

**SPECIFICATIONS FOR  
LAUNCH RAMP RECONSTRUCTION  
CALDERS DOCK, MB**



Department of Fisheries & Oceans  
Small Craft Harbours Branch  
Winnipeg, Manitoba

**July 2021**

**TABLE OF CONTENTS**

<u>Section</u>	<u>Page</u>
01 11 05 – General Instructions .....	2
01 35 29 – Health and Safety Requirements.....	7
01 35 43 – Environmental Procedures .....	10
01 45 00 – Quality Control.....	14
01 77 00 – Closeout Procedures .....	16
02 41 13 – Selective Site Demolition.....	18
03 41 02 – Precast Concrete Elements.....	20
05 55 00 – Metal Fabrications .....	23
31 32 19.16 – Geotextiles.....	26
31 23 33 – Excavating, Trenching and Backfilling .....	29

**01 11 05 – GENERAL INSTRUCTIONS**

**Part 1      General**

**1.1            MEASUREMENT FOR PAYMENT**

- .1      No measurement will be made under this Section.

**1.2            DESCRIPTION OF WORK**

- .1      The work site described in this specification is located in Calders Dock, Manitoba. The Calders Dock Harbour site is located approximately 200 km north of Winnipeg, Manitoba. The site is accessible by road, located off of PR 234. See the location plan displayed on Drawing C-1.
- .2      The work under this contract covers the launch ramp reconstruction at Calders Dock Harbour as follows:
  - .1      Demolition and removal of existing concrete launch ramp pads.
  - .2      Demolition and removal of existing concrete slab.
  - .3      Excavation to suit new ramp installation.
  - .4      Supply and install of new granular base and sub-base.
  - .5      Supply and install of forty-six (46) new concrete launch ramp pads.
  - .6      Supply and install geotextile material.
  - .7      Supply and install of new granular base on launch ramp approach.
- .3      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 and as specified herein.

**1.3            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.

**1.4            WORK SCHEDULE**

- .1      Provide within 10 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 Departmental Representative and schedule updated by Contractor in conjunction with and to approval of Departmental Representative.
- .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 complete by **October 29, 2021**.
- .4      Work sequence:
  - .1      Reconstruction of launch ramp to be completed before **October 29, 2021**.

- .2 Work shall not begin until **October 11<sup>th</sup>, 2021**, unless approved by Departmental Representative.
- .3 Before work is undertaken, ensure that all materials and trades required are available to finish work in as short a period as possible.
- .4 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.

## **1.5 CERTIFICATES AND TRANSCRIPTS**

- .1 Immediately after award of Contract, submit Workers' Compensation Board status.

## **1.6 FEES, PERMITS AND CERTIFICATES**

- .1 Provide authorities having jurisdiction with information requested.
- .2 Pay fees and obtain certificates and work permits required.
- .3 Furnish certificates and permits when requested.

## **1.7 MEASUREMENT FOR PAYMENT**

- .1 Notify Departmental Representative sufficiently in advance of operations to permit required measurements for payment.
- .2 Submit to Departmental Representative, at least 14 days before first application for payment, cost breakdown, in detail as directed by Departmental Representative, for parts of Work, aggregating total amount of Contract Price, so as to facilitate evaluation of applications for payment. After approval by Departmental Representative, cost breakdown will be used as basis for progress payments.

## **1.8 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 Departmental Representative 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.
- .4 Do not scale off drawings.

## **1.9 CONTRACTOR'S USE OF SITE**

- .1 Co-ordinate use of premises under direction of the Departmental Representative.
- .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 interferes with operations of Departmental Representative 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 Departmental Representative.
- .8 At completion of operations condition of existing work: equal to or better than that which existed before new work started.

#### **1.10 EXISTING SERVICES**

- .1 Notify Departmental Representative and utility companies of intended interruption of services and obtain required permission.
- .2 Where Work involves breaking into or connecting to existing services, give Departmental Representative 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 Departmental Representative of findings.
- .4 Submit schedule to and obtain approval from Departmental Representative 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 Departmental Representative 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.

#### **1.11 DOCUMENTS REQUIRED**

- .1 Maintain at job site, one copy of 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.

**1.12 CONTRACT METHOD**

- .1 Construct Work under a combined price contract. All costs for work not specifically identified as a unit price item shall be included in the lump sum arrangement.

**1.13 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.

**1.14 PROJECT MEETINGS**

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

**1.15 SETTING OUT OF WORK**

- .1 Departmental Representative will provide only those survey control points and set such stakes as necessary to define general location, alignment and elevations of work. Give Departmental Representative 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 Departmental Representative.
- .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 Departmental Representative's inspection of work.
- .6 Supply stakes and other survey markers required for laying out work.

**1.16 ADDITIONAL DRAWINGS**

- .1 Departmental Representative 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 Departmental Representative in advance of the date they are required.

**1.17 EXAMINATION**

- .1 Before submitting tender, examine existing conditions and determine conditions affecting work.
- .2 Obtain all information which may be necessary for proper execution of Contract.

**1.18 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.

**1.19 MATERIAL AND EQUIPMENT**

- .1 Use new products unless otherwise specified.
- .2 Deliver and store material and equipment to manufacturer's instructions with manufacturer's labels and seals intact.
- .3 When material or equipment specified by standard performance specifications, upon request of Departmental Representative, obtain from manufacturer an independent testing laboratory report, stating that material or equipment meets or exceeds specified requirements.

**1.20 SECURING WORK AREA**

- .1 Secure the work areas in each stage in an approved manner. This includes fencing or barricades to prevent public access to any areas where construction activities occur and construction materials are stored.
- .2 For all in-water work during ice-free condition, the works are to be marked with cautionary buoys that are lighted from dusk to dawn and during periods of restricted visibility per the Transport Canada Navigable Waters Protection Act.
  - .1 Buoy must include yellow flashing light that remains lit from dusk to dawn for the duration of in-water work.

**1.21 VEHICLE AND PEDESTRIAN PROTECTION**

- .1 Provide snow fencing, wooden barriers, or other approved barriers to prevent vehicles and pedestrians from accessing the site during construction.
- .2 Contractor shall provide appropriate signage for vehicle and pedestrian protection.
- .3 All barriers shall include delineation and reflectors to stand out at nightfall.

**1.22 DRAWINGS**

- .1 The following drawings are to be read in conjunction with this specification:
  - .1 C-1: Site Plan and Demolition Details
  - .2 C-2: Construction Details
  - .3 C-3: Assembly Details

**Part 2 Products**

**2.1 NOT USED**

- .1 Not Used.

**Part 3 Execution**

**3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**

**01 35 29 – HEALTH AND SAFETY REQUIREMENTS**

**Part 1        General**

**1.1            MEASUREMENT FOR PAYMENT**

- .1        No measurement will be made under this Section.

**1.2            REFERENCES**

- .1        Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations
- .2        Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  - .1        Material Safety Data Sheets (MSDS).
- .3        Province of Manitoba
  - .1        The Workers Compensation Act (latest edition)
- .4        Provincial and Federal Health Authorities COVID-19 regulations at time of work.

**1.3            SUBMITTALS**

- .1        Submit site-specific Health and Safety Plan: Within 10 days after date of Notice to Proceed and prior to commencement of Work.
- .2        Submit copies of incident and accident reports to Departmental Representative.
- .3        Submit WHMIS MSDS – Material Safety Data Sheets to Departmental Representative.
- .4        Departmental Representative 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 Departmental Representative within 5 days after receipt of comments from Departmental Representative.
- .5        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.
- .6        On-site Contingency and Emergency Response Plan: address standard operating procedures to be implemented during emergency situations.

**1.4            FILING OF NOTICE**

- .1        File Notice of Project with Provincial authorities prior to beginning of Work.

**1.5            SAFETY ASSESSMENT**

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

**1.6            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.



- .3 In the event of a conflict between any provisions of above authorities having the most stringent provision will apply.

## **1.7 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.

## **1.8 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 the Province having jurisdiction and advise Departmental Representative verbally and in writing.

## **1.9 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 project.
  - .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.

## **1.10 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 verbally and in writing.

## **1.11 CORRECTION OF NON-COMPLIANCE**

- .1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction or 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.

## **1.12 COVID-19 MEASURES**

- .1 Contractor to follow all COVID-19 precautions and mitigation measures as stipulated by the Province of Manitoba at the time of the Work
- .2 All measures to be included in Site Specific Safety Plan.

**Part 2            Products**

**2.1                NOT USED**

.1                Not Used.

**Part 3            Execution**

**3.1                NOT USED**

.1                Not Used.

**END OF SECTION**

**01 35 43 – ENVIRONMENTAL PROCEDURES**

**Part 1        General**

**1.1            RELATED SECTIONS**

- .1        Section 02 41 13 – Selective Site Demolition

**1.2            MEASUREMENT FOR PAYMENT**

- .1        No separate measurement will be for work of this section. Work is to be included in lump sum costs for project. Includes supply, installation, maintenance and removal of vertical silt curtain in lump sum costs.

**1.3            SUBMITTALS**

- .1        Contractor to document placement of silt curtain with photos and submit to Departmental Representative.
- .2        Contractor to submit all environmental permits required prior to construction.

**1.4            FIRES**

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

**1.5            DRAINAGE**

- .1        Provide temporary drainage and pumping required to keep excavations and site free from water.
- .2        Ensure pumped water into waterways, sewer or drainage systems free of suspended materials.
- .3        Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements.

**1.6            WORK ADJACENT TO WATERWAYS**

- .1        No in-water work or shoreline work is permitted between April 15 and June 30.
- .2        Construction equipment may not enter the waterbody unless the waterbody is frozen. If construction equipment will be located on the frozen surface of the waterbody, it will be removed from the waterbody each night if the on-ice component spans more than one day.
- .3        Construction equipment shall not enter and leave the lake at such a location and in such a manner that disturbance to the lakeshore occurs.
- .4        Every effort will be made to minimize the introduction of sediment to the lake during work activities. Any sediment or debris tracked onto the ice during the project must be cleaned off at the end of the project. This includes any ice that needs to be removed from the shoreline to accommodate stabilization works. All material used for shoreline stabilization shall be clean and free of silt and clay.
- .5        Do not use waterway beds for borrow material.
- .6        Waterways to be free of excavated fill, waste material and debris.

- .7 Design and construct temporary crossings to minimize erosion to waterways.
- .8 Do not skid logs or construction materials across waterways.
- .9 Avoid damage to shoreline.
- .10 Supply, install, and maintain approved erosion control blankets to unprotected slopes until revegetation is established.
- .11 Any impacts below ordinary high water mark that are not shown on the site plan are not permitted without written approval from the Departmental Representative. Up to 30 days may be required for approval.
- .12 Reclaim and restore disturbed areas to previous or better condition.
- .13 Areas used for stockpiling construction materials, including fill or other equipment storage will be well back from the edge of the water body and, if possible, in areas which have already been disturbed or are devoid of vegetation.
- .14 All required machinery should be supplied with appropriate spill containment kits as a precaution in the event of accidental fuel spills or hydraulic leaks. Additional kits should be available on site with the capacity to contain any spills of deleterious substances that may be reasonably expected to occur. Contractors should ensure that all personnel are familiar with the spill kits.
- .15 The Contractor shall report spills of fuels or other contaminants to the Departmental Representative.
- .16 The Contractor shall not remove, destroy or disturb species pursuant to Provincial Threatened, Endangered and Extirpated Species regulation, or species listed in the federal Species at Risk Act.
- .17 The Contractor shall not disturb migratory bird nests.

## **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 No maintenance of vehicles or equipment in construction areas.
- .7 All required machinery must be supplied with appropriate spill containment kits as a precaution in the event of accidental fuel spills or hydraulic leaks. Additional kits must be available on site. Contractors to ensure that all personnel are familiar with the spill kits contents.
- .8 The Contractor shall report spills of fuels or other contaminants to the Departmental Representative immediately and follow all Provincial environmental legislation regarding spills.

## **1.8 DISPOSAL OF WASTES**

- .1 Do not bury rubbish and waste materials on site unless approved by the Departmental Representative.
- .2 Do not dispose of waste or volatile materials, such as mineral spirits, oil or paint thinner into waterways. Hazardous wastes including fuels, oils and lubricants to be disposed of by a licensed hazardous waste carrier/handler in accordance with Provincial Environment Legislation.
- .3 Collect all rubbish and waste material and dispose of in accordance with applicable governing authorities.
- .4 Do not allow debris of any type to enter waterway.

## **1.9 PLANT 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.

## **1.10 VERTICAL SILT CURTAIN**

- .1 Contractor to isolate the work area from the lake with an approved silt curtain to prevent the drift of sediment from the work area into the waterbody as required. The silt curtain must extend from the top of the ice/water to within 300mm of the river bottom. The silt curtain must be left in place until all suspended sediments are settled out. On completion of the project carefully remove silt curtain to ensure settled sediment is not disturbed. Costs for supply, installation, maintenance, and removal to be included in lump sum costs.
- .2 Silt curtain must be installed prior to undertaking in-water Work. Contractor to document silt curtain installation with photographs and submit to Departmental Representative.
- .3 Silt curtain location and placement is the Contractor's responsibility. Placement to allow sufficient access to work area while ensuring no sediment enters the water body and may be subject to Departmental Representative's approval.
- .4 Silt curtain must attain the following Specifications:
  - .1 Fabric: Minimum 14 oz. PVC.
  - .2 Chain Ballast: Minimum 4.76mm.
  - .3 Connection: Maximum vertical connection between sections no more than 300mm apart.
- .5 Silt curtain to arrive to site clean and free of any organic material.
- .6 For all in-water work during ice-free conditions, the works are to be marked with cautionary buoys that are lighted from dusk to dawn and during periods of restricted visibility per the Transport Canada Navigable Waters Protection Act.

## **1.11 INVASIVE SPECIES**

- .1 Contractor to follow all Provincial and Federal regulations to prevent the spread of aquatic invasive species (zebra mussels, spiny waterfleas, etc) during the course of the work.

- .2 Contractor to obtain applicable Aquatic Invasive Species (AIS) permits prior to commencement of work.

**Part 2 Products**

**2.1 NOT USED**

- .1 Not Used.

**Part 3 Execution**

**3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**

**01 45 00 – QUALITY CONTROL**

**Part 1        General**

**1.1            MEASUREMENT FOR PAYMENT**

- .1        No measurement will be made under this Section.

**1.2            INSPECTION**

- .1        Allow Departmental Representative access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.
- .2        Provide minimum 5 working days notice for requesting inspection if Work is designated for special tests, inspections or approvals by Departmental Representative.
- .3        Departmental Representative will order part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction.

**1.3            INDEPENDENT INSPECTION AGENCIES**

- .1        Independent Inspection/Testing Agencies may be engaged by Departmental Representative for purpose of inspecting and/or testing portions of Work.
- .2        Provide equipment required for executing inspection and testing by appointed agencies.
- .3        Employment of inspection/testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.
- .4        If defects are revealed during inspection and/or testing, appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by Departmental Representative at no cost to. Pay costs for re-testing and re-inspection.

**1.4            ACCESS TO WORK**

- .1        Allow inspection/testing agencies access to Work, off site manufacturing and fabrication plants.
- .2        Co-operate to provide reasonable facilities for such access.

**1.5            PROCEDURES**

- .1        Notify Departmental Representative in advance of requirement for tests, in order that attendance arrangements can be made.
- .2        Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in orderly sequence to not cause delays in Work.
- .3        Provide labour and facilities to obtain and handle samples and materials on site. Provide sufficient space to store and cure test samples.

**1.6 REJECTED WORK**

- .1 Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected by Departmental Representative as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.
- .2 Make good other Contractor's work damaged by such removals or replacements promptly.
- .3 If in opinion of Departmental Representative it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Owner will deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which will be determined by Departmental Representative.

**1.7 TESTS AND MIX DESIGNS**

- .1 Furnish test results and mix designs as requested.

**1.8 MILL TESTS**

- .1 Submit mill test certificates as requested.

**Part 2 Products**

**2.1 NOT USED**

- .1 Not Used.

**Part 3 Execution**

**3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**



**01 77 00 – CLOSEOUT PROCEDURES**

**Part 1            General**

**1.1                MEASUREMENT FOR PAYMENT**

- .1            No measurement will be made under this Section.

**1.2                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.
    - .1            Notify Departmental Representative in writing of satisfactory completion of Contractor's inspection and submit verification that corrections have been made.
    - .2            Request Departmental Representative inspection
  - .2            Final Inspection:
    - .1            When completion tasks are done, request final inspection of Work by Departmental Representative.
    - .2            When Work incomplete according to Departmental Representative, complete outstanding items and request re-inspection.
  - .3            Declaration of Substantial Performance: when Departmental Representative considers deficiencies and defects corrected and requirements of Contract substantially performed, make application for Certificate of Substantial Performance.
  - .4            Final Payment:
    - .1            When Departmental Representative considers final deficiencies and defects corrected and requirements of Contract met, make application for final payment.
  - .5            Payment of Holdback: after issuance of Certificate of Substantial Performance of Work, submit application for payment of holdback amount in accordance with contractual agreement.

**1.3                FINAL CLEANING**

- .1            When Work is Substantially Complete remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.
- .2            Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.

**1.4                RECORD DRAWINGS**

- .1            Maintain project "as-built" record drawings and record accurately significant deviations from Contract documents caused by site conditions and changes ordered by Departmental Representative.
- .2            Mark "as-built" changes in red coloured ink. Sign and date final copy.

- .3 Record the following information:
  - .1 Field changes of dimension and detail.
  - .2 Changes made by Change Order or Field Instruction.
- .4 At completion of project and prior to final inspection, neatly transfer “as-built” notations to second set and submit both sets to Departmental Representative.

**Part 2 Products**

**2.1 NOT USED**

- .1 Not Used.

**Part 3 Execution**

**3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**

**02 41 13 – SELECTIVE SITE DEMOLITION**

**Part 1        General**

**1.1            MEASUREMENT FOR PAYMENT**

- .1        Demolition and removal of existing reinforced concrete slab and all launch ramp pads to be included in lump sum costs for project.
- .2        Mobilization and demobilization
  - .1        Payment for mobilization and demobilization shall be included in lump sum costs and shall include all works required to:
    - .1        Mobilize equipment, materials, tools, supplies, labour and supervision.
    - .2        Site preparation (including but not limited to snow clearing, ice flooding).
    - .3        Insurance(s) required for duration of construction.
    - .4        Fees, certificates and work permits required.
    - .5        Temporary construction facilities.
    - .6        Signage.
    - .7        Securing work and storage areas.
    - .8        Protect the public during construction.
    - .9        Daily site cleaning
    - .10      Demobilization of aforementioned items upon completion of construction.
  - .3

**1.2            DELIVERY, STORAGE AND HANDLING**

- .1        Storage and Protection:
  - .1        Protect existing items designated to remain and items designated for salvage. In event of damage to such items, immediately replace or make repairs to approval of Departmental Representative and at no cost to Departmental Representative.
  - .2        Remove and store materials to be salvaged, in manner to prevent damage.
  - .3        Store and protect in accordance with requirements for maximum preservation of material.
  - .4        Handle salvaged materials as new materials.

**1.3            SITE CONDITIONS**

- .1        Site Environmental Requirements:
  - .1        Perform work in accordance with Section 01 35 43
  - .2        Ensure that selective demolition work does not adversely affect adjacent watercourses, groundwater and wildlife, or contribute to excess air and noise pollution.

- .3 Ensure proper disposal procedures are maintained throughout the project.

**Part 2 Products**

**2.1 NOT USED**

- .1 Not Used.

**Part 3 Execution**

**3.1 PREPARATION**

- .1 Inspect site and verify extent and location of items designated for removal, disposal, alternative disposal, recycling, salvage and items to remain.
- .2 Locate and protect utilities. Preserve active utilities traversing site in operating condition.
- .3 Notify and obtain approval of utility companies before starting demolition.

**3.2 REMOVAL OPERATIONS**

- .1 Remove items as indicated.
- .2 Do not disturb items designated to remain in place.

**3.3 REMOVAL FROM SITE**

- .1 Dispose of materials not designated for salvage or re-use in work, off-site at location acceptable to Departmental Representative, and in accordance with the Authority having Jurisdiction.

**3.4 RESTORATION**

- .1 Remove debris, trim surfaces and leave work site clean, upon completion of Work.
- .2 Reinstate areas and existing works outside areas of demolition to conditions that existed prior to commencement of work.

**3.5 EQUIPMENT**

- .1 Leave machinery running only while in use, except where extreme temperatures prohibit shutting machinery down.

**END OF SECTION**

## **03 41 02 – PRECAST CONCRETE ELEMENTS**

### **Part 1      General**

#### **1.1            MEASUREMENT PROCEDURES**

- .1      Costs for supply and installation of the launch ramp pads to be measured for payment by the unit supplied and installed. Price to include costs of galvanized steel cable, galvanized shackles, galvanized saddle clamps, galvanized pipe spacers, excavation, levelling, and miscellaneous fittings.

#### **1.2            REFERENCES**

- .1      Canadian Standards Association (CSA International)
  - .1      CSA-A23.1/A23.2-2004, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
  - .2      CSA-A23.3-14, Design of Concrete Structures.
  - .3      CSA-A23.4-05, Precast Concrete - Materials and Construction.
  - .4      CAN/CSA-A3000-03, Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).
    - .1      CSA-A3001-03, Cementitious Materials for Use in Concrete.
  - .5      CAN/CSA-G30.18-M92(R2002), Billet-Steel Bars for Concrete Reinforcement.
  - .6      CSA-W59-03, Welded Steel Construction (Metal Arc Welding) (Metric version).

#### **1.3            PERFORMANCE REQUIREMENTS**

- .1      Concrete launch ramp pads:
  - .1      Long dimensions of launch ramp pads not to vary from design length by more than +/- 25mm.
  - .2      Cross sectional dimensions of launch ramp pads not to vary from design lengths by more than +/- 25mm.
  - .3      Deviations from straight lines in long sections not to exceed 10mm in 3m throughout length.

#### **1.4            DELIVERY, STORAGE AND HANDLING**

- .1      Transport concrete launch ramp pads with points of support and direction of reactions approximately same as when they will be in final position in work.
- .2      Handle, store and protect concrete pads in order to avoid damage to concrete.
- .3      Identify lifting points by inserting hooks during manufacturing process.

### **Part 2      Products**

#### **2.1            MATERIALS**

- .1      Cement to CAN/CSA-A3001, Type GU.

- .2 Water: to CSA-A23.1/A23.2.
- .3 Reinforcing steel: to CAN/CSA-G30.18.
- .4 Hardware and miscellaneous materials: to CSA-A23.1/A23.2.
- .5 Anchors and supports: to CAN/CSA-G40.21 Type 300 W.
- .6 Welding materials: to CSA W48.
- .7 Air entrainment admixtures: to ASTM C260.

## **2.2 MIXES**

- .1 Concrete:
  - .1 Alternative 1 - Performance Method for specifying concrete: to meet Departmental Representative performance criteria in accordance with CAN/CSA-A23.1/A23.2.
    - .1 Provide concrete mix to meet following hard state requirements:
      - .1 Durability and class of exposure: C-1.
      - .2 Minimum compressive strength at 28 days: 30 MPa.
      - .3 Surface texture:
        - .1 Concrete launch ramp pads: Traction surfaces of slabs to be serrated dandelion rake finish with approximately 10mm ribs.
    - .2 Provide quality management plan to ensure verification of concrete quality to specified performance.
    - .3 Concrete supplier's certification.

## **2.3 MANUFACTURED UNITS**

- .1 Manufacture units in accordance with CSA-A23.4.
- .2 Provide hardware suitable for handling elements.

## **2.4 SOURCE QUALITY CONTROL**

- .1 Upon request, provide Departmental Representative with certified copies of quality control tests related to this project as specified in CSA-A23.4.
- .2 Upon request, provide Departmental Representative with certified copy of mill test report of reinforcing steel supplied, showing physical and chemical analysis.

## **Part 3 Execution**

### **3.1 VERIFICATION**

- .1 Quality Control Plan: ensure concrete supplier meets performance criteria and provide verification of compliance.
- .2 Launch ramp pads not to be forced into position or to be subjected to stresses or overloads which could cause damage.

- .3 Replace launch ramp pads damaged during installation to satisfaction of Departmental Representative at no additional cost.
- .4 Extend granular base beyond launch ramp as directed in drawings.
- .5 Launch ramp pads to be spaced 75mm apart with galvanized pipe spacers.
- .6 After placing launch ramp pads in final position, fill spaces between pads with granular surfacing (20 minus granular fill).
- .7 Launch ramp pads to be joined by a continuous 12mm dia. Galvanized steel cable fastened at the upper end of the launch ramp with three (3) galvanized cable clamps.

**END OF SECTION**

**05 55 00 – METAL FABRICATIONS**

**Part 1        General**

**1.1            MEASUREMENT FOR PAYMENT**

- .1        No measurement will be made under this Section.

**1.2            REFERENCES**

- .1        American Society for Testing and Materials International, (ASTM)
  - .1        ASTM A53/A53M-18, Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
  - .2        ASTM A269-15a, Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.
  - .3        ASTM A307-14e1, Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
- .2        Canadian General Standards Board (CGSB)
  - .1        CAN/CGSB-1.40-97, Anti-corrosive Structural Steel Alkyd Primer.
  - .2        CAN/CGSB-1.181-92, Ready-Mixed, Organic Zinc-Rich Coating.
- .3        Canadian Standards Association (CSA International)
  - .1        CAN/CSA-G40.20-13/G40.21-13(R2018), General Requirements for Rolled or Welded Structural Quality Steel.
  - .2        CAN/CSA-G164-18(R2019), Hot Dip Galvanizing of Irregularly Shaped Articles.
  - .3        CAN/CSA-S16.1-14(R2019), Limit States Design of Steel Structures.
  - .4        CSA W48-18, Filler Metals and Allied Materials for Metal Arc Welding (Developed in co-operation with the Canadian Welding Bureau).
  - .5        CSA W59-13, Welded Steel Construction (Metal Arc Welding) (Imperial Version).
- .4        The Environmental Choice Program
  - .1        CCD-047a-98(R2005), Paints, Surface Coatings.
  - .2        CCD-048-98(R2006), Surface Coatings - Recycled Water-borne.

**Part 2        Products**

**2.1            MATERIALS**

- .1        Steel sections and plates: to CAN/CSA-G40.20/G40.21, Grade 350W.
- .2        Steel pipe: to ASTM A53/A53M standard weight, painted finish.
- .3        Welding materials: to CSA W59.
- .4        Welding electrodes: to CSA W48 Series.
- .5        Bolts and anchor bolts: to ASTM A307.
- .6        Grout: non-shrink, non-metallic, flowable, 15 MPa at 24 hours.



## **2.2 FABRICATION**

- .1 Fabricate work square, true, straight and accurate to required size, with joints closely fitted and properly secured.
- .2 Where possible, fit and shop assemble work, ready for erection.
- .3 Ensure exposed welds are continuous for length of each joint. File or grind exposed welds smooth and flush.

## **2.3 FINISHES**

- .1 Galvanizing: hot dipped galvanizing with zinc coating 600 g/m<sup>2</sup> to CAN/CSA-G164.
- .2 Chromium plating: chrome on steel with plating sequence of 0.009 mm thickness of copper 0.010 mm thickness of nickel and 0.0025 mm thickness of chromium.
- .3 Shop coat primer: to CAN/CGSB-1.40.
- .4 Zinc primer: zinc rich, ready mix to CAN/CGSB-1.181.

## **2.4 ISOLATION COATING**

- .1 Isolate aluminum from following components, by means of bituminous paint:
  - .1 Dissimilar metals except stainless steel, zinc, or white bronze of small area.
  - .2 Concrete, mortar and masonry.
  - .3 Wood.

## **2.5 SHOP PAINTING**

- .1 Apply one shop coat of primer to metal items unless stated otherwise on drawings, with exception of galvanized or concrete encased items.
- .2 Use primer unadulterated, as prepared by manufacturer. Paint on dry surfaces, free from rust, scale, grease. Do not paint when temperature is lower than 7 degrees Celsius.
- .3 Clean surfaces to be field welded; do not paint.

## **Part 3 Execution**

### **3.1 ERECTION**

- .1 Do welding work in accordance with CSA W59-13 unless specified otherwise.
- .2 Erect metalwork square, plumb, straight, and true, accurately fitted, with tight joints and intersections.
- .3 Provide suitable means of anchorage acceptable to Departmental Representative such as dowels, anchor clips, bar anchors, expansion bolts and shields, and toggles.
- .4 Exposed fastening devices to match finish and be compatible with material through which they pass.
- .5 Provide components for building by other sections in accordance with shop drawings and schedule.
- .6 Make field connections with bolts to CAN/CSA-S16.1-14(R2019), or weld.

- .7 Touch-up rivets, field welds, bolts and burnt or scratched surfaces after completion of erection with primer.
- .8 Touch-up galvanized surfaces with zinc rich primer where burned by field welding.

**3.2 CLEANING**

- .1 Perform cleaning after installation to remove construction and accumulated environmental dirt.
- .2 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

**END OF SECTION**

## **31 32 19.16 – GEOTEXTILES**

### **Part 1 General**

#### **1.1 RELATED REQUIREMENTS**

- .1 Section 31 23 33 – Excavating, Trenching and Backfilling

#### **1.2 MEASUREMENT AND PAYMENT**

- .1 All geotextile material required shall be included in Lump Sum costs for project. Approximately 24.5 linear metres are required for one layer of geotextile, if overlapping more required.

#### **1.3 REFERENCE STANDARDS**

- .1 ASTM International
  - .1 ASTM A123/A123M-[09], Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
  - .2 ASTM D4491-[99a(2009)], Standard Test Methods for Water Permeability of Geotextiles by Permittivity.
  - .3 ASTM D4595-[09], Standard Test Method for Tensile Properties of Geotextiles by the Wide-Width Strip Method.
  - .4 ASTM D4716-[08], Standard Test Method for Determining the (In-Plane) Flow Rate Per Unit Width and Hydraulic Transmissivity of a Geosynthetic Using a Constant Head.
  - .5 ASTM D4751-[04], Standard Test Method for Determining Apparent Opening Size of a Geotextile.
- .2 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB-4.2 No. 11.2-[2004], Textile Test Methods - Bursting Strength - Ball Burst Test (Extension of September 1989).
  - .2 CAN/CGSB-148.1, Methods of Testing Geotextiles and Complete Geomembranes.
    - .1 No.2-M85, Methods of Testing Geosynthetics - Mass per Unit Area.
    - .2 No.3-M85, Methods of Testing Geosynthetics - Thickness of Geotextiles.
    - .3 No.6.1-93, Methods of Testing Geotextiles and Geomembranes - Bursting Strength of Geotextiles Under No Compressive Load.
    - .4 No.7.3-92, Methods of Testing Geotextiles and Geomembranes - Grab Tensile Test for Geotextiles.
    - .5 No. 10-94, Methods of Testing Geosynthetics - Geotextiles - Filtration Opening Size.
- .3 Ontario Provincial Standard Specifications (OPSS)
  - .1 OPSS 1860-November 2010, Material Specification for Geotextiles.

#### **1.4 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Provide in accordance with Section 01 33 00- Submittal Procedures.

- .2 Product Data:
  - .1 The Contractor shall submit, if required by the Departmental Representative, the Manufacturer's quality control manual for the Geotextile to be delivered to the site.
  - .2 The Contractor shall submit, if required by the Departmental Representative, methods of joining.

## **1.5 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with manufacturer's written instructions.
- .2 Storage and Handling Requirements:
  - .1 Store materials in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Store and protect geotextiles from direct sunlight and UV rays.
  - .3 Replace defective or damaged materials with new.

## **Part 2 Products**

### **2.1 MATERIAL**

- .1 Geotextile: non-woven synthetic fibre fabric, supplied in rolls. It shall be Type N3, geotextile and the threads used in sewing operation shall consist of a long chain synthetic polymer composed of at least 85% by mass of propylene, ethylene, ester, amide or vinylidene-chloride, and shall contain stabilizers or inhibitors added to the base plastic to make the filaments resistant to deterioration by ultraviolet and heat exposure
- .2 Physical properties:
  - .1 Tensile strength and elongation (in any principal direction): to ASTM D4632.
    - .1 Minimum grab tensile strength: 790 N
    - .2 Elongation at break: minimum 50%.
  - .2 Tearing strength: to ASTM D4533.
    - .1 Minimum tearing strength (Trapezoid Method): 310 N
- .3 Hydraulic properties:
  - .1 Apparent opening size (AOS): to ASTM D4751, 50 to 250  $\mu\text{m}$
  - .2 Permittivity: to ASTM D4491, 1.00 to 2.50  $\text{sec}^{-1}$
- .4 Securing pins and washers: to CSA G40.21, Grade 300W, hot-dipped galvanized with minimum zinc coating of 600  $\text{g}/\text{m}^2$  to ASTM A123/A 123M.
- .5 Factory seams: sewn in accordance with manufacturer's recommendations.
- .6 Thread for sewn seams: equal or better resistance to chemical and biological degradation than geotextile.

**Part 3 Execution**

**3.1 INSTALLATION**

- .1 The Contractor shall prepare the surface, in advance of placing the geotextile, to achieve a smooth, even surface, clear of any aggregates or debris, and constructed to cross section and profile indicated on the plans.
- .2 Place geotextile material smooth and free of tension stress, folds, wrinkles and creases.
- .3 Place geotextile material on sloping surfaces in one continuous length from toe of slope to upper extent of geotextile.
- .4 Overlap each successive strip of geotextile 600 mm over previously laid strip as approved by Departmental Representative.
- .5 Join successive strips of geotextile by [sewing]pinning.
- .6 Protect installed geotextile material from displacement, damage or deterioration before, during and after placement of material layers.
- .7 After installation, cover with overlying layer within 4 hours of placement.
- .8 Replace damaged or deteriorated geotextile to approval of Departmental Representative
- .9 Place and compact soil layers in accordance with Section 31 23 33 - Excavating, Trenching and Backfilling

**3.2 CLEANING**

- .1 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment.

**3.3 PROTECTION**

- .1 Vehicular traffic not permitted directly on geotextile.
- .2 Do not overload soil or aggregate covering on geotextile.

**END OF SECTION**

**31 23 33 – EXCAVATING, TRENCHING AND BACKFILLING**

**Part 1 General**

**1.1 MEASUREMENT PROCEDURES**

- .1 Supply and installation of new 20 mm down base material will be paid for by the tonne of material installed, compacted and remaining in work.
- .2 Supply and installation of new 100 mm down sub-base material will be paid for by the tonne of material installed, compacted and remaining in work.
- .3 Costs for grading and excavating existing material are to be included in lump sum costs for project.
- .4 Contractor to make own arrangements with Provincial authorities, municipalities and owners of private properties, for the quarrying and transportation of rock materials and machinery for work over their property, roads or streets.
- .5 Provide quarry tickets to Departmental Representative for all 20 mm down and 100 mm down material delivered to site.

**1.2 DESCRIPTION**

- .1 This section specifies requirements for excavation to install concrete launch ramp pads and supplying and placing granular base and sub-base base to lines and grades as shown on plans or as established by Departmental Representative.

**1.3 SUBMITTALS**

- .1 Submit to Departmental Representative for approval, two weeks before excavation, the proposed location of spoil area for excavated material.
- .2 Submit records of underground utility locates, indication: location plan of existing utilities as found in field, clearance record from utility authority, and location plan of relocated and abandoned services, as required.

**1.4 SOURCE SAMPLING**

- .1 Inform Departmental Representative of proposed source of materials and provide access for sampling at least 2 weeks prior to commencing work

**1.5 DEFINITIONS**

- .1 Common excavations: excavated material of whatever nature, which are not included under definitions of rock excavations.
- .2 Grade: plane above which material is to be excavated.
- .3 Estimated quantity:
  - .1 Volume of material calculated to be above grade and within specified side slopes unless otherwise specified.
- .4 Side slope: inclined surface or plane from grade at side limit of excavated area to intersect original ground line outside of side limit and to be expressed as ratio of horizontal to vertical.

**1.6 EXISTING CONDITIONS**

- .1 Examine soil report contained within this specification if applicable.
- .2 Before commencing work verify location of buried services on and adjacent to site.
- .3 Arrange with appropriate authority for relocation of buried services that interfere with execution of work.

**Part 2 Products**

**2.1 MATERIALS**

- .1 100 mm Granular sub-base material in accordance with following requirements:
  - .1 Crushed, pit run or screened stone, or gravel.
  - .2 Gradations to be within limits specified when tested to ASTM C136 and ASTM C117. Sieve sizes to CAN/CGSB-8.1.
  - .3 The gradation and physical requirements to be as follows:

Sieve Designation	% Passing
100 mm	100
75 mm	60-100
37.5 mm	35-80
19 mm	20-60
9.5 mm	10-40

- .2 Base Course: use 20 mm crushed stone backfill as shown on the drawings.
  - .1 Gradations to be within limits specified when tested to ASTM C136 and ASTM C117. Sieve sizes to CAN/CGSB-8.1.
  - .2 The gradation and physical requirements to be as follows:

Sieve Designation	% Passing
19 mm	100
4.75 mm	35-85
425 um	15-65
75 um	0-12

**Part 3 Execution**

**3.1 EXCAVATION**

- .1 Excavate to lines, grades, elevations and dimensions as directed by Departmental Representative.
- .2 Excavation must not interfere with bearing capacity of adjacent foundations.
- .3 Keep excavated and stockpiled materials safe distance away from edge of excavation as directed by Departmental Representative.
- .4 Restrict vehicle operations directly adjacent to open trenches.

- .5 Dispose of surplus and unsuitable excavated material off site. Any public roads used as haul roads between the excavation area and the spoil area shall be kept free and clean of debris. Maintenance of these roads is to be Contractor's responsibility.
- .6 Do not obstruct flow of surface drainage or natural watercourses.
- .7 Notify Departmental Representative when bottom of excavation is reached.
- .8 Obtain Departmental Representative approval of completed excavation.

### **3.2 BACKFILLING**

- .1 Do not commence backfilling until areas of work have been inspected and approved by Departmental Representative.
- .2 Ensure no frozen material is placed.
- .3 Place material only on clean unfrozen surface, free from snow or ice.
- .4 Place and compact the backfilled granular base as shown on plans.
- .6 Place granular materials using methods which do not lead to segregation or degradation.
- .8 Place material to full width in uniform layers not exceeding 150 mm compacted thickness. Departmental Representative may authorize thicker lifts (layers) if specified compaction can be achieved.
- .9 Shape each layer to smooth contour and compact to specified density before succeeding layer is placed.
- .10 Remove and replace portion of layer in which material has become segregated during spreading.

### **3.3 COMPACTION**

- .1 Compaction equipment to be capable of obtaining required material densities.
- .2 Each lift or layer to be thoroughly compacted by means of packers or mechanical tampers to a relative compaction of not less than 98% Standard Proctor Density for the backfill material at optimum moisture content.
- .3 Shape and roll alternately to obtain smooth, even and uniformly compacted base.
- .4 Apply water as necessary during compaction to obtain specified density.
- .5 In areas not accessible to rolling equipment, compact to specified density with mechanical tampers approved by Departmental Representative.
- .6 Correct surface irregularities by loosening and adding or removing material until surface is within specified tolerance.
- .7 For underwater compaction provide adequate compaction by means of backhoe bucket or other approved method.

### **3.4 SITE TOLERANCES**

- .1 Finished granular surface to be within plus or minus 10 mm of established grade and cross section but not uniformly high or low.



**3.5 PROTECTION**

- .1 Maintain finished granular surface in condition conforming to this section until granular surfacing is accepted by Departmental Representative.

**3.6 CLEANING**

- .1 Leave work area clean at the end of each work day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment.

**3.7 HAUL ROADS**

- .1 Be solely responsible for construction and maintenance of haul roads. Remove haul roads from site upon completion of project. No separate payment to be made for construction, maintenance and removal of haul roads.
- .2 Contractor to be responsible for obtaining approval from all applicable agencies for using and construction access roads to site.
- .3 Contractor to repair any damage caused to roads or property as a result of hauling operations.

**END OF SECTION**