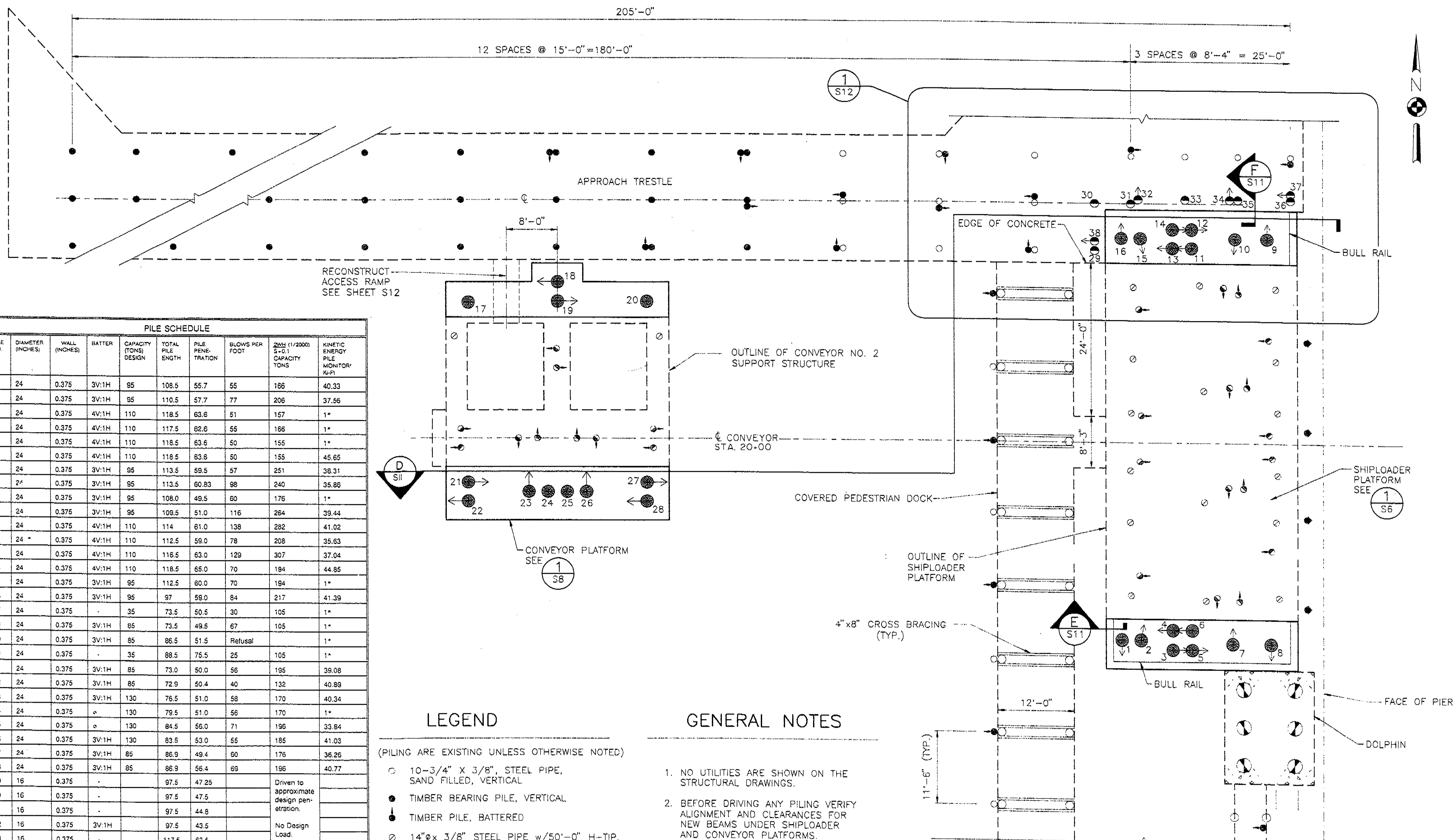

PILE SCHEDULE									
PILE NO.	DIAMETER (INCHES)	WALL (INCHES)	BATTER	CAPACITY (TONS) DESIGN	TOTAL PILE ENGTH	PILE PENE-TRATION	BLOWS PER FOOT	2WH (1/2000) S+0.1 CAPACITY TONS	KINETIC ENERGY PILE MONITOR² Ki-Ft
1	24	0.375	3V:1H	95	108.5	55.7	55	166	40.33
2	24	0.375	3V:1H	95	110.5	57.7	77	206	37.56
3	24	0.375	4V:1H	110	118.5	63.6	51	157	1*
4	24	0.375	4V:1H	110	117.5	62.6	55	166	1*
5	24	0.375	4V:1H	110	118.5	63.6	50	155	1*
6	24	0.375	4V:1H	110	118.5	63.6	50	155	45.65
7	24	0.375	3V:1H	95	113.5	59.5	57	251	38.31
8	24	0.375	3V:1H	95	113.5	60.83	98	240	35.86
9	24	0.375	3V:1H	95	108.0	49.5	60	176	1*
10	24	0.375	3V:1H	95	109.5	51.0	116	264	39.44
11	24	0.375	4V:1H	110	114	61.0	138	282	41.02
12	24	0.375	4V:1H	110	112.5	59.0	78	208	35.63
13	24	0.375	4V:1H	110	116.5	63.0	129	307	37.04
14	24	0.375	4V:1H	110	118.5	65.0	70	194	44.85
15	24	0.375	3V:1H	95	112.5	60.0	70	194	1*
16	24	0.375	3V:1H	95	97	59.0	84	217	41.39
17	24	0.375	-	35	73.5	50.5	30	105	1*
18	24	0.375	3V:1H	85	73.5	49.5	67	105	1*
19	24	0.375	3V:1H	85	86.5	51.5	Refusal		1*
20	24	0.375	-	35	88.5	75.5	25	105	1*
21	24	0.375	3V:1H	85	73.0	50.0	56	195	39.08
22	24	0.375	3V:1H	85	72.9	50.4	40	132	40.89
23	24	0.375	3V:1H	130	76.5	51.0	58	170	40.34
24	24	0.375	⌀	130	79.5	51.0	56	170	1*
25	24	0.375	⌀	130	84.5	56.0	71	196	33.84
26	24	0.375	3V:1H	130	83.5	53.0	55	185	41.03
27	24	0.375	3V:1H	85	86.9	49.4	60	176	36.26
28	24	0.375	3V:1H	85	86.9	56.4	69	196	40.77
29	16	0.375	-		97.5	47.25		Driven to approximate design pen-etration. No Design Load.	
30	16	0.375	-		97.5	47.5			
31	16	0.375	-		97.5	44.8			
32	16	0.375	3V:1H		97.5	43.5			
33	16	0.375	-		117.5	63.5			
34	16	0.375	3V:1H		92.5	34.0			
35	16	0.375	-		107.5	49.0			
36	16	0.375	-		117.5	59.0			
37	16	0.375	3V:1H		112.5	54.0			
38	16	0.375	3V:1H		87.5	37.5			

* MIN. ALLOWABLE PENETRATION = 50 FT. BELOW MUDLINE FOR 24"⌀ PILING.
1* MANUAL COUNT FOR BLOWS/FT.
2 BERMINGHAMMER V 1.00 PILE DRIVING MONITOR

HAMMER USED - BERMINGHAMMER B-4505
RATED ENERGY - 75,900 FT-LBS
RAM WEIGHT - 6,600 LBS
MAX RAM STROKE - 11.82 FT

LEGEND

(PILING ARE EXISTING UNLESS OTHERWISE NOTED)

- 10-3/4" X 3/8", STEEL PIPE, SAND FILLED, VERTICAL
- TIMBER BEARING PILE, VERTICAL
- TIMBER PILE, BATTERED
- 14"⌀ x 3/8" STEEL PIPE w/50'-0" H-TIP, VERTICAL
- 14"⌀ x 3/8" STEEL PIPE w/50'-0" H-TIP, BATTERED
- TIMBER FENDER
- 28"⌀ STL. PIPE PILES
- NEW 24"⌀ STL. PIPE PILES
- 12 PILE NUMBER
- NEW 16"⌀ X 3/8" STEEL PIPE PILES, FILL VERT. PILING W/SAND

GENERAL NOTES

1. NO UTILITIES ARE SHOWN ON THE STRUCTURAL DRAWINGS.
2. BEFORE DRIVING ANY PILING VERIFY ALIGNMENT AND CLEARANCES FOR NEW BEAMS UNDER SHIPLOADER AND CONVEYOR PLATFORMS.
3. BATTER PILES MAY BE ROTATED UP TO 10 DEGREES IN EITHER DIRECTION FROM PLAN TO CLEAR OBSTRUCTIONS.

PILE LAYOUT

SCALE: 1/8" = 1'-0"

0 4 8 16 32
1/8"=1'-0" GRAPHIC SCALE IN FEET

STATE OF ALASKA 49TH Irvin George Porter No. 1841-E REGISTERED PROFESSIONAL ENGINEER

AS-BUILT

DESIGN GCF
DRAWN MKA
CHECK DHA
APPROVED GCF

R&M ENGINEERING, INC.
6205 GLACIER HIGHWAY
P.O. BOX 34278
JUNEAU, ALASKA 99803
PH: (907) 780-6060

SOT03-1991-AB-S5, Pile Layout Plan

ALASKA INDUSTRIAL DEVELOPMENT & EXPORT AUTHORITY
SKAGWAY ORE TERMINAL STRUCTURAL REPAIRS
SKAGWAY, ALASKA

PILE LAYOUT PLAN

DATE: DEC. 6, 1991
R&M NO. 901362.03
SCALE: AS NOTED

S5

SHEET 5 OF 18

12/16/2013

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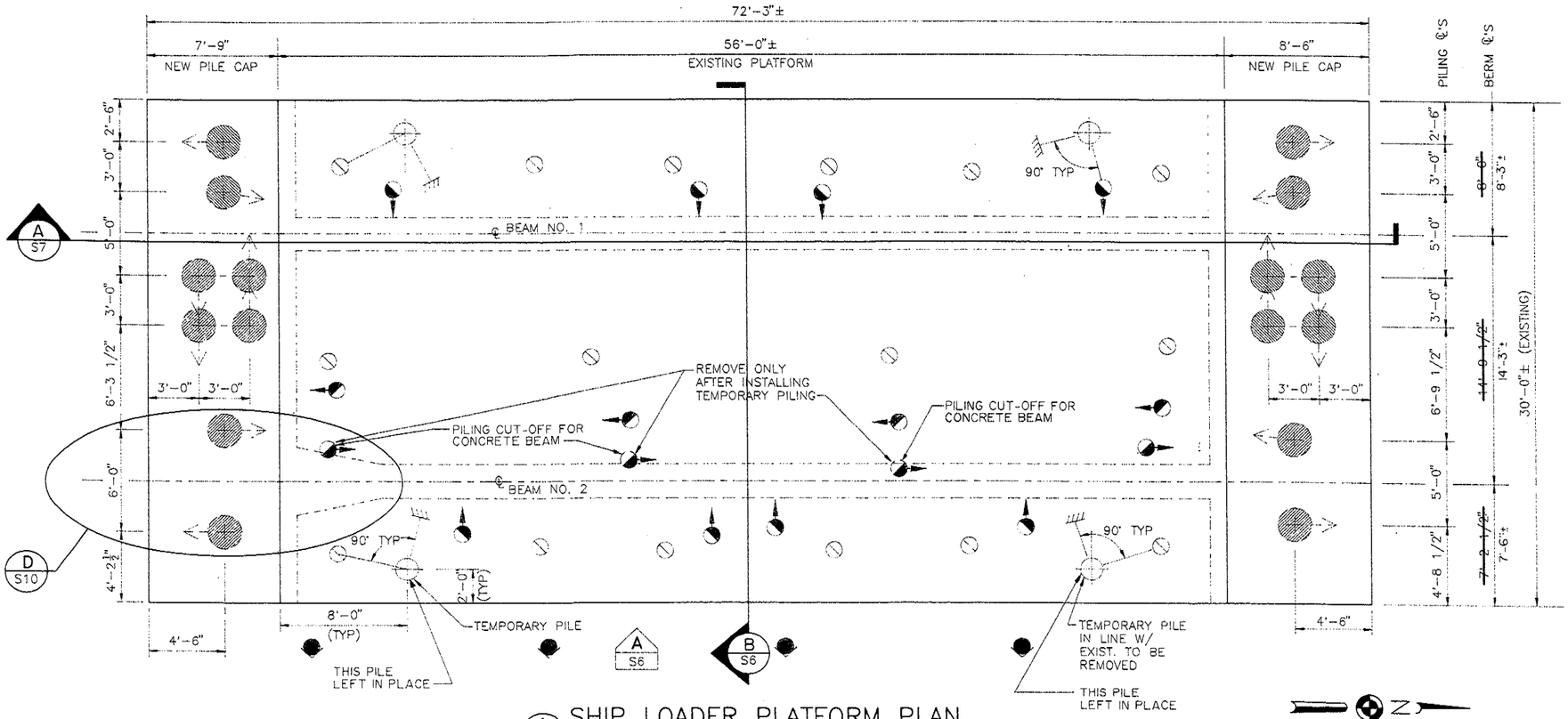
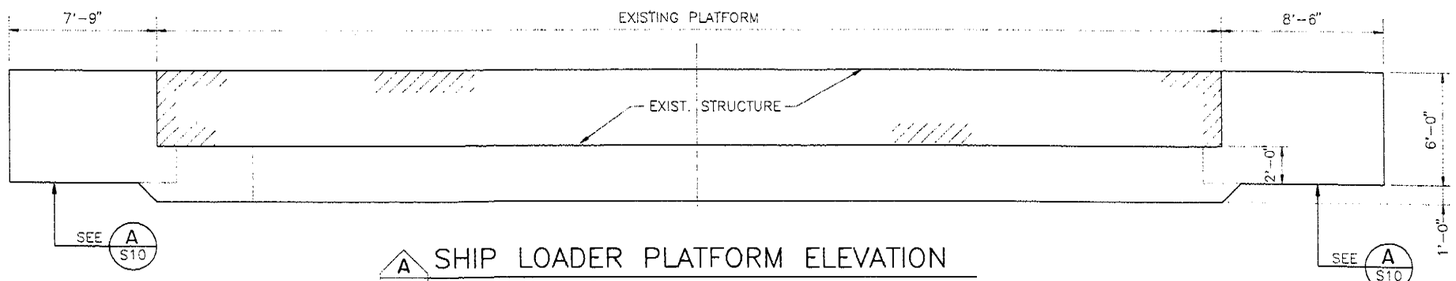
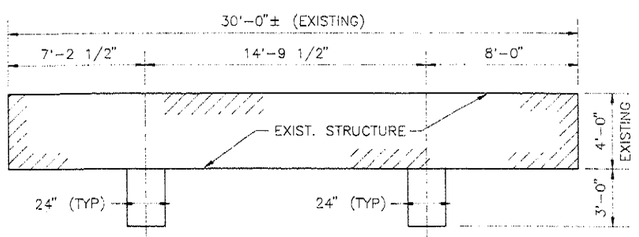


I S5 SHIP LOADER PLATFORM PLAN
SCALE: 1/4" = 1'-0"



A S6 SHIP LOADER PLATFORM ELEVATION
SCALE: 1/4" = 1'-0"



B S6 SHIP LOADER PLATFORM SECTION
SCALE: 1/4" = 1'-0"

NOTES

1. BATTER NORTH–SOUTH PILING 3V:1H, AND EAST–WEST PILING 4V:1H.
2. BULL RAIL ON NEW CAPS NOT SHOWN.
3. LOADER TOWER AND OTHER FEATURES ON EXIST. PLATFORM NOT SHOWN.
4. TEMPORARY PILING:
   - TEMPORARY PILING ARE TO BE INSTALLED ONLY IF IT IS NECESSARY TO REMOVE EXISTING PILING IN ORDER TO CONSTRUCT NEW BEAMS UNDER THE SHIPLOADER PLATFORM.
   - FOR EACH PILE REMOVED PROVIDE ONE 18" DIAMETER X 0.375" WALL TEMPORARY PILE.
   - DRIVE TEMPORARY PILES TO A 30 TON WORKING CAPACITY, BUT NO LESS THAN 50 FT. PENETRATION.
   - CUT OFF TEMPORARY PILING AT AN ELEVATION SUFFICIENT TO ALLOW INSTALLATION OF 30 TON JACKS.
   - BRACE THE TOP OF TEMPORARY PILING AGAINST ADJACENT PILING OR THE UNDERSIDE OF THE LOADER PLATFORM WITH A MINIMUM OF TWO BRACES POSITIONED AT APPROXIMATELY 90° TO ONE ANOTHER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DESIGNING THE BRACES AND PROVIDING AN INSTALLATION PLAN TO THE ENGINEER.
   - WELD A MINIMUM 1" THICK PLATE TO THE TOP OF THE TEMPORARY PILING AND PLACE A BEARING PLATE BETWEEN THE 30 TON JACKS AND THE LOADER PLATFORM. THE BEARING PLATE SHALL BE 1" THICK AND HAVE A BEARING AREA OF NOT LESS THAN 1" SQUARE FOOT.
   - LOAD AND MAINTAIN EACH OF THE JACKS AT 20 TONS. LOAD THE JACKS SEQUENCIALLY IN 4 TON INCREMENTS.
   - THE CONTRACTOR MAY INSTALL ADDITIONAL TEMPORARY PILING.
   - REMOVE TEMPORARY PILING AND BRACING FOLLOWING POST–TENSIONING OF BEAMS NOL. 1 AND NO. 2.
   - TEMPORARY PILING NEED NOT BE GALVANIZED.
5. DO NOT REMOVE FORMS OR SHORING FOR BEAMS NO. 1 AND NO. 2 UNTIL CONCRETE REACHES SUFFICIENT STRENGTH TO TRANSFER WEIGHT OF BEAMS TO #7 DOWELS IN VENT HOLES.

DESIGN GCF | DRAWN NRY | CHECK DHA | APPROVED GCF

R&M ENGINEERING, INC.
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P.O. BOX 34278
JUNEAU, ALASKA 99803
PH: (907) 780-6060

STATE OF ALASKA 49TH Irvin George Porter No. 1841-E REGISTERED PROFESSIONAL ENGINEER

SOT03-1991-AB-S6, Loader Platform - Plan & Sections

ALASKA INDUSTRIAL DEVELOPMENT & EXPORT AUTHORITY
SKAGWAY ORE TERMINAL STRUCTURAL REPAIRS
SKAGWAY, ALASKA

LOADER PLATFORM PLAN & SECTIONS

AS-BUILT

0 2 4 8 12
1/4"=1'-0" GRAPHIC SCALE IN FEET

DATE: DEC. 6, 1991
R&M NO. 901362.03
SCALE: AS NOTED

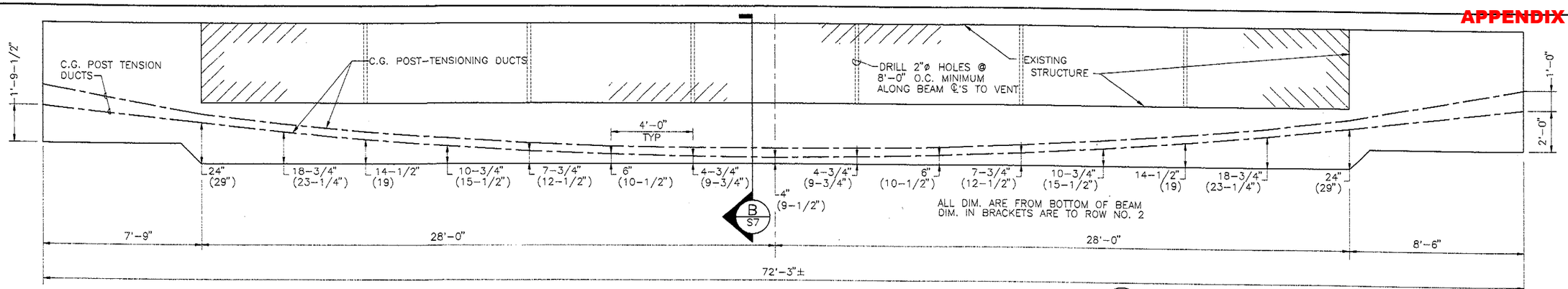
S6

SHEET NO. 6 OF 18

12/16/2013

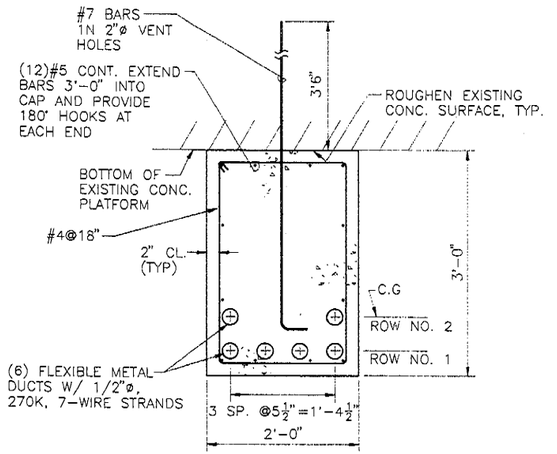
E:05169-S6, 1=48 , 12/06/91 at 14:35

FILE NO. G.M.-365-6



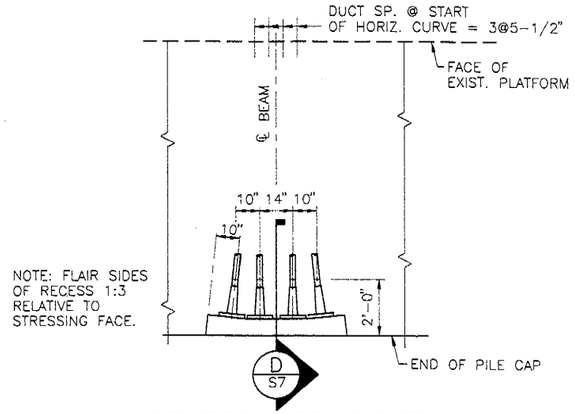
A S6 SHIP LOADER PLATFORM POST-TENSIONING PROFILES

SCALE: 3/8" = 1'-0" (BEAM NO. 1, BEAM NO. 2 SIMILAR)



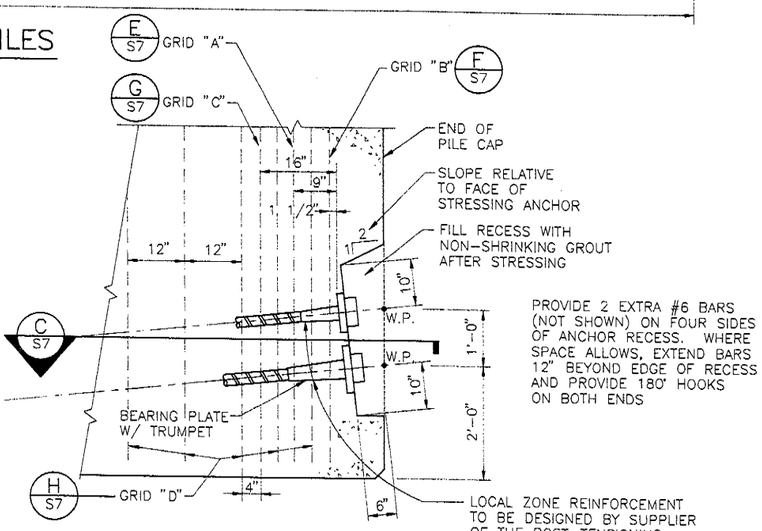
B S7 BEAM SECTION

SCALE: 1" = 1'-0"



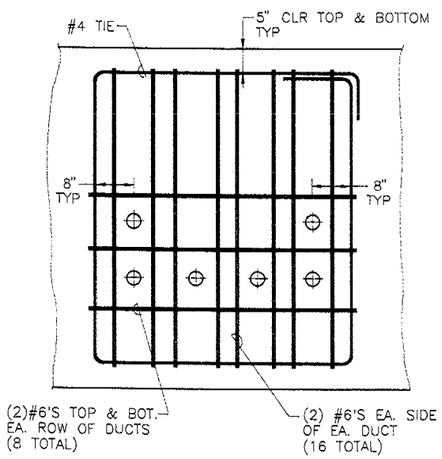
C S7 RECESS FOR POST-TEN. ANCHORAGES - PLAN

3 REQUIRED SCALE: 3/8"=1'-0"
NORTH & SOUTH ENDS BEAM NO. 1
NORTH END BEAM NO. 2



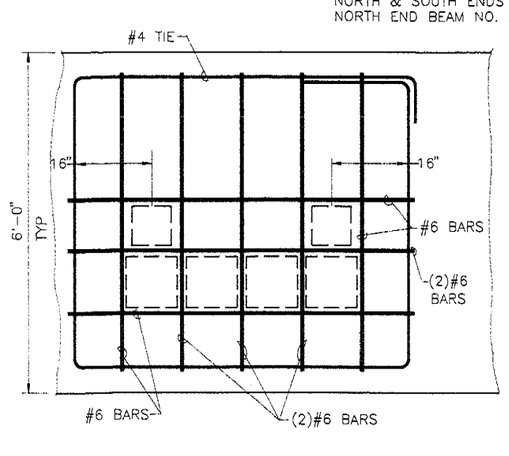
D S7 RECESS FOR STRESSING ANCHORAGE - NORTH END'S

SCALE: 3/4"=1'-0" (SOUTH END BEAM NO. 1 SIMILAR)



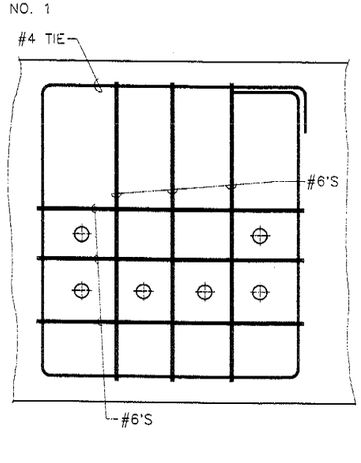
E S7 GRID "A"

SCALE: 3/4"=1'-0"



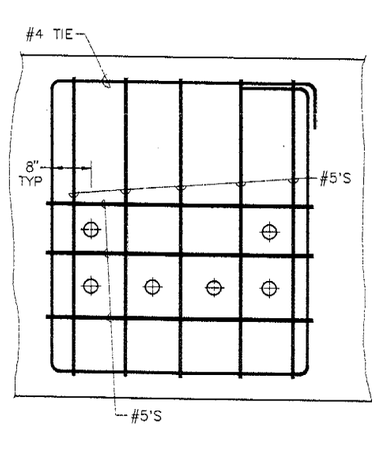
F S7 GRID "B"

SCALE: 3/4"=1'-0"



G S7 GRID "C"

SCALE: 3/4"=1'-0"



H S7 GRID "D"

SCALE: 3/4"=1'-0"

NOTE: PROVIDE 180° HOOKS ON BOTH ENDS OF #5 & #6 BARS IN GRIDS "A" THRU "D".

STATE OF ALASKA * 49TH * Irvin George Porter No. 1841-E REGISTERED PROFESSIONAL ENGINEER

AS-BUILT

0 1 2 3 4 5 6 7 8
3/8"=1'-0" GRAPHIC SCALE IN FEET

0 1 2 3 4
3/4"=1'-0" GRAPHIC SCALE IN FEET

0 1 2 3
1"=1'-0" GRAPHIC SCALE IN FEET

DESIGN GCF DRAWN NRY CHECK DHA APPROVED GCF

R&M ENGINEERING, INC.
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P.O. BOX 34278
JUNEAU, ALASKA 99803
PH: (907) 780-6060

STATE OF ALASKA * 49TH * Irvin George Porter No. 1841-E REGISTERED PROFESSIONAL ENGINEER

SOT03-1991-AB-S7, Loader Platform - Details

ALASKA INDUSTRIAL DEVELOPMENT & EXPORT AUTHORITY
SKAGWAY ORE TERMINAL STRUCTURAL REPAIRS
SKAGWAY, ALASKA

LOADER PLATFORM DETAILS

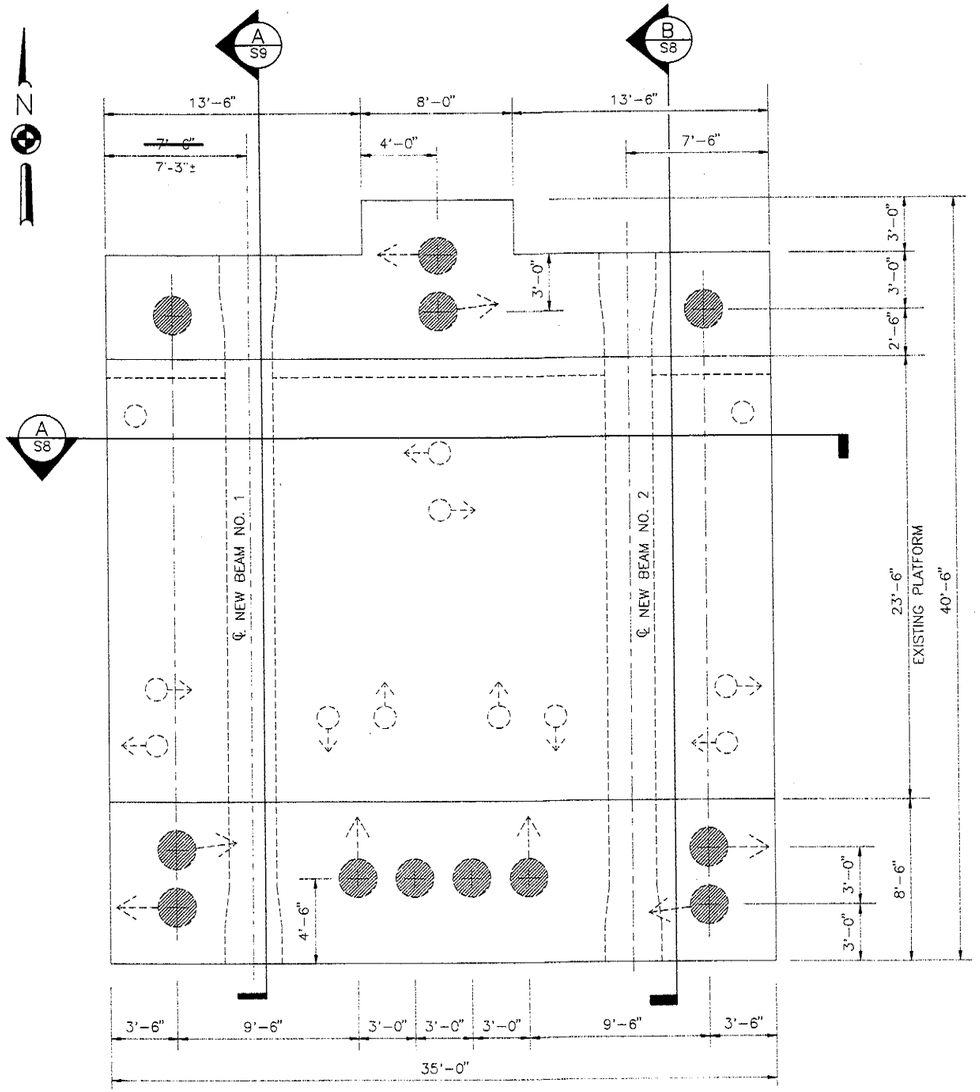
DATE: DEC. 6, 1991
R&M NO. 901362.03
SCALE: AS NOTED

S7

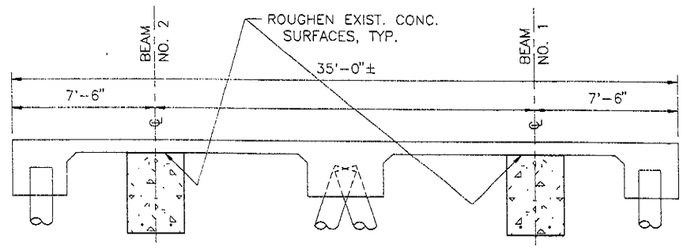
SHEET 7 OF 18

E:05169-10, 1=32 , 12/06/91 at 11:05

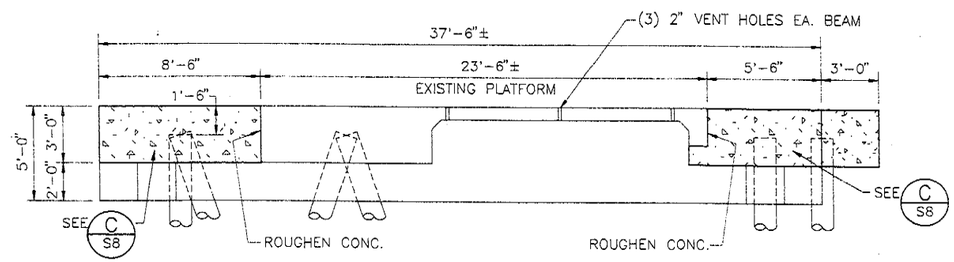
FILE NO. O.M.-365-7



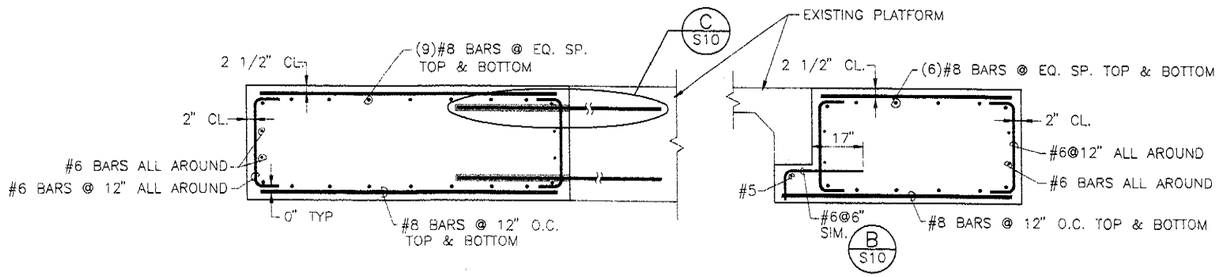
1/S5 CONVEYOR NO. 2 SUPPORT STRUCTURE
SCALE: 1/4" = 1'-0"



A/S8 CONVEYOR NO.2 SUPPORT SECTION
SCALE: 1/4" = 1'-0"



B/S8 CONVEYOR NO.2 SUPPORT SECTION
SCALE: 1/4" = 1'-0"



C/S8 SECTION
SCALE: 1/2" = 1'-0"

STATE OF ALASKA 49TH
Irvin George Porter
No. 1841-E
REGISTERED PROFESSIONAL ENGINEER

AS-BUILT

0 2 4 8 12
1/4"=1'-0" GRAPHIC SCALE IN FEET

0 1 2 4 6
1/2"=1'-0" GRAPHIC SCALE IN FEET

DESIGN GCF | DRAWN NRY | CHECK DHA | APPROVED GCF

R&M ENGINEERING, INC.
6205 GLACIER HIGHWAY
P.O. BOX 34278
JUNEAU, ALASKA 99803
PH: (907) 780-6060

STATE OF ALASKA 49TH
Registered Professional Engineer
Irvin George Porter
No. 1841-E

SOT03-1991-AB-S8, Conveyor Platform - Plan & Sections

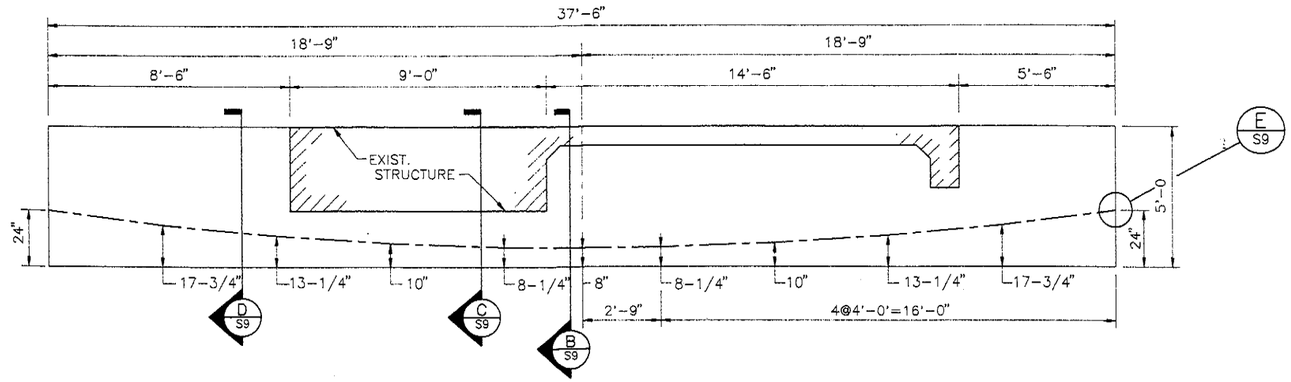
ALASKA INDUSTRIAL DEVELOPMENT & EXPORT AUTHORITY
SKAGWAY ORE TERMINAL STRUCTURAL REPAIRS
SKAGWAY, ALASKA

CONVEYOR PLATFORM PLAN & SECTIONS

DATE: DEC. 6, 1991
R&M NO. 901362.03
SCALE: 1/4"=1'-0"

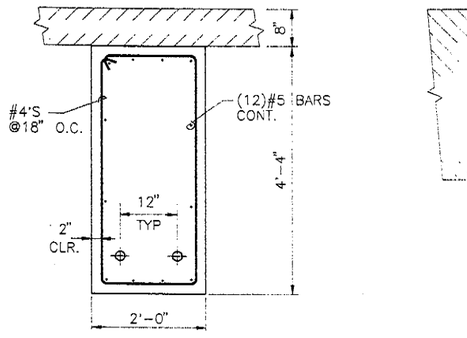
S8

SHEET 8 OF 18



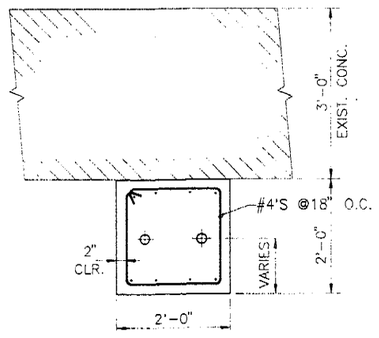
A S8 CONVEYOR NO. 2 SUPPORT POST-TENSIONING PROFILE

SCALE: 3/8"=1'-0"



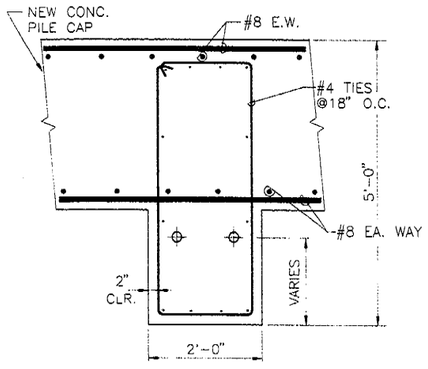
B S9 SECTION

SCALE: 3/4"=1'-0"



C S9 SECTION

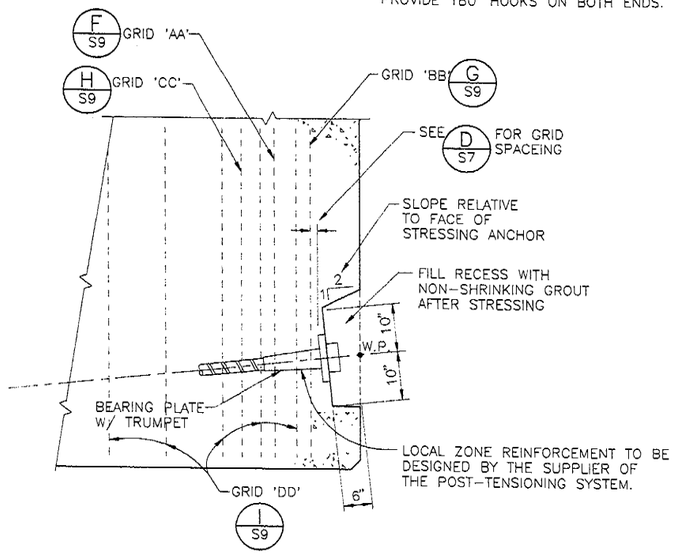
SCALE: 3/4"=1'-0"



D S9 SECTION

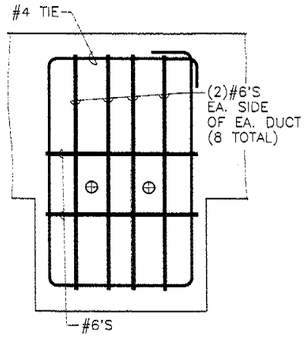
SCALE: 3/4"=1'-0"

NOTE: FLAIR SIDES OF RECESS 1:3 RELATIVE TO FACE OF STRESSING ANCHOR. PROVIDE 2 EXTRA #6 BARS(NOT SHOWN) ON FOUR SIDES OF ANCHOR RECESS. WHERE SPACE ALLOWS, EXTEND BARS 12" BEYOND EDGE OF RECESS AND PROVIDE 180° HOOKS ON BOTH ENDS.



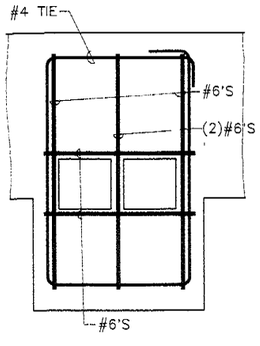
E S9 RECESS FOR STRESSING ANCHORAGE — TYP

SCALE: 3/4"=1'-0"



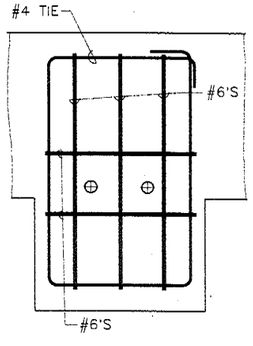
F S9 GRID "AA"

SCALE: 3/4"=1'-0"



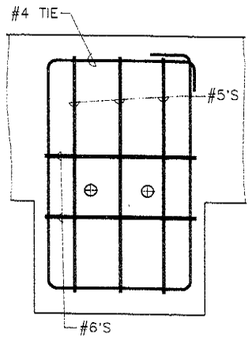
G S9 GRID "BB"

SCALE: 3/4"=1'-0"



H S9 GRID "CC"

SCALE: 3/4"=1'-0"



I S9 GRID "DD"

SCALE: 3/4"=1'-0"

NOTE: PROVIDE 180° HOOKS ON BOTH ENDS OF #5 & #6 BARS IN GRIDS "AA" THRU "DD".

STATE OF ALASKA 49TH
Irvin George Porter No. 1841-E
REGISTERED PROFESSIONAL ENGINEER
AS-BUILT

0 1 2 3 4 5 6 7 8
3/8"=1'-0" GRAPHIC SCALE IN FEET

0 1 2 3 4
3/4"=1'-0" GRAPHIC SCALE IN FEET

DESIGN WAR | DRAWN MAS | CHECK DHA | APPROVED GCF

R&M ENGINEERING, INC.
6205 GLACIER HIGHWAY
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JUNEAU, ALASKA 99803
PH: (907) 780-6060

STATE OF ALASKA 49TH Irvin George Porter No. 1841-E Registered Professional Engineer

SOT03-1991-AB-S9, Conveyor Platform Details

ALASKA INDUSTRIAL DEVELOPMENT & EXPORT AUTHORITY
SKAGWAY ORE TERMINAL STRUCTURAL REPAIRS
SKAGWAY, ALASKA

CONVEYOR PLATFORM DETAILS

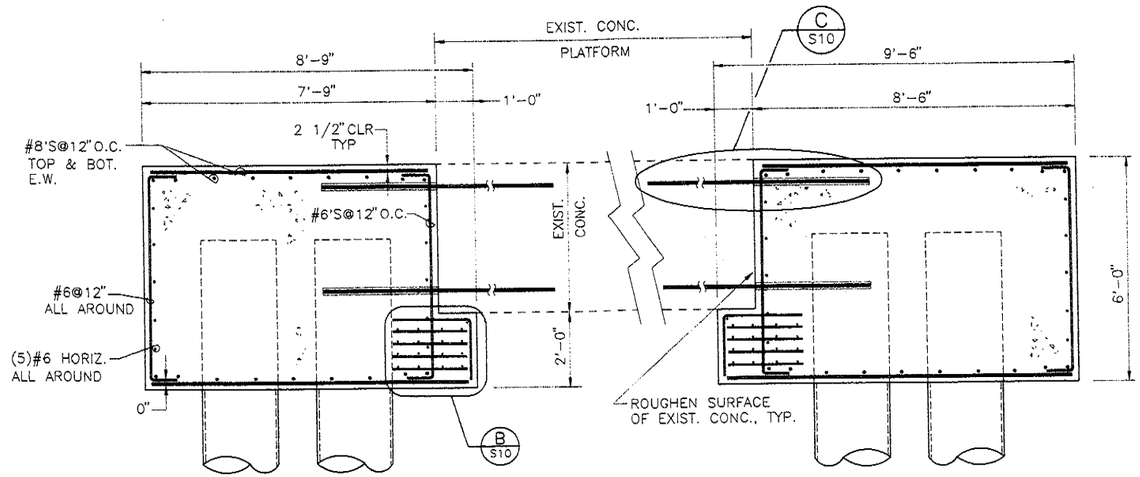
DATE: DEC. 6, 1991
R&M NO. 901362.03
SCALE: AS NOTED

S9

SHEET 9 OF 18

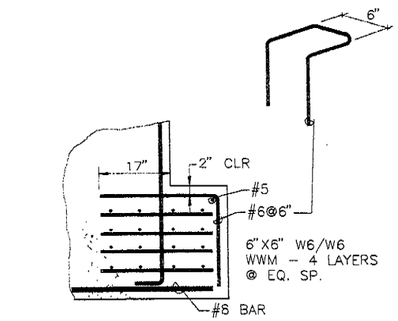
E:\05169-09, 1=16 , 12/05/91 at 09:16

FILE NO. O.M.-365-9



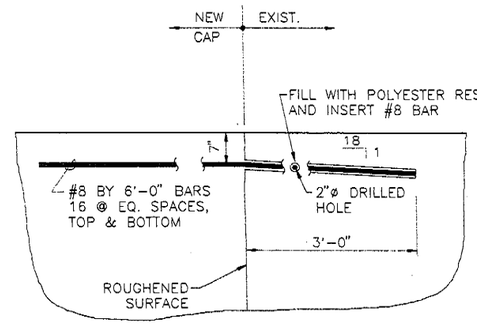
A S6 SECTION

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



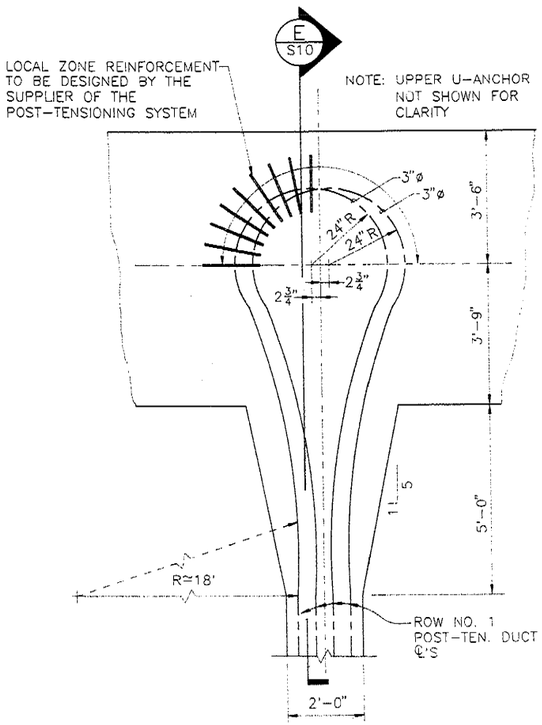
B S10 MAIN TEN. REINF.

SCALE: 3/4"=1'-0"



C S10 DOWEL DETAIL

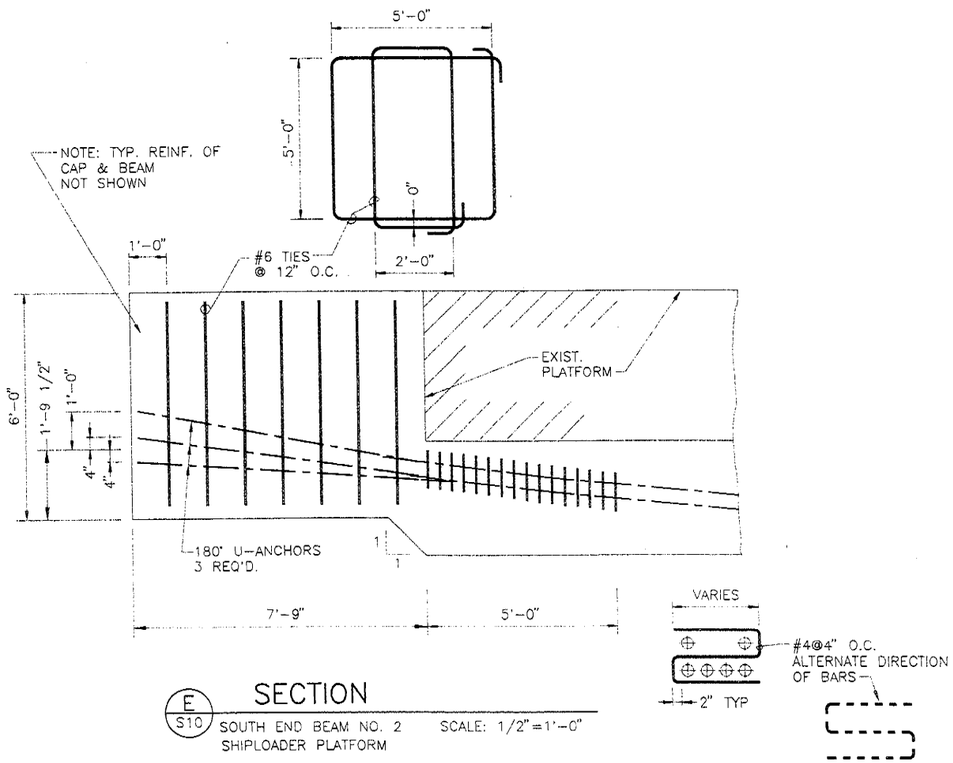
SCALE: 3/4"=1'-0"



D S6 PLAN DEAD-END ANCHOR

SOUTH END BEAM NO. 2 ONLY SHIPLOADER PLATFORM

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



E S10 SECTION

SOUTH END BEAM NO. 2 SHIPLOADER PLATFORM

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

DESIGN WAR | DRAWN MAS | CHECK DHA | APPROVED GCF

R&M ENGINEERING, INC.
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P.O. BOX 34278
JUNEAU, ALASKA 99803
PH: (907) 780-6060

STATE OF ALASKA 49TH Irwin George Porter No. 1841-E REGISTERED PROFESSIONAL ENGINEER

AS-BUILT

SOT03-1991-AB-S10, Structural Details

ALASKA INDUSTRIAL DEVELOPMENT & EXPORT AUTHORITY
SKAGWAY ORE TERMINAL STRUCTURAL REPAIRS
SKAGWAY, ALASKA

STRUCTURAL DETAILS

DATE: DEC. 6, 1991
R&M NO. 901362.03
SCALE: AS NOTED

S10

SHEET 10 OF 18

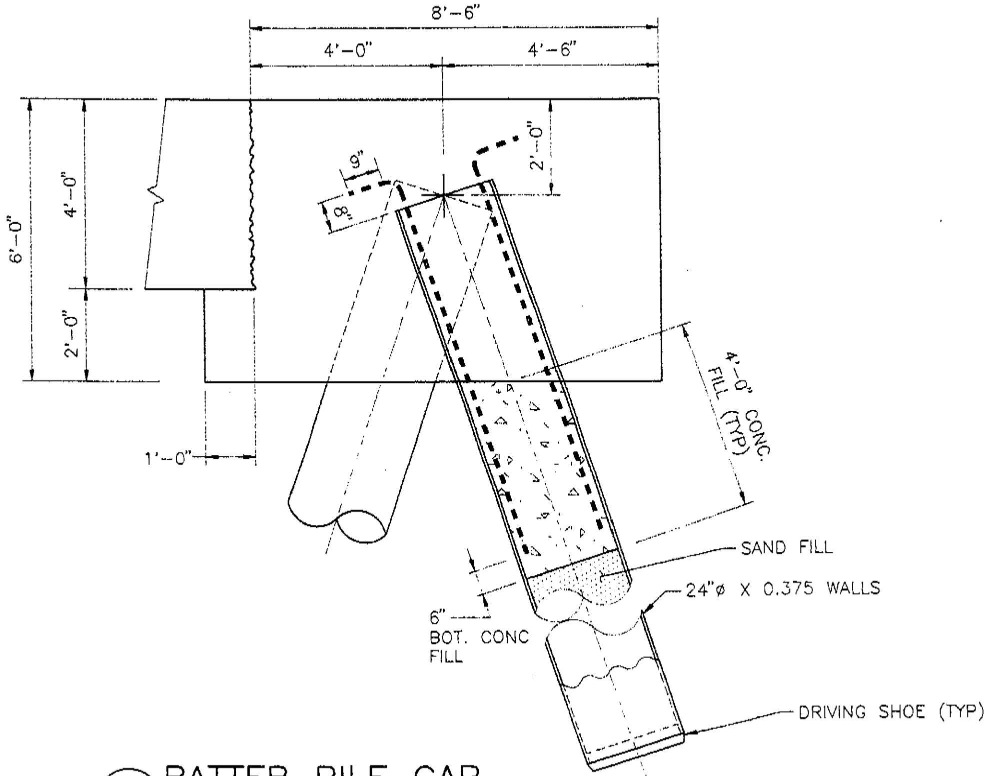
3/4"=1'-0" GRAPHIC SCALE IN FEET

1/2"=1'-0" GRAPHIC SCALE IN FEET

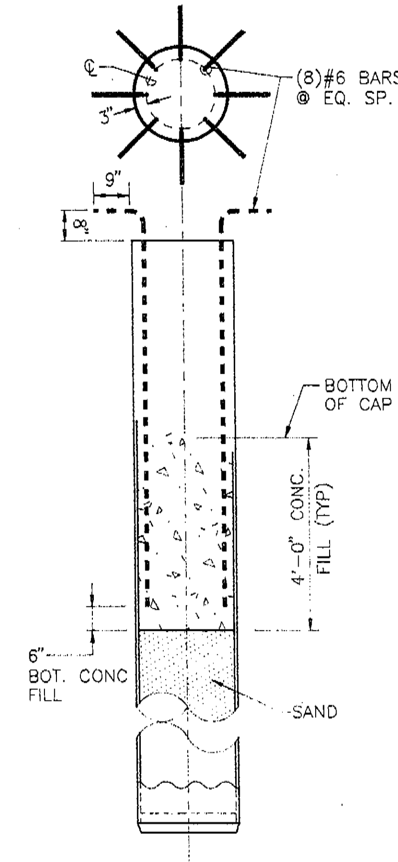
E:05169-13, 1=16 , 12/06/91 at 12:40

FILE NO. O-M-365-10

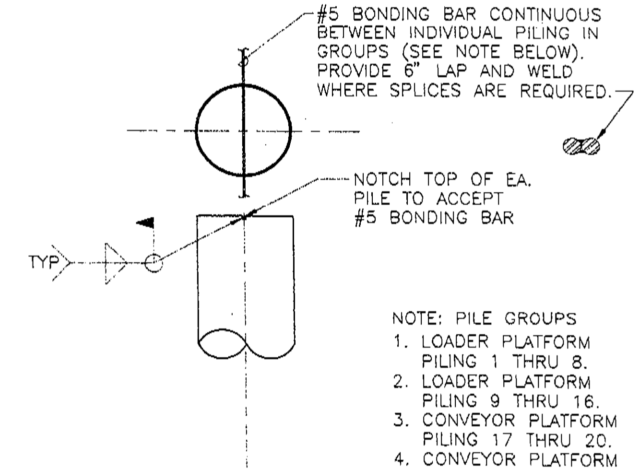
12/16/2013



A TYP BATTER PILE CAP
SCALE: 1/2" = 1'-0"

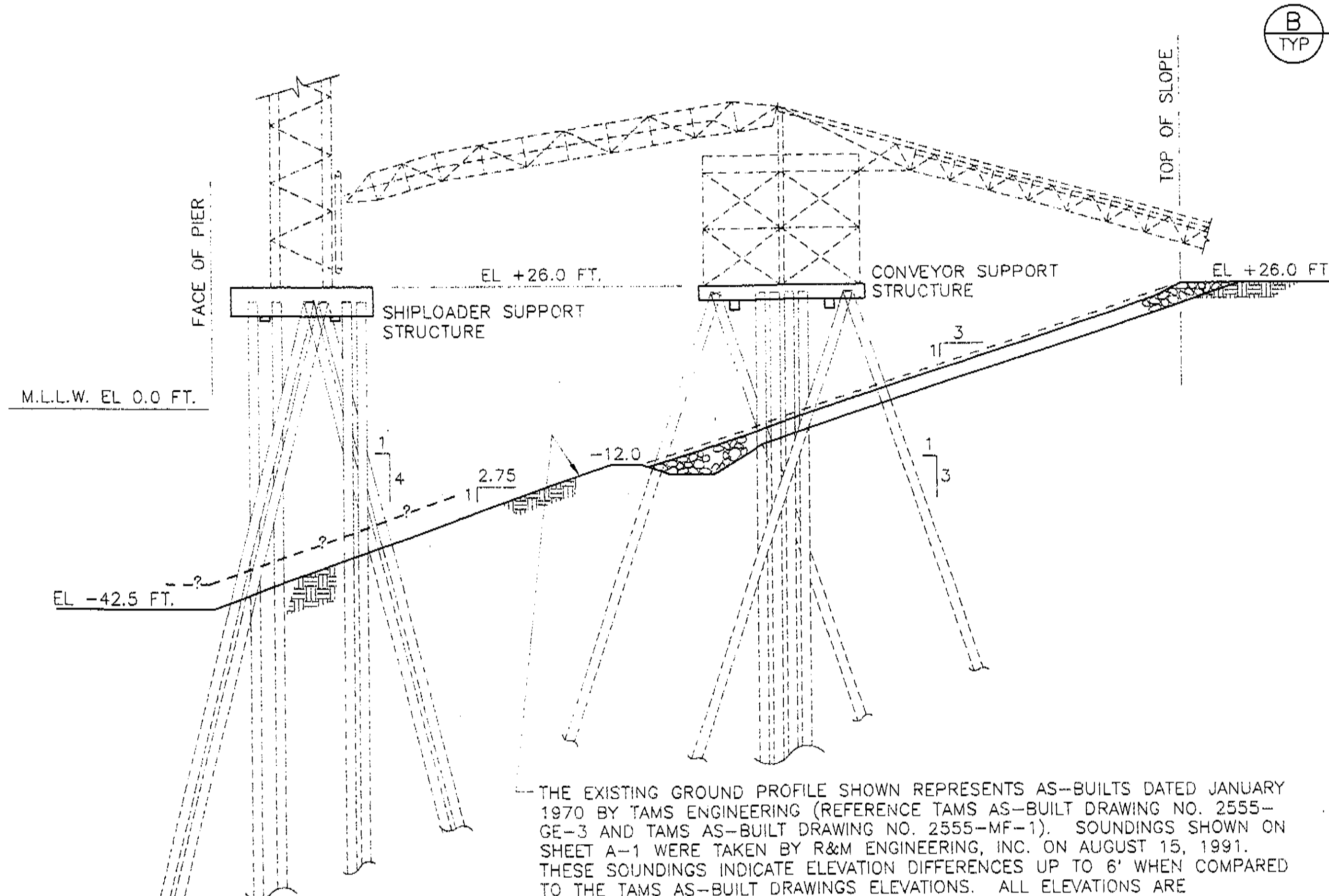


B TYP PILE DETAIL
SCALE: 1/2" = 1'-0"



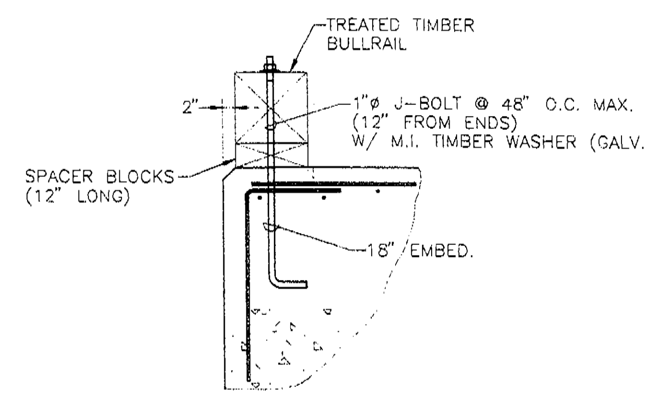
NOTE: PILE GROUPS
1. LOADER PLATFORM PILING 1 THRU 8.
2. LOADER PLATFORM PILING 9 THRU 16.
3. CONVEYOR PLATFORM PILING 17 THRU 20.
4. CONVEYOR PLATFORM PILINGS 21 THRU 28.

C TYP BONDING BAR DETAIL
SCALE: 1/2" = 1'-0"

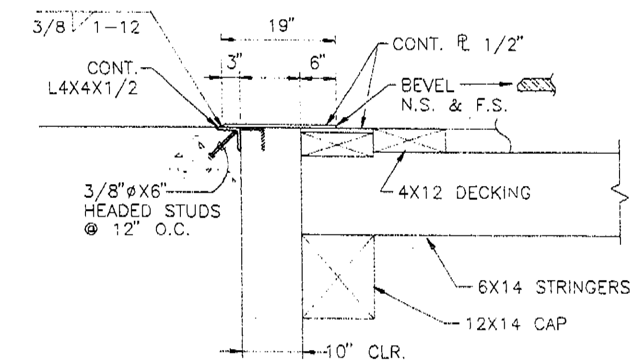


THE EXISTING GROUND PROFILE SHOWN REPRESENTS AS-BUILTS DATED JANUARY 1970 BY TAMS ENGINEERING (REFERENCE TAMS AS-BUILT DRAWING NO. 2555-GE-3 AND TAMS AS-BUILT DRAWING NO. 2555-MF-1). SOUNDINGS SHOWN ON SHEET A-1 WERE TAKEN BY R&M ENGINEERING, INC. ON AUGUST 15, 1991. THESE SOUNDINGS INDICATE ELEVATION DIFFERENCES UP TO 6' WHEN COMPARED TO THE TAMS AS-BUILT DRAWINGS ELEVATIONS. ALL ELEVATIONS ARE REFERENCED FROM MEAN LOWER LOW WATER = 0.00'. DASHED LINES WITH QUESTION MARKS ARE TAKEN FROM SOUNDINGS ON SHEET A-1.

D S5 SECTION @ NEW CONSTRUCTION
SCALE: 1"=20'



E S5 DECK-BULLRAIL DTL.
SCALE: 3/4"=1'-0"



F S5,S12 DECK-PLATE DTL
SCALE: 3/4"=1'-0"

DESIGN GCF
DRAWN NRY
CHECK DHA
APPROVED GCF

R&M ENGINEERING, INC.
6205 GLACIER HIGHWAY
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PH: (907) 780-6060

SOT03-1991-AB-S11, Structural Details

ALASKA INDUSTRIAL DEVELOPMENT & EXPORT AUTHORITY
SKAGWAY ORE TERMINAL STRUCTURAL REPAIRS
SKAGWAY, ALASKA

STRUCTURAL DETAILS

AS-BUILT

0 1 2 3 4
3/4"=1'-0" GRAPHIC SCALE IN FEET

0 1 2 4 6
1/2"=1'-0" GRAPHIC SCALE IN FEET

0 20 40 60
1"=20' GRAPHIC SCALE IN FEET

DATE: DEC. 6, 1991
R&M NO. 901362.03
SCALE: AS NOTED

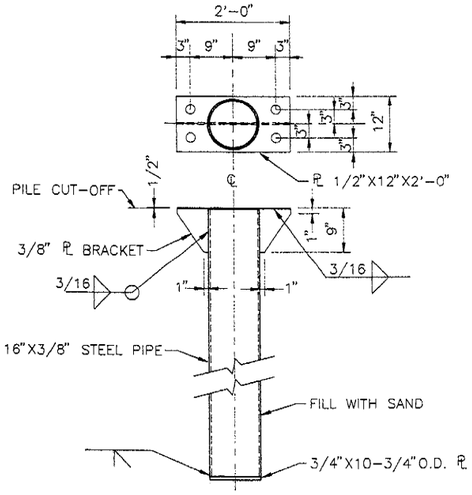
S11

SHEET 11 OF 18

12/16/2013

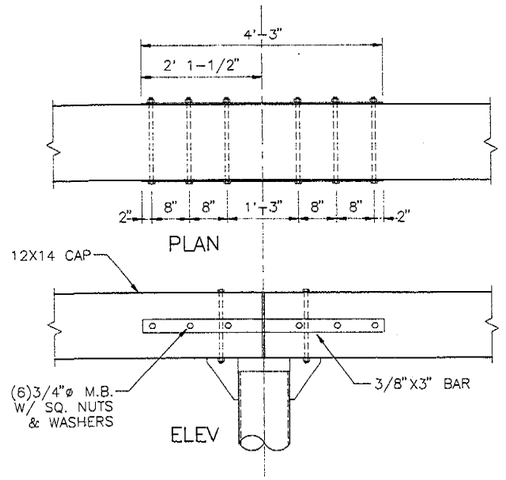
E:05169-11, 1=24 , 12/05/91 at 13:16

FILE NO. O.M.-365-11



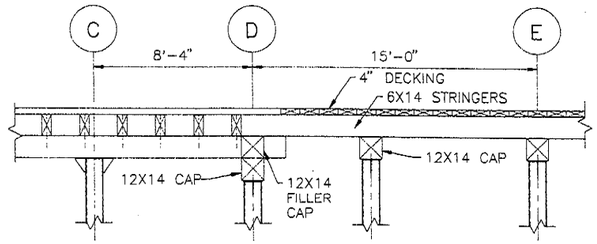
A S12 PILE DETAIL-TYP

SCALE: 3/4"=1'-0"



B S12 CAP BEAM SPLICE DETAIL-TYP

SCALE: 3/4"=1'-0"

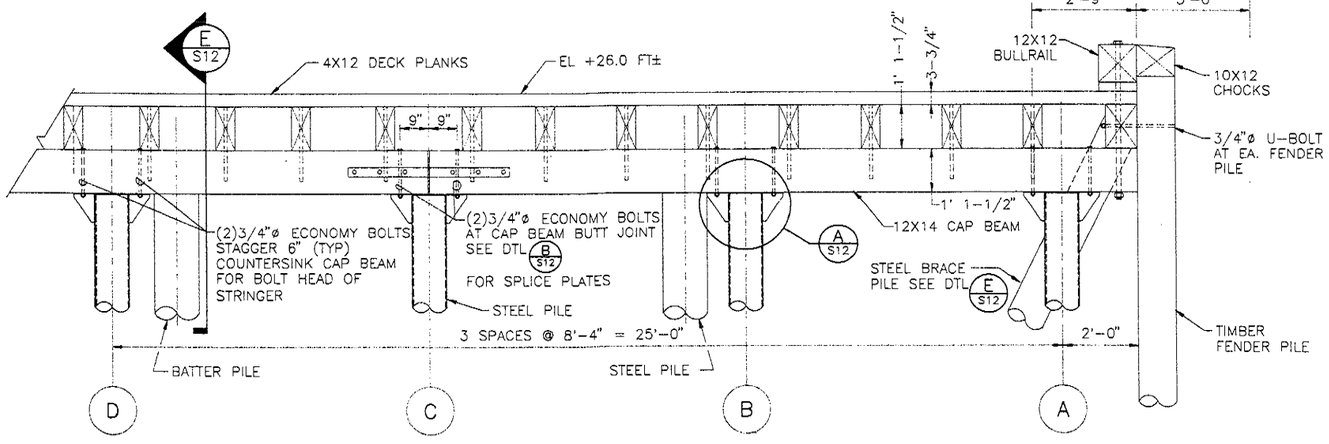


C S12 DECK SECTION

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

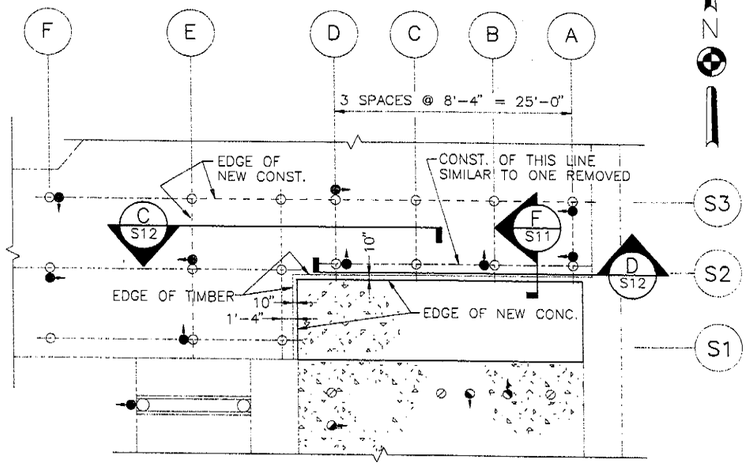
GENERAL NOTES

NOTE: IT IS INTENDED TO RECONSTRUCT THE TIMBER DOCK EMPLOYING MATERIALS AND METHODS SIMILAR TO THOSE USED IN THE EXISTING STRUCTURE, UNLESS OTHERWISE NOTED.



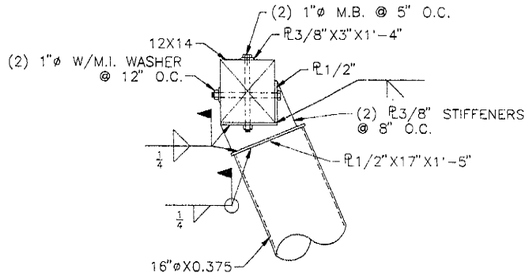
D S12 DECK SECTION

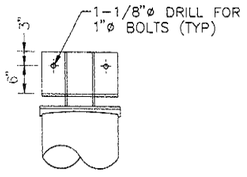
SCALE: 1/2"=1'-0"



1 S5 TIMBER DOCK RECONSTRUCTION PLAN

SCALE: 1/8" = 1'-0"





E S12 LONGITUDINAL BRACE PILE-TYPE DETAIL-TYP

SCALE: 3/4"=1'-0"

STATE OF ALASKA 49TH Irvin George Porter No. 1841-E REGISTERED PROFESSIONAL ENGINEER

AS-BUILT

0 4 8 16 32
1/8"=1'-0" GRAPHIC SCALE IN FEET

0 2 4 8 12
1/4"=1'-0" GRAPHIC SCALE IN FEET

0 1 2 4 6
1/2"=1'-0" GRAPHIC SCALE IN FEET

0 1 2 3 4
3/4"=1'-0" GRAPHIC SCALE IN FEET

DESIGN GCF | DRAWN MAS | CHECK DHA | APPROVED GCF

R&M ENGINEERING, INC.
6205 GLACIER HIGHWAY
P.O. BOX 34278
JUNEAU, ALASKA 99803
PH: (907) 780-6060

SOT03-1991-AB-S12, Timber Dock - Plan & Sections

ALASKA INDUSTRIAL DEVELOPMENT & EXPORT AUTHORITY
SKAGWAY ORE TERMINAL STRUCTURAL REPAIRS
SKAGWAY, ALASKA

TIMBER DOCK
PLAN & SECTIONS

DATE: DEC. 6, 1991
R&M NO. 901362.03
SCALE: AS NOTED

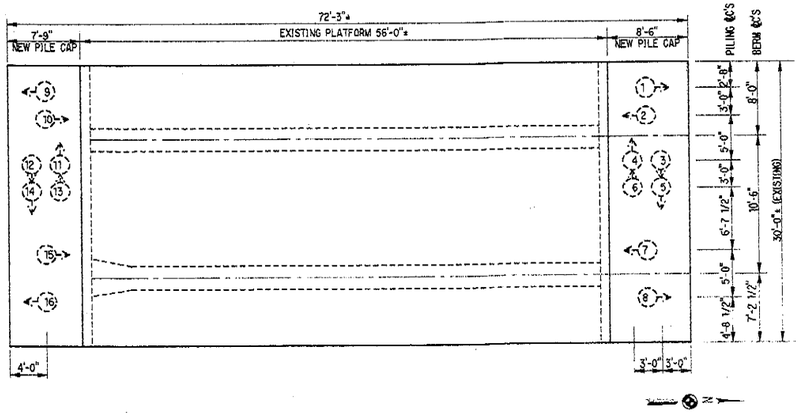
S12

SHEET 12 OF 18

E:05169-12, 1=16 , 12/05/91 at 13:11

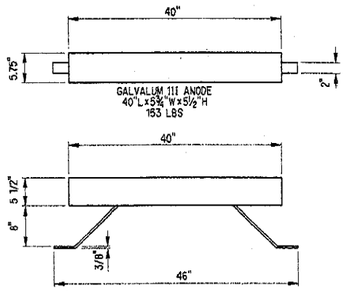
FILE NO. O.M.-365-12

12/16/2013



SHIP LOADER PLATFORM PLAN 1

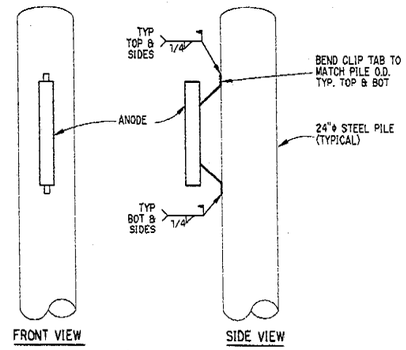
SCALE: 1/8" = 1'-0"



ANODE SPECIFICATION:
- TOTAL WEIGHT: 153 LBS
- GALVALUM III WEIGHT: 140 LBS
- CORE WEIGHT: 13 LBS
- STANDOFF: 2" WIDE x ⅜" THICK
- ANODE LENGTH: 40"
- ANODE HEIGTH: 5 1/2 "
- ANODE WIDTH: 5¾"
- STANDOFF MOUNT: 8"

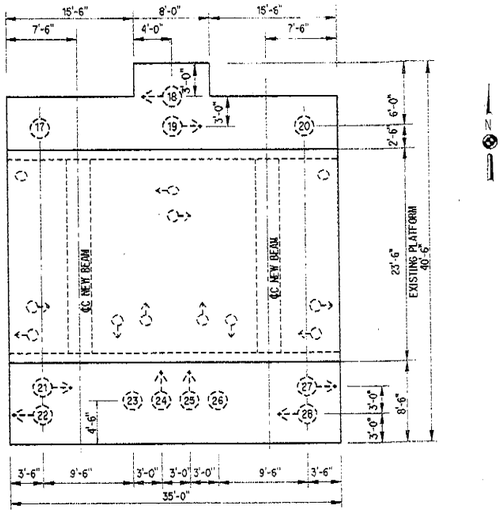
ANODE DETAIL 3

NTS



ANODE ATTACHMENT DETAIL 4

NTS



CONVEYOR NO. 2 SUPPORT STRUCTURE 2

SCALE: 1/8" = 1'-0"

Pile Number	Piles	Anodes
1	1	2
2	1	2
3	1	2
4	1	2
5	1	2
6	1	2
7	1	2
8	1	2
9	1	2
10	1	2
11	1	2
12	1	2
13	1	2
14	1	2
15	1	2
16	1	2
17	1	0
18	1	0
19	1	0
20	1	6
21	1	0
22	1	0
23	1	0
24	1	0
25	1	4
26	1	4
27	1	6
28	1	6
Total Piles =	28	
Total Anodes =		56

ANODE PLACEMENT DETAIL 5

ANODE INSTALLATION NOTES

1. INSTALL ANODES ON PILES AS SPECIFIED. USE 120° (3 ANODES PER ROW) MINIMUM SPACING.
2. INSTALL ANODES AT OR WITHIN ONE (1) FOOT OF MUDLINE. INSTALL ADDITIONAL ANODE(S) ROW(S) BELOW MLLW. SPACE VERTICALLY AS REQUIRED FOR CLEARANCE.
3. INSTALL ANODES SO THAT THEY REMAIN SUBMERGED AT ALL TIMES.

STATE OF ALASKA 49TH Irvin George Porter No. 1841-E REGISTERED PROFESSIONAL ENGINEER

AS-BUILT

DESIGN D. M. W. | DRAWN D-J. W. | CHECK | APPROVED

R&M ENGINEERING, INC.
6205 GLACIER HIGHWAY
P.O. BOX 34278
JUNEAU, ALASKA 99803
PH: (907) 780-6060

SOT03-1991-AB-CP1, Cathodic Protection

ALASKA INDUSTRIAL DEVELOPMENT & EXPORT AUTHORITY
SKAGWAY ORE TERMINAL STRUCTURAL REPAIRS
SKAGWAY, ALASKA

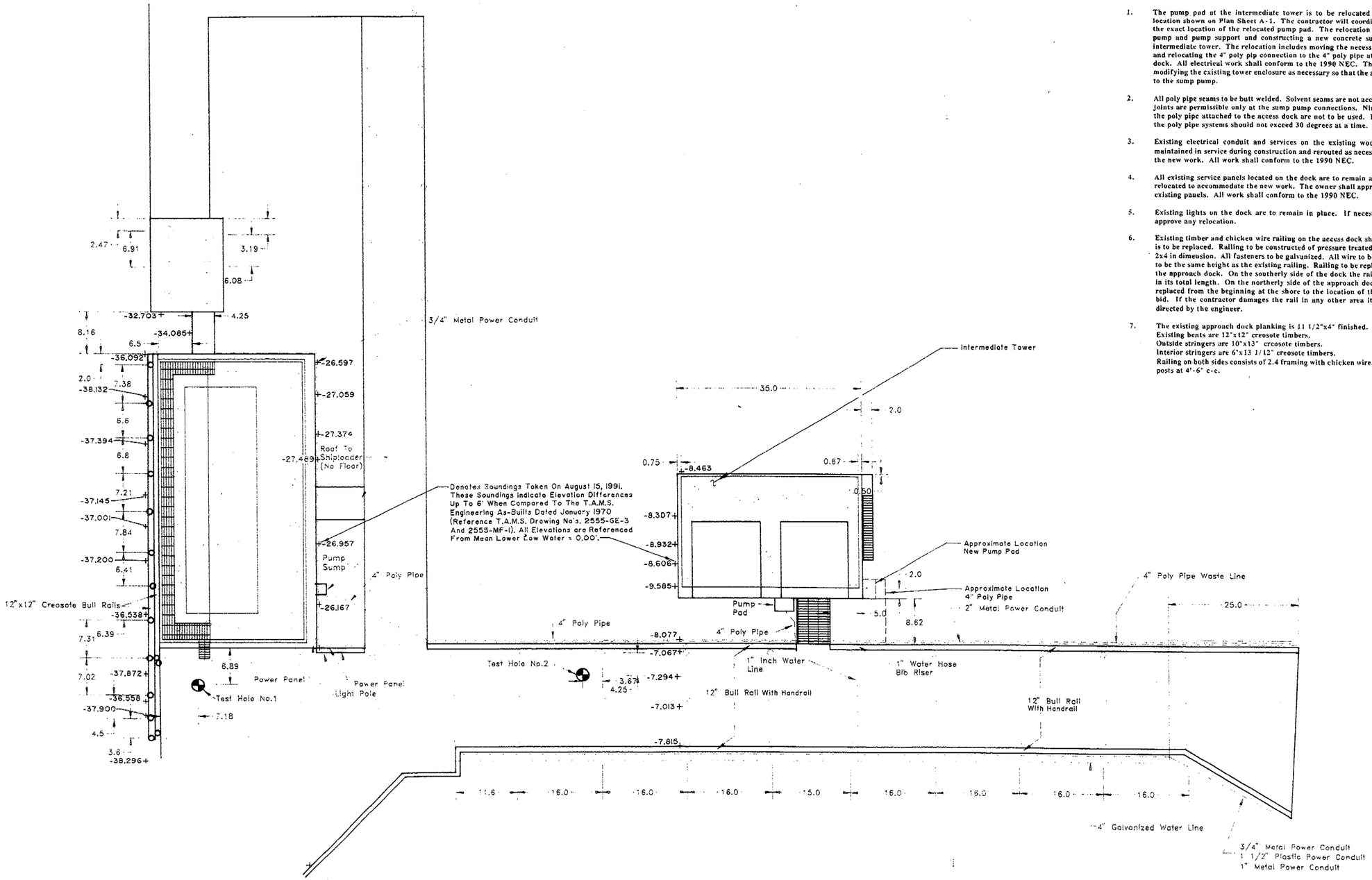
LOADER & CONVEYOR PLATFORMS CATHODIC PROTECTION DETAILS

DATE: DEC. 6, 1991
R&M NO.
SCALE: AS SHOWN

CP-1

SHEET

FILE NO. O.M.-365-13



AS-BUILT SHIP LOADER, DOCK ACCESS, PEDESTRIAN BRIDGE

Scale 1" = 10'

NOTES:

1. The pump pad at the intermediate tower is to be relocated to the approximate location shown on Plan Sheet A-1. The contractor will coordinate with the owner the exact location of the relocated pump pad. The relocation includes moving the pump and pump support and constructing a new concrete sump attached to the intermediate tower. The relocation includes moving the necessary electrical service and relocating the 4" poly pip connection to the 4" poly pipe attached to the access dock. All electrical work shall conform to the 1990 NEC. The work also includes modifying the existing tower enclosure as necessary so that the sludge can be drained to the sump pump.

2. All poly pipe seams to be butt welded. Solvent seams are not acceptable. Mechanical joints are permissible only at the sump pump connections. Ninety degree bends on the poly pipe attached to the access dock are not to be used. Bends on this part of the poly pipe systems should not exceed 30 degrees at a time.

3. Existing electrical conduit and services on the existing wooden dock are to be maintained in service during construction and rerouted as necessary to accommodate the new work. All work shall conform to the 1990 NEC.

4. All existing service panels located on the dock are to remain and if necessary to be relocated to accommodate the new work. The owner shall approve any relocation of existing panels. All work shall conform to the 1990 NEC.

5. Existing lights on the dock are to remain in place. If necessary the owner shall approve any relocation.

6. Existing timber and chicken wire railing on the access dock shown on Drawing A-1 is to be replaced. Railing to be constructed of pressure treated lumber not less than 2x4 in dimension. All fasteners to be galvanized. All wire to be galvanized. Railing to be the same height as the existing railing. Railing to be replaced on both sides of the approach dock. On the southerly side of the dock the railing is to be replaced in its total length. On the northerly side of the approach dock the railing is to be replaced from the beginning at the shore to the location of the 3" galvanized hose bid. If the contractor dumages the rail in any other area it shall be repaired as directed by the engineer.

7. The existing approach dock planking is 11 1/2"x4" finished.
Existing bents are 12"x12" creosote timbers.
Outside stringers are 10"x13" creosote timbers.
Interior stringers are 6"x13 1/12" creosote timbers.
Railing on both sides consists of 2.4 framing with chicken wire, railing 30" high with posts at 4'-6" c-c.

DESIGN I.G.P. DRAWN I.G.P. CHECK I.G.P. APPROVED I.G.P.

R&M ENGINEERING, INC.
ENGINEERS GEOLOGISTS SURVEYORS
6205 GLACIER HIGHWAY
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JUNEAU, ALASKA 99803
PH.: (907) 780-6060

STATE OF ALASKA 49TH Irvin George Porter No. 3085-S REGISTERED PROFESSIONAL ENGINEER

SOT03-1991-AB-A1, As-Built Ship Loader Access, Pedestrian Bridge

ALASKA INDUSTRIAL DEVELOPMENT & EXPORT AUTHORITY
SKAGWAY ORE TERMINAL STRUCTURAL REPAIRS
SKAGWAY, ALASKA

AS-BUILT SHIP LOADER ACCESS PEDESTRIAN BRIDGE

DATE: OCT., 1991
R&M NO. 901314.03
SCALE:

A-1
SHEET
OF

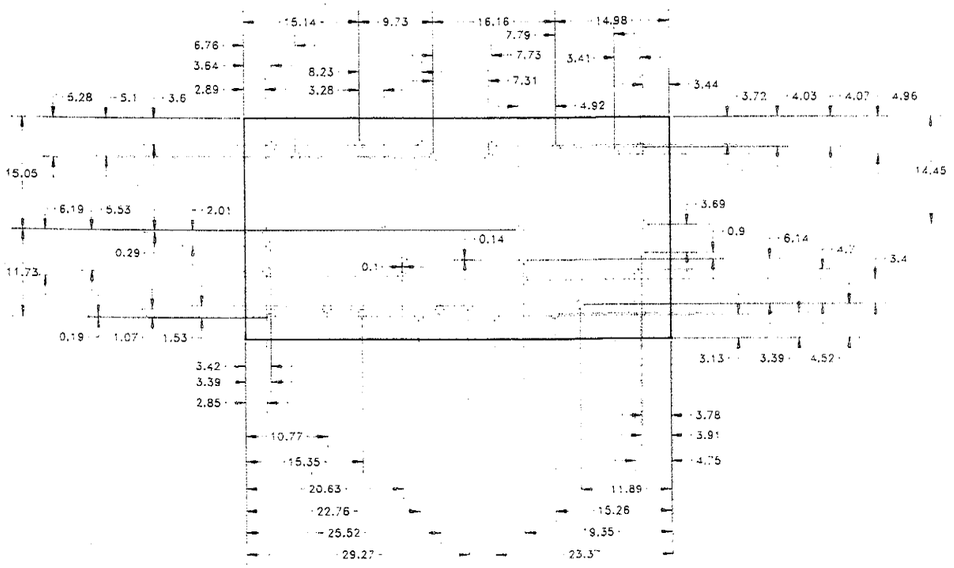
STATE OF ALASKA 49TH Irvin George Porter No. 1641-E REGISTERED PROFESSIONAL ENGINEER

AS-BUILT

12/16/2013

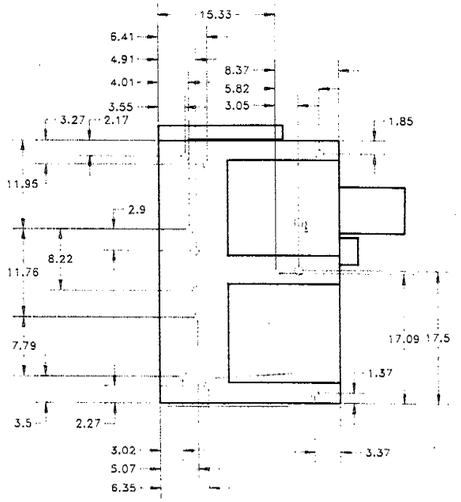
E:05169-S1, 1=1, 08/16/91 at 08:46

FILE NO. O.M.-365-14



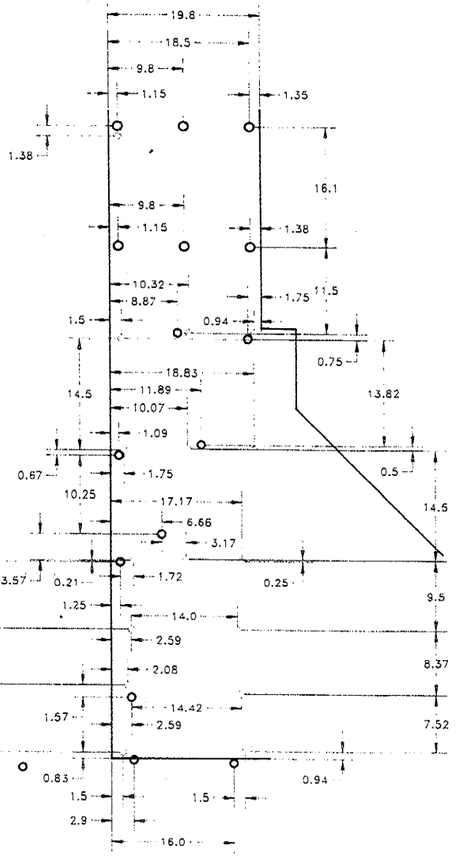
SHIP LOADER AS BUILT PILE LOCATION

Scale 1" = 10'



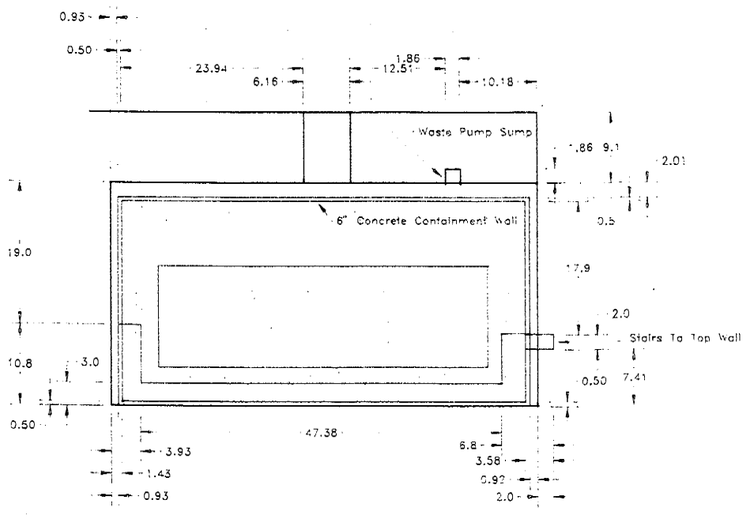
INTERMEDIATE TOWER PILE LOCATION

Scale 1" = 10'



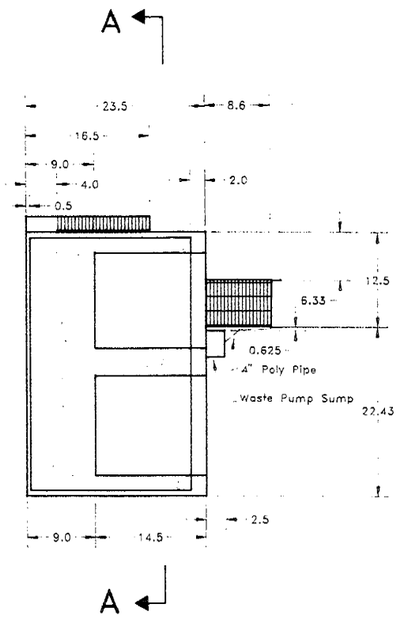
ACCESS DECK PILING LAYOUT

Scale 1" = 10'



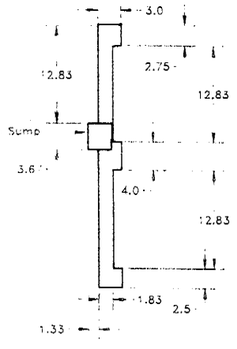
SHIP LOADER PLAN VIEW

Scale 1" = 10'



PLAN VIEW INTERMEDIATE TOWER

Scale 1" = 10'



SECTION A – A

Scale 1" = 10'

STATE OF ALASKA
49TH
Irvin George Porter
No. 1841-E
REGISTERED PROFESSIONAL ENGINEER

AS-BUILT

DESIGN I.G.P.
DRAWN I.G.P.
CHECK I.G.P.
APPROVED I.G.P.

R&M ENGINEERING, INC.
ENGINEERS GEOLOGISTS SURVEYORS
6205 GLACIER HIGHWAY
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JUNEAU, ALASKA 99803
PH.: (907) 780-6060

STATE OF ALASKA
49TH
JOHN G. PORTER
NO. 3865-S
REGISTERED PROFESSIONAL ENGINEER

SOT03-1991-AB-A2, As-Built Ship Loader Details

ALASKA INDUSTRIAL DEVELOPMENT & EXPORT AUTHORITY
SKAGWAY ORE TERMINAL STRUCTURAL REPAIRS
SKAGWAY, ALASKA

AS-BUILT
SHIP LOADER DETAILS

DATE: OCT., 1991
R&M NO. 90314.03
SCALE:

A-2

SHEET OF

E:05169-S1, 1=1, 08/16/91 at 08:46

FILE NO. O.M.-365-15

TEST HOLE NO. 1

DEPTH (FT.)	SOIL GRAPH	LOCATION SAMPLED	BLOW COUNT	SOIL DESCRIPTION

TOP OF DECK EL.= 26.4'

M.L.L.W. EL.= 0.0'

MUDLINE EL.= 33.6'

MEDIUM DENSE, DARK GRAY SILTY SAND W/ SHELL PARTICLES
SM

MEDIUM DENSE LIGHT GRAY FINE TO COARSE SAND
SP

SP-GP

①, Ss, 40
DENSE LIGHT GRAY FINE TO COARSE SAND W/ 20% FINE GRAVEL 5% SILT OR LESS
SP

SP-GP

②, Ss, 40

②A, Ss, 43

③, Ss, 18
MEDIUM DENSE GRAY BROWN FINE TO COARSE SAND W/ 10% GRAVEL
SP

④, Ss, 42
DENSE GRAVELLY SAND, CLEAN, W/ GRAVEL TO 1.5"+

⑤, Ss, 38
DENSE GRAY BROWN GRAVELLY SAND
SP-GP

⑥, Ss, 34
DENSE GRAY BROWN GRAVELLY SAND
SP-GP

⑦, Ss, 55
DENSE TO VERY DENSE GRAVELLY SAND
SAND IS FINE TO COARSE
SP-GP

SP

⑧, Ss, 76
VERY DENSE LIGHT GRAY MED.- COARSE W/ SOME FINE SAND W/ GRAVELLY SAND LENSES GRAVEL TO 2"
SM

DENSE GRAY FINE SANDY SILT

⑨, Ss, 53
DENSE GRAY FINE SAND & SILTY FINE SAND
SM-ML

SP-GP

⑩, Ss, 59
VERY DENSE LIGHT GRAY MED.-COARSE SAND W/ 20% GRAVEL TO 2"+

⑪, Ss, 73
VERY DENSE LIGHT GRAY GRAVELLY TO 2" SAND W/ TRACE SILT
SP-GP

⑫, Ss, 96
VERY DENSE LIGHT GRAY GRAVELLY SAND MED. TO COARSE

⑬, Ss, 58
VERY DENSE LIGHT GRAY MED. TO COARSE SAND W/ 5% - 10% GRAVEL NO SILT
SP

⑭, Ss, 58
SOIL SECTION THICKNESS-162' ±

BOTTOM EL.= 195'

EXPLANATION

UNFROZEN GROUND
ORGANIC MATERIAL
Little Visible Ice 0-10 V_s
ICE DESCRIPTION
A.B
SAMPLE NUMBER
① Ss, 72, 57 1%, 85.9 pcf
DRY DENSITY
WATER CONTENT
BLOWS/FOOT
SAMPLER TYPE
W.D. WATER TABLE
APPROX STRATA CHANGE
BEDROCK
FROZEN GROUND
W.D.-WHILE DRILLING
A.B.-AFTER BORING

TYPICAL SOILS LOG

Ss 1.4" SPLIT SPOON WITH 140 LB HAMMER
Ss 1.4" SPLIT SPOON WITH 340 LB HAMMER
Sh 2.5" SPLIT SPOON WITH 340 LB HAMMER
Sp 2.5" SPLIT SPOON, PUSHED
A AUGER SAMPLE
Ts SHELBY TUBE
Tm MODIFIED SHELBY TUBE
Bs BULK SAMPLE

SAMPLER TYPE SYMBOLS

ORGANIC MATERIAL — GRAVEL
CLAY — COBBLES & BOULDERS
SILT — BEDROCK
SAND — ICE, MASSIVE

SOIL SYMBOLS

STATE OF ALASKA 49TH Irvin George Porter No. 1841-E REGISTERED PROFESSIONAL ENGINEER

AS-BUILT

DESIGN J.C.
DRAWN F.M.
CHECK J.C.
APPROVED M.A.M.

R&M ENGINEERING, INC.
ENGINEERS GEOLOGISTS SURVEYORS
6205 GLACIER HIGHWAY
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JUNEAU, ALASKA 99803
PH.: (907) 780-6060

STATE OF ALASKA 49TH M.A. Menzies No. 855-CE REGISTERED PROFESSIONAL ENGINEER

SOT03-1991-AB-T1, Test Hole No. 1

ALASKA INDUSTRIAL DEVELOPMENT & EXPORT AUTHORITY
SKAGWAY ORE TERMINAL STRUCTURAL REPAIRS
SKAGWAY, ALASKA
AUGUST, 1991
TEST HOLE NO. 1

DATE: OCT., 1991
R&M NO. 901314.03
SCALE:

SHEET T - 1 OF

12/16/2013

FILE NO. O.M.-365-16

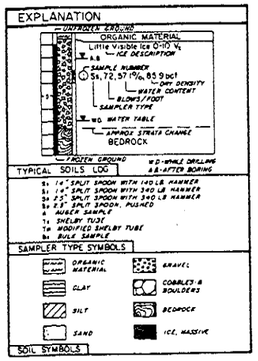
TEST HOLE NO. 2

TOP OF DECK
EL. = 26.4'

M.L.L.W.
EL. = 0.0'

MUDLINE
EL. = 14.6'

DEPTH (FT.)	SOIL GRAPH	LOCATION SAMPLED	BLOW COUNT	SOIL DESCRIPTION
				ML-SP DENSE BLACK TO DARK GRAY ORGANIC-RICH SANDY SILT W/ WOOD & WOOD PARTICLES
				①, Ss, 30 MEDIUM DENSE LIGHT GRAY MED. TO COARSE SAND W/ 15%-20% GRAVEL
				SP-GP LENSES OF GRAVELLY SAND
				SP-GP ②, Ss, 41 DENSE GRAY MED. TO COARSE SAND W/ SOME GRAVEL IN LENSES



DEPTH (FT.)	SOIL GRAPH	LOCATION SAMPLED	BLOW COUNT	SOIL DESCRIPTION
				③, Ss, 32 SP DENSE LIGHT GRAY FINE TO MEDIUM W/ SCATTERED COARSE SAND & A TRACE OF GRAVEL
				④, Ss, 61 SP VERY DENSE LIGHT GRAY FINE TO COARSE SAND W/ 10% TO
				ML-SM
				⑤, Ss, 31 DENSE GRAY FINE SAND W/ SOME SILT
				DENSE & MEDIUM DENSE GRAY FINE TO COARSE SAND W/ GRAVELLY LENSES @ 5' INTERVALS (APPROX.)
				SP-GP MATERIAL DESCRIPTION FROM SCREENED CUTTINGS & DRILLING CHARACTERISTICS

BOTTOM
EL. = 153.6'

DEPTH (FT.)	SOIL GRAPH	LOCATION SAMPLED	BLOW COUNT	SOIL DESCRIPTION
				SAND W/ GRAVELLY LENSES
				SOIL SECTION THICKNESS 139' (±)

STATE OF ALASKA * 49TH * Irvin George Porter No. 1841-E REGISTERED PROFESSIONAL ENGINEER

AS-BUILT

DESIGN J.C.
DRAWN F.M.
CHECK J.C.
APPROVED M.A.M.

R&M ENGINEERING, INC.
ENGINEERS GEOLOGISTS SURVEYORS
6205 GLACIER HIGHWAY
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JUNEAU, ALASKA 99803
PH.: (907) 780-6060

STATE OF ALASKA * 49TH * Mark Menzies No. 1855-CE REGISTERED PROFESSIONAL ENGINEER

SOT03-1991-AB-T2, Test Hole No. 2

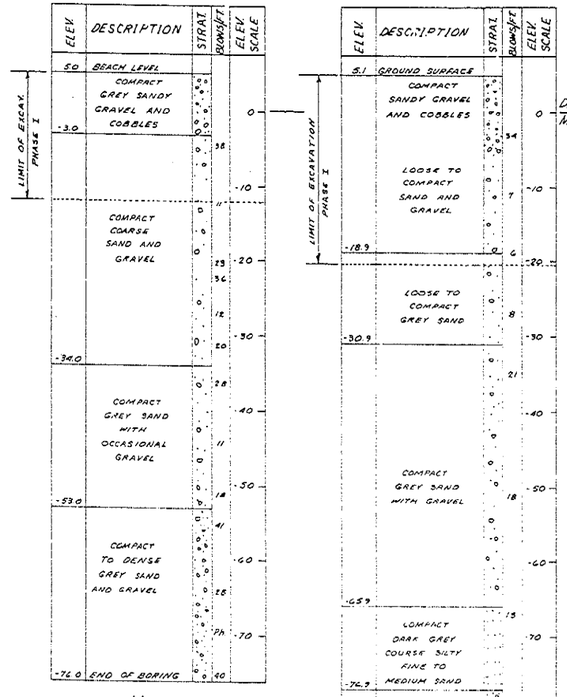
ALASKA INDUSTRIAL DEVELOPMENT & EXPORT AUTHORITY
SKAGWAY ORE TERMINAL STRUCTURAL REPAIRS
SKAGWAY, ALASKA
AUGUST, 1991
TEST HOLE NO. 2

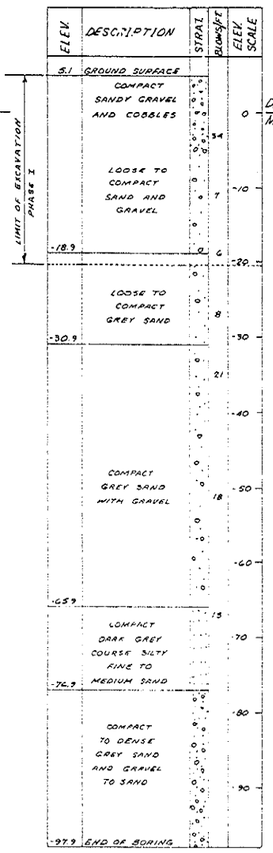
DATE: OCT., 1991
R&M NO. 901314.03
SCALE:

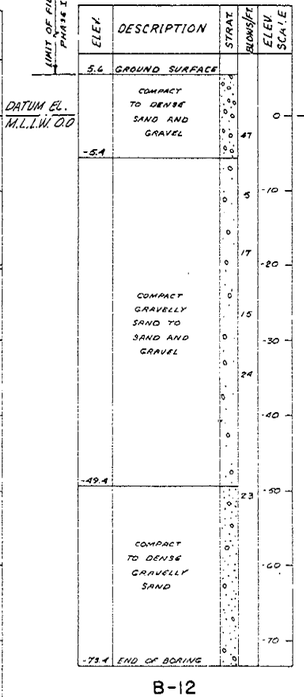
T-2

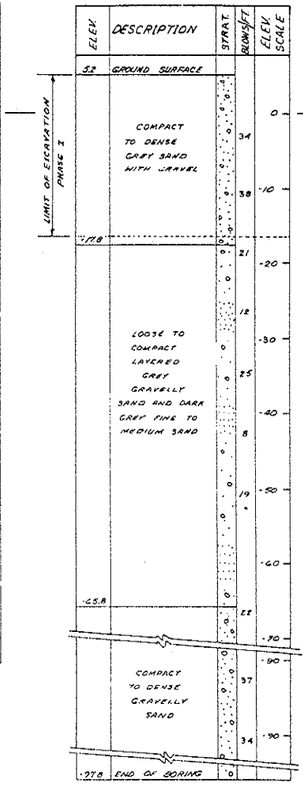
SHEET OF

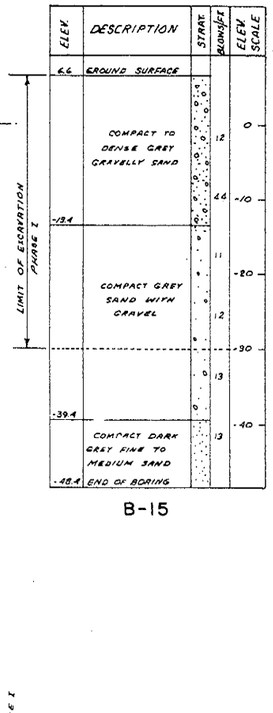
FILE NO. 0.M.-365-17

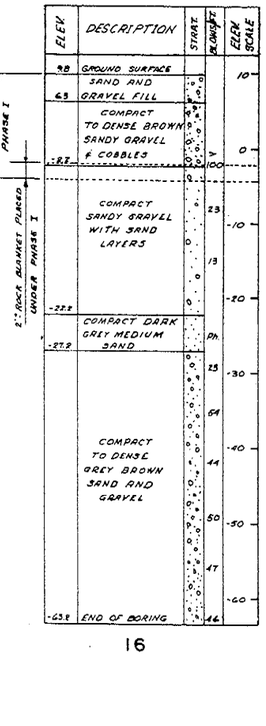


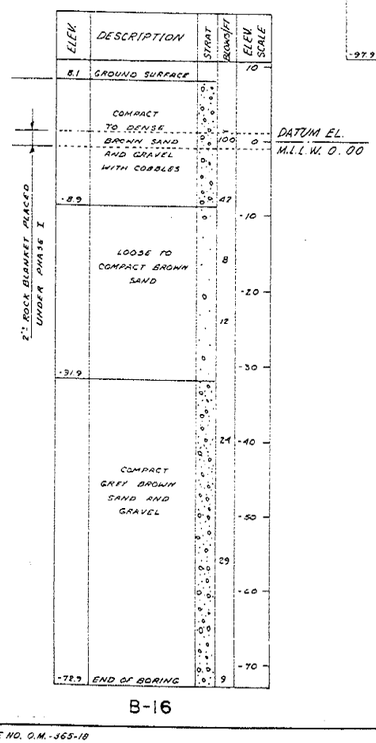


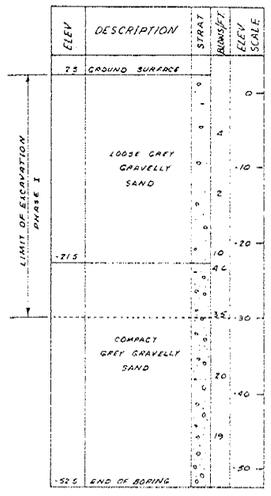


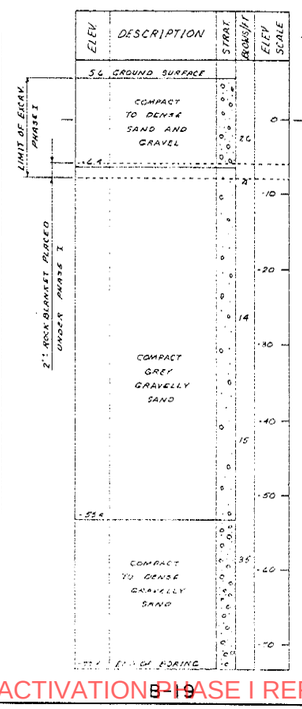


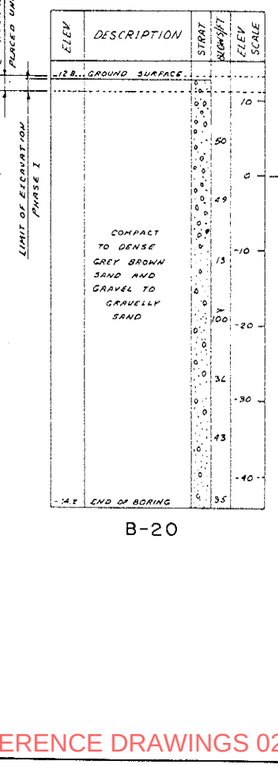


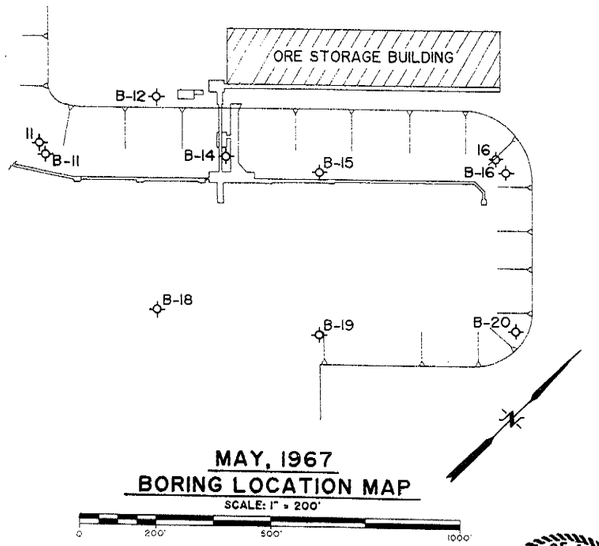












BORING NOTES

1. BORING LOGS ARE TAKEN FROM SOILS REPORT ENTITLED "SOIL INVESTIGATION, PROPOSED ORE TERMINAL, WHITE PASS AND YUKON ROUTE, SKAGWAY, ALASKA," BY GOLDER, BRAWNER AND ASSOCIATES, LTD., VANCOUVER, B.C., DATED MAY 1967.
2. THE SUBSURFACE INFORMATION AND DATA HEREIN ARE NOT INTENDED AS REPRESENTATIONS OR WARRANTIES, BUT ARE FURNISHED FOR INFORMATION ONLY. IT IS EXPRESSLY UNDERSTOOD THAT THE OWNER AND ENGINEER, OR EITHER, WILL NOT BE RESPONSIBLE FOR THE ACCURACY THEREOF OR FOR ANY DEDUCTION, INTERPRETATION, OR CONCLUSION DRAWN THEREFROM BY THE CONTRACTOR. THE INFORMATION IS MADE AVAILABLE IN ORDER THAT THE CONTRACTOR MAY HAVE READY ACCESS TO THE SAME INFORMATION AVAILABLE TO THE OWNER AND ENGINEER, OR EITHER, AND IS NOT A PART OF THIS CONTRACT. (SEE SPECIAL PROVISIONS.)
3. ALL ELEVATIONS REFER TO THE PLANE OF MEAN LOWER LOW WATER (M.L.L.W. = 0.00 FEET).
4. SEE GENERAL PLAN, DRAWING NUMBER 2555-GE-3, FOR BORING LOCATIONS.
5. LEGEND:

   Ph: SAMPLER ADVANCED BY HYDRAULIC PRESSURE
   > : GREATER THAN
6. "GROUND SURFACE" SHOWN ON THESE BORINGS REFER TO ORIGINAL GROUND ELEVATIONS ON DATE WHEN BORINGS WERE TAKEN, PRIOR TO DREDGING AND HYDRAULIC FILL OPERATION CONDUCTED UNDER PHASE I PROJECT. "LIMIT OF EXCAVATION - PHASE I" AND "LIMIT OF FILL - PHASE I" INDICATED ON THESE BORING LOGS. DOES NOT PURPORT TO BE "AS-BUILT" CONSTRUCTION COMPLETED UNDER PHASE I AT THE TIME OF AWARD OF THIS CONTRACT.

DESIGN J.C. DRAWN F.M. CHECK J.C. APPROVED M.A.M.

R&M ENGINEERING, INC.
ENGINEERS GEOLOGISTS SURVEYORS
6205 GLACIER HIGHWAY
P.O. BOX 34278
JUNEAU, ALASKA 99803
PH.: (907) 780-6060

SOT03-1991-AB-T3, May,1967
Subsurface Data Boring Logs

ALASKA INDUSTRIAL DEVELOPMENT & EXPORT AUTHORITY
SKAGWAY ORE TERMINAL STRUCTURAL REPAIRS
SKAGWAY, ALASKA

MAY, 1967 SUBSURFACE DATA BORING LOGS

DATE: OCT., 1991
R&M NO. 901314.03
SCALE:

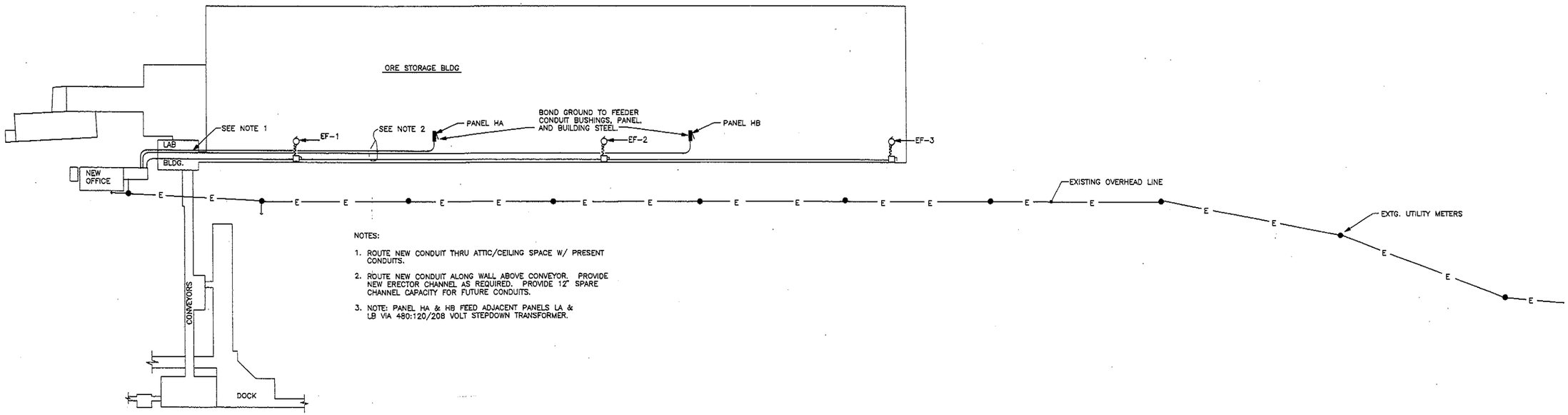
T-3

STATE OF ALASKA 49TH
Irvin George Porter No. 1841-E
REGISTERED PROFESSIONAL ENGINEER

AS-BUILT

SHEET OF

FILE NO. O.M.-365-18



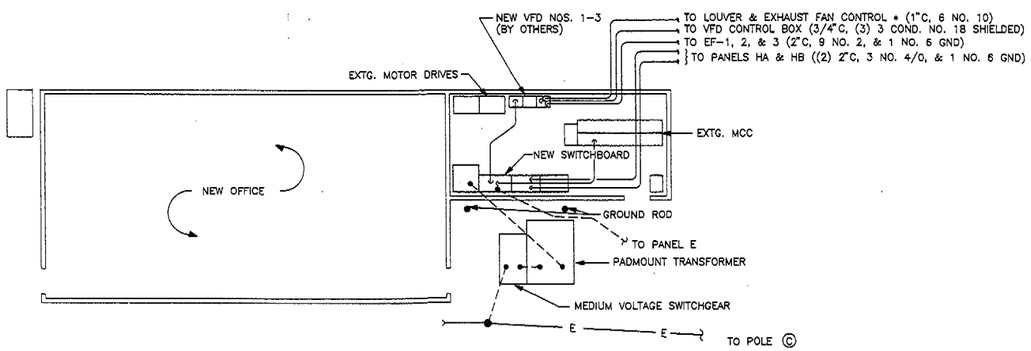
NOTES:

1. ROUTE NEW CONDUIT THRU ATTIC/CEILING SPACE W/ PRESENT CONDUITS.
2. ROUTE NEW CONDUIT ALONG WALL ABOVE CONVEYOR. PROVIDE NEW ERECTOR CHANNEL AS REQUIRED. PROVIDE 12" SPARE CHANNEL CAPACITY FOR FUTURE CONDUITS.
3. NOTE: PANEL HA & HB FEED ADJACENT PANELS LA & LB VIA 480:120/208 VOLT STEPDOWN TRANSFORMER.

SITE PLAN

SCALE: 1"=50'

0' 50' 100' 150'



ELECTRICAL BUILDING

SCALE: 1/8"=1'0"

0' 3' 5' 10' 15'

NOTE:

* EXTG EXHAUST FAN CONTROL NOT CONNECTED PER DIRECTION OF CRAIG BOWER.

DRAWING REDUCED TO 45% OF ORIGINAL SIZE

SOT03-1991-AB-23/29, Electrical Site Plan / Details

AS-BUILT

REV	DATE	ACTION	DESCRIPTION	BY	APVD
1	10/91		AS-BUILTS	PEL	BCH

STATE OF ALASKA 49TH — Irvin George Porter No. 1841-E — REGISTERED PROFESSIONAL ENGINEER

STATE OF ALASKA 49th — B.C. HAIGHT EE 4806 — REGISTERED PROFESSIONAL ENGINEER

B.C. Haight
Consulting Engineers
418 Harris Street, Juneau, Alaska
(907) 586-9788

R & M ENGINEERS, INC.
Skagway Ore Handling Terminal
Skagway Alaska

SITE PLAN / DETAILS

PROJECT NUMBER	Scale:	Sheet No
128-06	AS NOTED	E-1
	Date: 29-OCT-90	
Drwn. CRH/PEL Dsgn. BCH	Apvd. BCH	

FILE #: G.M. 331-23

AS-BUILT SHT. #: 23 OF 29

15 SPACES @ 4'-0 = 60-0

4-5⅜ 4-5⅜

10I25.4

2-L RD. STIFFNER (TYP.)

10 I 25.4 10 I 25.5 10 I 25.5 10 I 25.5 10 I 25.5 10 I 25.5

5'-10⅝

10 I 25.4

VIEW (A) Scale ½ = 1-0

72'-6 c/c PULLEYS

68-11⅝

3-6 1-0

DETAIL (B)

DETAIL (D)

2'-0 2'-0 TAKE-UP

A.G. DECK PLATE. FOR CONVEYOR #3 MECHANICAL EQUIP'T. (SEE DWG. 2555-ME-22)

C 12I31.8 SEE DWG 2555-SL-2

C 12I31.8 (SEE DWG 2555-SL-2)

min. 3-0
max. 18-0

21'-7½

FOR DETAILS OF HEAD CHUTE & SPOUT SEE DRG. Nº SL-13.

G-G REF. minimum

25'-0 REF.

ELEVATION Scale: ¼ = 1-0

¾ ϕ H.S. BOLTS.

PL. 3"x1"x4½

MILL ENDS.

SPLICE DETAIL Scale 1" = 1-0

10I25.4

1-0¾

¾ ϕ HOLES

5'-8 c/c

10 M C 6.5

2-¼ FOR STIFF. (TYP.)

5'-0 c/c

¾ ϕ ADJUSTING SCREW IN 1" SLOTS

8-11½

6-0 2-11½

BELT LINE

FOR DETAILS OF HEAD CHUTE SUPPORTS - SEE DRG. Nº SL-13

7" 1-9½ 7 4-3 1-6

FOR DETAILS OF WHEEL BRACKETS SEE DRG. Nº SL-8.

℄ CHUTE

DETAIL (B) Scale ½ = 1-0

℄ CONV. #3 FLOW

2-6 2-6

3'-10

2'-10 2'-10

3'-5 3'-5

SECTION (C) Scale ½ = 1-0

(F) 11½ 2'-0 11½

R. 4-2-9

10I25.4

5'-0 c/c

10 I 25.5 10 I 25.5 10 I 25.5

2-¼ STIFF. PL.

10 M C 6.5

5'-3 c/c

10I25.4 10I25.4

BELT LINE

9⅛

14GA DECK PL.

10I25.4

SHUTTLE CYLINDER (SEE DWG 2555-SL-14)

FOR DETAILS OF WHEEL BRACKETS SEE DRG. Nº SL-8

DETAIL (D) Scale ½ = 1-0

BELT LINE

3'-10

W SIDE 12I31.8

℄ CONVEYOR #3

2-6

4-2½

2'-7½ 2'-7½

3-2½ 3-2½

SECTION (F) Scale ½ = 1-0

ESTIMATED STEELWEIGHT OF SHUTTLE FRAME: 7,200#

DRAWING REDUCED TO 45% OF ORIGINAL SIZE

SOT03-1969-AB-2555-SL-1, Conveyor No. 3 - Shuttle Frame

PREPARED BY: WRIGHT ENGINEERS LIMITED VANCOUVER CANADA
REFERENCE: 528 480 301

PACIFIC AND ARCTIC RAILWAY AND NAVIGATION COMPANY
ORE HANDLING TERMINAL -- PHASE II
SKAGWAY ALASKA

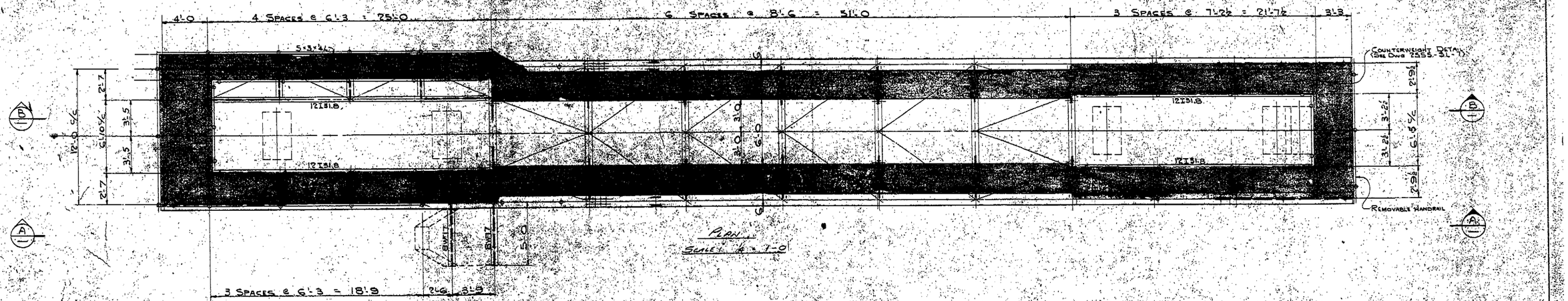
TIPPETTS - ABBETT - McCARTHY - STRATTON
ENGINEERS AND ARCHITECTS
Seattle New York

SHIPLOADER CONVEYOR #3 SHUTTLE FRAME

DRAWN BY G. QUAN
DATE AUG. - 68
SCALE As noted
DRAWING NUMBER 2555-SL-1

DESIGNED BY J. W.H.
CHECKED BY

NO. BY DATE REVISION



NOTES:
- BEAMS - 12WF27 U/NOTED
- BRACING GST13.5 FLUSH WITH TOP OF 12" BEAMS
- H/RAIL FIXED U/NOTED
- RAILS - 1¼" SCH 40 PIPE
- POSTS - 1½" SCH 40 PIPE
- SOCKETS - 2" SCH 80 PIPE x 6"
- DENOTES GRATING WC-19-4 (1"x3")

ESTIMATED STEELWEIGHT OF BOOM: 52,000#

DRAWING REDUCED TO 45% OF ORIGINAL SIZE

SOT03-1969-AB-2555-SL-2, Loading Boom – Plan & Elevations

PREPARED BY: WRIGHT ENGINEERS LIMITED, VANCOUVER — CANADA
REFERENCE: 528 | 480 | 302

PACIFIC AND ARCTIC RAILWAY AND NAVIGATION COMPANY
ORE HANDLING TERMINAL -- PHASE II
SKAGWAY — ALASKA

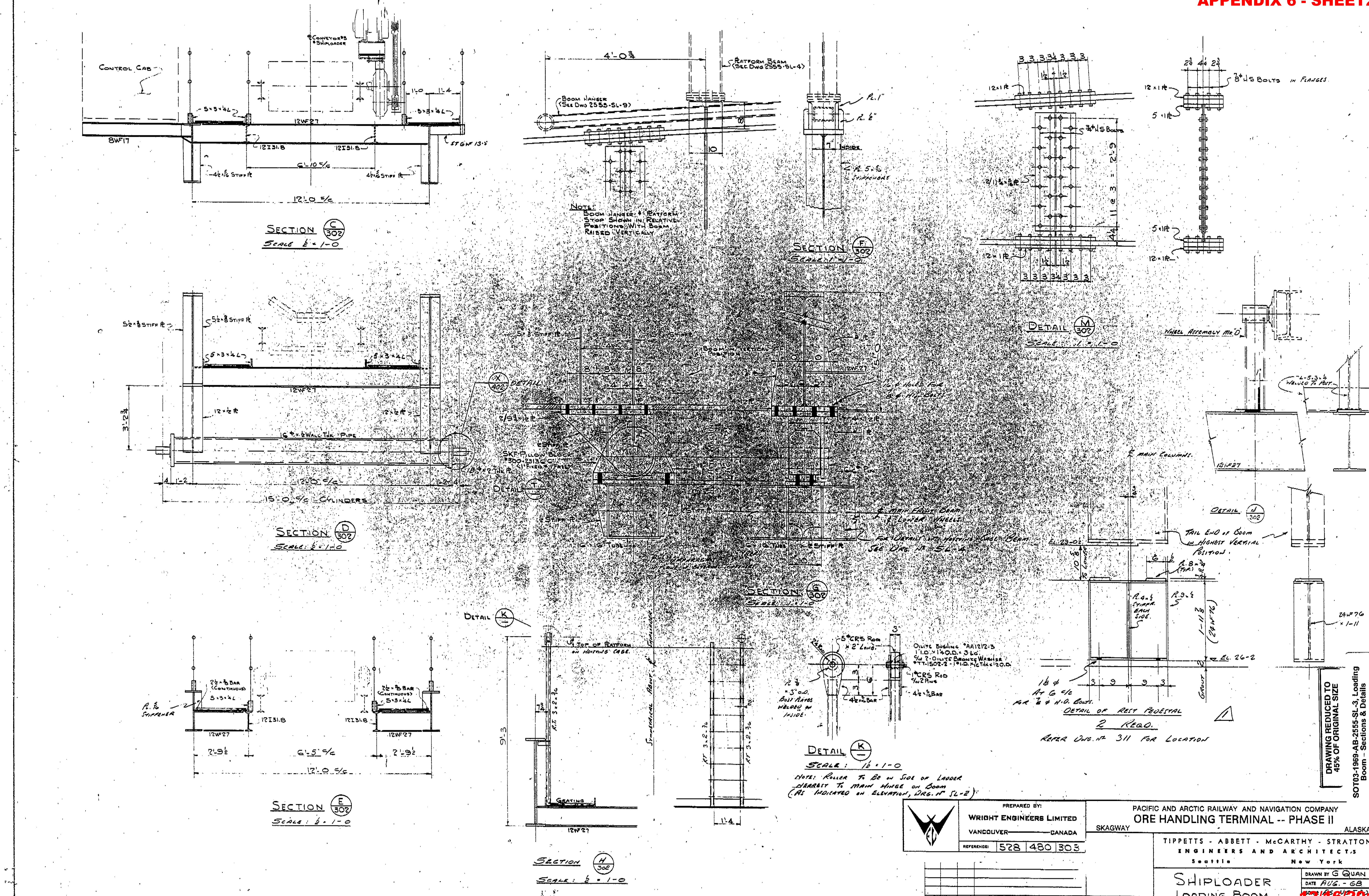
TIPPETTS - ABBETT - McCARTHY - STRATTON
ENGINEERS AND ARCHITECTS
Seattle — New York

NO.	BY	DATE	REVISION

DESIGNED BY J.W.H
CHECKED BY

SHIPLOADER LOADING BOOM PLAN & ELEVATIONS

DRAWN BY G. QUAN
DATE AUG.-68
SCALE AS NOTED
DRAWING NUMBER 2555-SL-2
REVISION 12/18/2013


Control Cab
8WF17
12WF27
12I31.8
6'-10 5/16
12'-0 5/16
Section C/302
Scale 1/2" = 1'-0
4'-0 3/4
Platform Beam (See Dwg 2555-SL-4)
Boom Hanger (See Dwg 2555-SL-9)
Note: Boom Hanger & Platform Stop Shown in Relative Positions With Boom Raised Vertically
Section F/302
Detail M/302
Section D/302
15'-0 5/16 Cylinders
16"ø x 1/2" Wall Thk Pipe
Section G/302
Detail J/302
Tail End of Boom in Highest Vertical Position
Section E/302
Scale 1/2" = 1'-0
6'-5 5/16
12'-0 5/16
Section H/302
Scale 1/2" = 1'-0
Top of Platform on Hoisting Cage
Grating
Detail K/302
Scale 1 1/2" = 1'-0
Note: Roller to be on Side of Ladder Nearest to Main Hinge on Boom (As Indicated on Elevation, Dwg. No. SL-2)
Detail of Rest Pedestal
2 Reqd.
Refer Dwg. No. 311 for Location
El. 26-2
24WF76 x 1'-11
PREPARED BY:
WRIGHT ENGINEERS LIMITED
VANCOUVER CANADA
REFERENCE: 528 480 303
PACIFIC AND ARCTIC RAILWAY AND NAVIGATION COMPANY
ORE HANDLING TERMINAL -- PHASE II
SKAGWAY ALASKA
TIPPETTS - ABBETT - McCARTHY - STRATTON
ENGINEERS AND ARCHITECTS
Seattle New York
SHIPLOADER
LOADING BOOM
DRAWN BY G QUAN
DATE AUG. - 68
DRAWING REDUCED TO 45% OF ORIGINAL SIZE
SOT03-1969-AB-2555-SL-3, Loading Boom - Sections & Details

SECTION (B/—) SCALE: 1" = 1'-0

NOTE: CHECK CAP PLATES FOR LAMINATIONS & LOAD CARRYING CAPACITY.

SECTION (F/—) SCALE: 1" = 1'-0

DETAIL (H/—) SCALE 1½" = 1'-0

SECTION (K/—) SCALE 1" = 1'-0

(FOR DETAILS OF BOOM HANGERS SEE ORG. NO. SL-9.)

VIEW (C/—)

2 - ⅜" PLATES WITH 1" THICK RUBBER PAD SANDWICHED BETWEEN.

10WF39

NOTE: TRAVELLING TO BE STOPPED AS REQUIRED TO CLEAR AUTOMATICALLY RETRACTABLE LADDER. (DECEASED)

FOR LADDER DETAILS SEE ORG. NO. SL-3

OUTLINE OF BOOM (IN HORIZONTAL POSITION).

20'-0 c/c MAIN GUIDE WHEEL

SYM. ABT. ℄

FOR DETAILS OF GRATING MOUNTING SEE ORG. NO. SL-3

NOTE: R.S. DENOTES A RIGID SUPPORT. JUNCTION OF CROSS BRACING IN CAGE SECTIONS SHALL BE RIGIDLY CONNECTED.

VIEW (A/—)

ACCESS LADDER ON FOURTH SIDE OF CAGE

FOR DETAILS OF COUNTERWEIGHT HANGERS SEE ORG. NO. SL-10.

VIEW (B/—) SCALE: ½" = 1'-0

SCALE: ½" = 1'-0

NOTES: ALL DIMENSIONS GIVEN FOR RECTANGULAR SECTIONS ARE OUTSIDE DIMENSIONS.
W/RAIL FIXED
RAILS - 14" Sch 40 PIPE
POSTS: 16" Sch 40 PIPE
SOCKETS: 2" Sch 80 PIPE x 6"
DENOTES GRATING WG-15-4 (1" x ⅛")
ESTIMATED WEIGHT OF SUPERSTRUCTURE SPECIFIED ON THIS ORG., (EXCLUDING WHEELS) 34,000#

DRAWING REDUCED TO 45% OF ORIGINAL SIZE

SOT03-1969-AB-2555-SL-4, Hoisting Cage Plan, Elevations, & Sections

PREPARED BY: WRIGHT ENGINEERS LIMITED
VANCOUVER — CANADA
REFERENCE: 528 480 304

PACIFIC AND ARCTIC RAILWAY AND NAVIGATION COMPANY
ORE HANDLING TERMINAL -- PHASE II
SKAGWAY ALASKA

TIPPETTS - ABBETT - McCARTHY - STRATTON
ENGINEERS AND ARCHITECTS
Seattle New York

NO.	BY	DATE	REVISION

DESIGNED BY J.W.H.
CHECKED BY

SHIPLOADER
HOISTING CAGE
PLAN, ELEVATIONS, & SECTIONS

DRAWN BY G. QUAN
DATE AUG. '68
SCALE AS NOTED
DRAWING NUMBER 25-55-SL-4

10 WF Col Base Pl

24 WF Col Base Pl

10 WF Col Splice Pl

24 WF Col Splice Pl

View on (B/—)

Detail (J/—)

Detail (K/—)

Detail (M/—)

Detail (N/—)

Detail (S/—) (Typical)

Section (T/—)

Key Plan

Note:
- All bolted connections to be ¾" HS bolts U/Noted

View on (A/—)

View on (C/—)

Section (D/—)

Section (F/—)

ESTIMATED STEELWORK FOR GUIDE TOWERS: 75,000 LBS.

PREPARED BY: WRIGHT ENGINEERS LIMITED
VANCOUVER — CANADA
REFERENCE: 528 | 480 | 305

PACIFIC AND ARCTIC RAILWAY AND NAVIGATION COMPANY
ORE HANDLING TERMINAL — PHASE II
SKAGWAY — ALASKA

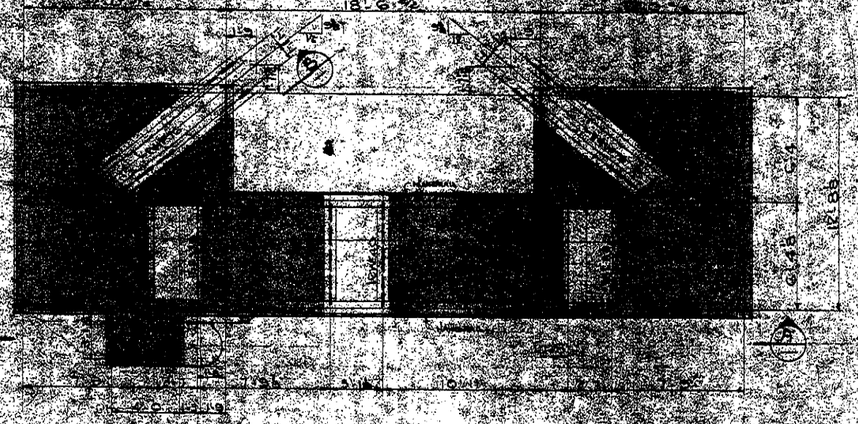
TIPPETTS - ABBETT - McCARTHY - STRATTON
ENGINEERS AND ARCHITECTS
Seattle — New York

SHIPLOADER
GUIDE TOWERS, ELEVATIONS & DETAILS

DRAWN BY: G. QUAN
DATE: AUG. '68
2555-SL-5

SOT03-1969-AB-2555-SL-5, Guide Towers, Elevations, & Details

DRAWING REDUCED TO 45% OF ORIGINAL SIZE



TOP OF STEEL - EL 93'-2 3/8

SCALE 4" = 1'-0"

FOR DETAILS OF DRUM HOIST AND CROSS SHAFT SEE DWG. NO SL-15

ELEVATION 93'-2 3/8

SECTION Ⓒ

SCALE 3/4" = 1'-0"

VIEW Ⓐ

FOR DETAILS OF SHEAVE ASSEMBLIES SEE DWG. NO. SL-15

ELEVATION 93'-2 3/8

SECTION Ⓑ

SCALE 3/4" = 1'-0"

LADDER & CAGE DETAIL

NOTE:

HANDRAIL FIXED

SOCKETS - 2" SCH 80 PIPE x 6

POSTS - 1 1/2" SCH 40 PIPE

RAILS - 1 1/4" SCH 40 PIPE

■ DENOTES GRATING WC-19-4 (1 x 1/8)

DRAWING REDUCED TO 45% OF ORIGINAL SIZE

SOT03-1969-AB-2555-SL-6, Hoisting Bridge Plan & Sections

PREPARED BY:
WRIGHT ENGINEERS LIMITED
VANCOUVER — CANADA
REFERENCE: 578 480 306

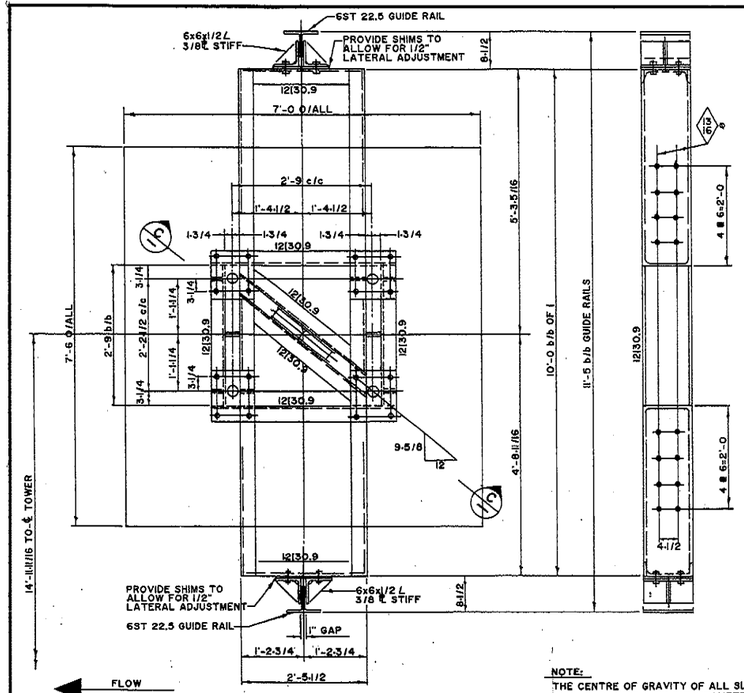
PACIFIC AND ARCTIC RAILWAY AND NAVIGATION COMPANY
ORE HANDLING TERMINAL - PHASE II
SKAGWAY ALASKA

TIPPETTS - ABBETT - McCARTHY - STRATTON
ENGINEERS AND ARCHITECTS
Seattle New York

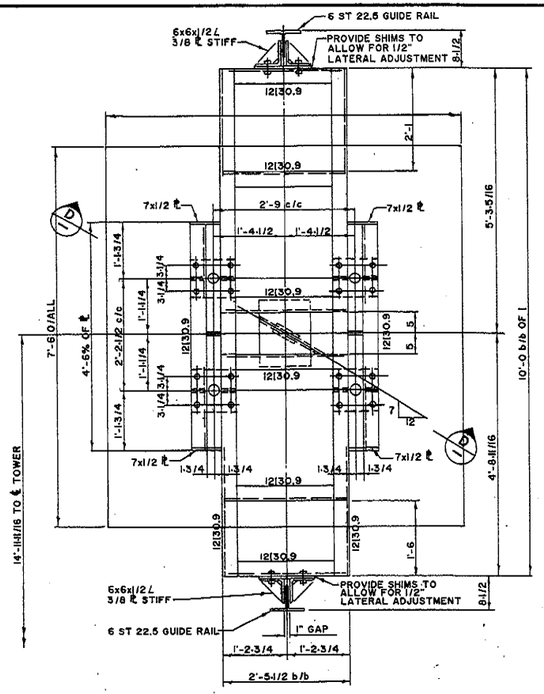
SHIPLOADER
HOISTING BRIDGE
PLAN & SECTIONS

DRAWN BY G. QUAN
DATE AUG. 68
SCALE AS NOTED
DRAWING NUMBER
DESIGNED BY J.W.H.
CHECKED BY

NO.	BY	DATE	REVISION

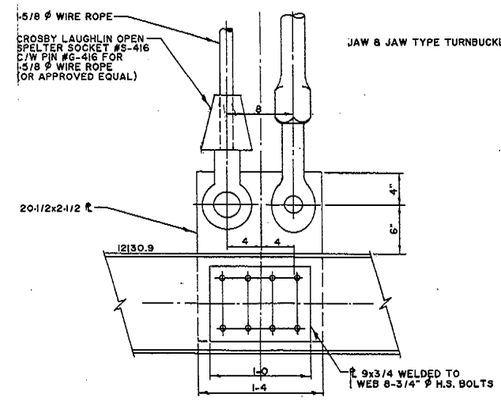


VIEW ON (A)
SCALE: 3/4" = 1'-0"

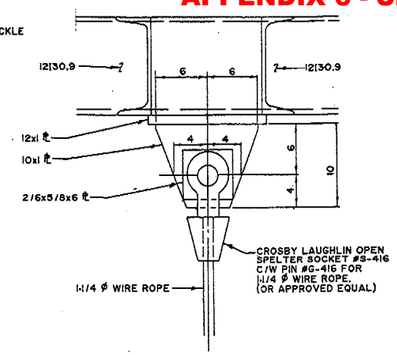


VIEW ON (B)
SCALE: 3/4" = 1'-0"

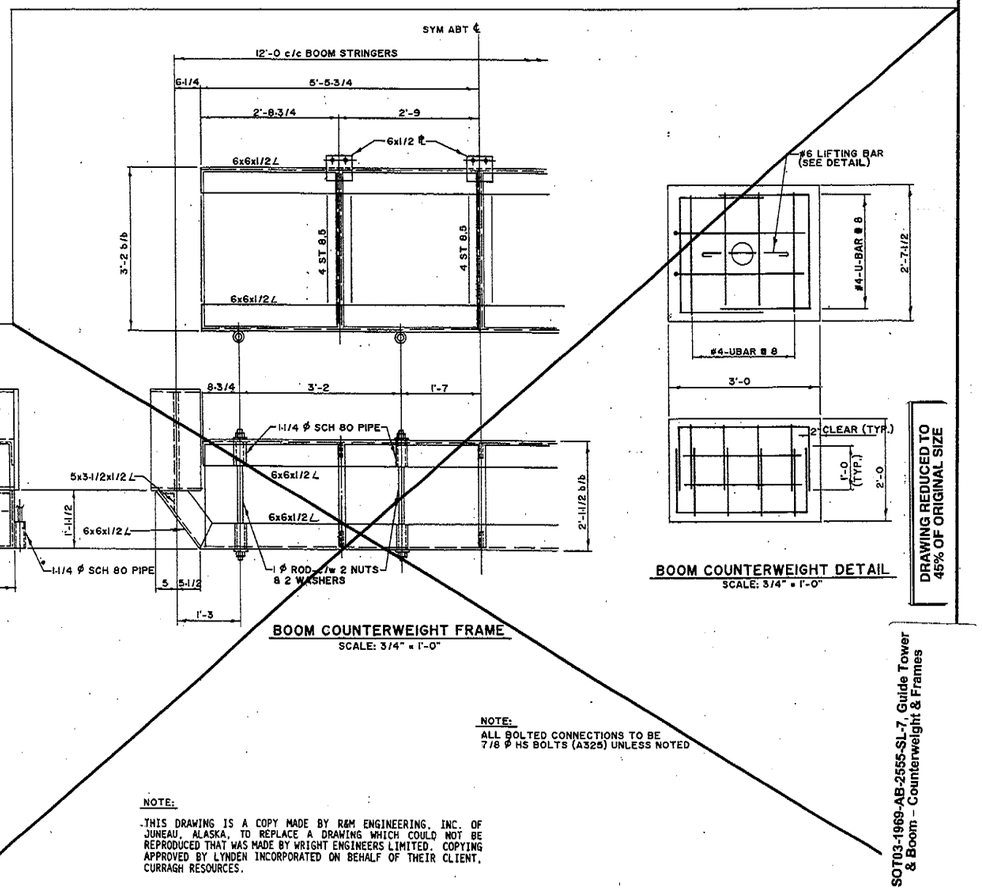
NOTE:
THE CENTRE OF GRAVITY OF ALL SLABS SHALL COINCIDE WITH THE GEOMETRICAL C. OF G. TO ELIMINATE BINDING OF COUNTERWEIGHT FRAMES IN GUIDES. WEIGHT OF EACH SLAB TO BE 7,600 LBS.



SECTION (C)
SCALE:1-1/2" = 1'-0"



SECTION (D)
SCALE:1-1/2" = 1'-0"



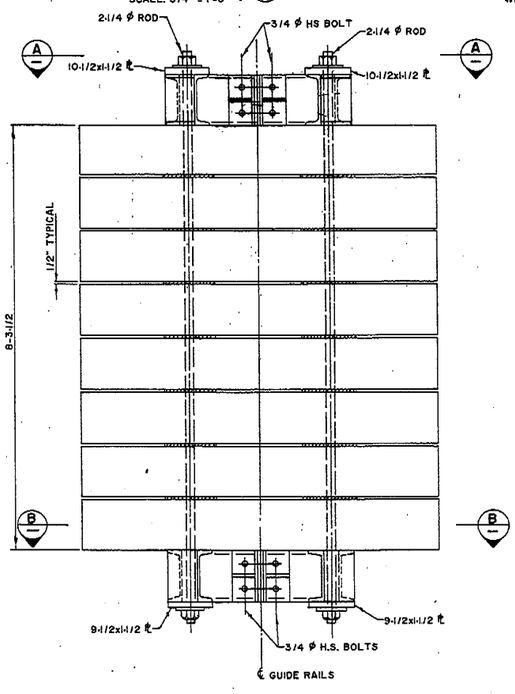
BOOM COUNTERWEIGHT DETAIL
SCALE: 3/4" = 1'-0"

BOOM COUNTERWEIGHT FRAME
SCALE: 3/4" = 1'-0"

DRAWING REDUCED TO 45% OF ORIGINAL SIZE

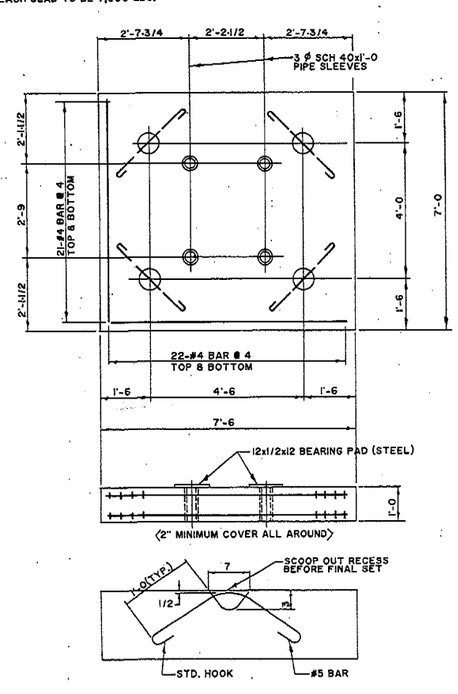
BOOM CWT. NOT REQ'D.

NOTE:
ALL BOLTED CONNECTIONS TO BE 7/8 ϕ HS BOLTS (A325) UNLESS NOTED



2 - CWT'S. REQ'D.

TOWER COUNTERWEIGHT FRAME
SCALE: 3/4" = 1'-0"



DETAIL OF LIFTING BAR

TOWER COUNTERWEIGHT DETAIL OF TYPICAL SLAB
SCALE:1/2" = 1'-0"

NOTE:
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PREPARED BY: WRIGHT ENGINEERS LIMITED
VANCOUVER — CANADA
REFERENCE: 528 | 480 | 307

PACIFIC AND ARCTIC RAILWAY AND NAVIGATION COMPANY
ORE HANDLING TERMINAL -- PHASE II
SKAGWAY — ALASKA

TIPPETTS - ABBETT - McCARTHY - STRATTON
ENGINEERS AND ARCHITECTS
Seattle — New York

SHIPLOADER
GUIDE TOWER & BOOM
COUNTERWEIGHT & FRAMES

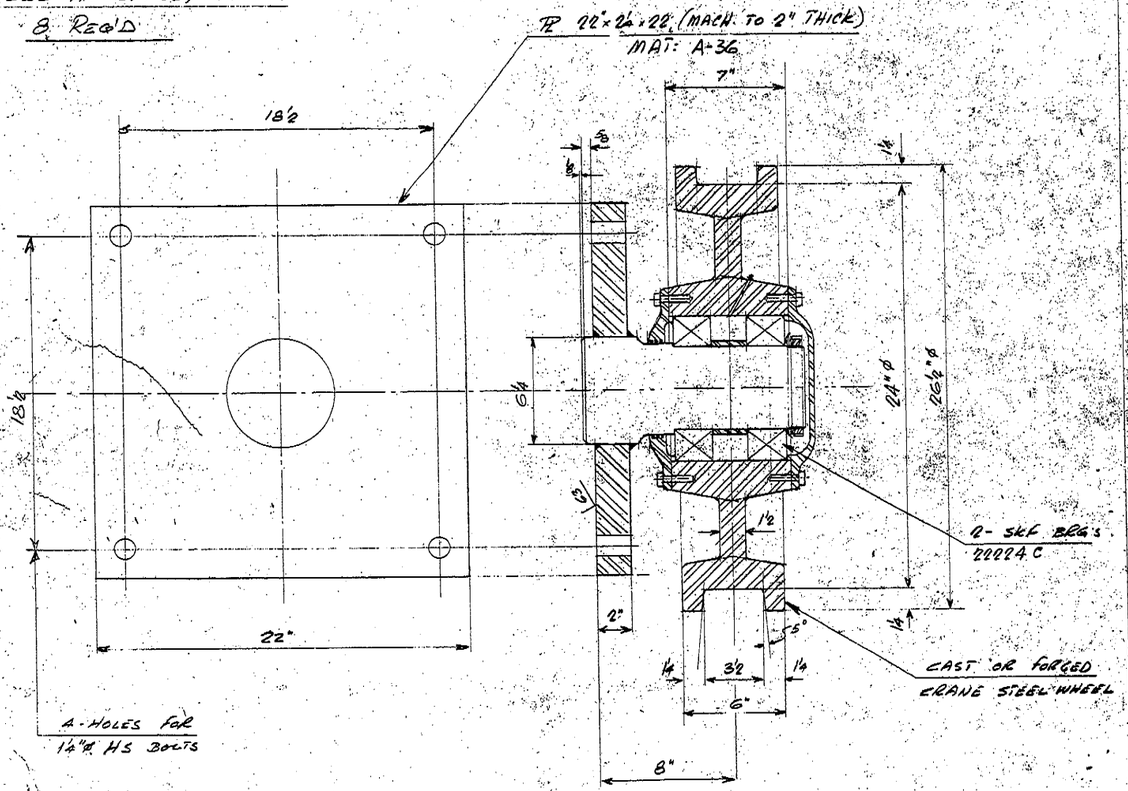
DRAWN BY G QUAN
DATE AUG '68
SCALE AS NOTED
DRAWING NUMBER 12/15/2013

DESIGNED BY J.C.H.
CHECKED BY

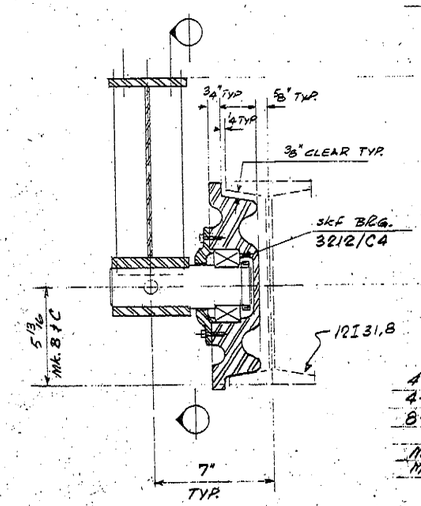
NO.	BY	DATE	REVISION

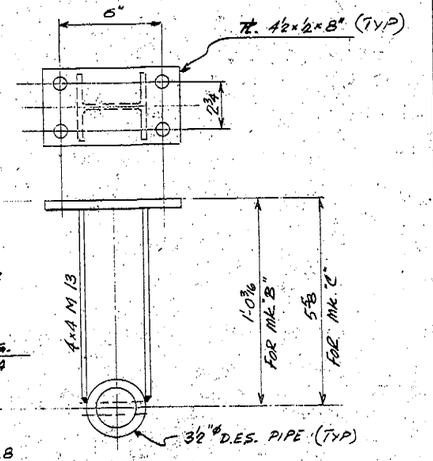
SOT03-1969-AB-2555-SL-7, Guide Tower & Boom – Counterweight & Frames

WHEEL ASSEMBLY MK. A
8 REQ'D



WHEEL ASSEMBLIES MK. B & C
8 - REQ'D



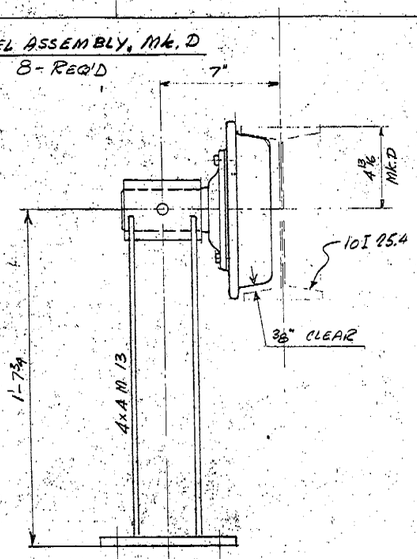


4-WHEEL ASSEMBLIES MK. B
4 ---------- MK. C
8 ---------- MK. D

MK. B & C TO SUIT 12I 31.8
MK. D TO SUIT 10I 25.4

SHAFT & BRG. ASSEMBLY SAME ON B, C & D

WHEEL ASSEMBLY, MK. D
8 - REQ'D



DRAWING REDUCED TO 45% OF ORIGINAL SIZE

SOT703-1969-AB-2555-SL-8, Wheel Assemblies

PREPARED BY: WRIGHT ENGINEERS LIMITED
VANCOUVER — CANADA
REFERENCE: 628 | 480 | 308

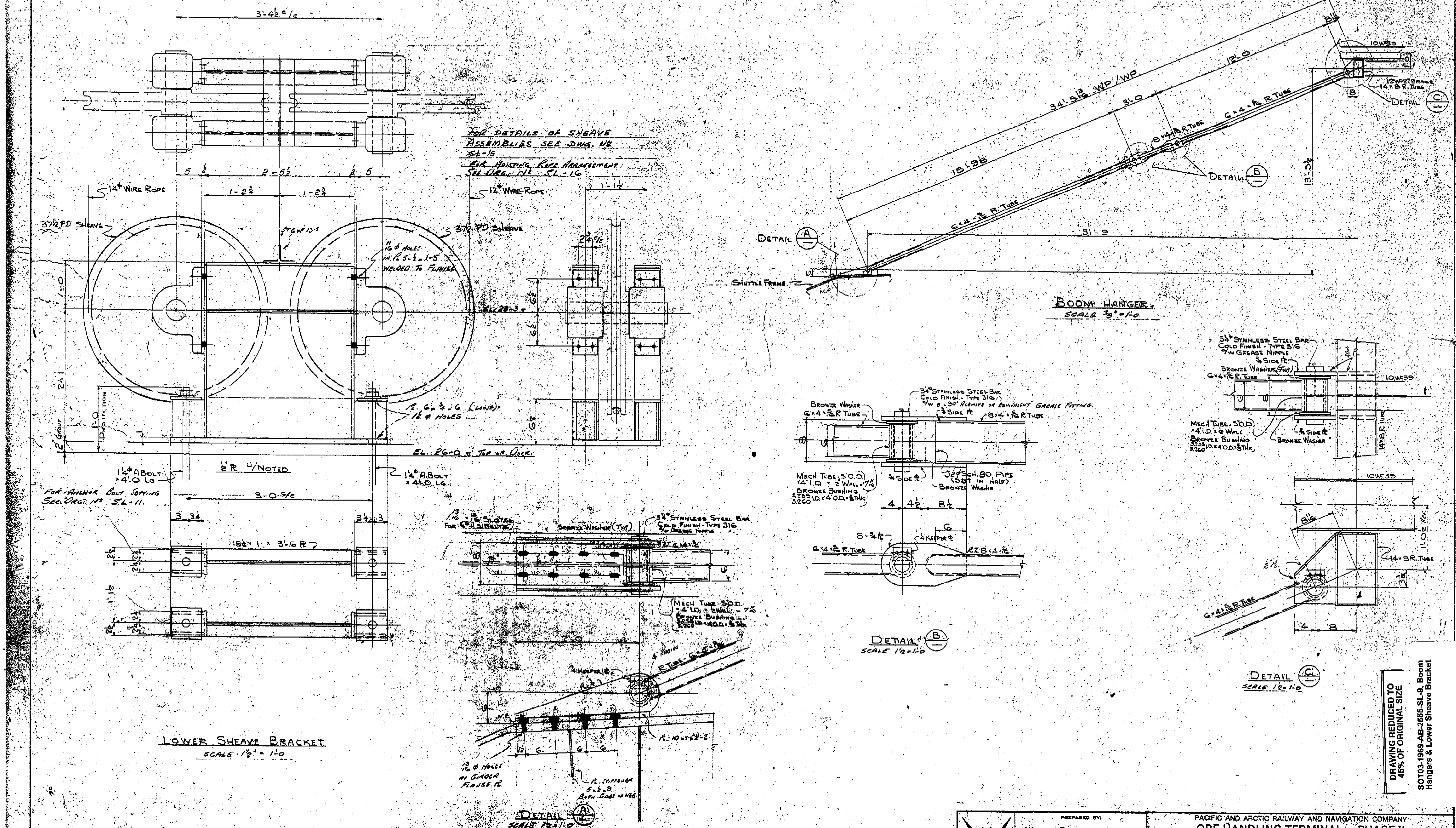
PACIFIC AND ARCTIC RAILWAY AND NAVIGATION COMPANY
ORE HANDLING TERMINAL -- PHASE II
SKAGWAY — ALASKA

TIPPETTS - ABBETT - McCARTHY - STRATTON
ENGINEERS AND ARCHITECTS
Seattle — New York

SHIP LOADER
WHEEL ASSEMBLIES

DRAWN BY: CW
DATE: AUG. 68
SCALE: 3" = 1'-0"
DESIGNED BY: CW
CHECKED BY:

NO.	BY	DATE	REVISION



DRAWING REDUCED TO 45% OF ORIGINAL SIZE

SOT03-1969-AB-2555-SL-9, Boom Hangers & Lower Sheave Bracket

PREPARED BY: WRIGHT ENGINEERS LIMITED VANCOUVER — CANADA

PACIFIC AND ARCTIC RAILWAY AND NAVIGATION COMPANY
ORE HANDLING TERMINAL -- PHASE II
SKAGWAY ALASKA

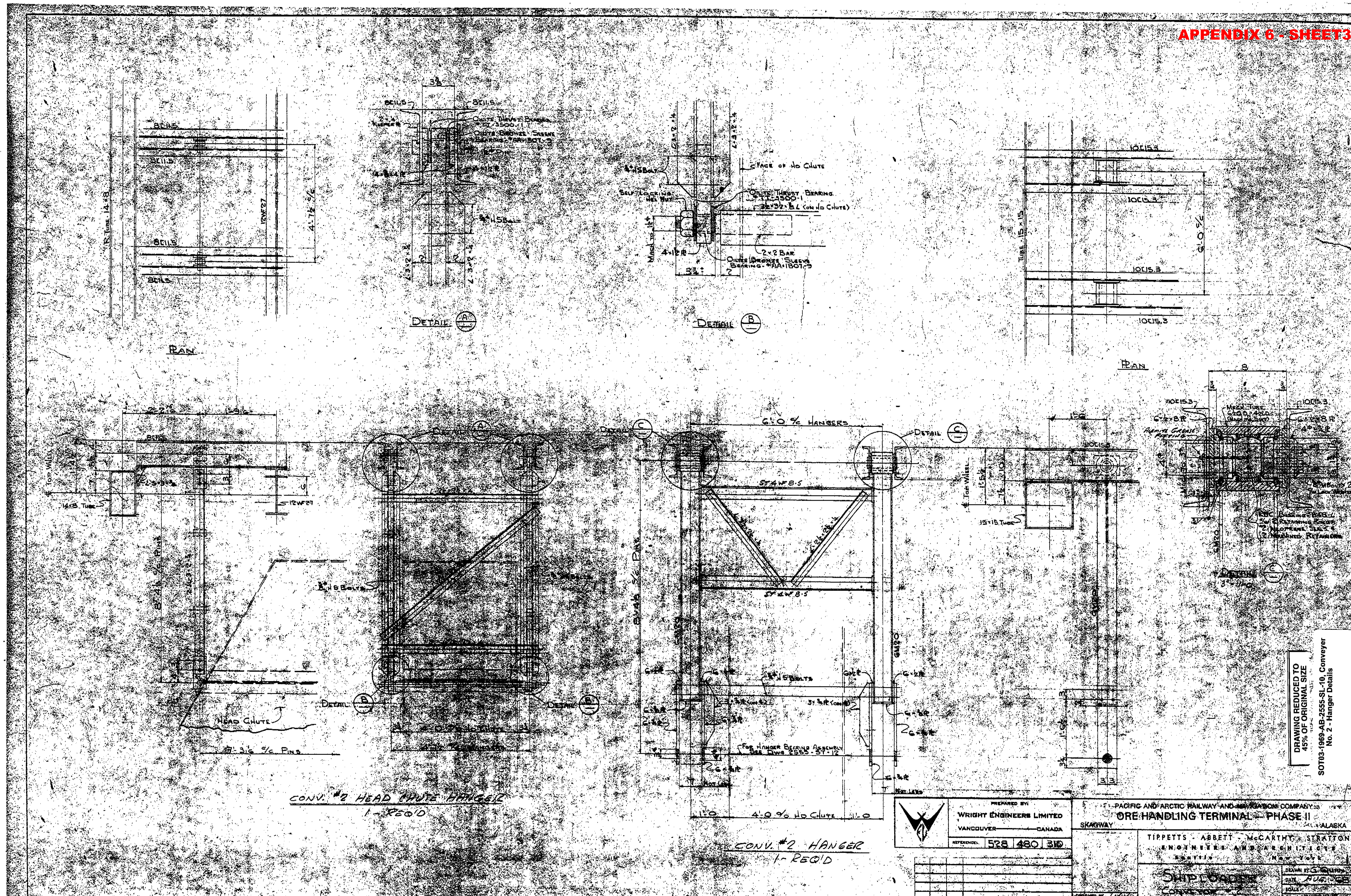
TIPPETTS - ABBETT - McCARTHY - STRATTON
ENGINEERS AND ARCHITECTS
Seattle New York

SHIPLOADER
BOOM HANGERS & LOWER SHEAVE BRACKET

DRAWN BY G. QUAN
DATE AUG.-68
SCALE AS NOTED

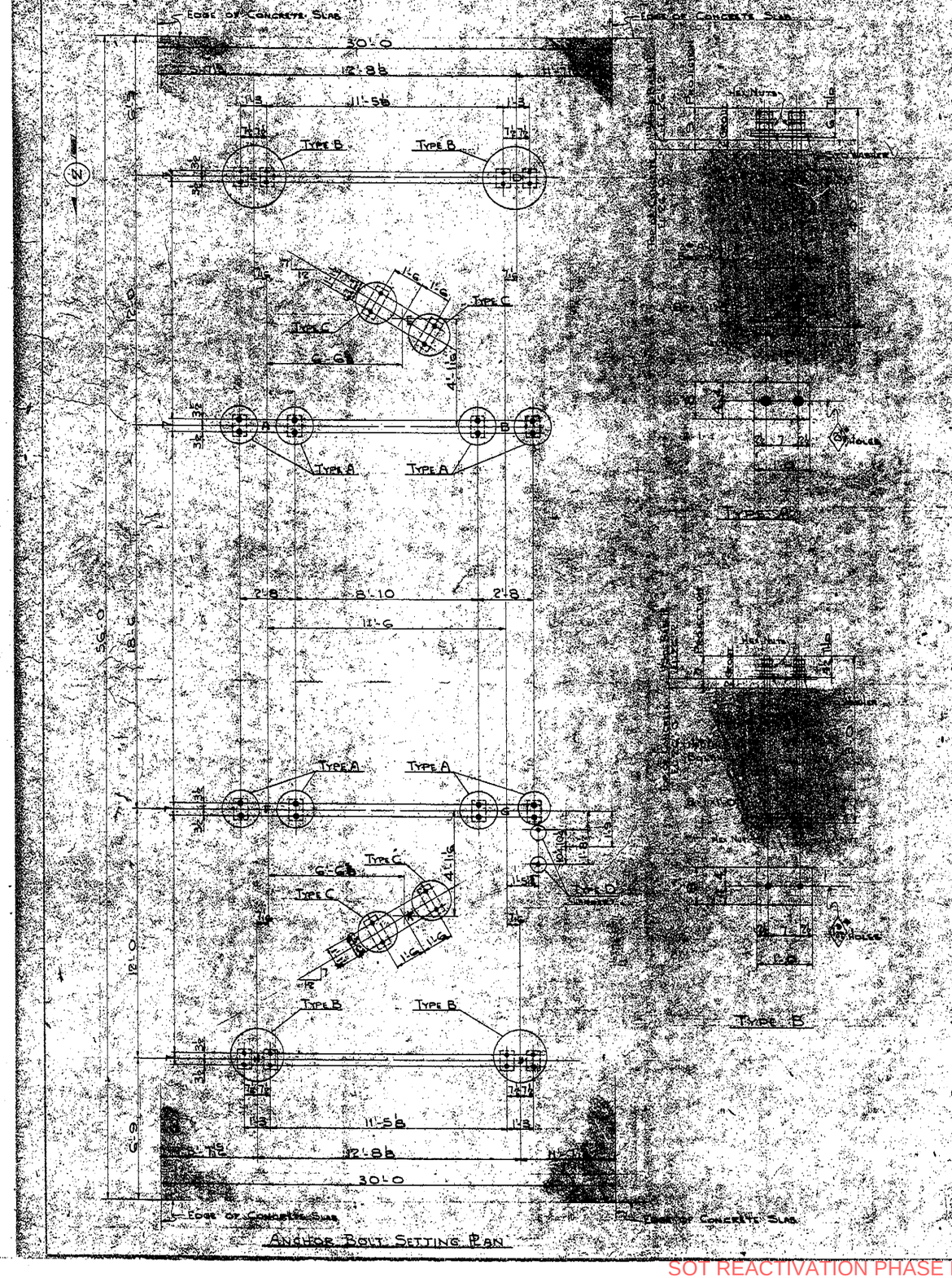
NO.	BY	DATE	REVISION

DESIGNED BY G.W.H.
CHECKED BY


PLAN
DETAIL A
DETAIL B
DETAIL C
PLAN
6'-0 c/c HANGERS
HEAD CHUTE
CONV. #2 HEAD CHUTE HANGER
1 - REQ'D
CONV. #2 HANGER
1 - REQ'D
4'-0 c/c Hd CHUTE
FOR HANGER BEARING ASSEMBLY SEE DWG 2555-ST-12
PREPARED BY:
WRIGHT ENGINEERS LIMITED
VANCOUVER CANADA
528 480 310
PACIFIC AND ARCTIC RAILWAY AND NAVIGATION COMPANY
ORE HANDLING TERMINAL — PHASE II
SKAGWAY
ALASKA
TIPPETTS - ABBETT - McCARTHY - STRATTON
ENGINEERS AND ARCHITECTS

DRAWING REDUCED TO 45% OF ORIGINAL SIZE

SOT03-1969-AB-2555-SL-10, Conveyer No. 2 - Hanger Details



Reactions on Bases
Design Loading Conditions

I - Dead Load + Live Load (Mat on Belt) + Wind Load at 5#/ft² (Basic)
II - Dead Load + Live Load + Rig-up in Trimmer + Wind Load at 5#/ft² (Basic)
III - Dead Load in Parked Position + Full Wind at 20#/ft² (Basic)

Horizontal Wind Shear Acting N to S & S to N on Bases A B C D E F G H J K	Loading Condition	Base Loads - Kips A	B	C	D	E	F	G	H	J	K	Direction of Wind
2.0k Per Base	I	+168	-12	+42	+43	-50	+192	+12	+18	+19	-50	N to S
Tot. Total		+192	+12	+18	+19	-50	+168	-12	+42	+43	-50	S to N
Do	II	+186	-27	+42	+43	-50	+210	-34	+18	+19	-50	N to S
		+210	-3	+18	+19	-50	+186	-27	+42	+43	-50	S to N
8.0k Per Base = 64.0k Total	III	+29	+57	+77	+78	-50	+123	+152	-17	-16	-50	N to S
		+123	+152	-17	-16	-50	+29	+57	+78	+78	-50	S to N

Sign Convention

+ve Indicates a Load Acting Vertically Downward on the Base

Note:
All Bolt Except For Ladder To Be Set In Steel Template

DRAWING REDUCED TO 46% OF ORIGINAL SIZE

SOT03-1969-AB-2555-SL-11, Anchor Bolt Setting Plan & Details

PREPARED BY: WRIGHT ENGINEERS LIMITED VANCOUVER CANADA
REFERENCE: 528 | 480 | 311

PACIFIC AND ARCTIC RAILWAY AND NAVIGATION COMPANY
ORE HANDLING TERMINAL -- PHASE II
SKAGWAY ALASKA

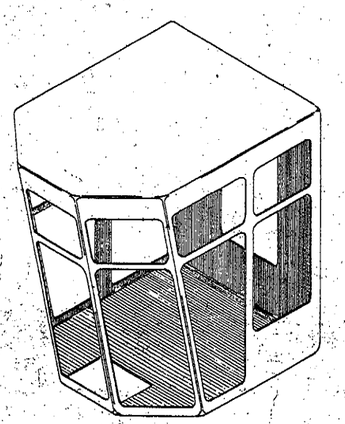
TIPPETTS - ABBETT - McCARTHY - STRATTON
ENGINEERS AND ARCHITECTS
Seattle New York

SHIPLOADER
ANCHOR BOLT SETTING PLAN & DETAILS

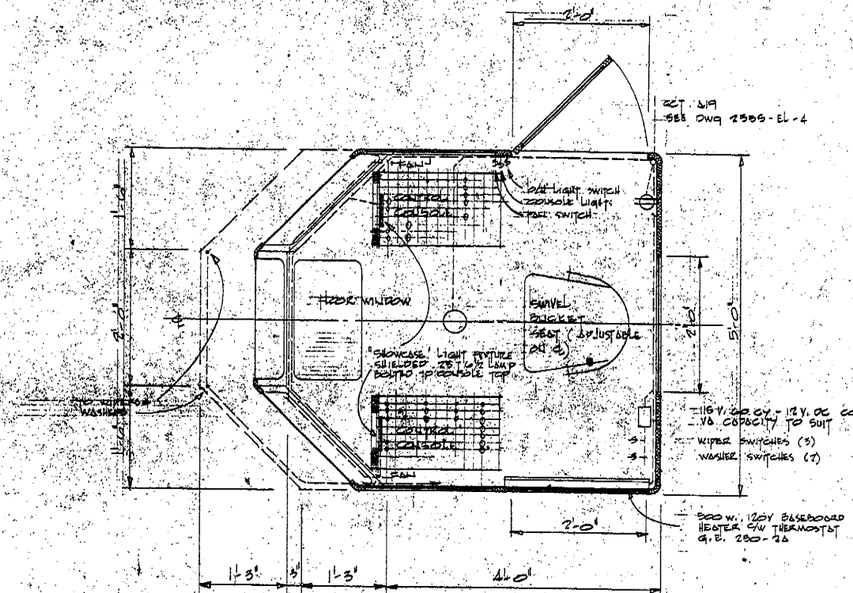
DRAWN BY G.E.QUINN
DATE AUG 7-68
SCALE
DRAWING NUMBER

DESIGNED BY J.M.H.
CHECKED BY

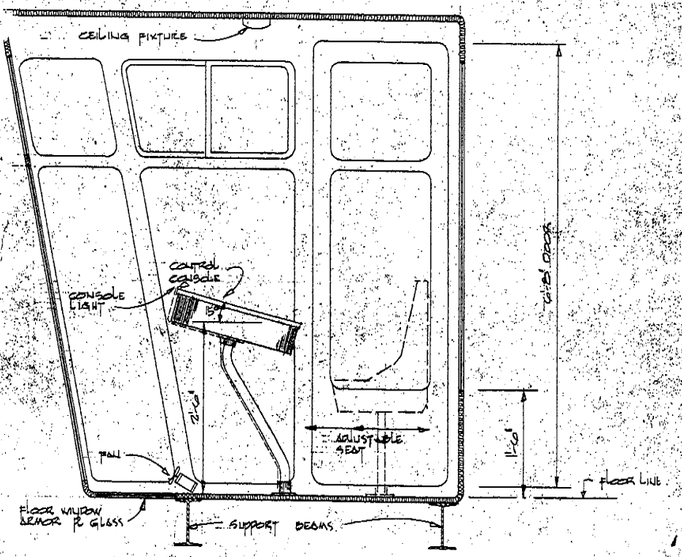
NO.	BY	DATE	REVISION



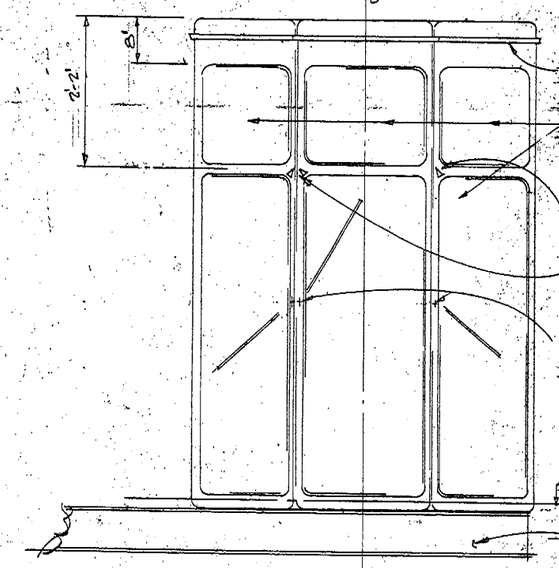
ISOMETRIC 1½"-1'-0"



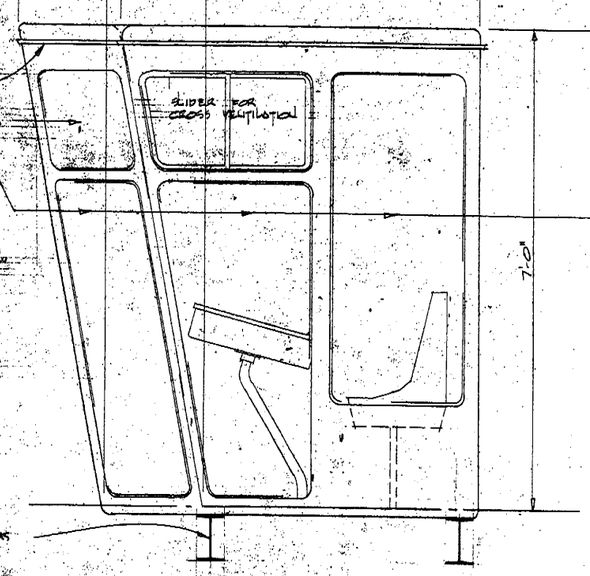
PLAN & SECTION



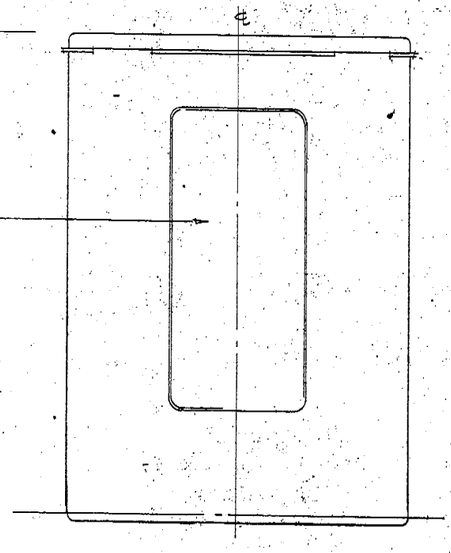
SECTION



FRONT VIEW



SIDE VIEW



REAR VIEW

DRAWING REDUCED TO 45% OF ORIGINAL SIZE

SOT03-1969-AB-2555-SL-12, Control Cab

PACIFIC AND ARCTIC RAILWAY AND NAVIGATION COMPANY
ORE HANDLING TERMINAL -- PHASE II
SKAGWAY ALASKA

PREPARED BY:
WRIGHT ENGINEERS LIMITED
VANCOUVER CANADA
REFERENCE: 528 480 312

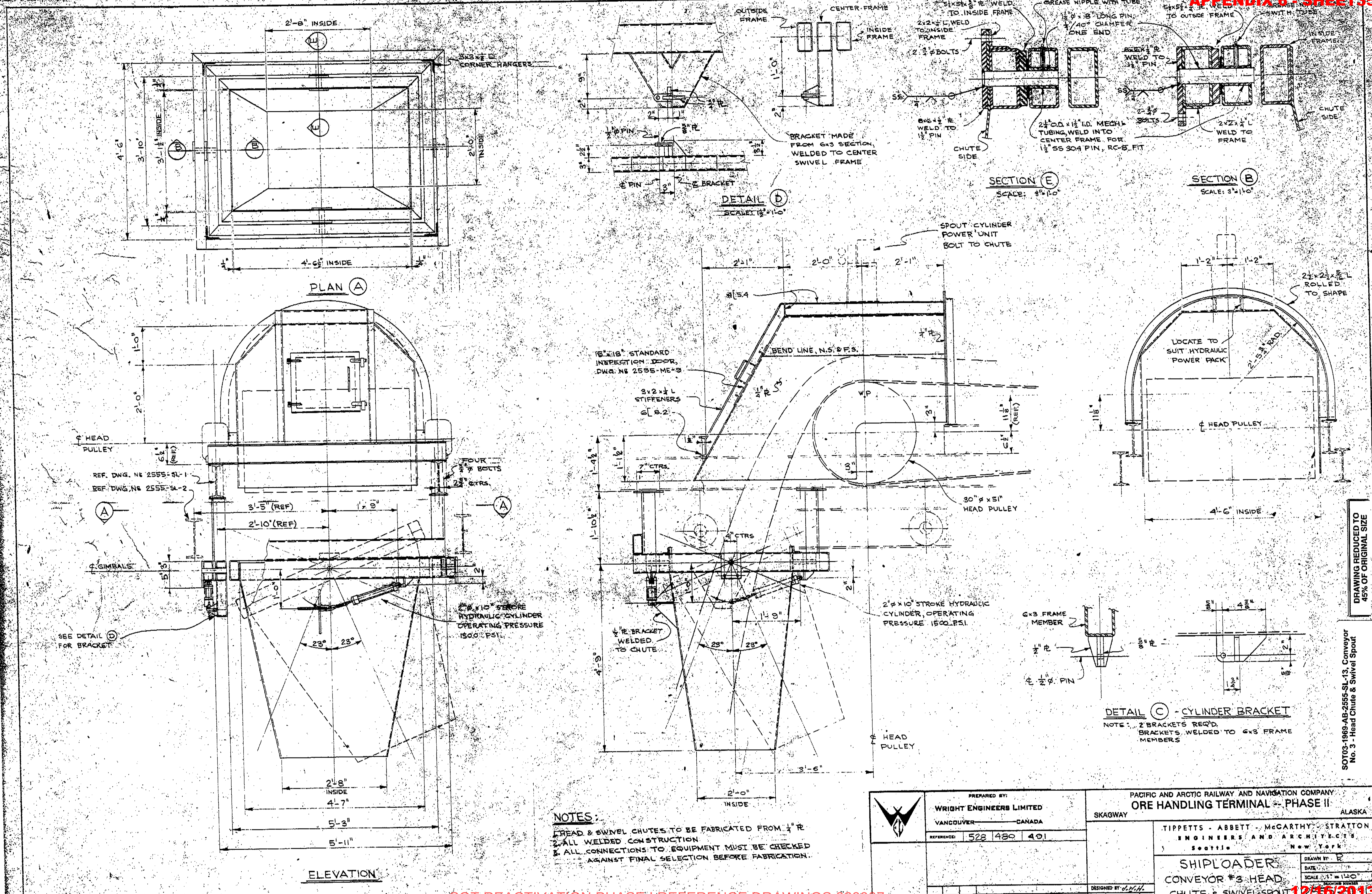
TIPPETTS - ABBETT - McCARTHY - STRATTON
ENGINEERS AND ARCHITECTS
Seattle New York

DESIGNED BY LGW
CHECKED BY

NO.	BY	DATE	REVISION

SHIPLOADER
CONTROL CAB

DRAWN BY LGW
DATE AUG.-68
SCALE 1/2"=1'-0"
2555 SL-12



NOTES:
1. HEAD & SWIVEL CHUTES TO BE FABRICATED FROM ¼" ℞
2. ALL WELDED CONSTRUCTION
3. ALL CONNECTIONS TO EQUIPMENT MUST BE CHECKED AGAINST FINAL SELECTION BEFORE FABRICATION.

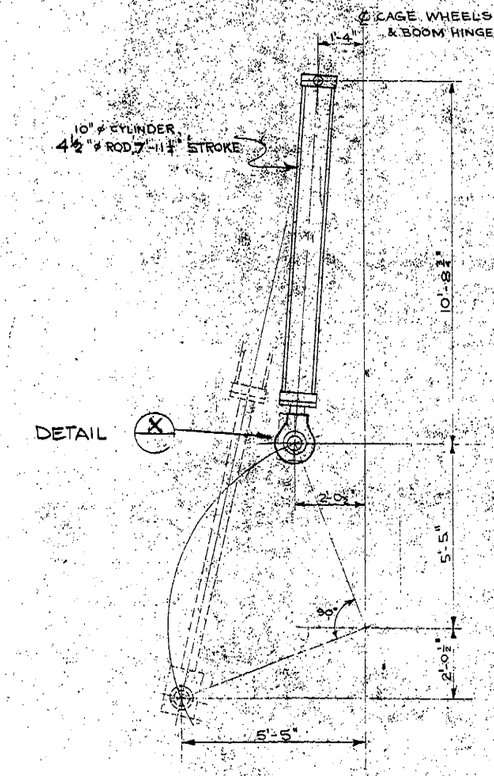
PREPARED BY: WRIGHT ENGINEERS LIMITED, VANCOUVER — CANADA
REFERENCE: 528 480 401

PACIFIC AND ARCTIC RAILWAY AND NAVIGATION COMPANY
SKAGWAY — ORE HANDLING TERMINAL — PHASE II — ALASKA

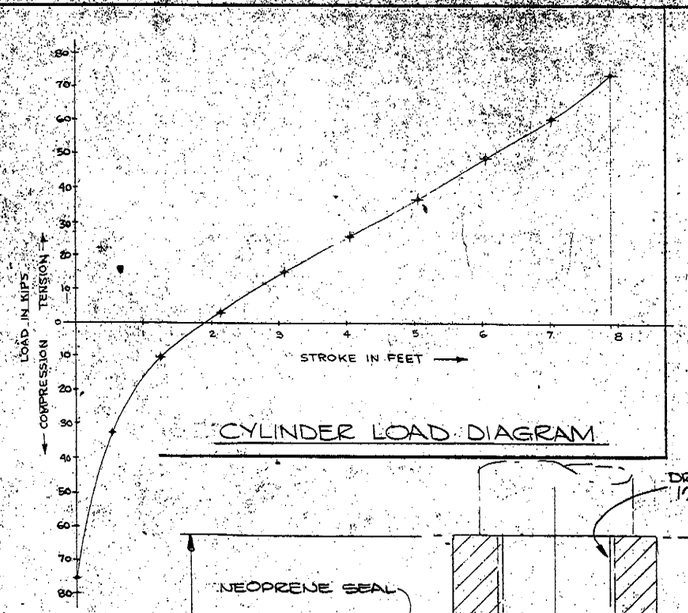
TIPPETTS - ABBETT - McCARTHY - STRATTON
ENGINEERS AND ARCHITECTS
Seattle — New York

SHIPLOADER
CONVEYOR #3 HEAD CHUTE & SWIVEL SPOUT

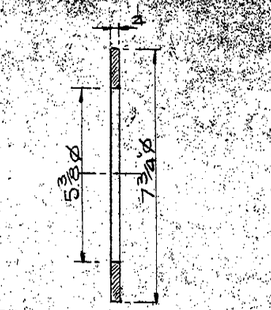
SCALE: 1" = 1'-0"
DESIGNED BY: J.N.H.
CHECKED BY: JSC



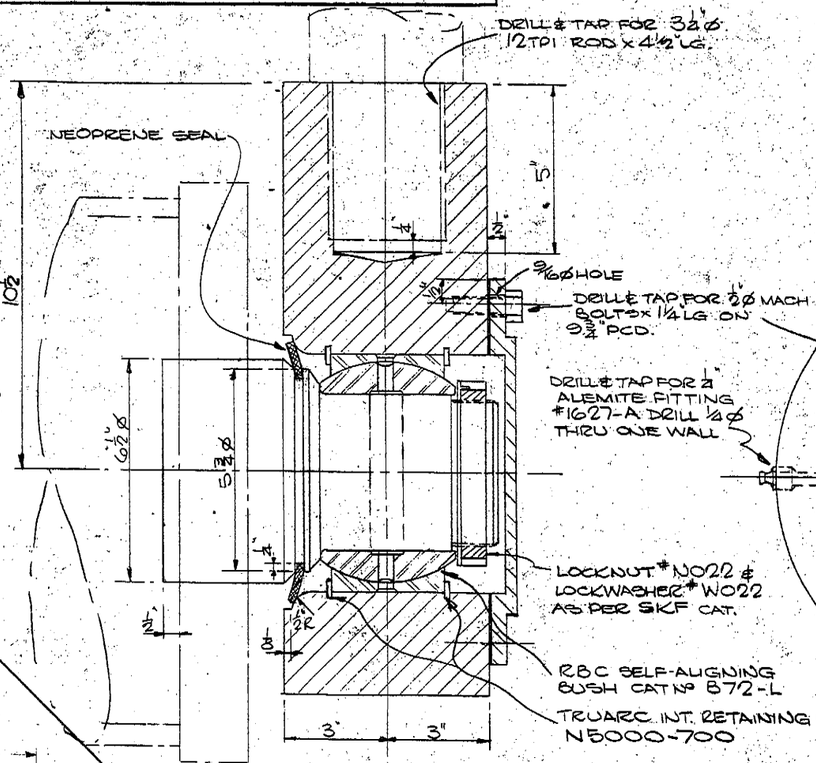
LUFFING CYLINDER

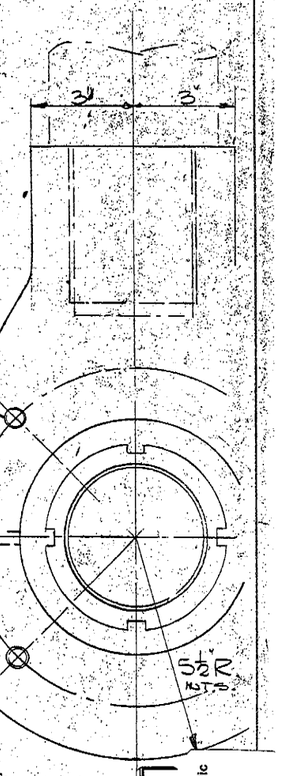


CYLINDER LOAD DIAGRAM

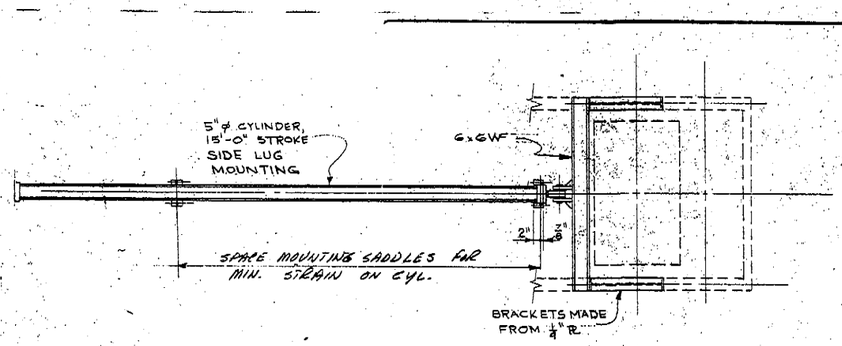


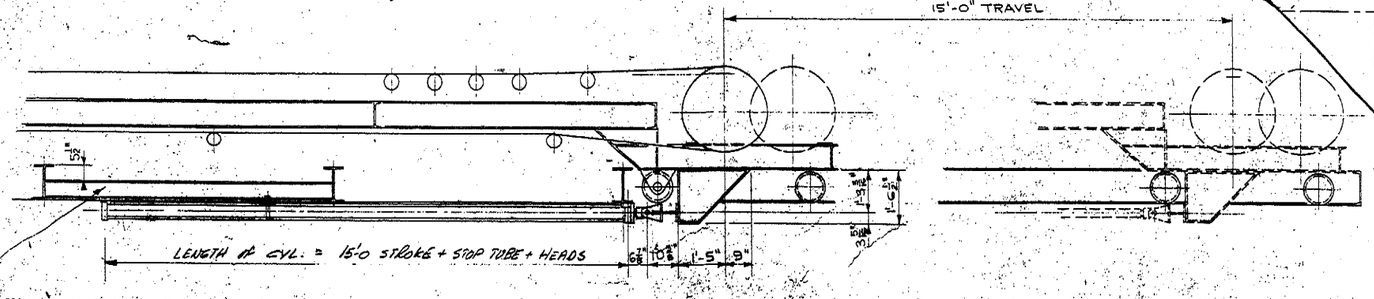
NEOPRENE SEAL
60 SHORE HARDNESS





CYLINDER ROD END - DETAIL (X)
MAT. ASTM-A36
SCALE ½ FULL SIZE





DETAILS OF SHUTTLE CYLINDER

DRAWING REDUCED TO 45% OF ORIGINAL SIZE

SOT03-1969-AB-2555-SL-14, Hydraulic Cylinders Luffing & Shuttle

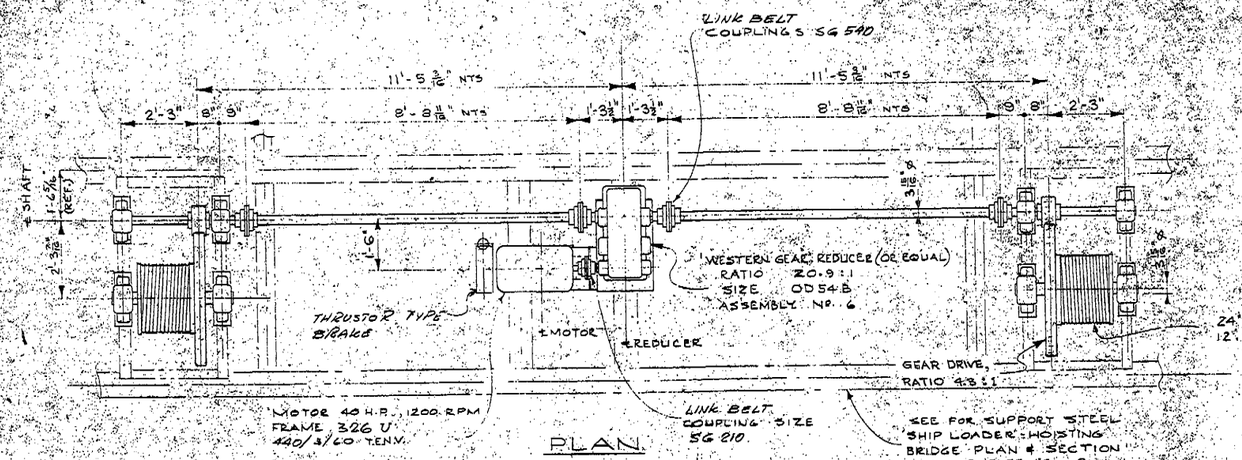
PREPARED BY: WRIGHT ENGINEERS LIMITED
VANCOUVER — CANADA
REFERENCE: 528 480 402

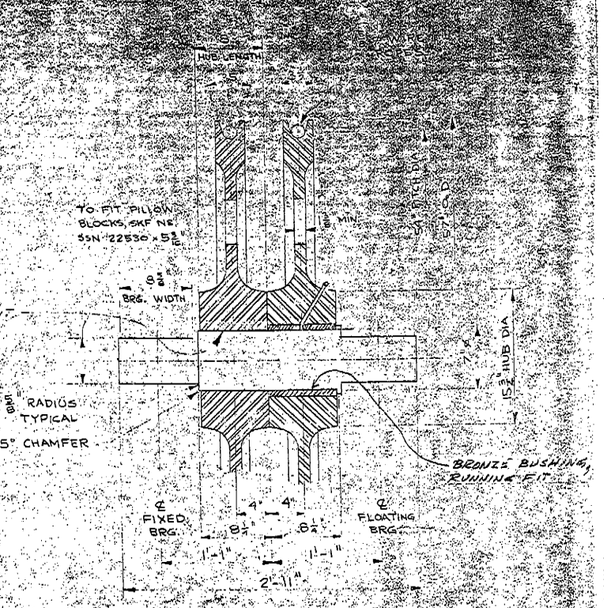
PACIFIC AND ARCTIC RAILWAY AND NAVIGATION COMPANY
ORE HANDLING TERMINAL -- PHASE II
SKAGWAY ALASKA

TIPPETTS - ABBETT - McCARTHY - STRATTON
ENGINEERS AND ARCHITECTS
Seattle New York

SHIPLOADER HYDRAULIC CYLINDERS
DRAWN BY R
DATE AUG 68
DRAWING NUMBER 2555-SL-14
LUFFING & SHUTTLE

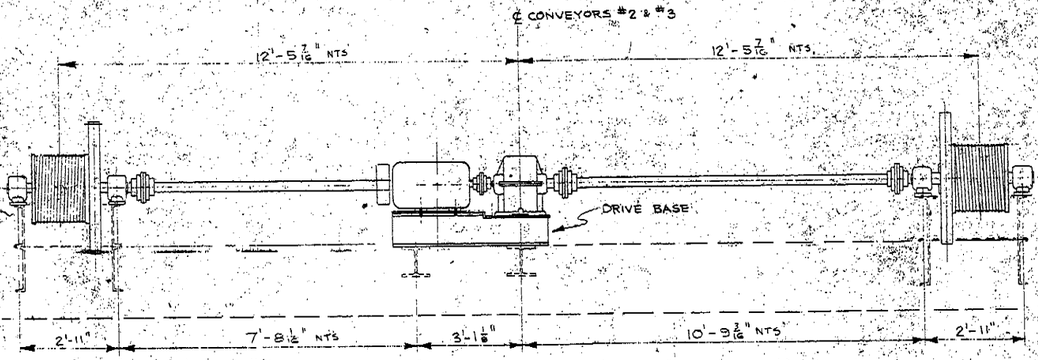
NO. | BY | DATE | REVISION
DESIGNED BY J.W.H
CHECKED BY





MAIN SHEAVE DETAILS

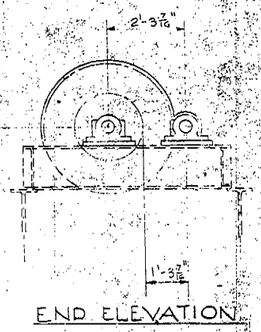
4 ASSEMBLIES AS SHOWN REQUIRED SCALE: 1 1/2" = 1'-0"



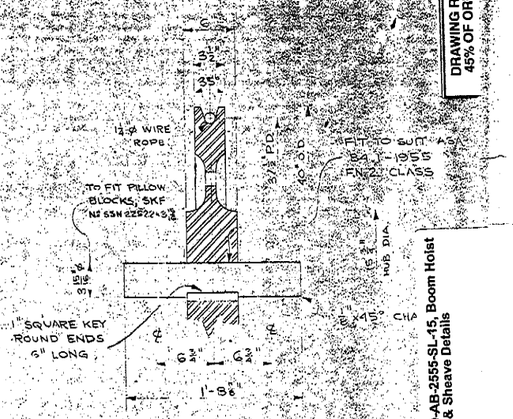
ELEVATION

BOOM HOIST ASSEMBLY

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



END ELEVATION

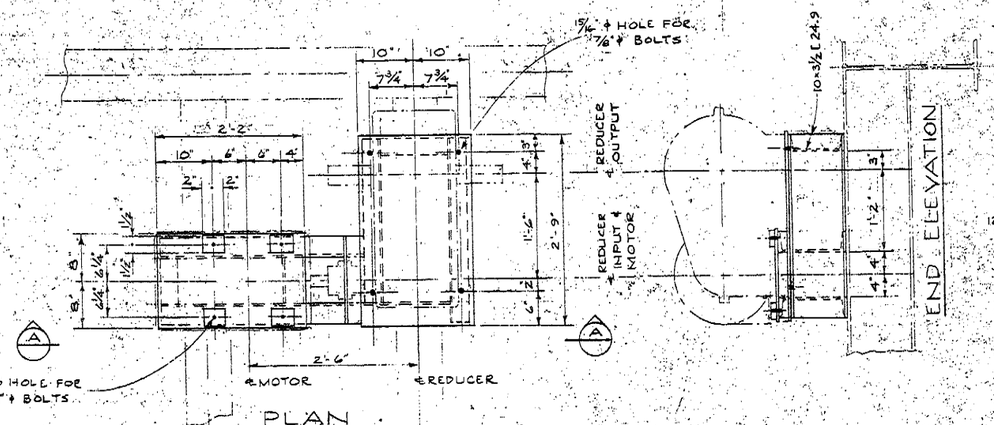


BOTTOM SHEAVE DETAILS

4 ASSEMBLIES REQ'D. SCALE: 1/2" = 1'-0"

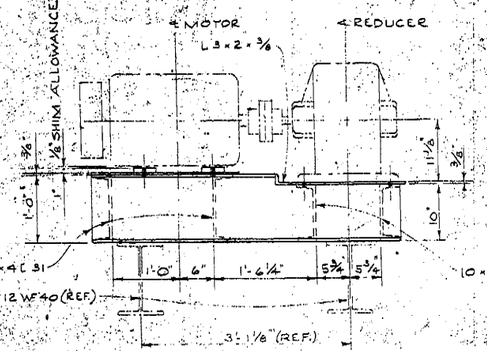
CANADIAN STEEL WHEEL LTD. CODE "719" OR EQUAL

MATERIAL: FORGED STEEL ASTM A-501 CLASS CR



DRIVE BASE DETAIL

SCALE: 1"=1'-0"



SECTION A

PREPARED BY: WRIGHT ENGINEERS LIMITED VANCOUVER CANADA

REFERENCE: 528 480 403

NO.	BY	DATE	REVISION

DESIGNED BY OWL

CHECKED BY

PACIFIC AND ARCTIC RAILWAY AND NAVIGATION COMPANY

ORE HANDLING TERMINAL — PHASE II

SKAGWAY ALASKA

TIPPETTS ABBETT MCCARTHY STRATTON ENGINEERS AND ARCHITECTS SEATTLE NEW YORK

SHIP LOADER BOOM HOIST SHEAVE DETAILS

DRAWN BY R.D.Sa

DATE Aug-16B

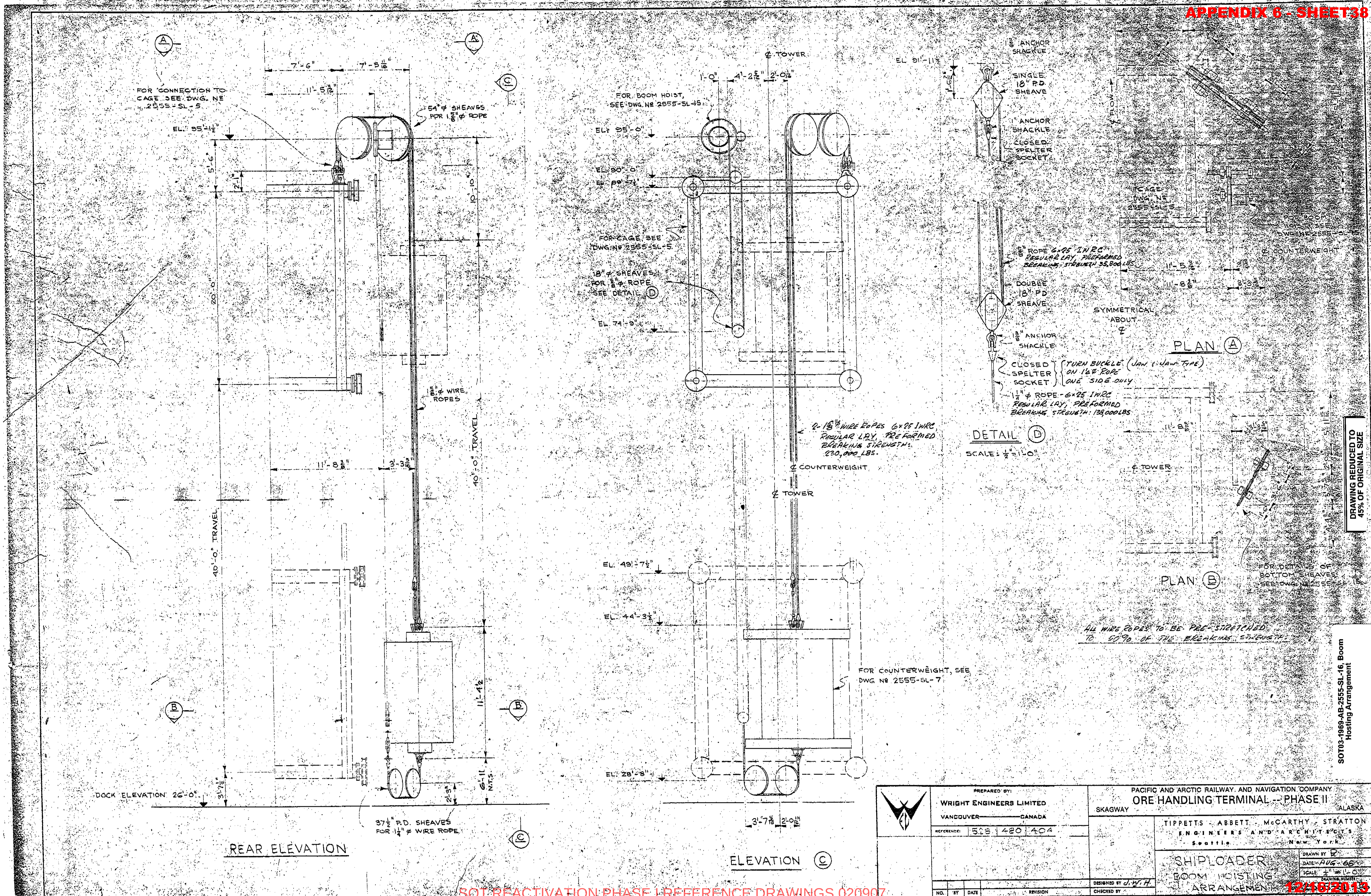
SCALE AS SHOWN

DRAWING No. SOT03-1969-AB-2555-SL-15

SOT03-1969-AB-2555-SL-15, Boom Hoist & Sheave Details

DRAWING REDUCED TO 45% OF ORIGINAL SIZE

12/16/2013


FOR CONNECTION TO CAGE SEE DWG. Nº 2555-SL-5
EL. 95'-1½"
7'-6"
7'-5 11/16"
11'-5½"
54"φ SHEAVES FOR 1⅝"φ ROPE
5'-6"
2'-1"
10'-10"
20'-0"
⅝"φ WIRE ROPES
11'-8⅜"
3'-3⅛"
40'-0" TRAVEL
40'-0" TRAVEL
11'-4½"
6'-11 N.T.S.
2'-3"
3'-1½"
DOCK ELEVATION 26'-0"
37½" P.D. SHEAVES FOR 1¼"φ WIRE ROPE
REAR ELEVATION
℄ TOWER
1'-0"
4'-2⅝"
2'-0½"
FOR BOOM HOIST, SEE DWG. Nº 2555-SL-15
EL. 95'-0"
EL. 90'-0"
EL. 89'-7½"
FOR CAGE, SEE DWG Nº 2555-SL-5.
18"φ SHEAVES FOR ⅝"φ ROPE SEE DETAIL D
EL. 74'-9"
2-1⅝" WIRE ROPES 6x25 IWRC REGULAR LAY, PREFORMED BREAKING STRENGTH: 230,000 LBS.
℄ COUNTERWEIGHT
℄ TOWER
EL. 49'-7½"
EL. 44'-3½"
FOR COUNTERWEIGHT, SEE DWG Nº 2555-SL-7
EL. 28'-8"
3'-7 5/16"
2'-0 11/16"
ELEVATION C
EL. 91'-11½"
1⅛" ANCHOR SHACKLE
SINGLE 18" P.D. SHEAVE
1" ANCHOR SHACKLE
CLOSED SPELTER SOCKET
⅝" ROPE 6x25 IWRC REGULAR LAY, PREFORMED BREAKING STRENGTH 35,800 LBS
DOUBLE 18" P.D. SHEAVE
1⅜" ANCHOR SHACKLE
CLOSED SPELTER SOCKET
TURN BUCKLE (JAW & JAW TYPE) ON 1¼"φ ROPE ONE SIDE ONLY
1¼"φ ROPE - 6x25 IWRC REGULAR LAY, PREFORMED BREAKING STRENGTH: 138,000 LBS
DETAIL D
SCALE: ½" = 1'-0"
CAGE DWG. Nº 2555-SL-5
℄ COUNTERWEIGHT
11'-5⅜"
11'-8⅜"
SYMMETRICAL ABOUT ℄
PLAN A
℄ TOWER
PLAN B
FOR DETAILS OF BOTTOM SHEAVES SEE DWG. Nº 2555
ALL WIRE ROPES TO BE PRE-STRETCHED TO 50% OF THE BREAKING STRENGTH.
DRAWING REDUCED TO 45% OF ORIGINAL SIZE
SOT03-1969-AB-2555-SL-16, Boom Hosting Arrangement
PREPARED BY: WRIGHT ENGINEERS LIMITED
VANCOUVER — CANADA
REFERENCE: 519 480 404
PACIFIC AND ARCTIC RAILWAY AND NAVIGATION COMPANY
ORE HANDLING TERMINAL -- PHASE II
SKAGWAY ALASKA
TIPPETTS - ABBETT - McCARTHY - STRATTON
ENGINEERS AND ARCHITECTS
Seattle New York
SHIPLOADER
BOOM HOISTING ARRANGEMENT
DATE AUG-66
SCALE ¼" = 1'-0"
DESIGNED BY J.W.H.
CHECKED BY
NO. BY DATE REVISION

TAKE-UP

END OF SHUTTLE CONVEYOR #3 SDWG 528-480-301

L.S. 27 IN

END OF BOOM DWG 528-480-302

4'-10½" (- 3" TO ACTUATE L.S. = 5'-1½")

TAKE-UP

LIMIT SWITCH ROLLER

L.S. 27-IN

SWITCH DRAWN WITH SHUTTLE CONVR FULLY RETRACTED

ARRANGEMENT OF L.S. #27-IN

BUMPER BLOCKS ON LUFFING BOOM DWG 528-480-302

BOOM STOP

L.S. PIVOT

(4) LOCATE & WELD IN FIELD AS SHOWN. LUFFING BOOM VERTICAL RESTING AGAINST BUMPER

LUFFING BOOM

ARRANGEMENT OF L.S. #27-HI

CAM ONE REQ'D MK (1) M.S.

BRACKET ONE REQ'D MK (2) M.S.

4 HOLES 13/64" ⌀

CONVEYOR #3

LIMIT SWITCH ROLLER

CAM ONE REQ'D MK (3) M.S.

L.S. ROLLER

CAGE DWG 528-480-304

ROLLER CAM

BRACKET

PLAN.

SWITCH

LS: 9-3, 9-2 & 9-1

LS: 27-DN & 27-IN

DIRECTION OF TRAVEL

CAM

ARM 2" R

LIMIT SWITCH

B51A SQUARE D

5° PRETRAVEL, 20° DIFFERENTIAL, 45° OVERTRAVEL, TOTAL 52° ∞

LS: 27-HI ARM POSITION

BRACKET

SCALE 6" = 1'-0"

TYPICAL INSTALLATION SKETCH SWITCH: SQUARE D. B51A. LEVER TYPE. LEVER CA-11

CLEAR 3"

FINAL STOP

FIRST STOP

6"

EL. 89-7½"

FREE TRAVEL WHILE IN OPERATION 38'-9"

11-10⅝"

11'-2"

20'-0"

LS 9-3

LS 9-2

LS 9-1

7'-4"

7'-9⅝"

STOP IN TO STOP 60'-0"

COM IN CAM 40'-3¾"

CAGE IN HIGH POSITION BOOM HORIZONTAL (LS. 9-3 TOUCHING CAM) CAN BE RAISED 6" MORE. BUT ONLY FROM OPERATOR CAB #2 TILL LS 9-2 TRIPS.

20'-0" WHEELS

LS 9-3

LS 9-2

LS 9-1

LOCATION SKETCH FOR LS 9-3, LS 9-2 AND LS 9-1 SCALE 1:20

FOR CAMS & BRACKETS SEE DETAILS.

CAGE IN LOW POSITION BOOM HORIZONTAL (L.S. 9-1 TOUCHING CAM)

EL. 29-7½"

EL. 26'-0"

SHIPLOADER ℄ CONVR #3

7'-6"

℄ COLUMN 24 WF 76 LOWER (5) (6) HIGHER (7)

COLUMN DWG 528-480-306

PLAN VIEW OF ASSEMBLY SCALE: 1½" = 1'-0"

CAGE DWG 528-480-304

CAM PLATE M.S. ONE REQ'D "L" = 6 MK (6) ONE REQ'D "L" = 2'-0" MK (7)

11'-2¼" TO ℄ OF TOP WHEELS

7'-1½" TO ℄ OF LOWER WHEELS

END VIEW SCALE: 3" = 1'-0"

PLAN VIEW SCALE

MOUNTING PLATE FOR LS 9-3, LS 9-2 & LS 9-1 ONE REQ'D M.S. MK (5) SEE ALSO LOCATION SKETCH

12 HOLES 13/64" ⌀ COUNTERSUNK ON FAR SIDE FOR F.H. SCREWS

POWER WHEEL

EL. 69-4½" (AT FINAL STOP)

41'-10⅝"

DRAWING REDUCED TO 45% OF ORIGINAL SIZE

BRACKET M.S. ONE REQ'D MK (8)

LOWER TO PARK

SCHEME OF MOVEMENT LUFFING BOOM

CAM M.S. ONE REQ'D MK (9) SEE NOTE

27-DN

LOWER TO PARK

NOTE: ADD 2"Y CAM (8) WHEN REQUIRED TO SUIT PARKING BLOCK BUT KEEP DIMENSIONS SHOWN IN ( )

SUPPORTING BLOCK FOR PARKED BOOM

SLAB EL. 26'-0"

ARRANGEMENT OF L.S. #27-DN SCALE 1"

LIMIT-A-V INTERLOCKING SWITCHES

1. SHUTTLE MOVEMENT DRIVE: HYDRAULIC CYLINDER - STROKE LIMITATION IN CYLINDER ITSELF — ONE LIMIT-LOCKING SWITCH LS #27-IN. NORM OPEN THIS SWITCH IS IN SERIES WITH NORM. OPEN PART OF 2 POLE LS #9-2 ONLY WHEN BOTH SWITCHES ARE CLOSED LUFFING BOOM LUFFING IN OR OUT (CAB #2)

2. CAGE HOIST DRIVE: EL. WINCH & ROPES - 3 L.S. AT CAGE (1) LS #9-3 NORM CLOSED STOPS "UP" MOTION 6" BELOW FINAL STOP. (2) LS #9-2 2 POLE FIRST ONE NORM. CLOSED, STOPS "UP" MOTION IN FINAL POSITION - THE OTHER POLE NORM OPEN. SEE REMARK AT LS #27-IN. (3) LS #9-1 NORM CLOSED STOPS "DOWN" MOTION APPR. 6" BEFORE STOP PLATE. FINALLY LS #27-DN NORM. CLOSED, STOPS HOIST MOTOR WHEN TAILEND OF LUFFING BOOM ARRIVES AT PARKING BLOCK TO PREVENT SLACK ROPES

3. LUFFING BOOM DRIVE HYDR. CYLINDER "DOWN" MOTION LIMITED BY PISTON IN CYLINDER, "UP" MOVEMENT LIMITED BY BUMPER IN CAGE. INTER LOCKING SWITCH L.S. #27-HI NORM. OPEN. ONLY WHEN THIS IS CLOSED IN "UP" POSITION OF LUFFING BOOM CAN THE OPERATOR LOWER THE CAGE 12" TO PARKING POSITION (FROM CAB #2 ONLY)

4. ALL MOUNTING SCREW HOLES TO BE CHECKED WITH SWITCHES BEFORE DRILLING.

PREPARED BY: WRIGHT ENGINEERS LIMITED VANCOUVER — CANADA REFERENCE: 528 480-405

PACIFIC AND ARCTIC RAILWAY AND NAVIGATION COMPANY SKAGWAY — ORE HANDLING TERMINAL -- PHASE II — ALASKA

TIPPETTS ABBETT McCARTHY STRATTON ENGINEERS AND ARCHITECTS Seattle New York

SHIPLOADER ARRANGEMENT OF LIMIT SWITCHES

DRAWN BY: DATE: AUG - 66 SCALE: AS NOTED

DESIGNED BY: G.E. CHECKED BY: J.A.M.M.

NO. | BY | DATE | REVISION

SOT03-1969-AB-2555-SL-17 Ship Loader - Arrangement of Limit Switches

SHIPLOADER

PLAN

CHECK THESE DIMENSIONS IN FIELD WITH BOOM "UP"

WHEELS AND VERTICAL MEMBER (FRONT)

LUFFING BOOM DWG #4

CAGE DWG 17

LOCATION LS-3 AND CAM
VERTICAL POSITION OF LUFFING BOOM. SCALE 1½" = 1'-0"

CAGE

CAM

ROLLER

LUFFING BOOM

SHIPLOADER

PLAN

HINGE POINT LUFFING BOOM

UNDERSIDE OF LUFFING BOOM (HORIZONTAL) PLATE (n) DWG #4

LOCATION LS-2 AND CAM
HORIZONTAL POSITION OF LUFFING BOOM SCALE 1½" = 1'-0"

CAM ONE REQ'D LONG 4 3/8" MK③

CAM ONE REQ'D LONG 8 11/16" MK④

REAR END OF LUFFING BOOM DWG #5

ROLLER LS-6

EXPECTED TRAVEL SEE DWG: 2555-SL-3

2 HOLES CSK FOR ½" FLAT HEAD BOLTS

PEDESTAL DWG. 2555-SL-3. WE. No: 528-480-303

LOCATION LS-6
VERTICAL PARKING OF LUFFING BOOM.
SCALE 1½" = 1'-0"

4 HOLES 3/8" SLOTTED

SWITCH SUPPORT ONE REQ'D FOR LS-2. MK⑤

4 HOLES 3/8" SLOTTED

CUT-OUT ONE LEG ONLY

SWITCH SUPPORT. ONE REQ'D FOR LS-3 MK⑥

4 HOLES 3/8" SLOTTED

SWITCH SUPPORT. FOR LS-6 ONE REQ'D MK⑧

CAM FOR LS-6 ONE REQ'D MK⑦

DETAILS SCALE: 3" = 1'-0"

FOR HYDRAULIC SCHEMATIC SEE ARVIS DWG: C-1108.

FOR CONSTRUCTION ISSUED MAR 14 1969 WRIGHT ENGINEERS LIMITED

STOP

LOCATION SKETCH
OF CAMS & SWITCHES
NO SCALE.
ELEVATION LOOKING FROM WATER SIDE TOWARD LAND

PLAN.
SCALE 3" = 1'-0"

LS-9-2 LOW HIGH

LS-9-3

CAM FOR LS-9-2 & 9-3

LS-9-2 LS-9-3 OF WHEELS

LS-9-1

CAM FOR LS-9-1 ONE REQ'D MK⑪

CAM TO CAM 40" 10½"

SUPPORT FOR LS-9-2 - 9-3 & 9-1 ONE REQ'D MK⑨
SCALE 1½" = 1'-0"

4 HOLES 3/8" SLOTTED (TYPICAL)

CAMS FOR LS-9-2 - 9-3 & 9-1
ELEVATION SECTION
SCALE 1½" = 1'-0"

IN EXTREME "IN" POSITION: 3¾"

CAM 1 FAR SIDE

CAM 1 NEAR SIDE

10" [MK(CS) DWG # 2 END OF SHUTTLE

ON NEARSIDE 12" I (CS)

ON FARSIDE 12" I (CS)

LS4-2 (OUT)

LS4-1 (IN)

12" [MK(CS) DWG # 5 END OF LUFFING BOOM

LOCATION CAMS & SWITCHES
SHUTTLE MOVEMENT.
SCALE 1½" = 1'-0"

MAINTAIN THIS DIMENSION ALWAYS

SCALE 3" = 1'-0"

CAM

ROLLER

4 HOLES 11/32" ø

DIMENSION SKETCH LIMITSWITCH

LS4-2

LS4-1

10" I 25.4

12 I 31.8

SECTION (A)
3" = 1'-0"

CUT TO SUIT 10 I 25.4

CAM. 2 REQ'D. MK①

SWITCH SUPPORT 2 REQ'D MK②

REV	DATE	ISSUED TO / FOR
A	13-3-69	TAMS - CONSTRUCTION

PREPARED BY: WRIGHT ENGINEERS LIMITED VANCOUVER — CANADA

REFERENCE: 522 480 405

PACIFIC AND ARCTIC RAILWAY AND NAVIGATION COMPANY

ORE HANDLING TERMINAL - PHASE II

SKAGWAY — ALASKA

TIPPETTS - ABBETT - McCARTHY - STRATTON
ENGINEERS AND ARCHITECTS
Seattle — N.Y.C.

SHIPLOADER ARRANGEMENT & LIMIT AND INTERLOCKING SWITCHES

DRAWN: DATE MARCH 07 1969

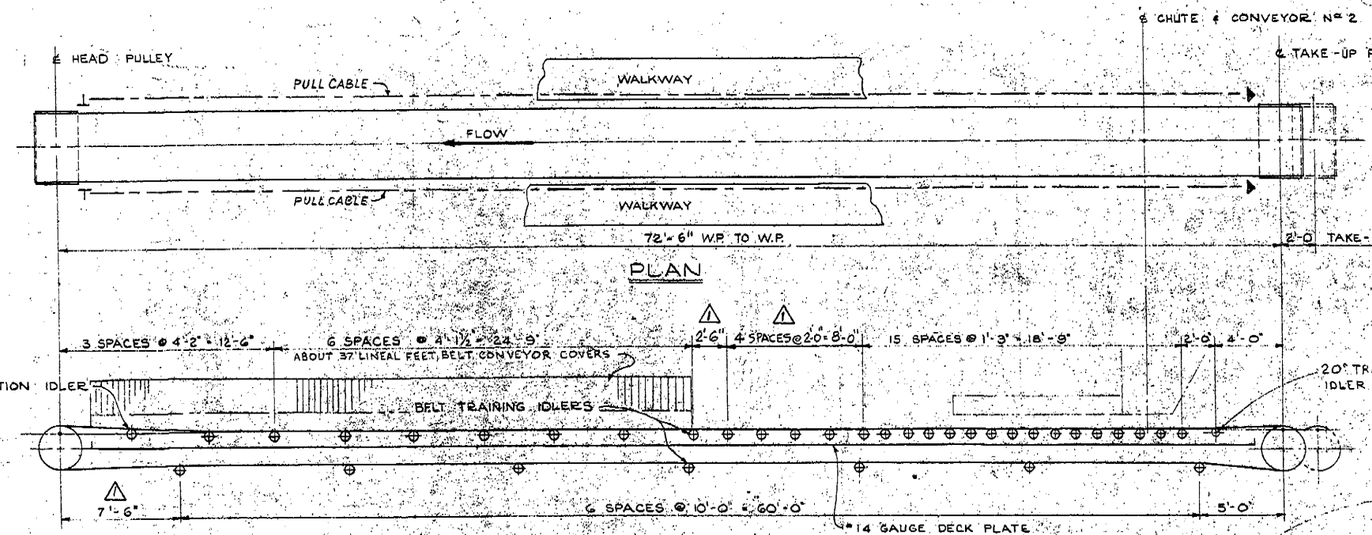
DESIGNED BY: CHECKED BY: J.S.C.

DRAWING REDUCED TO 45% OF ORIGINAL SIZE

SOT03-1969-AB-2555-SL-17A.

CONVEYOR DATA

			WEIGHT
DATA	WIDTH	48"	
	BELT SPEED	350 F.P.M.	
	DESIGN CAPACITY	1500 S.T.P.H.	
	MATERIAL SIZE	CONCENTRATE	
	MAT'L WT. / FT.³	90 TO 140 LBS.	
	AVG. MECH. LD. / FT.		
	MAT'L LOAD / FT.	143 LBS.	
HEAD PULLEY	DIAM. & FACE	30"ϕ x 51" C.F.	
	WRAP, DEGREES	180°	
	LAGGING THICK.	½" DIAMOND LAGG.	
SHAFT	DIAM.	4 15/16 ϕ C.R.S. (NECK TO 4 7/16)	
BEARINGS	MAKE & TYPE	4 BOLT	
	NUMBER		
TAIL PULLEY	DIAM. & FACE		
SHAFT	DIAM.		
BEARINGS	MAKE & TYPE		
	NUMBER		
TAKE-UP	TYPE	SCREW	
	WEIGHT		
	TRAVEL	2'-0"	
PULLEY	DIAM. & FACE	30"ϕ x 51" C.F.	
SHAFT	DIAM.	3 15/16 ϕ C.F.S.	
BEARINGS	MAKE & TYPE	4 BOLT	
	NUMBER		
SNUB PULLEY	DIAM. & FACE		
SHAFT	DIAM.		
BEARINGS	MAKE & TYPE		
	NUMBER		
TURN PULLEYS	NUMBER OF		
	DIAM. & FACE		
SHAFT(S)	DIAM.		
BEARINGS	MAKE & TYPE		
	NUMBER		
DRIVE PULLEY	NUMBER OF		
WRAP (°)	LAGGING THICK.		
	DIAM. & FACE		
SHAFTS	DIAM.		
BEARINGS	MAKE & TYPE		
	NUMBER		
IDLERS - IMPACT	NUMBER OF		
	DIAM. ROLLS		
	MAKE, TYPE & HAND		
IDLERS - CARRYING	NUMBER OF	27	
	DIAM. ROLLS	5"ϕ x 35"	
	MAKE, TYPE & HAND	(LH)	
IDLERS - CARRYING TRAINING	NUMBER OF	1	
	DIAM. ROLLS	5"ϕ x 35"	
	MAKE, TYPE & HAND	(LH)	
IDLERS - RETURN	NUMBER OF	6	
	DIAM. ROLLS	5"ϕ DISC	
	MAKE, TYPE & HAND	(LH)	
IDLERS - RETURN TRAINING	NUMBER OF	1	
	DIAM. ROLLS	5"ϕ DISC	
	MAKE, TYPE & HAND	(LH)	
IDLERS - SPIRAL OR DISC	NUMBER OF		
	DIAM. ROLLS		
	MAKE, TYPE & HAND		
IDLERS - TRANSITION	NUMBER OF	2	
	DIAM. ROLLS	5"ϕ x 20"	
	MAKE, TYPE & HAND	(LH)	
BELT CLEANER		HEAD & TAIL END	
DRIVE PULLEY	R.P.M.	48.1	
OVERALL RATIO	MOTOR/HEAD PULLEY	40.6 TO 1	
MOTOR	H.P.	20	
	R.P.M.	1750	
	FRAME		
	VOLTS/PH./CYCLE	480/3/60	
COUPLING - HIGH SPEED	MAKE & SIZE		
	REDUCER BORE		
	MOTOR BORE		
REDUCER	TYPE	SHAFT MOUNT	
	MAKE		
	SIZE & ASSEMBLY		
	RATIO	24.62 TO 1	
COUPLING LOW SPEED	MAKE & SIZE		
	BORES		
FINAL DRIVE	BELT OR CHAIN	V-BELT	
DRIVER	DIAMETER	5.2" P.D.	
	HUB TYPE & BORE		
DRIVEN	DIAMETER	8.6" P.D.	
	HUB TYPE & BORE		
CHAIN OR BELT	TYPE & NUMBER OF	B SECTION - 6 REQ'D	
	LENGTH & NUMBER		
RATIO OF DRIVE		1.65 TO 1	
HOLD BACK & ROTATION			
BELT	LENGTH (WITHOUT SPLICE)	150'-0"	
	PLY & TYPE	6 PLY 48oz CN	
	TOP & BTM. COVER	1/8" x 1/16"	



ELEVATION
SCALE ¼" = 1'-0"

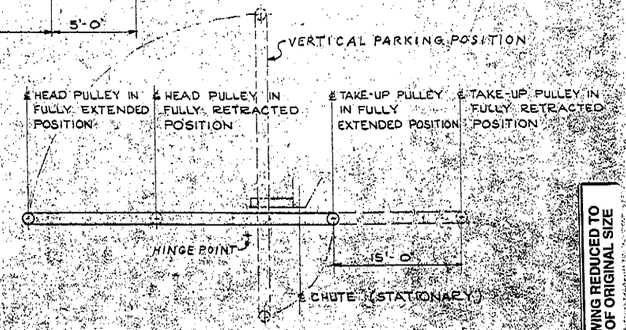
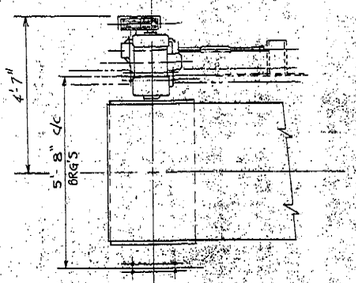
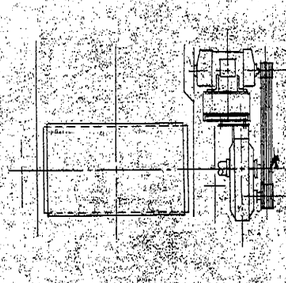
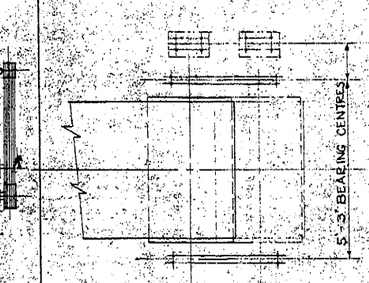
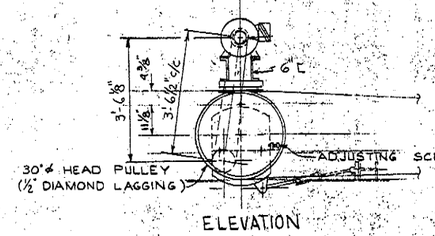


DIAGRAM SHOWING SHIPLOADER CONVEYOR POSITION
SCALE: 1/16" = 1'-0"







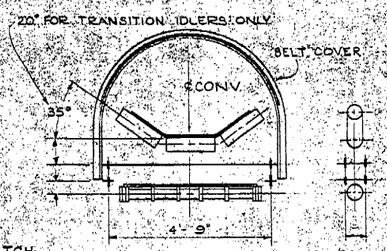


DETAILS OF DRIVE PULLEY
SCALE: ½" = 1'-0"

DETAILS OF TAKE-UP PULLEY
SCALE ½" = 1'-0"

TENSION T_1 =	5340 LBS.
TENSION T_2 =	3890 LBS.
START-UP T_1 =	7210 LBS. AT 229 %

KEY TO SYMBOLS
▶ SINGLE EMERGENCY STOP SWITCH
T DEAD END POST FOR PULL CABLE



TYPICAL SECTION
SCALE: ½" = 1'-0"

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — M. LUCIEER

STATE OF ALASKA — 49TH — No. 1398-E — REGISTERED PROFESSIONAL ENGINEER

DRAWING REDUCED TO 45% OF ORIGINAL SIZE

SOT03-1969-AB-2555-ME-22
Conveyor No. 3 (48" Belt) Mechanical
General Arrangement

CONVEYOR NO. 2	2555-ME-20
SITE PLAN AND ELEVATION	2555-CL-2
REFERENCE	DWG. No.

PREPARED BY: WRIGHT ENGINEERS LIMITED, VANCOUVER — CANADA

REFERENCE:	528	803	401

NO.	BY	DATE	REVISION
1	PFP	8/22/68	Rev. Spacings & Add Drive Pulley Details

REVISED DATE AUG 22-1968

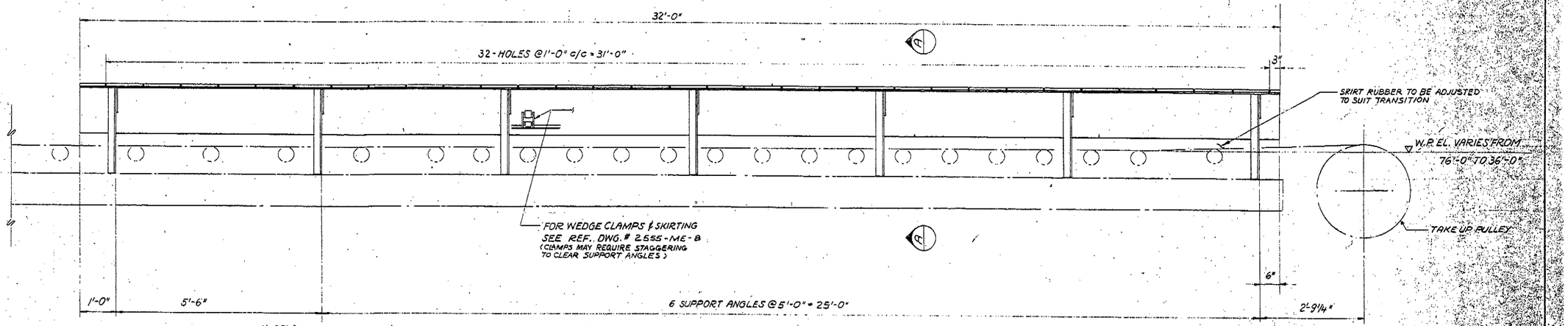
DESIGNED BY SUO
CHECKED BY MD

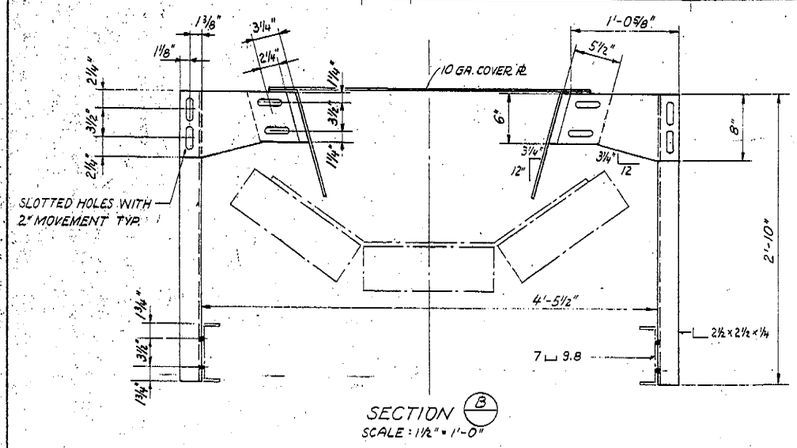
PACIFIC AND ARCTIC RAILWAY AND NAVIGATION COMPANY
ORE HANDLING TERMINAL - PHASE II
SKAGWAY, ALASKA

TIPPETTS - ABBETT - McCARTHY - STRATTON
ENGINEERS AND ARCHITECTS
Seattle — New York

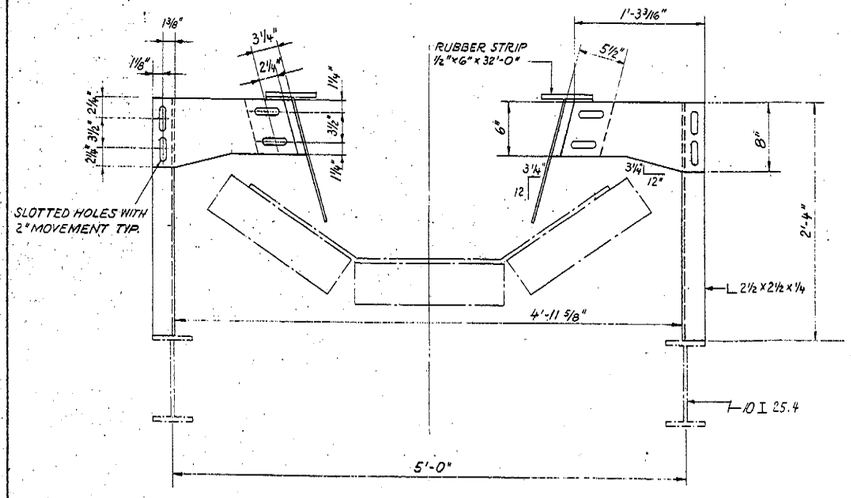
CONVEYOR Nº 3 (48" BELT)
MECHANICAL GENERAL ARRANGEMENT

DRAWN BY RNT
DATE MAY 1968
SCALE AS NOTED
DRAWING NUMBER 2555-ME-22



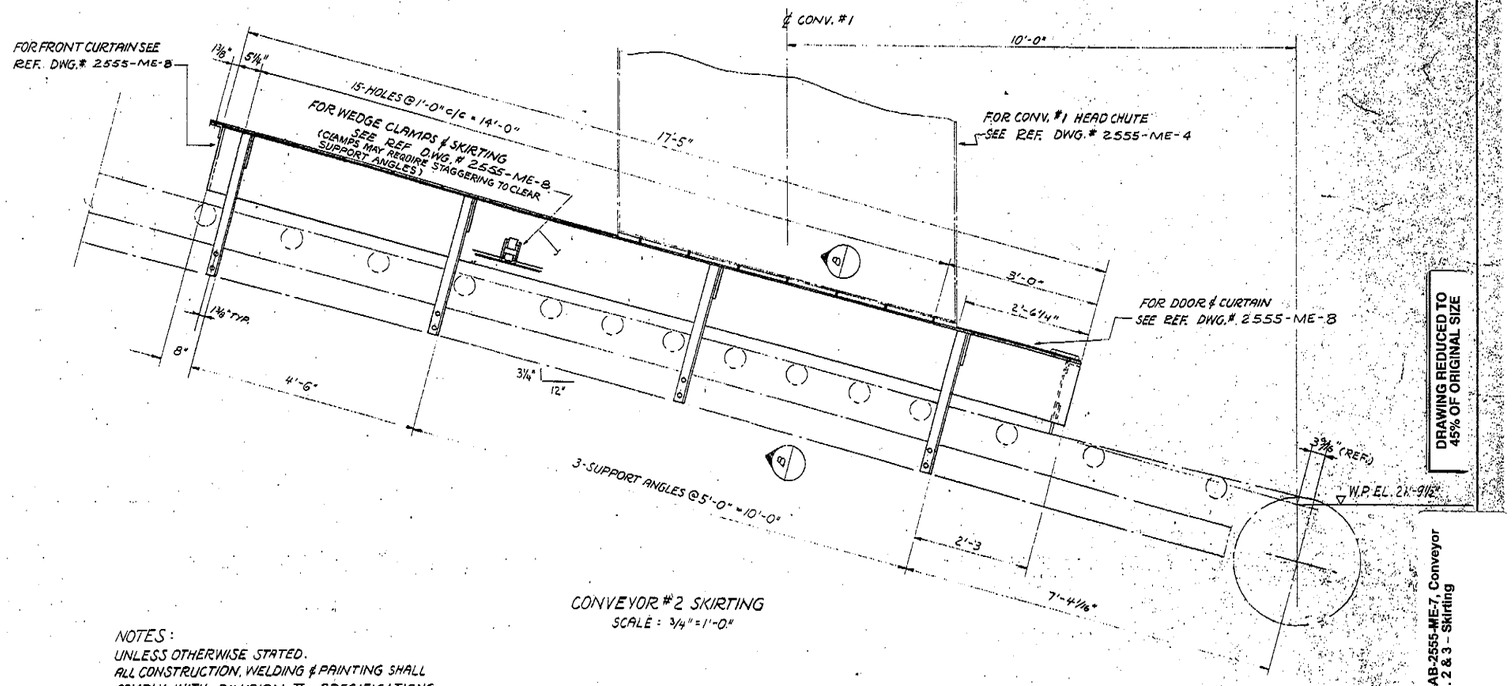


SECTION (B)
SCALE : 1½" = 1'-0"



SECTION (A)
SCALE : 1½" = 1'-0"

CONVEYOR #3 SKIRTING
SCALE : ¾" = 1'-0"



CONVEYOR #2 SKIRTING
SCALE : ¾" = 1'-0"

NOTES :
UNLESS OTHERWISE STATED.
ALL CONSTRUCTION, WELDING & PAINTING SHALL COMPLY WITH DIVISION II SPECIFICATIONS.
ALL CONSTRUCTION SHALL BE WELDED.
ALL PLATES TO BE ¼" THICK M/S.
ALL HOLES TO BE 11/16" ϕ FOR 5/8" ϕ BOLTS.

DRAWING REDUCED TO 45% OF ORIGINAL SIZE

SOT03-1989-AB-2555-ME-7, Conveyor Nos. 2 & 3 – Skirting

STATE OF ALASKA 49TH No. 1398 REGISTERED PROFESSIONAL ENGINEER

SKIRTING STANDARDS	2555-ME-8
CONV. #3 MECH. G.A.	2555-ME-22
CONV. #2 MECH. G.A.	2555-ME-20
REFERENCE	DWG. NO.

PREPARED BY:
WRIGHT ENGINEERS LIMITED
VANCOUVER——CANADA

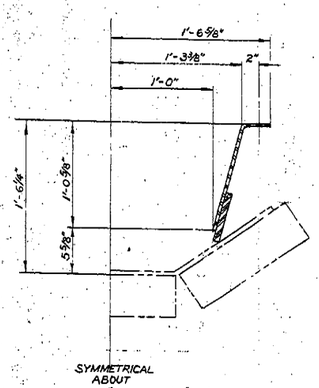
NO.	BY	DATE	REVISION

PACIFIC AND ARCTIC RAILWAY AND NAVIGATION COMPANY
ORE HANDLING TERMINAL -- PHASE II
SKAGWAY ALASKA

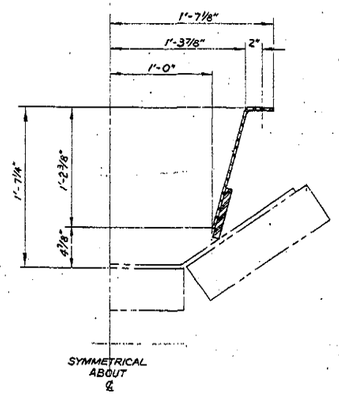
TIPPETTS - ABBETT - McCARTHY - STRATTON
ENGINEERS AND ARCHITECTS
Seattle New York

CONVEYOR # 2 & 3 SKIRTING

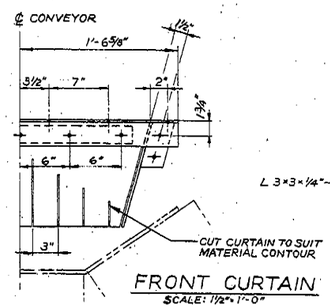
DESIGNED BY L.K.
CHECKED BY GCH.
DRAWN BY L.K.
DATE MAY 1968
SCALE AS NOTED
DRAWING NUMBER 2555-ME-7



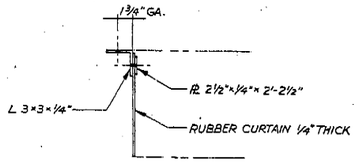
SKIRTING FOR 42" CONVEYOR
(35° IDLER)
SCALE: 1½"=1'-0"

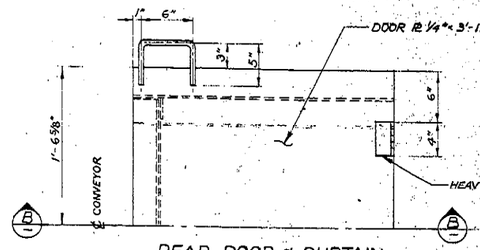


SKIRTING FOR 48" CONVEYOR
(35° IDLER)
SCALE: 1½"=1'-0"

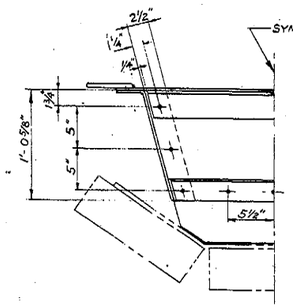


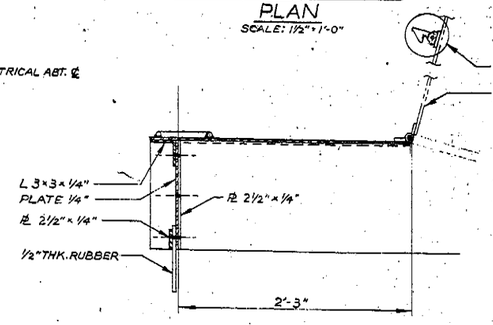
FRONT CURTAIN
SCALE: 1½"=1'-0"



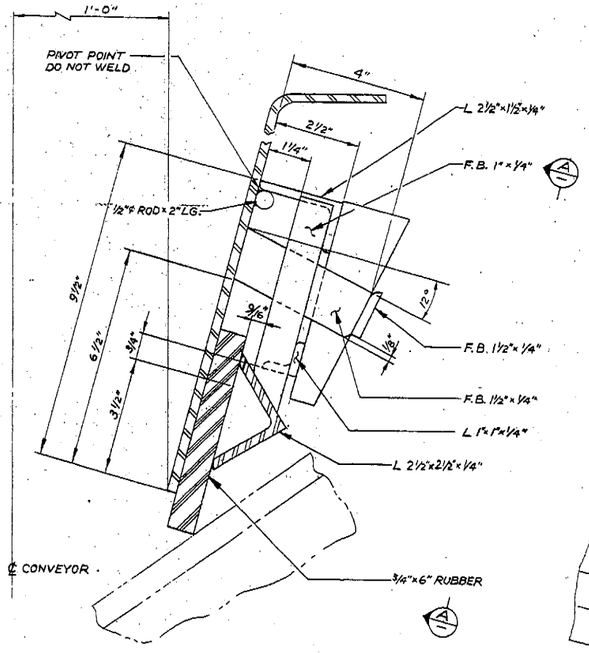


REAR DOOR & CURTAIN PLAN
SCALE: 1½"=1'-0"

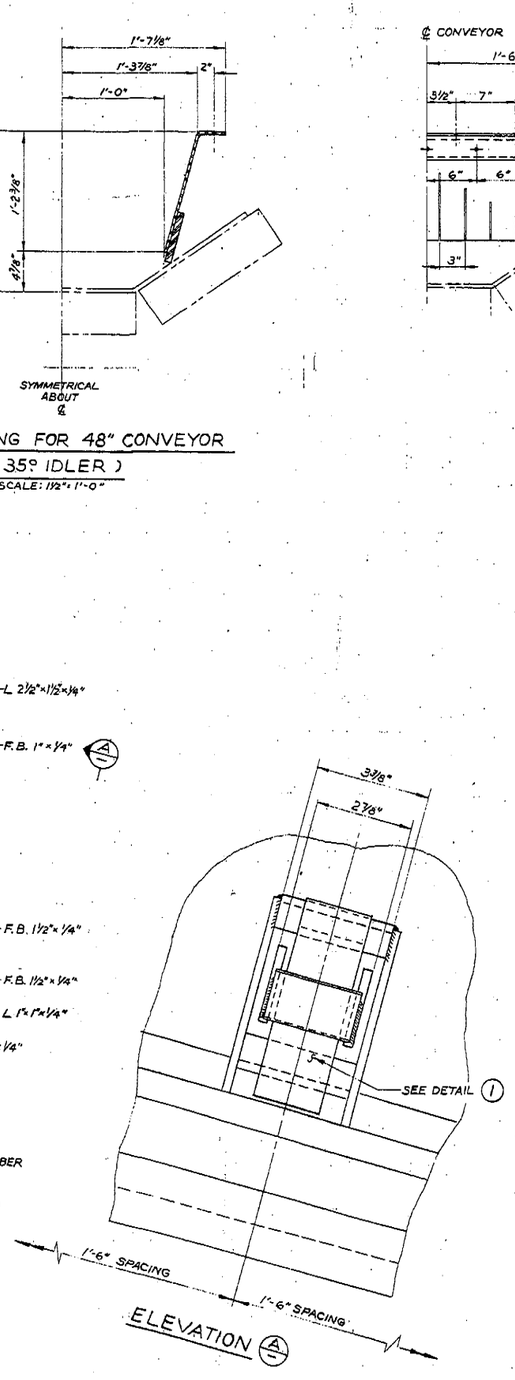




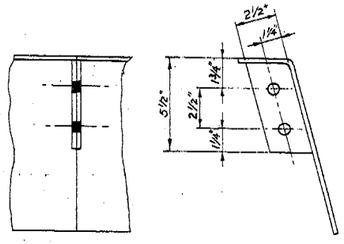
SECTION (B)



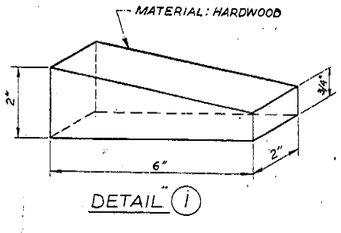
TYPICAL SECTION THRU SKIRTING
HALF SCALE



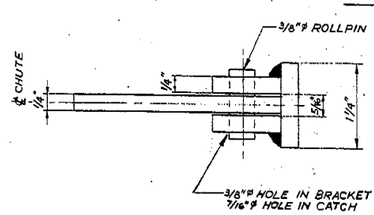
ELEVATION (A)

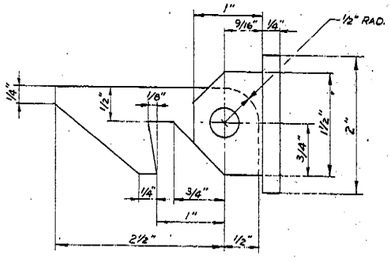


TYPICAL SKIRT JOINT DETAILS
FOR 42" AND 48" CONVEYORS
SCALE: 3"=1'-0"



DETAIL (1)





DETAIL (2)
FULL SCALE

NOTES: (UNLESS OTHERWISE STATED)

1. ALL CONSTRUCTION, WELDING & PAINTING SHALL COMPLY WITH DIVISION II SPECIFICATIONS.
2. ALL CONSTRUCTION SHALL BE WELDED.
3. ALL PLATES TO BE ¼" THICK MILD STEEL.
4. ALL BOLT HOLES TO BE 1/16" ϕ FOR ⅝" ϕ BOLTS.

DRAWING REDUCED TO 45% OF ORIGINAL SIZE

SOT03-1969-AB-2555-ME-8, Conveyors Standard Skirting Details

STATE OF ALASKA — 49TH — No. 13981E — REGISTERED PROFESSIONAL ENGINEER

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — M. LUCIFER

PACIFIC AND ARCTIC RAILWAY AND NAVIGATION COMPANY
ORE HANDLING TERMINAL -- PHASE II
SKAGWAY ALASKA

PREPARED BY:
WRIGHT ENGINEERS LIMITED
VANCOUVER——CANADA
REFERENCE: 528 710 H08

NO.	BY	DATE	REVISION

DESIGNED BY
CHECKED BY GGH

TIPPETTS - ABBETT - McCARTHY - STRATTON
ENGINEERS AND ARCHITECTS
Seattle New York

CONVEYORS
STANDARD SKIRTING
DETAILS

DRAWN BY E.K.
DATE MAY 1968
SCALE AS NOTED
DRAWING NUMBER
1-2555-ME-8