

## **Section 00 00 00 – Title Page**

Requisition No: F1571-155017/A

# **HARTLEY BAY FIRE PROTECTION SYSTEM INSTALLATION**

FISHERIES AND OCEANS CANADA  
SMALL CRAFT HARBOURS – PACIFIC REGION

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**END OF SECTION**

## Section 01 11 00 – Summary of Work

### Part 1 General

#### 1.1 RELATED REQUIREMENTS

- .1 Section 21 30 10 – Fire Protection

#### 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  
Small Craft Harbours Program of the Department of Fisheries and Oceans, 200-401 Burrard Street Vancouver B.C. V6C 3S4
  - .2 Contracting Authority  
Public Works Government Services of Canada (PWGSC)
  - .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 The following drawings and documents shall be considered part of this contract. These drawings are to be used as a reference; the contractor is to confirm all dimensions, elevations and locations.
  - Fire Protection Drawings
    - .1 Hartley Bay Fire Line (FP-1 to 5 of 5)
    - .2 Hartley Bay – Fire Line Materials Reference
  - Reference Drawings
    - .3 Hartley Bay - Float Layout (HB-2)
    - .4 Hartley Bay – Harbour Development Wharf and Floats (Drawing 1 to 5 of 9)
    - .5 Hartley Bay – Site Photo Reference (1 to 7 of 7)
    - .6 Standpipe Support Photo Reference (1)

#### 1.4 LOCATION

- .1 The Hartley Bay Small Craft Harbour is located in Hartley Bay, BC on the central coast of British Columbia at the mouth of Douglas Channel, about 630 kilometres (390 mi) north of Vancouver and 145 kilometres (90 mi) south of Prince Rupert. It is



an isolated village accessible only by air and water with a population of 200. Hartley Bay harbour is a Class "C" harbour.

## 1.5 WORK COVERED BY CONTRACT DOCUMENTS

- .1 Except as otherwise specified; the work described in this section shall include the supply of materials, equipment, tools, services, labor and all things necessary for the completion of the supply and installation of a fire protection system on the wharf and floats in Hartley Bay (the Project Site), British Columbia.
- .2 Delivery of work shall be no later than October 30th, 2015.
- .3 All equipment and materials shall be supplied by the contractor along with all hardware and fixtures necessary for the installation.
- .4 All replaced items, cut-offs and waste material shall be disposed by the contractor in strict accordance with provincial, local, and municipal regulations and Part 8 of the National Building Code and with the Canadian Construction Safety Code.

## 1.6 DESCRIPTION OF ITEMS

### .1 Mobilisation / Demobilisation

The lump sum cost of mobilization/demobilization includes the following:

- .1 Moving all crew, equipment and materials on and off the Site.
- .2 Supply all materials, fasteners, required hand and power tools, generators, and equipment required to complete the Contract, unless otherwise specified.
- .3 Site clean-up after completion of the work.

### .2 Supply of all Dry Line Fire Protection System Materials

The lump sum cost to supply all dry fire line system materials includes the following:

- .1 Supply of all materials required for installation of the dry line system materials required for installation as shown in Section 21 30 10 FIRE PROTECTION and shown on drawings.

### .3 Installation of Dry Line Fire Protection System

The lump sum cost to install dry fire line system includes the following:

- .1 Install dry fire line system on wharf and approach as shown in Section 21 30 10 FIRE PROTECTION and shown on drawings.
- .2 Install dry fire line system on floats as shown in Section 21 30 10 FIRE PROTECTION and shown on drawings.



## **1.7 COMPLIANCE WITH STANDARD SPECIFICATIONS CODES AND REGULATIONS**

- .1 Unless expressly stated to the contrary, all materials, equipment and articles furnished by the Contractor shall comply with the applicable provisions of the standards of the Canadian Standards Association (CSA) or the Canadian Government Specification Board (CGSB) with the applicable provisions of the American Society for Testing Materials (ASTM), National Fire Protection Association (NFPA), American Concrete Institute (ACI) and the American Water Works Association (AWWA).
- .2 Where specific codes and standards are not dated, work shall conform to the latest issue of the specified standards, as revised and amended at the date of receipt of the tender.
- .3 The Contractor shall follow all regulations in accordance with the Fisheries Act. Care shall be taken not to release any deleterious materials to fish habitat into the water.

## **1.8 PERMITS, CERTIFICATES, LAWS AND ORDINANCES**

- .1 The Contractor shall, at his own expense, procure all permits, certificates and licenses required of him by law for the execution of his work under this contract. He shall comply with all Federal, Provincial or Municipal laws, ordinances or rules and regulations relating to the performance of his work and in force during the duration of this contract.
- .2 The Contractor is required to give all required notices, comply with all local, municipal, provincial, and federal laws, ordinances, codes, by-laws, rules and regulations relating to the work.

## **1.9 SITEWORK**

- .1 All work shall be completed to the lines and grades as shown on the drawings.
- .2 All heavy construction equipment shall be free of leaks and cleaned prior to construction.
- .3 The contractor shall have absorbent pads on site in case of any oil leaks or contaminants entering the water.

## **1.10 CONTRACTOR USE OF PREMISES**

- .1 The Contractor shall not enter on nor occupy with men, tools, equipment or material, any ground outside the property of the Owner without the written consent of the party owning such ground. Other contractors or employees or representatives of the Owner may, for all necessary purposes, enter upon the work and premises use by the Contractor, and the Contractor shall conduct his work so as not to impede unnecessarily any work being done by others nor adjacent to the site.



- .2 The Contractor shall keep proper illumination each night between hours of sunset and sunrise upon all floating plant and false-work, upon all arranges and other stakes where necessary, upon all buoys of such size and un such locations as required by a governing authority. When work is done at night, maintain from sunset to sunrise such lights on or about the work and plant as necessary for the proper observation of the work and the efficient prosecution thereof.
- .3 The Contractor is responsible for all materials and equipment either supplied by the Contractor, the Owner, or the Engineer. The Contractor is responsible for the repair and replacement of stolen or damaged items.
- .4 The Contractor shall work whatever shifts required in order to ensure the work meets regulatory windows and is completed by the completion date of the contract.
- .5 The Contractor shall normally perform all work within the hours of daylight except in instances where the Contractor has requested and received approval for shift changes.
- .6 Within 7 days of award, the contractor is to supply a week by week schedule of proposed activities related to the contract.
- .7 Limit use of premises for Work, for storage, and for access, to allow:
  - Owner occupancy.
  - Partial owner occupancy.
  - Work by other contractors.
  - Public usage.
- .8 Co-ordinate use of premises under direction of Engineer.
- .9 Obtain and pay for use of additional storage or work areas needed for operations under this Contract.
- .10 Remove or alter existing work to prevent injury or damage to portions of existing work which remain.
- .11 Repair or replace portions of existing work which have been altered during construction operations to match existing or adjoining work, as directed by Engineer.
- .12 At completion of operations condition of existing work: equal to or better than that which existed before new work started.
- .13 The contractor is responsible to avoid any damages to the property and personnel during construction.

#### **1.11 CONTRACTOR'S PERSONNEL**

- .1 The Contractor's representative on site shall be completely familiar with the method of work to be employed. Such personnel shall remain on site for the duration of the work as required by the Engineer.



- .2 The Contractor shall have full responsibility for the board, lodging and transportation of his personnel and subcontractors. The cost for this shall be incorporated into his unit prices. He shall comply with all labor requirements, Worker's Compensation regulations and general working conditions in the area.

#### **1.12 OWNER OCCUPANCY**

- .1 Owner will occupy premises during entire construction period for execution of normal operations.
- .2 Co-operate with Owner in scheduling operations to minimize conflict and to facilitate Owner usage.
- .3 The contractor will give the owner a minimum 72 hours notice for work that may interrupt access to the harbour.
- .4 The site shall be left in a safe condition at the completion of the each work day.

#### **1.13 EXISTING SERVICES**

- .1 Notify, Engineer and utility companies of intended interruption of services and obtain required permission.
- .2 Where Work involves breaking into or connecting to existing services, give Engineer 72 hours notice for necessary interruption of mechanical or electrical service throughout course of work. Minimize duration of interruptions. Carry out work at times as directed by governing authorities with minimum disturbance to pedestrian, vehicular traffic, and tenant operations.
- .3 Provide alternative routes for personnel, pedestrian and vehicular traffic.
- .4 Establish location and extent of service lines in area of work before starting Work. Notify Engineer of findings.
- .5 Submit schedule to and obtain approval from Engineer for any shut-down or closure of active service or facility including power and communications services. Adhere to approved schedule and provide notice to affected parties.
- .6 Provide temporary services when directed by Engineer to maintain critical building and tenant systems.
- .7 Provide adequate bridging over trenches which cross sidewalks or roads to permit normal traffic.
- .8 Where unknown services are encountered, immediately advise Engineer and confirm findings in writing.
- .9 Protect, relocate or maintain existing active services. When inactive services are encountered, cap off in manner approved by authorities having jurisdiction.



## 1.6 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.

**END OF SECTION**





## Section 01 35 26.06 – Health and Safety Requirements

### Part 1 General

#### 1.1 RELATED REQUIREMENTS

- .1 Section 01 11 00 – SUMMARY OF WORK
- .2 Section 21 30 10 – FIRE PROTECTION

#### 1.2 REFERENCES

- .1 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations
- .2 Province of British Columbia
  - .1 Workers Compensation Act, RSBC 1996 - Updated [2012].
- .3 National Building Code of Canada (NBC):
  - .1 Part 8, Safety Measures at Construction and Demolition Sites.

#### 1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit site-specific Health and Safety Plan: Within 7 days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:
  - .1 Results of site specific safety hazard assessment.
  - .2 Results of safety and health risk or hazard analysis for site tasks and operation found in work plan.
- .2 Submit 2 copies of Contractor's authorized representative's work site health and safety inspection reports to Departmental Representative, weekly.
- .3 Submit copies of reports or directions issued by Federal, and Provincial health and safety inspectors.
- .4 Submit copies of incident and accident reports.
- .5 Submit WHMIS MSDS - Material Safety Data Sheets in accordance with WHMIS requirements.
- .6 Departmental Representative will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor. Revise plan as appropriate and resubmit plan to Departmental Representative.



- .7 Departmental Representative's review of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.
- .8 Medical Surveillance: where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for site personnel prior to commencement of Work, and submit additional certifications for any new site personnel to Departmental Representative.
- .9 On-site Contingency and Emergency Response Plan: address standard operating procedures to be implemented during emergency situations.

#### **1.4 FILING OF NOTICE**

- .1 The General Contractor is to complete and submit a Notice of Project as required by Provincial authorities.
- .2 Provide copies of all notices to the Department Representative.

#### **1.5 SAFETY ASSESSMENT**

- .1 Perform site specific safety hazard assessment related to project.

#### **1.6 MEETINGS**

- .1 Schedule and administer Health and Safety meeting with Departmental Representative prior to commencement of Work.

#### **1.7 REGULATORY REQUIREMENTS**

- .1 Comply with specified codes, acts, bylaws, standards and regulations to ensure safe operations at site.
- .2 In event of conflict between any provisions of the above authorities, the most stringent provision will apply. Should a dispute arise in determining the most stringent requirement, the Departmental Representative will advise on the course of action to be followed.

#### **1.8 WORK PERMITS**

- .1 Obtain all speciality permit(s) related to project before start of work if required.

#### **1.9 PROJECT/SITE CONDITIONS**

- .1 Work at site will involve contact with:
  - .1 Gitga'at First Nation.



## 1.10 GENERAL REQUIREMENTS

- .1 Develop written site-specific Health and Safety Plan based on hazard assessment prior to beginning site Work and continue to implement, maintain, and enforce plan until final demobilization from site. Health and Safety Plan must address project specifications.
- .2 Departmental Representative may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns.
- .3 Contractor shall agree to install proper site separation and identification in order to maintain time and space at all times throughout life of project.
- .4 Provide safety barricades and lights around work site as required to provide a safe working environment for workers and protection for pedestrian and vehicular traffic.
- .5 Ensure that non-authorized persons are not allowed to circulate in designated construction areas of the work site.
  - .1 Provide appropriate means by use of barricades, fences, warning signs, traffic control personnel, and temporary lighting as required.
  - .2 Secure site at night time or provide security guard as deemed necessary to protect site against entry.

## 1.11 RESPONSIBILITY

- .1 Assume responsibility as the Prime Contractor for work under this contract.
- .2 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.
- .3 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.

## 1.12 COMPLIANCE REQUIREMENTS

- .1 Comply with Workers Compensation Act, B.C.
- .2 Comply with Canada Labour Code, Canada Occupational Safety and Health Regulations.

## 1.13 UNFORSEEN HAZARDS

- .1 When unforeseen or peculiar safety-related factor, hazard, or condition occur during performance of Work, follow procedures in place for Employee's Right to Refuse Work in accordance with Acts and Regulations of Province having jurisdiction and advise Departmental Representative verbally and in writing.



#### **1.14 HEALTH AND SAFETY CO-ORDINATOR**

- .1 Employ and assign to Work, competent and authorized representative as Health and Safety Co-ordinator. Health and Safety Co-ordinator must:
  - .1 Have site-related working experience specific to activities associated with working near or in the marine environment.
  - .2 Have working knowledge of occupational safety and health regulations.
  - .3 Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter site to perform Work.
  - .4 Be responsible for implementing, enforcing daily and monitoring site-specific Contractor's Health and Safety Plan.
  - .5 Be on site during execution of Work.

#### **1.15 POSTING OF DOCUMENTS**

- .1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on site in accordance with Acts and Regulations of Province having jurisdiction, and in consultation with Departmental Representative.

#### **1.16 CORRECTION OF NON-COMPLIANCE**

- .1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by Departmental Representative.
- .2 Provide Departmental Representative with written report of action taken to correct non-compliance of health and safety issues identified.
- .3 Departmental Representative may stop Work if non-compliance of health and safety regulations is not corrected. The General Contractor/subcontractors will be responsible for any costs arising from such a "stop work order".

#### **1.17 HEALTH AND SAFETY PLAN**

- .1 Conduct a site-specific hazard assessment based on review of Contract documents, required work, and project site. Identify any known and potential health risks and safety hazards.
- .2 Prepare and comply with a site-specific project Health and Safety Plan based on hazard assessment, including, but not limited to, the following:
  - .1 Primary requirements:
    - .1 Contractor's safety policy.
    - .2 Identification of applicable compliance obligations.
    - .3 Definition of responsibilities for project safety/organization chart for project.



- .4 General safety rules for project.
  - .5 Job-specific safe work, procedures.
  - .6 Inspection policy and procedures.
  - .7 Incident reporting and investigation policy and procedures.
  - .8 Occupational Health and Safety Committee/Representative procedures.
  - .9 Occupational Health and Safety meetings.
  - .10 Occupational Health and Safety communications and record keeping procedures.
- .2 Summary of health risks and safety hazards resulting from analysis of hazard assessment, with respect to site tasks and operations which must be performed as part of the work.
  - .3 List hazardous materials to be brought on site as required by work.
  - .4 Indicate Engineering and administrative control measures to be implemented at the site for managing identified risks and hazards.
  - .5 Identify personal protective equipment (PPE) to be used by workers.
  - .6 Identify personnel and alternates responsible for site safety and health.
  - .7 Identify personnel training requirements and training plan, including site orientation for new workers.
- .3 Develop the plan in collaboration with all subcontractors. Ensure that work/activities of subcontractors are included in the hazard assessment and are reflected in the plan.
  - .4 Revise and update Health and Safety Plan as required, and re-submit to the Departmental Representative.
  - .5 Departmental Representative's review: the review of Health and Safety Plan by Public Works and Government Services Canada (PWGSC) shall not relieve the Contractor of responsibility for errors or omissions in final Health and Safety Plan or of responsibility for meeting all requirements of construction and Contract documents.

## 1.18 EMERGENCY PROCEDURES

- .1 List standard operating procedures and measures to be taken in emergency situations. Include an evacuation plan and emergency contacts (i.e. names/telephone numbers) of:



- .1 Designated personnel from own company.
- .2 Regulatory agencies applicable to work and as per legislated regulations.
- .3 Local emergency resources.
- .4 Departmental Representative.
- .2 Include the following provisions in the emergency procedures:
  - .1 Notify workers and the first-aid attendant, of the nature and location of the emergency.
  - .2 Evacuate all workers safely.
  - .3 Check and confirm the safe evacuation of all workers.
  - .4 Notify the fire department or other emergency responders.
  - .5 Notify adjacent workplaces or residences which may be affected if the risk extends beyond the workplace.
  - .6 Notify Departmental Representative [site staff].
- .3 Provide written rescue/evacuation procedures as required for, but not limited to:
  - .1 Work at high angles.
  - .2 Work in confined spaces or where there is a risk of entrapment.
  - .3 Work with hazardous substances.
  - .4 Underground work.
  - .5 Work on, over, under and adjacent to water.
  - .6 Workplaces where there are persons who require physical assistance to be moved.
- .4 Design and mark emergency exit routes to provide quick and unimpeded exit.
- .5 Revise and update emergency procedures as required, and re-submit to the Departmental Representative.

#### **1.19 HAZARDOUS PRODUCTS**

- .1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage and disposal of hazardous materials, and regarding labelling and provision of Material Safety Data Sheets (MSDS)



acceptable to the Departmental Representative and in accordance with the Canada Labour Code.

**1.20 OVERLOADING**

- .1 Ensure no part of work is subjected to a load which will endanger its safety or will cause permanent deformation.

**1.21 FALSEWORK**

- .1 Design and construct falsework in accordance with CSA S269.1- 1975 (R2003).

**1.22 SCAFFOLDING**

- .1 Design, construct and maintain scaffolding in a rigid, secure and safe manner, in accordance with CSA Z797-2009 and B.C. Occupational Health and Safety Regulations.

**1.23 BLASTING**

- .1 Blasting or other use of explosives is not permitted without prior receipt of written instruction by Departmental Representative.

**1.24 POWDER ACTUATED DEVICES**

- .1 Use powder actuated devices only after receipt of written permission from Departmental Representative.

**1.25 FIRE SAFETY AND HOT WORK**

- .1 Obtain Departmental Representative's authorization before any welding, cutting or any other hot work operations can be carried out on site.
- .2 Hot work includes cutting/melting with use of torch, flame heating roofing kettles, or other open flame devices and grinding with equipment which produces sparks.

**1.26 FIRE SAFETY REQUIREMENTS**

- .1 Store oily/paint-soaked rags, waste products, empty containers and materials subject to spontaneous combustion in ULC approved, sealed containers and remove from site on a daily basis.
- .2 Handle, store, use and dispose of flammable and combustible materials in accordance with the National Fire Code of Canada.

**1.27 WORK STOPPAGE**

- .1 Give precedence to safety and health of public and site personnel and protection of environment over cost and schedule considerations for Work.



**Part 2        Products**

**2.1            NOT USED**

.1        Not used.

**Part 3        Execution**

**3.1            NOT USED**

.1        Not used.

**END OF SECTION**





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## Section 21 30 10 – Fire Protection

### Part 1 General

#### 1.1 RELATED REQUIREMENTS

- .1 Section 01 11 00 – STATEMENT OF WORK

#### 1.2 SPECIAL CONDITIONS

- .1 The Contractor shall closely coordinate his Work with the site occupants through the Departmental Representative and other contractors who are working on site to avoid conflicts and ensure efficient installation of the fire protection system.

#### 1.3 FIRE PROTECTION SYSTEM

- .1 Installation of the new fire line system as specified in Section 21 30 10 FIRE PROTECTION and shown on drawings FP-1 to FP-5.
- .2 The fire protection system consists of but is not limited to:
  - .1 New approach and float fire lines and foam equipment
  - .2 Associated piping fittings, hangers, valves and auxiliary equipment
  - .3 All cutting, coring, sleeving, reinforcing and making good
  - .4 Painting and identification of pipe and equipment
  - .5 Access panels required
  - .6 Drains as required
  - .7 Obtain Fire Department acceptance.

#### 1.4 SUBMITTALS

- .1 As-built Drawings
  - .1 The contractor will record all field alterations and additions, including access panels and drain locations on a field set of drawings.
- .2 Pressure Test Certifications
  - .1 Upon completion of all pressure tests and before substantial completion of the job submit one hard completed copy and one electronic copy of the “Contractor’s Material and Test Certificate” to the Departmental Representative.

### Part 2 Products

#### 2.1 QUANTITIES

- .1 Below is an estimate table of the quantities required for the installation of the fire protection system (reference drawing #2 Hartley Bay – Fire Line Materials Reference). The contractor will be responsible for any additional materials required for field fit installation:



Item Number	Description	Units
1	4" x 2½" x 2½" Fire Dept Connection one straight, two 90° angle type c/w Caps	3
2	4" x 2½" x 2½" Hydrant c/w 2 – 2½" Hose Valves one straight , two 90° angle type c/w Caps	2
3	2 ½" Angle Hose Valves fem NPT x male HT c/w/ & Caps	6
4	1" Brass Ball Valve fem NPT	12
5	3" Brass Ball Valve NPT	0
6		
7	4" Galv. Sch 40 pipe	200ft
8	3" Galv Sch 40 pipe	60ft
9	2½" Galv Sch 40 pipe	60ft
10	1" Galv Sch 40 pipe	20ft
11	4" Sclair Pipe D-9	0
12	3" Sclair Pipe D-9	900ft
13	4" x 3" Sclair Reducer fuse connection	0
14	3" Sclair Tee fuse connection	11
15	3" Sclair Elbow 90° fuse connection	8
16	4" Sclair Elbow 90° fuse connection	0
17	3" Sclair Coupling, Victaulic Style #995, galv.	12
18	3" Sclair x groove Coupling, Victaulic Style #997, galv	10
19	3" x 1" NPT galv Sclair Outlet Coupling	6
20	4" Sclair Tee fuse connection	0
21	4" Sclair Coupling, Victaulic Style #995	0
22	4" galv grooved coupling flexible	16
23	3" galv grooved coupling flexible	6
24	2 ½" galv grooved coupling flexible	0
25		
26	4" x 2½" galv grooved Reducing Coupling	0
27	3" x 2½" galv grooved Reducing Coupling	7
28		
29	4" galv grooved Elbow 90°	5
30	3" galv grooved Elbow 90°	8
31	2 ½" galv grooved Elbow 90°	0
32		
33	4" galv grooved tee	0
34	3" galv grooved tee	2
35		
36	4" galv grooved cap	0
37	3" galv grooved cap	3
38	3" x 2 ½" galv grooved reducer	0
39	3" x 1" galv grooved outlet coupling	2
40	4" x 1" galv grooved outlet coupling	2
41	4" NPT x 3" NPT galv Hex bushing	4
42	4" NPT galv Elbow 90°	2



43	3" NPT galv Elbow 90°	2
44		
45	100ft Galv Tolco Tolstrut #B12	100ft
46	4" Galv Tolco Tolstrut pipe clamp	40
47	2½" Galv Tolco Tolstrut pipe clamp	20
48	4" Galv 2 hole pipe clamp	10
49	2½" Galv 2 hole pipe clamp	25
50	3/8" galv hanger rod	60ft
51	Galv side beam bracket 3/8" rod	12
52	4" galv HD hanger ring	12
53		
54	3/8" x 6" galv coach screw	80
55	3/8" galv rod coupling	12
56	3/8" galv hex nut	100
57	3/8" x 2½" galv lag bolt	40
58	3/8" x 1½" galv hex bolt	0
59	1" galv straight Sway Brace Fitting	0
60	4" galv standard pipe clamp	10
61	2 ½" galv standard pipe clamp	0
62		
63	4" galv Riser Support (see attached pictures)	2
64	2½" galv Riser Support (see attached pictures)	6
65	Cellar Nozzle Retainers	0
66	Deck Hatches	12
67	Drain & Control Valve Access Hatches	12
68	Denso Tape	bulk
69	Scottyfire Roll and Foam Mod #4045-30 Attack system configured for Class B foam. All threads to be compatible with the local standard.	1
70	5 gallon refills of Class B non-freezing foam.	2
71	Weatherproofed enclosure	1
72	Scottyfire Foam-fast Class A Applicator Mod #4010-30. All threads to be compatible with the local standard.	1
73	12" Foam-fast cartridges.	6

## 2.2 MATERIALS, EQUIPMENT, VALVES AND DEVICES

- .1 All materials, equipment, valves and devices installed and/or furnished under this section shall be new and be listed and/or approved for use in fire protection installation by the following authorities.
- .1 Underwriters' Laboratories of Canada (ULC)
- or, if not available
- .2 Underwriters' Laboratories Inc. (UL)
  - .3 Factory Mutual Engineering Association

## 2.3 CONTROL VALVES



- .1 Valves for the same application shall be one manufacture and bearing ULC label, manufacturer's name, valve size and pressure rating. Unless otherwise specified, design for 175psi working pressure.
- .2 Valves 3" and smaller shall be bronze construction with screwed connection, either O.S. &Y valves or ball valves.

#### **2.4 PIPING AND FITTINGS**

- .1 Galvanized SCH 40 steel piping and galvanized fitting shall meet the requirements of ASTM A 795 and ANSI B 16 or as indicated. Sclair pipe to be Type D-9.
- .2 SCH 40 steel piping shall be threaded or cut-grooved where required upto 4" dia..
- .3 Sclair piping to be fusion welded where required upto 3" dia.

#### **2.5 FIRE DEPARTMENT CONNECTION, WHARF HYDRANT AND HOSE VALVES**

- .1 Fire department connection shall be 4" x 2½" x 2½" complete with caps and plate marked "Standpipe" in 2" letters.
- .2 Wharf hydrant shall be 4" x 2½" x 2½" complete with 2-2½" hose valves and caps.
  - .1 Hose valves shall be angle type 2½" complete with caps.
- .3 All threads to be compatible with the local standard.
- .4 The fire department connection and hose valves should be plain bronze finish.

#### **2.6 HANGERS, SEISMIC SWAY BRACING & PIPING RESTRAINTS**

- .1 Hangers shall conform to Section 2-6 and seismic sway bracing and piping restraints current NFPA No. 13.

#### **2.7 ACCESS PANELS**

- .1 Install access panels as required at control and drain valve locations. Manufactured type and style to suit structural conditions. Size to be as required for intended use (i.e.hand only or full access). Access panels to be painted fire red.

#### **2.8 FOAM EQUIPMENT**

- .1 Scottyfire Roll and Foam Mod #4045-30 Attack system configured for class B foam come with
  - .1 Two (2) 5 gallon refills of Class B non-freezing foam. All threads to be compatible with the local standard, and
  - .2 Weatherproofed enclosure located close to the float hydrant.

### **Part 3 Execution**



**3.1 WELDING**

- .1 Welding of steel pipe and fittings on the wharf and floats is prohibited

**3.2 PIPE INSTALLATION**

- .1 Obtain consultants approval for method and type of pipe hangers to be used for each construction type prior to commencing the Work. Victaulic piping connections to be cut-grooved.

**Part 4 3.3 CUTTING, CORING & PATCHING**

- .1 Cut or core openings in floats as required for installation of the work. Coordinate schedule and obtain the Departmental Representative's approval prior to commencement of cutting or coring. In addition to obtaining approval of coring locations, the Contractor shall take precautions during coring to avoid damaging existing services located in floats.
- .2 Structures to be reinforced where weakened by cutting or coring.
- .3 Contractor to make good where existing equipment removed and new equipment installed.
- .4 The contractor will keep an accurate markup drawing for location of all cores.

**3.4 IDENTIFICATION**

- .1 Provide control valves and drains with factory produced lamicoid identification tags.
- .2 All Standpipe risers shall be painted "fire red".

**3.5 DRAINS**

- .1 System auxiliary drains shall be piped to drainages systems and/or to a point where they are easily accessible and equipped with a valve, nipple and cap.
- .2 Access panels to be provided where necessary.
- .3 A copy of the location and size of all drains and low points on all systems must be submitted with the as-built drawings.

**3.6 PROTECTION**

- .1 All exposed steel pipe, fittings and equipment located in the float structure is to be completely wrapped in Denso tape.

**3.7 CLEANING**

- .1 Maintain the work in a tidy condition and free from accumulation of waste products and debris.



- .2 Material accumulated by cutting and opening up shall be removed as work is performed.
- .3 Unless otherwise noted, all equipment demolished or removed and not to be handed over to the Owner shall become the property of the Contractor and removed from site.

### **3.8 TESTING OF PIPING**

- .1 The Contractor shall hydrostatic pressure test the piping system as required by the Contractors Material & Test Certificate.
- .2 Prior to the pressure test, all piping shall be flushed in accordance with NFPA No. 13 to ensure removal of all foreign material and debris.
- .3 Tests shall involve the local Fire Department and be witnessed by the Departmental Representative.
- .4 Any leaks or deficiencies found as a result of the testing shall be repaired by the contractor.

### **3.9 INSPECTIONS AND TESTS**

- .1 The Contractor shall provide field labour and equipment to facilitate all inspections, examinations and tests required by authorities and/or agencies specified in Part 1 to obtain a complete interim and final acceptance of the fire protection system.
- .2 The tests required shall be in the presence of representatives of the agencies having jurisdiction.

### **3.10 PLACING IN SERVICE**

- .1 When the entire fire protection system has been completed and testing has been passed, the contractor shall demonstrate the complete operation and maintenance required to the Fire Departments and designated personnel.

### **3.11 CONTRACTOR'S MATERIAL AND TEST CERTIFICATE**



Contractor's Material and Test Certificate for Aboveground Piping										
<b>PROCEDURE</b> Upon completion of work, inspection and tests shall be made by the contractor's representative and witnessed by an owner's representative. All defects shall be corrected and system left in service before contractor's personnel finally leave the job.										
A certificate shall be filled out and signed by both representatives. Copies shall be prepared for approving authorities, owners, and contractor. It is understood the owner's representative's signature in no way prejudices any claim against contractor for faulty material, poor workmanship, or failure to comply with approving authority's requirements or local ordinances.										
Property name							Date			
Property address										
Plans	Accepted by approving authorities (names)									
	Address									
	Installation conforms to accepted plans						<input type="checkbox"/> Yes		<input type="checkbox"/> No	
Equipment used is approved						<input type="checkbox"/> Yes		<input type="checkbox"/> No		
If no, explain deviations										
Instructions	Has person in charge of fire equipment been instructed as to location of control valves and care and maintenance of this new equipment?									
	If no, explain?									
	Have copies of the following been left on the premises?						<input type="checkbox"/> Yes		<input type="checkbox"/> No	
1. System components instructions						<input type="checkbox"/> Yes		<input type="checkbox"/> No		
2. Care and maintenance instructions						<input type="checkbox"/> Yes		<input type="checkbox"/> No		
3. NFPA 25						<input type="checkbox"/> Yes		<input type="checkbox"/> No		
Location of system	Supplies buildings									
Sprinklers	Make	Model	Year of manufacture	Orifice size	Quantity	Temperature rating				
Pipe and fittings	Type of pipe _____ Type of fittings _____									
Alarm valve or flow indicator	Alarm device				Maximum time to operate through test connection					
	Type	Make	Model	Minutes	Seconds					
Dry pipe operating test	Dry valve			Q.O.D.						
	Make	Model	Serial no.	Make	Model	Serial no.				
		Time to trip through test connection <sup>1</sup>	Water pressure	Air pressure	Trip point air pressure	Time water reached test outlet <sup>2</sup>		Alarm operated properly		
		Minutes	Seconds	psi	psi	psi	Minutes	Seconds	Yes	No
	Without Q.O.D.									
	With Q.O.D.									
If no, explain										



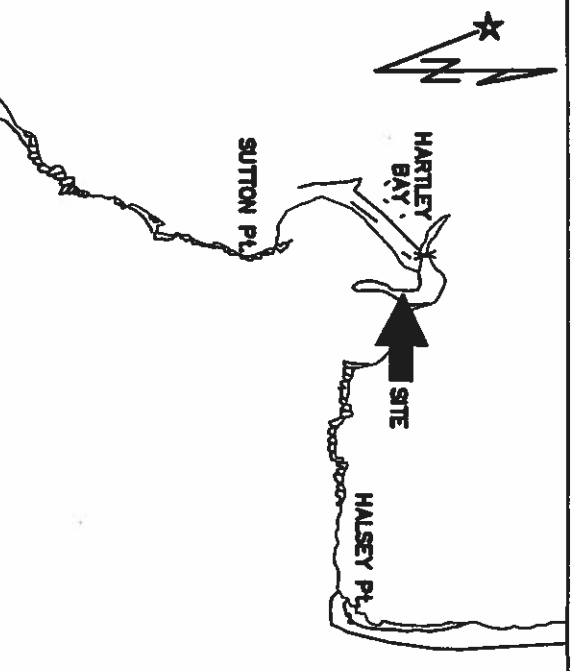
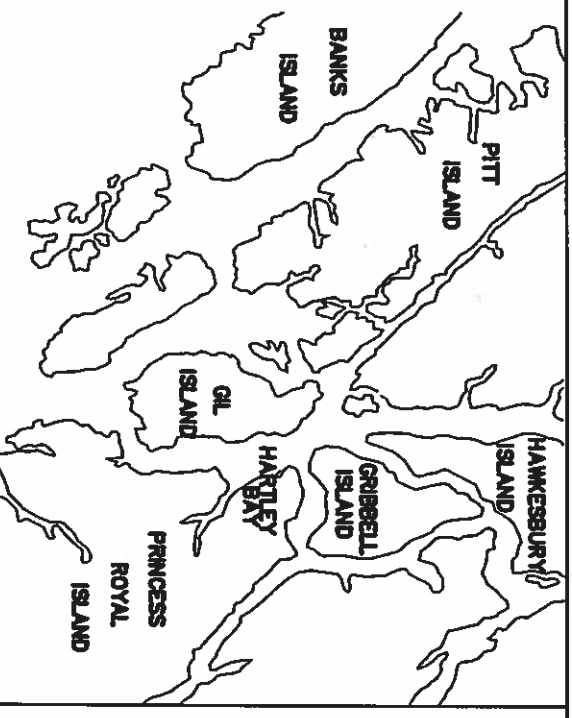
Deluge and preaction valves	Operation <input type="checkbox"/> Pneumatic <input type="checkbox"/> Electric <input type="checkbox"/> Hydraulics							
	Piping supervised <input type="checkbox"/> Yes <input type="checkbox"/> No				Detecting media supervised <input type="checkbox"/> Yes <input type="checkbox"/> No			
	Does valve operate from the manual trip, remote, or both control stations? <input type="checkbox"/> Yes <input type="checkbox"/> No							
	Is there an accessible facility in each circuit for testing? <input type="checkbox"/> Yes <input type="checkbox"/> No						If no, explain	
	Make	Model	Does each circuit operate supervision loss alarm?		Does each circuit operate valve release?		Maximum time to operate release	
		Yes	No	Yes	No	Minutes	Seconds	
Pressure reducing valve test	Location and floor	Make and model	Setting	Static pressure		Residual pressure (flowing)		Flow rate
				Inlet (psi)	Outlet (psi)	Inlet (psi)	Outlet (psi)	Flow (gpm)
Test description	<p><b>Hydrostatic:</b> Hydrostatic tests shall be made at not less than 200 psi (13.6 bar) for 2 hours or 50 psi (3.4 bar) above static pressure in excess of 150 psi (10.2 bar) for 2 hours. Differential dry-pipe valve clappers shall be left open during the test to prevent damage. All aboveground piping leakage shall be stopped.</p> <p><b>Pneumatic:</b> Establish 40 psi (2.7 bar) air pressure and measure drop, which shall not exceed 1½ psi (0.1 bar) in 24 hours. Test pressure tanks at normal water level and air pressure and measure air pressure drop, which shall not exceed 1½ psi (0.1 bar) in 24 hours.</p>							
	<p>All piping hydrostatically tested at _____ psi (____ bar) for _____ hours</p> <p>Dry piping pneumatically tested    <input type="checkbox"/> Yes    <input type="checkbox"/> No</p> <p>Equipment operates properly    <input type="checkbox"/> Yes    <input type="checkbox"/> No</p> <p>Do you certify as the sprinkler contractor that additives and corrosive chemicals, sodium silicate or derivatives of sodium silicate, brine, or other corrosive chemicals were not used for testing systems or stopping leaks?    <input type="checkbox"/> Yes    <input type="checkbox"/> No</p>							
Tests	Drain test	Reading of gauge located near water supply test connection: _____ psi (____ bar)			Residual pressure with valve in test connection open wide: _____ psi (____ bar)			
	Underground mains and lead in connections to system risers flushed before connection made to sprinkler piping							
	Verified by copy of the U Form No. 85B flushed by installer of underground sprinkler piping				<input type="checkbox"/> Yes <input type="checkbox"/> No	Other    Explain		
					<input type="checkbox"/> Yes <input type="checkbox"/> No			
If powder-driven fasteners are used in concrete, has representative sample testing be satisfactorily completed? <input type="checkbox"/> Yes <input type="checkbox"/> No    If no, explain								
Blank testing gaskets	Number used	Locations					Number removed	
Welding	Welding piping <input type="checkbox"/> Yes <input type="checkbox"/> No							
	# yes...							
	Do you certify as the sprinkler contractor that welding procedures comply with the requirements of at least AWS B2.1? <input type="checkbox"/> Yes <input type="checkbox"/> No							
	Do you certify that the welding was performed by welders qualified in compliance with the requirements of at least AWS B2.1? <input type="checkbox"/> Yes <input type="checkbox"/> No							
Do you certify that the welding was carried out in compliance with a documented quality control procedure to ensure that all discs are retrieved, that openings in piping are smooth, that slag and other welding residue are removed, and that the internal diameters of piping are not penetrated? <input type="checkbox"/> Yes <input type="checkbox"/> No								
Cutouts (discs)	Do you certify that you have a control feature to ensure that all cutouts (discs) are retrieved? <input type="checkbox"/> Yes <input type="checkbox"/> No							



Hydraulic data nameplate	Nameplate provided <input type="checkbox"/> Yes <input type="checkbox"/> No		If no, explain
	Date left in service with all control valves open		
Remarks			
Signatures	Name of sprinkler contractor		
	Tests witnessed by		
	For property owner (signed)	Title	Date
	For sprinkler contractor (signed)	Title	Date
Additional explanations and notes			

END OF SECTION





LOCATION CHART

SCALE 1 : 16,280

**NOTES:**

1. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS.

**DESIGN CRITERIA:**

1. NFPA 307, "STANDARD FOR THE CONSTRUCTION AND FIRE PROTECTION OF MARINE TERMINALS, PIERS, AND WHARVES."

**AUTHORITIES:**

1. LOCAL HARBOUR AUTHORITY.
2. DEPARTMENT OF FISHERIES AND OCEANS, SMALL CRAFT HARBOURS BRANCH.
3. LOCAL FIRE DEPARTMENT.

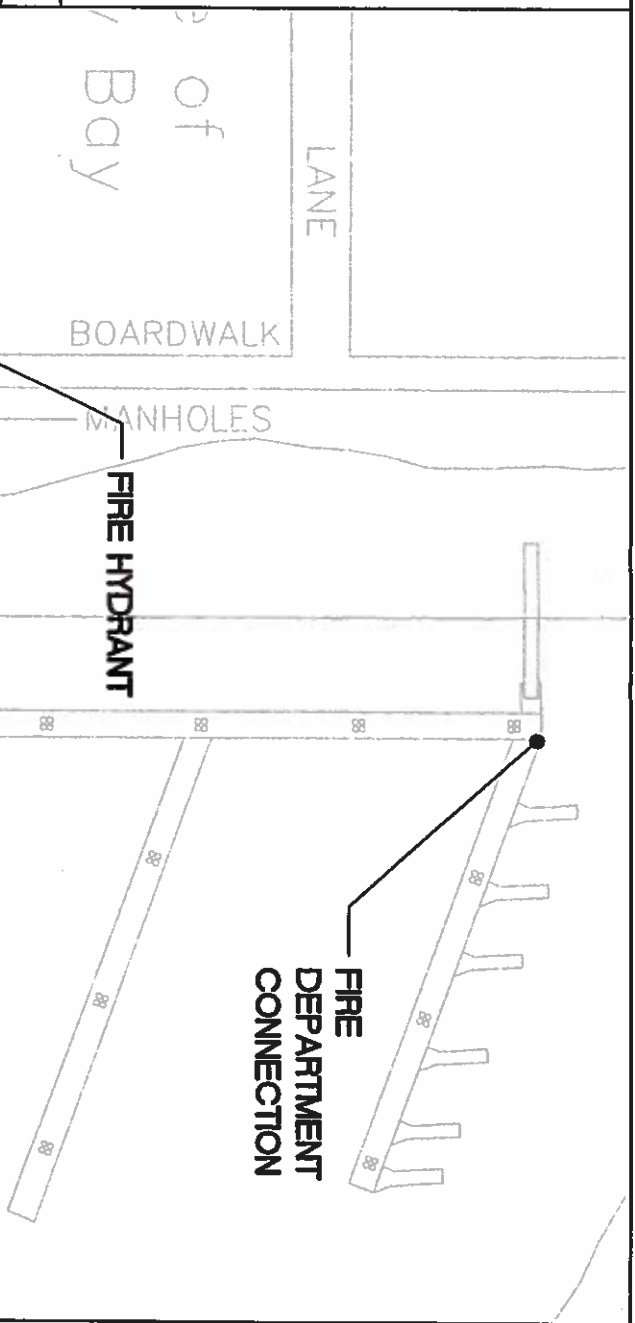
2. NFPA 303, "FIRE PROTECTION STANDARD FOR MARINAS AND BOATYARDS."

PRESSURE LOSSES FROM APPROACH FIRE DEPARTMENT CONNECTION TO FLOAT END HOSE VALVE:

100 USGPM	28 PSI
150 USGPM	49 PSI

**PROJECT SCOPE:**

1. INSTALLATION OF FIRE LINE ON APPROACH.



**SITE PLAN**  
SCALE: 1:800

PROJECT: HARTLEY BAY, SMALL CRAFT HARBOUR

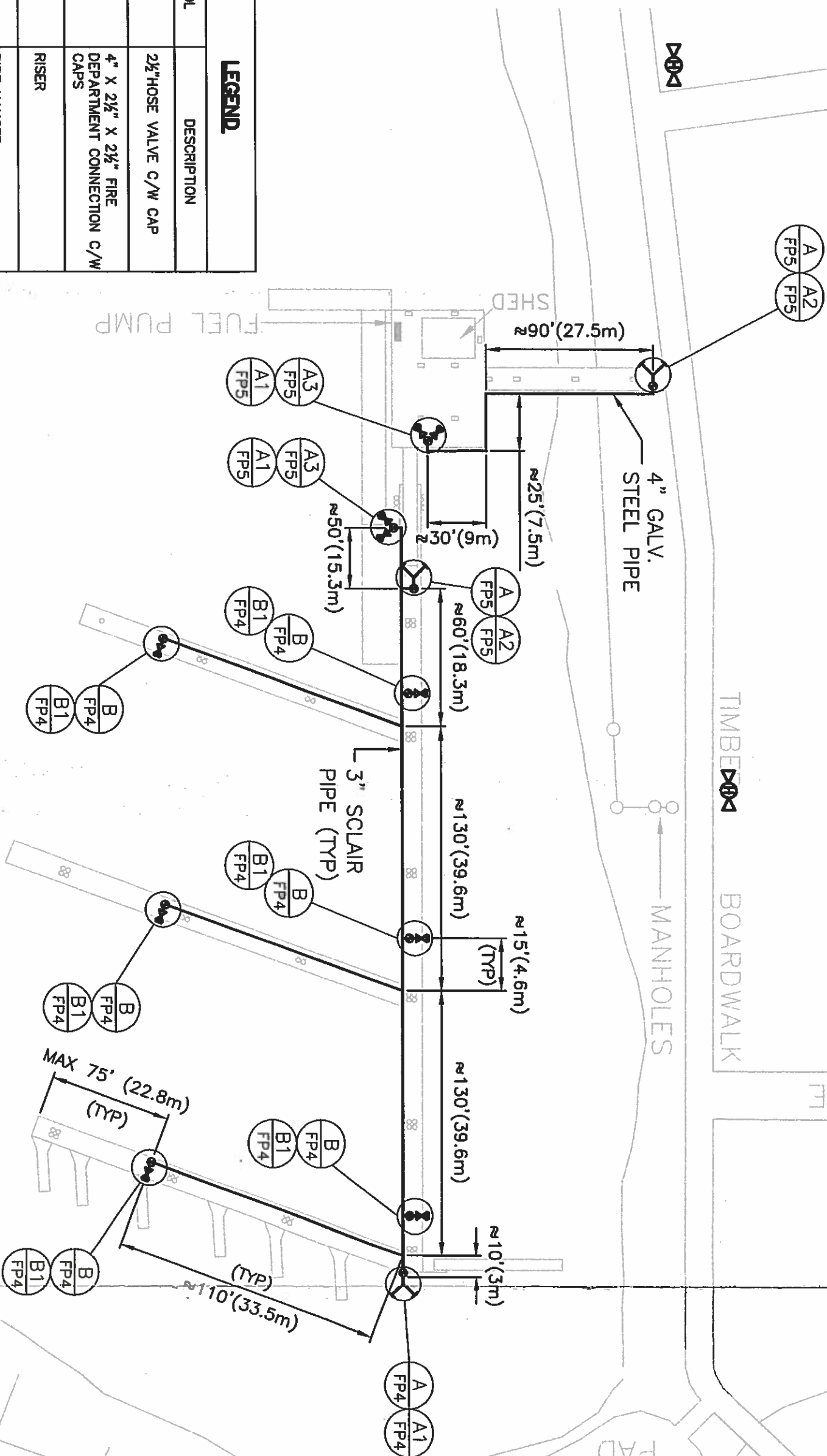
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SCALE:	AS NOTED	FILE NO.: 142220-1
DRAWN BY:	AKT	DATE PRINTED: NOV 19, 2014
CHECKED BY:	GM	SHEET: FP 1 OF: 5 REVISION: -
REVIEWED BY:	GM	REV. DATE: -



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VANCOUVER, BRITISH COLUMBIA  
CANADA V6B 3X5  
TEL: (604) 732-3761  
FAX: (604) 732-1277  
EMAIL: info@gbacan.com

LEGEND	
SYMBOL	DESCRIPTION
	2 1/2" HOSE VALVE C/W CAP
	4" X 2 1/2" X 2 1/2" FIRE DEPARTMENT CONNECTION C/W CAPS
	RISER
	PIPE HANGER
	4X SWAY BRACING
	2X SWAY BRACING
	FIRE LINE
	EXISTING FIRE HYDRANT
	4" X 2 1/2" X 2 1/2" HEADER C/W 2 1/2" HOSE VALVES



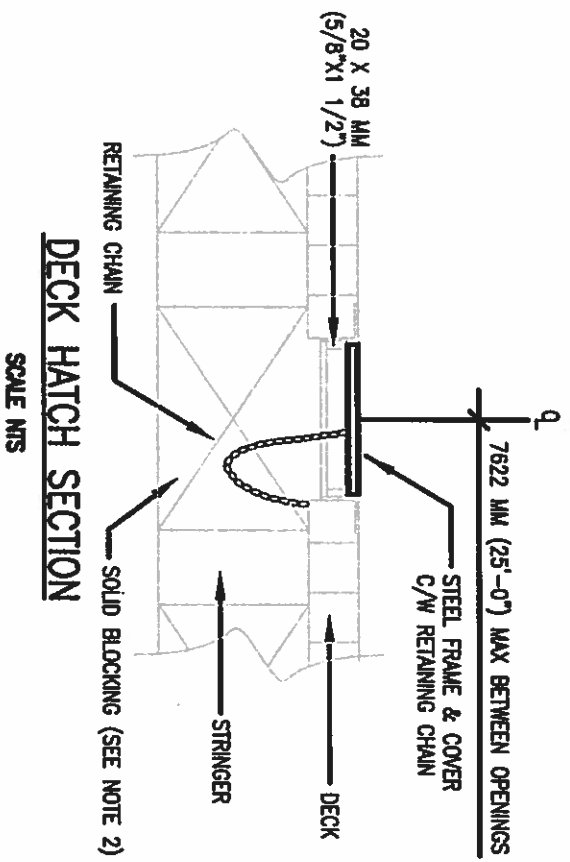
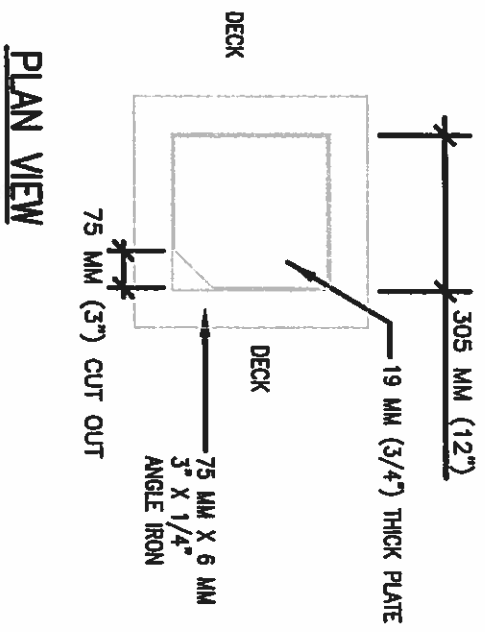
**FLOAT FIRE LINE**  
SCALE 1/8"=1'-0"

PROJECT: HARTLEY BAY, SMALL CRAFT HARBOUR

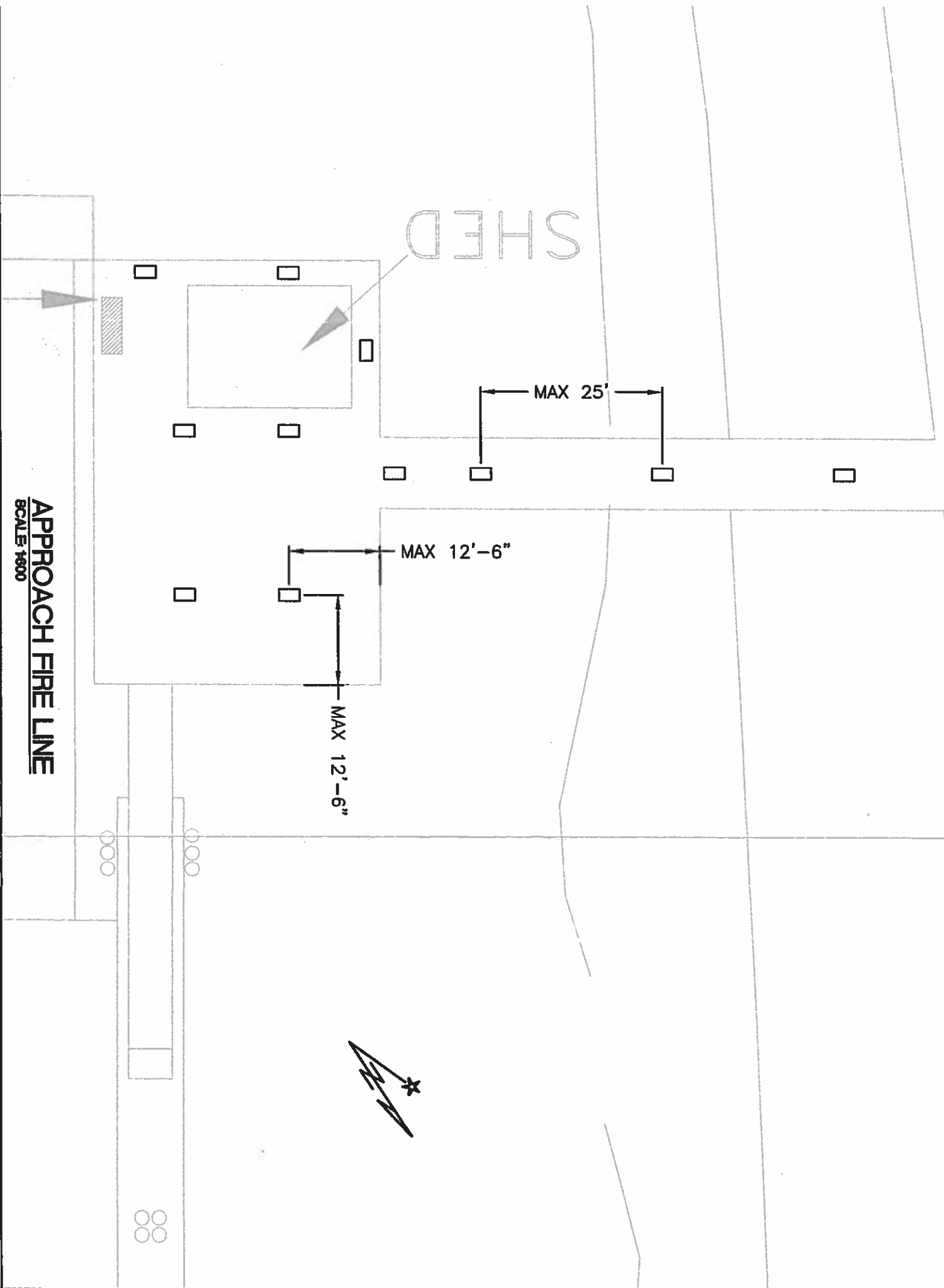


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LEGEND	
SYMBOL	DESCRIPTION
□	DECK HATCH



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PROJECT: HARTLEY BAY, SMALL CRAFT HARBOUR

TITLE: FIRE LINE

SCALE: AS NOTED

DRAWN BY: AKT

CHECKED BY: GM

REVIEWED BY: GM

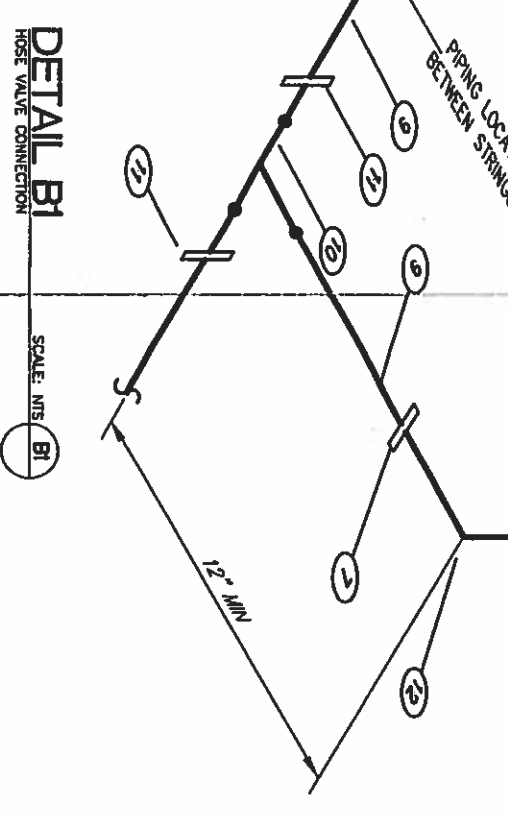
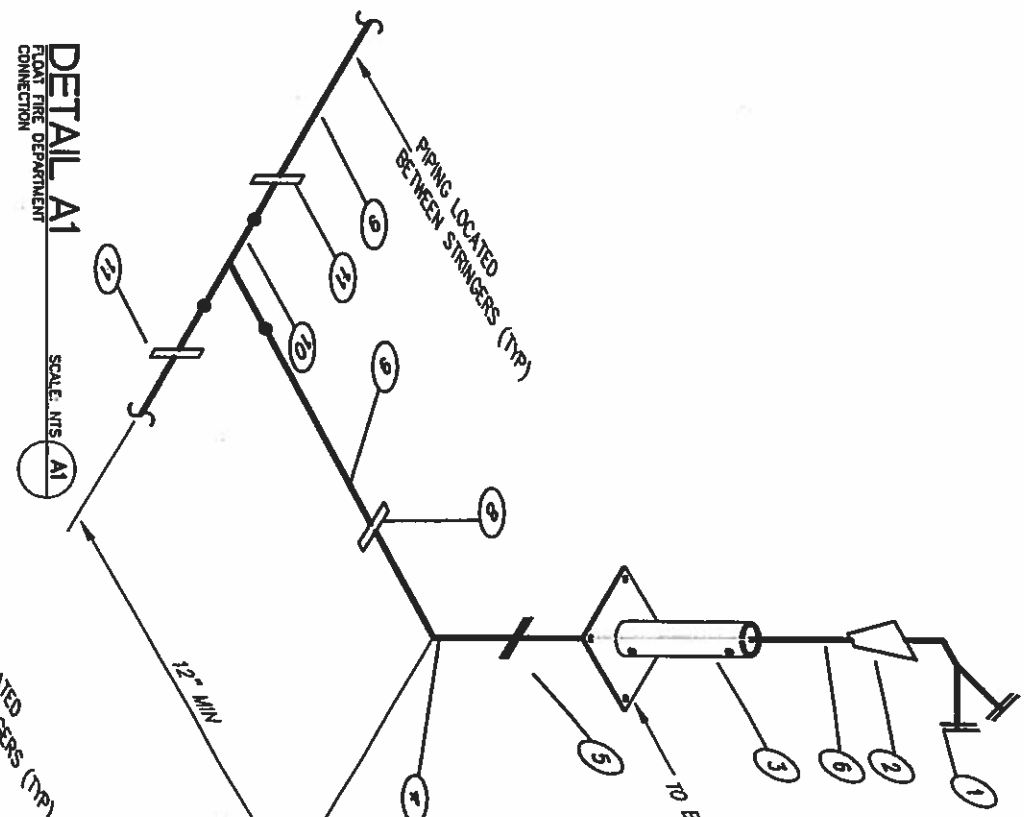
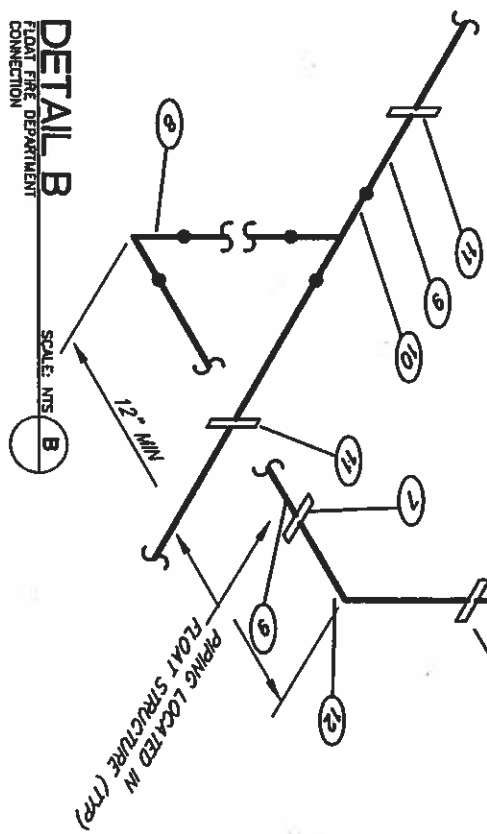
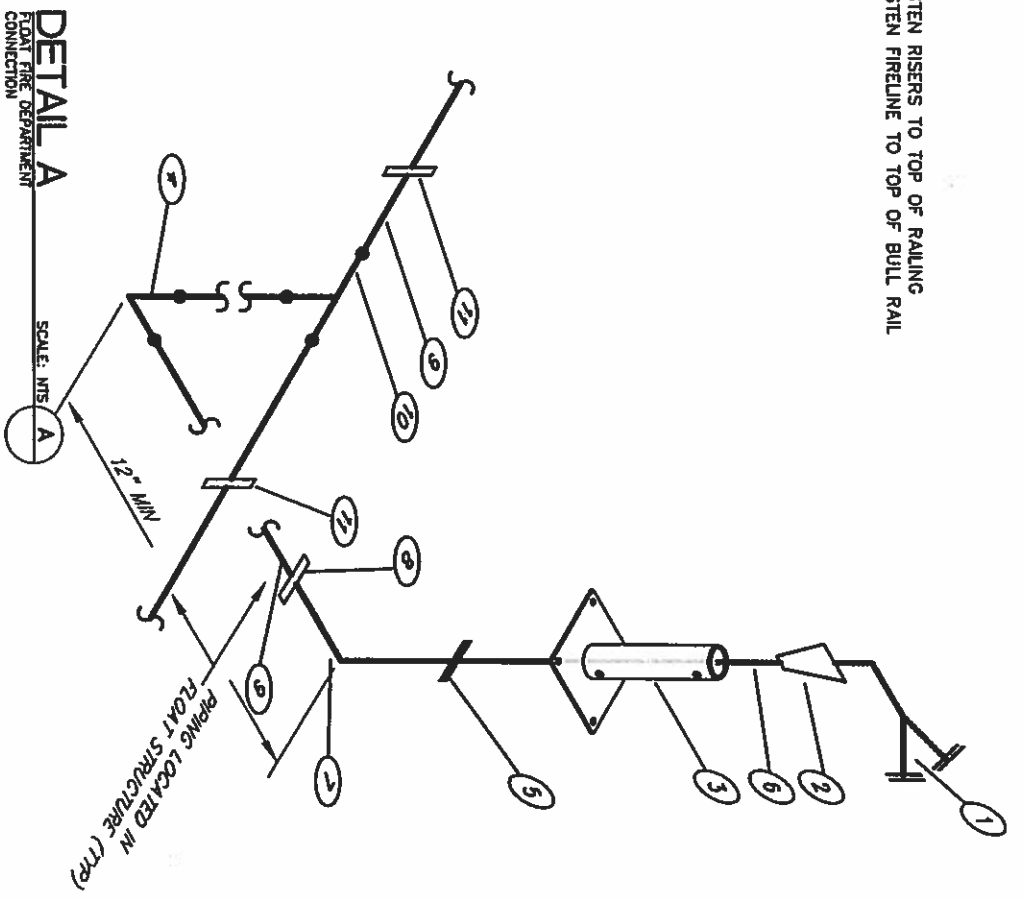
FILE NO.: 142220-1

DATE PRINTED: NOV 19, 2014

SHEET: FP 3 OF: 5 REVISION: -

REV. DATE: -

- NOTE:
1. FASTEN RISERS TO TOP OF RAILING
  2. FASTEN FIRELINE TO TOP OF BULL RAIL



- LEGEND (DETAIL "A & A1")
1. 4 x 2 1/2" x 2 1/2" FIRE DEPARTMENT CONNECTION C/W CAPS
  2. 4"x3" GALV. HEX BUSHING
  3. PIPE STAND c/w 3/8" x 12" x 12" GALVANIZED STEEL PLATE
  4. 3" SCLAIR ELBOW
  5. 3" GALV. GROOVED COUPLING
  6. 3" DIA. SCH. 40 GALV. PIPE
  7. 3" GALV. 90° GROOVED ELBOW
  8. 3" GALV. SCLAIR X GROOVED COUPLING
  9. 3" SCLAIR PIPE (D-9 TYP)
  10. 3" SCLAIR TEE
  11. 3" GALV. SCLAIR COUPLING
- FOR END PIECE USE 3" GALV. SCLAIR X GROOVED COUPLING C/W 3" GALV. GROOVED PLUG

- LEGEND (DETAIL "B & B1")
1. 2 1/2" HOSE VALVE C/W CAPS
  2. 2 1/2" DIA GALV. SCH40 PIPE (NPT X GROOVE)
  3. PIPE STAND C/W 3/8"x12"x12" GALVANIZED STEEL PLATE
  4. ---
  5. 3"x2 1/2" GALV. GROOVED COUPLING
  6. ---
  7. 3" GALV. SCLAIR X GROOVED COUPLING
  8. 3" SCLAIR ELBOW
  9. 3" SCLAIR PIPE (D-9 TYP)
  10. 3" SCLAIR TEE
  11. 3" GALV. SCLAIR COUPLING. FOR END PIECE USE 3" GALV. SCLAIR X GROOVED COUPLING C/W 3" GALV. GROOVED PLUG
  12. 3" GALV. GROOVED ELBOW



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PROJECT: HARTLEY BAY, SMALL CRAFT HARBOUR

TITLE: FIRE LINE

SCALE: AS NOTED

DRAWN BY: AKT

CHECKED BY: GM

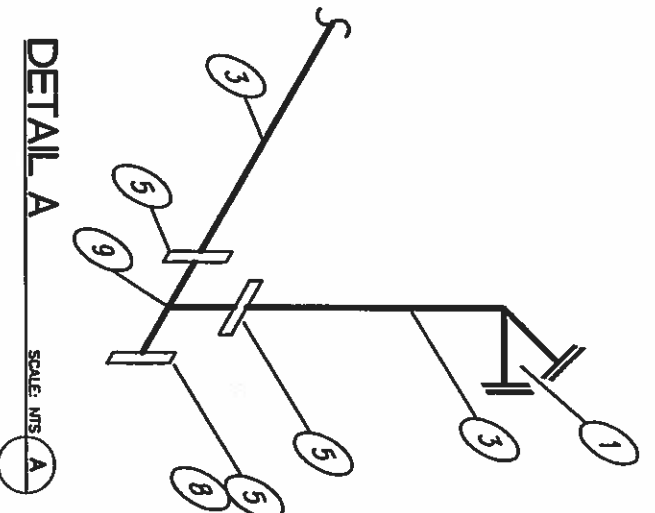
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FILE NO.: 142220-1

DATE PRINTED: NOV 19, 2014

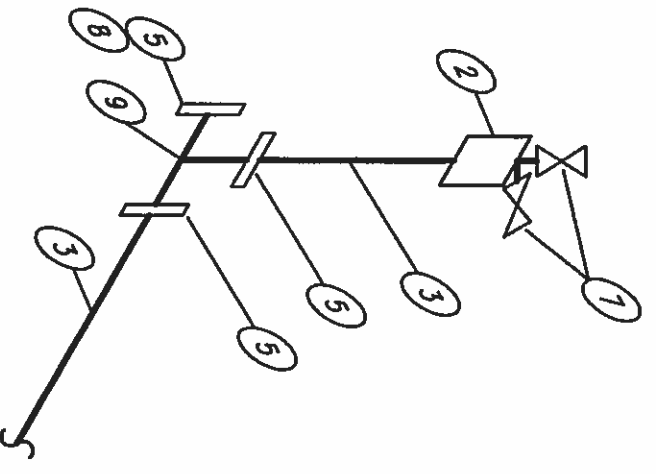
SHEET: FP 4 OF: 5 REVISION: -

REV. DATE: -



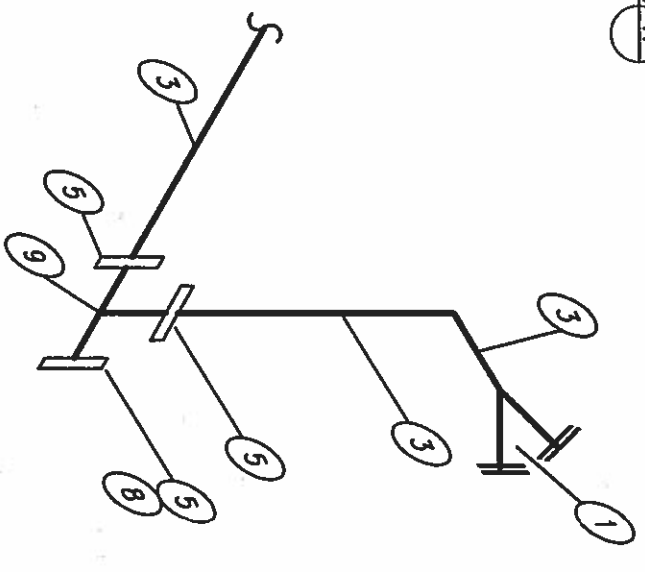
DETAIL A

SCALE: NTS A



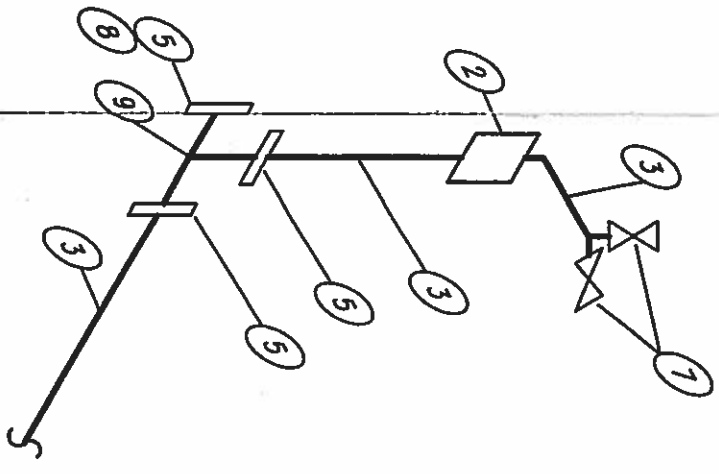
DETAIL A1

SCALE: NTS A1



DETAIL A2

SCALE: NTS A2



DETAIL A3

SCALE: NTS A3

- NOTE:
1. FASTEN RISERS TO TOP OF RAILING
  2. FASTEN FIRELINE TO TOP OF BULL RAIL

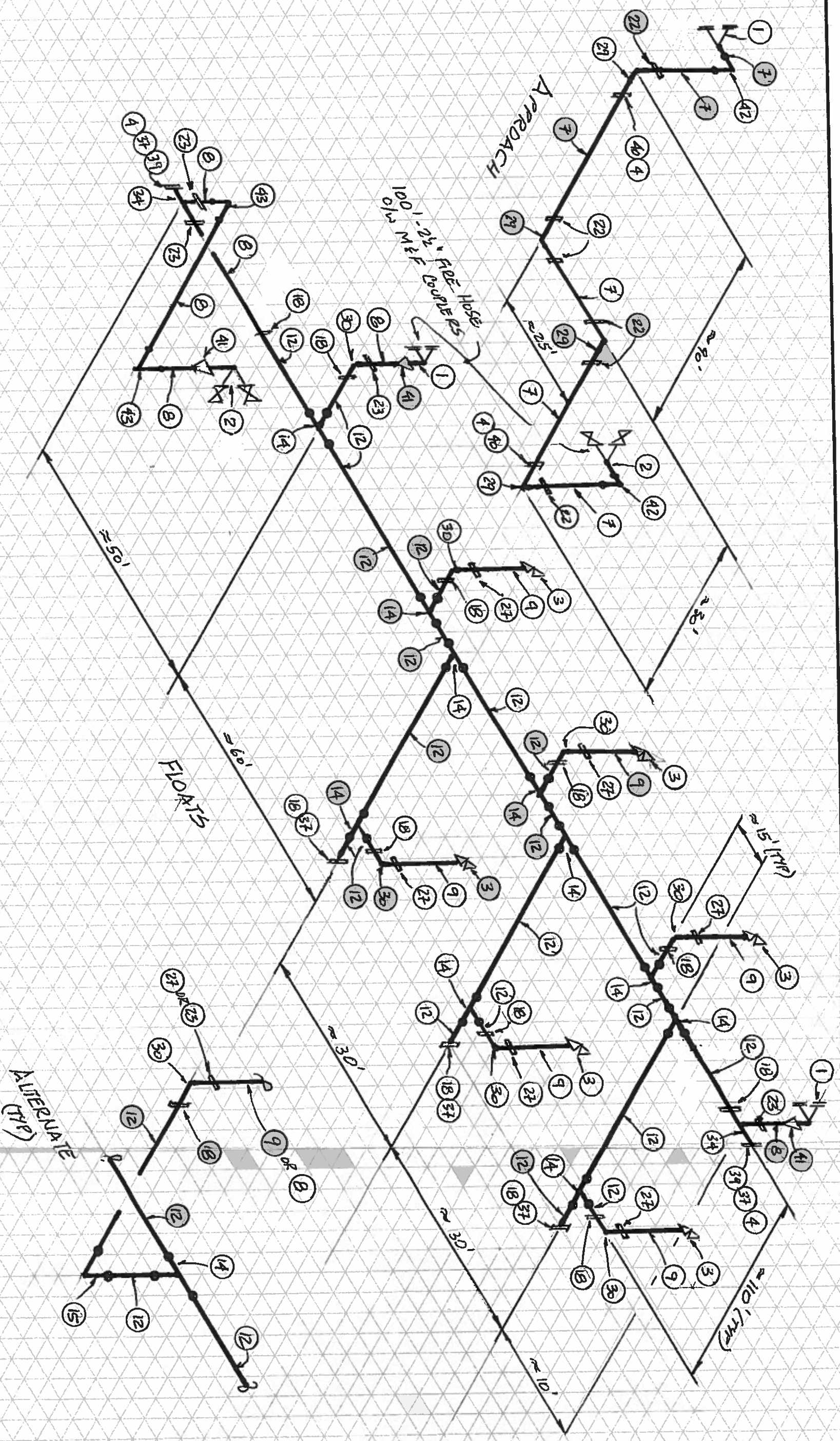
- LEGEND (DETAIL "A-A3")
1. 4" x 2 1/2" x 2 1/2" FIRE DEPARTMENT CONNECTION C/W CAPS
  2. 4" x 2 1/2" x 2 1/2" HEADER
  3. 4" DIAMETER SCHEDULE 40 GALVANIZED PIPE
  4. 2 1/2" DIAMETER SCHEDULE 40 GALVANIZED PIPE
  5. 4" GALVANIZED GROOVED COUPLING
  6. 4" x 2 1/2" GALVANIZED GROOVED COUPLING
  7. 2 1/2" HOSE VALVE C/W CAPS
  8. 4" GALVANIZED CAP
  9. 4" GALVANIZED TEE



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 EMAIL: info@gbacan.com

PROJECT:	HARTLEY BAY, SMALL CRAFT HARBOUR		
TITLE:	FIRE LINE		
SCALE:	AS NOTED		
DRAWN BY:	AKT	FILE NO.:	142220-1
CHECKED BY:	GM	DATE PRINTED:	NOV 19, 2014
REVIEWED BY:	GM	SHEET:FP 5	OF: 5
		REVISION:	-
		REV. DATE:	-

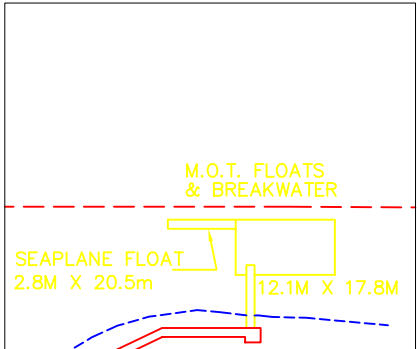
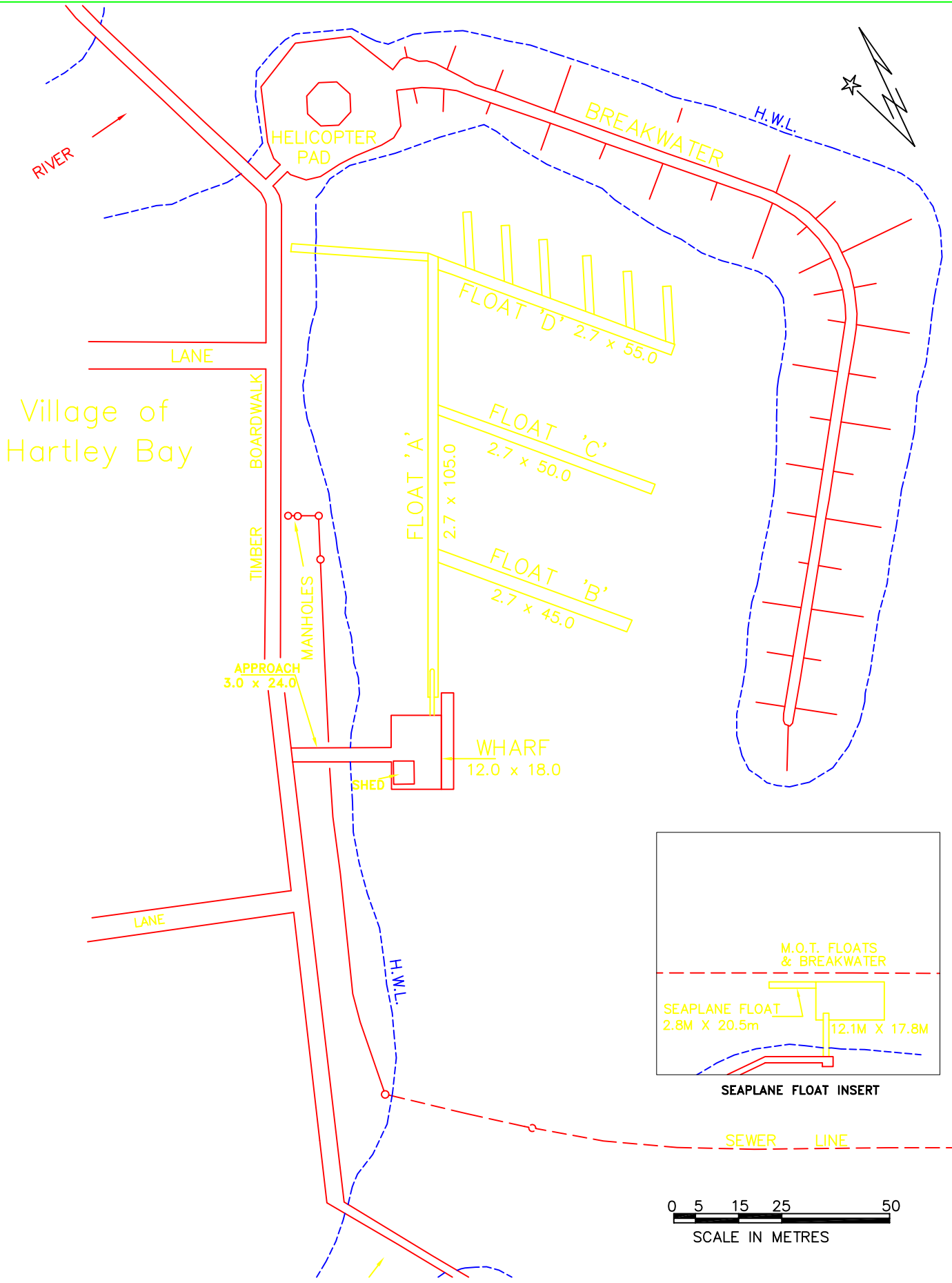


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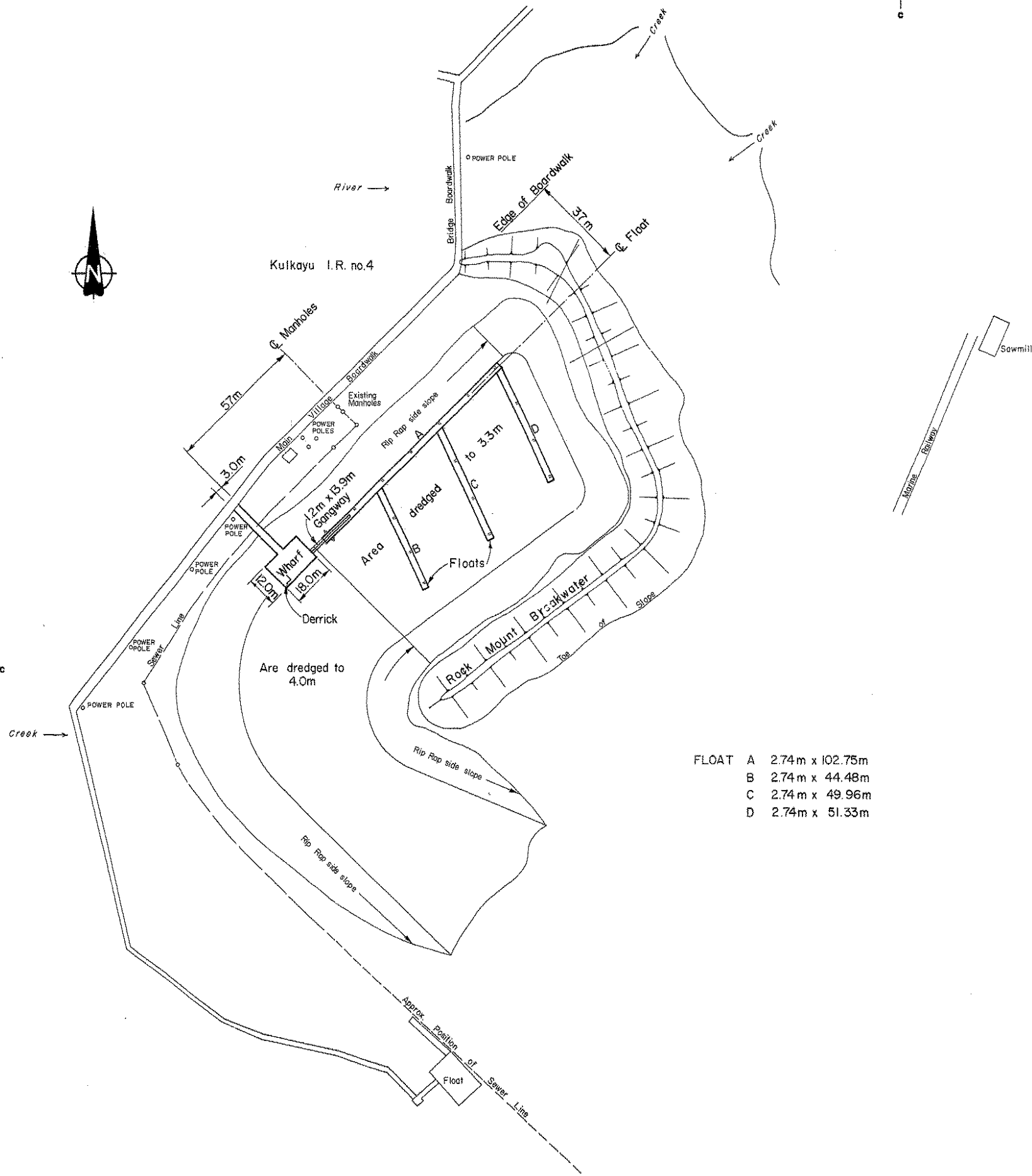
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 DATE: OCT. 31, 2014

DRAWN: GM  
 REVIEWED:  
 APPROVED:



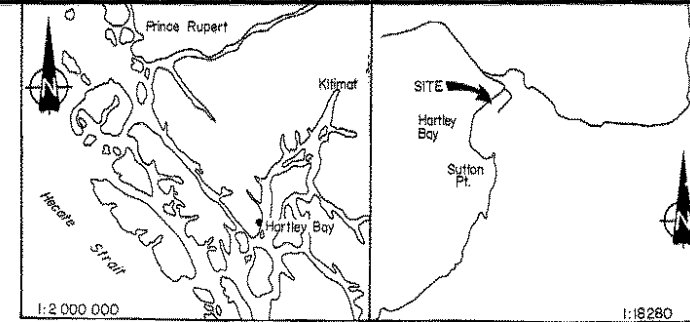
0 5 15 25 50  
SCALE IN METRES





- FLOAT A 2.74 m x 102.75m
- B 2.74 m x 44.48m
- C 2.74 m x 49.96m
- D 2.74 m x 51.33m

LAYOUT PLAN  
scale 1:1000



LOCATION CHARTS

revisions | date

A	A
C	B C

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

project | projet

HARTLEY BAY, B.C.  
HARBOUR DEVELOPMENT  
WHARF AND FLOATS

drawing | dessin

LAYOUT PLAN

designed D.T. | conçu

date June 1984

drawn MDK | dessiné

date June 1984

reviewed | examiné

date

approved | approuvé

date

Tender | soumission

PWC Project Manager / Administrateur de projets TPC

project number / no. du projet

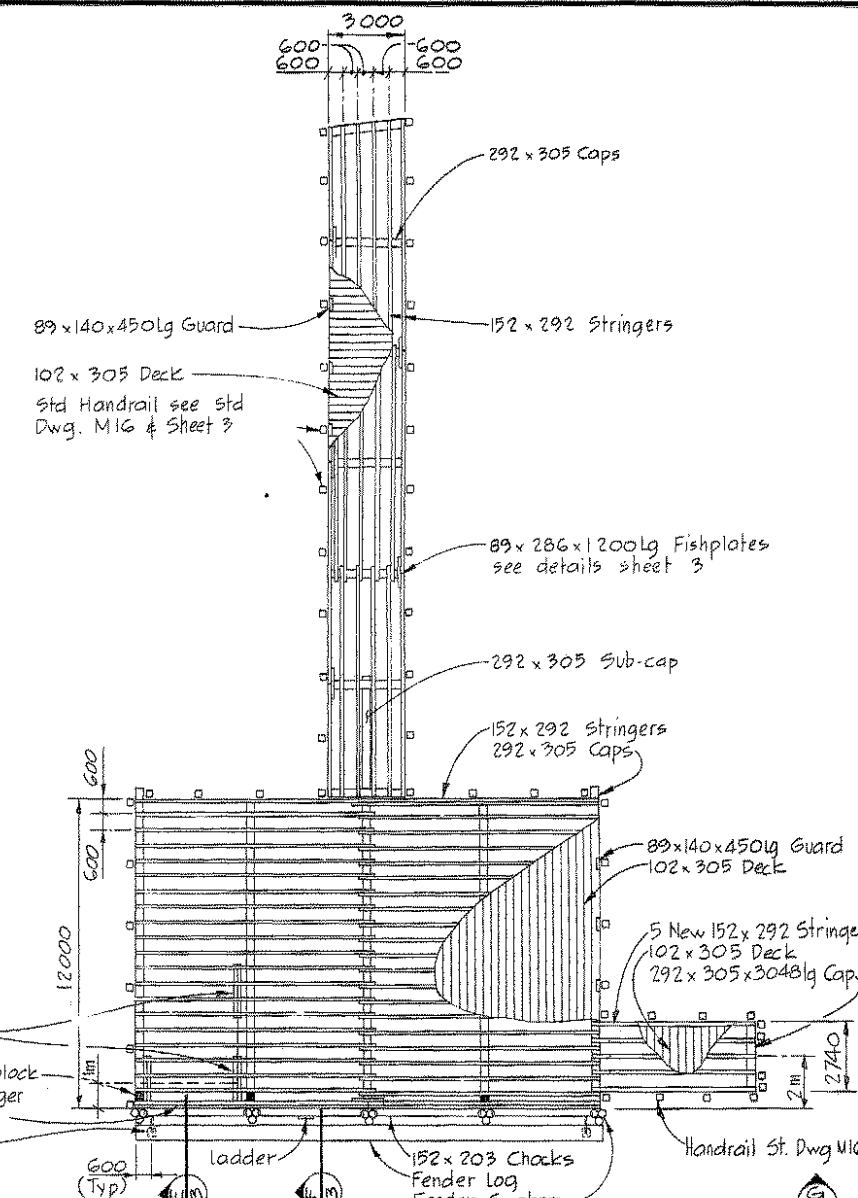
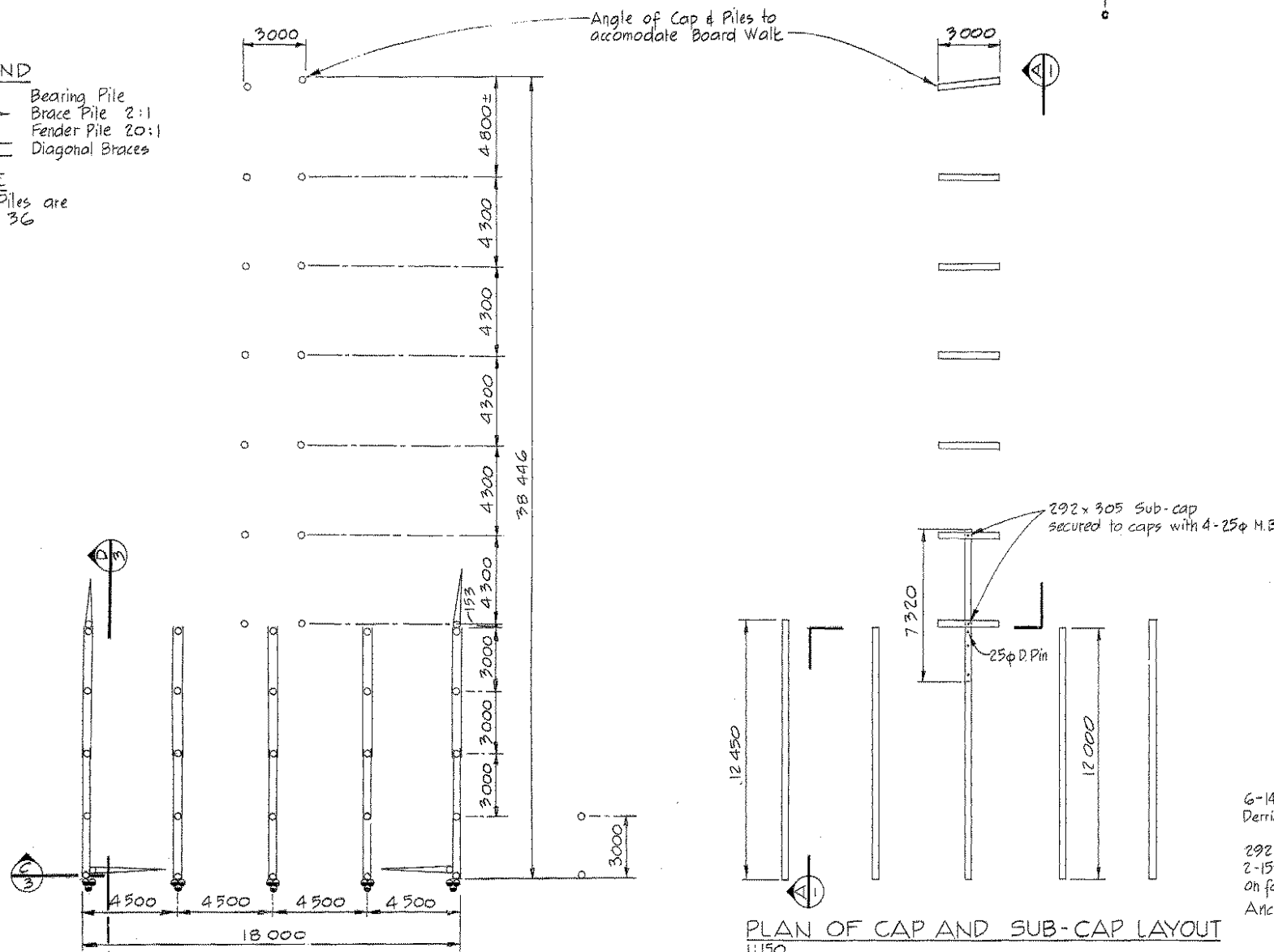
100559 - 370611

drawing no. / no. du dessin

1 of 9

**LEGEND**  
 ○ Bearing Pile  
 ◯ Brace Pile 2:1  
 ● Fender Pile 20:1  
 ◯ Diagonal Braces

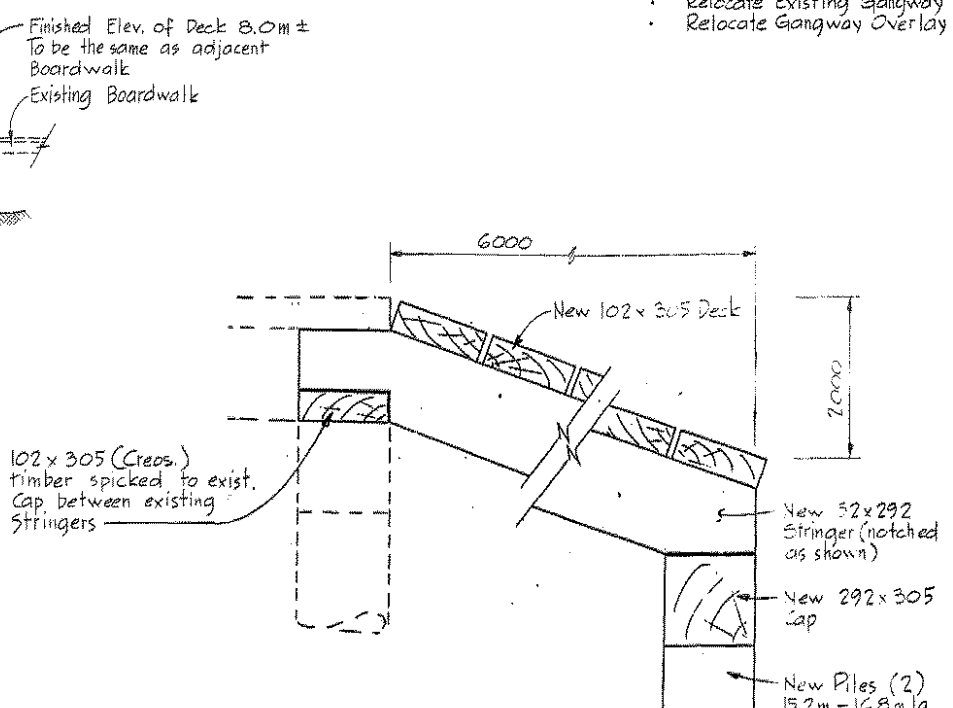
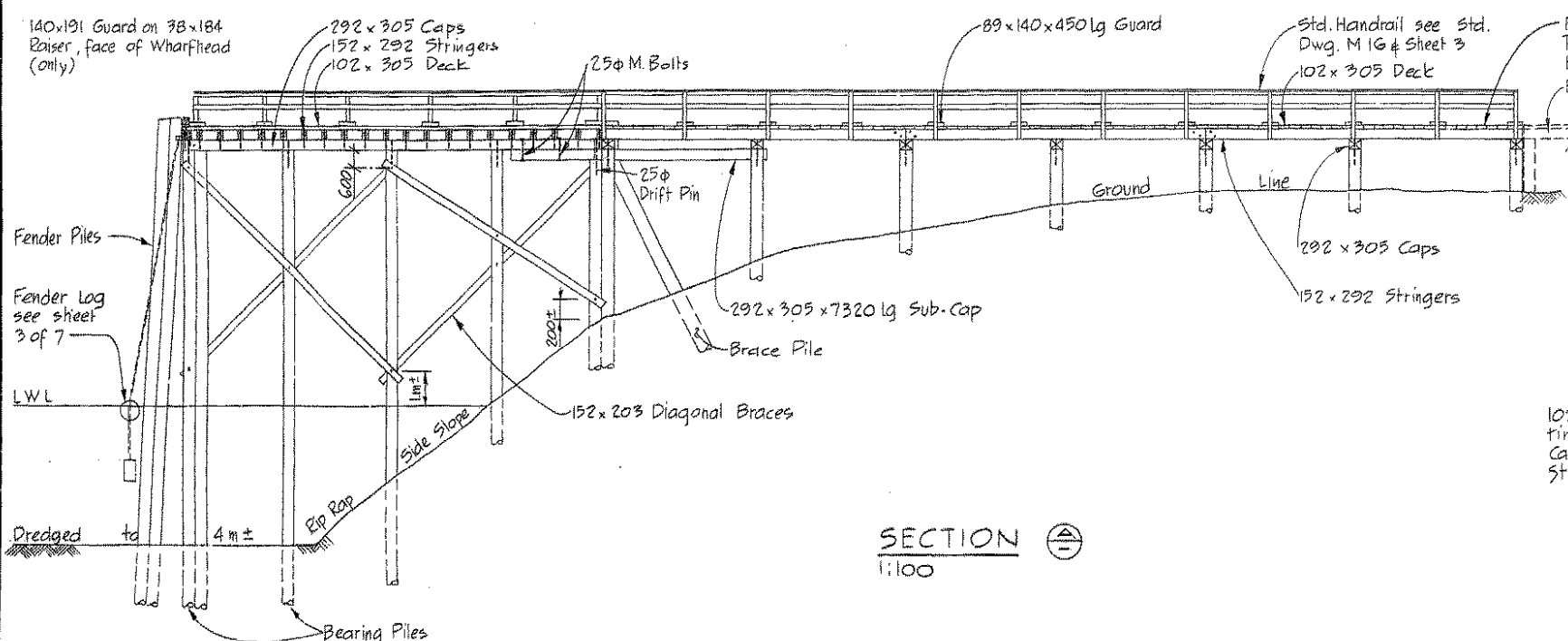
**NOTE**  
 All Piles are  
 Size 36

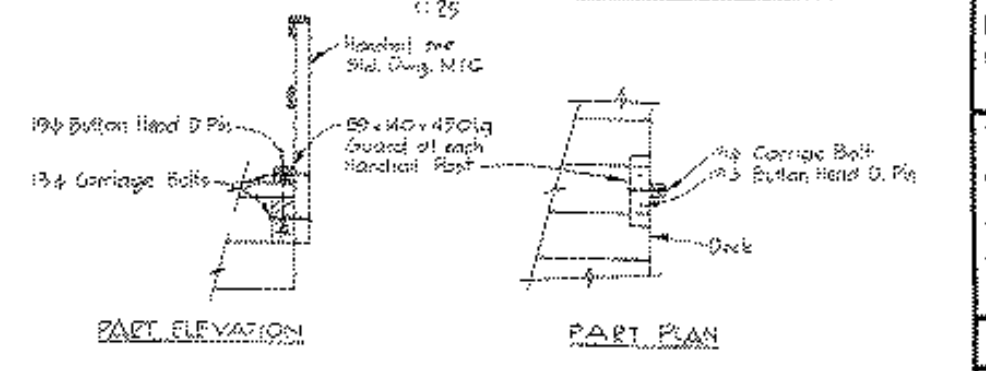
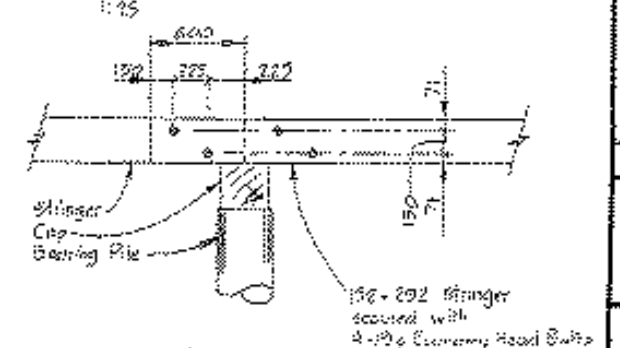
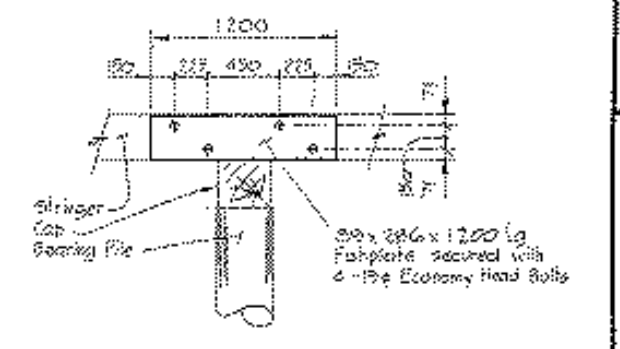
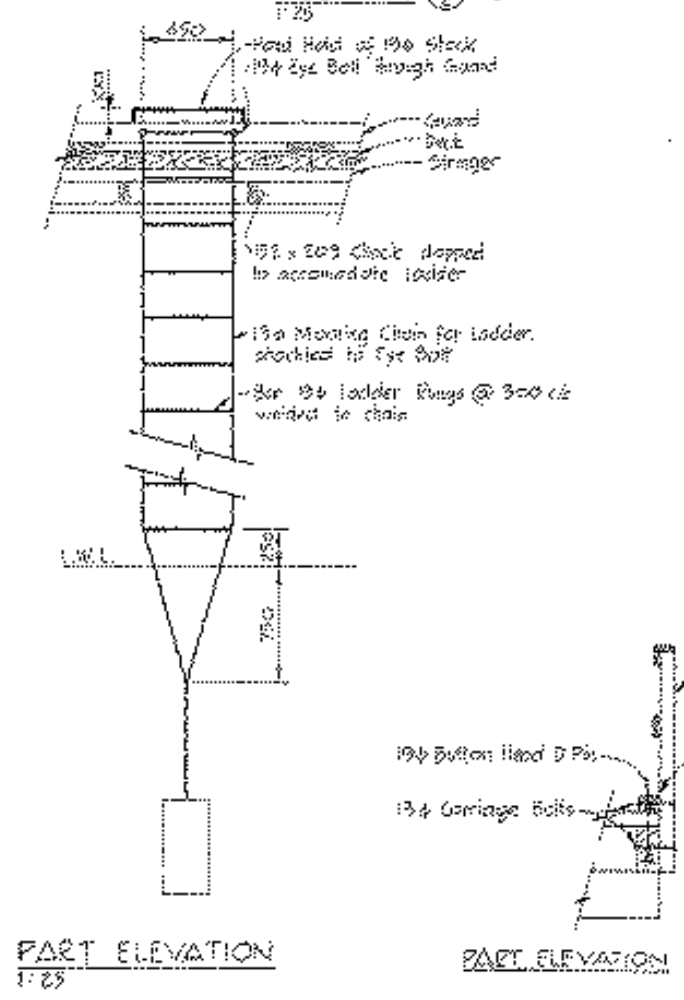
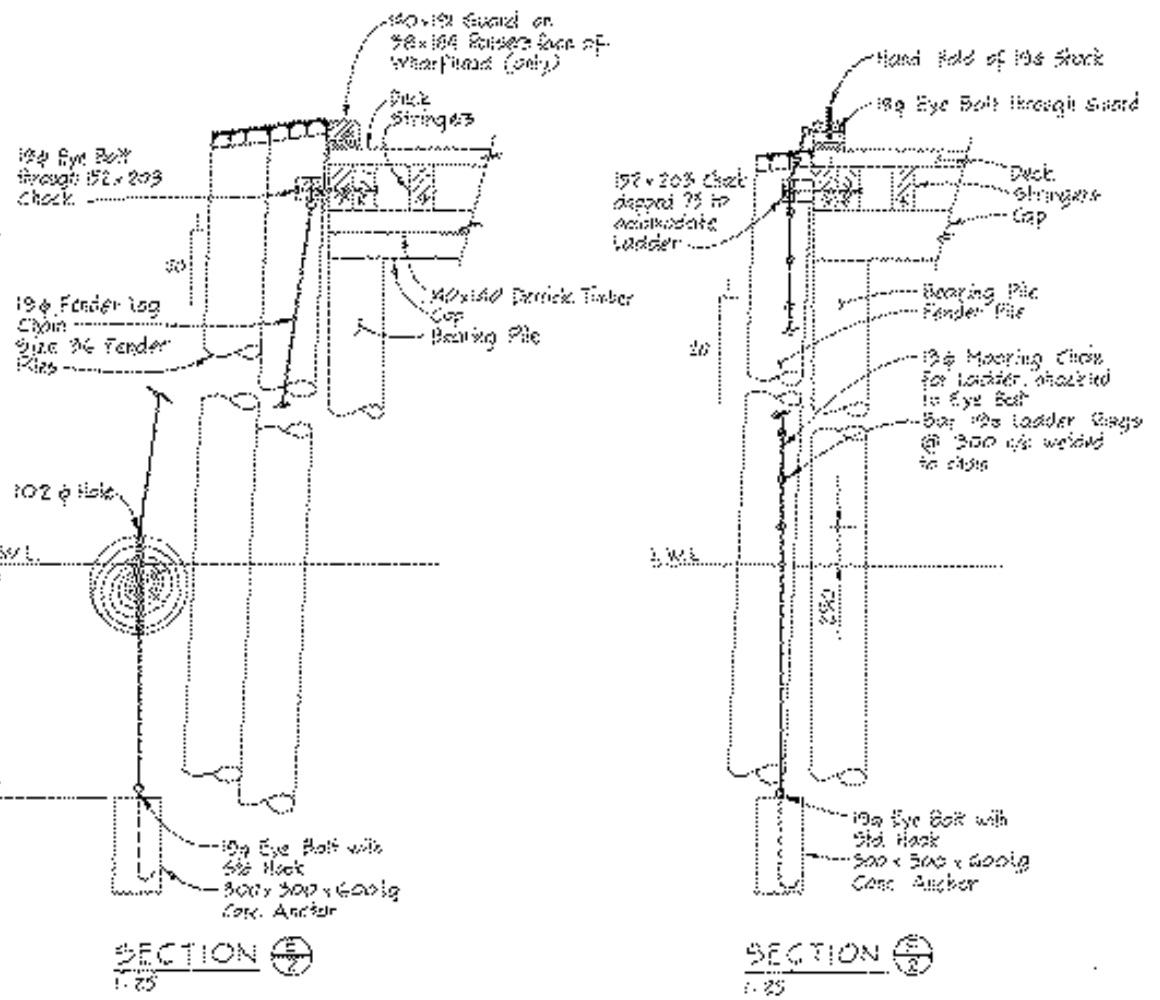
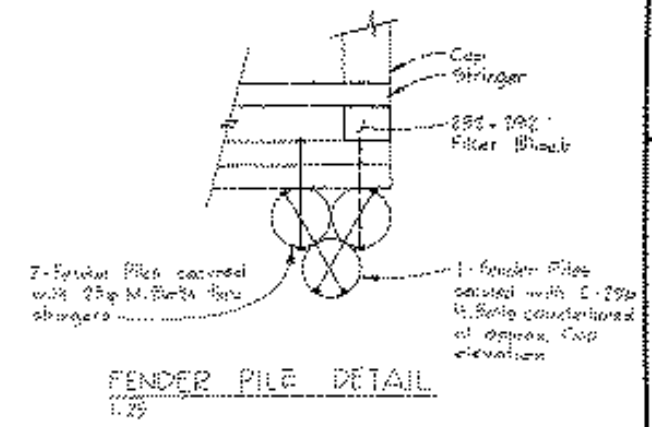
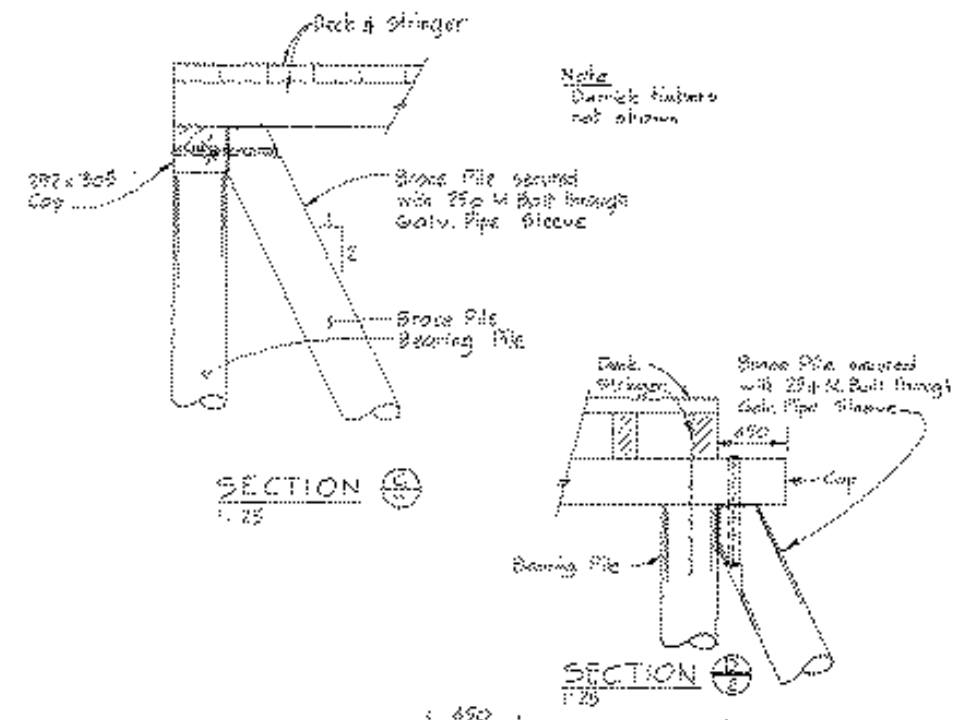
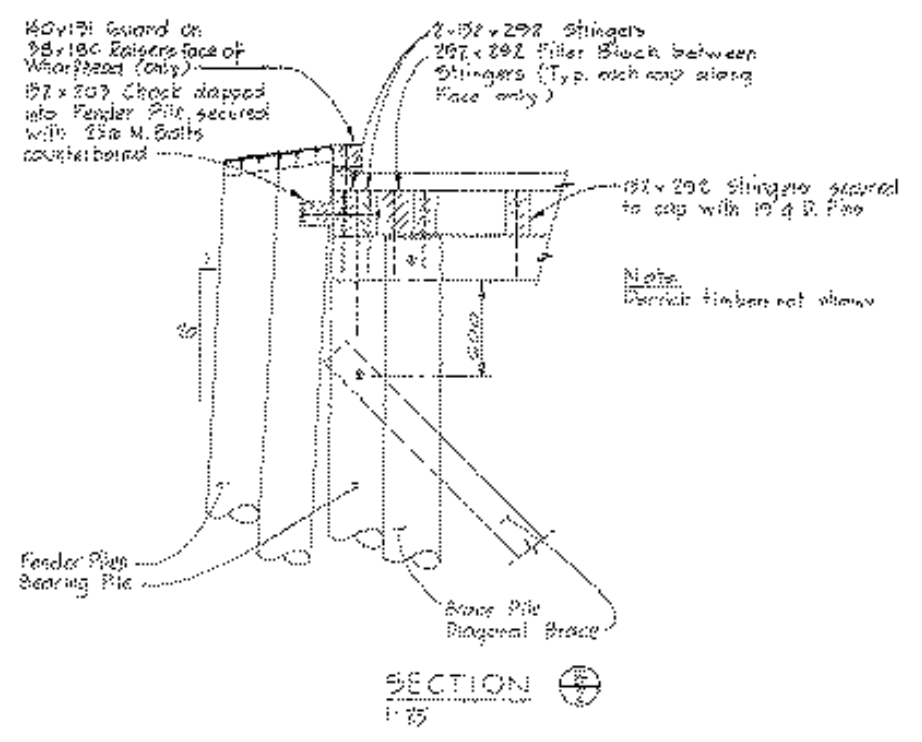


PLAN OF CAP AND SUB-CAP LAYOUT  
1:150

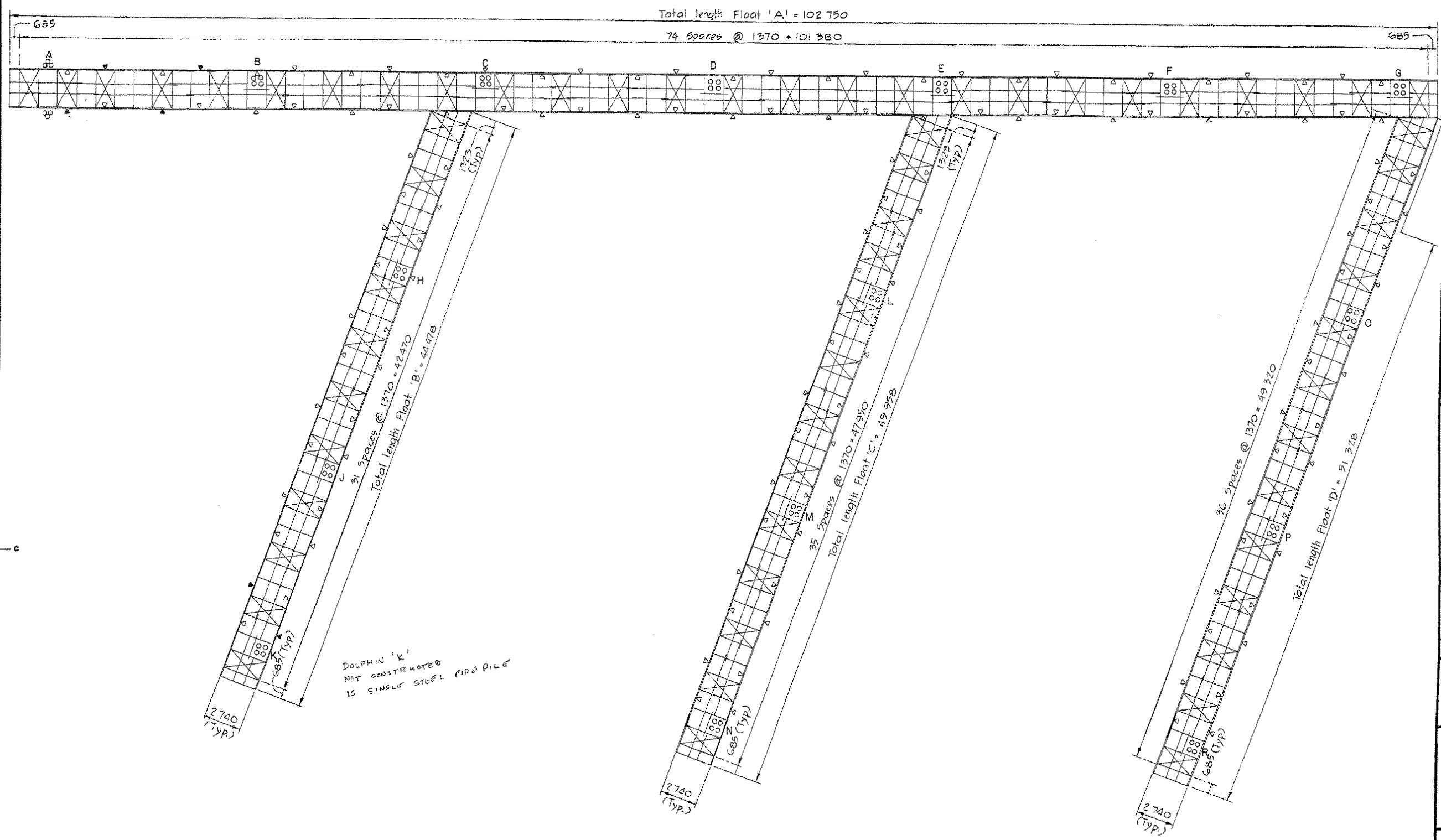
PLAN - STRINGER, DECK LAYOUT  
1:150

**NOTE**  
 Relocate Existing Gangway  
 Relocate Gangway Overlay





Revised	date
Project	name
HARTLEY BAY, B.C. HARBOUR DEVELOPMENT WHARF AND FLOATS	
Drawing	sheet
WHARF CONSTRUCTION DETAILS	
Designed by	dept
date	1984
Drawn by	dept
date	1984
Checked by	dept
date	1984
Approved by	dept
date	1984
PWT Model Storage      Approbation de plans PWT project number      51-412111 100559 - 370611 Drawing no.      no. d'archives 3 of 9	



PLAN OF FRAME AND FLOTATION  
1:150

LEGEND

- △ Indicates location of Stringer Splice See Std. Dwg. MBb
- ▲ Indicates location of Flange Splice See Std. Dwg. MBb
- ⊕ Indicates location of Joist Lap
- ⊠ Indicates location of 600 x 1200 x 2400g Billet

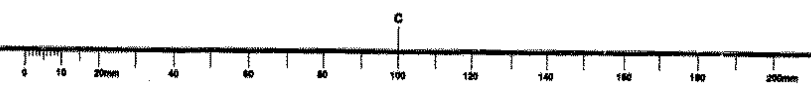
A, B, etc. letters are for Dolphin reference only

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

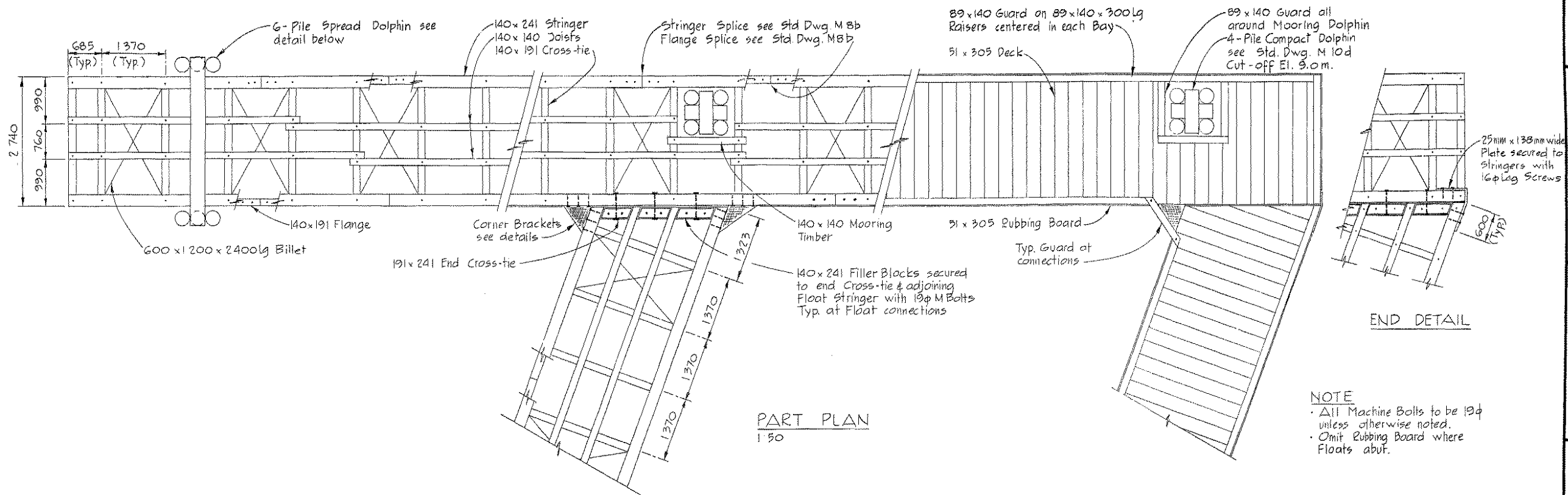
project HARTLEY BAY, B.C. HARBOUR DEVELOPMENT WHARF AND FLOATS

drawing FLOAT LAYOUT

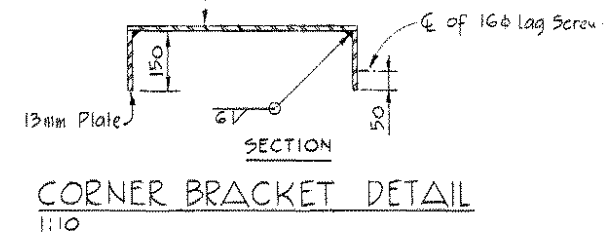
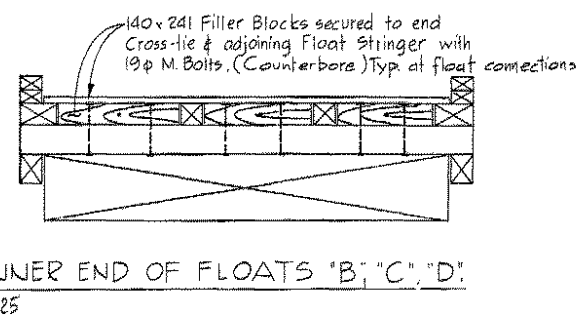
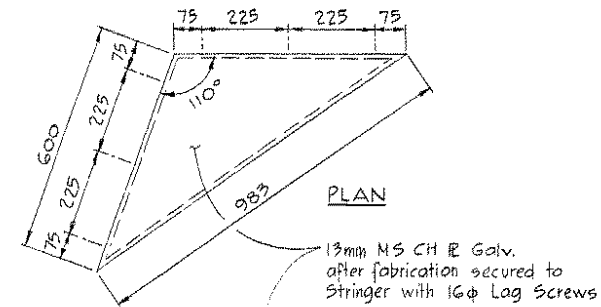
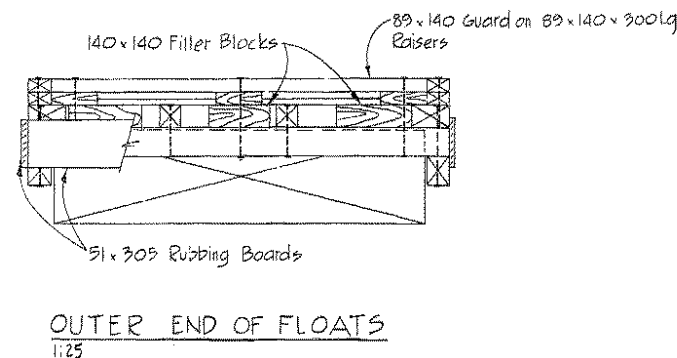
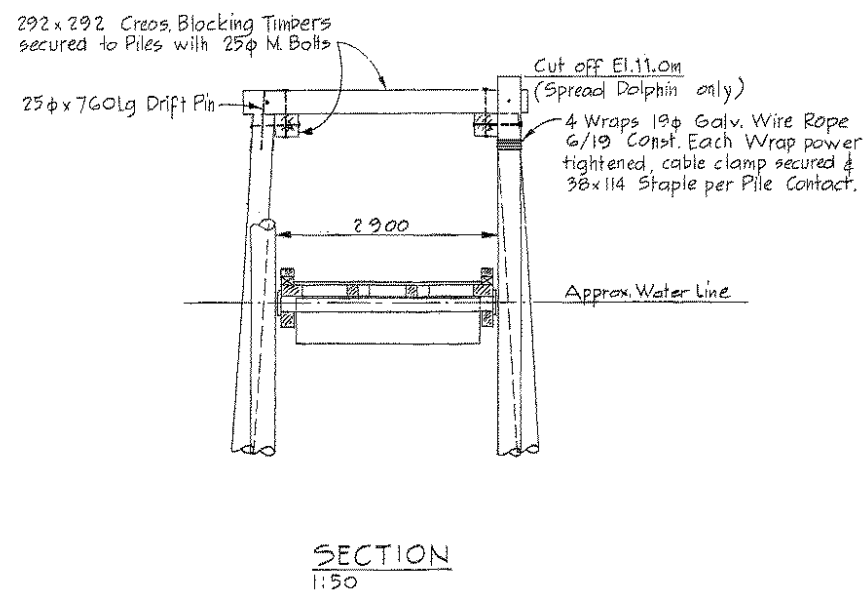
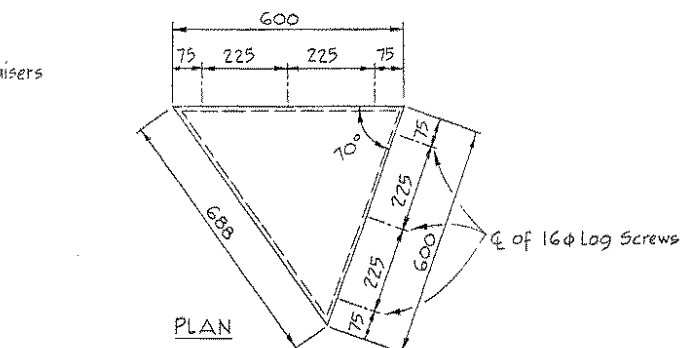
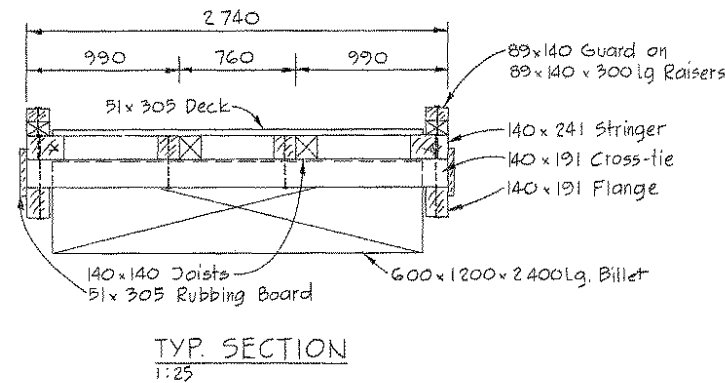
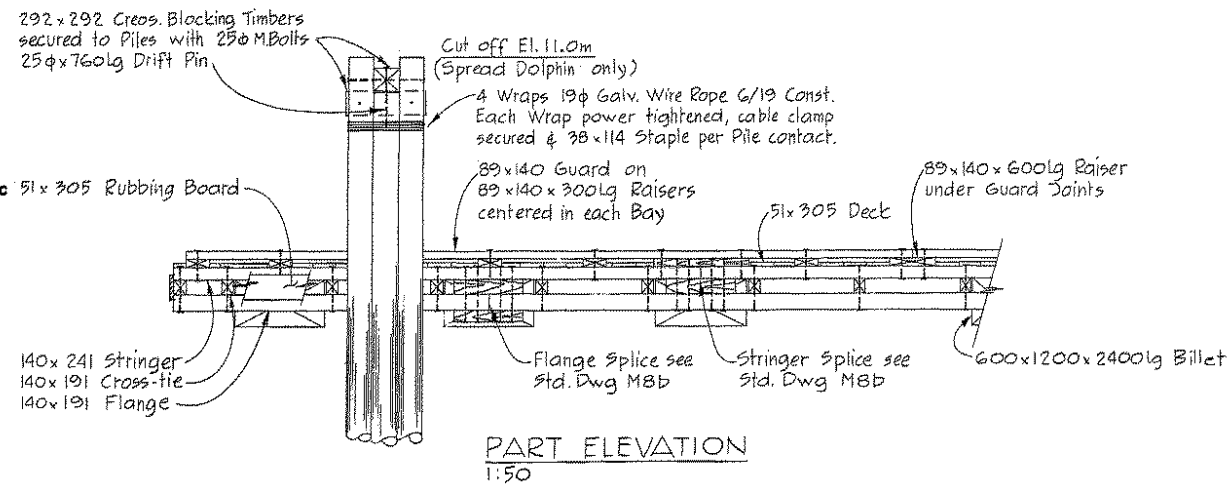
designed D.T.	conçu
date June 1984	
drawn VDE	dessiné
date June 1984	
revised	examiné
date	
approved	approuvé
date	
Tender	Soumission
PWC Project Manager	Administrateur de Projets TRC
project number 100559-370611	no. du projet
drawing no. 4 of 9	no. du dessin



12(4-9)



**NOTE**  
 • All Machine Bolts to be 19φ unless otherwise noted.  
 • Omit Rubbing Board where Floats abut.

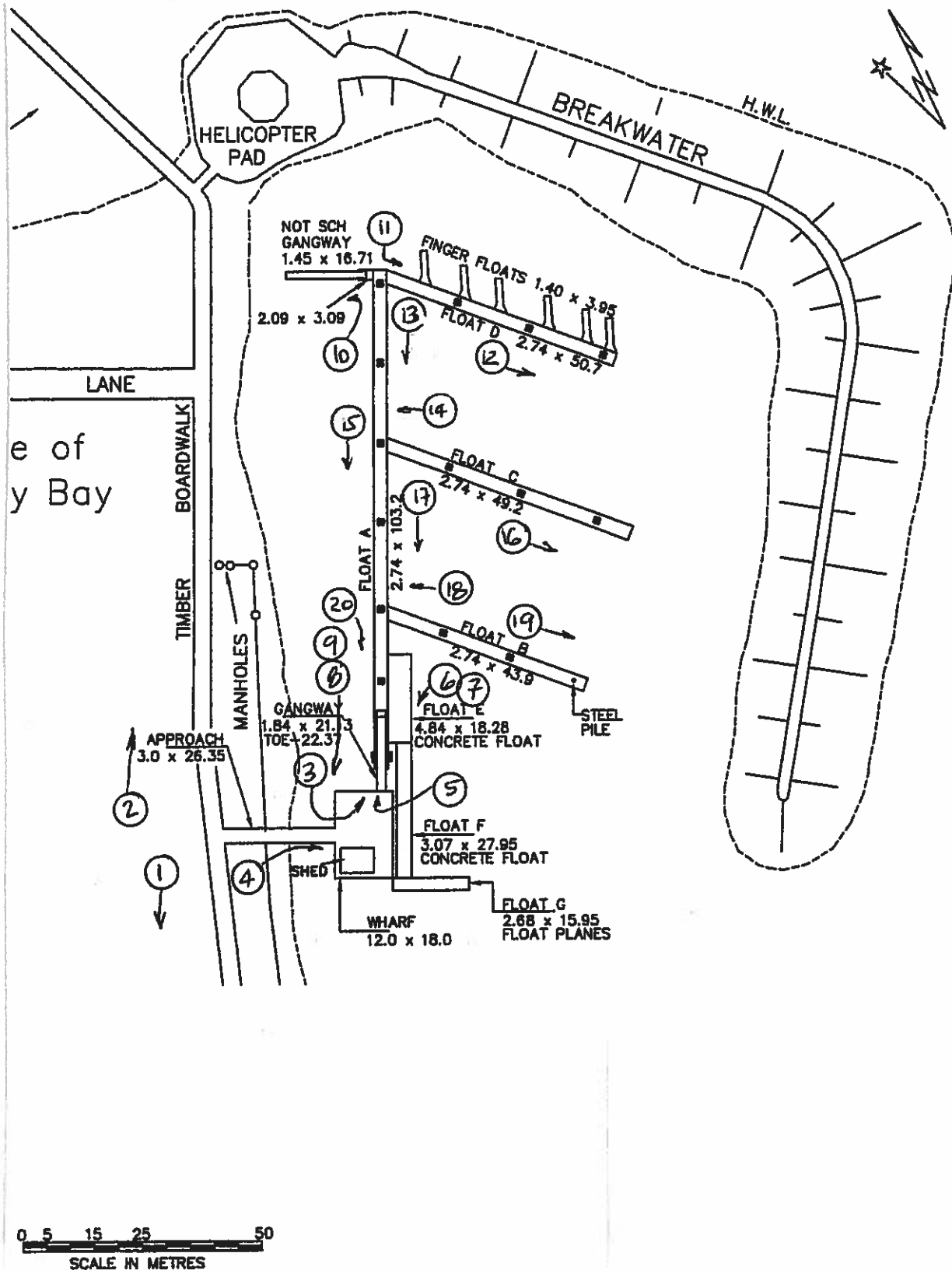


revisions	date
<b>A</b>	A detail no. no. du détail
<b>C</b>	B location drawing no. lieu dessin no.
	C drawing no. dessin no.

project **HARTLEY BAY, B.C. HARBOUR DEVELOPMENT WHARF AND FLOATS**

drawing **FLOAT CONSTRUCTION DETAILS**

designed <b>J.T.</b>	conçu
date <b>June 1984</b>	
drawn <b>MDL</b>	dessiné
date <b>June 1984</b>	
reviewed	examiné
date	
approved	approuvé
date	
Tender	Soumission
PWC Project Manager	Administrateur de projets TPC
project number	no. du projet
<b>100559 - 370611</b>	
drawing no.	no. du dessin



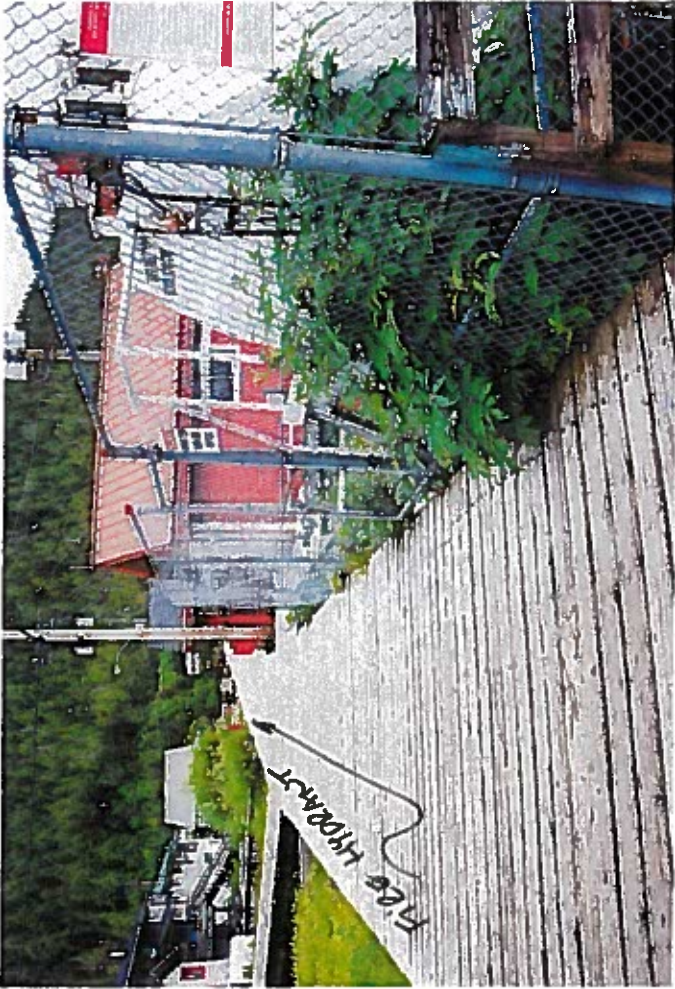
Picture orientation Hartley Bay, June 17th, 2014



#4



#3



#2



#1



5#





8\*



6\*



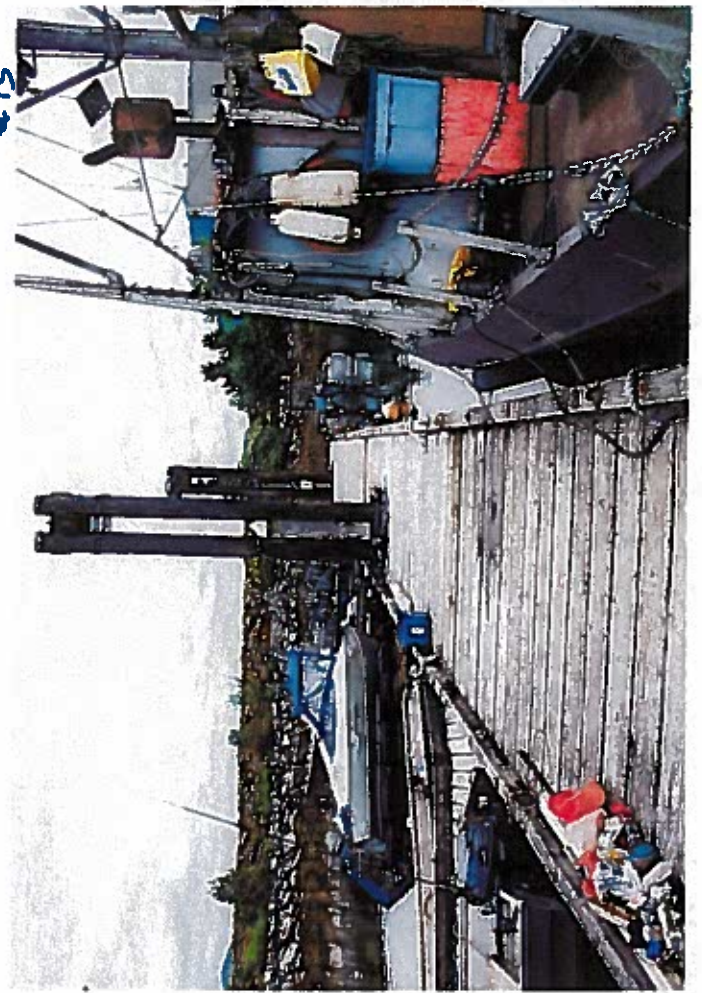
9\*



7\*



#13



#12



#11



#10

15



14



14





#20



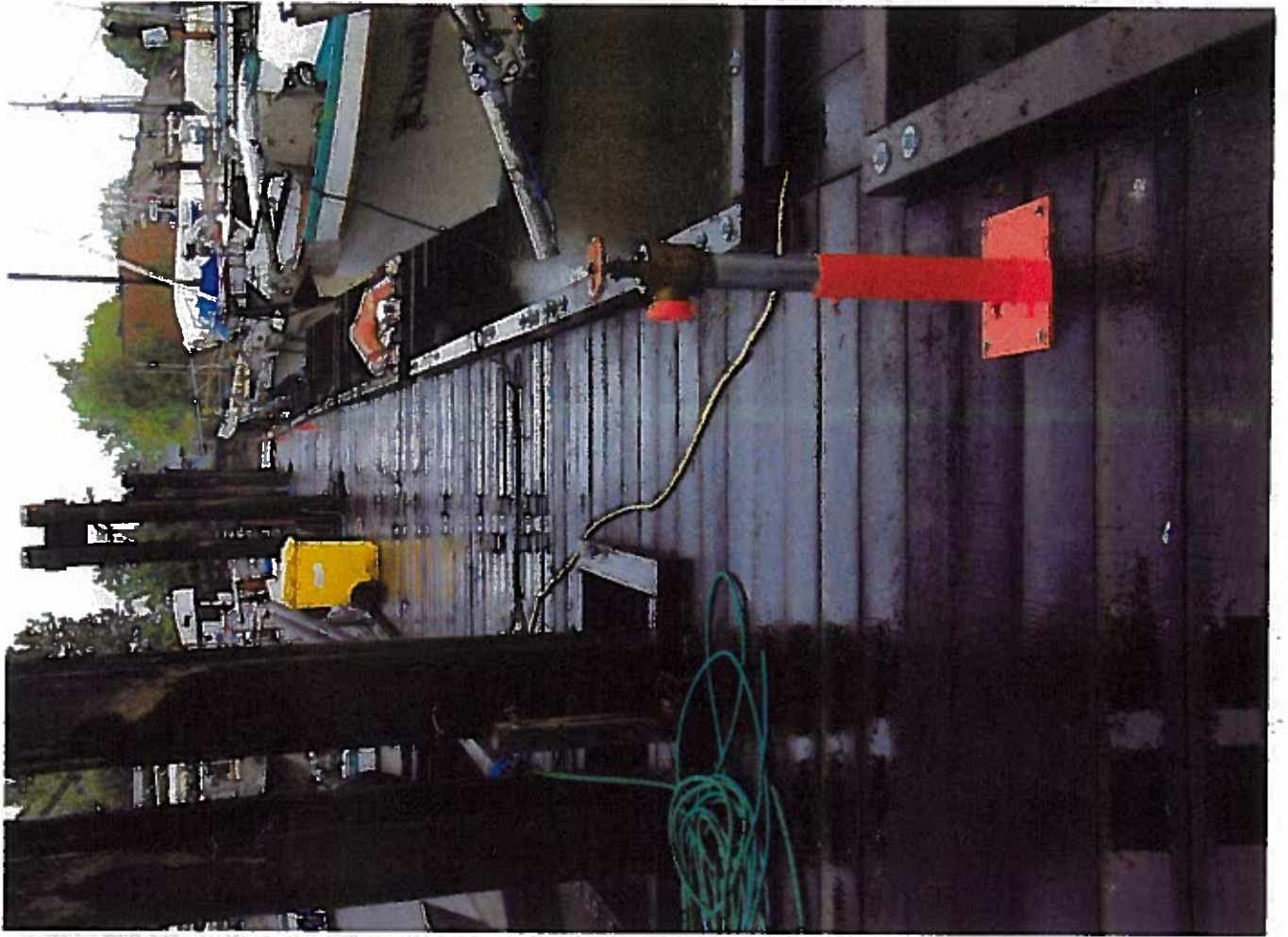
#19



#18



#17



TYP STANDPIPE SUPPORTS