

**SPECIFICATIONS FOR
LAND BASED DREDGING
WHEATLEY, ONTARIO**



Department of Fisheries & Oceans
Small Craft Harbours Branch
Burlington, Ontario

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01 11 05 – GENERAL INSTRUCTIONS

Part 1 General

1.1 DESCRIPTION OF WORK

- .1 The work under this contract covers the Land Based dredging at Wheatley, Ontario.
- .2 The site of the dredging work is Wheatley Harbour.
- .3 The site for disposal of the dredged material is the beach at Essex Region Conservation Authority's Hillman Marsh parking lot located at the end of Mersea Road 2.
- .4 The work to be done by the Contractor under this Contract shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies, insurance, and all things necessary for and incidental to the satisfactory performance and completion of all work as specified herein. All work to be done in accordance with details shown on the accompanying plans as specified herein.

1.2 DEFINITIONS

- .1 The word "provide" means "supply and install".
- .2 For purposes of this contract, "Departmental Representative", "Architect/Engineer" and "Engineer" shall have the same meaning.

1.3 WORK SCHEDULE

- .1 Provide within 5 working days after Contract award, schedule showing anticipated progress stages and final completion of work within time period required by contract documents.
- .2 Interim reviews of work progress based on work schedule will be conducted as decided by Engineer and schedule updated by Contractor in conjunction with and to approval of Engineer.
- .3 Work under this contract is to be performed in a timely manner. Commence planning and preparatory work immediately upon receipt of official notification of acceptance of Contract and schedule the work so that the project will be completed in a timely manner.
- .4 Work sequence:
 - .1 Before work is undertaken, ensure that all materials and trades required are available to finish work in as short a period as possible.
 - .2 No area to be renovated shall be placed out of service until it is confirmed that there shall be no need to stop the work waiting for receipt of materials, equipment or labour.

1.4 MEASUREMENT FOR PAYMENT

- .1 Notify Engineer sufficiently in advance of operations to permit required measurements for payment.

- .2 Submit to Engineer, at least 7 days before Information for first application for payment, cost breakdown, Progress Payment in detail as directed by Engineer, for parts of Work, aggregating total amount of Contract Price, so as to facilitate evaluation of applications for payment. After approval by Engineer, cost breakdown will be used as basis for progress payments.

1.5 INTERPRETATION OF DOCUMENTS

- .1 In the event of discrepancies or conflicts in interpreting the Plans (drawings) and Specifications, Specifications take precedence over drawings bound with specifications.
- .2 Drawings and specifications are complementary. When work is shown or mentioned on the drawings but is not indicated in the specifications, or when work is indicated in the specifications but is not shown or mentioned on the drawings, it shall nevertheless be included in the Contract.
- .3 The sub-division of the Specification into sections, identified by title and number, is for convenience only and does not modify the singularity of the document, nor does it operate to make or imply that the Engineer is an arbiter to establish the limits or extent of contract between Contractor and Subcontractors or to determine the limits or extents of work that may be decided by trade unions or contractors' organizations. Extras to the Contract will not be considered on the grounds of differences in interpretation of the Specification and/or Drawings as to which trade performs the work.

1.6 CONTRACTOR'S USE OF SITE

- .1 Co-ordinate use of premises under direction of the Engineer.
- .2 Do not unreasonably encumber the site with materials and equipment.
- .3 Assume full responsibility for protection and safekeeping of products under this Contract.
- .4 Move stored products or equipment which interfere with operations of Engineer or other harbour users.
- .5 Obtain and pay for use of additional storage or work areas needed for operations under this Contract.
- .6 Remove or alter existing work to prevent injury or damage to portions of existing work which remain.
- .7 Repair or replace portions of existing work which have been altered during construction operations to match existing or adjoining work, as directed by Engineer.
- .8 At completion of operations condition of existing work: equal to or better than that which existed before new work started.

1.7 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.
- .3 Establish location and extent of service lines in area of work before starting Work. Notify Engineer of findings.
- .4 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.
- .5 Where unknown services are encountered, immediately advise Engineer and confirm findings in writing.
- .6 Protect, relocate or maintain existing active services. When inactive services are encountered, cap off in manner approved by authorities having jurisdiction.
- .7 Record locations of maintained, re-routed and abandoned service lines.

1.8 DOCUMENTS REQUIRED

- .1 Maintain at job site, one copy each document as follows:
 - .1 Contract Drawings.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Reviewed Shop Drawings.
 - .5 Change Orders.
 - .6 Other Modifications to Contract.
 - .7 Copy of Approved Work Schedule.
 - .8 Health and Safety Plan and Other Safety Related Documents.
 - .9 Other documents as specified.

1.9 CODES AND STANDARDS

- .1 Perform work in accordance with National Building Code of Canada (NBC) and any other code of provincial or local application provided that in any case of conflict or discrepancy, the more stringent requirements shall apply.
- .2 Work to meet or exceed requirements of contract documents, specified standards, codes and referenced documents.

1.10 PROJECT MEETINGS

- .1 Engineer will arrange project meetings and assume responsibility for setting times and recording and distributing minutes.

1.11 SETTING OUT OF WORK

- .1 Engineer will provide only those survey control points and set such stakes as necessary to define general location, alignment and elevations of work. Give engineer reasonable notice of requirements for such control points and stakes.
- .2 Set grades and lay out work in detail from control points and grades established by Engineer.
- .3 Provide devices needed to lay out and construct work.
- .4 Supply such devices needed to lay out and construct work.
- .5 Supply such devices as straight edges and templates required to facilitate Engineer's inspection of work.
- .6 Supply stakes and other survey markers required for laying out work.

1.12 ADDITIONAL DRAWINGS

- .1 Engineer may furnish additional drawings for clarification. These additional drawings have same meaning and intent as if they were included with plans referred to in Contract documents.
- .2 When additional drawings and instructions are required by the Contractor, provide reasonable notice in writing to the Engineer in advance of the date they are required.

1.13 SITE INSPECTION

- .1 The submission of a tender is deemed to be a confirmation of the fact that the Tenderer has inspected the site and is fully conversant with all the conditions under which the work is to be carried out.

1.14 DRAWINGS

- .1 The following drawings are to be read in conjunction with this specification:
 - .1 D-1

1.15 DATUM

- .1 Chart datum for Lake Erie is 173.5 metres I.G.L.D. (1985)
- .2 Elevations and soundings shown on drawings are expressed in metres relative to chart datum.
- .3 Areas to be dredged are to be referenced to dredge control points on drawing and vertical bench marks as indicated.

1.16 OVERLOADING

- .1 No part of Work shall be loaded with load which will endanger its safety or will cause permanent deformation.
- .2 Repair to original condition any part of work damaged due to overloading at no cost to Engineer.

1.17 TAXES

- .1 Pay applicable Federal, Provincial and Municipal taxes.

END OF SECTION

01 35 29 – HEALTH AND SAFETY REQUIREMENTS

Part 1 General

1.1 REFERENCES

- .1 National Building Code 1995 (NBC):.
 - .1 Part 8 Safety Measures at Construction and Demolition Sites Health Canada/Workplace Hazardous Materials Information System (WHMIS)
- .2 Province of Ontario
 - .1 The Occupational Health and Safety Act and Regulations for Construction Projects, revised statutes of Ontario 1990, Chapter 0.1 as amended, O.Reg. 213/91 as amended by O.Reg. 631/94, O.Reg. 143/99, O.Reg 571/99, O.Reg. 145/00, O. Reg.527/00. R.R.O. 1990, Reg. 834, O. Reg. 278/05 (Asbestos – Construction), O. Reg. 845/90 (Silica) as amended by O. Reg. 521/92 and O. Reg. 391/00.
 - .2 Workplace Safety and Insurance Act, 1997.
 - .3 Municipal statutes and authorities.
- .3 Fire Commissioner of Canada
 - .1 FC-301 Standard for Construction Operations
 - .2 FC-302 Standard for Welding and Cutting, June 1982.
Human Resources Development Canada Labour Program
Fire Protection Engineering Services
4900 Yonge Street 8th Floor
Willowdale, Ontario M2N 6A8
and copies may be obtained from:
Human Resources Development Canada
Labour Program Fire Protection Engineering Services
Ottawa, Ontario K1A 0J2

1.2 SUBMITTALS

- .1 Submit site-specific Health and Safety Plan: Within 7 days after date of Notice to Proceed and prior to commencement of Work. Plan must include
 - .1 Results of site specific safety hazard
 - .2 Results of safety and health risk or hazard analysis for site tasks and operation.
 - .3 Measures and controls to be implemented to address identified safety hazards and risks.
 - .4 Provide a Fire and Safety Plan in accordance with NBC, subsection 8.2.3 prior to commencement of work. Deliver two copies of the Fire Safety Plan to the Engineer not later than 14 days before commencing work.
 - .5 Contractor's and Sub-contractors' Safety Communication Plan.
 - .6 Contingency and Emergency Response Plan addressing standard operating procedures specific to the project site to be implemented during emergency situations.

- .2 Engineer will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor after receipt of plan. Revise plan as appropriate and resubmit plan to Engineer within 5 days after receipt of comments from Engineer.
- .3 Engineer'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.
- .4 Submit copies of incident and accident reports.
- .5 Submit records of Contractor's Safety Meetings when requested.
- .6 Submit 2 copies of the Contractor's authorized representative's work site health and safety inspection reports to Departmental Representative, when requested.
- .7 Submit copies of reports or directions issued by safety inspectors of authority having jurisdiction.
- .8 Submit names of personnel and alternatives responsible for site safety and health.
- .9 Submit WSIB – Workplace Safety and Insurance Board, Experience Rating Report for Province of Ontario.
- .10 Submit Material Safety Data Sheets (MSDS) to Engineer.

1.3 FILING OF NOTICE

- .1 File of Notice of Project with Provincial authorities prior to commencement of work.

1.4 WORK PERMIT

- .1 Obtain permit related to project prior to commencement of work.

1.5 SAFETY ASSESSMENT

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

1.6 MEETINGS

- .1 Pre-construction meeting: schedule and administer Health and Safety meeting with Departmental Representative prior to commencement of work.

1.7 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 Observe and enforce construction safety measures required by Canadian Construction Safety Code, Provincial Government, Worker's Compensation Board and municipal statutes and authorities.

1.8 PROJECT/SITE CONDITIONS

- .1 Work at site will involve contact with Benzene in fuel oil.

1.9 REGULATORY REQUIREMENTS

- .1 Comply with Acts and regulations of the Province of Ontario.
- .2 Comply with specified standards and regulations to ensure safe operations at site.
- .3 In event of conflict between any provisions of specified standards and regulations, the most stringent provision governs.

1.10 GENERAL REQUIREMENTS

- .1 Develop written site-specific Health and Safety Plan based on hazard assessment prior to commencing any site Work and continue to implement, maintain, and enforce plan until final demobilization from site. Health and Safety Plan must address project specifications.
- .2 Relief from or substitution for any portion or provision of minimum Health and Safety Guidelines specified herein or reviewed site-specific Health and Safety Plan shall be submitted to Departmental Representative in writing. Departmental Representative will respond in writing, where deficiencies are noted and request resubmission with correction of deficiencies either accepting or requesting improvements.

1.11 COMPLIANCE REQUIREMENTS

- .1 Comply with Ontario Occupational Health and Safety Act. R.S.O. 1990 Chapter 0.1, as amended.

1.12 RESPONSIBILITY

- .1 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.
- .2 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.
- .3 Where applicable the Contractor shall be designated "Constructor", as defined by Occupational Health and Safety Act for the Province of Ontario.

1.13 UNFORESEEN HAZARDS

- .1 Should any unforeseen or peculiar safety-related factor, hazard, or condition become evident during performance of Work, immediately stop work and advise Departmental Representative verbally and in writing.
- .2 Follow procedures in place for Employees Right to Refuse Work as specified in the Occupational Health and Safety Act for the Province of Ontario.

1.14 POSTING OF DOCUMENTS

- .1 Provide documents as follows and post on site in a conspicuous location:
 - .1 Contractor's Safety Policy
 - .2 Constructor's Name
 - .3 Health and Safety Representative's name
 - .4 Ministry of Labour Orders for Province of Ontario
 - .5 Occupational Health and Safety Act for Province of Ontario
 - .6 Material Safety and Data Sheets
 - .7 Safety Plans
 - .8 Notice of Project
 - .9 Joint Health and Safety Committee Members (where required)
- .2 Comply with Provincial general posting requirements

1.15 CORRECTION OF NON-COMPLIANCE

- .1 Immediately address health and safety non-compliance issues identified by Departmental Representative and regulatory agency having jurisdiction in the Province.
- .2 Provide Departmental Representative with written report of action taken to correction-compliance of health and safety issues identified.
- .3 Departmental Representative may stop Work if non-compliance of health and safety regulations is not corrected.

1.16 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.
- .2 Assign responsibility and obligation to Competent Supervisor to stop or start Work when, at Health and Safety Coordinator's Competent Supervisor's discretion, it is necessary or advisable for reasons of health or safety. Departmental Representative may also stop Work for health and safety considerations.

1.17 BLASTING

- .1 Blasting or other use of explosives is not permitted.

1.18 POWDER ACTUATED DEVICES

- .1 Use powder actuated devices only after receipt written permission from Engineer.

1.19 WORK STOPPAGE

- .1 Give precedence to safety and health of public and site personnel and protection of environmental over cost and schedule considerations for Work.
- .2 Assign responsibility and obligation to competent Supervisor to stop or start work when, at Competent Supervisor's discretion, it is necessary or advisable for reasons of health or safety. Engineer may also stop work for health and safety considerations.

END OF SECTION

01 35 43 – ENVIRONMENTAL PROCEDURES

Part 1 General

1.1 GENERAL

- .1 The material to be dredged is classified sand and is not contaminated

1.2 MEASUREMENT FOR PAYMENT

- .1 No separate measurement will be for work of this section. Work is incidental to the project cost.

1.3 FIRES

- .1 Fires and burning of rubbish on site not permitted.

1.4 DISPOSAL OF MATERIALS

- .1 Dispose of dredged material at the Hillman Marsh. Use of a bulldozer will be required at the disposal location for levelling and grading.
- .2 The contractor may be required to temporarily suspend dredging operations if the turbidity plume from the dredging activities adversely affects the quality of water at water intake pipes located in the area. Make no claim for delays resulting from the above.

1.5 DISPOSAL OF WASTES

- .1 Do not bury rubbish and waste materials on site unless approved by Departmental Representative.
- .2 Do not dispose of waste or volatile materials, such as mineral spirits, oil or paint thinner into waterways, storm or sanitary sewers.
- .3 All waste materials including containers and waste fluids associated with the vehicle maintenance shall be disposed of in a legal manner at a site approved by Local Authorities.

1.6 WORK ADJACENT TO WATERWAYS

- .1 Construction equipment to be operated on land only.
- .2 Do not use waterway beds for borrow material.
- .3 Waterways to be free of excavated fill, waste material and debris.
- .4 Design and construct temporary crossings to minimize erosion to waterways.

- .5 Do not skid logs or construction materials across waterways.
- .6 Avoid damage to shoreline.
- .7 Supply, install, and maintain approved erosion control blankets to unprotected slopes until revegetation is established.
- .8 Any impacts below ordinary high water mark that are not shown on the site plan are not permitted without written approval from the Engineer. Up to 30 days may be required for approval.

1.7 POLLUTION CONTROL

- .1 Control emissions from equipment and plant to local authorities' emission requirements.
- .2 Prevent sandblasting and other extraneous materials from contaminating air and waterways beyond application area.
- .3 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads.
- .4 Locate temporary fuel storage 100 metres from shore and comply with Provincial Environmental Legislation.
- .5 Refueling, servicing, or cleaning of equipment on ice or within 100 metres of shore is prohibited. Contractor to ensure all equipment operating on project is free of external fluid leaks, grease, oil, and mud.
- .6 Contractor to contain all oil leaks from equipment working adjacent to waterways.
- .7 No maintenance of vehicles or equipment in construction areas.
- .8 Use drip pans to catch leaking oil from compressors, pumps, etc.

1.8 COOPERATION AND PROTECTION

- .1 Protect trees and plants on site and adjacent properties.
- .2 Avoid disturbance of topsoil and vegetation unless otherwise specified. Contractor is responsible to restore all impacted areas to original state.
- .3 Repair and clean existing structures, roads, beaches or other facilities damaged or fouled by the work. Complete repairs and clean up at no additional expense to Engineer. Repairs made to damaged existing work to equal or better than original.

END OF SECTION

01 52 00 – TEMPORARY FACILITIES

Part 1 General

1.1 ACCESS

- .1 Provide and maintain adequate access to and exit from project site.
- .2 Provide snow removal for temporary access throughout the period of work, if applicable
- .3 If authorized to use existing roads for access to project site, maintain such roads for duration of Contract and make good any damages resulting from Contractor's use of roads.
- .4 Make good damage to any existing land, roads, vegetation or structures resulting from Contractor's equipment and operations. Restore to original condition at no additional cost to Engineer.

1.2 USE OF ROADWAYS FOR THE PURPOSES OF HAULING

- .1 Fisheries and Oceans Canada (DFO) has obtained a permit from the Municipality of Leamington for the use of the roadways for this contract.
- .2 DFO will be monitoring the hauling progress with the cooperation of the Wheatley Harbour Authority. Trucks should travel at a reasonable rate of speed to ensure minimal damage to the roadways while delivering material to the disposal location.
- .3 See Dredging Section 2.3- Disposal of Dredged materials, for more details.

1.3 SANITARY FACILITIES

- .1 Provide sanitary facilities for work force in Facilities accordance with governing regulations and ordinances.
- .2 Post notices and take such precautions as required by local health authorities. Keep area and premises in sanitary condition.

1.4 REMOVAL OF TEMPORARY FACILITIES

- .1 Remove temporary facilities from site upon completion of work unless otherwise directed by Engineer.

1.5 MEASUREMENT PROCEDURES

- .1 Providing and maintaining access and exits to the project site, providing any road restoration or repair to existing roads, will not be measured separately for payment, but shall be considered included in the general project costs.

END OF SECTION

01 77 00 – CLOSEOUT PROCEDURES

Part 1 General

1.1 ADMINISTRATIVE REQUIREMENTS

- .1 Acceptance of Work Procedures:
 - .1 Contractor's Inspection: Contractor to conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.
 - .2 Final Inspection:
 - .1 When completion tasks are done, request final inspection of Work by Engineer.
 - .2 When Work incomplete according to Engineer, complete outstanding items and request re-inspection.
 - .3 Final Payment:
 - .1 When Engineer considers final deficiencies and defects corrected and requirements of Contract met, make application for final payment.
 - .4 Payment of Holdback: after issuance of Certificate of Substantial Performance of Work, submit application for payment of holdback amount in accordance with contractual agreement.

1.2 FINAL CLEANING

- .1 Remove surplus materials, excess materials, rubbish, tools and equipment.

END OF SECTION

35 20 23 – LAND BASED DREDGING

Part 1 General

1.1 DEFINITIONS

- .1 The following defines the terminology used in this specification.
- .2 Dredging: excavating, transporting and disposing of underwater materials
- .3 Class A material: solid rock requiring drilling and blasting to loosen, and boulders or rock fragments of individual volumes of 1.5 cubic metres or more.
- .4 Class B material: loose or shale rock, silt, sand, quick sand, mud, shingle, gravel, clay and sand, gumbo, boulders, till, debris or and material not specified under Class A.
- .5 Obstructions: class of material greater than 1.5 cubic metres that is not included in this specification.
- .6 Debris: pieces of wood, wood fibre, logs, wire rope, tires, scrap steel, pieces of concrete and other waste materials.
- .7 Grade: plane above which all material is to be dredged.
- .8 Side slope: inclined surface from grade depth at side limit of dredging area to intersect original ground line outside of dredging area and to be expressed as a ratio of horizontal to vertical.
- .9 Estimated quantity:
 - .1 Area in square metres of material calculated horizontally to exist above grade and within dredge limits, unless otherwise specified.
- .10 CMPM: cubic metres place measurement at dredging site.
 - .1 CMSM: cubic metres scow measurement.
 - .2 SQM: area in square metres projected on horizontal.
- .11 Box cut: dredging channel area with vertical side slopes and allowing side slope of excavation collapse to a natural equilibrium slope.
- .12 Cleared areas: areas of dredging accepted as complying with plans and specifications.
- .13 Mechanical sweep: clearing all the dredged areas to the grade depth using a mechanical device suspended from a barge.
- .14 Chart datum: permanently established plane from which soundings or tide heights are referenced.
- .15 Coordinates:
 - .1 U.T.M.: universal transverse Mercator projection.

- .2 M.T.M.: modified transverse Mercator projection.
- .3 U.T.M. or M.T.M. Coordinates: plane rectangular coordinates used in grid system in which grid network is applied to U.T.M. or M.T.M. projection. Horizontal control information as indicated.
- .16 Minimum mode: mode of operation of hydrographic survey equipment where minimum sounding over length of travel between position updates will be retained in memory.
- .17 Matrix block: each dredge area is presented as a number of blocks. Each block may contain a variable number of soundings depending upon survey coverage.
- .18 Least of minimum plan: hydrographic survey plan in which least sounding in grouping of matrix blocks is plotted.
- .19 Instantaneous mode: mode of operation of hydrographic survey equipment where only sounding observed at predetermined distance interval is retained in memory.
- .20 Average of instantaneous plan: hydrographic survey plan in which average sounding in an appropriate group of matrix blocks is plotted.
- .21 Mechanical dredging plant: equipment that is comprised of the following - clamshell, dragline, dipper or backhoe dredge with dump scows.
- .22 Hydraulic dredging plant: equipment that uses the movement of water to excavate and transport underwater materials such as: cutter suction dredger, suction dredger or trailing suction hopper dredger.

1.2 LOCATION

- .1 Work comprises dredging of the following areas as indicated:

Area A in the nearshore adjacent to the beach, directly east of the east pier, as directed by the contract administrator..

1.3 INTERFERENCE TO NAVIGATION

- .1 Do not impede navigation during progress of work in accordance with the Collision Regulation with Canadian Modifications 1983.
- .2 Ascertain schedule of vessel movements and fishery activities in area affected by dredging operations including movement of vessels at adjacent wharves. The site is subject to heavy navigational traffic both commercial and recreational.
- .3 Plan and execute work in manner that will not interfere with fishing operations, marina operations, construction activities at wharf sites, or access to wharves by land or water.
- .4 Make no claim for delays resulting from the above.

- .5 Engineer will not be responsible for loss of time, equipment, material or any other cost related to interference with moored vessels in harbour or due to other Contractor's operations.
- .6 Keep Operations Centre, Watchkeeper at 1-800-265-0237, Canadian Coast Guard, (CCG) Transport Canada, Sarnia, Ontario informed of dredging operations in order that necessary Notices to Shipping and Notices to Mariners will be issued. Make arrangements with CCG to relocate and replace buoys for execution of work. Advise nearest Coast Guard Base of any requirements to relocate channel markers/buoys within dredging area.

1.4 REQUIREMENTS OF REGULATORY AGENCIES

- .1 Mark floating equipment with lights in accordance with the Collision Regulations with the Canadian Modifications, 1983, and maintain a VHF marine radio watch of board.

1.5 SITE INFORMATION

- .1 Material to be dredged consists of Class 'B' material.
- .2 Sediment Sample Locations are indicated on drawings. Appendix A – Sediment Sample Grain Size Analysis is attached to the end of the specifications. Grain size analysis is limited to the depth of the sample and may not be indicative of the overall soil conditions.
- .3 Wheatley Harbour has been previously dredged to grade depth. Material to be dredged generally consists of silt, silty sand, sand and debris.

1.6 DREDGING SEQUENCE

- .1 Supply engineer with plan of dredging sequence and/or stages.
- .2 Engineer may direct Contractor to alter sequence of dredging areas.

1.7 MEASUREMENT PROCEDURES

- .1 Mobilization and Demobilization of dredging equipment will each be measured under the Lump Sum Arrangement (L.S)
- .2 Site Preparation including the construction of a temporary work platform for completion of dredging in Area A will be measured under the Lump Sum arrangement and shall include excavation and backfilling of native fill materials. Removal of the work platform is considered included in the work and shall not be measured separately for payment.
- .3 For the Dredging of Areas A, Dredging: will be measured in cubic metres, truck box measurement, determined from capacity of filled truck. Only material excavated within areas indicated on the drawings, or by the direction of the contract administrator will be measured. Payment will include disposal of dredge material, at locations specified. This

should include all machinery required to load the dump trucks at the Wheatley Harbour end and grade the dredge spoils at the Hillman Marsh and East Beach Road end (disposal locations) and maintenance of roadways during the hauling of materials to disposal site; site clean-up and final grading and cleanup at project site.

1.8 DREDGING PLANT

- .1 Contractor to determine required equipment necessary to excavate material specified and to dispose of excavated material.

Part 2 Execution

2.1 LAYOUT OF WORK

- .1 Immediately upon entering site for purpose of beginning work on this project, locate all reference points and take proper action necessary to prevent their disturbance.
- .2 The Engineer will meet with the Contractor and his survey staff to identify the established horizontal control consisting of a baseline, coordinate system with reference control monuments and vertical control benchmarks to define the work and disposal areas.
- .3 Maintain the established horizontal and vertical control and lay out the work from these established references. Be responsible for the accuracy of work relative to established references. Provide and maintain electronic position fixing and distance measuring equipment as required for accurate dredging control. Provide, at own expense, survey vessel, equipment and crew to set up and maintain control for location of dredge limits.

2.2 DREDGING DETAILS

- .1 Dredge Wheatley Harbour Area A to a grade depth of 2.4 metres below chart datum
- .2 Construct Temporary Work Platform to allow land based equipment to have extended reach at the nearshore area.
- .3 Remove stockpiled sand to grade consistent with the surrounding beach area.
- .4 Make provision for removal of debris intender. Make no claims for delays attributed to debris.

2.3 DISPOSAL OF DREDGED MATERIALS

- .1 Dispose of dredged material from Area A by depositing at the Hillman Marsh site. Limits of disposal area to be verified on site prior to start of work. Restrict disposal activities to those areas indicated.
- .2 Before hauling operations begin, a meeting will take place with the Contractor. Details of hauling route are provided on drawing D-1.
- .3 Contractor is to transport dredged material to the disposal site using land based equipment. See Section 3.1 for further details.
- .4 Use of a bulldozer will be required at the disposal location for levelling and grading. The sand can be transported onto the Hillman site at 2 areas accessing by the north parking lot driveway off of Mersea road 2. The material should be dumped and graded onto the existing remnant barrier beach ridge.
- .5 Ensure truck boxes are sealed and do not leak dredged material during transportation between dredging site and transfer area. If spillage or leakage of dredged material occurs, stop work until remedial measures are taken.
- .6 Do not permit any dredged material to spill or flow into waterways during the disposal of dredged material activities.
- .7 Maintain roadways and transfer area in a clean manner throughout the duration of the contract.
- .8 After all hauling operations are complete, an additional Post-construction survey will be conducted of the haul roads.
- .9 The contract administrator will assess the condition of the road and instruct the contractor to repair any damages caused by the Contractor's operation at no additional cost to Engineer. Restore surfaces to the original condition upon the completion of work.

2.4 DISPOSAL OF DEBRIS

- .1 Do not dispose of debris in harbour
- .2 Dispose of debris in containment facility identified or at approved land disposal site.

2.5 CO-OPERATION AND ASSISTANCE TO ENGINEER

- .1 Cooperate with Engineer on inspection of work and provide assistance requested.
- .2 Furnish use of such boats, equipment, labour and materials forming ordinary and usual part of dredging plant as may be reasonably necessary to inspect and supervise work.

2.6 MONITORING OF WORK

- .1 Contractor is responsible to monitor effectiveness and productivity of his own work on an ongoing basis.
- .2 The contract administrator will monitor work as required to ensure work is being carried out as per the contract documents.

2.7 FINAL CLEANING

- .1 Remove surplus materials, excess materials, rubbish, tools and equipment.

Part 3 Products

3.1 DREDGING EQUIPMENT

- .1 Contractor to determine required equipment necessary to dredge material specified and to dispose of dredged material at the designated disposal location.

END OF SECTION

APPENDIX A

Sediment Sample Logs and Grain Size Analysis

SEDIMENT SAMPLE LOG

LOCATION: Whitby Harbour

PROJECT DESC: Soundings and Sediment Sample Survey

PROJECT #: 305019

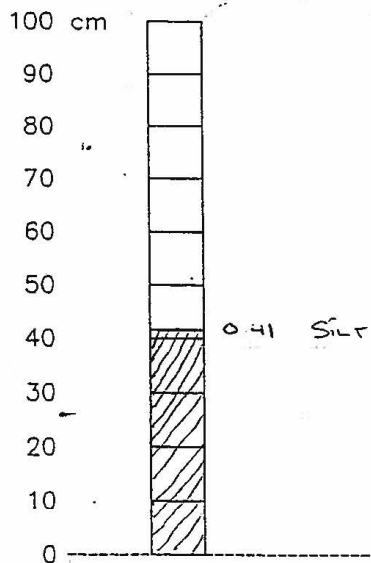
SAMPLE #: 1 (C=CORE J=JAR)

DATE: 22/10/03

SOUNDING: 2.4 GAUGE: 0.38 REDUCED SOUNDING: 2.0

STATION & FLAG: N 5497.645
E 4898.000

SAMPLE DESCRIPTION



LEGEND

	SILT		SANDY SILT
	SAND		SILTY SAND
	CLAY		GRAVEL

LOGGED BY: B. Carrigan

SEDIMENT SAMPLE LOG

LOCATION: Whearty Harbour

PROJECT DESC: Seawall and Sediment Sample Survey

PROJECT #: 305019

SAMPLE #: 2 (C=CORE J=JAR)

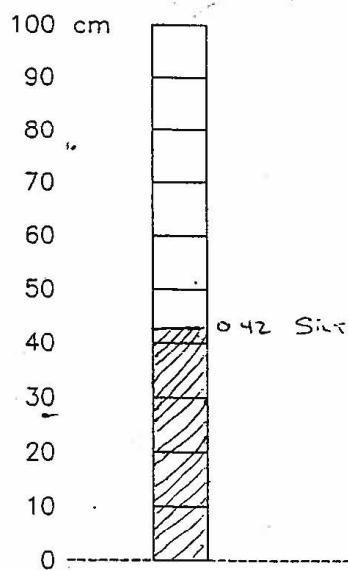
DATE: 22/10/03

SOUNDING: 2.2 GAUGE: 0.38 REDUCED SOUNDING: 1.8

STATION & FLAG: N 5517.645

E 4933.000

SAMPLE DESCRIPTION



LOGGED BY: B. Carlin

LEGEND

	SILT		SANDY SILT
	SAND		SILTY SAND
	CLAY		GRAVEL

SEDIMENT SAMPLE LOG

LOCATION: Wheatley Harbour

PROJECT DESC: SOUNDING AND SEDIMENT Sample Survey

PROJECT #: 305019

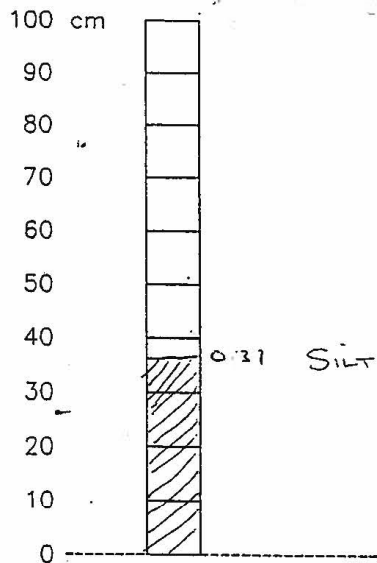
SAMPLE #: 3 (CORE J=JAR)

DATE: 22/10/03

SOUNDING: 2.0 GAUGE: 0.37 REDUCED SOUNDING: 1.6

STATION & FLAG: N 5527.645
E 4973.000

SAMPLE DESCRIPTION



LEGEND

	SILT		SANDY SILT
	SAND		SILTY SAND
	CLAY		GRAVEL

LOGGED BY: B. Carrigan

SEDIMENT SAMPLE LOG

LOCATION: Wheatley Harbour

PROJECT DESC: SOUNDING AND SEDIMENT SAMPLE SURVEY

PROJECT #: 305019

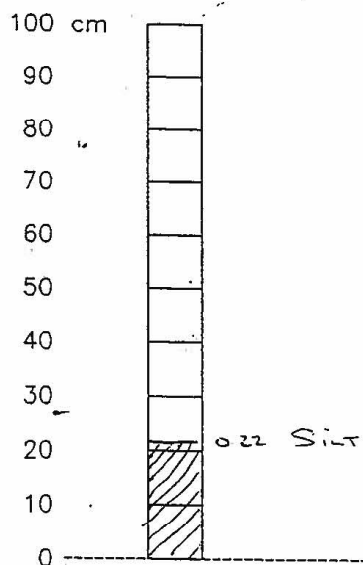
SAMPLE #: 4 (C=CORE J=JAR)

DATE: 22/10/03

SOUNDING: 2.5 GAUGE: 0.37 REDUCED SOUNDING: 2.1

STATION & FLAG: N 5557.645
E 4958.000

SAMPLE DESCRIPTION



LEGEND

	SILT		SANDY SILT
	SAND		SILTY SAND
	CLAY		GRAVEL

LOGGED BY: B. Carrington

SEDIMENT SAMPLE LOG

LOCATION: Wheatley Harbour

PROJECT DESC: SANDSIL AND SEDIMENT SAMPLE SURVEY

PROJECT #: 305019

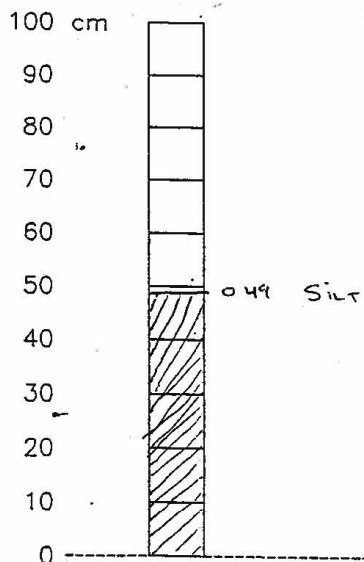
SAMPLE #: S (C=CORE J=JAR)

DATE: 22/10/03

SOUNDING: 1.9 GAUGE: 0.38 REDUCED SOUNDING: 1.5







STATION & FLAG: N 5582.645
E 4928.000

SAMPLE DESCRIPTION



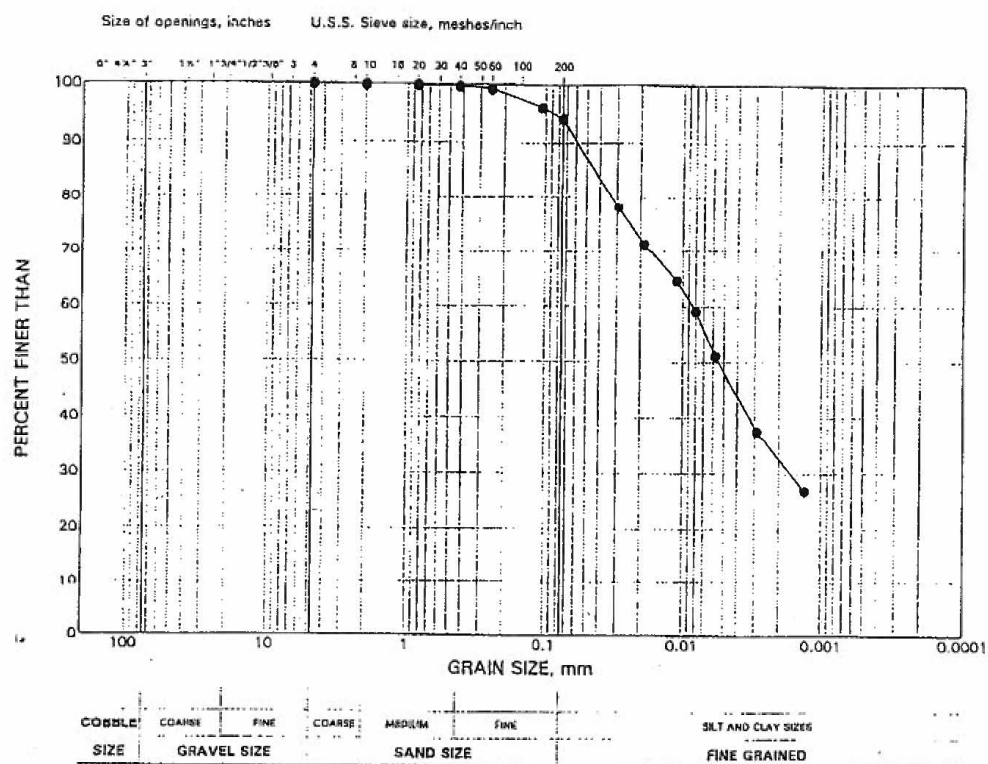
LOGGED BY: B. CARLIGAN

LEGEND

	SILT		SANDY SILT
	SAND		SILTY SAND
	CLAY		GRAVEL

GRAIN SIZE DISTRIBUTION

FIGURE

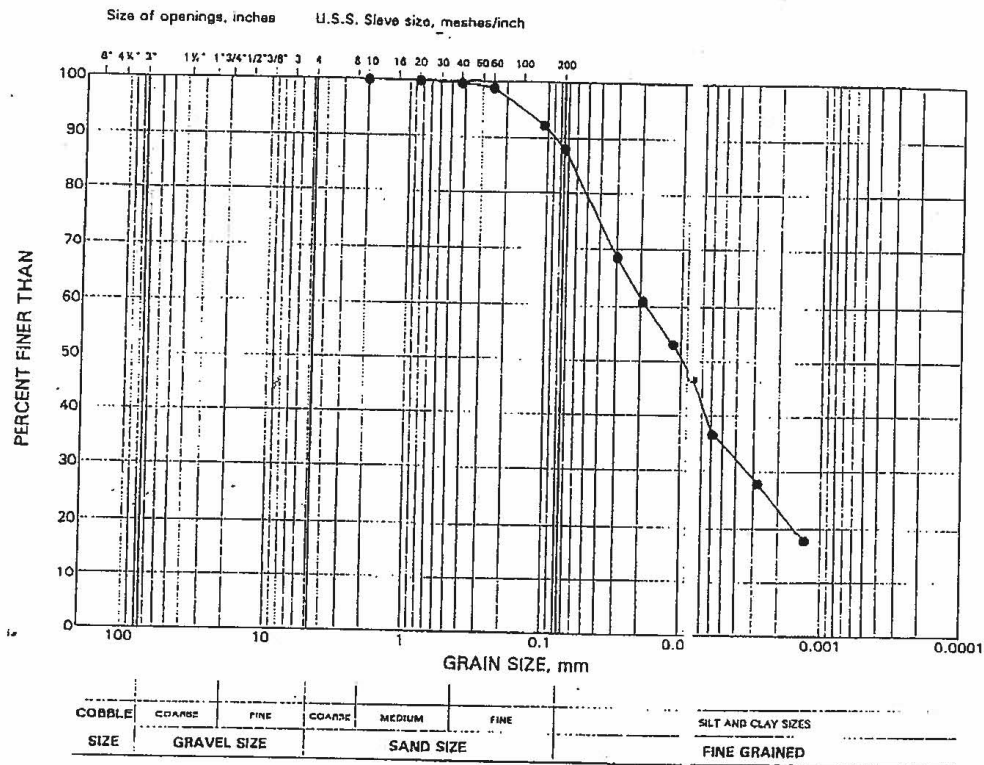


LEGEND

SYMBOL	BOREHOLE	SAMPLE	DEPTH (m)
•			

GRAIN SIZE DISTRIBUTION

FIGURE

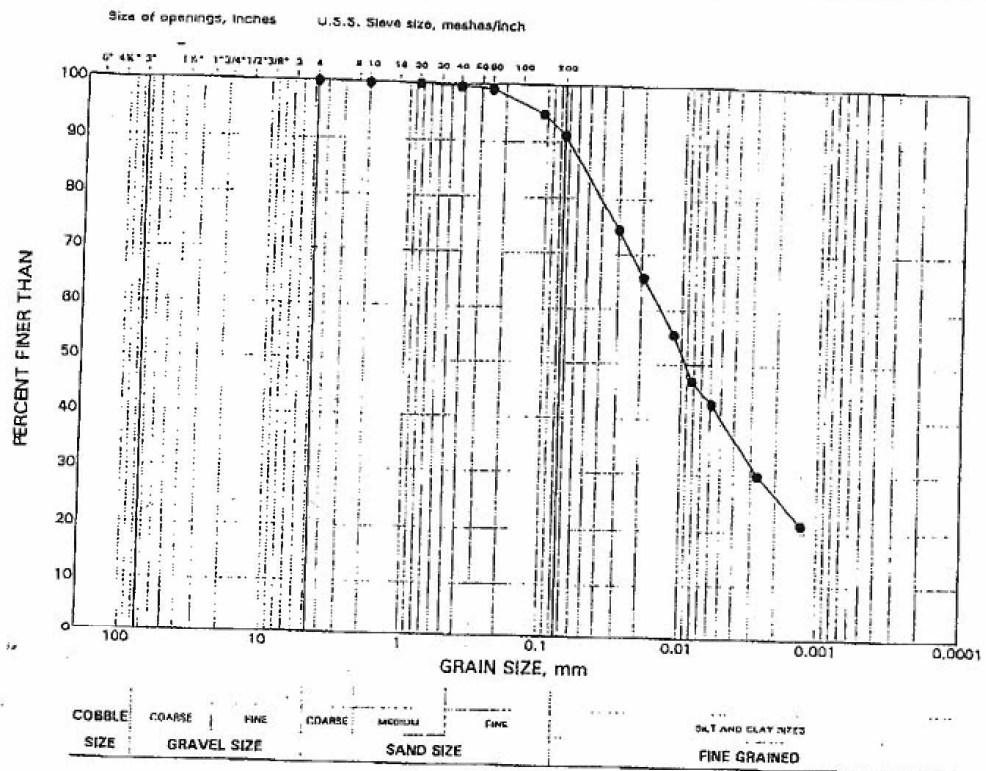


LEGEND

SYMBOL	BOREHOLE	SAMPLE	DEPTH (m)
•	-	3	-

GRAIN SIZE DISTRIBUTION

FIGURE



LEGEND

SYMBOL	BOREHOLE	SAMPLE	DEPTH (m)
•	-	5	-

APPENDIX B

Water Level Chart for Lake Erie

