ANNEX 1

APPENDIX A

Best Management Practices (BMPs) for Constructing Docks and Floats

Fisheries and Oceans
Pêches et Océans

Pacific Region

Best Management Practices (BMPs) for Constructing Docks and Floats in the South Coast Area (Vancouver Island - Sunshine Coast)

- These BMPs apply to docks, floats and gangways proposed for the marineand freshwater shoreline. They do not, however, apply to congested waterways or foreshores where there are presently numerous docks and floats in a restricted area.
- Adherence to the BMPs should allow a property owner to construct a dock or float that will not adversely affect fish habitat.
- If you are able to meet the criteria set forth in these BMPs, you do not require further advice from Fisheries & Oceans Canada (DFO) Habitat Management staff. Completion of the notification page of this document and provision of the notification to the local DFO office is all that is necessary (See notification form attached).
- It is your responsibility to ensure that you have met the requirements of other agencies with jurisdication over land and water development in your area (Land and Water BC; local government, Regional Districts, etc).

The focus of these BMPs is to protect fish habitat from the impacts of shading, fill placement and low tide grounding of both structures and vessels.

1. Access ramps or walkways should be a minimum of 1.0 metre above the highest high water mark (HHW) of the tide, lake or stream.
2. Walkways should be a maximum width of 1.5 metres.
3. The bottom of floats should be a minimum of 1.0 m above the bed of the sea, lake or stream during the lowest water level or tide. Float height above lowest water level will need to be increased if deep draft vessels are to be moored at the dock or float.
4. Grating incorporated into ramps, walkways or floats will increase light and reduce shading of the sea/lake/stream bed. If grating is impractical, deck planks should be no wider than 15cm (6in) and planks should be spaced at least 2.5cm (1in) apart to allow light penetration.
5. North/South dock alignments will further improve light penetration.
6. Floats must not to be installed over marine or freshwater vegetation (eelgrass, kelp, saltmarsh, lake weeds, etc.).
7. Concrete, steel, BMP-treated or recycled timber piles are acceptable. For detailed information on treated wood options, refer to the *Guideline to Protect Fish and Fish Habitat from Treated Wood Used in the Aquatic Environment in the Pacific Region*, available on-line at http://www.dfo-mpo.gc.ca/Library/245973.pdf.

8. The dock/float structure and the vessel to be moored at the structure are not to come to rest on intertidal seabed, lakebed or streambed areas during the lowest tide or lowest water period of the year.
9. Construction must not to include use of native beach materials (boulders, cobble, gravel, sand, drift logs etc.).
10. Access to the beach for construction purposes is to be from the adjacent upland property wherever possible. If heavy equipment is required to work on the beach or access is required along the beach, you should seek the advice of a professional biologist to ensure that fish habitat, including riparian, intertidal saltmarch or in-water vegetation, is not adversely affected during construction.
11. Filling, dredging or blasting below the High Water Mark is not permitted.
12. Works at the upland/water interface are to be conducted when the site is not wetted by the tide or when the water levels in lakes and streams have receded, if practical.
13. Works are to be conducted in a manner that does not result in the deposit of toxic or deleterious substances (e.g. sediment, uncured concrete, sediment, fuel, lubricants, paints, stains, etc.) into waters frequented by fish.
14. Refueling of machinery and washing of buckets and hand tools must take place a minimum of 10m away from waters frequented by fish.
15. Marine foreshore construction should take place between June 1 and February 15 of any calendar year. Freshwater construction should occur during the period July 1 to September 15 in any calendar year.
16. Terrestrial riparian vegetation and intertidal saltmarsh or in-water vegetation must not be harmfully affected by access or construction. You are advised to seek the advice of a professional biologist if vegetation will be affected in any way by your proposed works

Please be advised that works in and around fish habitat (riparian habitats adjacent to fish bearing waters, tidal foreshores, lakeshores and streams) can negatively affect fish habitat. Section 35(1) of the Fisheries Act prohibits the harmful alteration, disruption or destruction of fish habitat (HADD). The Fisheries Act may be enforced if a HADD occurs during access, construction or maintenance of the erosion control structure.

For additional information, please visit our DFO website at www.pac.dfo-mpo.gc.ca

Revised by: DFO-Habitat Management, South Coast Area, March, 2004

NOTIFICATION TO DFO – CONSTRUCTION OF FLOATS AND DOCKS

You signature below indicates that you have read and understood these guidelines and will abide by them.

Name: _____

Address: _____

_____

Telephone #/cell#: _____

Worksite Address (if different from above): _____

_____

Detailed Description of Works(dimensions; materials-attach a drawing if desired):

_____

_____

_____

Start Date for Works: _____ End Date for Works: _____

I acknowledge thatI will adhere to the conditions described for construction of floats and docks as outlined above. I will not place fill below the HHW mark, use native beach materials for construction or harmfully affect riparian or in-water vegetation or other fish habitats

Signature: _____ Date Signed: _____

Fax or Mail this form to your local DFO office AT LEAST 5 BUSINESS DAYS PRIOR to the planned construction start date. A Fisheries Officer may inspect your construction site to ensure compliance with the Fisheries Act.

Fax Numbers:

DFO- Comox: (250) 339-4612
DFO- Duncan: (250) 746-8397
DFO- Nanaimo: (250) 754-0309
DFO- Pender Harbour: (250) 883-2152
DFO- Powell River: (250) 485-7439
DFO- Port Alberni: (250) 724-2555
DFO- Powell River: (250) 485-7439
DFO- Victoria: (250) 363-0191

ANNEX 2

APPENDIX B

DFO Best Management Practices for Pile Driving & Related Operations

Best Management Practices for Pile Driving and Related Operations – BC Marine and Pile Driving Contractors Association - March, 2003

The BC Marine and Pile Driving Contractors Association and Fisheries and Oceans Canada (DFO) have developed a Best Management Practices Policy for pile driving operations and related activities when working on the water within the province of British Columbia.

The Pile Driving Industry utilizes many different construction methods, equipment and materials in order to complete the contractual obligations for its client. Hammers; including drop, diesel, air, vibratory and hydraulic, vibroflot, and rotary, air and churn drills are the primary instruments in a pile driving operation. These hammers and drills are supported by a wide variety of heavy equipment, including a range of conventional cranes (truck mounted, crawler and pedestal mounted), spud scows, support barges and other water borne equipment. The piling types include treated timber (primarily creosote), concrete and steel (pipe, h-beam and sheet). Construction projects have the potential to utilize a number of different combinations of equipment and materials. It is the purpose of this document to examine the characteristics of each potential combination and develop a Best Management Practices Policy that will meet the following criteria:

-Maximize environmental protection
-Avoid contravention of the Fisheries Act
-Provide construction services economically

1)- Basic Rules of Operation

When in an aquatic environment, contractors will employ the following BASIC Best Management Practices:

- All equipment will be maintained in good proper running order to prevent leaking or spilling of potentially hazardous or toxic products. This includes hydraulic fluid, diesel, gasoline and other petroleum products.
- Storage of fuels and petroleum products will comply with safe operating procedures, including containment facilities in case of a spill.
- Pile cut-offs, waste or any miscellaneous unused materials will be recovered for either disposal in a designated facility or placed in storage. Under no circumstances will materials be deliberately thrown overboard.
- Contractors will have emergency spill equipment available whenever working near or on the water.
- Contractors, where possible, will position their water borne equipment in a manner that will minimize damage to identified fish habitat (i.e. eelgrass). Where possible, alternative methods will be employed (i.e.: use of anchors instead of spuds). In the event that circumstances will not allow an alternative, contractors will minimize the

damage and where required restore habitat to its original state at the completion of the project.

- Prior to the commencement of any work, the contractor will complete and forward the attached "Notice of Project" to the Department of Fisheries and Oceans. Letters of advice or Habitat Authorizations may be required, depending on the scope of work proposed.
- If contractors are working and a herring (or other fish) spawning occurs, the work will be temporarily suspended and the appropriate DFO contact notified.
- There will be no restriction of work during closure periods (the only exception being when spawning is present), provided the contractors employ an exclusion device (protective netting or geotextile material suspended in the water column around pile driving area) around the work area to prevent fish access or when required, an effective method of mitigating shock waves (bubble curtain).
- Whenever shock wave monitoring (hydrophone) is performed at a marine construction site and the findings are available to the contractor, the data will be forwarded to the BC Marine and Pile Driving Contractors Association and Svein Vagle at the Institute of Ocean Sciences in Sidney, BC. It is hoped that a database can be built that will catalogue work procedures and reflect the safest and most economical approach to protecting the fish and their habitat.

2)-Timber Piling (creosote):

When driving timber piling, the following Best Management Practices will be employed to minimize/prevent impact to marine fish and their habitat:

- Where possible, new timber piles will comply with the best Management Practices for the use of treated wood in aquatic environments as developed by the Canadian Institute of Treated Wood and the Western Wood Preservers Institute and the DFO document "Guidelines to Protect Fish and Fish Habitat from Treated Wood Used in Aquatic Environments in the Pacific Region".
- Where the above is not possible creosote piling will stand (weather) for a minimum of 45 days prior to installation.
- These requirements are for new piling only. Reused piling will not be subject to any additional treatments, however, pilings with excessive creosote should be avoided.
- Timber piling is normally driven using a drop hammer, a diesel/air impact hammer or a small vibratory hammer. Because of the relative small diameter of the timber pile, and its excellent energy absorbing quality, there is little threat of sound pressure impacts to fish and their habitat when driving timber piles.
- Environmental monitoring of sound pressure impacts is not required.
- When demolition is required on timber pile structures, the contractor will remove the piling by mechanical means and avoid breaking the piling at the mud line or below. All demolition operations should be monitored in order to control and contain the construction debris and to determine whether there are any effects on fish.

3)-Concrete Piles

When driving concrete piles, regardless of which hammer is being used, the following Best Management Practices will be employed to minimize/prevent impacts to fish habitat:

Less than 24 inch diameter

- The physical design of 24 inch concrete pile dictates that: 1/ the energy required must be controlled in order to prevent the pile from breaking and 2/ the concrete construction of the pile will absorb the energy. These two factors are expected to result in low level shock wave emission (less than 30 kPa.) and minimal or no effects to fish and their habitat should result.
- Environmental monitoring of sound pressure levels is generally not required.

Greater than 24 inch diameter

- When driving concrete piles with a diameter greater than 24 inches using an impact or hydraulic hammer, the following Best Management Practice will be employed to minimize the impact on fish habitat:
- Visual and hydrophone monitoring of the impact on fish by the sound waves emitted will be required. If sound pressures over 30 kPa is measured or a fish kill is evident, the contractor will introduce effective means of reducing the level of the shock waves. Appropriate mitigating measures would be the deployment of a bubble curtain over the full length of the wetted pile. This should reduce the shock waves to an acceptable level.
- If, despite the introduction of preventive measures, further visual/hydrophone monitoring reveals unacceptable conditions (fish kill or sound pressure over 30 kPa), then the work will stop immediately and the methods will be reviewed and corrected.

4)-Steel Pipe Piles

Less than 18 inch diameter

When driving steel piles 18 inches in diameter and less, regardless of the type of hammer being used, the following Best Management Practices will be employed to minimize/prevent impacts to fish habitat:

- Because of the small diameter of the pile it is assumed that the energy required to drive the pile to the final point of installation will not result in shock waves in excess of 30 kPa, therefore, protective measures to reduce shock waves are not expected to be required.

- If, however, ground conditions during pile installation cause a fish kill, work will cease and contractors will be responsible for introducing effective means of reducing the level of shock waves or will introduce measures that will prevent fish from entering the potentially harmful shock wave area. Appropriate mitigating measures would include the deployment a bubble curtain over the full length of the wetted pile. This technique should reduce the shock waves to an acceptable level.
- If, despite the introduction of preventive measures, further visual/hydrophone monitoring reveals unacceptable conditions (fish kill or sound pressure over 30 kPa), then the work will stop immediately and the methods will be reviewed and corrected.

Greater than 24 inches in diameter

When driving steel pipe piles with a diameter greater than 24 inches using impact or hydraulic hammers, the following Best Management Practices will be employed to minimize/prevent impacts to fish habitat:

- Hydrophone and visual monitoring of the effects of the shock waves on fish will be required. If a fish kill occurs, the contractor will introduce effective means of reducing the level of the shockwave. Appropriate mitigating measures would be the deployment of a bubble curtain over the full length of the wetted pile.
- If, despite the introduction of preventive measures, further visual/hydrophone monitoring reveals unacceptable conditions (fish kill or sound pressure over 30 kPa), then the work will stop immediately and the methods will be reviewed and corrected.

5)-Steel Sheet Piles and H-piles

When driving steel sheet piles and H-piles with a drop hammer, an impact hammer or a vibratory hammer, the following Best Management Practices will be employed to minimize the impact on fish habitat:

- It is anticipated that the driving of these types of piles will not generate shock waves in excess of 30kPa, therefore, mitigating measures are not expected to be required.
- If, however, ground conditions during pile installation cause a fish kill, work will cease and contractors will be responsible for introducing effective means of reducing the level of shock waves or will introduce measures that will prevent fish from entering the potentially harmful shock wave area. Appropriate mitigating measures would include the deployment a bubble curtain over the full length of the wetted pile. This technique should reduce the shock waves to an acceptable level.
- If, despite the introduction of preventive measures, further visual/hydrophone monitoring reveals unacceptable conditions (fish kill or sound pressure over 30 kPa), then the work will stop immediately and the methods will be reviewed and corrected.

6)-Stone Column Construction

When installing stone column using a vibroflot, the following Best Management practices will be employed to minimize/prevent impacts to fish habitat:

- The vibrating action and air flush associated with the operation of the probe results in a high degree of turbidity. When this level exceeds the criteria as outlined in the British Columbia Approved Water Quality Guidelines, the contractor will introduce containment methods that are designed to isolate the contaminated area and to prevent fish from entering the contaminated area. Silt curtains and netting are two methods that can provide the necessary protection.
- When supplying the aggregate to the probe, the contractor will ensure that spillage is prevented, thereby providing additional protection to fish habitat.
- An independent environmental consultant will be used to monitor turbidity levels.

7)-Underwater Drilling and Blasting

When performing underwater drilling and blasting the following Best Management Practices will be employed to minimize/prevent impacts to fish habitat:

<u>Underwater Drilling</u>

- Generally, drilling underwater is a process that has very little impact on fish or fish habitat. The procedure does not generate shock waves.
- Contractors will ensure that all attachments (hydraulic connections and couplings) are in good operating order and inspected prior to the start of every day. Spill kits and containment booms must be maintained on-site in case of spills.
- Depending on soil conditions and the potential for turbidity, drill cuttings will be deposited adjacent to the operation, contained on the sea bed or pumped to the surface for deposit into containment skiffs or scows for land disposal when it is determined that the drill cuttings are unsuitable for return to the environment.

<u>Underwater Blasting</u>

Contractors required to perform blasting underwater will provide the following protection to minimize/prevent impacts to fish habitat:

- Because of the potential for harmful shock waves resulting from a blast, a protection shield will surround the immediate blast area. This would be in the form of an air-induced bubble curtain, which has the primary purpose of absorbing the shock wave and a secondary purpose of preventing fish from entering the blast area.
- In order to protect against flying rock, mats (rubber) will be placed over the blasting area. The placement of the mats may also provide protection for any fish swimming in the immediate area.

- Monitoring of fish movement and concentrations will be conducted using a sounder to determine if fish herding or scaring techniques (seal bombs) can be utilized to reduce the presence of fish in the blast area.

8)-Cleaning out Pipe Piles:

When cleaning out pipe piles (i.e.: air lifting) the following Best Management Practices will be employed to minimize/prevent impacts to fish habitat:

- Generally, sediment contained in the pipe is will be pumped to the surface and processed through an approved containment system and disposed of at an approved landfill site.
- In exceptional circumstances, if the sediment is non-toxic, fish are not present in the area, and adjacent fish habitats are not a concern (contact DFO) it may be acceptable to:

1. Pump the sediment through a discharge tube and allowed it to settle in the immediate area with or without a silt curtain to contain the sediment.
2. Pump the sediment through a discharge tube and additional flex hosing and redirect it back to the base of the pile.

9) Containment of Concrete Residue and Water Run Off

When placing concrete in form work over or in water, the following Best Management Practices will be employed to minimize/prevent the impacts to fish habitat:

Pouring concrete

- Spills: When pouring concrete all spills of fresh concrete must be prevented. Concrete is toxic to fish due its high pH. If concrete is discharged from the transit mixer directly to the formwork or placed by wheelbarrow, proper sealed chutes must be constructed to avoid spillage. If the concrete is being placed with a concrete pump, all hose and pipe connections must be sealed and locked properly to ensure the lines will not leak or uncouple. Crews will ensure that concrete forms are not filled to overflowing.
- Sealing forms: All concrete forms will be constructed in a manner which will prevent fresh concrete or cement-laden water from leaking into the surrounding water.

Curing concrete

- When fresh water is used to cure concrete, the run off must be monitored for acceptable pH levels. If the pH levels are outside the allowable limits then the run off water must be contained and neutralized.

Grinding concrete

- When grinding cured concrete, the dust and fines entering the water must not exceed the allowable limits for suspended solids. When grinding green or incompletely cured concrete and the dust or fines are entering the water, pH

monitoring will be conducted to ensure allowable ranges are maintained. In the event that the levels are outside the acceptable ranges, preventative measures will be introduced. This may include introducing silt curtains to contain the solids and prevent fish from entering a contaminated area or constructing catch basins to recover the run off and neutralizing it prior to disposal.

Patching concrete

- Spills: When patching concrete, all spills must be contained and prevented from entering the water.

Washing hand tools, pumps and transit mixer

- All tools, pumps, pipes, hoses and trucks used for finishing, placing or transporting fresh concrete must be washed off in such a way as to prevent the wash water and excess concrete from entering the marine environment. The wash water will be contained and disposed of upland in an environmentally acceptable manner.

Whenever there is the possibility of contaminants entering water, the contractor will monitor pH levels to ensure acceptable levels.

APPENDIX

Fisheries and Oceans Canada

Contact List

Name	Telephone No.	Fax. No.

NOTICE OF PROJECT

To: Fisheries and Oceans Canada

Attention:

Fax. No.:

From: "Contractor"

Telephone No.:

Fax. No.:

Representative:

Please be advised of the following marine/pile driving project:

Project Name:

Project Location:

Project Manager/Superintendent:

Project Telephone No.:

Project Fax. No.:

Project commencement date:

ANNEX 3

Transport Canada / Transports Canada

ENVIRONMENTAL EFFECTS DETERMINATION FORM

1. PROJECT IDENTIFICATION			
Project Title:	Wharf Restoration		
Project Location:	Bamfield Public Port Facility, British Columbia		
TC File No.	10047839		
NWPP File No.			
OPI File No.	9126608 (PAD, Project Number 5667)		
RDIMS Record No.	10047839		
NEATS Record No.	37381		
Total Estimated Cost:		Start Date:	End Date:

2. PROPONENT INFORMATION		
Contact Information	Proponent	Representative and/or Environmental Consultant (if applicable)
Contact Name:	Wayne Marston, Regional Manager, Programs and Terminal Services (THO)	
Organization Name:	Transport Canada	
Mailing Address:	600-800 Burrard St Vancouver, BC V6Z 2J8	
Tel:	(604) 666-5469	
Fax:	(604) 666-9107	
Email:	wayne.marston@tc.gc.ca	

3. PROJECT DESCRIPTION, DESCRIPTION OF THE ENVIRONMENT AND FEDERAL SCOPE

Project Description

This project involves repairs including the replacement of a significantly deteriorated bearing pile and cross bracing in the same area, the replacement of two significantly cracked stringers, and the replacement of mooring chains on the float. Other isolated minor repairs are to be implemented.

Gangway replacement will be changed to repainting the underside of the gangway to protect from corrosion. Based on the attached photos, the underside of the gangway will require sanding and re-painting as required. As it is on the underside of the gangway, sanding containment measures on the float including a tarp or other by the contractor could be used. The other options proposed including a new gangway, sandblasting, and removal of the gangway for sanding and painting are not required based on the current condition of the gangway.

The work is being contracted and managed by Public Works and Government Services Canada (PWGSC) on behalf of Transport Canada.

Description of the Environment

The Site is approximately 0.2 hectares in area and comprises a trestle approach, a wharf head, a gangway and one main float. The float is moored by anchor. A metal shed and derrick are located on the wharf. The wharf had one light that was supplied power from a solar panel. The structures are situated almost entirely over water.

ANNEX 4

INSTITUTE OF OCEAN SCIENCES
ENVIRONMENT CANADA

AS BUILT DRAWINGS

PATRICIA BAY, B.C.
MARINE FACILITY

DRAWING LIST

STRUCTURAL

S1 — EXISTING STRUCTURE SITE PLAN
S2 — GENERAL ARRANGEMENT
S3 — DREDGING PLAN
S4 — WHARF GENERAL ARRANGEMENT
S5 — WHARF PILING & CRIB LAYOUT
S6 — WHARF — CRIBS TYPICAL FIRST STAGE CONC OUTLINE & REINF
S7 — WHARF CRIB N° 1 CONC OUTLINE & REINF
S8 — WHARF TYPICAL SECTIONS
S9 — WHARF APPROACH PILE CAPS CONC OUTLINE & REINF
S10 — WHARF PIER 1,2 & CROSS PIER PILE CAPS CONC OUTLINE & REINF
S11 — WHARF STANDARD CRIB DETAILS KIOSK PAD AND CLEAT DETAILS
S12 — WHARF AND APPROACH KIOSK PAD AND LAMP STANARD DETAILS
S13 — WHARF CROSS PIER PILE CAP & BEAM LAYOUT
S14 — WHARF CROSS PIER BEAMS CONC OUTLINE & REINF
S15 — WHARF AND APPROACH DECK PANEL AND DRAINAGE DETAILS
S16 — WHARF AND APPROACH DECK PANEL DETAILS
S17 — WHARF AND APPROACH FENDER SYSTEM DETAILS
S18 — CAUSEWAY GENERAL ARRANGEMENT
S19 — CAUSEWAY TYPICAL SECTIONS AND DETAILS
S20 — CAUSEWAY SERVICE DUCT CONC OUTLINE & REINF
S21 — LAUNCHING PIER PLAN AND DETAILS
S22 — LAUNCHING PIER FLOATS, SEAPLANE BASE PLAN AND DETAILS
S23 — STANDARD 4' X 36' STEEL-GANGWAY

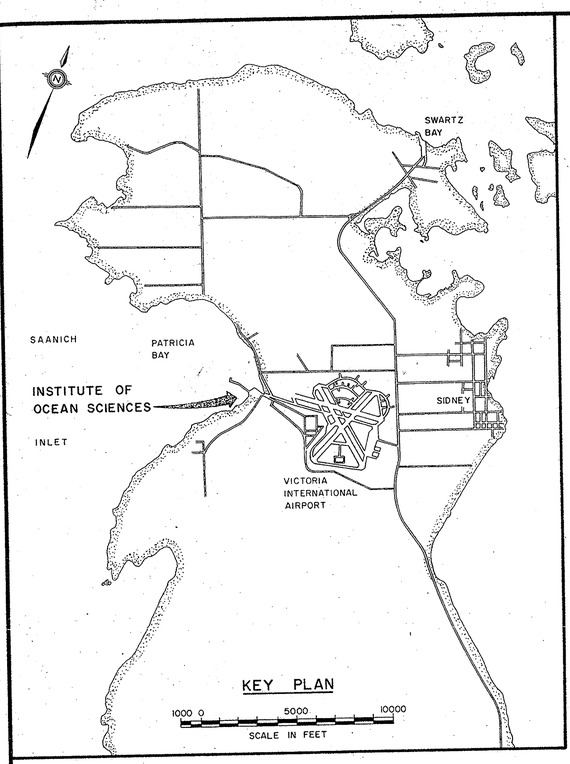
MECHANICAL

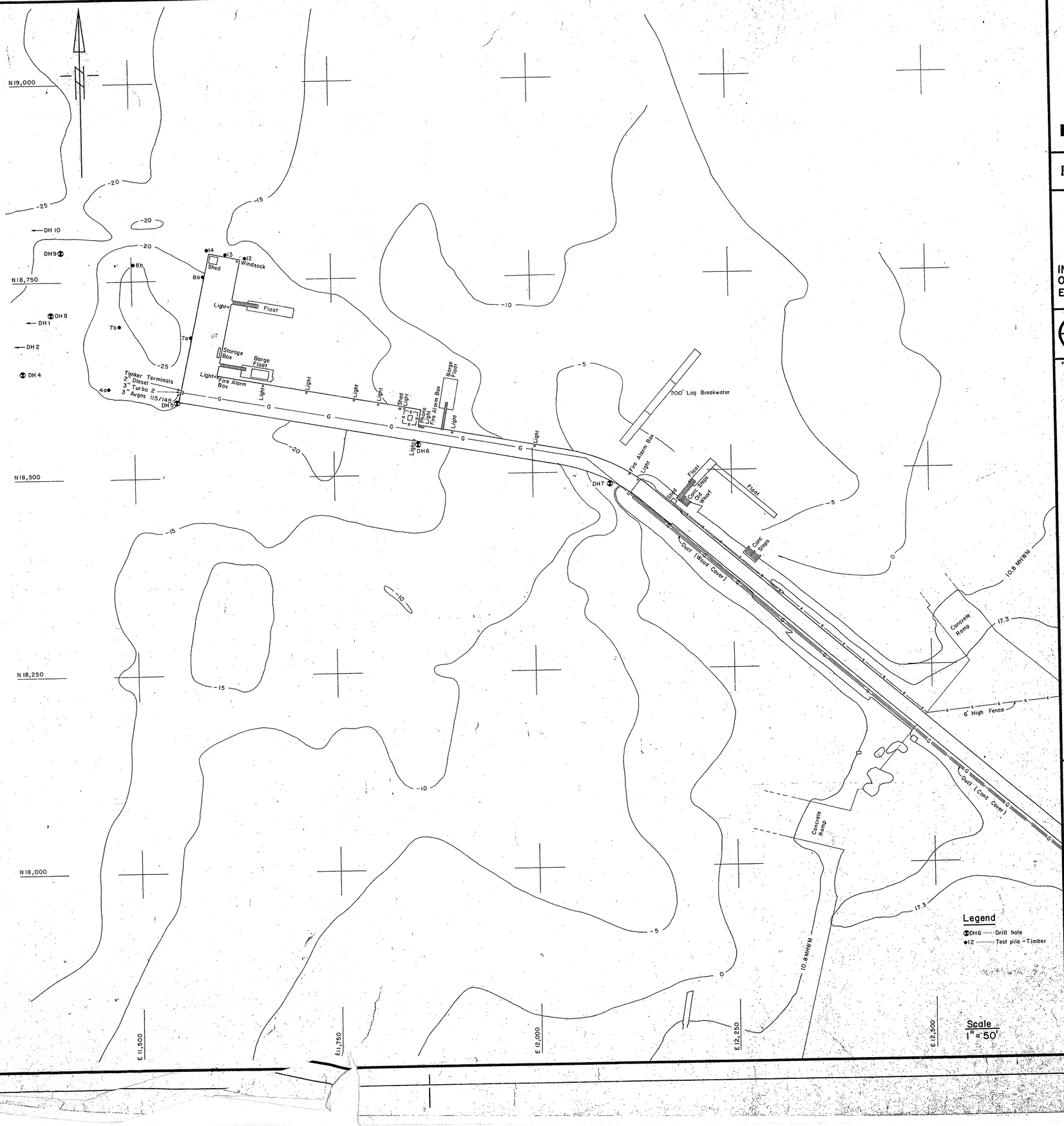
M1 — PARTIAL SITE PLAN (EAST)
M2 — PARTIAL SITE PLAN (WEST)
M3 — DETAILS OF VALVE PIT & SERVICE TRENCH ON APPROACH PIER
M4 — SERVICES TO APPROACH PIER KIOSK PLAN, SECTIONS & DETAILS
M5 — PLAN OF CRIB AT TRESTLE HEAD
M6 — HOLDING TANKS SECTIONS & DETAILS
M7 — CRIB DETAILS - SOUTH FINGER
M8 — SMALL BOAT HARBOUR
M9 — DETAILS
M10 — CRIB DETAILS - NORTH FINGER

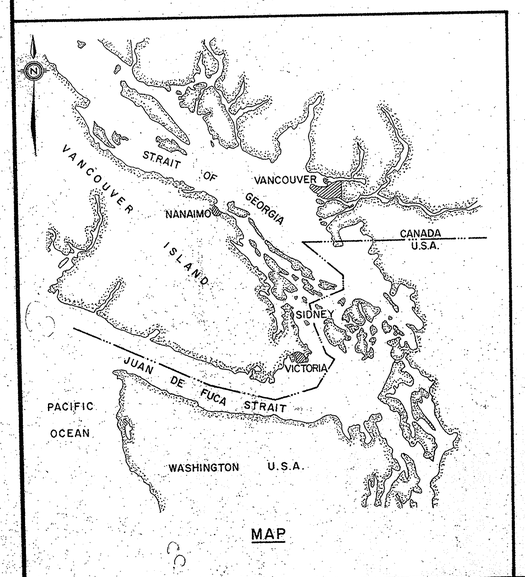
ELECTRICAL

E1 — CAUSEWAY PLAN
E2 — WHARF PLANS- FEEDER PLAN AND LIGHTING AND POWER PLAN
E3 — KIOSKS - ELECTRICAL EQUIPMENT DETAILS
E4 — CRIB DETAILS AND KIOSK ASSEMBLY DETAILS
E5 — LIGHTING DETAILS AND SUBSTATION DETAILS
E6 — DISTRIBUTION SINGLE LINE DIAGRAM AND PANELBOARDS

Public Works
Canada







Public Works Canada / Travaux publics Canada

PACIFIC REGION

INSTITUTE OF OCEAN SCIENCES
ENVIRONMENT CANADA

A detail no. / détail no.
B location drawing no. / sur dessin no.
C drawing no. / dessin no.

revisions / date
A - Contours revised

project title / titre du projet
PATRICIA BAY, B.C.
MARINE FACILITY

drawing title / titre du dessin
EXISTING STRUCTURE
SITE PLAN

designed by / conçu par
date 13-8-74

drawn by H.D.T. / dessiné par
date

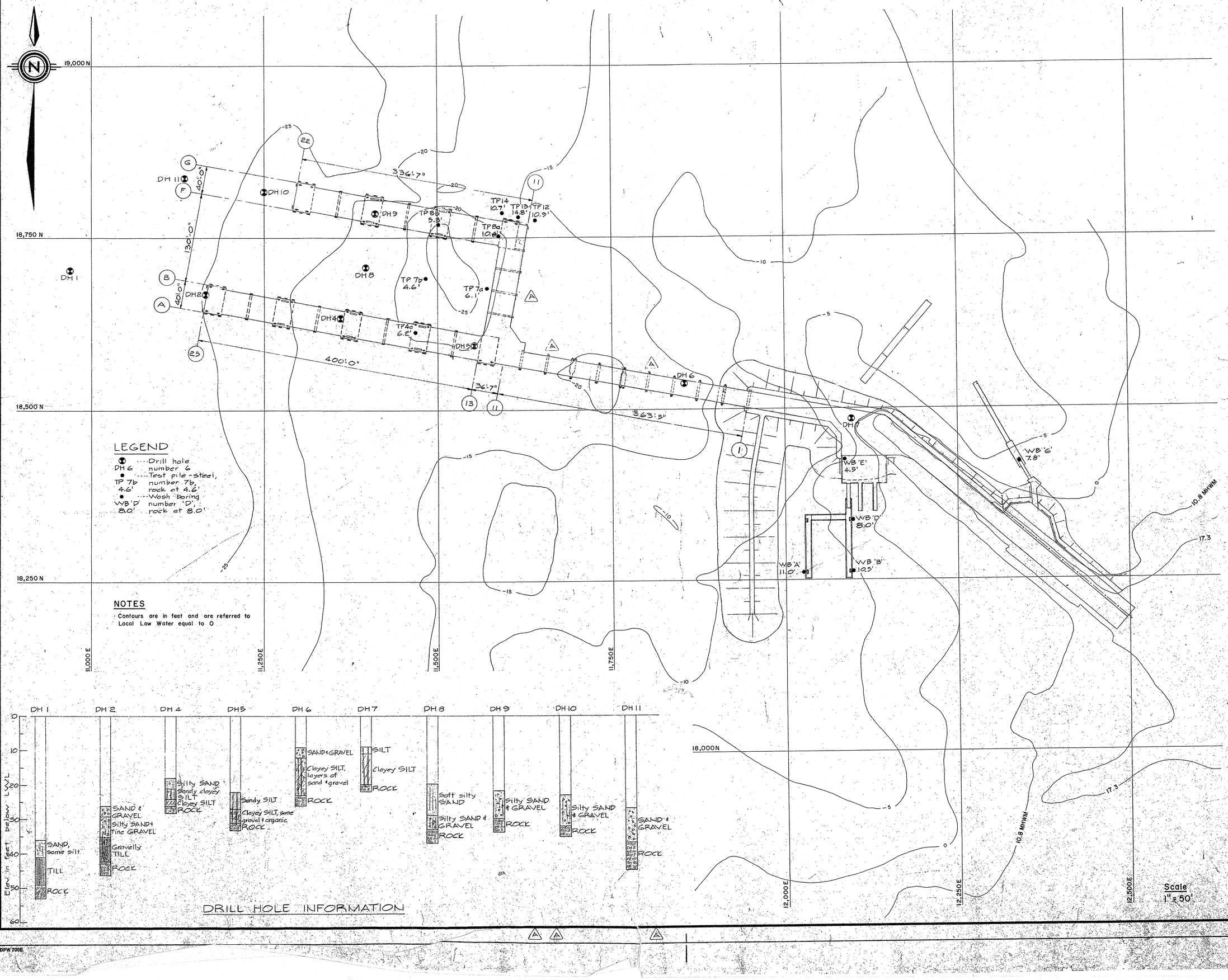
reviewed by / examiné par
date

approved by / approuvé par
date 13-8-74

Tender / Soumission
D.P.W. Project Manager / Administrateur de projets M.T.P.

project number / no. du projet
89323

drawing no. / dessin no.
S 1



LEGEND

- DH 6 ····Drill hole number 6
- TP 7b 4.6' ····Test pile-steel, number 7b, rock at 4.6'
- WB 'D' 8.0' ····Wash boring number 'D', rock at 8.0'

NOTES

- Contours are in feet and are referred to Local Low Water equal to 0

DRILL HOLE INFORMATION

Scale 1" = 50'

Public Works Canada / Travaux publics Canada

PACIFIC REGION

INSTITUTE OF OCEAN SCIENCES
ENVIRONMENT CANADA

A detail no. / détail no.
B location drawing no. / sur dessin no.
C drawing no. / dessin no.

revisions / date
A - Cross pier layout & 2 approach pile caps changed Dec 2/74
B - Contours revised

project title / titre du projet
PATRICIA BAY, B.C.
MARINE FACILITY

drawing title / titre du dessin
GENERAL ARRANGEMENT

designed by / conçu par
date 15-8-74

drawn by H.D.T. / dessiné par
date

reviewed by / examiné par
date

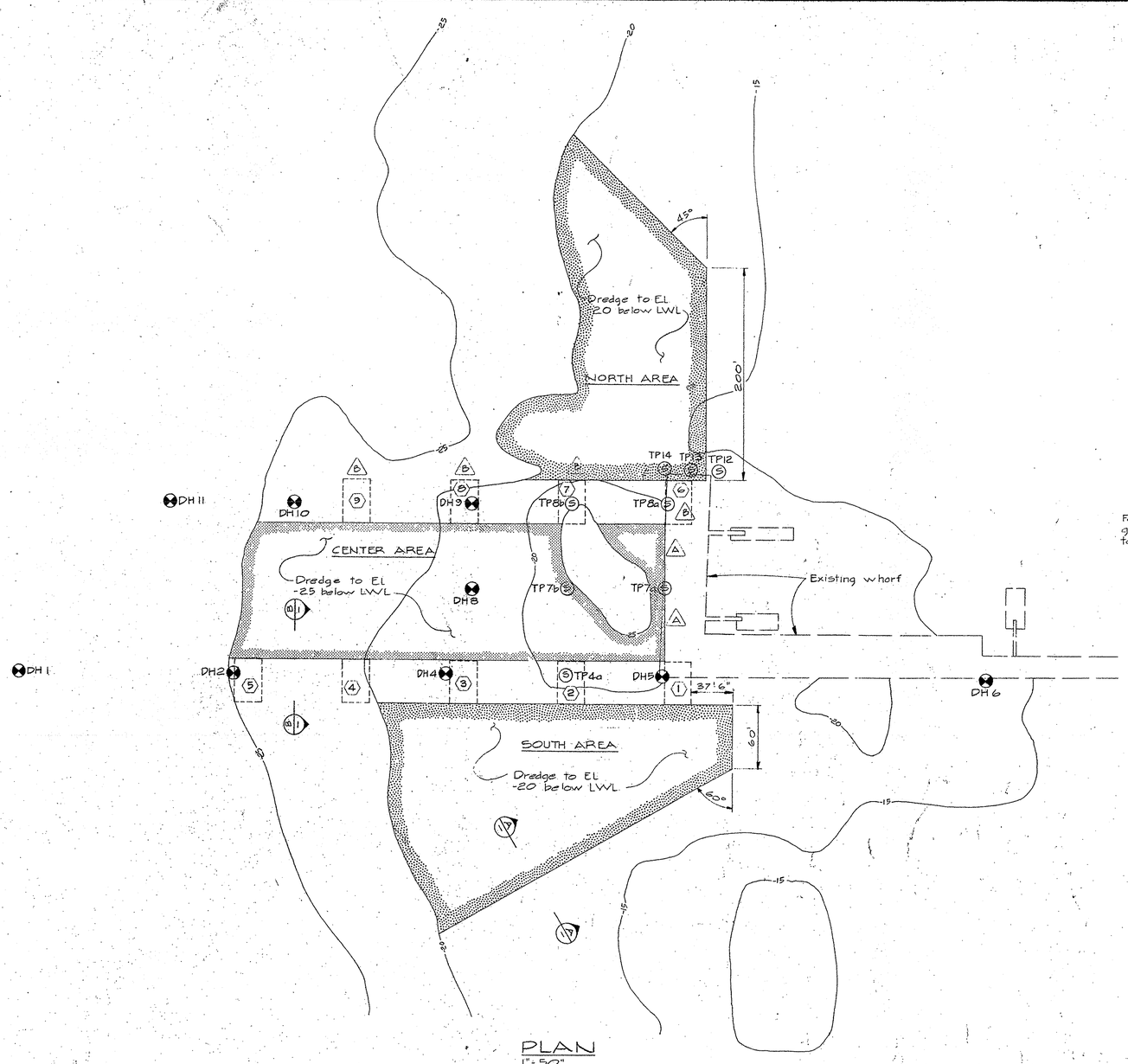
approved by / approuvé par
date 15-8-74

Tender / Soumission
D.P.W. Project Manager / Administrateur de projets M.T.P.

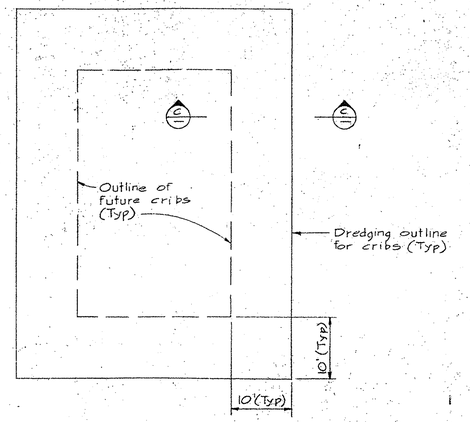
project number / no. du projet
89323

drawing no. / dessin no.
S 2

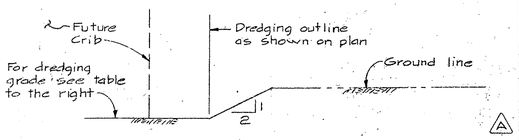
DPW 700E



PLAN
1"=50'

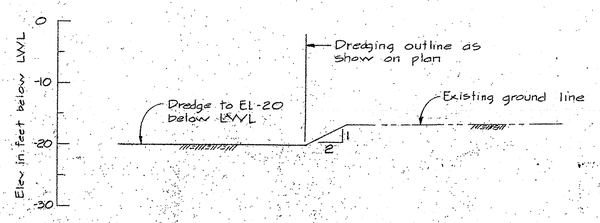


PLAN OF CRIB DREDGING
1"=10'

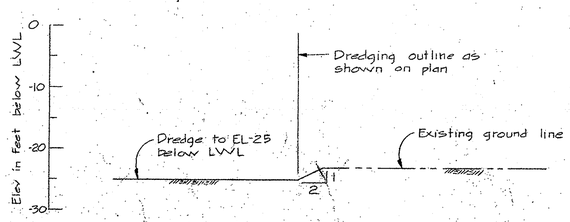


SECTION ⓒ
1"=10'

At crib No. 1 dredge to Rock
" " " 2 " " Rock
" " " 3 " " Rock
" " " 4 " " Rock
" " " 5 " " Till
" " " 6 " " Rock
" " " 7 " " El -26
" " " 8 " " El -26
" " " 9 " " El -26



SECTION Ⓐ
1"=10'



SECTION Ⓑ
1"=10'

LEGEND
- Drill hole DH 6
- Ⓢ Test pile - Steel TP 12
- ③ Crib number

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PACIFIC REGION

INSTITUTE OF OCEAN SCIENCES
ENVIRONMENT CANADA

A detail no. / détail no.
B location drawing no. / sur dessin no.
C drawing no. / dessin no.

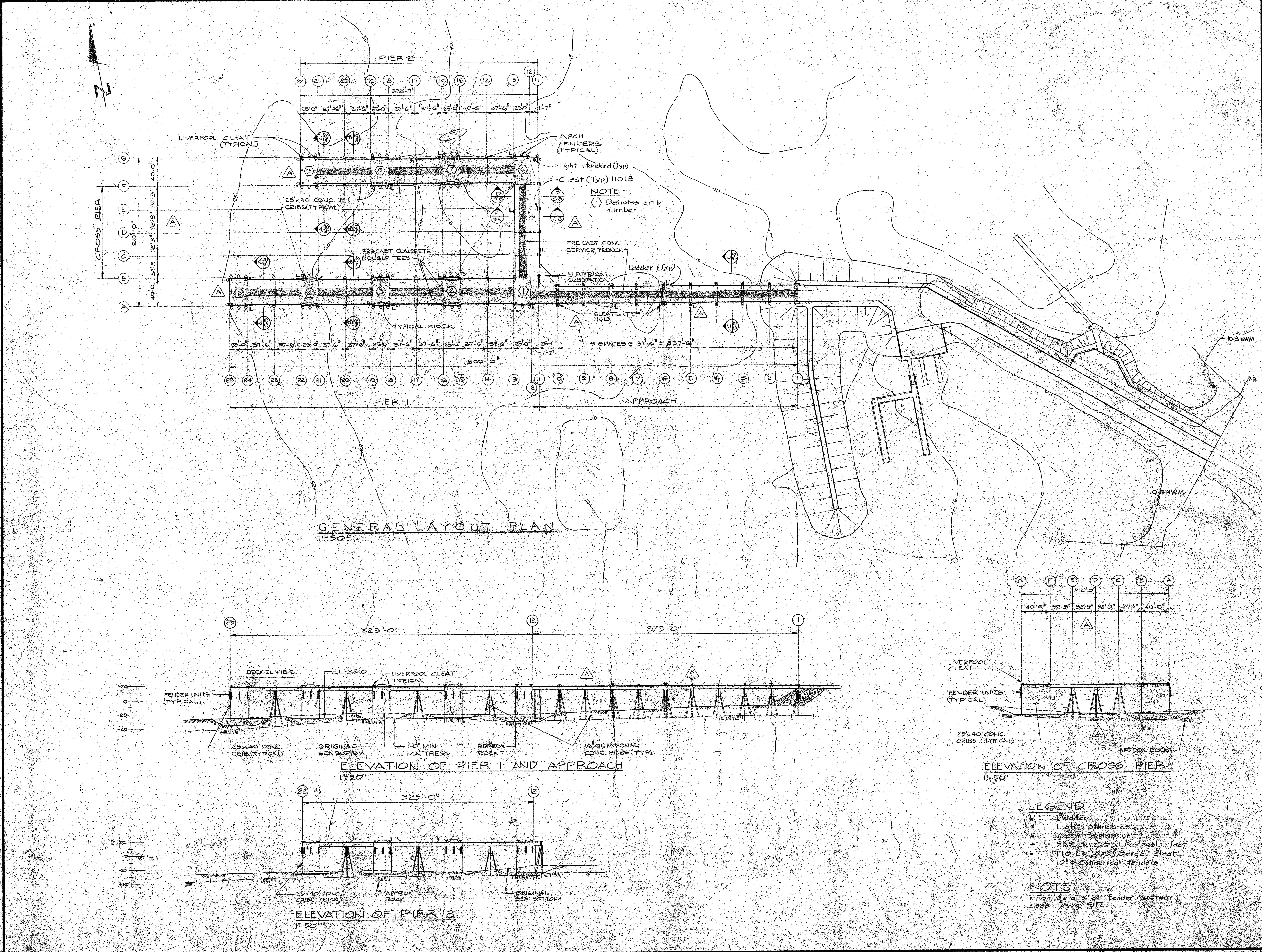
revisions / date
A - Removed dredging at Cribs "6 & "7, Dec 2/74
B - Renumber Cribs "5, "9, "10 & "11 to read "6, "7, "8 & "9. 4 contours revised

project title / titre du projet
PATRICIA BAY, B.C.
MARINE FACILITY

drawing title / titre du dessin
DREDGING PLAN

designed by / conçu par
date 13-8-74
drawn by H.D.T. / dessiné par
date
reviewed by / examiné par
date
approved by / approuvé par
date 15-8-74
Tender / Soumission
D.P.W. Project Manager / Administrateur de projets T.P.
project number / no. du projet
89323
drawing no. / dessin no.
S 3

DPW 700E



Public Works Canada / Travaux publics Canada

PACIFIC REGION

INSTITUTE OF OCEAN SCIENCES ENVIRONMENT CANADA

A detail no. / détail no.
B location drawing no. / sur dessin no.
C drawing no. / dessin no.

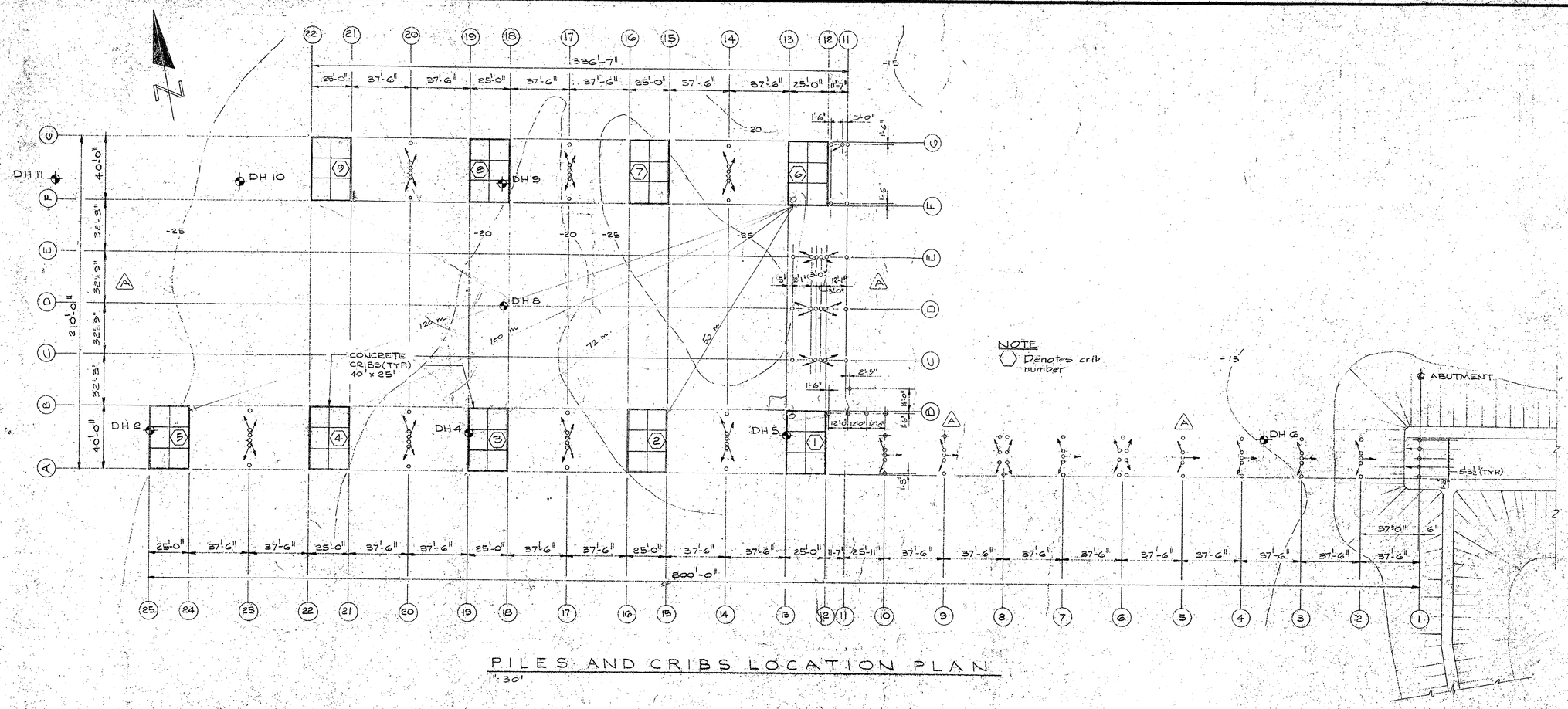
revisions / date
A - General revision to Plan & Elevations Dec/74
B - Ladders, fenders & cleats clarified on plan. Legend added. Contours revised

project title / titre du projet
PATRICIA BAY, B.C. MARINE FACILITY

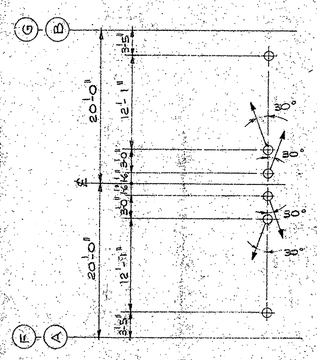
drawing title / titre du dessin
WHARF GENERAL ARRANGEMENT

designed by / conçu par: [signature]
date: 13-8-74
drawn by / dessiné par: H.D.T. & Tony De Curtis
date:
reviewed by / examiné par:
date:
approved by / approuvé par: [signature]
date: 13-8-74
Tender / Soumission
D.P.W. Project Manager / Administrateur de projets M.T.P.
project number / no. du projet: 89323
drawing no. / dessin no.: S 4

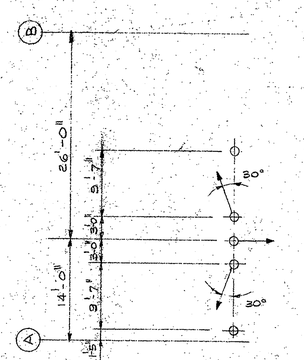
DPW 700E



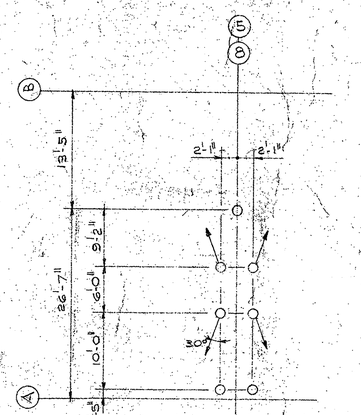
PILES AND CRIBS LOCATION PLAN
1" = 30'



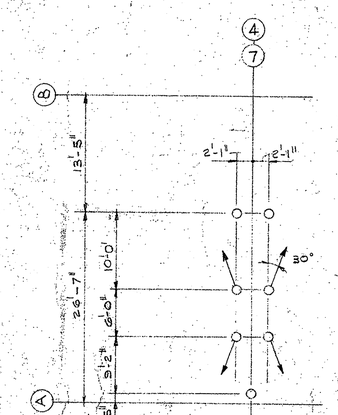
PILES LAYOUT
ON LINES 14, 17, 20, 23
(PIERS N°1 & N°2)
PILE LAYOUT SIMILAR
ON LINES 'C', 'D' & 'E'



PILES LAYOUT
ON LINES 2, 3, 4, 5, 7, 9 & 10



PILES LAYOUT
ON LINE 6



PILES LAYOUT
ON LINE 8

NOTES
- Embedment of piles in caps and/or beams shall be 4" min, 6" max
- ○ Denotes battered piles Slope 1:5
- All conc piles in approach bents, abutment, & cross pier bents C, D & E to be cut off at EL 11.95 (±1')
- All conc piles in piers 1 & 2, bents to be cut off at EL 12.01 (±1")
- All conc piles in beams 1, 2, 3 & 4 to be cut off at EL 13.92 (±1')
- Pile locations are dimensioned 4" above base of caps

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ENVIRONMENT CANADA

A detail no. / détail no.
B location drawing no. / no dessin no.
C drawing no. / dessin no.

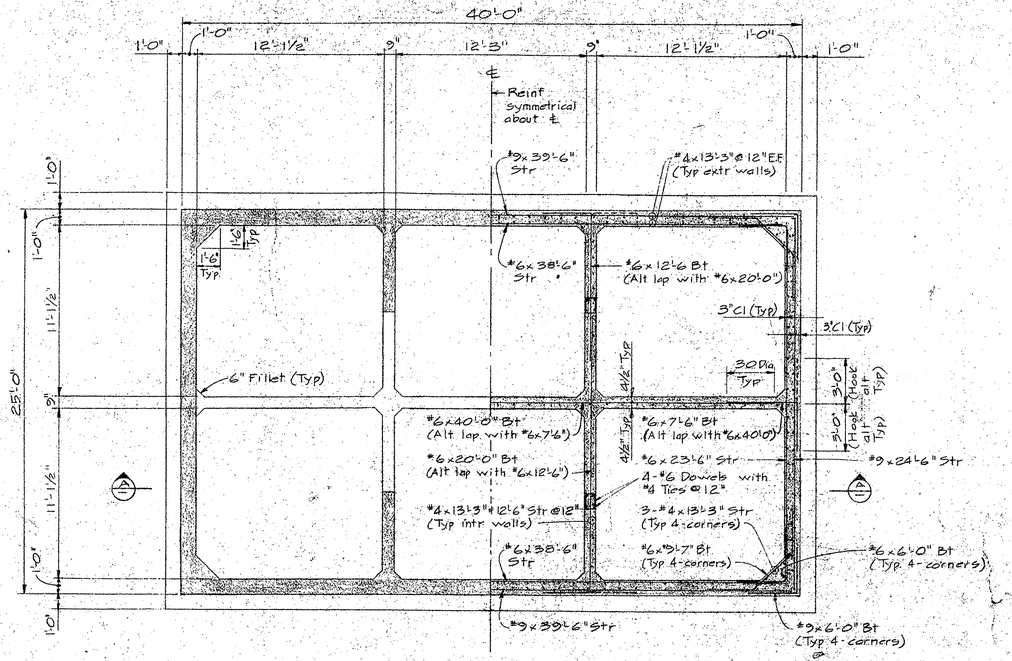
revisions / date
A - Revise pile layout on Cross Pier, Lines 5, 9, 10 & B. Dec 2/74
B - Notes added

project title / titre du projet
PATRICIA BAY, B.C.
MARINE FACILITY

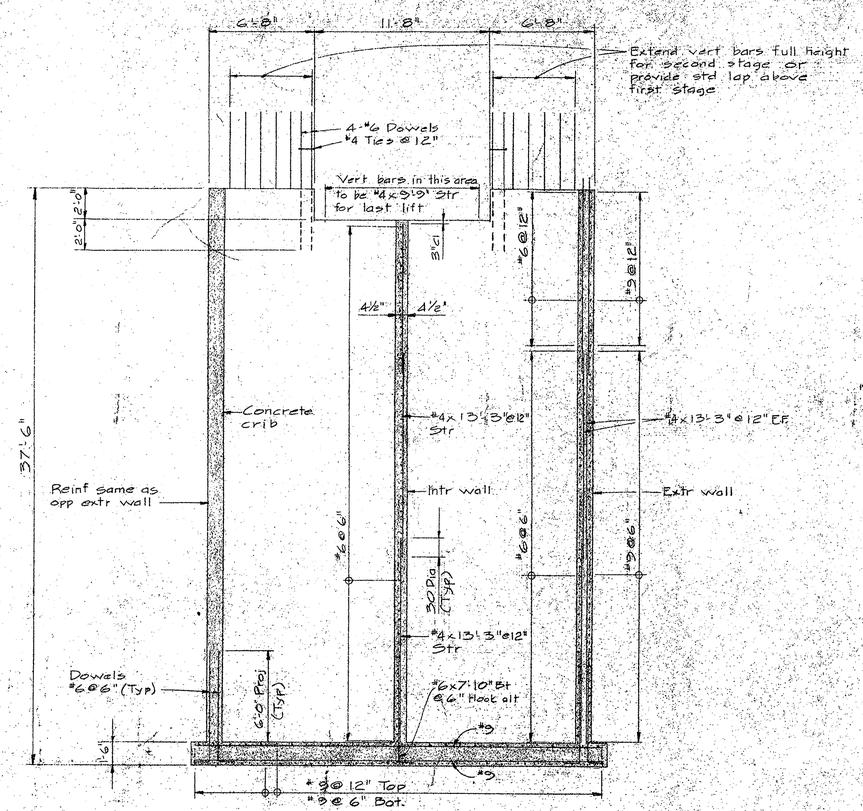
drawing title / titre du dessin
WHARF
PILING & CRIB LAYOUT

designed by / conçu par
date 13-8-74
drawn by / dessiné par
J.D.T. & TONY DE CURTIS
date
reviewed by / examiné par
date
approved by / approuvé par
date 15-8-74
Tender / Soumission
D.P.W. Project Manager / Administrateur de projets M.T.P.
project number / no. du projet
89323
drawing no. / dessin no.
S 5

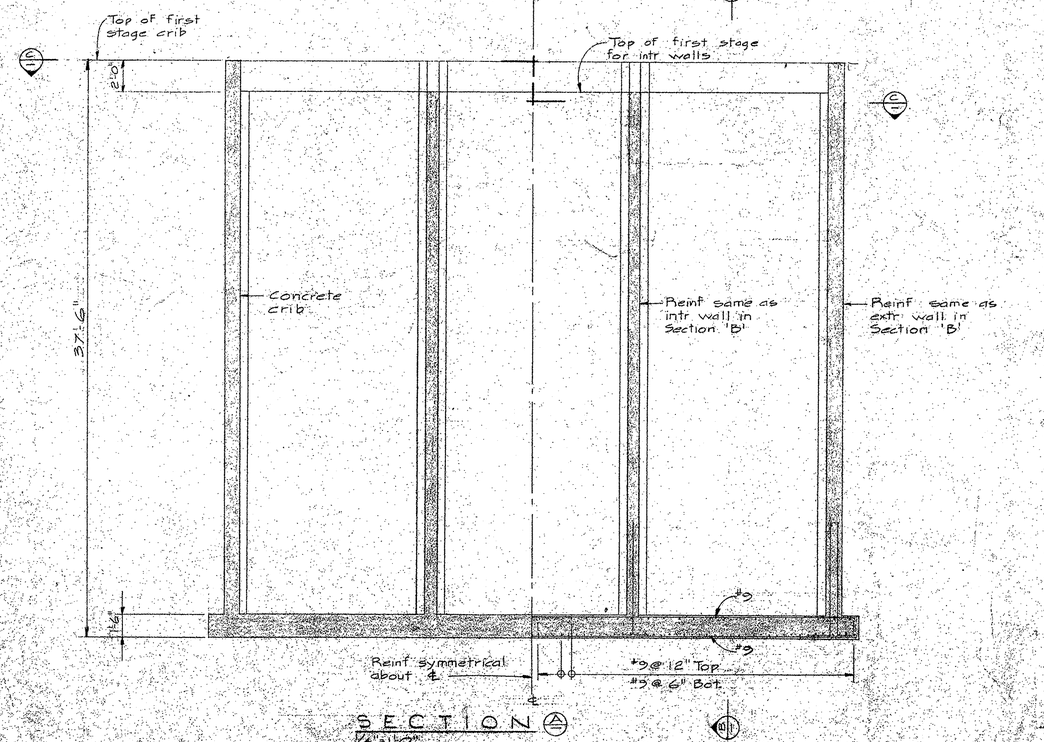
DPW 700E



SECTION ℄ THRU CONCRETE CRIB
¼"=1'-0"



SECTION ℬ
¼"=1'-0"



SECTION ℳ
¼"=1'-0"

NOTE
1. For differences of first stage in Crib N.T.S. see Dwg S7.
2. For details of second stage in Cribs see Dwg S11.

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INSTITUTE OF OCEAN SCIENCES
ENVIRONMENT CANADA

A detail no. / detail no.
B location drawing no. / sur dessin no.
C drawing no. / dessin no.

revisions / date
A - General revision

project title / titre du projet
PATRICIA BAY, B.C.
MARINE FACILITY

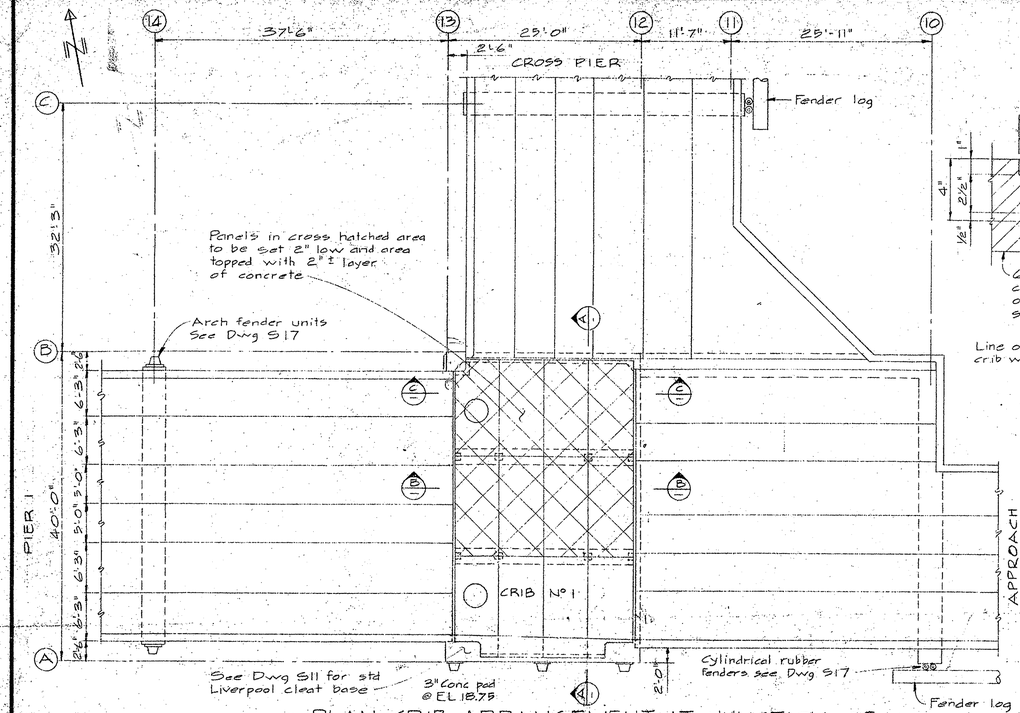
drawing title / titre du dessin
WHARF — CRIBS
TYPICAL FIRST STAGE
CONC OUTLINE & REINF

designed by / concu par
date 13-8-76
drawn by H.D.T. & Tony De Cunha / dessiné par
date
reviewed by / examiné par
date
approved by / approuvé par
date
Tender / Soumission
D.P.W. Project Manager / Administrateur de projets M.T.P.

project number / no. du projet
89323

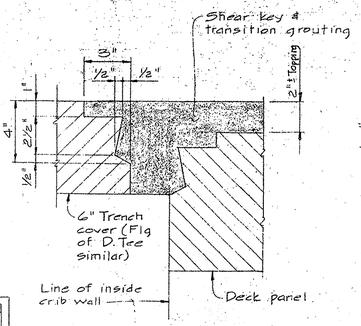
drawing no. / dessin no.
S 6

DPW 700 E

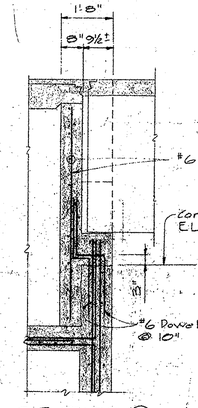


PLAN-CRIB ARRANGEMENT AT JUNCTION OF APPROACH, PIER 1 & CROSS PIER

1/8" = 1'-0" (CLEATS NOT SHOWN)

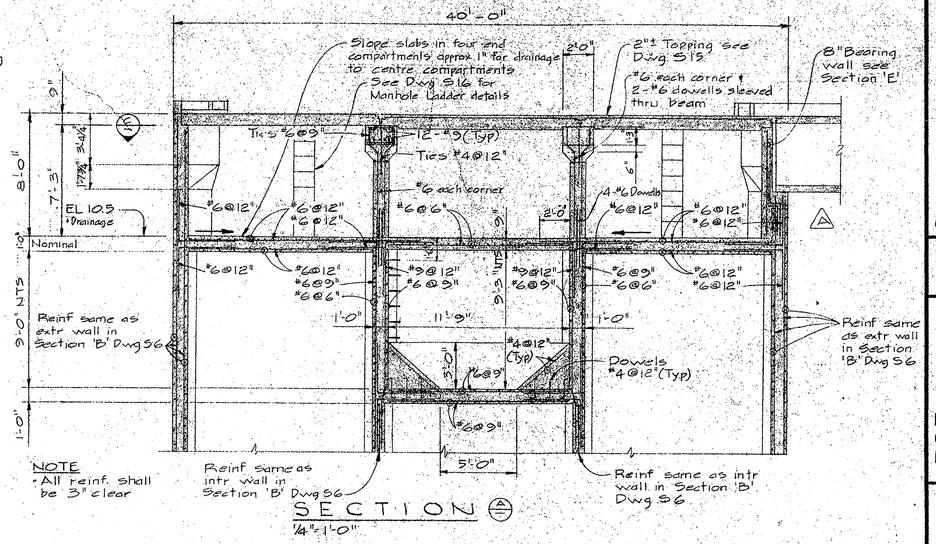


DETAIL (L)
3" = 1'-0"

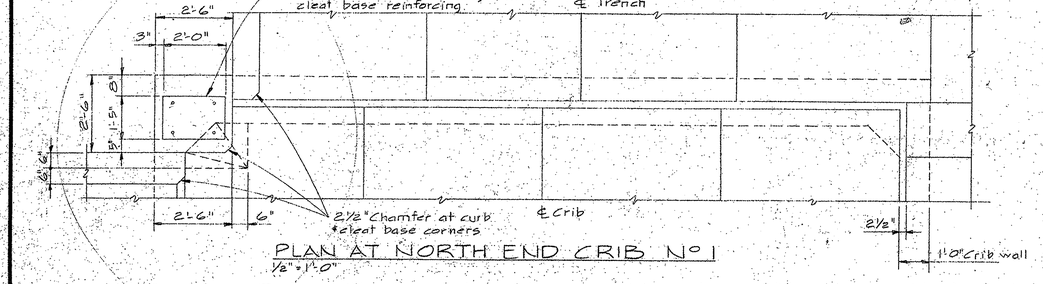


SECTION (E)
1/2" = 1'-0"

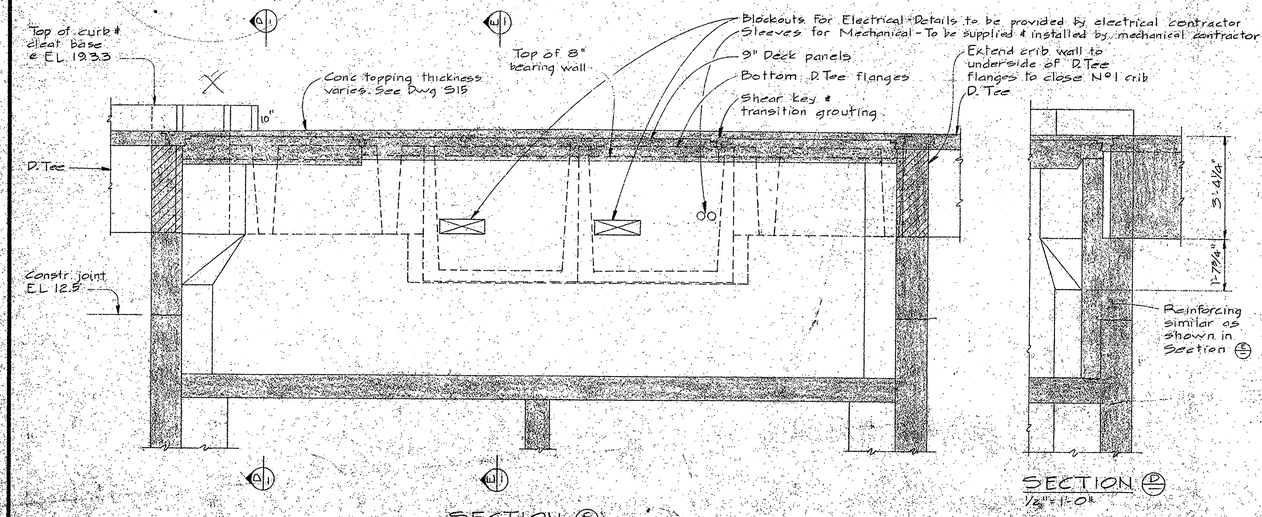
NOTE
- All bearing surfaces for deck panels to be screeded 3/8" to 1/2" low to provide for sand-cement leveling mortar



SECTION (A)
1/4" = 1'-0"

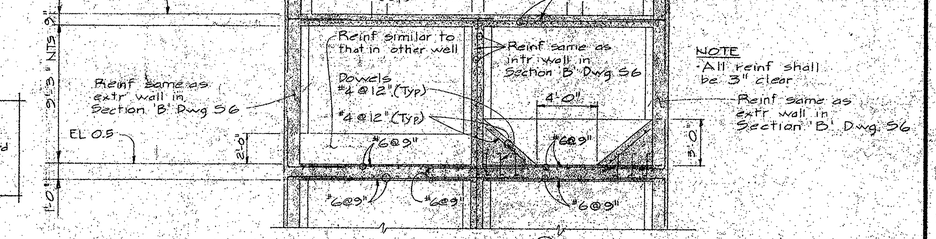


PLAN AT NORTH END CRIB N° 1
1/2" = 1'-0"

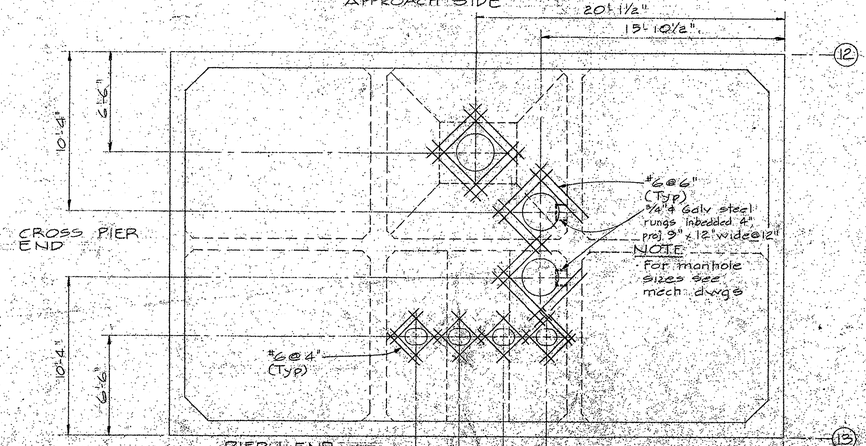


SECTION (C)
1/2" = 1'-0"
NOTE - South End of Crib N°6 Similar

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



SECTION (B)
1/4" = 1'-0"



PLAN AT EL 10.5
1/4" = 1'-0"

DPW 700 E

Department of Public Works
Ministère des Travaux publics

PACIFIC REGION

INSTITUTE OF OCEAN SCIENCES ENVIRONMENT CANADA

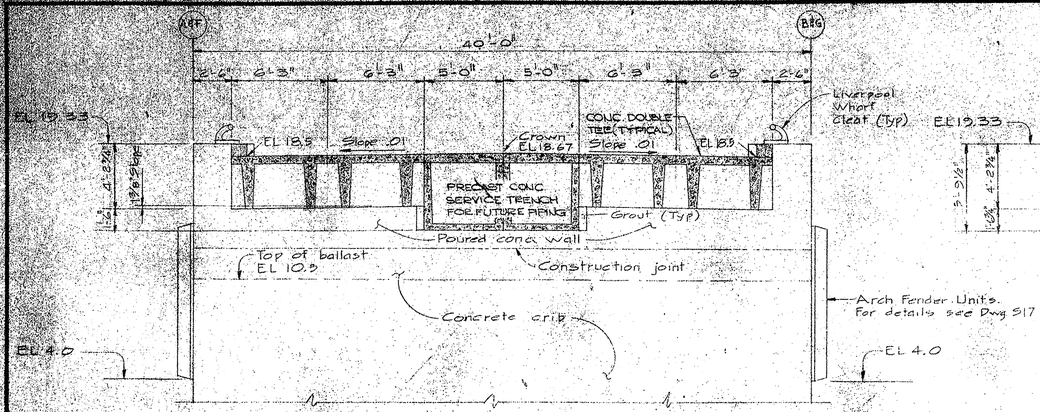
A detail no. — détail no.
B location drawing no. — sur dessin no.
C drawing no. — dessin no.

revisions	date
A- Revise Cross Pier & Liverpool wharf cleat anchor blocks	Dec 2/74
B - General revision	

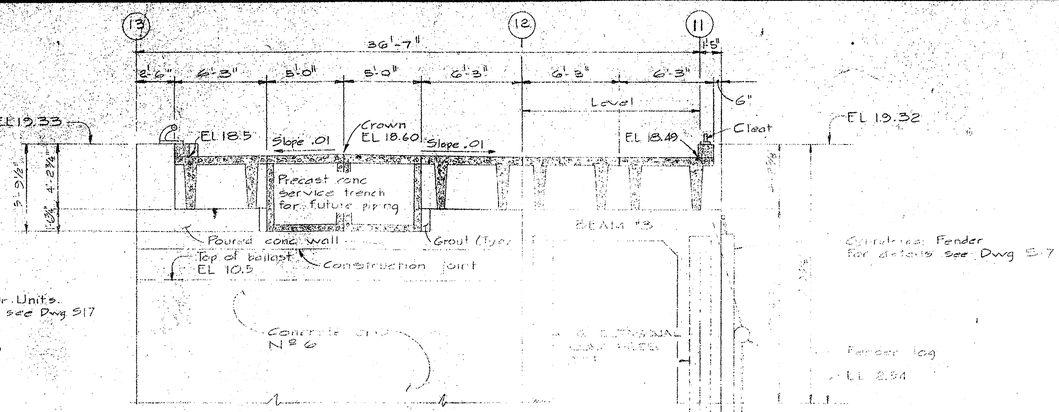
project title — titre du projet
PATRICIA BAY, B.C.
MARINE FACILITY

drawing title — titre du dessin
WHARF
CRIB N° 1
CONC OUTLINE & REINF

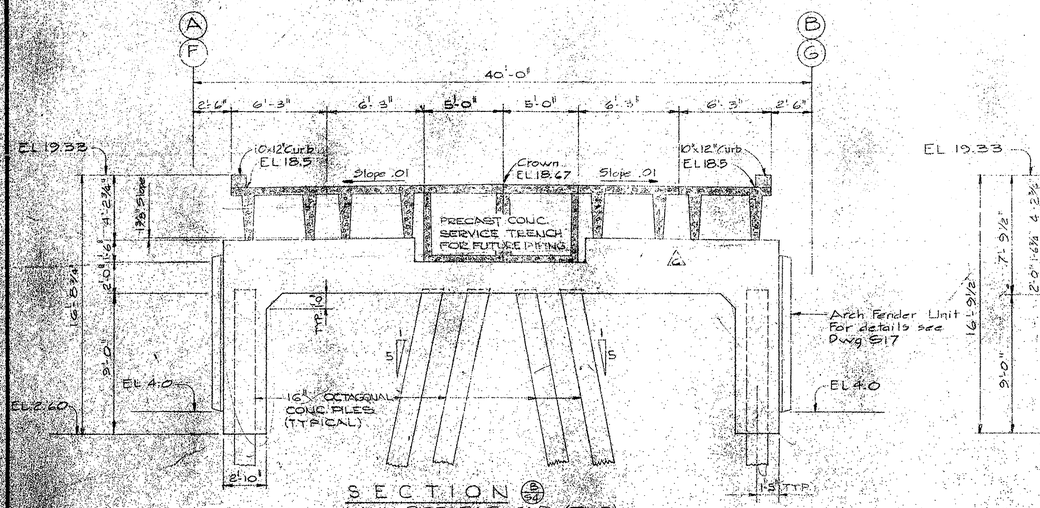
designed by — conçu par
date 12-8-74
drawn by H.D.T. & Tony De Curtis — dessiné par
date
reviewed by — examiné par
date
approved by — approuvé par
date 12-8-74
Tender — Soumission
D.P.W. Project Manager — Administrateur de projets M.T.P.
project number — no. du projet
89323
drawing no. — dessin no.
S 7



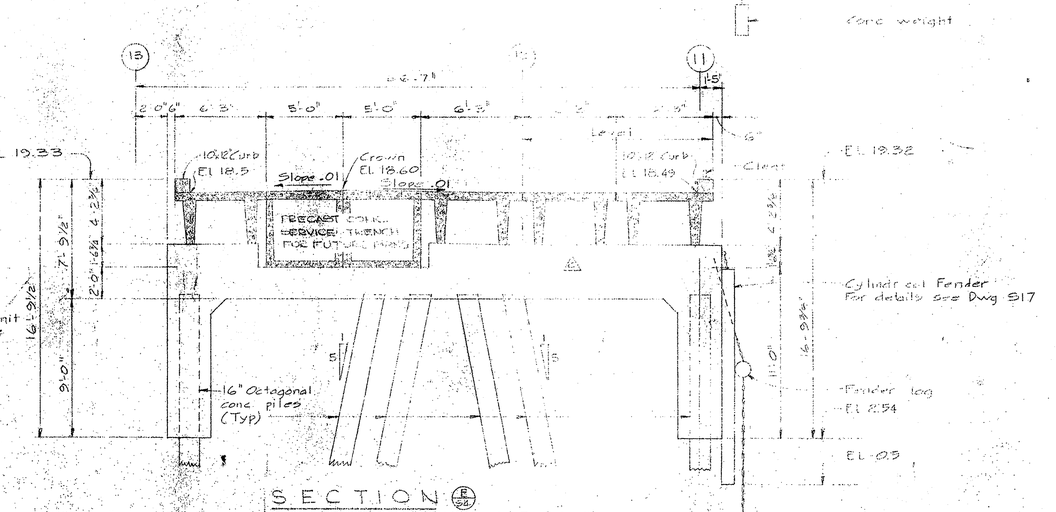
SECTION A/S4
TYPICAL CRIB
1/4"=1'-0"



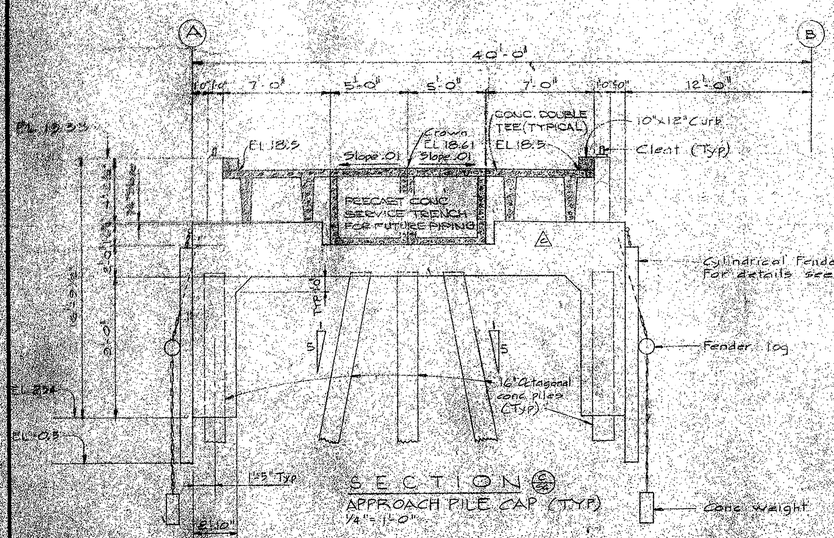
SECTION D/S4
1/4"=1'0"



SECTION E/S4
MAIN PIER PILE CAP (TYP)
1/4"=1'-0"



SECTION F/S4
CROSS PIER PILE CAP (TYP)
1/4"=1'-0"



SECTION G/S4
APPROACH PILE CAP (TYP)
1/4"=1'-0"

Department of Public Works
Ministère des Travaux publics

PACIFIC REGION

INSTITUTE OF OCEAN SCIENCES
ENVIRONMENT CANADA

A detail no. / detail no.
A/B/C
B location drawing no. / no dessin no.
C drawing no. / dessin no.

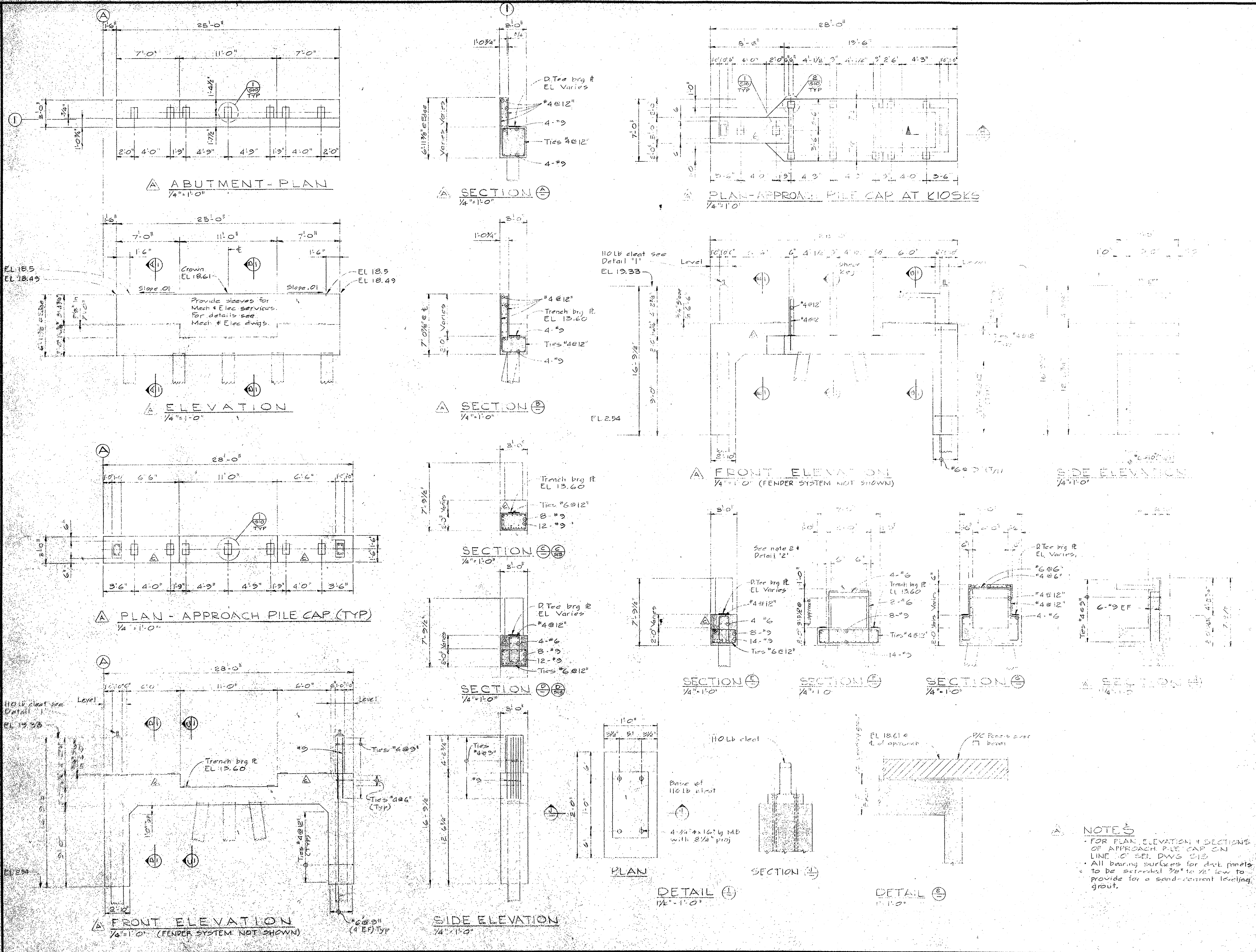
revisions / dates
A - General revision to all sections. Section 'F' deleted Dec 2/74
B - General revision
C - As built

project title / titre du projet
PATRICIA BAY, B.C.
MARINE FACILITY

drawing title / titre du dessin
WHARF
TYPICAL SECTIONS

designed by / conçu par
date
drawn by H.O.T. & Tony De Curtis / dessiné par
date
reviewed by / examiné par
date
approved by / approuvé par
date
Tender / Soumission
D.P.W. Project Manager / Administrateur de projet T.P.T.
project number / no. de projet
89323
drawing no. / dessin no.
S 8

DPW 700 E


ABUTMENT - PLAN
1/4" = 1'-0"
SECTION A
ELEVATION
SECTION B
PLAN - APPROACH PILE CAP AT KIOSKS
FRONT ELEVATION (FENDER SYSTEM NOT SHOWN)
SIDE ELEVATION
PLAN - APPROACH PILE CAP (TYP)
SECTION C D
SECTION E
SECTION F
SECTION G
Provide sleeves for Mech & Elec services. For details see Mech & Elec dwgs.
Trench brg ℄ EL 13.60
D.Tee brg ℄ EL Varies
110 Lb cleat see Detail '1'
PLAN
SECTION 1
DETAIL 1
DETAIL 2
NOTES
- FOR PLAN, ELEVATION, & SECTIONS OF APPROACH PILE CAP ON LINE 'C' SEE DWG S18
- All bearing surfaces for deck panels to be screeded 1/8" to 1/4" low to provide for a sand-cement leveling grout.

Department of Public Works
Ministère des Travaux publics

PACIFIC REGION

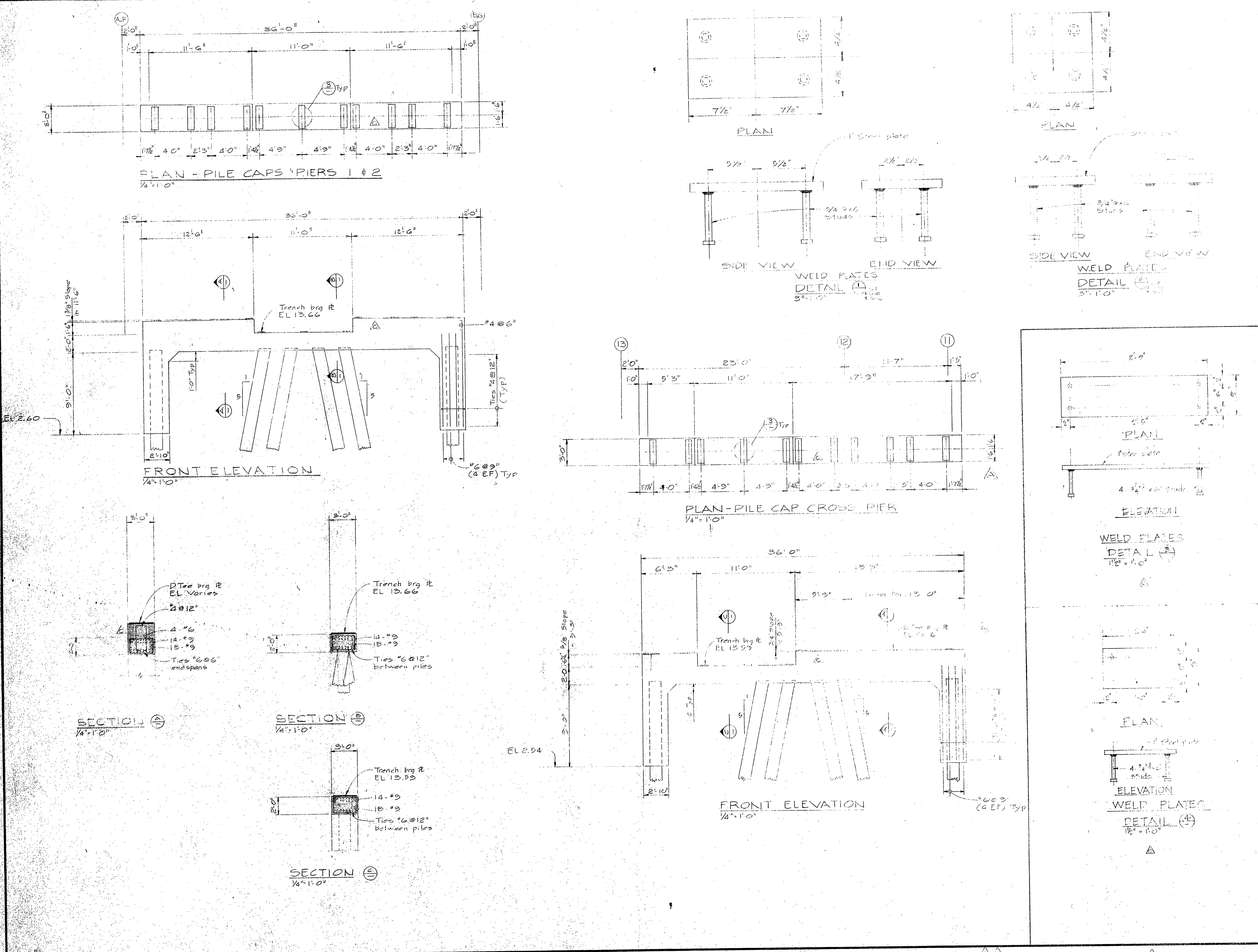
INSTITUTE OF OCEAN SCIENCES ENVIRONMENT CANADA

PATRICIA BAY, B.C.
MARINE FACILITY

WHARF
APPROACH
PILE CAPS
CONC OUTLINE & REINF

project number: 89323

drawing no.: S 9



Department of Public Works
Ministère des Travaux publics

PACIFIC REGION

INSTITUTE OF
OCEAN SCIENCES
ENVIRONMENT CANADA

revisions
A - Cleat pedestal on cross pier pile cap removed Dec 2/74
B - General revision
C - As built

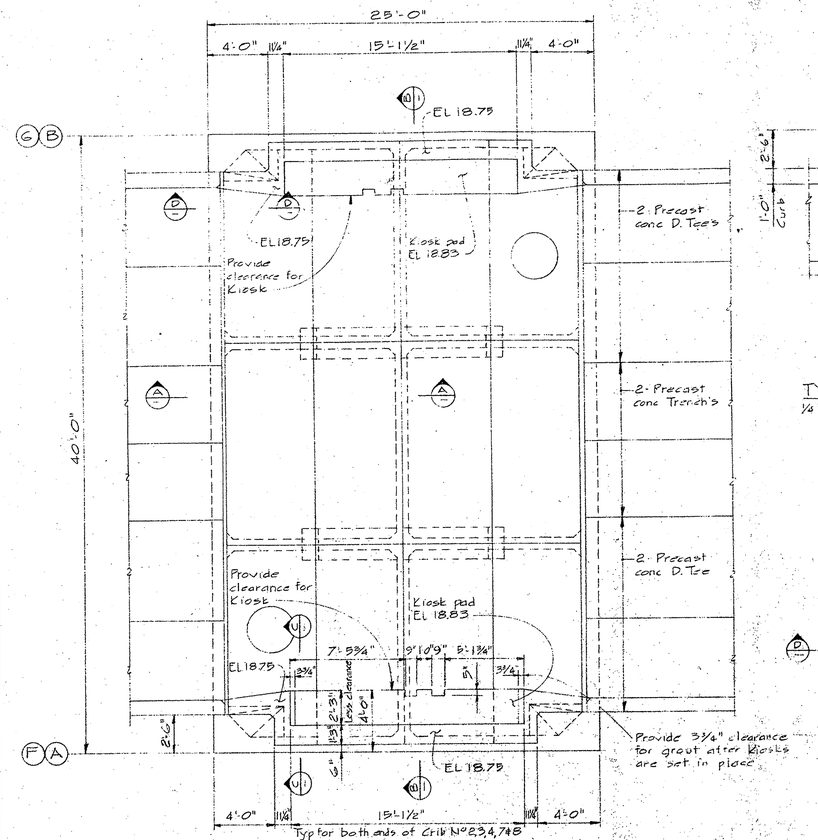
project title
PATRICIA BAY, B.C.
MARINE FACILITY

drawing title
WHARF
PIER 1, 2 & CROSS PIER
PILE CAPS
CONC OUTLINE & REINF

project number
89323

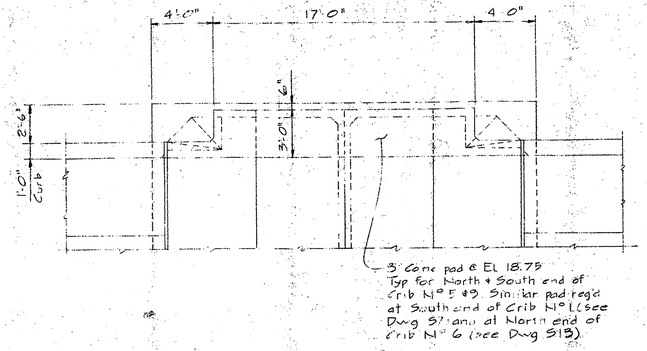
drawing no.
S 10

DPW 700 F



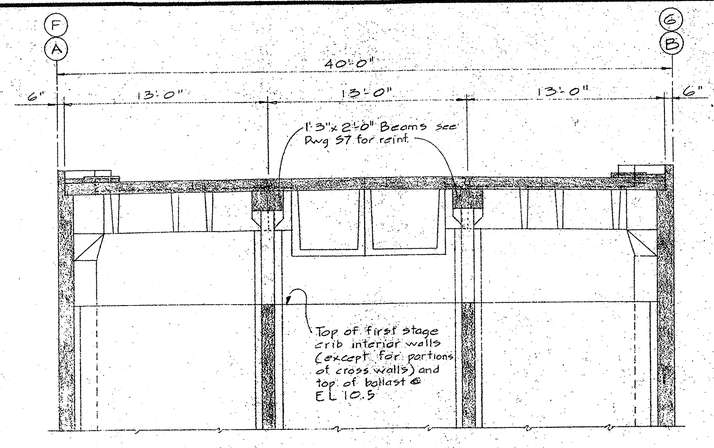
TYPICAL DECK PLAN FOR CRIBS WITH KIOSKS

1/4"=1'-0" (FENDER SYSTEM NOT SHOWN)



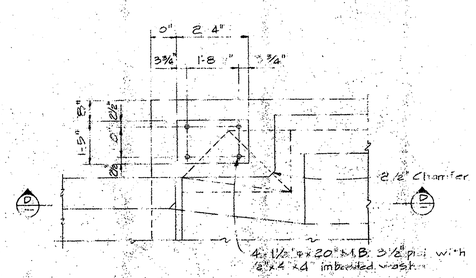
TYPICAL DECK PLAN FOR CRIBS WITHOUT KIOSKS

1/4"=1'-0"



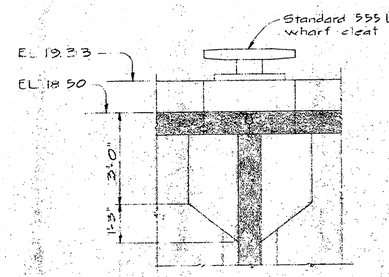
SECTION (B)

1/4"=1'-0"



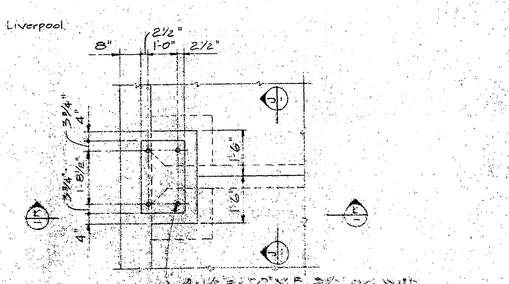
PLAN VIEW OF TYP CLEAT LOCATION ON CRIBS

1/2"=1'-0"



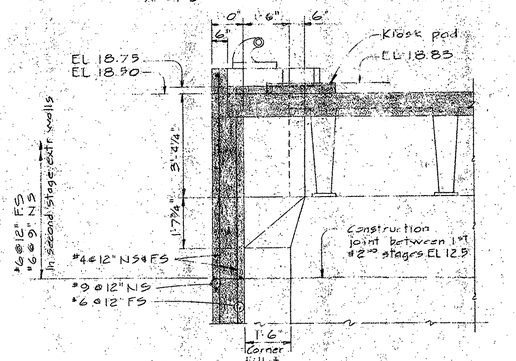
SECTION (D)

1/2"=1'-0"



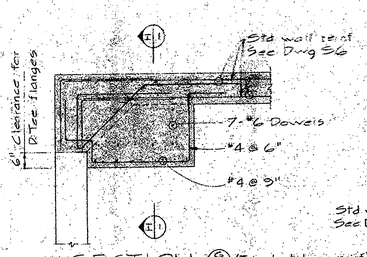
PLAN OF CLEAT LOCATION ON WEST SIDE OF CRIBS N°5&9

1/2"=1'-0"



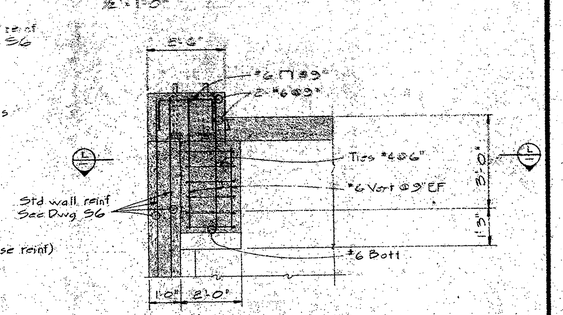
SECTION (E)

1/2"=1'-0"



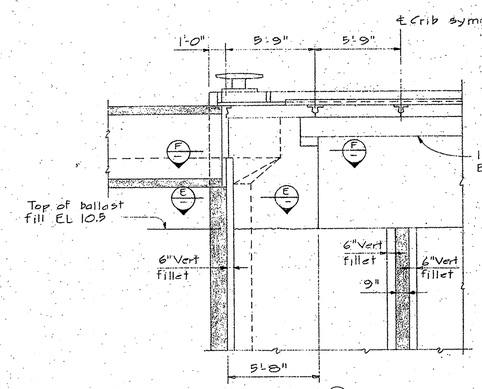
SECTION (E) (Typ cleat base reinf)

(Typ. between bottom of D Tee & base of deck slabs)
1/2"=1'-0"



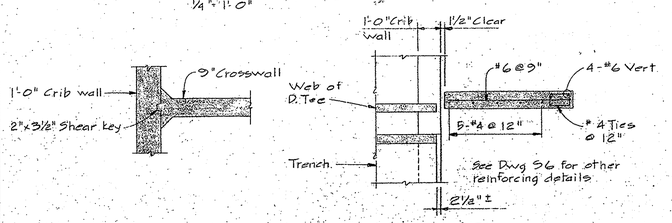
SECTION (F)

1/2"=1'-0"



SECTION (A)

1/4"=1'-0"

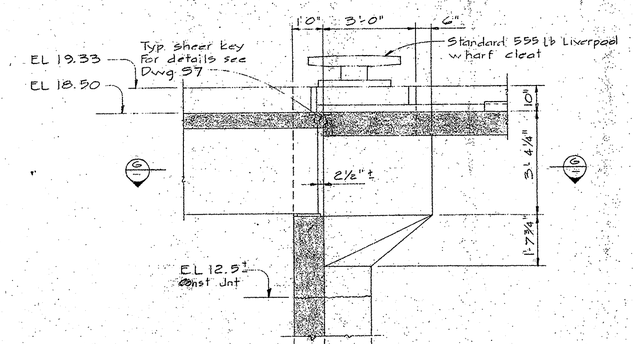


SECTION (E) Typical between top of first stage & base of D Tee

3/8"=1'-0"

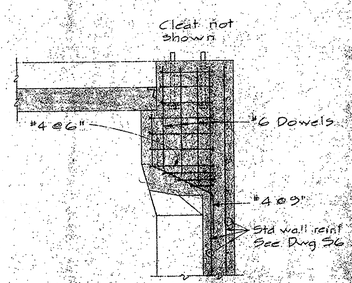
SECTION (F) Typical between base of D Tee's & top of cross wall

3/8"=1'-0"



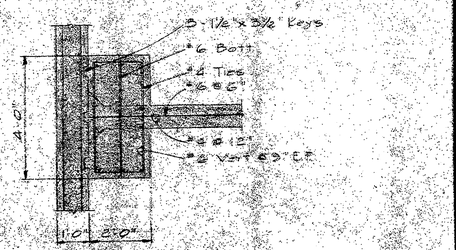
SECTION (D)

1/2"=1'-0"



SECTION (H)

1/2"=1'-0"



SECTION (H)

1/2"=1'-0"

NOTE

All bearing surfaces for deck panels to be screeded 3/8" to 5/8" low to provide for a sand cement levelling mortar.
For details of kiosks see Dwg E4

Public Works Canada / Travaux publics Canada

PACIFIC REGION

INSTITUTE OF OCEAN SCIENCES
ENVIRONMENT CANADA

A detail no. / détail no.
B location drawing no. / sur dessin no.
C drawing no. / dessin no.

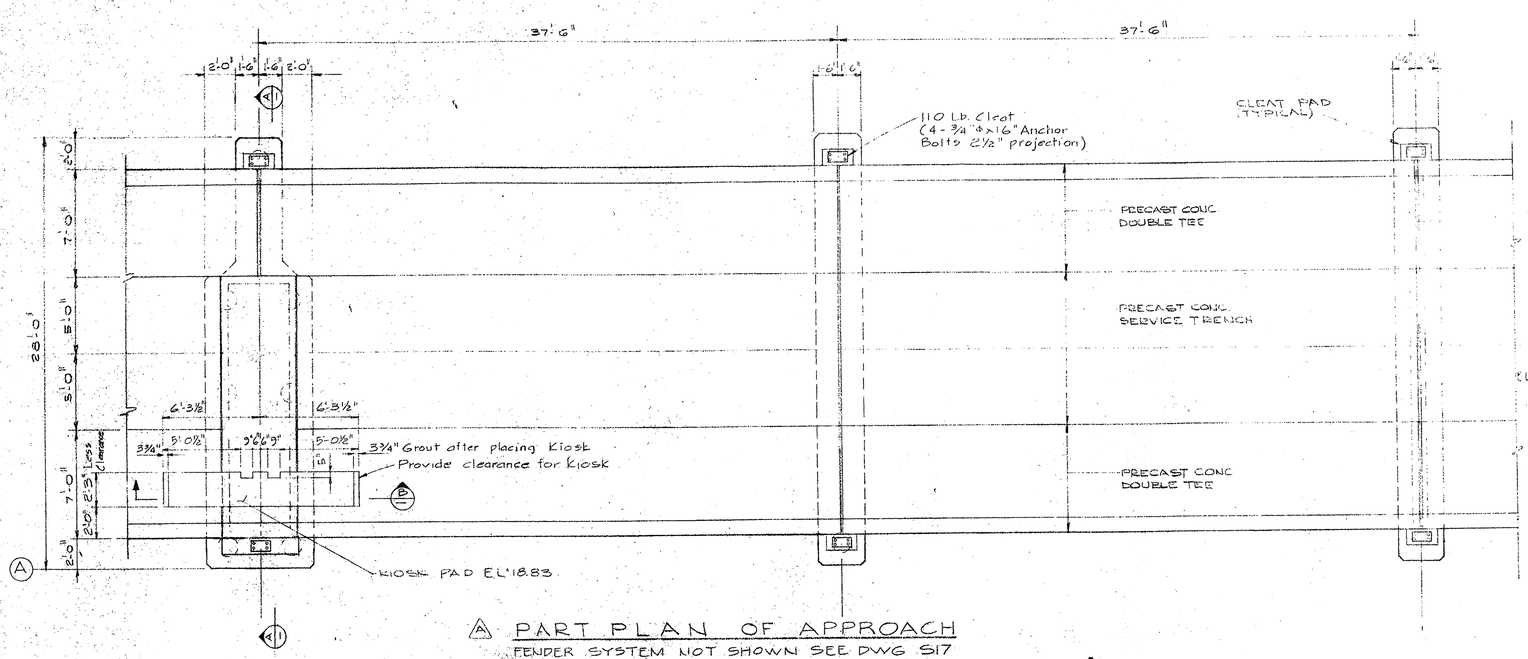
revisions / date
A - General revisions Dec 2/74
B - Redrawn

project title / titre du projet
PATRICIA BAY, B.C.
MARINE FACILITY

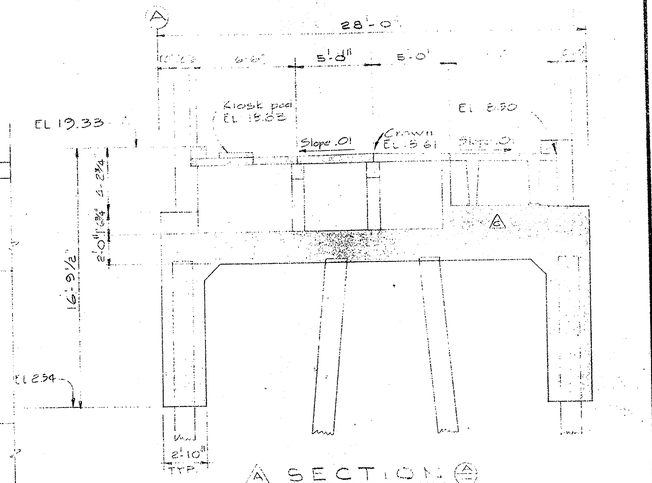
drawing title / titre du dessin
WHARF
STANDARD CRIB DETAILS
KIOSK PAD AND
CLEAT DETAILS

designed by / conçu par
date
drawn by / dessiné par
date
recommended by / recommandé par
date
approved by / approuvé par
date
Director / Directeur
D.A.W. Project Manager / Administrateur de projets M.T.P.
project number / no. du projet
89323
drawing no. / dessin no.
S 11

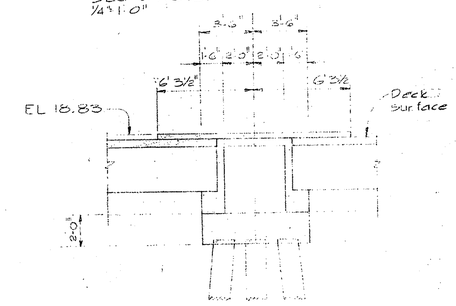
DPW 700E



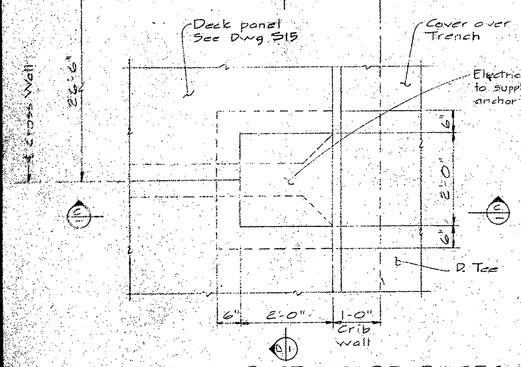
A PART PLAN OF APPROACH
FENDER SYSTEM NOT SHOWN SEE DWG S17
1/4"=1'-0"



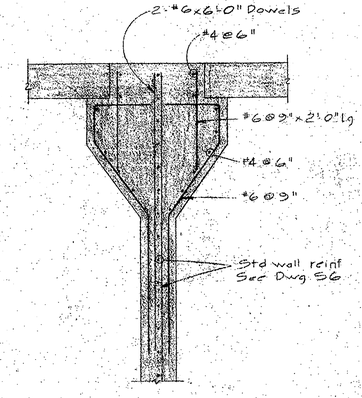
A SECTION A
FENDER SYSTEM NOT SHOWN
SEE DWG S17
1/4"=1'-0"



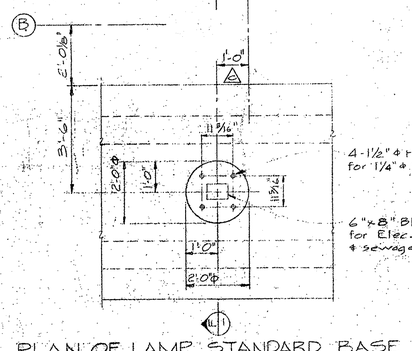
SECTION E
1/4"=1'-0"



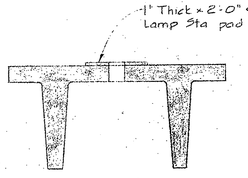
PLAN OF LAMP STANDARD BASES CRIBS Nº 5 AND 9
3/4"=1'-0"



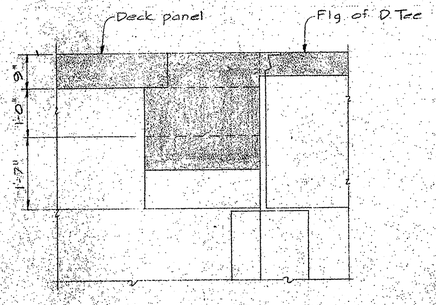
SECTION E
3/4"=1'-0"



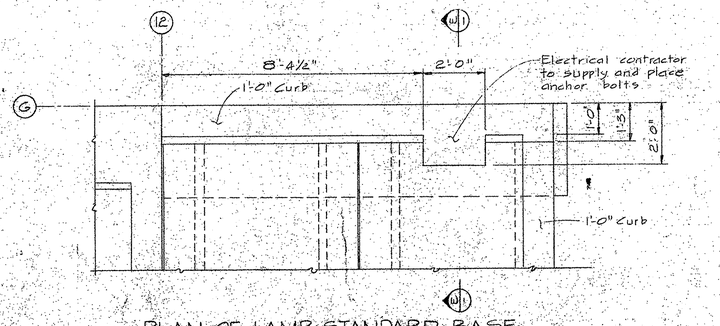
PLAN OF LAMP STANDARD BASE TO THE S.E. OF CRIB Nº 1
1/2"=1'-0"



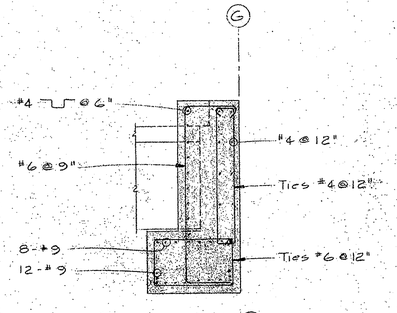
SECTION F
1/2"=1'-0"



SECTION E
3/4"=1'-0"



PLAN OF LAMP STANDARD BASE TO THE N.E. OF CRIB Nº 6
1/2"=1'-0"



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

Department of Public Works
Ministère des Travaux publics

PACIFIC REGION

INSTITUTE OF OCEAN SCIENCES
ENVIRONMENT CANADA

A detail no. / détail no.
B location drawing no. / sur dessin no.
C drawing no. / dessin no.

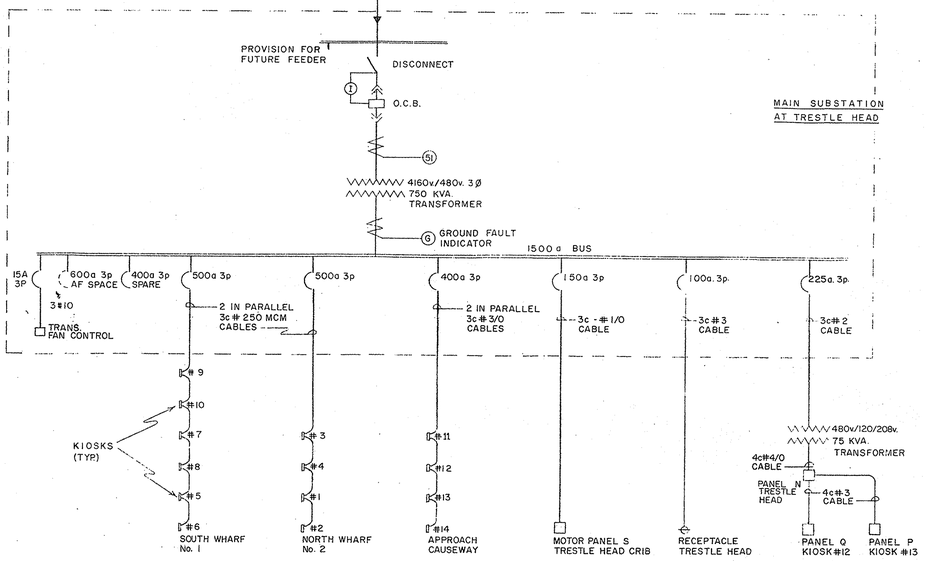
revisions / date
A - General revision Dec 2/74
B - General revision
C - As built.

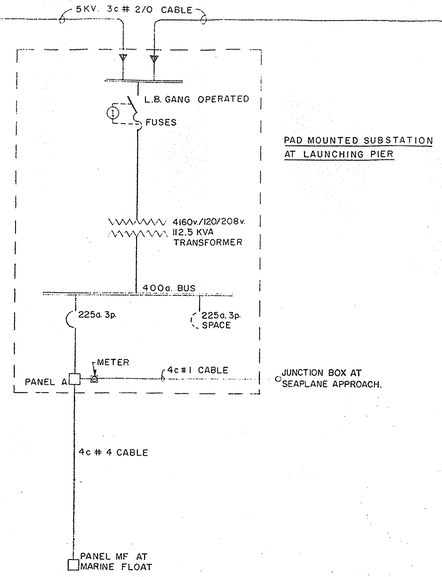
project title / titre du projet
PATRICIA BAY, B.C.
MARINE FACILITY

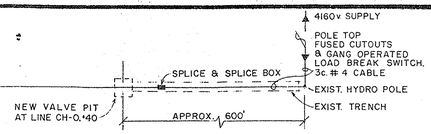
drawing title / titre du dessin
WHARF AND APPROACH
KIOSK PAD AND
LAMP STANDARD DETAILS

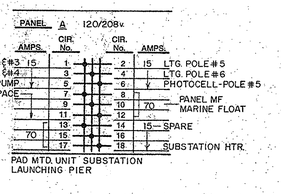
designed by / conçu par
date 13-3-74
drawn by H.D.T. & Tony De Curtis / dessiné par
date
reviewed by / examiné par
date
approved by / approuvé par
date 13-3-74
Tender / Soumission
D.P.W. Project Manager Administrateur de projet M.T.P.
project number / no. du projet
89323
drawing no. / dessin no.
S 12

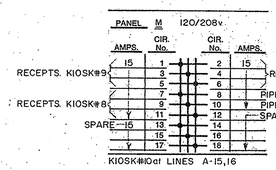
DPW 700 F

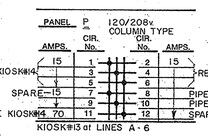


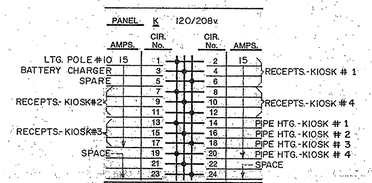


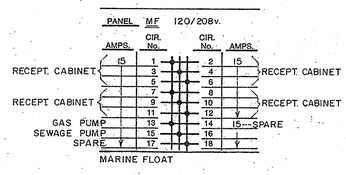


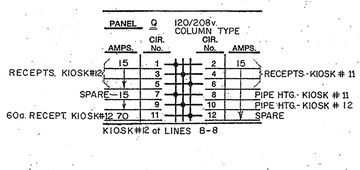


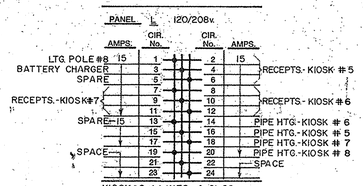


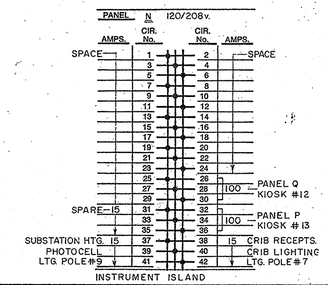


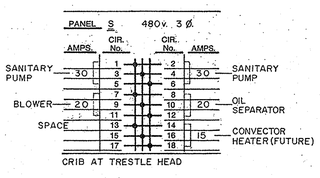












Public Works Canada / Travaux publics Canada

PACIFIC REGION

PACIFIC RIM CONSULTANTS LIMITED — MECHANICAL & ELECTRICAL ENGINEERS — VANCOUVER, B.C.

Peter G Scott P Eng
CONSULTING ELECTRICAL ENGINEER
3160 Cornwall Street
Vancouver B BC Canada
(604) 228-8081

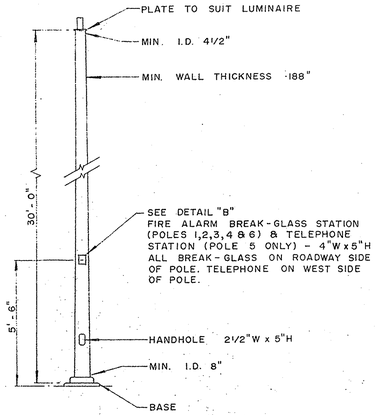
— A JOINT VENTURE

A detail no. / detail no.
B location drawing no. / sur dessin no.
C drawing no. / dessin no.
revisions / date

project title / titre du projet
MARINE STRUCTURES
INSTITUTE OF OCEAN SCIENCES
PATRICIA BAY B.C.

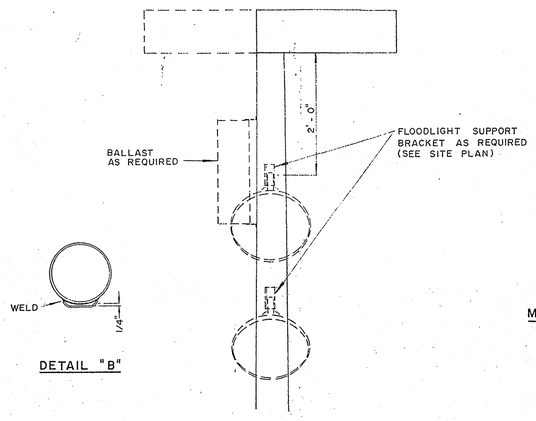
drawing title / titre du dessin
DISTRIBUTION SINGLE LINE DIAGRAM and PANELBOARDS

designed by J.F. Mirko, G. Neumeyer — conçu par
date August 14th, 1974
drawn by M. Leathley — dessiné par
date August 14th, 1974
reviewed by J.F. Mirko, P.G. Scott — examiné par
date August 14th, 1974
approved by — approuvé par
date
Tender — Soumission
D.P.W. Project Manager — Administrateur de projets M.T.P.
project number — no. du projet
89323
drawing no. — dessin no.
E-6



TYPICAL POLE FOR STANDARDS 1-6 INCLUSIVE

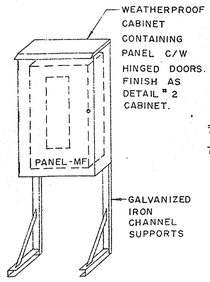
SCALE: 3/8" = 1'-0"



DETAIL "B"

TYPICAL ARRANGEMENT OF LUMINAIRES FOR STANDARDS 5 & 6

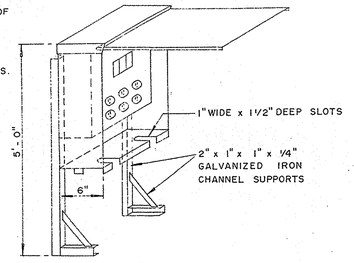
SCALE: 1" = 1'-0"



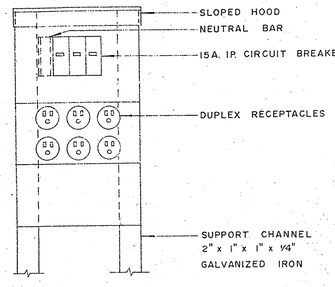
DETAIL # 1

MOUNTING OF PANEL-MF

N.T.S.



ISOMETRIC VIEW

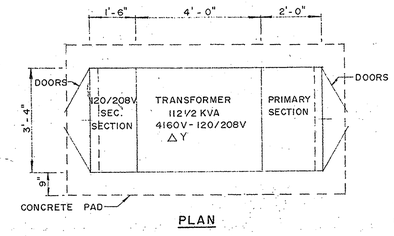


FRONT VIEW

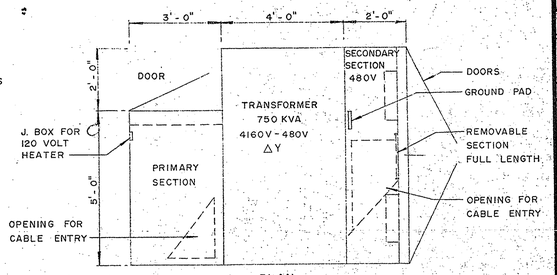
DETAIL # 2

RECEPTACLE CABINET - MARINE FLOATS

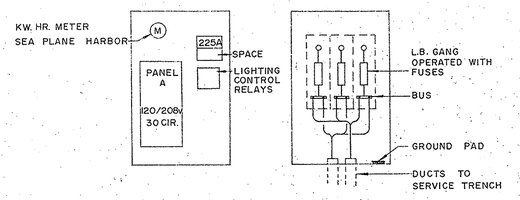
N.T.S.



PLAN



PLAN



SECONDARY SECTION

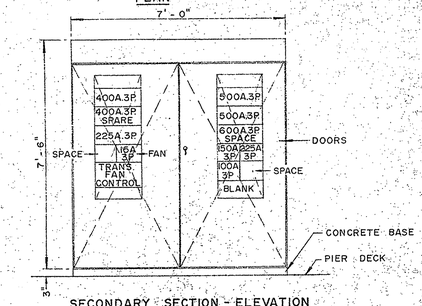
PRIMARY SECTION

ELEVATIONS

DETAIL OF PAD MOUNTED SUBSTATION

LOCATED AT THE MARINE FLOATS PIER

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

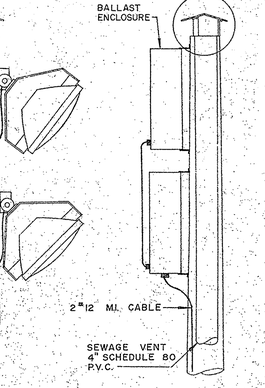


SECONDARY SECTION - ELEVATION

MAIN SUBSTATION

LOCATED AT CROSS PIER

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



POLE #7 (NORTH VIEW)

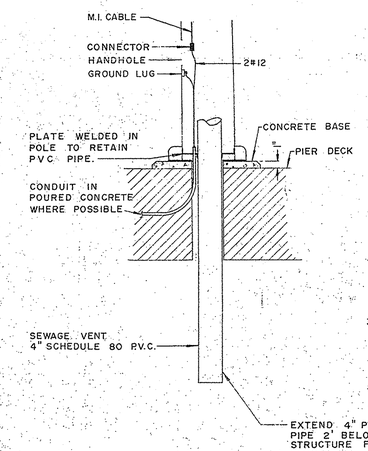
SCALE: 1" = 1'-0"

SECTION THROUGH POLE #7

(WEST VIEW)

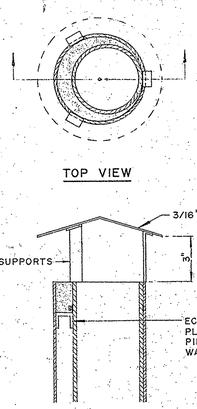
(LUMINAIRES NOT SHOWN)

SCALE: 1" = 1'-0"



SECTION THROUGH POLE #7

SCALE: 1" = 1'-0"

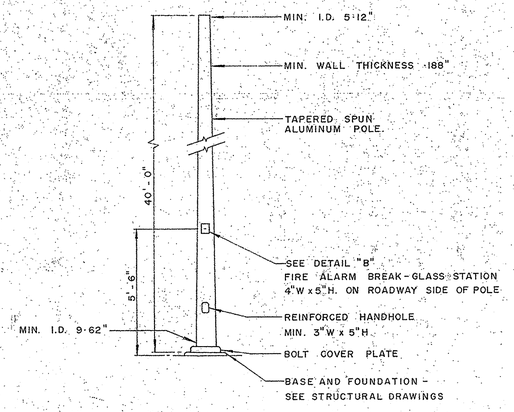


TOP VIEW

SECTION

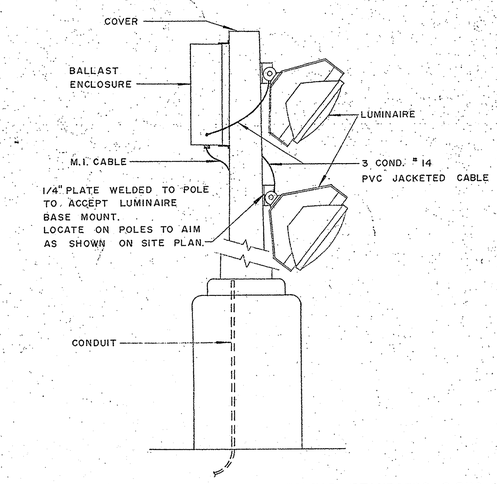
DETAIL "A"

SCALE: 1/4" = 1"



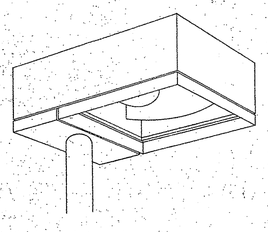
TYPICAL POLE FOR STANDARDS 8-10 INCLUSIVE

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

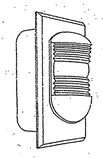


TYPICAL ARRANGEMENT OF LUMINAIRES FOR STANDARDS 8 & 10

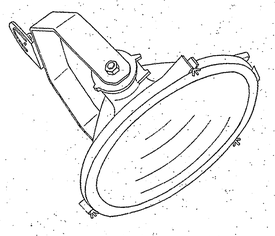
SCALE: 1" = 1'-0"



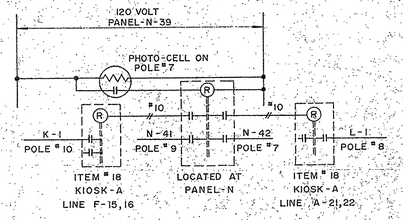
POLE-TOP LUMINAIRE



NAVIGATION LIGHT



FLOODLIGHT



LIGHTING CONTROL SCHEMATIC

ITEM No. 18

Public Works Canada / Travaux publics Canada

PACIFIC REGION

PACIFIC RIM CONSULTANTS LIMITED — MECHANICAL & ELECTRICAL ENGINEERS — VANCOUVER, B.C.

Peter G Scott P. Eng
CONSULTING ELECTRICAL ENGINEER
3160 Cornwall Street
Vancouver, B.C. Canada
(604) 228-9061

— A JOINT VENTURE

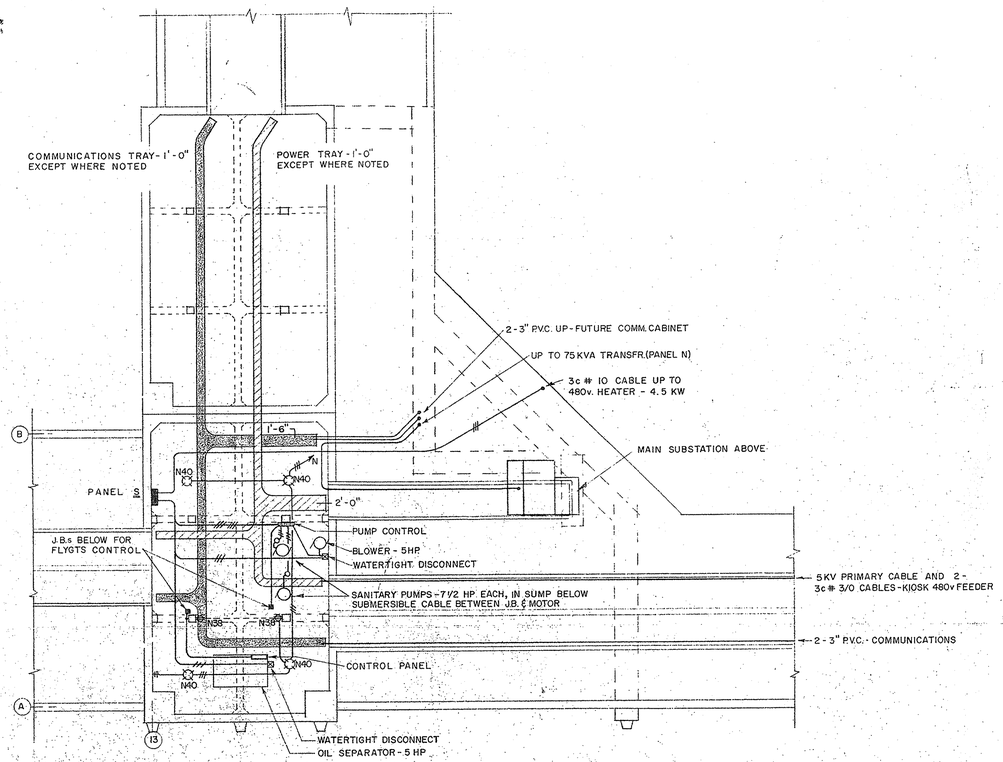
A detail no. / détail no.
B location drawing no. / sur dessin no.
C drawing no. / dessin no.
revisions / date

project title / titre du projet
MARINE STRUCTURES
INSTITUTE OF OCEAN SCIENCES
PATRICIA BAY B.C.

drawing title / titre du dessin
LIGHTING DETAILS and SUBSTATION DETAILS

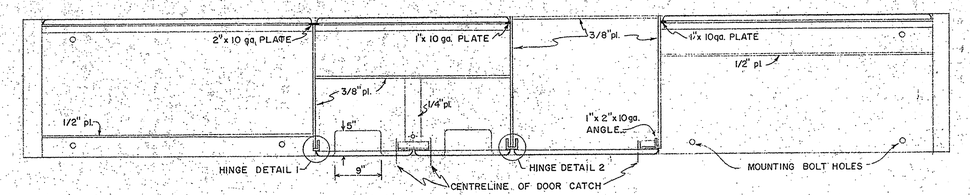
designed by / conçu par: P.G.Scott, G.Neumeyer — date: August 14th, 1974
drawn by / dessiné par: P. Braddle — date: August 14th, 1974
reviewed by / examiné par: J.F.Mirko, P.G.Scott — date: August 14th, 1974
approved by / approuvé par — date
Tender / Soumission
D.P.W. Project Manager / Administrateur de projets M.T.P.
project number / no. du projet: 89323
drawing no. / dessin no.: E-5

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA



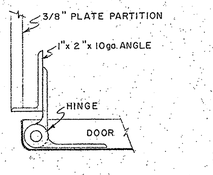
CRIBS AT TRESTLE HEAD DETAIL

1/8" = 1'-0"



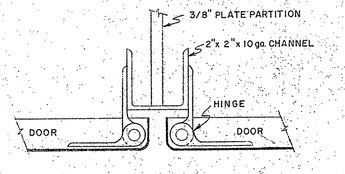
SECTION B-B

1" = 1'-0"



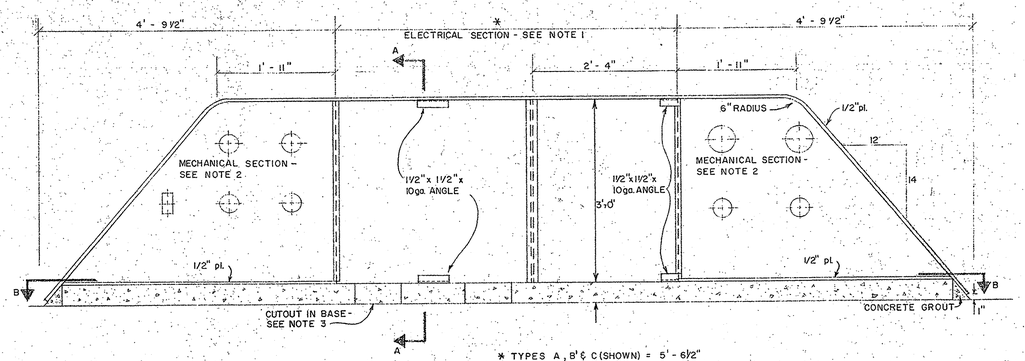
HINGE DETAIL 1

N.T.S.



HINGE DETAIL 2

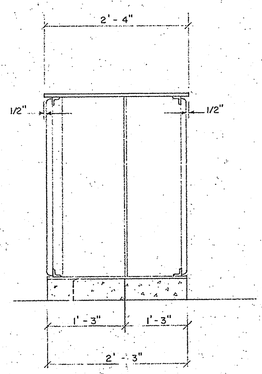
N.T.S.



* TYPES A, B & C (SHOWN) = 5' - 6 1/2"
TYPES B, D, E AND F = 3' - 0"

KIOSK - FRONT VIEW

1" = 1'-0"



SECTION A-A

1" = 1'-0"

NOTES

1. REFER TO ELECTRICAL DRAWING E-3 FOR ELECTRICAL EQUIPMENT AND PARTITION LAYOUTS.
2. REFER TO MECHANICAL DRAWING M-9 FOR EXACT SIZE AND LOCATION OF MECHANICAL CONNECTION OPENINGS.
3. CHAMFER ALL EDGES OF CUTOUTS AT DOORS.

Public Works Canada / Travaux publics Canada

PACIFIC REGION

PACIFIC RIM CONSULTANTS LIMITED — MECHANICAL & ELECTRICAL ENGINEERS — VANCOUVER, B.C.

Peter G Scott, P Eng
CONSULTING ELECTRICAL ENGINEER
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— A JOINT VENTURE

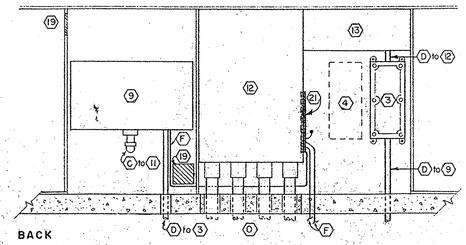
A detail no. / détail no.
B location drawing no. / sur dessin no.
C drawing no. / dessin no.
revisions / date

project title / titre du projet
MARINE STRUCTURES
INSTITUTE OF OCEAN SCIENCES
PATRICIA BAY B.C.

drawing title / titre du dessin
CRIB DETAILS and KIOSK ASSEMBLY DETAILS

designed by J.F. Mirko, G. Neumeyer — conçu par
date August 14th, 1974
drawn by M. Leathley — dessiné par
date August 14th, 1974
reviewed by J.F. Mirko, P.G. Scott — examiné par
date August 14th, 1974
approved by — approuvé par
date
Tender — Soumission
D.P.W. Project Manager — Administrateur du projets M.T.P.
project number / no. du projet
89323
drawing no. / dessin no.
E-4

DPW 700E



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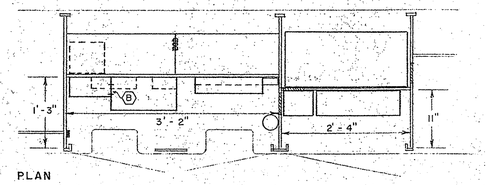

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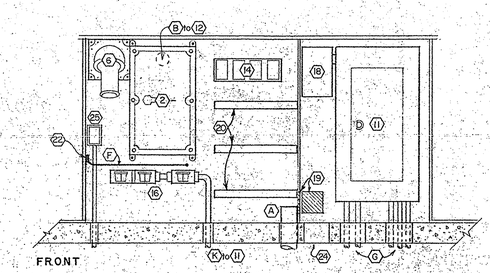
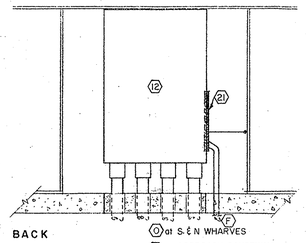


FRONT

KIOSK - TYPE A



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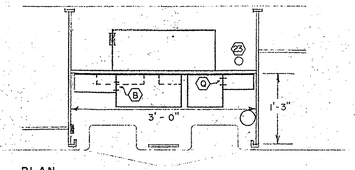
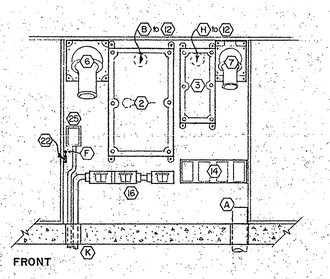
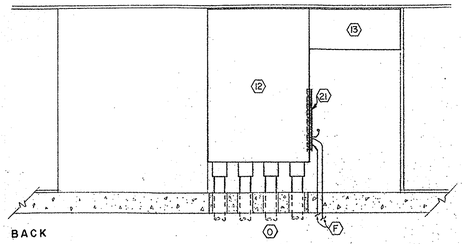


PLAN

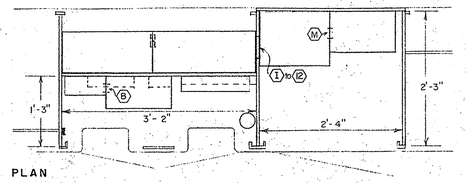


FRONT

KIOSK - TYPE B



BACK



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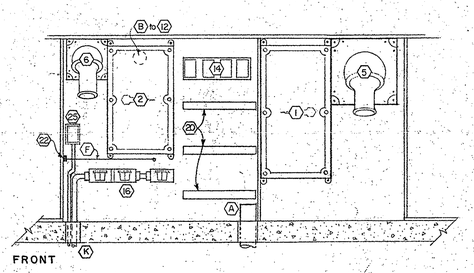
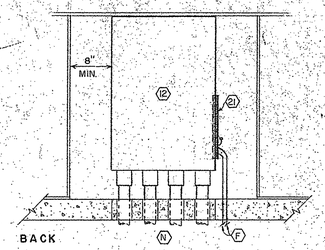


FRONT

KIOSK - TYPE C

KIOSK EQUIPMENT LEGEND

(1) 400A, 480V. CIRCUIT BREAKER SWITCH
(2) 200A, 480V. CIRCUIT BREAKER SWITCH
(3) 100A, 480V. CIRCUIT BREAKER SWITCH
(4) 100A, 480V. CIRCUIT BREAKER SWITCH SPACE
(5) 400A, 480V. RECEPTACLE
(6) 200A, 480V. RECEPTACLE
(7) 100A, 480V. RECEPTACLE
(8) 60A, 120V. RECEPTACLE
(9) 15 KVA TRANSFORMER
(10) BREAKER PANEL, 12 CIRCUITS - PANEL P OR Q
(11) BREAKER PANEL, 24 CIRCUITS - PANEL K, L OR M.
(12) SPLITTER TROUGH
(13) WIREWAY
(14) 4 COMMUNICATION OUTLETS
(15) 3 COMMUNICATION OUTLETS
(16) 3 - 15A. DUPLEX RECEPTACLES
(17) 3 - 15A. SINGLE RECEPTACLES
(18) LIGHTING CONTROL RELAY
(19) 4" x 4" VENT OPENING
(20) MOUNTING CHANNEL
(21) MAIN GROUND PAD
(22) GROUND LUG
(23) 1½" SLEEVE FOR FUTURE CONDUIT
(24) KNOCKOUT SLEEVES
(25) FIRE ALARM OUTLET



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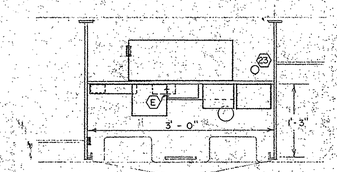

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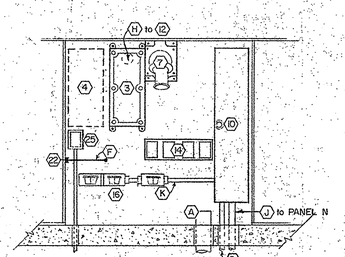
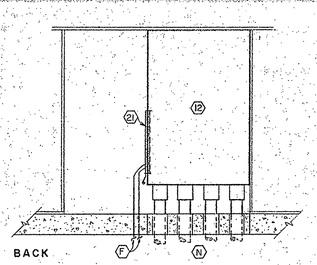


FRONT

KIOSK - TYPE D



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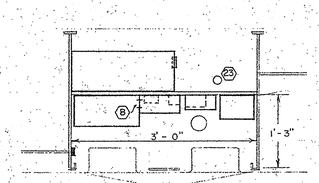

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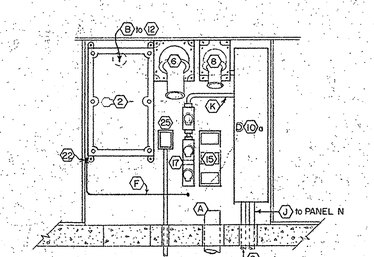
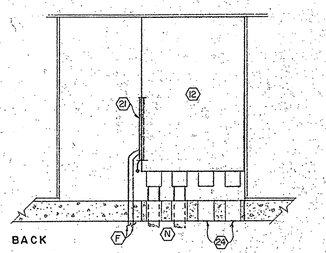


FRONT

KIOSK - TYPE E



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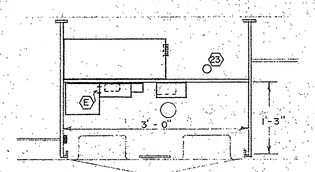

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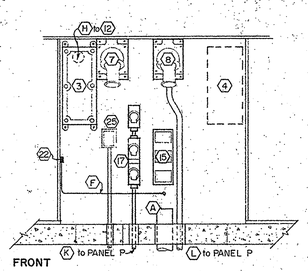

FRONT

KIOSK - TYPE F

KIOSK WIRING LEGEND

(A) 3" PVC. TO COMMUNICATIONS TRAY
(B) 3# 2/0 R90 + GRD., 2½"
(C) 4# 4 R90, 1½" SHORT ELBOW
(D) 3# 8 R90 + GRD., 1"
(E) 3# 3 R90 + GRD., 1½"
(F) GROUND CONDUCTOR - SEE SPEC.
(G) CONDUIT FEEDERS AS REQUIRED
(H) 3# 1/0 R90 + GRD., 2"
(I) 6# 3/0 R90 + GRD.
(J) 4# 3 TECK
(K) 4# 12 + GRD., ¾"
(L) 2# 6 R90 + GRD., 1"
(M) 3# 500 MCM R90 + GRD.
(N) 3c# 3/0 CABLES
(O) 3c# 250 MCM CABLES

NOTE

KIOSK - TYPE B

ENCLOSURE DIMENSIONS AND PARTITIONS AS FOR TYPE C.
LEFT SECTION COMPONENTS AS FOR TYPE B; RIGHT SECTION TO CONTAIN NAVIGATION LIGHT POWER SUPPLY.

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PACIFIC REGION

PACIFIC RIM CONSULTANTS LIMITED
MECHANICAL & ELECTRICAL ENGINEERS
VANCOUVER B.C.

Peter G Scott P. Eng
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3160 Cameron Street
Vancouver, B.C. Canada
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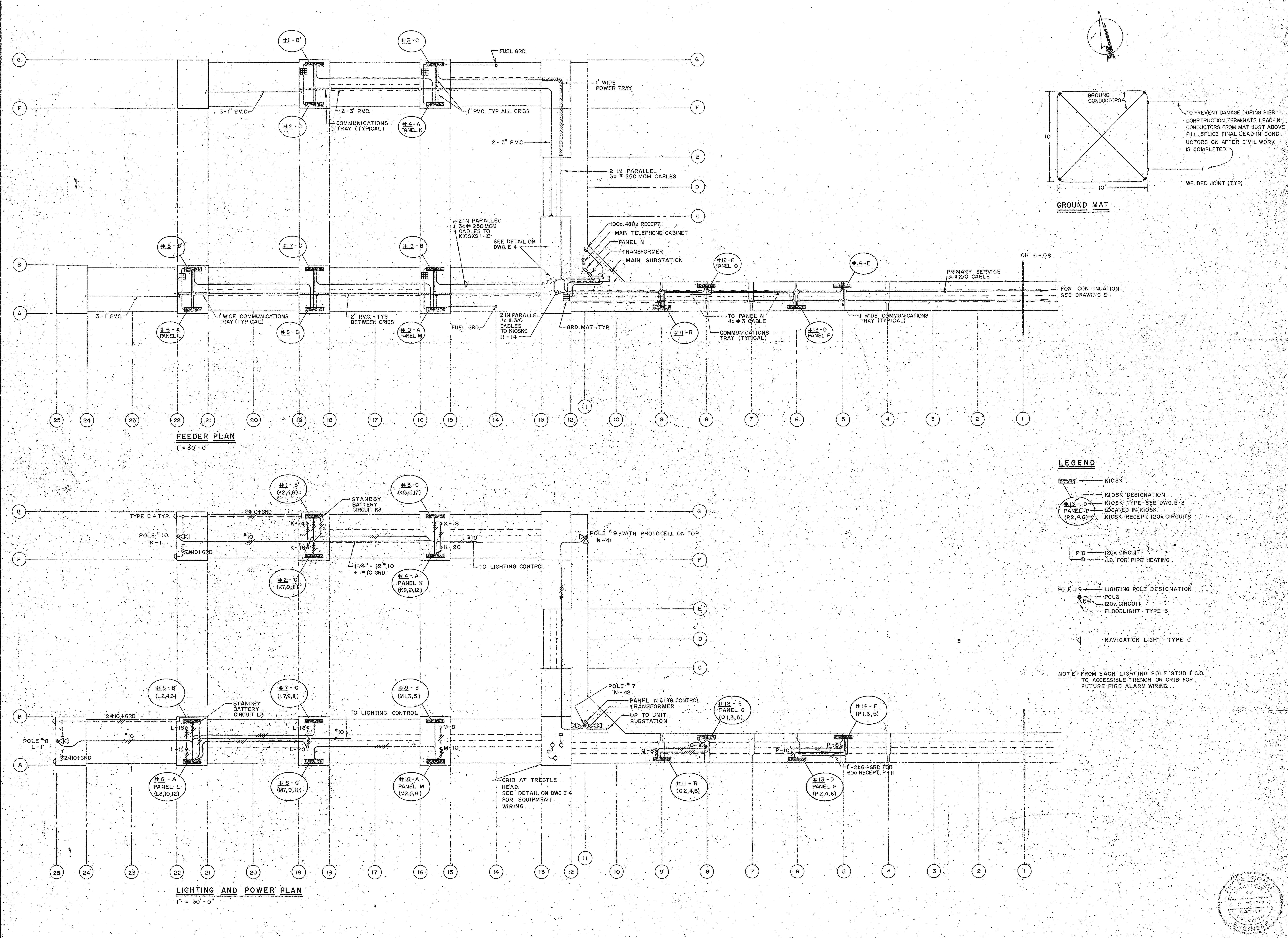
— A JOINT VENTURE

A detail no. / détail no.
B location drawing no. / sur dessin no.
C drawing no. / dessin no.
revisions / date

project title / titre du projet
MARINE STRUCTURES
INSTITUTE OF OCEAN SCIENCES
PATRICIA BAY, B.C.

drawing title / titre du dessin
KIOSKS - ELECTRICAL EQUIPMENT DETAILS

designed by / conçu par: J.F. Mirko
date: August 14th, 1974
drawn by / dessiné par: M. Leathley
date: August 14th, 1974
reviewed by / examiné par: J.F. Mirko, P.G. Scott
date: August 14th, 1974
approved by / approuvé par:
date:
Tender / Soumission
D.P.W. Project Manager / Administrateur de projets M.T.P.
project number / no. du projet: 8.9323
drawing no. / dessin no.: E-3



FEEDER PLAN
1" = 30'-0"
#1-B'
#2-C
#3-C
#4-A PANEL K
#5-B'
#6-A PANEL L
#7-C
#8-C
#9-B
#10-A PANEL M
#11-B
#12-E PANEL Q
#13-D PANEL P
#14-F
FUEL GRD.
1' WIDE POWER TRAY
3-1" P.V.C.
2-3" P.V.C.
1" P.V.C. TYP. ALL CRIBS
COMMUNICATIONS TRAY (TYPICAL)
2 IN PARALLEL 3c # 250 MCM CABLES
2 IN PARALLEL 3c # 250 MCM CABLES TO KIOSKS 1-10
SEE DETAIL ON DWG. E-4
100a. 480v RECEPT.
MAIN TELEPHONE CABINET
PANEL N
TRANSFORMER
MAIN SUBSTATION
CH 6+08
PRIMARY SERVICE 3c # 2/0 CABLE
FOR CONTINUATION SEE DRAWING E-1
1' WIDE COMMUNICATIONS TRAY (TYPICAL)
2" P.V.C. - TYP. BETWEEN CRIBS
2 IN PARALLEL 3c # 3/0 CABLES TO KIOSKS 11-14
GRD. MAT - TYP.
TO PANEL N 4c # 3 CABLE
COMMUNICATIONS TRAY (TYPICAL)
GROUND CONDUCTORS
10'
TO PREVENT DAMAGE DURING PIER CONSTRUCTION, TERMINATE LEAD-IN CONDUCTORS FROM MAT JUST ABOVE FILL. SPLICE FINAL LEAD-IN CONDUCTORS ON AFTER CIVIL WORK IS COMPLETED.
WELDED JOINT (TYP.)
GROUND MAT
LIGHTING AND POWER PLAN
1" = 30'-0"
#1-B' (K2,4,6)
#2-C (K7,9,11)
#3-C (K13,15,17)
#4-A PANEL K (K8,10,12)
#5-B' (L2,4,6)
#6-A PANEL L (L8,10,12)
#7-C (L7,9,11)
#8-C (M7,9,11)
#9-B (M1,3,5)
#10-A PANEL M (M2,4,6)
#11-B (Q2,4,6)
#12-E PANEL Q (Q1,3,5)
#13-D PANEL P (P2,4,6)
#14-F (P1,3,5)
TYPE C - TYP.
POLE #10 K-1
2#10+GRD.
STANDBY BATTERY CIRCUIT K3
1 1/4" - 2 # 10 + 1 # 10 GRD.
TO LIGHTING CONTROL
POLE #9 WITH PHOTOCELL ON TOP N-41
POLE #8 L-1
STANDBY BATTERY CIRCUIT L3
POLE #7 N-42
PANEL N & LTG. CONTROL TRANSFORMER
UP TO UNIT SUBSTATION
CRIB AT TRESTLE HEAD SEE DETAIL ON DWG E-4 FOR EQUIPMENT WIRING.
1"-2#6+GRD FOR 60a RECEPT. P-11
LEGEND
KIOSK
KIOSK DESIGNATION
KIOSK TYPE-SEE DWG. E-3
LOCATED IN KIOSK
KIOSK RECEPT. 120v CIRCUITS
#13-D PANEL P (P2,4,6)
P10 120v. CIRCUIT
J.B. FOR PIPE HEATING
POLE #9 LIGHTING POLE DESIGNATION
POLE
120v. CIRCUIT
FLOODLIGHT - TYPE B
NAVIGATION LIGHT - TYPE C
NOTE: FROM EACH LIGHTING POLE STUB 1" C.O. TO ACCESSIBLE TRENCH OR CRIB FOR FUTURE FIRE ALARM WIRING.

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PACIFIC REGION

PACIFIC RIM CONSULTANTS LIMITED — MECHANICAL & ELECTRICAL ENGINEERS, VANCOUVER, B.C.

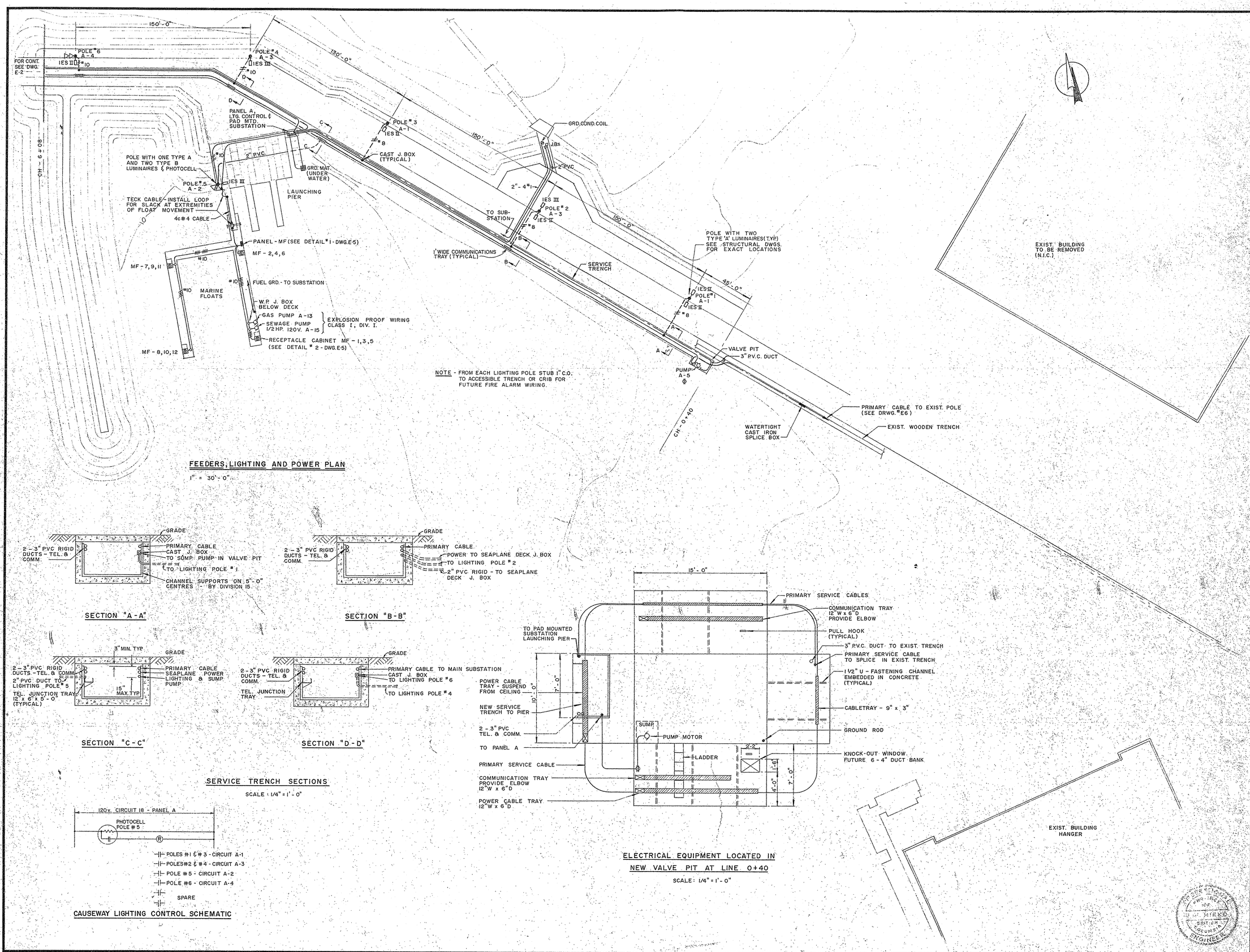
Peter G Scott P. Eng — Consulting Electrical Engineer

— A JOINT VENTURE

project title / titre du projet: MARINE STRUCTURES — INSTITUTE OF OCEAN SCIENCES — PATRICIA BAY B.C.

drawing title / titre du dessin: WHARF PLANS— FEEDER PLAN and LIGHTING AND POWER PLAN

designed by	P.G. Scott, G. Neumeyer	conçu par
date	August 14th, 1974	
drawn by	P. Braddle	dessiné par
date	August 14th, 1974	
reviewed by	J.F. Mirko, P.G. Scott	examiné par
date	August 14th, 1974	
project number	89323	no. du projet
drawing no.	E-2	dessin no.



NOTE - FROM EACH LIGHTING POLE STUB 1" C.O. TO ACCESSIBLE TRENCH OR CRIB FOR FUTURE FIRE ALARM WIRING.

FEEDERS, LIGHTING AND POWER PLAN

1" = 30'-0"

SECTION "A-A"

SECTION "B-B"

SECTION "C-C"

SECTION "D-D"

SERVICE TRENCH SECTIONS

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

- POLES #1 & #3 - CIRCUIT A-1
- POLES #2 & #4 - CIRCUIT A-3
- POLE #5 - CIRCUIT A-2
- POLE #6 - CIRCUIT A-4
- SPARE

CAUSEWAY LIGHTING CONTROL SCHEMATIC

ELECTRICAL EQUIPMENT LOCATED IN NEW VALVE PIT AT LINE 0+40

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

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PACIFIC REGION

PACIFIC RIM CONSULTANTS LIMITED — MECHANICAL & ELECTRICAL ENGINEERS — VANCOUVER, B.C.

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— A JOINT VENTURE

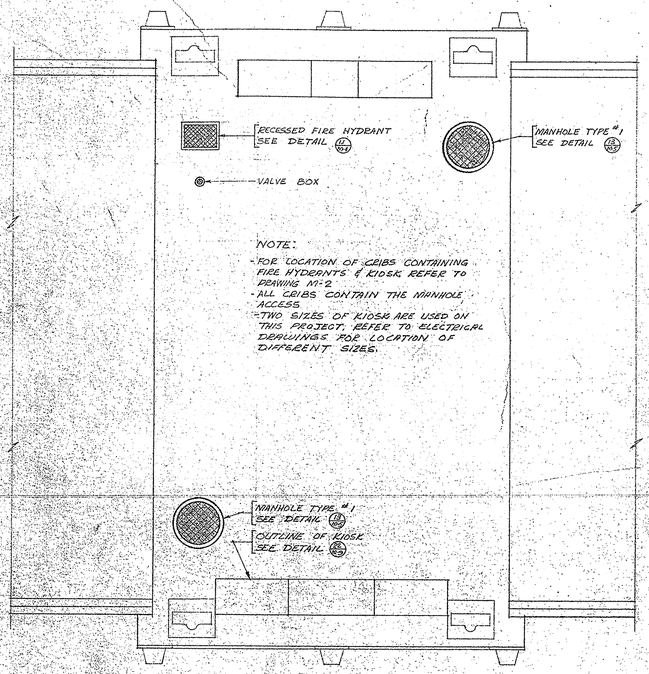
A detail no. / détail no.
B location drawing no. / sur dessin no.
C drawing no. / dessin no.
revisions / date

project title / titre du projet
MARINE STRUCTURES
INSTITUTE OF OCEAN SCIENCES
PATRICIA BAY B.C.

drawing title / titre du dessin
CAUSEWAY PLAN

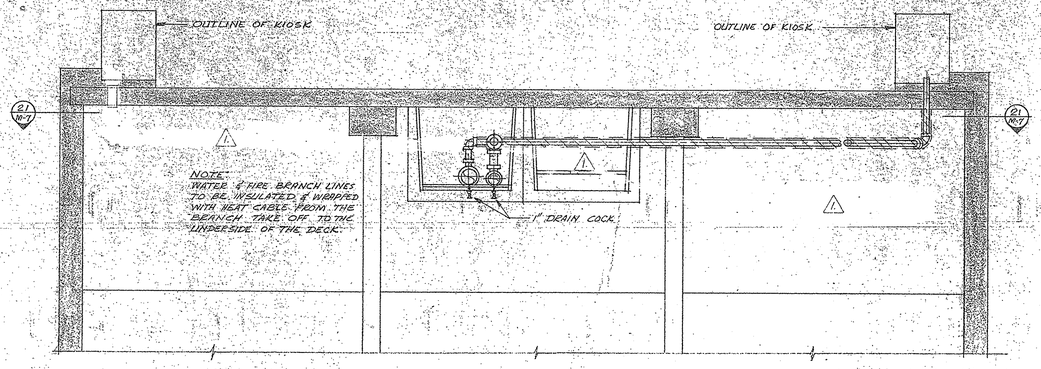
designed by / conçu par	P.G.Scott, G. Neumeyer
date	August 14th, 1974
drawn by / dessiné par	P. Braddle
date	August 14th, 1974
reviewed by / examiné par	J.F. Mirko, P.G. Scott
date	August 14th, 1974
approved by / approuvé par	
date	
Tender / Soumission	
D.P.W. Project Manager / Administrateur de projets M.T.P.	
project number / no. du projet	8 9 3 2 3
drawing no. / dessin no.	E-1

J. F. MIRKO — BRITISH COLUMBIA — ENGINEER



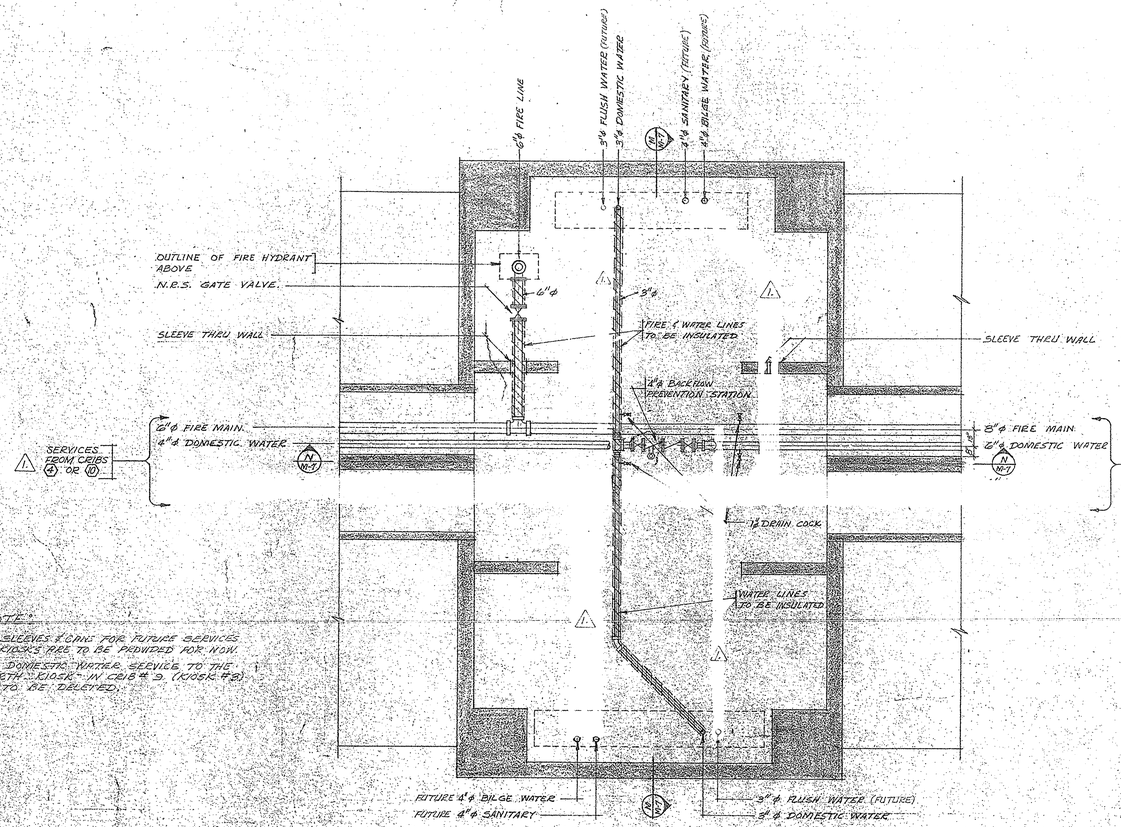
PLAN - TYPICAL CRIB DECK PLAN (9 M-10) NORTH FINGER

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



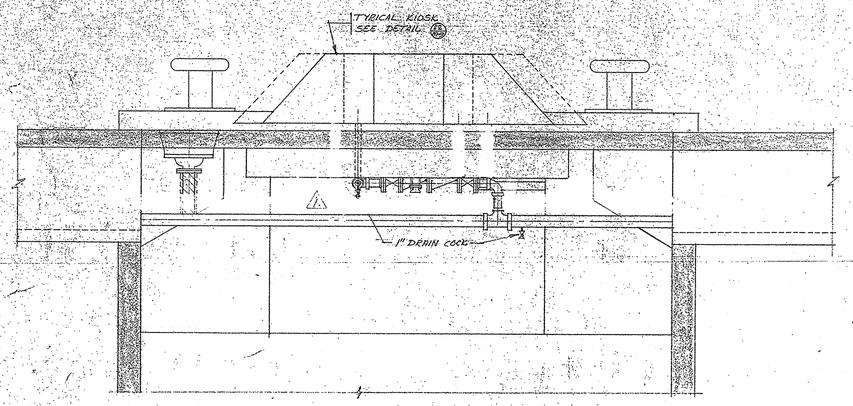
SECTION (M M-10)

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



PLAN - TYPICAL CRIB BELOW DECK (21 M-10) NORTH FINGER

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



SECTION (N M-10)

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

Public Works Canada / Travaux publics Canada

PACIFIC REGION

D.W.T. JOB NO. 4306-03

A detail no. / détail no.

B location drawing no. / no dessin no.

C drawing no. / dessin no.

revisions	date
SANITARY & BILGE WATER SERVICES DELETED. FLUSH WATER DELETED. DOMESTIC WATER TO KIOSK #5 DELETED.	27/11/74

project title / titre du projet

MARINE STRUCTURES

INSTITUTE OF OCEAN SCIENCES

PATRICIA BAY B.C.

drawing title / titre du dessin

CRIB DETAILS - NORTH FINGER

designed by E. CROWDIS R.F. DAVIS / conçu par

date AUG. 14, 1974

drawn by E. CROWDIS / dessiné par

date

reviewed by R.F. DAVIS / examiné par

date R.F. Davis

approved by / approuvé par

date

Tender / Soumission

D.P.W. Project Manager / Administrateur de projets M.T.P.

project number / no. du projet

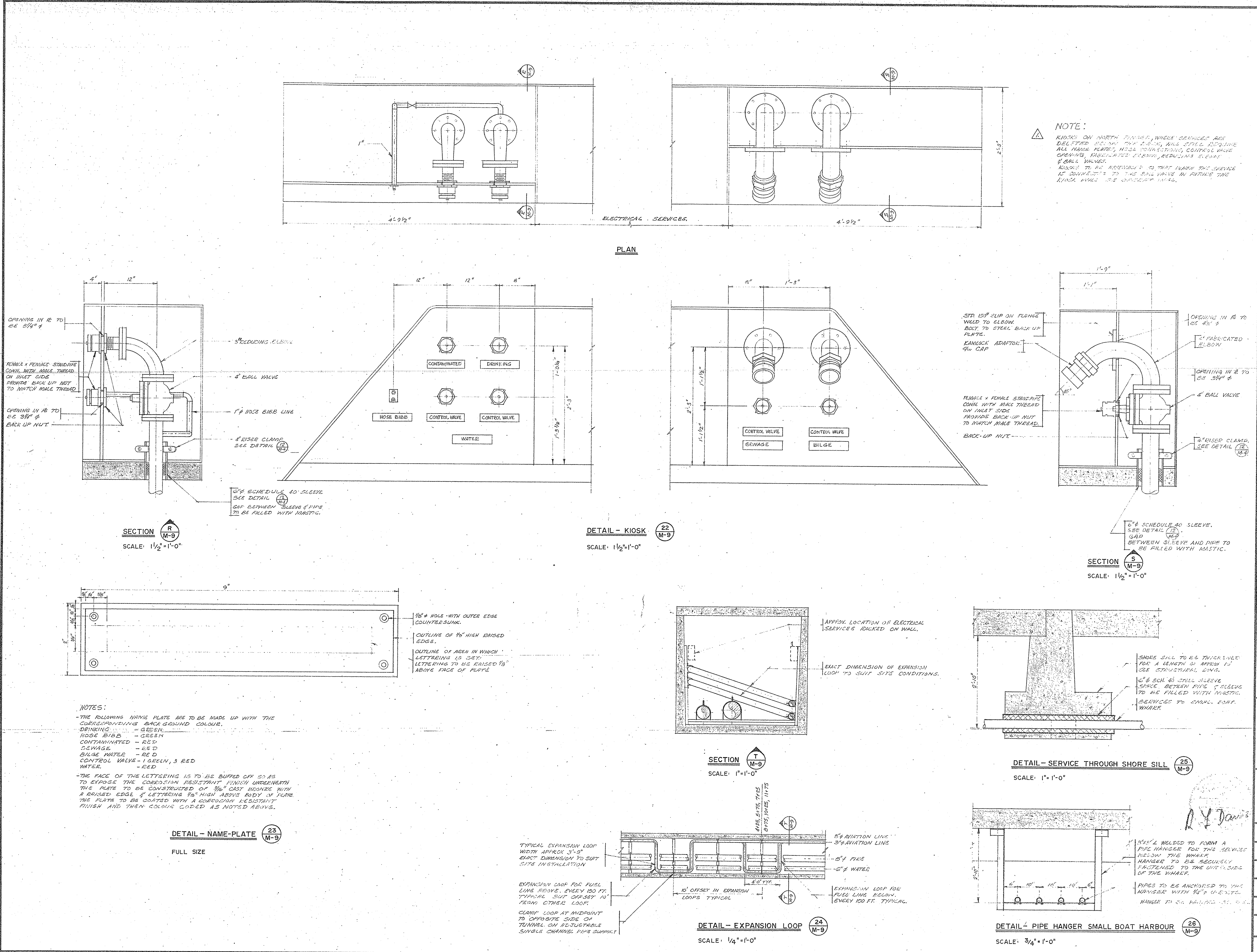
89323

drawing no. / dessin no.

M-10

PROFESSIONAL ENGINEER PROVINCE OF R.F. DAVIS

DPW 700E



DPW 700E

Public Works Canada / Travaux publics Canada

PACIFIC REGION

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1690 WEST BROADWAY
VANCOUVER 9, B.C.

D.W.T. JOB NO. 4306-03

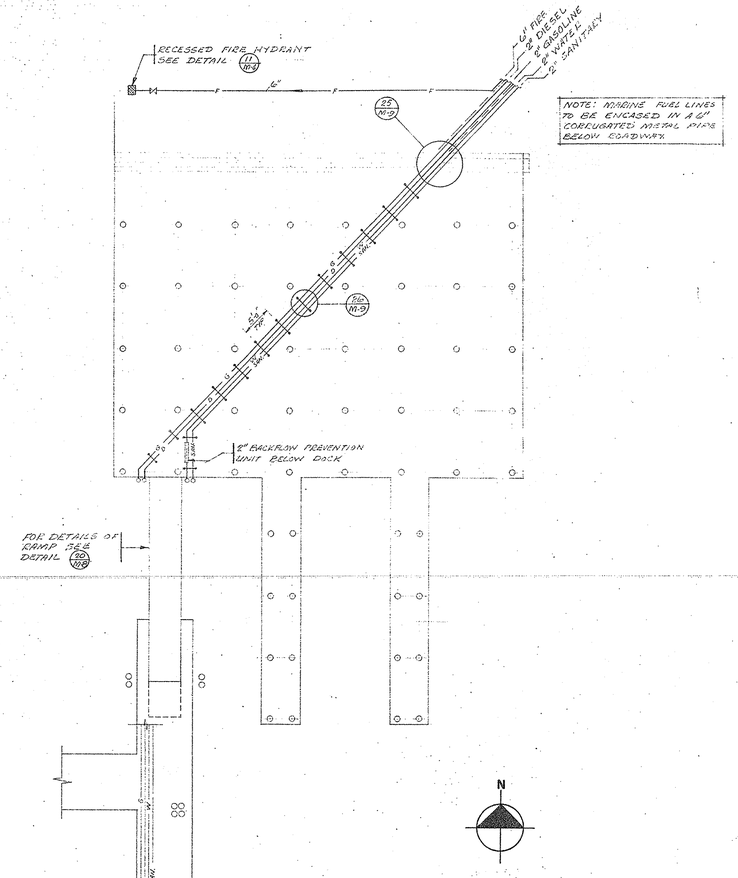
A detail no. / détail no.
B location drawing no. / sur dessin no.
C drawing no. / dessin no.

revisions		date
1.	NOTE RE: SERVICES TO KIOSKS ON NORTH FINGER.	26/11/74

project title / titre du projet
MARINE STRUCTURES
~~INSTITUTE OF OCEAN SCIENCES~~
PATRICIA BAY B.C.

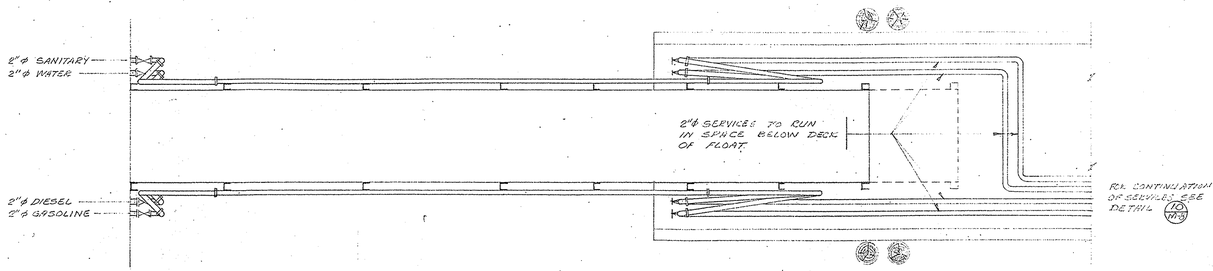
drawing title / titre du dessin
DETAILS

designed by	E. CROWDIS R. F. DAVIS	conçu par
date	AUG. 14, 1974	
drawn by	E. CROWDIS	dessiné par
date		
reviewed by	R. F. DAVIS	examiné par
date		
approved by		approuvé par
date		
Tender		Soumission
D.P.W. Project Manager		Administrateur de projets M.T.P.
project number	89323	no. du projet
drawing no.	M-9	dessin no.

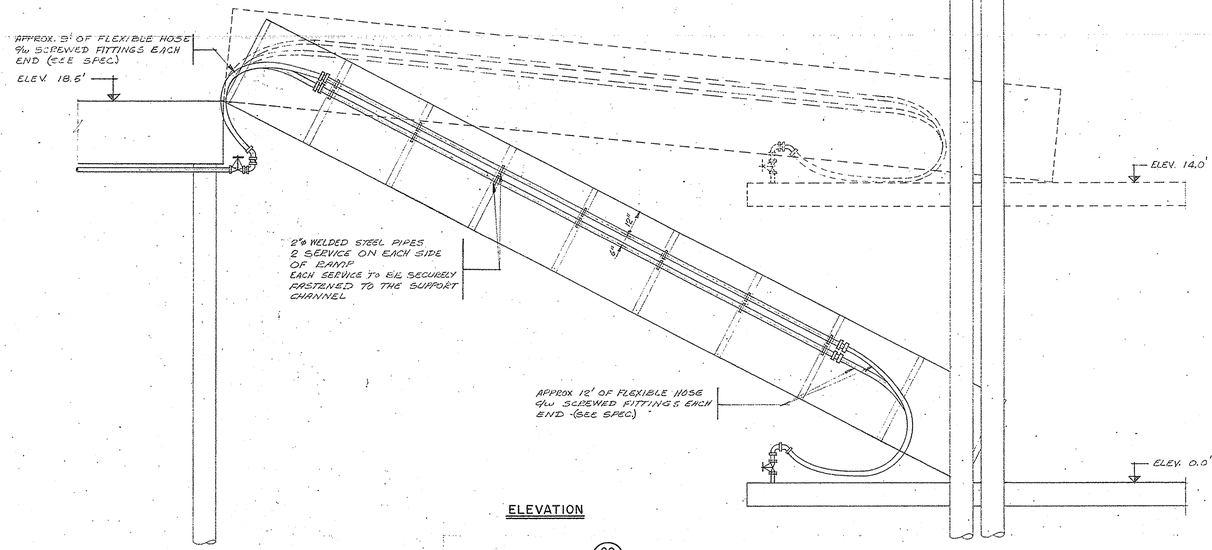


DETAIL– SMALL BOAT HARBOUR FACILITIES 10 M-8

SCALE: 1"= 10'-0"



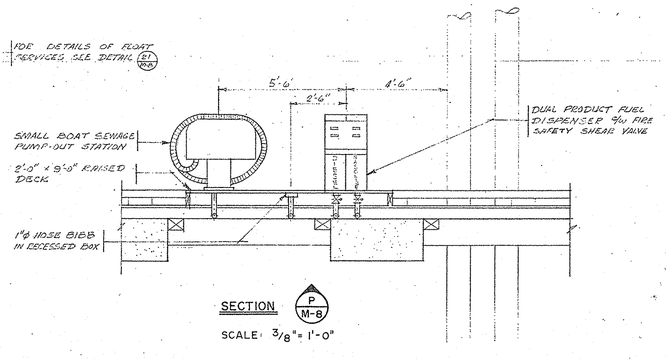
PLAN



ELEVATION

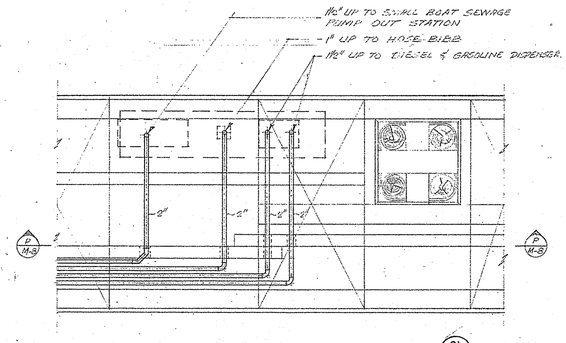
DETAIL - RAMP 20 M-8

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



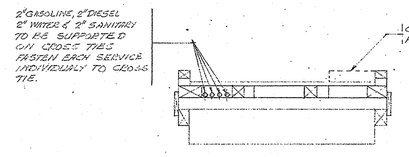
SECTION P M-8

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



PLAN– SERVICES BELOW FLOAT DECK 21 M-8

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



SECTION O M-8

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

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VANCOUVER 9, B.C.

D.W.T. JOB NO. 4306-03

A detail no. / détail no.
B location drawing no. / sur dessin no.
C drawing no. / dessin no.
revisions / date

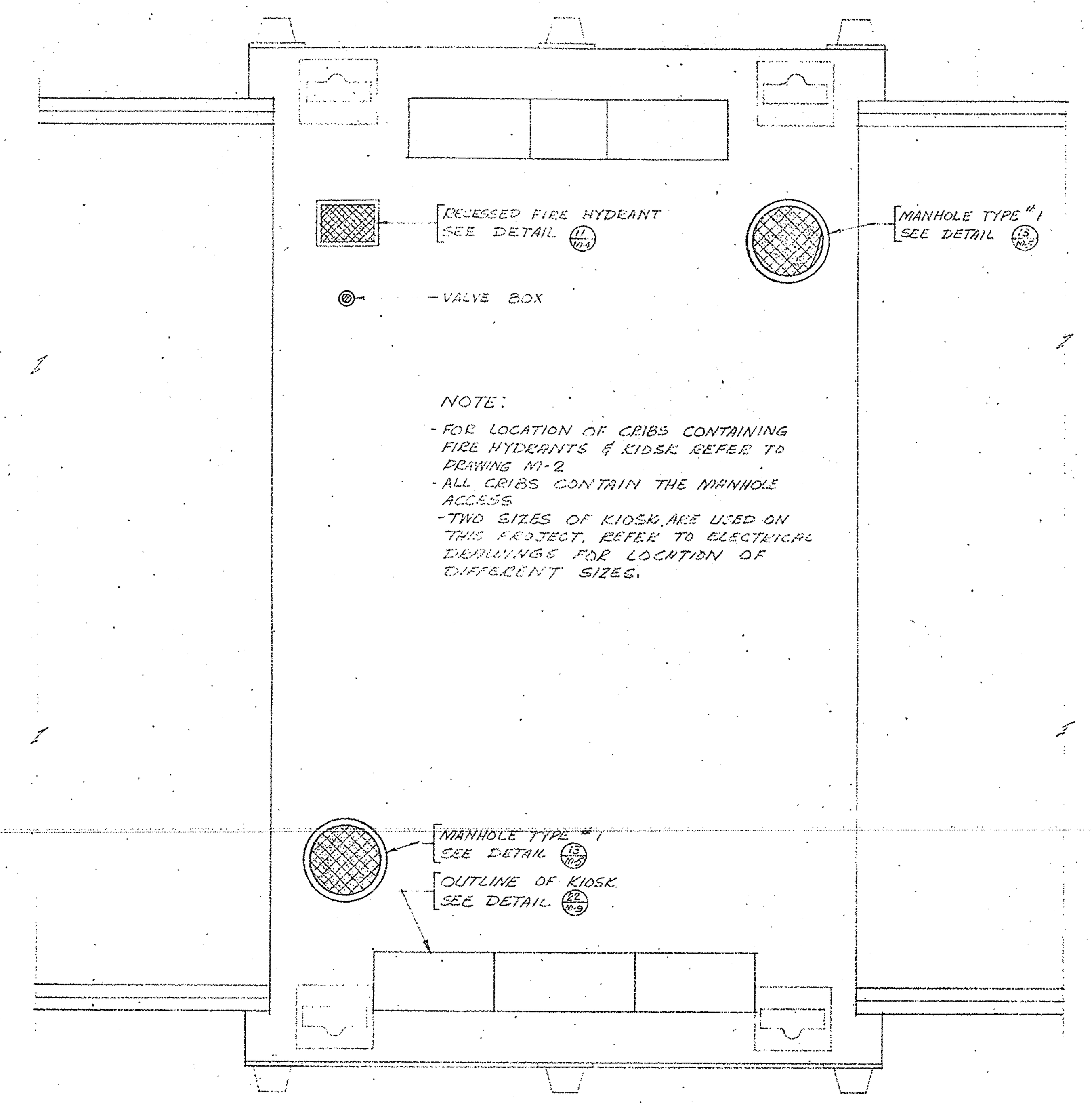
project title / titre du projet
MARINE STRUCTURES
INSTITUTE OF OCEAN SCIENCES
PATRICIA BAY B.C.

drawing title / titre du dessin
SMALL BOAT HARBOUR

designed by E. CROWDIS R.F. DAVIS / conçu par
date AUG. 14, 1974
drawn by E. CROWDIS / dessiné par
date
reviewed by R.F. DAVIS / examiné par
date
approved by / approuvé par
date
Tender / Soumission
D.P.W. Project Manager / Administrateur de projets M.T.P.
project number / no. du projet
89323
drawing no. / dessin no.
M-8

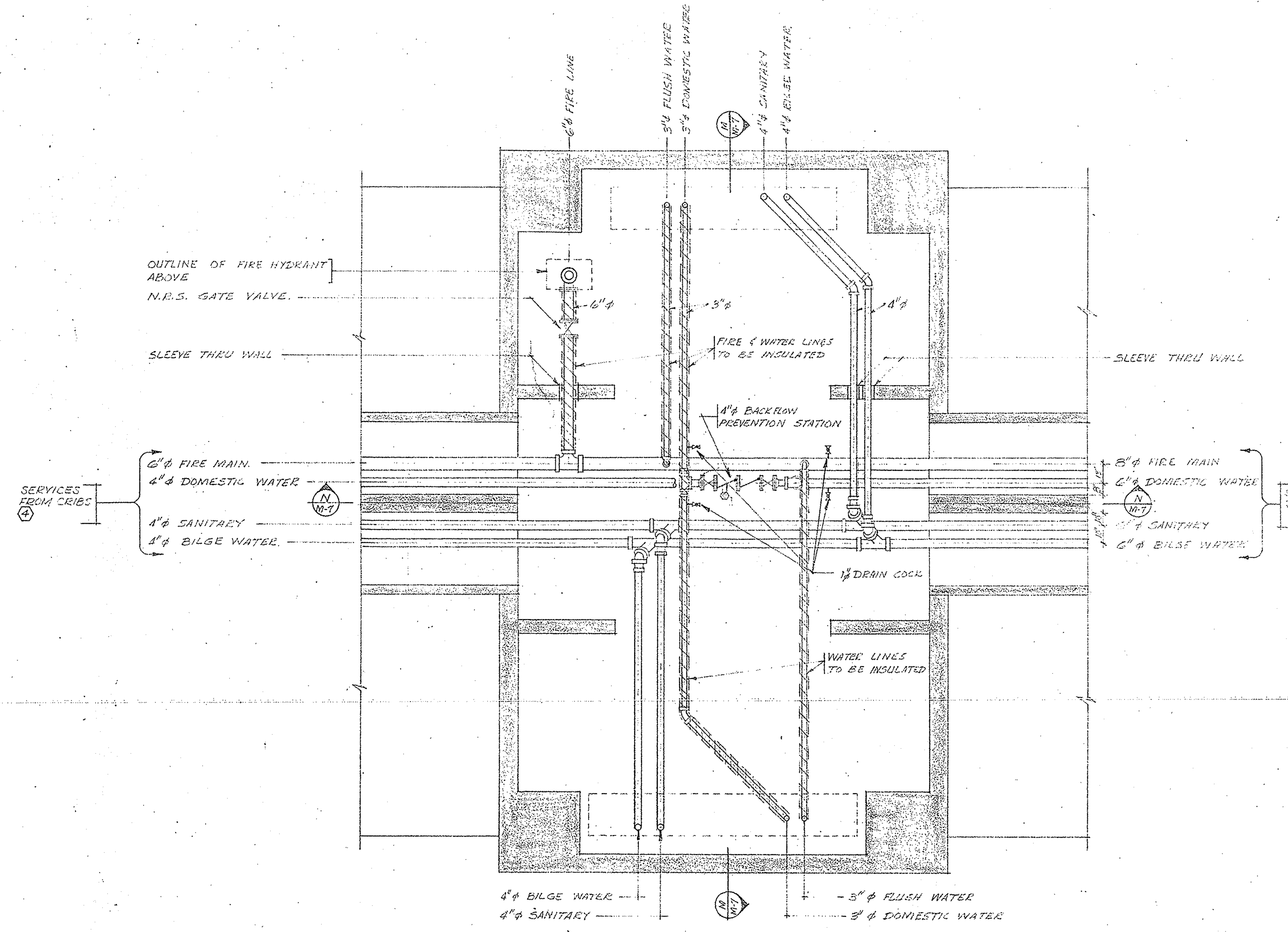
R.F. Davis

DPW 700E



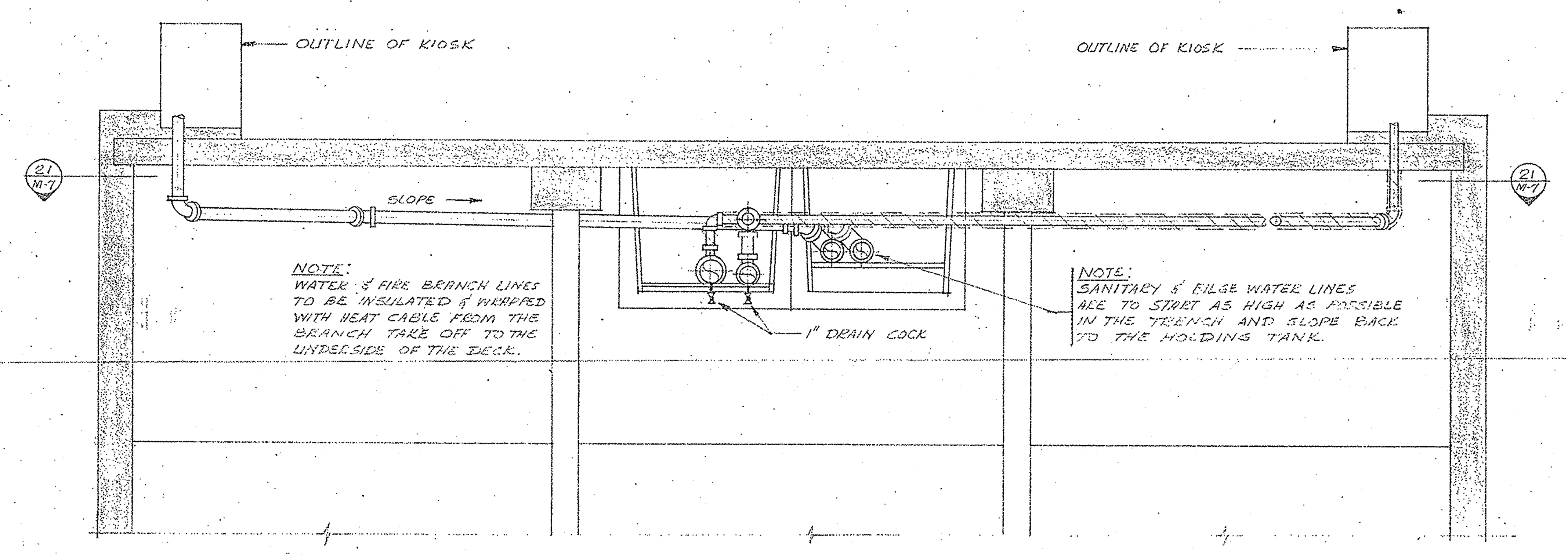
PLAN - TYPICAL CRIB DECK PLAN (9 / M-7) SOUTH FINGER

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



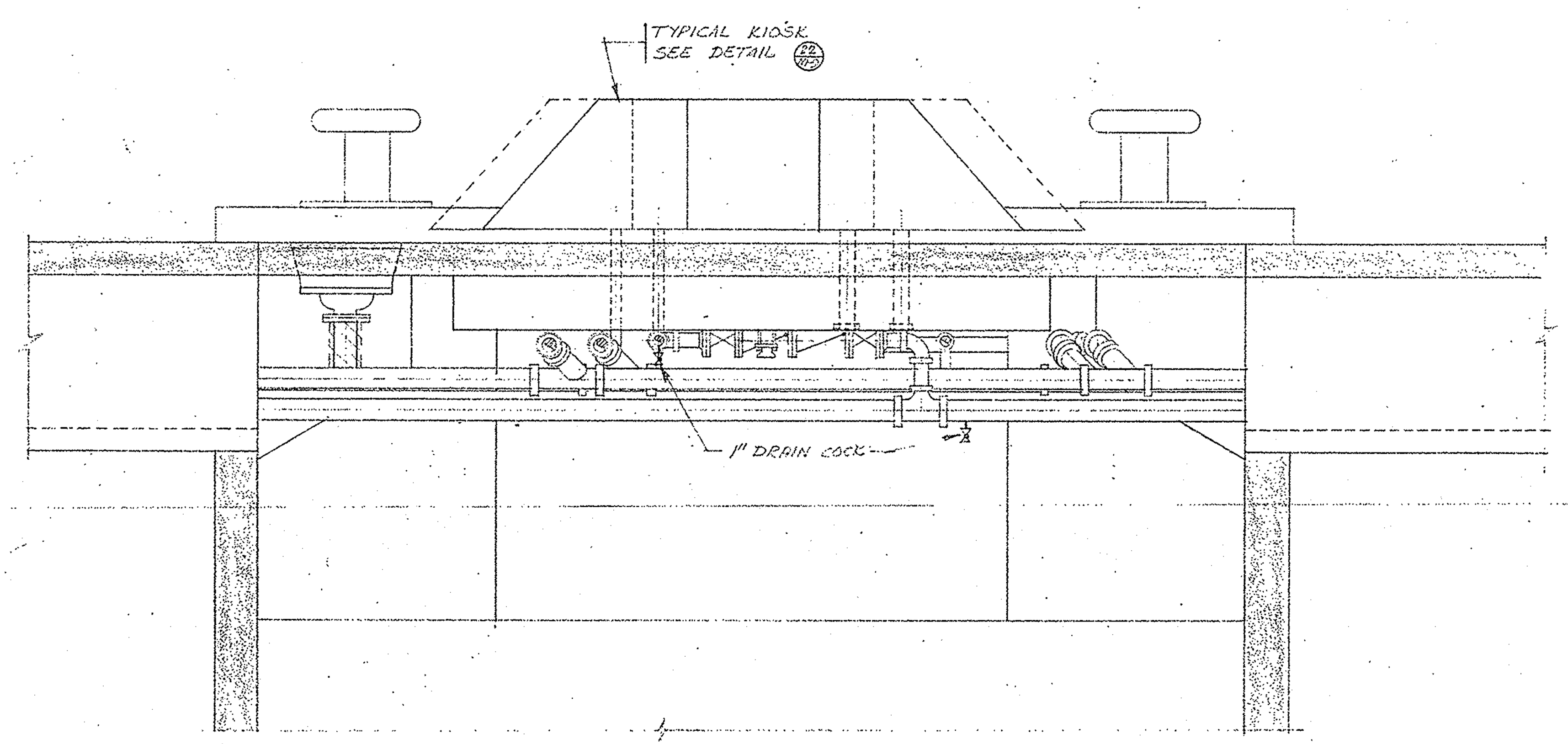
PLAN - TYPICAL CRIB BELOW DECK (21 / M-7) SOUTH FINGER

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



SECTION (M / M-7)

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



SECTION (N / M-7)

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

Public Works Canada / Travaux publics Canada

PACIFIC REGION

D.W.T. JOB NO. 4306-03

A detail no. / détail no.
B location drawing no. / sur dessin no.
C drawing no. / dessin no.

revisions		date
1	DETAIL REFERENCE CHANGED TO SOUTH FINGER ONLY	26/11/74

project title / titre du projet

MARINE STRUCTURES

INSTITUTE OF OCEAN SCIENCES

PATRICIA BAY B.C.

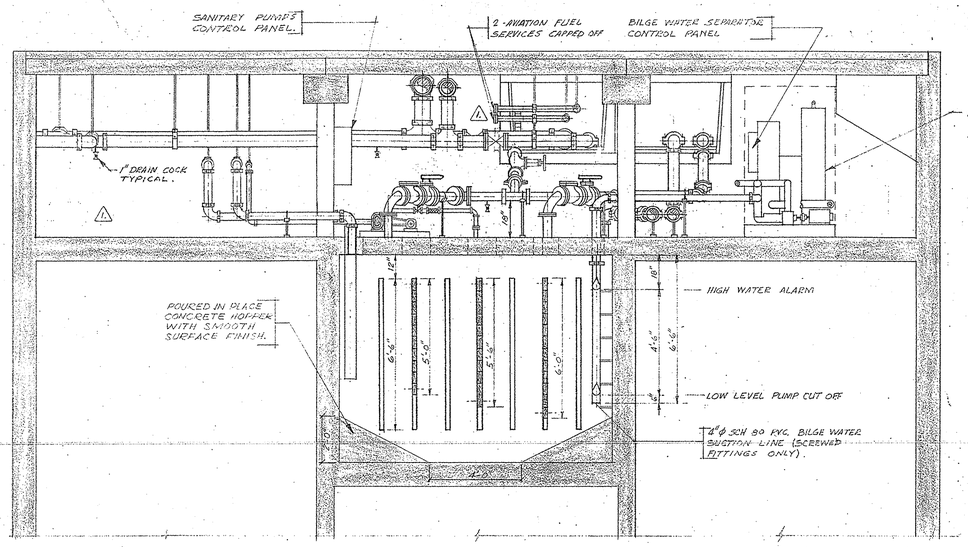
drawing title / titre du dessin

CRIB DETAILS - SOUTH FINGER

designed by E. CROWDIS R.F. DAVIS conçu par
date AUG. 14, 1974
drawn by E. CROWDIS dessiné par
date
reviewed by R.F. DAVIS examiné par
date R.F. Davis
approved by approuvé par
date
Tender Soumission
D.P.W. Project Manager Administrateur de projets M.T.P.
project number no. du projet 89323
drawing no. dessin no. M-7

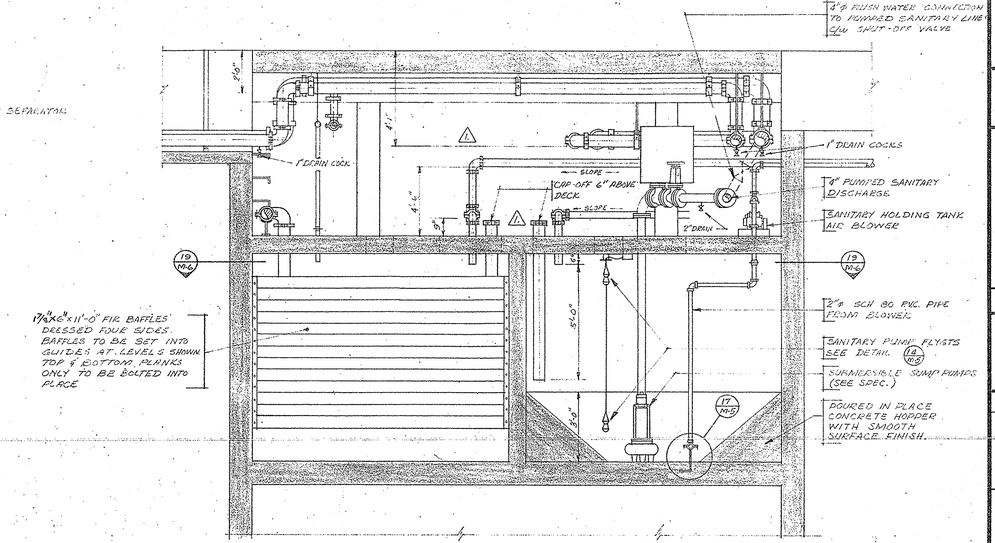
R.F. Davis

DPW 700E



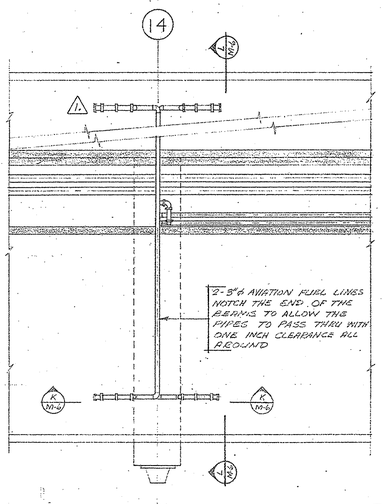
SECTION F M-6

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



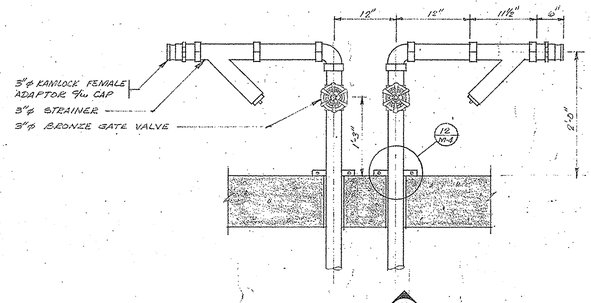
SECTION G M-6

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



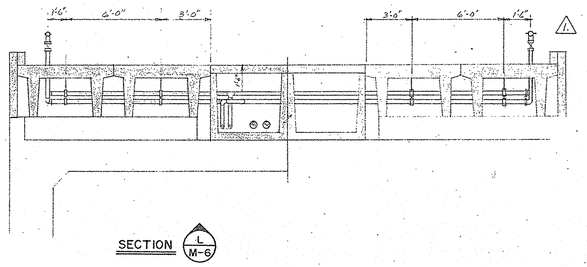
PLAN-AVIATION FUEL CONNECTIONS 8 M-6

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



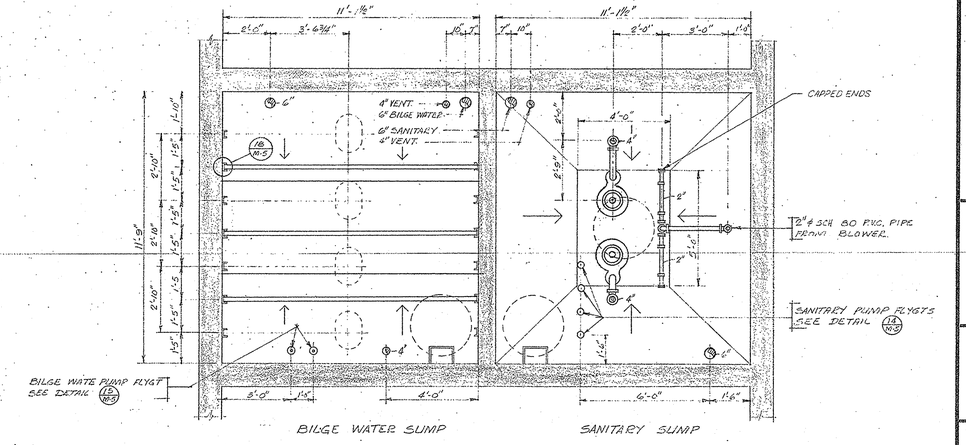
SECTION K M-6

SCALE: 1"=1'-0"



SECTION L M-6

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



PLAN-SANITARY AND BILGE WATER HOLDING TANKS 19 M-6

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

DPW 700E

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VANCOUVER 9, B.C.

D.W.T. JOB NO. 4306-03

A detail no. / détail no.

B location drawing no. / sur dessin no.

C drawing no. / dessin no.

revisions	date
1 AVIATION FUEL, SEWAGE, & BILGE WATER RISERS FROM NORTH FINGER. AVIATION FUEL CONN RELOCATED TO SOUTH FINGER.	74/11/14

project title / titre du projet

MARINE STRUCTURES

INSTITUTE OF OCEAN SCIENCES

PATRICIA BAY B.C.

drawing title / titre du dessin

HOLDING TANKS

SECTIONS & DETAILS

designed by E.CROWDIS R.F. DAVIS / conçu par

date AUG. 14, 1974

drawn by E.CROWDIS / dessiné par

date

reviewed by R.F. DAVIS / examiné par

date R.F. Davis

approved by / approuvé par

date

Tender / Soumission

D.P.W. Project Manager / Administrateur de projets M.T.P.

project number / no. du projet

89323

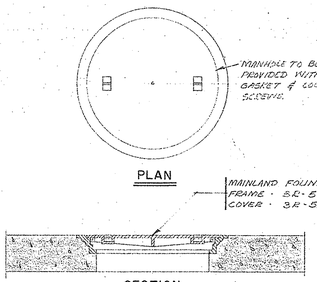
drawing no. / dessin no.

M-6

REGISTERED PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA

R.F. DAVIS

R.F. Davis

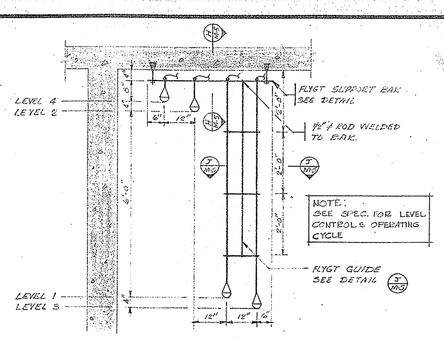


MANHOLE TYPE #1

MANHOLE TYPE #2

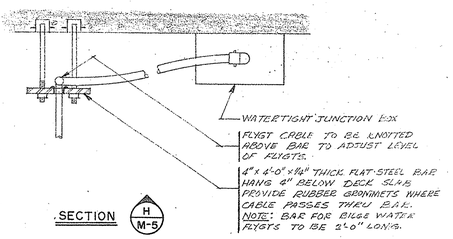
DETAIL- TYPICAL MANHOLES (13 M-5)

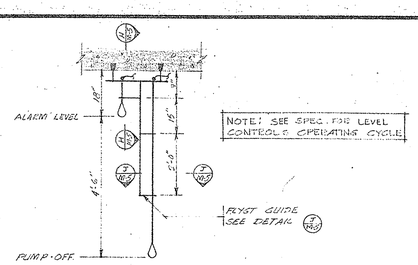
SCALE: 3/4"=1'-0"



DETAIL- SANITARY PUMP FLYGTS (14 M-5)

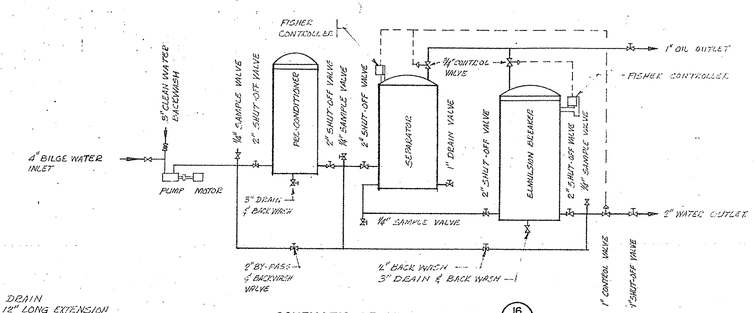
SCALE: 1/2"=1'-0"





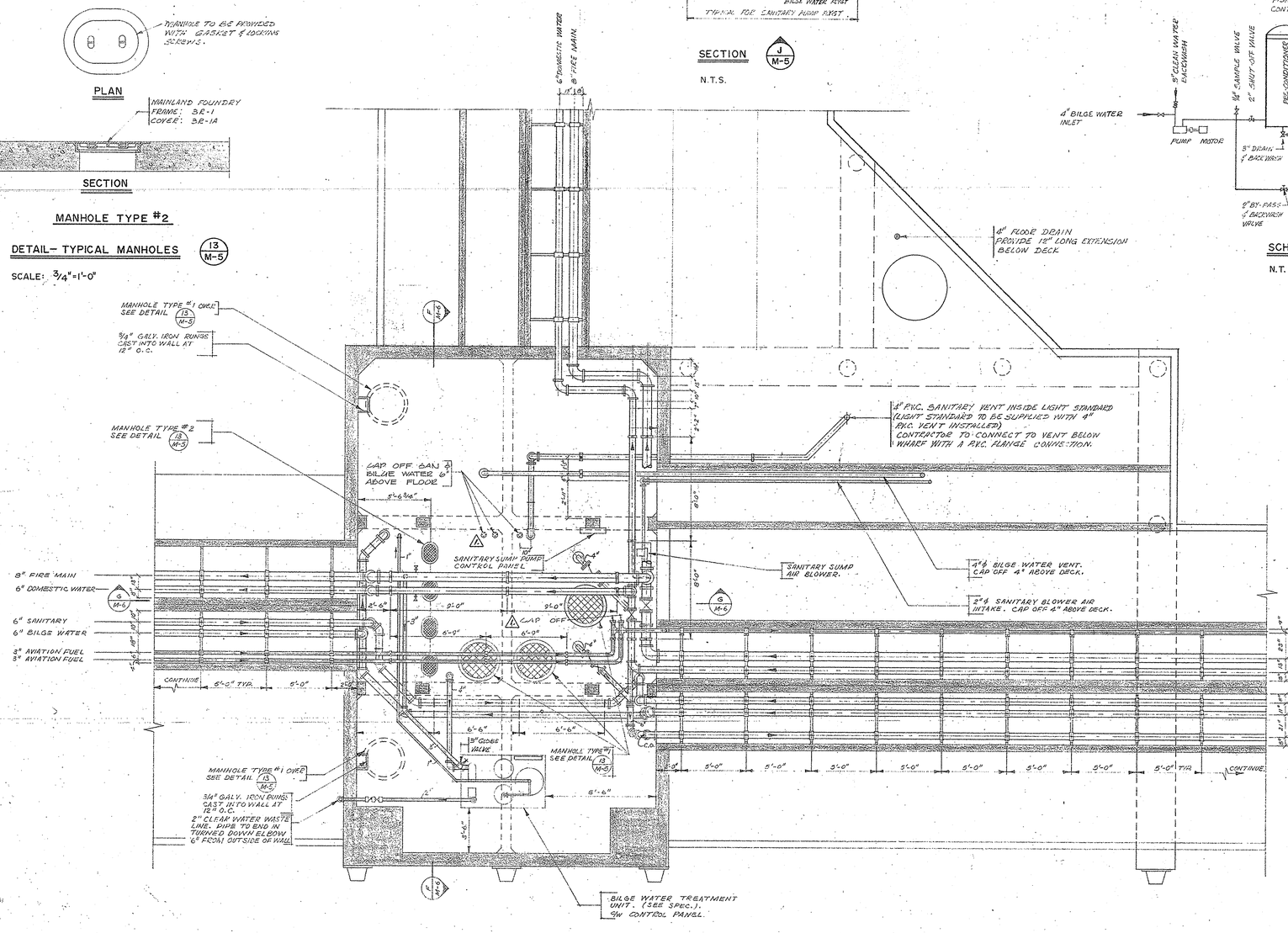
DETAIL- BILGE WATER PUMP FLYGTS (15 M-5)

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



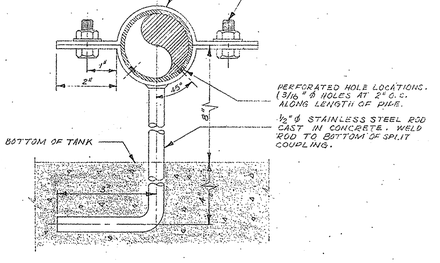
SCHEMATIC OF OIL SEPARATOR (16 M-5)

N.T.S.



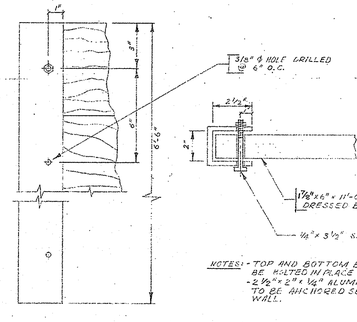
PLAN- SERVICE AREA CRIB #1 (7 M-5)

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



DETAIL- BLOWER LINE PIPE SUPPORT (17 M-5)

SCALE: 6"=1'-0"



DETAIL- SEWAGE PIT BAFFLE GUIDE (18 M-5)

SCALE: 3"=1'-0"

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VANCOUVER 9, B.C.

D.W.T. JOB NO 4306-03

A detail no. / detail no.
B location drawing no. / our dessin no.
C drawing no. / dessin no.

revisions	date
1. ANNATION FUEL, SANITARY & BILGE WATER MOVED FROM TRESTLE 2. PLAN REVISED.	26/11/74

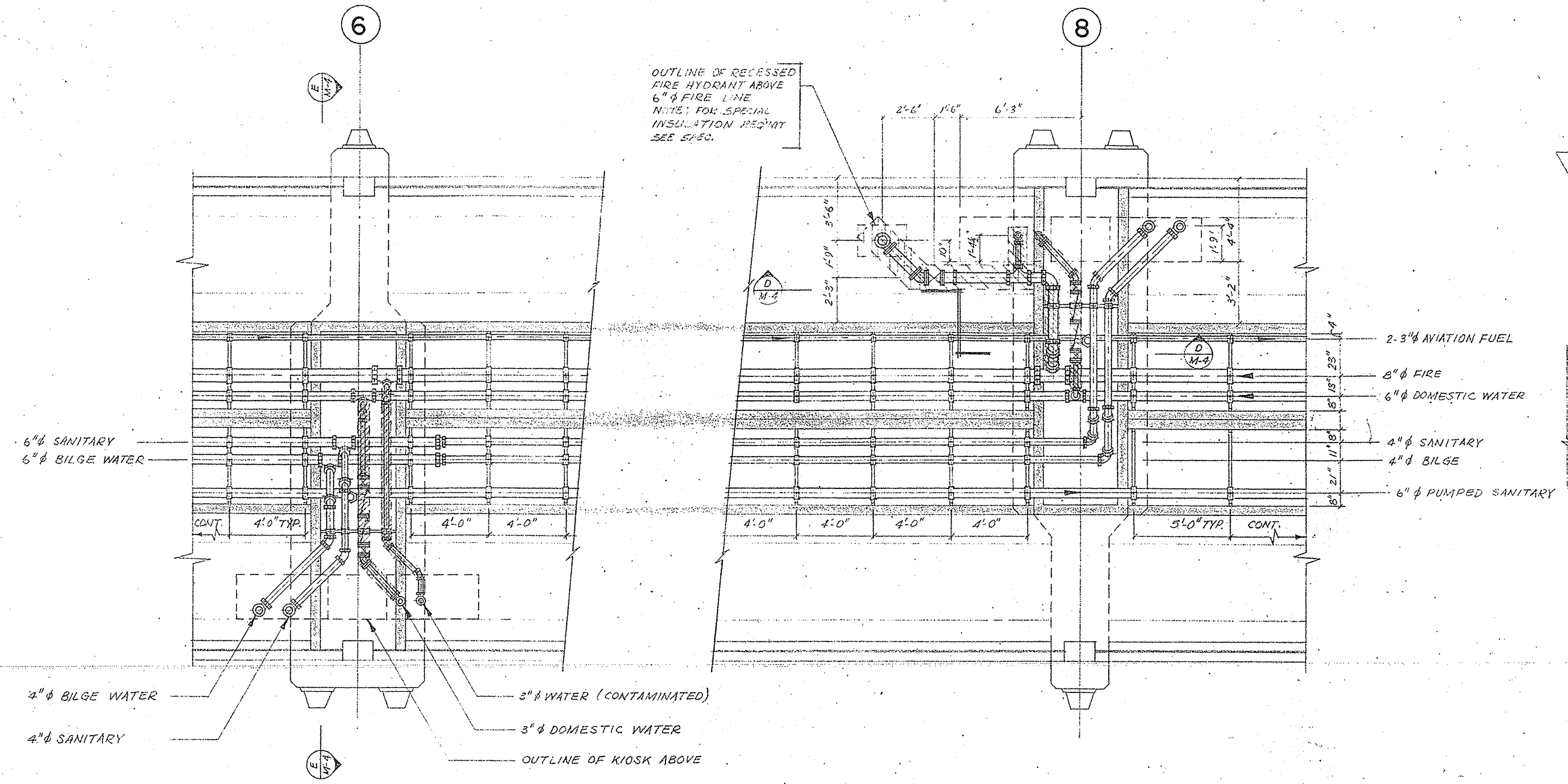
project title / titre du projet
MARINE STRUCTURES
INSTITUTE OF OCEAN SCIENCES
PATRICIA BAY B.C.

drawing title / titre du dessin
PLAN OF CRIB AT TRESTLE HEAD.

designed by E.CROWDIS R.F.DAVIS / conçu par
date AUG. 14, 1974
drawn by E.CROWDIS / dessiné par
date
reviewed by R.F.DAVIS / examiné par
date
approved by / approuvé par
date
Tender / Soumission
D.P.W. Project Manager / Administrateur de projets M.T.P.
project number / no. du projet
89323
drawing no. / dessin no.
M-5

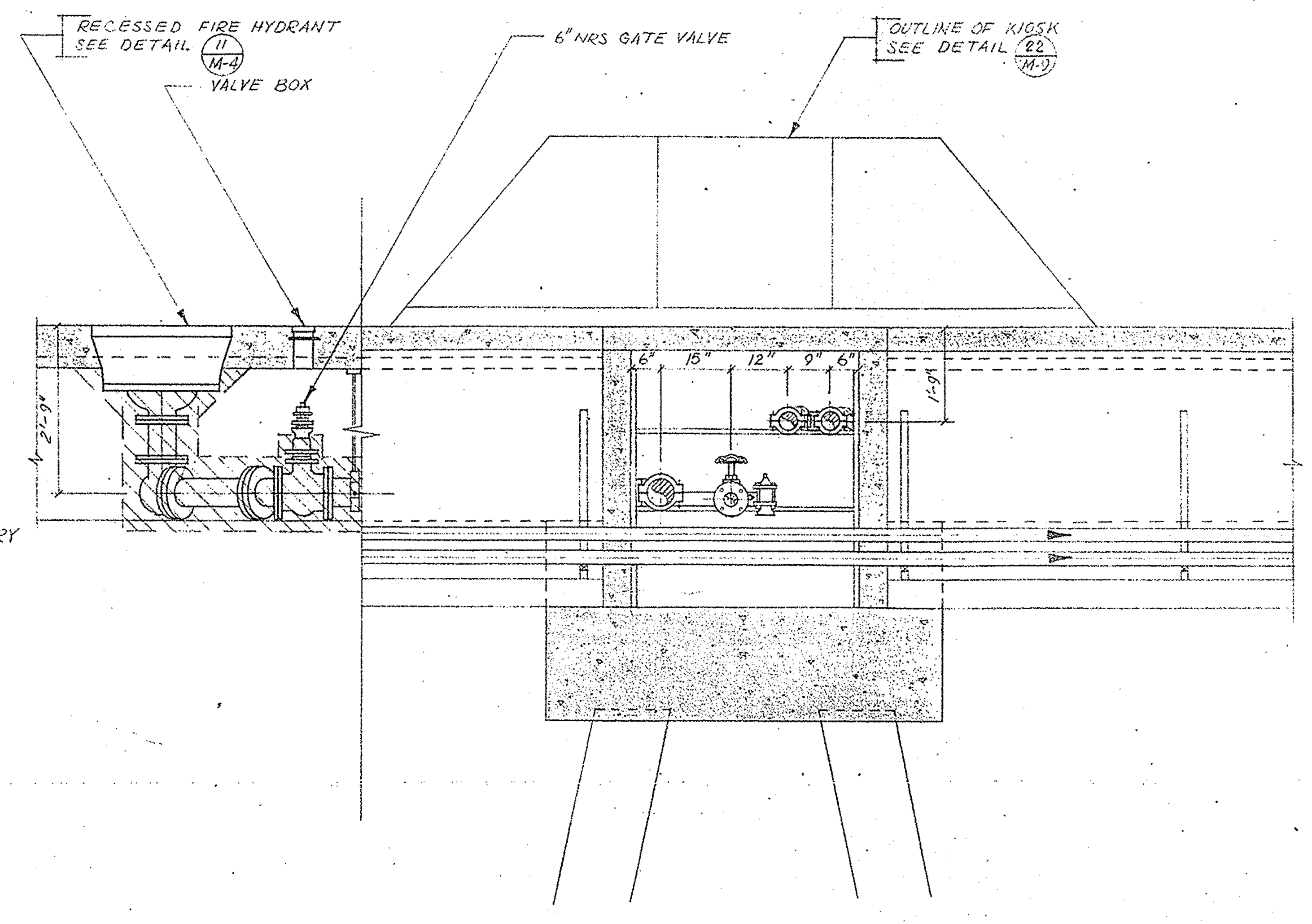
REGISTERED PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA R.F. DAVIS

DPW 700E



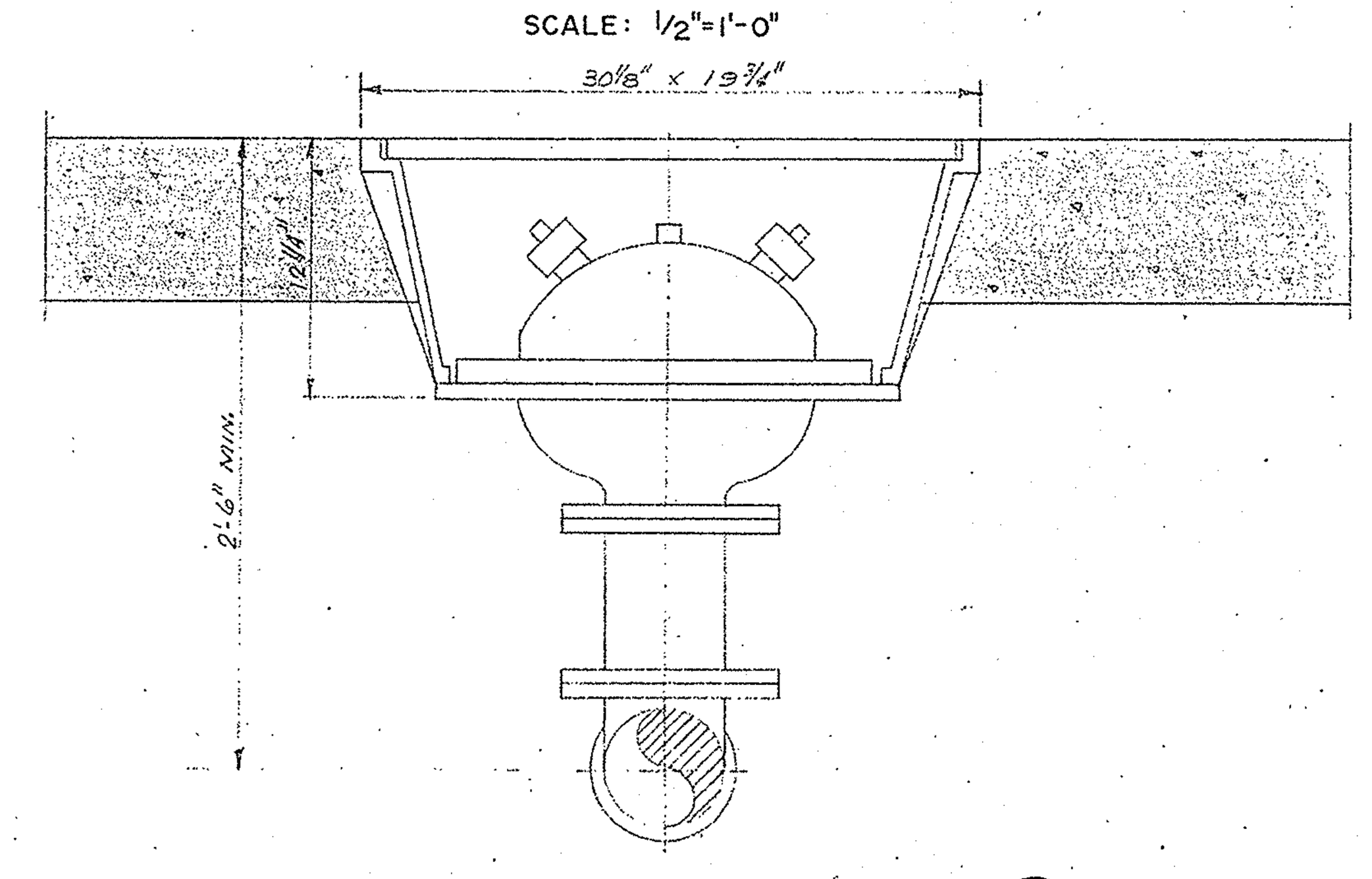
PLAN 6/M-4

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



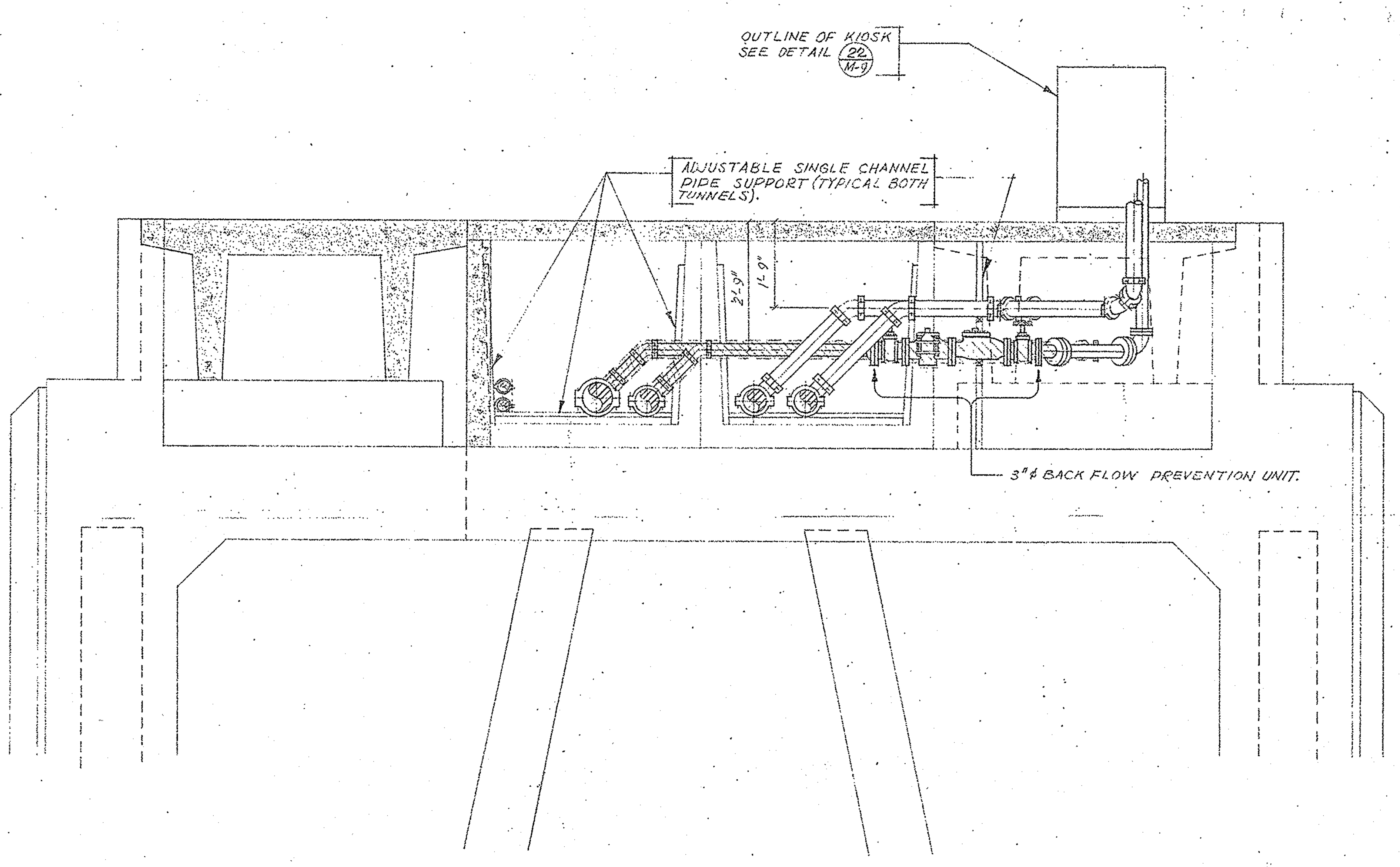
SECTION D/M-4

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



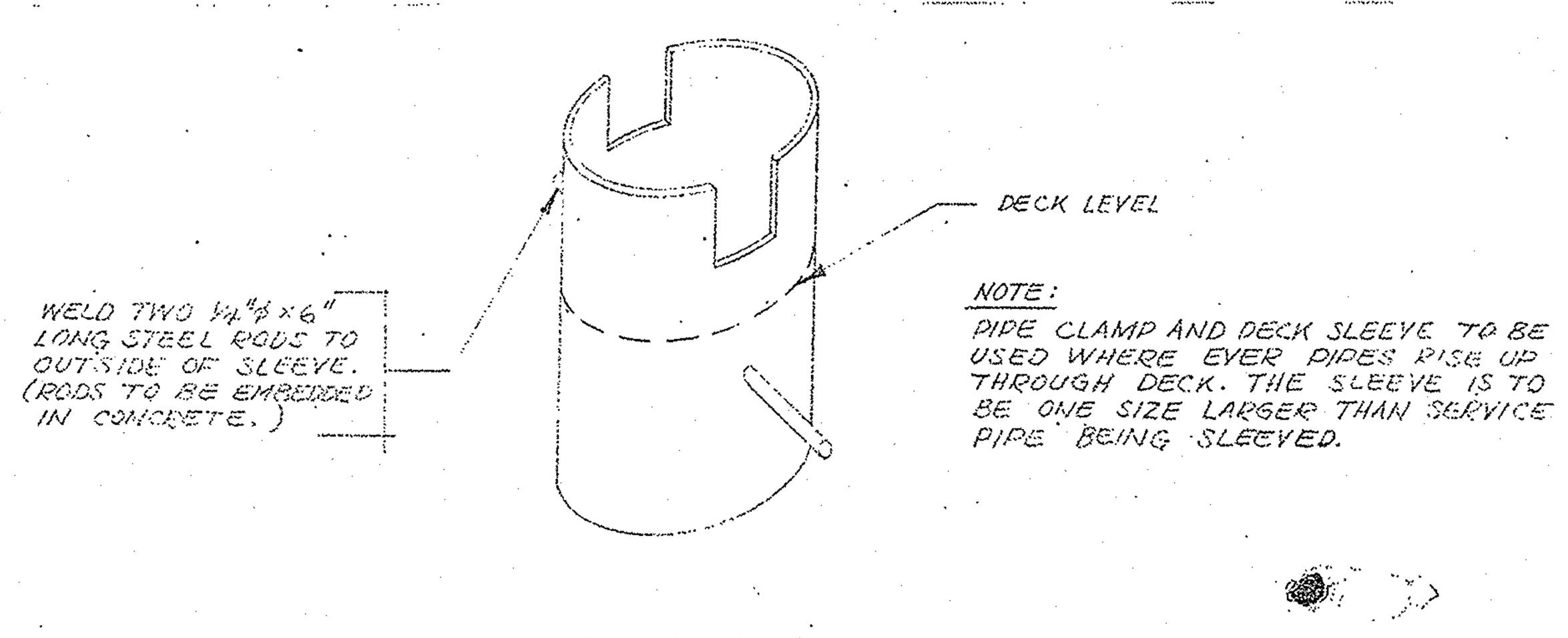
DETAIL - RECESSED FIRE HYDRANT 11/M-4

SCALE: 1½" = 1'-0"

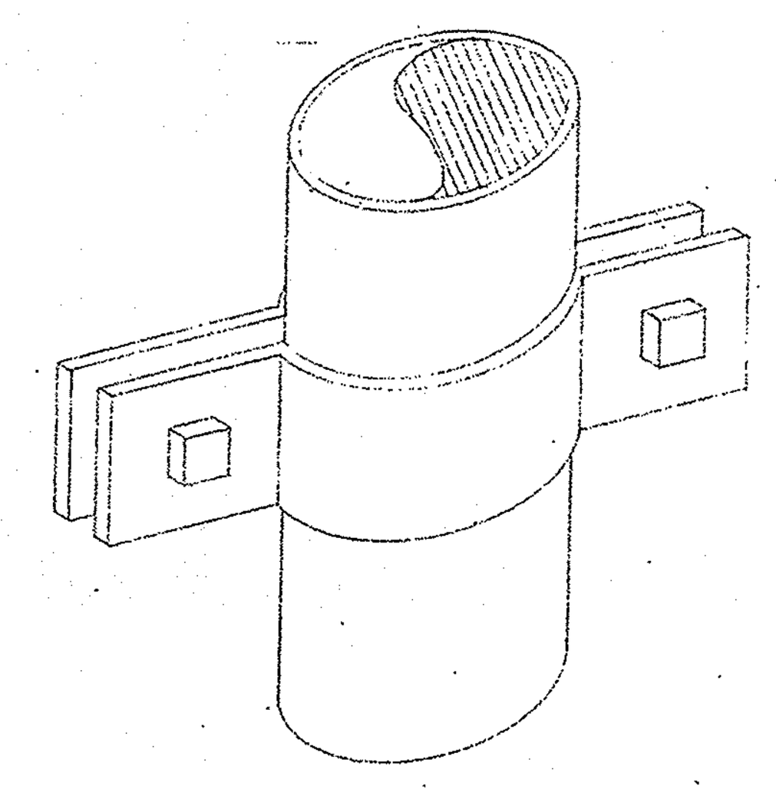


SECTION E/M-4

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



DECK SLEEVE



PIPE CLAMP

DETAIL - PIPE RISER CLAMP 12/M-4

N.T.S.

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D. W. THOMSON & COMPANY LTD.
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1690 WEST BROADWAY
VANCOUVER 9, B.C.

D.W.T. JOB NO. 4306-03

A detail no. / détail no.
B location drawing no. / sur dessin no.
C drawing no. / dessin no.

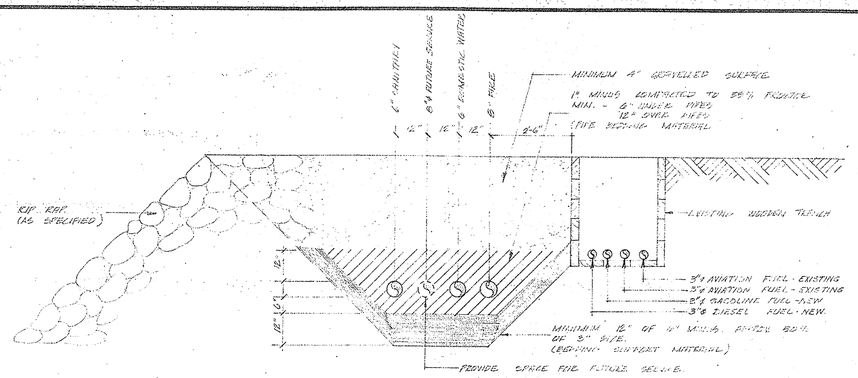
revisions		date
1	PLAN 6/M-4 REVISED TO SHOW THAT THERE IS ONLY TWO KIOSKS ON THE APPROACH PIER.	25/11/74

project title / titre du projet
MARINE STRUCTURES
INSTITUTE OF OCEAN SCIENCES
PATRICIA BAY B.C.

drawing title / titre du dessin
SERVICES TO APPROACH PIER
KIOSK
PLAN, SECTIONS & DETAILS.

designed by / conçu par: E. CROWDIS R.F. DAVIS
date: AUG. 14, 1974
drawn by / dessiné par: E. CROWDIS
date:
reviewed by / examiné par: R.F. DAVIS
date:
approved by / approuvé par:
date:
Tender / Soumission
D.P.W. Project Manager / Administrateur de projets M.T.P.
project number / no. du projet: 89323
drawing no. / dessin no.: M-4

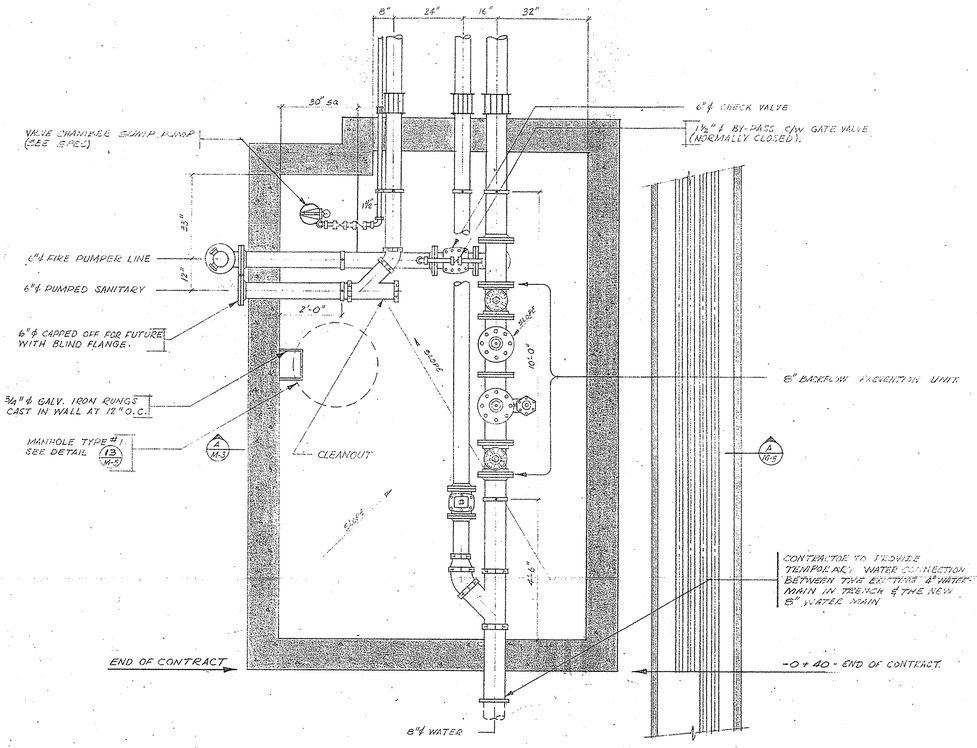
DPW 700E



NOTE:
WHERE SERVICES ARE LAYED BETWEEN 3'+0.0 AND 6'+0.0 ALONG RAILWAY; BACKFILL MATERIAL ABOVE BEDDING TO BE PIT RUN GRAVEL COMPACTED TO 95% P.S.D.M., TO FORM SUPPORT FOR RAILWAYS.

⚠ TYPICAL BEDDING DETAIL (U / M-3)

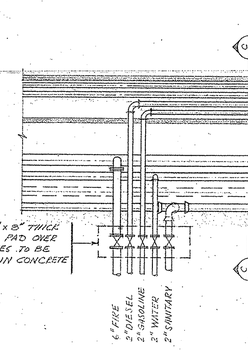
SCALE: 1/2" = 1'-0"



PLAN

⚠ DETAIL - VALVE CHAMBER (1 / M-3)

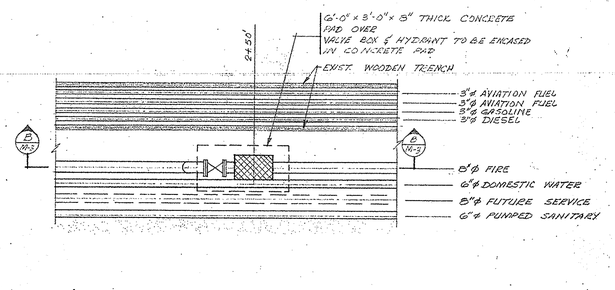
SCALE: 1/2"=1'-0"



6'-0" x 2'-0" x 8" THICK CONCRETE PAD OVER VALVE BOXES TO BE ENCASED IN CONCRETE PAD.

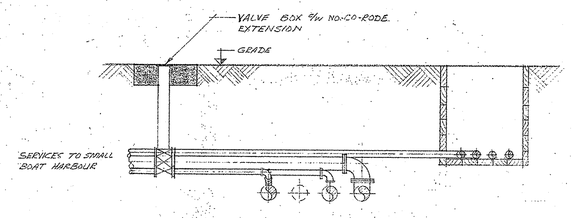
⚠ PLAN (3 / M-3)

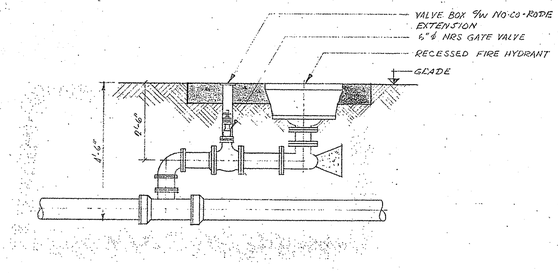
SCALE: 1/4"=1'-0"



⚠ PLAN (2 / M-3)

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



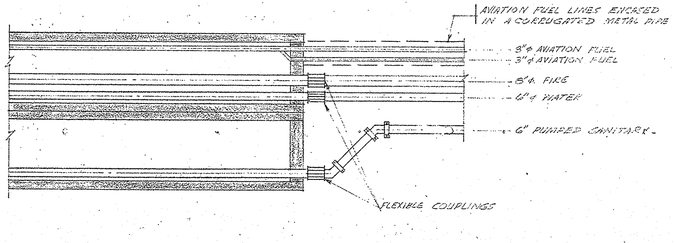


⚠ SECTION (C / M-3)

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

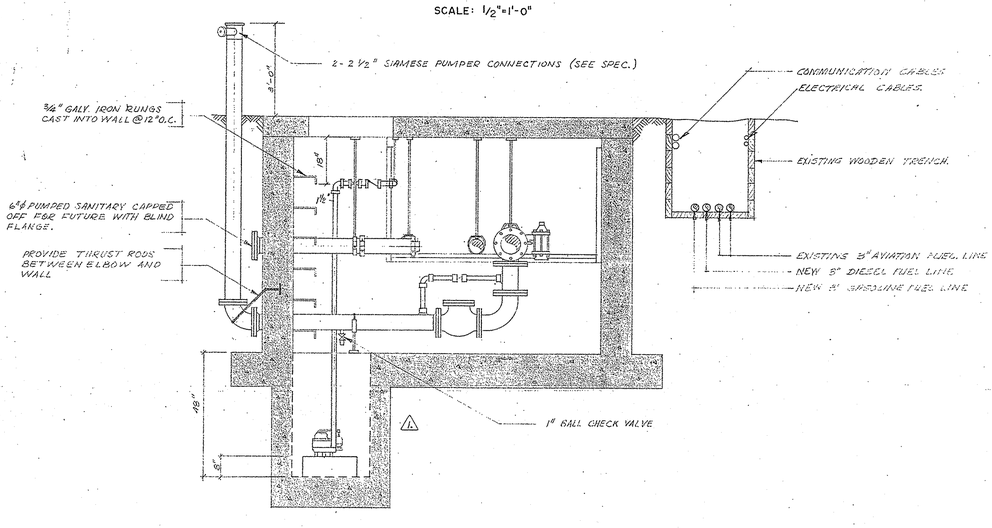
⚠ SECTION (B / M-3)

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



⚠ PLAN (5 / M-3)

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



⚠ SECTION (A / M-3)

SCALE: ½"=1'-0"

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PACIFIC REGION

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1690 WEST BROADWAY
VANCOUVER 9, B.C.

D.W.T. JOB NO. 4306-03

A detail no. / détail no.
B location drawing no. / no. dessin no.
C drawing no. / dessin no.

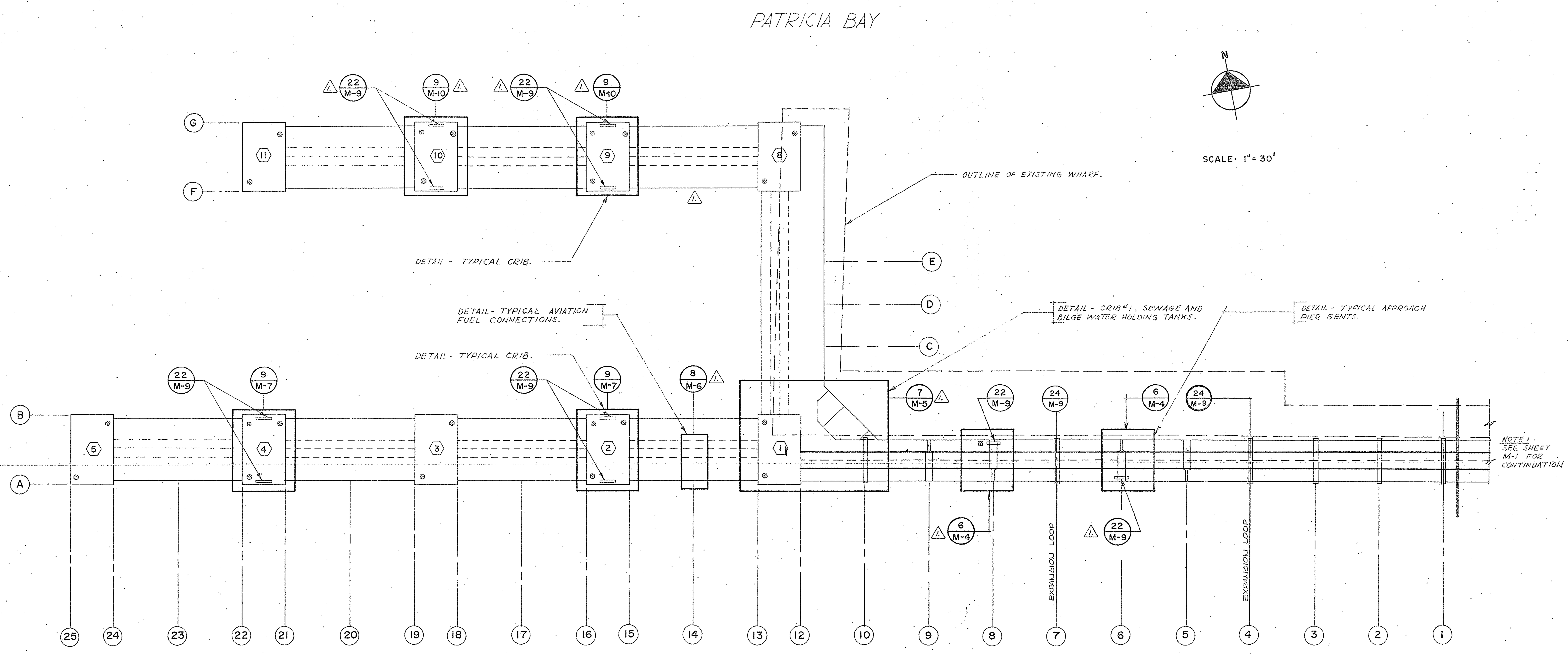
revisions		date
1	NEW BEDDING DETAIL FOR PIPES ON APPROACH WAY CONCRETE TRENCH DELETED.	

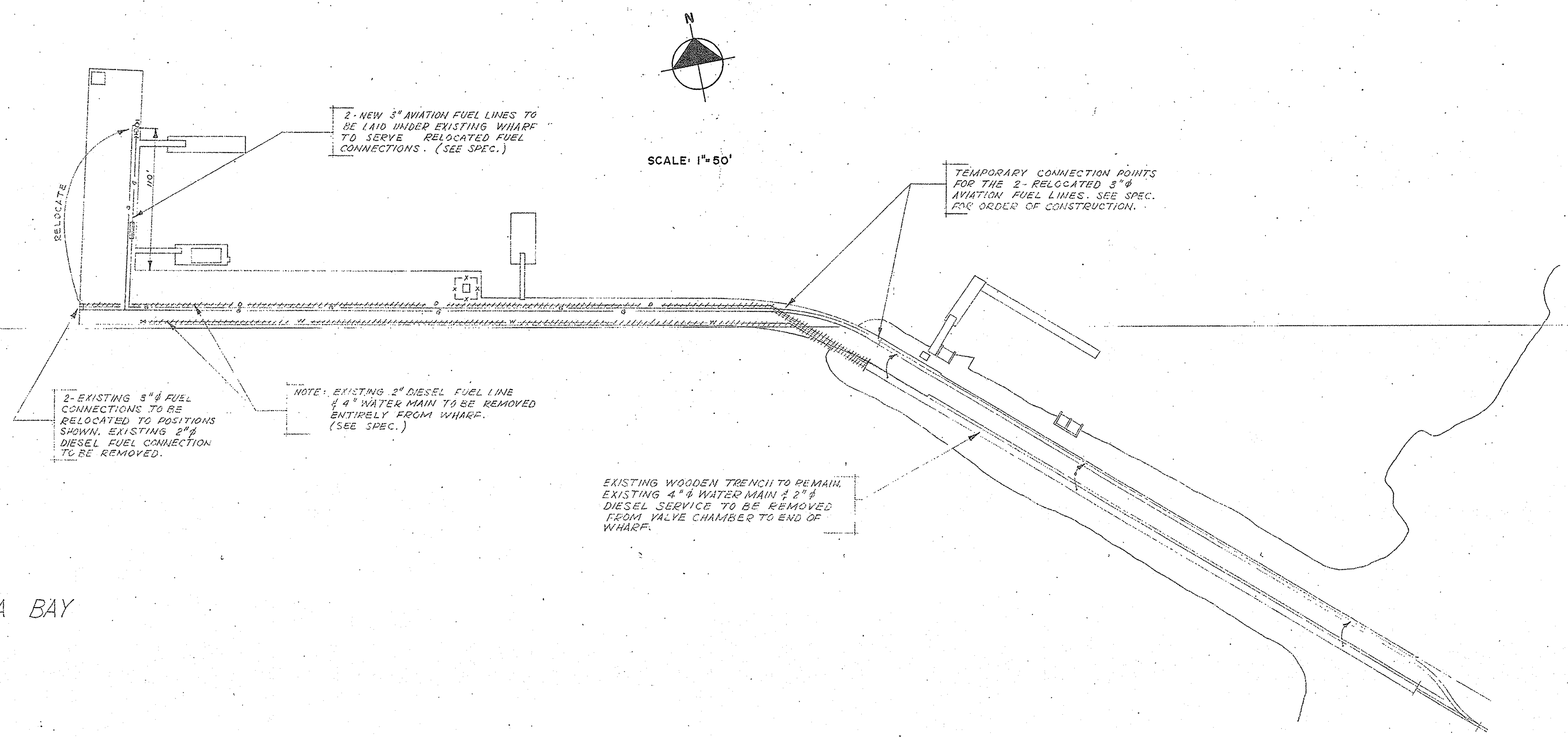
project title / titre du projet
MARINE STRUCTURES
INSTITUTE OF OCEAN SCIENCES
PATRICIA BAY B.C.

drawing title / titre du dessin
DETAILS OF VALVE PIT & SERVICE TRENCH ON APPROACH PIER.

designed by E.CROWDIS R.F.DAVIS / conçu par
date AUG. 14, 1974
drawn by E. CROWDIS / dessiné par
date
reviewed by R.F. DAVIS / examiné par
date
approved by / approuvé par
date
Tender / Soumission
D.P.W. Project Manager / Administrateur de projets M.T.P.
project number / no. du projet
89323
drawing no. / dessin no.
M-3

DPW 700E





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VANCOUVER 9, B.C.

D.W.T. JOB NO. 4306-03

A detail no. / détail no.
B location drawing no. / sur dessin no.
C drawing no. / dessin no.

revisions		date
	1. AVIATION FUEL CONN. TO BE REMOVED FROM NORTH FINGER & RELOCATED TO SOUTH FINGER.	
1	2. SERVICES TO NORTH FINGER REVISED	25/11/74
	3. EXPANSION LOOP LOCATION REVISED	
	4. TEMPORARY RELOCATION OF AVIATION FUEL LINES ON APPROACH PIER DELETED	
	5. KIOSKS AT BENTS 5 & 9 DELETED	

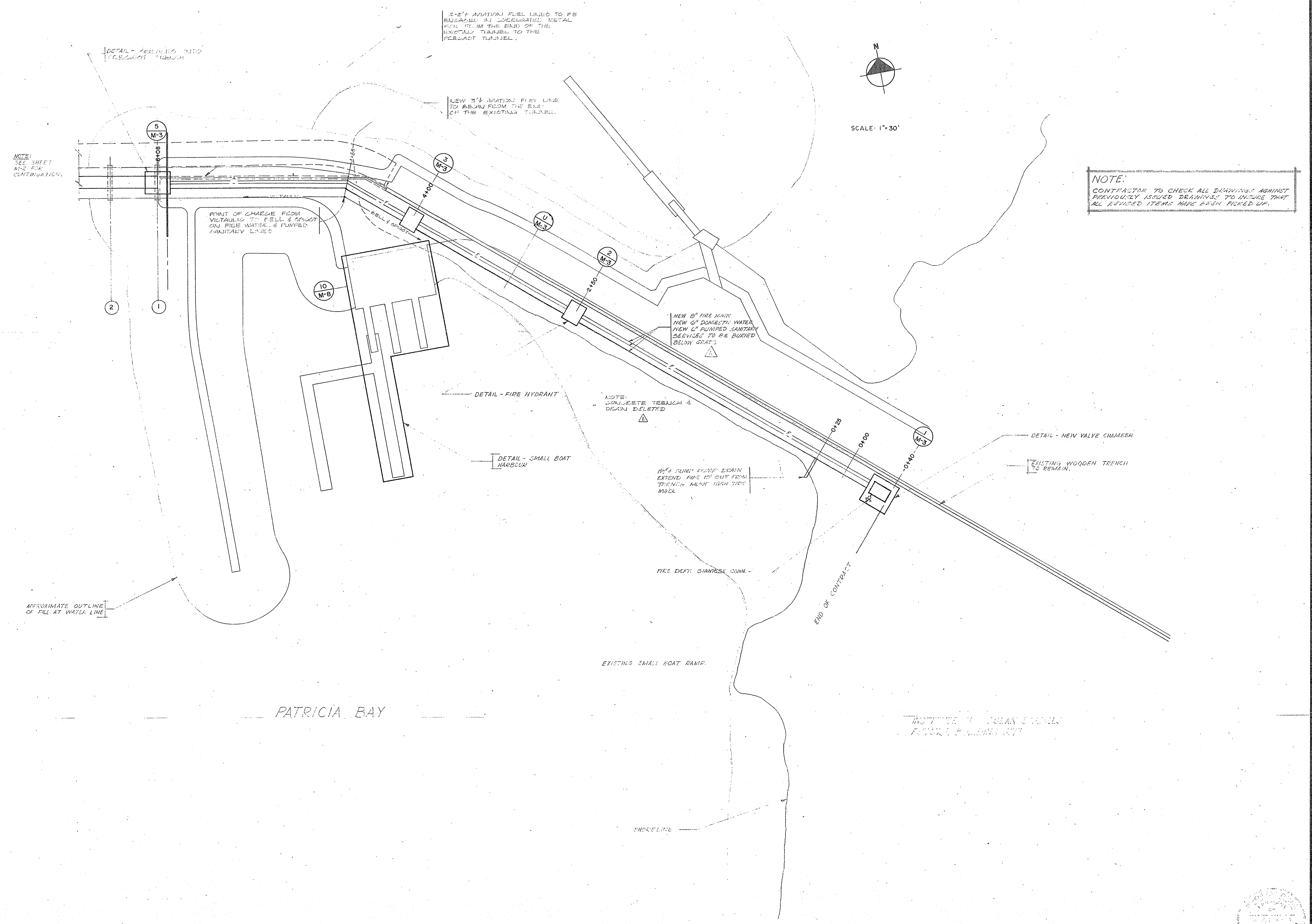
project title / titre du projet
MARINE STRUCTURES
INSTITUTE OF OCEAN SCIENCES.
PATRICIA BAY B.C.

drawing title / titre du dessin
PARTIAL SITE PLAN (WEST)

designed by / conçu par	E.CROWDIS R.F.DAVIS	
date	AUG. 14, 1974	
drawn by / dessiné par	E.CROWDIS	
date		
reviewed by / examiné par	R. F. DAVIS	
date	R. F. Davis	
approved by / approuvé par		
date		
Tender / Soumission		
D.P.W. Project Manager / Administrateur de projets M.T.P.		
project number / no. du projet	89323	
drawing no. / dessin no.	M-2	

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — R. F. DAVIS

DPW 700E


NOTE:
SEE SHEET M-2 FOR CONTINUATION.
2-3"⌀ AVIATION FUEL LINES TO BE ENCASED IN CORRUGATED METAL PIPE FROM THE END OF THE EXISTING TUNNEL TO THE PRECAST TUNNEL.
NEW 3"⌀ AVIATION FUEL LINE TO BEGIN FROM THE END OF THE EXISTING TUNNEL.
POINT OF CHARGE FROM VICTAULIC TO BELL & SPIGOT ON FIRE WATER & PUMPED SANITARY LINES
VICTAULIC
BELL & SPIGOT
SCALE: 1"=30'
NOTE:
CONTRACTOR TO CHECK ALL DRAWINGS AGAINST PREVIOUSLY ISSUED DRAWINGS TO INSURE THAT ALL REVISED ITEMS HAVE BEEN PICKED UP.
NEW 8" FIRE MAIN
NEW 6" DOMESTIC WATER
NEW 6" PUMPED SANITARY
SERVICES TO BE BURIED BELOW GRADE
DETAIL - FIRE HYDRANT
NOTE:
CONCRETE TRENCH & DRAIN DELETED
DETAIL - SMALL BOAT HARBOUR
DETAIL - NEW VALVE CHAMBER
EXISTING WOODEN TRENCH TO REMAIN.
EXTEND PIPE 10' OUT FROM TRENCH ABOVE HIGH TIDE MARK
FIRE DEPT. SIAMESE CONN.
END OF CONTRACT
APPROXIMATE OUTLINE OF FILL AT WATER LINE
EXISTING SMALL BOAT RAMP
PATRICIA BAY
SHORELINE

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1690 WEST BROADWAY
VANCOUVER 9, B.C.

D.W.T. JOB NO. 4306-03

A detail no. / détail no.
B location drawing no. / sur dessin no.
C drawing no. / dessin no.

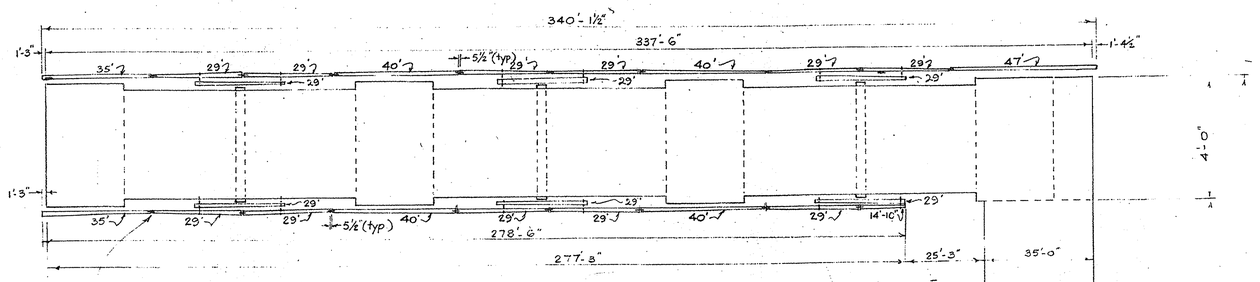
revisions		date
1	TRENCH & DRAIN DELETED, SERVICE BURIED IN GRADE.	25/11/74

project title / titre du projet
MARINE STRUCTURES
INSTITUTE OF OCEAN SCIENCES
PATRICIA BAY B.C.

drawing title / titre du dessin
PARTIAL SITE PLAN (EAST)

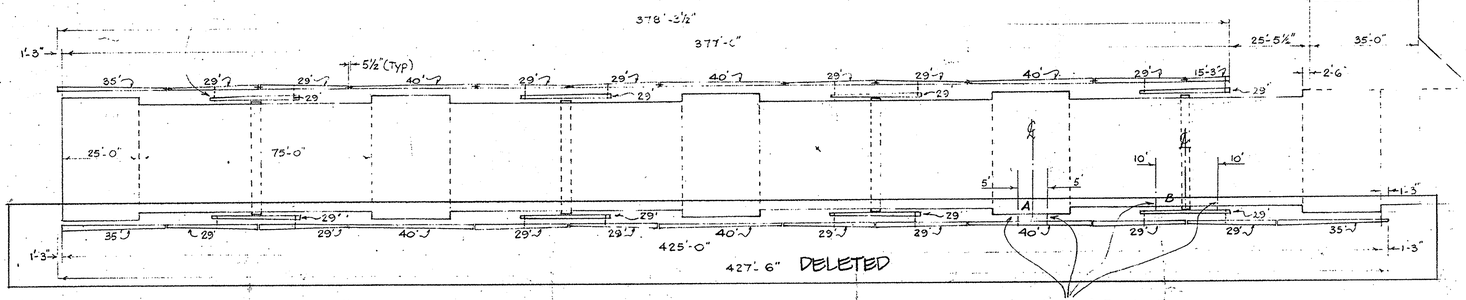
designed by / conçu par: E. CROWDIS R.F. DAVIS
date: AUG. 14, 1974
drawn by / dessiné par: E. CROWDIS
date:
reviewed by / examiné par: R.F. DAVIS
date:
approved by / approuvé par:
date:
Tender / Soumission
D.P.W. Project Manager / Administrateur de projets M.T.P.
project number / no. du projet: 89323
drawing no. / dessin no.: M-1

DPW 700E



Note: ¾" ϕ Galv. Connecting Chains through 4" ϕ Holes in Logs with min. 12" clear between Holes and Log ends. Logs to be placed tip to tip and butt to butt

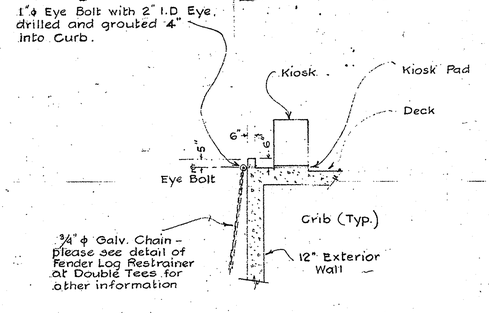
Similar Chain Connection between the two rows of Logs



PLAN OF LAYOUT

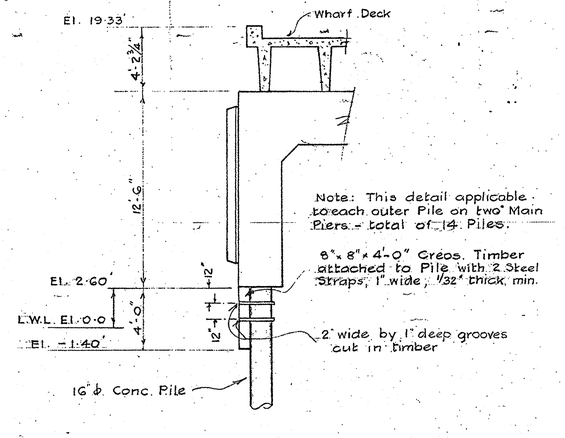
Scale: 1" = 20'

Location of Fender Log Restrainer Systems (Typ.)
A - at Cribs, B - at double T's



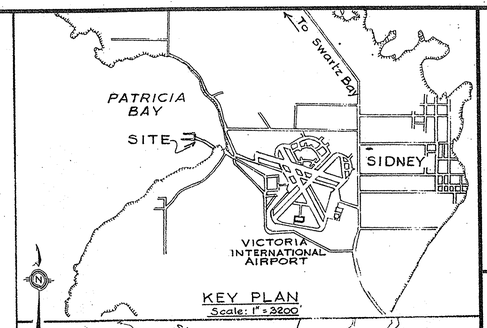
DETAIL OF FENDER LOG RESTRAINER SYSTEM AT CRIBS

Scale: 1" = 4'



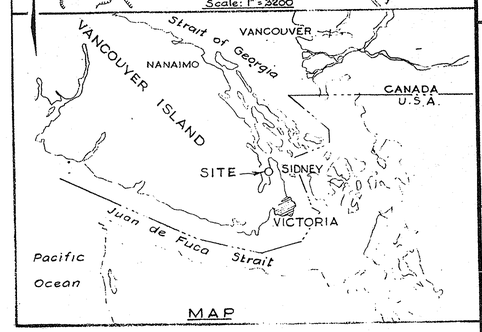
DETAIL OF FENDER LOG RUBBING TIMBERS

Scale: 1" = 4'

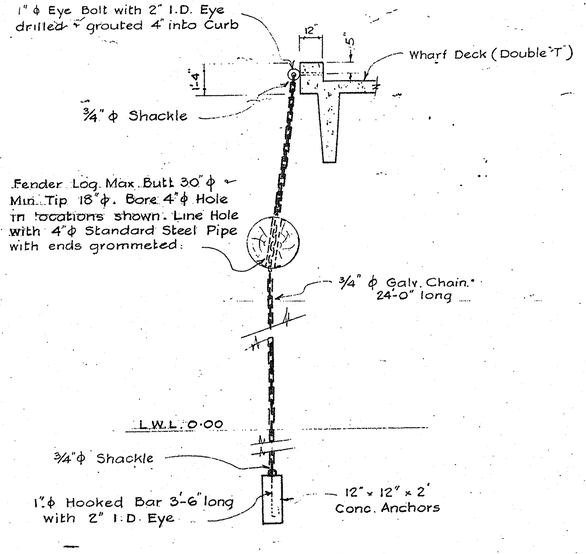


KEY PLAN

Scale: 1" = 3200'



MAP



DETAIL OF FENDER LOG RESTRAINER AT DOUBLE T's

Scale: ⅜" = 1'

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INSTITUTE OF OCEAN SCIENCES ENVIRONMENT CANADA

A detail no. / dessin no.
B location drawing no. / sur dessin no.
C drawing no. / dessin no.
revisions / date

REV. 1. ALL LOGS SOUTH SIDE DELETED

project title / titre du projet

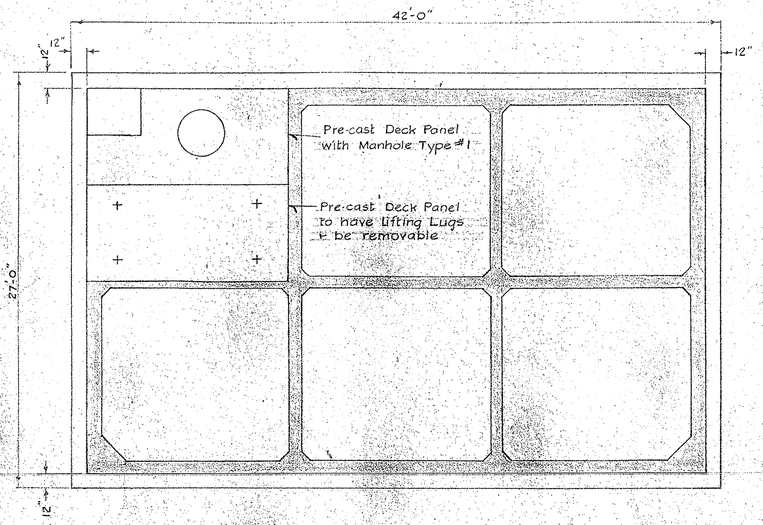
PATRICIA BAY, B.C.
MARINE FACILITY

drawing title / titre du dessin

FENDER LOGS

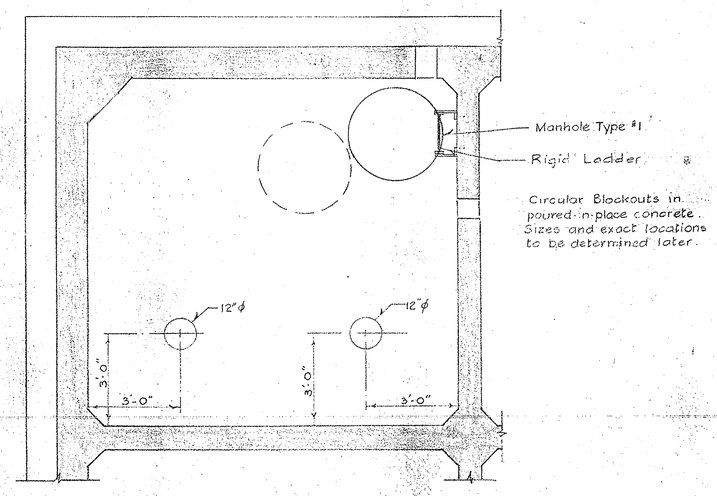
designed by / conçu par
date
drawn by W.G.F. / dessiné par
date 6.4.76
reviewed by / examiné par
date
approved by / approuvé par
date N.A Todd
Tender / Soumission
D.P.W. Project Manager / Administrateur de projets M.T.P.
project number / no. du projet
OAS-CONS-0001
drawing no. OAS-CONS-0001 / dessin no.
1 of 1

E156-44



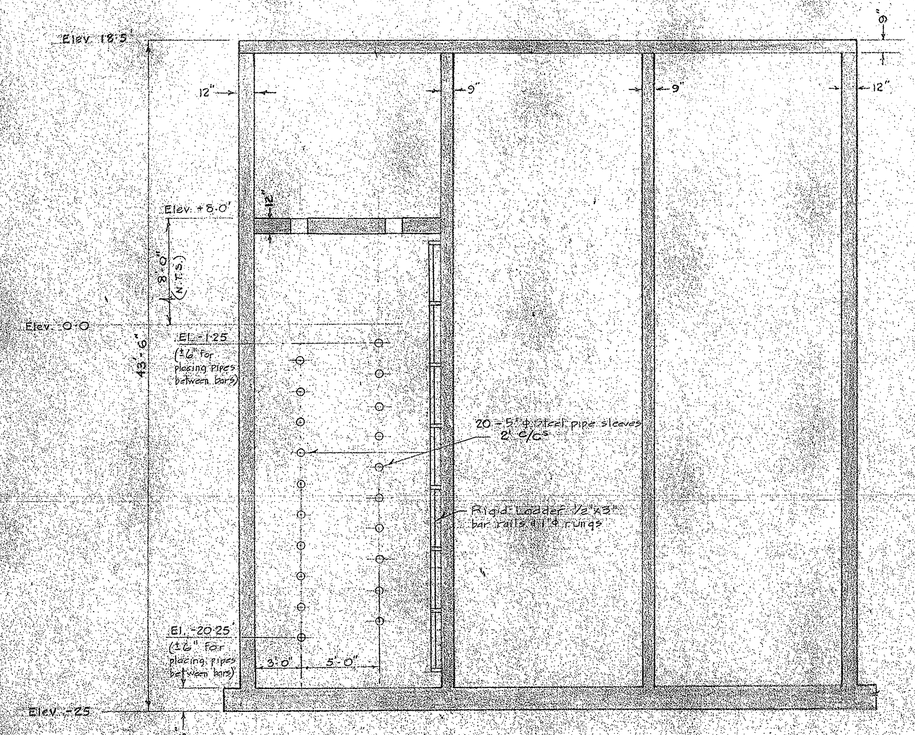
DECK PLAN

Scale: 1" = 4'



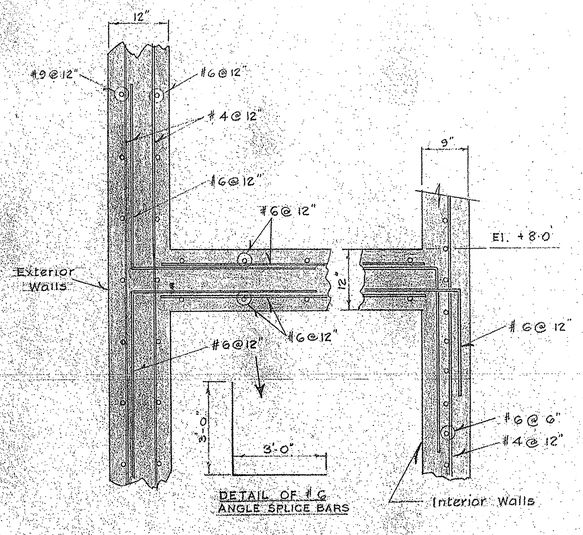
PLAN OF PUMP ROOM

Scale: 1" = 2'



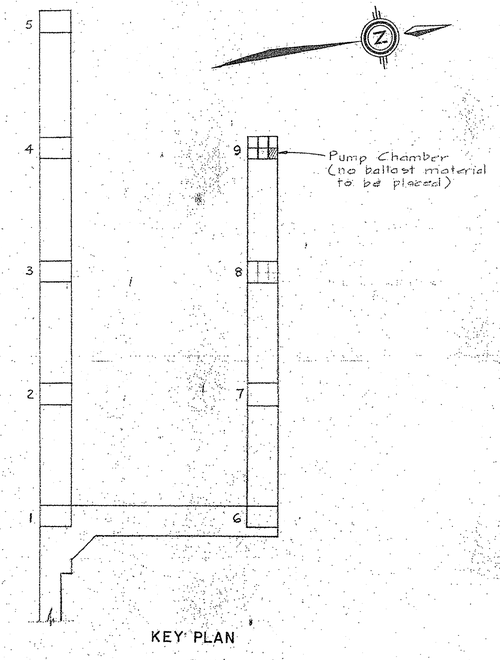
SECTIONAL ELEVATION

Scale: 1" = 4'



PART SECTIONAL ELEVATION SHOWING REINFORCING

Scale: 1" = 1'



KEY PLAN

Scale: 1" = 80' ±

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PACIFIC REGION

A detail no. / détail no.
B location drawing no. / sur dessin no.
C drawing no. / dessin no.
revisions / date

project title / titre du projet

INSTITUTE OF OCEAN SCIENCES MARINE STRUCTURES

drawing title / titre du dessin

SEA WATER INTAKE

designed by / conçu par
date
drawn by WJJ / dessiné par
date 29.7.85
reviewed by / examiné par
date
approved by / approuvé par
date
Tender / Soumission
D.P.W. Project Manager / Administrateur de projets de T.P.
project number / no du projet
drawing no. / dessin no.

1 of 1

DPW 700E

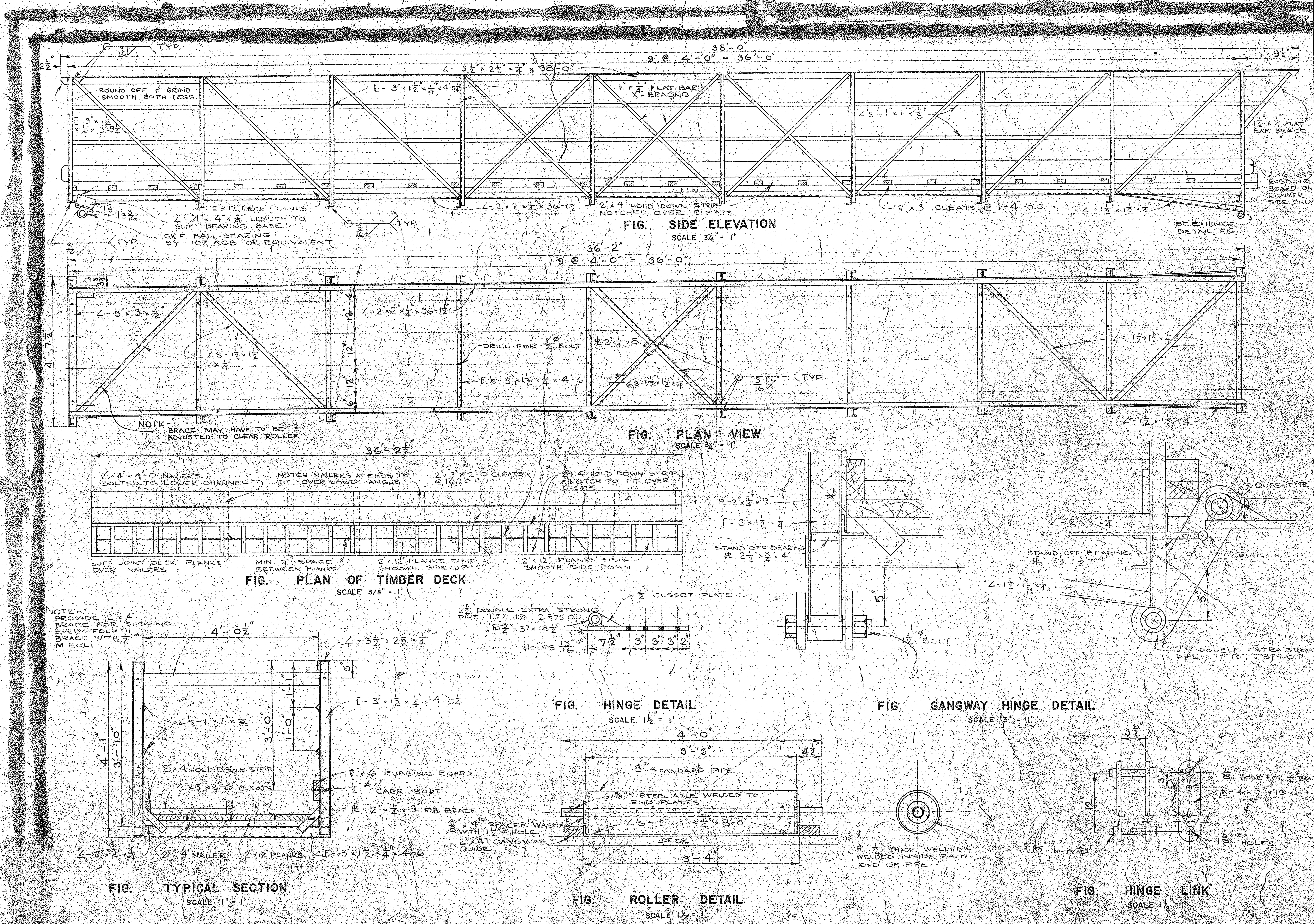
FIG. SIDE ELEVATION
SCALE 3/4" = 1'
38'-0"
9 @ 4'-0" = 36'-0"
ROUND OFF & GRIND SMOOTH BOTH LEGS
1" x 1/4" FLAT BAR X-BRACING
2" x 12" DECK PLANKS
SKF BALL BEARING SY 107 ACB OR EQUIVALENT
2" x 4 HOLD DOWN STRIP NOTCHED OVER CLEATS
2" x 3" CLEATS @ 1'-4" O.C.
SEE HINGE DETAIL FIG.
TYP.
FIG. PLAN VIEW
SCALE 3/4" = 1'
36'-2"
9 @ 4'-0" = 36'-0"
DRILL FOR 1/2" BOLT
NOTE - BRACE MAY HAVE TO BE ADJUSTED TO CLEAR ROLLER
FIG. PLAN OF TIMBER DECK
SCALE 3/8" = 1'
36'-2 1/2"
NOTCH NAILERS AT ENDS TO FIT OVER LOWER ANGLE
BUTT JOINT DECK PLANKS OVER NAILERS
2" x 12" PLANKS S4S SMOOTH SIDE UP
2" x 12" PLANKS S4S SMOOTH SIDE DOWN
NOTE - PROVIDE 2 x 4 BRACE FOR SHIPPING EVERY FOURTH BRACE WITH 1/2" M.BOLT
FIG. TYPICAL SECTION
SCALE 1" = 1'
4'-0 1/2"
2" x 4 HOLD DOWN STRIP
2" x 4" NAILER
2" x 12" PLANKS
2" x 6 RUBBING BOARD
1/2" CARR. BOLT
FIG. HINGE DETAIL
SCALE 1 1/2" = 1'
2 1/2" DOUBLE EXTRA STRONG PIPE 1.771 I.D. 2.875 O.D.
1/2" GUSSET PLATE
FIG. GANGWAY HINGE DETAIL
SCALE 3" = 1'
3" GUSSET PL
STAND OFF BEARING
FIG. ROLLER DETAIL
SCALE 1 1/2" = 1'
4'-0"
3'-3"
3'-4"
3" STANDARD PIPE
DECK
FIG. HINGE LINK
SCALE 1 1/2" = 1'

Department of Public Works
Ministère des Travaux publics

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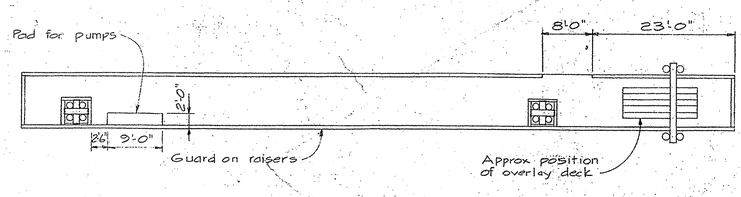
ENVIRONMENT CANADA

PATRICIA BAY, B.C.
MARINE FACILITY

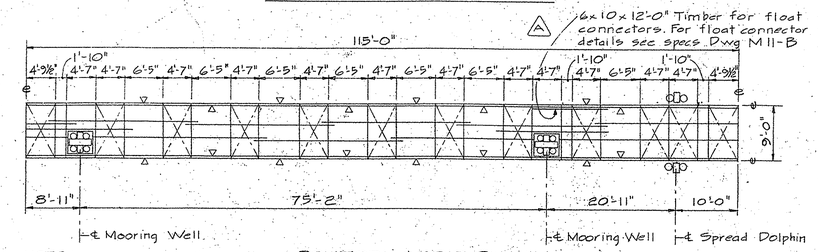
STANDARD 4' x 36'
STEEL - GANGWAY

89323

S 23



GUARD & OVERLAY DECK PLAN



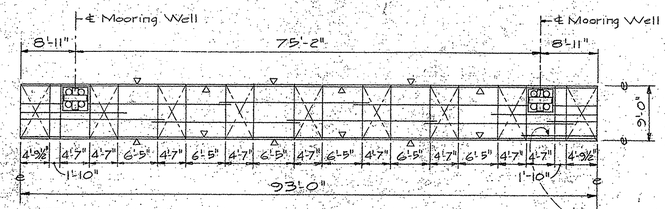
NOTE
- Install pontoon at each position marked thus X

PONTOON & GRID PLAN

9'x115' PONTOON FLOAT

1"=10'

GUARD & DECK PLAN

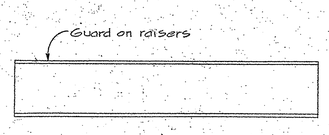


NOTE
- Install pontoon at each position marked thus X

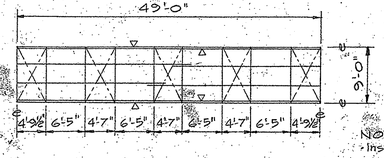
PONTOON & GRID PLAN

9'x93' PONTOON FLOAT

1"=10'



GUARD & DECK PLAN

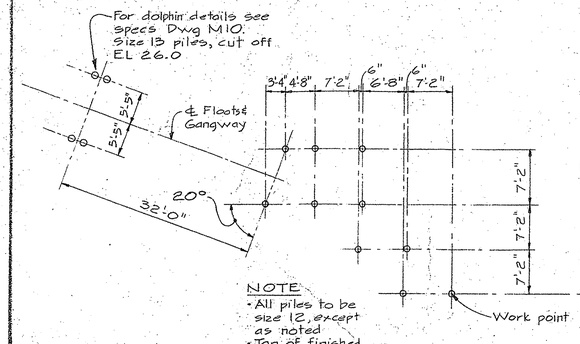


NOTE
- Install pontoon at each position marked thus X

PONTOON & GRID PLAN

9'x49' PONTOON FLOAT

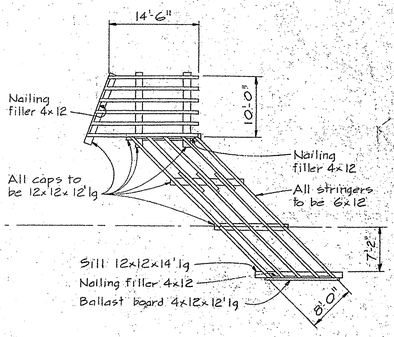
1"=10'



NOTE
- All piles to be size 12, except as noted
- Top of finished deck EL 17.0

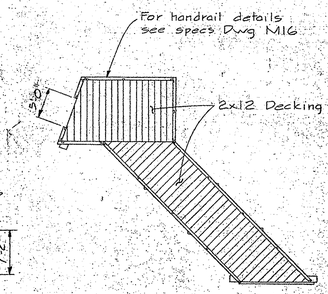
PLAN - PILE LAYOUT

1"=10'



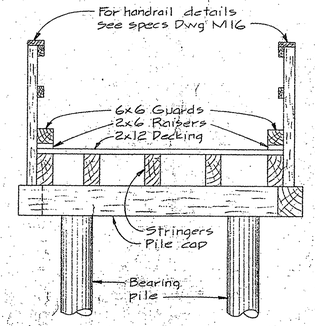
PLAN - PILE CAP & STRINGER LAYOUT

1"=10'



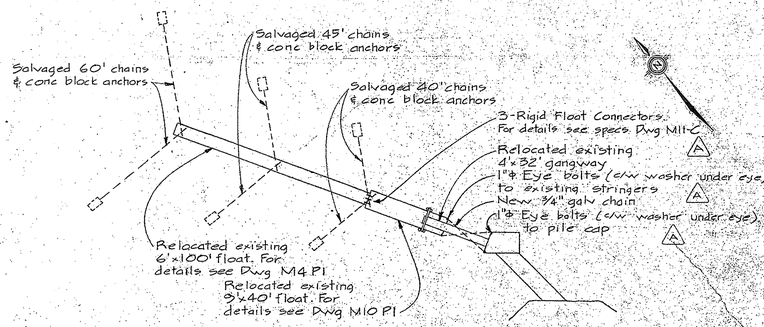
PLAN - DECK & HANDRAIL LAYOUT

1"=10'



TYPICAL SECTION THRU SEAPLANE BASE APPROACH

½"=1'-0"



PLAN OF SEAPLANE BASE

1"= 30'

SEAPLANE BASE

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PACIFIC REGION

INSTITUTE OF OCEAN SCIENCES ENVIRONMENT CANADA

A detail no. / détail no.
B location drawing no. / sur dessin no.
C drawing no. / dessin no.

revisions	date
A- Plan of Seaplane Base revised. Float connecter details added for 9'x115' & 9'x93' floats.	

project title / titre du projet

PATRICIA BAY, B.C.
MARINE FACILITY

drawing title / titre du dessin

LAUNCHING PIER FLOATS, SEAPLANE BASE PLAN AND DETAILS

designed by / conçu par
date 15-8-74

drawn by H.P.T. / dessiné par
date

reviewed by / examiné par
date

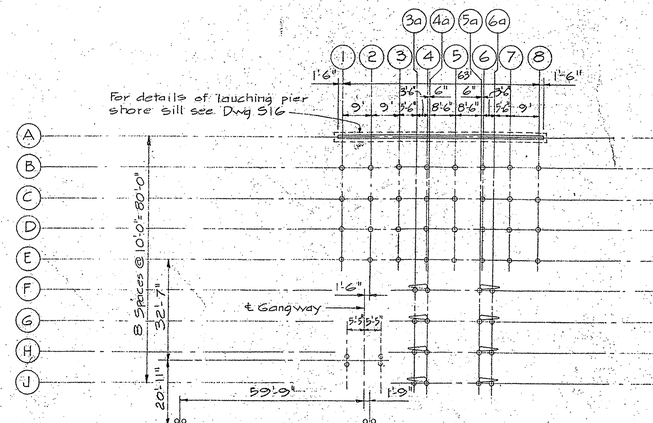
approved by / approuvé par
date

Tender / Soumission
D.P.W. Project Manager / Administrateur de projets M.T.P.

project number / no. du projet
89323

drawing no. / dessin no.
S 22

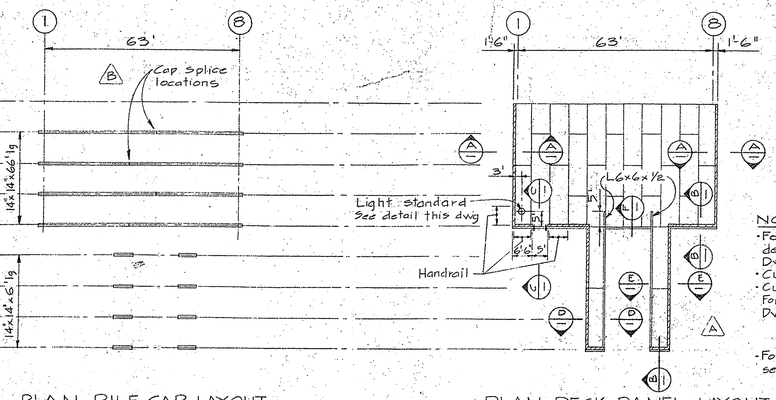
DPW 700E



PLAN - PILE LAYOUT
1" = 20'

NOTE
- All piles to be size 13
- For dolphin details see specs Dwg M10

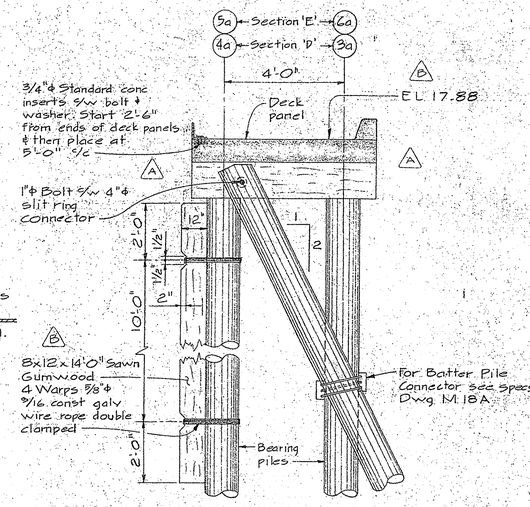
LEGEND
o Bearing pile
⊂ Batter pile



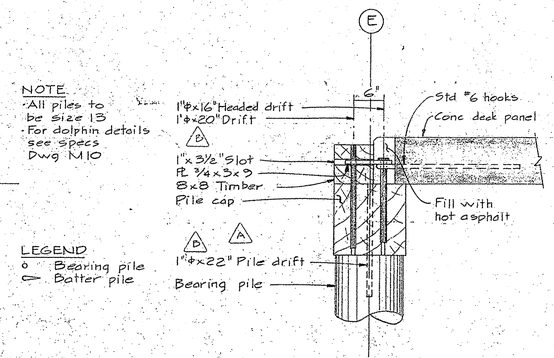
PLAN - PILE CAP LAYOUT
1" = 20'

PLAN - DECK PANEL LAYOUT
1" = 20'

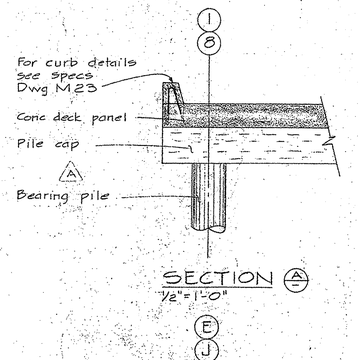
NOTE
- For details for conc deck panels see specs Dwgs M21, M22 & M24
- Curb shown thus ▭
- Curb to be cast in field. For details see specs Dwg M23
- For details for handrail see specs Dwg M16-A



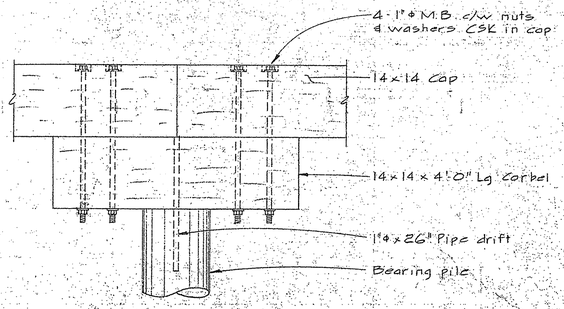
SECTION (D)
SECTION (E) SIMILAR BUT OPP HAND
1/2" = 1'-0"



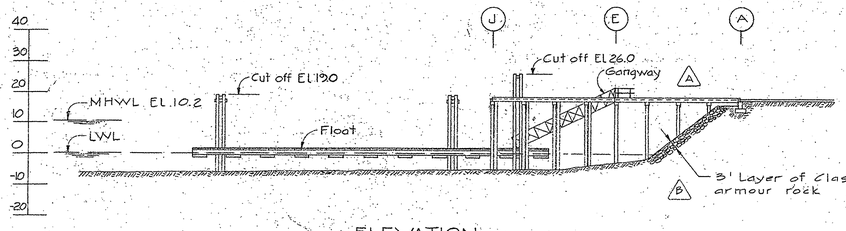
SECTION (F)
1" = 1'-0"



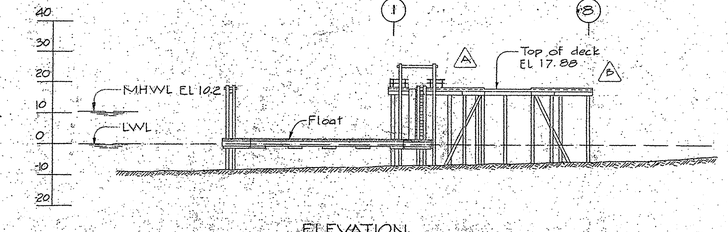
SECTION (A)
1/2" = 1'-0"



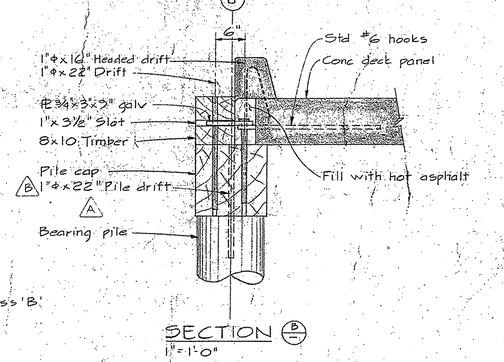
B CORBEL DETAIL
1" = 1'-0"



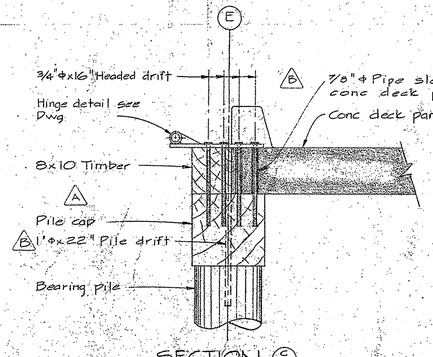
ELEVATION
(Looking west)
1" = 20'



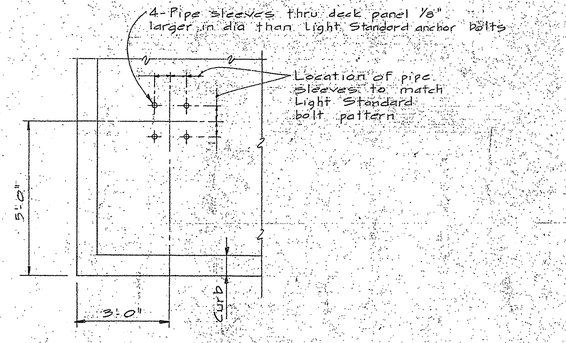
ELEVATION
(Looking north)
1" = 20'



SECTION (B)
1" = 1'-0"



SECTION (C)
1" = 1'-0"



B LIGHT STANDARD BASE DETAIL
N.T.S.

A

Public Works Canada / Travaux publics Canada

PACIFIC REGION

INSTITUTE OF OCEAN SCIENCES
ENVIRONMENT CAN

A detail no. / B location drawing no. / C drawing no. / dessin no.

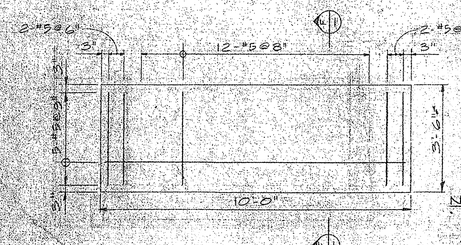
revisions / date
A - Fascia deleted Dec 2/74
B - Pile cap layout, Sections 'B', 'D', 'E', 'F' & elevations revised. Corbel & Light Standard Bas details added.

project title / titre du projet
PATRICIA BAY, B.C.
MARINE FACILITY

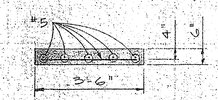
drawing title / titre du dessin
LAUNCHING PIER
PLAN AND DETAILS

designed by / conçu par
date 10-74
drawn by L.D.T. / dessiné par
date
reviewed by / examiné par
date
approved by / approuvé par
date
Tender / Soumission
D.P.W. Project Manager / Administrateur de projets M.T.P.
project number / no. du projet
89323
drawing no. / dessin no.
S 21

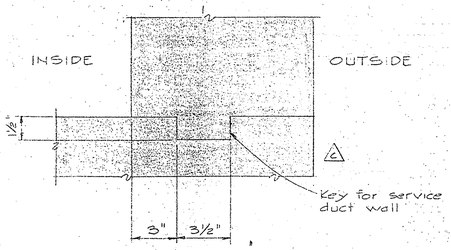
DPW 700E



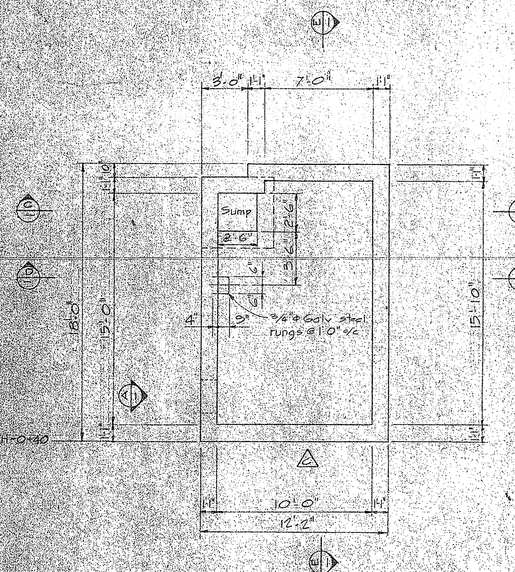
PLAN OF LID FOR EXISTING SERVICE DUCT
1/2"=1'-0"



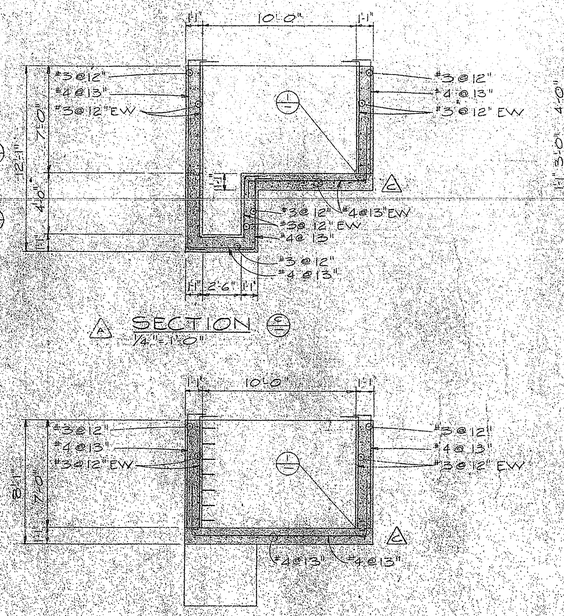
SECTION
1/2"=1'-0"



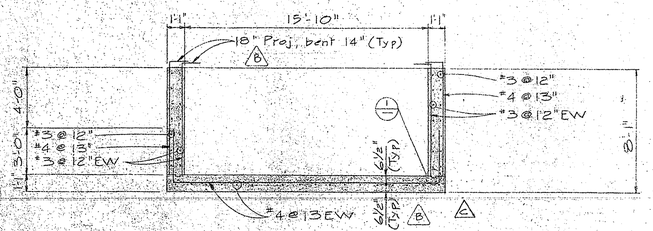
DETAIL
3"=1'-0"



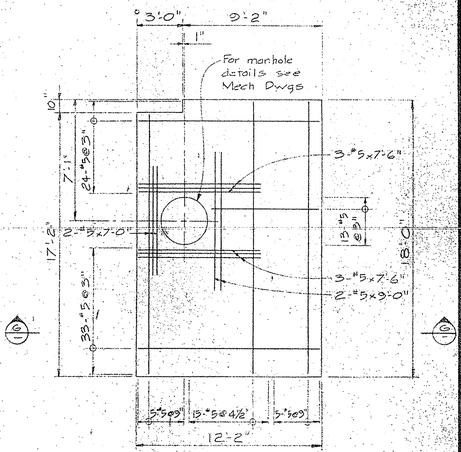
PLAN OF VALVE PIT
Shown without fixed lid
1/4"=1'-0"



SECTION
1/4"=1'-0"

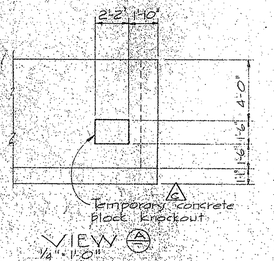


SECTION
1/4"=1'-0"

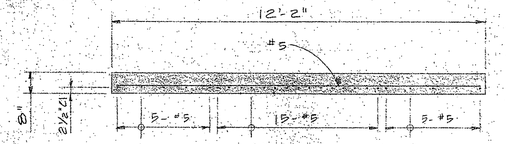


PLAN OF VALVE PIT
FIXED LID
1/4"=1'-0"

SECTION
1/4"=1'-0"



VIEW
1/4"=1'-0"



SECTION
1/2"=1'-0"

NOTES
- Exterior walls to be coated with bitumastic damp-proofing compound.
- Refrences: See Mech Dwg M1 & M3
  See Elec Dwg E1

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PACIFIC REGION

INSTITUTE OF OCEAN SCIENCES
ENVIRONMENT CANADA

A detail no. / détail no.
B location drawing no. / sur dessin no.
C drawing no. / dessin no.
revisions / date

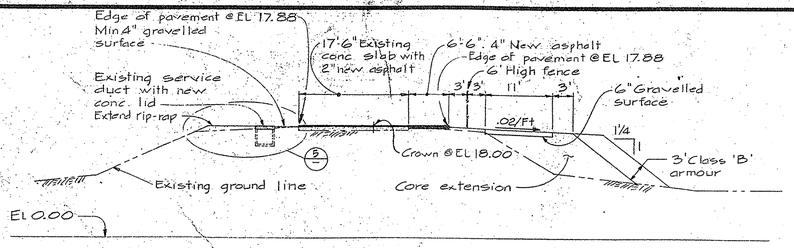
A - Plan of Valve Pit & Section 'D' & 'E' revised. Section thru Service Duct, Removable Service Duct Lid, Section 'A' & 'B', Fixed Service Duct Lid at CH 4+94, Jet at Service Duct and Abutment & Lid Fire Hydrant Location & Lid, deleted. Lid for Existing Service Duct & Section 'F' added. Dec 2/74
B - Lid for Existing Service Duct, Section 'C', 'D', 'E' & 'F' Revised, Section 'G' & Notes added
C - As built.

project title / titre du projet
PATRICIA BAY, B.C.
MARINE FACILITY

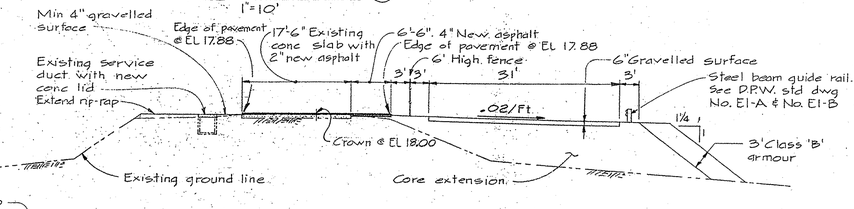
drawing title / titre du dessin
CAUSEWAY
SERVICE DUCT
CONC OUTLINE & REINF

designed by / conçu par
date 12-9-74
drawn by H.D.T / dessiné par
date
reviewed by / examiné par
date
approved by / approuvé par
date
Tender / Soumission
D.P.W. Project Manager / Administrateur de projets T.A.P.
project number / no. du projet
89323
drawing no. / dessin no.
S 20

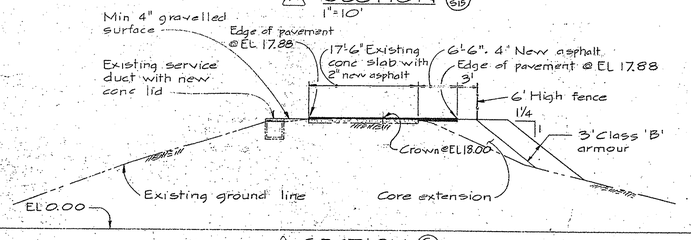
DPW 7058



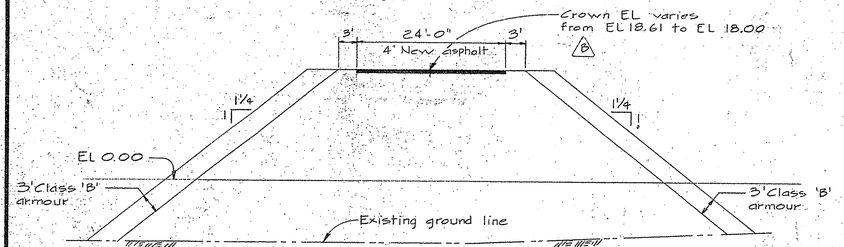
A SECTION (A/S15)
1"=10'



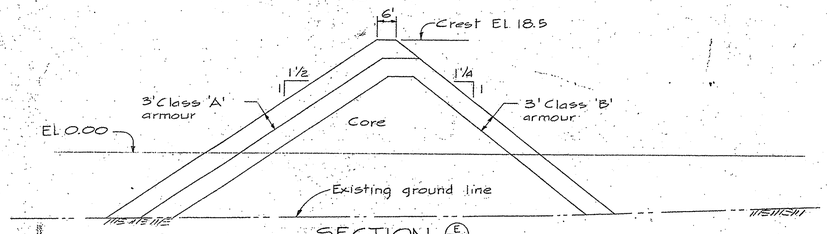
A SECTION (B/S15)
1"=10'



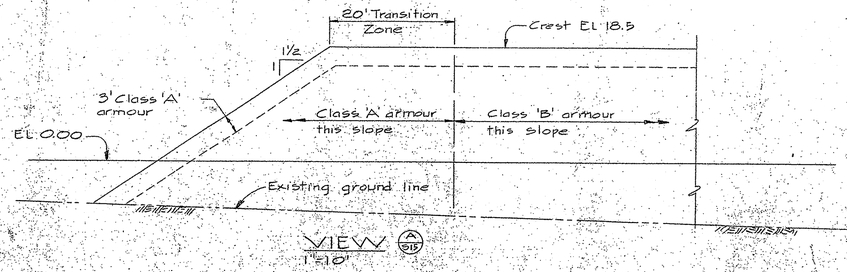
A SECTION (C/S15)
1"=10'



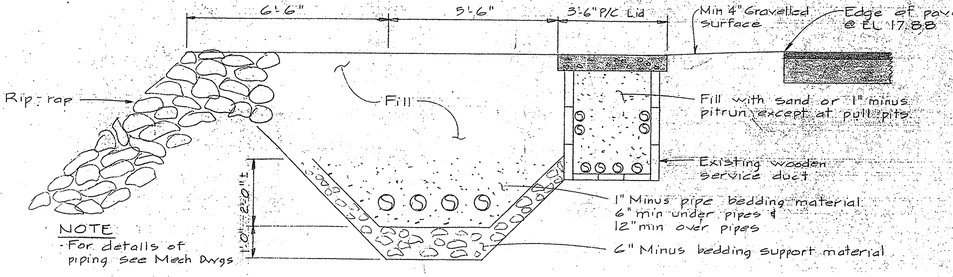
A SECTION (D/S15)
1"=10'



SECTION (E/S15)
1"=10'

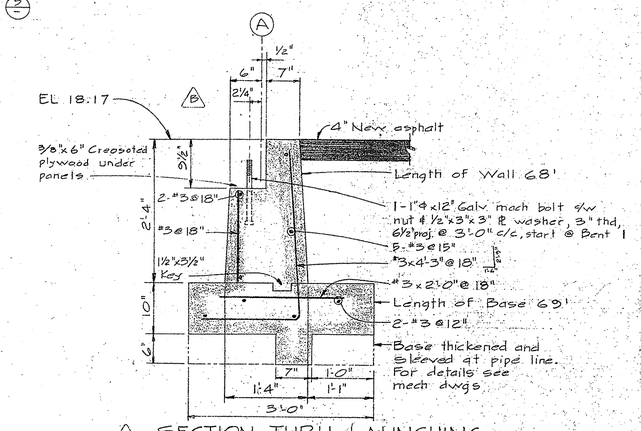


VIEW (A/S15)
1"=10'

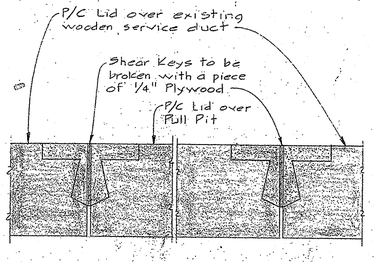


NOTE
· For details of piping see Mech Dwgs

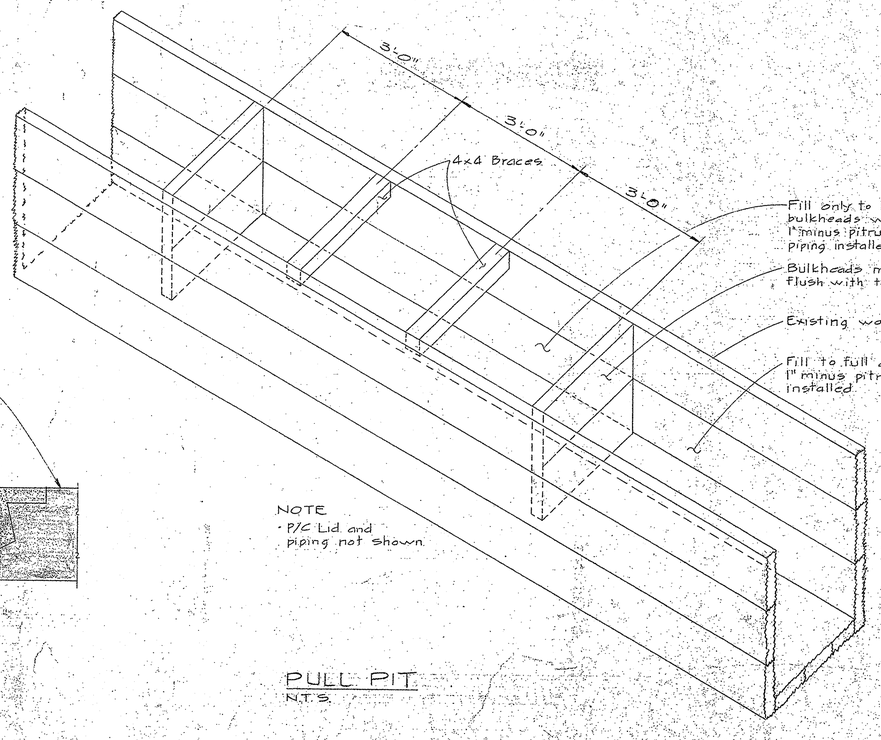
DETAIL (B/S15)
1/2"=1'-0"



A SECTION THRU LAUNCHING PIER SHORE SILL
1"=1'-0"



PULL PIT P/C LID
N.T.S.



NOTE
· P/C Lid and piping not shown

PULL PIT
N.T.S.

Public Works Canada / Travaux publics Canada

PACIFIC REGION

INSTITUTE OF OCEAN SCIENCES ENVIRONMENT CANADA

A detail no. / détail no.
B location drawing no. / sur dessin no.
C drawing no. / dessin no.

revisions / date

A - Sections 'A' 'B' & 'D' & section thru launching pier shore sill revised. Detail '1' '2' '3' & '4' & section thru retaining wall deleted. Dec 2/74

B - Section thru launching pier shore sill & section 'D' revised. Detail '5' Pull Pit added.

project title / titre du projet

PATRICIA BAY, B.C.
MARINE FACILITY

drawing title / titre du dessin

CAUSEWAY
TYPICAL SECTIONS
AND DETAILS

designed by / conçu par
date 15-8-74

drawn by H.D.T. / dessiné par
date

reviewed by / examiné par
date

approved by / approuvé par
date 15-8-74

Tender / Soumission
D.P.W. Project Manager / Administrateur de projets M.T.P.

project number / no. du projet
89323

drawing no. / dessin no.
S 19

DPW 700E

LEGEND

▩	Existing concrete slab covered with 2" new asphalt
▨	4" of new asphalt
▓	Gravelled Surface

Scale
1" = 30'

DPW 700E

Public Works Canada **Travaux publics Canada**

PACIFIC REGION

INSTITUTE OF OCEAN SCIENCES ENVIRONMENT CANADA

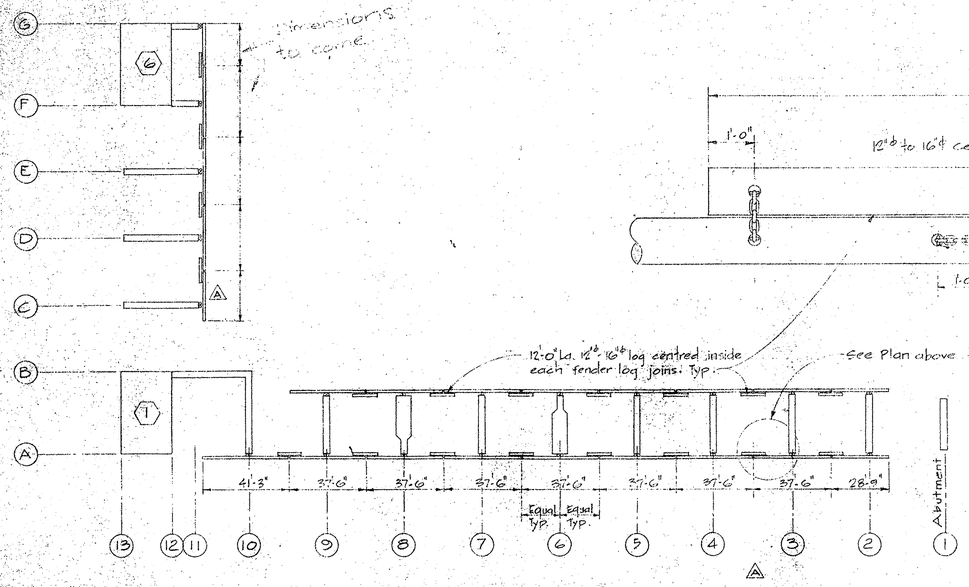
A detail no. détail no.
B location drawing no. sur dessin no.
C drawing no. dessin no.

revisions date
A - General revision. Dec 2/74
B - General revision.

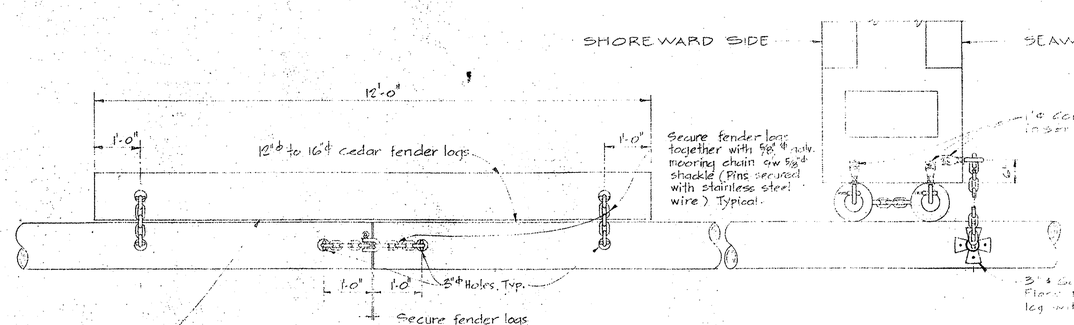
project title titre du projet
PATRICIA BAY, B.C. MARINE FACILITY

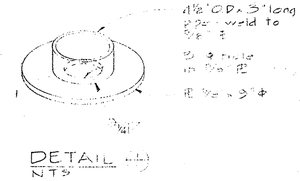
drawing title titre du dessin
CAUSEWAY GENERAL ARRANGEMENT

designed by conçu par
date 13-8-74
drawn by H.T. dessiné par
date
reviewed by examiné par
date
approved by approuvé par
date 13-8-74
Tender Soumission
D.P.W. Project Manager Administrateur de projets M.T.P.
project number no. du projet
89323
drawing no. dessin no.
S 18

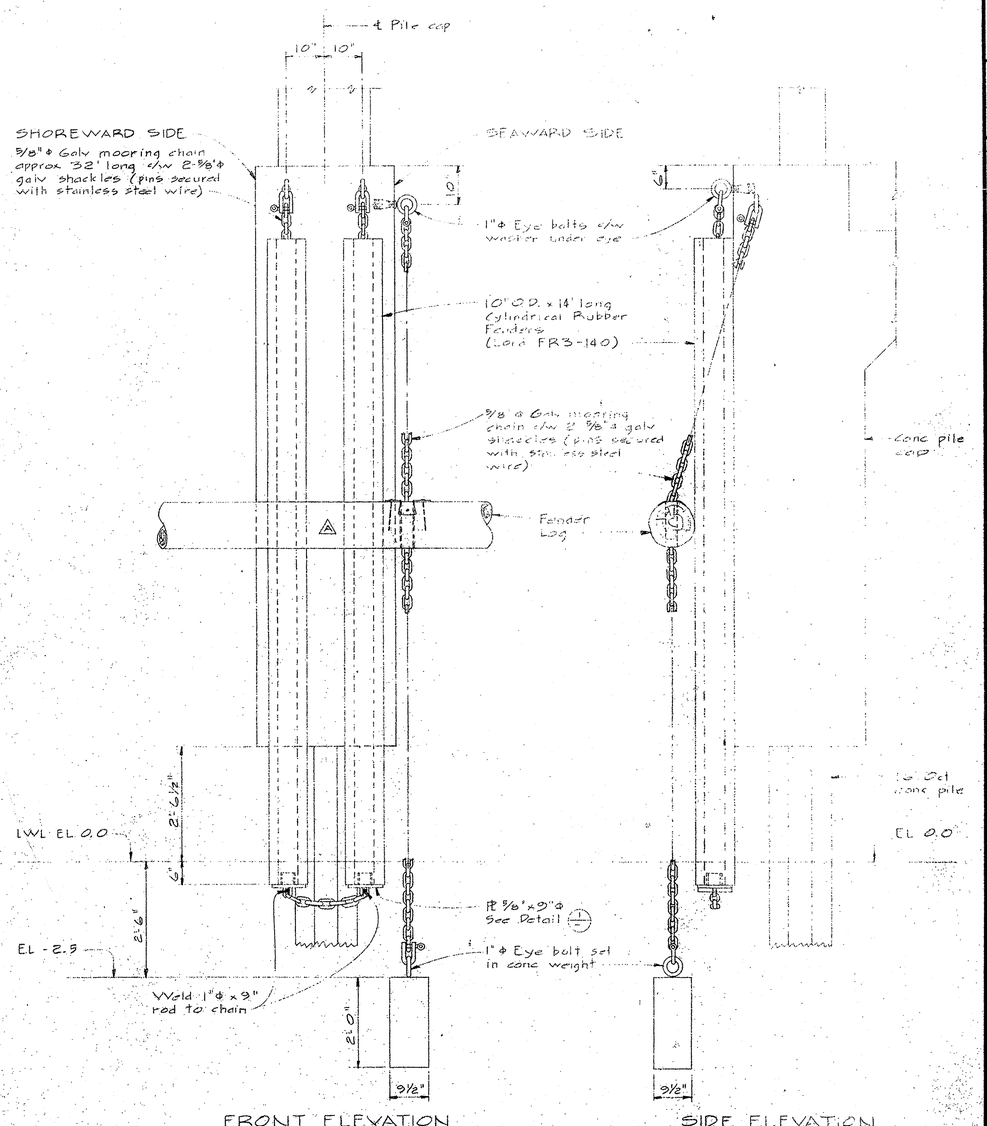


FENDER LOG LAYOUT PLAN
1"=30'





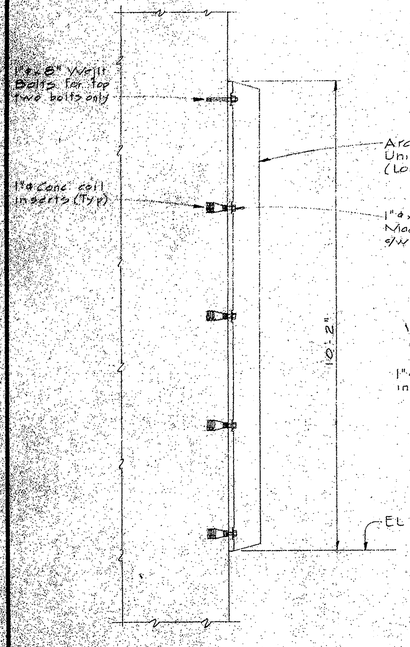
DETAIL
NTS



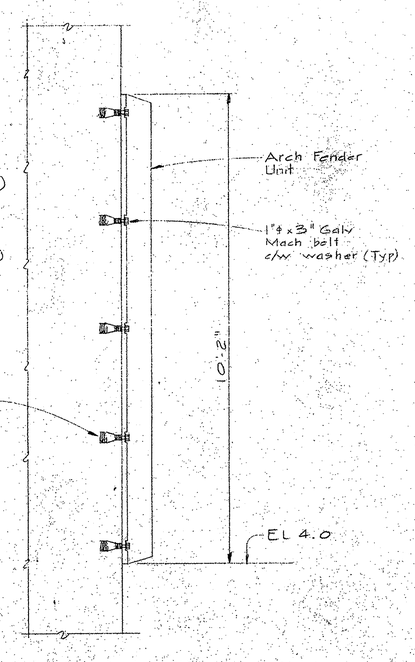
FRONT ELEVATION

SIDE ELEVATION

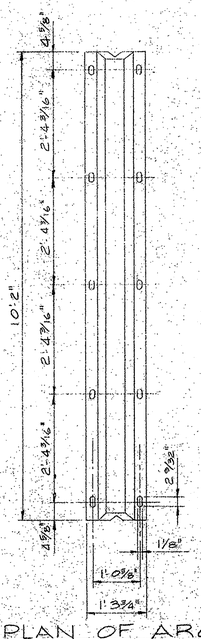
CYLINDRICAL FENDER DETAIL
3/4"=1'-0"



ARCH FENDER UNIT FOR CRIBS
3/4"=1'-0"



ARCH FENDER UNIT FOR MAIN PIERS
3/4"=1'-0"



PLAN OF ARCH FENDER UNIT
3/4"=1'-0"

Public Works Canada / Travaux publics Canada

PACIFIC REGION

INSTITUTE OF OCEAN SCIENCES
ENVIRONMENT CANADA

A detail no. / B location drawing no. / C drawing no. / revisions / date

A - As built.

project title / titre du projet

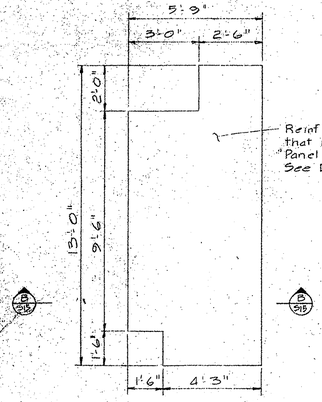
PATRICIA BAY, B.C.
MARINE FACILITY

drawing title / titre du dessin

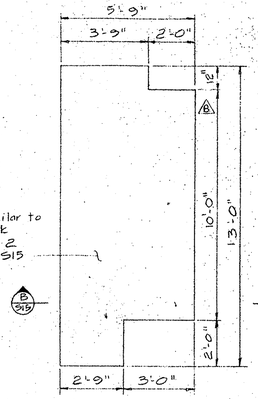
WHARF AND APPROACH
FENDER SYSTEM
DETAILS

designed by / dessiné par
date
drawn by HDT / dessiné par
date
reviewed by / examiné par
date
approved by / approuvé par
date
Tender / Soumission
D.P.W. Project Manager / Administrateur de projets M.T.P.
project number / no. du projet
89323
drawing no. / dessin no.
S 17

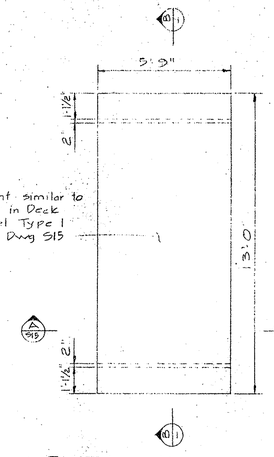
DPW 7008



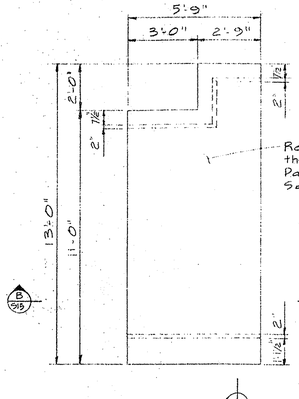
PLAN
DECK PANEL TYPE 12
3/8"=1'-0"



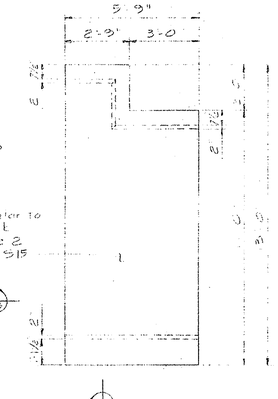
PLAN
DECK PANEL TYPE 14
3/8"=1'-0"



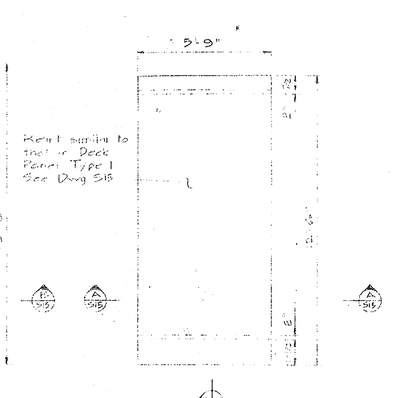
PLAN
DECK PANEL TYPE 15
3/8"=1'-0"



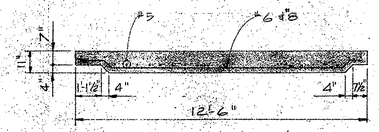
PLAN
DECK PANEL TYPE 16
3/8"=1'-0"



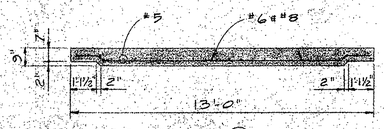
PLAN
DECK PANEL TYPE 17
3/8"=1'-0"



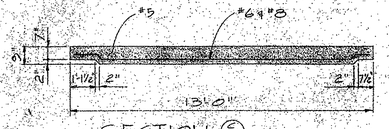
PLAN
DECK PANEL TYPE 18
3/8"=1'-0"



SECTION A S15
3/8"=1'-0"



SECTION B S15
3/8"=1'-0"



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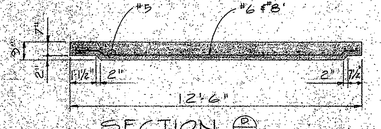
3/8"=1'-0"



SECTION D S15
3/8"=1'-0"

Public Works Canada / Travaux publics Canada

PACIFIC REGION

INSTITUTE OF OCEAN SCIENCES ENVIRONMENT CANADA

A detail no. / détail no.
B location drawing no. / no. dessin no.
C drawing no. / dessin no.

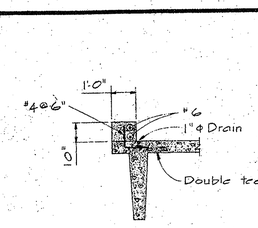
revisions / date
A - New drawing
B - As built.

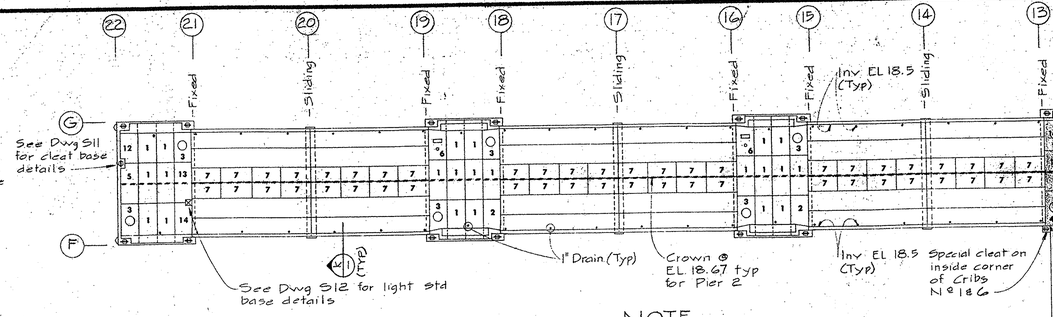
project title / titre du projet
PATRICIA BAY, B.C.
MARINE FACILITY

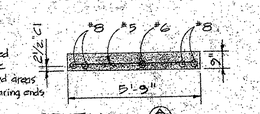
drawing title / titre du dessin
WHARF AND APPROACH
DECK PANEL
DETAILS

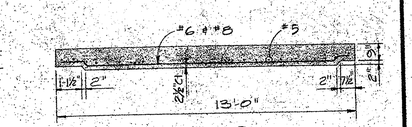
designed by / conçu par
date
drawn by / dessiné par
I.D.T.
date
reviewed by / examiné par
date
approved by / approuvé par
date
Tender / Soumission
D.P.W. Project Manager / Administrateur de projets M.T.P.
project number / no. du projet
89323
drawing no. / dessin no.
S 16

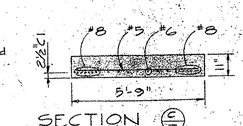
DPW 7078

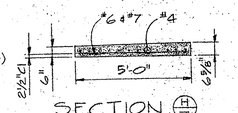


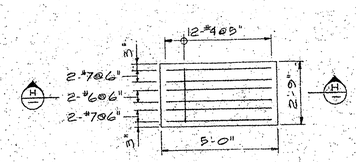


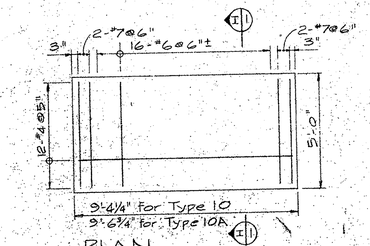


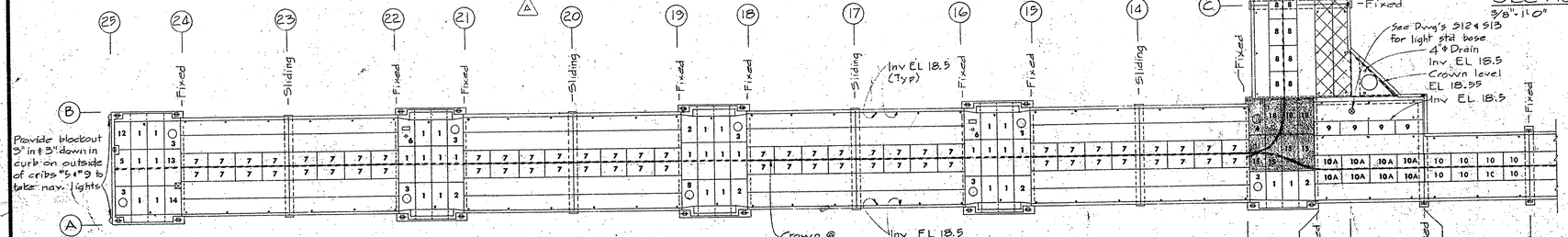


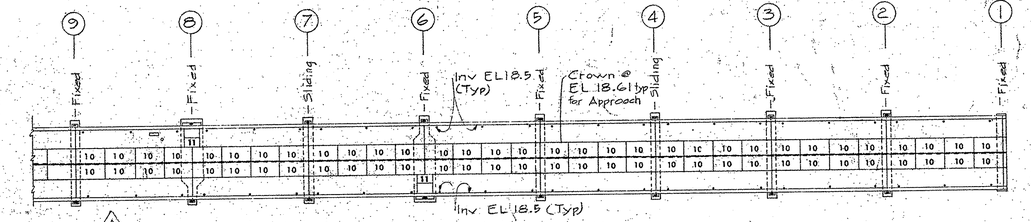












NOTE

- All sliding joints on Pier 1, Pier 2 & Cross Pier shall be 1 1/2" clear with a min. of 3/4" sealant compound c/w backing
- All sliding joints on Approach shall be 2" clear with a min. of 3/4" sealant compound c/w backing

LEGEND

- ━ ━ Denotes crown for drainage
- 3 Denotes deck panel type
- ⊗ & ⊠ Light standard
- ⊖ 555 Lb Liverpool cleat
- ▬ 110 Lb Two post cleat
- ○ Manhole
- ⊕ Fire hydrant & valve

Public Works Canada Travaux publics Canada

PACIFIC REGION

INSTITUTE OF
OCEAN SCIENCES
ENVIRONMENT CANADA

A detail no. détail no.
B location drawing no. sur dessin no.
C drawing no. dessin no.

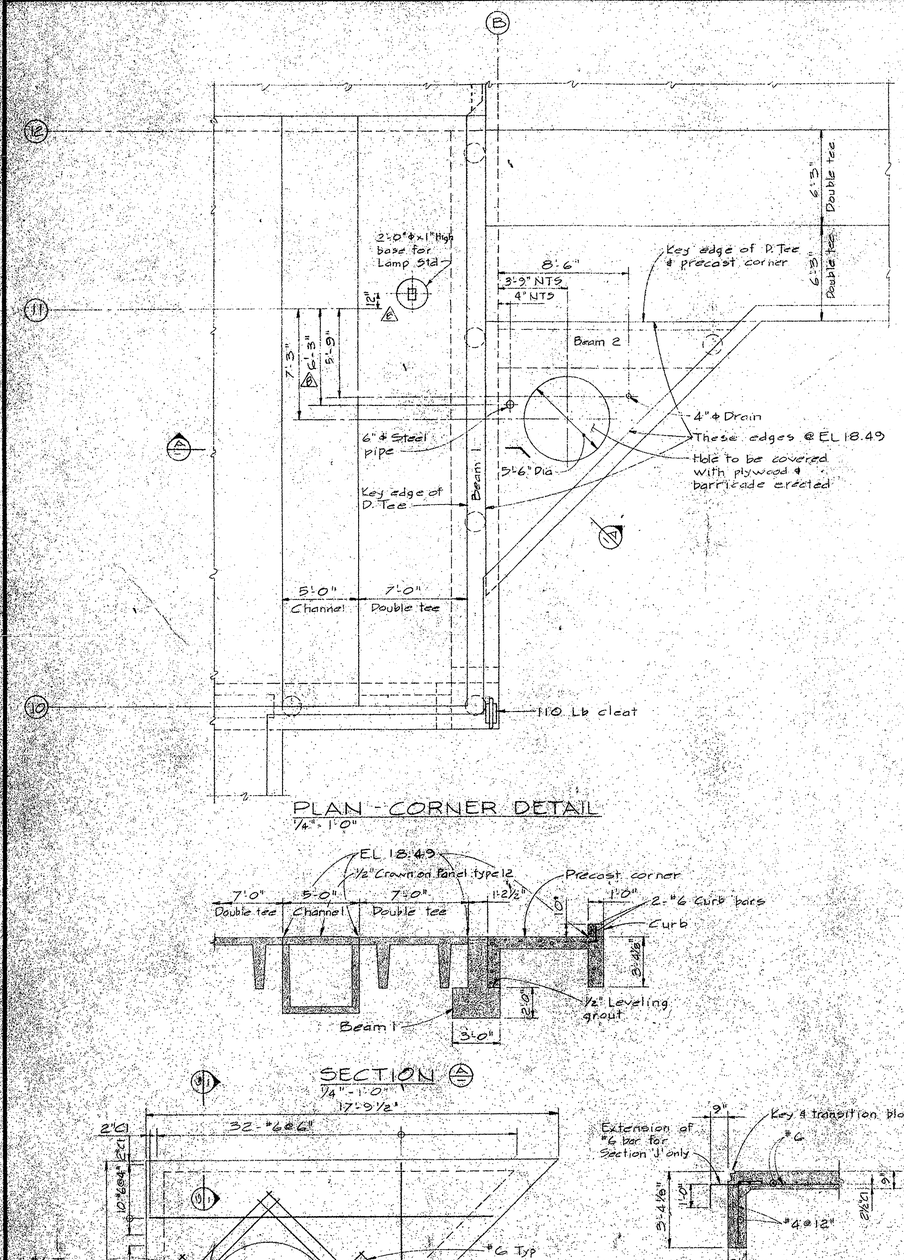
revisions date
A - General revision. Fascia and deck panel panel type 5 & 9 deleted Dec 2/74
B - General revision

project title titre du projet
PATRICIA BAY, B.C.
MARINE FACILITY

drawing title titre du dessin
WHARF AND APPROACH
DECK PANEL AND
DRAINAGE DETAILS

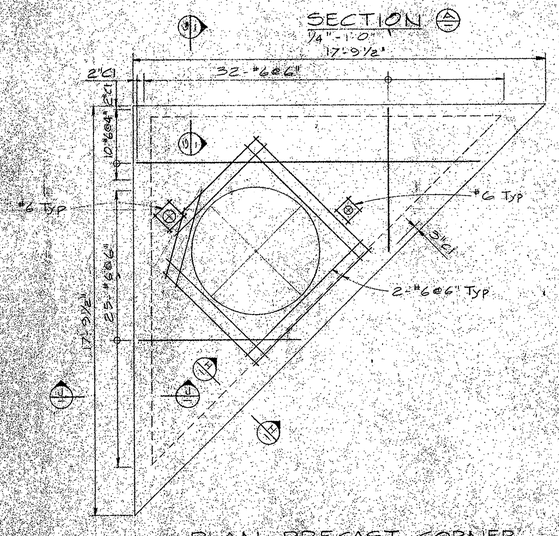
designed by conçu par
date 13-8-74
drawn by H.D.T. dessiné par
date
reviewed by examiné par
date
approved by approuvé par
date 13-8-74
Tender Soumission
D.P.W. Project Manager Administrateur de projets M.T.P.
project number no. du projet
89323
drawing no. dessin no.
S 15

DPW 700E

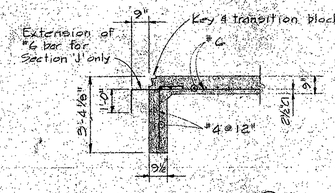


PLAN - CORNER DETAIL
1/4" = 1'-0"

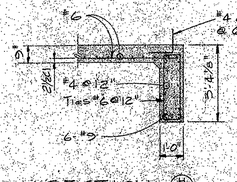
SECTION
1/4" = 1'-0"



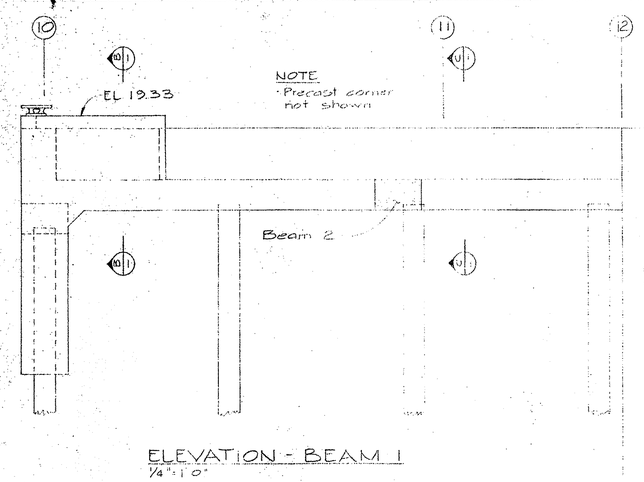
PLAN - PRECAST CORNER
3/8" = 1'-0"



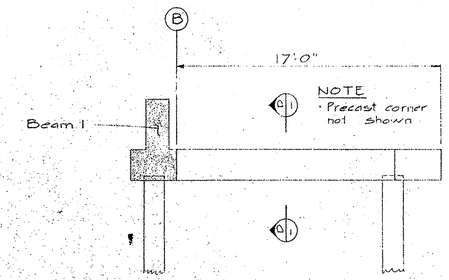
SECTION
SECTION SIM
EXCEPT AS NOTED
3/8" = 1'-0"



SECTION
3/8" = 1'-0"

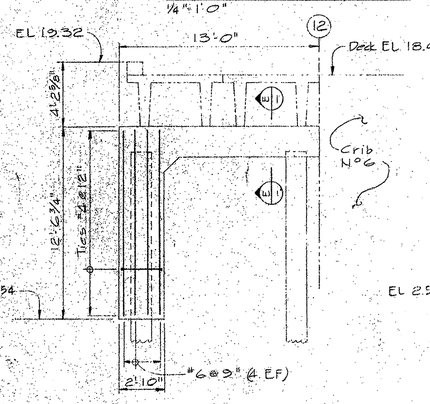


ELEVATION - BEAM 1
1/4" = 1'-0"

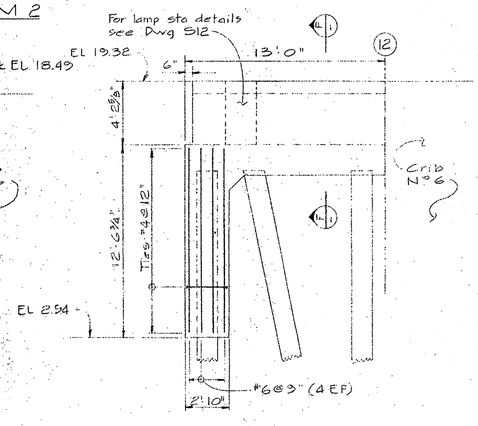


ELEVATION - BEAM 2
1/4" = 1'-0"

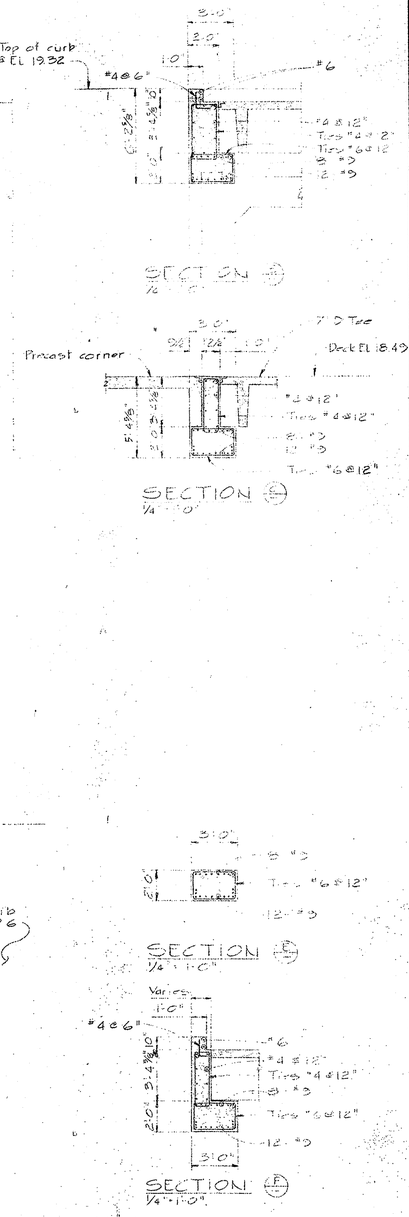
SECTION
1/4" = 1'-0"



EVEVATION - BEAM 3
1/4" = 1'-0" FENDERS NOT SHOWN



EVEVATION - BEAM 4
1/4" = 1'-0" FENDERS NOT SHOWN



Public Works Canada / Travaux publics Canada

PACIFIC REGION

INSTITUTE OF OCEAN SCIENCES ENVIRONMENT CANADA

A detail no. / detail no.
B location drawing no. / suit details no.
C drawing no. / details no.

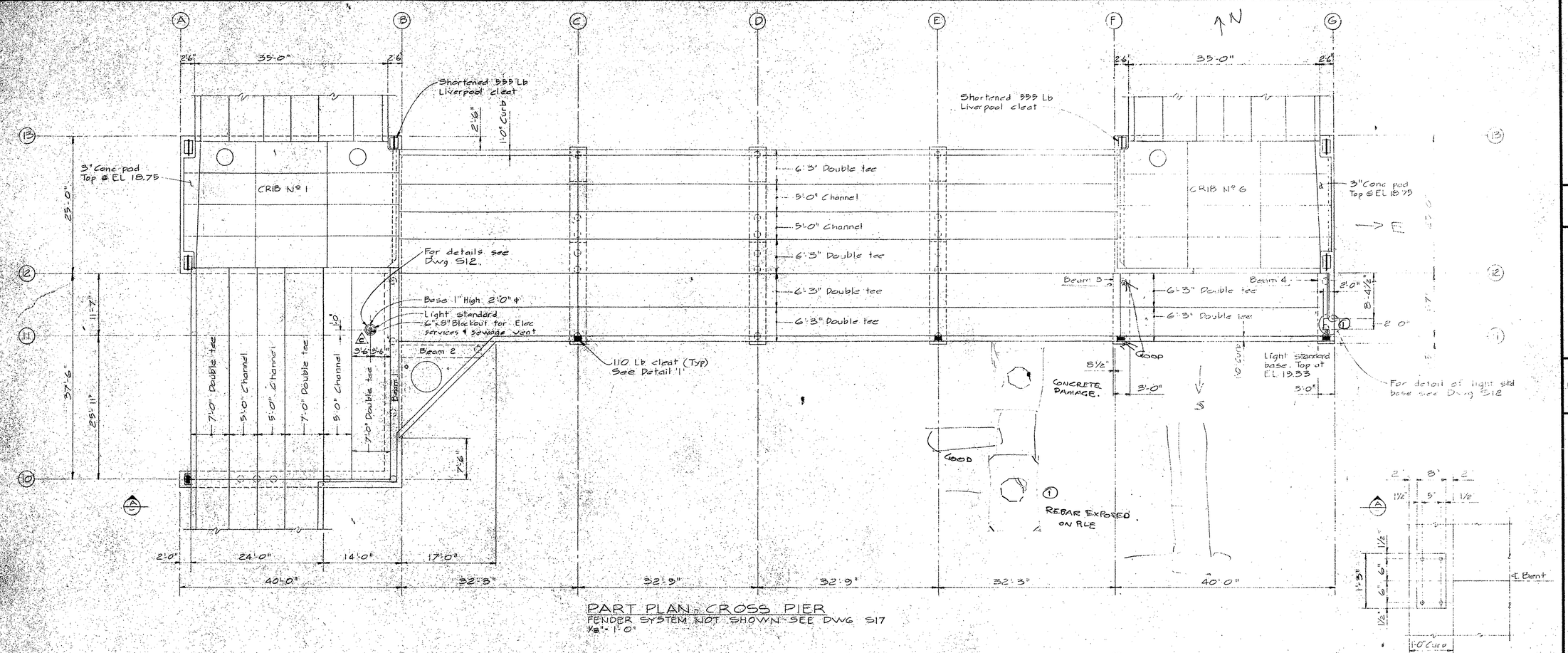
revisions / date
A - Redrawn Dec 12/74
B - As built.

project title / title of project
PATRICIA BAY, B.C.
MARINE FACILITY

drawing title / titre du dessin
WHARF
CROSS PIER
BEAMS
CONC OUTLINE & REINF

designed by / concu par
date
drawn by H.D.T. / dessiné par
date
reviewed by / examiné par
date
approved by / approuvé par
date
Tender / Soumission
D.P.W. Project Manager / Administrateur de projet M.T.P.
project number / no. du projet
89323
drawing no. / dessin no.
S 14

DPW 7008



Public Works Canada / Travaux publics Canada

PACIFIC REGION

INSTITUTE OF OCEAN SCIENCES ENVIRONMENT CANADA

A detail no. / detail no.
B location drawing no. / no dessin no.
C drawing no. / dessin no.

revisions / date
A - Redrawn — Dec 2/74
B - General revision
C - As built.

project title / titre du projet
PATRICIA BAY, B.C.
MARINE FACILITY

drawing title / titre du dessin
WHARF
CROSS PIER
PILE CAP & BEAM LAYOUT

designed by / conçu par
date
drawn by / exécuté par
date
reviewed by / examiné par
date
approved by / approuvé par
date
Tender / Soumission
D.P.W. Project Manager / Administrateur de projets M.T.P.
project number / no. du projet
89323
drawing no. / dessin no.
S 13

DPW 1508

ANNEX 5

Cook Pickering & Doyle Ltd.
CONSULTING ENGINEERS

PHONE 879-0494

835 WEST 7TH AVENUE
VANCOUVER 9, B.C.

February 11, 1974

Project #3877 - P

Your File #988-520-1

Public Works Canada,
Pacific Region,
1444 Alberni Street,
Vancouver, B.C.

Dear Sirs:

Re: Soils Investigation Patricia Bay, B.C.

SCOPE

This report gives the results of a soils investigation for the proposed wharf at Pacific Ocean Environment Centre, Patricia Bay, Saanich, B.C. The field work consisted of drilled test holes at locations specified by the Public Works Canada Personnel; who also laid out the range lines to determine test hole locations in the field. This report gives comments with regard to pile capacity in compression and tension, dredging characteristics of the soil and general comments with regard to soil stability.

GENERAL SOIL CONDITIONS

All test holes were taken to bedrock and the three to five feet of core were taken in order to prove that bedrock was encountered rather than boulders above the bedrock. In general, the soils over the bedrock consist of a surface layer three to nine feet thick of loose silty sand and gravel over layers of dense sand and gravel with clayey silt and in some cases layers of glacial till. The total overburden thickness above the bedrock is fairly thin, ranging from eight to sixteen feet.

cont...

DISCUSSION AND RECOMMENDATIONS

The proposed dock will consist of a piled structure with a deck designed for a load of 500 psf. The main lateral loads on the dock will consist of earthquake inertia forces, berthing forces and wind forces. These lateral forces will be resisted by batter piles in tension and compression.

no tension capacity

Compression piles at this site will have fairly high capacity dependent only on the crushing strength between the bedrock and the pile tips. In general, compression piles driven to 80 or 100 tons capacity will penetrate the overburden and achieve their capacity in end bearing on the bedrock. The main problem associated with compression piles will be stability during construction. The thin overburden will have difficulty supporting the batter piles during construction and wave action may tend to cause the vertical piles to rock with an associated unseating at the pile tip. Thus, many of the piles will require substantial ties or false work to achieve stability during construction.

Tension piles at this site will have undependable capacity as is indicated from the soil conditions and the pile pull out tests completed by Public Works Canada Forces. We have analyzed the results of the fifteen pile pull out tests and find there is no dependable correlation between pull out capacity and driving records, soil conditions or depth of penetration. The pull out tests indicate that all tension piles required for the wharf must be field tested to ensure adequate capacity. As a basis for design, we suggest an allowable tensile capacity in the order of 10 kips per pile, (for piles in the order of 13 inches diameter) or a linear increase for larger diameter piles. These piles should be proof loaded during construction to at least 1.5 times the design load. The pile pull out tests indicate that with the above design criteria, at least six out of fifteen piles will fail and thus require replacement or re-driving. The alternate

cont...

Public Works Canada

February 11, 1974

method of developing tensile capacity is to use rock anchors. Rock anchorage can be designed by either socketing a pipe pile, drilling through a hollow pile (either pipe or hollow concrete) or installing separate anchors in small protective conduits. In general, the anchors should be installed from either the wharf deck or a false work platform, since it is difficult to drill a battered hole from a floating rig. Anchor capacity, generally, depends on bond strengthbetween the grout and the rock. In sound rock, anchors should achieve a design capacity of 100 psi bond between the grout and rock. We recommend that anchors be proof loaded to 1.5 times design capacity.

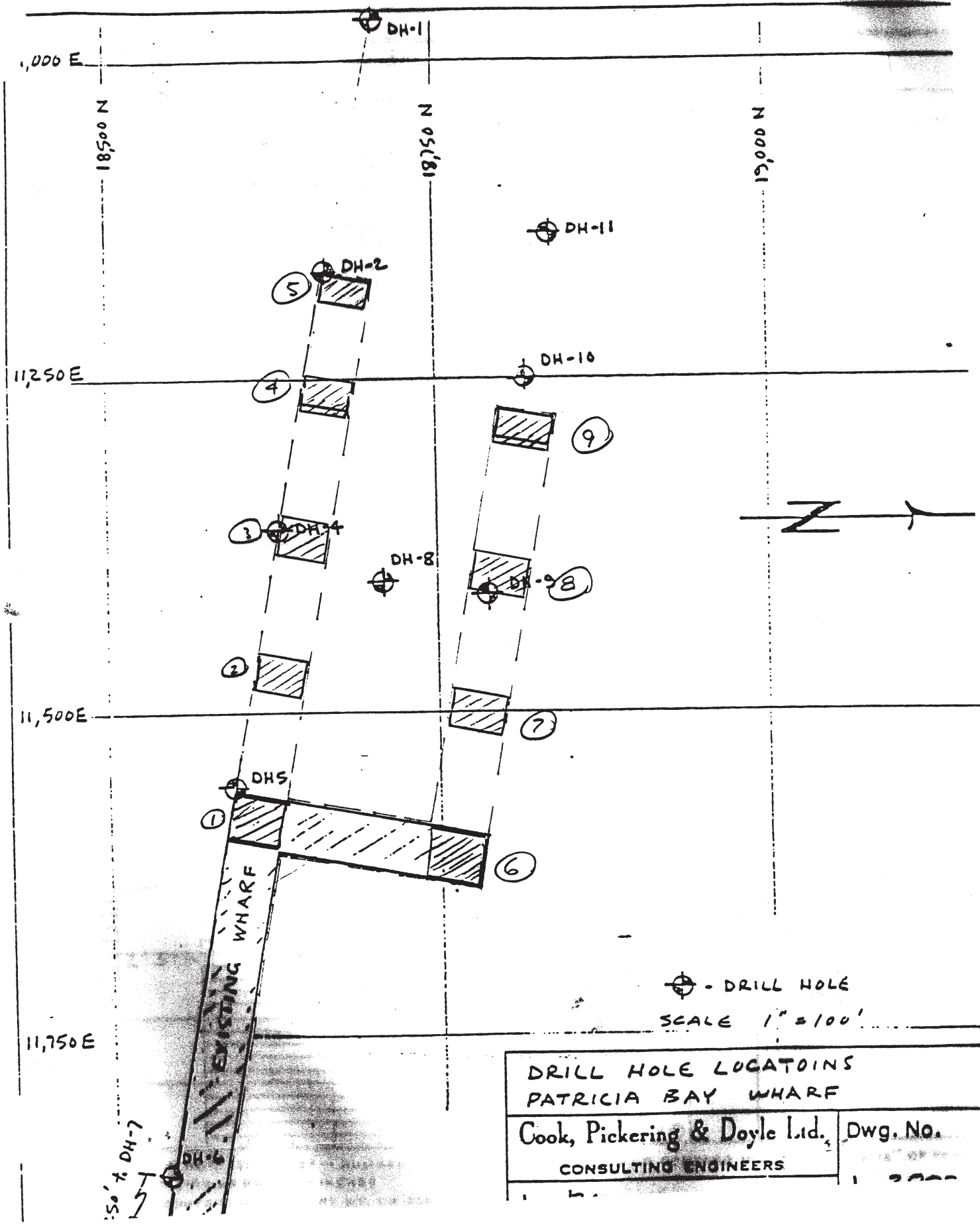
Dredging will be required in order to establish sufficient draught adjacent to the wharf. The loose surface sand and gravel will dredge easily with standard methods. However, the denser sand and gravels (blow counts greater than 30 blows per foot) will be difficult to dig and in some cases may require a very heavy small volume clam bucket to achieve satisfactory progress. These dense glacial tills and dense sand and gravel would be similar to some of the soils encountered in the deepening program of the First Narrows Channel in Vancouver.

Yours very truly,

Ronald G. Doyle

RONALD G. DOYLE, P. ENG.
COOK, PICKERING & DOYLE LTD.

RGD/twb



DRILL HOLE LOCATOINS
PATRICIA BAY WHARF

Cook, Pickering & Doyle Ltd.
CONSULTING ENGINEERS

Dwg. No.

Cook Pickering & Doyle Ltd.

835 WEST 7TH AVENUE. VANCOUVER 9, B.C.

PROJECT PAT BAY

JOB NO. 3[illegible]7

COND	N	SAMPLER	10 20 30 40 50 60 70 80 90	DEPTH ELEV	SYMBOL	
				0		DH-1
				36		SAND, Some Silt
				10		TILL
				46		ROCK
				20		
				0		DH-2
				26		SAND & GRAV
				10		Silty SAND & fin GRAV
				36		Gravelly TILL
				20		ROCK
				0		DH-4
				18		Silty SAND
						Sandy Clayey SILT
				10		Clayey SILT
				28		ROCK
				20		

N — STANDARD PENETRATION TEST — NUMBER OF BLOWS OF 140 LB. HAMMER DROPPED 30" TO PRODUCE 12" OF PENETRATION AS NOTED — INCHES

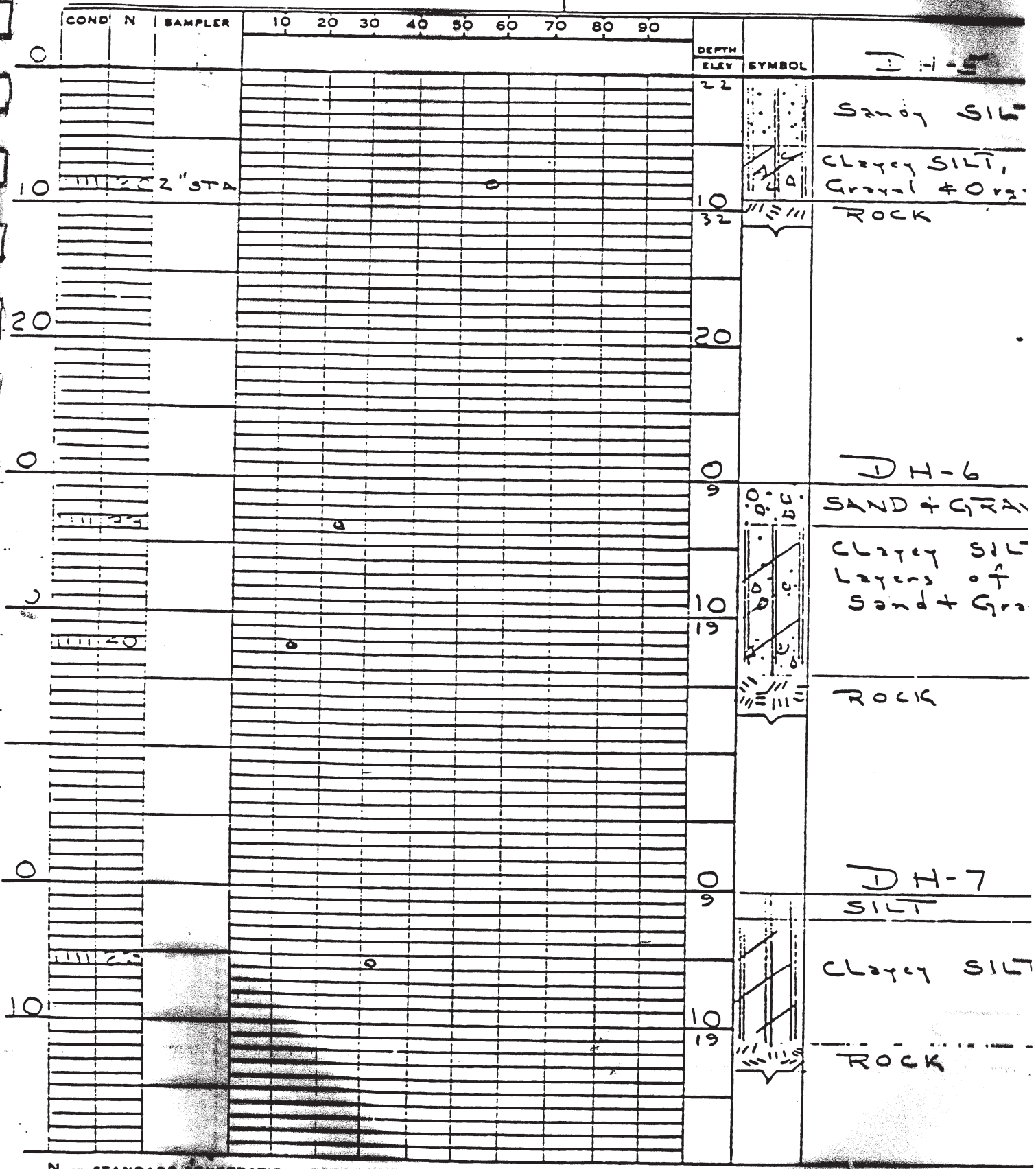
• — MOISTURE CONTENT IN % BY DRY WT. OF SOIL ▶ PLASTIC LIMIT

Cook Pickering & Doyle Ltd.

838 WEST 7TH AVENUE, VANCOUVER 9, B.C.

PROJECT PAT Bay

JOB NO. 327



N — STANDARD PENETRATION TEST — NUMBER OF BLOWS OF 140 LB. HAMMER DROPPED 30" TO PRODUCE 12" OF PENETRATION AS NOTED — INCHES

• — MOISTURE CONTENT IN % BY DRY WT. OF SOIL

X — UNCONFINED COMPRESSION STRENGTH — PSI.

▶ PLASTIC LIMIT ◀ LIQUID LIMIT ▼ GROUND WATER LEVEL

(X) — TORVANE OR PENETROMETER EQUIV. UNCONFINED

Cook Pickering & Doyle Ltd.

838 WEST 7TH AVENUE, VANCOUVER 9, B.C.

PROJECT PAT BAY

JOB NO. 3807

COND	N	SAMPLER	10 20 30 40 50 60 70 80 90	DEPTH ELEV	SYMBOL	DH-8
				20		Soft Silty SAND
				10		
		2" STA		30		Silty SAND & GRAVEL
						ROCK
				20		
				40		
				0		DH-9
		2" STA		22		Silty SAND & GRAVEL
				10		ROCK
				32		
				0		DH-10
		2" STA		23		Silty SAND & GRAVEL
				10		ROCK
				33		

N — STANDARD PENETRATION TEST — NUMBER OF BLOWS OF 140 LB. HAMMER DROPPED 30" TO PRODUCE 12" OF PENETRAT
OR PENETRATION AS NOTED — INCHES

Cook Pickering & Doyle Ltd.

838 WEST 7TH AVENUE, VANCOUVER 9, B.C.

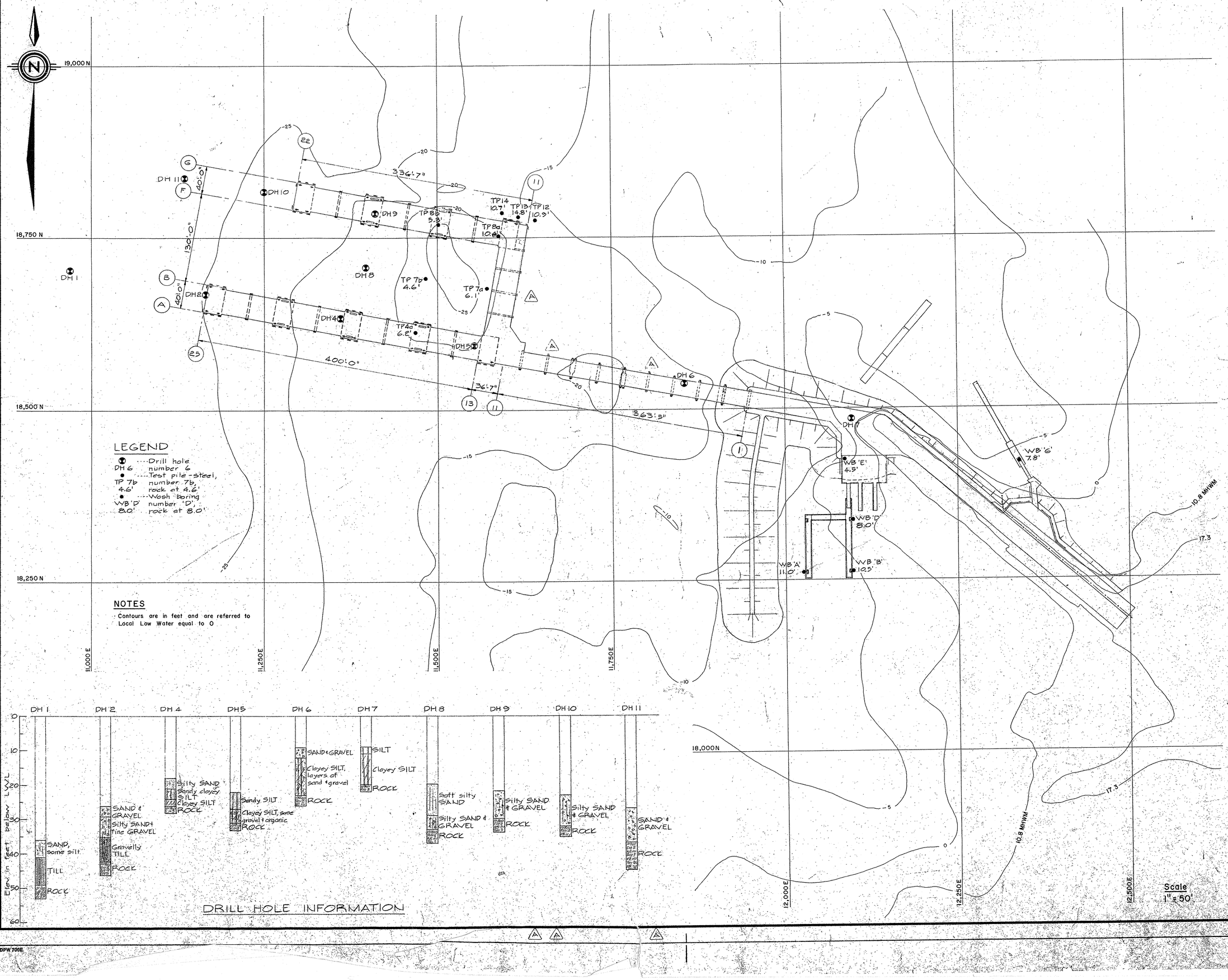
PROJECT: PAT BAY

JOB NO. 38

DH-1

DEPTH	COND	N	SAMPLER	10 20 30 40 50 60 70 80 90	DEPTH / ELEV	SYMBOL	DESCRIPTION
0					27		? SAND & G
	[illegible] 2" STA						
10					10 / 37		ROCK
20					20 / 47		

N — STANDARD PENETRATION TEST — NUMBER OF BLOWS OF 140 LB. HAMMER DROPPED 30" TO PENETRATE ... OR PENETRATION AS NOTED — INCHES



LEGEND

- DH 6 ····Drill hole number 6
- TP 7b 4.6' ····Test pile-steel, number 7b, rock at 4.6'
- WB 'D' 8.0' ····Wash boring number 'D', rock at 8.0'

NOTES

- Contours are in feet and are referred to Local Low Water equal to 0

DRILL HOLE INFORMATION

Scale 1" = 50'

Public Works Canada / Travaux publics Canada

PACIFIC REGION

INSTITUTE OF OCEAN SCIENCES
ENVIRONMENT CANADA

A detail no. / détail no.
B location drawing no. / sur dessin no.
C drawing no. / dessin no.

revisions / date
A - Cross pier layout & 2 approach pile caps changed Dec 2/74
B - Contours revised

project title / titre du projet
PATRICIA BAY, B.C.
MARINE FACILITY

drawing title / titre du dessin
GENERAL ARRANGEMENT

designed by / conçu par
date 15-8-74

drawn by H.D.T. / dessiné par
date

reviewed by / examiné par
date

approved by / approuvé par
date 15-8-74

Tender / Soumission
D.P.W. Project Manager / Administrateur de projets M.T.P.

project number / no. du projet
89323

drawing no. / dessin no.
S 2

DPW 700E

ANNEX 6

DFO – Steel Piling Pipe

PART 1 - GENERAL INFORMATION

1-1 Security Requirement

There is no security requirement associated with this bid solicitation.

1-2 Requirement

1. **The Statement of Requirement is as follows:**
   to supply and deliver Steel Piling Pipe to the Department of Fisheries and Oceans – Pacific Biological Station (PBS) and Institute of Ocean Sciences (IOS) in accordance with the associated Technical Specifications detailed in the Statement of Requirement attached as Annex A.

2. Goods must be delivered to the identified sites on or before 22 April 2016, as detailed in the resulting contract clauses.

PART 2 - BIDDER INSTRUCTIONS

2-1 Standard Instructions, Clauses and Conditions

All instructions, clauses and conditions identified in the bid solicitation by number, date and title are set out in the *Standard Acquisition Clauses and Conditions Manual* (https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual) issued by Public Works and Government Services Canada.
Bidders who submit a bid agree to be bound by the instructions, clauses and conditions of the bid solicitation and accept the clauses and conditions of the resulting contract.

The 2003 (2015-07-03) Standard Instructions - Goods or Services - Competitive Requirements, are incorporated by reference into and form part of the bid solicitation.

2-2 Submission of Bids

Bids must be submitted only to Public Works and Government Services Canada (PWGSC) by the date, time and place indicated on page 1 of the bid solicitation.

2-3 Enquiries - Bid Solicitation

All enquiries must be submitted in writing to the Contracting Authority no later than three (3) working days before the bid closing date. Enquiries received after that time may not be answered.

Bidders should reference as accurately as possible the numbered item of the bid solicitation to which the enquiry relates. Care should be taken by bidders to explain each question in sufficient detail in order to enable Canada to provide an accurate answer. Technical enquiries that are of a proprietary nature must be clearly marked "proprietary" at each relevant item. Items identified as “proprietary” will be treated as such except where Canada determines that the enquiry is not of a proprietary nature.

Canada may edit the question(s) or may request that the Bidder do so, so that the proprietary nature of the question(s) is eliminated and the enquiry can be answered to all bidders. Enquiries not submitted in a form that can be distributed to all bidders may not be answered by Canada.

2-4 Applicable Laws - Bid

1. Any resulting contract must be interpreted and governed, and the relations between the parties determined, by the laws in force in British Columbia.

2. Bidder may, at its discretion, substitute the applicable laws of a Canadian province or territory of their choice without affecting the validity of their bid, by deleting the name of the Canadian province or territory specified and inserting the name of the Canadian province or territory of their choice. If no change is made, it acknowledges that the applicable laws specified are acceptable to the Bidders.

PART 3 - BID PREPARATION INSTRUCTIONS

3-1 Bid Preparation Instructions

Canada requests that bidders provide their bid in separately bound sections as follows:

Section I: Technical Bid (1 copy)
Section II: Financial Bid (1 copy)
Section III: Certifications (1 copy)

Prices must appear in the financial bid only. No prices must be indicated in any other section of the bid.

Canada requests that bidders follow the format instructions described below in the preparation of their bid:

a. use 8.5 x 11 inch (216 mm x 279 mm) paper;
b. use a numbering system that corresponds to the bid solicitation.

In April 2006, Canada issued a policy directing federal departments and agencies to take the necessary steps to incorporate environmental considerations into the procurement process Policy on Green Procurement (http://www.tpsgc-pwgsc.gc.ca/ecologisation-greening/achats-procurement/politique-policy-eng.html).

To assist Canada in reaching its objectives, bidders should:

1) use 8.5 x 11 inch (216 mm x 279 mm) paper containing fibre certified as originating from a sustainably-managed forest and containing minimum 30% recycled content; and,
2) use an environmentally-preferable format including black and white printing instead of colour printing, printing double sided/duplex, using staples or clips instead of cerlox, duotangs or binders.

3-1.1 Section I: Technical Bid

In their technical bid, bidders should explain and demonstrate how they propose to meet the requirements and how they will carry out the work.

3-1.2 Section II: Financial Bid

Bidders must submit their financial bid in accordance with Annex B. The total amount of Applicable Taxes must be shown separately.

3-1.3 Section III: Certification Requirements

Bidders must submit the certifications required under Part 5.

3-2 Mandatory Bid Deliverables

Regardless of requirements specified elsewhere in this bid solicitation and its associated Statement of Requirement, the following are the only mandatory documents that must be submitted with the response at the time of bid closing. The Bidder must be compliant on each item to be considered responsive.

Item	Description	Completed and Attached
Section I Technical Bid		
1	Solicitation document part 1 page 1, completed and signed	
Section II Financial Bid		
1	Annex B, Schedule of Quantities and Prices, completed.	
Section III Certifications		
1	Standard Instructions - Annex C - **INFORMATION REQUIRED FOR INTEGRITY PROVISIONS VERIFICATION-** Code of Conduct and Certifications - Bid. Provide a complete list of names of all individuals who are currently directors of the Bidder. Bidders bidding as sole proprietorship, including those bidding as a joint venture, must provide with their bid the name of the owner.	

PART 4 - EVALUATION PROCEDURES AND BASIS OF SELECTION

4-1 Evaluation Procedures

a.) Bids will be assessed in accordance with the entire requirement of the bid solicitation including the technical and financial evaluation criteria.

b.) An evaluation team composed of representatives of Canada will evaluate the bids.

4-1.1 Technical Evaluation

All technical details of the requirement are mandatory as described in Annex A. In order to be found responsive the bidder's submission must comply with all of the technical details of the requirement with no deviations.

4-1.2 Financial evaluation

The bid will be evaluated in accordance with Annex B-1, Schedules of Quantities and Prices.

4-2 Basis of Selection

SACC Manual Clause A0031T (2010-08-16) Basis of Selection

PART 5 - CERTIFICATIONS

5-1 General

Bidders must provide the required certifications and associated information to be awarded a contract.

The certifications provided by bidders to Canada are subject to verification by Canada at all times. Canada will declare a bid non-responsive, or will declare a contractor in default in carrying out any of its obligations under the Contract, if any certification made by the Bidder is found to be untrue, whether made knowingly or unknowingly, during the bid evaluation period or during the contract period.

The Contracting Authority will have the right to ask for additional information to verify the Bidder's certifications. Failure to comply and to cooperate with any request or requirement imposed by the Contracting Authority may render the bid non-responsive or constitute a default under the Contract.

5-2 Certifications Required Precedent to Contract Award

5-2.1 Integrity Provisions - Associated Information

By submitting a bid, the Bidder certifies that the Bidder and its Affiliates are in compliance with the provisions as stated in Section 01 Integrity Provisions - Bid of Standard Instruction 2003 (2015-07-03). The associated information required within the Integrity Provisions will assist Canada in confirming that the certifications are true.

5-2.2 Federal Contractors Program for Employment Equity - Bid Certification

By submitting a bid, the Bidder certifies that the Bidder, and any of the Bidder's members if the Bidder is a Joint Venture, is not named on the Federal Contractors Program (FCP) for employment equity "FCP Limited Eligibility to Bid" list (http://www.labour.gc.ca/eng/standards_equity/eq/emp/fcp/list/inelig.shtml) available from Employment and Social Development Canada (ESDC) - Labour's website.

Canada will have the right to declare a bid non-responsive if the Bidder, or any member of the Bidder if the Bidder is a Joint Venture, appears on the "FCP Limited Eligibility to Bid " list at the time of contract award.

5-3 Additional Certifications Required Precedent to Contract Award

The certifications listed below should be completed and submitted with the bid but may be submitted afterwards. If any of these required certifications is not completed and submitted as requested, the Contracting Authority will inform the Bidder of a time

frame within which to provide the information. Failure to comply with the request of the Contracting Authority and to provide the certifications within the time frame provided will render the bid non-responsive.

5.3.1 Price Certification

The Bidder certifies that the price proposed

(a) is not in excess of the lowest price charged anyone else, including the Bidder's most favoured customer, for the like quality and quantity of the goods, services or both;
(b) does not include an element of profit on the sale in excess of that normally obtained by the Bidder on the sale of goods, services or both of like quality and quantity, and
(c) does not include any provision for discounts to selling agents.

Signature Name Title Date

PART 6 - RESULTING CONTRACT CLAUSES

The following clauses and conditions apply to and form part of any contract resulting from the bid solicitation.

6-1 Security Requirement

There is no security requirement applicable to this Contract.

6-2 Requirement

The Contractor must supply and deliver Steel Piling Pipe to the Department of Fisheries and Oceans in accordance with the associated Technical Specifications and delivery schedule detailed in the Statement of Requirement - Annex A.

6-3 Standard Clauses and Conditions

All clauses and conditions identified in the Contract by number, date and title are set out in the *Standard Acquisition Clauses and Conditions Manual* (https://buyandsell.gc.ca / policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual) issued by Public Works and Government Services Canada.

6-3.1 General Conditions

2010A 2015-09-03, General Conditions - Medium Complexity - Goods, apply to and form part of the Contract.

6-4 Term of Contract

6-4.1 Delivery Date

All the deliverables must be received on or before April 22, 2016. **Destination Addresses:**

1.)IOS – 9860 West Saanich Road, Sidney, BC V8L 4B2 and;

2.) PBS – 3190 Hammond Bay Road, Nanaimo, BC V9T 6N7
DFO-Canadian Coast Guard, Pacific Region

6-4.2 Preparation For Delivery

Preparation for delivery and packaging are to be to the highest manufacturer's standard for the mode of transportation utilized, to ensure safe arrival at final destination.

6-4.4 Shipping Instructions - Delivery at Destination

1. Goods must be consigned to the destination(s) specified in the Contract and delivered duty paid (DDP), Incoterms 2000 for shipments from a commercial contractor.

6-4.5 Notice of Shipment

The Contractor must inform the Contracting Authority named in Article 6-5.1 when the goods have been shipped and must also provide shipping details to allow the shipment to be tracked.

6-4.6 Failure to keep the Contracting Authority informed

As the delivery date is an essential part of this contract, except for excusable delays notified in accordance with Article 16 (Time of Essence) of 2010, failure to communicate any changes to the delivery schedule specified in this contract will prejudice Canada and will, at Canada's discretion, entail either:

a) Contract Termination in accordance with General Conditions 2010 Article 06 (Time of the Essence) and Article 23 subsection 4, (Default by the Contractor), and the Contractor will be liable to Canada for all losses and damages suffered by Canada because of the default or occurrence upon which the notice was based, including any increase in the cost incurred by Canada in procuring the Work from another source; or

b) Consideration for Contract Amendment. Delivery date(s) will not be extended without consideration being provided by the Contractor in the form of adjustment to the price, warranty, and/or services provided.

Any of the above remedies applied will be logged against Contractor performance. Unsatisfactory performance could debar a Contractor for a period of time from bidding on future requirements.

6-4.7 Inspection and Acceptance

Goods will be inspected and accepted by the Inspection Authority.

6-5 Authorities

6-5.1 Contracting Authority

The Contracting Authority for the Contract is:

Name: David Castle
Title: Supply Specialist
Address: Public Works and Government Services Canada
Pacific Region, Acquisitions, Marine
401 - 1230 Government Street

Victoria, BC, Canada V8W 3X4
Telephone: 250-363-0110
Facsimile: 250-363-3960
E-mail address: david.castle@pwgsc-tpsgc.gc.ca

The Contracting Authority is responsible for the management of the Contract and any changes to the Contract must be authorized in writing by the Contracting Authority. The Contractor must not perform work in excess of or outside the scope of the Contract based on verbal or written requests or instructions from anybody other than the Contracting Authority.

6-5.2 Technical Authority

The Technical Authority for the Contract is:

Name:
Title:
Address:
Telephone:
E-mail address:

The Technical Authority is the representative of the department or agency for whom the Work is being carried out under the Contract and is responsible for all matters concerning the technical content of the Work under the Contract. Technical matters may be discussed with the Technical Authority; however, the Technical Authority has no authority to authorize changes to the scope of the Work. Changes to the scope of the Work can only be made through a contract amendment issued by the Contracting Authority.

6-5.3 Inspection Authority

The Technical Authority is the Inspection Authority. All reports, deliverable items, documents, goods and all services rendered under the Contract are subject to inspection by the Inspection Authority or representative. Should any report, document, good or service not be in accordance with the Requirements at Annex A and to the satisfaction of the Inspection Authority, as submitted, the Inspection Authority will have the right to reject it or require its correction at the sole expense of the Contractor before recommending payment. Any communication with a Contractor regarding the quality of the Work performed pursuant to this Contract shall be undertaken by official correspondence through the Contracting Authority.

The Inspection Authority may designate, and be represented by, an Inspector (TI), Quality Assurance Representative (QAR) or Designated Engineering Authority (DEA).

6-5.4 Contractor's Representative

Name and telephone numbers of the person responsible for production:
Name: _____ Telephone No: _____

Facsimile No.: _____ E-mail: _____

Name and telephone numbers of the person responsible for delivery:
Name: _____ Telephone No: _____
Facsimile No.: _____ E-mail: _____

6-6 Payment

6-6.1 Basis of Payment - Firm Price, Firm Unit Price(s) or Firm Lot Price(s)

In consideration of the Contractor satisfactorily completing all of its obligations under the Contract, the Contractor will be paid a firm price as specified in Annex B. Customs duties are included and Applicable Taxes are extra.

Canada will not pay the Contractor for any design changes, modifications or interpretations of the Work, unless they have been approved, in writing, by the Contracting Authority before their incorporation into the Work.

6-6.2 Single Payment

Canada will pay the Contractor upon completion and delivery of the Work in accordance with the payment provisions of the Contract if:

a. an accurate and complete invoice and any other documents required by the Contract have been submitted in accordance with the invoicing instructions provided in the Contract;
b. all such documents have been verified by Canada;
c. the Work delivered has been accepted by Canada.

6-6.3 SACC Manual Clauses

Reference	Date	Title
C0100C	2010-01-11	Discretionary Audit - Commercial Goods and/or Services
C0711C	2008-05-12	Time Verification
B5007C	2010-01-11	Procedures for Design Change or Additional Work

6-7 Invoicing Instructions

6-7.1 The Contractor must submit invoices in accordance with the section of the General Conditions titled Invoice Submission.

6-7.2 Invoice is to be made out to:

DFO Invoicing – Fisheries and Oceans Canada
Attention: Michael Liang
Suite 200 – 401 Burrard Street
Vancouver, BC V6C 3S4

6-7.3 Original invoice is to be sent for verification to:

Public Works and Government Services Canada
Acquisitions, Marine
401 - 1230 Government Street
Victoria, B.C., V8W 3X4 Attention: Dave Castle
Email: PAC.Marine@pwgsc-tpsgc.gc.ca

6-8 Certifications

6-8.1 Compliance

The continuous compliance with the certifications provided by the Contractor in its bid and the ongoing cooperation in providing associated information are conditions of the Contract. Certifications are subject to verification by Canada during the entire period of the Contract. If the Contractor does not comply with any certification, fails to provide the associated information, or if it is determined that any certification made by the Contractor in its bid is untrue, whether made knowingly or unknowingly, Canada has the right, pursuant to the default provision of the Contract, to terminate the Contract for default.

6-9 Applicable Laws - Contract

The Contract must be interpreted and governed, and the relations between the parties determined, by the laws in force in _____. **(To be completed by the Contracting Authority at Contract Award)**

6-10 Priority of Documents

If there is a discrepancy between the wordings of any documents that appear on the list, the wording of the document that first appears on the list has priority over the wording of any document that subsequently appears on the list.

a. the Articles of Agreement;
b. the General Conditions 2010A 2015-09-03, Medium Complexity - Goods;
c. Annex A, Statement of Work;
d. Annex B, Basis of Payment;
e. the Contractor's bid dated _____ (*insert date of bid*) (*If the bid was clarified or amended, insert at the time of contract award*: ", as clarified on _____" ***or*** ", as amended on_____" *and insert date(s) of clarification(s) or amendment(s)*)

6-11 SACC Manual Clauses

Reference	Title	Date
A9055C	Scrap and Waste Material	2010-08-16
A9068C	Government Site Regulations	2010-01-11

ANNEX A – Statement of Requirement

Identification:

The Coast Guard has the requirement for a Contractor to fabricate and supply STEEL PILING PIPES to both the IOS and PBS stations as per the following statement of requirement.

REQUIREMENT

Supply 680 lineal meters of 508mm diameter x 12.7mm thick steel pipe, in 20 meter lengths.

Supply 260 lineal meters of 914mm diameter x 19.1mm thick steel pipe, in 20 meter lengths.

Supply 520 lineal meters of 508mm diameter x 19.1mm thick steel pipe, in 26 meter lengths.

Supply 680 lineal meters of 457mm diameter x 12.7mm thick steel pipe, in 20 meter lengths.

FABRICATION

Piles are to be fabricated in the lengths specified, and up to the total length indicated in Requirement.

Piles are to be fabricated full length without splicing.

Fabrication tolerances must be attained on final product lengths. Allowance for sag shall be made when measuring pile dimensions. Piles shall be rolled/formed to the following tolerance limits.

Pipe wall thickness	± 3%
Circumference	±10 mm
Diameter	As per API SPEC 5L, table 10
Out of roundness (difference between maximum and minimum external diameters at any particular cross section)	As per API SPEC 5L, table 10
Deviation from circular arc within a chord of 300 mm	±3 mm
Allowable deviation from a straight line as measured by 3 m straight edge	6mm (0.2%)
Allowable deviation from straight line over total length of fabricated pile	40 mm
Perpendicularity of the end face	1.6 mm

Flatness of end face	3 mm max. over circumference
Overall pile lengths	±150 mm

MATERIALS

Steel pipe: straight longitudinal seam of size and wall thicknesses indicated.

Steel pipe to ASTM A252, Grade 3.

Pipe material to have following minimum properties:

Yield strength: 310 MPa.

Tensile strength: 455 MPa.

Weldable steel: to ASTM A106/ASTM A106M carbon equivalent less than 0.55%.

Only new materials shall be used, unless written approval from the Departmental Representative is obtained prior to material being procured or fabricated.

Materials shall be free of defects, loose scale, slag, discolouration, rust, and other defects which reduce the strength or general stability thereof.

Repairs to minor defects are only permitted with the prior written approval of the Departmental Representative.

Proposed repair procedures shall be submitted to the Departmental Representative for review and acceptance prior to any repairs being carried out.

Any sharply bent or kinked material shall be rejected. Material shall be replaced by the supplier at no expense to the Department.

INSPECTION AND TESTING OF MATERIALS

Product data: submit manufacturer's printed product literature, specifications and datasheet.

Quality Assurance: test reports:

Prior to fabrication, and, if requested, provide Departmental Representative with two copies of steel producer's certificates in accordance with ASTM A252.

Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and chemical and physical properties.

Submit details of any other materials to be used in fabricating piles for review by Departmental Representative.

DELIVERY, STORAGE, AND HANDLING

Deliver new, undamaged materials to site, accompanied by certified test reports, with manufacturer's logo and mill identification mark provided on pipe piling.

The Contractor shall be responsible for the protection of all steel piles during fabrication, storage, and shipping. All damage shall be reported to the Departmental Representative for

instructions. Steel piles that are damaged shall be replaced by the Contractor to the satisfaction of the Departmental Representative at no cost to the Owner.

The Contractor shall be responsible for the proper scheduling of delivery for the steel piles. The steel piles will be delivered to the following sites:

680 lineal meters of 508mm diameter x 12.7mm thick steel pipe and 260 lineal meters of 914mm diameter x 19.1mm thick steel pipe, in 20 meter lengths, will be delivered to:
Pacific Biological Station (PBS)
3190 Hammond Bay Road
Nanaimo, BC, V9T 6N7

520 lineal meters of 508mm diameter x 19.1mm thick steel pipe, in 26 meter lengths, and 680 lineal meters of 457mm diameter x 12.7mm thick steel pipe, in 20 meter lengths will be delivered to:
Institute of Oceans Science (IOS)
9860 West Saanich Road
Sidney, BC, V8L 4B2

Storage and Protection:

Store and handle pipe piling in accordance with manufacturer's written instructions to prevent permanent deflection, distortion or damage to interlocks.

Support pipe piling on level blocks or racks spaced not more than 3 m apart and not more than 0.60 m from ends.

Store pipe piling to facilitate required inspection activities and prevent damage to coatings and corrosion prior to installation.

MANUFACTURER'S INSTRUCTIONS

Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.

ANNEX B - SCHEDULE OF QUANTITIES AND PRICES

ITEM NO	DESCRIPTION OF WORK	Delivered to	UNIT	QUANTITY	UNIT PRICE ($)	AMOUNT ($)
1	508mm diameter x 12.7mm thick steel pipe as per ASTM 252 Gr 3 supplied and delivered in 20m lengths.	PBS Nanaimo	meter	680		
2	914mm diameter x 19.1mm thick steel pipe as per ASTM 252 Gr 3 supplied and delivered in 20m lengths.	PBS Nanaimo	meter	260		
3	508mm diameter x 19.1mm thick steel pipe as per ASTM 252 Gr 3 supplied and delivered in 26m lengths.	IOS Sidney	meter	520		
4	457mm diameter x 12.7mm thick steel pipe as per ASTM 252 Gr 3 supplied and delivered in 20m lengths.	IOS Sidney	meter	680		
					SUB TOTAL PRICE	
					APPLICABLE TAXES	
					TOTAL PRICE	

NOTE: **Piping must be supplied in noted lengths.**

B-1 Price for Evaluation

The price of the bid will be evaluated in Canadian Dollars, Delivered Duty Paid (DDP) to the destinations stated in Article 6-4.4 (Incoterms 2000) for Goods.

B2 Delivery

All components must be delivered to the final Destinations on or before

Delivery Addresses:

ANNEX C - INFORMATION REQUIRED FOR INTEGRITY PROVISIONS VERIFICATION

Please provide list of names of the following entities, according to the ownership nature of the company

1. For a Corporation - each current member of the Bidder's Board of Directors;

_____

_____

_____

_____

2. For a Partnership, General Partnership or Limited Partnership - the names of all current partners;

_____

_____

_____

_____

3. For a Sole Proprietorship or an individual doing business under a firm name - the name of the sole proprietor or individual;

_____

4. For a Joint Venture - the names of all current members of the Joint venture;

_____

_____

5. For an individual - the full name of the person

_____

ANNEX 7

Public Works and Government Services Canada | **Travaux publics et Services gouvernementaux Canada**

Purchasing Office - Bureau des achats
Public Works and Government Services Canada - Pacific Region
401 - 1230 Government Street
Victoria, B. C.
V8W 3X4

Standing Offer and Call-up Authority
Autorisation de passer une offre à commandes et des commandes subséquentes

Regional Individual Standing Offer (RISO)
Offre à commandes individuelle et régionale (OCIR)

This is not a Contract
La présente n'est pas un contrat

Canada, as represented by the Minister of Public Works and Government Services Canada, hereby authorizes the identified Users listed herein to make call-ups against this Standing Offer.

Le Canada, représenté par le ministre des Travaux Publics et Services Gouvernementaux Canada, autorise par la presénte, les utilisateurs identifiés énumérés ci-après, à passer des commandes subséquentes à cette offre à commandes.

The Offeror hereby acknowledges that the attached document contains its Standing offer.

Le Proposant constate, par la présente, que le document ci-joint comprend son offre à commandes.

Signature Date

Name and Title of person authorized to sign on behalf of Offeror
Nom et titre de la personne autorisée à signer au nom du Proposant
(Type or print) (Taper ou imprimer)

Comments - Commentaires

Vendor/Firm Name and Address
Raison sociale et adresse du fournisseur/de l'entrepreneur
876454547PG0001
Jornic Holdings LTD
po box 1293
Lake Cowichan
British Columbia
V0R2G0
Canada
Operating as: Jornic Marine Construction

Title - Sujet
TIMBER FLOATS

Period of Standing Offer - Durée de l'offre à commandes
Start/début: 2015-09-18 **End/fin:** 2016-08-31

Standing Offer No. - N° de l'offre à commandes
F1571-15700C/001/XLV

Date
2015-09-18

Client Reference No. - N° de référence du client
F1571-15700C

Requisition Reference No. - N° de la demande
F1571-15700C

File No. - N° de dossier
XLV-5-38048

Amendment No. - N° modif.

CCC No./N° CCC - FMS No./N° VME

Individual Call-up Limitation - Limite des commandes individuelles

GST/ HST TPS/TVH
☐

Financial Code(s) - Code(s) financier(s)
714258-004 58511-610-284-063056401

Amount - Montant

Security - Sécurité
This Standing Offer shall not be used for call-ups where security requirements have been identified.
Cette offre à commandes ne peut pas être utilisée pour les commandes subséquentes dans lesquelles les besoins en matière de sécurité ont été déterminés.

If marked "X," please see the box to the left. ☐ **Acknowledgement copy required**
S'il y a un "X" ici, s.v.p. voir la boîte à la gauche. **Accusé de réception requis**

Destination - of Goods, Services, and Construction:
Destination - des biens, services et construction:
FISHERIES AND OCEANS CANADA
SEE HEREIN

Invoices - Original and two copies to be sent to:
Factures - Envoyer l'original et deux copies à:
SEE HEREIN
.

Address Enquiries to: - Adresser toutes questions à:
Buchan, Torrey

Buyer Id - Id de l'acheteur
xlv211

Telephone No. - N° de téléphone
(250) 363-3249 ( )

FAX No. - N° de FAX
(250) 363-3960

Total Estimated Cost - Coût total estimatif
$1,500,000.00

Currency Type - Genre de devise
CAD

For the Minister - Pour le Ministre

Canada

Standing Offer
F1571-15700C/001/XLV

TABLE OF CONTENTS

STANDING OFFER AND RESULTING CONTRACT CLAUSES

A. STANDING OFFER

1. Offer

The Offeror offers to fulfill the requirement in accordance with the Requirement at Annex A.

2. Security Requirements

There is no security requirement applicable to this Standing Offer.

3. Standard Clauses and Conditions

All clauses and conditions identified in the Standing Offer and resulting contract(s) by number, date and title are set out in the *Standard Acquisition Clauses and Conditions Manual* (https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual) issued by Public Works and Government Services Canada.

3.1 General Conditions

2005 (2015-07-03) General Conditions - Standing Offers - Goods or Services, apply to and form part of the Standing Offer.

3.2 Standing Offers Reporting

The Offeror must compile and maintain records on its provision of goods, services or both to the federal government under contracts resulting from the Standing Offer. This data must include all purchases, including those paid for by a Government of Canada Acquisition Card.

The Offeror must provide this data in accordance with the reporting requirements detailed in Annex D. If some data is not available, the reason must be indicated. If no goods or services are provided during a given period, the Offeror must still provide a "nil" report.

The data must be submitted on a *quarterly basis* to the Standing Offer Authority.
The quarterly reporting periods are defined as follows:

- 1st quarter: September 1 to November 30;
- 2nd quarter: December 1 to February 29;
- 3rd quarter: March 1 to May 31;
- 4th quarter: June 1 to August 31.

The data must be submitted to the Standing Offer Authority no later than *thirty (30)* calendar days after the end of the reporting period.

4. Term of Standing Offer

4.1 Period of the Standing Offer

The period for making call-ups against the Standing Offer is from date of Standing Offer issuance to August 31, 2016.

4.2 Extension of Standing Offer

If the Standing Offer is authorized for use beyond the initial period, the Offeror offers to extend its offer for an additional three (3), one-year periods, from *September 1 2016* to *August 31 2017, September 1 2017* to *August 31 2018, and September 1 2018* to *August 31 2019,* under the same conditions and at the rates or prices specified in the Standing Offer, or at the rates or prices calculated in accordance with the formula specified in the Standing Offer.

The Offeror will be advised of the decision to authorize the use of the Standing Offer for an extended period by the Standing Offer Authority *thirty (30)* days before the expiry date of the Standing Offer. A revision to the Standing Offer will be issued by the Standing Offer Authority.

5. Authorities

5.1 Standing Offer Authority

The Standing Offer Authority is:

Name:	Torrey Buchan
Title:	Supply Specialist Public Works and Government Services Canada Acquisitions Branch
Directorate:	Marine Acquisitions – Pacific Region
Address:	Suite 401, 1230 Government Street Victoria, BC Canada V8X 4S4
Telephone:	250-216-2092
Facsimile:	250-363-3960
E-mail address:	torrey.buchan2@pwgsc-tpsgc.gc.ca

The Standing Offer Authority is responsible for the establishment of the Standing Offer, its administration and its revision, if applicable. Upon the making of a call-up, as Contracting Authority, he is responsible for any contractual issues relating to individual call-ups made against the Standing Offer by any Identified User.

5.2 Project Authority

The Technical Authority for the Standing Offer is provided upon issuance.

Name:	Eugene Yeung
Organization:	Department of Fisheries & Oceans Small Craft Harbours
Telephone:	604-230-2911
Facsimile:	604-666-7056
E-mail address:	Eugene.Yeung@dfo-mpo.gc.ca

The Technical Authority named above is the representative of the department or agency for whom the Work is being carried out under the Standing Offer and associated Call-ups and is responsible for all matters concerning the technical content of the Work under associated Call-ups. Technical matters may be discussed with the Technical Authority, however the Technical Authority has no authority to authorize changes to the scope of the Work. Changes to the scope of the Work can only be made through a Standing Offer revision issued by the Standing Offer Authority.

5.3 Inspection Authority

The Inspection Authority for the Standing Offer is the Technical Authority.

The Inspection Authority is the representative of the department or agency for whom the Work is being performed under the Standing Offer and is responsible for inspection of the Work and acceptance of the finished work. The Inspection Authority may be represented on-site by a designated inspector and any other Government of Canada inspector who may from time to time be assigned in support of the designated Inspector.

5.4 Offeror's Representative

Name:	Cliff Gibson
Telephone:	250-749-0233
Facsimile:	250-749-0243
E-mail address:	cvgibson@shaw.ca

6. Identified Users

The Identified User authorized to make call-ups against the Standing Offer is: Small Craft Harbours Branch, Fisheries & Oceans Canada.

7. Call-up Instrument

The Work will be authorized or confirmed by the Identified User(s) using form *PWGSC-TPSGC 942, Call-up Against a Standing Offer*.

8. Limitation of Call-ups

Individual call-ups against the Standing Offer must not exceed $200,000.00 (Applicable Taxes included).

Individual call-ups against the Standing Offer exceeding $200,000.00 (Applicable Taxes included), must be authorized in writing by the Standing Offer Authority.

9. Financial Limitation

The total cost to Canada resulting from call ups against the Standing Offer must not exceed the sum of *$1,500,000.00* (*Applicable Taxes excluded*) unless otherwise authorized in writing by the Standing Offer Authority. The Offeror must not perform any work or services or supply any articles in response to call ups which would cause the total cost to Canada to exceed the said sum, unless an increase is so authorized.

The Offeror must notify the Standing Offer Authority as to the adequacy of this sum when 75 percent of this amount has been committed, or *three (3)* months before the expiry date of the Standing Offer, whichever comes first. However, if at any time, the Offeror considers that the said sum may be exceeded, the Offeror must promptly notify the Standing Offer Authority.

10. Priority of Documents

If there is a discrepancy between the wording of any documents that appear on the list, the wording of the document that first appears on the list has priority over the wording of any document that subsequently appears on the list.

a) the call up against the Standing Offer, including any annexes;
b) the articles of the Standing Offer;
c) the general conditions 2005 (2015-07-03), General Conditions - Standing Offers - Goods or Services;
d) the general conditions 2010A (2015-07-03), General Conditions - Goods (Medium Complexity);
e) Annex A, Requirement;
f) Annex B, Basis of Payment;
g) Annex C, Insurance Requirements;
h) Annex D, Reporting Requirements;
i) the Offeror's offer dated September 3, 2015.

11. Certifications

11.1 Compliance

The continuous compliance with the certifications provided by the Offeror with its offer and the ongoing cooperation in providing associated information are conditions of issuance of the Standing Offer (SO).

Certifications are subject to verification by Canada during the entire period of the SO and of any resulting contract that would continue beyond the period of the SO. If the Offeror does not comply with any certification, fails to provide the associated information, or if it is determined that any certification made by the Offeror in its offer is untrue, whether made knowingly or unknowingly, Canada has the right to terminate any resulting contract for default and set aside the Standing Offer.

12. Applicable Laws

The Standing Offer and any contract resulting from the Standing Offer must be interpreted and governed, and the relations between the parties determined, by the laws in force in British Columbia.

B. RESULTING CONTRACT CLAUSES

The following clauses and conditions apply to and form part of any contract resulting from a call-up against the Standing Offer.

1. Requirement

The Contractor must provide the items detailed in the call-up against the Standing Offer.

2. Standard Clauses and Conditions

2.1 General Conditions

2010A (2015-07-03), General Conditions - Goods (Medium Complexity) apply to and form part of the Contract.

Section 16, Interest on Overdue Accounts, of 2010A (2015-07-03), General Conditions - Goods (Medium Complexity) will not apply to payments made by credit cards.

3. Term of Contract

3.1 Delivery Date

Delivery must be made within ten (10) weeks from receipt of a call-up against the Standing Offer.

4. Payment

4.1 Basis of Payment

In consideration of the Contractor satisfactorily completing all of its obligations under the Contract, the Contractor will be paid firm unit prices*, as specified in Annex B and detailed in the call-up.* Customs duties are *included* and Applicable Taxes are extra.

Canada will not pay the Contractor for any design changes, modifications or interpretations of the Work, unless they have been approved, in writing, by the Contracting Authority before their incorporation into the Work.

4.2 Single Payment

SACC Manual clause H1000C (2008-05-12), Single Payment.

5. Invoicing Instructions

1. The Contractor must submit invoices in accordance with the section entitled "Invoice Submission" of the general conditions. Invoices cannot be submitted until all work identified in the invoice is completed.

2. Invoices must be distributed as follows:
    a. The original and one (1) copy must be forwarded to the address shown on page 1 of the Contract for certification and payment.

b. One (1) copy must be forwarded to the Contracting Authority identified under the section entitled "Authorities" of the Contract.

6. Insurance Requirements

The Contractor must comply with the insurance requirements specified in Annex C. The Contractor must maintain the required insurance coverage for the duration of the Contract. Compliance with the insurance requirements does not release the Contractor from or reduce its liability under the Contract.

The Contractor is responsible for deciding if additional insurance coverage is necessary to fulfill its obligation under the Contract and to ensure compliance with any applicable law. Any additional insurance coverage is at the Contractor's expense, and for its own benefit and protection.

The Contractor must forward to the Contracting Authority within ten (10) days after the date of award of the Contract, a Certificate of Insurance evidencing the insurance coverage and confirming that the insurance policy complying with the requirements is in force. For Canadian-based Contractors, coverage must be placed with an Insurer licensed to carry out business in Canada, however, for Foreign-based Contractors, coverage must be placed with an Insurer with an A.M. Best Rating no less than “A-”. The Contractor must, if requested by the Contracting Authority, forward to Canada a certified true copy of all applicable insurance policies.

7. Trade Qualifications

The Contractor must use qualified, certificated (if applicable) and competent tradespeople and supervision to ensure a uniform high level of workmanship. The Technical Authority may request to view and record details of the certification and/or qualifications held by the Contractor’s tradespeople. This request should not be unduly exercised but only to ensure qualified tradespeople are on the job

ANNEX A

REQUIREMENT

FISHERIES AND OCEANS CANADA
SMALL CRAFT HARBOURS – PACIFIC REGION

200 – 401 Burrard Street
Vancouver, British Columbia
V6C 3S4

Departmental Contact
Shaun Loader – Project Engineer
Small Craft Harbours – Pacific Region
Shaun.Loader@dfo-mpo.gc.ca
604-351-8847

Section 01 11 00 – Summary of Work

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 01 33 00 – SUBMITTAL REQUIREMENTS AND EVALUATION
.2 Section 02 48 00 – BUOYANCY BILLETS
.3 Section 02 50 00 – TIMBER FLOATS
.4 Section 05 90 00 – STEEL HARDWARE.

1.2 DEFINITIONS

.1 Throughout contract documents, the words “Owner,” “Contracting Authority,” “Harbour Authority,” “Contractor,” “Engineer,” or “Department,” shall be defined as follows:

.1 Owner and Contracting Authority
Small Craft Harbours Program of the Department of Fisheries and Oceans, 200-401 Burrard Street Vancouver B.C. V6C 3S4

.2 Engineer/Departmental Representative
An employee of the Owner or Engineer assigned by the Owner as the Engineer for this project, or the Engineer’s representative assigned by the Engineer as his representative for the project.

.3 Contractor
The party accepted by the Owner with whom a formal contract is entered to complete the work of this project.

.4 Department
The Department of Fisheries and Oceans, Canada.

1.3 DRAWINGS

.1 STANDARD FLOATS

9’ FLOAT

.1 FM9-ST-000: 2.742m WIDE STANDARD FLOAT MODULE ASSEMBLY
.2 FM9-ST-001: 2.742m WIDE STANDARD FLOAT MODULE
.3 FM9-ST-002: 2.742m WIDE STANDARD FLOAT MODULE ASSEMBLY
.4 FM9-ST-003: 2.742m WIDE STANDARD FLOAT MODULE ASSEMBLY
.5 FM9-END-200: 2.742m WIDE FLOAT MODULE 2005 REVISION
.6 FM9-END-201: 2.742m WIDE FLOAT MODULE 2005 REVISION

12’ FLOAT

.1 FM12-ST-000: 3.654m WIDE STANDARD FLOAT MODULE ASSEMBLY
.2 FM12-ST-001: 3.654m WIDE STANDARD FLOAT MODULE
.3 FM12-ST-002: 3.654m WIDE STANDARD FLOAT MODULE ASSEMBLY
.4 FM912-ST-003: 3.654m WIDE STANDARD FLOAT MODULE ASSEMBLY
.5 FM12-END-200: 3.654m WIDE FLOAT MODULE 2005 REVISION
.6 FM12-END-201: 3.654m WIDE FLOAT MODULE 2005 REVISION

9’ FLOAT HEAVY

.1 FM9-HV-000: 2.742m WIDE HEAVY FLOAT MODULE ASSEMBLY

.2 FM9-HV-001: 2.742m WIDE HEAVY FLOAT MODULE
.3 FM9-HV-002: 2.742m WIDE HEAVY FLOAT MODULE ASSEMBLY
.4 FM9-HV-003: 2.742m WIDE HEAVY FLOAT MODULE ASSEMBLY
.5 FM9-HV-END-200: 2.742m WIDE HEAVY FLOAT MODULE 2005 REVISION
.6 FM9-HV-END-201: 2.742m WIDE HEAVY FLOAT MODULE 2005 REVISION

12' FLOAT HEAVY
.1 FM12-HV-000: 3.654m WIDE HEAVY FLOAT MODULE ASSEMBLY
.2 FM12-HV-001: 3.654m WIDE HEAVY FLOAT MODULE
.3 FM12-HV-002: 3.654m WIDE HEAVY FLOAT MODULE ASSEMBLY
.4 FM912-HV-003: 3.654m WIDE HEAVY FLOAT MODULE ASSEMBLY
.5 FM12-HV-END-200: 3.654m WIDE HEAVY FLOAT MODULE 2005 REVISION
.6 FM12-HV-END-201: 3.654m WIDE HEAVY FLOAT MODULE 2005 REVISION

1.4 LOCATION

.1 The Port Edward Small Craft Harbour is located on the north coast of British Columbia just north of the mouth of the Skeena River, near Price Rupert.

.2 The French Creek Small Craft Harbour is located on the east coast of Vancouver Island just north of Parksville, BC.

.3 The Steveston Small Craft Harbour is located in Steveston, BC part of the City of Richmond.

1.5 WORK COVERED BY THE STANDING OFFER

.1 Work covered in this section comprises of the supply, fabrication and assembly of timber float modules and materials along with the delivery to Port Edward Harbour, French Creek Harbour and Steveston Harbour, British Columbia.

.2 All materials shall be supplied by the contractor and the contractor is responsible for all labour and materials necessary for assembly.

.3 The floats shall be delivered no longer than 10 weeks from the call up date.

1.6 FLOAT MODULE SUPPLY, ASSEMBLY AND DELIVERY

.1 9' STANDARD FLOAT MODULE

.1 Fabrication and Supply

The work to be carried out under this item includes all labour, materials and equipment for the supply of timber float modules so that they can be assembled by others into a complete float. The work generally consists of, but is not limited to the following:

.1 Supply of a 9 foot wide standard float module

.1 This item includes the supply of all items listed in the tables labelled "TIMBER MEMBERS" & "HARDWARE REQUIREMENTS" on drawing:

STANDARD FLOAT MODULE
FM9-ST-000
FM9-ST-001
FM9-ST-002
FM9-ST-003

.2 This item includes the supply of hardware and nails (above and beyond those specified in the drawing).

.2 9’ STANDARD FLOAT END MODULE

.1 Fabrication and Supply

The work to be carried out under this item includes all labour, materials and equipment for the supply of timber float end modules so that they can be assembled by others into a complete float. The work generally consists of, but is not limited to the following:

.1 Supply of a 9 foot wide standard float end module

.1 This item includes the supply of all items listed in the tables labelled “TIMBER MEMBERS” & “HARDWARE REQUIREMENTS” on drawing:

STANDARD FLOAT END MODULE
FM9-END-200
FM9-END-201

.2 This item includes the supply of all hardware, tools and nails necessary for assemble of the floats

.3 12’ STANDARD FLOAT MODULE

.1 Fabrication and Supply

The work to be carried out under this item includes all labour, materials and equipment for the supply of timber float modules so that they can be assembled by others into a complete float. The work generally consists of, but is not limited to the following:

.1 Supply of a 12 foot wide standard float module

.1 This item includes the supply of all items listed in the tables labelled “TIMBER MEMBERS” & “HARDWARE REQUIREMENTS” on drawing:

STANDARD FLOAT MODULE
FM12-ST-000
FM12-ST-001
FM12-ST-002
FM12-ST-003

.2 This item includes the supply of all hardware, tools and nails necessary for assemble of the floats

.4 12’ STANDARD FLOAT END MODULE

.1 Fabrication and Supply

The work to be carried out under this item includes all labour, materials and equipment for the supply of timber float end modules so that they can be assembled by others into a complete float. The work generally consists of, but is not limited to the following:

.1 Supply of a 12 foot wide standard float end module

.1 This item includes the supply of all items listed in the tables labelled “TIMBER MEMBERS” & “HARDWARE REQUIREMENTS”
on drawing:

STANDARD FLOAT END MODULE
FM12-END-200
FM12-END-201

.2 This item includes the supply of all hardware, tools and nails necessary for assemble of the floats

.5 9’ HEAVY FLOAT MODULE

.1 Fabrication and Supply

The work to be carried out under this item includes all labour, materials and equipment for the supply of timber float modules so that they can be assembled by others into a complete float. The work generally consists of, but is not limited to the following:

.1 Supply of a 9 foot wide heavy float module

.1 This item includes the supply of all items listed in the tables labelled “TIMBER MEMBERS” & “HARDWARE REQUIREMENTS”
on drawing:

HEAVY FLOAT MODULE
FM9-HV-000
FM9-HV-001
FM9-HV-002
FM9-HV-003

.2 This item includes the supply of hardware and nails (above and beyond those specified in the drawing).

.6 9’ HEAVY FLOAT END MODULE

.1 Fabrication and Supply

The work to be carried out under this item includes all labour, materials and equipment for the supply of timber float end modules so that they can be assembled by others into a complete float. The work generally consists of, but is not limited to the following:

.1 Supply of a 9 foot wide heavy float end module

.1 This item includes the supply of all items listed in the tables labelled “TIMBER MEMBERS” & “HARDWARE REQUIREMENTS”
on drawing:

HEAVY FLOAT END MODULE
FM9-HV-END-200
FM9-HV-END-201

.2 This item includes the supply of all hardware, tools and nails necessary for assemble of the floats

.7 12’ HEAVY FLOAT MODULE

.1 Fabrication and Supply

The work to be carried out under this item includes all labour, materials and equipment for the supply of timber float modules so that they can be assembled by others into a complete float. The work generally consists of, but is not limited to the following:

.1 Supply of a 12 foot heavy standard float module
.1 This item includes the supply of all items listed in the tables labelled “TIMBER MEMBERS” & “HARDWARE REQUIREMENTS” on drawing:
HEAVY FLOAT MODULE
FM12-HV-000
FM12-HV-001
FM12-HV-002
FM12-HV-003

.2 This item includes the supply of all hardware, tools and nails necessary for assemble of the floats

.8 12’ HEAVY FLOAT END MODULE
.1 Fabrication and Supply
The work to be carried out under this item includes all labour, materials and equipment for the supply of timber float end modules so that they can be assembled by others into a complete float. The work generally consists of, but is not limited to the following:

.1 Supply of a 12 foot wide heavy float end module
.1 This item includes the supply of all items listed in the tables labelled “TIMBER MEMBERS” & “HARDWARE REQUIREMENTS”
on drawing:

HEAVY FLOAT END MODULE
FM12-HV-END-200
FM12-HV-END-201

.2 This item includes the supply of all hardware, tools and nails necessary for assemble of the floats

.9 FLOAT FLANGES
.1 Fabrication and supply S4S creosote beams
The work under this contract shall include the supply of equipment, labour and materials for the performance of all work as required by the Contract Documents. The work generally consists of, but is not limited to the following:

.1 This item includes the supply of a bundle of twenty (20) timber beams.
.2 Dimension of beams will be
.1 Twenty-two feet (22’) long by six inches by eight inches (6”x8”) surface four sides (S4S) – Actual dimensions 5.5” x 7.5”
.3 Beam materials are to be
.1 #1 Select or Better Fir
.2 14 Lb. Creosote treatment

.10 FLOAT JOISTS
.1 Fabrication and supply S4S creosote beams

The work under this contract shall include the supply of equipment, labour and materials for the performance of all work as required by the Contract Documents. The work generally consists of, but is not limited to the following:

.1 This item includes the supply of a bundle of twenty (20) timber beams.
.2 Dimension of beams will be
.1 Eighteen feet (18') long by six inches by six inches (6"x6") surface four sides (S4S) – Actual dimensions 5.5" x 5.5"
.3 Beam materials are to be
.1 #1 Select or Better Fir
.2 14 Lb. Creosote treatment

.11 FLOAT TIE-RAILS (4x6)

.1 Fabrication and supply S4S creosote beams

The work under this contract shall include the supply of equipment, labour and materials for the performance of all work as required by the Contract Documents. The work generally consists of, but is not limited to the following:

.1 This item includes the supply of a bundle of twenty (20) timber beams.
.2 Dimension of beams will be
.1 Twenty-two feet (22') long by four inches by six inches (6"x4") surface four sides (S4S) – Actual dimensions 5.5"x3.5"
.3 Beam materials are to be
.1 #1 Select or Better Fir
.2 ACZA treatment

.12 FLOAT TIE-RAILS (6x6)

.1 Fabrication and supply S4S creosote beams

The work under this contract shall include the supply of equipment, labour and materials for the performance of all work as required by the Contract Documents. The work generally consists of, but is not limited to the following:

.1 This item includes the supply of a bundle of twenty (20) timber beams.
.2 Dimension of beams will be
.1 Twenty-two feet (22') long by six inches by six inches (6"x6") surface four sides (S4S) – Actual dimensions 5.5"x5.5"
.3 Beam materials are to be
.1 #1 Select or Better Fir
.2 ACZA treatment

.13 FLOAT DECKING (2x8)

.1 Fabrication and supply ACZA treated planks

The work under this contract shall include the supply of equipment, labour and materials for the performance of all work as required by the Contract Documents. The work generally consists of, but is not limited to the following:

.1 This item includes the price per board feet to supply a bundle of minimum 1000 board feet of material.
.2 Dimension of planks will be
.1 Up to twenty-two feet (22') long by two inches by eight inches (2" x 8") surface one side two edges (S1S2E) – Actual dimensions 1.75" x 7.5"
.2 Surfaced side to be heart side of plank
.3 Typical lengths will be 8', 11', 13' or 17'
.4 Lengths to be specified on call-up
.3 Plank materials are to be
.1 #1 Select or Better Fir
.2 ACZA treatment

.14 FLOAT DECKING (2x12)

.1 Fabrication and supply ACZA treated planks

The work under this contract shall include the supply of equipment, labour and materials for the performance of all work as required by the Contract Documents. The work generally consists of, but is not limited to the following:

.1 This item includes the price per board feet to supply a bundle of minimum 1000 board feet of material.

.2 Dimension of planks will be

.1 Up to twenty-two feet (22') long by two inches by twelve inches (2" x 12") surface one side two edges (S1S2E) – Actual dimensions 1.75" x 7.5"

.2 Surfaced side to be heart side of plank

.3 Typical lengths will be 8', 11', 13' or 17'

.4 Lengths to be specified on call-up

.3 Plank materials are to be

.1 #1 Select or Better Fir

.2 ACZA treatment

.15 FLOAT DECKING (3x12)

.1 Fabrication and supply ACZA treated planks

The work under this contract shall include the supply of equipment, labour and materials for the performance of all work as required by the Contract Documents. The work generally consists of, but is not limited to the following:

.1 This item includes the price per board feet to supply a bundle of minimum 1000 board feet of material.

.2 Dimension of planks will be

.1 Up to thirty feet (30') long by three inches by twelve inches (3" x 12") surface one side two edges (S1S2E) – Actual dimensions 2.75" x 11.5"

.2 Surfaced side to be heart side of plank

.3 Typical lengths will be 12', 16', or 20'

.4 Lengths to be specified on call-up

.3 Plank materials are to be

.1 #1 Select or Better Fir

.2 ACZA treatment

.16 FLOAT DECKING (4x12)

.1 Fabrication and supply ACZA treated planks

The work under this contract shall include the supply of equipment, labour and materials for the performance of all work as required by the Contract Documents. The work generally consists of, but is not limited to the following:

.1 This item includes the price per board feet to supply a bundle of minimum 1000 board feet of material.

.2 Dimension of planks will be

.1 Up to thirty feet (30') long by four inches by twelve inches (4" x 12") surface one side two edges (S1S2E) – Actual dimensions 3.75" x 11.5"

.2 Surfaced side to be heart side of plank

.3 Typical lengths will be 12', 16', or 20'

.4 Lengths to be specified on call-up

.3 Plank materials are to be

.1 #1 Select or Better Fir

.2 ACZA treatment

.17 MISCELLANEOUS FLOAT STRUCTURAL TIMBERS

.1 Fabrication and supply S4S creosote beams

The work under this contract shall include the supply of equipment, labour and materials for the performance of all work as required by the Contract Documents. The work generally consists of, but is not limited to the following:

.1 This item includes the price per board feet to supply a bundle of minimum 1000 board feet of material.

.2 Dimension of beams will be

.1 Up to twenty feet (20') long

.2 Up to a max width of eight inches by a max depth of eight inches (0"-8" width x 0"-8" depth), with not one dimension exceeding eight inches (8")

.3 Surface four sides (S4S)

.4 Length, width and depth to be specified on call-up

.3 Beam materials are to be

.1 #1 Select or Better Fir

.2 14 Lb. Creosote treatment

.18 MISCELLANEOUS FLOAT STRUCTURAL TIMBERS

.1 Fabrication and supply S4S creosote beams

The work under this contract shall include the supply of equipment, labour and materials for the performance of all work as required by the Contract Documents. The work generally consists of, but is not limited to the following:

.1 This item includes the price per board feet to supply a bundle of minimum 1000 board feet of material.

.2 Dimension of beams will be

.1 Greater than twenty feet (20'), up to thirty feet (30') long

.2 Up to a max width of eight inches by a max depth of eight inches (0"-8" width x 0"-8" depth), with not one dimension exceeding eight inches (8")

.3 Surface four sides (S4S)

.4 Length, width and depth to be specified on call-up

.3 Beam materials are to be

.1 #1 Select or Better Fir

.2 14 Lb. Creosote treatment

.19 MISCELLANEOUS FLOAT STRUCTURAL TIMBERS

.1 Fabrication and supply S4S creosote beams

The work under this contract shall include the supply of equipment, labour and materials for the performance of all work as required by the Contract Documents. The work generally consists of, but is not limited to the following:

.1 This item includes the price per board feet to supply a bundle of minimum 1000 board feet of material.

.2 Dimension of beams will be

.1 Up to twenty feet (20') long

.2 Up to a max width of sixteen inches by a max depth of sixteen inches (0"-16" width x 0"-16" depth), with a minimum of one dimension exceeding eight inches (8")

.3 Surface four sides (S4S)

.4 Length, width and depth to be specified on call-up

.3 Beam materials are to be

.1 #1 Select or Better Fir

.2 14 Lb. Creosote treatment

.20 MISCELLANEOUS FLOAT STRUCTURAL TIMBERS

.1 Fabrication and supply S4S creosote beams

The work under this contract shall include the supply of equipment, labour and materials for the performance of all work as required by the Contract

Documents. The work generally consists of, but is not limited to the following:

.1 This item includes the price per board feet to supply a bundle of minimum 1000 board feet of material.

.2 Dimension of beams will be

.1 Greater than twenty feet (20'), up to thirty feet (30') long

.2 Up to a max width of sixteen inches by a max depth of sixteen inches (0"-16" width x 0"-16" depth), with a minimum of one dimension exceeding eight inches (8")

.3 Surface four sides (S4S)

.4 Length, width and depth to be specified on call-up

.3 Beam materials are to be

.1 #1 Select or Better Fir

.2 14 Lb. Creosote treatment

.21 FOAM BUOYANCY BILLET (610 X 597 X 3352)

.1 Fabrication and supply of 610mm x 597mm x 3352mm buoyancy billet

The work under this contract shall include the supply of equipment, labour and materials for the performance of all work as required by the Contract Documents. The work generally consists of, but is not limited to the following:

.1 This item includes the price per unit to supply one (1) buoyancy billet.

.2 Finished dimension of buoyancy billet will be 610mm x 597mm x 3352mm

.22 Foam Buoyancy Billet (610 x 597 x 2438)

.1 Fabrication and supply of 610mm x 597mm x 2438mm buoyancy billet

The work under this contract shall include the supply of equipment, labour and materials for the performance of all work as required by the Contract Documents. The work generally consists of, but is not limited to the following:

.1 This item includes the price per unit to supply one (1) buoyancy billet.

.2 Finished dimension of buoyancy billet will be 610mm x 597mm x 2438mm

.23 Foam Buoyancy Billet (1000 x 597 x 2438)

.1 Fabrication and supply of 1000mm x 597mm x 2438mm buoyancy billet

The work under this contract shall include the supply of equipment, labour and materials for the performance of all work as required by the Contract Documents. The work generally consists of, but is not limited to the following:

.1 This item includes the price per unit to supply one (1) buoyancy billet.

.2 Finished dimension of buoyancy billet will be 1000mm x 597mm x 2438mm

.24 Foam Buoyancy Billet (1000 x 597 x 3352)

.1 Fabrication and supply of 1000 x 597 x 3352 buoyancy billet

The work under this contract shall include the supply of equipment, labour and materials for the performance of all work as required by the Contract Documents. The work generally consists of, but is not limited to the following:

.1 This item includes the price per unit to supply one (1) buoyancy billet.

.2 Finished dimension of buoyancy billet will be 1000mm x 597mm x 3352mm

.25 Foam Buoyancy Billet (610 x 597 x 3352)

.1 Fabrication and supply of 610mm x 597mm x 3352mm buoyancy billet

The work under this contract shall include the supply of equipment, labour and materials for the performance of all work as required by the Contract Documents.\

The work generally consists of, but is not limited to the following:
.1 This item includes the price per unit to supply one (1) buoyancy billet.
.2 Finished dimension of buoyancy billet will be 610mm x 597mm x 3352mm

.26 Foam Buoyancy Billet (610 x 597 x 1219)

.1 Fabrication and supply of 610mm x 597mm x 1219mm buoyancy billet

The work under this contract shall include the supply of equipment, labour and materials for the performance of all work as required by the Contract Documents.
The work generally consists of, but is not limited to the following:
.1 This item includes the price per unit to supply one (1) buoyancy billet.
.2 Finished dimension of buoyancy billet will be 610mm x 597mm x 1219mm

.27 9' STANDARD FLOAT MODULE

.1 Assembly

The lump sum cost for this item shall include the supply of materials, equipment, tools, services, labour and all things necessary to complete the following:

.1 Assembly of the 2.74m wide timber float modules as identified in the Drawings.

.2 Contractor to supply all necessary hardware as per Section 05 90 00 – STEEL HARDWARE to assemble the floats.

.3 All field cuts and treatment as per Section 02 50 00 – TIMBER FLOATS.

.4 Splice together with other modules and end kits as required in call-up.

.28 9' FLOAT END MODULE

.1 Assembly

The lump sum cost for this item shall include the supply of materials, equipment, tools, services, labour and all things necessary to complete the following:

.1 Assembly of the 2.74m wide timber float modules as identified in the Drawings.

.2 Contractor to supply all necessary hardware as per Section 05 90 00 – STEEL HARDWARE to assemble the floats.

.3 All field cuts and treatment as per Section 02 50 00 – TIMBER FLOATS.

.4 Splice together with other modules and end kits as required in call-up.

.29 12' FLOAT MODULE

.1 Assembly

The lump sum cost for this item shall include the supply of materials, equipment, tools, services, labour and all things necessary to complete the following:

.1 Assembly of the standard 3.66m wide timber float modules as identified in the Drawings.

.2 Contractor to supply all necessary hardware as per Section 05 90 00 – STEEL HARDWARE to assemble the floats.

.3 All field cuts and treatment as per Section 02 50 00 – TIMBER FLOATS.

.4 Splice together with other modules and end kits as required in call-up.

.30 12' FLOAT END MODULE

.2 Assembly

The lump sum cost for this item shall include the supply of materials, equipment, tools, services, labour and all things necessary to complete the following:

.1 Assembly of the standard 3.66m wide timber float modules as identified in the Drawings.

.2 Contractor to supply all necessary hardware as per Section 05 90 00 – STEEL HARDWARE to assemble the floats.

.3 All field cuts and treatment as per Section 02 50 00 – TIMBER FLOATS.

.4 Splice together with other modules and end kits as required in call-up.

.31 UNASSEMBLED FLOAT MODULE DELIVERY - STEVESTON

The lump sum cost for this item shall include the supply of materials, equipment, tools, services, labour and all things necessary to complete the following:

.1 Delivery of unassembled 9' or 12' float modules to:

.1 Steveston Harbour, Richmond, BC
12740 Trites Road
Richmond, BC
V7E 3R8

.2 Secure unassembled float modules and all other materials including decking in bundles and label bundles.

.3 The contractor shall give the Departmental Representative at least two weeks' notice before the delivery of the modules to site.

.4 Bundle all ACZA and Creosote material for float.

.5 Float modules will be assembled, delivered and secured as directed by the Departmental Representative.

.6 Bundle decking and rub boards with two modules per bundle. The contractor shall supply twenty-eight (28) pieces of decking for each module.

.32 UNASSEMBLED FLOAT MODULE DELIVERY – FRENCH CREEK

The lump sum cost for this item shall include the supply of materials, equipment, tools, services, labour and all things necessary to complete the following:

.1 Delivery of unassembled 9' or 12' float modules to:

.1 French Creek Harbour, Parksville, BC
1055 Lee Road

Parksville, BC
V9P 2E1

.2 Secure unassembled float modules and all other materials including decking in bundles and label bundles.

.3 The contractor shall give the Departmental Representative at least two weeks' notice before the delivery of the modules to site.

.4 Bundle all ACZA and Creosote material for float.

.5 Float modules will be assembled, delivered and secured as directed by the Departmental Representative.

.6 Bundle decking and rub boards with two modules per bundle. The contractor shall supply twenty-eight (28) pieces of decking for each module.

.33 UNASSEMBLED FLOAT MODULE DELIVERY – PORT EDWARD
The lump sum cost for this item shall include the supply of materials, equipment, tools, services, labour and all things necessary to complete the following:

.1 Delivery of unassembled 9' or 12' float modules to:
.1 Port Edward Harbour, Port Edward, BC
200 Bayview Drive
Port Edward, BC
V0V 1G0

.2 Secure unassembled float modules and all other materials including decking in bundles and label bundles.

.3 The contractor shall give the Departmental Representative at least two weeks' notice before the delivery of the modules to site.

.4 Bundle all ACZA and Creosote material for float.

.5 Float modules will be assembled, delivered and secured as directed by the Departmental Representative.

.6 Bundle decking and rub boards with two modules per bundle. The contractor shall supply twenty-eight (28) pieces of decking for each module.

.34 ASSEMBLED FLOAT MODULE DELIVERY (UP TO 4 TOGETHER) - STEVESTON
The lump sum cost for this item shall include the supply of materials, equipment, tools, services, labour and all things necessary to complete the following:

.1 Delivery of 9' or 12' float modules floating to:
.1 Steveston Harbour, Richmond, BC
12740 Trites Road
Richmond, BC
V7E 3R8

.2 Secure float modules as directed by the Departmental Representative or with 2 lines to existing floats. Refer to site plan for location.

.3 Secure all other materials in bundles and label bundles.

.4 The contractor shall give the Departmental Representative at least two weeks' notice before the delivery of the modules to site.

.5 Float modules will be assembled, delivered and secured as directed by the Departmental Representative.

.35 ASSEMBLED FLOAT MODULE DELIVERY (UP TO 4 TOGETHER) – FRENCH CREEK
The lump sum cost for this item shall include the supply of materials, equipment, tools, services, labour and all things necessary to complete the following:

.1 Delivery of 9' or 12' float modules floating to:
.1 French Creek Harbour, Parksville, BC
1055 Lee Road
Parksville, BC
V9P 2E1

.2 Secure float modules as directed by the Departmental Representative

.3 Secure all other materials including decking in bundles and label bundles.

.4 The contractor shall give the Departmental Representative at least two weeks' notice before the delivery of the modules to site.

.5 Float modules will be assembled, delivered and secured as directed by the Departmental Representative.

.36 ASSEMBLED FLOAT MODULE DELIVERY (UP TO 4 TOGETHER) – PORT EDWARD
The lump sum cost for this item shall include the supply of materials, equipment, tools, services, labour and all things necessary to complete the following:

.1 Delivery of 9' or 12' float modules floating to:
.1 Port Edward Harbour, Port Edward, BC
200 Bayview Drive
Port Edward, BC
V0V 1G0

.2 Secure float modules as directed by the Departmental Representative

.3 Secure all other materials including decking in bundles and label bundles.

.4 The contractor shall give the Departmental Representative at least two weeks' notice before the delivery of the modules to site.

.5 Float modules will be assembled, delivered and secured as directed by the Departmental Representative.

1.8 DOCUMENTS REQUIRED

.1 Maintain at job site, one copy each document as follows:
.1 Contract Drawings, Specifications and any Addenda.

.2 Change Orders and other Modifications to Contract.
.3 Copy of Approved Work Schedule.
.4 Health and Safety Plan and Other Safety Related Documents.
.5 All regulatory permits required for the work
.6 Associated Best Management Practices documentation.

.2 All submittals shall be in accordance with Section 01 33 00 – SUBMITTAL REQUIREMENTS.

Part 2 Products

2.1 NOT USED

.1 Not used.

Part 3 Execution

3.1 NOT USED

.1 Not used.

END OF SECTION

Section 01 33 00 – Submittal Requirements

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 11 00 – SUMMARY OF WORK

1.2 ADMINISTRATIVE

.1 Submit to the Departmental Representative submittals listed for review. Submit promptly and in orderly sequence to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.

.2 Do not proceed with Work affected by submittal until review is complete.

.3 Present shop drawings, product data, samples and mock ups in SI Metric units.

.4 Where items or information is not produced in SI Metric units converted values are acceptable.

.5 Review submittals prior to submission to the Departmental Representative. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.

.6 Notify the Departmental Representative, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.

.7 Verify field measurements and affected adjacent Work are co-ordinated.

.8 Contractor's responsibility for errors and omissions in submission is not relieved by the Departmental Representative's review of submittals.

.9 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by the Departmental Representative review.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Section 02 48 00 – Buoyancy Billets

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 02 50 00 – TIMBER FLOATS

1.2 REFERENCE DRAWINGS

.1 FM9-ST-000: 2.742m WIDE STANDARD FLOAT MODULE ASSEMBLY
.2 FM9-ST-001: 2.742m WIDE STANDARD FLOAT MODULE
.3 FM9-ST-002: 2.742m WIDE STANDARD FLOAT MODULE ASSEMBLY
.4 FM9-ST-003: 2.742m WIDE STANDARD FLOAT MODULE ASSEMBLY
.5 FM9-END-200: 2.742m WIDE FLOAT MODULE 2005 REVISION
.6 FM9-END-201: 2.742m WIDE FLOAT MODULE 2005 REVISION

Part 2 Products

2.1 GENERAL

.1 The dimensions of the finished coated billets are to be as diagrammed. It is the contractor's responsibility to ensure that the finished billets will fit into the frame of the float without damage.

.2 For assembly the buoyancy billets shall be secured to the float frame members with nylon banding or plastic strapping.

.3 The billets of the floats will be coated with polyurea as specified in this section.

.4 Buoyancy billets will not be accepted if damaged in any manner in handling. Field repair of polyurea coating may be acceptable, subject to written approval by the Engineer.

2.2 PHYSICAL PROPERTIES

.1 The materials will meet or exceed the following standards:

PROPERTY	POLYSTYRENE	POLYUREA
Compressive Strength at l0"% deformation (minimum):	76kPa	N/A
Tear Strength: (minimum)	N/A	30KN/m
Flexural Strength (minimum):	124 kPa	N/A

Water Absorption By volume (maximum):	6%	0%
Density (minimum):	16 kg/m^3	1100kg/m^3

2.3 POLYSTYRENE

.1 The expanded polystyrene will be a uniform cellular structure free of voids resulting from unexpanded components or any other causes. If a beaded product is to be used, the beads will be fused so that when the product is broken by hand pressure, there is an excess of broken or sheared beads.

.2 The billets to be built-up to correct vertical depth using thinner layers, providing the bonding method is approved by the Engineer. No vertical joints will be permitted within the billet. Before coating the polystyrene billets will be cured to minimize moisture content.

.3 Polystyrene will contain 100% virgin bead (no reground material is permitted).

2.4 POLYUREA COATING

.1 The polystyrene billets will be sprayed to provide a minimum 2mm polyurea coating thoroughly bonded to the polystyrene billets and applied under dry conditions to ensure even application and bonding. The coating will be uniform with an even surface, self-extinguishing, and impervious to gasoline and oil. Any break or separation in the coating will be cause for rejection.

2.5 TESTING

.1 Upon notification of acceptance of tender, the Contractor will submit to the Engineer a 100 x 150-x 600 mm sample of his method of bonding the materials.

Part 3 Execution

3.1 HANDLING OF MATERIALS

.1 Buoyancy billets will not be accepted if damaged in any manner in handling. This includes damage from strapping and slings.

END OF SECTION

Section 02 50 00 – Timber Floats

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 02 48 00 – BUOYANCY BILLETS

1.2 REFERENCE DRAWINGS

.1 FM9-ST-000: 2.742m WIDE STANDARD FLOAT MODULE ASSEMBLY
.2 FM9-ST-001: 2.742m WIDE STANDARD FLOAT MODULE
.3 FM9-ST-002: 2.742m WIDE STANDARD FLOAT MODULE ASSEMBLY
.4 FM9-ST-003: 2.742m WIDE STANDARD FLOAT MODULE ASSEMBLY
.5 FM9-END-200: 2.742m WIDE FLOAT MODULE 2005 REVISION
.6 FM9-END-201: 2.742m WIDE FLOAT MODULE 2005 REVISION

Part 2 Products

2.1 GENERAL

.1 Except as otherwise noted, only new materials are to be used in, and remain an integral part of the structures.

.2 The Engineer may inspect materials and products at all stages of manufacture and transportation to the Project Site. Satisfactory inspection at any stage does not preclude future rejection if the materials or products are subsequently found to lack uniformity or fail to conform to the requirements specified.

.3 Acceptance will not be made until the materials or products are satisfactorily installed in the completed structures specified.

.4 The Contractor shall be responsible to repair all materials damaged through their handling, storage and/or installation.

2.2 TIMBER

.1 All timber for the purpose intended shall conform to the requirements of the N.L.G.A. Standard Grading Rules for Canadian Lumber.

.2 Refer to drawings and specifications for timber dimensions and treatment.

.3 All timber shall be Coast Douglas Fir. No 1 Structural Grade or better, unless specified otherwise.

.4 All decking shall be S1S2E (rough cut), heart side and smooth side down.

.5 All joists, cross-ties, stringers, blocking, bull rail, risers and fascia boards shall be S2E (rough cut)

.6 All timber shall be free of heart centre with no sap.

.7 All treated timber shall be S4S precut and bored, to specified dimensions, before treating.

.8 Rubboards and all timber at or above deck level shall be salt-treated. All timber below deck level, except rub boards, shall be creosote treated.

2.3 TREATMENT OF MATERIAL

.1 Creosote-treated Materials:
- .1 All creosote treated timber will be treated in accordance with CSA 080 and will follow the Best Management Practices for Creosote as outlined in “Best Management Practices for the use of Treated Wood in Aquatic Environments”.
- .2 All creosote treated materials will have a minimum retention of 225kg per cubic metre (14lb. per cubic foot).

.2 Salt-treated Materials:
- .1 All salt-treated timber to be treated in accordance with CSA 080-1989, “Wood Preservation”, and its current amendments CSA 080.14, for materials in contact with ground or water. (Only non-leachable ACA salts will be accepted).
- .2 All salt treatment will follow the Best Management Practices for ACA and ACZA as outlines in “Best Management Practices for the use of Treated Wood in Aquatic Environments”.
- .3 All salt-treated timber will have a minimum retention of 6.4 kg/m3 (0.40 lb. Per cubic foot) and a depth of penetration of 10mm as specified in CSA 080.14.

.3 Testing:
- .1 The Engineer will carry out testing of materials including core sampling at the treatment plant. Data will be made available to the Contractor for information only.
- .2 Notwithstanding the Engineer's testing program, the Contractor will ensure the materials meet the specified requirements in all respects. The Engineer reserves the right to reject materials on site.

2.4 FIELD TREATING

.1 Creosote-treated timber members that have fresh cut surfaces exposed in the structure shall be treated as specified:
- .1 All cuts or breaks in the surfaces shall be treated with two (2) separate coats of creosote oil.
- .2 Where bolt holes must be bored through creosote treated piles, the holes shall be filled with creosote oil and the bolts shall be dipped in hot creosote oil before bolts are placed.
- .3 Alternative field wood treatment to be approved by the Engineer before application.
- .4 Ensure preservatives are properly stored and protected in case of spillage.

.2 Salt-treated timber members that have fresh cut surfaces exposed in the structure shall be treated as specified:
- .1 All field cut surfaces to be treated with two (2) coats of Copper Naphthenate.
- .2 When field treating by brushing, spraying, dipping or soaking do so in such a manner that the preservative does not drip into the water or onto the ground.

.3 Ensure preservatives are properly stored and protected in case of spillage.

2.5 FABRICATION

.1 All treated timber shall be precut, counter bored, notched and bored, to specific dimensions, before treating.

.2 Holes will be drilled vertically to match up with other bolt holes. Timbers are to be template drilled so that one timber is interchangeable with any other timber (i.e. stringers with stringers or flanges with flanges).

.3 Mark using an impression stamp on all creosote pieces with the first initial(s) on one end of the timber (i.e. Stringer “S”), along with an arrow (or triangle) indicating the up orientation.

2.6 BOUYANCY BILLETS

.1 Five (5) billets are required per float module. Refer to Section 02 48 00 – BUOYANCY BILLETS for billet material specifications.

2.7 STEEL HARDWARE

.1 Contractor will supply all hardware or nails with modules, as required for complete assembly of the structure including all decking and rub boards.

Part 3 Execution

3.1 HANDLING OF MATERIALS

.1 Treated material will not be accepted if damaged in any manner in handling, including damage from strapping or slings.

.2 The Contractor shall be responsible to repair or replace all materials damaged by handling, storage and/or installation of materials.

3.2 EXISTING STRUCTURES

.1 Any structures damaged by the Contractor during the works shall be repairs and made good at the Contractor’s expense to the satisfaction of the Engineer.

3.3 SHIPPING AND PACKAGING

.1 Bundle includes all ACZA and Creosote material for float.

.2 Float modules will be assembled, delivered and secured as directed by the Departmental Representative.

.3 Bundle decking and rub boards with two modules per bundle. The contractor shall supply twenty-eight (28) pieces of decking for each module.

END OF SECTION

Section 05 90 00 – Steel Hardware

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 02 48 00 – BUOYANCY BILLETS
.2 Section 02 50 00 – TIMBER FLOATS

1.2 REFERENCE DRAWINGS

.1 FM9-ST-000: 2.742m WIDE STANDARD FLOAT MODULE ASSEMBLY
.2 FM9-ST-001: 2.742m WIDE STANDARD FLOAT MODULE
.3 FM9-ST-002: 2.742m WIDE STANDARD FLOAT MODULE ASSEMBLY
.4 FM9-ST-003: 2.742m WIDE STANDARD FLOAT MODULE ASSEMBLY
.5 FM9-END-200: 2.742m WIDE FLOAT MODULE 2005 REVISION
.6 FM9-END-201: 2.742m WIDE FLOAT MODULE 2005 REVISION

Part 2 Products

2.1 STEEL

.1 Small fastenings will conform to the standard for Wire Nails, Spikes, and Staples, Canadian Standards Association (CSA) B-111-1974.

.2 Drift bolts, machine bolts, washers, and miscellaneous iron will conform to the standard for General Purpose Structural Steel of the CAN3-G40.21-M81.

.3 Items manufactured or fabricated from scrap steel of unknown chemical or physical properties are not acceptable.

.4 All bolts will be of the full dimension specified or shown on the plan. Unless otherwise specified, all machine bolts will be provided with steel DPW washers under head and nut. The steel DPW washers shall be round unless specified square.

.5 All bolts shall be 19mm (3/4”) National course thread, unless shown otherwise. (NIC)

.6 Holes for machine bolts will be bored to provide a driving fit.

2.2 HARDWARE

.1 All hardware including bolts, drift bolts, carriage bolts, lag bolts, pipe sleeves, nuts and washers etc. will be hot dipped galvanized in accordance with the ASTM A153. Galvanize to 610g/m2 (2oz/ft2).

.2 All bolts will be of the full dimension specified or shown on the plan.

.3 Unless otherwise specified, all machine bolts will be provided with round steel plate washers under head and nut.

.4 All bolts shall be 19mm (3/4”) National course thread, unless shown otherwise.

.5 All 19mm washers shall be 6mm thick and 75mm diameter galvanized steel.

.6 All 25mm washers shall be a minimum of 8mm thick and 100mm diameter galvanized steel.

.7 All bolts to have 100mm (4”) of thread unless shown otherwise.

Part 3 Execution

3.1 ASSEMBLY

.1 All bolts shall be tightened to 100 Newton Meters (80 ft/lbs).

.2 Care shall be taken not to damage the treated wood finish. All treatment damaged by the Contractor shall be repaired at the Contractor’s expense as per Section 00 99 00 Timber Repairs.

.3 Pre-drilling:

.1 All ends of timbers including decking not fastened by bolts shall be predrilled prior to installation to prevent splitting.

.4 Holes for machine bolts will be bored to provide a driving fit.

3.2 FASCIA

.1 Secure each contact point with 2 – 100mm galvanized RDOX nails.

.2 Contact points every 500mm maximum.

END OF SECTION

APPENDIX 1 - DRAWINGS

For a copy of the Drawings, contact the Contracting Authority at:
torrey.buchan2@pwgsc-tpsgc.gc.ca

ANNEX B

BASIS OF PAYMENT

NOTE: Delivery charges for items 9 through 26 will be in extra to the unit prices in the pricing schedules below.

B1. Year 1

ITEM	CLASS OF LABOUR PLANT OR MATERIAL	UNIT COST
FLOAT MODULE SUPPLY FABRICATION		
1	PRICE for the fabrication and supply of one complete 9' foot wide float module.	$
2	PRICE for the fabrication and supply of one complete set of 9' foot wide float ends.	$
3	PRICE for the fabrication and supply of one complete 12' foot wide float module.	$
4	PRICE for the fabrication and supply of one complete set of 12' foot wide float ends.	$
5	PRICE for the fabrication and supply of one complete 9' foot wide heavy float module.	$
6	PRICE for the fabrication and supply of one complete set of 9' foot wide heavy float ends.	$
7	PRICE for the fabrication and supply of one complete 12' foot wide heavy float module.	$
8	PRICE for the fabrication and supply of one complete set of 12' foot wide heavy float ends.	$
9	PRICE for bundle of 22' long 6" x 8" S4S creosote treated timber beams in bundles of 20 units	$
10	PRICE for bundle of 18' long 6" x 6" S4S creosote treated timber beams in bundles of 20 units	$
11	PRICE for bundle of 22' long 4" x 6" S4S ACZA treated timber beams in bundles of 20 units	$
12	PRICE for bundle of 22' long 6" x 6" S4S ACZA treated timber beams in bundles of 20 units	$
13	PRICE per board foot of up to 22' long 2" x 8" S1S2E ACZA treated timber decking	$
14	PRICE per board foot of up to 22' long 2" x 12" S1S2E ACZA treated timber decking	$
15	PRICE per board foot of up to 30' long 3" x 12" S1S2E ACZA treated timber decking	$
16	PRICE per board foot of up to 30' long x 4" x 12" S1S2E ACZA treated timber decking	$
17	PRICE per board foot of up to 20' long x 0"-8" width x 0"-8" length S4S creosote treated timber beams	$

18	PRICE per board foot of 20'-30' long x 0"-8" width x 0"-8" length S4S creosote treated timber beams	$
19	PRICE per board foot of up to 20' long x 0"-16" width x 0"-16" length S4S creosote treated timber beams	$
20	PRICE per board foot of 20'-30' long x 0"-16" width x 0"-16" length S4S creosote treated timber beams	$
21	PRICE per unit of 610 x 597 x 3352 Lg. Foam buoyancy billet	$
22	PRICE per unit of 610 x 597 x 2438 Lg. Foam buoyancy billet	$
23	PRICE per unit of 1000 x 597 x 2438 Lg. Foam buoyancy billet	$
24	PRICE per unit of 1000 x 597 x 3352 Lg. Foam buoyancy billet	$
25	PRICE per unit of 610 x 597 x 3352 Lg. Foam buoyancy billet	$
26	PRICE per unit of 610 x 597 x 1219 Lg. Foam buoyancy billet	$
FLOAT MODULE ASSEMBLY		
27	Assembly of one complete 9' foot wide float module.	$
28	Assembly of one complete set of 9' foot wide float ends.	$
29	Assembly of one complete 12' foot wide float module.	$
30	Assembly of one complete set of 12' foot wide float ends.	$
FLOAT MODULE DELIVERY		
31	Delivery of up to a batch of four (4) unassembled float kits to Stevenson Harbour, BC	$
32	Delivery of up to a batch of four (4) unassembled float kits to French Creek Harbour, BC	$
33	Delivery of up to a batch of four (4) unassembled float kits to Port Edward Harbour, BC	$
34	Delivery of assembled floating modules up to four (4) kits to Stevenson Harbour, BC	$
35	Delivery of assembled floating modules up to four (4) kits to French Creek Harbour, BC	$
36	Delivery of assembled floating modules up to four (4) kits to Port Edward Harbour, BC	$

B2. Option Year 1

ITEM	CLASS OF LABOUR PLANT OR MATERIAL	UNIT COST
FLOAT MODULE SUPPLY FABRICATION		
1	PRICE for the fabrication and supply of one complete 9' foot wide float module.	$
2	PRICE for the fabrication and supply of one complete set of 9' foot wide float ends.	$
3	PRICE for the fabrication and supply of one complete 12' foot wide float module.	$
4	PRICE for the fabrication and supply of one complete set of 12' foot wide float ends.	$
5	PRICE for the fabrication and supply of one complete 9' foot wide heavy float module.	$
6	PRICE for the fabrication and supply of one complete set of 9' foot wide heavy float ends.	$
7	PRICE for the fabrication and supply of one complete 12' foot wide heavy float module.	$
8	PRICE for the fabrication and supply of one complete set of 12' foot wide heavy float ends.	$
9	PRICE for bundle of 22' long 6" x 8" S4S creosote treated timber beams in bundles of 20 units	$
10	PRICE for bundle of 18' long 6" x 6" S4S creosote treated timber beams in bundles of 20 units	$
11	PRICE for bundle of 22' long 4" x 6" S4S ACZA treated timber beams in bundles of 20 units	$
12	PRICE for bundle of 22' long 6" x 6" S4S ACZA treated timber beams in bundles of 20 units	$
13	PRICE per board foot of up to 22' long 2" x 8" S1S2E ACZA treated timber decking	$
14	PRICE per board foot of up to 22' long 2" x 12" S1S2E ACZA treated timber decking	$
15	PRICE per board foot of up to 30' long 3" x 12" S1S2E ACZA treated timber decking	$
16	PRICE per board foot of up to 30' long x 4" x 12" S1S2E ACZA treated timber decking	$
17	PRICE per board foot of up to 20' long x 0"-8" width x 0"-8" length S4S creosote treated timber beams	$
18	PRICE per board foot of 20'-30' long x 0"-8" width x 0"-8" length S4S creosote treated timber beams	$
19	PRICE per board foot of up to 20' long x 0"-16" width x 0"-16" length S4S creosote treated timber beams	$
20	PRICE per board foot of 20'-30' long x 0"-16" width x 0"-16" length S4S creosote treated timber beams	$
21	PRICE per unit of 610 x 597 x 3352 Lg. Foam buoyancy billet	$

22	PRICE per unit of 610 x 597 x 2438 Lg. Foam buoyancy billet	$
23	PRICE per unit of 1000 x 597 x 2438 Lg. Foam buoyancy billet	$
24	PRICE per unit of 1000 x 597 x 3352 Lg. Foam buoyancy billet	$
25	PRICE per unit of 610 x 597 x 3352 Lg. Foam buoyancy billet	$
26	PRICE per unit of 610 x 597 x 1219 Lg. Foam buoyancy billet	$
FLOAT MODULE ASSEMBLY		
27	Assembly of one complete 9' foot wide float module.	$
28	Assembly of one complete set of 9' foot wide float ends.	$
29	Assembly of one complete 12' foot wide float module.	$
30	Assembly of one complete set of 12' foot wide float ends.	$
FLOAT MODULE DELIVERY		
31	Delivery of up to a batch of four (4) unassembled float kits to Stevenson Harbour, BC	$
32	Delivery of up to a batch of four (4) unassembled float kits to French Creek Harbour, BC	$
33	Delivery of up to a batch of four (4) unassembled float kits to Port Edward Harbour, BC	$
34	Delivery of assembled floating modules up to four (4) kits to Stevenson Harbour, BC	$
35	Delivery of assembled floating modules up to four (4) kits to French Creek Harbour, BC	$
36	Delivery of assembled floating modules up to four (4) kits to Port Edward Harbour, BC	$

B3. Option Year 2

ITEM	CLASS OF LABOUR PLANT OR MATERIAL	UNIT COST
FLOAT MODULE SUPPLY FABRICATION		
1	PRICE for the fabrication and supply of one complete 9' foot wide float module.	$
2	PRICE for the fabrication and supply of one complete set of 9' foot wide float ends.	$
3	PRICE for the fabrication and supply of one complete 12' foot wide float module.	$
4	PRICE for the fabrication and supply of one complete set of 12' foot wide float ends.	$
5	PRICE for the fabrication and supply of one complete 9' foot wide heavy float module.	$
6	PRICE for the fabrication and supply of one complete set of 9' foot wide heavy float ends.	$
7	PRICE for the fabrication and supply of one complete 12' foot wide heavy float module.	$
8	PRICE for the fabrication and supply of one complete set of 12' foot wide heavy float ends.	$
9	PRICE for bundle of 22' long 6" x 8" S4S creosote treated timber beams in bundles of 20 units	$
10	PRICE for bundle of 18' long 6" x 6" S4S creosote treated timber beams in bundles of 20 units	$
11	PRICE for bundle of 22' long 4" x 6" S4S ACZA treated timber beams in bundles of 20 units	$
12	PRICE for bundle of 22' long 6" x 6" S4S ACZA treated timber beams in bundles of 20 units	$
13	PRICE per board foot of up to 22' long 2" x 8" S1S2E ACZA treated timber decking	$
14	PRICE per board foot of up to 22' long 2" x 12" S1S2E ACZA treated timber decking	$
15	PRICE per board foot of up to 30' long 3" x 12" S1S2E ACZA treated timber decking	$
16	PRICE per board foot of up to 30' long x 4" x 12" S1S2E ACZA treated timber decking	$
17	PRICE per board foot of up to 20' long x 0"-8" width x 0"-8" length S4S creosote treated timber beams	$
18	PRICE per board foot of 20'-30' long x 0"-8" width x 0"-8" length S4S creosote treated timber beams	$
19	PRICE per board foot of up to 20' long x 0"-16" width x 0"-16" length S4S creosote treated timber beams	$
20	PRICE per board foot of 20'-30' long x 0"-16" width x 0"-16" length S4S creosote treated timber beams	$
21	PRICE per unit of 610 x 597 x 3352 Lg. Foam buoyancy billet	$

22	PRICE per unit of 610 x 597 x 2438 Lg. Foam buoyancy billet	$
23	PRICE per unit of 1000 x 597 x 2438 Lg. Foam buoyancy billet	$
24	PRICE per unit of 1000 x 597 x 3352 Lg. Foam buoyancy billet	$
25	PRICE per unit of 610 x 597 x 3352 Lg. Foam buoyancy billet	$
26	PRICE per unit of 610 x 597 x 1219 Lg. Foam buoyancy billet	$
FLOAT MODULE ASSEMBLY		
27	Assembly of one complete 9' foot wide float module.	$
28	Assembly of one complete set of 9' foot wide float ends.	$
29	Assembly of one complete 12' foot wide float module.	$
30	Assembly of one complete set of 12' foot wide float ends.	$
FLOAT MODULE DELIVERY		
31	Delivery of up to a batch of four (4) unassembled float kits to Stevenson Harbour, BC	$
32	Delivery of up to a batch of four (4) unassembled float kits to French Creek Harbour, BC	$
33	Delivery of up to a batch of four (4) unassembled float kits to Port Edward Harbour, BC	$
34	Delivery of assembled floating modules up to four (4) kits to Stevenson Harbour, BC	$
35	Delivery of assembled floating modules up to four (4) kits to French Creek Harbour, BC	$
36	Delivery of assembled floating modules up to four (4) kits to Port Edward Harbour, BC	$

B4. Option Year 3

ITEM	CLASS OF LABOUR PLANT OR MATERIAL	UNIT COST
FLOAT MODULE SUPPLY FABRICATION		
1	PRICE for the fabrication and supply of one complete 9' foot wide float module.	$
2	PRICE for the fabrication and supply of one complete set of 9' foot wide float ends.	$
3	PRICE for the fabrication and supply of one complete 12' foot wide float module.	$
4	PRICE for the fabrication and supply of one complete set of 12' foot wide float ends.	$
5	PRICE for the fabrication and supply of one complete 9' foot wide heavy float module.	$
6	PRICE for the fabrication and supply of one complete set of 9' foot wide heavy float ends.	$
7	PRICE for the fabrication and supply of one complete 12' foot wide heavy float module.	$
8	PRICE for the fabrication and supply of one complete set of 12' foot wide heavy float ends.	$
9	PRICE for bundle of 22' long 6" x 8" S4S creosote treated timber beams in bundles of 20 units	$
10	PRICE for bundle of 18' long 6" x 6" S4S creosote treated timber beams in bundles of 20 units	$
11	PRICE for bundle of 22' long 4" x 6" S4S ACZA treated timber beams in bundles of 20 units	$
12	PRICE for bundle of 22' long 6" x 6" S4S ACZA treated timber beams in bundles of 20 units	$
13	PRICE per board foot of up to 22' long 2" x 8" S1S2E ACZA treated timber decking	$
14	PRICE per board foot of up to 22' long 2" x 12" S1S2E ACZA treated timber decking	$
15	PRICE per board foot of up to 30' long 3" x 12" S1S2E ACZA treated timber decking	$
16	PRICE per board foot of up to 30' long x 4" x 12" S1S2E ACZA treated timber decking	$
17	PRICE per board foot of up to 20' long x 0"-8" width x 0"-8" length S4S creosote treated timber beams	$
18	PRICE per board foot of 20'-30' long x 0"-8" width x 0"-8" length S4S creosote treated timber beams	$
19	PRICE per board foot of up to 20' long x 0"-16" width x 0"-16" length S4S creosote treated timber beams	$
20	PRICE per board foot of 20'-30' long x 0"-16" width x 0"-16" length S4S creosote treated timber beams	$
21	PRICE per unit of 610 x 597 x 3352 Lg. Foam buoyancy billet	$

22	PRICE per unit of 610 x 597 x 2438 Lg. Foam buoyancy billet	$
23	PRICE per unit of 1000 x 597 x 2438 Lg. Foam buoyancy billet	$
24	PRICE per unit of 1000 x 597 x 3352 Lg. Foam buoyancy billet	$
25	PRICE per unit of 610 x 597 x 3352 Lg. Foam buoyancy billet	$
26	PRICE per unit of 610 x 597 x 1219 Lg. Foam buoyancy billet	$
FLOAT MODULE ASSEMBLY		
27	Assembly of one complete 9' foot wide float module.	$
28	Assembly of one complete set of 9' foot wide float ends.	$
29	Assembly of one complete 12' foot wide float module.	$
30	Assembly of one complete set of 12' foot wide float ends.	$
FLOAT MODULE DELIVERY		
31	Delivery of up to a batch of four (4) unassembled float kits to Stevenson Harbour, BC	$
32	Delivery of up to a batch of four (4) unassembled float kits to French Creek Harbour, BC	$
33	Delivery of up to a batch of four (4) unassembled float kits to Port Edward Harbour, BC	$
34	Delivery of assembled floating modules up to four (4) kits to Stevenson Harbour, BC	$
35	Delivery of assembled floating modules up to four (4) kits to French Creek Harbour, BC	$
36	Delivery of assembled floating modules up to four (4) kits to Port Edward Harbour, BC	$

B5. Unscheduled Work

B5.1 Unscheduled work arising, as authorized by the Minister, will be calculated in the following manner:

Number of hours (to be negotiated) X **$ 65.00** your firm hourly Charge-out Labour Rate which includes Overhead and profit, plus net laid-down cost of materials to which will be added a 10% mark-up, plus Goods and Services Tax or Harmonized Sales Tax as applicable, of the total cost of material and labour. The firm hourly Charge-out Labour Rate and the material mark-up will remain firm for the duration of the Contract and any subsequent amendments.

B5.2 Notwithstanding definitions or usage elsewhere in this document, or in the Bidder's Cost Management System, when negotiating Hours for unscheduled work, PWGSC will consider only those hours of labour directly involved in the production of the subject work package.

B5.3 Allowance for Related Labour Costs such as: Management, Direct Supervision, Purchasing and Material Handling, Quality Assurance and Reporting, First Aid, Gas Free Inspecting and Reporting, and Estimating will be included as Overhead for the purposes of determining the Charge-out Labour Rate entered above.

B5.4 The 10% mark-up rate for materials will also apply to subcontracted costs. The mark-up rate includes any allowance for material and subcontract management not allowed for in the Charge-out Labour Rate. A separate labour component for the purchase and handling of materials or subcontract administration is not allowable.

B5.5 Overtime

The Contractor must not perform any overtime under the Contract unless authorized in advance and in writing by the Contracting Authority. Any request for payment must be accompanied by a copy of the overtime authorization and a report containing the details of the overtime performed pursuant to the written authorization.

Payment for authorized overtime will be calculated as follows:
Number of hours (to be negotiated) X **$ 130.00** per hour Overtime Labour Rate.

ANNEX C

INSURANCE REQUIREMENTS

1. The Contractor must obtain Commercial General Liability Insurance, and maintain it in force throughout the duration of the Standing Offer, in an amount usual for a Standing Offer of this nature, but for not less than $2,000,000 per accident or occurrence and in the annual aggregate.

2. The Commercial General Liability policy must include the following:
    a. Additional Insured: Canada is added as an additional insured, but only with respect to liability arising out of the Contractor's performance of the Contracts. The interest of Canada should read as follows: Canada, as represented by Public Works and Government Services Canada.
    b. Bodily Injury and Property Damage to third parties arising out of the operations of the Contractor.
    c. Products and Completed Operations: Coverage for bodily injury or property damage arising out of goods or products manufactured, sold, handled, or distributed by the Contractor and/or arising out of operations that have been completed by the Contractor.
    d. Personal Injury: While not limited to, the coverage must include Violation of Privacy, Libel and Slander, False Arrest, Detention or Imprisonment and Defamation of Character.
    e. Cross Liability/Separation of Insureds: Without increasing the limit of liability, the policy must protect all insured parties to the full extent of coverage provided. Further, the policy must apply to each Insured in the same manner and to the same extent as if a separate policy had been issued to each.
    f. Blanket Contractual Liability: The policy must, on a blanket basis or by specific reference to the Standing Offer, extend to assumed liabilities with respect to contractual provisions.
    g. Employees and, if applicable, Volunteers must be included as Additional Insured.
    h. Employers' Liability (or confirmation that all employees are covered by Worker's compensation (WSIB) or similar program)
    i. Broad Form Property Damage including Completed Operations: Expands the Property Damage coverage to include certain losses that would otherwise be excluded by the standard care, custody or control exclusion found in a standard policy.
    j. Notice of Cancellation: The Insurer will endeavour to provide the Standing Offer Authority thirty (30) days written notice of policy cancellation.
    k. If the policy is written on a claims-made basis, coverage must be in place for a period of at least 12 months after the completion or termination of the Standing Offer.
    l. Owners' or Contractors' Protective Liability: Covers the damages that the Contractor becomes legally obligated to pay arising out of the operations of a subcontractor.

ANNEX D

REPORTING REQUIREMENTS

PERIOD: _____		**Number of Call-ups: _____**	
ITEM	**CLASS OF LABOUR PLANT OR MATERIAL**	**QTY PURCHASED**	**Extended Total**
FLOAT MODULE FABRICATION			
1	Fabrication and supply of one complete 9’ foot wide float module.		
2	Fabrication and supply of one complete set of 9’ foot wide float ends.		
3	Fabrication and supply of one complete 12’ foot wide float module.		
4	Fabrication and supply of one complete set of 12’ foot wide float ends.		
5	PRICE for the fabrication and supply of one complete 9’ foot wide heavy float module.		
6	PRICE for the fabrication and supply of one complete set of 9’ foot wide heavy float ends.		
7	PRICE for the fabrication and supply of one complete 12’ foot wide heavy float module.		
8	PRICE for the fabrication and supply of one complete set of 12’ foot wide heavy float ends.		
9	PRICE for bundle of 22’ long 6” x 8” S4S creosote treated timber beams in bundles of 20 units		
10	PRICE for bundle of 18’ long 6” x 6” S4S creosote treated timber beams in bundles of 20 units		
11	PRICE for bundle of 22’ long 4” x 6” S4S ACZA treated timber beams in bundles of 20 units		
12	PRICE for bundle of 22’ long 6” x 6” S4S ACZA treated timber beams in bundles of 20 units		
13	PRICE per board foot of up to 22’ long 2” x 8” S1S2E ACZA treated timber decking		
14	PRICE per board foot of up to 22’ long 2” x 12” S1S2E ACZA treated timber decking		
15	PRICE per board foot of up to 30’ long 3” x 12” S1S2E ACZA treated timber decking		
16	PRICE per board foot of up to 30’ long x 4” x 12” S1S2E ACZA treated timber decking		
17	PRICE per board foot of up to 20’ long x 0”-8” width x 0”-8” length S4S creosote treated timber beams		
18	PRICE per board foot of 20’-30’ long x 0”-8” width x 0”-8” length S4S creosote treated timber beams		

19	PRICE per board foot of up to 20’ long x 0”-16” width x 0”-16” length S4S creosote treated timber beams		
20	PRICE per board foot of 20’-30’ long x 0”-16” width x 0”-16” length S4S creosote treated timber beams		
21	PRICE per unit of 610 x 597 x 3352 Lg. Foam buoyancy billet		
22	PRICE per unit of 610 x 597 x 2438 Lg. Foam buoyancy billet		
23	PRICE per unit of 1000 x 597 x 2438 Lg. Foam buoyancy billet		
24	PRICE per unit of 1000 x 597 x 3352 Lg. Foam buoyancy billet		
25	PRICE per unit of 610 x 597 x 3352 Lg. Foam buoyancy billet		
26	PRICE per unit of 610 x 597 x 1219 Lg. Foam buoyancy billet		
FLOAT MODULE ASSEMBLY			
27	Assembly of one complete 9’ foot wide float module.		
28	Assembly of one complete set of 9’ foot wide float ends.		
29	Assembly of one complete 12’ foot wide float module.		
30	Assembly of one complete set of 12’ foot wide float ends.		
FLOAT MODULE DELIVERY			
31	Delivery of up to a batch of four (4) unassembled float kits to Stevenson Harbour, BC		
32	Delivery of up to a batch of four (4) unassembled float kits to French Creek Harbour, BC		
33	Delivery of up to a batch of four (4) unassembled float kits to Port Edward Harbour, BC		
34	Delivery of assembled floating modules up to four (4) kits to Stevenson Harbour, BC		
35	Delivery of assembled floating modules up to four (4) kits to French Creek Harbour, BC		
36	Delivery of assembled floating modules up to four (4) kits to Port Edward Harbour, BC		
		Additional Delivery Charges (for delivery of items 9-26)	
		Total Spend for Period:	$

GST is extra.

Public Works and Government Services Canada | Travaux publics et Services gouvernementaux Canada

Call-up Against a Standing Offer
Commande subséquente à une offre à commandes

Ship to - Expédier à

IOS Inner Harbour
(TBD)

Supplier - Fournisseur

Jornic Holdings Ltd.
Lake Cowichan, BC
V0R2G0

To the supplier: The standing offer identified below is accepted as follows: You are required to supply the goods or services, or both, shown below at the prices or on the pricing basis stated and in accordance with the other conditions stated in the standing offer. Only goods or services, or both, included in the standing offer will be supplied in the call-up against the standing offer.

Au fournisseur: L'offre à commandes indiquée ci-dessous est acceptée selon les modalités suivantes : Vous devez fournir les biens ou les services, ou les deux, indiqués ci-dessous selon les prix ou la base de tarification établie, et conformément avec les autres conditions stipulées dans l'offre à commandes. Seuls les biens ou les services, ou les deux, inclus dans l'offre à commandes seront fournis dans la commande subséquente à l'offre à commandes.

Security: The call-up includes security provisions.
Sécurité : La demande comprend des exigences en matière de sécurité.

☑ NO / NON ☐ YES / OUI — If YES, attach a SRCL to the call-up / Si OUI, joindre une LVERS à la demande

Invoices must be sent in accordance with - Les factures doivent être envoyées selon

☐ The detailed instructions in the standing offer / Les instructions détaillées dans l'offre à commandes
☐ The address shown in the "Ship to" block / L'adresse indiquée dans la case « Expédier à »
☑ Special instructions below / Les instructions particulières ci-dessous

Each shipment must be accompanied by a packing or delivery slip. All invoices, bills of lading and packing slips must show the following reference numbers.

Chaque expédition doit être accompagnée d'un bordereau d'emballage ou de livraison. Les factures, connaissements et bordereaux d'emballage doivent tous porter les numéros de référence suivants.

Financial Code(s) - Code financier(s)
5D500-RP3-230-0630-9R306

Standing Offer No. - N° de l'offre à commandes	Requisition No. - N° de demande Order. Off. - Bur. dem. / YY - AA / Serial No. - N° de série	Client Reference No. (optional) N° de référence du client (facultatif)
F1571-15700C/001/XLV	F1700 / 15 / 092	F1571-15700C

The representative of the Identified User signing the call-up form must indicate his or her physical address. This address will constitute the address most connected with the supply and will determine, where applicable, the place of supply for this procurement.
Le représentant de l'utilisateur désigné qui signe le formulaire de commande subséquente doit indiquer son adresse municipale, qui constituera l'adresse la plus associée à l'approvisionnement et qui déterminera, le cas échéant, le lieu d'approvisionnement pour cette commande.

Amendment No. N° de modification	Previous Value ($) Valeur précédente ($)	Value of increase or decrease ($) Valeur de l'augmentation ou diminution ($)	Total estimated expenditures or revised Total des dépenses estimatives ou révisées
		737,029.39	737,029.39

Item No. N° de l'article	NATO Stock No. / Item Description N° de nomenclature de l'OTAN / Description de l'article	U. of I. U. de d.	Quantity Quantité	Unit Price Prix unitaire ($)	Extended Price Prix calculé ($)
7	Fabricate and Supply 12' wide Heavy Float Module	Ea	54.00		
8	Fabricate and Supply 12' wide Heavy Float End Kit	Ea	9.00		
32	Delivery of up to four (4) unassembled float modules to French Creek	Ea	14.00		

Special Instructions - Instructions particulières

Submit invoices electronically to: DFOinvoicing-MPOfacturation@dfo-mpo.gc.ca

Total)

For further information, call - Pour renseignements supplémentaires, contacter

Name - Nom: Vahid Kahnamelli
Telephone No. - N° de téléphone: (604) 666-8868

Delivery required by - Livraison requise le (YYYY-MM-DD) (AAAA-MM-JJ): 2016-03-31

For internal purposes only - Pour usage interne seulement

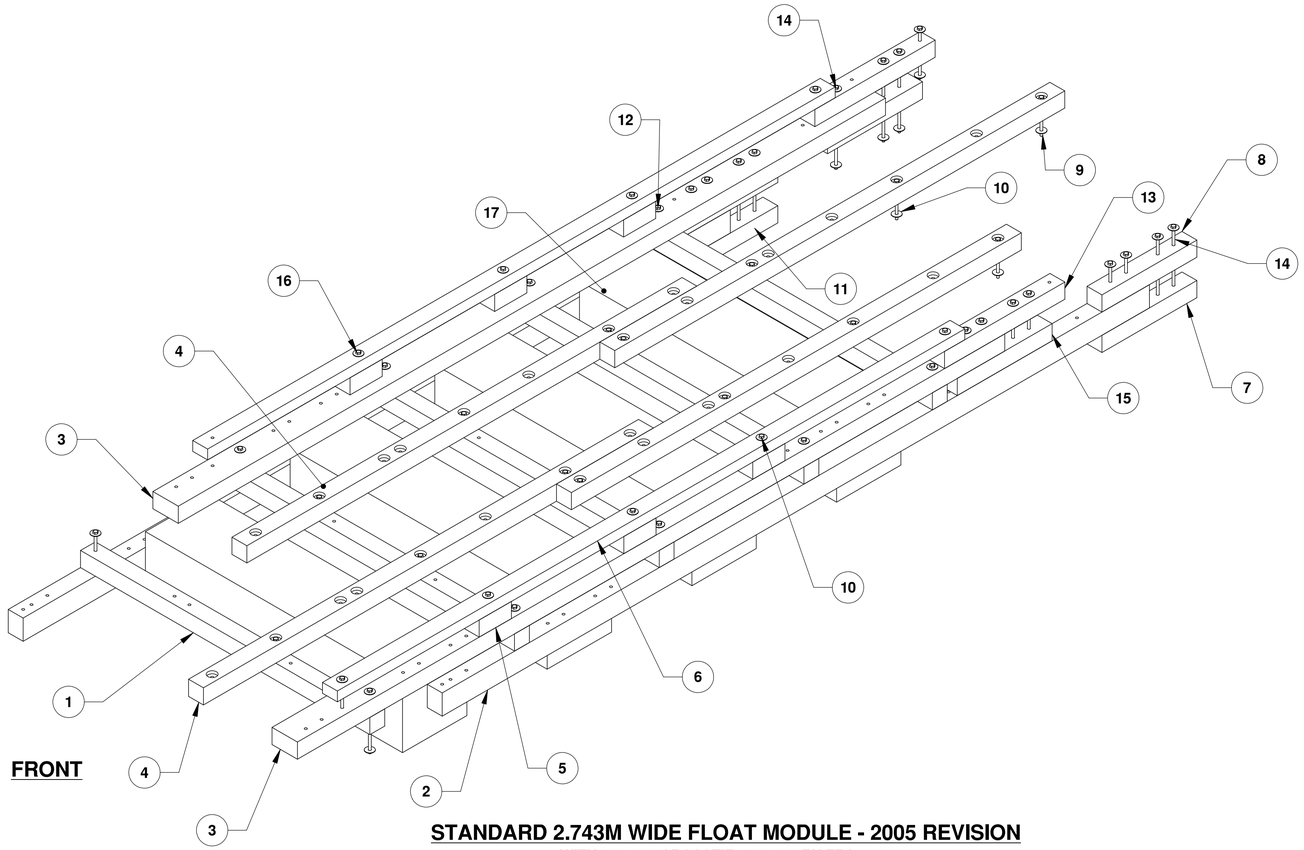
Pursuant to subsection 32(1) of the *Financial Administration Act*, funds are available.
En vertu du paragraphe 32(1) de la *Loi sur la gestion des finances publiques*, des fonds sont disponibles.

Signature (Mandatory - Obligatoire) — Date (YYYY-MM-DD - AAAA-MM-JJ): 2015/11/23

Approved for the Minister - Approuvé pour le Ministre

Signature (Mandatory - Obligatoire) — Date (YYYY-MM-DD - AAAA-MM-JJ)

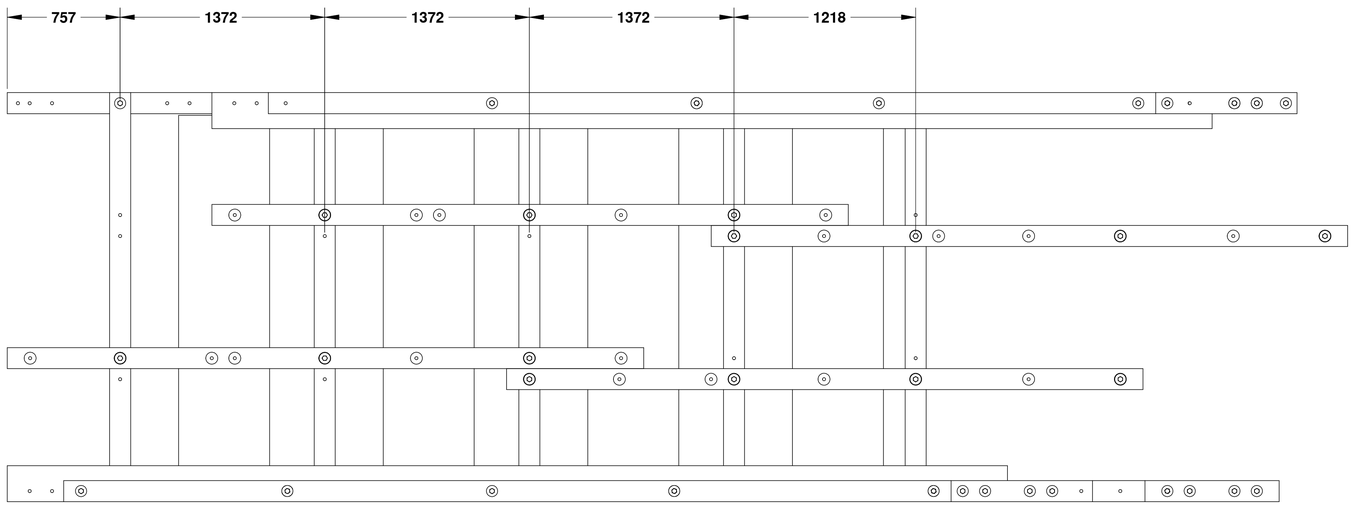
Canada



FRONT

STANDARD 2.743M WIDE FLOAT MODULE - 2005 REVISION

WITH 141x141 CROSSTIE, 141x141 RISERS



FRONT

PLAN VIEW

TIMBER MEMBERS

ITEM NO.	QTY.	TIMBER MEMBER	DESCRIPTION	MATERIAL
1	5	CROSS TIES	(6x6) 141 X 141 x 2743 LG	14 LB CREOSOTE TREATMENT #1 BTR FIR
2	2	FLANGE	(6x8) 141 x 191 x 6706 LG	14 LB CREOSOTE TREATMENT #1 BTR FIR
3	2	STRINGER	(6x10) 141 x 241 x 6706 LG	14 LB CREOSOTE TREATMENT #1 BTR FIR
4	4	JOISTS	(6x6) 141 x 141 X 4267 LG	14 LB CREOSOTE TREATMENT #1 BTR FIR
5	6	RISER	(6x6) 141 x 141 x 305 LG	ACZA
6	2	RAIL	(4x6) 89 x 141 x 5950 LG	ACZA
7	2	LOWER FLANGE SPLICE	(6x6) 141 X 141 x 900 LG	14 LB CREOSOTE TREATMENT #1 BTR FIR
8	2	UPPER FLANGE SPLICE	(6x6) 141 x 141 x 900 LG	14 LB CREOSOTE TREATMENT #1 BTR FIR
13	2	UPPER STRINGER SPLICE	(6x6) 141 x 141 x 1140 LG	ACZA
15	2	LOWER STRINGER SPLICE	(6x6) 141 x 141 x 900 LG.	14 LB CREOSOTE TREATMENT #1 BTR FIR
17	5	FOAM BUOYANCY BILLET	610 X 597 x 2438 LG.	
19	28	DECK PLANKS	(12x2) 305 x 38 x 2440 LG	ACZA

HARDWARE REQUIREMENTS

ITEM NO.	QTY.	HARDWARE
9	14	HEX BOLT 19 x 300mm
10	98	WASHERS 19 DIA.
11	49	HEX NUT 19mm DIA.
12	10	HEX BOLT 19 x 508mm
14	15	HEX BOLT 19 x 660mm
16	10	HEX BOLT 19 x 406mm
20	192	100mm GALVANIZED SPIRAL NAILS

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ±
ANGULAR: MACH ± BEND ±
TWO PLACE DECIMAL ±
THREE PLACE DECIMAL ±
INTERPRET GEOMETRIC TOLERANCING PER:
MATERIAL --
FINISH --
DO NOT SCALE DRAWING

	DATE	NAME
DRAWN	12/04	BB
CHECKED		
ENG APPR.		
MFG APPR.		
Q.A.		

COMMENTS:

NEXT ASSY | USED ON | APPLICATION

Fisheries & Oceans | Pêches et Océans

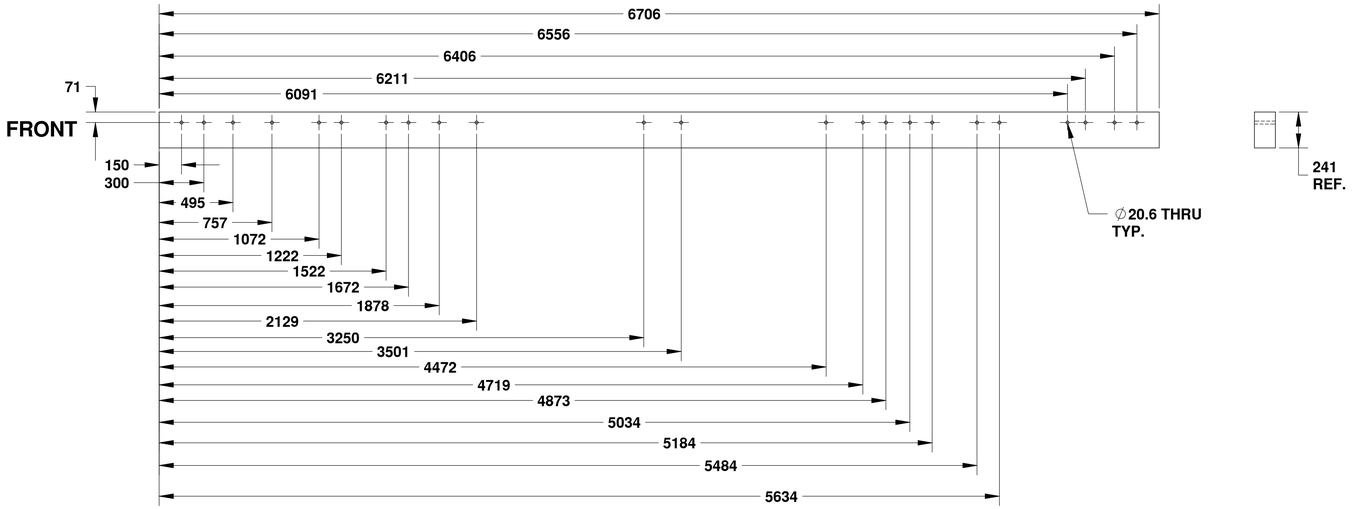
Small Craft Harbours Branch

TITLE: **'2005 REVISION' 2.743m WIDE STANDARD FLOAT MODULE**

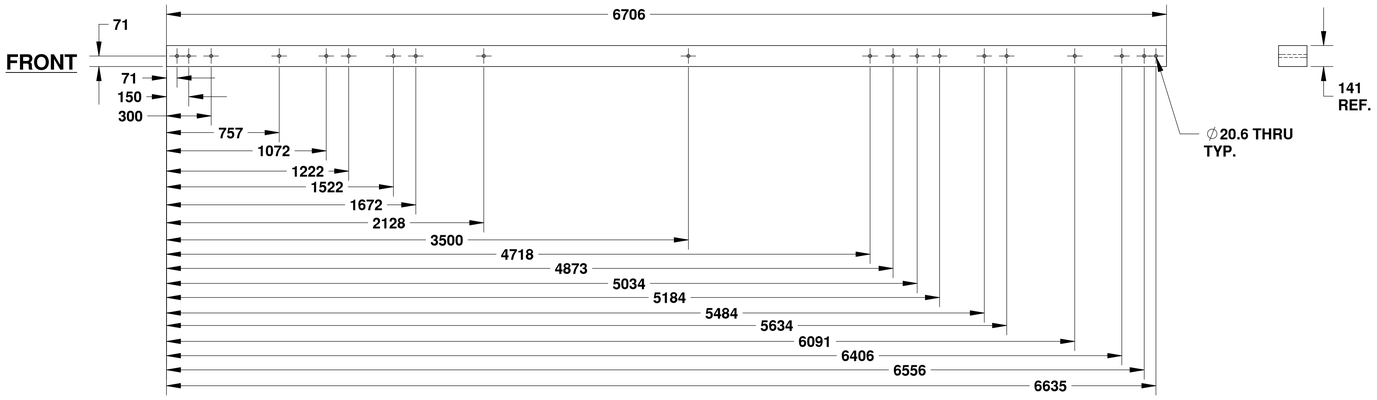
SIZE **D** | DWG. NO. **FM9-ST-000** | REV **F**

SCALE: 1:20 | WEIGHT: | SHEET 1 OF 1

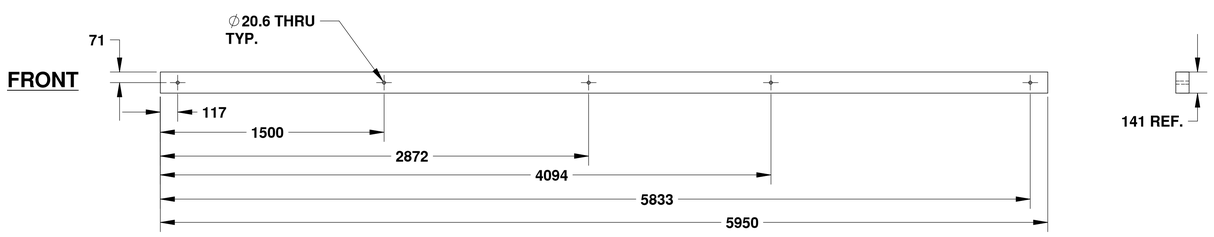
REV F | 1 | D



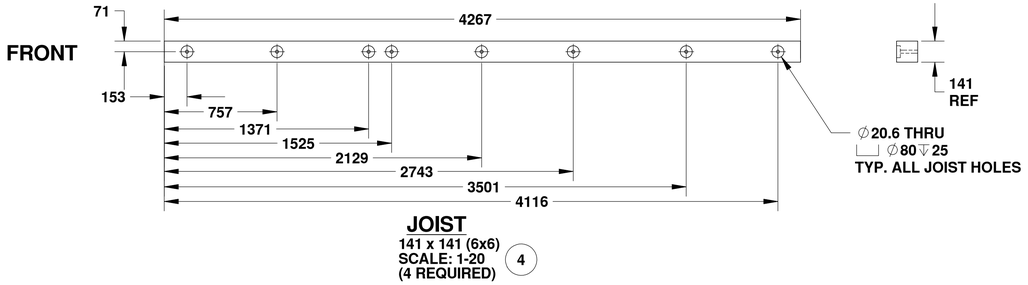
STRINGER
141 x 241 (6x10) (3)
SCALE: 1-20
(2 REQUIRED)



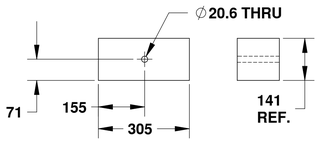
FLANGE
141 x 191 (6x8) (2)
SCALE: 1-20
(2 REQUIRED)



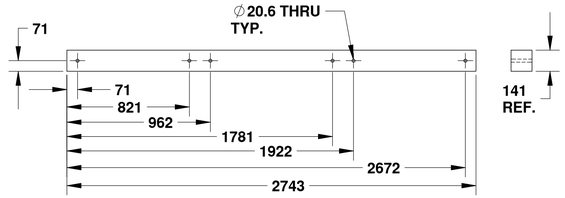
RAIL
89 x 141 (4x6) (6)
SCALE: 1-20
(2 REQUIRED)



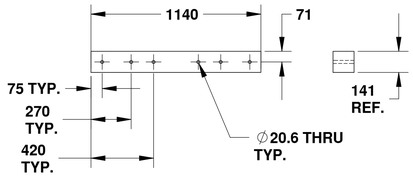
JOIST
141 x 141 (6x6) (4)
SCALE: 1-20
(4 REQUIRED)



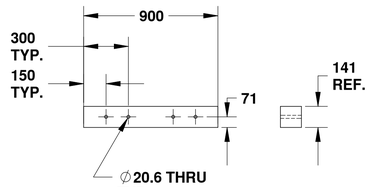
RISER
141 x 141 (6x6) (5)
SCALE: 1-20
(6 REQUIRED)



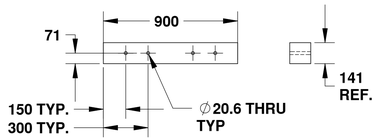
CROSSTIE
141 x 141 (6x6) (1)
SCALE: 1-20
(5 REQUIRED)



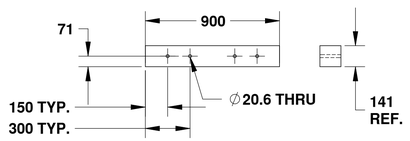
UPPER STRINGER SPLICE
141 x 141 (6x6) (13)
SCALE: 1-20
(2 REQUIRED)



LOWER STRINGER SPLICE
141 x 141 (6x6) (15)
SCALE: 1-20
(2 REQUIRED)



LOWER FLANGE SPLICE
141 x 141 (6x6) (7)
SCALE: 1-20
(2 REQUIRED)



UPPER FLANGE SPLICE
141 x 141 (6x6) (8)
SCALE: 1-20
(2 REQUIRED)

FOAM BOUYANCY BILLET
SCALE: 1-25
(5 REQUIRED) (17)

UNLESS OTHERWISE SPECIFIED:		DATE	NAME
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± ANGULAR: MACH ± BEND ± TWO PLACE DECIMAL ± THREE PLACE DECIMAL ±	DRAWN	12/04	BB
	CHECKED		
	ENG APPR.		
	MFG APPR.		
	Q.A.		
INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:		
MATERIAL ---			
FINISH ---			
NEXT ASSY / USED ON / APPLICATION / DO NOT SCALE DRAWING			

Fisheries & Oceans / Pêches et Océans
Small Craft Harbours Branch

TITLE: '2005 REVISION'
2.743m WIDE STANDARD FLOAT MODULE

SIZE	DWG. NO.	REV
D	FM9-ST-001	E
SCALE: 1:20	WEIGHT:	SHEET 1 OF 1

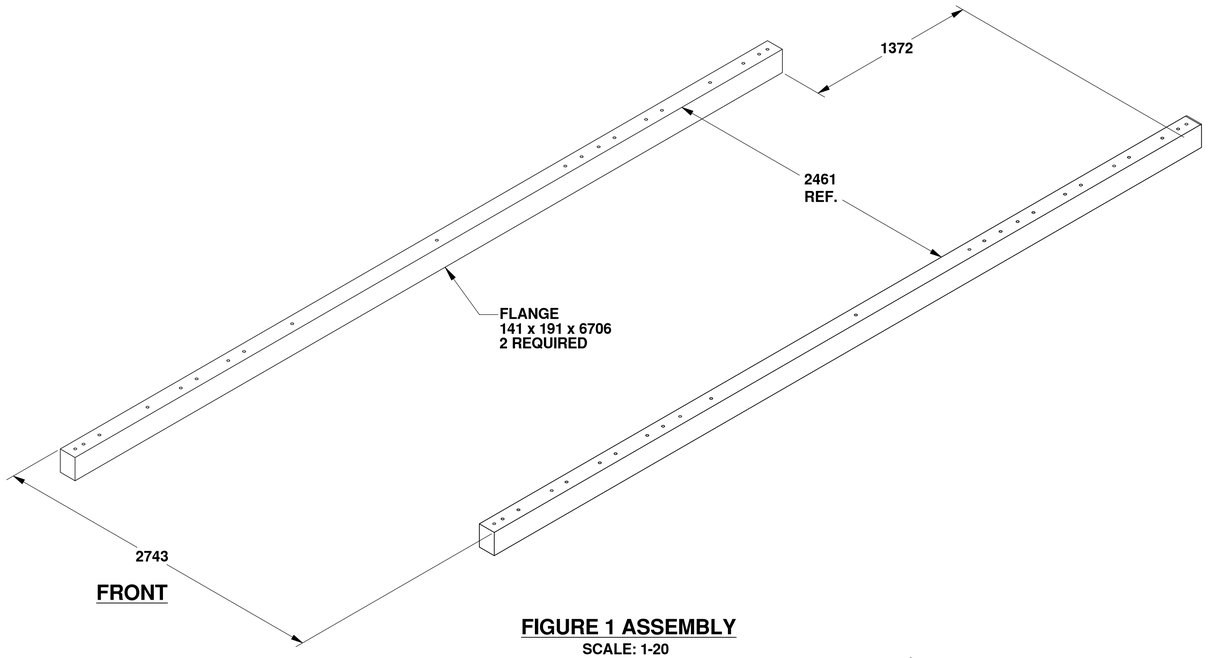


FIGURE 1 ASSEMBLY
SCALE: 1-20

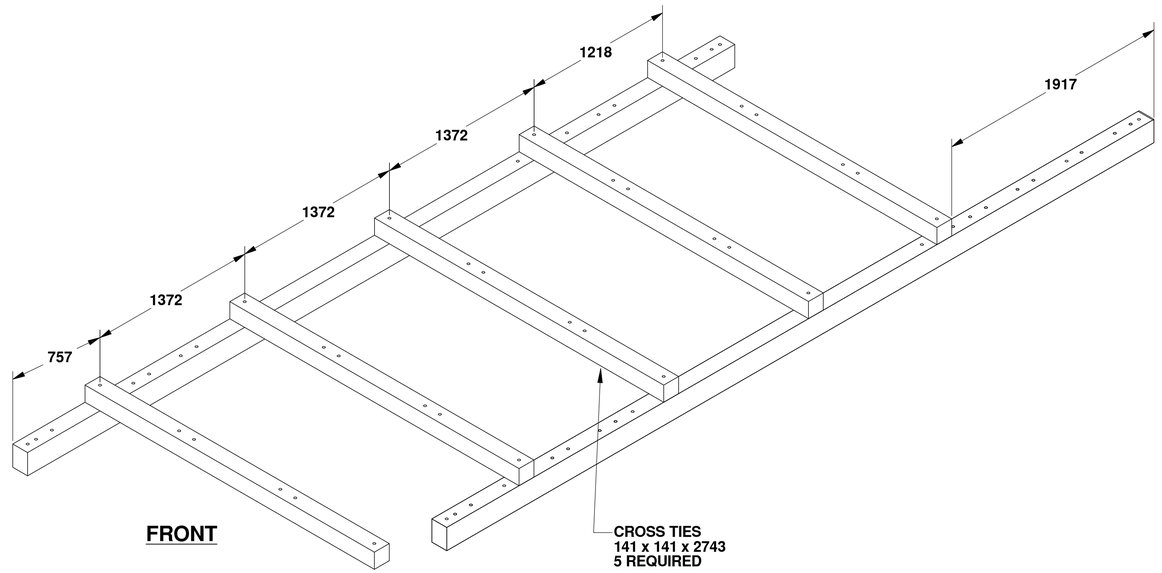


FIGURE 2 ASSEMBLY
SCALE: 1-20

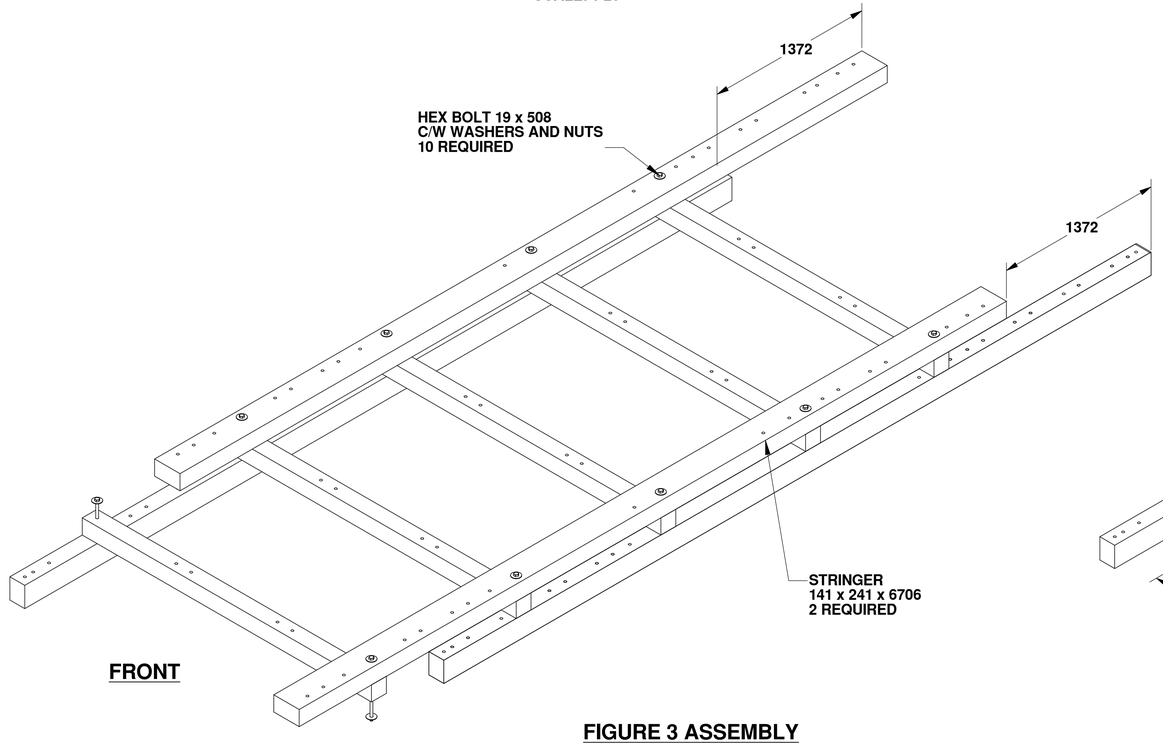


FIGURE 3 ASSEMBLY
SCALE: 1-20

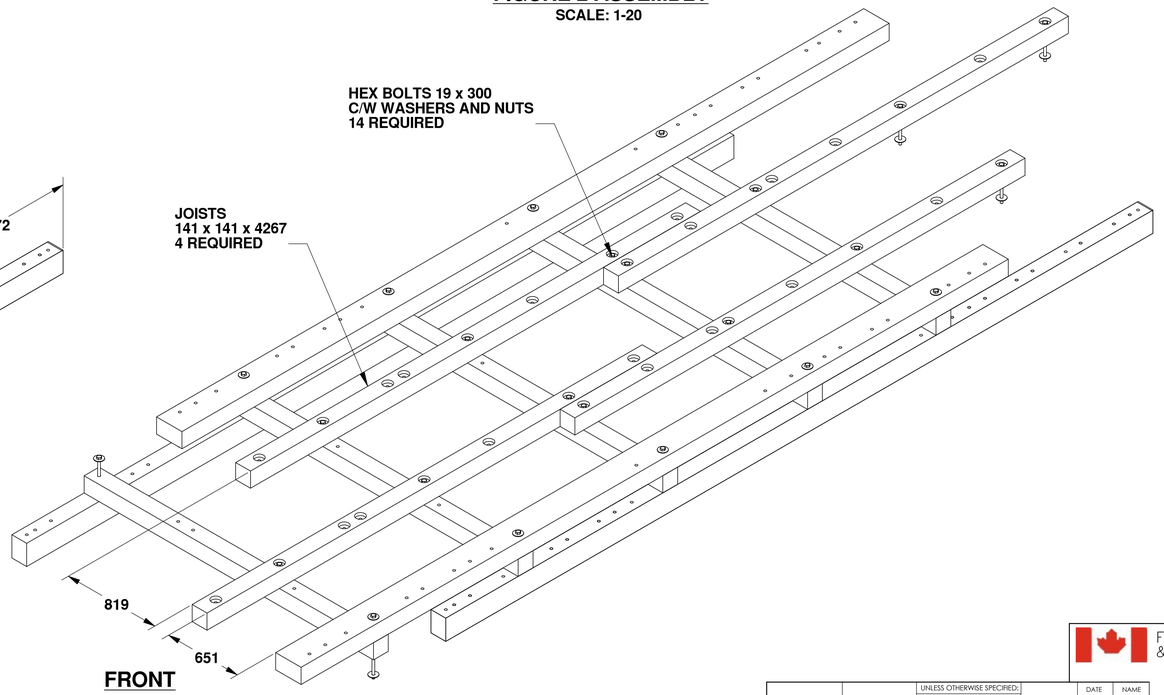


FIGURE 4 ASSEMBLY
SCALE: 1-20

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ±
ANGULAR: MACH ± BEND ±
TWO PLACE DECIMAL ±
THREE PLACE DECIMAL ±
INTERPRET GEOMETRIC TOLERANCING PER:
MATERIAL —
FINISH —
NEXT ASSY | USED ON
APPLICATION | DO NOT SCALE DRAWING

	DATE	NAME
DRAWN	12/04	BB
CHECKED		
ENG APPR.		
MFG APPR.		
Q.A.		
COMMENTS:		

Fisheries & Oceans | Pêches et Océans
Small Craft Harbours Branch

TITLE: '2005 REVISION' 2.743m WIDE STANDARD FLOAT MODULE ASSEMBLY

SIZE D | DWG. NO. FM9-ST-002 | REV E
SCALE: 1:20 | WEIGHT: | SHEET 1 OF 1

REV 1
1
D

WestCAD Services Ltd.

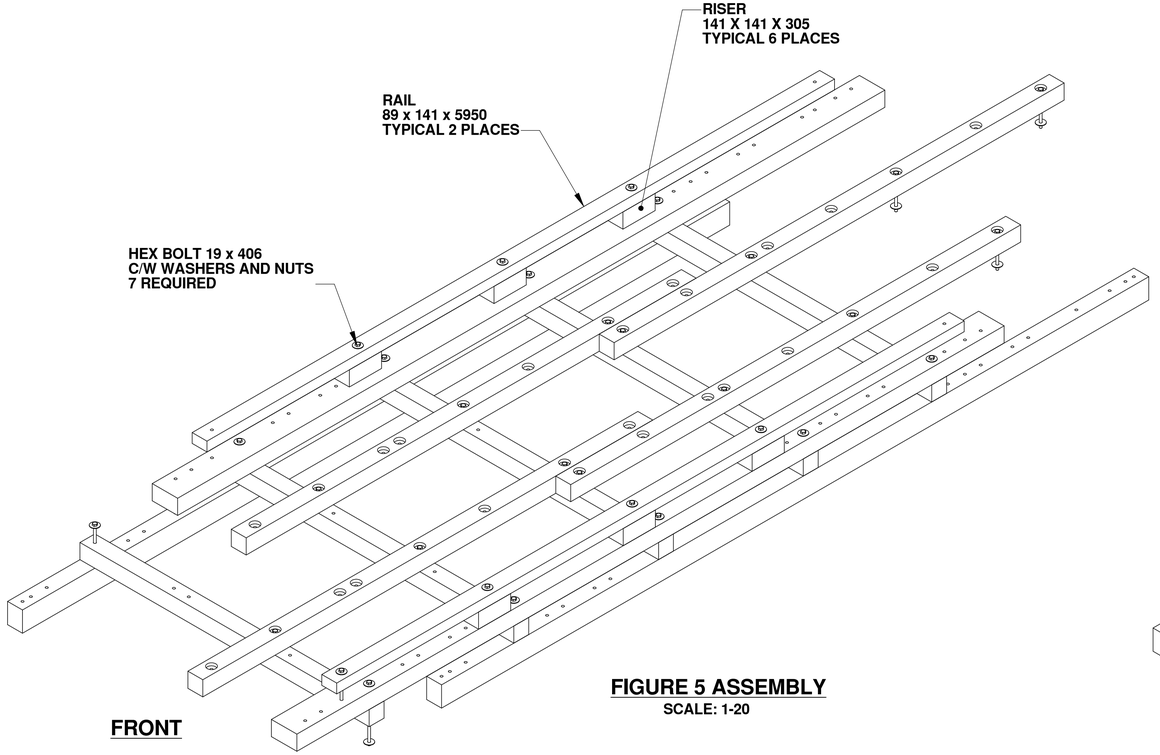


FIGURE 5 ASSEMBLY
SCALE: 1-20

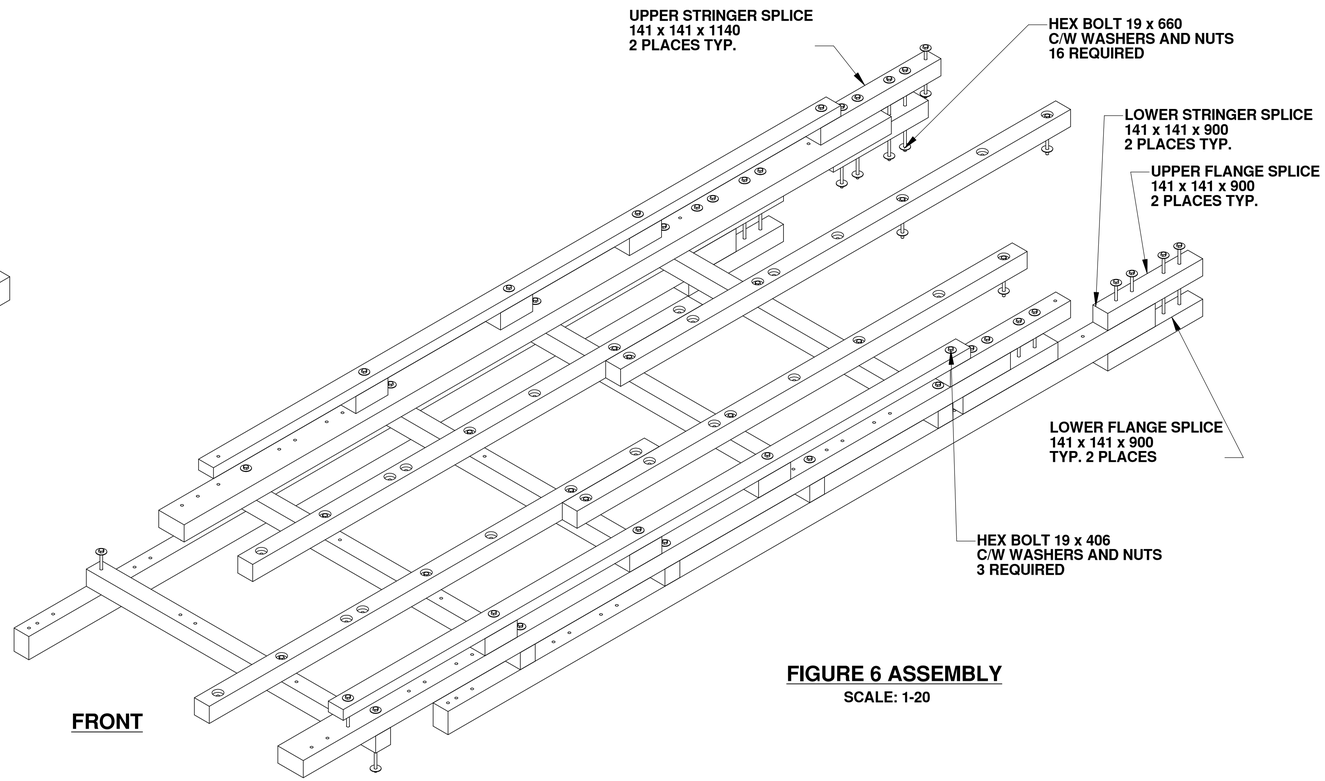


FIGURE 6 ASSEMBLY
SCALE: 1-20

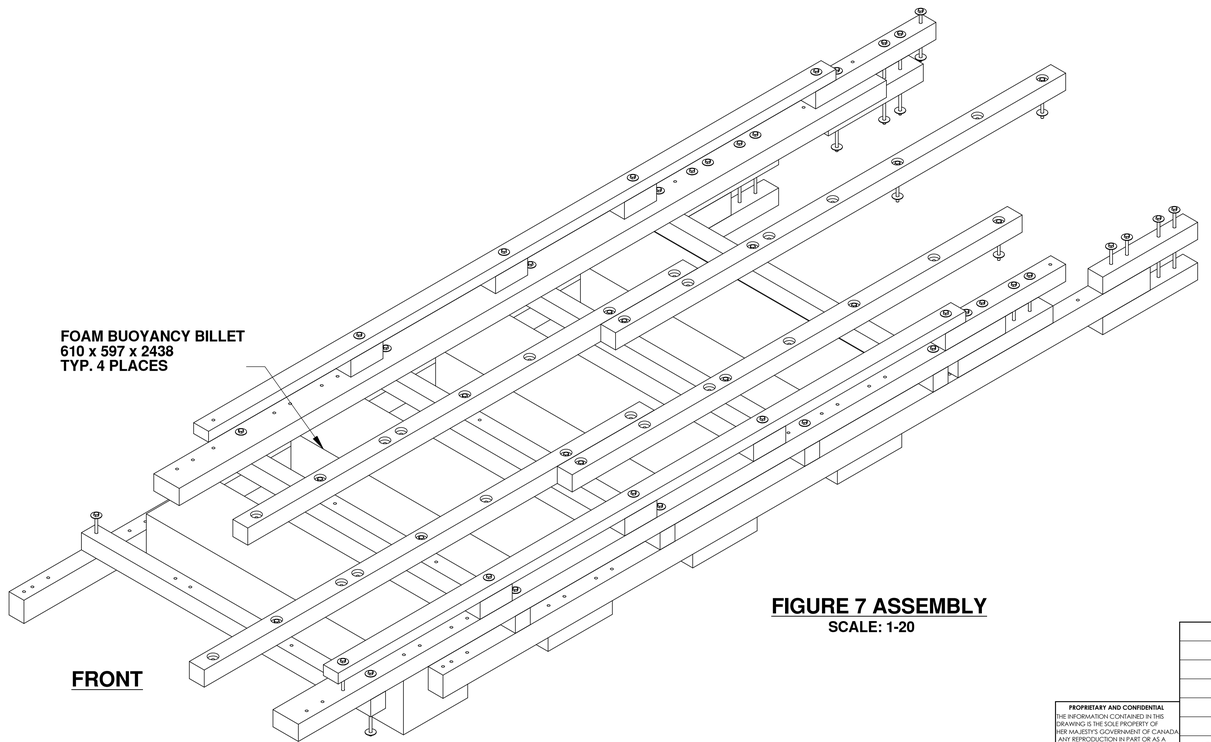


FIGURE 7 ASSEMBLY
SCALE: 1-20

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ±
ANGULAR: MACH ± BEND ±
TWO PLACE DECIMAL ±
THREE PLACE DECIMAL ±
INTERPRET GEOMETRIC TOLERANCING PER:
MATERIAL ---
FINISH ---
DO NOT SCALE DRAWING

	DATE	NAME
DRAWN	12/04	BB
CHECKED		
ENG APPR.		
MFG APPR.		
Q.A.		
COMMENTS:		

NEXT ASSY | USED ON | APPLICATION

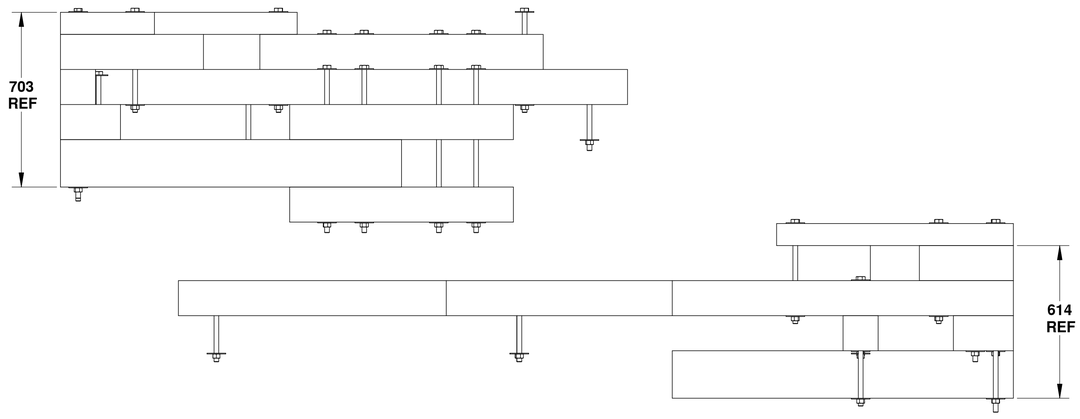
Fisheries & Oceans | Pêches et Océans
Small Craft Harbours Branch

TITLE: **'2005 REVISION' 2.743m WIDE STANDARD FLOAT MODULE ASSEMBLY**

SIZE	DWG. NO.	REV
D	FM9-ST-003	D

SCALE: 1:20 | WEIGHT: | SHEET 1 OF 1

WestCAD Services Ltd.

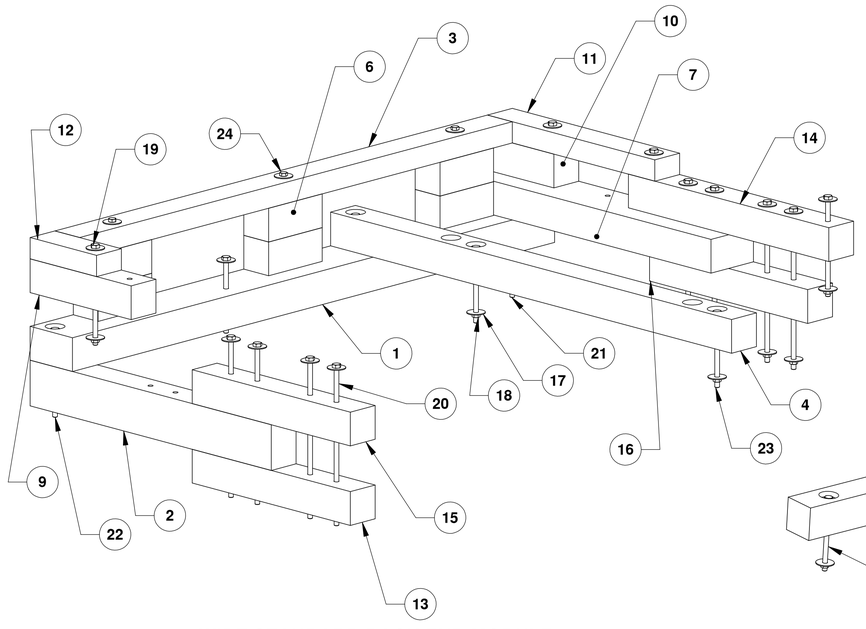


TIMBER MEMBERS REQUIREMENTS

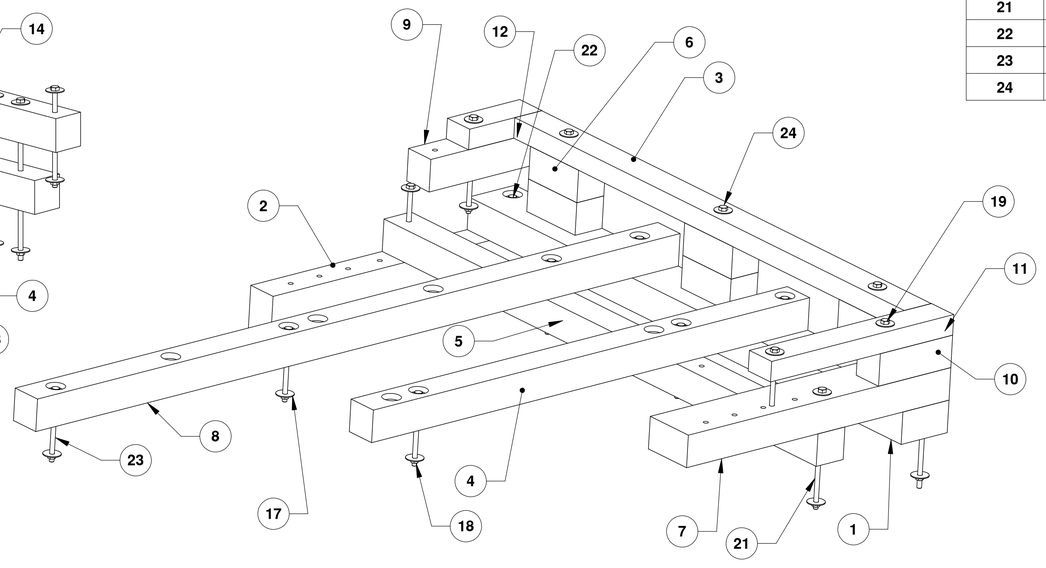
ITEM NO.	QTY.	TIMBER MEMBER	DESCRIPTION	MATERIAL
1	2	END CROSSTIE	(6x10) 141 x 241 x 2743 LG.	14 LB. CREOSOTE TREATMENT #1 BTR FIR
2	2	FLANGE END	(6x8) 141 x 191 x 1372 LG.	14 LB. CREOSOTE TREATMENT #1 BTR FIR
3	2	END RAIL	(4x6) 89 x 141 x 2461 LG.	ACZA
4	2	JOIST END 'B'	(6x6) 141 x 141 x 2281 LG.	14 LB. CREOSOTE TREATMENT #1 BTR FIR
5	1	STANDARD CROSSTIE	(6x6) 141 x 141 x 2743 LG.	14 LB. CREOSOTE TREATMENT #1 BTR FIR
6	12	END BLOCK	(6x6) 141 x 141 x 305 LG.	ACZA
7	2	STRINGER END	(6x10) 141 x 241 x 1372 LG.	14 LB. CREOSOTE TREATMENT #1 BTR FIR
8	1	MODIFIED JOIST	(6x6) 141 x 141 x 3359 LG.	14 LB. CREOSOTE TREATMENT #1 BTR FIR
9	2	SPACER END 'B'	(6x6) 141 x 141 x 575 LG.	ACZA
10	2	SPACER END	(6x6) 141 x 141 x 378 LG.	ACZA
11	2	RAIL END	(4x6) 89 x 141 x 952 LG.	ACZA
12	2	RAIL END 'B'	(4x6) 89 x 141 x 378 LG.	ACZA
13	1	LOWER FLANGE SPLICE	(6x6) 141 x 141 x 900 LG	14 LB. CREOSOTE TREATMENT #1 BTR FIR
14	1	UPPER STRINGER SPLICE	(6x6) 141 x 141 x 1140 LG.	ACZA
15	1	UPPER FLANGE SPLICE	(6x6) 141 x 141 x 900 LG.	14 LB. CREOSOTE TREATMENT #1 BTR FIR
16	1	LOWER STRINGER SPLICE	(6x6) 141 x 141 x 900 LG.	14 LB. CREOSOTE TREATMENT #1 BTR FIR

HARDWARE REQUIREMENTS

ITEM NO.	QTY.	DESCRIPTION
17	76	WASHER 19mm DIA.
18	38	HEX NUT 19mm DIA.
19	7	HEX BOLT 19 x 406mm
20	8	HEX BOLT 19 x 660mm
21	4	HEX BOLT 19 x 508mm
22	2	HEX BOLT 19 x 356mm
23	11	HEX BOLT 19 x 300mm
24	6	HEX BOLT 19 x 557mm



2.743m WIDE STANDARD BACK END MODULE



2.743m WIDE STANDARD FRONT END MODULE

2.743m WIDE END FLOAT MODULES

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UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ±
ANGULAR: MACH ± BEND ±
TWO PLACE DECIMAL ±
THREE PLACE DECIMAL ±
INTERPRET GEOMETRIC TOLERANCING PER:
MATERIAL --
FINISH --
NEXT ASSY | USED ON
APPLICATION
DO NOT SCALE DRAWING

	DATE	NAME
DRAWN	06/06	WSL
CHECKED		
ENG APPR.		
MFG APPR.		
Q.A.		

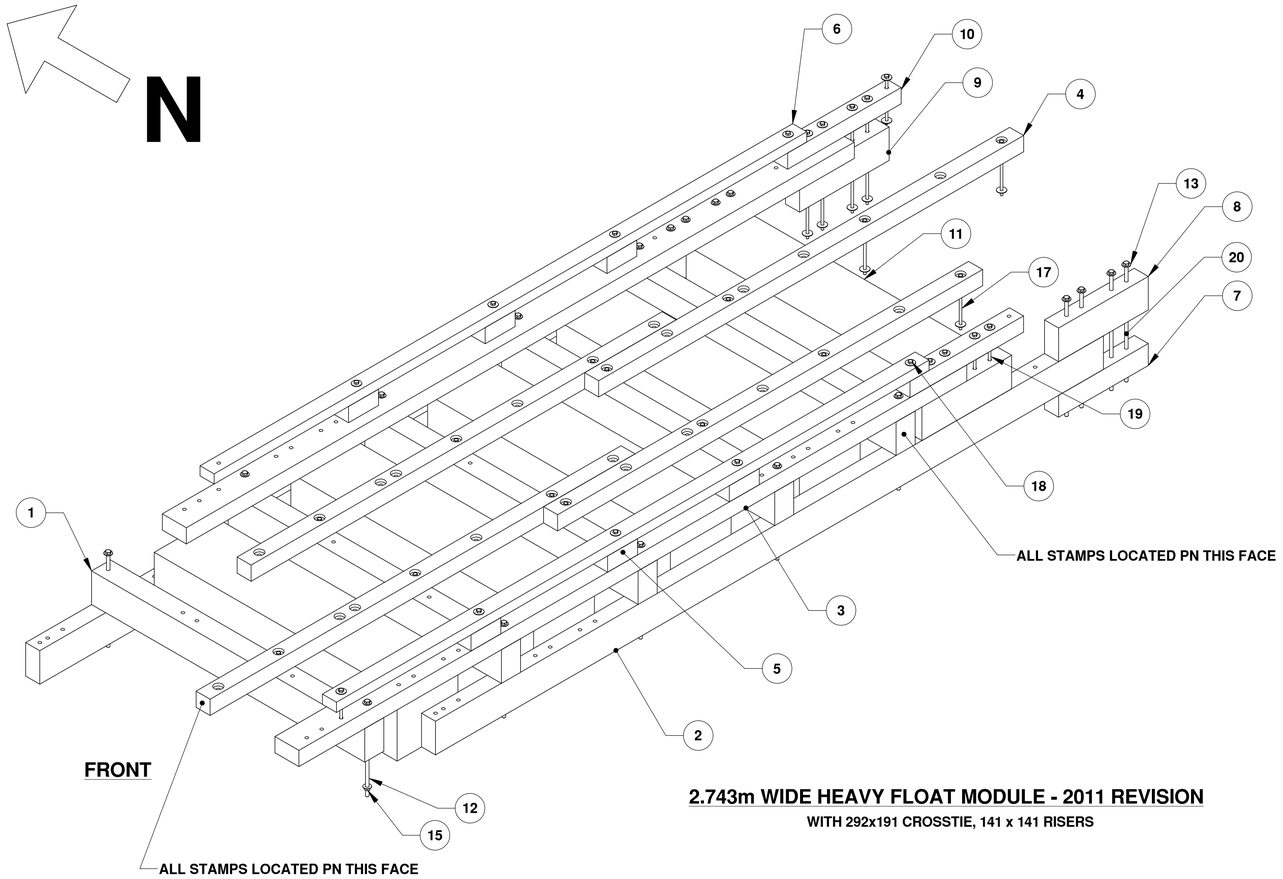
COMMENTS:
VERSION 2

Fisheries & Oceans / Pêches et Océans
Small Craft Harbours Branch

TITLE: 2.743m WIDE FLOAT MODULE 2005 REVISION

SIZE	DWG. NO.	REV
D	FM9-END-200	D

SCALE: 1:12 | WEIGHT: | SHEET 1 OF 1



FRONT

ALL STAMPS LOCATED PN THIS FACE

TIMBER MEMBERS

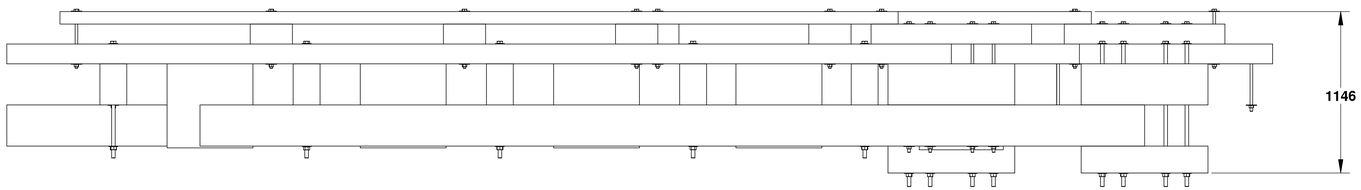
ITEM NO.	QTY.	TIMBER MEMBER	DESCRIPTION	MATERIAL
1	5	CROSSTIES	(12x8) 292 x 191 x 2743 LG.	14 LB CREOSOTE TREATMENT #1 BTR FIR
2	2	FLANGE	(12x6) 292 x 141 x 6706 LG.	14 LB CREOSOTE TREATMENT #1 BTR FIR
3	2	STRINGER	(10x6) 241 x 141 X 6706 LG.	14 LB CREOSOTE TREATMENT #1 BTR FIR
4	4	JOIST	(6x6) 141 x 141 x 4267 LG.	14 LB CREOSOTE TREATMENT #1 BTR FIR
5	6	RISER	(6x6) 141 x 141 x 305 LG.	ACZA
6	2	RAIL	(4x6) 89 x 141 x 5950 LG.	ACZA
7	2	LOWER FLANGE SPLICE	(6x8) 141 x 191 X 900 LG.	14 LB CREOSOTE TREATMENT #1 BTR FIR
8	2	UPPER FLANGE SPLICE	(6x12) 141 X 292 X 900 LG.	14 LB CREOSOTE TREATMENT #1 BTR FIR
9	2	LOWER STRINGER SPLICE	(6x12) 141 x 292 x 900 LG.	14 LB CREOSOTE TREATMENT #1 BTR FIR
10	2	UPPER STRINGER SPLICE	(6x6) 141 x 141 x 1140 LG.	ACZA
11	5	FOAM BOUYANCY BILLET	1000 x 597 x 2438 LG.	
21	28	DECK PLATES	(12 x 2) 305 x 38 x 2440 LG.	ACZA

HARDWARE

ITEM NO.	HARDWARE	QTY
12	HEX BOLT 25 x 812mm	10
13	WASHERS 25 ∅	100
15	HEX NUT 25 ∅	50
17	HEX BOLT 25 x 457mm	14
18	HEX BOLT 25 x406mm	10
19	HEX BOLT 25 x 914mm	8
20	HEX BOLT 25 x 1016mm	8
22	GALVANIZED SPIRALS NAILS 100mm LG	192

2.743m WIDE HEAVY FLOAT MODULE - 2011 REVISION

WITH 292x191 CROSSTIE, 141 x 141 RISERS



FRONT

SIDE VIEW

SCALE: 1-20

WestCAD Services Ltd.

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ±
ANGULAR: MACH ± BEND ±
TWO PLACE DECIMAL ±
THREE PLACE DECIMAL ±
INTERPRET GEOMETRIC TOLERANCING PER:
MATERIAL --
FINISH --
NEXT ASSY | USED ON
APPLICATION | DO NOT SCALE DRAWING

	DATE	NAME
DRAWN	07/10	WSL
CHECKED		
ENG APPR.		
MFG APPR.		
Q.A.		

COMMENTS:

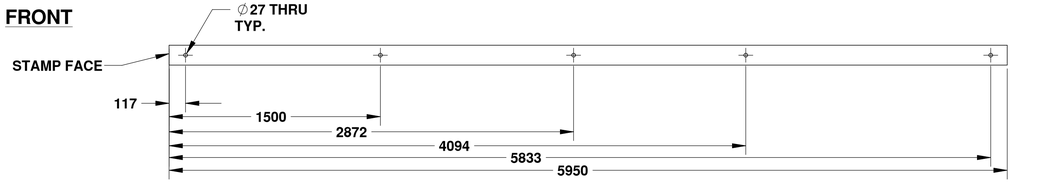
Fisheries & Oceans | Pêches et Océans
Small Craft Harbours Branch

TITLE: '2010 REVISION' 2.743m WIDE HEAVY FLOAT MODULE ASSEMBLY

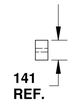
SIZE D | DWG. NO. FM9-HV-000 | REV E

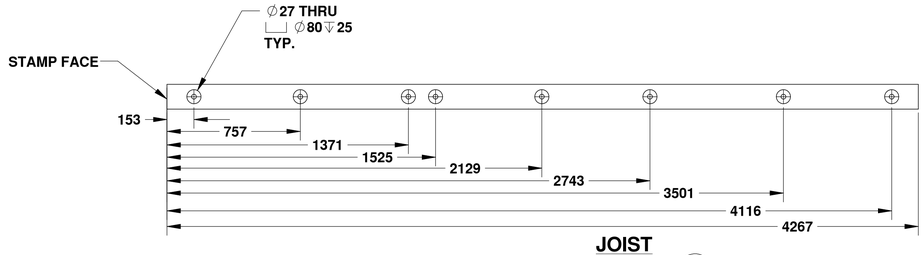
SCALE: 1:20 | WEIGHT: | SHEET 1 OF 1

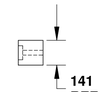
REV 1 | D



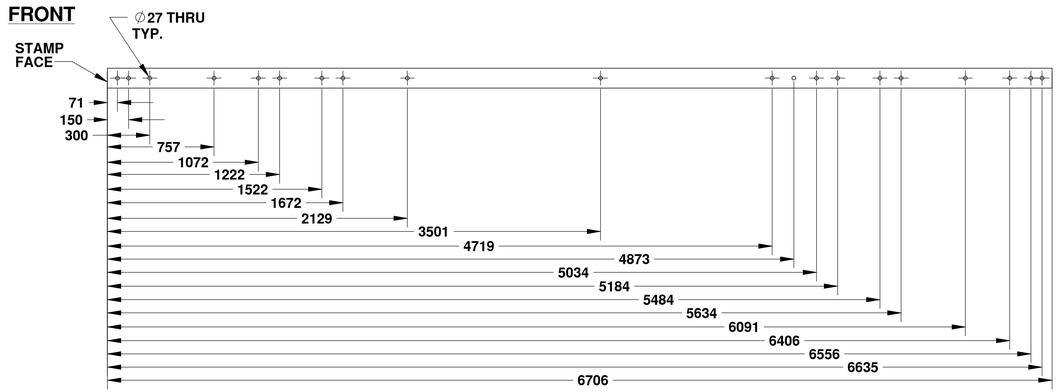
RAIL
89 x 141 (4x6)
SCALE: 1-20
(2 REQUIRED) 6



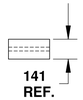


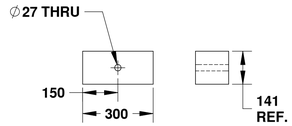


JOIST
141 X 141 (6X6)
SCALE 1-16
(4 REQUIRED) 4

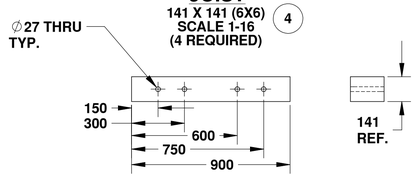


FLANGE
292 x 141 (12x6)
SCALE: 1-20
(2 REQUIRED) 2

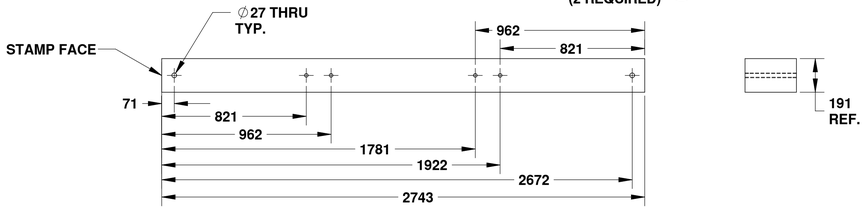




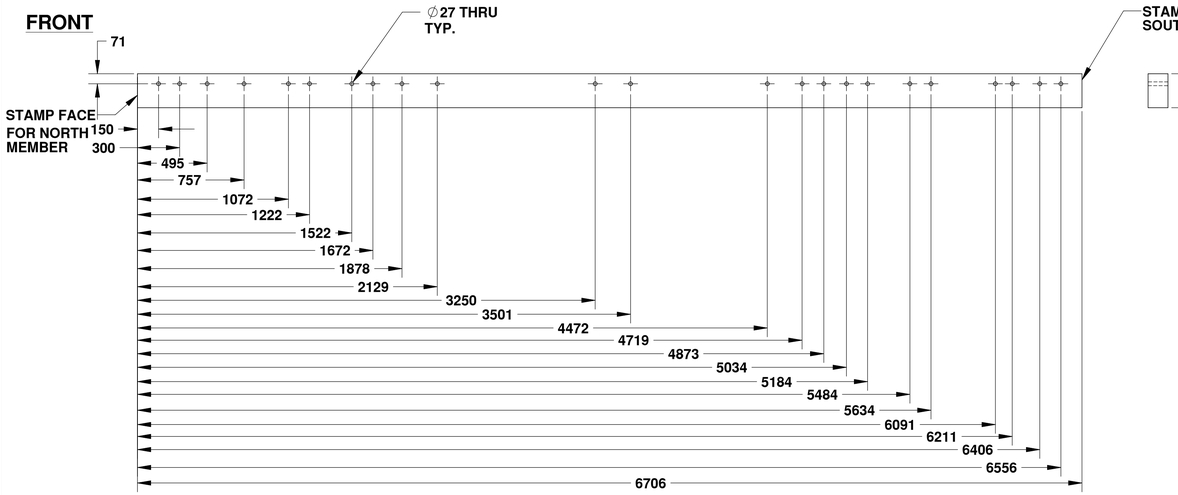
RISER
141 x 141 (6x6)
SCALE 1-12
(6 REQUIRED) 5



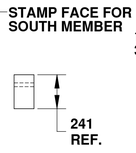
LOWER FLANGE SPLICE
141 x 191 (6x8)
SCALE: 1-16
(2 REQUIRED) 7

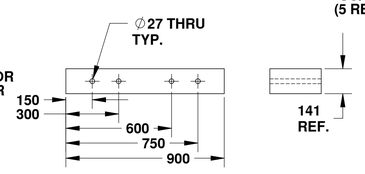


CROSSTIE
292 x 191 (12x8)
SCALE: 1-20
(5 REQUIRED) 1

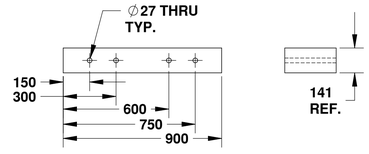


STRINGER
241 x 141 (10x6)
SCALE: 1-20
(2 REQUIRED) 3

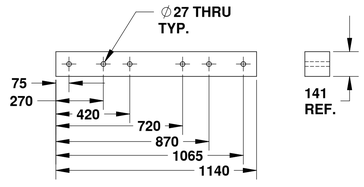




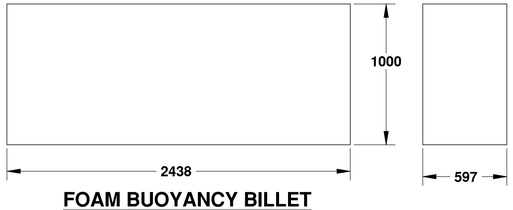
UPPER FLANGE SPLICE
292 X 141 (12X6)
SCALE 1-16
(2 REQUIRED) 8



LOWER STRINGER SPLICE
292 x 141 (12X6)
SCALE: 1-16
(2 REQUIRED) 9



UPPER STRINGER SPLICE
141 x 141 (6x6)
SCALE: 1-16
(2 REQUIRED) 10



FOAM BUOYANCY BILLET
SCALE: 1-20
(5 REQUIRED) 20

HOLES ARE DRILLED CENTERLINE UNLESS OTHERWISE NOTED

WestCAD Services Ltd.

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ±
ANGULAR: MACH ± BEND ±
TWO PLACE DECIMAL ±
THREE PLACE DECIMAL ±
INTERPRET GEOMETRIC TOLERANCING PER:
MATERIAL —
FINISH —
DO NOT SCALE DRAWING

	DATE	NAME
DRAWN	07/10	WSL
CHECKED		
ENG APPR.		
MFG APPR.		
Q.A.		
COMMENTS:		

NEXT ASSY | USED ON | APPLICATION

Fisheries & Oceans / Pêches et Oceans
Small Craft Harbours Branch

TITLE: '2010 REVISION'
2.743m WIDE HEAVY
FLOAT MODULE ASSEMBLY

SIZE D | DWG. NO. FM9-HV-001 | REV E
SCALE: 1:16 | WEIGHT: | SHEET 1 OF 1

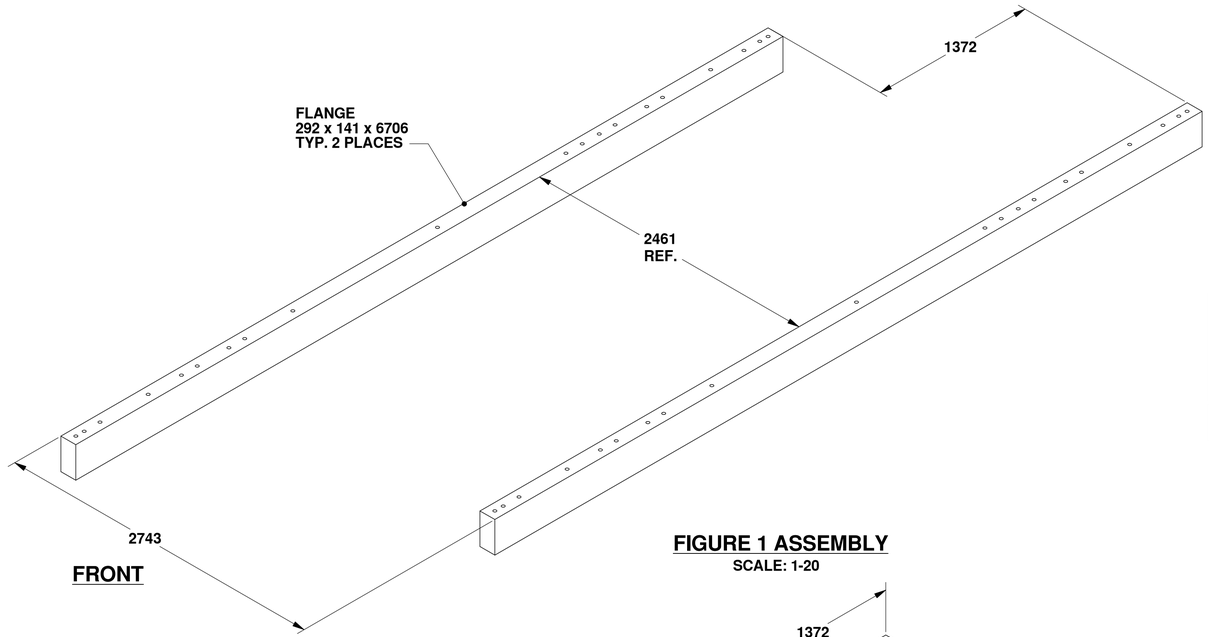


FIGURE 1 ASSEMBLY
SCALE: 1-20

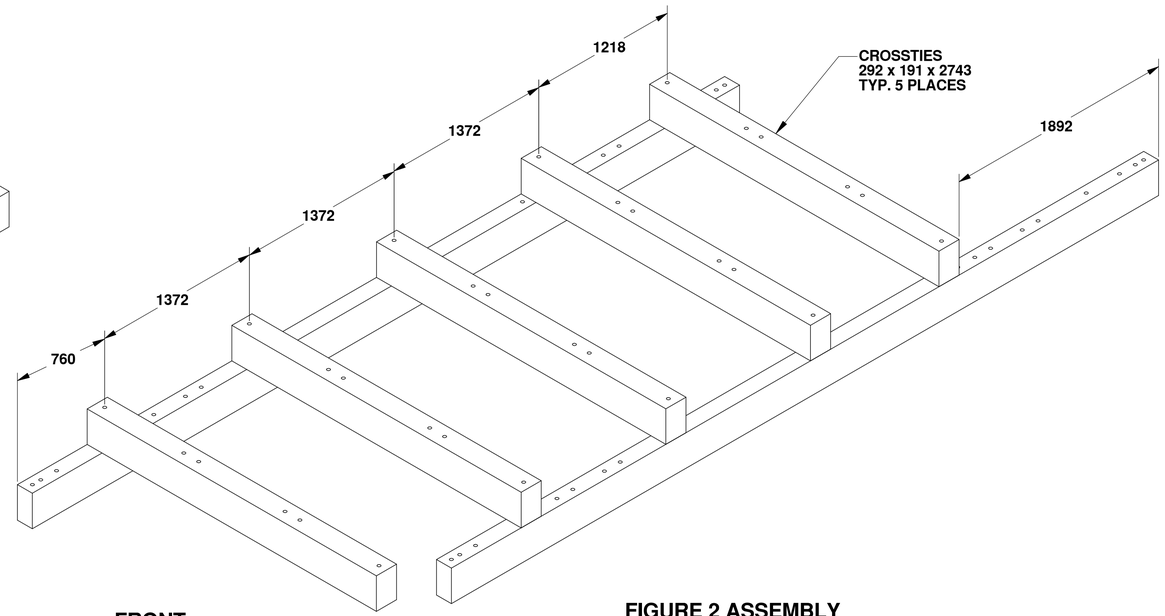


FIGURE 2 ASSEMBLY
SCALE 1-20

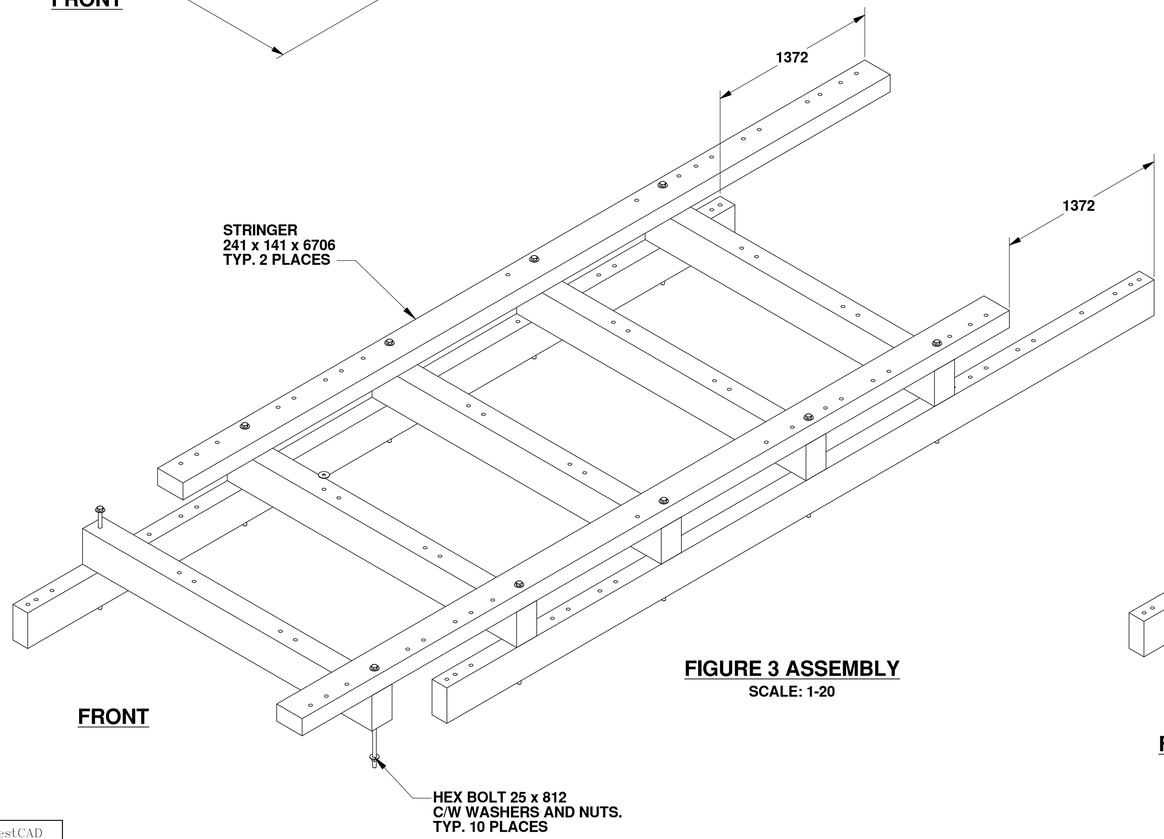


FIGURE 3 ASSEMBLY
SCALE: 1-20

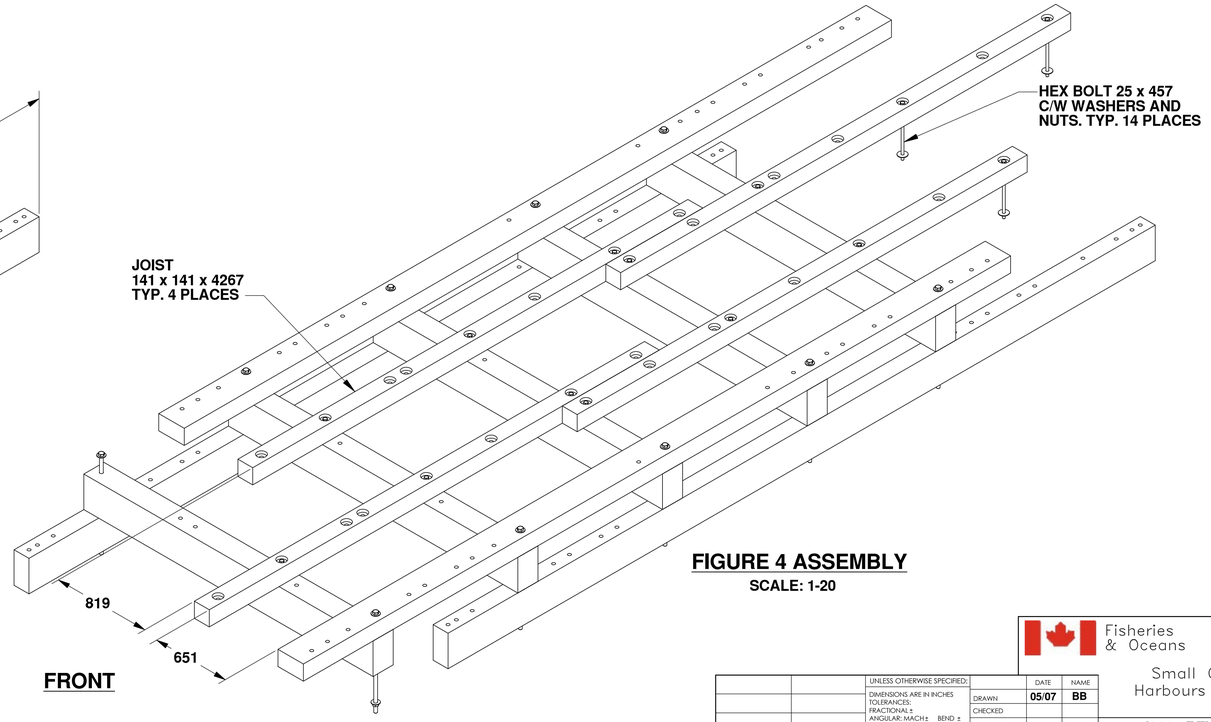


FIGURE 4 ASSEMBLY
SCALE: 1-20

WestCAD Services Ltd.

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ±
ANGULAR: MACH ± BEND ±
TWO PLACE DECIMAL ±
THREE PLACE DECIMAL ±
INTERPRET GEOMETRIC TOLERANCING PER:
MATERIAL —
FINISH —
NEXT ASSY | USED ON
APPLICATION
DO NOT SCALE DRAWING

	DATE	NAME
DRAWN	05/07	BB
CHECKED		
ENG APPR.		
MFG APPR.		
Q.A.		

COMMENTS:
Holes Resized to 27mm

Fisheries & Oceans | Pêches et Océans
Small Craft Harbours Branch

TITLE: '2005 REVISION' 2.743m WIDE HEAVY FLOAT MODULE ASSEMBLY

SIZE	DWG. NO.	REV
D	FM9-HV-002	C

SCALE: 1:20 | WEIGHT: | SHEET 1 OF 1

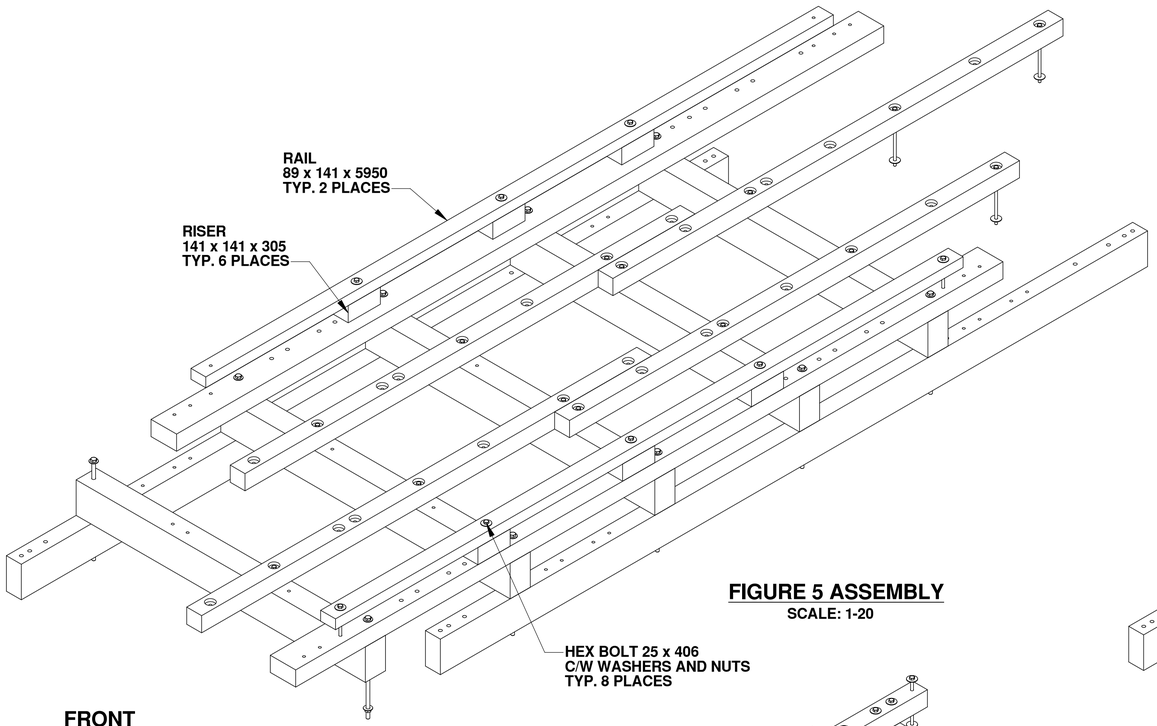


FIGURE 5 ASSEMBLY
SCALE: 1-20

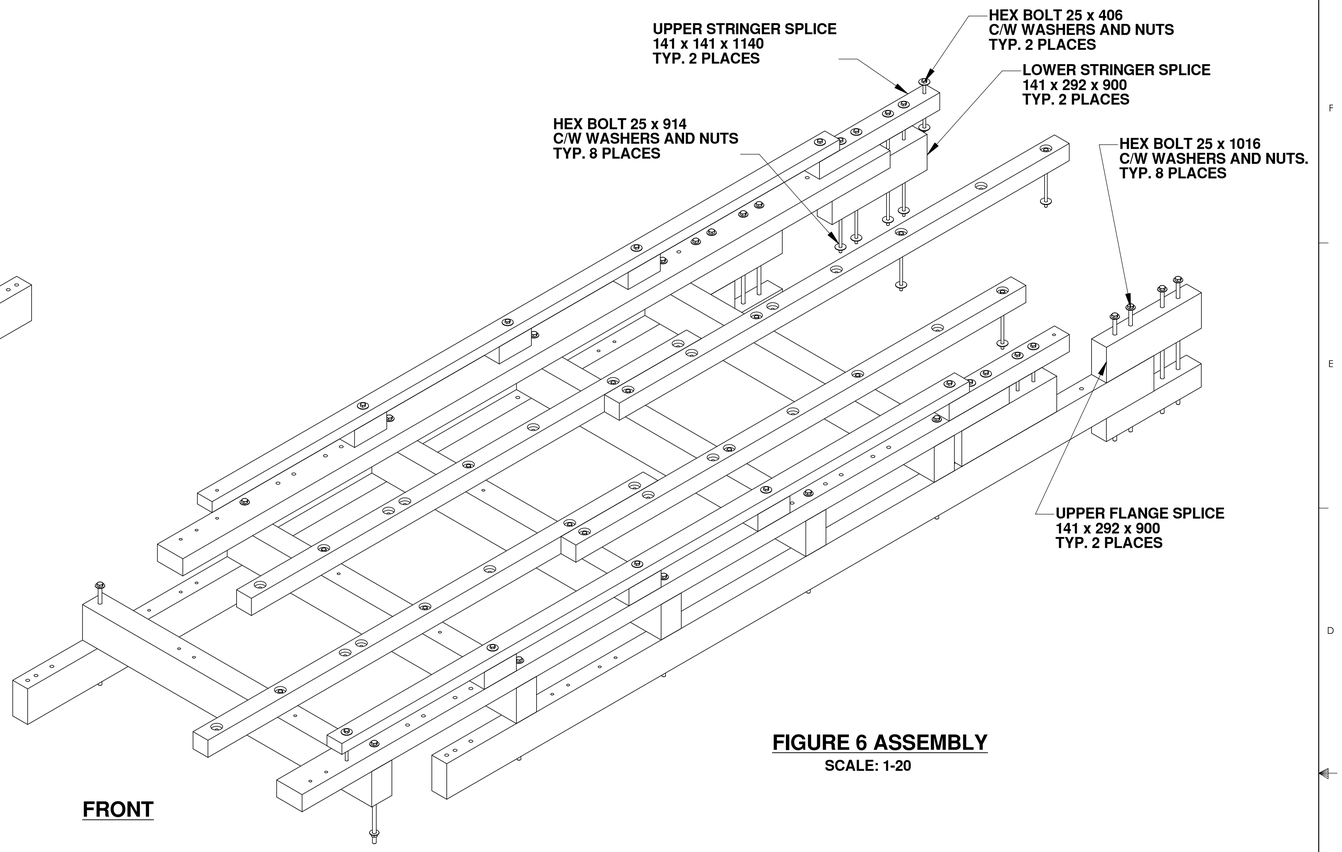


FIGURE 6 ASSEMBLY
SCALE: 1-20

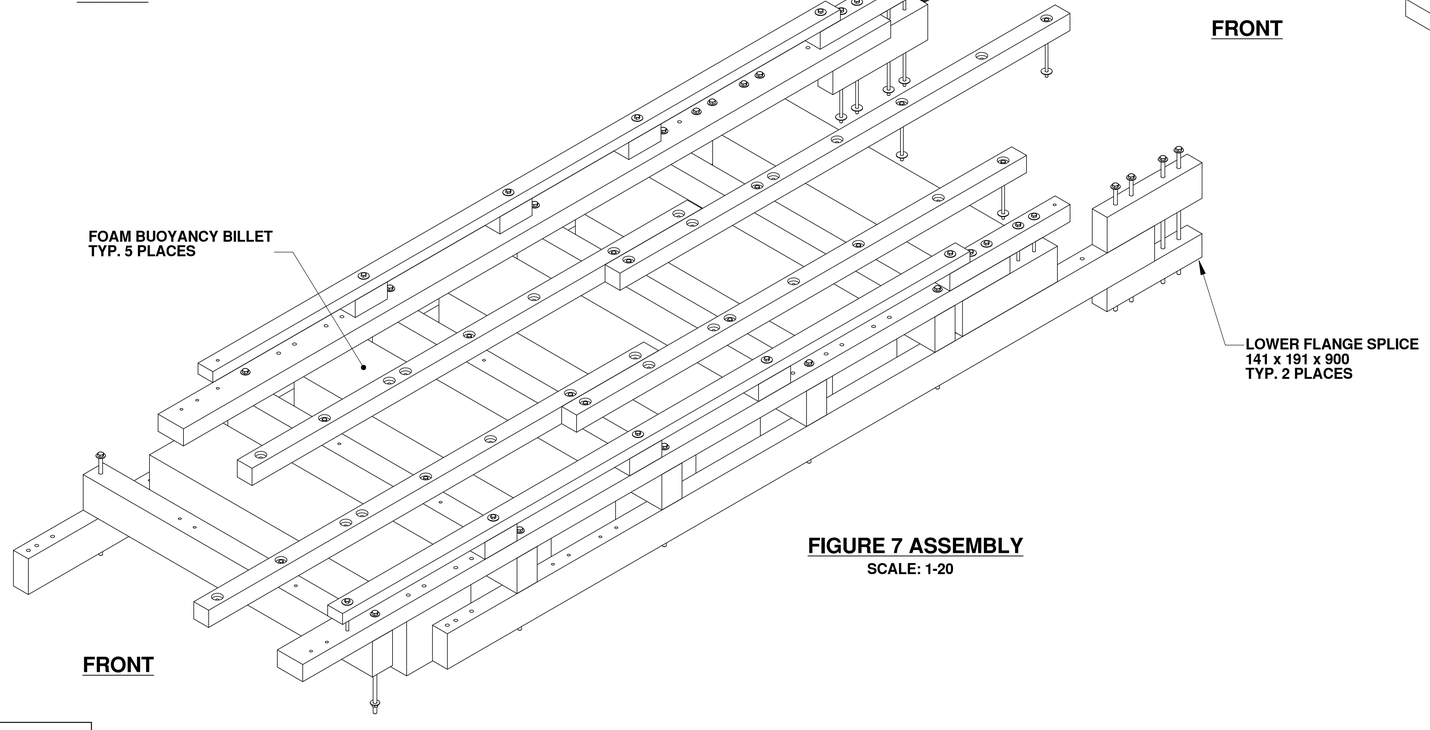


FIGURE 7 ASSEMBLY
SCALE: 1-20

WestCAD Services Ltd.

				DATE	NAME
		UNLESS OTHERWISE SPECIFIED:			
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± ANGULAR: MACH ± BEND ± TWO PLACE DECIMAL ± THREE PLACE DECIMAL ±	DRAWN	05/07	BB
			CHECKED		
			ENG APPR.		
			MFG APPR.		
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.		
		MATERIAL --	COMMENTS:		
		FINISH --	Holes Resized for 27mm		
NEXT ASSY	USED ON				
APPLICATION		DO NOT SCALE DRAWING			

Fisheries & Oceans / Pêches et Océans
Small Craft Harbours Branch

TITLE: '2005 REVISION'
2.743m WIDE HEAVY
FLOAT MODULE ASSEMBLY

SIZE	DWG. NO.	REV
D	FM9-HV-003	C

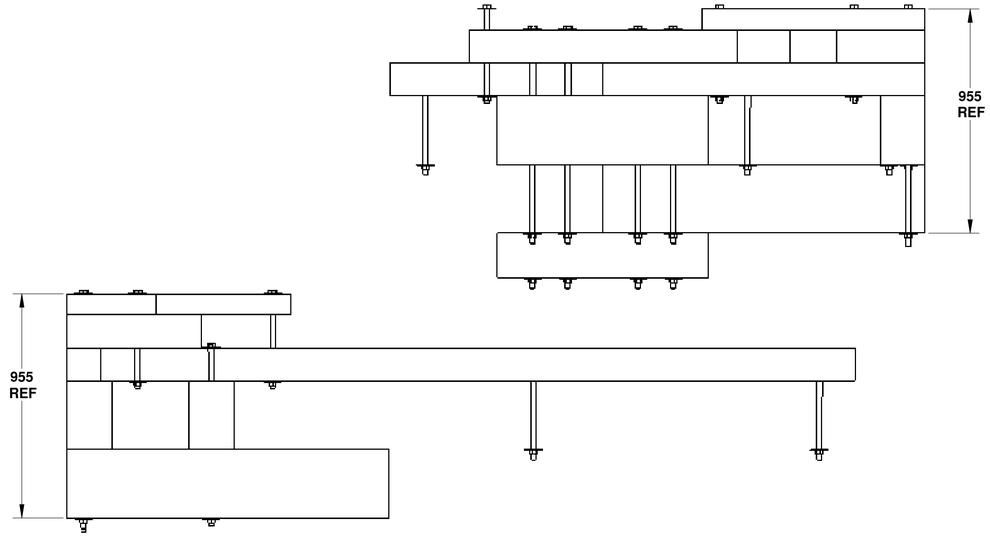
SCALE: 1:20 | WEIGHT: | SHEET 1 OF 1

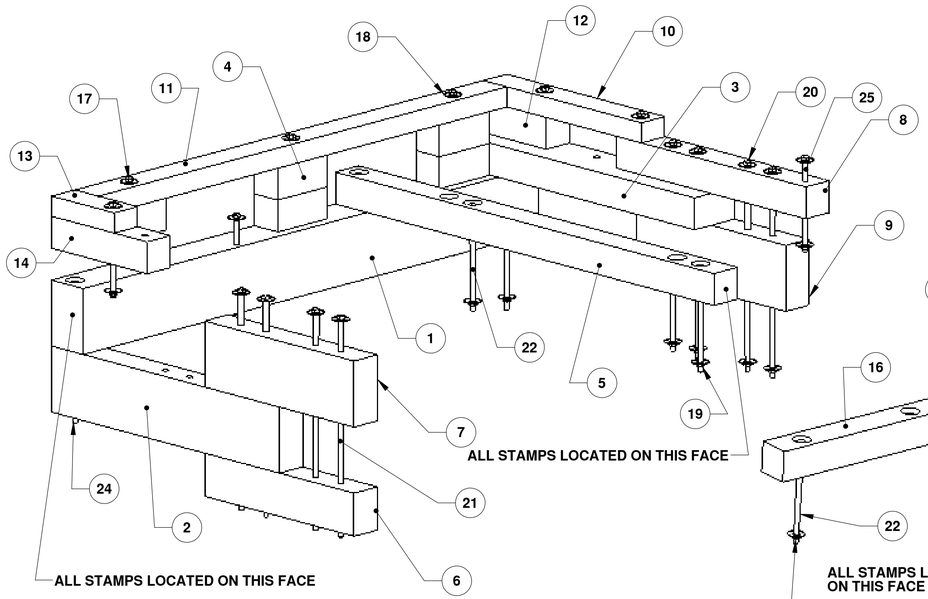
TIMBER MEMBERS REQUIREMENTS

ITEM NO.	QTY.	TIMBER MEMBER	DESCRIPTION	MATERIAL
1	2	END CROSSTIE	(8x12) 191 x 292 x 2743 LG.	14 IB. CREOSOTE TREATMENT #1 BTR FIR
2	2	FLANGE END	(6x12) 141 x 292 x 1372 LG.	14 IB. CREOSOTE TREATMENT #1 BTR FIR
3	2	STRINGER END	(6x10) 141 x 241 x 1372 LG.	14 LB CREOSOTE TREATMENT #1 BTR FIR
4	12	END BLOCK (RISER)	(6x6) 141 x 141 x 305 LG.	ACZA
5	2	JOIST END 'B'	(6x6) 141 x 141 x 2281 LG.	14 LB CREOSOTE TREATMENT #1 BTR FIR
6	1	LOWER FLANGE SPLICE	(6x8) 141 x 191 x 900 LG.	14 IB. CREOSOTE TREATMENT #1 BTR FIR
7	1	UPPER FLANGE SPLICE	(6x12) 141 x 292 x 900 LG.	14 IB. CREOSOTE TREATMENT #1 BTR FIR
8	1	UPPER STRINGER SPLICE	(6x6) 141 x 141 x 1140 LG.	ACZA
9	1	LOWER STRINGER SPLICE	(6x12) 141 x 292 x 900 LG.	14 IB. CREOSOTE TREATMENT #1 BTR FIR
10	2	RAIL END	(4x6) 89 x 141 x 952 LG.	ACZA
11	2	END RAIL	(4x6) 89 x 141 x 2460 LG.	ACZA
12	2	SPACER END	(6x6) 141 x 141 x 378 LG.	ACZA
13	2	RAIL END 'B'	(4x6) 89 x 141 x 378 LG.	ACZA
14	2	SPACER END 'B'	(6x6) 141 x 141 x 575 LG.	ACZA
15	1	STANDARD CROSSTIE	(8x12) 191 x 292 x 2743 LG.	14 IB. CREOSOTE TREATMENT #1 BTR FIR
16	1	MODIFIED JOIST	(6x6) 141 x 141 x 3359 LG.	14 LB CREOSOTE TREATMENT #1 BTR FIR

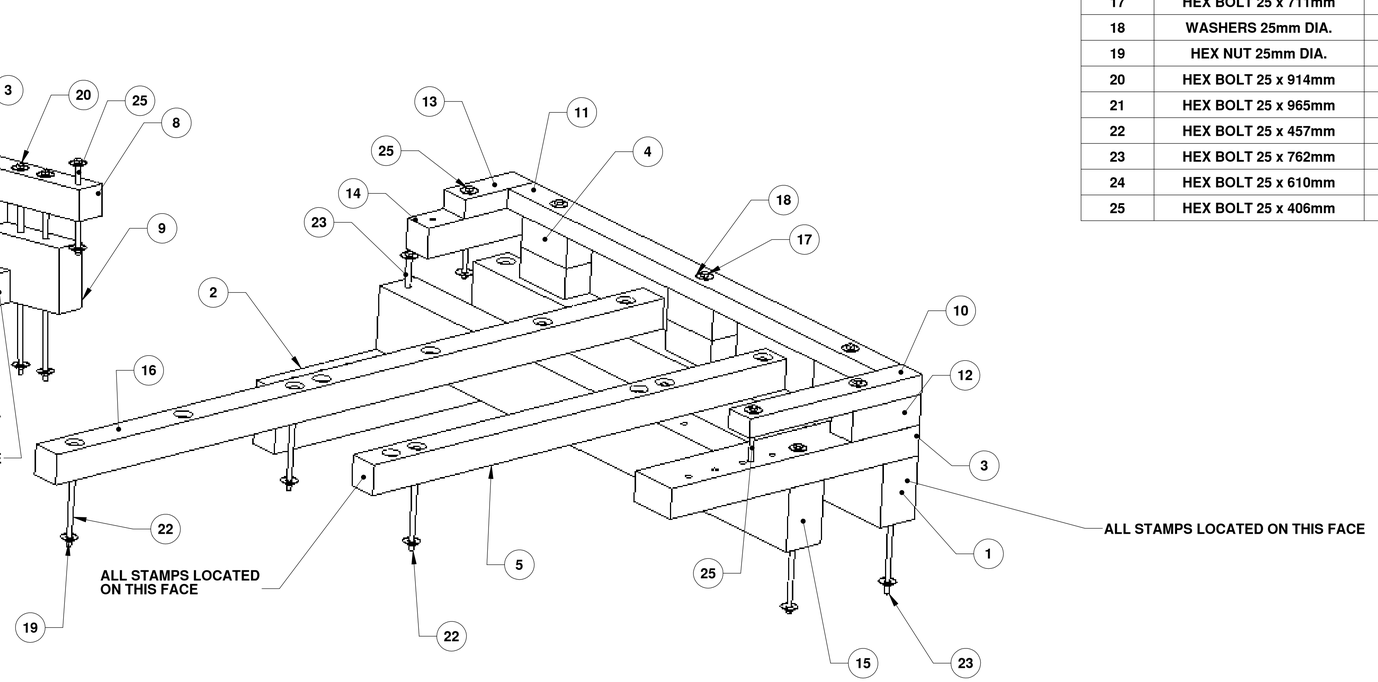
HARDWARE REQUIREMENTS

ITEM NO.	DESCRIPTION	QTY.
17	HEX BOLT 25 x 711mm	6
18	WASHERS 25mm DIA.	76
19	HEX NUT 25mm DIA.	38
20	HEX BOLT 25 x 914mm	4
21	HEX BOLT 25 x 965mm	4
22	HEX BOLT 25 x 457mm	11
23	HEX BOLT 25 x 762mm	4
24	HEX BOLT 25 x 610mm	2
25	HEX BOLT 25 x 406mm	7





2.743m WIDE HEAVY BACK END MODULE



2.743m WIDE HEAVY FRONT END MODULE

2.743m WIDE END FLOAT MODULES

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ANGULAR: MACH ± BEND ±
TWO PLACE DECIMAL ±
THREE PLACE DECIMAL ±
INTERPRET GEOMETRIC TOLERANCING PER:
MATERIAL ---
FINISH ---
DO NOT SCALE DRAWING

	DATE	NAME
DRAWN	12/11	WSL
CHECKED		
ENG APPR.		
MFG APPR.		
Q.A.		

COMMENTS:

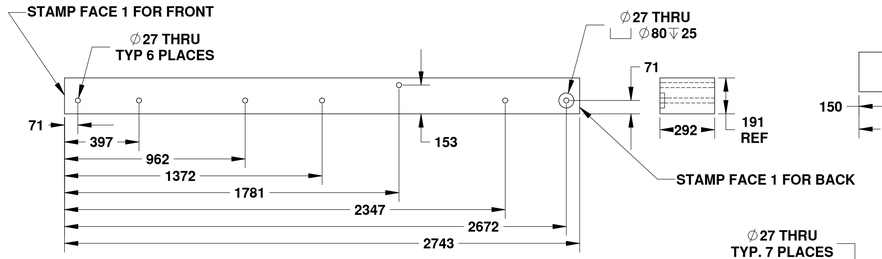
NEXT ASSY | USED ON | APPLICATION

Fisheries & Oceans | Pêches et Oceans
Small Craft Harbours Branch

TITLE: 2.743m WIDE FLOAT MODULE 2011 REVISION

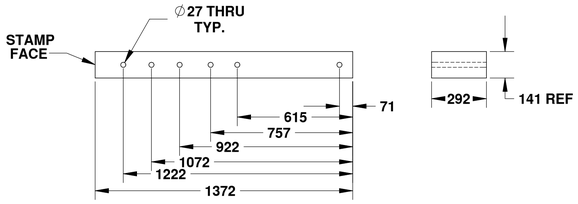
SIZE D | DWG. NO. FM9-HV-END-200 | REV E

SCALE: 1:12 | WEIGHT: | SHEET 1 OF 1



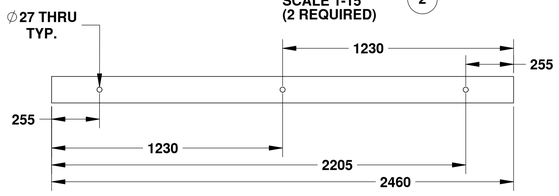
END CROSSTIE

191x292 (8x12)
SCALE 1-15
(2 REQUIRED) (1)



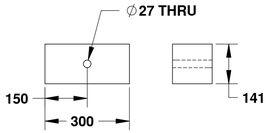
FLANGE END

141x292 (6x12)
SCALE 1-15
(2 REQUIRED) (2)



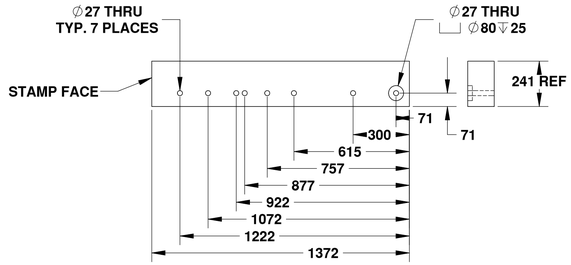
END RAIL

89x141 (4x6)
SCALE 1-15
(2 REQUIRED) (11)



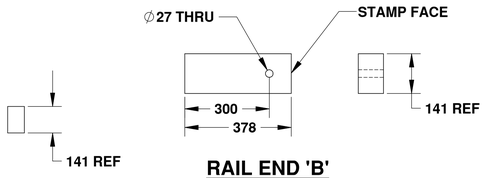
RISER

141x141 (6x6)
SCALE 1-10
(12 REQUIRED) (4)



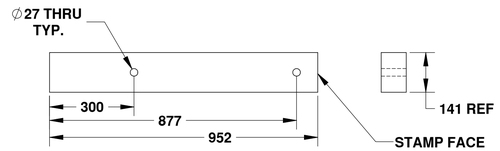
STRINGER END

141x241 (6x10)
SCALE 1-15
(2 REQUIRED) (3)



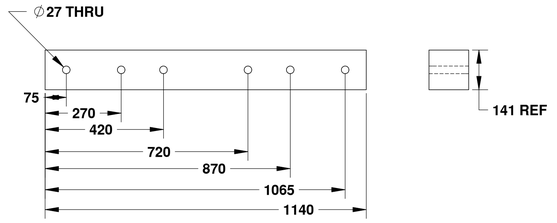
RAIL END 'B'

89x141 (4x6)
SCALE 1-10
(2 REQUIRED) (13)



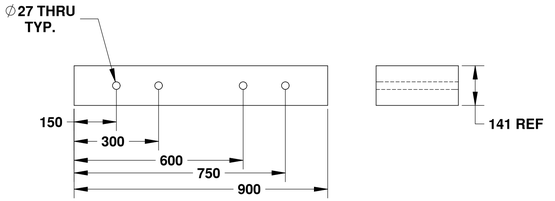
RAIL END

89x141 (4x6)
SCALE 1-10
(2 REQUIRED) (10)



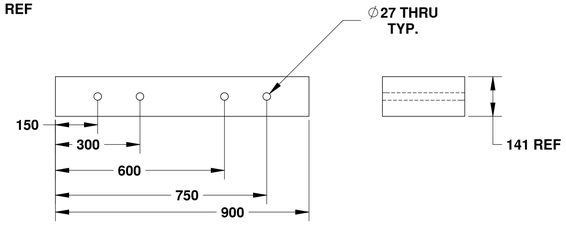
UPPER STRINGER SPLICE

141x141 (6x6)
SCALE 1-10
(1 REQUIRED) (8)



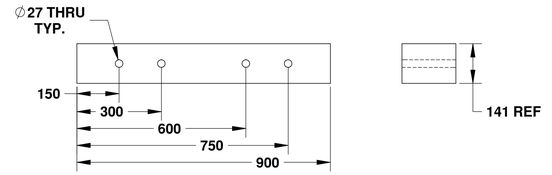
UPPER FLANGE SPLICE

141x292 (6x12)
SCALE 1-10
(1 REQUIRED) (7)



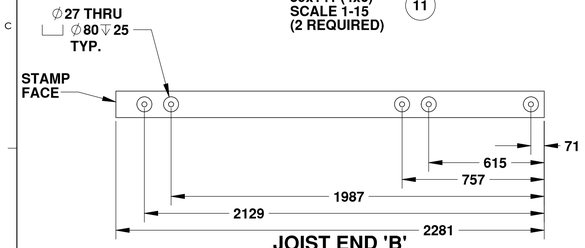
LOWER STRINGER SPLICE

141x292 (6x12)
SCALE 1-10
(1 REQUIRED) (9)



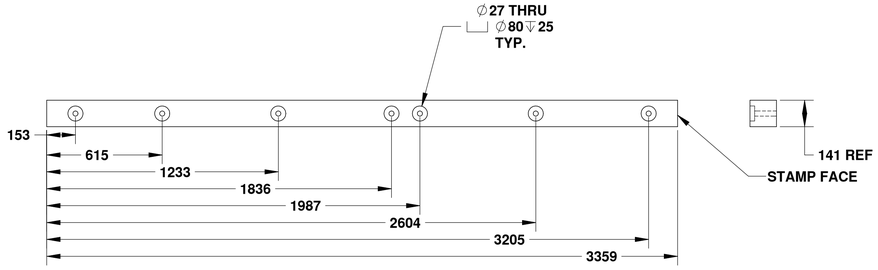
LOWER FLANGE SPLICE

141x191 (6x8)
SCALE 1-10
(1 REQUIRED) (6)



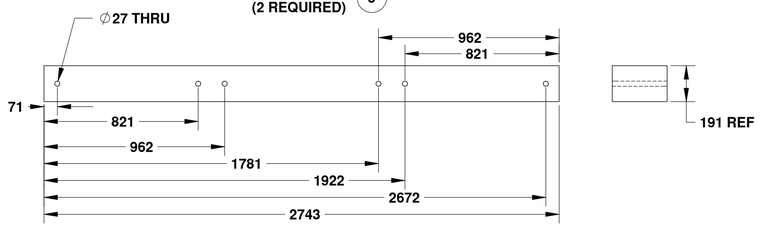
JOIST END 'B'

141x141 (6x6)
SCALE 1-15
(2 REQUIRED) (5)



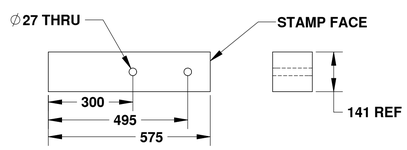
MODIFIED JOIST

141x141 (6x6)
SCALE 1-15
(1 REQUIRED) (16)



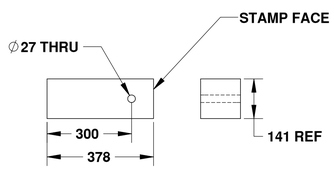
STANDARD CROSSTIE

191x292 (8x12)
SCALE 1-15
(1 REQUIRED) (15)



SPACER END 'B'

141x141 (6x6)
SCALE 1-10
(2 REQUIRED) (14)



SPACER END

141x141 (6x6)
SCALE 1-10
(2 REQUIRED) (12)

HOLE ARE DRILLED CENTERLINE
UNLESS OTHERWISE NOTED

				DATE	NAME
		UNLESS OTHERWISE SPECIFIED:			
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± ANGULAR: MACH ± BEND ± TWO PLACE DECIMAL ± THREE PLACE DECIMAL ±	DRAWN	12/11	WSL
			CHECKED		
			ENG APPR.		
			MFG APPR.		
			Q.A.		
			COMMENTS:		
		INTERPRET GEOMETRIC TOLERANCING PER:			
		MATERIAL —			
NEXT ASSY	USED ON	FINISH —			
APPLICATION		DO NOT SCALE DRAWING			

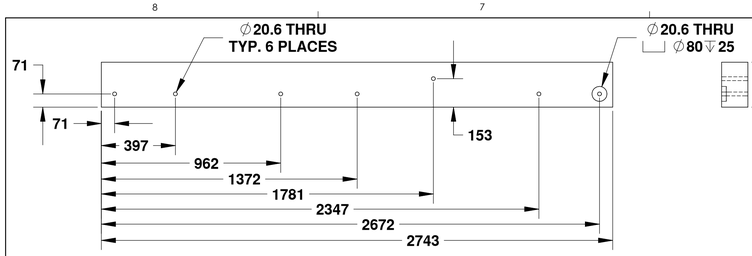
Fisheries & Oceans / Pêches et Oceans
Small Craft Harbours Branch

TITLE: 2.743m WIDE FLOAT MODULE 2011 REVISION

SIZE	DWG. NO.	REV
D	FM9-HV-END-201	E

SCALE: 1:15 | WEIGHT: | SHEET 1 OF 1

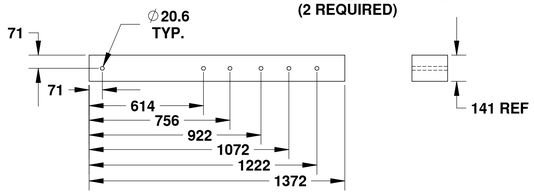
WestCAD Services Ltd.



END CROSSTIE

141x241 (6x10)
SCALE: 1-16
(2 REQUIRED)

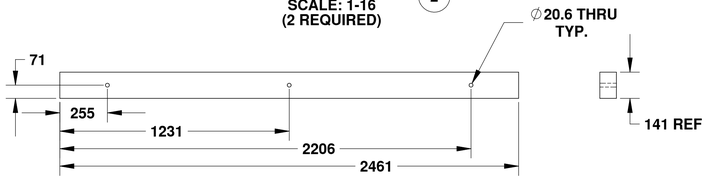
1



FLANGE END

141x191 (6x8)
SCALE: 1-16
(2 REQUIRED)

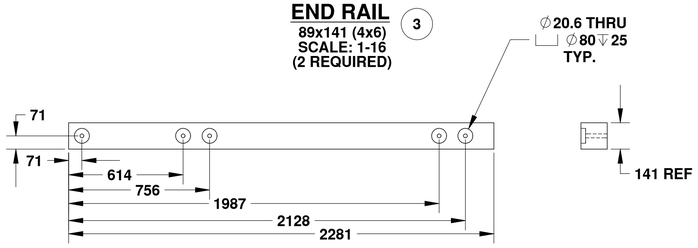
2



END RAIL

89x141 (4x6)
SCALE: 1-16
(2 REQUIRED)

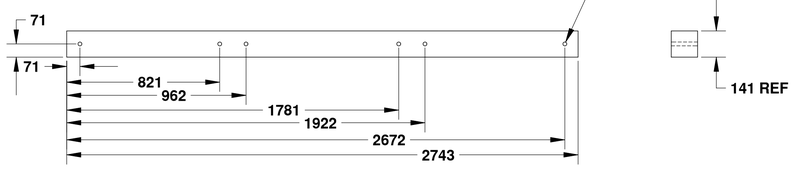
3



JOIST END 'B'

141x141 (6x6)
SCALE: 1-16
(2 REQUIRED)

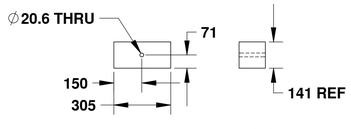
4



STANDARD CROSSTIE

141x141 (6x6)
SCALE: 1-16
(1 REQUIRED)

5



END BLOCK

141x141 (6x6)
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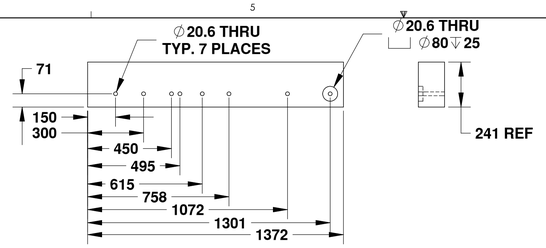
(12 REQUIRED)

6



STRINGER END

141x241 (6x10)
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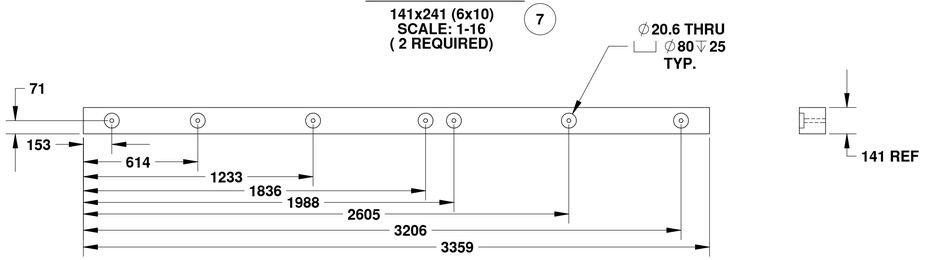
(2 REQUIRED)

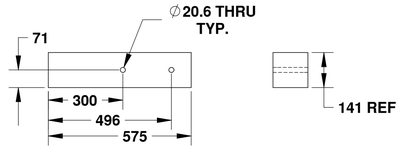
7



MODIFIED JOIST

141x141 (6x6)
SCALE: 1-16
(1 REQUIRED)

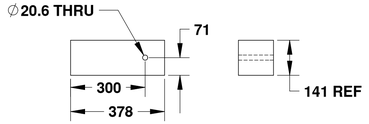
8



SPACER END 'B'

141x141 (6x6)
SCALE: 1-12
(2 REQUIRED)

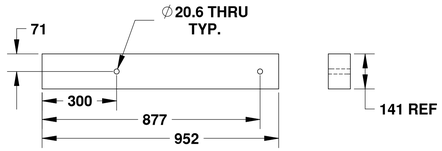
9



SPACER END

141x141 (6x6)
SCALE: 1-12
(2 REQUIRED)

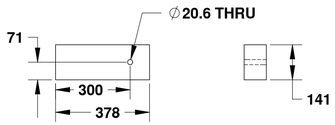
10



RAIL END

89x141 (4x6)
SCALE: 1-12
(2 REQUIRED)

11



RAIL END 'B'

89x141 (4x6)
SCALE: 1-12
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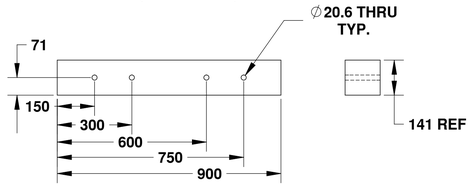
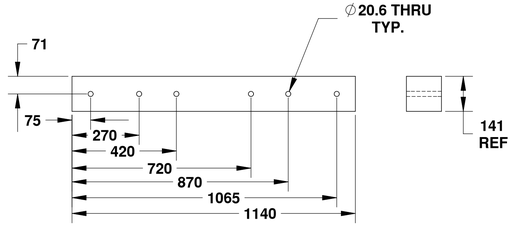
12



LOWER FLANGE SPLICE

141x141 (6x6)
SCALE: 1-12
(1 REQUIRED)

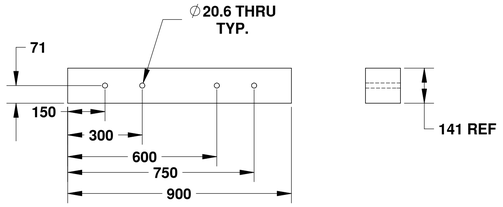
13



UPPER STRINGER SPLICE

141x141 (6x6)
SCALE: 1-12
(1 REQUIRED)

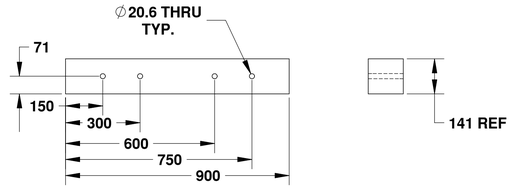
14



UPPER FLANGE SPLICE

141x141 (6x6)
SCALE: 1-12
(1 REQUIRED)

15



LOWER STRINGER SPLICE

141x141 (6x6)
SCALE: 1-12
(1 REQUIRED)

16

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NEXT ASSY | USED ON | APPLICATION

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ±
ANGULAR: MACH ± BEND ±
TWO PLACE DECIMAL ±
THREE PLACE DECIMAL ±
INTERPRET GEOMETRIC TOLERANCING PER:
MATERIAL --
FINISH --
DO NOT SCALE DRAWING

	DATE	NAME
DRAWN	06/01	WSL
CHECKED		
ENG APPR.		
MFG APPR.		
Q.A.		

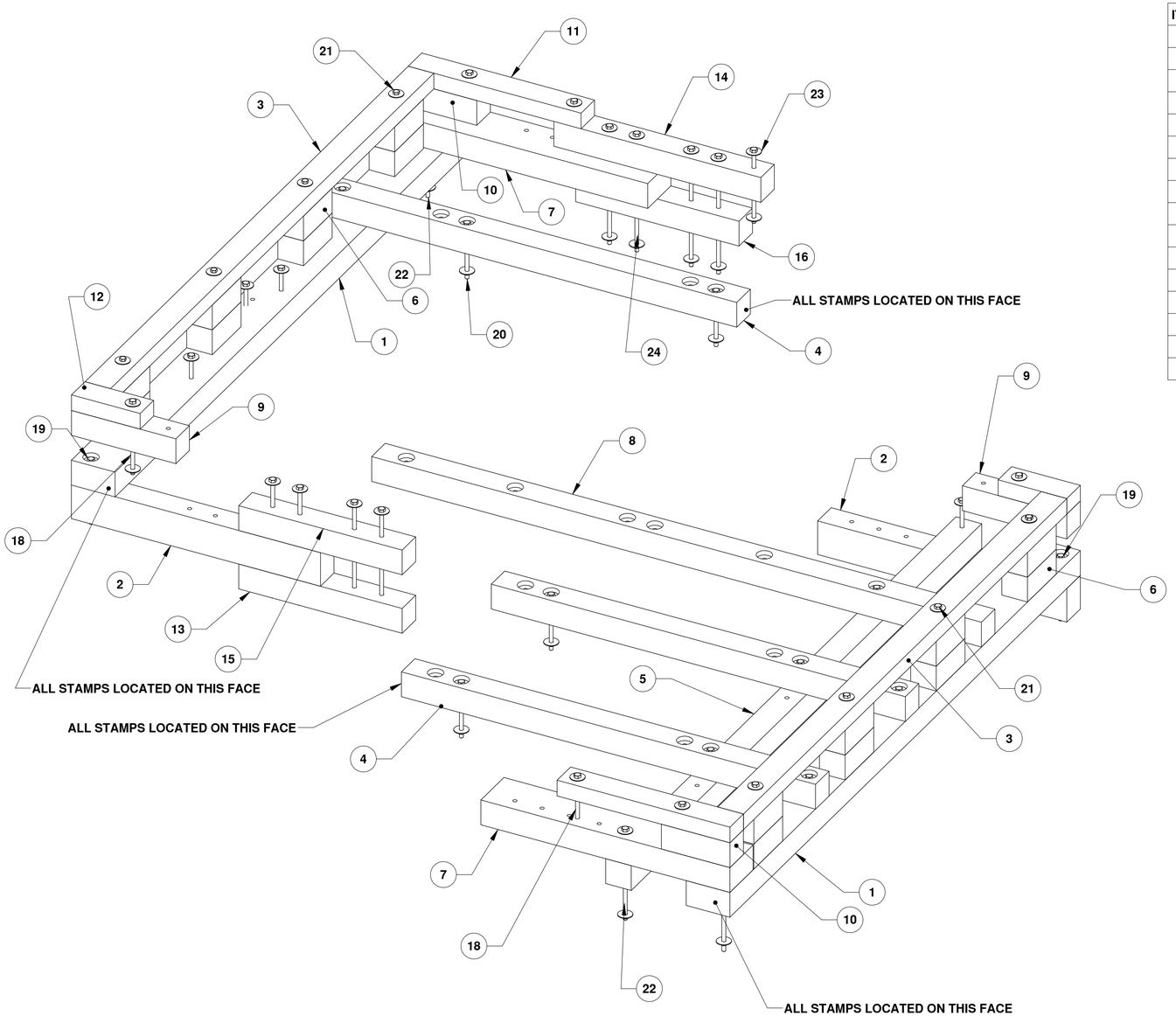
COMMENTS:
VERSION 2

Fisheries & Oceans | Pêches et Océans
Small Craft Harbours Branch

TITLE: **2.743m WIDE FLOAT MODULE 2005 REVISION**

SIZE **D** | DWG. NO. **FM9-END-201** | REV **C**
SCALE: 1:16 | WEIGHT: | SHEET 1 OF 1

REV
1
D

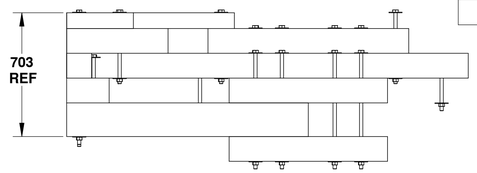


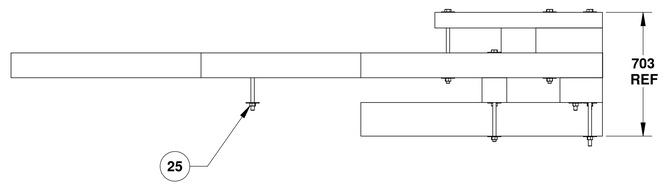
TIMBER MEMBER REQUIREMENTS

ITEM NO.	QTY.	TIMBER MEMBER	DESCRIPTION	MATERIAL
1	2	END CROSSTIE	(6x10) 141 x 241 x 3658 LG.	14 LB. CREOSOTE TREATMENT #1 BTR FIR
2	2	FLANGE END	(6x8) 141 x 191 x 1372 LG.	14 LB. CREOSOTE TREATMENT #1 BTR FIR
3	2	END RAIL	(4x6) 89 x 141 x 3374 LG.	ACZA
4	3	JOIST END 'B'	(6x6) 141 x 141 x 2281 LG	14 LB. CREOSOTE TREATMENT #1 BTR FIR
5	1	STANDARD CROSSTIE	(6x6) 141 x 141 x 3658 LG	14 LB. CREOSOTE TREATMENT #1 BTR FIR
6	16	END BLOCK	(6x6) 141 x 141 x 300 LG.	ACZA
7	2	STRINGER END	(6x10) 141 X 241 x 1372 LG.	14 LB. CREOSOTE TREATMENT #1 BTR FIR
8	1	MODIFIED JOIST	(6x6) 141 x 141 x 3359 LG.	14 LB. CREOSOTE TREATMENT #1 BTR FIR
9	2	SPACER END 'B'	(6x6) 141 x 141 x 575 LG.	ACZA
10	2	SPACER END	(6x6) 141 x 141 x 378 LG.	ACZA
11	2	RAIL END	(4x6) 89 x 141 x 952 LG.	ACZA
12	2	RAIL END 'B'	(4x6) 89 x 141 x 378 LG.	ACZA
13	1	LOWER FLANGE SPLICE	(6x6) 141 x 141 x 900 LG.	14 LB. CREOSOTE TREATMENT #1 BTR FIR
14	1	UPPER STRINGER SPLICE	(6x6) 141 x 141 x 1140 LG.	ACZA
15	1	UPPER FLANGE SPLICE	(6x6) 141 x 141 x 900 LG.	14 LB. CREOSOTE TREATMENT #1 BTR FIR
16	1	LOWER STRINGER SPLICE	(6x6) 141 x 141 x 900 LG.	14 LB. CREOSOTE TREATMENT #1 BTR FIR

HARDWARE REQUIREMENTS

ITEM NO.	QTY.	DESCRIPTION
18	7	HEX BOLT 19 x 406mm
19	2	HEX BOLT 19 x 356mm
20	13	HEX BOLT 19 x 300mm
21	8	HEX BOLT 19 x 557mm
22	4	HEX BOLT 19 x 508mm
23	84	WASHER 19mm DIA.
24	8	HEX BOLT 19 x 660mm
25	42	HEX NUT 19mm DIA.





3.65m WIDE FLOAT END MODULES

WestCAD Services Ltd.

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ±
ANGULAR: MACH ± BEND ±
TWO PLACE DECIMAL ±
THREE PLACE DECIMAL ±
INTERPRET GEOMETRIC TOLERANCING PER:
MATERIAL --
FINISH --
NEXT ASSY | USED ON
APPLICATION
DO NOT SCALE DRAWING

	DATE	NAME
DRAWN	12/11	WSL
CHECKED		
ENG APPR.		
MFG APPR.		
Q.A.		

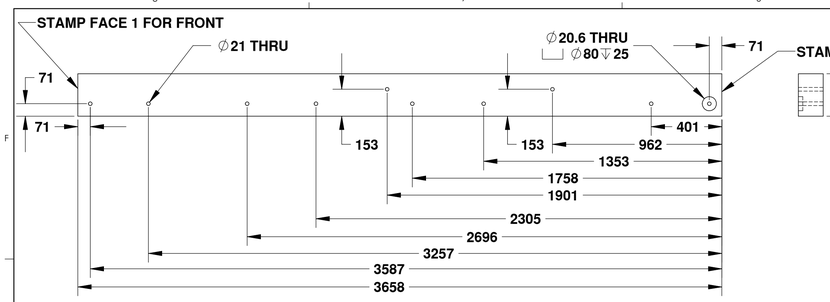
COMMENTS:

Fisheries & Oceans / Pêches et Océans
Small Craft Harbours Branch

TITLE: 3.65m WIDE FLOAT MODULE 2011 REVISION

SIZE	DWG. NO.	REV
D	FM12-END-200	J

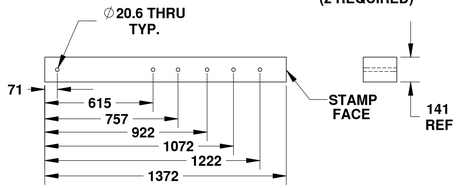
SCALE: 1:12 | WEIGHT: | SHEET 1 OF 1



END CROSSTIE

141x241 (6x10)
SCALE: 1-16
(2 REQUIRED)

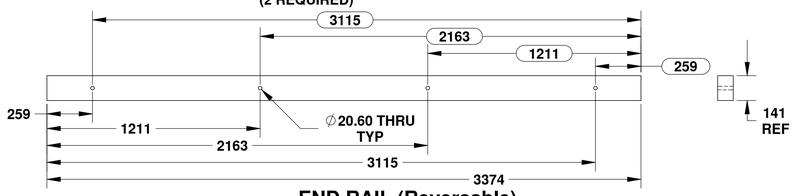
1



FLANGE END

141x191 (6x8)
SCALE: 1-16
(2 REQUIRED)

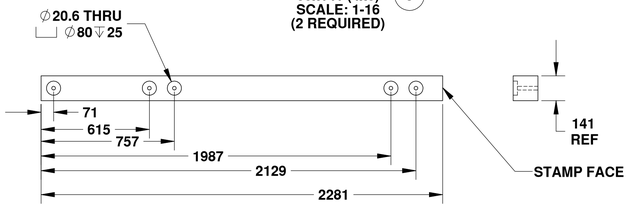
2



END RAIL (Reversable)

89x141 (4x6)
SCALE: 1-16
(2 REQUIRED)

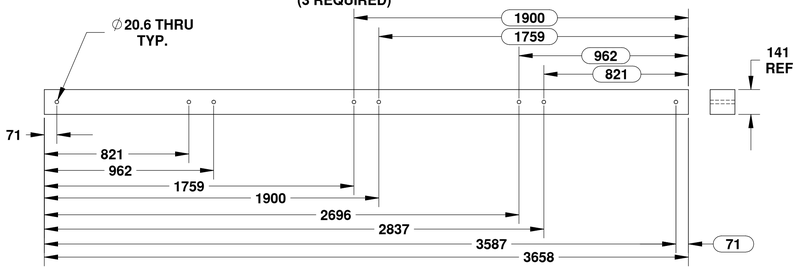
3



JOIST END 'B'

141x141 (6x6)
SCALE: 1-16
(3 REQUIRED)

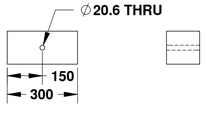
4



STANDARD CROSSTIE (Reversable)

141x141 (6x6)
SCALE: 1-16
(1 REQUIRED)

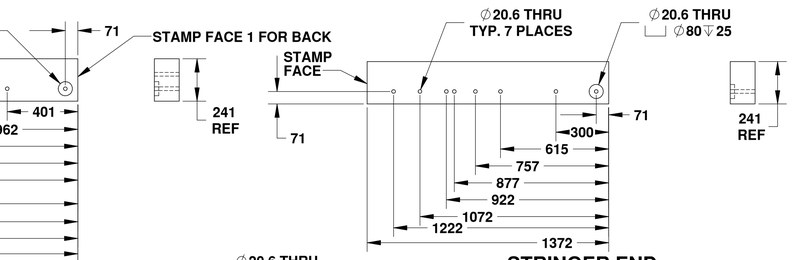
5



END BLOCK

141x141 (6x6)
SCALE: 1-16
(16 REQUIRED)

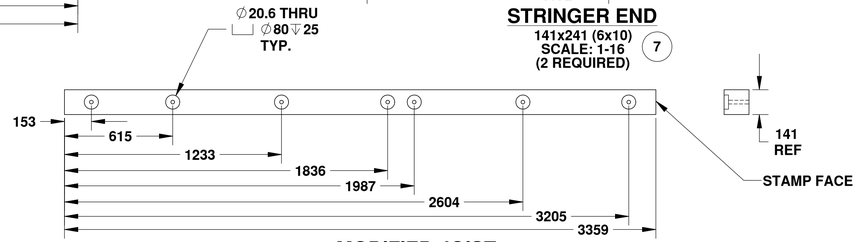
6



STRINGER END

141x241 (6x10)
SCALE: 1-16
(2 REQUIRED)

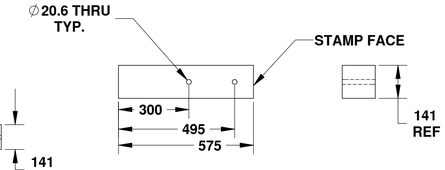
7



MODIFIED JOIST

141x141 (6x6)
SCALE: 1-16
(1 REQUIRED)

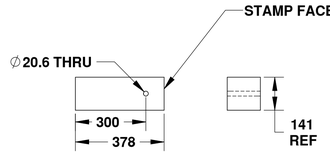
8



SPACER END 'B'

141x141 (6x6)
SCALE: 1-12
(2 REQUIRED)

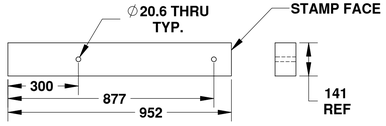
9



SPACER END

141x141 (6x6)
SCALE: 1-12
(2 REQUIRED)

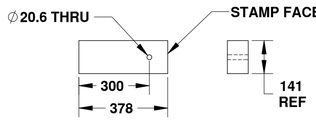
10



RAIL END

89x141 (4x6)
SCALE: 1-12
(2 REQUIRED)

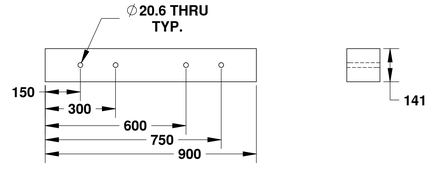
11



RAIL END 'B'

89x141 (4x6)
SCALE: 1-12
(2 REQUIRED)

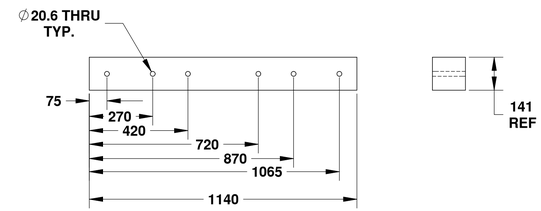
12



LOWER FLANGE SPLICE

141x141 (6x6)
SCALE: 1-12
(1 REQUIRED)

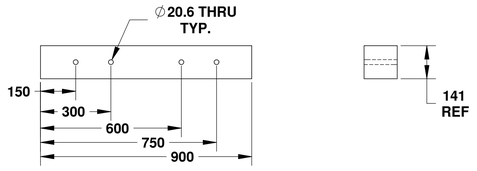
13



UPPER STRINGER SPLICE

141x141 (6x6)
SCALE: 1-12
(1 REQUIRED)

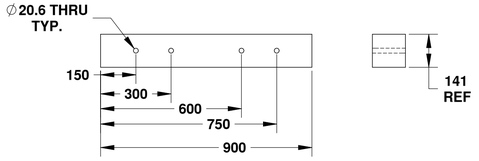
14



UPPER FLANGE SPLICE

141x141 (6x6)
SCALE: 1-12
(1 REQUIRED)

15



LOWER STRINGER SPLICE

141x141 (6x6)
SCALE: 1-12
(1 REQUIRED)

16

HOLES ARE TO BE DRILLED CENTERLINE UNLESS OTHERWISE NOTED

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ±
ANGULAR: MACH ± BEND ±
TWO PLACE DECIMAL ±
THREE PLACE DECIMAL ±
INTERPRET GEOMETRIC TOLERANCING PER:
MATERIAL —
FINISH —
NEXT ASSY | USED ON | APPLICATION | DO NOT SCALE DRAWING

	DATE	NAME
DRAWN	12/11	WSL
CHECKED		
ENG APPR.		
MFG APPR.		
Q.A.		

COMMENTS:

Fisheries & Oceans / Pêches et Oceans
Small Craft Harbours Branch

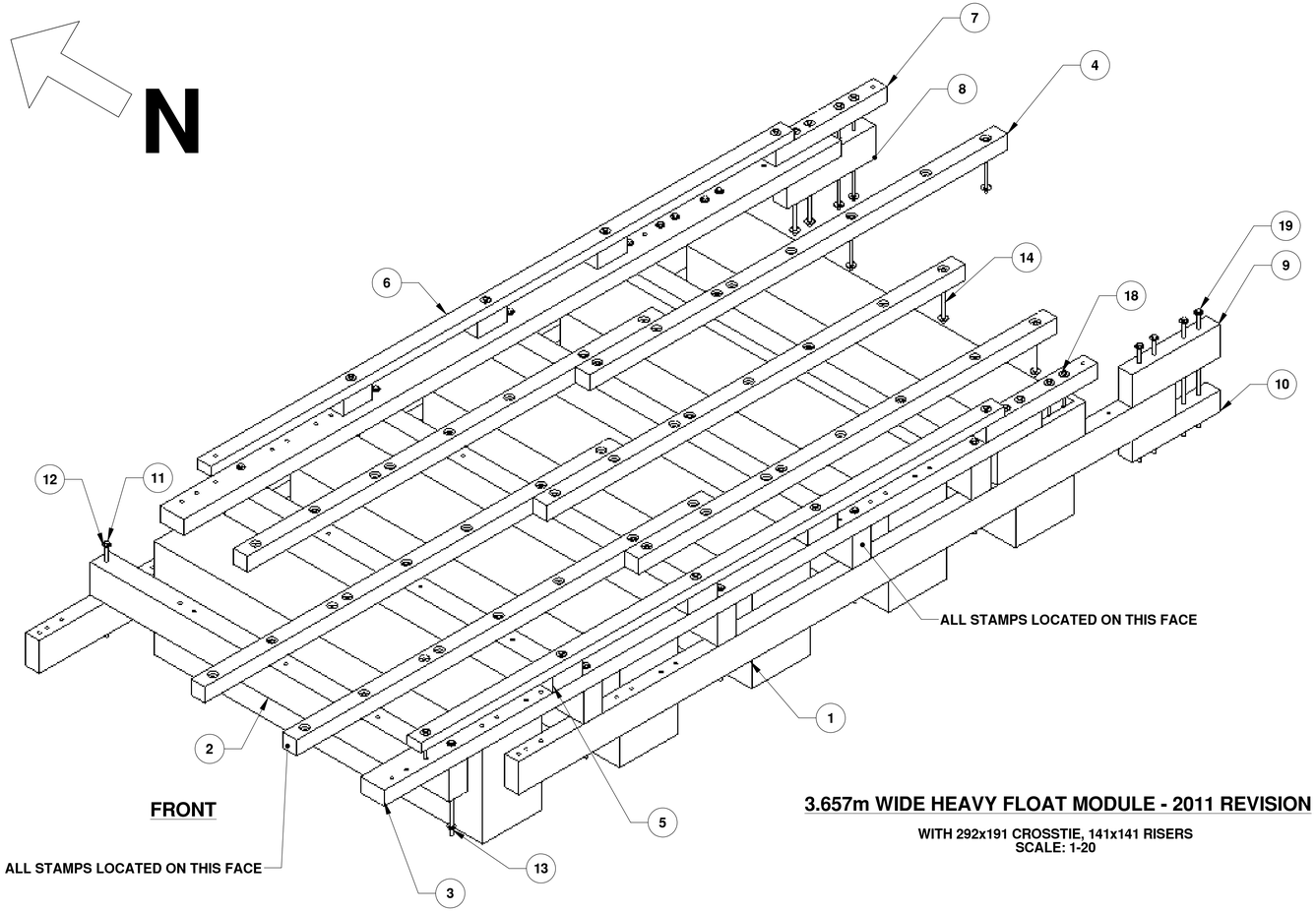
TITLE: 3.65m WIDE FLOAT MODULE 2011 REVISION

SIZE	DWG. NO.	REV
D	FM12-END-201	J

SCALE: 1:16 | WEIGHT: | SHEET 1 OF 1

WestCAD Services Ltd.

REV 1
1
D



FRONT

3.657m WIDE HEAVY FLOAT MODULE - 2011 REVISION

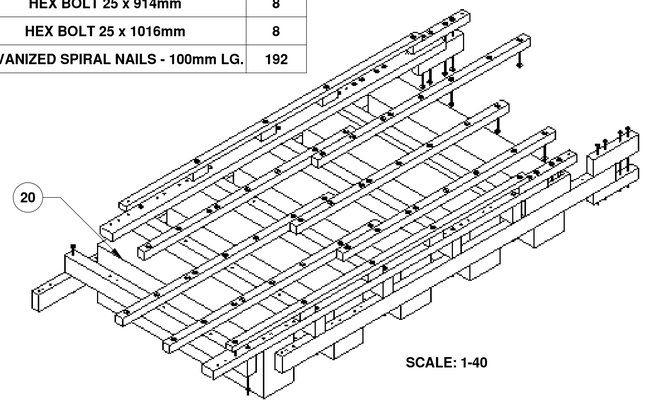
WITH 292x191 CROSSTIE, 141x141 RISERS
SCALE: 1-20

TIMBER MEMBERS

ITEM NO.	QTY.	TIMBER MEMBERS	DESCRIPTION	MATERIAL
1	2	FLANGE	(12x6) 292 X 141 x 6706 LG.	14 LB CREOSOTE TREATMENT #1 BTR FIR
2	5	CROSSTIE	(12x8) 292 x 191 x 3658 LG.	14 LB CREOSOTE TREATMENT #1 BTR FIR
3	2	STRINGER	(10x6) 241 X 141 X 6706 LG.	14 LB. CREOSOTE TREATMENT #1 BTR FIR
4	6	JOIST	(6x6) 141 x 141 x 4267 LG.	14 LB. CREOSOTE TREATMENT #1 BTR FIR
5	6	RISERS	(6x6) 141 x 141 x 300 LG.	ACZA
6	2	RAIL	(4x6) 89 x 141 x 5950 LG.	ACZA
7	2	UPPER STRINGER SPLICE	(6x6) 141 x 141 x 1140 LG.	ACZA
8	2	LOWER STRINGER SPLICE	(6x12) 141 x 292 x 900 LG.	14 LB CREOSOTE TREATMENT #1 BTR FIR
9	2	UPPER FLANGE SPLICE	(6x12) 141 x 292 X 900 LG.	14 LB CREOSOTE TREATMENT #1 BTR FIR
10	2	LOWER FLANGE SPLICE	(6x8) 141 x 191 x 900 LG.	14 LB CREOSOTE TREATMENT #1 BTR FIR
20	5	FOAM BOUYANCY BILLET	1000 x 597 x 3352 LG.	
21	28	DECK PLATES	(12x2) 305 x 38 x 2440 LG.	ACZA

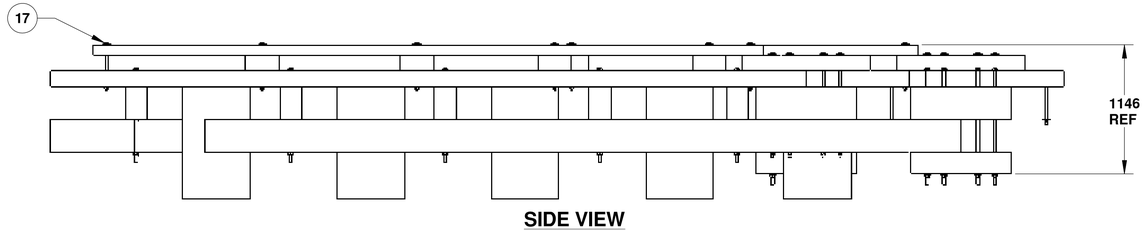
HARDWARE

ITEM NO.	HARDWARE	QTY
11	HEX BOLT 25 x 812mm	10
12	WASHERS 25mm	112
13	HEX NUTS 25mm	56
14	HEX BOLT 25 x 457mm	21
17	HEX BOLT 25 x 406mm	9
18	HEX BOLT 25 x 914mm	8
19	HEX BOLT 25 x 1016mm	8
22	GALVANIZED SPIRAL NAILS - 100mm LG.	192



SCALE: 1-40

FRONT



SIDE VIEW

SCALE: 1-25

WestCAD Services Ltd.

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ±
ANGULAR: MACH ± BEND ±
TWO PLACE DECIMAL ±
THREE PLACE DECIMAL ±
INTERPRET GEOMETRIC TOLERANCING PER:
MATERIAL ---
FINISH ---
NEXT ASSY | USED ON | APPLICATION | DO NOT SCALE DRAWING

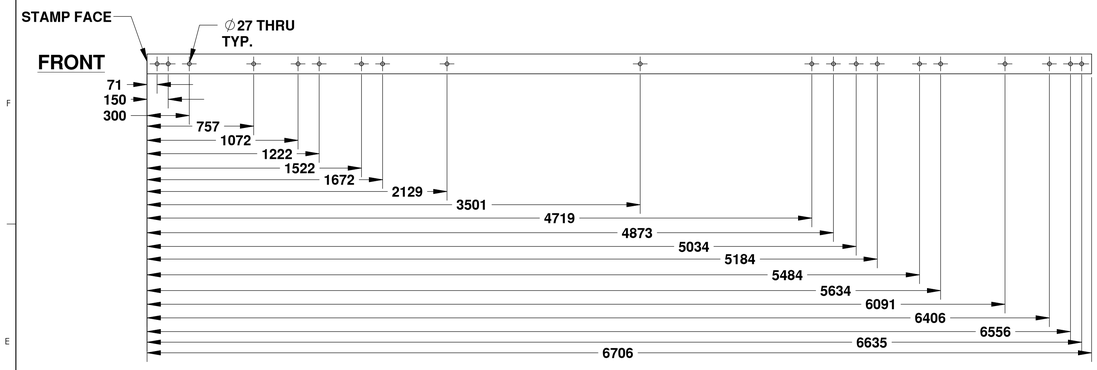
	DATE	NAME
DRAWN	12/11	WSL
CHECKED		
ENG APPR.		
MFG APPR.		
Q.A.		
COMMENTS:		

Fisheries & Oceans | Pêches et Océans
Small Craft Harbours Branch

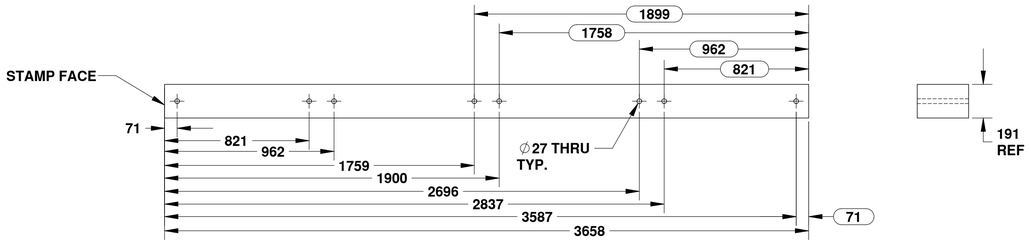
TITLE: '2011 REVISION' 3.657m WIDE HEAVY FLOAT MODULE ASSEMBLY

SIZE	DWG. NO.	REV
D	FM12-HV-000	G

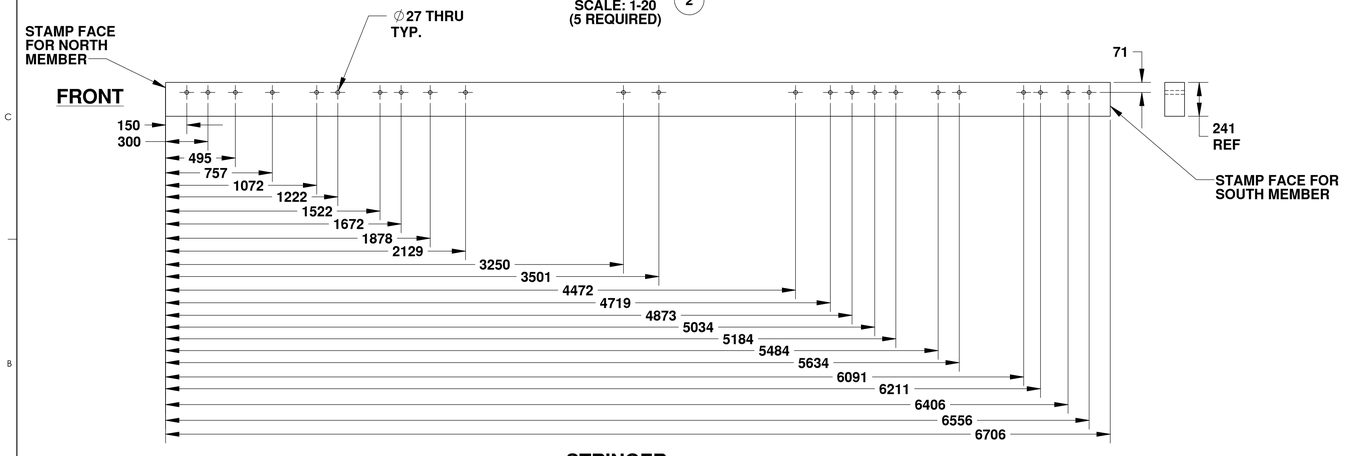
SCALE: 1:25 | WEIGHT: | SHEET 1 OF 1



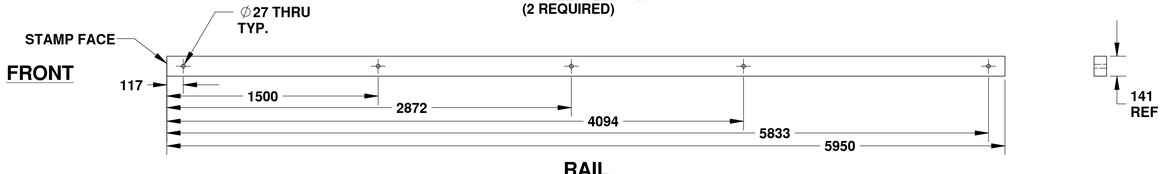
FLANGE
292 x 141 (12x6) SCALE: 1-20 (2 REQUIRED) (1)



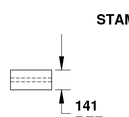
CROSSTIE (Reversable)
292 x 191 (12x8) SCALE: 1-20 (5 REQUIRED) (2)

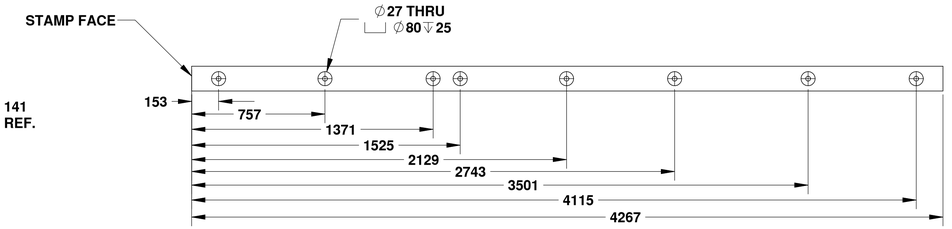


STRINGER
241 x 141(10x6) SCALE: 1-20 (2 REQUIRED) (3)

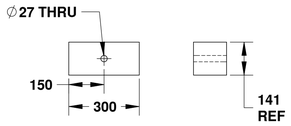


RAIL
89 x 141 (4x6) SCALE: 1-20 (2 REQUIRED) (6)

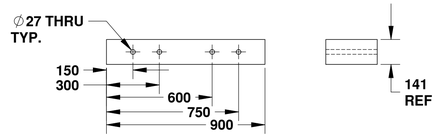




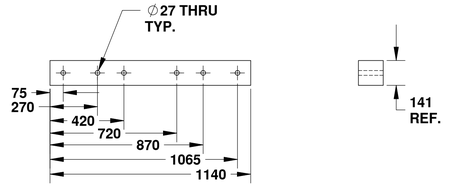
JOIST
141 x 141 (6x6) SCALE: 1-16 (6 REQUIRED) (4)



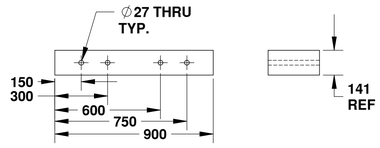
RISER
141 x 141 (6x6) SCALE: 1-16 (6 REQUIRED) (5)



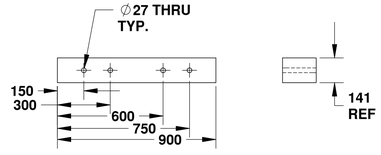
LOWER STRINGER SPLICE
292 x 141 (12x6) SCALE: 1-16 (2 REQUIRED) (8)



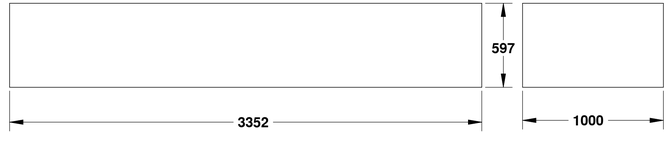
UPPER STRINGER SPLICE
141 x 141 (6x6) SCALE: 1-16 (2 REQUIRED) (7)



UPPER FLANGE SPLICE
292 x 141 (12x6) SCALE: 1-16 (2 REQUIRED) (9)



LOWER FLANGE SPLICE
141 x 191 (6x8) SCALE: 1-16 (2 REQUIRED) (10)



FOAM BUOYANCY FLOAT
1000 x 597 x 2438 LG. SCALE: 1-20 (5 REQUIRED) (20)

HOLES ARE TO BE DRILLED CENTER LINE UNLESS OTHERWISE NOTED

WestCAD Services Ltd.

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ±
ANGULAR: MACH ± BEND ±
TWO PLACE DECIMAL ±
THREE PLACE DECIMAL ±
INTERPRET GEOMETRIC TOLERANCING PER:
MATERIAL —
FINISH —
NEXT ASSY | USED ON | APPLICATION | DO NOT SCALE DRAWING

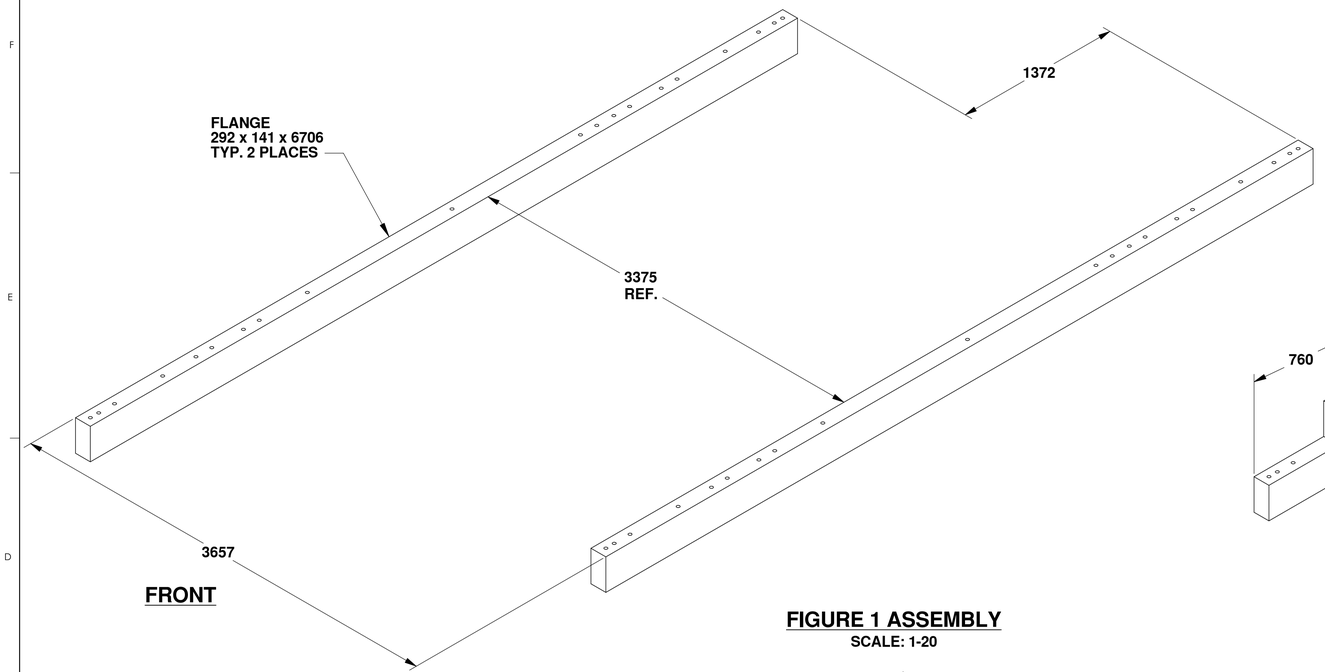
	DATE	NAME
DRAWN	12/11	WSL
CHECKED		
ENG APPR.		
MFG APPR.		
Q.A.		
COMMENTS:		

Fisheries & Oceans | Pêches et Océans
Small Craft Harbours Branch

TITLE: '2011 REVISION' 3.657m WIDE HEAVY FLOAT MODULE ASSEMBLY

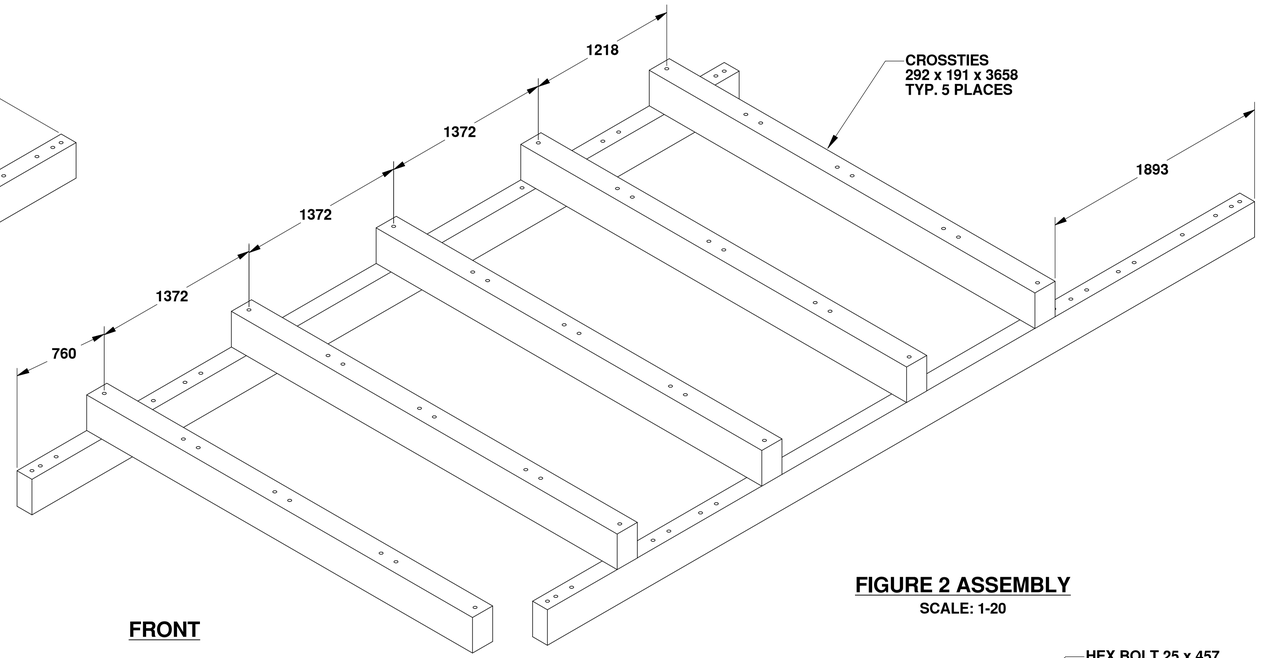
SIZE D | DWG. NO. FM12-HV-001 | REV G
SCALE: 1:16 | WEIGHT: | SHEET 1 OF 1

REV 1
D



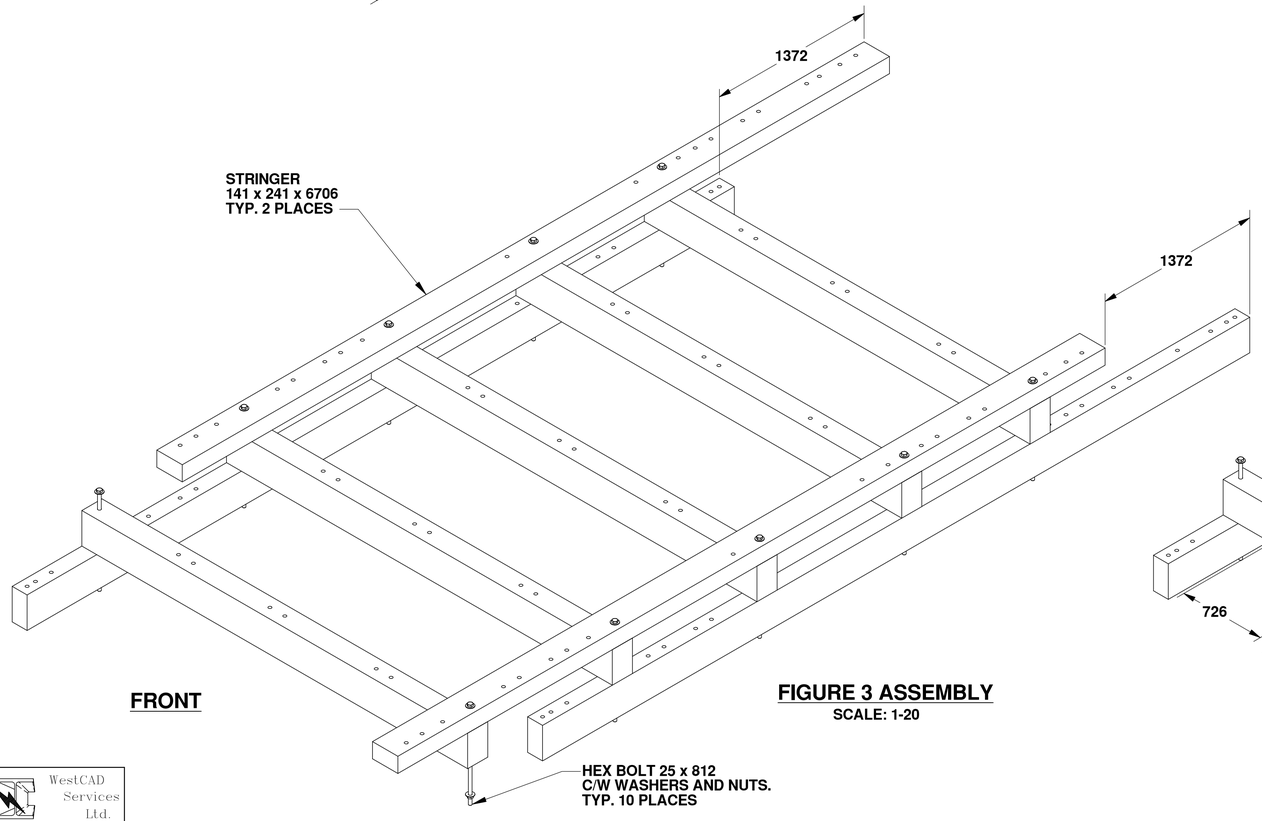
FRONT

FIGURE 1 ASSEMBLY
SCALE: 1-20



FRONT

FIGURE 2 ASSEMBLY
SCALE: 1-20



FRONT

FIGURE 3 ASSEMBLY
SCALE: 1-20

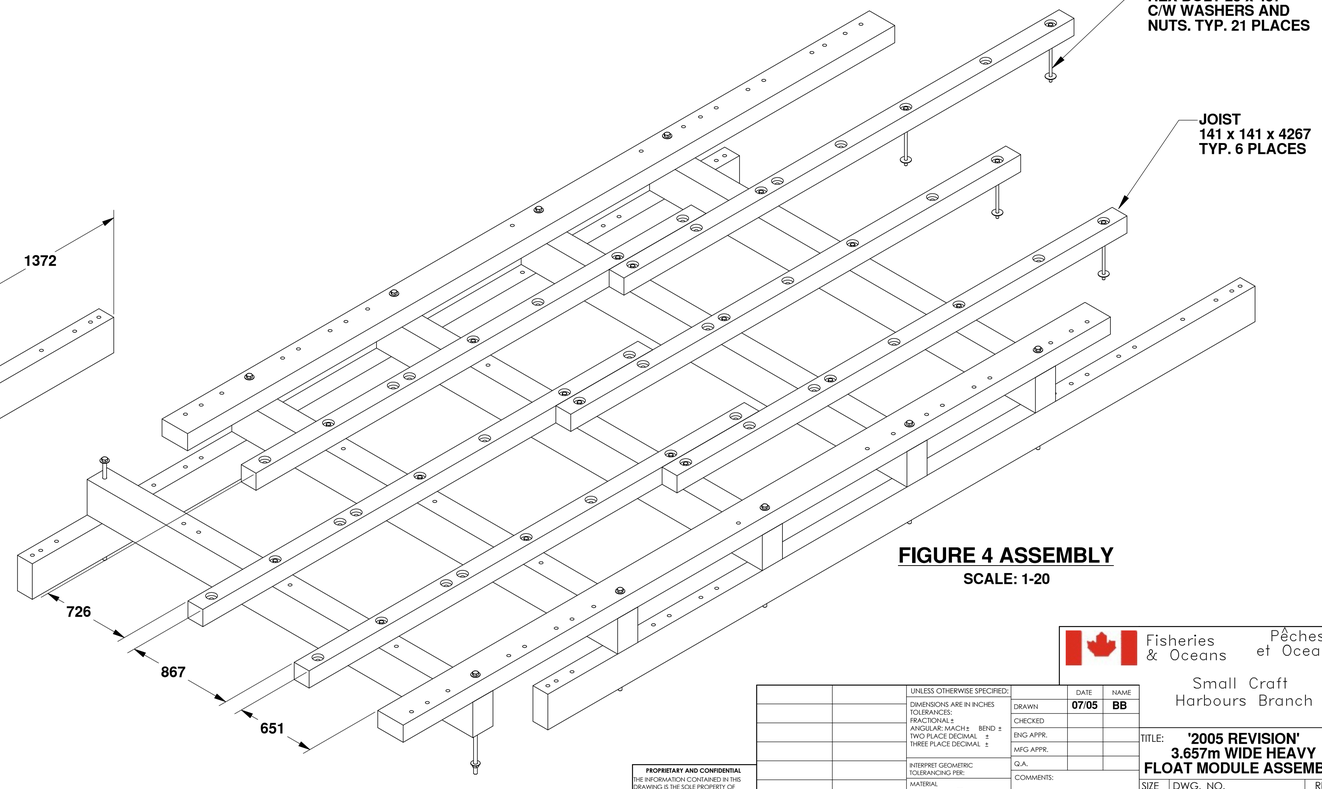


FIGURE 4 ASSEMBLY
SCALE: 1-20

WestCAD Services Ltd.

		UNLESS OTHERWISE SPECIFIED:		DATE	NAME
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± ANGULAR: MACH ± BEND ± TWO PLACE DECIMAL ± THREE PLACE DECIMAL ±	DRAWN	07/05	BB
			CHECKED		
			ENG APPR.		
			MFG APPR.		
			Q.A.		
		INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:		
		MATERIAL ---	HOLES RESIZED TO 27mm		
NEXT ASSY	USED ON	FINISH ---			
APPLICATION		DO NOT SCALE DRAWING			

Fisheries & Oceans / Pêches et Oceans
Small Craft Harbours Branch

TITLE: '2005 REVISION' 3.657m WIDE HEAVY FLOAT MODULE ASSEMBLY

SIZE	DWG. NO.	REV
D	FM12-HV-002	B

SCALE: 1:20 | WEIGHT: | SHEET 1 OF 1

REV 1 D

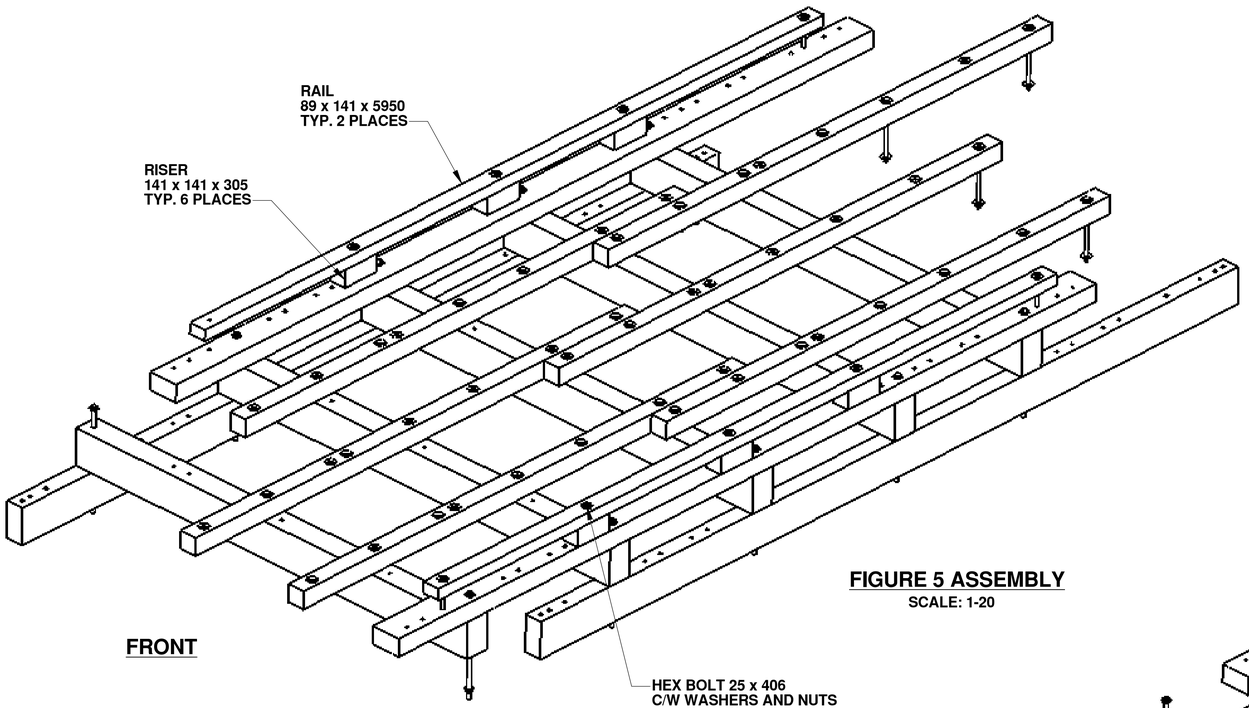


FIGURE 5 ASSEMBLY
SCALE: 1-20

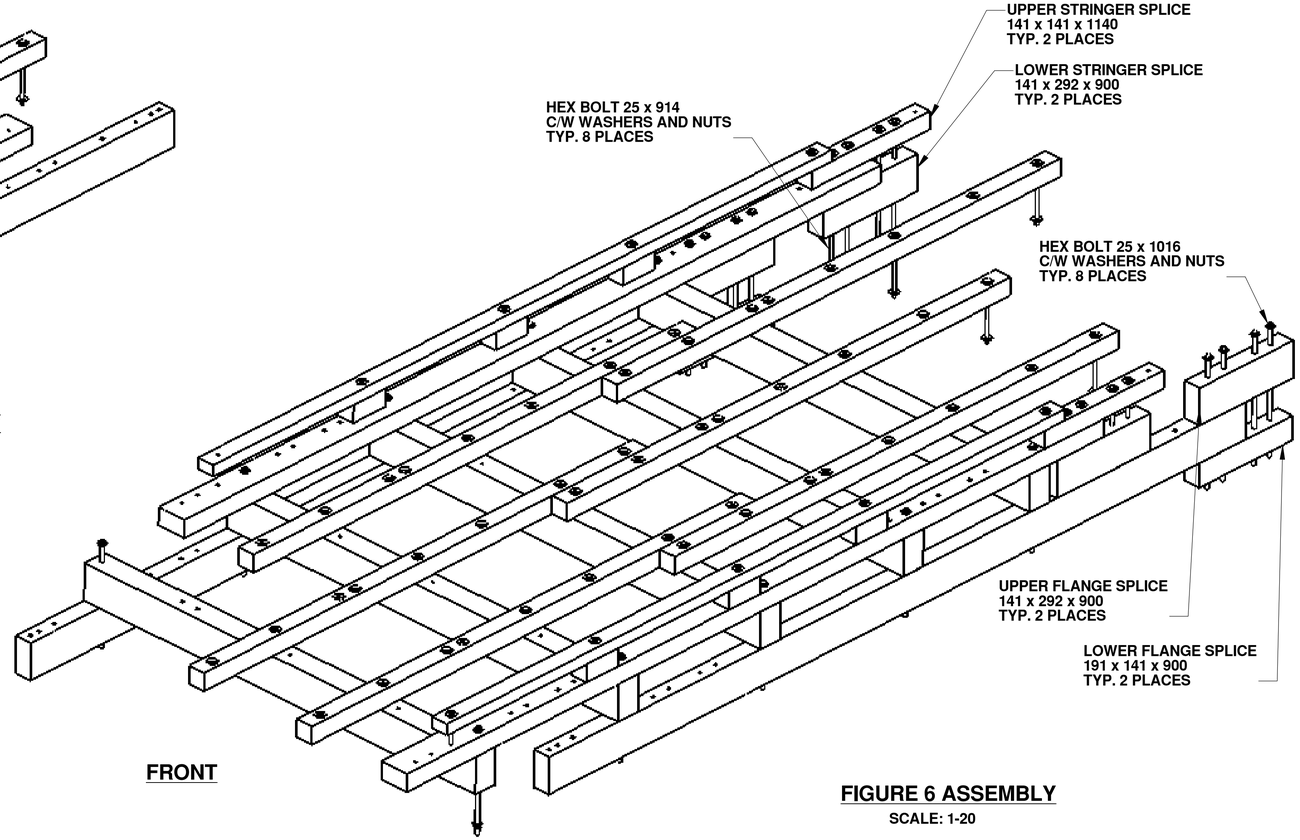


FIGURE 6 ASSEMBLY
SCALE: 1-20

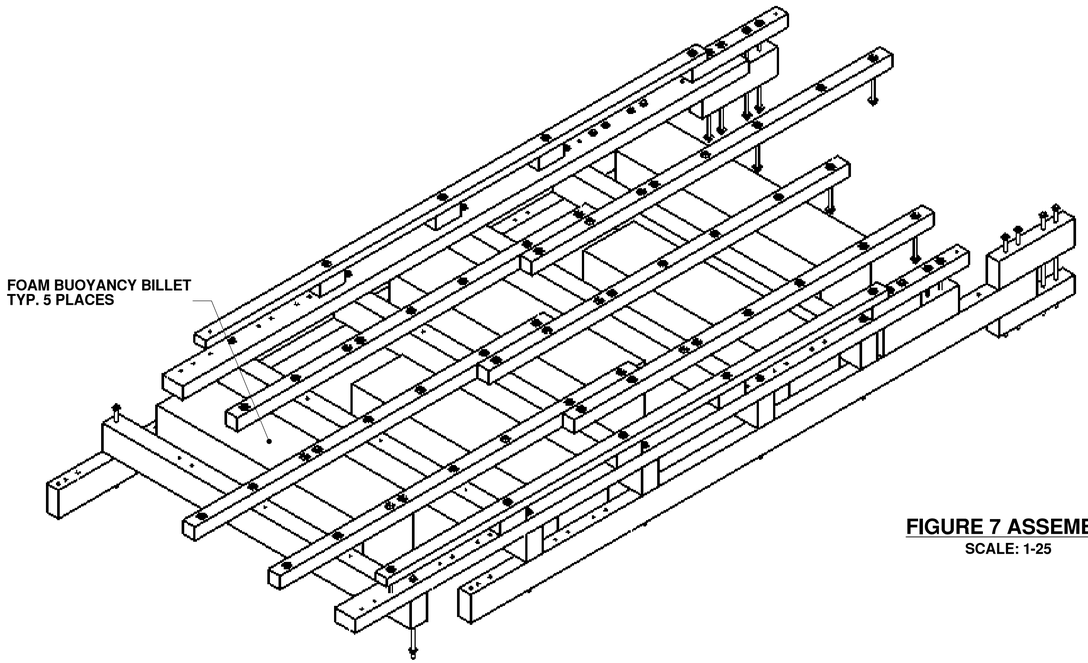


FIGURE 7 ASSEMBLY
SCALE: 1-25

WestCAD Services Ltd.

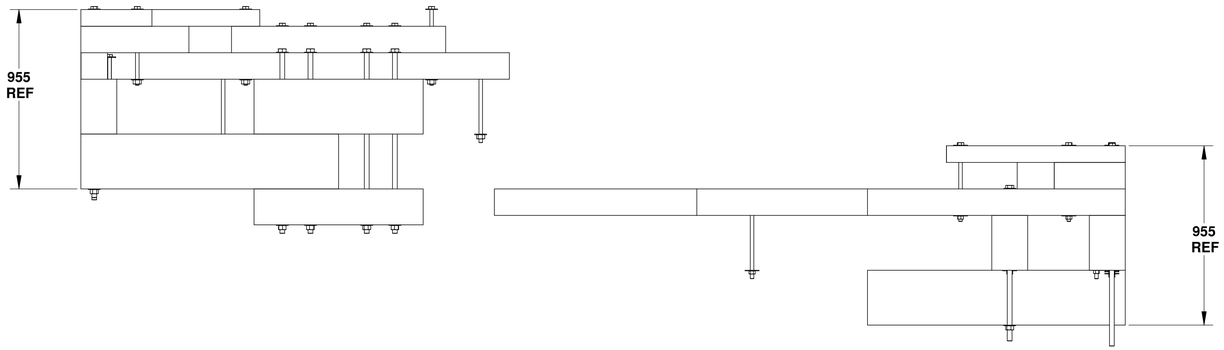
UNLESS OTHERWISE SPECIFIED:		DATE / NAME
DIMENSIONS ARE IN INCHES	DRAWN	07/05 BB
TOLERANCES:	CHECKED	
FRACTIONAL ±	ENG APPR.	
ANGULAR: MACH ± BEND ±	MFG APPR.	
TWO PLACE DECIMAL ±	Q.A.	
THREE PLACE DECIMAL ±	COMMENTS:	
INTERPRET GEOMETRIC TOLERANCING PER:	Holes Resized to 27mm	
MATERIAL --		
FINISH --		
NEXT ASSY / USED ON		
APPLICATION / DO NOT SCALE DRAWING		

Fisheries & Oceans / Pêches et Océans
Small Craft Harbours Branch

TITLE: **'2005 REVISION' 3.657m WIDE HEAVY FLOAT MODULE ASSEMBLY**

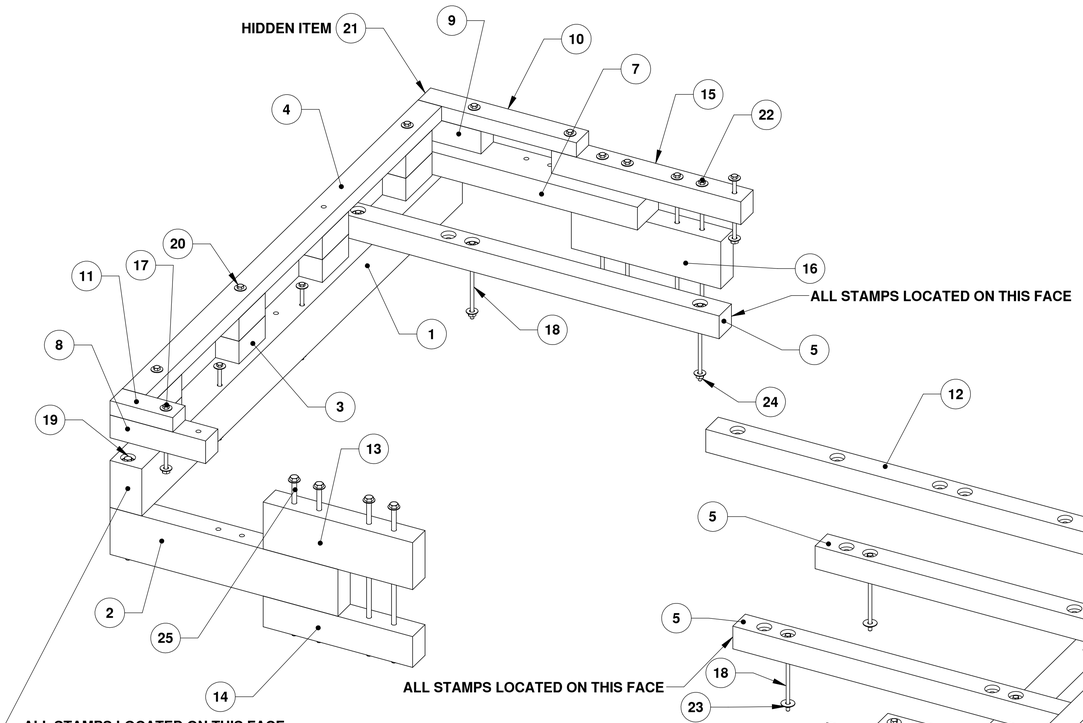
SIZE	DWG. NO.	REV
D	FM12-HV-003	B

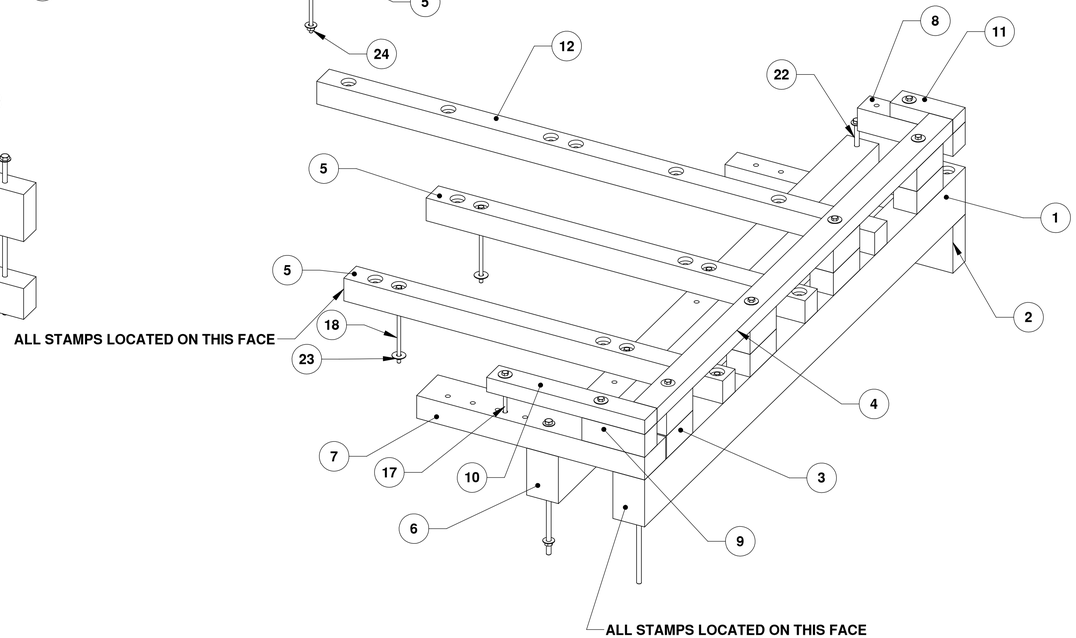
SCALE: 1:20 | WEIGHT: | SHEET 1 OF 1



TIMBER MEMBER REQUIREMENTS

ITEM NO.	QTY	TIMBER MEMBER	DESCRIPTION	MATERIAL
1	2	END CROSSTIE	(12x8) 292 x 191 X 3658 LG.	14 LB. CREOSOTE TREATMENT #1 BTR FIR
2	2	FLANGE END	(6x12) 141 x 292 x 1372 LG.	14 LB. CREOSOTE TREATMENT #1 BTR FIR
3	16	END BLOCK	(6x6) 141 X 141 x 300 LG.	ACZA
4	2	END RAIL	(4x6) 89 x 141 X 3374 LG.	ACZA
5	3	JOIST END 'B'	(6x6) 141 x 141 X 2281 LG.	14 LB. CREOSOTE TREATMENT #1 BTR FIR
6	1	STANDARD CROSSTIE	(12x8) 292 X 191 X 3658 LG.	14 LB. CREOSOTE TREATMENT #1 BTR FIR
7	2	STRINGER END	(6x10) 141 x 241 x 1372 LG.	14 LB. CREOSOTE TREATMENT #1 BTR FIR
8	2	SPACER END	(6x6) 141 x 141 x 575 LG.	ACZA
9	2	SPACER END 'B'	(6x6) 141 x 141 x 378 LG.	ACZA
10	2	RAIL END	(4x6) 89 X 141 x 952 LG.	ACZA
11	2	RAIL END 'B'	(4x6) 89 X 141 X 378 LG.	ACZA
12	1	MODIFIED JOIST	(6x6) 141 x 141 x 3359 LG.	14 LB. CREOSOTE TREATMENT #1 BTR FIR
13	1	UPPER FLANGE SPLICE	(12x6) 292 x 141 X 900 LG.	14 LB. CREOSOTE TREATMENT #1 BTR FIR
14	1	LOWER FLANGE SPLICE	(6x8) 141 x 191 X 900 LG.	14 LB. CREOSOTE TREATMENT #1 BTR FIR
15	1	UPPER STRINGER SPLICE	(6x6) 141 x 141 x 1140 LG.	ACZA
16	1	LOWER STRINGER SPLICE	(6x12) 141 x 292 x 900 LG.	14 LB. CREOSOTE TREATMENT #1 BTR FIR





HARDWARE

ITEM NO.	QTY	DESCRIPTION
17	7	HEX BOLT 25 X 406
18	13	HEX BOLT 25 x 457
19	2	HEX BOLT 25 X 610
20	8	HEX BOLT 25 x 711
21	4	HEX BOLT 25 X 762
22	4	HEX BOLT 25 X 914
23	84	WASHER 25mm DIA.
24	42	HEX NUT 25mm DIA.
25	4	HEX BOLT 25 x 965

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ±
ANGULAR: MACH ± BEND ±
TWO PLACE DECIMAL ±
THREE PLACE DECIMAL ±
INTERPRET GEOMETRIC TOLERANCING PER:
MATERIAL ---
FINISH ---
DO NOT SCALE DRAWING

NEXT ASSY | USED ON | APPLICATION

	DATE	NAME
DRAWN	12/11	WSL
CHECKED		
ENG APPR.		
MFG APPR.		
Q.A.		

COMMENTS:

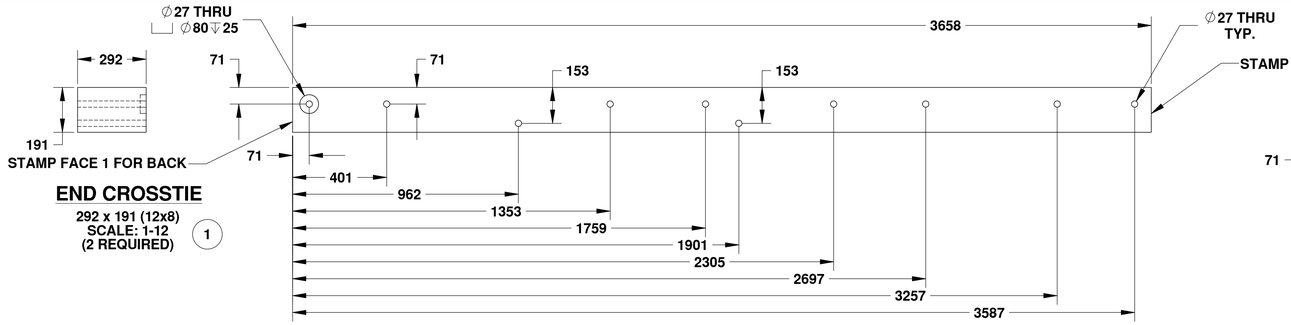
Fisheries & Oceans / Pêches et Oceans
Small Craft Harbours Branch

TITLE: **3.65m WIDE FLOAT MODULE 2011 REVISION**

SIZE D | DWG. NO. FM12-HV-END-000 | REV I
SCALE: 1:15 | WEIGHT: | SHEET 1 OF 1

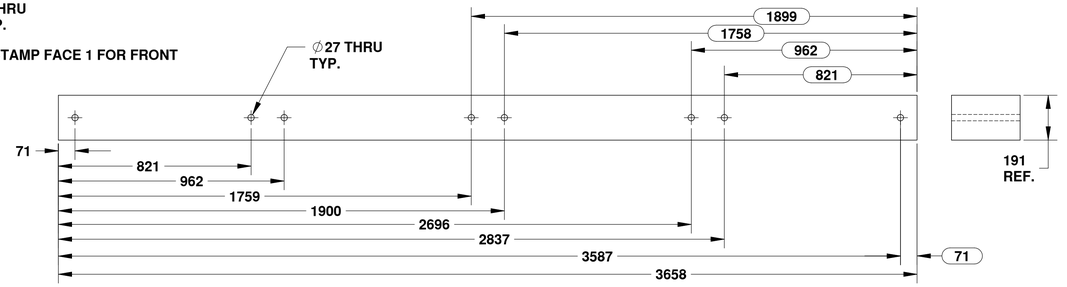
WestCAD Services Ltd.

REV I
D

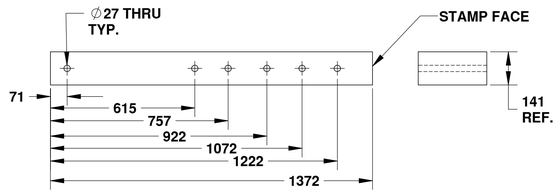


END CROSSTIE

292 x 191 (12x8)
SCALE: 1-12
(2 REQUIRED) 1

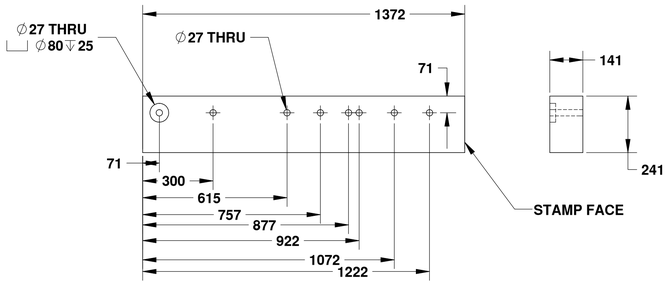


STANDARD CROSSTIE (Reversable)



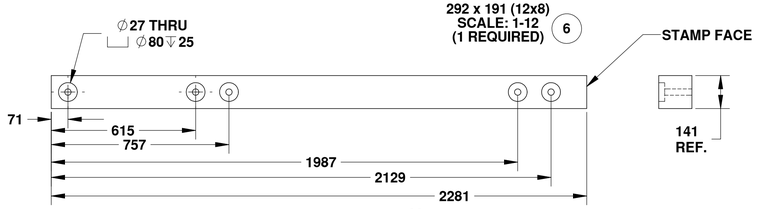
FLANGE END 2

292 x 141 (12x6)
SCALE: 1-12
(2 REQUIRED)



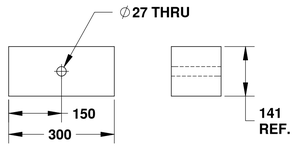
STRINGER END

241 x 141 (10x6)
SCALE: 1-12
(2 REQUIRED) 7



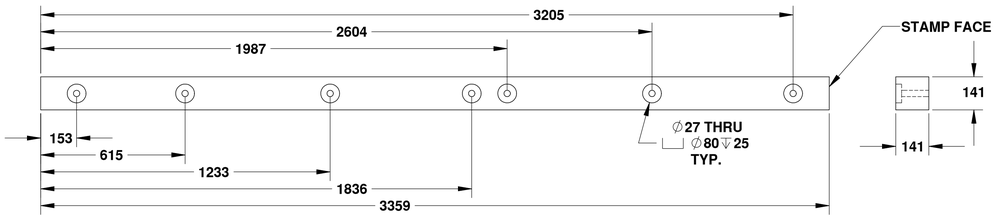
JOIST END B 5

141 x 141 (6x6)
SCALE: 1-12
(3 REQUIRED)



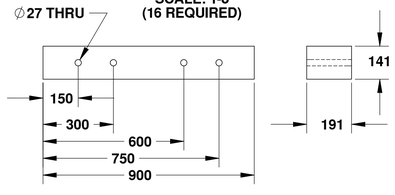
END BLOCK 3

141 x 141 (6x6)
SCALE: 1-8
(16 REQUIRED)



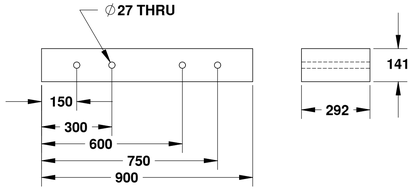
MODIFIED JOIST 12

141 x 141 (6x6)
SCALE: 1-12
(1 REQUIRED)



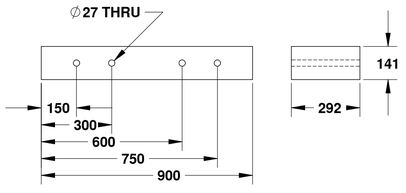
LOWER FLANGE SPLICE 14

141 x 191 (6x8)
SCALE: 1-12
(1 REQUIRED)



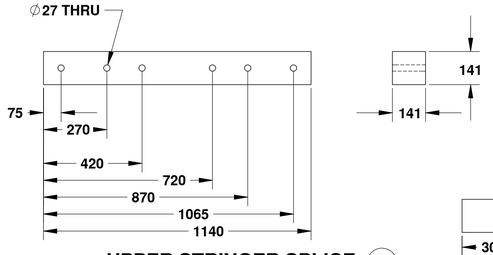
UPPER FLANGE SPLICE 13

292 x 141 (12x6)
SCALE: 1-12
(1 REQUIRED)



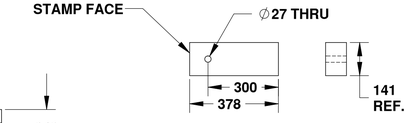
LOWER STRINGER SPLICE 16

292 x 141 (12x6)
SCALE: 1-12
(1 REQUIRED)



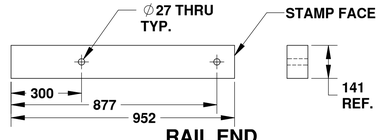
UPPER STRINGER SPLICE 15

141 x 141 (6x6)
SCALE: 1-12
(1 REQUIRED)



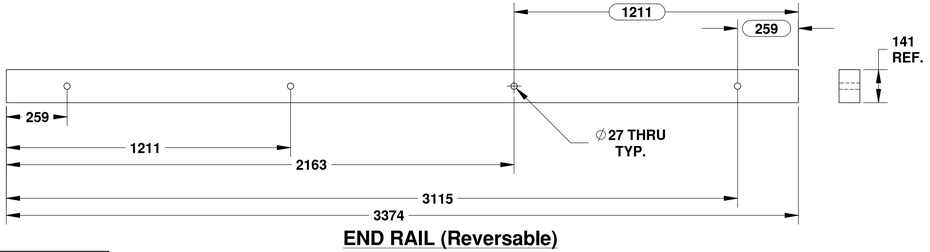
RAIL END 'B'

89 x 141 (4x6)
SCALE: 1-12
(2 REQUIRED) 11



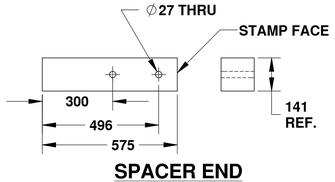
RAIL END

89 x 141 (4x6)
SCALE: 1-12
(2 REQUIRED) 10



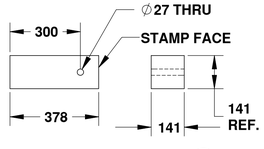
END RAIL (Reversable)

89 x 141 (4x6)
SCALE: 1-12
(2 REQUIRED) 4



SPACER END

141 x 141 (6x6)
SCALE: 1-12
(2 REQUIRED) 8



SPACER END B 9

141 x 141 (6x6)
SCALE: 1-12
(2 REQUIRED)

HOLES ARE TO BE DRILLED CENTER LINE UNLESS OTHERWISE NOTED

WestCAD Services Ltd.

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ±
ANGULAR: MACH ± BEND ±
TWO PLACE DECIMAL ±
THREE PLACE DECIMAL ±
INTERPRET GEOMETRIC TOLERANCING PER:
MATERIAL —
FINISH —
NEXT ASSY | USED ON
APPLICATION | DO NOT SCALE DRAWING

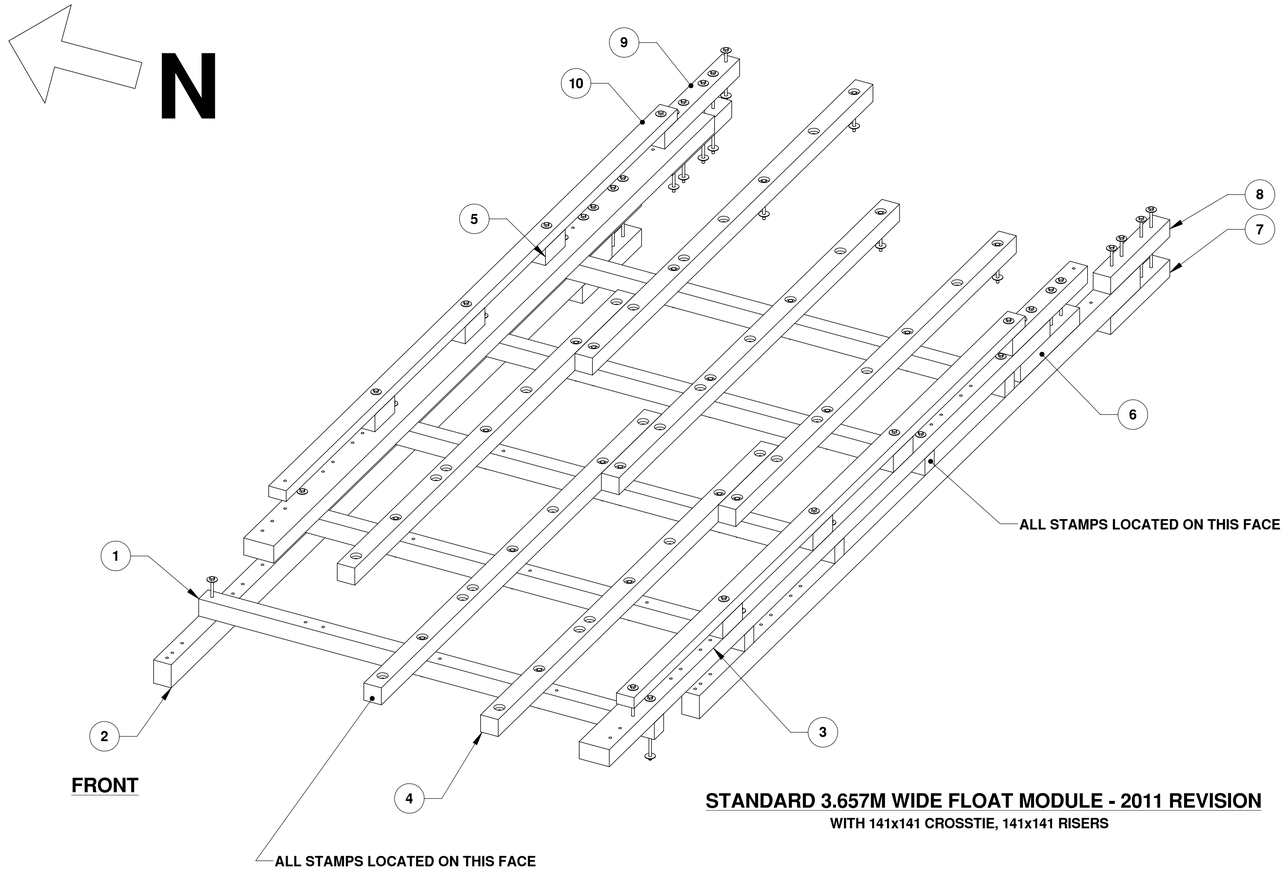
	DATE	NAME
DRAWN	12/11	WSL
CHECKED		
ENG APPR.		
MFG APPR.		
Q.A.		
COMMENTS:		

Fisheries & Oceans | Pêches et Océans
Small Craft Harbours Branch

TITLE: 2011 REVISION
3.657m WIDE HEAVY
END MODULES ASSEMBLY

SIZE	DWG. NO.	REV
D	FM12-HV-END-001	I

SCALE: 1:12 | WEIGHT: | SHEET 1 OF 1

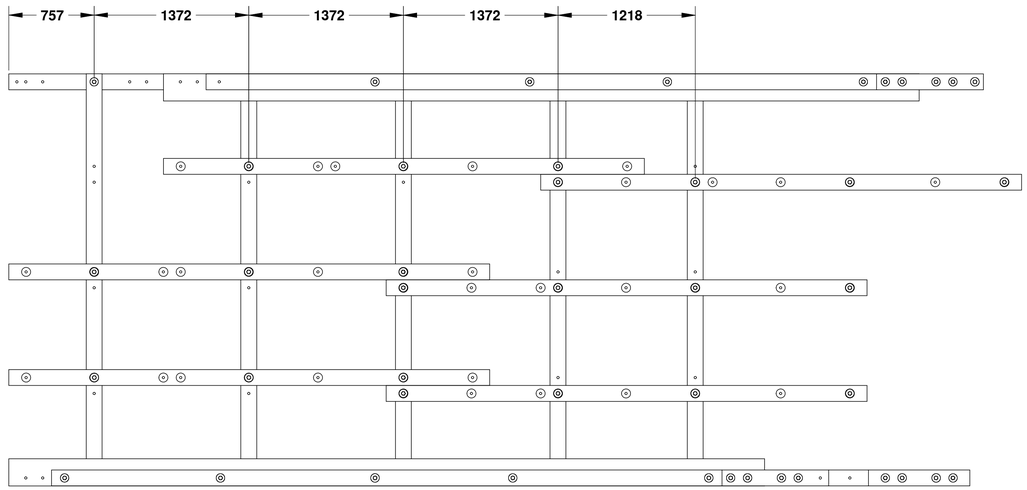


FRONT

ALL STAMPS LOCATED ON THIS FACE

STANDARD 3.657M WIDE FLOAT MODULE - 2011 REVISION

WITH 141x141 CROSSTIE, 141x141 RISERS



FRONT

PLAN VIEW

SCALE: 1 - 25

TIMBER REQUIRED

ITEM NO.	QTY.	TIMBER MEMBER	DESCRIPTION	MATERIAL
1	5	CROSS TIES	(6x6) 141 x 141 x 3658 LG	14 LB CREOSOTE TREATMENT #1 BTR FIR
2	2	FLANGE	(6x8) 141 x 191 x 6706 LG	14 LB CREOSOTE TREATMENT #1 BTR FIR
3	2	STRINGER	(6x10) 141 x 241 x 6706 LG	14 LB CREOSOTE TREATMENT #1 BTR FIR
4	6	JOISTS	(6x6) 141 x 141 x 4267 LG	14 LB CREOSOTE TREATMENT #1 BTR FIR
5	6	RISER	(6x6) 141 x 141 x 305 LG	ACZA
6	2	LOWER STRINGER SPLICE	(6x6) 141 x 141 x 900 LG	14 LB CREOSOTE TREATMENT #1 BTR FIR
7	2	LOWER FLANGE SPLICE	(6x6) 141 x 141 x 900 LG	14 LB CREOSOTE TREATMENT #1 BTR FIR
8	2	UPPER FLANGE SPLICE	(6x6) 141 x 141 x 900 LG	14 LB CREOSOTE TREATMENT #1 BTR FIR
9	2	UPPER STRINGER SPLICE	(6x6) 141 x 141 x 1140 LG	ACZA
10	2	RAIL	(4x6) 89 x 141 x 5950 LG	ACZA
21	28	DECK PLANKS	(12x2) 305 x 38 x 3352 LG	ACZA
17	5	FOAM BOUYANCY BILLETS	1000 x 597 x 3352 LG	

HARDWARE REQUIRED

ITEM NO.	QTY.	HARDWARE
11	21	HEX BOLT 19 x 300mm
12	114	WASHERS
13	57	HEX NUT 19mm DIA
14	16	HEX BOLT 19 x 660mm
15	10	HEX BOLT 19 x 406mm
16	10	HEX BOLT 19 x 508mm
19	264	GALVANIZED SPIRAL NAILS - 100mm LG

REV I

D

WestCAD Services Ltd.

NEXT ASSY | USED ON | APPLICATION

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ±
ANGULAR: MACH ± BEND ±
TWO PLACE DECIMAL ±
THREE PLACE DECIMAL ±
INTERPRET GEOMETRIC TOLERANCING PER:
MATERIAL ---
FINISH ---
DO NOT SCALE DRAWING

	DATE	NAME
DRAWN	12/11	WSL
CHECKED		
ENG APPR.		
MFG APPR.		
Q.A.		

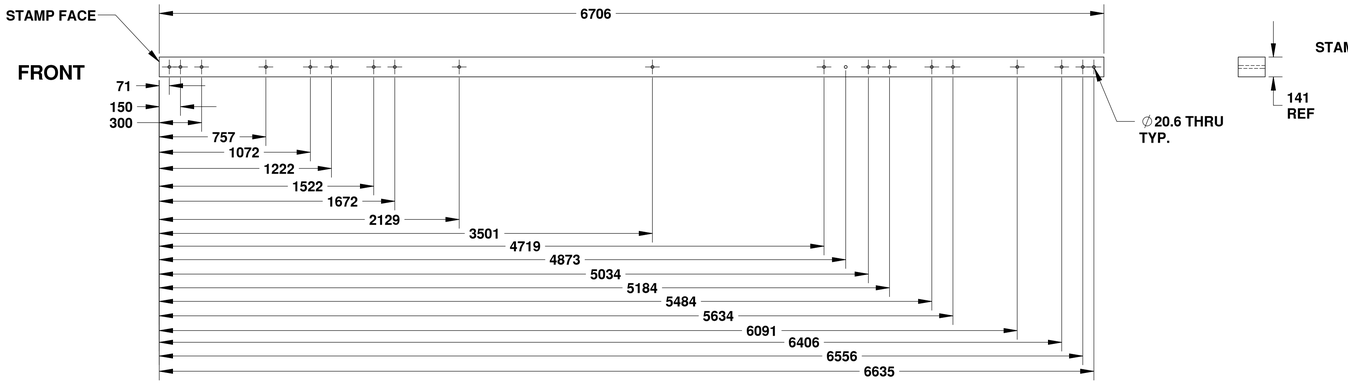
COMMENTS:

Fisheries & Oceans | Pêches et Océans
Small Craft Harbours Branch

TITLE: '2011 REVISION' 3.657m WIDE STANDARD FLOAT MODULE ASSEMBLY

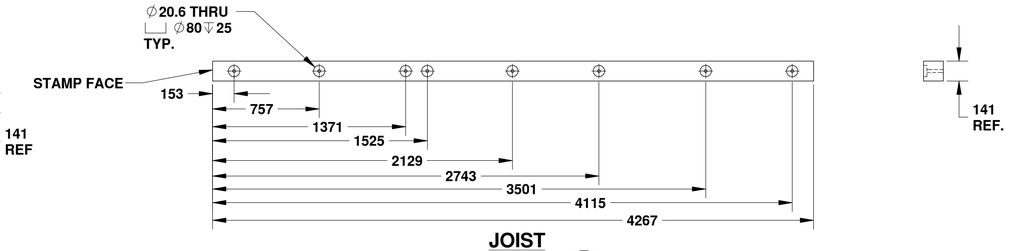
SIZE D | DWG. NO. FM12-ST-000 | REV I

SCALE: 1:20 | WEIGHT: | SHEET 1 OF 1



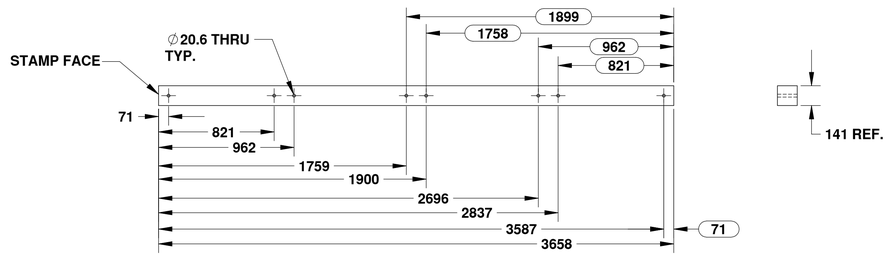
FLANGE

141 x 191(6x8)
SCALE: 1-20
(2 REQUIRED) 2



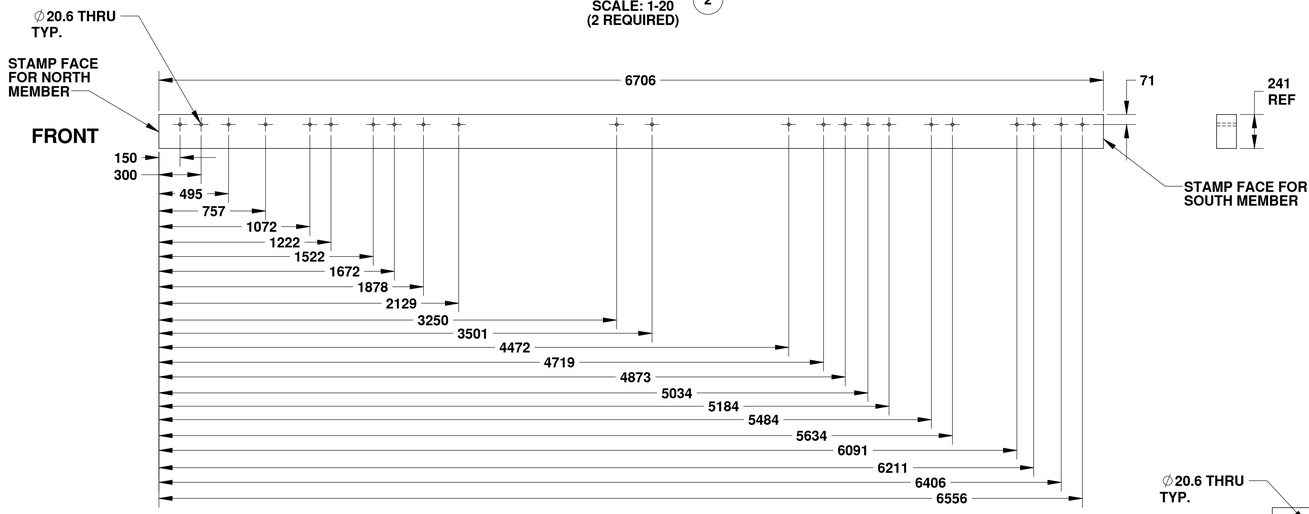
JOIST

141 x 141 (6x6) 4
SCALE: 1-20
(6 REQUIRED)



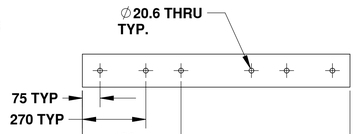
CROSSTIE (Reversable)

141 x 141 (6x6)
SCALE: 1-20
(5 REQUIRED) 1



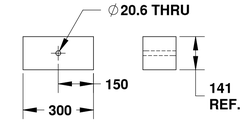
STRINGER

141 x 241 (6x10) 3
SCALE: 1-20
(2 REQUIRED)



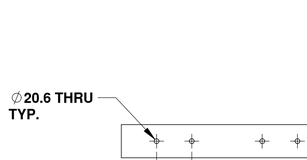
UPPER STRINGER SPLICE

141 x 141 (6x6) 13
SCALE 1-20
(2 REQUIRED)



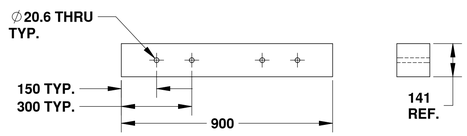
RISER

141 x 141 (6x6) 5
SCALE: 1-20
(6 REQUIRED)



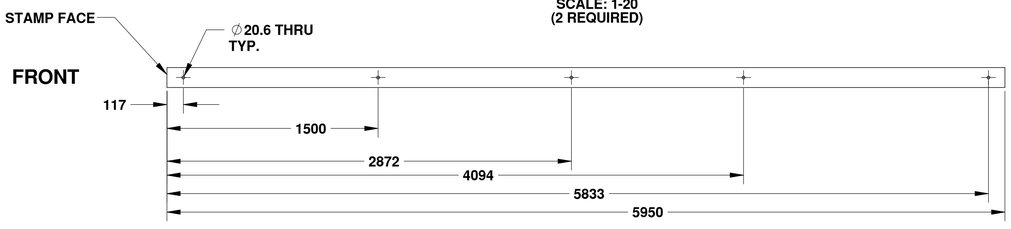
LOWER STRINGER SPLICE

141 x 141 (6x6) 6
SCALE 1:20
(2 REQUIRED)



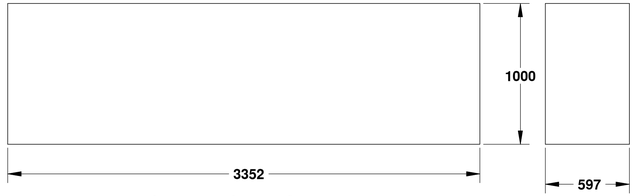
UPPER FLANGE SPLICE

141 x 141 (6x6) 8
SCALE: 1-20
(2 REQUIRED)



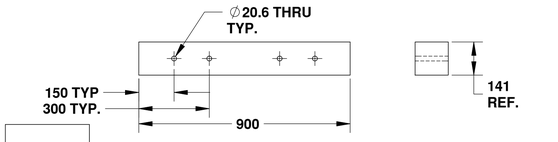
STANDARD RAIL

89 x 141 (4x6)
SCALE: 1-20
(2 REQUIRED) 14



FOAM BUOYANCY BILLET

SCALE: 1-20
(5 REQUIRED) 17



LOWER FLANGE SPLICE

141 x 141 (6x6) 7
SCALE: 1-20
(2 REQUIRED)

HOLES ARE TO BE DRILLED CENTERLINE UNLESS OTHERWISE NOTED

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ±
ANGULAR: MACH ± BEND ±
TWO PLACE DECIMAL ±
THREE PLACE DECIMAL ±
INTERPRET GEOMETRIC TOLERANCING PER:
MATERIAL —
FINISH —
NEXT ASSY | USED ON | APPLICATION | DO NOT SCALE DRAWING

	DATE	NAME
DRAWN	12/11	WSL
CHECKED		
ENG APPR.		
MFG APPR.		
Q.A.		
COMMENTS:		

Fisheries & Oceans Pêches et Oceans
Small Craft Harbours Branch

TITLE: '2011 REVISION' 3.657m WIDE STANDARD FLOAT MODULE

SIZE D | DWG. NO. FM12-ST-001 | REV J

SCALE: 1:20 | WEIGHT: | SHEET 1 OF 1

WestCAD Services Ltd.

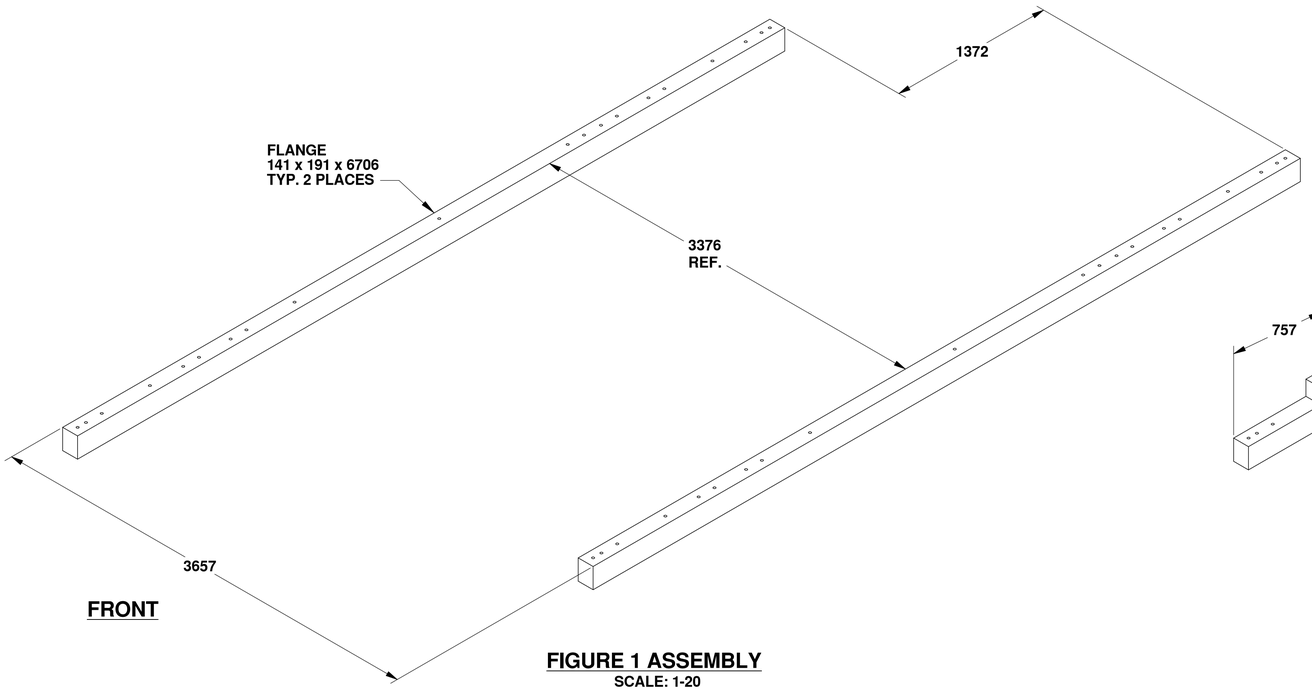


FIGURE 1 ASSEMBLY
SCALE: 1-20

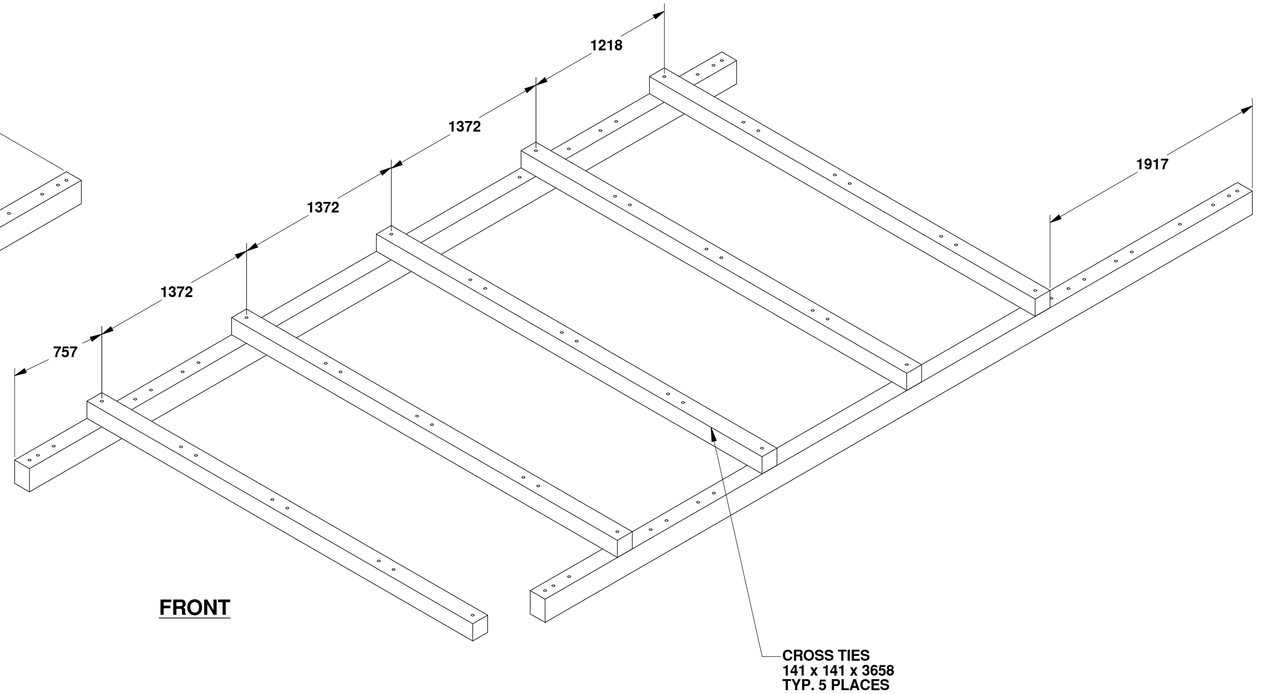


FIGURE 2 ASSEMBLY
SCALE: 1-20

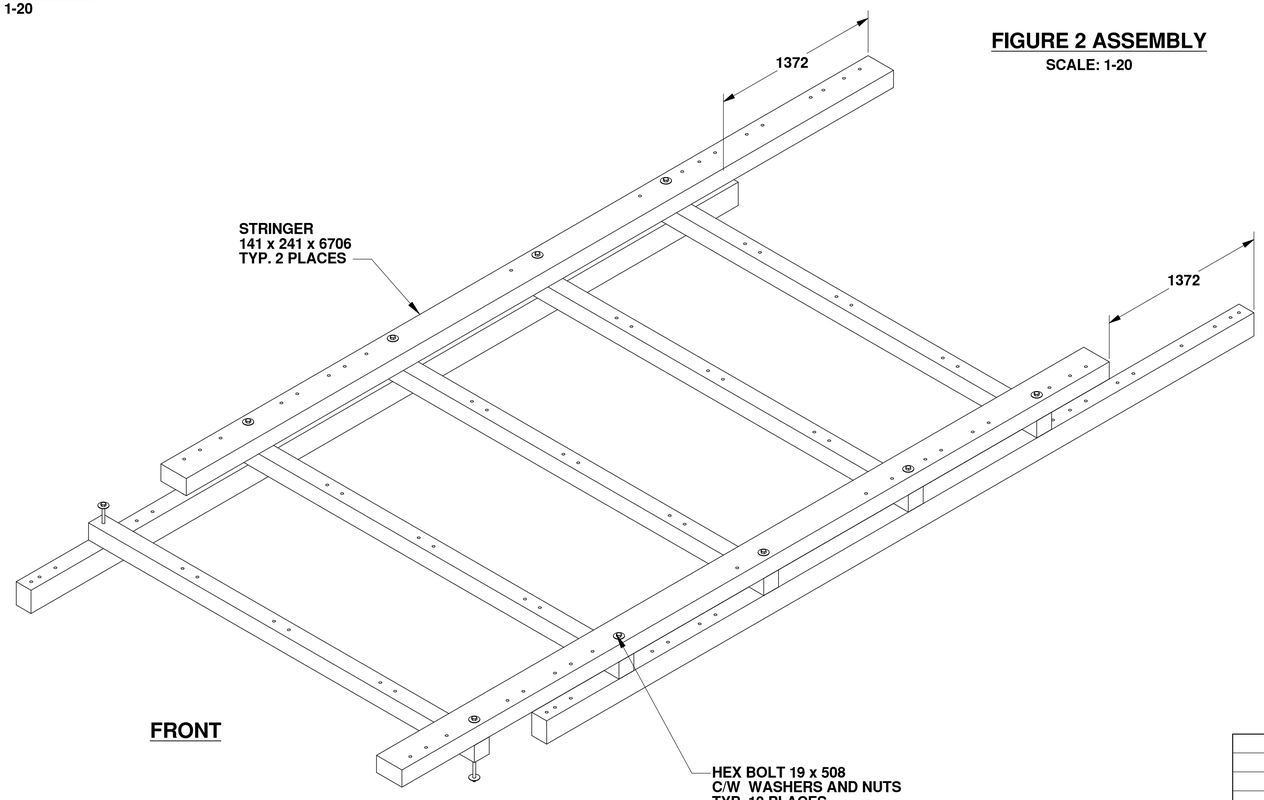


FIGURE 3 ASSEMBLY
SCALE: 1-20

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			CHECKED		
			ENG APPR.		
			MFG APPR.		
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.		
		MATERIAL ---	COMMENTS:		
NEXT ASSY	USED ON	FINISH ---			
APPLICATION		DO NOT SCALE DRAWING			

Fisheries & Oceans / Pêches et Oceans
Small Craft Harbours Branch

TITLE: **'2005 REVISION' 3.657m WIDE STANDARD FLOAT MODULE ASSEMBLY**

SIZE	DWG. NO.	REV
D	FM12-ST-002	E

SCALE: 1:20 | WEIGHT: | SHEET 1 OF 1

WestCAD Services Ltd.

REV
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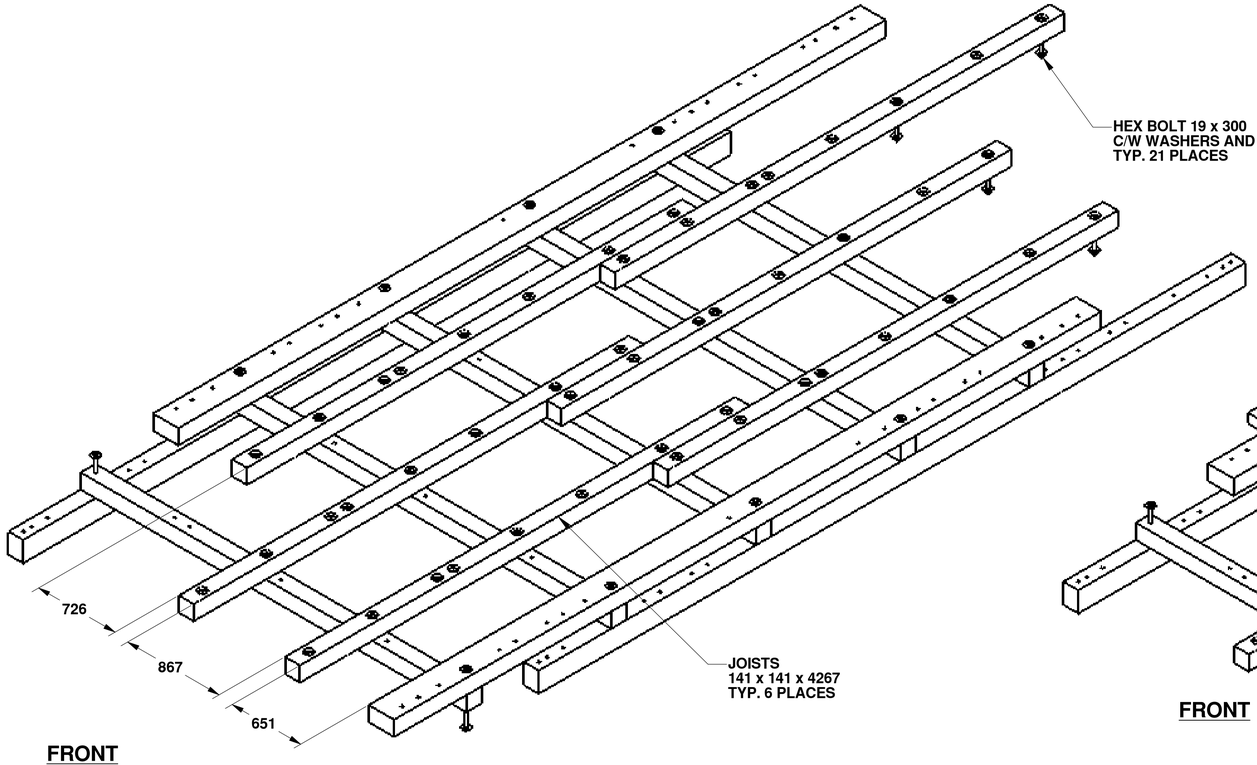

FIGURE 4 ASSEMBLY

SCALE: 1-20

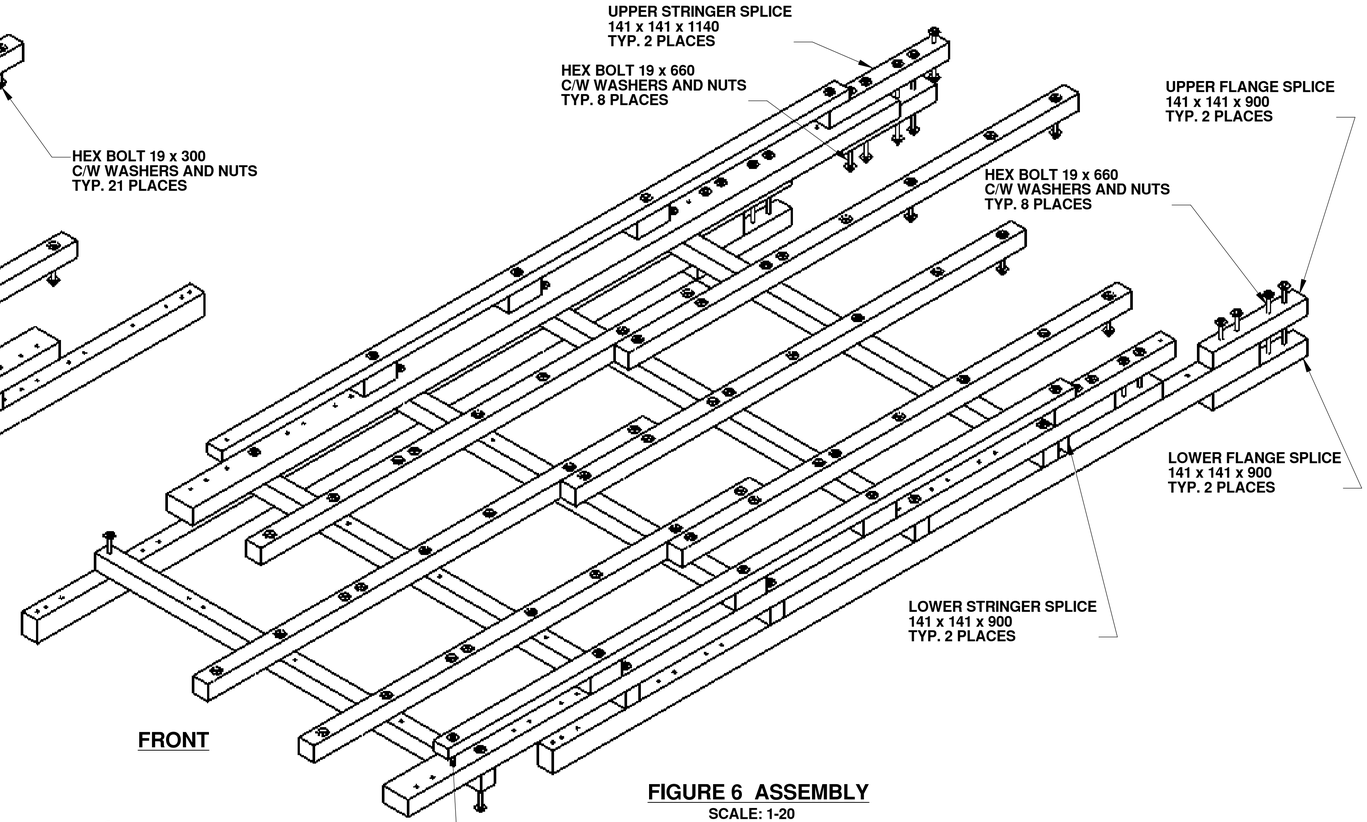

FIGURE 6 ASSEMBLY

SCALE: 1-20

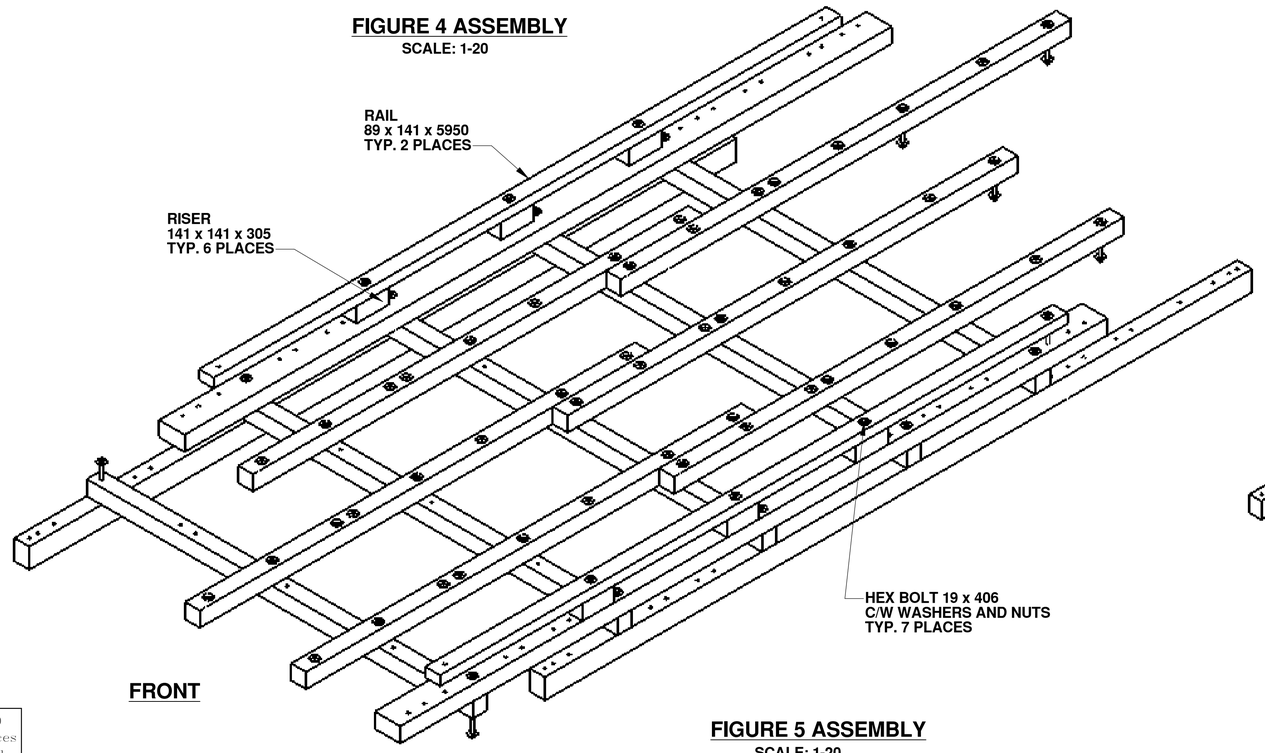

FIGURE 5 ASSEMBLY

SCALE: 1-20

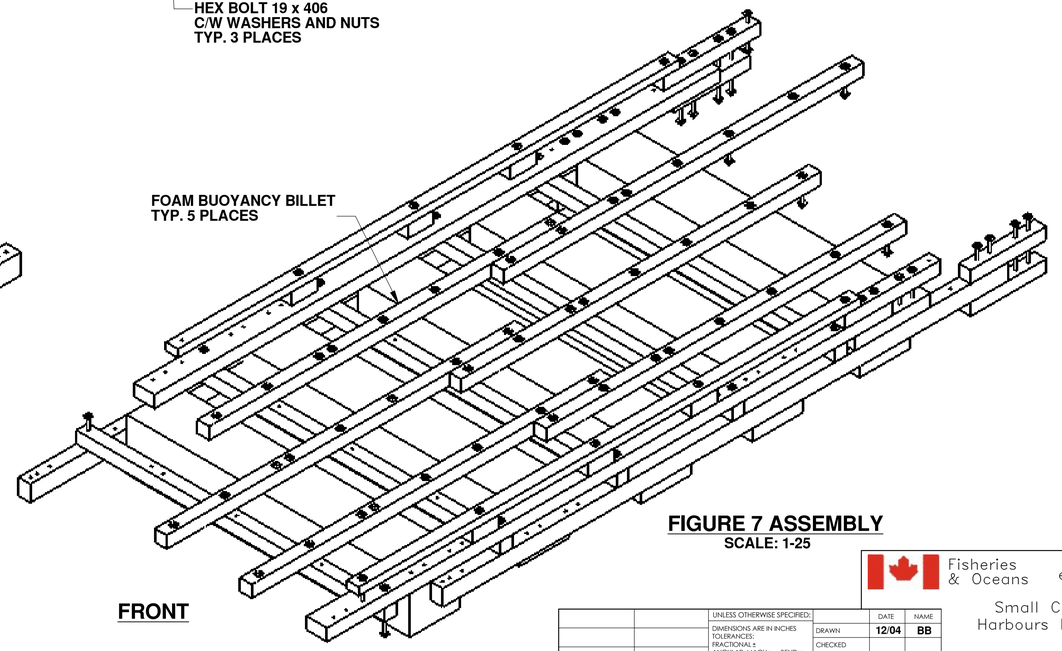

FIGURE 7 ASSEMBLY

SCALE: 1-25

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		UNLESS OTHERWISE SPECIFIED:		DATE	NAME
		DIMENSIONS ARE IN INCHES	DRAWN	12/04	BB
		TOLERANCES:	CHECKED		
		FRACTIONAL ±	ENG APPR.		
		ANGULAR: MACH ± BEND ±	MFG APPR.		
		TWO PLACE DECIMAL ±	Q.A.		
		THREE PLACE DECIMAL ±	COMMENTS:		
		INTERPRET GEOMETRIC TOLERANCING PER:			
		MATERIAL ---			
NEXT ASSY	USED ON	FINISH ---			
APPLICATION		DO NOT SCALE DRAWING			

Fisheries & Oceans / Pêches et Océans
Small Craft Harbours Branch

TITLE: '2005 REVISION' 3.657m WIDE STANDARD FLOAT MODULE ASSEMBLY

SIZE D | DWG. NO. FM12-ST-003 | REV E

SCALE: 1:20 | WEIGHT: | SHEET 1 OF 1

REV 1
D

FRONT

ANNEX 8

Fisheries and Oceans Canada | Pêches et Océans Canada

Canada

Small Craft Harbours Branch

Technical Specifications

VEHICLE RAMP TO FLOATING DOCK

SMALL CRAFT HARBOURS

B.C.

DECEMBER, 2015

VJA ENGINEERING

TECHNICAL SPECIFICATIONS

SECTION	TITLE
00 00 01	Technical Specification Index
01 00 00	General Requirements
00 51 00	Structural Steel Work
00 55 00	Metal Fabrication
00 98 00	Painting

DRAWINGS	TITLE
Vehicle Ramp for 40,000 kg GVW Semitrailers	
215132-001	General Arrangement
215132-002	Elevation in High/Low Position
215132-003	Ramp Arrangement
215132-004	Ramp Details – Sheet 1 of 2
215132-005	Ramp Details – Sheet 2 of 2
215132-006	Abutment Apron – Plan, Sections and Details
215132-007	Float Apron – Plan, Sections and Details
215132-008	Abutment & Float Aprons – Sections and Details
215132-009	Ramp Grating – Arrangement and Details
Vehicle Ramp for 20,000 kg GVW Straight Trucks	
215132-101	General Arrangement
215132-102	Elevation In High/Low Position
215132-103	Ramp Arrangement
215132-104	Ramp Details – Sheet 1 of 2
215132-105	Ramp Details – Sheet 2 of 2
215132-106	Abutment Apron – Plan, Sections and Details
215132-107	Float Apron – Plan, Sections and Details
215132-108	Abutment & Float Aprons – Sections and Details
215132-109	Ramp Grating – Arrangement and Details

END OF SECTION

1 GENERAL

.1 The Standard General Conditions of these specifications form an integral part of this section.

2 MINIMUM STANDARDS

.1 In the absence of other standards specified in the Contract Documents, all work is to conform to, or exceed, the minimum standards of the Canadian Government Specifications Boards, the Canadian Standards Association, the American Society for Testing of Materials, or the National Building Code of Canada, whichever is applicable.

.2 All work to be done in accordance with Work Safe BC regulations.

3 BARRIERS, LIGHTS AND WATCHING

.1 The Contractor shall provide all requisite barriers, fences, warning signs, lights and watching for the protection of persons and property on or adjacent to the site.

4 SITE ACCESS

.1 The Contractor shall erect and maintain barriers, fences, lights, warning devices, and other protective devices as may be required for prevention of theft or damage of goods and protection of the public and workmen, or if so ordered by the Engineer.

5 CLEAN-UP

.1 At all times the Contractor shall keep the work site free from accumulation of waste material and debris.

6 PROGRESS REPORT

.1 The Contractor shall keep a daily record of progress of the work available for inspection by the Engineer.

.2 The daily record shall include particulars of number and type of personnel working on the project and work performed.

7 ENGINEER'S ACCESS

.1 The Contractor shall provide access to the work for the Engineer's inspectors and surveyors as required.

8 PERMITS AND ROYALTIES

.1 All permits and licenses required are the responsibility of the Contractor and shall be for the Contractor's account. The Contractor shall have the appropriate business license.

9 PREVENTION OF WATER AND AIR POLLUTION

.1 The Contractor shall comply with Federal and Provincial laws, orders and regulations concerning the control and abatement of water and air pollution.

10 CARE OF FINISHED WORK

.1 The Contractor shall protect all finished work from injury, defacement, unauthorized entry, or trespass until such time as the work described in the Contract Documents is substantially complete.

11 NOISE BY-LAWS

.1 The Contractor shall comply with the requirements of any local or other Noise By-Laws.

END OF SECTION

1 GENERAL

.1 All fabrication and assembly of structural steel shall comply with Standard CAN/CSA-S6, latest revision.

2 MATERIALS

.1 Hollow structural steel sections shall conform to CSA Standard G40.20/G40.21-M, Class "C", Grade 350W.

.2 All other rolled sections and miscellaneous plate shall be grade 300W or better, unless noted otherwise on the drawings, in conformance with CSA Standard G40.20/G40.21-M.

.3 All structural steel members shall be made of the size and weight shown on the drawings unless written approval for any change is first obtained from the Engineer.

.4 Bolts, washers and nuts shall conform to ASTM specification A325.

3 WELDING

.1 Welding practice and qualifications of welders and erectors of welded construction shall conform to the requirements of CSA Standards W47, W48, and W59 latest editions. The metallurgy of weld metal shall be similar to the parent material.

.2 Unless noted otherwise, all welds shall develop the full strength of the connected members, and shall be continuous seal welds with a minimum 6mm leg length.

.3 Where on the drawings it is called for double sided welding; the welding details called for on the near side shall be duplicated on the far side if not called up otherwise.

4 INSPECTION

.1 The Contractor shall furnish all facilities for inspecting and testing the weight, dimensions and quality of workmanship at the shop where the material is fabricated.

.2 The Engineer shall be notified well in advance of the start of work, in order to allow sufficient time for inspection of material and workmanship.

5 SHOP DRAWINGS

.1 The Contractor shall prepare and submit shop drawings with metric dimensions.

.2 The Contractor shall submit three prints or an electronic copy in PDF of the shop drawings for the Engineer's review prior to commencing fabrication. If shop drawings are not to the Engineer's satisfaction, they will be returned with the notation "Resubmit". Drawings that have been returned with the notation "Reviewed" would allow fabrication to commence.

.3 The review of shop drawings will be for size and arrangement of members and strength of connections. Any errors in dimensions shown on the shop drawings shall be the responsibility of the Contractor.

.4 Upon completion of the project, all reviewed shop drawings shall be submitted to the owner along with the As-Built marked drawings. In addition, diskettes containing all shop drawings shall be submitted.

6 COATINGS

.1 Except as noted below, all structural and miscellaneous steel shall be painted in accordance with the requirements of Section 00 98 00 – Painting.

.2 Bolts, washers and nuts shall be hot dip galvanized in accordance with ASTM Specifications A-153 or A-123 or CSA G 164-M (minimum zinc coating 610 g/m^2).

.3 Grating shall be hot dip galvanized in accordance with CSA Specification G 164-M (minimum zinc coating 610 g/m^2).

.4 Touch up all damaged painted surfaces immediately upon delivery of the ramp as per Section 00 98 00 – Painting.

END OF SECTION

1 GENERAL

.1 The Contractor shall supply all material and bolts required for the work.

.2 This section covers the requirements for the supply, detailing, fabrication, assembly and delivery of the steelwork shown in the Drawings and Specifications.

.3 The latest edition of, and any standard referenced by, the following standards shall apply to the work.

a) CSA G40.21M - Structural Quality Steel
b) CSA W48.1 - Mild Steel Covered Arc - Welding Procedures
c) CSA W59 - Welded Steel Construction

.4 Alternative Details
All details shall, in general conform to those shown on the Drawings. Alternative details may be substituted to facilitate the Contractor's shop procedures and to suit his standard detailing practice, provided such alternative details comply in all respects with these Specifications and do not require an appreciable increase in weight of metal. The Contractor shall submit all proposed Alternate Details for review and acceptance by the Engineer prior to performing any of the Work or procuring any of the material for the Alternative Details.

2 WORKING DRAWINGS

.1 Working drawings shall consist of shop detail drawings, assembly diagrams and other working drawings showing details, dimensions, sizes, material and other information necessary for the complete fabrication of the steelwork.

The Contractor shall submit shop drawings in accordance with Section 00 51 00. The Contractor shall allow a minimum of one (1) week for review of shop drawings by the Engineer.

.2 Discrepancies or vague references shall be clarified by the Contractor before proceeding with the fabrication of metal work; otherwise errors in dimensions shall be corrected at the Contractor's expense.

3 QUALIFICATIONS AND EQUIPMENT

.1 Contractor
The Contractor shall produce evidence that his plant is currently fully approved by the CWB to perform pile splices to the requirements of C.S.A. Specification W47.1 Div. 2.1 or better.

The Contractor shall also produce evidence of satisfactory experience in the fabrication of heavy structural steelwork.

The fabricator shall appoint, subject to the Engineer's approval, an employee who shall assist and be responsible to the welding engineer.

Unless such information has already been forwarded to the Owner, the Contractor shall submit to the Engineer the names of the welding engineer, welding supervisors and shop inspectors who are to be employed on the work.

.2 Operators
The Contractor shall produce evidence that all welding operators to be employed on the work are currently qualified by the CWB in the processes in which they are to be employed on the work. Such qualifications shall have been issued within two (2) years of the commencement of fabrication.

Expired welding certificates are not acceptable for qualification; ONLY current valid qualifications will be recognized by the Owner.

The Contractor shall also produce evidence relative to each operator, that he has been executing satisfactory welding in the required processes within the six (6) month period previous to the award of this contract.

.3 Welding Equipment
All equipment to be used in the work shall be in good working order and shall be subject to the inspection of the Engineer.

.4 Welding Procedures
The Contractor shall submit copies of the welding procedures which he intends to use for examination and approval by the Engineer.

Such procedures shall be accompanied by documentary proof that they have been qualified previously by the Canadian Welding Bureau at the plant where the work is to be carried out.

The procedures shall include the following information: joint type, welding process, welding position, base metal specification, welding consumable specification and size, preheat requirements, amperage and voltage requirements, speed, polarity, and welding equipment, including a description of travel for automatic welding.

4 MATERIALS

.1 Structural Steel
Steel shall conform to the requirements as called for on the drawings.

Prior to fabrication, the Contractor shall supply to the Engineer, manufacturer's mill certificates giving details of all chemical and physical properties of the steel to be used in the work.

Steel shall be supplied free of surface defects and internal discontinuities, with due regard for the end use of the steel in the contract.

Edges of all plates will be subject to inspection by the Engineer. Any discontinuities will be explored and may be accepted, subject to ASTM A435.

The Engineer shall be supplied with a record of all observed discontinuities.

Repairs to defective plates shall not proceed until approval of the proposed repair has been given by the Engineer.

.2 Welding Consumables
Welding consumables for all processes shall be certified by the manufacturer as complying with the requirements of the following specification:

a) Manual, shielded metal arc welding - All electrodes for manual shielded metal arc welding shall conform to A.W.S. Specifications A.5.1 classification E7018.
b) Gas, metal arc welding - All electrodes used in the gas, metal arc welding process shall be composite electrodes conforming to A.W.S. Specification A.5.18, classification E70T-9. The use of micra wire will not be permitted.
c) Shielding gas shall be welding grade carbon dioxide with a guaranteed dew point of -45^{0}C.
d) Submerged arc welding - Welding electrodes and fluxes used in the submerged arc welding process shall conform to A.W.S. Specification A.5.17 and shall produce a weld to classification F72 - EM 12 K or approved equivalent.

.3 Bolts

Bolts, nuts and washers shall be hot-dip galvanized and shall conform to the requirements of ASTM Specification A325, Type I of North American or European manufacture only.

5 MATERIAL STORAGE

.1 Steel

Structural material, either plain or fabricated, shall be stored at the Contractor's shop or elsewhere, above the ground upon platforms, skids, or other supports. It shall be kept free from dirt and other foreign matter, and shall be protected as far as practical from corrosion. Long members shall be supported on skids placed near enough together to prevent injury from deflection.

Prior to fabrication, all steel shall be marked for identification by the heat number and specification by a marking system approved by the Engineer.

.2 Welding Consumables

All electrodes having low hydrogen coverings shall be dried for at least two (2) hours between 230^{0}C and 260 ^{0}C before they are used. Electrodes shall be stored immediately after drying in storage ovens held at a temperature of at least 120^{0}C. Electrodes that are not used within four (4) hours after removal from a drying or storage oven shall be re-dried before use. Electrodes which have been wet shall not be used.

Electrode wire used in submerged arc welding and gas metal arc welding shall be stored in the original container at room temperature and kept free of moisture, oil, dirt or other contaminators.

Flux used for submerged arc welding shall be dry and free of contamination from dirt, mill scale, oil or other foreign material. Fused flux shall not be used on the work.

Gas for gas metal arc welding shall be stored in marked steel bottles and shall not be subjected to temperatures in excess of 50^{0}C nor temperatures of less than 0 ^{0}C.

6 PREPARATION OF MATERIAL

.1 Straightening Material

Prior to being used in fabrication, all structural steel shall be straight and free from kinks or bends. If straightening is necessary, it shall be done by methods that will not injure the metal. The steel shall not be heated unless permission is given by the Engineer. Sharp kinks and bends will be cause for rejection of the steel.

.2 Edge Preparation for Welding

The edges of plates or sections which are to be welded together shall be prepared by sawing, shearing, flame-cutting, machining, chipping or arc air gouging to the details shown on the shop drawings.

Surfaces and edges to be welded shall be smooth, uniform and free from fins, tears, cracks and other defects which would adversely affect the quality or strength of the weld. Surfaces to be welded shall also be free from loose scale, slag, rust, grease, moisture or other material that will prevent proper welding. Mill scale that withstands vigorous wire brushing, a light film of drying oil or a thin rust inhibitive coating may remain except that all mill scale shall be removed from the surfaces on which flange-to-web welds are to be made by submerged arc welding or by shielded metal arc welding with low hydrogen electrodes. Surfaces within 50 mm of any weld location shall be free from any paint or other material that would prevent proper welding or produce objectionable fumes while welding.

Edges of material thicker than specified in the following list shall be trimmed if and as required to produce a satisfactory welding edge wherever a weld among the edges to carry calculated stress:

- Sheared edges of material thicker than 12 mm
- Rolled edges of plates (other than Universal Mill Plates thicker than 10 mm)
- Toes of angles or rolled shapes (other than wide flange section thicker than 16 mm)
- Universal Mill Plates or edges of wide flange section thicker than 25 mm.

Edges may be prepared by oxygen cutting, provided a smooth and regular surface free from cracks and notches is secured, and providing that an accurate profile is secured by the use of a mechanical guide. Free hand cutting shall be done only where approved by the Engineer.

In all oxygen cutting, the cutting flame shall be so adjusted and manipulated as to avoid cutting beyond (inside) the prescribed lines. Roughness of cut surfaces shall not be greater than that defined by the United States Standards Institute surface roughness value of 1,000 U.S.A.I.B46.1, Surface Texture). Roughness exceeding this value shall be removed by machining or grinding.

.3 Edge Preparation (non-welded edges)

Steel may be cut to size by sawing, shearing, flame cutting or machining. All steel after cutting shall be marked by a method agreed to by the Engineer so that its specification may be immediately identified.

Sheared edges of plates more than 16 mm in thickness shall be planed to a depth of 6 mm.

Special attention shall be given to the cutting of flange plates. Occasional gouges not in excess of 6 mm deep will be accepted in areas of low stress at the discretion of the Engineer. The repair or removal of such gouges shall be to the Engineer's instructions.

Corners of all exposed flame cut or sheared plates including flanges, gusset plates, etc. shall be ground to a minimum 1.5mm 45 degree bevel to facilitate painting. Re-entrant flame cuts shall be filleted to a radius of not less than 20 mm.

7 FABRICATION

.1 Marking

Prior to fabrication, all steel shall be marked for identification by heat number and specification by a marking system approved by the Engineer.

.2 Bolt Holes

All holes for high tensile bolts shall be either punched, sub-punched and reamed, or drilled, and shall be of a nominal diameter not more than 2 mm in excess of the nominal bolt diameter.

Punched holes shall be clean cut, without torn or ragged edges. The diameter of the die shall not exceed the diameter of the punch by more than 2 mm. If a punched hole must be enlarged to admit a bolt, it shall be reamed.

Reamed holes shall be cylindrical and perpendicular to the member. Where practicable, reamers shall be directed by mechanical means. Reaming shall be done with twist drills. Drilling shall be done with twist drills. Burrs on the outside surfaces shall be removed. Poor matching of holes will be cause of rejection.

Allowable tolerance for bolt holes:

.1 Matching holes for bolts to register so that a gauge 2 mm less in diameter than hole will pass freely through assembled members at right angles to such members.

.2 Unless otherwise shown drill all bolt holes 1.6 mm larger than nominal bolt diameter.

.3 Centre-to-centre distance between two holes of a group of holes to vary by not more than 2 mm from dimensioned distance between such holes.

.4 Centre-to-centre distance between any group of holes to vary not more than following in Table 1:

Centre to Centre distance in metres	**Tolerance in plus or minus mm**
less than 10	1
10 to 20	2
20 to 30	3

.5 Do not correct mis-punched or mis-drilled members without Engineer's approval.

.3 Pin Holes

All holes for pins shall be drilled and reamed to a diameter tolerance of 0.5 mm. Burrs on the outside surface shall be ground flush.

.4 High Strength Bolts

Installation of high strength bolts shall be in accordance with the latest edition of the AASHTO Specification Section 10.17.4.

Sufficient bolts, nuts and washers shall be furnished to complete the entire structure with an ample surplus to replace all bolts damaged or lost.

Holes in the girder field splices shall be sub-punched and, unless otherwise specified, reamed while assembled in the shop. The assembly, including camber, alignment and accuracy of holes shall be approved by the Engineer before reaming is recommended.

.5 Butt Joints

Except as called for on the drawings, butt joints will not be permitted.

The Contractor may submit an alternative butt joint design provided that such design has been pre-qualified under CSA Standard W59.

.6 Assembly and Welding Sequences
If requested by the Engineer, the Contractor shall supply full details of the proposed assembly and welding sequence of any particular weld.

.7 Shop splices
.1 Locate to Engineer's approval.
.2 Use complete joint penetration groove welds finished flush. Details of butt joints to CSA W59. Use only as approved by Engineer.

.8 Nylon Washers
Machining of washers shall be to the manufacturer's recommendations.

Installation shall be done without use of driving of components to fit. Minor adjustments in face-to-face tolerances of hinge components may be compensated for by planning thickness of washer. If greater than 6.0 mm is to be removed (or added) the steel components shall be corrected.

The Contractor shall supply to the Owner, spares of all sizes of fabricated washers as called for the drawings at the completion of the project.

.9 Bent Plates
When bending plates, the plates shall be so taken from the stock plates that the bend line will be at right angles to the direction of rolling. The radius of the bend measured inside shall be not less than the thickness of the plate. Before bending, the corners of the plate shall be rounded to a radius of 2 mm throughout that portion of the plate at which bending is to occur.

.10 Dimensional Tolerances
The dimensions of the completed steelwork shall comply with the appropriate dimensional tolerances as specified in CSA Standard W59 Welded Steel Construction.

.11 Shipping
Structural members shall be loaded on trucks, cars or barges in such a manner that they can be transported and unloaded at their destination without being excessively stressed, deformed or otherwise damaged.

8.0 WELDING

.1 General
Welding shall be done by the manual, shielded metal arc, gas shielded metal arc or submerged arc processes in accordance with the approved procedures and A.W.S. D1.1 Section 4, Technique.

All Welding shall be done under cover and, in the case of gas metal arc welding, shall be done in an area free from wind or draft.

Butt welds shall be extended beyond the edges of the parts to be joined by means of start and run-off tabs providing sufficient thickness to avoid the weld burning through and with a joint preparation similar to that on the main material. For manual shielded metal arc welding, the width of the tabs shall be not less than the thickness of the thicker part being joined or 75 mm, whichever is greater. For submerged arc welding, the width of

the tabs shall be not less than 75 mm. Each weld pass shall be carried far enough beyond the edge of the parts being joined to ensure sound welds in the joint. Tabs shall be removed upon completion and cooling of the weld without damage to the parent plate, and the end of the weld made smooth and flush with the edges of the abutting parts.

In gas metal arc welding, the equipment shall be capable of sustaining a gas flow rate of from 0.85 to 1.25 m^3/h.

.2 Preheat and Interpass Temperatures

No welding shall be done when the temperature of the base metal is lower than - 20^0C. At temperatures below 0 ^{0}C, the steel shall be preheated to a temperature of at least 10^0C in excess of that stated in Table 2.

Preheat shall be applied to all steel to be welded so that the steel within 75 mm of the weld is heated to the temperature shown in Table 2.

Preheat shall be applied in such a manner that moisture from the heating equipment does not penetrate the joint.

For all welding processes, preheat and interpass temperatures shall be maintained during welding, at temperatures not less than stated in Table2.

THICKNESS OF THICKEST PART AT POINT OF WELDING	**TEMP.**
Less than 20mm	none
20mm to 35mm	21°C
40mm to 60mm	66°C
Over 60mm	107°C

Table 2: Minimum preheat and interpass temperatures

Preheat temperatures above the minimum shown in Table 2 may be required for highly restrained joints if designated by the Engineer.

Preheat temperature shall in no case exceed 200^0C but there shall be no limit on interpass temperature.

Preheat requirements for tack welds shall be as in Table 2, except that where single pass tack welds are used and are to be incorporated and consumed in a weld made by the submerged arc and the gas metal arc processes, preheat is unnecessary.

.3 Assembly

The shop assembly of the various components of the weld shall be executed in accordance with A.W.S. D1.1, Subsections 3.3 and 3.4.

Tack welding shall be done by qualified operators, using the smallest size weld required to hold the components of the assembly together. Tack welds shall not be less than 100 mm in length and shall be incorporated in the final weld.

Tack welds shall be made with 5 mm maximum size electrodes and shall be subject to the preheat requirement of the Preheat Clauses.

.4 Welding

.1 When CAN/CSA-G40.21 grade 350A steel is specified, deposited weld metal to have a Charpy V-Notch value not lower than that of steel.
.2 Do welding in shop unless otherwise permitted by Engineer.
.3 Do not weld at locations where weld is not indicated.
.4 All welds are to be continuous over the entire length of the joint unless otherwise specified.
.5 Use minimum 6mm fillet weld unless otherwise shown.

.5 Quality and Details of Welds

The quality and details of welds shall be in accordance CSA Standard W59, Clause 12 unless noted otherwise or as specified by the Engineer. Fender panels, mooring structures, walkways, stairs and ladders shall be in accordance with Clause 11.

Undercut at the tow of the flange to web fillet weld will not be allowed except in regions of low stress at the discretion of the Engineer.

9.0 QUALITY ASSURANCE

.1 Inspection

All materials, welding procedures, shop drawings, and steelwork fabrication will be inspected by the Engineer to ascertain compliance with the Owner's Specifications and Drawings.

All phases of fabrication including cutting to size of plates, edge preparation of welded joints, weld assembly and welding will be subject to visual examination by the Engineer.

At his discretion and at the Owner's expense, the Engineer will appoint a testing agent to test any completed or partially completed weld by non-destructive testing methods. Generally, fillet welds will be tested by the dry powder magnetic particle method and butt welds by ultrasonic testing, but this does not preclude the use of another method of testing deemed necessary by the Engineer.

It is desirable that the inspection of welds is carried out as soon as possible after the completion of welding.

The Contractor shall be prepared to move and support the pieces being inspected so that, in general, the inspection can be done on the flat and so that a minimum of 1.25 m of headroom is available.

The Engineer will attempt to schedule non-destructive testing operations so as not to interfere with the progress of the work. However, the Contractor is expected to co-operate with the Engineer and the testing agency in the satisfactory expedition of inspection procedures. The Contractor shall furnish all facilities for access by the testing agency for inspection and testing. The Contractor shall ensure all slag and other residue is removed from the weld when it is completed and ready for weld inspection. Slag removal by the testing agency will be paid for by the Contractor. A minimum of 72 hours notice of any inspection stage being reached shall be given to the Engineer by the Contractor.

.2 Unacceptable Work

Any work found to be unacceptable, shall be corrected in accordance CSA Standard W59. The Contractor shall bear the cost of re-inspection of welds after defects are repaired.

No repair shall be made until agreed to by the Engineer.

10.0 COATINGS

Except as noted below, all structural steel shall be painted in accordance with the requirements of Section 00 98 00 – Painting.

Bolts, washers and nuts shall be hot dip galvanized in accordance with ASTM Specifications A-153 or A-123 or CSA G 164-M (minimum zinc coating 610 g/m^2).

Grating shall be hot dip galvanized in accordance with CSA Specification G 164-M (minimum zinc coating 610 g/m^2).

The Contractor is advised to handle all materials delicately to prevent paint damage. Nylon slings are to be used at all times when lifting lugs are not available.

Touch up all damaged surfaces immediately upon delivery of the ramp and supply 2 gallons of paint for field touch-up of any damaged paint surface during the installation of the ramp as per 00 98 00 – Painting.

END OF SECTION

1 SCOPE OF WORK

.1 All ferrous surfaces except galvanized components are to be painted. This includes:
- Steel ramp and aprons complete.

2 APPLICABLE CODES

.1 All work contained in this section shall comply with the latest edition of the following standards:

CGSB	Standards of the Canadian General Standards Board
SSPC-SP1	Solvent Cleaning (degreasing)
SSPC-SP2	Hand Tool Cleaning
SSPC-SP7	Brush-off Blast Cleaning
SSPC-SP10	Near White Blast Cleaning
SSPC-SP11	Power Tool Cleaning to Bare Metal
SSPC-GUIDE 6	Debris Containment
ASTM-03276	Recommended Practice Guide for Paint Inspection
ASTM-D3359	Method for Measuring Adhesion by Tape Test
Work Safe BC	Occupational Health and Safety Regulations
	BC Waste Management Act (SWEP)
SSPC-PA2	Procedure for Determining Conformance to Dry Coating Thickness Requirement

3 SURFACE PREPARATION

.1 All steel surfaces to be painted shall be prepared in accordance with the SSPC Manual Volume II and the paint manufacturer's specifications.

.2 Degrease according to SSPC-SP1 Solvent Cleaning. Remove all weld splatter and grind all welds and sharp edges. Blast clean to SSPC-SP10, Near White Metal Standard.

.3 Minimum allowable motor anchor pattern is 50 microns (2 mils). Shape of surface profile shall be jagged and irregular, as opposed to peened.

.4 If chloride substrates measurements are required by Engineer, the chloride concentration shall be less than 3µg/cm2 measured by Chlor-Rid test.

.5 The surface finish shall be approved by a representative of the Owner or the paint manufacturer before application of any coatings.

4 PAINT APPLICATION

.1 Coatings shall be applied in accordance with the manufacturer's specifications. All blast cleaning and shop painting shall be carried out under cover in an area protected from weather and other detrimental effects.

.2 Paint application should commence prior to any presence of rust bloom and within 8 hrs following abrasive blasting.

.3 Paint manufacturers recommendation for application parameters shall be consulted to identify minimum and maximum temperatures, relative humidity and dew point restrictions and pot life. Consult paint manufacturer for further information.

5 PAINT SYSTEM

.1 All dry film thickness (DFT) shall be stated in Mils (thousands of an inch). The equivalent measurement and conversions are as follows:

One thousandth of an inch (1 mil) = 25 microns

The detailed requirements of the paint schedule are given below.

.2 Stripe coats shall be applied to all welds, lap joints, plate edges, corners, sharp edges and any other areas where spray application of the overall coating system may result in low dry film thickness.

.3 The following paint systems shall be used:

Coat No.	Type	Binder	Product Name	Dry Film Thickness
1	Primer	Zinc-Rich Epoxy	Interzinc 52	2.5 mils
2	Mid Coat	Polyamide Epoxy	Interseal 670HS	7 mils
2	Stripe Coat	Polyamide Epoxy	Interseal 670HS	5 mils
3	Topcoat	Polyamide Epoxy	Interseal 670HS	7 mils
-	-	-	-	16.5 mils minimum

Note: Finished coating system Dry Film Thickness shall be a minimum of 16.5 Mils (412 microns) at each spot measurement. Stripe coat not included.

.4 Topcoat to be a light grey colour (colour code RAL 7035) except for **railing which shall have a red top coat (RAL 3000) and curb which shall have a safety yellow top coat (RAL 1003).**

.5 Coating for Non Skid Deck Surfaces. This includes the top surface of aprons and the top surface of apron finger plates.

The following paint system is approved for use in Non Skid Deck Surfacing:

Supplier	Paint System	Coats	Dry Film Thickness
Sutton Road Markings	Bimagrip Urethane Non-Skid (RS Clare, Manufacturer) Acraprime SP Polyurethane Prime	1	10 m^2/l Resign 2.3 kg/m^2 Aggregate 4-6 kg/ m^2

.6 All bolts, washers, nuts and grating shall be hot dip galvanised in accordance with ASTM Specifications A-153 or A-123, or CSA Specification G 164-M (minimum zinc coating 610 g/m^2).

6 WORKMANSHIP

.1 Contractor shall complete a daily reporting account for Shop/Field Quality Assurance.

.2 An Engineer's Representative may request on site monitoring during paint preparation.

.3 Each coat, including stripe coat shall be of contrasting colors and mixed in full proportions.

.4 The preparation of surfaces to be painted and the application of the paints shall be as specified above.

.5 Coating shall take place as soon as practicable after inspection of cleaning, but, in any event, within eight hours and before any visible or detrimental rusting or contamination occurs.

.6 All coating material shall be applied by airless spray unless otherwise allowed or specified by the manufacturer. Spray painting equipment shall be of ample capacity and suitable for the work and shall at all times be kept clean and in good working order. Air lines shall be equipped with water traps to positively remove condensed moisture.

.7 No thinner shall be added to any paint in excess of the paint manufacturer's recommendations.

.8 Prior to spray application of primer, all crevices, appurtenances, and re-entrant surfaces which would otherwise be difficult to coat by spraying, together with all weld areas shall be brushed (stripe) in order to ensure a continuous film on all surfaces, and then painted as specified.

.9 Newly coated surfaces will be inspected when the coating has thoroughly dried and immediately before the coated member is to be removed from the paint shop for shipment. The coated surfaces may be rejected if any of the following defects are apparent, and the Engineer or his representative, in his judgement, believes the coating performance and life will be impaired by these conditions:

a. Inadequate dry film thickness (DFT).
b. Runs, sags, holidays or shadowing caused by inefficient application methods.
c. Evidence of poor coverage at plate edges, lap joints, crevices, pockets, corners and re-entrant angles.
d. Damage to shop coat due to handling before the coating is sufficiently cured or any other contributory cause.

.10 Coated surfaces rejected by the Engineer shall be made good by the Contractor at his own expense. The Contractor shall submit to the Engineer his proposed method of repair to the damaged surfaces.

.11 Damage to adjacent property, vehicles, pedestrians and other portions of the structure due to the painting operations shall be made good without additional expenses to the Owner. No paint, equipment, scaffolding, et cetera shall obstruct traffic or pedestrians, except by written permission of the Owner's Representative, in which case proper warning signs, barricades, et cetera shall be placed, maintained and removed without additional expense to the Owner.

.12 Field touch up painting shall be carried out in accordance with the paint manufacturer's specifications.

.13 The Contractor shall provide sufficient paint for field touch-up of any damaged paint surface.

.14 Only nylon ropes or rubber covered slings may be used for handling steel in either the Contractors shop during loading or shipment or during unloading and erection at the site. Where coatings are damaged during handling/erection, these areas shall be marked and recorded for remedial actions.

END OF SECTION

Fisheries and Oceans | Pêches et Océans

REAL PROPERTY SAFETY & SECURITY

VEHICLE RAMP TO FLOATING DOCK FOR 20,000 kg GVW STRAIGHT TRUCKS

ISSUED FOR TENDER

DRAWING LIST

DRAWING NO.	DRAWING TITLE	REVISION A	B	C	D
215132–101	GENERAL ARRANGEMENT	A			
215132–102	ELEVATION IN HIGH/LOW POSITION	A			
215132–103	RAMP ARRANGMENT	A			
215132–104	RAMP DETAILS – SHEET 1 of 2	A			
215132–105	RAMP DETAILS – SHEET 2 of 2	A			
215132–106	ABUTMENT APRON – PLAN, SECTIONS AND DETAILS	A			
215132–107	FLOAT APRON – PLAN, SECTIONS AND DETAILS	A			
215132–108	FLOAT & ABUTMENT APRONS – SECTIONS & DETAILS	A			
215132–109	RAMP GRATING – ARRANGEMENT AND DETAILS	A			

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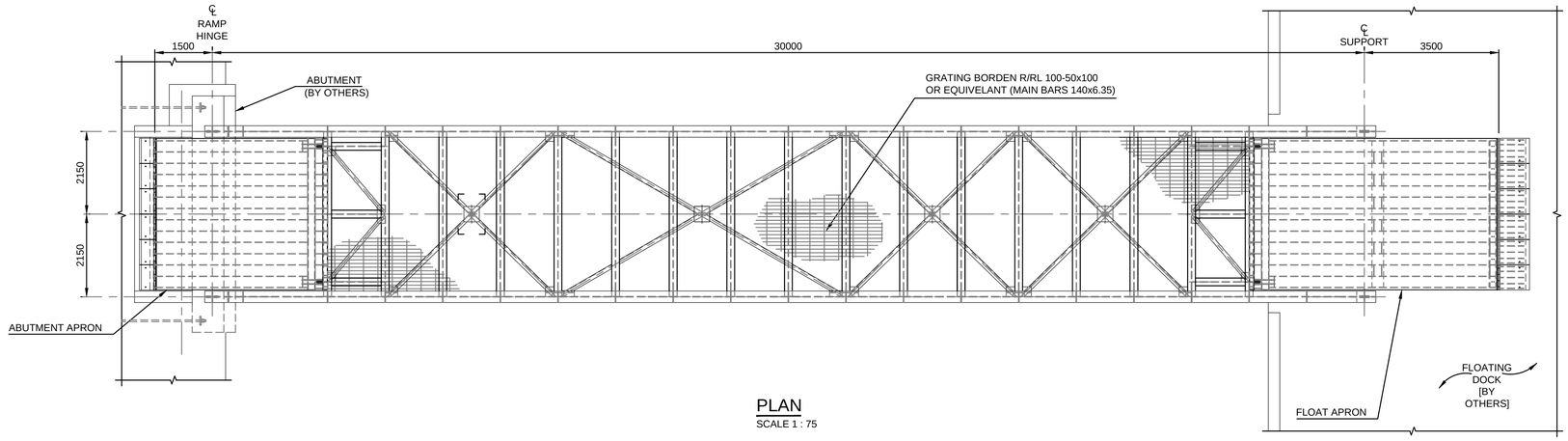
CONSULTING ENGINEERS
VANCOUVER, B.C.



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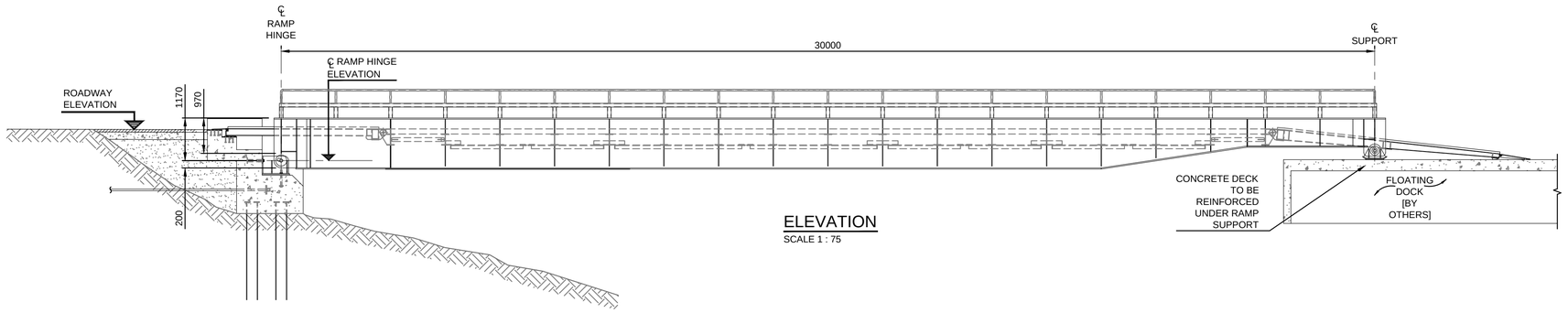


ELEVATION

SCALE 1 : 75

GENERAL NOTES:

GENERAL

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTES OTHERWISE.

STRUCTURAL AND MISCELLANEOUS STEEL

1. ALL ROLLED SECTIONS & MISCELLANEOUS PLATES TO BE GRADE 300W CONFORMING TO CAN CSA STD. G40.20/G40.21 UNLESS NOTED OTHERWISE.
2. ALL BOLTS TO CONFORM TO ASTM A325 UNLESS NOTED OTHERWISE.
3. ALL WELDING TO CONFORM TO CAN CSA STD. W47, W48 & W59. THE MINIMUM WELD SIZE TO BE 6mm.
4. FOR CORROSION PROTECTION OF STRUCTURAL & MISCELLANEOUS STEEL, SEE SPECIFICATIONS.
5. HOLLOW STRUCTURAL SECTIONS TO BE GRADE 350W, CLASS C CONFORMING TO CSA STD. G40.20/G40.21-M UNLESS NOTED OTHERWISE.

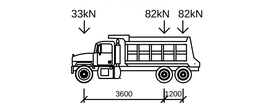
DESIGN CRITERIA:

1. LIVE LOAD ON RAMP:
   a) UNIFORMLY DISTRIBUTED LIVE LOAD = 5kPa
   b) HIGHWAY LIVE LOADING:

TRUCK CLASS CL3-410 CONFORMING TO CAN/CSA-S6-06

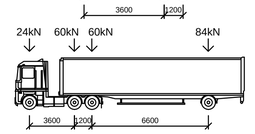
GVW = 20,000kg (44,000 lbs)

MAX AXLE LOADS



TRUCK CLASS CL2-300 CONFORMING TO CAN/CSA-S6-06

GVW = 23,200kg (51,000 lbs)



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PROVINCE OF BRITISH COLUMBIA
A. E. PEDERSEN
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Revision/ Revision	Description/Description	Date/Date
A	ISSUED FOR TENDER	15/12/14

Client/client

Fisheries & Oceans Canada
Real Property
Safety & Security

200 - 401 Burrard Street
Vancouver, Canada, V6C 3S4

Project title/Titre du projet

SMALL CRAFT HARBOURS
20,000 kg GVW RAMP

Approved by/Approuve par
A.P.

Designed by/Concept par
A.P.

Drawn by/Dessine par
WSL

PWGSC Project Manager/Administrateur de Projets TPSGC

PWGSC, Architectural and Engineering Resources Manager/ Ressources Architectural et de Directeur d'Ingénierie, TPSGC

Client/client
VJA

Drawing title/Titre du dessin

GENERAL ARRANGEMENT

Project No./No. du projet	Sheet/ Feuille	Revision no./ La Révision no.
215132	101 OF	A

PWGSC – A1 – 841X594

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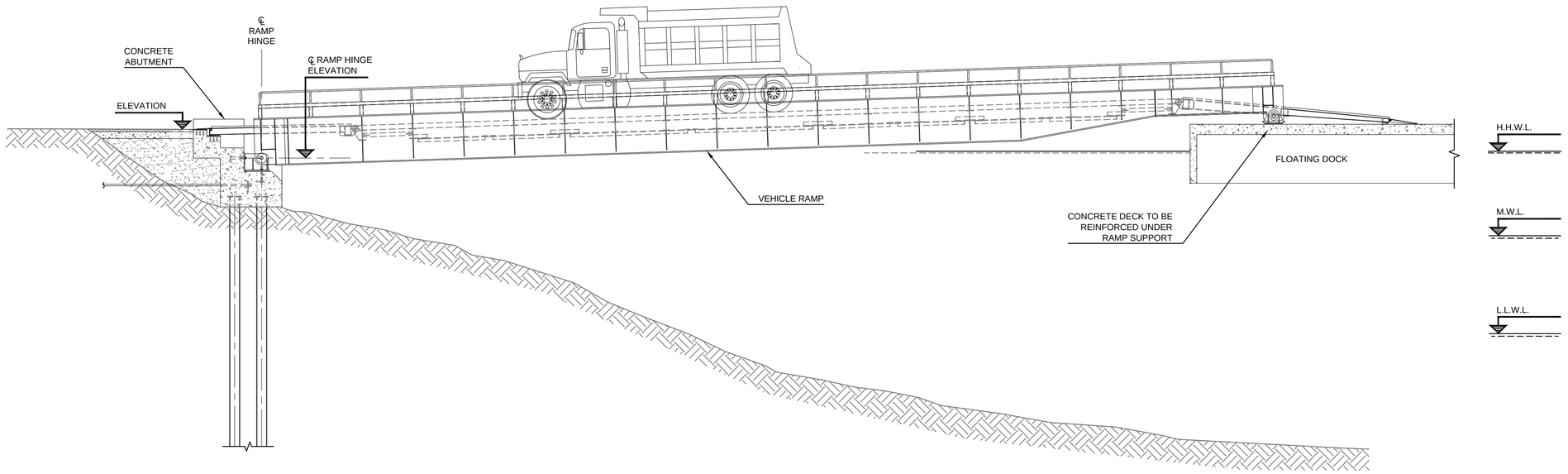
215132-101



ELEVATION

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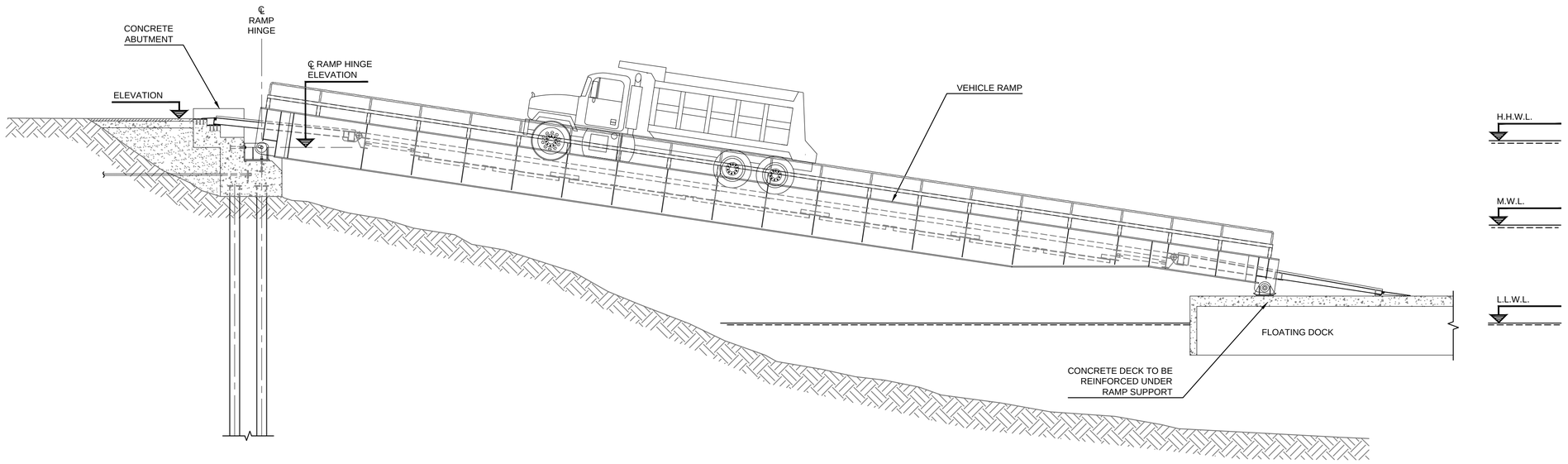
[FLOATING DOCK AT H.H.W.L.]



ELEVATION

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[FLOATING DOCK AT L.L.W.L.]

NOTES:

1. REFER TO DWG. -101 FOR GENERAL NOTES.

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SMALL CRAFT HARBOURS
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PWGSC, Architectural and Engineering Resources Manager/ Ressources Architectural et de Directeur d'ingénierie, TPSGC

Client/client
VJA

Drawing title/Titre du dessin

ELEVATION IN HIGH / LOW POSITION

Project No./No. du projet	Sheet/ Feuille	Revision no./ La Révision no.
215132	102 OF	A

PWGSC – A1 – 841X594

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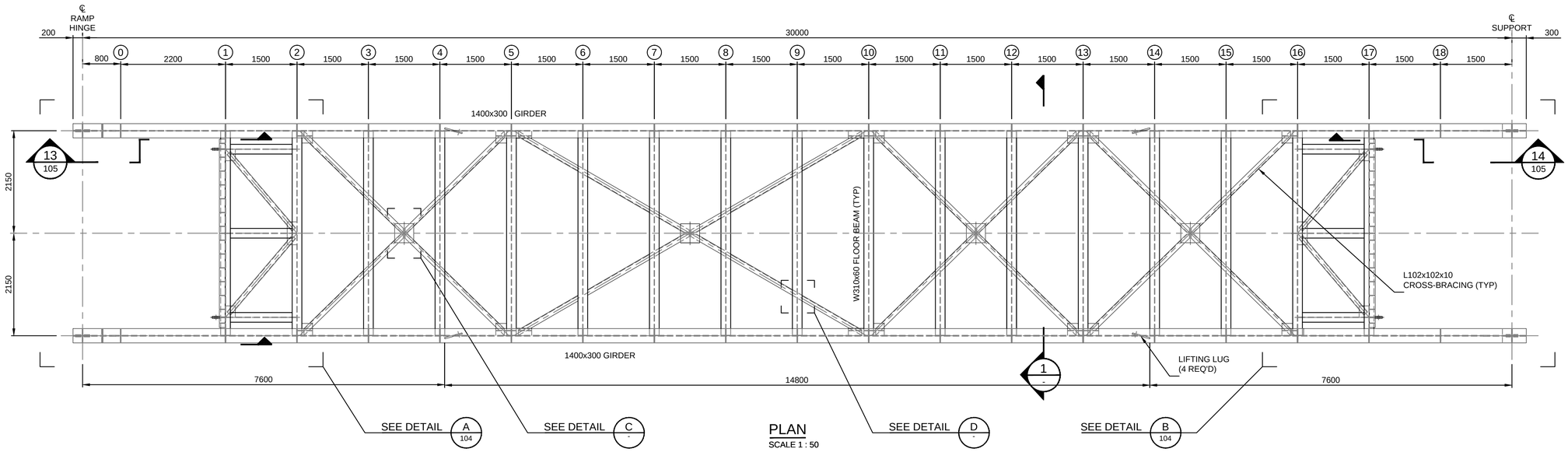
215132-102



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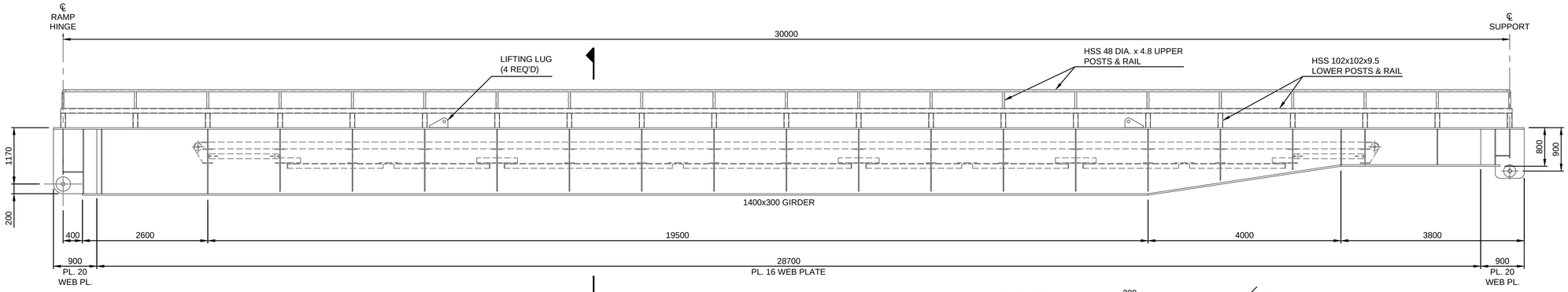

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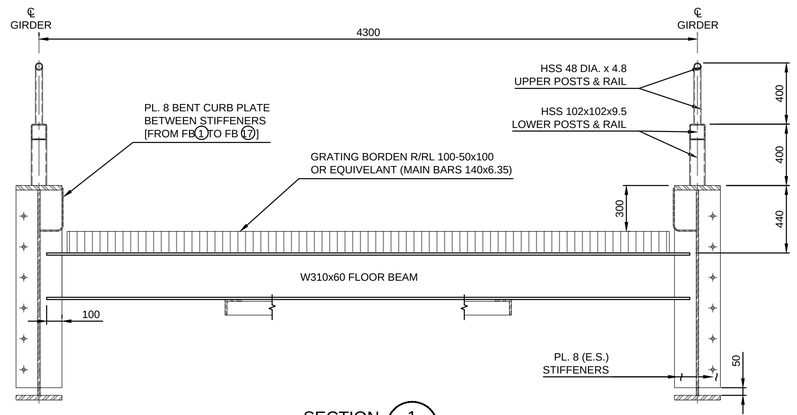

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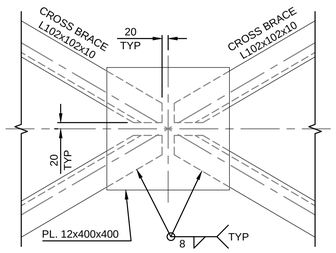

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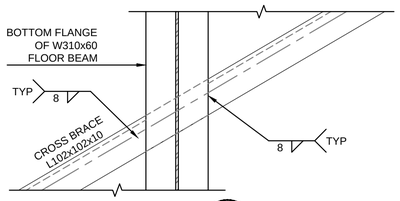

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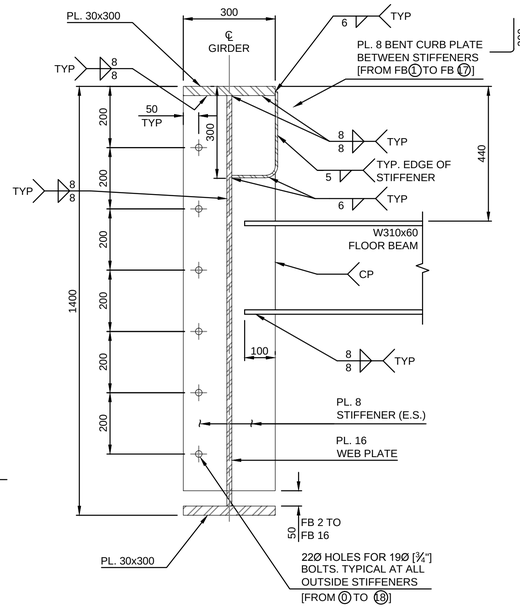

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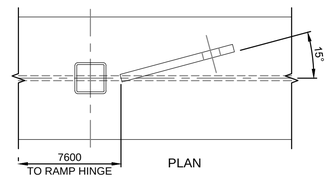

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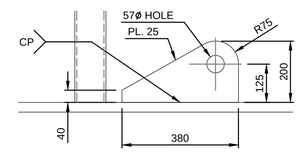

ELEVATION

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[FOUR REQ'D]

NOTES:

1. REFER TO DWG. -101 FOR GENERAL NOTES.

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A	ISSUED FOR TENDER	15/12/18

Client/client

Fisheries & Oceans Canada
Real Property
Safety & Security

200 - 401 Burrard Street
Vancouver, Canada, V6C 3S4

Project title/Titre du projet

SMALL CRAFT HARBOURS 20,000 kg GVW RAMP

Approved by/Approuve par
A.P.

Designed by/Concept par
A.P.

Drawn by/Dessine par
WSL

PWGSC Project Manager/Administrateur de Projets TPSGC

PWGSC, Architectural and Engineering Resources Manager/ Ressources Architectural et de Directeur d'ingénierie, TPSGC

Client/client
VJA

Drawing title/Titre du dessin

RAMP ARRANGEMENT

Project No./No. du projet	Sheet/ Feuille	Revision no./ La Révision no.
215132	103 OF	A

PWGSC – A1 – 841X594

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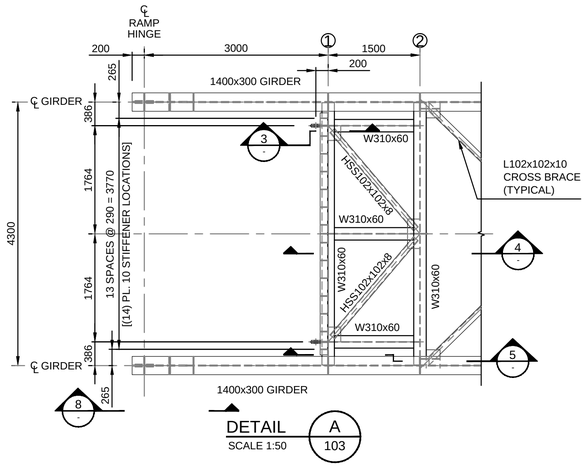
215132-103 to105



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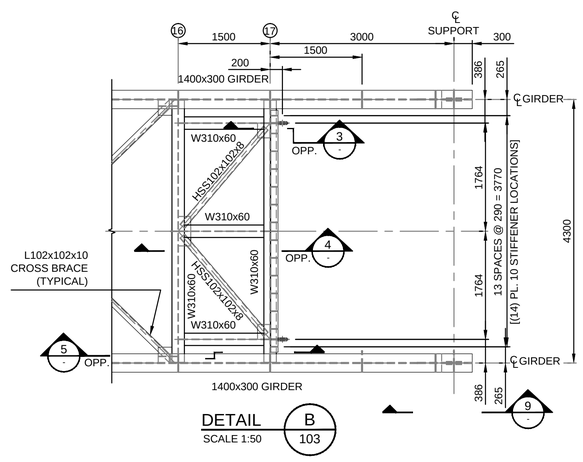

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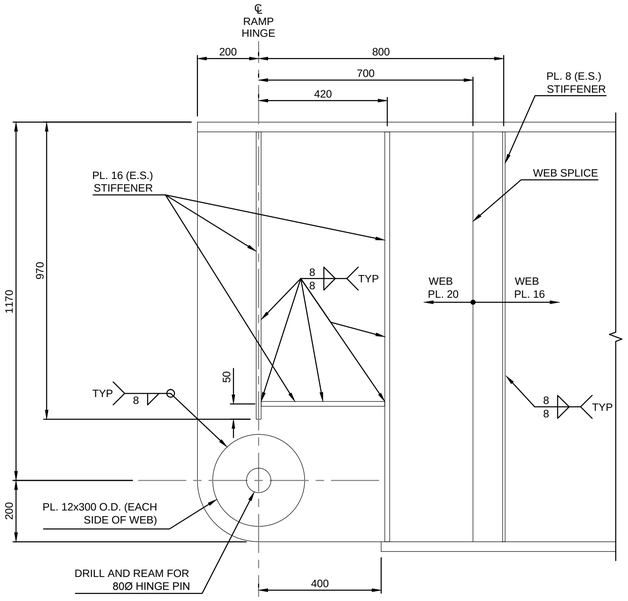

ELEVATION 8
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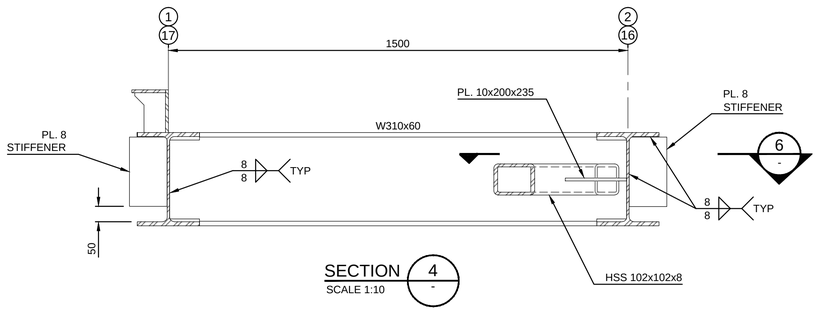

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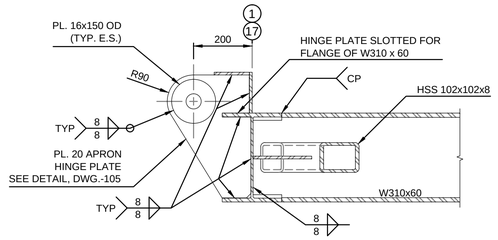

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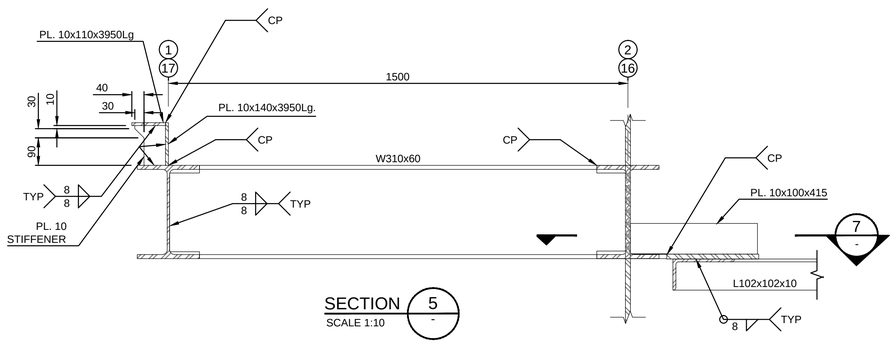

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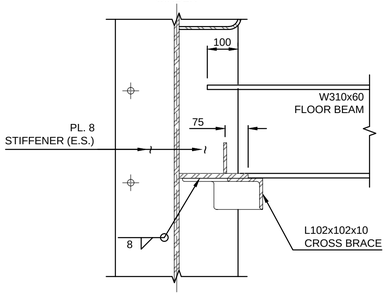

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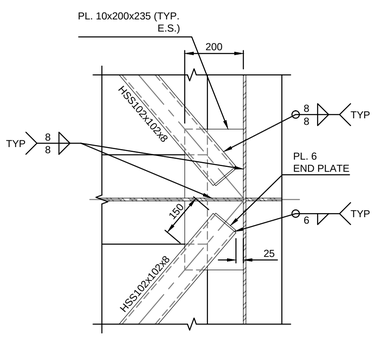

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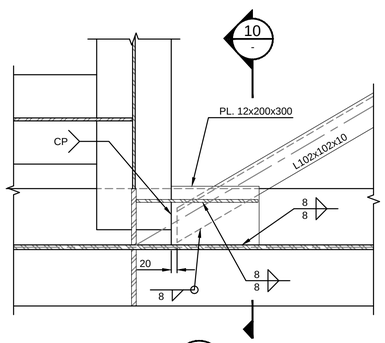

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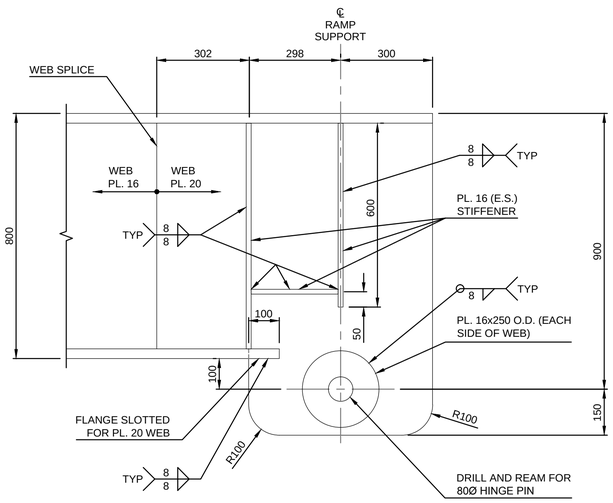

ELEVATION 9
SCALE 1:10
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[SIDE PLATE NOT SHOWN FOR CLARITY]

NOTES:

1. REFER TO DWG. -101 FOR GENERAL NOTES.

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A. E. PEDERSEN
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Revision/ Revision	Description/Description	Date/Date
A	ISSUED FOR TENDER	15/12/18

Client/client

Fisheries & Oceans Canada
Real Property
Safety & Security

200 - 401 Burrard Street
Vancouver, Canada, V6C 3S4

Project title/Titre du projet

SMALL CRAFT HARBOURS
20,000 kg GVW RAMP

Approved by/Approuve par
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Designed by/Concept par
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Drawn by/Dessine par
WSL

PWGSC Project Manager/Administrateur de Projets TPSGC

PWGSC, Architectural and Engineering Resources Manager/ Ressources Architectural et de Directeur d'ingénierie, TPSGC

Client/client
VJA

Drawing title/Titre du dessin

RAMP DETAILS
SHEET 1 OF 2

Project No./No. du projet	Sheet/ Feuille	Revision no./ La Révision no.
215132	104 OF	A

PWGSC – A1 – 841X594

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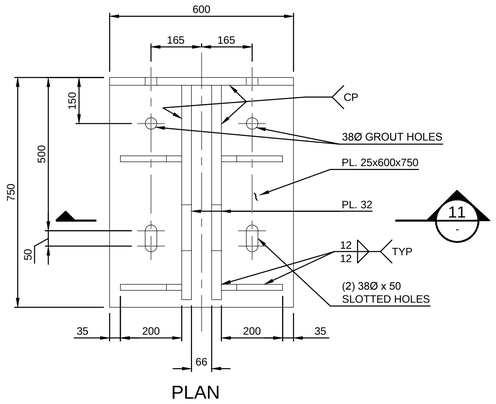
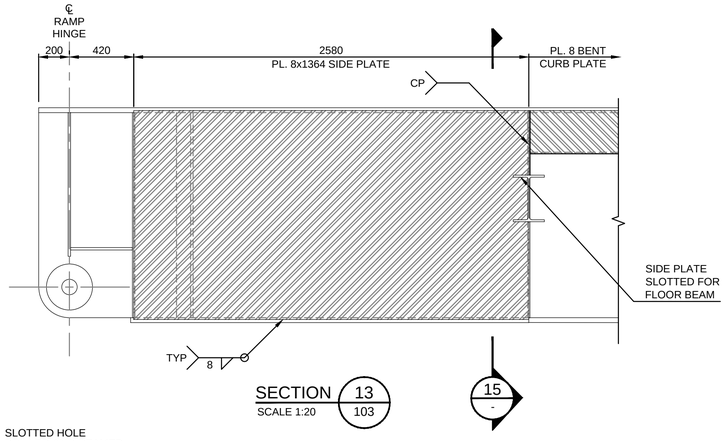
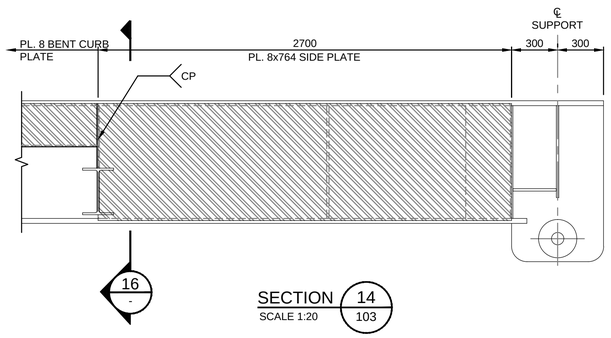


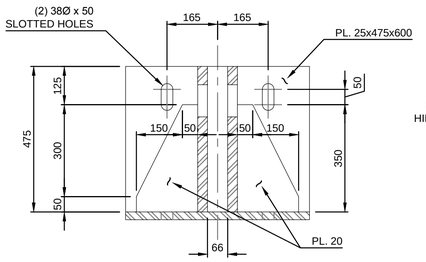
PLAN



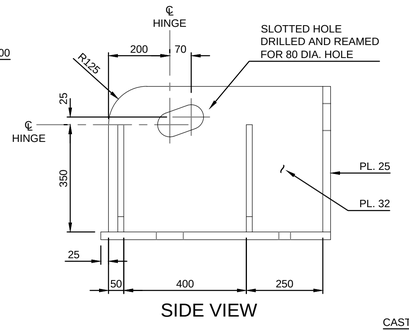
SECTION 13 / 103
SCALE 1:20



SECTION 14 / 103
SCALE 1:20



SECTION 11 / -
SCALE 1:10

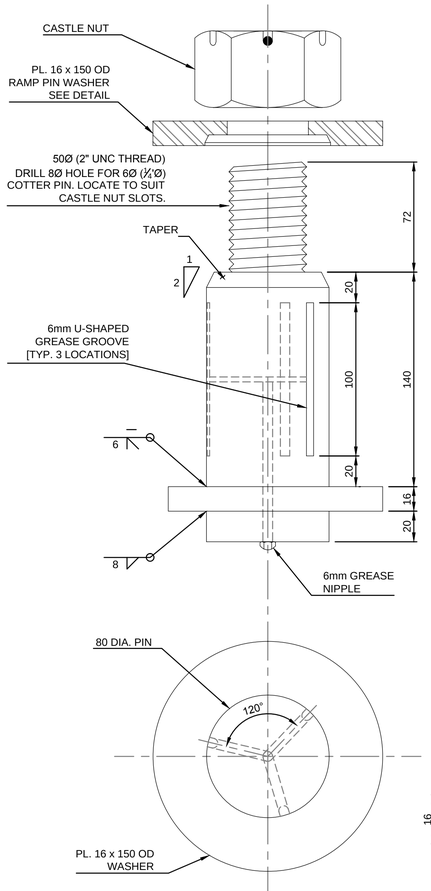


SIDE VIEW

RAMP HINGE SEAT

SCALE 1 : 10

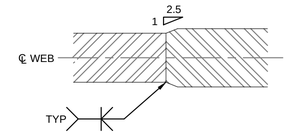
[2 REQ'D]



PIN DETAIL

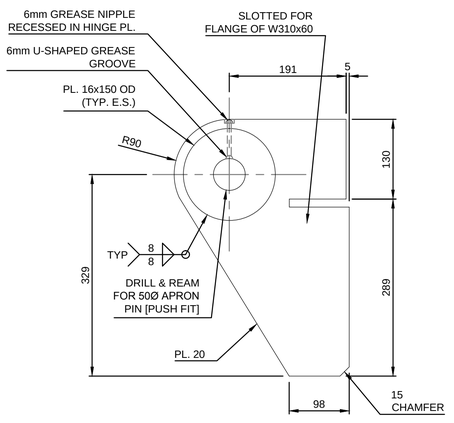
SCALE 1 : 2

80 DIA. RAMP PIN
[4 REQ'D]



WEB SPLICE

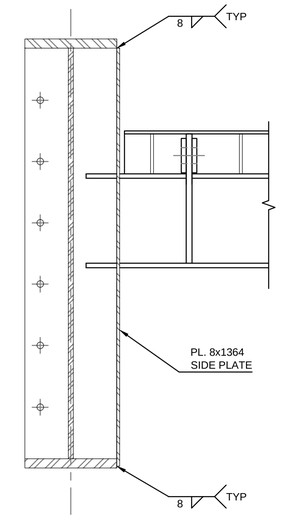
SCALE 1 : 1



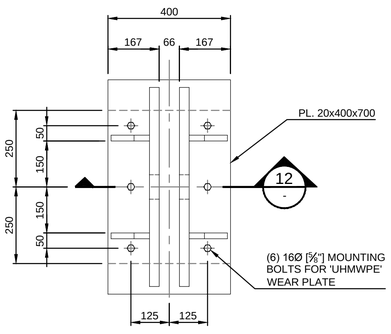
APRON HINGE PLATE

SCALE 1 : 5

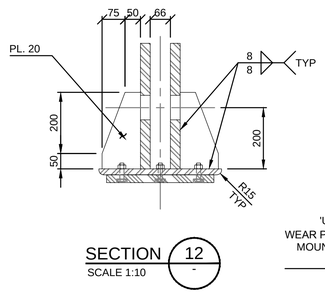
[4 REQ'D]



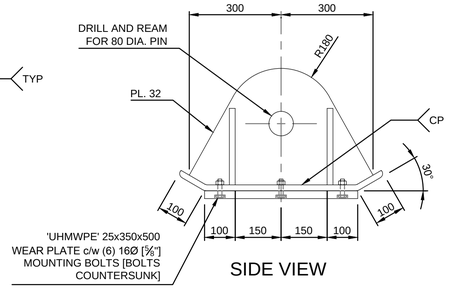
SECTION 15 / -
SCALE 1:10



PLAN



SECTION 12 / -
SCALE 1:10

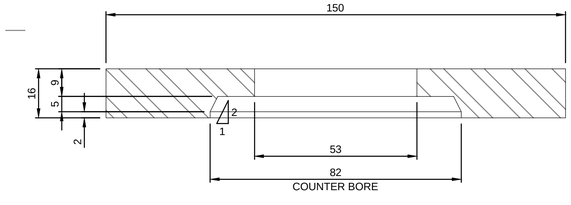


SIDE VIEW

RAMP SUPPORT SHOE

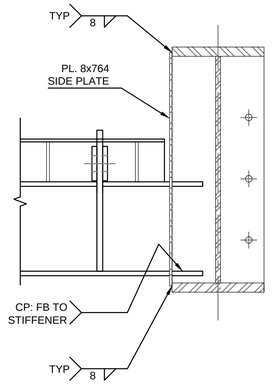
SCALE 1 : 10

[2 REQ'D]



RAMP PIN WASHER

SCALE 1 : 1



SECTION 16 / -
SCALE 1:10

NOTES:

1. REFER TO DWG. -101 FOR GENERAL NOTES.

Public Works and Government Services Canada / Travaux publics et Services gouvernementaux Canada

REAL PROPERTY SERVICES
Western Region
SERVICES IMMOBILIERS
Région de l'ouest

NOT FOR CONSTRUCTION

VJA ENGINEERING
VILLHOLTH JENSEN & ASSOC. LTD.
CONSULTING ENGINEERS
VANCOUVER, B.C.

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
A. E. PEDERSEN
14009

Revision/ Revision	Description/Description	Date/Date
A	ISSUED FOR TENDER	15/12/18

Client/client

Fisheries & Oceans Canada
Real Property
Safety & Security

200 - 401 Burrard Street
Vancouver, Canada, V6C 3S4

Project title/Titre du projet

SMALL CRAFT HARBOURS
20,000 kg GVW RAMP

Approved by/Approuve par
A.P.

Designed by/Concept par
A.P.

Drawn by/Dessine par
WSL

PWGSC Project Manager/Administrateur de Projets TPSGC

PWGSC, Architectural and Engineering Resources Manager/ Ressources Architectural et de Directeur d'ingénierie, TPSGC

Client/client
VJA

Drawing title/Titre du dessin

RAMP DETAILS
SHEET 2 OF 2

Project No./No. du projet	Sheet/Feuille	Revision no./ La Révision no.
215132	105 OF	A

PWGSC – A1 – 841X594

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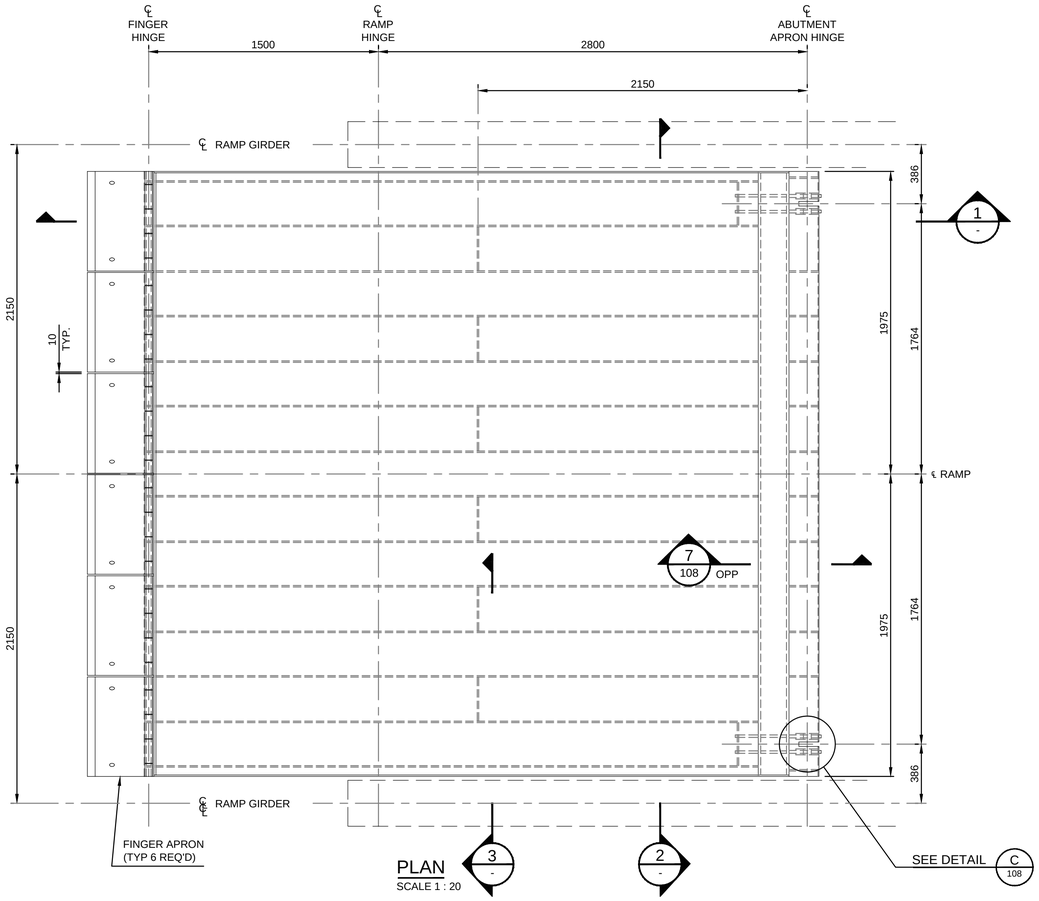
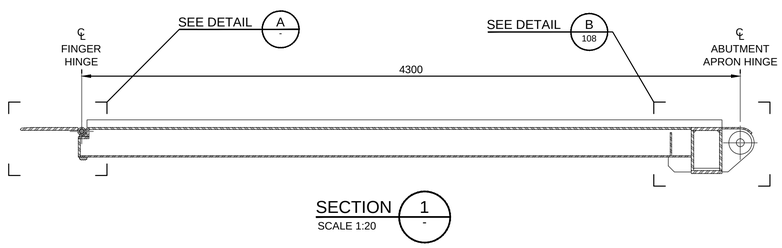
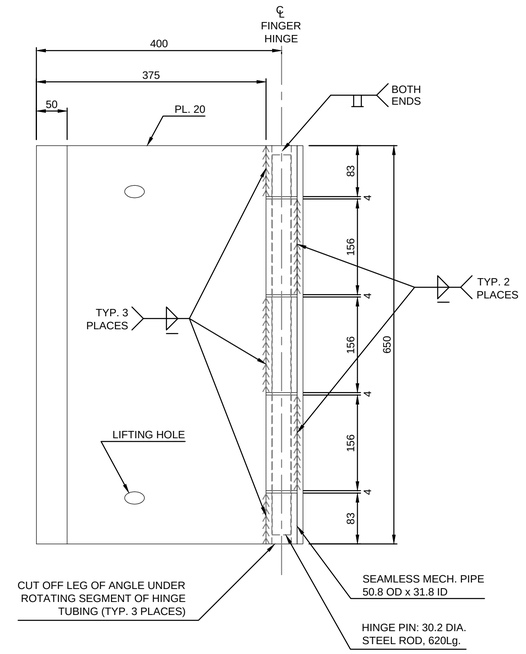
215132-103 to105



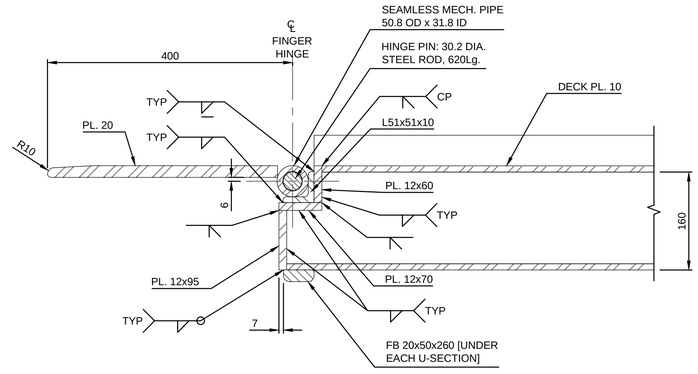
PLAN
SCALE 1 : 20 (3 - / 2 -)



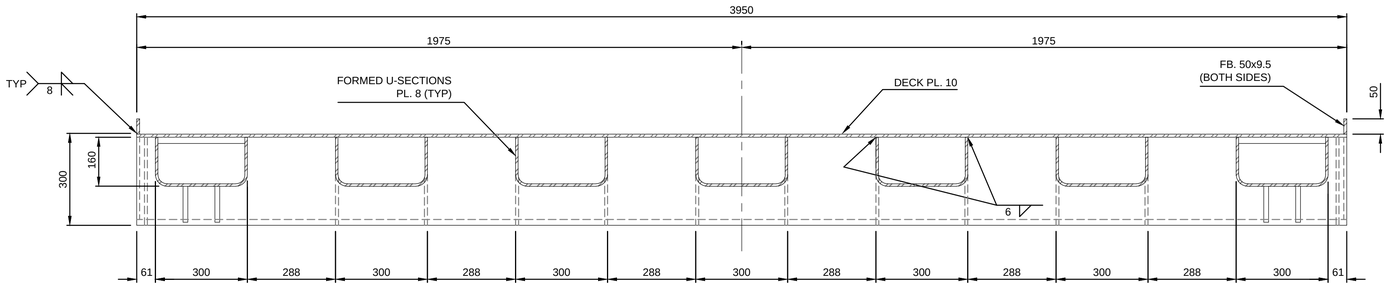
SECTION 1 -
SCALE 1:20



FINGER APRON DETAIL
SCALE 1 : 5



DETAIL A -
SCALE 1:5



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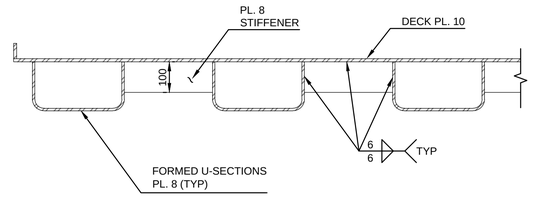
SCALE 1:10



SECTION 3 -
SCALE 1:10

NOTES:

1. REFER TO DWG. -101 FOR GENERAL NOTES.

Public Works and Government Services Canada / Travaux publics et Services gouvernementaux Canada

REAL PROPERTY SERVICES
Western Region
SERVICES IMMOBILIERS
Région de l'ouest

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CONSULTING ENGINEERS
VANCOUVER, B.C.

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
A. E. PEDERSEN
14009

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A	ISSUED FOR TENDER	15/12/18

Client/client

Fisheries & Oceans Canada
Real Property
Safety & Security

200 - 401 Burrard Street
Vancouver, Canada, V6C 3S4

Project title/Titre du projet

SMALL CRAFT HARBOURS
20,000 kg GVW VEHICLE RAMP

Approved by/Approuve par
A.P.

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A.P.

Drawn by/Dessine par
WSL

PWGSC Project Manager/Administrateur de Projets TPSGC

PWGSC, Architectural and Engineering Resources Manager/ Ressources Architectural et de Directeur d'ingénierie, TPSGC

Client/client
VJA

Drawing title/Titre du dessin

ABUTMENT APRON
PLAN, SECTIONS AND DETAILS

Project No./No. du projet	Sheet/ Feuille	Revision no./ La Révision no.
215132	106 OF	A

PWGSC – A1 – 841X594

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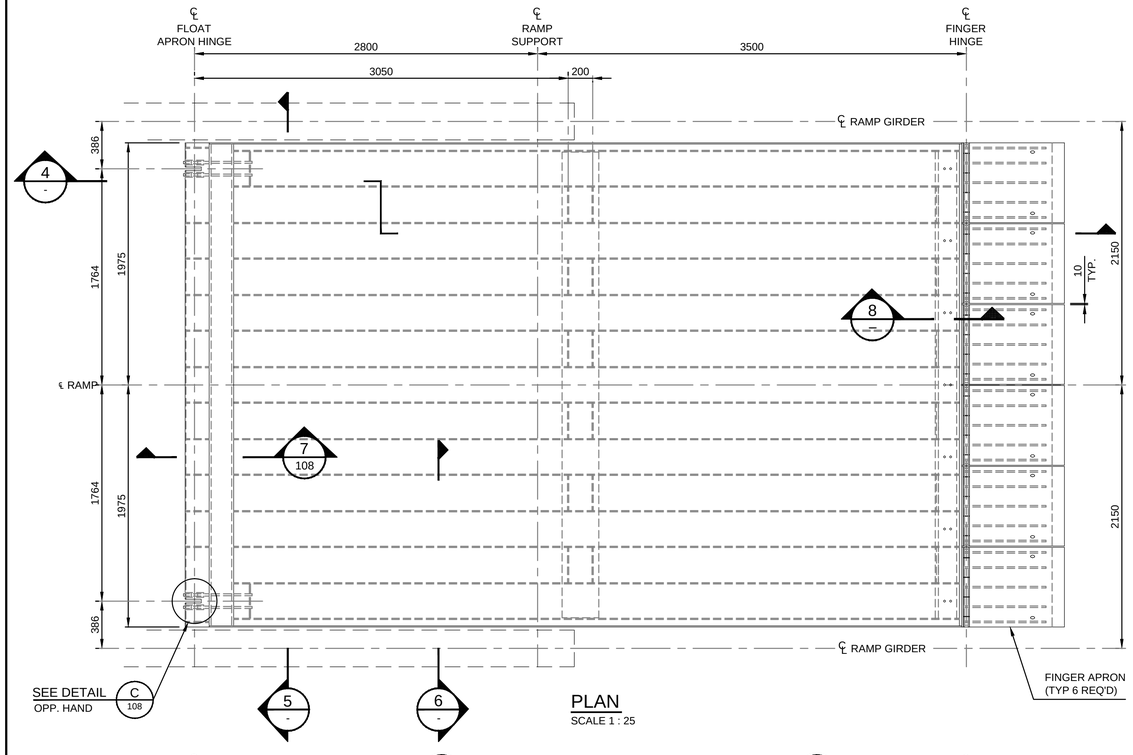
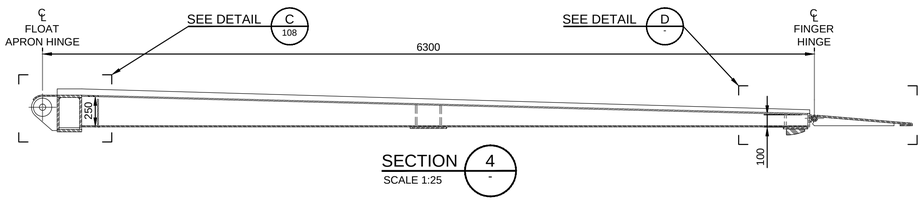
215132-106 to108



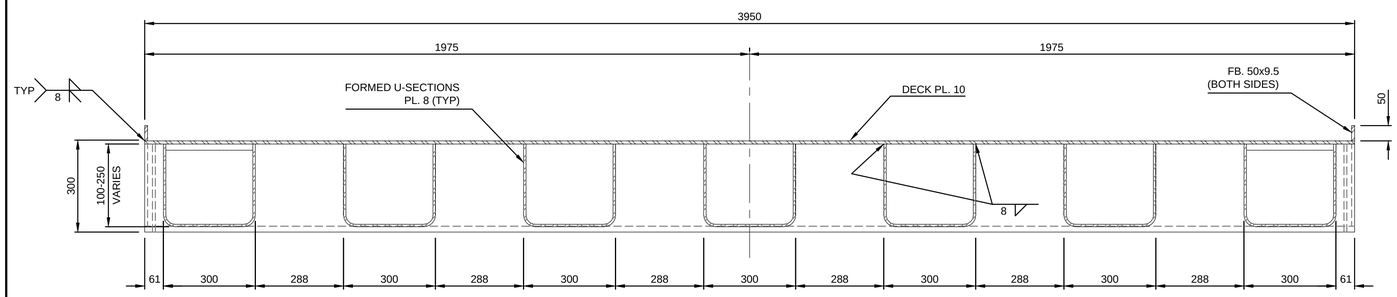
PLAN

SCALE 1 : 25



SECTION 4

SCALE 1:25



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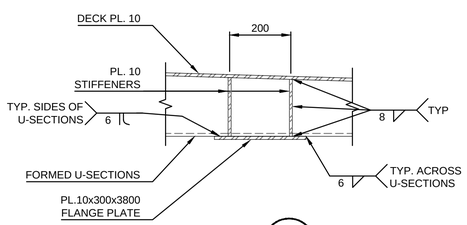
SCALE 1:10



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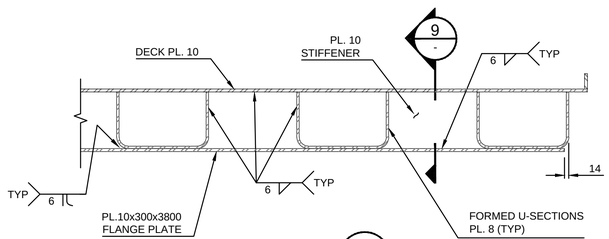
SCALE 1:10



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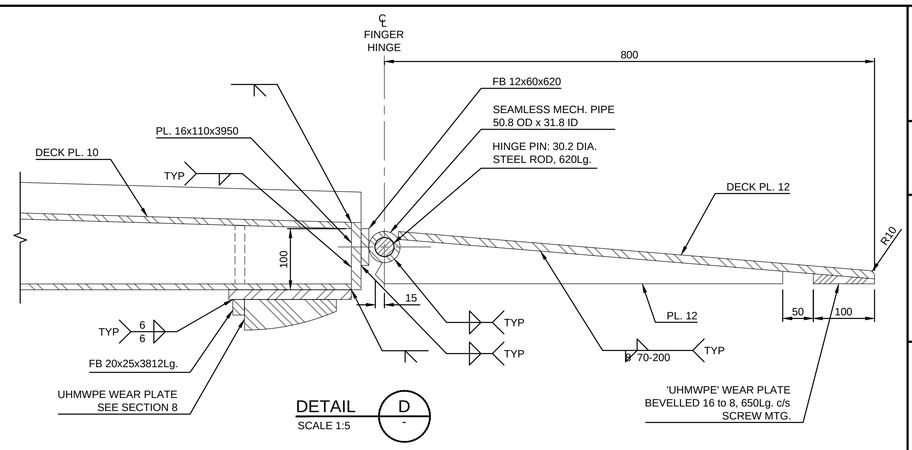
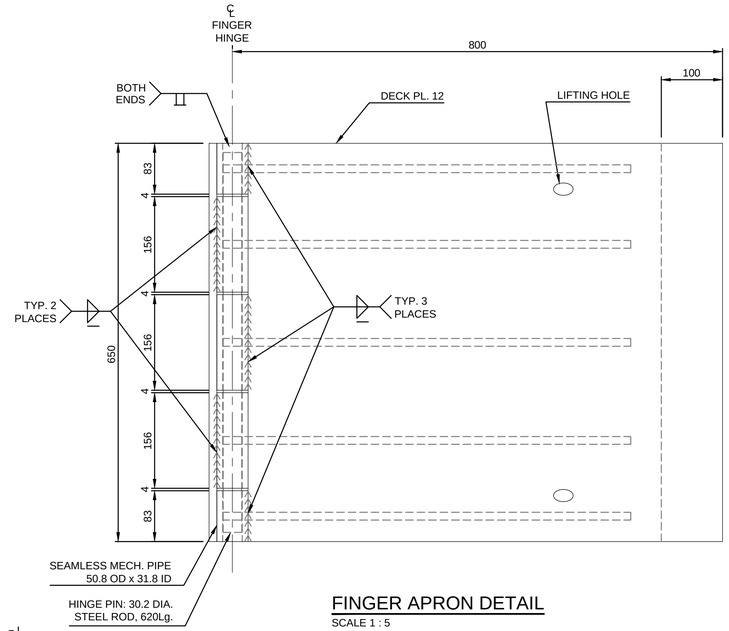
SCALE 1:10



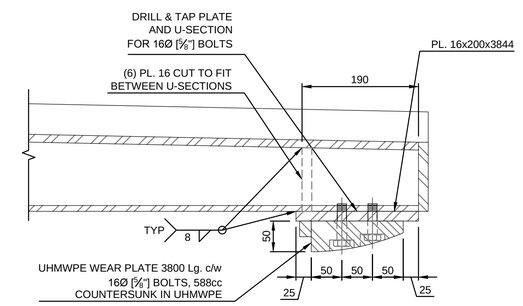
DETAIL D

SCALE 1:5



FINGER APRON DETAIL

SCALE 1 : 5



SECTION 8

SCALE 1:10

NOTES:

1. REFER TO DWG. -101 FOR GENERAL NOTES.

Public Works and Government Services Canada

Travaux publics et Services gouvernementaux Canada

REAL PROPERTY SERVICES
Western Region
SERVICES IMMOBILIERS
Région de l'ouest

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CONSULTING ENGINEERS
VANCOUVER, B.C.

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA A. E. PEDERSEN # 14009

Revision/ Revision	Description/Description	Date/Date
A	ISSUED FOR TENDER	15/12/18

Client/client

Fisheries & Oceans Canada
Real Property
Safety & Security

200 - 401 Burrard Street
Vancouver, Canada, V6C 3S4

Project title/Titre du projet

SMALL CRAFT HARBOURS
20,000 kg GVW VEHICLE RAMP

Approved by/Approuve par
A.P.

Designed by/Concept par
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Drawn by/Dessine par
WSL

PWGSC Project Manager/Administrateur de Projets TPSGC

PWGSC, Architectural and Engineering Resources Manager/ Ressources Architectural et de Directeur d'ingénierie, TPSGC

Client/client
VJA

Drawing title/Titre du dessin

FLOAT APRON
PLAN, SECTIONS & DETAILS

Project No./No. du projet	Sheet/Feuille	Revision no./ La Révision no.
215132	107 OF	A

PWGSC – A1 – 841X594

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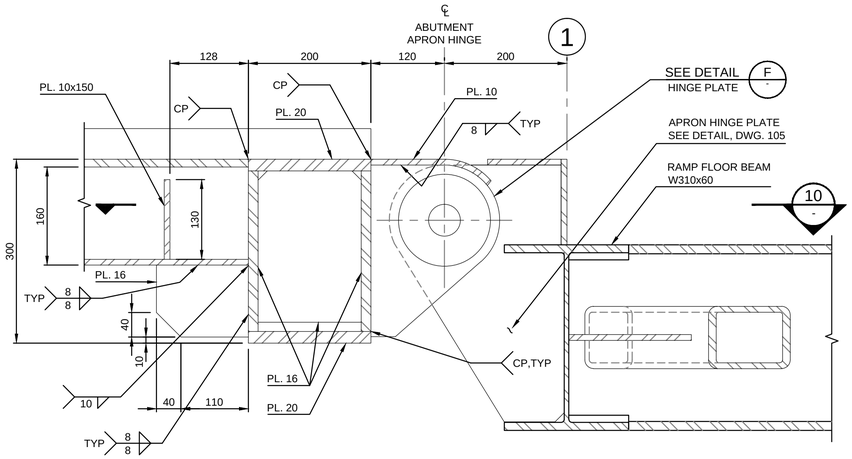
215132-106 to108



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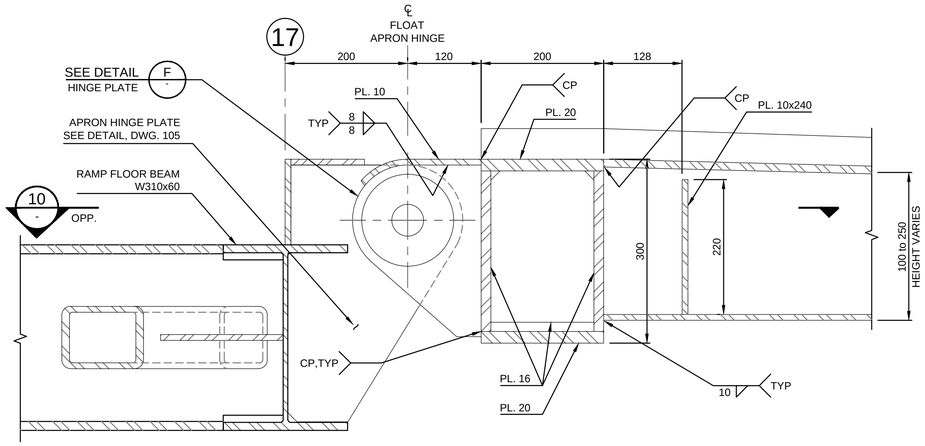
SCALE 1:5



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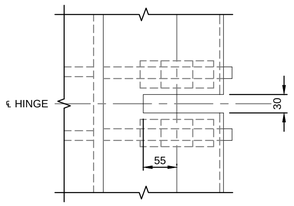
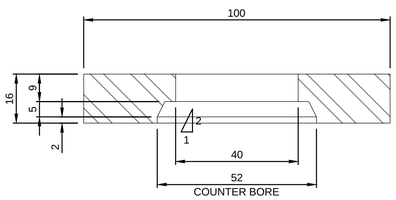
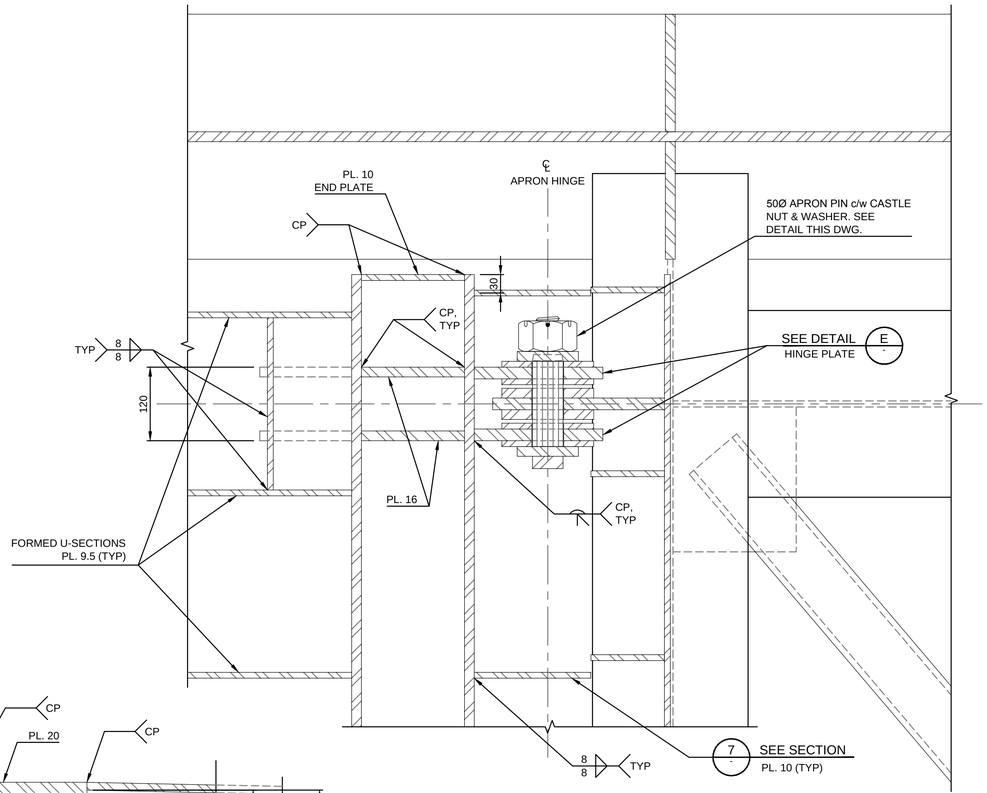


DETAIL E 106 / E 107
SCALE 1:5

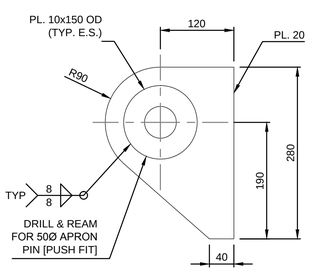
TYPICAL DECK PLATE
HINGE CLEARANCE NOTCHES



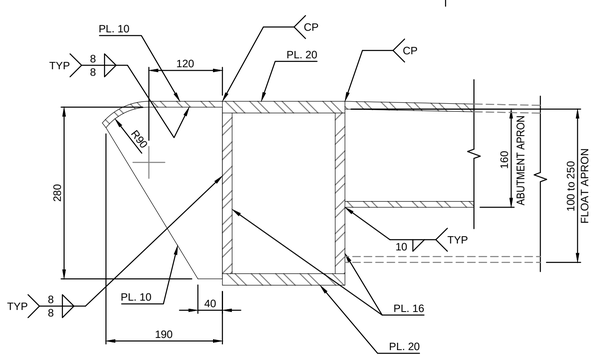
APRON PIN WASHER
1 : 1



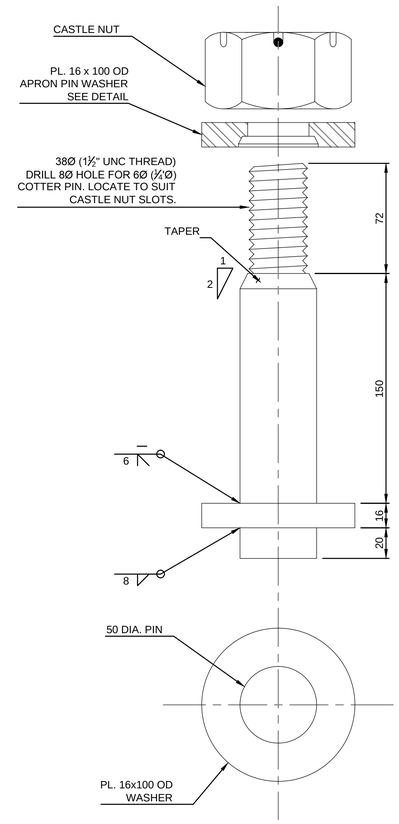
SECTION 10
SCALE 1:5



DETAIL F -
SCALE 1:5



SECTION 7 106 / 7 107
SCALE 1:5



PIN DETAIL
SCALE 1 : 2
50 DIA. APRON PIN
[4 REQ'D]

NOTES:

1. REFER TO DWG. -101 FOR GENERAL NOTES.

Public Works and Government Services Canada
Travaux publics et Services gouvernementaux Canada

REAL PROPERTY SERVICES
Western Region
SERVICES IMMOBILIERS
Région de l'ouest

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VILLHOLTH JENSEN & ASSOC. LTD.
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PROFESSIONAL ENGINEER
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Real Property
Safety & Security

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20,000 kg GVW VEHICLE RAMP

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PWGSC, Architectural and Engineering Resources Manager/ Ressources Architectural et de Directeur d'Ingénierie, TPSGC

Client/client
VJA

Drawing title/Titre du dessin

FLOAT AND ABUTMENT APRONS
SECTIONS AND DETAILS

Project No./No. du projet	Sheet/ Feuille	Revision no./ La Révision no.
215132	108 OF	A

PWGSC – A1 – 841X594

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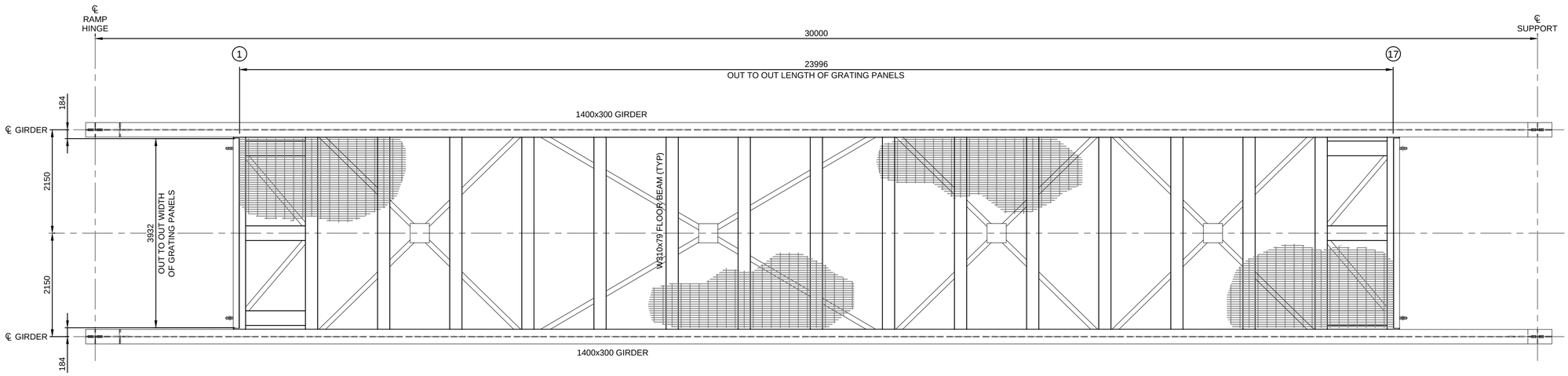
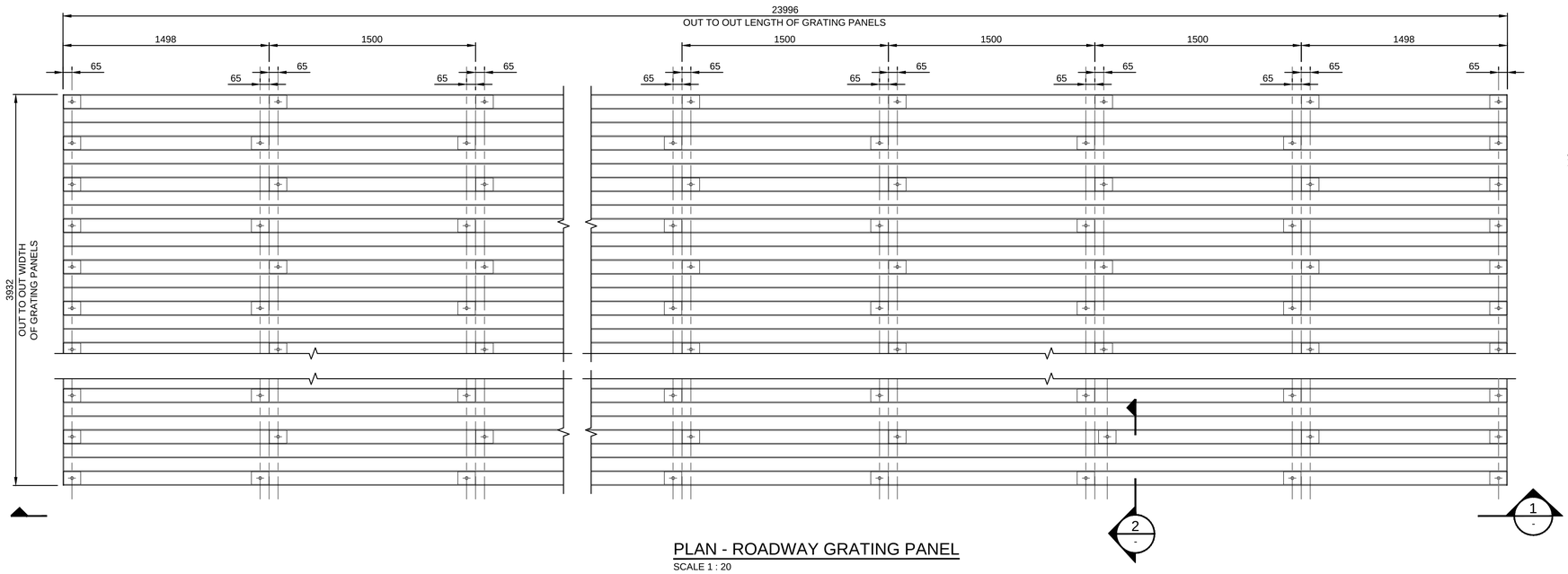
215132-106 to108



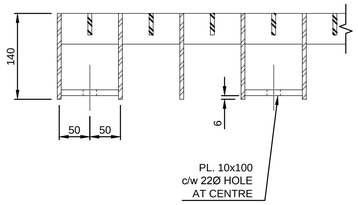
GRATING PLAN

SCALE 1 : 50

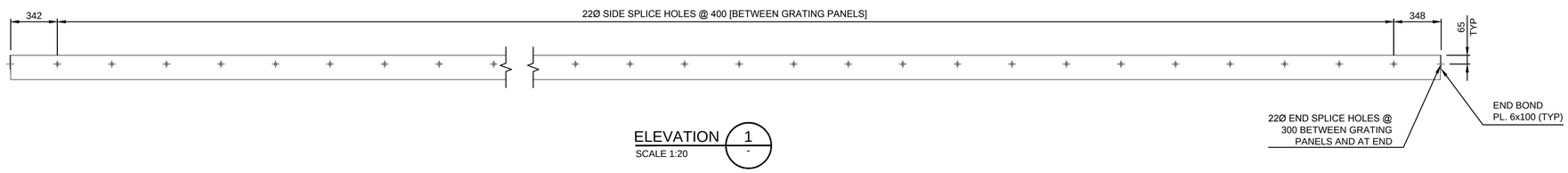


PLAN - ROADWAY GRATING PANEL

SCALE 1 : 20



SECTION 2 / - SCALE 1:5



ELEVATION 1 / - SCALE 1:20

GRATING DESCRIPTION

ROADWAY GRATING:

- BORDEN R/RL 100-50 x 100 (OR EQUIVALENT) SERRATED, GALVANIZED, 140 x 6.35 MAIN BARS. STEEL 350W CONFORMING TO CSA G.40.21

ROADWAY GRATING HARDWARE

- BOLTS TO BE SUPPLIED WITH GRATING.
- END BOLTS: 19 DIA BOLTS C/W NUTS & WASHERS.
  SIDE BOLTS: 19 DIA BOLTS C/W NUTS & WASHERS.
  HOLD DOWN BOLTS: 19 DIA BOLTS C/W NUTS & WASHERS.
- (FLOOR BEAMS; W310x60; 13.1mm FLANGE)

NOTES:

1. REFER TO DWG. -101 FOR GENERAL NOTES.

Public Works and Government Services Canada / Travaux publics et Services gouvernementaux Canada

REAL PROPERTY SERVICES
Western Region
SERVICES IMMOBILIERS
Région de l'ouest

NOT FOR CONSTRUCTION

VJA ENGINEERING
VILLHOLTH JENSEN & ASSOC. LTD.
CONSULTING ENGINEERS
VANCOUVER, B.C.

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
A. E. PEDERSEN
14009

Revision/ Revision	Description/Description	Date/Date
A	ISSUED FOR TENDER	15/12/18

Client/client

Fisheries & Oceans Canada
Real Property
Safety & Security

200 - 401 Burrard Street
Vancouver, Canada, V6C 3S4

Project title/Titre du projet

SMALL CRAFT HARBOURS
20,000 kg GVW VEHICLE RAMP

Approved by/Approuve par
A.P.

Designed by/Concept par
A.P.

Drawn by/Dessine par
WSL

PWGSC Project Manager/Administrateur de Projets TPSGC

PWGSC, Architectural and Engineering Resources Manager/ Ressources Architectural et de Directeur d'Ingénierie, TPSGC

Client/client
VJA

Drawing title/Titre du dessin

RAMP GRATING
ARRANGEMENT AND DETAILS

Project No./No. du projet	Sheet/ Feuille	Revision no./ La Révision no.
215132	109 OF	A

PWGSC – A1 – 841X594

0 10 20 30 40 50 60 70 80 90 100mm

215132-109

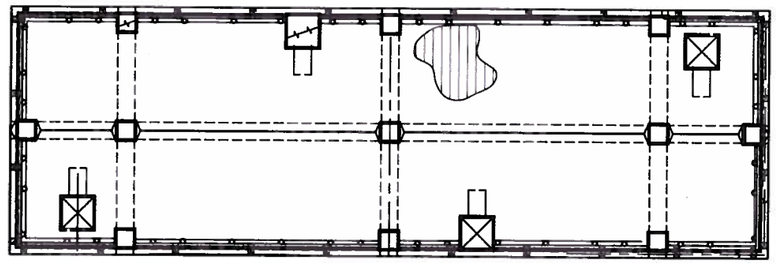
ANNEX 9

FISHERIES AND OCEANS CANADA

SMALL CRAFT HARBOURS

STANDARD CONCRETE FLOAT MODULE

26.22m LONG x 8.537m WIDE x 1.695 DEEP



DRAWING LIST

DRAWING NUMBER	TITLE
56134-0801-R13CONCRETE FLOAT-SHEET 1	TITLE PAGE (THIS SHEET)
56134-0801-R8-CONCRETE FLOAT-SHEET 2	CONCRETE OUTLINE, PLANS
56134-0801-R6-CONCRETE FLOAT-SHEET 3	REINFORCEMENT, FLOAT PLAN AND SECTIONS
~~56134-0801-R6-CONCRETE FLOAT-SHEET 4~~	~~REINFORCEMENT AT FLOAT CORNERS, SECTIONS AND DETAILS~~
56134-0801-R6-CONCRETE FLOAT-SHEET 5	REINFORCEMENT AT FLOAT CORNERS & WALL SECTIONS
56134-0801-R9-CONCRETE FLOAT-SHEET 6	METALWORK DETAILS
56134-0801-R5-CONCRETE FLOAT-SHEET 7	FLOTATION BILLET LAYOUTS AND HOISTING GUIDELINES
56134-0801-R7-CONCRETE FLOAT-SHEET 8	DUAL TYPE I TWO END TO END FLOAT LAYOUT
~~56134-0801-R8-CONCRETE FLOAT-SHEET 9~~	~~QUAD FOUR FLOAT DOCK LAYOUT – MOORING WELLS IN LINE~~
~~56134-0801-R2-CONCRETE FLOAT-SHEET 10~~	~~PROPOSED MODIFICATIONS – FENDERING & FLOAT JOINING~~
~~56134-0801-R1-CONCRETE FLOAT-SHEET 11~~	~~MODIFICATION DETAILS – FENDERING DETAILS~~
56134-0801-R5-CONCRETE FLOAT-SHEET 12	MODIFICATION DETAILS – FLOAT CORNER WITHOUT FLOAT TO FLOAT STEEL BAR CONNECTORS
56134-0801-R7-CONCRETE FLOAT-SHEET 13	PLAN VIEW LAYOUT – CONCRETE OUTLINE, QUAD FLOAT WITH STAGGERED WELLS
~~56134-0801-0 -CONCRETE FLOAT-SHEET 14~~	~~PLAN VIEW LAYOUT – CONCRETE OUTLINE, SINGLE FLOAT WITH TRAPEZOIDAL SHAPE~~
56134-0801-R2-CONCRETE FLOAT-SHEET 15	DRAIN HOLE & EMBED LAYOUT-SINGLE , DUAL TYPE I , QUAD TYPE II
~~56134-0801-R1-CONCRETE FLOAT-SHEET 16~~	~~QUAD TYPE III~~
~~56134-0801-R1-CONCRETE FLOAT-SHEET 17~~	~~QUAD TYPE IV – DRAIN HOLE & EMBED LAYOUT~~
56134-0801-R2-CONCRETE FLOAT-SHEET 18	DUAL TYPE II – TWO FLOAT SIDE BY SIDE LAYOUT
~~56134-0801-0 -CONCRETE FLOAT-SHEET 19~~	~~COMPOSITE FENDER ARRANGEMENTS~~
~~56134-0801-0 -CONCRETE FLOAT-SHEET 20~~	~~DUAL TYPE II – ADJUSTED CONCRETE OUTLINE~~
56134-0801-0 -CONCRETE FLOAT-SHEET 21	FLOAT JOINING DETAILS

Plot Scale: 1:1

PWGSC B1

0 10 20mm 40 60 80 100 120 140 160 180 200mm

Public Works and Government Services Canada / Travaux Publics et Services gouvernementaux Canada

Fisheries & Oceans Canada
Small Craft Harbours
Real Properties, Safety and Security

TETRA TECH

PROFESSIONAL ENGINEER
G. J. GAWDIN
BRITISH COLUMBIA
2 Dec 15

revisions		date

A detail no. no. du détail
B location drawing no. sur dessin no.
C drawing no. dessin no.

project / projet

FISHERIES AND OCEANS CANADA
SMALL CRAFT HARBOURS
CONCRETE FLOAT DOCK

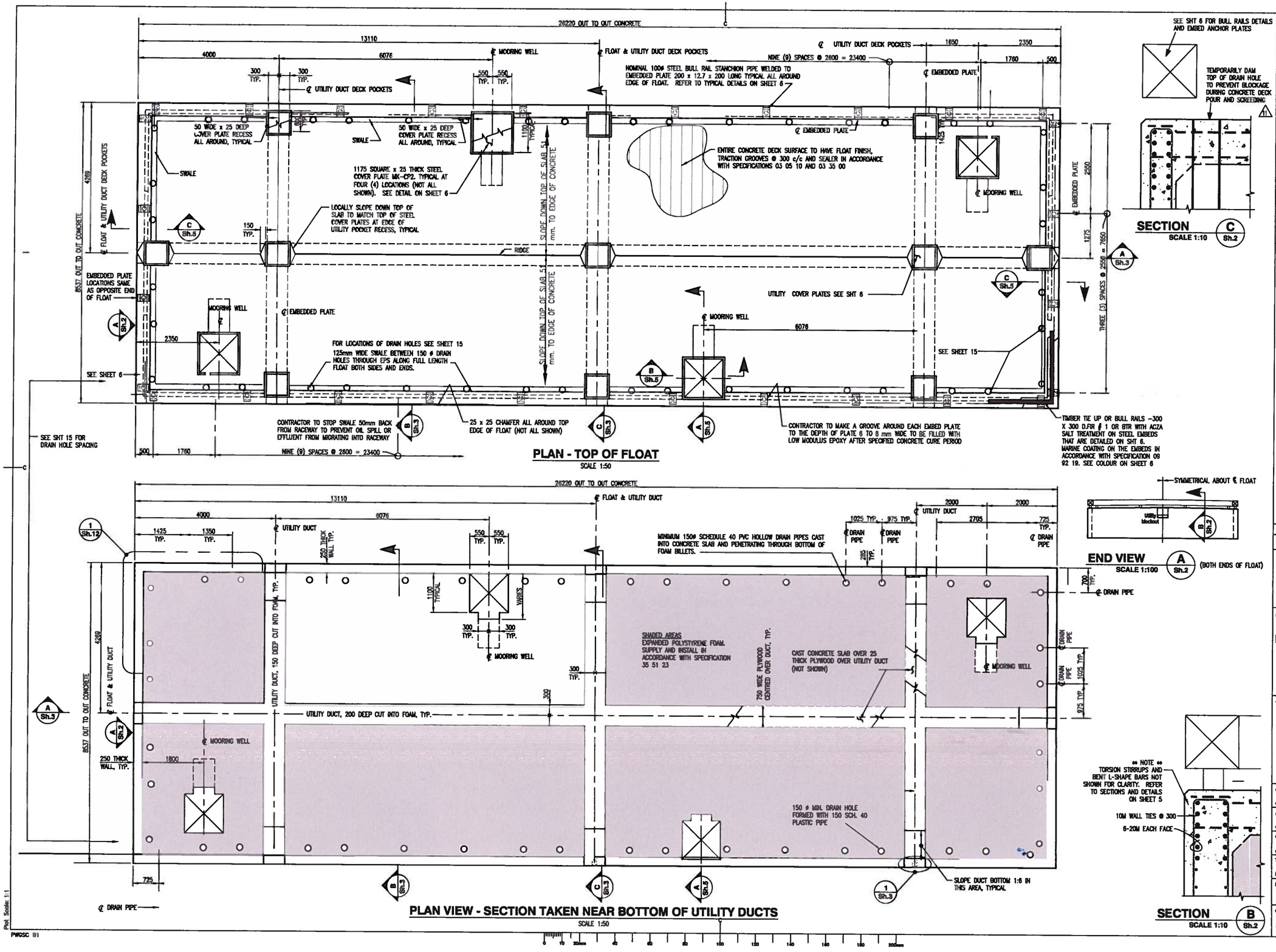
drawing / dessin

PLAN of Standard Float

designed	G.J. Gawdin	concu
date	2015-11-18	
drawn	EB	dessine
date	2015-11-18	
approved		approuve
date		
Tender		Soumission
PWGSC Project Manager		Administrateur de projets TPSGC

project number / no. du projet
TRN.VHWY03002-01

drawing no. / no. du dessin
56134 - 0801 - R13 - CONCRETE FLOAT - SHEET 1



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TETRA TECH

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA G. J. GAWDIN
3 Dec 15

revisions		date

A detail no. no. du détail
B location drawing no. sur dessin no.
C drawing no. dessin no.

project / projet

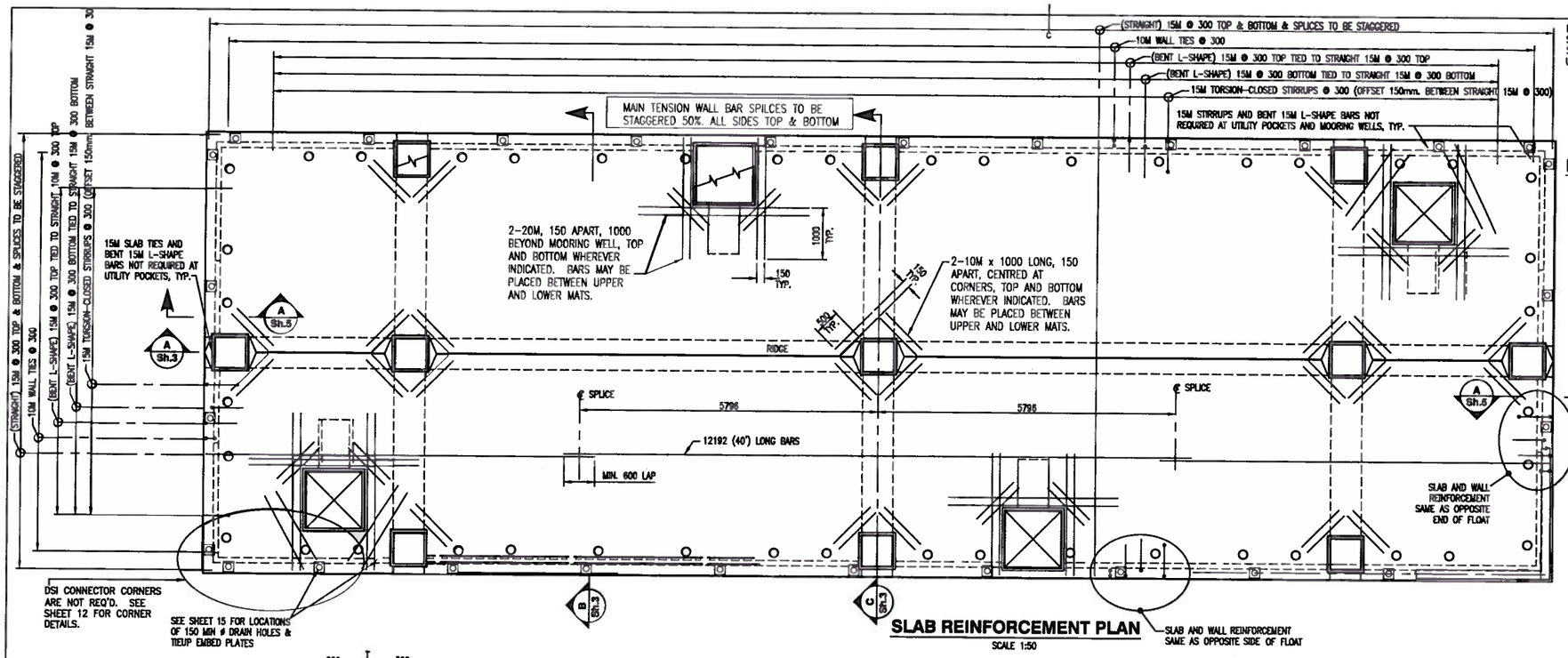
FISHERIES AND OCEANS CANADA
SMALL CRAFT HARBOURS
STANDARD CONCRETE FLOAT
MODULE 26.22m x 8.537m

drawing / dessin

CONCRETE OUTLINE PLANS

designed GJG	concu
date 2015-11-18	
drawn EB	dessine
date 2015-11-18	
approved	approuve
date	
Tender	Soumission
PWGSC Project Manager	Administrateur de projets TPSGC
project number	no. du projet
TRN.VHWT03002-01	
drawing no.	no. du dessin
56134 - 0801 - R8 - CONCRETE FLOAT - SHEET 2	

Plot Scale: 1:1
PWGSC 81



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Real Properties, Safety and Security

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PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
G. J. GAWDIN
3 DEC 15

revisions	date

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C drawing no. dessin no.

project / projet

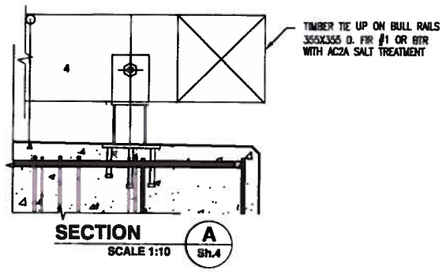
FISHERIES AND OCEANS CANADA
SMALL CRAFT HARBOURS
STANDARD CONCRETE FLOAT
MODULE 26.22m x 8.537m

drawing / dessin

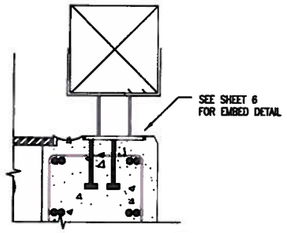
REINFORCEMENT FLOAT PLAN AND SECTIONS

designed GJG	concu
date 2015-11-18	
drawn EB	dessine
date 2015-11-18	
approved	approuve
date	
Tender	Soumission
PWGSC Project Manager	Administrateur de projets TPSGC
project number	no. du projet
TRN.VHWY03002-01	
drawing no.	no. du dessin
56134 - 0801 - R6 - CONCRETE FLOAT - SHEET 3	

Plot Scale 1:1
PWGSC 81



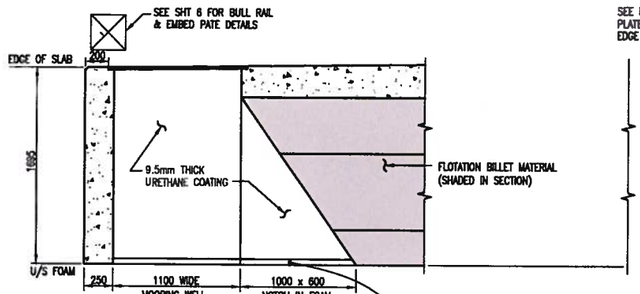
SECTION A Sh.4
SCALE 1:10



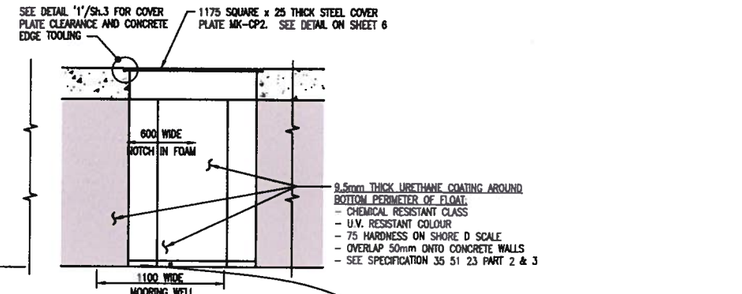
SECTION B Sh.4
SCALE 1:10

NOTES:

1. SEE WALL SECTIONS BELOW AND SHEET 12 FOR CORNER DETAILS.
2. SHEET 12 SHOWS TYPICAL LONG AND SHORT WALL DETAILS TO BE INCORPORATED WITH DETAILS ON THIS SHEET.

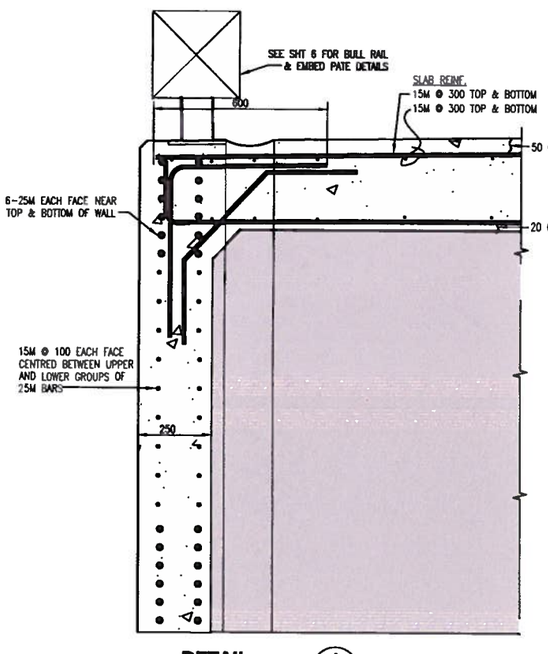


SECTION A Sh.2
SCALE 1:25
(TYPICAL AT ALL MOORING WELLS)

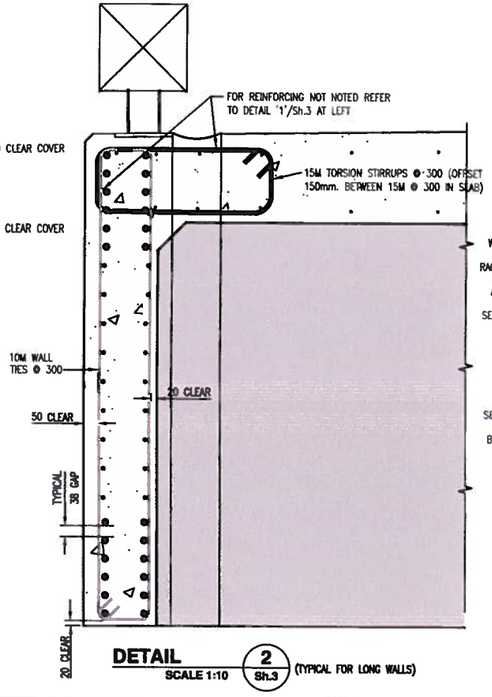


SECTION B Sh.2
SCALE 1:25
(TYPICAL AT ALL MOORING WELLS)

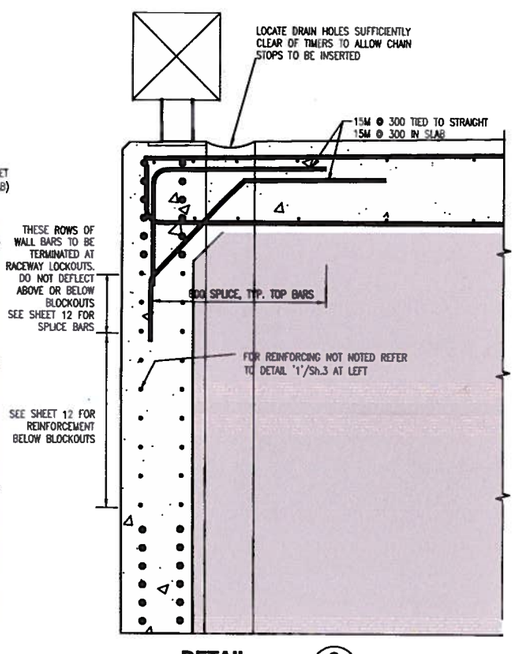
MAIN TENSION WALL BAR SPLICES TO BE STAGGERED 50%. ALL WALLS, TOP & BOTTOM DECK



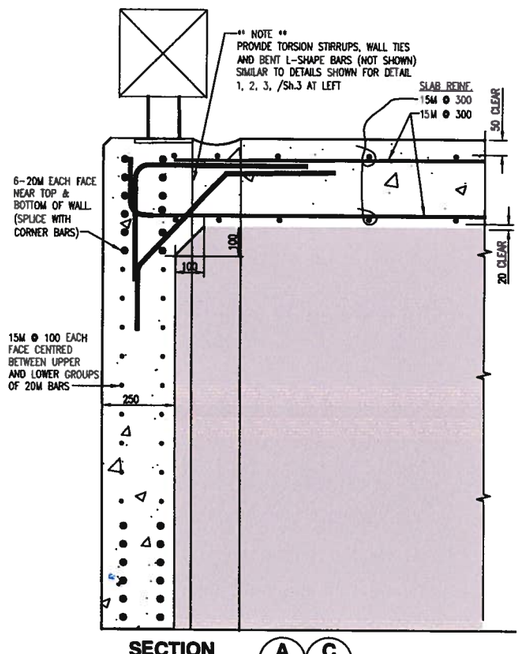
DETAIL 1 Sh.3
SCALE 1:10
(TYPICAL FOR LONG WALLS)



DETAIL 2 Sh.3
SCALE 1:10
(TYPICAL FOR LONG WALLS)



DETAIL 3 Sh.3
SCALE 1:10
(TYPICAL FOR LONG WALLS)



SECTION A C Sh.3 Sh.2
SCALE 1:10
(TYPICAL FOR SHORT WALLS OR END WALLS)

Plot Scale: 1:1

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Real Properties, Safety and Security

TETRA TECH

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
G. J. DAWDIN
2 Dec 15

revisions		date

A detail no. no. du detail
B location drawing no. no. du dessin
C drawing no. dessin no.

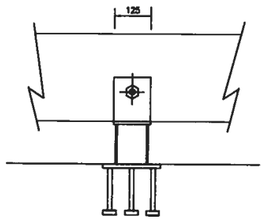
project / projet

FISHERIES AND OCEANS CANADA
SMALL CRAFT HARBOURS
STANDARD CONCRETE FLOAT
MODULE 26.22m x 8.537m

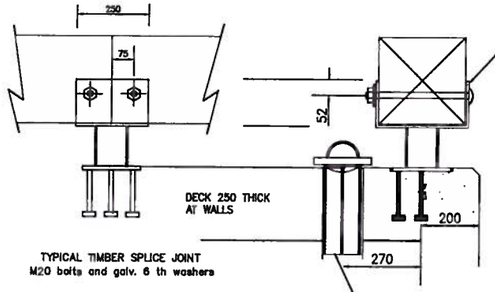
drawing / dessin

REINFORCEMENT AT FLOAT CORNERS AND WALL SECTIONS

designed	GJG
date	2015-11-18
drawn	EB
date	2015-11-18
approved	
date	
Tender	Soumission
PWGSC Project Manager	Administrateur de projets TPSGC
project number	TRN.VHWY03002-01
drawing no.	56134 - 0801 - R6 - CONCRETE FLOAT - SHEET 5



TYPICAL CONTINUOUS TIMBER JOINT
M20 bolt and galv. 6 th washers



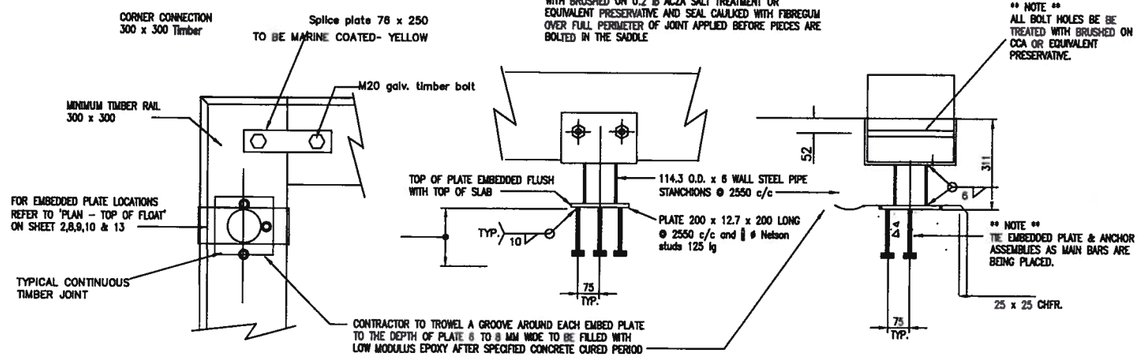
TYPICAL TIMBER SPLICE JOINT
M20 bolts and galv. 6 th washers

9.5 PL BENT TO FORM U HEAD FOR 355 X 355 TIMBER RAIL D.FIR #1 OR BTR c/w 0.2 lb ACZA SALT TREATMENT
20 ø TIMBER BOLT GALVANIZED
TIMBER RAILS TO BE 50 mm IN-BOARD OF THE EXTERIOR WALL

PLATE AND PIPE TO BE MARINE COATED TO SPECIFICATIONS COLURED YELLOW

SWALE AND DRAIN HOLES LOCATION ALLOW CHAIN STOPS ACCESS TO DRAIN HOLES

** NOTE **
ALL TIMBER BUTT SPLICES AND BOLT HOLES TO BE TREATED WITH BRUSHED ON 0.2 lb ACZA SALT TREATMENT OR EQUIVALENT PRESERVATIVE AND SEAL CAULKED WITH FIBREGUM OVER FULL PERIMETER OF JOINT APPLIED BEFORE PIECES ARE BOLTED IN THE SADDLE

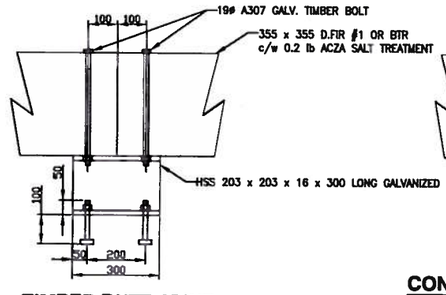


PLAN CORNER **ELEVATION** **SECTION**

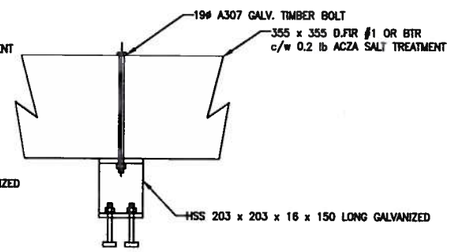
TYPICAL BULL RAIL DETAILS FOR SINGLE AND DUAL STANDARD FLOAT

SCALE 1:10

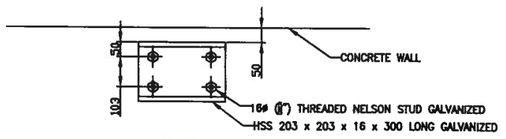
MARINE COATING IN ACCORDANCE WITH SPECIFICATION 09 92 19



TIMBER BUTT JOINT
SCALE 1:10

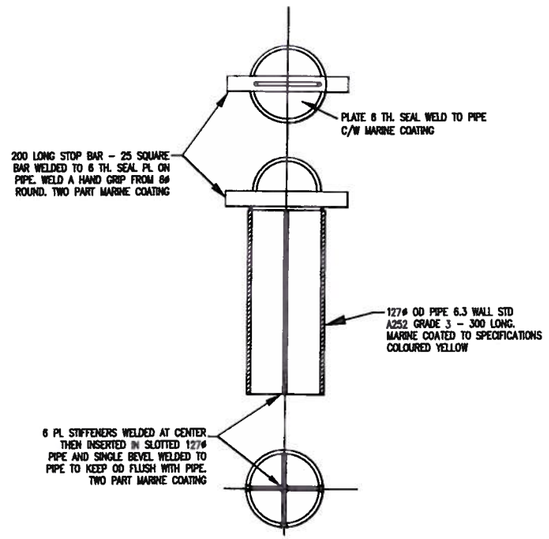


CONTINUOUS TIMBER JOINT
SCALE 1:10
PROVIDE 32ø HOLES FOR NELSON STUDS AND 21ø HOLE FOR TIMBER BOLT.



PLAN
SCALE 1:10

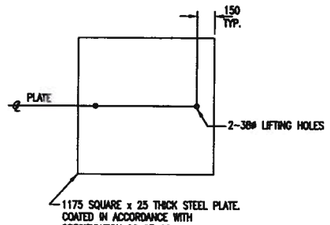
TYPICAL BULL RAIL FOR QUAD



FENDER CHAIN STOP

PROVIDE 10 PER SINGLE FLOAT OR THE QUANTITY REQUIRED BY THE OWNER. NO CHAIN STOPS ARE REQUIRED FOR THE QUAD

UTILITY STEEL COVER PLATES



MOORING WELL STEEL COVER PLATES
SCALE 1:25

Plot Scale: 1:1
PWGSC B1

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Small Craft Harbours
Real Properties, Safety and Security

TETRA TECH

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
G. J. GAWDIN
3 Dec 15

revisions | date

A detail no. no. du detail
B location drawing no. sur dessin no.
C drawing no. dessin no.

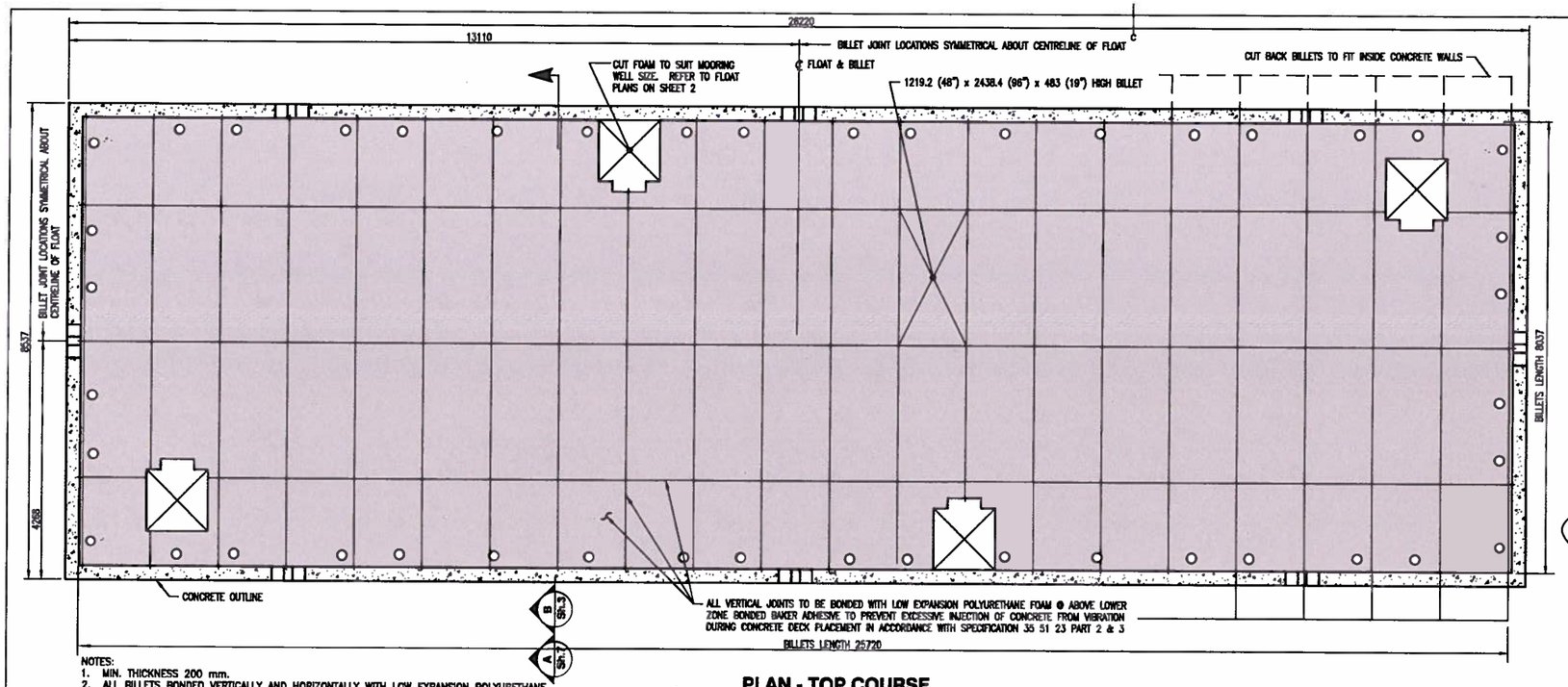
project / projet

FISHERIES AND OCEANS CANADA
SMALL CRAFT HARBOURS
STANDARD CONCRETE FLOAT
MODULE 26.22m x 8.537m

drawing / dessin

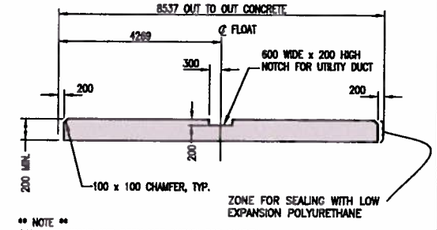
DETAILS

designed GJC / concu
date 2015-11-18
drawn EB / dessine
date 2015-11-18
approved / approuve
date
Tender / Soumission
PWGSC Project Manager / Administrateur de projets TPSGC
project number / no. du projet
TRN.VHWY03002-01
drawing no. / no. du dessin
56134 - 0801 - R9 - CONCRETE FLOAT - SHEET 6



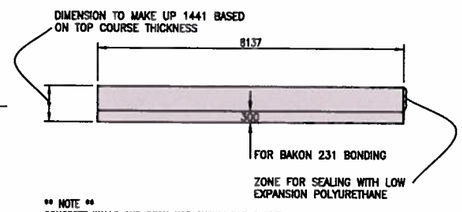
NOTES:
1. MIN. THICKNESS 200 mm.
2. ALL BILLETS BONDED VERTICALLY AND HORIZONTALLY WITH LOW EXPANSION POLYURETHANE. HORIZONTAL APPLICATION TO BE IN A ZIG ZAG PATTERN TO PROVIDE 100 % COVERAGE.
3. VERTICAL JOINTS SEALED WITH LOW EXPANSION POLYURETHANE INJECTED @ CENTERS OF 200 MAX. TO LOWEST HORIZONTAL JOINT.

PLAN - TOP COURSE



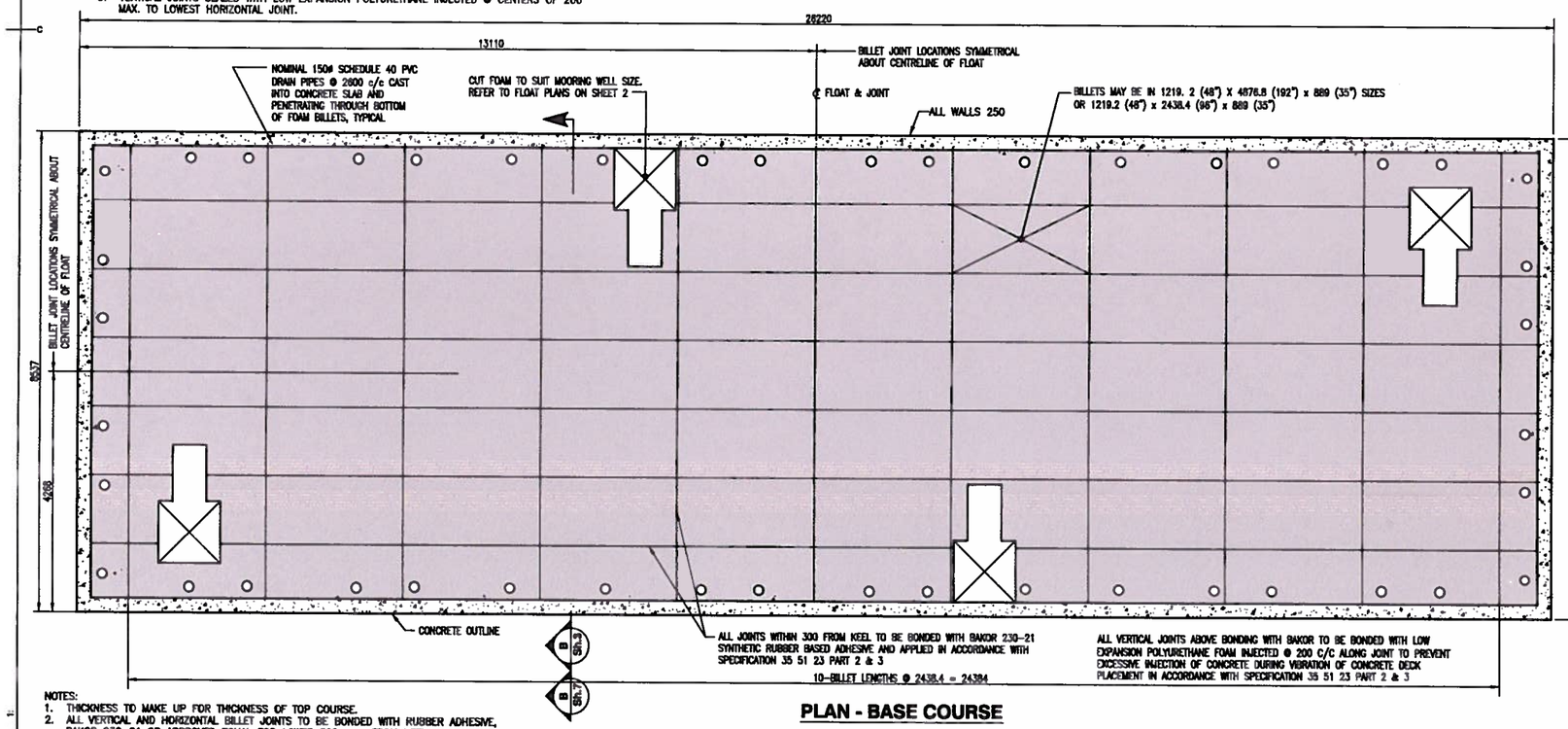
** NOTE **
CONCRETE WALLS AND DECK NOT SHOWN FOR CLARITY

SECTION A Sh.7 — SCALE 1:75 (TOP COURSE CROSS-SECTION)



** NOTE **
CONCRETE WALLS AND DECK NOT SHOWN FOR CLARITY

SECTION B Sh.7 — SCALE 1:75 (BASE COURSE CROSS-SECTION)



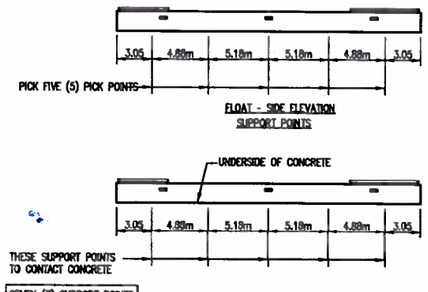
NOTES:
1. THICKNESS TO MAKE UP FOR THICKNESS OF TOP COURSE.
2. ALL VERTICAL AND HORIZONTAL BILLET JOINTS TO BE BONDED WITH RUBBER ADHESIVE, BAKOR 230-21 OR APPROVED EQUAL FOR LOWER 300 mm. FROM KEEL.
3. ALL BILLET JOINTS, VERTICAL AND HORIZONTAL, TO BE SEALED WITH LOW EXPANSION POLYURETHANE WITH APPROVED BONDING PATTERNS.

PLAN - BASE COURSE
FLOTATION BILLET LAYOUTS

SCALE 1:50

HOISTING GUIDELINES

1. CONCRETE COMPRESSIVE STRENGTH 35 MPa VERIFIED BY TEST CYLINDERS.
2. APPROXIMATE HOISTING WEIGHT WITH TIGHT CONTROL ON CONCRETE MIX PLASTIC DENSITY IS 235 TONS IMPERIAL.
3. NOTCH FOAM AS SHOWN AT SUPPORT POINT LOCATIONS.
4. MANUFACTURER MUST DESIGN AND SET EMBEDDED HOISTING ATTACHMENTS AND REINFORCING AND PROVIDE A DURABLE CORROSIVE RESISTANT SURFACE TO MATCH DESIGN. IN THE EVENT THE MANUFACTURER INTENDS TO USE EMBEDDED HOISTING ATTACHMENTS, THE MANUFACTURER SHALL DESIGN AND SUPPLY, INSTALL ATTACHMENTS, REINFORCING AND MAKE GOOD THE DECK SURFACE TO AN EQUIVALENT DURABLE CORROSIVE RESISTANT SURFACE AT HIS COST.
5. CONTRACTOR TO PROVIDE SUPPORT LATERAL SUPPORT FOR BOTTOM OF WALLS AT PICK POINTS TO PREVENT DAMAGE FROM EXCESSIVE DEFECTION OF THE WALL AS THE EPS DEFORMS. CONTRACTOR TO PROVIDE PROTECTION TO THE BOTTOM SURFACE OF THE CONCRETE AND EPS FOR SKID LAUNCH.



Public Works and Government Services Canada / Travaux Publics et Services gouvernementaux Canada

Fisheries & Oceans Canada
Small Craft Harbours
Real Properties, Safety and Security

TETRA TECH

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — G. J. GAWDIN — 23 DEC 15

revisions		date

A detail no. / no. du détail
B location drawing no. / sur dessin no.
C drawing no. / dessin no.

project / projet

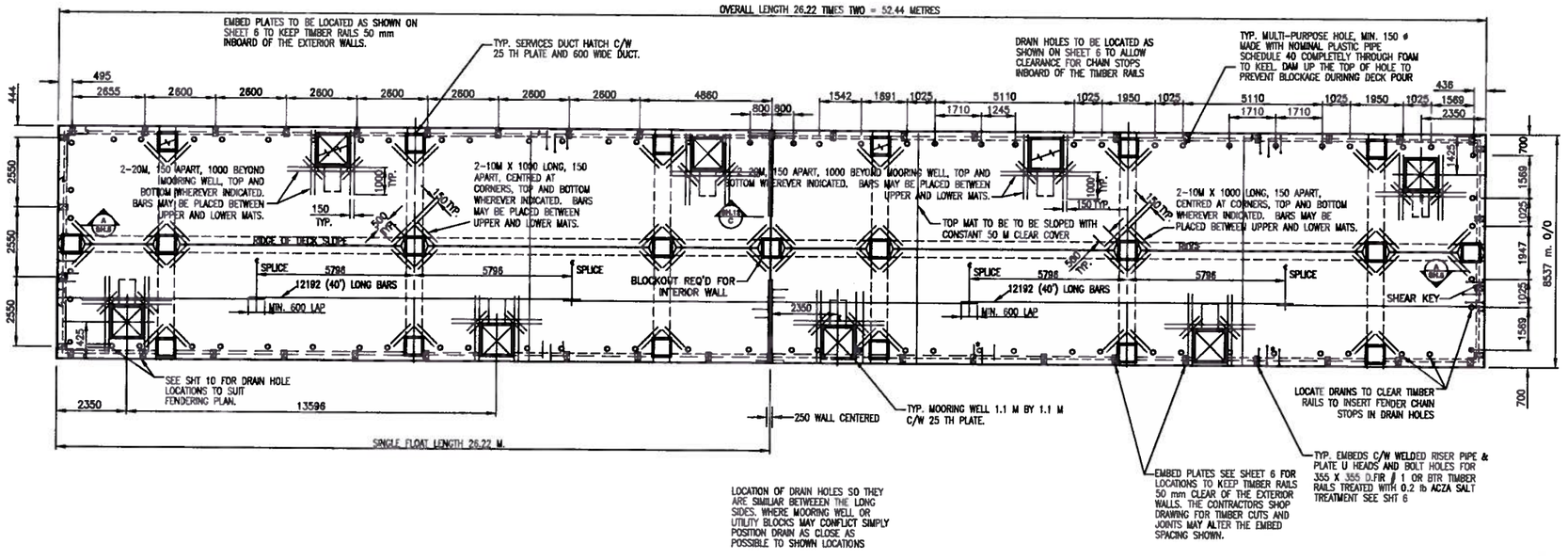
FISHERIES AND OCEANS CANADA
SMALL CRAFT HARBOURS
STANDARD CONCRETE FLOAT
MODULE 26.22m x 8.537m

drawing / dessin

FLOTATION BILLET LAYOUTS AND HOISTING GUIDELINES
Single Float

designed GJC	concu
date 2015-11-18	
drawn EB	dessine
date 2015-11-18	
approved	approuve
date	
Tender	Soumission
PWGSC Project Manager	Administrateur de projets TPSGC
project number	no. du projet
TRN.VHWY03002-01	
drawing no.	no. du dessin
56134 - 0801 - R5 - CONCRETE FLOAT - SHEET 7	

PWGSC 191



LOCATION OF DRAIN HOLES SO THEY ARE SIMILIAR BETWEEEN THE LONG SIDES. WHERE MOORING WELL OR UTILITY BLOCKS MAY CONFLICT SIMPLY POSITION DRAIN AS CLOSE AS POSSIBLE TO SHOWN LOCATIONS

PLAN - DUAL TYPE I

SCALE 1:100

NOTES:

1. REVISE FOAM BONDING TO BOND THE BOTTOM 300 ZONE OF EACH BILLET WITH BAKOR RUBBER ADHESIVE. THE UPPER ZONES OF FOAM MAY BE BONDED WITH LOW EXPANSION POLYURETHANE FOAM IN LIEU OF BAKOR.

Plot Scale: 1:1

PWGSC 81

0 10 20mm 40 60 80 100 120 140 160 180 200mm

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Real Properties, Safety and Security

TETRA TECH

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA G. J. GAWDIN

2Dec15

revisions		date

A detail no. / no. du detail
B location drawing no. / sur dessin no.
C drawing no. / dessin no.

project / projet

FISHERIES AND OCEANS CANADA
SMALL CRAFT HARBOURS
DUAL CONCRETE FLOAT
MODULE 52.44 m x 8.537m

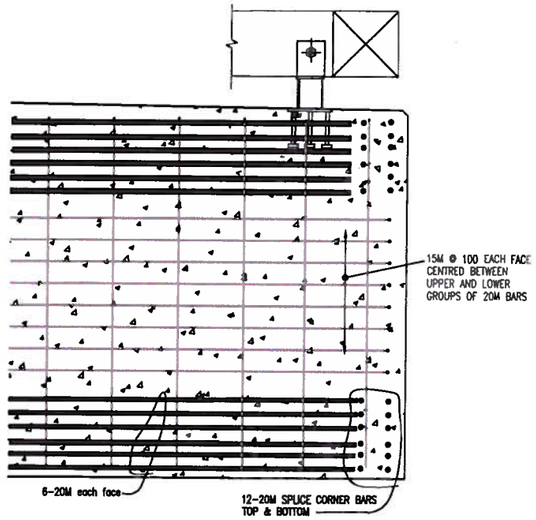
drawing / dessin

PLAN VIEW LAYOUT
CONCRETE OUTLINE

Dual Float TYPE I

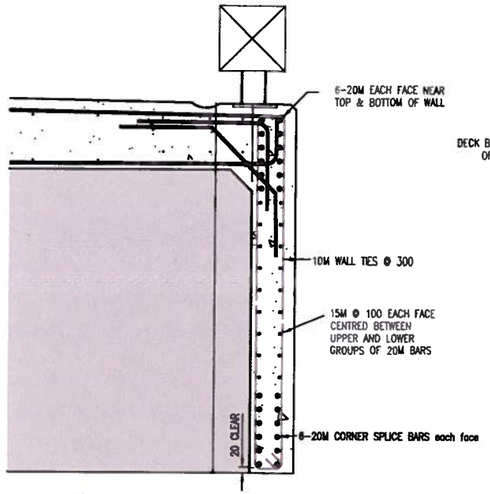
designed	GJC	concu
date	2015-11-18	
drawn	EB	dessine
date	2015-11-18	
approved		approuve
date		
Tender		Soumission
PWGSC Project Manager		Administrateur de projets TPSGC
project number		no. du projet
drawing no.		no. du dessin

56134 - 0801 - R6 - CONCRETE FLOAT - SHEET 8



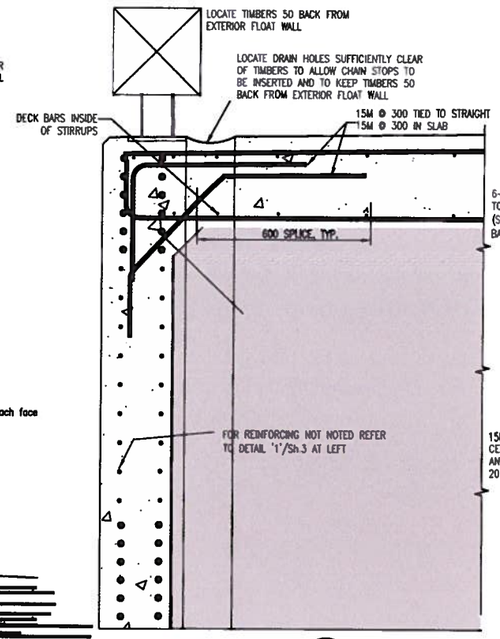
WALL REINFORCING AND CONCRETE AT CORNERS

TRANSVERSE WALL

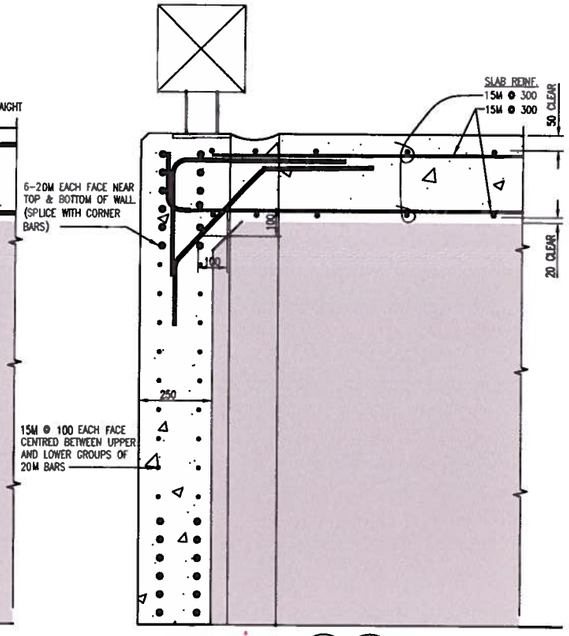


WALL REINFORCING AND CONCRETE AT CORNERS

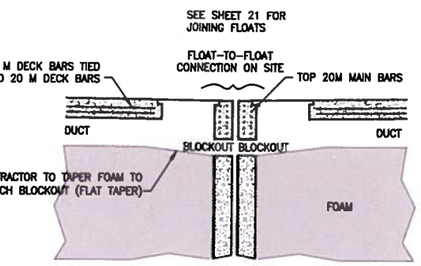
LONG WALL



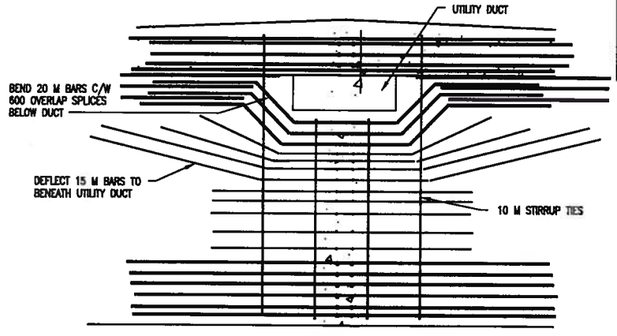
DETAIL 3 Sh.3 — SCALE 1:10 (TYPICAL FOR LONG WALLS)



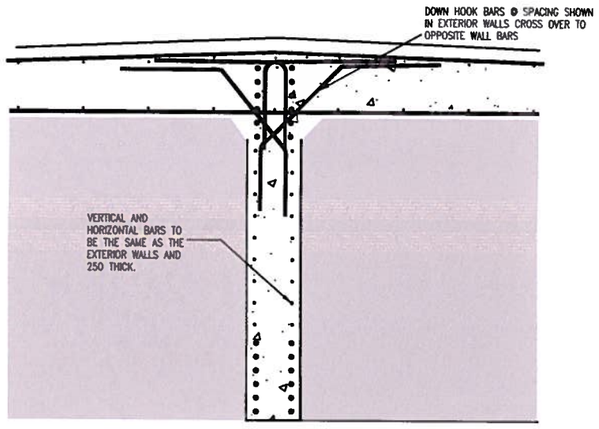
SECTION A C — SCALE 1:10 Sh.3 Sh.2 (TYPICAL FOR SHORT WALLS)



BLOCK OUT - EXTERIOR WALLS



BLOCK OUTS THROUGH WALLS

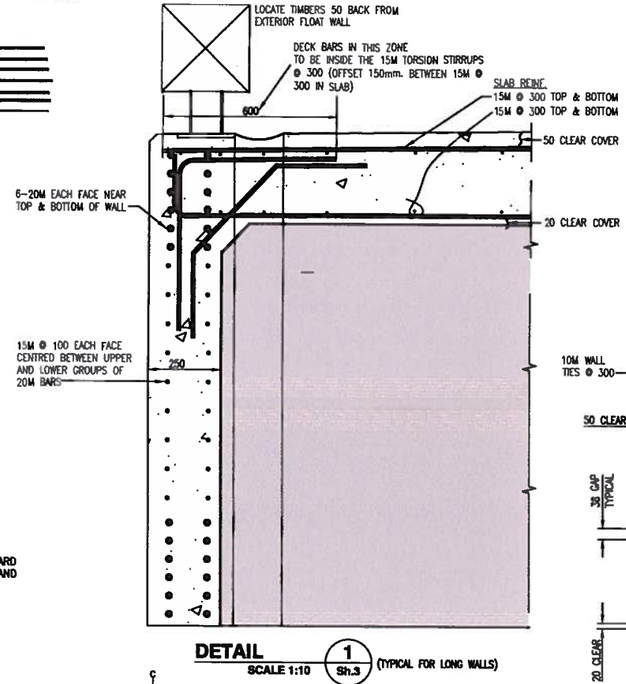


SECTION C 13

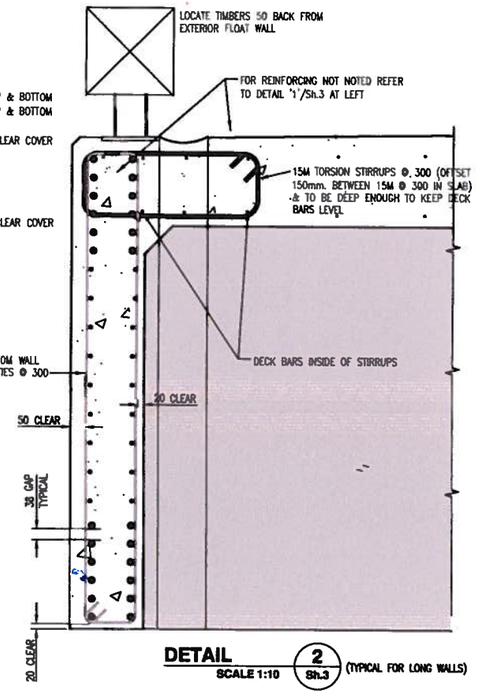
TYPICAL INTERIOR WALL REINFORCING BOTH LONG & TRANSVERSE WALLS

NOTES:

1. THIS TENDER ONLY REQUIRES THE SINGLE STANDARD FLOAT AND SHALL INCORPORATE THESE CORNER AND WALL DETAILS.



DETAIL 1 Sh.3 — SCALE 1:10 (TYPICAL FOR LONG WALLS)



DETAIL 2 Sh.3 — SCALE 1:10 (TYPICAL FOR LONG WALLS)

Plot Scale: 1:1

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PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — G. J. GAWDIN — 3 Dec 15

revisions	date

A detail no. no. du détail / B location drawing no. sur dessin no. / C drawing no. dessin no.

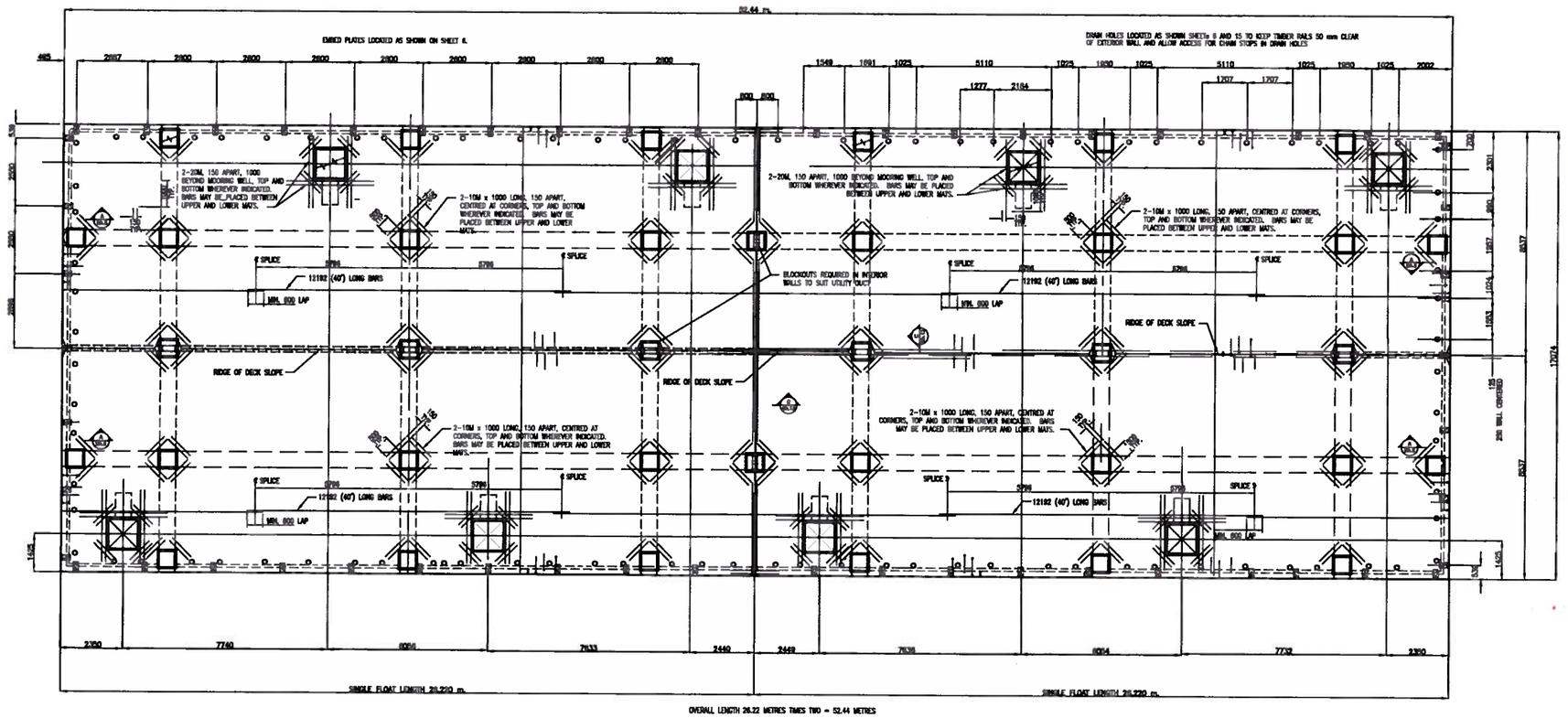
project / projet

FISHERIES AND OCEANS CANADA SMALL CRAFT HARBOURS STANDARD CONCRETE FLOAT MODULE 26.22m x 8.537m

drawing / dessin

FLOAT WITHOUT CONNECTION POCKETS AT THE CORNERS

designed GJC	concu
date 2015-11-18	
drawn EB	dessine
date 2015-11-18	
approved	approuve
date	
Tender	Soumission
PWGSC Project Manager	Administrateur de projets TPSGC
project number	no. du projet
TRN.VHWY03002-01	
drawing no.	no. du dessin
56134 - 0801 - R5 - CONCRETE FLOAT - SHEET 12	



PLAN - QUAD TYPE II - STAGGERED WELLS - FOUR STD'S

Plot Scale: 1:1
PWGSC B1

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TETRA TECH

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
G. J. BAWDIN
2 DEC 15

revisions		date

A detail no. / no. du détail
B location drawing no. / sur dessin no.
C drawing no. / dessin no.

project / projet

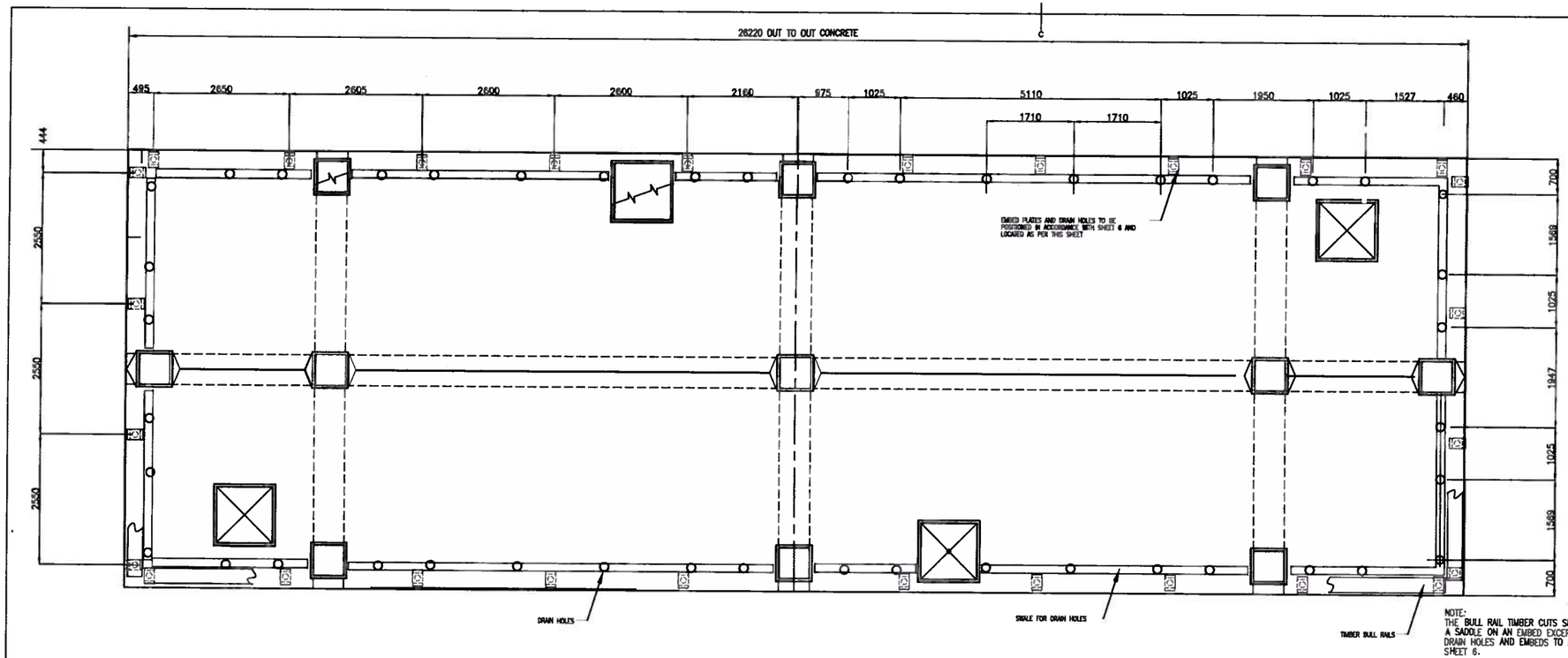
FISHERIES AND OCEANS CANADA
SMALL CRAFT HARBOURS
QUAD CONCRETE FLOAT
MODULE 52.44 m x 17.074m

drawing / dessin

PLAN VIEW LAYOUT
CONCRETE OUTLINE

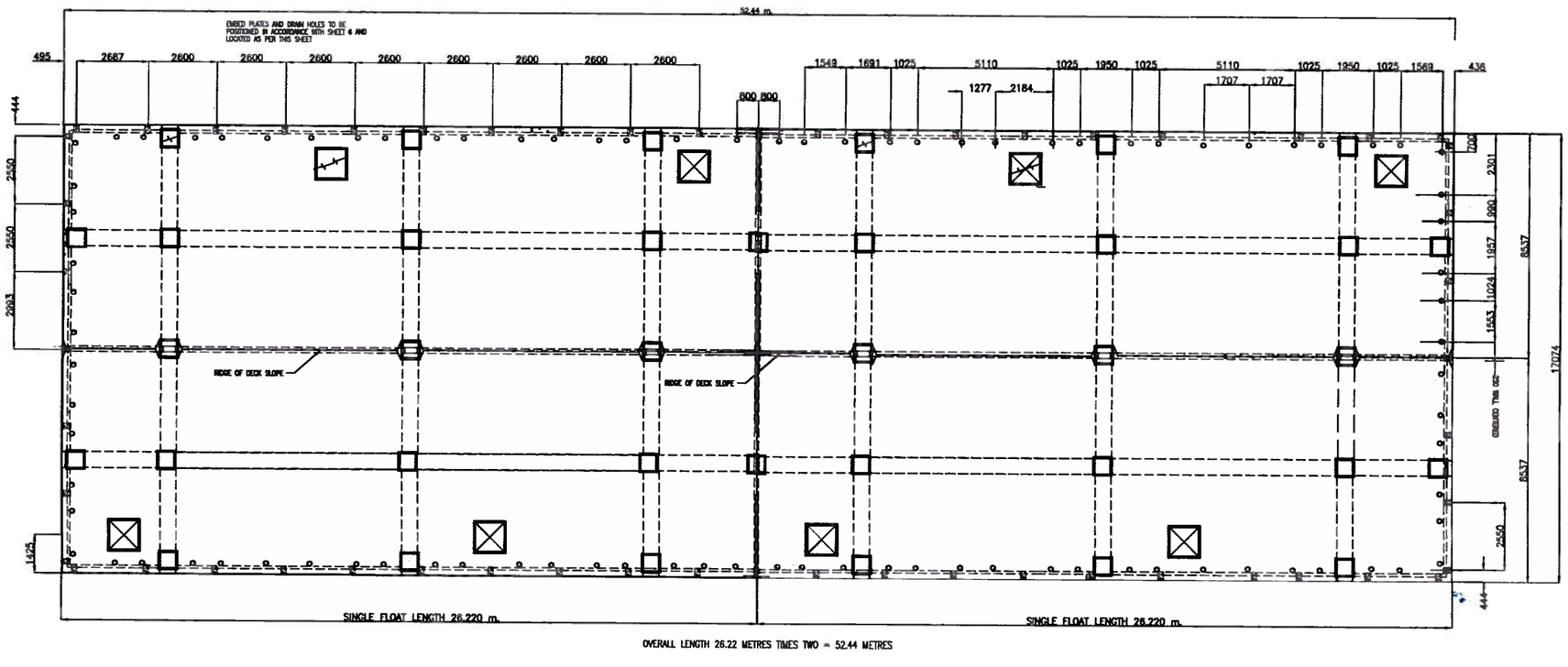
Quad TYPE II - Staggered Wells

designed GJC	concu
date 2015-11-18	
drawn EB	dessiné
date 2015-11-18	
approved	approuvé
date	
Tender	Soumission
PWGSC Project Manager	Administrateur de projets TPSGC
project number	no. du projet
TRN.VHWY03002-01	
drawing no.	no. du dessin
56134 - 0801 - R7 - CONCRETE FLOAT - SHEET 13	



SINGLE FLOAT

NOTE:
THE BULL RAIL TIMBER CUTS SHALL BE BUTT SPLICED IN A SADDLE ON AN EMBED EXCEPT AT THE CORNERS. DRAIN HOLES AND EMBEDS TO BE POSITIONED FROM EXTERIOR WALLS AS SHOWN ON SHEET 6.



OVERALL LENGTH 26.22 METRES TIMES TWO = 52.44 METRES

QUAD TYPE II

Plot Scale: 1:1

PWGSC B1

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PROFESSIONAL ENGINEER
G. J. DAWDIN
BRITISH COLUMBIA
3 sheets

revisions		date

A detail no. no. du détail
B location drawing no. sur dessin no.
C drawing no. dessin no.

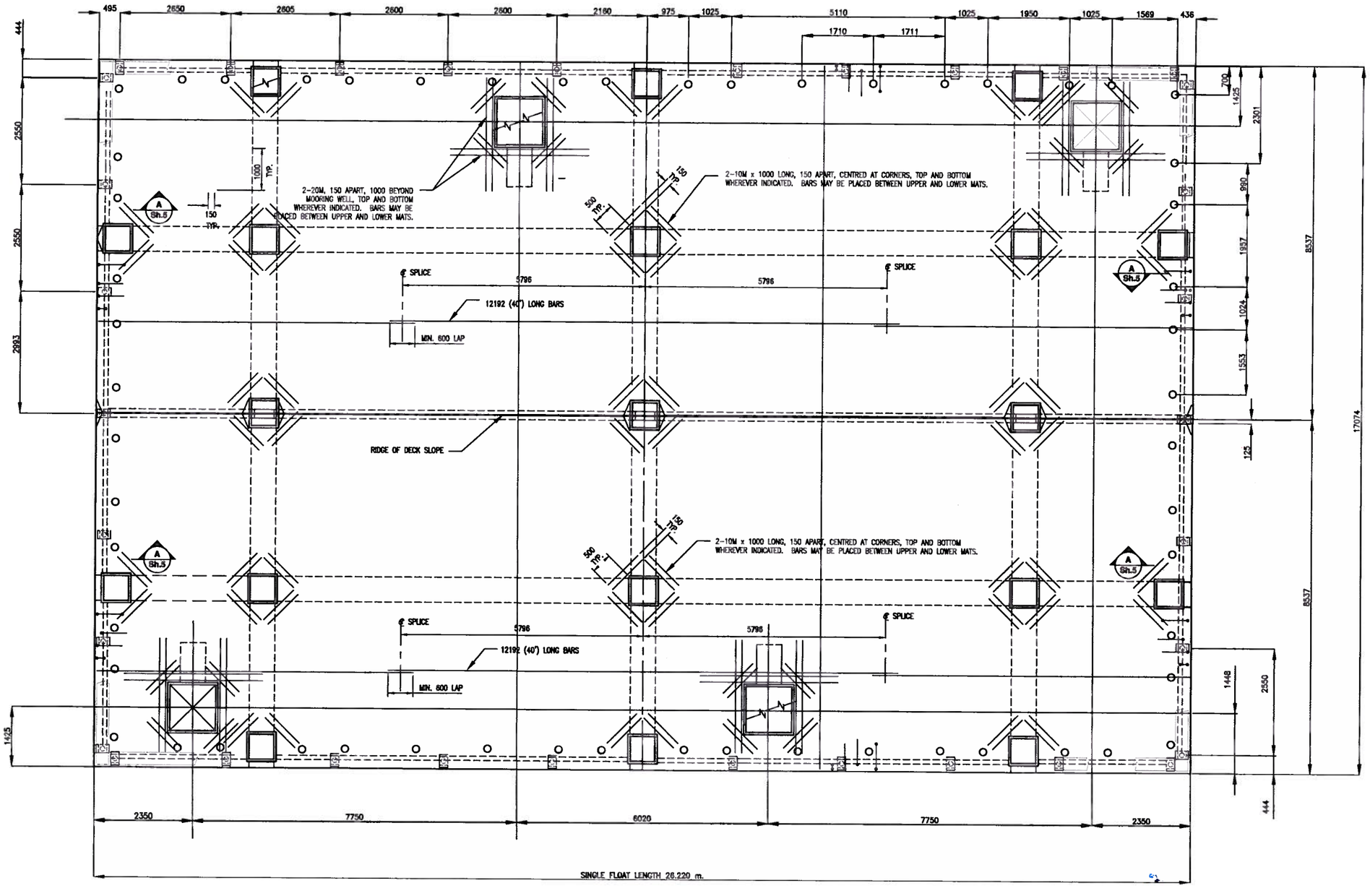
project / projet

FISHERIES AND OCEANS CANADA
SMALL CRAFT HARBOURS
STANDARD CONCRETE FLOAT
MODULE 26.22 m x 8.537m

drawing / dessin

LOCATION OF DRAIN HOLES & EMBEDS - STD

designed GJG	concu
date 2015-11-18	
drawn EB	dessine
date 2015-11-18	
approved	approuve
date	
Tender	Soumission
PWGSC Project Manager	Administrateur de projets TPSGC
project number	no. du projet
TRN.VHWY03002-01	
drawing no.	no. du dessin
56134 - 0801 - CONCRETE FLOAT - SHEET 15	



PLAN -DUAL TYPE II - SIDE BY SIDE- STAGGERED WELLS

Plot Scale: 1:1

PWGSC B1

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PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
G. J. GAWDIN
3 Dec 15

revisions		date

A detail no. no. du détail
B location drawing no. sur dessin no.
C drawing no. dessin no.

project / projet

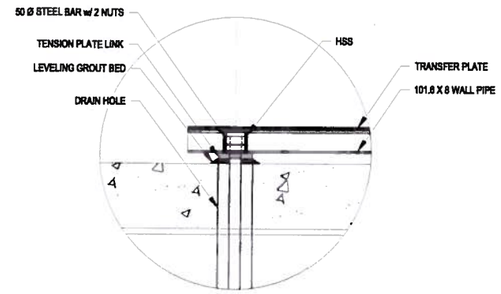
FISHERIES AND OCEANS CANADA
SMALL CRAFT HARBOURS

drawing / dessin

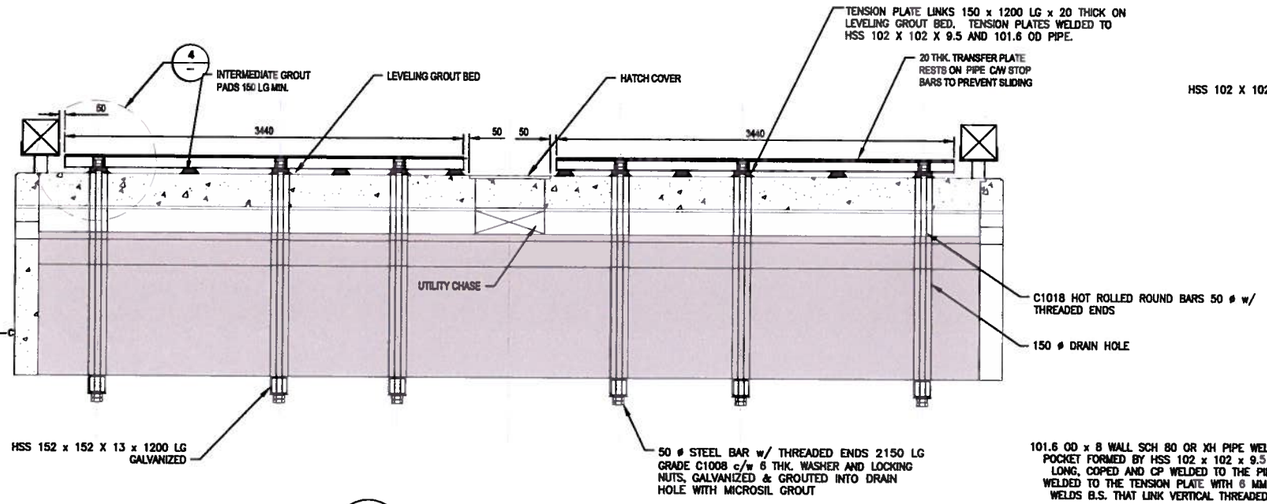
PLAN VIEW LAYOUT
CONCRETE OUTLINE

DUAL TYPE II - STD FLOATS
SIDE BY SIDE

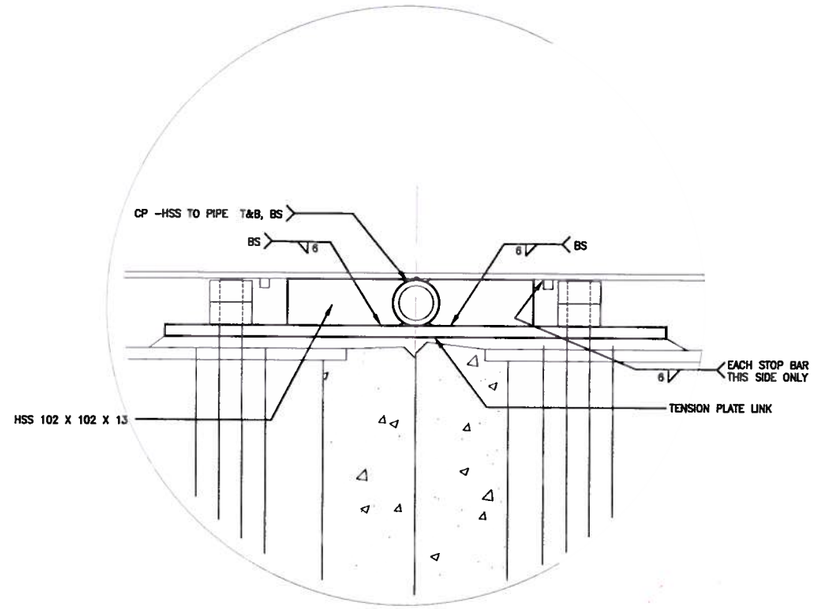
designed GJG	concu
date 2015-11-18	
drawn EB	dessine
date 2015-11-18	
approved	approuve
date	
Tender	Soumission
PWGSC Project Manager	Administrateur de projets TPSGC
project number	no. du projet
TRN.VHWY03002-01	
drawing no.	no. du dessin
56134 - 0801 - R0 - CONCRETE FLOAT - SHEET 18	



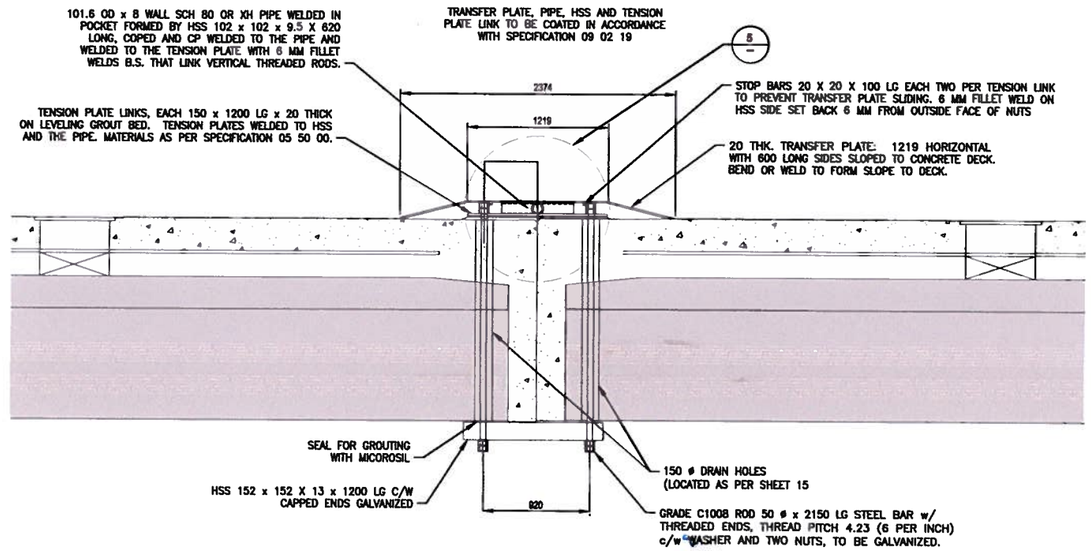
4 — **FLOAT JOINING DETAIL - ELEVATION AT CONNECTION**
1:50



3 — **FLOAT JOINING DETAIL - ELEVATION VIEW**
1:25



5 — **TENSION PLATE LINK DETAIL**
1:25



2 — **FLOAT JOINING DETAIL - ELEVATION VIEW**
1:25

Plot Scale: 1:1
PWGSC B1

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PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA G. J. GAVDIN

revisions | date

A detail no. no. du détail
B location drawing no. sur dessin no.
C drawing no. dessin no.

project / projet

FISHERIES AND OCEANS CANADA SMALL CRAFT HARBOURS

drawing / dessin

ELEVATION VIEW LAYOUT STEEL FABRICATION STANDARD FLOAT JOINING DETAILS ON-SITE

designed GJG / conçu
date 2015-11-18
drawn EB / dessiné
date 2015-11-18
approved / approuvé
date
Tender / Soumission
PWGSC Project Manager / Administrateur de projets TPSGC
project number / no. du projet
drawing no. / no. du dessin

56134 - 0801 - R0 - CONCRETE FLOAT - SHEET 21

ANNEX 10

GENERAL NOTES

1. DETAILS CONTAINED ON THESE DRAWINGS HAVE BEEN DESIGNED IN ACCORDANCE WITH THE FOLLOWING: CAN/CSA–S6–00 – CANADIAN HIGHWAY BRIDGE DESIGN CODE. CSA S16.1
2. THE METRIC SYSTEM OF UNITS IS USED UNLESS SPECIFIED OTHERWISE. THE REFERENCE DRAWINGS ARE IN THE IMPERIAL AND METRIC SYSTEM OF UNITS.
3. THE DIMENSIONS AND ELEVATIONS OF THE EXISTING COMPONENTS HAVE BEEN TAKEN FROM THE REFERENCE DRAWINGS PROVIDED BY PWGSC WITHOUT FIELD VERIFICATION. THE CONTRACTOR IS RESPONSIBLE TO DETERMINE ALL FIELD ELEVATIONS AND DIMENSIONS NECESSARY FOR HIS WORK PRIOR TO COMMENCEMENT OF CONSTRUCTION OR ORDERING AND FABRICATING ANY MATERIAL.
4. THE CONTRACTOR IS TO CONFIRM LOCATION OF ALL UTILITIES AND DRAINAGE PIPES THAT MAY BE AFFECTED BY THE WORK TO BE PERFORMED IN THIS CONTRACT PRIOR TO THE COMMENCEMENT OF THE WORK.
5. REMOVE EXISTING ELEMENTS TO GAIN ACCESS TO WORK AS NECESSARY. REINSTATE TO MATCH EXISTING, UNLESS NOTED OTHERWISE.
6. THESE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH THE PROJECT TECHNICAL SPECIFICATIONS.

DESIGN CRITERIA

PROJECT DATUM & TIDAL ELEVATIONS

1 ALL ELEVATIONS ARE REFERENCED TO HYDROGRAPHIC (TIDE & CHART) DATUM.

2 THE METRIC SYSTEM OF UNITS IS USED.

3 TIDAL ELEVATIONS AT THE SITE ARE BASED ON VALUES PUBLISHED BY THE CANADIAN HYDROGRAPHIC SERVICE (C.H.S.) FOR PATRICIA BAY, B.C.:

E.H.W.L.....3.87m

L.L.W.L.....0.00m

E.L.W.L.....–0.40m

STRUCTURAL DESIGN

1. OPERATING VESSELS FOR THE FACILITY.

TABLE 1 – DESIGN VESSELS

VESSEL	LOAD DISPLACEMENT (TONNES)	LENGTH OVERALL (m)	BEAM (m)	MAXIMUM DRAFT (m)
SIR WILFRED LAURIER (A)	4660	83.0	16.20	6.0
BARTLETT (B)	1723	57.8	13.00	4.1
JOHN P. TULLY	2100	69.0	14.50	4.5
JOHN JACOBSON	800	50.0	11.00	4.0
TANU	900	50.1	9.75	4.6
VECTOR	560	39.7	9.50	3.1
GORDON REID	1100	50.0	11.00	5.4
ATLIN POST	70	20.0	5.20	1.5

2. DESIGN VESSEL: PIER 1, PIER 2 & CROSS PIER – 2500 TONNE LOAD DISPLACEMENT VESSEL
   APPROACH PIER – BENTS 3 TO 10 – 1000 TONNE LOAD DISPLACEMENT VESSEL

3. FENDER SYSTEM:

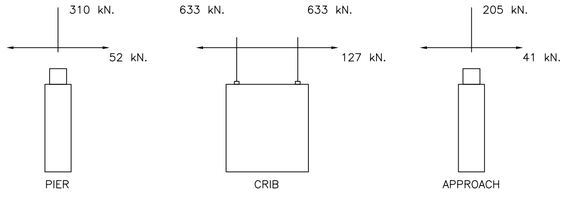
DESIGN BERTHING VELOCITY	– 0.3 m/s PERPENDICULAR TO BERTH FACE
BERTHING TYPE	1/4 POINT
MAXIMUM BERTHING ANGLE	10 DEGREES
BERTHING COEFFICIENT	0.66
DESIGN BERTHING ENERGY	7.0 TONNE m
DESIGN BERTHING ENERGY BENTS 3–10	3.2 TONNE m

4. BERTHING VELOCITIES FOR INCREASED DISPLACEMENT TONNAGE

TABLE 2 – REDUCED VELOCITIES

VESSEL	LOCATION	BERTHING VELOCITY PERP. TO BERTH FACE
STANDARD 2500 TONNE LOAD DISPLACEMENT	APPROACH PIER BENT 3 TO 10	0.2 m/s
STANDARD 5000 TONNE LOAD DISPLACEMENT	PIER 1, PIER 2 & CROSS PIER	0.2 m/s
STANDARD 5000 TONNE LOAD DISPLACEMENT	APPROACH PIER BENT 3 TO 10	0.15 m/s

5. ALLOWABLE BERTHING FORCES (BASED ON WHARF LATERAL CAPACITY):



GROUT

1. FOR FACE PLATES USE PREMIXED CEMENTITIOUS, FLOW ABLE NON SHRINK GROUT, FREE OF METALIC AGGREGATES, CONFORMING TO ASTM C1107. MINIMUM COMPRESSIVE CUBE STRENGTH OF 21MPa AT 3 DAYS AND 45MPa AT 28 DAYS.
2. FOR PILE TIP TENDON USE PREMIXED FLUID CONSISTENCY CEMENTITIOUS EXPANDING NON SHRINK GROUT FREE OF AGGREGATES CONFORMING, TO ASTM C1107. MINIMUM CUBE STRENGTH OF 35 MPa @ 3 DAYS AND 60 MPa @ 28 DAYS, BOTH WITH FLUID CONSISTENCY
3. FOR PILE GROUTING USE PREMIXED FLOWABLE CONSISTENCY CEMENTITIOUS EXPANDING NON SHRINK GROUT FREE OF METALLIC AGGREGATES CONFORMING, TO ASTM C1107. MINIMUM CUBE STRENGTH OF 25 MPa @ 3 DAYS AND 50 MPa @ 28 DAYS, BOTH WITH FLOWABLE CONSISTENCY

STRUCTURAL AND MISCELLANEOUS STEEL

1. STRUCTURAL STEEL CAN/CSA G40.20/G40.21, WITH THE FOLLOWING GRADES. W SHAPE BEAMS AND HSS SECTIONS: 350W PLATES AND ANGLES: 300W PILE AND CAMEL PIPES: 445 MPa. MINIMUM YIELD
2. PILE TIP TENDONS TO BE DOUBLE CORROSION PROTECTED THREADBAR AS MANUFACTURED BY DYWIDAG SYSTEMS INTERNATIONAL OR APPROVED EQUAL, IN ACCORDANCE WITH CSA G30.18–M92 GRADE 413/620 MPa.
3. HOT DIP GALVANIZE STEEL WHERE INDICATED TO CAN/CSA G164, MINIMUM ZINC COATING OF 600 g/m.
4. STRUCTURAL STEEL ERECTION BOLTS SHALL CONFORM TO ASTM A325 TYPE 1 ZINC COATED UNLESS NOTED OTHERWISE.
5. PAINT ALL METAL NOT REQUIRED TO BE GALVANIZED IN ACCORDANCE WITH TECHNICAL SPECIFICATIONS.
6. MINIMUM THICKNESS OF CONNECTION PLATES IS 6mm.

WELDING

1. WELDING IN ACCORDANCE WITH CSA–W59 AND CSA–W47.1.
2. MINIMUM WELD SIZE TO BE 6mm UNLESS NOTED OTHERWISE.
3. ALL WELDS TO BE CONTINUOUS UNLESS NOTED OTHERWISE.
4. ELECTRODES SHALL BE IN ACCORDANCE WITH CSA STANDARD W48.1–M.
5. ELECTRODES TO BE E480XX CLASSIFICATION.
6. SEAL WELD ALL WELDED JOINTS.

EMBEDDED ANCHORS

1. ALL ANCHOR RODS TO BE ~~STAINLESS STEEL GRADE~~ 316 GALVANIZED A307 (A)
2. DRILL ANCHOR HOLES IN CONCRETE AS DETAILS. ADJUST TO AVOID CONFLICT WITH EXISTING REINFORCING. PLUG ALL DRILL HOLES NOT USED WITH CEMENTITIOUS GROUT
3. FIELD MEASURE AND DRILL FABRICATED STEEL ELEMENTS & PLATES TO SUIT ANCHOR DRILL HOLES
4. EPOXY GROUT ANCHORS WITH "HILTI HIT HY150" OR APPROVED EQUIVALENT (USE 5[illegible] EPOXY UNDERWATER) (A)
5. TACK WELD ALL EXPOSED NUTS HOLDING UHMW TO CONCRETE (A)

FENDERS

1. FENDER RUBBERS:
   DESIGN OF THE FENDER RUBBERS HAS BEEN BASED ON PROPRIETARY CATALOGUE INFORMATION. REQUIRED DESIGN PROPERTIES FOR THE FENDERS IS AS FOLLOWS:

FENDER TYPE	CALL UP	THICKNESS [mm]	ENERGY ABSORPTION [kNm]	MAX. SUPPORT REACTION [kN]	FACE FINISH
ARCH	AR500H	500	70	450	A
ARCH	AR500HP	500	70	450	A
ARCH	AR600H	600	70	295	
UNIT ELEMENT	UE550	550	70	295	
CONE	C400	400	36	180	
TIRE	305ø	500	–	–	

   (ARCH AND UNIT ELEMENT DATA BASED ON 1 m WIDTH)

   FACE FINISH:
   TYPE A: STRUCTURAL MOUNTING 1 FACE; IMPACT RUBBER AT OTHER FACE
   TYPE B: STRUCTURAL MOUNTING 1 FACE EMBEDDED STEEL PLATE WITH UHMW PANEL MOUNTING HOLES AT OTHER FACE
   TYPE C: STRUCTURAL MOUNTING EACH FACE

2. PROVIDE, FOR ENGINEER'S APPROVAL, DETAILS AND PERFORMANCE DATA OF FENDER RUBBERS TO BE SUPPLIED TO MEET THE ABOVE REQUIREMENTS.
3. FENDER MOUNTING PLATE SIZES AND ANCHORAGE LOCATIONS ARE TO BE ADJUSTED BY THE CONTRACTOR FOR FENDER RUBBERS APPROVED BY PWGSC.

SUMMARY OF SCOPE OF WORK

1. REMOVE AND DISPOSE TIMBER PILES ALONG THE NORTH AND SOUTH FACES OF THE END CRIBS OF PIER 1 AND PIER 2.
2. REMOVE AND DISPOSE 200mm RUBBER ARCH FENDERS WHERE REQUIRED TO ACCOMMODATE NEW FENDERING SYSTEM.
3. SUPPLY AND INSTALL DIAGONAL HSS BRACING AND FRAMING, TOGETHER WITH ANCHORS, AND STEEL FRAMING EXTENSIONS TO CONCRETE BENT COLUMNS AT THE FOLLOWING LOCATIONS:
   ALONG GRID A – AT GRIDS 3 TO 10;
   ALONG GRID G AT GRIDS 14, 17 & 20;
   ALONG GRID 11 AT EACH COLUMN.
4. SUPPLY & INSTALL 762ø PIPE PILES, WITH PILE TOPS AS DETAILED AND EACH PILE WITH ~~HOLLOW OSLO POINT AND~~ GROUTED 57ø DOUBLE CORROSION PROTECTED TENDON, AT EACH COLUMN OF EACH BENT AND ADJACENT TO THE SIDE FACES OF EACH CRIB ALONG GRID G, EXCEPT AT LOCATIONS CALLED UP IN NOTE 3 ABOVE. (A)
5. SUPPLY AND INSTALL RUBBER ARCH FENDERS, TOGETHER WITH MOUNTING PANELS AND ANCHORS, TO THE WALL FACE AT CRIB AND BENT LOCATIONS AS FOLLOWS:
   EACH CORNER OF EACH CRIB ALONG GRID B, EXCEPT GRID 12;
   EACH CORNER OF EACH CRIB ALONG GRID G;
   EACH BENT FACE ALONG GRID G.
6. SUPPLY AND INSTALL UNIT ELEMENT (UE) RUBBER FENDERS, TOGETHER WITH MOUNTING PANELS, PILE ATTACHMENT FRAMING AND ANCHORS, AT EACH PIPE PILE LOCATION.
7. SUPPLY AND INSTALL WALL ANCHORED BEAM SUPPORT FOR UE RUBBER FENDERS ADJACENT TO THE SIDE FACES OF EACH CRIB ALONG GRID G.
8. SUPPLY AND INSTALL UHMW(PE) PANELS AT LOCATIONS SHOWN.
9. SUPPLY AND INSTALL LOAD DISPERSION PANELS TO PILES AT LOCATIONS OF UE RUBBER FENDERS, EXCEPT THE CROSS PIER PILES ALONG GRID 13.
10. SUPPLY AND INSTALL CONTINUOUS 710ø PIPE CAMELS WITH FOAM FILL, SPLICE JOINTS, RECESSES, TIMBER RUB STRIP, LOCATING HSS & CHAINS, OUTRIGGERS AND UHMW(PE) PANELS. CAMELS TO BE PROVIDED ALONG GRIDS A, B, F, G & 11.
11. SUPPLY AND INSTALL ARCH RUBBER FENDERS AT PIPE CAMEL RECESSES AT THE FOLLOWING LOCATIONS:
    EACH CORNER OF EACH CRIB ALONG GRID A, & F, EXCEPT AT INTERSECTION OF GRIDS F & 12;
    EACH BENT FACE ALONG GRID 11
12. SUPPLY AND INSTALL CONE FENDER RUBBERS AT PIPE CAMEL RECESSES ALONG GRIDS AT GRIDS 3 TO 10.
13. SUPPLY AND INSTALL CAMEL LOCATING CHAINS AND WEIGHTS.
14. SUPPLY AND INSTALL CONTINUOUS 305ø STEEL PIPE WITH 14" USED TIRE WRAP CAMEL AT EACH CRIB FACE ALONG GRID G.
15. SUPPLY AND INSTALL 102ø HSS AND FRAMES FOR CAMEL ALIGNMENT
16. RELOCATE EXISTING LADDER TO ACCOMMODATE FENDER LOCATING HSS AND OUTRIGGERS, WHERE REQUIRED

DRAWING LIST

REFERENCE DATA

REFERENCE DRAWINGS
1. PATRICIA BAY, BC . MARINE FACILITY, PWGSC PROJECT NO. 89323, DRAWINGS S1 TO S17
2. PATRICIA BAY, BC. MARINE FACILITY, PWGSC PROJECT NO. 850497, WHARF SEISMIC RETROFIT – DRAWINGS 142232–8200 TO 8207; DRAWINGS 142232–8–SK1 TO SK14

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Pacific Region / Region du Pacifique

Fisheries and Oceans Canada

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CAD FILE No. – SHEET 1

KM ENGINEERING PROJECT No. – KM 04–03

number	revision	revision	date
A	AS BUILT		DEC. 2, 2004

A detail number / number du detail
B source drawing no. / de dessin no.
C detail on drawing no. / detail sur dessin no.

project / projet

PATRICIA BAY, B.C.
INSTITUTE OF OCEAN SCIENCES
MAIN WHARF
FENDERING UPGRADE

drawing / dessin

GENERAL NOTES

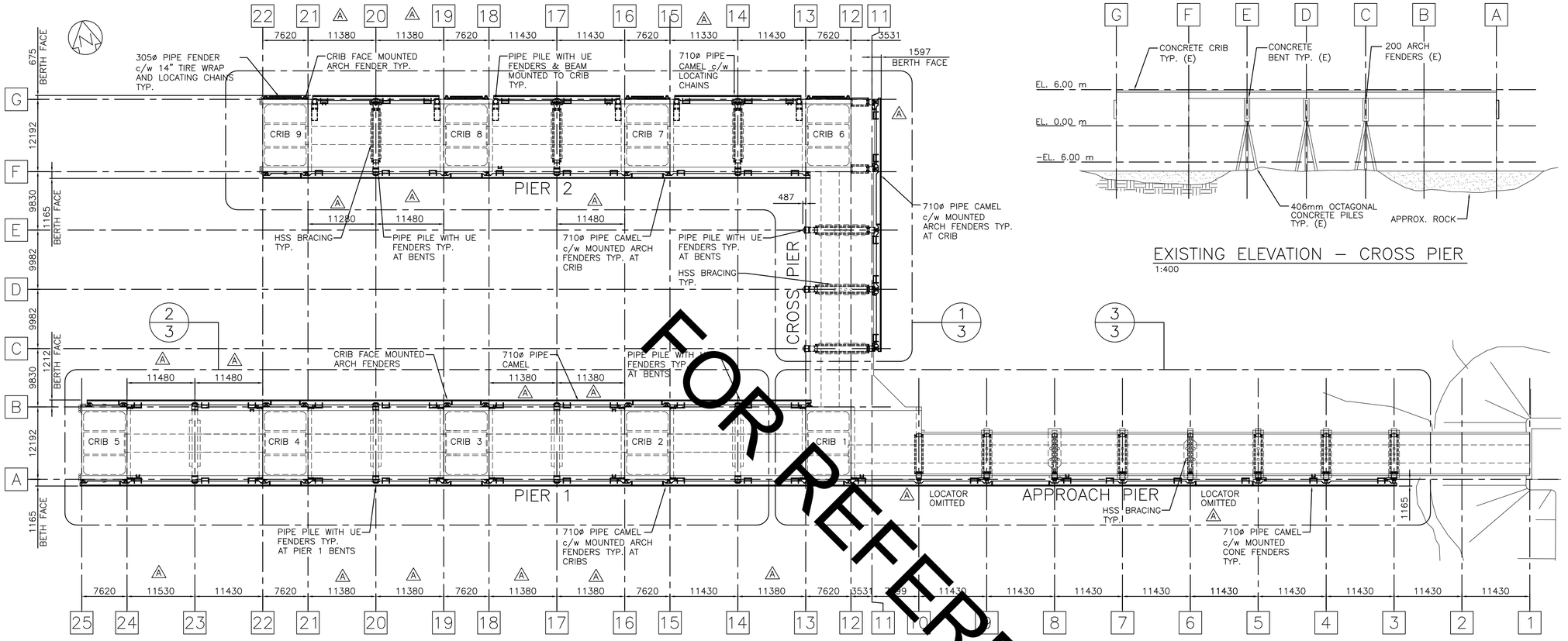
designed MAHOMED KATHRADA, P. ENG. concu
date 03.03.03 date
drawn ARLEN DONNELLY dessine
date 03.03.10 date
approved approuve
date date
Tender Soumission

PWGSC Project Manager Administrateur de projets TPSGC
project number / numéro du projet

853033

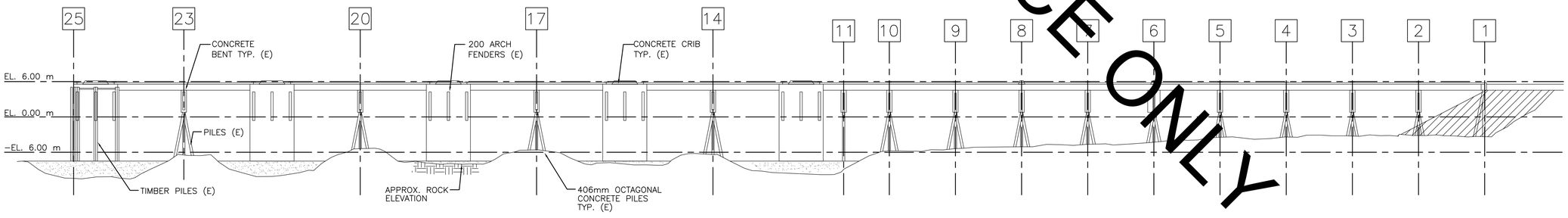
drawing number / numéro du dessin: 001
rev.: A

05–22–03



GENERAL ARRANGEMENT
FENDERING SYSTEM UPGRADE
1:400

EXISTING ELEVATION – CROSS PIER
1:400



EXISTING ELEVATION – PIER 1 AND APPROACH PEIR
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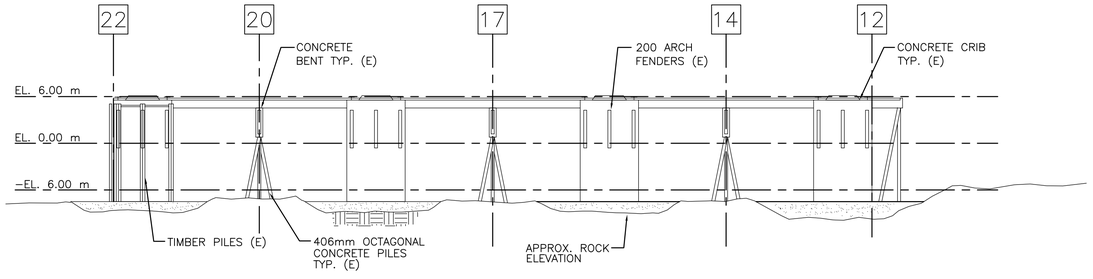

EXISTING ELEVATION – PIER 2
1:400

LEGEND
(E) : EXISTING
(L) : RELOCATED EXISTING LADDER
(CL) : EXISTING CLEATS

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CAD FILE No. – SHEET 1

KM ENGINEERING PROJECT No. – KM 04–03

number	revision	revision	date
A	AS BUILT		DEC. 2, 2004

A detail number / number du detail
B source drawing no. / de dessin no.
C detail on drawing no. / detail sur dessin no.

project / projet

PATRICIA BAY, B.C.
INSTITUTE OF OCEAN SCIENCES
MAIN WHARF
FENDERING UPGRADE

drawing / dessin

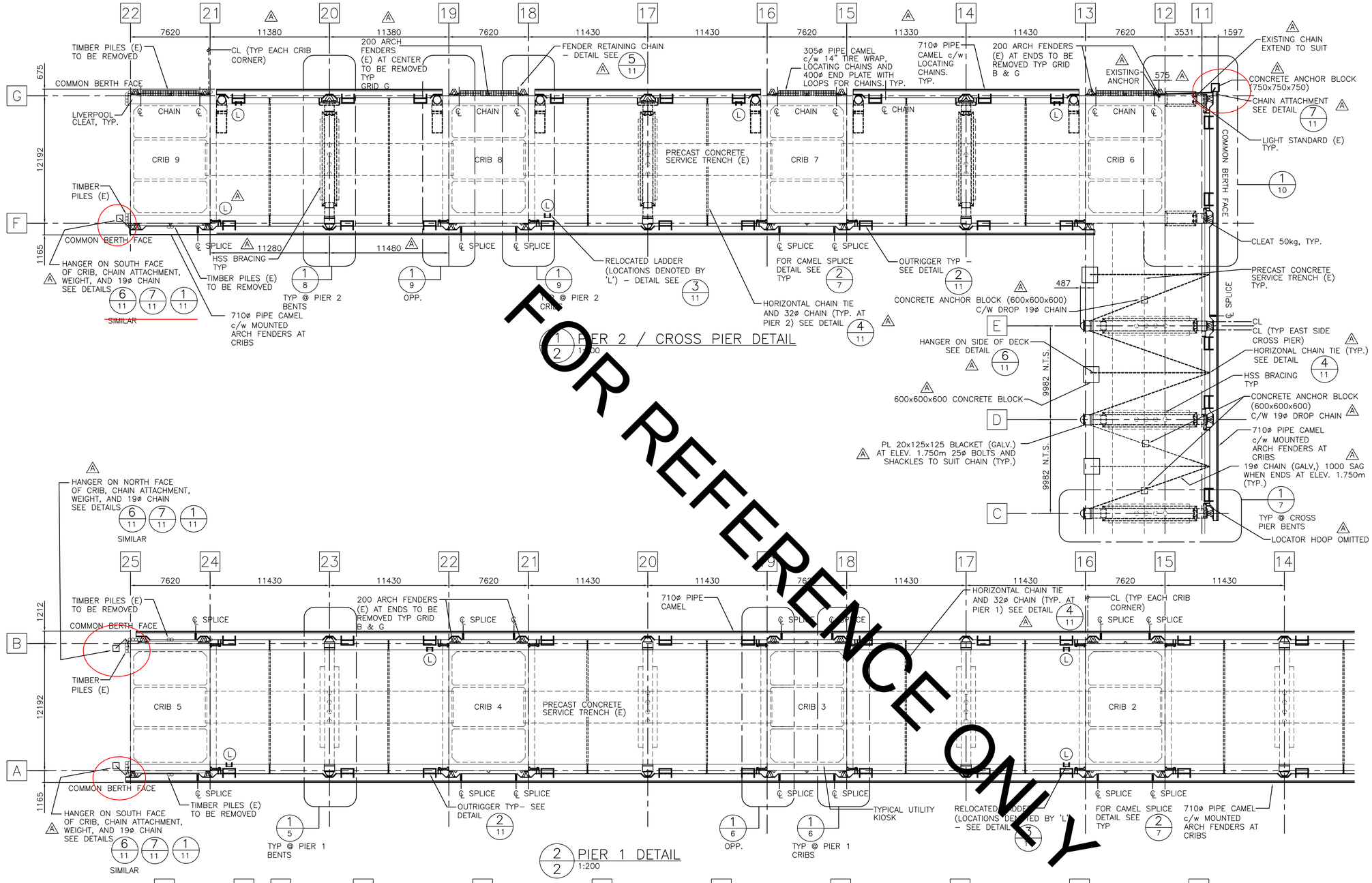
GENERAL ARRANGEMENT AND EXISTING SECTIONS

designed MAHOMED KATHRADA, P. ENG. concu
date 03.03.03 date
drawn ARLEN DONNELLY dessine
date 03.03.10 date
approved approuve
date date
Tender Soumission

PWGSC Project Manager Administrateur de projets TPSGC
project number / numéro du projet
853033

drawing number / numéro du dessin: 002
rev.: A

05-22-03



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KM Engineering Group Inc.
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CAD FILE No. – SHEET 3

KM ENGINEERING PROJECT No. – KM 04-03

number	revision	revision	date
A	AS BUILT		DEC. 6, 2004

A detail number / number du detail
B source drawing no. / de dessin no.
C detail on drawing no. / detail sur dessin no.

project / projet

PATRICIA BAY, B.C.
INSTITUTE OF OCEAN SCIENCES
MAIN WHARF
FENDERING UPGRADE

drawing / dessin

GENERAL ARRANGEMENT DETAILS

designed	MAHOMED KATHRADA, P. ENG.	concu
date	03.03.03	date
drawn	ARLEN DONNELLY	dessine
date	03.03.10	date
approved		approuve
date		date
Tender		Soumission

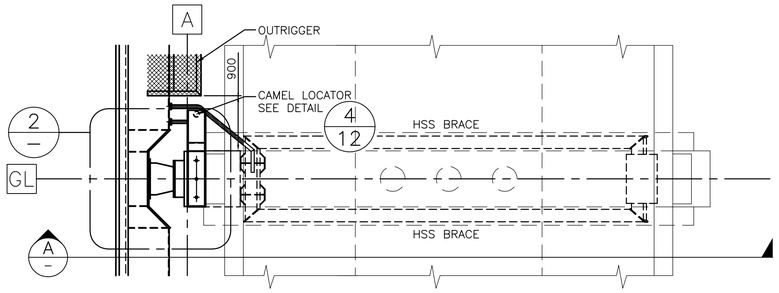
PWGSC Project Manager / Administrateur de projets TPSGC

project number / numéro du projet: 853033

drawing number / numéro du dessin: 003

rev.: A

05-22-03



1 / 3 DETAIL @ APPROACH PIER BENTS
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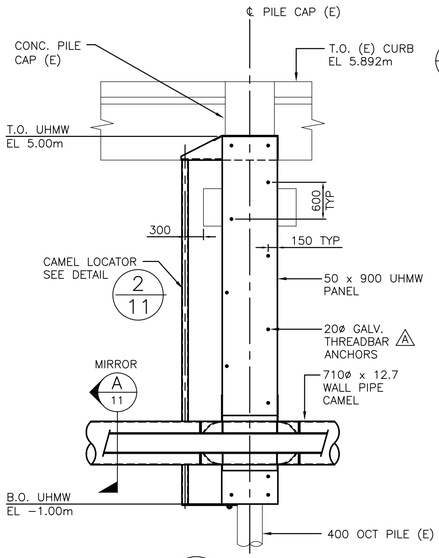

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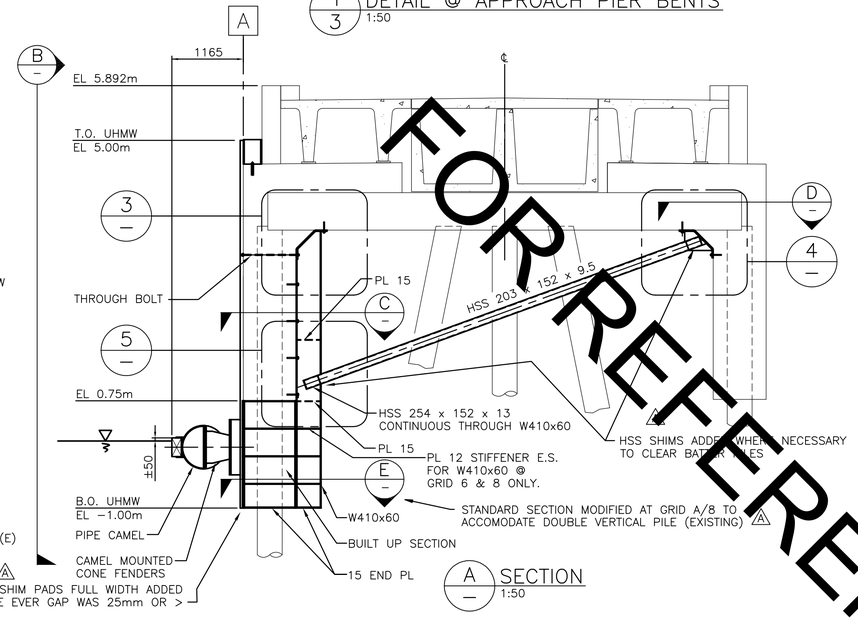

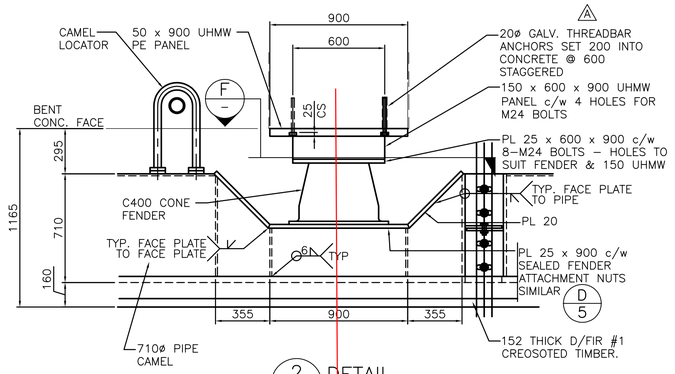

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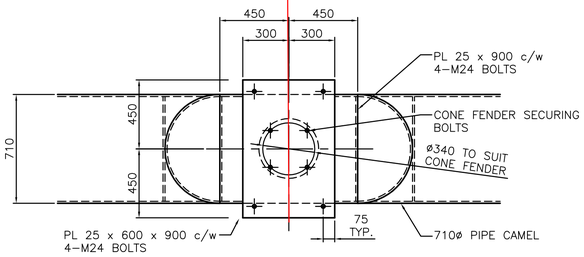
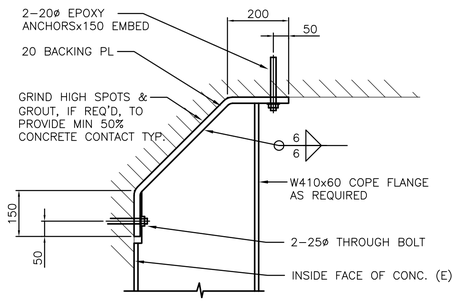


F / — 710ø CAMEL SPLICE AND CONE FENDER NOT SHOWN
1:20



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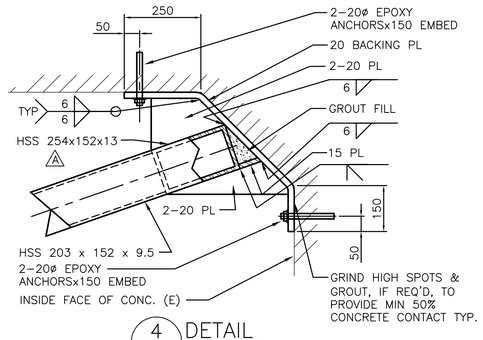

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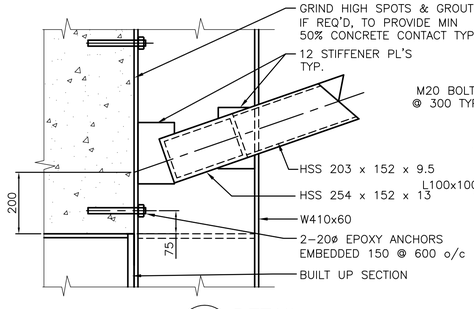

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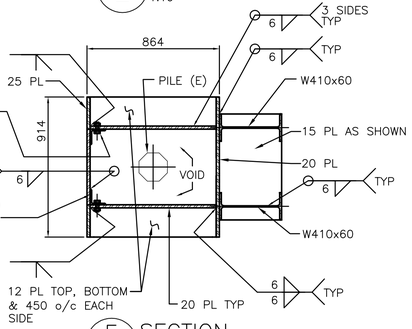
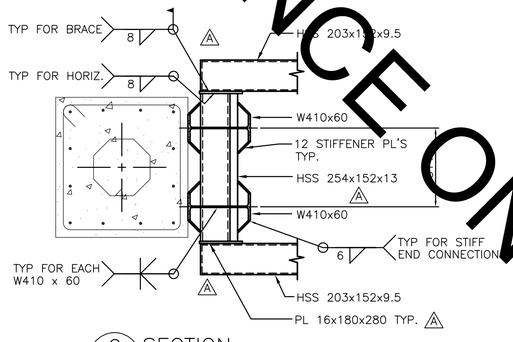


E / — SECTION
1:20



C / — SECTION
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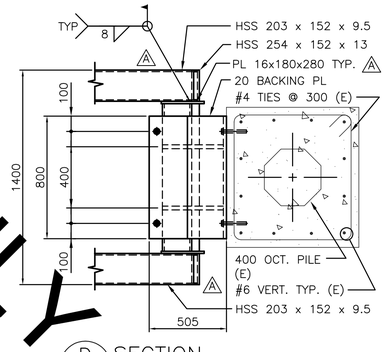

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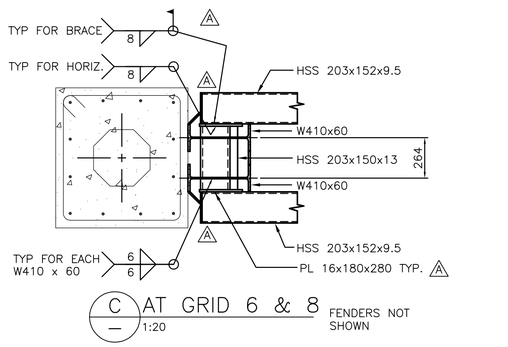
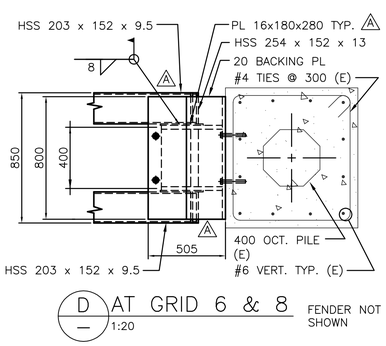


C / — AT GRID 6 & 8 FENDERS NOT SHOWN
1:20



D / — AT GRID 6 & 8 FENDER NOT SHOWN
1:20

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CAD FILE No. − SHEET 4

KM ENGINEERING PROJECT No. − KM 04-03

number	revision	revision	date
A	AS BUILT		DEC 4, 2004

A / C — A detail number / number du detail; B source drawing no. / de dessin no.; C detail on drawing no. / detail sur dessin no. — A / B C

project / projet

PATRICIA BAY, B.C.
INSTITUTE OF OCEAN SCIENCES
MAIN WHARF
FENDERING UPGRADE

drawing / dessin

DETAILS AT APPROACH BENTS

designed MAHOMED KATHRADA, P. ENG. concu

date 03.03.03 date

drawn ARLEN DONNELLY dessine

date 03.03.10 date

approved approuve

date date

Tender Soumission

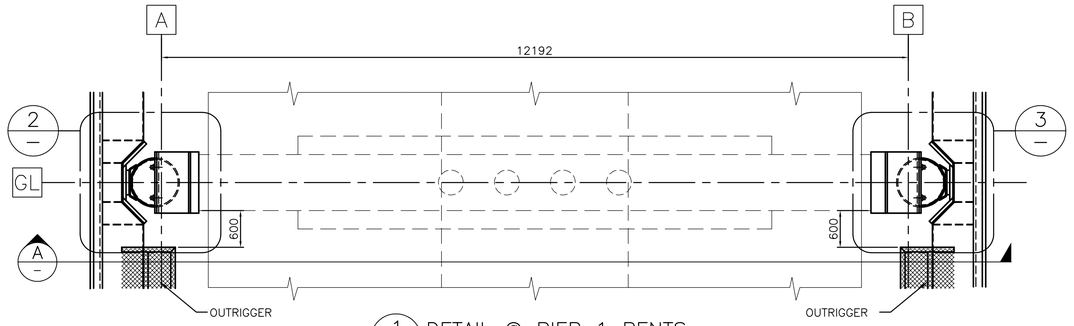
PWGSC Project Manager Administrateur de projets TPSGC

project number / numéro du projet

853033

drawing number / numéro du dessin 004 | rev. A

05-22-03



1/3 DETAIL @ PIER 1 BENTS
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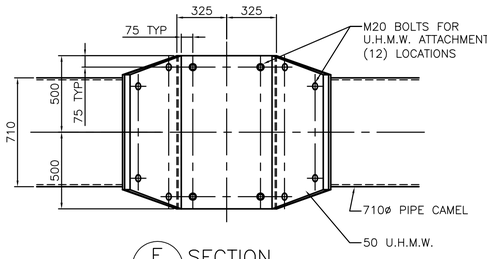

E/— SECTION
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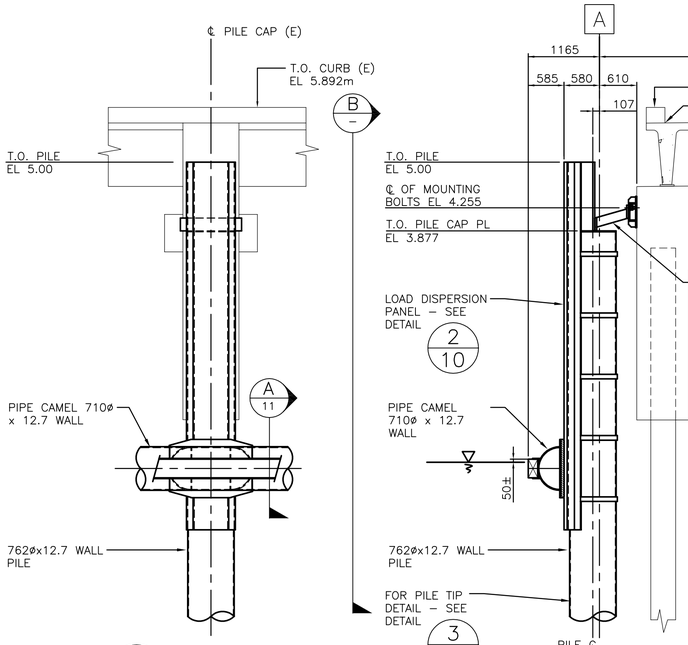

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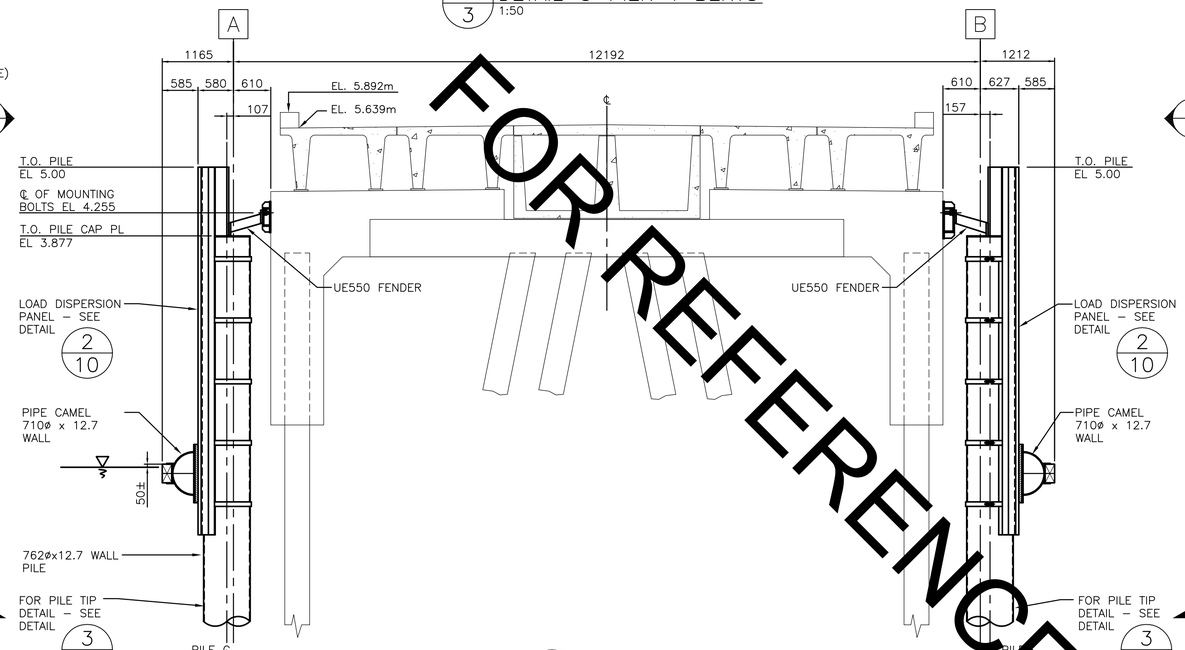

A/— SECTION
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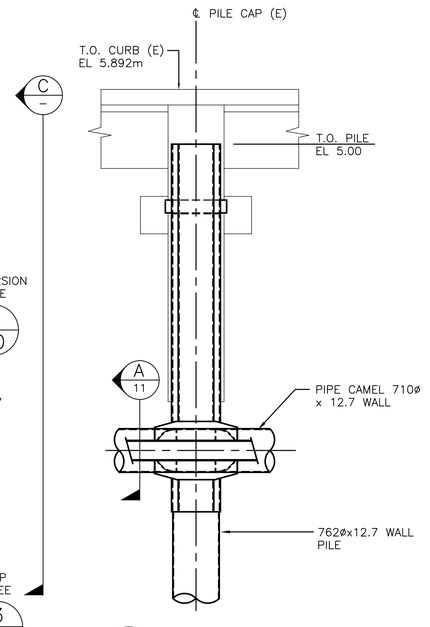

C/— ELEVATION
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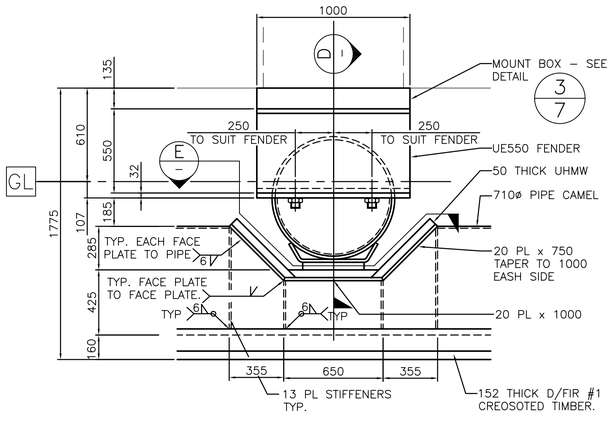

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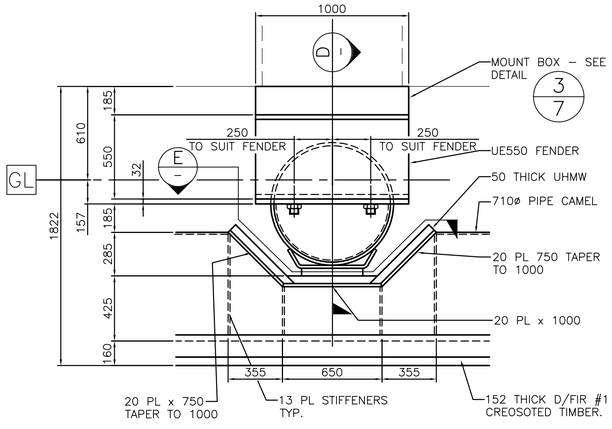

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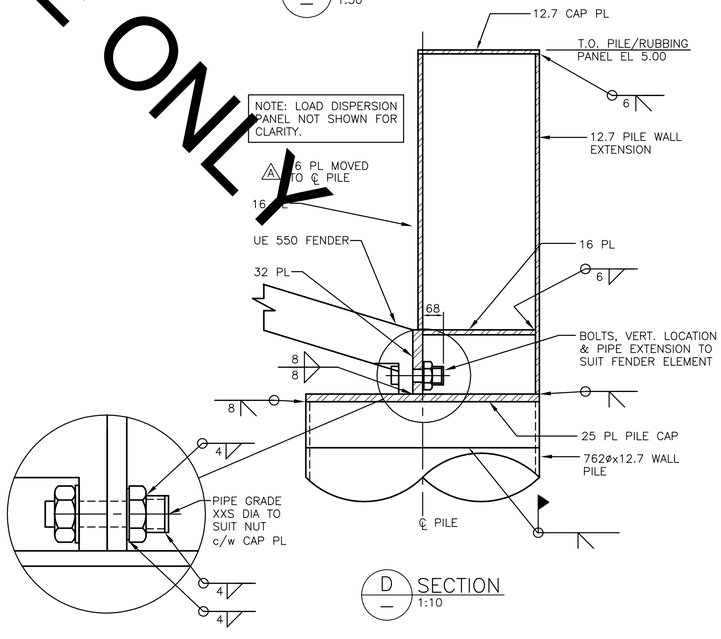

D/— SECTION
1:10

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Fisheries and Oceans Canada

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CAD FILE No. – SHEET 5

KM ENGINEERING PROJECT No. – KM 04–03

number	revision	revision	date
A	AS BUILT		DEC. 3, 2004

A/C A detail number / number du detail
B source drawing no. / de dessin no.
C detail on drawing no. / detail sur dessin no.
A/B|C

project / projet

PATRICIA BAY, B.C.
INSTITUTE OF OCEAN SCIENCES
MAIN WHARF
FENDERING UPGRADE

drawing / dessin

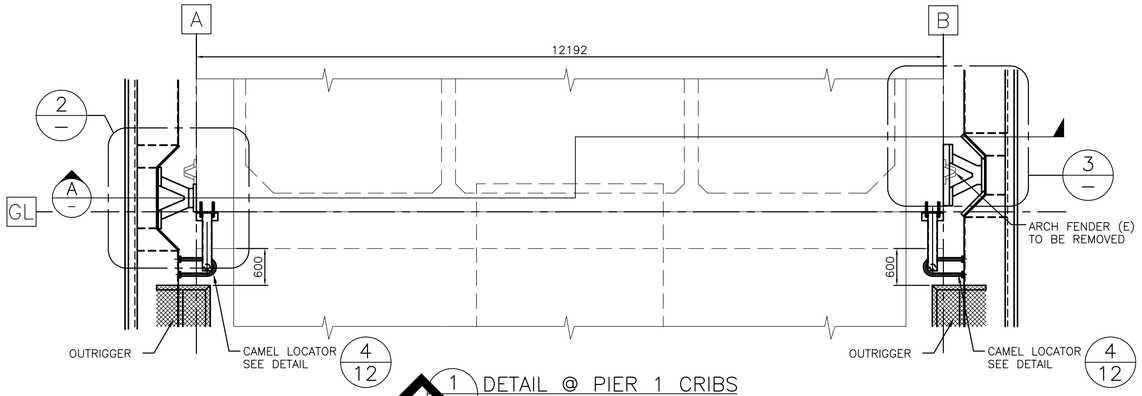
DETAILS AT PIER 1 BENTS

designed MAHOMED KATHRADA, P. ENG. concu
date 03.03.03 date
drawn ARLEN DONNELLY dessine
date 03.03.10 date
approved approuve
date date
Tender Soumission
PWGSC Project Manager Administrateur de projets TPSGC
project number / numéro du projet

853033

drawing number / numéro du dessin: 005
rev.: A

05-22-03



1 DETAIL @ PIER 1 CRIBS
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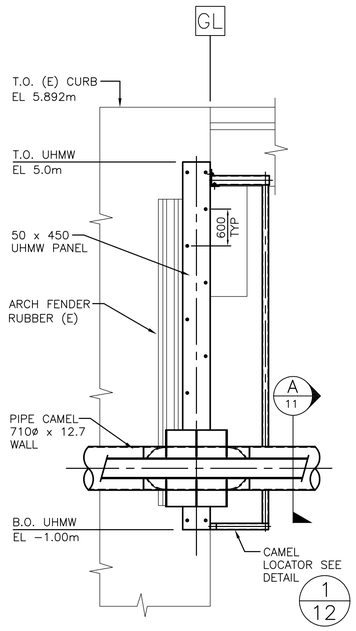
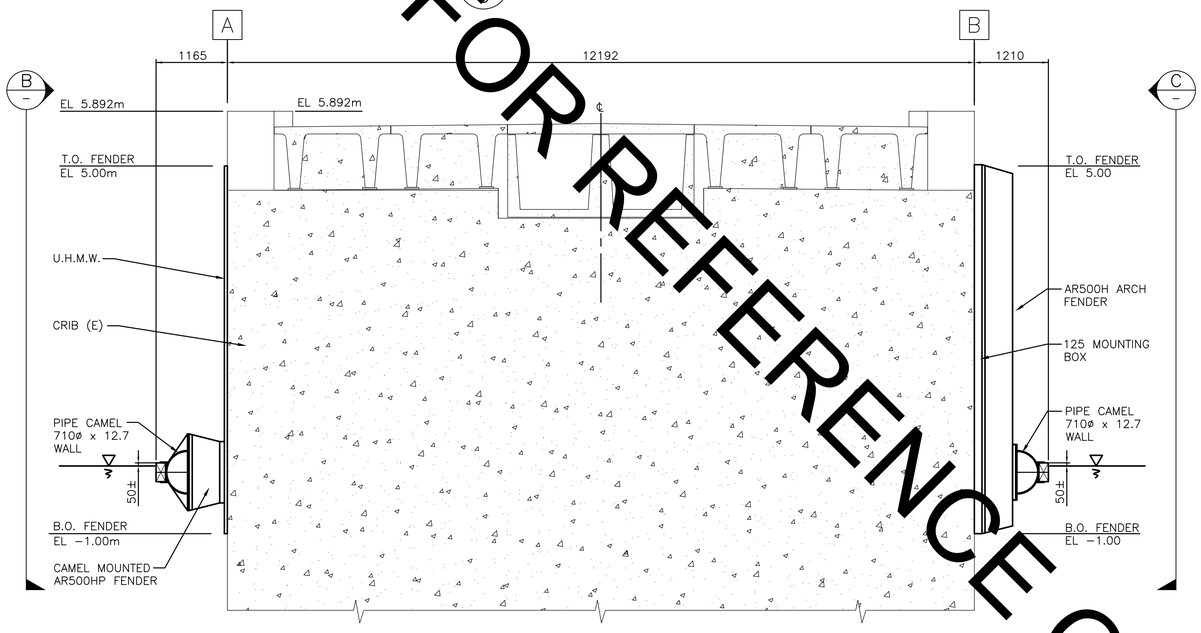


B ELEVATION
1:50



A SECTION
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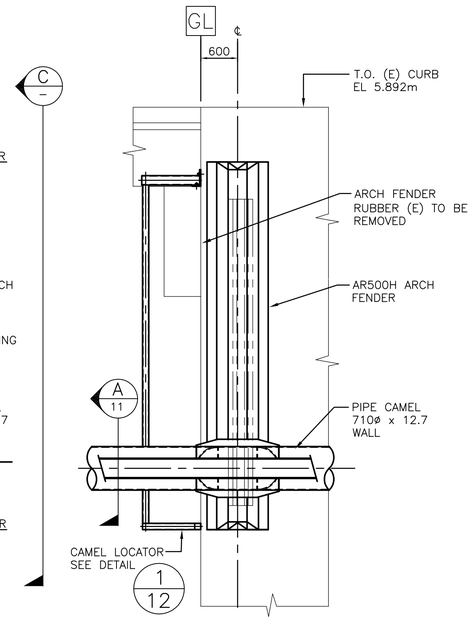

C ELEVATION
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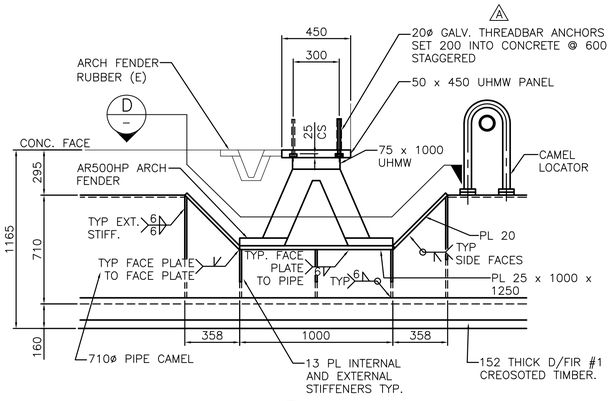

2 DETAIL
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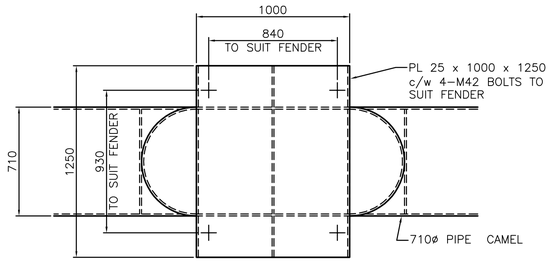
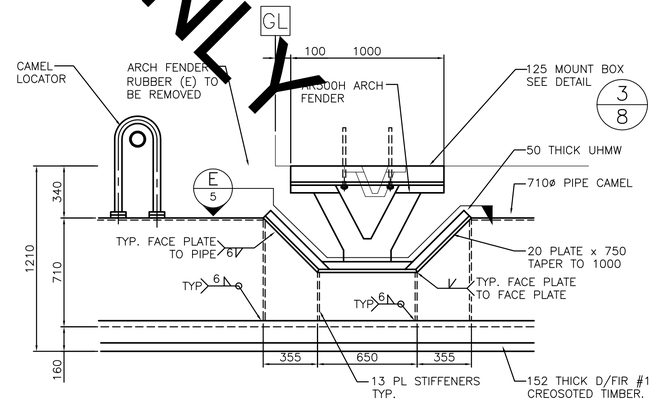


D 710ø CAMEL
1:20

SPLICE AND ARCH
FENDER NOT SHOWN



3 DETAIL
1:20

SPLICE NOT SHOWN

Public Works and Government Services Canada
Travsaux publics et Services gouvernmentaux Canada

Pacific Region
Region du Pacifique

Fisheries and Oceans Canada

KM Engineering Group Inc.
Consulting Engineers KM 04−2003
Suite 305 − 895 Fort Street, Victoria, B.C. V8W 1H7
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CAD FILE No. − SHEET 6

KM ENGINEERING PROJECT No. − KM 04−03

number	revision	revision	date
A	AS BUILT		DEC. 6, 2004

A detail number / number du detail
B source drawing no. / de dessin no.
C detail on drawing no. / detail sur dessin no.

project / projet

PATRICIA BAY, B.C.
INSTITUTE OF OCEAN SCIENCES
MAIN WHARF
FENDERING UPGRADE

drawing / dessin

DETAILS AT PIER 1 CRIBS

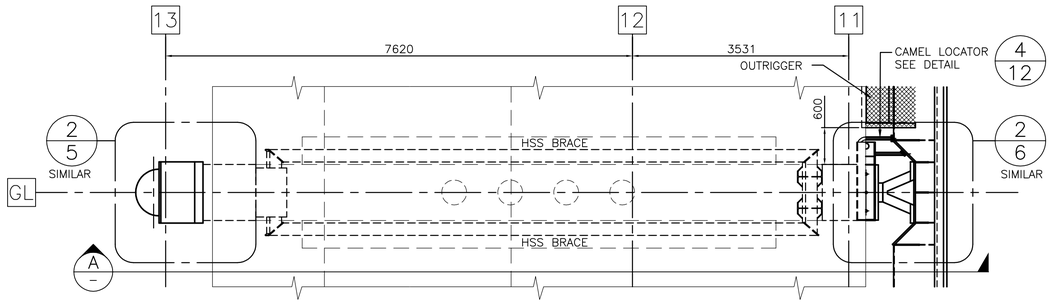
designed MAHOMED KATHRADA, P. ENG. concu
date 03.03.03 date
drawn ARLEN DONNELLY dessine
date 03.03.10 date
approved approuve
date date
Tender Soumission

PWGSC Project Manager Administrateur de projets TPSGC
project number numéro du projet

853033

drawing number / numéro du dessin: 006
rev.: A

05−22−03



1/3 DETAIL @ CROSS PIER BENTS
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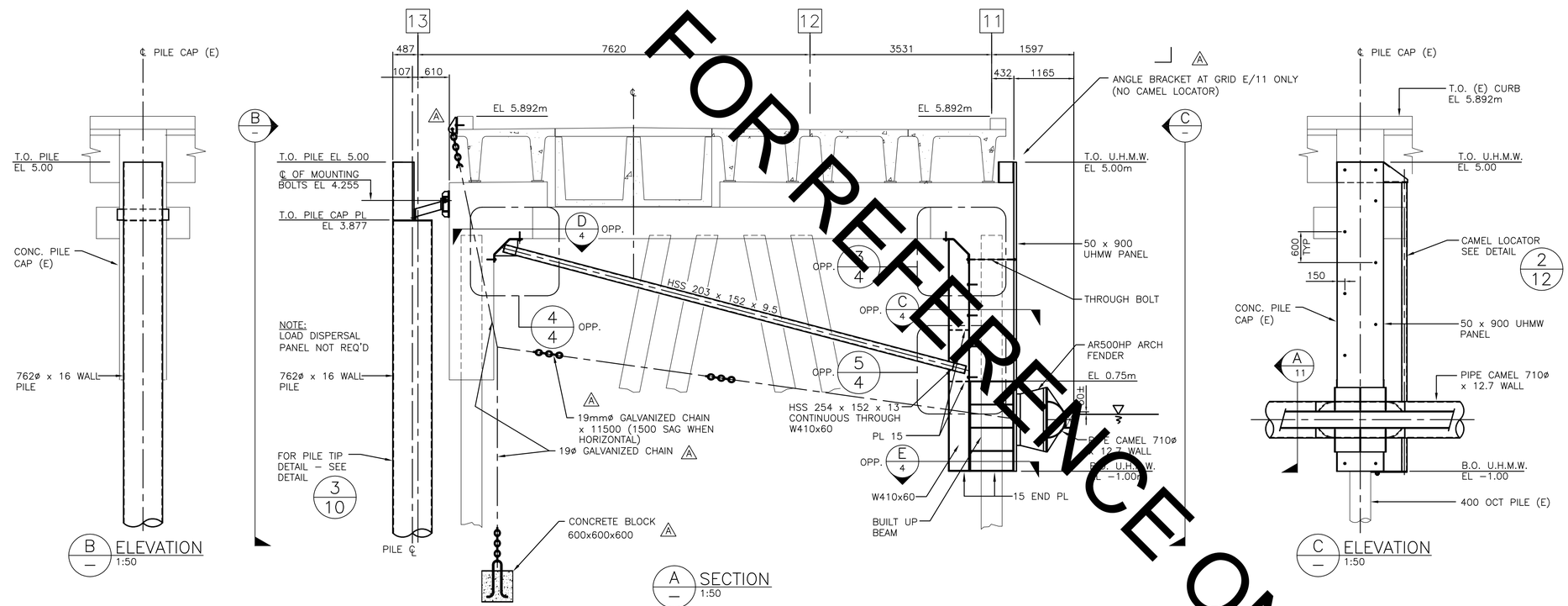
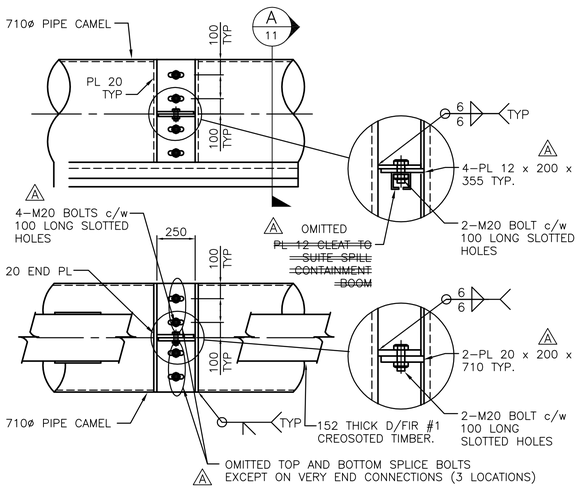


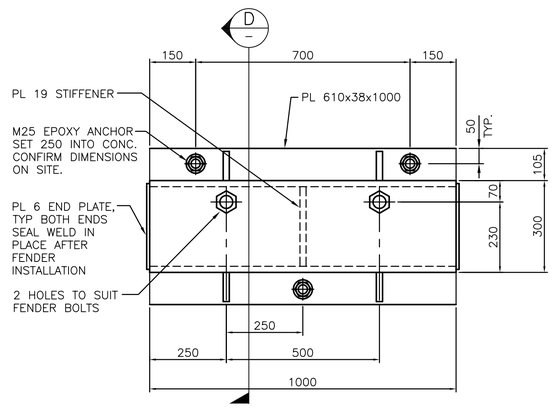
B/– ELEVATION
1:50

A/– SECTION
1:50

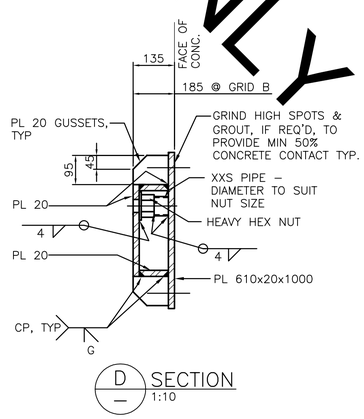
C/– ELEVATION
1:50



2/3 TYP SPLICE DETAIL
1:20



3/– UE FENDER MOUNT DETAIL
1:10



D/– SECTION
1:10

FOR REFERENCE ONLY

Public Works and Government Services Canada / Travaux publics et Services gouvernementaux Canada

Pacific Region / Region du Pacifique

Fisheries and Oceans Canada

KM Engineering Group Inc.
Consulting Engineers KM 04–2003
Suite 305 – 895 Fort Street, Victoria, B.C. V8W 1H7
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CAD FILE No. – SHEET 7

KM ENGINEERING PROJECT No. – KM 04–03

number	revision	revision	date
A	AS BUILT		DEC. 3, 2004

A/C detail number / number du detail
B source drawing no. / de dessin no.
C detail on drawing no. / detail sur dessin no.
A/B|C

project / projet

PATRICIA BAY, B.C.
INSTITUTE OF OCEAN SCIENCES
MAIN WHARF
FENDERING UPGRADE

drawing / dessin

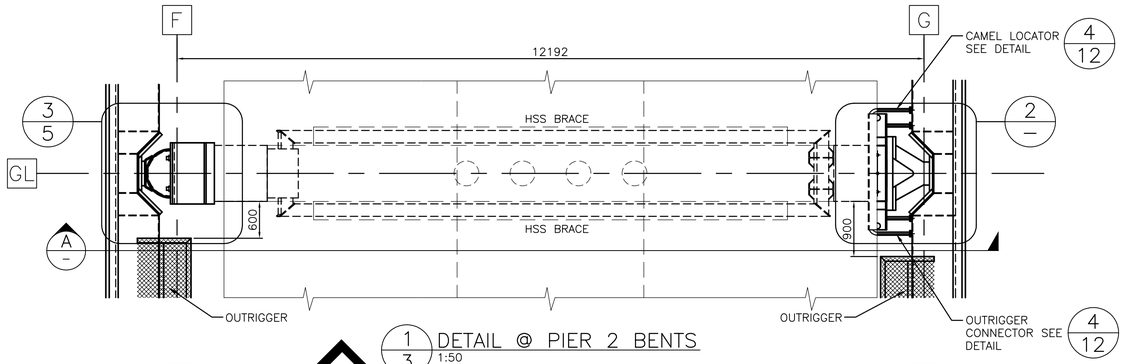
DETAILS AT CROSS PIER BENTS

designed MAHOMED KATHRADA, P. ENG. concu
date 03.03.03 date
drawn ARLEN DONNELLY dessine
date 03.03.10 date
approved approuve
date date
Tender Soumission

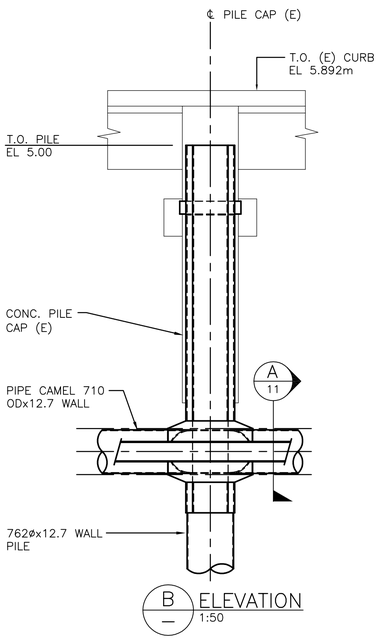
PWGSC Project Manager Administrateur de projets TPSGC
project number / numéro du projet
853033

drawing number / numéro du dessin: 007
rev.: A

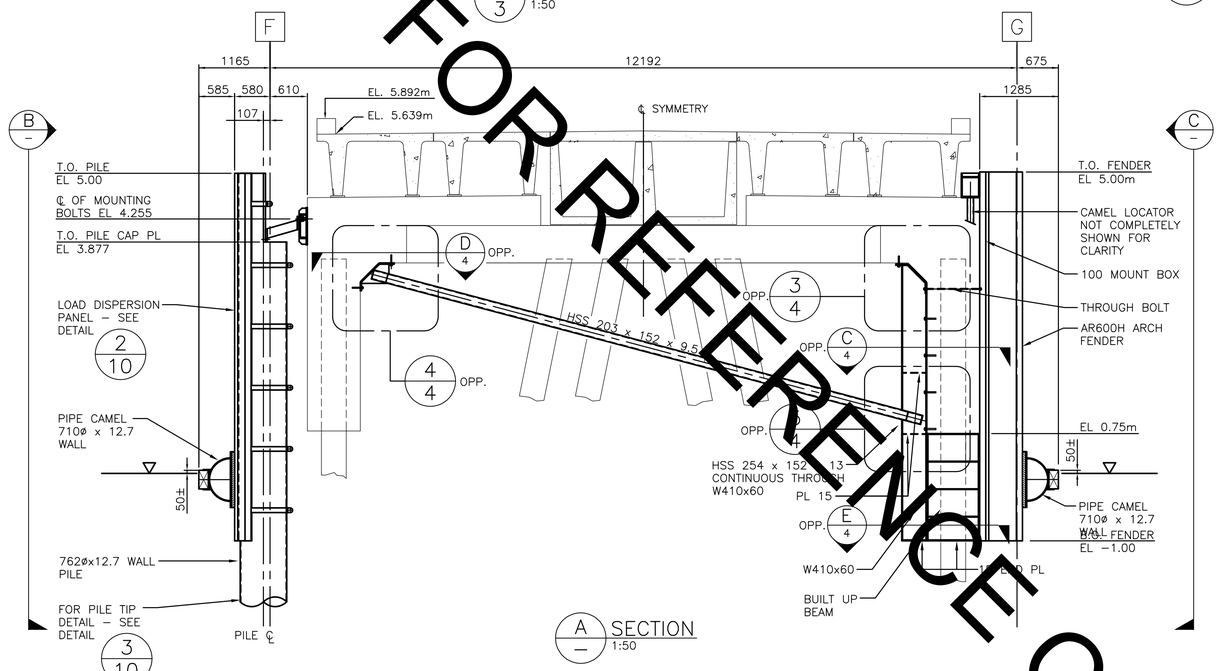
05-22-03



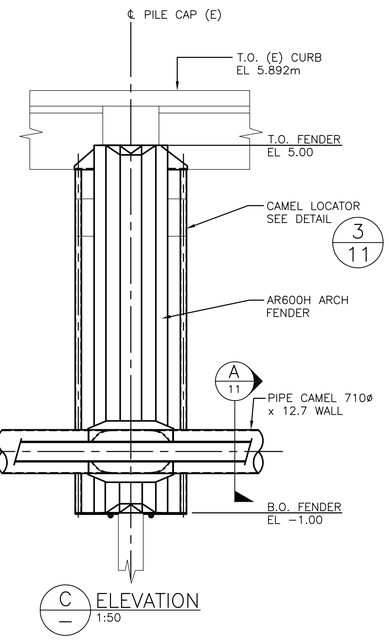
1/3 DETAIL @ PIER 2 BENTS
1:50



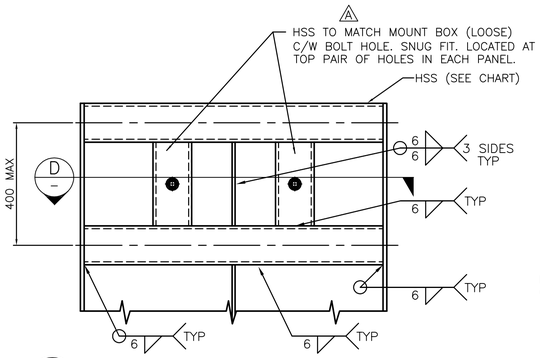
B/– ELEVATION
1:50



A/– SECTION
1:50

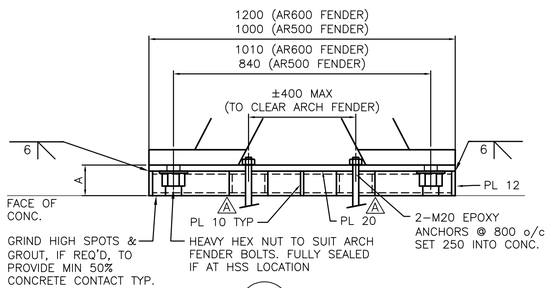


C/– ELEVATION
1:50

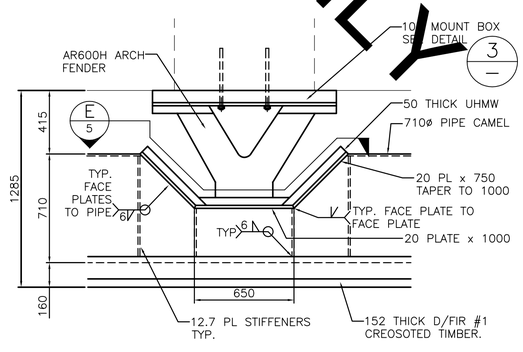


3/– ARCH FENDER MOUNT BOX DETAIL
1:10

BOX TYPE	DIM A	HSS
100 MOUNT BOX	96	HSS 127 x 76 x 9.5
125 MOUNT BOX	122	HSS 152 x 102 x 9.5
150 MOUNT BOX	172	HSS 152 x 152 x 9.5



D/– SECTION
1:10



2/– DETAIL
1:20

Public Works and Government Services Canada
Travsaux publics et Services gouvernmentaux Canada
Pacific Region
Region du Pacifique

Fisheries and Oceans Canada

KM Engineering Group Inc.
Consulting Engineers KM 04–2003
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CAD FILE No. – SHEET 8

KM ENGINEERING PROJECT No. – KM 04–03

number	revision	revision	date
A	AS BUILT		DEC. 3, 2004

A detail number / number du detail
B source drawing no. / de dessin no.
C detail on drawing no. / detail sur dessin no.

project / projet

PATRICIA BAY, B.C.
INSTITUTE OF OCEAN SCIENCES
MAIN WHARF
FENDERING UPGRADE

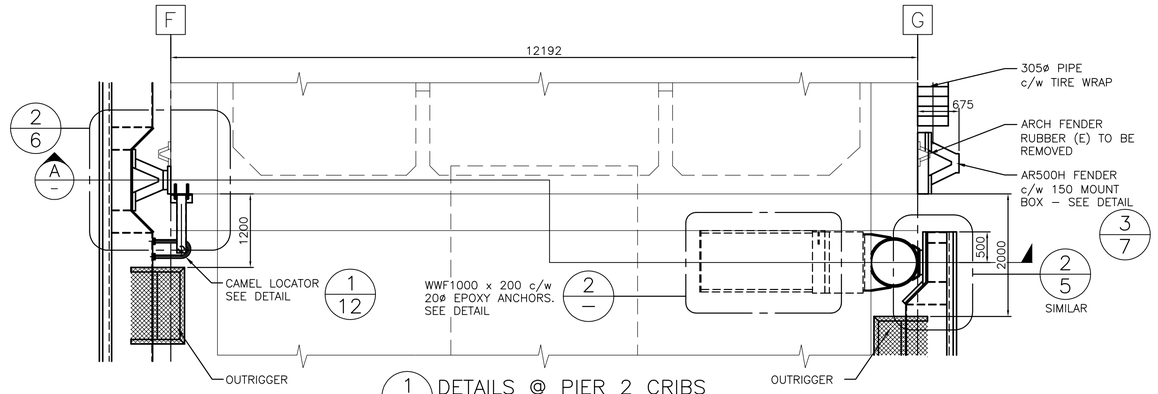
drawing / dessin

DETAILS AT PIER 2 BENTS

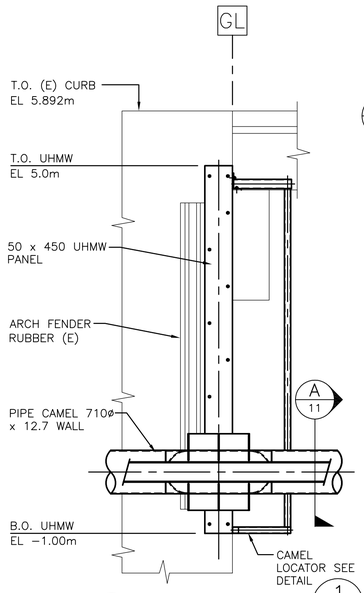
designed	MAHOMED KATHRADA, P. ENG.	concu
date	03.03.03	date
drawn	ARLEN DONNELLY	dessine
date	03.03.10	date
approved		approuve
date		date
Tender		Soumission

PWGSC Project Manager / Administrateur de projets TPSGC
project number / numéro du projet: 853033
drawing number / numéro du dessin: 008
rev.: A

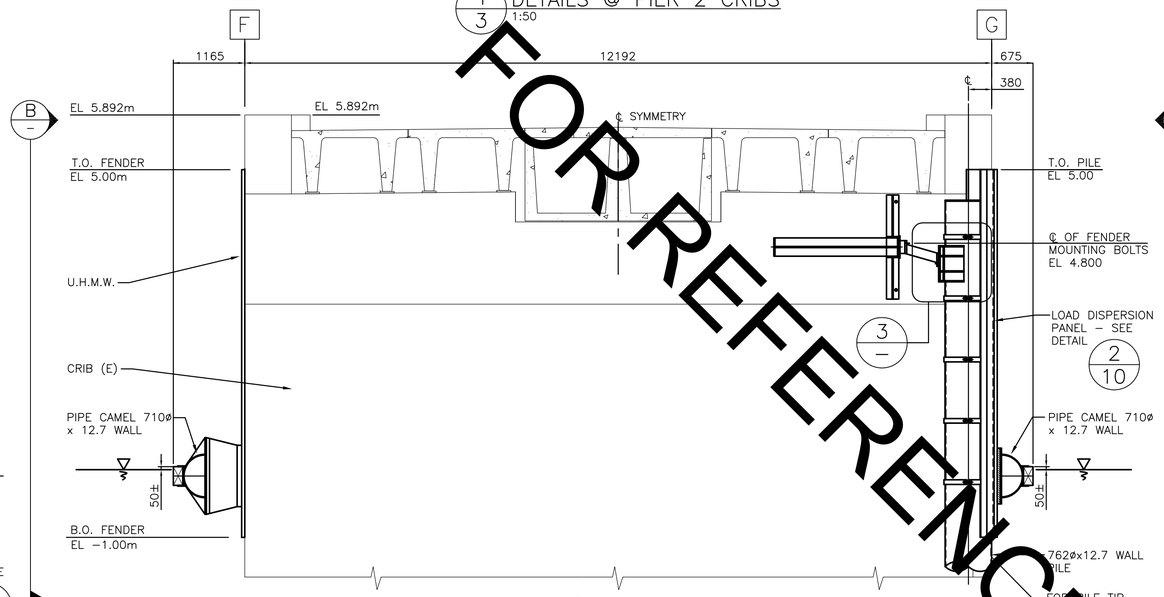
05-22-03



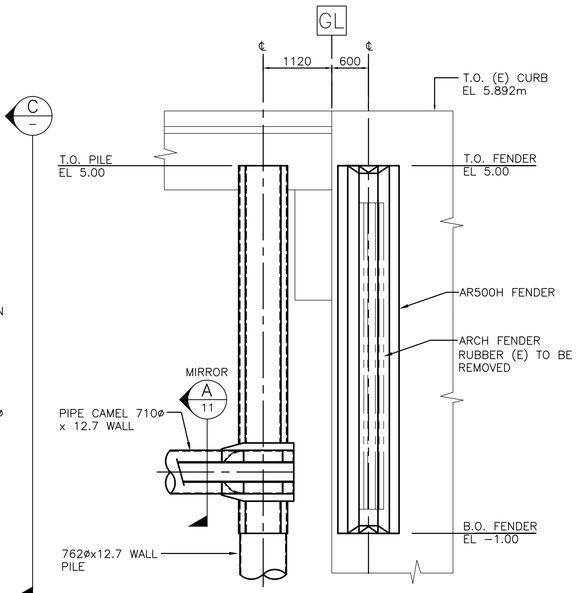
1/3 DETAILS @ PIER 2 CRIBS
1:50



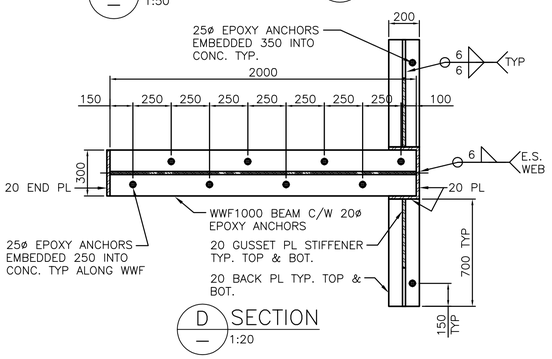
B/– ELEVATION
1:50



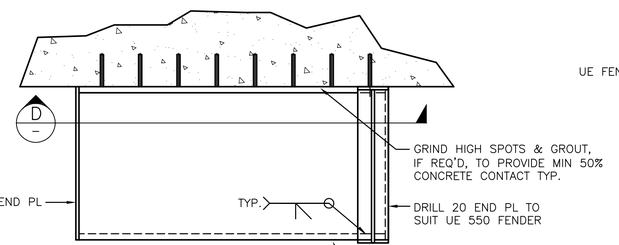
A/– SECTION
1:50



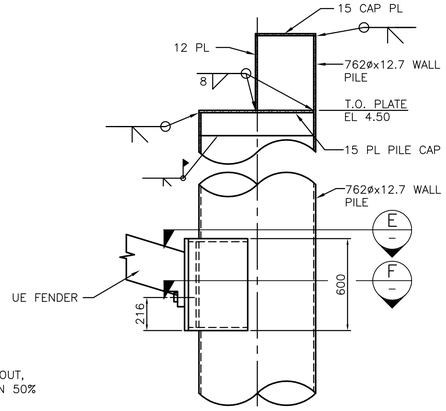
C/– ELEVATION
1:50



D/– SECTION
1:20

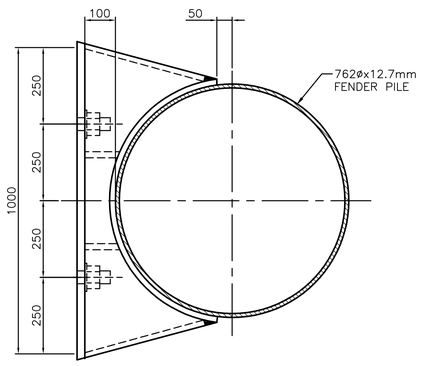


2/– DETAIL
1:20

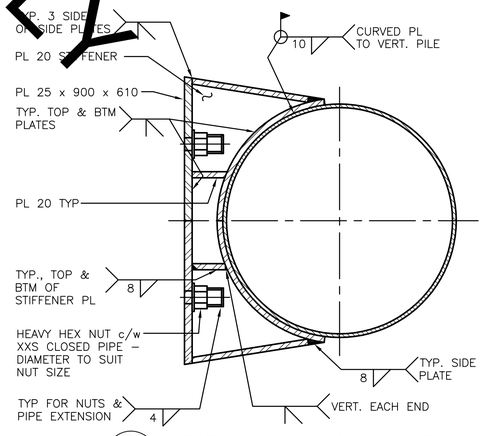


NOTE: LOAD DISPERSION PANEL NOT
SHOWN FOR CLARITY.

3/– DETAIL
1:20



E/– SECTION
1:10



F/– SECTION – WELDING DETAIL
1:10

Public Works and Government Services Canada | Travaux publics et Services gouvernementaux Canada

Pacific Region | Region du Pacifique

Fisheries and Oceans Canada

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CAD FILE No. – SHEET 9

KM ENGINEERING PROJECT No. – KM 04–03

number	revision	revision	date
A	AS BUILT (NO CHANGE)		DEC. 7, 2004

A/C — A detail number / number du detail; B source drawing no. / de dessin no.; C detail on drawing no. / detail sur dessin no. — A/B|C

project / projet

PATRICIA BAY, B.C.
INSTITUTE OF OCEAN SCIENCES
MAIN WHARF
FENDERING UPGRADE

drawing / dessin

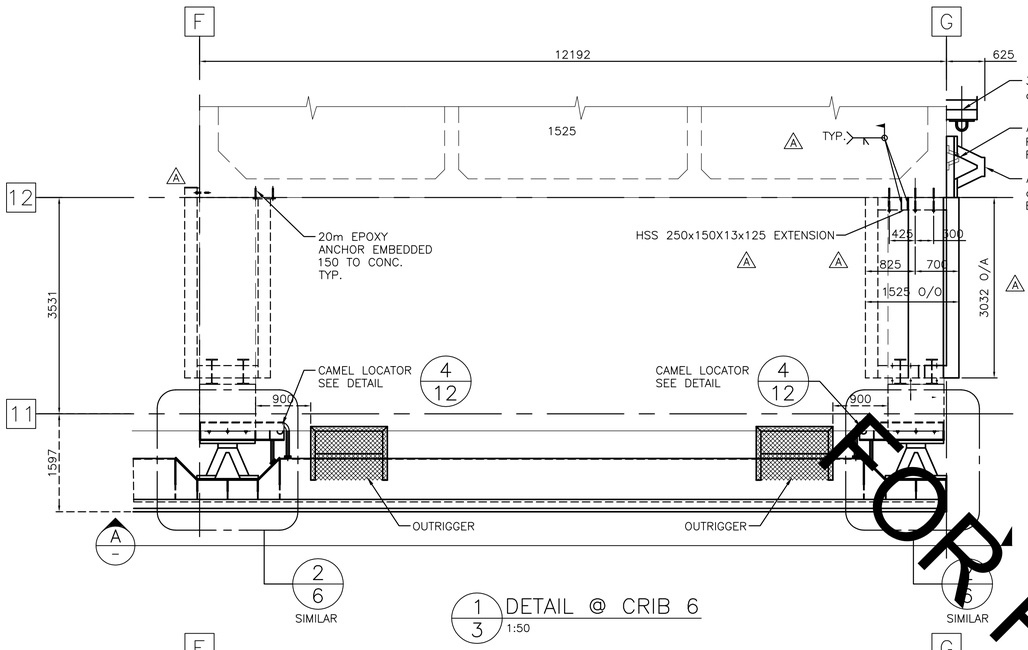
DETAILS AT PIER 2 CRIBS

designed	MAHOMED KATHRADA, P. ENG.	concu
date	03.03.03	date
drawn	ARLEN DONNELLY	dessine
date	03.03.10	date
approved		approuve
date		date
Tender		Soumission
PWGSC Project Manager		Administrateur de projets TPSGC

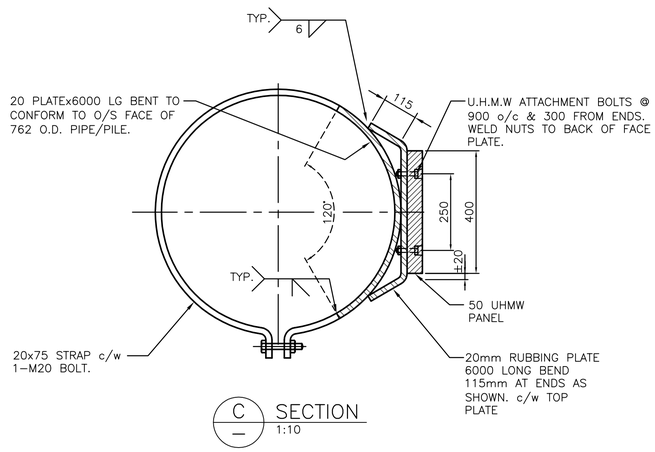
project number / numéro du projet: 853033

drawing number / numéro du dessin: 009 — rev.: A

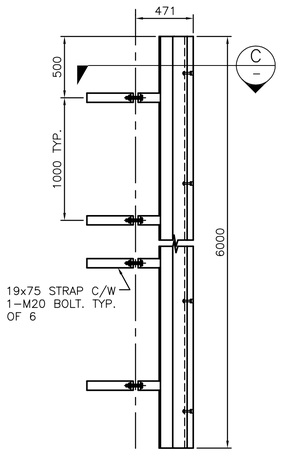
05–22–03



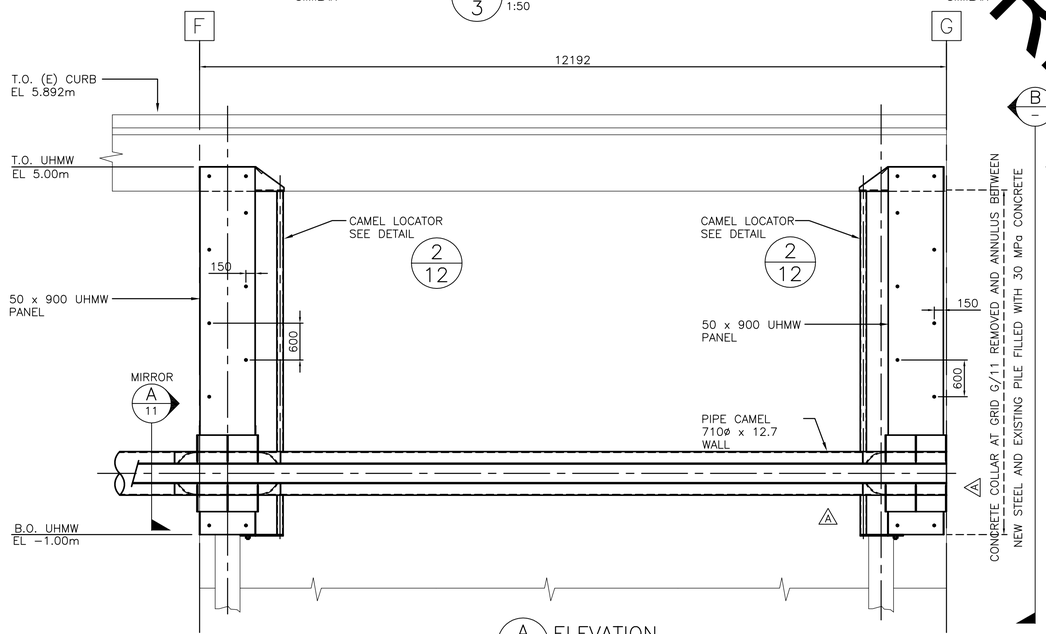
1/3 DETAIL @ CRIB 6
1:50



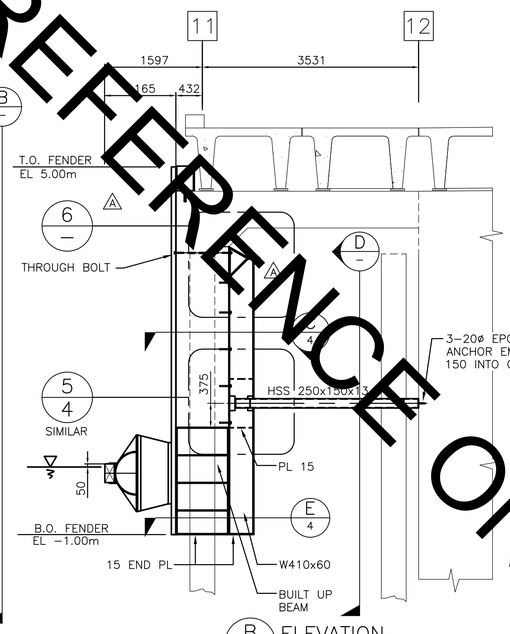
C/– SECTION
1:10



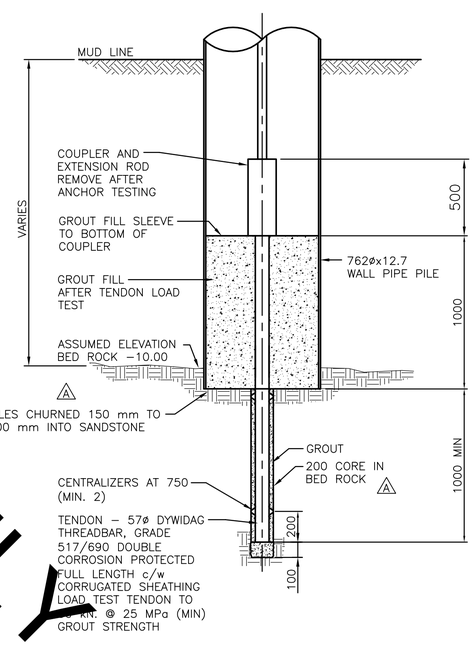
2/– DETAIL – LOAD DISPERSION PANEL
1:25



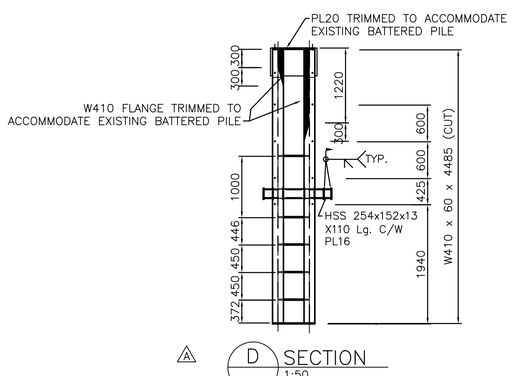
A/– ELEVATION
1:50



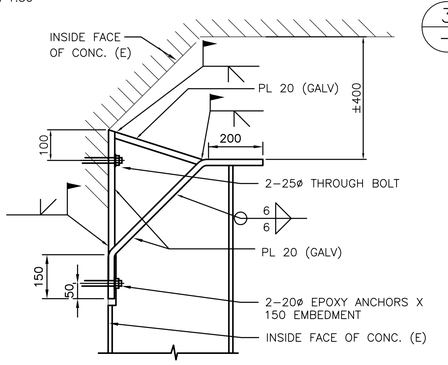
B/– ELEVATION
1:50



3/– PILE TIP DETAIL
1:20



A/D SECTION
1:50



A/6 DETAIL AT GRID F AND G/11 ONLY
1:10

M9D – FENDER MOUNT DETAIL MODIFICATION
GRID 11/G

Public Works and Government Services Canada | Travaux publics et Services gouvernementaux Canada

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CAD FILE No. – SHEET 10

KM ENGINEERING PROJECT No. – KM 04–03

number	revision	revision	date
A	AS BUILT		DEC. 5, 2004

A/C A detail number number du detail
B source drawing no. de dessin no.
C detail on drawing no. detail sur dessin no.
A/B|C

project / projet

PATRICIA BAY, B.C.
INSTITUTE OF OCEAN SCIENCES
MAIN WHARF
FENDERING UPGRADE

drawing / dessin

DETAILS AT CRIB 6

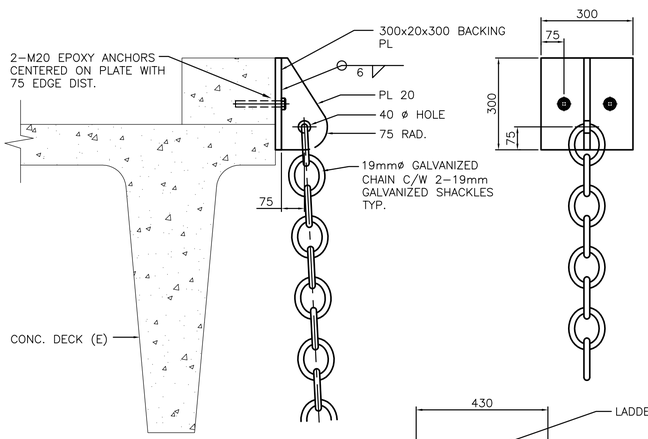
designed MAHOMED KATHRADA, P. ENG. concu
date 03.03.03 date
drawn ARLEN DONNELLY dessine
date 03.03.10 date
approved approuve
date date
Tender Soumission

PWGSC Project Manager Administrateur de projets TPSGC
project number / numéro du projet

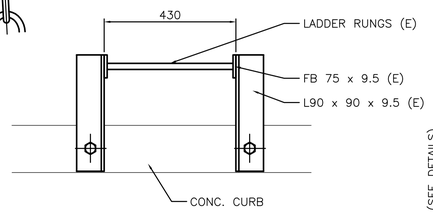
853033

drawing number / numéro du dessin: 010
rev.: A

05-22-03

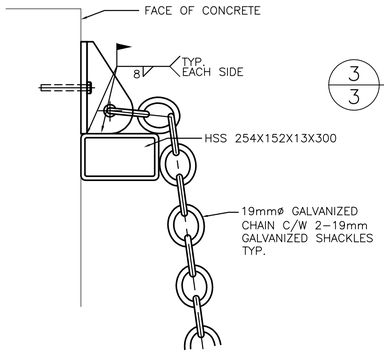


6/3 HANGER 1:10

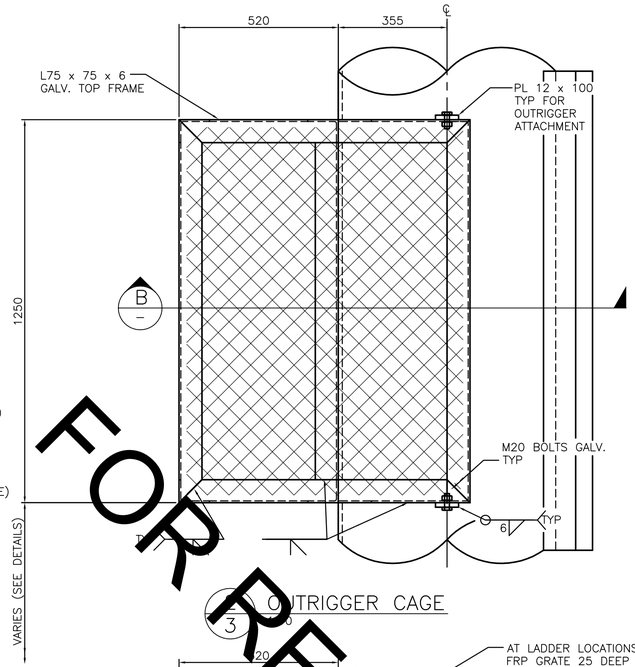


3/3 LADDER DETAIL (E) 1:20

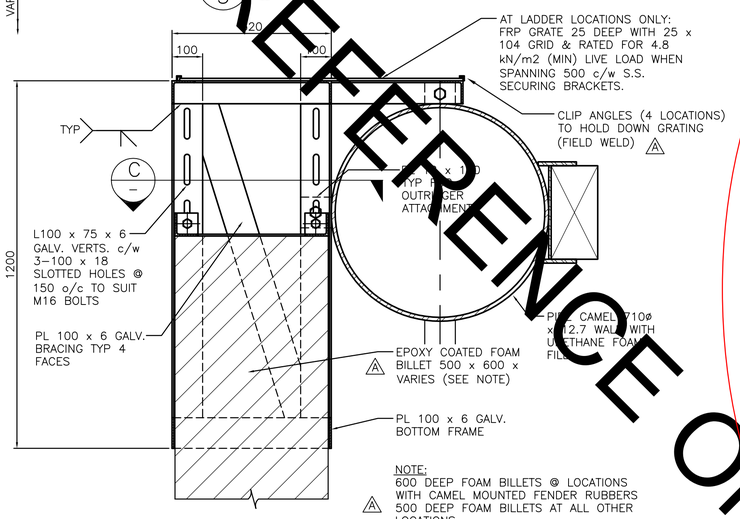
RE–ATTACH AS PER EXISTING



5/3 HANGER WITH CHAIN SUPPORT 1:10

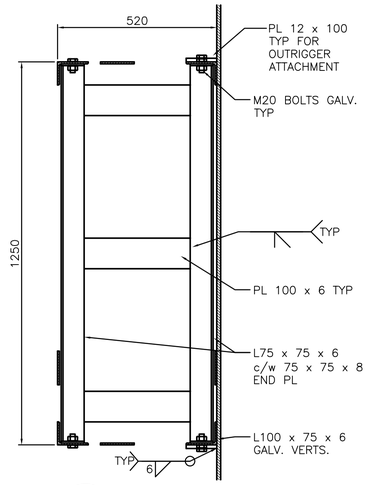


3/3 OUTRIGGER CAGE



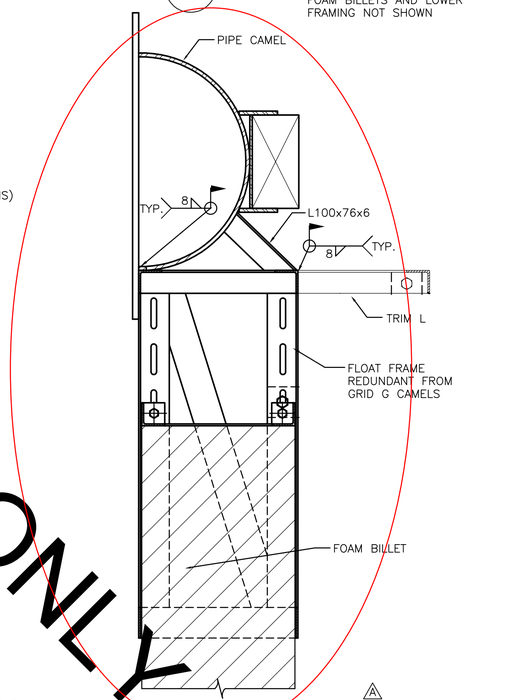
NOTE:
600 DEEP FOAM BILLETS @ LOCATIONS WITH CAMEL MOUNTED FENDER RUBBERS
500 DEEP FOAM BILLETS AT ALL OTHER LOCATIONS.
ADJUST HEIGHT TO PROVIDE LEVEL PLATFORM
SOME BILLETS WERE OMITTED ENTIRELY TO BALANCE CAMELS A

B/– SECTION 1:10

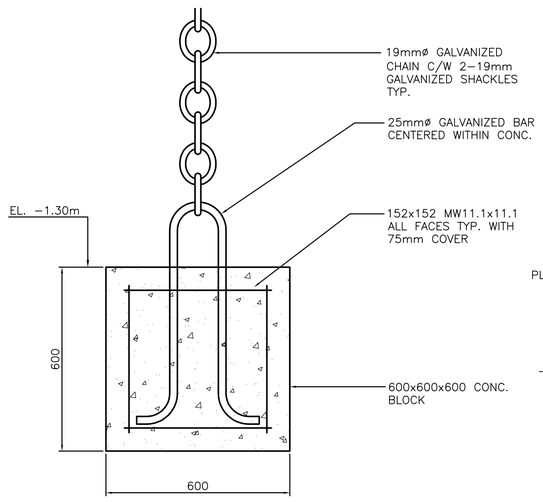


C/– SECTION 1:10

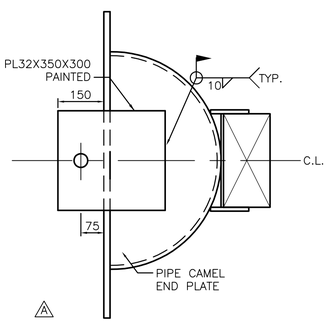
FOAM BILLETS AND LOWER FRAMING NOT SHOWN



A ADD FLOATATION – END CAMELS 1:10 THREE LOCATIONS

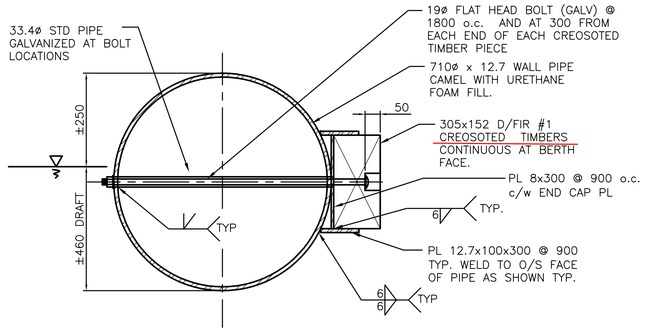


1/3 FENDER RETAINING CHAIN 1:10

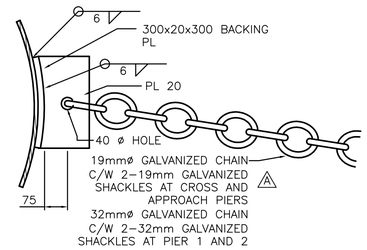


A

7/11 CHAIN ATTACHMENT – END CAMELS 1:10



A/– TYP. SECTION 1:10



4/3 HORIZONTAL CHAIN TIE 1:20

Public Works and Government Services Canada | Travsaux publics et Services gouvernmentaux Canada

Pacific Region | Region du Pacifique

Fisheries and Oceans Canada

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CAD FILE No. – SHEET 11

KM ENGINEERING PROJECT No. – KM 04–03

A	AS BUILT	DEC. 7, 2004
	revision	

A/C A detail number / number du detail
B source drawing no. / de dessin no.
C detail on drawing no. / detail sur dessin no.
A/B/C

project / projet

PATRICIA BAY, B.C.
INSTITUTE OF OCEAN SCIENCES
MAIN WHARF
FENDERING UPGRADE

drawing / dessin

OUTRIGGER AND CAMEL LOCATING CHAIN DETAILS

designed	MAHOMED KATHRADA, P. ENG.	concu
date	03.03.03	date
drawn	ARLEN DONNELLY	dessine
date	03.03.10	date
approved		approuve
date		date
Tender		Soumission

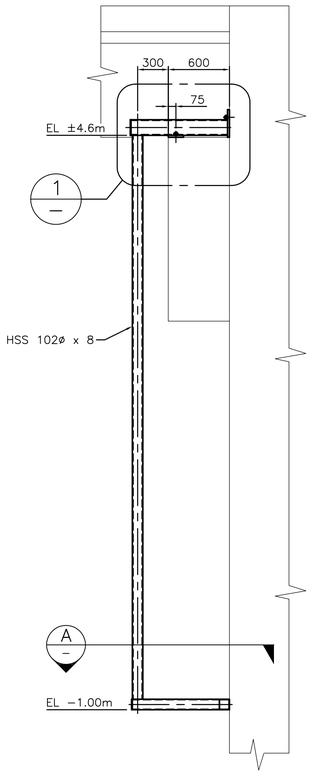
PWGSC Project Manager / Administrateur de projets TPSGC

project number / numéro du projet: 853033

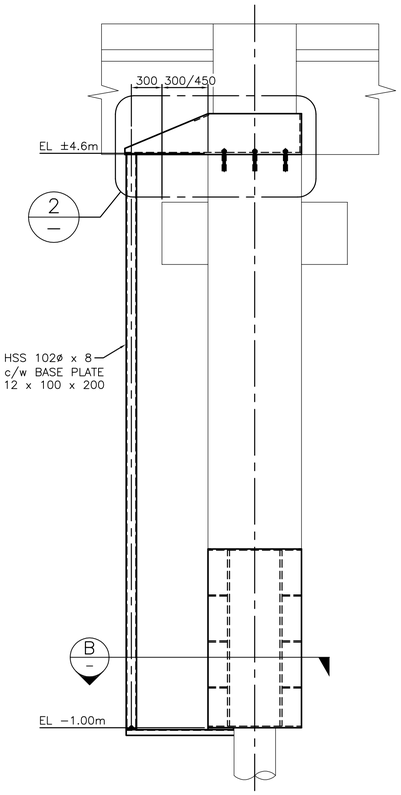
drawing number / numéro du dessin: 011

rev.: A

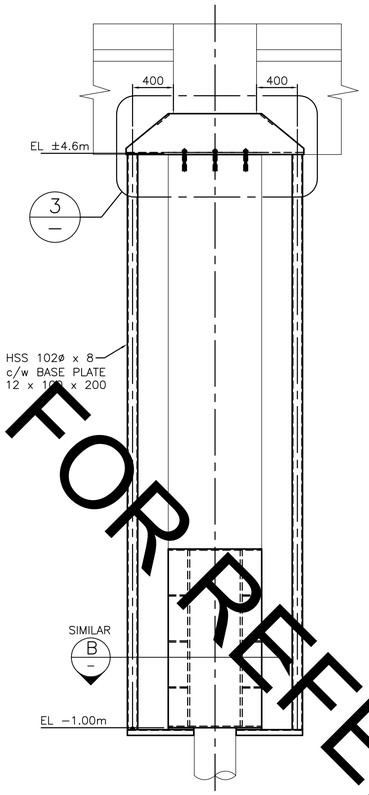
05–22–03



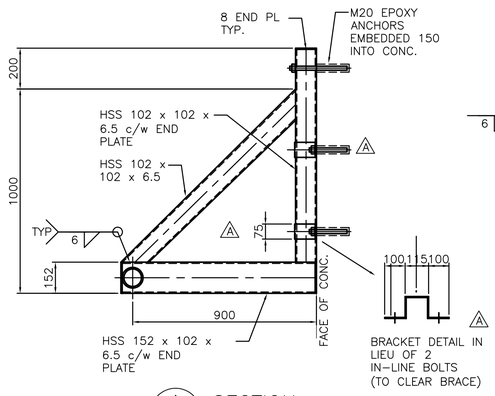
1 / 6 CAMEL LOCATOR FOR CRIBS
1:30
CAMELS AND FENDERS NOT SHOWN OPPOSITE AS SHOWN IN SOME LOCATIONS



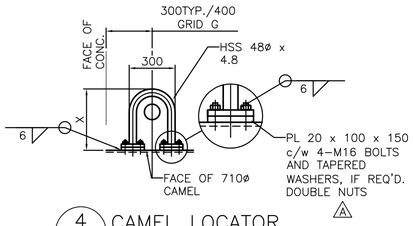
2 / 4 CAMEL LOCATOR FOR BENTS
1:30
APPROACH PIER SHOWN
CAMELS AND FENDERS NOT SHOWN OPPOSITE AS SHOWN IN SOME LOCATIONS
A OMITTED AT BENTS 6 AND 10 ON APPROACH PIER



3 / 8 CAMEL LOCATOR FOR BENTS @ GRID
1:30
CAMELS AND FENDERS NOT SHOWN
CROSS PIER SIMILAR (1 SIDE ONLY)

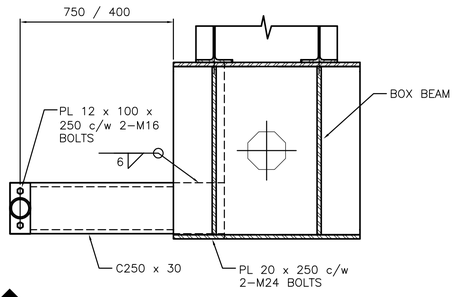


A SECTION
1:15

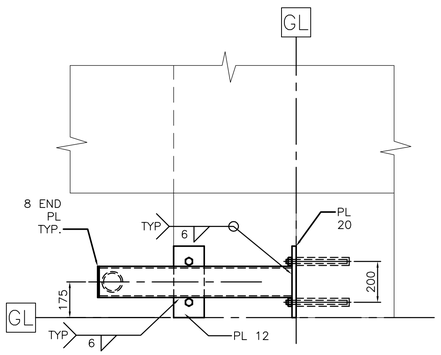


4 CAMEL LOCATOR
1:20

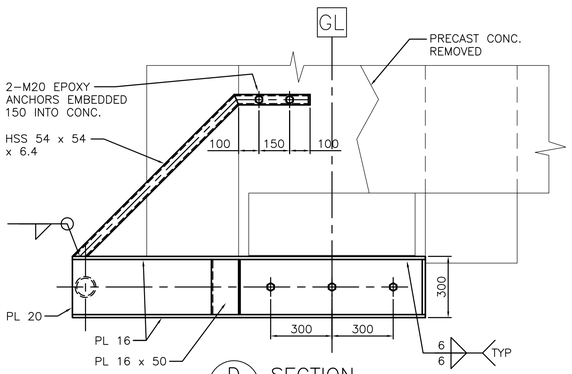
LOCATION	X DIM
APPROACH PIER	750
PIER 1 CRIB, GRID A	725
PIER 1 CRIB, GRID B	750
PIER 2 CRIB, GRID F	725
PIER 2 BENT, GRID G	800
CROSS PIER, GRID 11	750



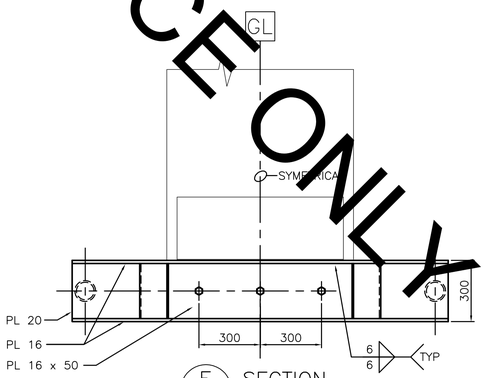
B SECTION
1:15



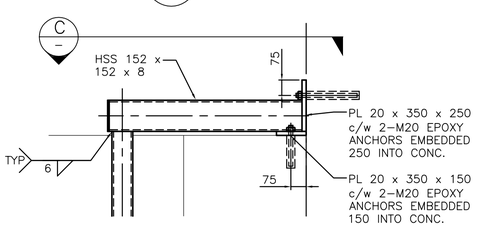
C SECTION
1:15



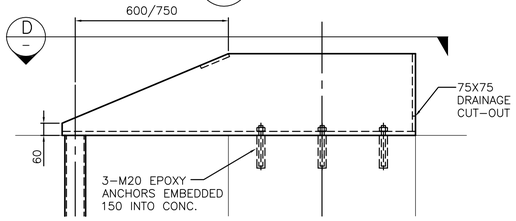
D SECTION
1:15



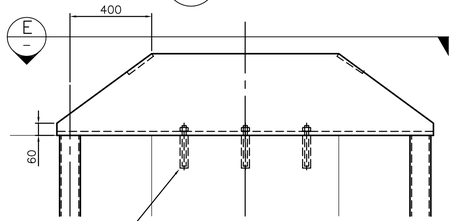
E SECTION
1:15



1 DETAIL
1:15



2 DETAIL
1:15



3 DETAIL
1:15

Public Works and Government Services Canada | Travsaux publics et Services gouvernmentaux Canada

Pacific Region | Region du Pacifique

Fisheries and Oceans Canada

KM Engineering Group Inc.
Consulting Engineers KM 04−2003
Suite 305 − 895 Fort Street, Victoria, B.C. V8W 1H7
TEL: (250) 920−7979 FAX: (250) 920−7911

CAD FILE No. − SHEET 12

KM ENGINEERING PROJECT No. − KM 04−03

number	revision	revision	date
A	AS BUILT		DEC. 7, 2004

A detail number / number du detail
B source drawing no. / de dessin no.
C detail on drawing no. / detail sur dessin no.

project / projet

PATRICIA BAY, B.C.
INSTITUTE OF OCEAN SCIENCES
MAIN WHARF
FENDERING UPGRADE

drawing / dessin

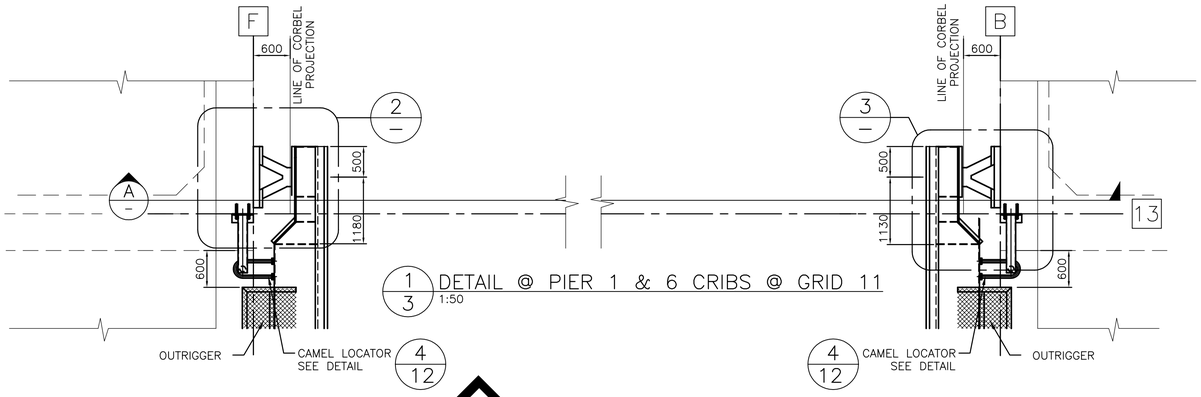
CAMEL LOCATING HSS & FRAME DETAILS

designed MAHOMED KATHRADA, P. ENG. concu
date 03.03.03 date
drawn ARLEN DONNELLY dessine
date 03.03.10 date
approved approuve
date date
Tender Soumission
PWGSC Project Manager Administrateur de projets TPSGC
project number / numéro du projet

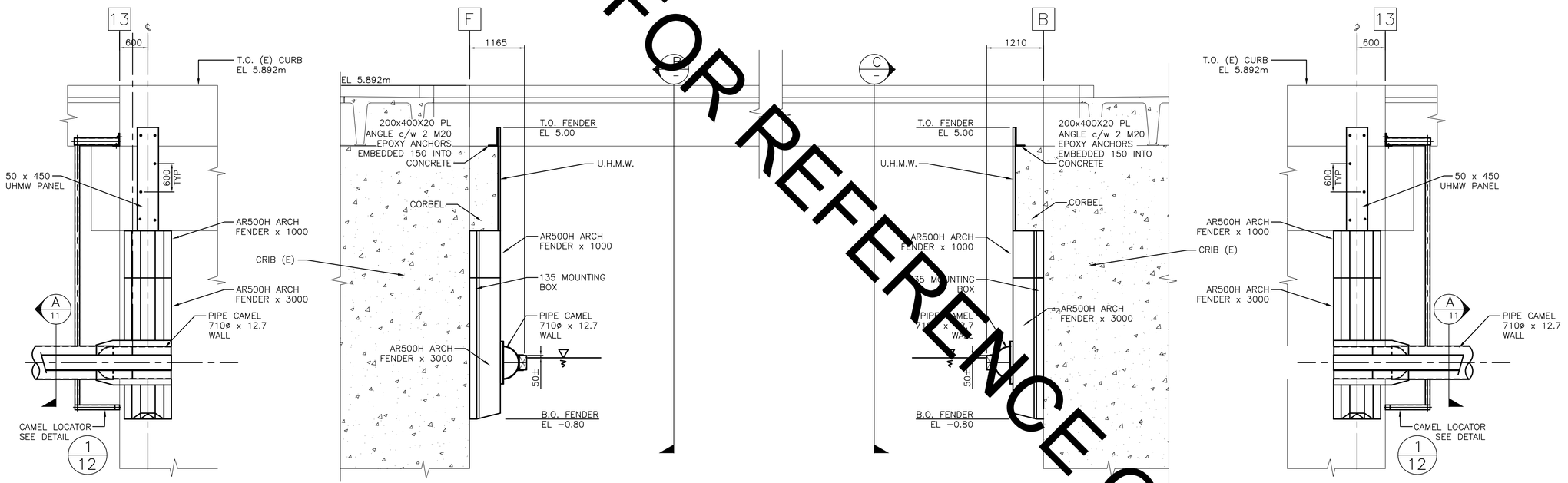
853033

drawing number / numéro du dessin: 012
rev.: A

05−22−03



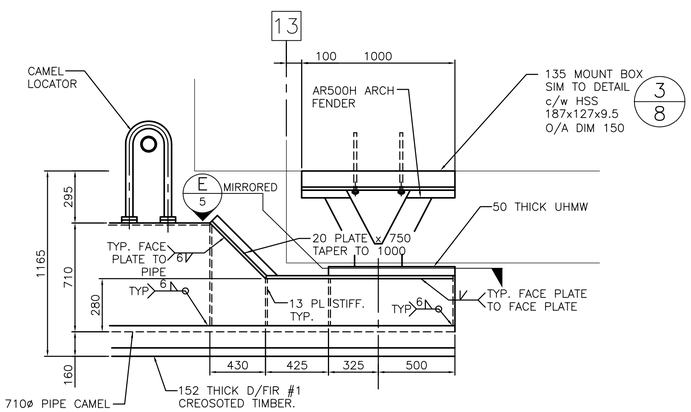
1/3 DETAIL @ PIER 1 & 6 CRIBS @ GRID 11
1:50



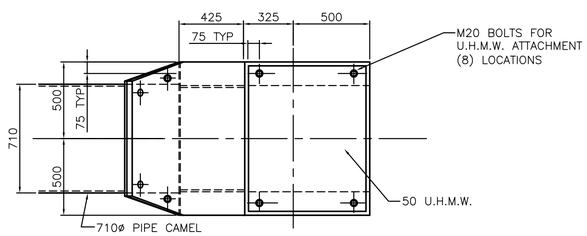
B ELEVATION
1:50

A SECTION
1:50

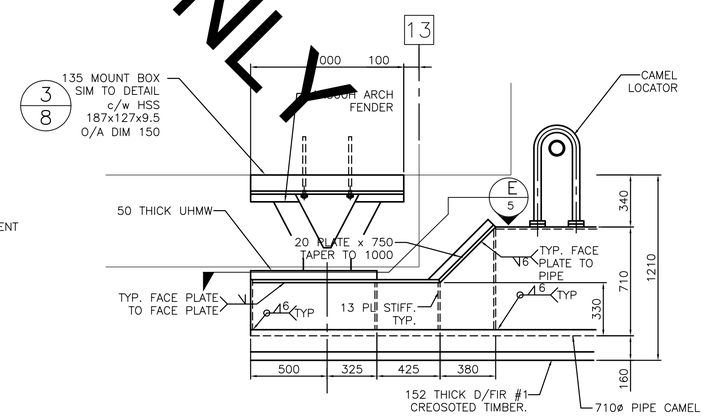
C ELEVATION
1:50



2/— DETAIL
1:20



E SECTION
1:20



DETAIL 2/—
1:20

Public Works and Government Services Canada
Travaux publics et Services gouvernmentaux Canada
Pacific Region
Region du Pacifique

Fisheries and Oceans Canada

KM Engineering Group Inc.
Consulting Engineers KM 04-2003
Suite 305 – 895 Fort Street, Victoria, B.C. V8W 1H7
TEL: (250) 920-7979 FAX: (250) 920-7911

CAD FILE No. – SHEET 6

KM ENGINEERING PROJECT No. – KM 04-03

number	revision	revision	date
A	AS BUILT (NO CHANGE)		DEC. 7, 2004

A detail number / number du detail
B source drawing no. / de dessin no.
C detail on drawing no. / detail sur dessin no.

project / projet

PATRICIA BAY, B.C.
INSTITUTE OF OCEAN SCIENCES
MAIN WHARF
FENDERING UPGRADE

drawing / dessin

DETAILS AT CRIBS 1 & 6 ON GRID 13

designed MAHOMED KATHRADA, P. ENG. concu
date 03.03.03 date
drawn ARLEN DONNELLY dessine
date 03.03.10 date
approved approuve
date date
Tender Soumission

PWGSC Project Manager Administrateur de projets TPSGC
project number / numéro du projet
853033

drawing number / numéro du dessin: 013
rev.: A

10-27-03

ANNEX 11

McALLISTER MARINE SURVEY & DESIGN LTD.
8466 COX DRIVE, MISSION B.C.
CANADA V2V 6V3
604-209-TUGS (8847) FAX 604-826-7202
E-MAIL : mmsdltd@telus.net

June 3, 2016 Our File # V 16/039

Trip in Tow Survey Of

Concrete Floats

For

Vancouver Pile Driving Ltd.

Report of survey undertaken March 8, 2010 review for subsequent 2016 tow by the undersigned surveyor of McAllister Marine Survey & Design Ltd. Survey performed at the request of Mr. Fred McMaster of Vancouver Pile Driving Ltd. for the purposes of approving the towing arrangements and preparations for voyages from the works of Vancouver Pile Driving Ltd. in North Vancouver, B.C. to the Steveston Harbour Authority tie-up in Richmond, B.C. and subsequently to Sydney, B.C. Survey was performed while the units were afloat at the wharves of Vancouver Pile Driving Ltd. in North Vancouver, B.C.

This report consists of 5 pages.

Unit Particulars

The units to be towed consist of a monolithic poured concrete structures fitted with pockets in the concrete deck and internal channels for the later installation of marina services. The structures are formed and poured over large expanded “Styrofoam” blocks and have no bottom shell. One end of each float is to be fitted with a steel weldment in the centerline pocket to serve as base for the towing connection that will distribute towing forces into the structure. We understand that the subject units are identical to the units surveyed and towed in 2010.

Towing Vessel

We understand that the intended tows will be contracted to Gisborne Marine Services with the intention of using the tug. The contractor shall be responsible to ensure that the tug is, in all respects, suitable for the intended tow.

Recommendations

1) Towing connection is to be made to a weldment set into the centerline pocket at one end of each float. The weldments are to be altered from their previous configuration to provide connection points for 2 shackles as shown in the attached drawing. The towing bridle is to be led from the shackle connections through the pockets on the towing end of the float that are transversely outboard of the pocket with the connection.

2) Chafe protection is to be fitted to the synthetic line bridle in way of the outboard pockets where the bridle changes direction from the duct below deck to lead to the tug. We understand that the proposed protection is to be split heavy wall rubber hose that will be closed around the bridle line and secured with heavy steel wire. This method of chafe protection is approved.

3) Chafe protection is to be provided at the point of contact between the tow bridle and the forward end of the float. We understand that the proposed protection will consist of a temporarily installed pipe that will provide a round contact point for the bridle. This method of chafe protection is approved.

4) The outboard towing end wood 12" x 12" rails are to be removed for the tow and secured to the remaining rails securely.

5) Towing speed and towline length to be regulated so as to eliminate sheering of tow as much as possible.

6) Tug to avoid contact with the tow except in calm conditions.

7) Transit of any constricted channel or pass to be made at slack water.

8) That the any of the planned voyage legs be commenced only when the predicted or expected significant wave height for the expected duration of the voyage is 2 feet or less.

9) Towing bridles and connections to be checked for chafe and lead on a regular basis.

10) Assist tugs to be engaged at the master's discretion.

11) Tandem towing is not approved.

12) Float to be lit as a barge during hours in conditions of reduced visibility and at night.

Subject to the above conditions the tows to Steveston Harbour Authority tie-up in Richmond, B.C. and to Sydney, B.C. are approved.

Acceptance and use of this report by the client acknowledges the client's understanding that the report has been composed of information that is believed to be true after reasonable investigation and inquiry but is not warranted to be so. The information was obtained without drilling, diving, ultrasonics, cleaning or opening up to expose parts or conditions ordinarily concealed. There were no tests for tightness or soundness conducted other than the conditions noted visually.

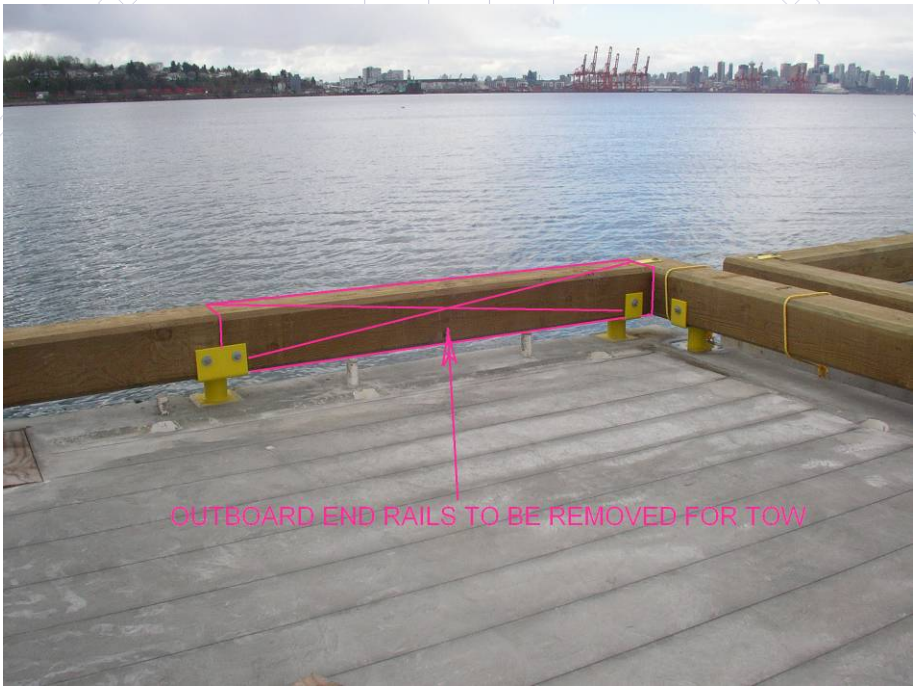
Acceptance and use of this report acknowledges the client's understanding that no determination of stability or structural strength has been made and no opinion is expressed.

Acceptance and use of this report acknowledges the client's understanding that McAllister Marine Survey & Design Ltd. does not accept any responsibility for damage or deterioration not found or discovered during the course of survey, nor for consequential damage, deterioration or loss due to any error or omission.

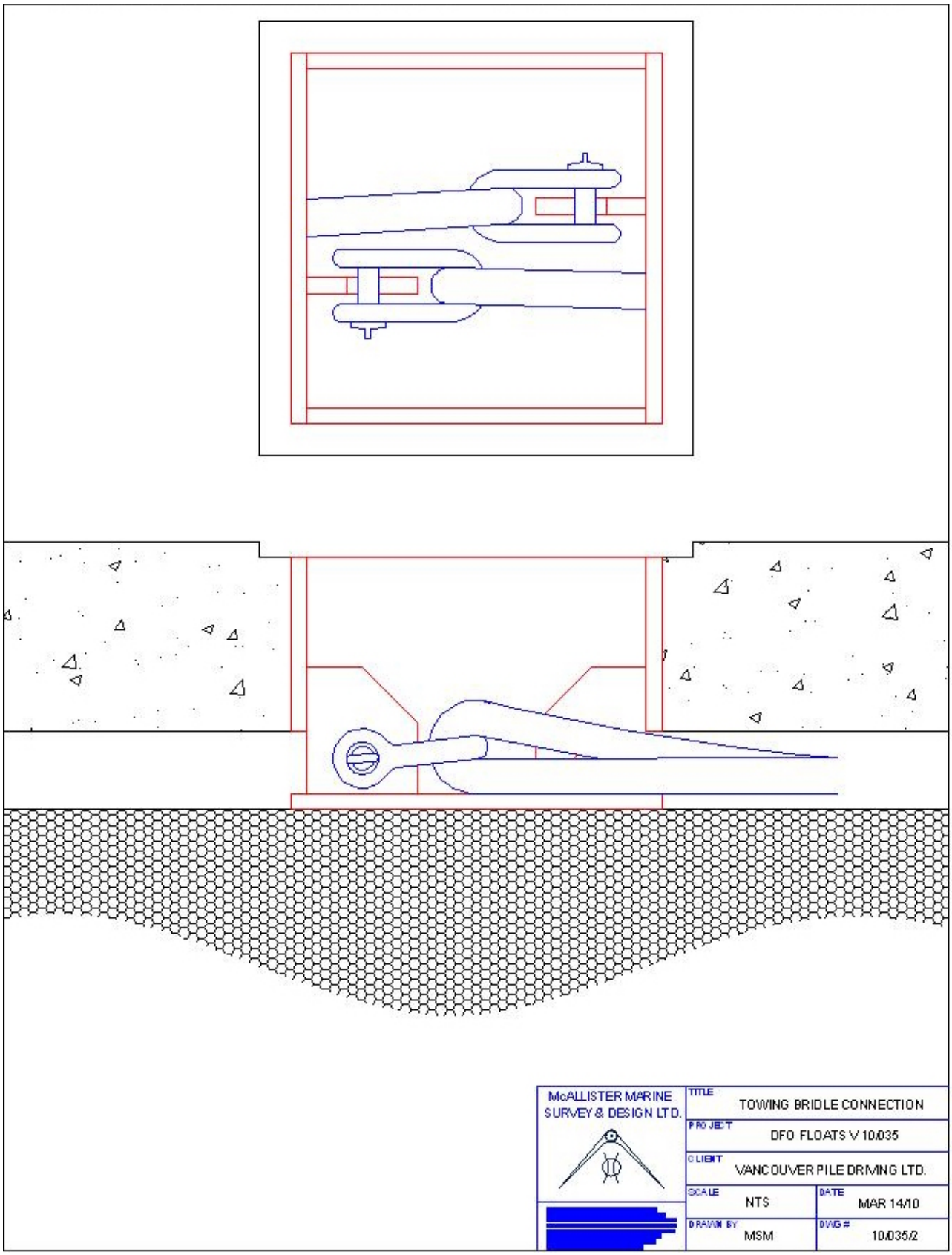
This report issued for the use of Vancouver Pile Driving Ltd.

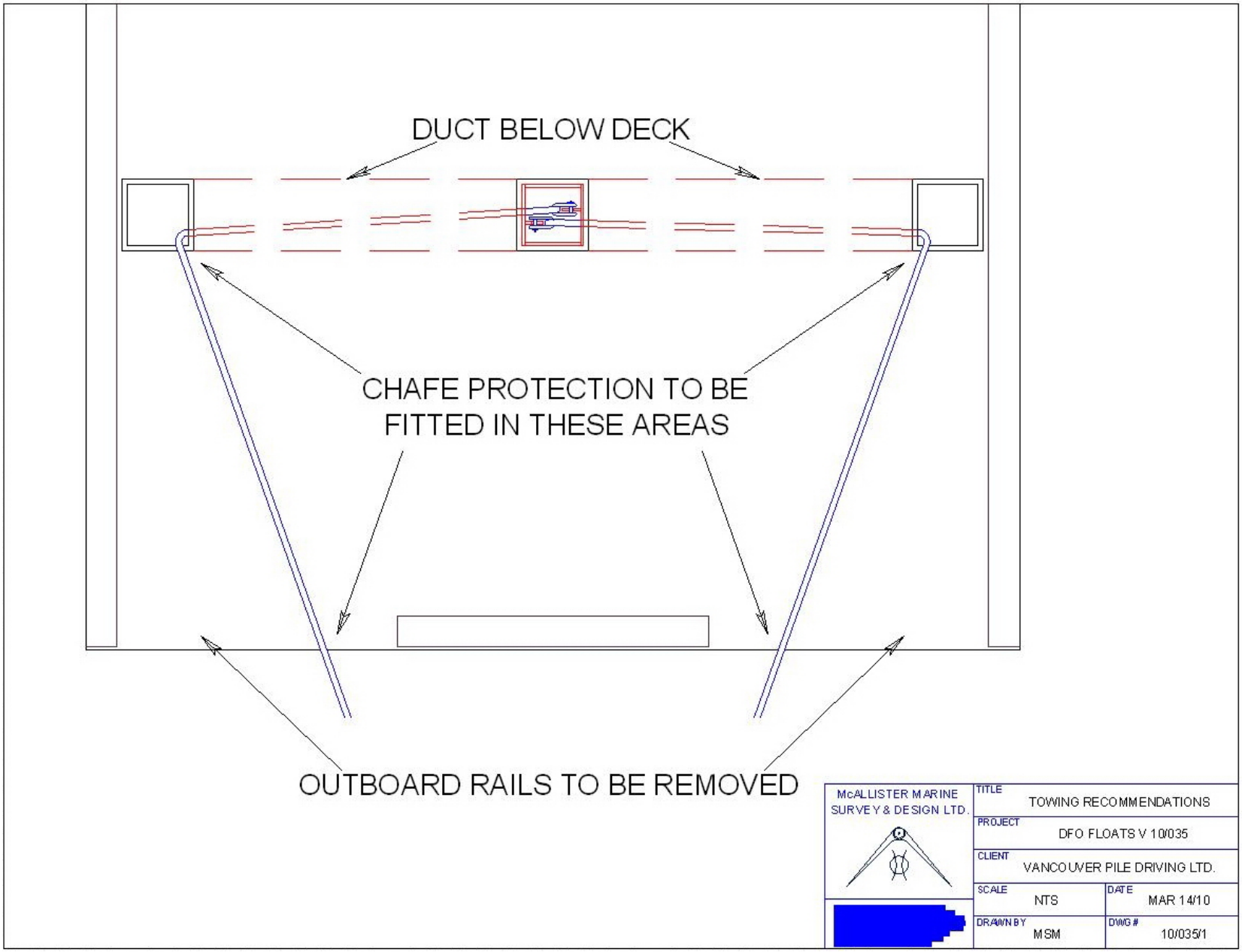
McAllister Marine Survey & Design Ltd.

Marc McAllister
Surveyor

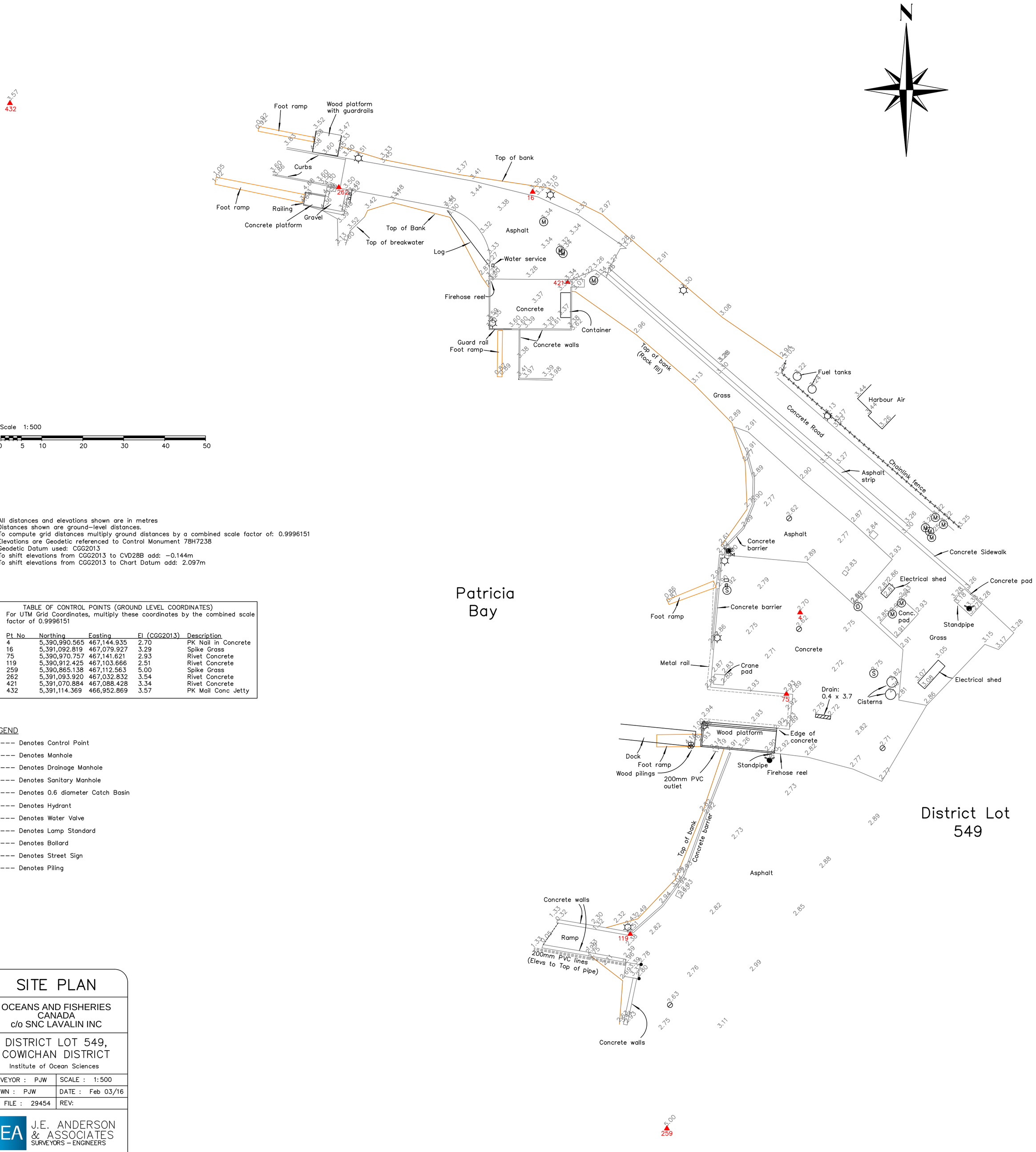


View showing 1 of 2 outboard bull rails to be removed for tow


McALLISTER MARINE
SURVEY & DESIGN LTD.
TITLE
TOWING BRIDLE CONNECTION
PROJECT
DFO FLOATS V 10/035
CLIENT
VANCOUVER PILE DRIVING LTD.
SCALE
NTS
DATE
MAR 14/10
DRAWN BY
MSM
DWG #
10/035/2


DUCT BELOW DECK
CHAFE PROTECTION TO BE
FITTED IN THESE AREAS
OUTBOARD RAILS TO BE REMOVED
McALLISTER MARINE
SURVEY & DESIGN LTD.
TITLE
TOWING RECOMMENDATIONS
PROJECT
DFO FLOATS V 10/035
CLIENT
VANCOUVER PILE DRIVING LTD.
SCALE
NTS
DATE
MAR 14/10
DRAWN BY
MSM
DWG #
10/035/1

ANNEX 12



Scale 1:500

0 5 10 20 30 40 50

All distances and elevations shown are in metres
Distances shown are ground-level distances.
To compute grid distances multiply ground distances by a combined scale factor of: 0.9996151
Elevations are Geodetic referenced to Control Monument 78H7238
Geodetic Datum used: CGG2013
To shift elevations from CGG2013 to CVD28B add: -0.144m
To shift elevations from CGG2013 to Chart Datum add: 2.097m

TABLE OF CONTROL POINTS (GROUND LEVEL COORDINATES)
For UTM Grid Coordinates, multiply these coordinates by the combined scale factor of 0.9996151

Pt No	Northing	Easting	El (CGG2013)	Description
4	5,390,990.565	467,144.935	2.70	PK Nail in Concrete
16	5,391,092.819	467,079.927	3.29	Spike Grass
75	5,390,970.757	467,141.621	2.93	Rivet Concrete
119	5,390,912.425	467,103.666	2.51	Rivet Concrete
259	5,390,865.138	467,112.563	5.00	Spike Grass
262	5,391,093.920	467,032.832	3.54	Rivet Concrete
421	5,391,070.884	467,088.428	3.34	Rivet Concrete
432	5,391,114.369	466,952.869	3.57	PK Mail Conc Jetty

LEGEND

- ▲ --- Denotes Control Point
- Ⓜ --- Denotes Manhole
- Ⓓ --- Denotes Drainage Manhole
- Ⓢ --- Denotes Sanitary Manhole
- ⊘ --- Denotes 0.6 diameter Catch Basin
- --- Denotes Hydrant
- --- Denotes Water Valve
- --- Denotes Lamp Standard
- --- Denotes Bollard
- --- Denotes Street Sign
- --- Denotes Piling

SITE PLAN

OCEANS AND FISHERIES CANADA
c/o SNC LAVALIN INC

DISTRICT LOT 549,
COWICHAN DISTRICT
Institute of Ocean Sciences

SURVEYOR : PJW	SCALE : 1:500
DRAWN : PJW	DATE : Feb 03/16
OUR FILE : 29454	REV:

J.E. ANDERSON & ASSOCIATES
SURVEYORS – ENGINEERS
4212 GLANFORD AVENUE,
VICTORIA. BC, V8Z 4B7
TEL: 250-727-2214 FAX: 250-727-3395
WEB: www.jeanderson.com
VICTORIA – NANAIMO – PARKSVILLE

V:_Surveying\29454...\...\29454.dwg (Site)

ANNEX 13

MILLENNIA RESEARCH LIMITED
ARCHAEOLOGICAL AND HERITAGE CONSULTING

510 Alpha Street, Victoria BC, V8Z 1B2
Phone: (250) 360-0919 Fax: (250) 360-0975
email: admin@millennia-research.com
http://www.millennia-research.com

Department of Fisheries and Oceans Institute of Ocean Sciences Wharf Upgrades Archaeological Overview Assessment

Millennia project number: 1628

Date: July 22, 2016

Prepared for: Public Works and Government Services Canada, on behalf of Fisheries and Oceans Canada

Attention: Katrina Johnston

Version Number: v3

Prepared by: Christine Mueller, BA

Administrative Information

HCA permit: non-permit

First Nations: The Project is in the area of interest of numerous First Nations, as identified by a search of the Consultative Areas Database (CAD):

Malahat First Nation
Pauquachin First Nation
Te'Mexw Treaty Association
Tsawout First Nation
Tsartlip Indian Band
Tseycum Indian Band

Report distributed to: PWGSC

Management Summary

Project Overview:

Department of Fisheries and Oceans proposes to upgrade water and electrical infrastructure for the fixed wharf and floating dock system at the Institute of Ocean Sciences, North Saanich BC. The upgrades are restricted to the north portion of the property and will encompass excavation for the installation of subsurface service upgrades to meet increasing demands by vessels using the facility.

Results:

Sites:

DdRu-17, DdRu-72, DdRu-156, DdRu-157

Management Recommendations:

It is recommended that:

1) Archaeological monitoring be conducted of ground disturbing activities for the electrical trench within the vicinity of DdRu-72
2) A Chance Find Procedure be followed in the event that unanticipated archaeological remains are encountered elsewhere during ground disturbing activities for the project.
3) Construction personnel attend an Archaeological Awareness Training session.

Introduction

The following report details the results of an Archaeological Overview Assessment (AOA) of the Institute of Ocean Science conducted by Millennia Research on behalf of Public Works and Government Services Canada (PWGSC). PWGSC is proposing a series of facility upgrades to its Institute of Ocean Sciences (IOS) facility in North Saanich (Figure 1). Proposed changes to the facility consist of upgrades to both the water and electrical supply to the wharfs servicing marine vessels. The project consists of several phases and the proposed upgrades constitute the first phase. The purpose of the AOA was to identify and assess the potential for archaeological sites within the proposed project area. It is anticipated that the project will include float replacement and installation as well as trenching for service lines. Finally, it is also expected that repairs will be made to the concrete wharf, specifically to the concrete piles and concrete beam supporting the warf and that this will include installation of anodes and anode jackets (wrapping of the concrete piles) to provide protection to the piles. The float replacement component of the project only has an effect below the intertidal. Subtidal lands have the potential for containing the remains of drowned terrestrial sites older than 5,000 years due to lower sea levels (e.g., Clague and Bobrowski 1990; Eldridge and Steffen 2008; Grier, et al. 2009;

Wilson, et al. 2009), and a low-density artifact scatter dating later than 5,000 years due to inadvertent loss of items from canoes as they travelled to and from the shore. However, the impact to any such remains will be very limited due to: 1) the lack of dredging and 2) pile driving being the only subsurface ground disturbance. These factors combine to reduce the potential for impacts to almost nil, and this part of the project is not considered further in this report.

Archaeological materials on federally regulated lands are subject to two Treasury Board policy instruments: the *Guide to the Management of Movable Heritage Assets* (Treasury Board of Canada Secretariat 2008) and the *Policy on Management of Materiel* (Treasury Board of Canada Secretariat 2006). These policies outline a general approach to the protection, conservation, and management of heritage assets. However, while referring to Parks Canada standards for recording (Parks Canada 2005a, b) they do not provide specific guidelines for conducting archaeological assessments. In keeping with professional best practices, this AOA was conducted to meet standards of the BC Archaeological Impact Assessment Guidelines (British Columbia Archaeology Branch 1998) and the British Columbia Association of Professional Archaeologists (BCAPA).

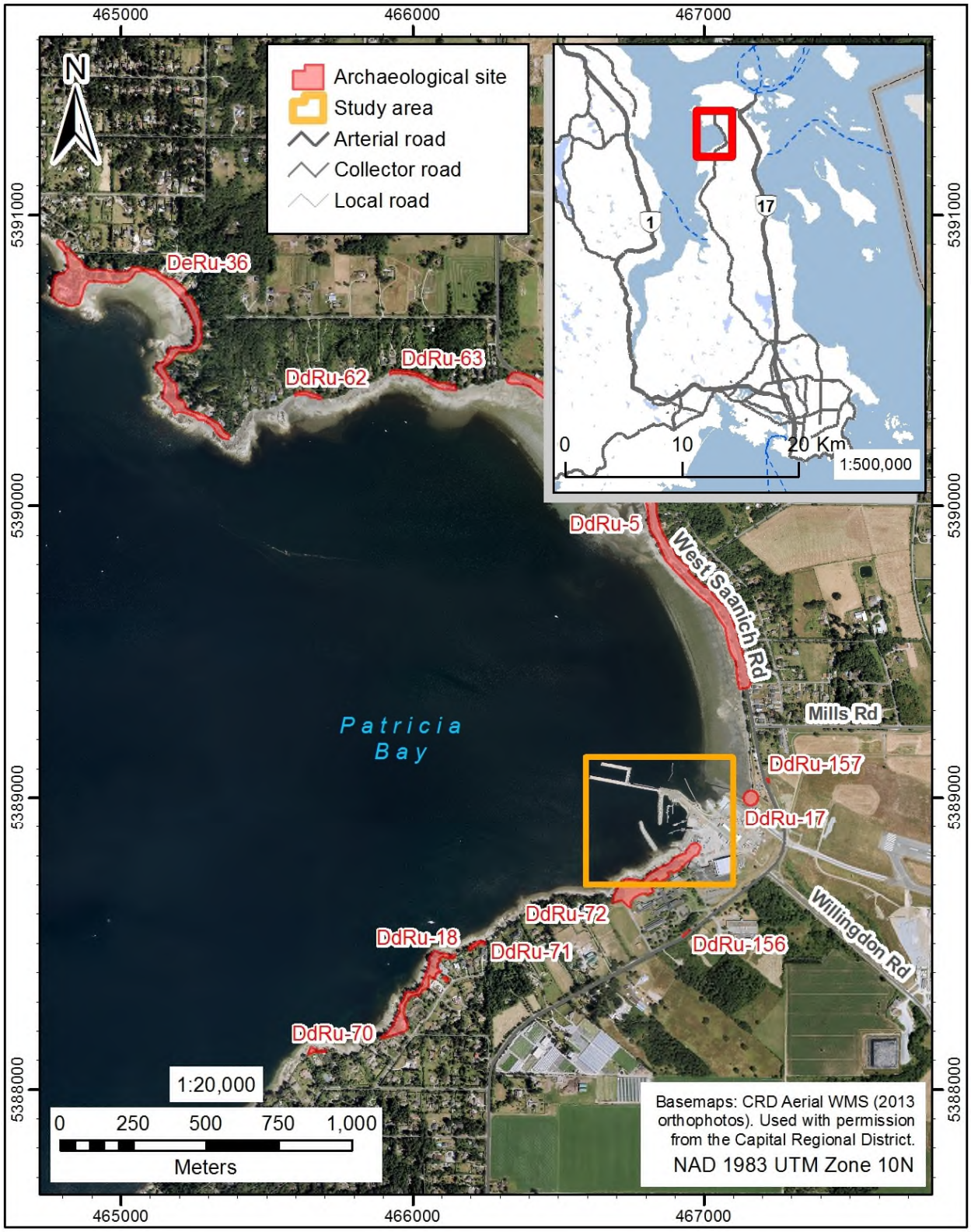


Figure 1 Study area showing nearby archaeological sites

Study Area and Project Description

Located on the west side of the Saanich Peninsula, the project area is situated within the area of interest of the Malahat First Nation, Tseycum Indian Band, Pauquachin First Nation, Tsartlip Indian Band, Tsawout First Nation, and the Te'Mexw Treaty Association. It falls within the Coastal Douglas-fir Biogeoclimatic zone, which is marked by warm, dry summers and mild, wet winters. It lies on the southeast coast of Vancouver Island within the rainshadow of the Vancouver Island and Olympic Peninsula mountains. Native forests were comprised of Douglas-fir, western red cedar, grand fir, arbutus, Garry oak and red alder. Most of these forests were logged by the beginning of the twentieth century and old growth remains in small enclaves such as parks. Local wildlife is both abundant and diverse, including black-tailed deer, occasional black bear and cougar, and a large array of birdlife, including many waterbirds who overwinter in the region (Nuszdorfer, et al. 1991).

Ethnography

The study area is located within the traditional lands of the Northern Straits speaking people, one of five groups comprising the Central Coast Salish. At contact Central Coast Salish territory included the southern end of the Strait of Georgia, the Strait of Juan de Fuca, and the Lower Fraser Valley (Suttles 1990). Northern Straits speaking peoples were located on the southeast and south coasts of Vancouver Island, from Saanich Inlet to Sherringham Point, the San Juan and southern Gulf Islands, and on the mainland from Point Roberts and Boundary Bay to Deception Pass. Comprised of six tribal groups, the Northern Straits speaking peoples included the Saanich who had traditional winter villages at Brentwood Bay, and Patricia, and Saanichton bays (Suttles 1990). The Central Coast Salish basic social unit was the family. Several related families constituted the basis of the household, and cooperated both economically and socially. Inter-household cooperation within villages served larger communal activities or concerns such as ceremonies, large scale hunting or defence; participation was not imposed and households remained autonomous (Suttles 1990).

Winter villages varied from a single house to one or more rows of houses closely situated to the shore. Houses were of post and beam construction with a shed roof, with the long axis of the house parallel to the shore and the roof angling down toward the rear of the house. Houses were often extended as needed, and may have included partitions to separate individual households. More seasonal structures included summer mat houses or huts. Other structures included sweat lodges and grave houses (Suttles 1990).

Similar to other Central Coast Salish groups, the North Saanich peoples exploited the full suite of available marine and terrestrial resources. Hunting was conducted on both land and sea and included large and small mammals such deer, elk, black bear, beaver, sea lions, hair seal, and porpoises. Only the Clallam and the Quinault hunted whales. Mammals were not only sought after for subsistence but provided a large variety of raw materials for the manufacture of tools and other goods. The largest subsistence source was fishing, especially salmon, but also both near and off-shore species such as halibut and sturgeon. Intertidal resources included shellfish and sea weed. Terrestrial plants provided additional resources for subsistence in the form of over 40 varieties used for food and medicine. Plants also served as raw material for the manufacture

of a wide assortment of large and small everyday items such as matting, cordage, containers, and canoes, or prestige and ceremonial items such as masks and rattles (Suttles 1990).

Project Description

Located within the confines of Patricia Bay on the west side of the Saanich Peninsula, the study area is approximately 400 m west of the Victoria International Airport and situated at the north end of a 70 acre complex comprising the Institute of Ocean Sciences (Figure 2). The institute was established in 1972 to support marine research activities, and many of its buildings were first erected in the mid 1970s. The land was previously occupied by the Department of Defense (DND) (Freeland 2003; Golder Associates Ltd. 2001).

The Institute property is located directly on the shoreline and is flanked to the north and south by both small scale farming and residential development. The shoreline to the west is comprised of rocky intertidal area, and a broad, shallow beach extends up from the north end of the project area toward the northern portion of Patricia Bay. Institute infrastructure includes a primary jetty which extends from the parking lot. Several associated wharfs and two rock infilled breakwaters provide protection to the inner wharf structures. It is likely that portions of the original shoreline have been modified; however, the extent of any foreshore infilling or restructuring is unclear from examination of satellite imagery. Maps predating the establishment of the IOS indicate that the shoreline did not differ significantly from today (Golder Associates Ltd. 2001, 2010a; Spady 2009). Most, if not all, of the project area has been subject to some type of development in the recent past; much of it is paved and serves either as a parking lot, tarmac for sea plane and boat storage or as water access ramps area for amphibious or float-planes and boat trailers. The two ramps are located on the in the north and south ends of the project area. Small islands of unpaved areas exist in several locations; the largest is situated to the west of the ramp base leading to the jetty and floats. The largest undeveloped areas are outside the project area to the east and south between the parking area and West Saanich Road.

The proposed upgrades to the Institute of Ocean Sciences consist of two separate components: upgrades to electrical infrastructure and upgrades to water supply infrastructure as part of a wharf replacement and installation project. The electrical infrastructure upgrades will begin at the Main Electrical Room – Substation # 1 in the south and extend approximately 200 m northward to Substation # 4 by means of trenching. Currently, the area is surfaced with asphalt, which will be removed. The machine excavated trench is expected to be approximately 2 m wide and 2.3 m deep. From Substation # 3, the upgrades will extend westward toward Floats B and C and Float D to the north and northwest along the pre-existing jetty. Work will also include upgrades within the vicinity of substation # 4, including Substation # 3 just to the south. Water supply improvements will begin at Substation #4 and proceed up the causeway northwest towards Float D and E. While water supply upgrades are proposed for Floats A, B and C, land-based service upgrades in other areas are not anticipated. The subsurface excavation for the installation of electrical and water upgrades from Substations # 3 and # 4 to the floats is expected to follow previously excavated trenches created for the initial installation of the float electrical and water services.

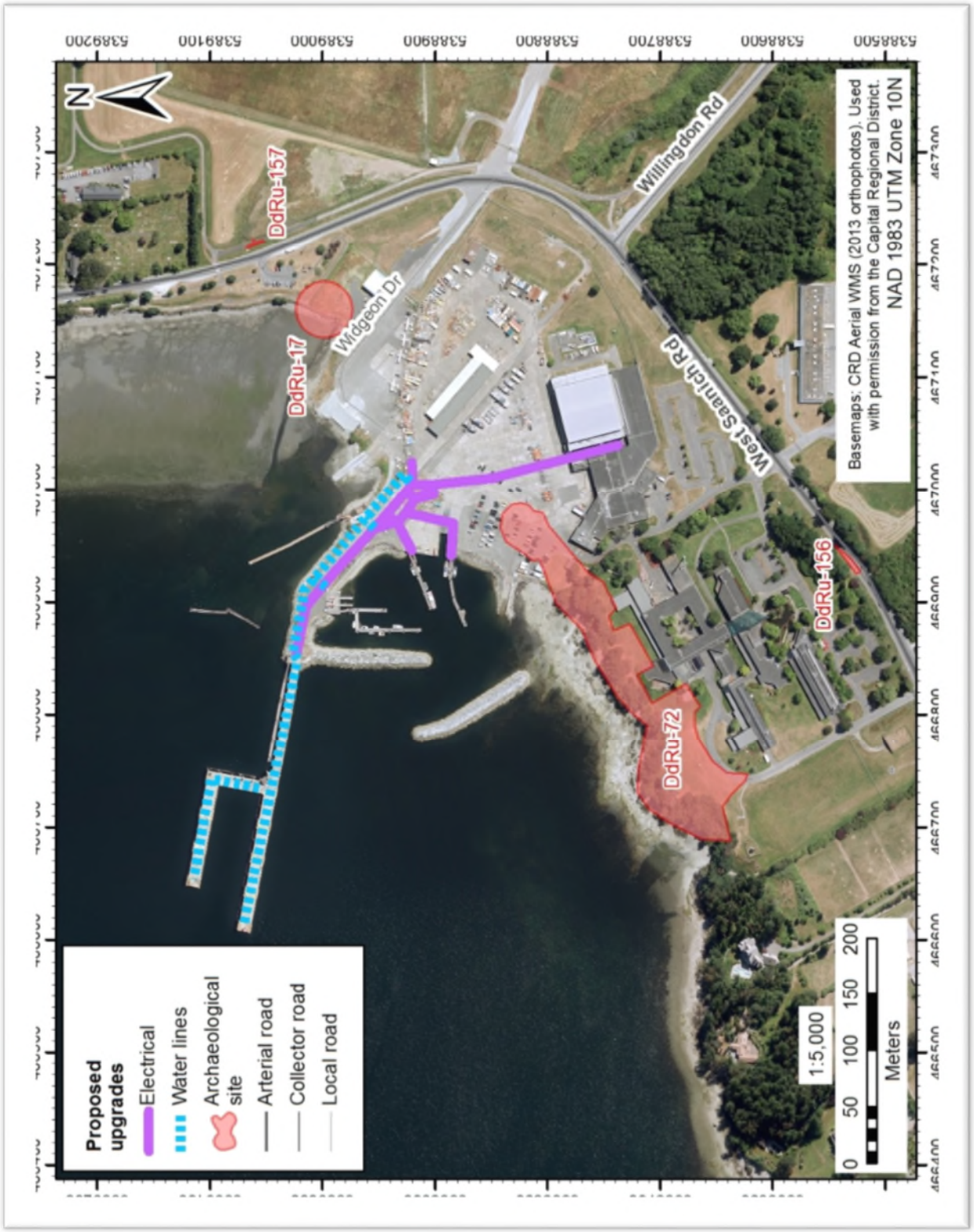


Figure 2 Detailed project area showing proposed electrical and water supply upgrades

Existing Data Review

The Study Area was subject to a desk-based review of available ethnographic, archaeological and map-based sources. These sources were reviewed in order to clarify the archaeological potential of the project area, with reference to the specific development where possible, and the reliability of the potential model, in general. The sources examined and general findings are outlined below:

- Map-based data sources:
  - Google Earth
  - Project Plans

- Previously recorded sites in Provincial Heritage Register:

  Remote Access to Archaeological Data (RAAD) accessed: July 13, 2016

Table 1. Previously recorded sites in vicinity of Project.

Site #	Project Area (Y/N)	Location/ Proximity to Project	Site Type	Reference
DdRu-5	N	380 m	Human remains, burial; burial cairns; shell midden	RAAD site form; 1975-006 Acheson et al. Report of the Archaeology of the South Western Gulf of Georgia; 2006-038 Wilson and Kanipe Archaeological Excavation and Monitoring Pat Bay Sewer Main Installation; 2006-107 Wilson and Kanipe Archaeological Excavation and Monitoring Pat Bay Sewer Main installation 2008-076 Post Impact Assessment of 10265 West Saanich road; 2008-241 Bond and Kanipe Letter report Post impact Assessment; 2010-054 Bond Letter report, post Impact Assessment- sewer service installation at 10227 West Saanich Road
DdRu-17	N	135 m	Human remains, burial; shell midden	RAAD site form; 1975-006 Acheson et al. Report of the Archaeology Survey of the south Western Gulf of Georgia
DdRu-72	N	30 m	Burial cairns; shell midden; cultural material	RAAD site form; 1975 Acheson et al. Report of the Archaeology Survey of the south Western gulf of Georgia; Golder Associates 2001 Archaeological Inventory of the Institute of Ocean Sciences Property; Benson 2004 Letter report Institute of Ocean Sciences Test Hole Samples; Smith 2005 Institute of Ocean

				Sciences Borehole-Seismic Instruments AIA; Spady 2009 Archaeological Inventory Institute of Ocean Sciences; Golder Associates 2010 AIA Acoustic Range Building at Institute of Ocean Sciences; Golder Associates 2010 AIA DFO IOS – Outdoor Distribution Upgrade
DdRu-156	N	200 m	Shell midden	RAAD site form
DdRu-157	N	280 m	Shell midden	RAAD site form

- Other archaeological studies:
    - Provincial Archaeological Report Library keyword search: July 13, 2016
      Keywords:
      "Institute of Ocean Sciences"
      "IOS"
      DdRu-17
      DdRu-72
      DdRu-157
      DdRu-156

The project area is in to proximity to four previously recorded archaeological sites: DdRu-17, DdRu-72, DdRu-156, and DdRu-157. DdRu-17 and DdRu-72 were first recorded in 1975 and are situated on IOS property. DdRu-156 and DdRu-157 were recorded more recently during the construction of a bike pathway along West Saanich Road and likely represent redeposited cultural material.

DdRu-17

DdRu-17is a shell midden site which was recorded during an extensive archaeological survey of the southwestern Gulf of Georgia conducted by Acheson et al. in 1975. The survey recorded basic site information such as location, site type, overall condition and level of disturbance, and rudimentary management assessments. At the time, DdRu-17 was considered to have been completely destroyed by road construction and fill. The site form notes that there are several artifacts, including a zoomorphic stone bowl associated with the site. There is also skeletal material recorded, though no further information is provided as to elements or the number of individuals they might represent. No additional archaeological work has occurred in the areas recorded for the site (Acheson, et al. 1975).

The site is located approximately 150 m northeast of the project area, along the terminus of Widgeon Drive. Maps indicate that it is situated on the mouth of a small stream or creek which empties into Patricia Bay. However this water course is not visible on digital imagery; it may exist only as a subsurface drainage channel or have since been culverted (Site form).

DdRu-72

Located just south and east of the project area is DdRu-72, an extensive shell midden site measuring ca 70 m wide and extending 340 m to the west-south-west along the southern shoreline of Patricia Bay. Also first recorded in the 1975 Acheson et al. survey, it is comprised of a substantial shell midden with eight associated cairn burials. The site was assessed as being in

fair to poor condition, due to localized construction disturbance resulting from past military (DND) activity, residential housing, and related landscaping. DdRu-72 is also in proximity to West Saanich Road (highway 17A) which is situated approximately 230 m from the shoreline (Acheson, et al. 1975). The survey coincided with initial development of the land for the construction of the IOS. DdRu-72 has not been subject to large-scale systematic archaeological investigation. It was part of several Department of National Defence archaeological inventories conducted in 1999 (Golder Associates Ltd. 1999, 2001; Smith 2005). It was also the subject of three recent Archaeological Impact Assessments (AIA) which conducted limited subsurface testing in the northern portion of the property in anticipation of proposed upgrades and improvements at the IOS (Golder Associates Ltd. 2010a, b; Smith 2005). As DdRu-72 is situated on Federal Lands, all subsequent archaeological investigations have been non-permitted (site form).

In 2001, Golder Associates Ltd. conducted an archaeological inventory, which consisted of a general surface reconnaissance and subsurface probing and shovel testing. The purpose of the inventory was to locate and assess cultural deposits, and it included investigation of foreshore and intertidal areas in addition to natural and constructed exposures. Judicially placed subsurface probes and shovel tests were limited to areas around buildings in the main section of the property, as northern portions were capped by pavement for parking areas and the seaplane base. Subsurface cultural materials were found to be fragmentary and generally consisted of disturbed and redistributed materials. The discontinuous nature of the midden deposits suggests possible large-scale removal of cultural material during construction or landscaping. Two shovel tests were placed within the site; one was located at the west end, east of the Chemistry building stairwell and the other was at the north end of the site behind the guardhouse. Both tested positive for cultural material extending to a depth of 90 cm, though only a then 5 cm lens located between 17 cm and 22 cm in Shovel Test 1 indicated intact deposits. Two additional shovel tests were placed 10 m and 30 m southeast of West Saanich Road. Both were negative for cultural material. Three possible burial cairns were identified in the south end of the site, but were not investigated. Areas identified at highest risk for archaeological impact were the western shoreline and the riparian zone containing the burial cairns (Golder Associates Ltd. 2001).

A letter report by Millennia Research (Benson 2004) was undertaken in response to geo-technical testing on the Institute of Ocean Sciences property in 2004. The testing was conducted in advance of construction of a small building several meters northwest of the then-current boundaries of DdRu-72. Four test holes were placed at varying distances from the modern shoreline. Of these, the two test holes closest to the shore tested positive for shell midden material. Test hole TH03-1 had cultural material at 1 m BS with possible midden at 1.9 m BS and TH03-2 had cultural material evident at 0.5 m BS and 1.3 m BS, with no cultural material beyond 1.8 m BS. No artifact, faunal or human osteological materials were noted or recovered from these tests (Benson 2004).

In 2005 Millennia Research Limited conducted an Archaeological Impact Assessment (AIA) (Smith 2005) of three bore hole (BH) locations. BH # 1 and BH # 3 were located just northwest of West Saanich Road, and southwest and south east of the main building complex. BH 2 was located to the northwest of the buildings and south of DdRu-72. All three bore holes extended to either sterile glacial clay or bedrock and were negative for cultural material.

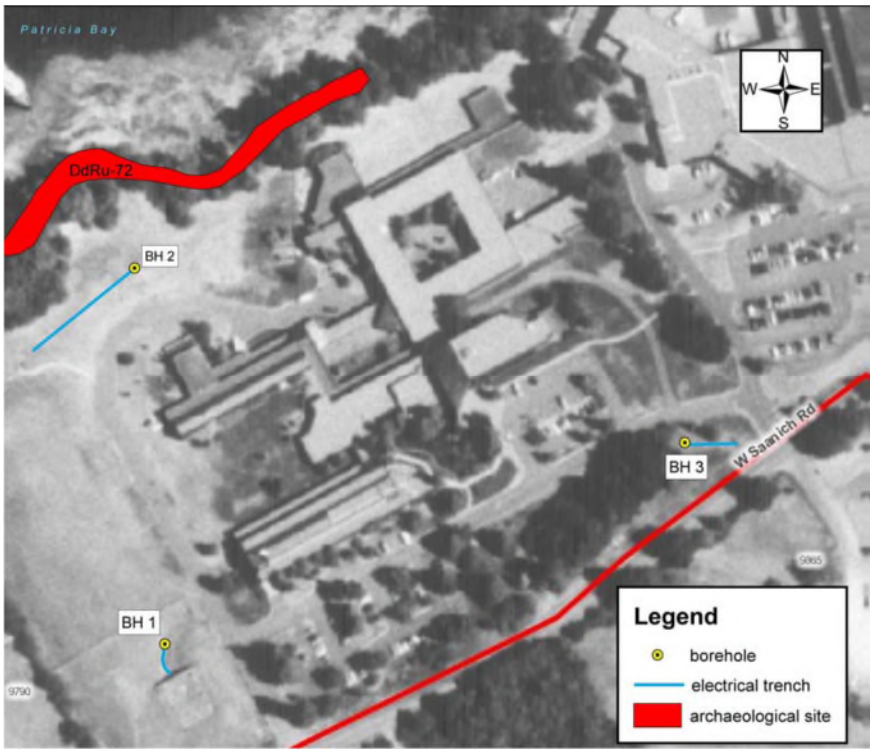


Figure 3 Location of bore hole tests conducted in 2005 (Smith 2005)

A second non-permitted AIA was conducted in 2009 by I.R. Wilson Consultants Ltd. (Spady 2009). For this assessment, subsurface testing took place at the northwest end of the property, and in the area of the DdRu-72 recorded site boundary. The testing consisted of nine shovel tests, 10 auger tests, and five backhoe tests. Testing recovered several faunal remains consisting of mammal long bone fragments and several avian bones. No artifacts or human osteological remains were noted or recovered. Subsurface testing indicated shallow, non-contiguous disturbed cultural deposits, all of which were located in north central portion of the property between the upper shoreline and access road. Only Shovel Test # 5 produced intact deposits; Shovel Tests # 9, #10 and # 11 and Auger Tests # 7 and # 8 were positive for disturbed cultural deposits. In addition to the three possible burial cairns identified in 2005, five more similar features were recorded. Again, the features were only tentatively identified and not fully investigated. As a result of the AIA findings, the site boundaries were redrawn, extending the site to include new cultural areas, including the eight petroform features (Spady 2009).

Figure 4 Tests conducted by I.R. Wilson Consultants Ltd. in 2009. Map also delineates the revised site boundaries and locations of archaeological features (Spady 2009)

A third AIA was conducted in late 2009 by Golder Associates Ltd. in an area directly adjacent to the north end of DdRu-72 (Figure 4) (Golder Associates Ltd. 2010a). Testing consisted of 14 shovel tests and six machine trench tests. All tests were positive for disturbed shell midden deposits. As well, two lithic artifacts, a ground slate stone knife and a large basalt abrader, were recovered.

Two human osteological fragments were recovered from Shovel Test #1 and #4: a portion of a left temporal bone and a mandibular fragment. These bones are believed to represent a previously disturbed burial. They were eventually returned and reburied by the Tseycum First Nation. Faunal remains recovered include an unidentifiable fish spine and fish vertebrae, a fragmented deer phalanx and a fragmented seal phalanx; 11 non-identifiable faunal fragments were also recovered, including six with cut marks. Recommendations of the AIA included salvage data recovery prior to any future construction in the project area followed by archaeological monitoring during construction if site avoidance is not possible (Golder Associates Ltd. 2010a, b).

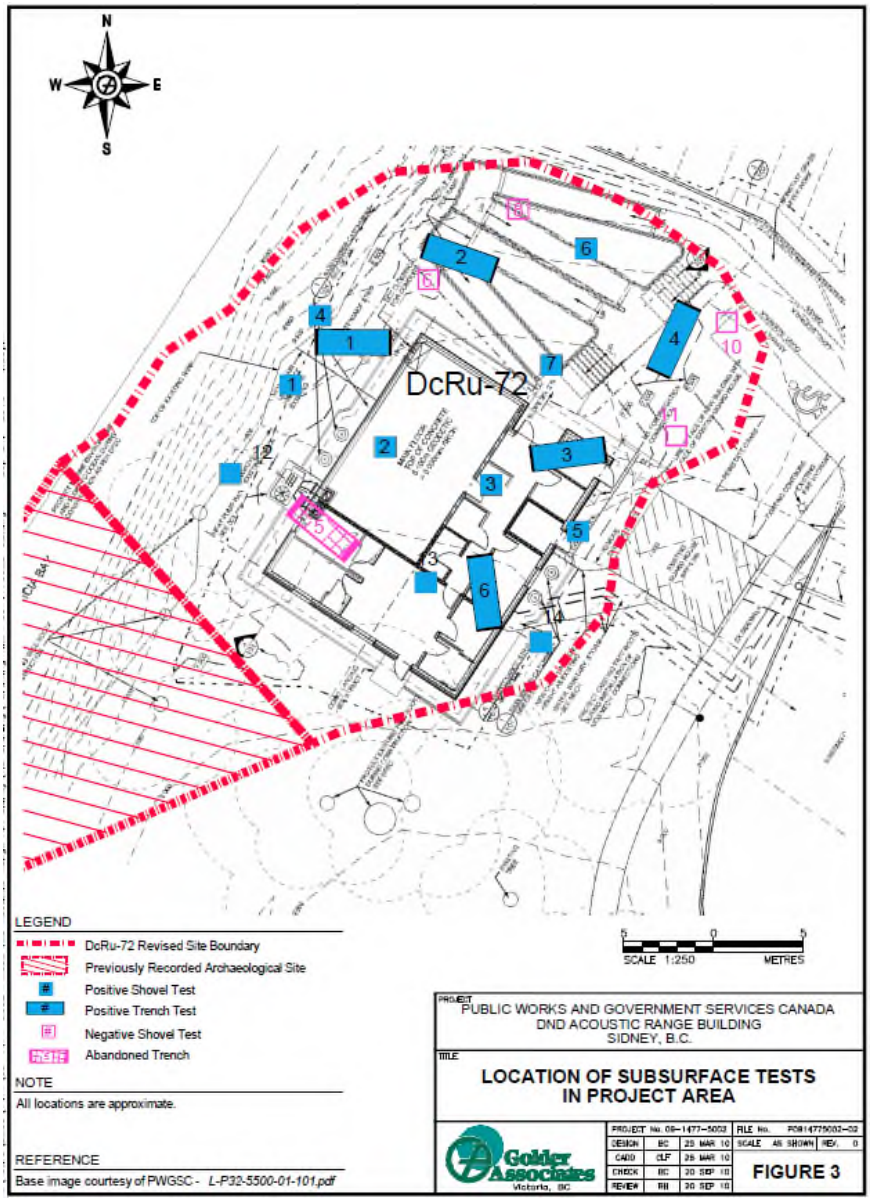


Figure 5 Tests conducted by Golder Associates in 2009 (Golder Associates Ltd. 2010a).

Further testing was conducted on the property by Golder for an additional AIA in early 2010 (Golder Associates Ltd. 2010b). This AIA was undertaken for proposed electrical distribution upgrades in the north end of the property, and in the location of the paved areas and the Main Warf and Jetties A, B and C. Construction for the upgrades was proposed to consist of four phases and included installation of cabling, Duct Banks and Pull pits, replacement of Substation # 5, modification to Substation # 6 and a new building in the location of Substations # 3 and # 4. The testing consisted of six machine tests and five borehole auger tests. Trenches for the cabling, duct banks and pull pits were between 2.25 m - 5.0 m long, 1.3 m - 2.9 m wide and 1.1 m – 1.7 m deep. Excavation was conducted in areas previously disturbed by development for the installation of buried services. Two tests, Machine Tests #2 and #5, contained archaeological

cultural material, all of which was disturbed and suggestive of redeposited shell midden. A small pocket of cultural material was also observed in material recovered from Machine Test #5 and represented disturbed, unstratified cultural shell deposit originating from approximately 20 cm dbs. Geotechnical bore hole testing went to a maximum depth of 4.40 m BS. All but one terminated in culturally sterile clay. TH10-04 was not able to penetrate the ground past 60 cm due to boulders. Of the five borehole auger tests, one (TH10-05) contained low density disturbed shell midden deposit at 90 to 110 cm dbs. Other boreholes suggested industrial site infilling over intertidal areas. No artifact, faunal or human osteological material was noted or recovered (Golder Associates Ltd. 2010b).

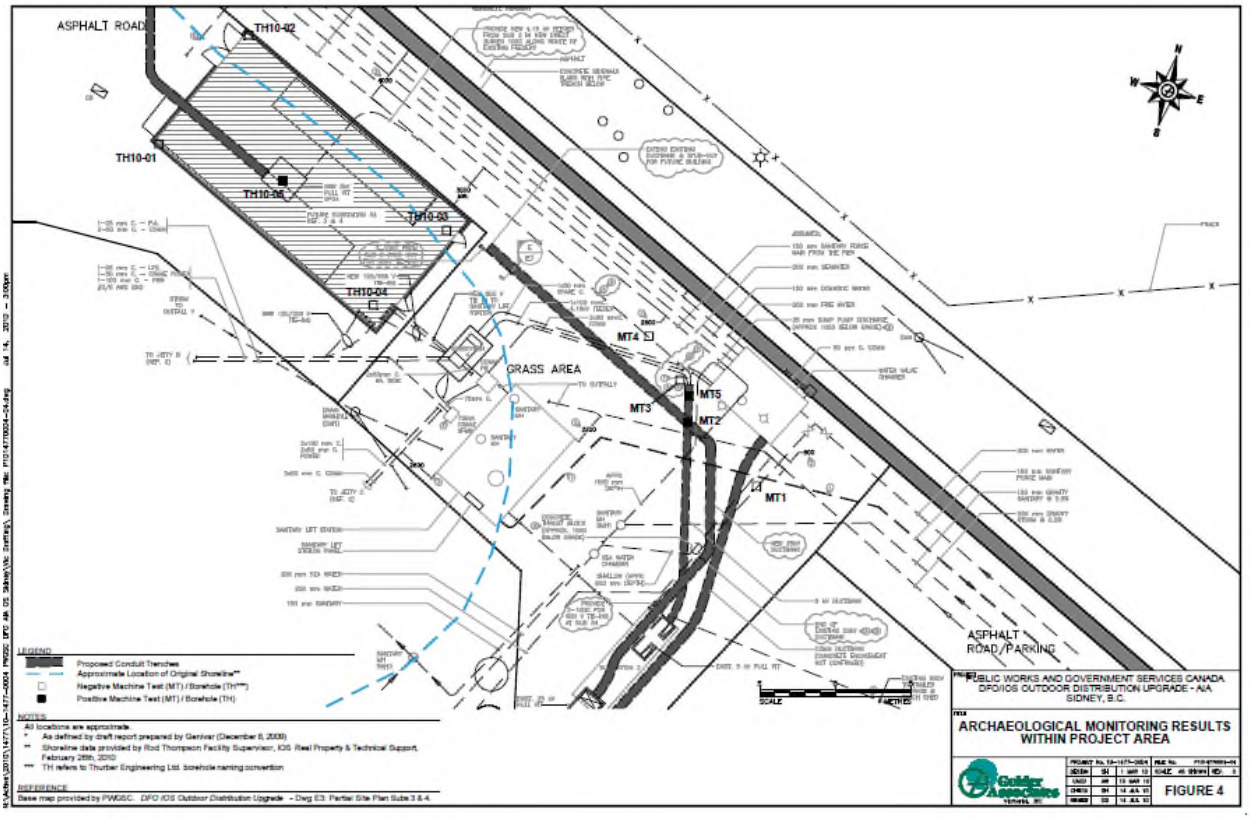


Figure 6 Tests conducted by Golder Associates Ltd. in July 2010 in anticipation of infrastructure upgrades in the northern portion of the IOS property (Golder Associates Ltd. 2010b).

DdRu-156

DdRu-156 is a small shell midden measuring 32 m x 4 m, located 150 m south of DdRu-72 and on the north side of West Saanich Road. It was first identified and recorded in 2012 during the construction of the Victoria Airport Authority West Saanich Bike Trail. Disturbed cultural deposits were identified, and it is believed that the material originated elsewhere and was transported to the location to serve as fill for the construction of the West Saanich Road. Materials excavated for the trail construction were removed to a nearby quarry. No fauna, artifacts, human osteological remains or features are recorded for the site (site form).

DdRu-157

DdRu-157 is a shell midden site identified and recorded in 2013 during the construction and excavation of the Victoria Airport Authority West Saanich Bike Trail. Measuring 17 m x 5 m, the site is located 75 m northeast of DdRu17 and across West Saanich Road. It contains disturbed shell midden material, some of which was excavated and moved to a nearby area at the time of construction. It is possible that the site represents redeposited material from past road construction. The full extent of the deposits is unknown. No fauna, artifacts, human osteological remains, or features are recorded for the site (site form).

Potential Assessment and Expected Site Types

Though prior work at DdRu-72 has shown it to be primarily disturbed and fragmented, the existence of eight petroform features in the south portion of the site indicates that the site has high archaeological potential. As no further archaeological investigations on the features has been conducted, it is somewhat unclear whether these petroforms represent burial cairns. It is possible that some may represent recent land clearing events as documented by IOS maintenance staff. Evidence given by a local member of the Tsartlip Nation and their general distribution and configuration suggests some, if not all, may be burial cairns (Spady 2009). It is also possible that some of the rocks were from cairns originally located in other locations on the site. Recent subsurface testing confirms that the site has been subject to considerable surface and subsurface modification. The recovery of fragments of human remains confirms that the site was used as a burial area, although their relation to the petroforms is unclear. Ethno-historic records indicate that Patricia Bay was the location of a large winter village, likely predating a move by the Tseycum people (including the place name) from the east coast (Tseyum Harbour) to the west of the Saanich Peninsula. This move occurred in the early nineteenth century to have the main village more protected from raids by Kwakwakawakw people (Jenness 1934-35:3). However, it is clear that large villages have long been present on Patricia Bay. DdRu-5 is a large shell midden, measuring 1,350 m long and 44 m wide, with a variety of associated burials, including burial cairns. The burial cairns here and at DdRu-72 would be consistent with North Saanich burial practices during the Marpole and early Strait of Georgia Culture types (Thom 1995) about 1,500 to 2,400 years ago.

The locations of DdRu-72 and DdRu-17 are consistent with a once-continuous shell midden that was segmented by historical developments. The current project area lies between the two known sites and can be expected to have once had shell midden there, and remnants might still be found below the developed surface.

Testing conducted in 2010 located cultural material close to the shoreline, within the jetty area. This area has already been subject to previous trenching for the installation of underground services and utilities in the past (Golder Associates Ltd. 2010b). It is expected that the current project will follow the footprint of these previous disturbances. No testing has been conducted elsewhere in the northern portion of the property, primarily as it is almost entirely paved over. Proposed new trenching for the electrical conduit from Substation #1 northward to Substation #3 will pass directly through this untested area approximately 20 m east of the northeastern end of DdRu-72. Based on past archaeological investigation, there is likelihood that the area east of the

shore may also contain shell midden material, though it would be expected to thin out as one moves further inland.

Recommendations

Previous work within the IOS property has determined there is potential to encounter archaeological material, including human remains, from both intact and disturbed contexts in the vicinity of DdRu-72 and the original shore generally. Therefore, it is recommended that:

1) Archaeological monitoring be conducted of ground disturbing activities for the electrical trench within the vicinity of DdRu-72
2) A Chance Find Procedure be followed in the event that unanticipated archaeological remains are encountered elsewhere during ground disturbing activities for the project.
3) "Archaeological Awareness" training should be provided to construction personnel as part of the Chance Archaeological Finds Procedure.

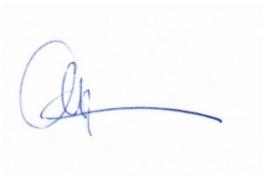
Disclosure Statement & Signature

The current study is concerned with the management of archaeological sites, which may be affected by development. Unidentified cultural deposits may be present within the project area. If unanticipated archaeological remains (including but not limited to those identified as potential site types in this document) are encountered during construction or land-altering activity the developer is advised to halt work in the immediate area and contact a professional archaeologist and the appropriate regulatory agency.

The information contained in this report has been compiled specifically for the project as defined by the proponent and discussed herein. Any subsequent changes to the proposed project may not be addressed by the current archaeological study and additional studies may be appropriate.

The information compiled in this report has been prepared in accordance with the standards of the BC Association of Professional Archaeologists, the BC Archaeological Impact Assessment Guidelines (British Columbia Archaeology Branch 1998), and following the Treasury Board *Guide to the Management of Movable Heritage Assets* (Treasury Board of Canada Secretariat 2008) and *Policy on Management of Materiel* (Treasury Board of Canada Secretariat 2006). This report has been prepared by Millennia Research Limited staff and reviewed by a senior archaeologist (see signatories below).

Millennia Research Ltd.
Per:
Signature:



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Title: Archaeologist

Morley Eldridge, MA, RPCA
President, Millennia Research Limited

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ANNEX 14

FISHERIES AND OCEANS
CANADIAN ENVIRONMENTAL ASSESSMENT ACT (CEAA) 2012
PROJECT EFFECTS DETERMINATION REPORT

GENERAL INFORMATION

1. Title: DFO IOS Wharf Upgrade Project, Sidney BC – 9860 West Saanich Road, Sidney BC V8L 5T5

2 Proponent: DFO Real Property, Safety and Security (RPSS)

3. Other Contacts (Proponent, Consultant, Contractor or another DFO Sector):

4. Role of each contact:

Marine Consultant: AquaTerra Environmental Ltd.

5. Source (Contact) (DFO sector, company, organization, provincial or federal department): DFO

6. Received Date: August 26, 2016

7. PATH No.:

8. DFO File No:

9. Other relevant file numbers:

BACKGROUND

10. Background about Proposed Development (including a description of the proposed development):

The Institute of Ocean Sciences (IOS) is Located west of Sidney, Vancouver Island on a 70-acre site. IOS is one of Canada's largest marine institutes and is an important link in Fisheries and Oceans Canada's nationwide chain of nine major scientific facilities. Specifically, the institute is the centre for research on coastal waters of BC, the Northeastern Pacific Ocean, the western Canadian Arctic, and navigable fresh waters east to the Alberta border.

Approved funding, provided via Canada's Economic Action Plan, will address operational requirements including structural, electrical, and wharf and float repairs in an effort to modernize federal facilities across the country to facilitate continued contributions to nationwide research.

PROJECT REVIEW

11. DFO's rationale for the project review:

Project is on federal land ☒ and;

- ☒ DFO is the proponent
- ☐ DFO to issue *Fisheries Act* Authorization, *Species at Risk Act* Permit or other regulatory permit
- ☐ DFO to provide financial assistance to another party to enable the project to proceed
- ☐ DFO to lease or sell federal land to enable the project to proceed
- ☐ Other

12. Fisheries Act Section(s) and/or Species at Risk Act Sections 73 or 74 (if applicable): not applicable

13. Primary Authority: DFO-RPSS

14. Primary Authority's rationale for involvement: DFO is the proponent

15. Other Authorities involved in review: none

16. Other Authority's rationale for involvement: not applicable

17. Other Contacts and Responses:

18. Scope of Project (details of the project subject to review): The project involves the upgrading of the DFO IOS Wharf and surrounding area and is divided into five (5) separate projects. Of note, Project 4 is the only project currently scheduled in the foreseeable future; however, each of the 5 projects have been evaluated for Environmental Effects. Details relating to each of the 5 projects are summarized below:

PROJECT 1: Electrical upgrade of the wharf and floats – This project is on hold as due to lack of funding. Work of this Contract consists of a major electrical upgrade to the marine side of the IOS facility. The upgrade involves the replacement of aging infrastructure, improvements to the distribution as a whole, and upgrades to suit existing and future ocean vessel requirements.

The project involves upgrades, replacements and modification to the high/medium voltage distribution equipment, the low voltage distribution equipment, float and pier lighting systems, telecommunications infrastructure, in-ground conduits, jetty tunnel cable trays and the marine side fire alarm system. A new powerhouse (substation 3) building is included with this work, as is improvements to the existing jetty building (substation 4). Discussions with DFO personnel indicate no interaction with the marine environment or foreshore areas will be required to accommodate this project.

PROJECT 2: Mechanical system upgrade of the wharf and the floats - This project is currently on hold as due to lack of funding. Work to be performed under this Contract includes, but is not limited to, the following items:

1. Remove and dispose the existing infrastructure components in an environmentally sound manner.
2. Retrofit existing valve chamber by installing new piping and valve arrangement above grade and new sump pump system.
3. Install new buried water and fire supply system piping, valves and hydrant system. Also install a new sewage pipe in the causeway area for future tie-in.
4. Install new piping and water dispensing pedestal equipment at the new floating dock A.
5. Replace existing water and fire supply system piping, valve and hydrant system for the Fixed Wharf area. Coordinate with the Kiosks' supplier (under different contract) for tie-ins of the Water piping.
6. Heat trace and insulation of all new piping system.

PROJECT 3: Phase 2 of the Concrete Wharf Repair - This project is currently on hold as due to lack of funding. Work to be performed under this Contract includes, but is not limited to, the following items:

1. Concrete beam repairs under the wharf deck involving epoxy injection and grouting cracks
2. Concrete pile repairs involving epoxy injection and grouting cracks
3. Installing galvanic Jackets on concrete piles. Piles will be cleaned/removal of all organic growth on piles
4. Installation of bulk anodes on piles and cross bracings
5. Deck membrane installation

Discussions with DFO personnel indicate that the majority of works will be undertaken from the existing deck; however, some injections and repairs may require scaffolding or access via boat to repair areas under the deck structure.

PROJECT 4: Floats A, B1, B2, C & D replacement/installation. This project will be going ahead and is scheduled to be awarded to the Contractor by September 2016.

Work to be performed under this Contract includes, but is not limited to, the following items:

1. Demolition and removal of the existing timber floats
2. Demolitions and removal of the timber dolphins on the existing floats
3. Demolish and remove timber trestle at transfer lift station near Float A
4. Install new timber floats (Floats A, B2,C and D)
5. Install new concrete floats (Float B)
6. Install steel pile to secure new floats
7. Install new landing to Floats A, B, B2 and D
8. Install electrical and water supply system on the new floats

The total area of the existing floats is estimated at 10308 ft^2. The total estimated area of the new float is estimated at – 20508 ft^2 – comprised of timber floats – 15690 ft^2 and concrete Floats – 4818 ft^2. The increase in wharf surface area is 10,200 ft^2 relative to the existing structures.

PROJECT 5: Steel camel repairs - This project is on hold as due to lack of funding:

1. U-bolts replacement
2. Camel locators repairs
3. Flotation billets replacement
4. Timber dolphin pile replacement
5. Grab bars on the camel ladders repairs
6. Rub boards replacement

Discussions with DFO personnel indicate that marine works will include repairs of up to 4 groups of 3-4 piles and two corner dolphins.

Projects with significant components within or directly above the water and potential for interaction with the marine environment and/or foreshore are limited to Projects 3, 4 and 5.

19. Location of Projects: 9860 West Saanich Road, Sidney, British Columbia, V8L 4B2

20. Environment Description

The site consists of rip-rapped foreshore areas and a historically dredged embayment to accommodate boat draughts utilizing the floats and wharf. Specifically, a historical report by Cook Pickering & Doyle Ltd. (1974) indicates that dredging would be required to establish sufficient draught next to the wharf areas. Bedrock was typically found 3-9 feet (0.9 – 2.7 m) below loose silty sand and gravel over increasingly dense sand and gravel layers with clayey silt in some areas and layers of glacial till. The total overburden thickness above the bedrock was estimated at 8-16 feet (2.4 – 4.9 m).

The floats were colonized by a variety of invertebrate species including Blue Mussels (*Mytilus edulis*), Purple Sea Stars (*Pisaster ochraceus*) and Vancouver Feather Duster Worm (*Eudistyla plumosa*) (refer to Photos 1&2). Shiner Perch (*Cymatogaster aggregata*) were observed around the existing pilings (Photo 3).

Photo 1: Blue Mussels (*Mytilus edulis*) and Vancouver Feather Duster Worm (*Eudistyla plumosa*) on existing floats.

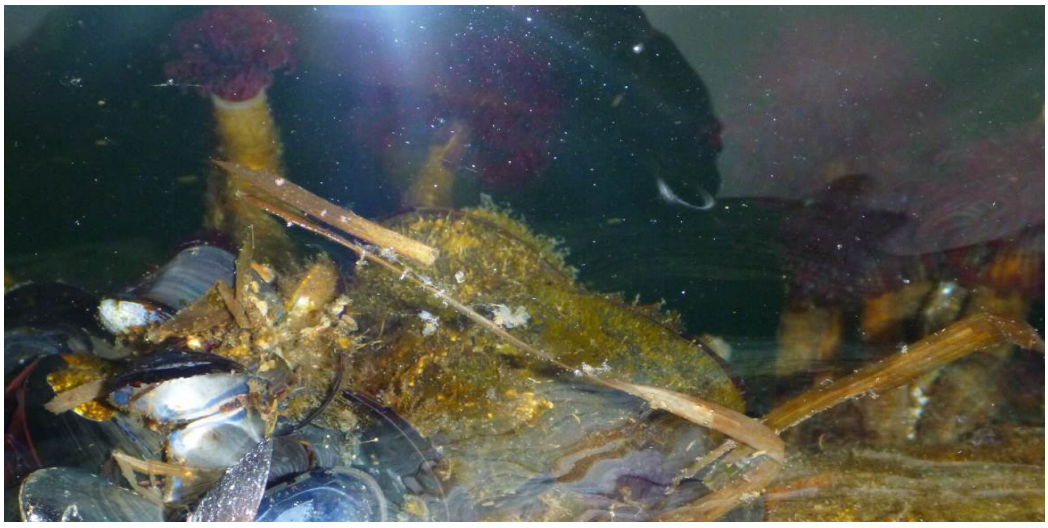

Photo 2: Purple Sea Stars (*Pisaster ochraceus*) and exotic Japanese Wireweed (*Sargassum muticum*) fragments along / attached to existing floats.

Photo 3: Shiner Perch (*Cymatogaster aggregata*) observed around piles.

AquaTerra personnel reviewed a 2007 dive survey via Remotely Operated Vehicle (ROV) for the wharf and float areas indicated that the area generally consists of low-value habitat. The GPS function for the ROV did not appear to function at depth; however, available GPS location points calibrated during the initial portion of the survey indicated that the dive survey included areas around Float B1 and B2. Generally, the sediment substrate composition appeared to consist of fine silty sand that was easily agitated by the ROV. Much of the substrate was covered with a bacterial

Beggiatoa mat (Photos 4 and 5), indicative of hypoxic-to-anoxic conditions. The survey identified some Vancouver Feather Duster Worms on the sea floor sporadically, as well as a single Leather Star (*Asteriopsis imbricata*) – Photo 6. Biodiversity seemed to be highest along the rip-rapped foreshore, where void spaces in the rock allowed for attachment and cover habitat for species such as the Giant Sea Cucumber (*Parastichopus californicus*) – Photo 7.

Photo 4: ROV Screen Capture – Beggiatoa Mat and Exposed Substrate.

Photo 5: ROV Screen Capture – Beggiatoa Mat, Exposed Substrate and Vancouver Feather Dusters.

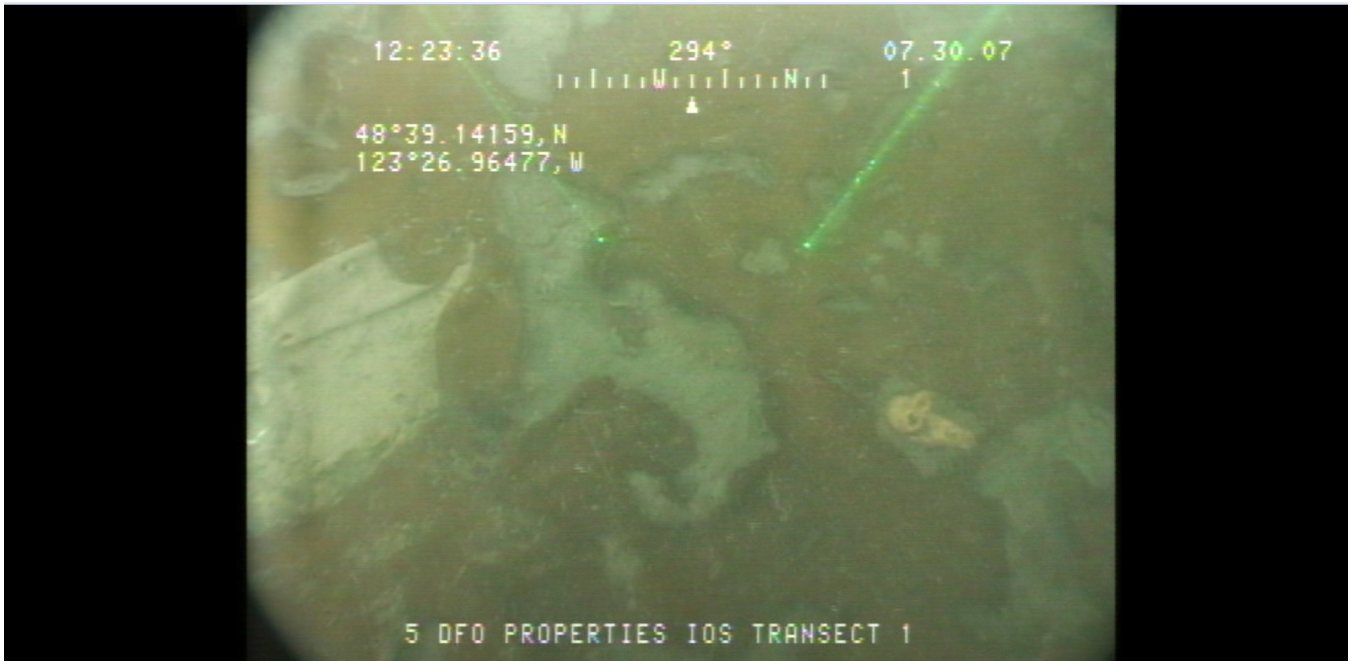

Photo 6: ROV Screen Capture – Beggiatoa Mat, Exposed Substrate and Leather Star.

Photo 7: ROV Screen Capture – Intertidal Rip-Rap Interface – Giant Sea Cucumber.

21. Scope of Effects Considered (section 5(1) and 5(2)): The scope of effects considered under CEAA 2012 consisted of:

1. 5(1)(a)(i) - fish and fish habitat (per the *Fisheries Act* – Subsection 2(1));
2. 5(1)(a)(ii) - aquatic species (per the *Species at Risk Act* – Subsection 2(1));
3. 5(1)(a)(iii) - migratory birds (per the *Migratory Birds Convention Act, 1994* – Subsection 2(1);
4. 5(1)(b)(i) – a change that may be caused to the environment that would occur on federal lands; and
5. 5(2)(a) – a change, other than those referred to in paragraphs (1)(a) and (b), that may be caused to the environment and that is directly linked or necessarily incidental to a federal authority's exercise of a power or performance of a duty or function that would permit the carrying out, in whole or in part, of the physical activity, the

designated project or the project.

22. Environmental Effects: The environmental effects identified based on discussions with DFO personnel and the field assessment are addressed by project, as follows:

PROJECT 1: No quantifiable environmental effects have been identified for this project given that there is not anticipated interaction between project-related tasks and the marine environment and/or foreshore area.

PROJECT 2: No quantifiable environmental effects have been identified for this project given that the proposed interaction between project-related tasks and the marine environment and/or foreshore area will be minor and limited primarily to areas beyond the top-of-bank with the exception of piping works to be installed under the floats. These works are anticipated to be conducted without significant adverse environmental effects.

PROJECT 3:

1. Potential impacts to water quality and/or inhabitants during concrete repair work as a result of epoxy and/or grout entering the aquatic environment.
2. Generation of debris and/or introduction of materials into the marine environment during the preparation of structures for repair.

PROJECT 4:

1. Temporary loss of attachment habitat for invertebrate species associated with removal of the existing wharf and floats;
2. Temporary loss of cover / shelter for fish and free-swimming invertebrates utilizing the wharf and floats;
3. Temporary disruption of waterfowl and shorebirds utilizing the floats and wharf for forage and feeding habitat;
4. Temporary disruption of nesting habitat for provincially blue-listed Purple Martin western subspecies (*Progne subis arboricola*) associated with nest boxes installed on the float piles (Photo 4) contingent on the timing of works;
5. Potential water quality impacts including the release of creosote / creosote containing materials and ACA/ACZA in treated wood during the decommissioning and removal of the existing wharf and floats;
6. Potential water quality impacts including the release of creosote / creosote containing materials and ACA/ACZA in treated wood during the installation of the new wharf and floats;
7. Permanent increase in shading effects of invertebrates utilizing the intertidal and subtidal zones as a result of the increase in wharf and float surface area; and
8. Permanent increase in attachment habitat for invertebrate species as a result of the increase in surface area provided by the new wharf and floats.

Photo 4: Active Purple Martin Nest Box

PROJECT 5:

1. Temporary loss of attachment habitat for invertebrate species associated with repair works of dolphins and piles;
2. Temporary loss of cover / shelter for fish and free-swimming invertebrates utilizing the active work area;
3. Temporary disruption of waterfowl and shorebirds utilizing the active work area; and
4. Potential water quality impacts including the release of creosote / creosote containing materials and ACA/ACZA in treated wood during pile and dolphin repair works.

23. Mitigation Measures for Project (including Habitat Compensation if applicable):

Identified mitigation measures / strategies applicable to each of the projects are as follows:

	PROJECT				
GENERAL	1	2	3	4	5
1. Storage of fuels and petroleum products will comply with safe operating procedures, including containment facilities in case of a spill.	✓	✓	✓	✓	✓
2. Waste or any miscellaneous unused materials will be recovered for either disposal in a designated facility or placed in storage. Under no circumstances will materials be deliberately thrown into the marine or terrestrial environment.	✓	✓	✓	✓	✓
3. Onsite crews will have emergency spill equipment available.	✓	✓	✓	✓	✓
4. All activities should be completed in such a way as to minimize stress and disturbance to resident flora and fauna.			✓	✓	✓
5. Operations should only operate where entirely necessary to complete the works to reduce effects to nearby soils, vegetation, and resident species. Respect should be given to the natural environment to minimize the footprint of the project.			✓	✓	✓
6. Aesthetic effects created by activities will be short-term and localized. Sites should be kept in a tidy manner during activities and left in a good condition at the end of the project.	✓		✓	✓	✓

EQUIPMENT / MACHINERY OPERATIONS					
1. All equipment will be maintained in proper running order to prevent leaking or spilling of potentially hazardous or toxic products. This includes hydraulic fluid, diesel, gasoline and other petroleum products.	✓	✓	✓	✓	✓
2. Vehicles should not be operated below the line of Highest High Water in the intertidal zone.			✓	✓	✓
3. Machinery must be operated efficiently, to ensure that noise and air quality issues are short-term and local.	✓	✓	✓	✓	✓
4. Environmental monitoring during works with a marine / foreshore component – to monitor water quality and assess for wildlife and other species potentially utilizing the active work area that may require the temporary cessation of works;			✓	✓	✓
5. Provision for a stocked spill kit including floating booms and spill pads to mitigate for any unforeseen discharges or deposition of creosote or creosote-containing materials into the water column during decommissioning and installation activities;			✓	✓	✓
7. Removal and re-installation of Purple Martin nest boxes post-nesting season in association with the BC Purple Martin Stewardship and Recovery Program;				✓	
8. Selective removal and relocation of invertebrates colonizing the existing floats and wharf. Only certain species (e.g., Sea Stars / Sea Pens etc.) are candidates for removal. A biologist(s) may be required on-site to facilitate this activity during the works;			✓	✓	✓
9. Store creosote treated wood on-land in an open air environment for a minimum of 45 days to allow lighter volatile hydrocarbons to volatilize into the atmosphere prior to wharf / float construction.				✓	
10. Install protective caps or wear strips on creosote containing areas where boat abrasion may occur, which may release treated wood into the environment at an accelerated rate;				✓	
11. Deploy of absorbent booms or pads during pile installation / maintenance is advisable, if possible, to capture this initial surface contamination.			✓	✓	✓
12. If pile removal is required as a component of wharf and/or float decommissioning, piles should be removed by a slow, steady pull to minimize disturbance of surface habitats and to avoid bringing creosote-contaminated sediments to the surface. If the pile breaks off below the biologically-active zone in the sediment, it may not be advisable to dredge the remainder out, depending on the sensitivity of the habitat at the site.				✓	

24. Significance of Adverse Environmental Effects:

N/A

25. Monitoring and Compliance Requirements under *Species at Risk Act*:

A search of the BC Conservation Data Centre (CDC) iMAP utility did not identify any federal Species-at-Risk within the project area. Two species, with a potential for occurrence situated within 5 km of the site include: Great Blue Heron (*Ardea herodias fannini)* – provincially blue-listed and federally ranked as 'Special Concern' (SARA Schedule 1) and Brant Goose (*Branta bernicla*) – provincially blue-listed and no federal rank. Additionally, as noted previously, Purple Martin – provincially blue-listed and no federal rank – currently nest in nest boxes on-site. With the exception of Purple Martin, which actively nests on-site and is not mandated under SARA, Great Blue Heron and Brant Goose are not anticipated to require monitoring as these species are anticipated to avoid the active work area during decommissioning and construction activities. Although Purple Martin are not mandated under SARA, sweeps and subsequent removal of the nest boxes and for individuals should be conducted in advance of the works by a Qualified Professional to ensure no adverse impacts occur prior to the onset of works. Nest boxes should be avoided during the nesting period for Purple

Martin, which is reported to start mid-May and end in mid-late August, contingent on weather variability (The Birds of British Columbia – Volume 3: Passerines, UBC Press 1997). Nests boxes are to be reinstated once works are completed.

CONCLUSION

26. Conclusion on Significance of Adverse Environmental Effects:

DFO, and its environmental representative, have determined that the project is not likely to cause significant adverse environmental effects and the project can be carried out in accordance with current environmental standards, guidelines, objectives and prescribed mitigation provided herein. Project specific environmental protection measures are outlined in the attached tender specification.

27. Prepared by:	**AquaTerra Environmental Ltd.**	**28. Date:**	**12 September 2016**
29. Name:	**Chris Lee, M.Sc., RPBio**		
30. Title:	Senior Biologist		
31. Approved by:	_____	**32. Date:**	_____
33. Name:	**Greg Brooke**		
34. Title:	**Manager Technical Support**		

DECISION

35. Decision Taken

☒ The project is not likely to cause significant adverse environmental effects, and DFO may exercise its power, duty or function.

☐ The project is likely to cause significant adverse environmental effects, and DFO has decided not to exercise its power, duty or function.

☐ The project is likely to cause significant adverse environmental effects, and DFO will ask the Governor in Council to determine if the significant adverse environmental effects are justified in the circumstances

36. Approved by: _____ **37. Date:** _____

38. Name:

39. Title:

40. References