REGISTRATION PURSUANT TO CHAPTER E-14.2

OF THE ENVIRONMENTAL PROTECTION ACT, SNL 2002

FOR THE DEMOLITION OF THE EXISTING BRIDGE AND CONSTRUCTION OF A NEW BRIDGE ON RUSHY POND BROOK ROUTE 1

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PROPONENT:

i. Name of Corporate Body

Department of Transportation and Infrastructure
Government of Newfoundland & Labrador

ii. Address

5th Floor, Confederation Building (West Block)
St. John's, NF
A1B 4J6

iii. Chief Executive Officer

Cory Grandy
Deputy Minister
729-3676

iv. Approval for Environmental Assessment Submission

_____ June 30, 2021

Greg Clarke Date
Assistant Deputy Minister
Assistant Deputy Minister of Transportation and Infrastructure
729-3796

v. Principal Contacts for the Purpose of Environmental Assessment

William Hillier
Director,
Highway Design and Construction
729-6610

Ken Hannaford
Senior Environmental Planner
Highway Design and Construction
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THE UNDERTAKING:

(i) Name of the Undertaking

This submission is for the demolition of the current deteriorated bridge and construction of a new bridge, including a temporary bypass bridge for Route 1. Its location falls on Rushy Pond Brook, a scheduled salmon river approximately 2.7 km west of Grand Falls-Windsor.

(ii) Nature of the Undertaking

The construction of a permanent bridge and temporary bridge crossing on Rushy Pond Brook on Route 1, km 436. The temporary bridge and bypass will be constructed and opened to traffic, the existing bridge will be closed and removed, the new bridge will be constructed, and the temporary bridge will be removed upon commissioning of the new bridge

(iii) Purpose / Rationale / Need for the Undertaking

The purpose of this project is to replace the aged and deteriorated bridge on Rushy Pond Brook.

Description of the Undertaking

Geographic Location

The project location is on Route 1 at the mouth of Rushy Pond Brook. The coordinates are Latitude 48.941523°, Longitude -55.715825°.

There are no additional routing alternatives to replacing the bridge. It is an essential link on Route 1 and any alternative would not be feasible.

Physical Features.

As Rushy Pond Brook is a Scheduled Salmon River, detailed design work and existing environmental conditions determine the type of structure which will be required and what modifications have to be incorporated into the structure to allow for the necessary fish passage and environmental protection. The existing environment at the site consists of the outlet of Rushy Pond where the Trans Canada Highway crosses the brook approximately 75 meters downstream. It was previously disturbed with the installation of the original bridge and not pristine. It is a slow-moving brook with barely discernable flow and aquatic vegetation being more of a steady and empties into the Exploits River 1.2km downstream. It is in part of the Central Newfoundland Forest, North-central Subregion. Fish species include Atlantic salmon, brook trout, three-spined stickleback, and American eel. Moose, snowshoe hare, muskrat, otter, mink, black bear, beaver and lynx occur throughout this subregion. Potential receptors include travelers on the TCH, Grand Falls Golf Club ~300m to the south, farmland ~150m to the northwest and the Town of Grand Falls Windsor. The existing bridge was built in 1965 with two 23.75m spans with concrete abutments and a concrete center pier. The overall width is 9.75m. It contains reinforced concrete abutments with a piled foundation, reinforced concrete center pier, pre-stressed concrete girders (two spans), concrete curbs, reinforced concrete wing walls, and aluminum handrails. The structures overall condition is reported as poor requiring immediate repairs. The most recent inspection, along with the evident deterioration of the structure led to the decision of replacing the existing bridge with a new one. The new bridge will be two span roughly 50m long and 14m

wide. The new structure is to be placed in the same location as the existing.

During the construction there will be a diversion located upstream from the existing bridge. The driving surface on approach to the temporary bridge structure is 8.6m in width (two lane) with an approximate length of the diversion at 496m. The crossing will consist of a Mabey Panel Bridge with a 33.54m span x 9.870 width. Special attention will be given to erosion and scour protection at inlet and outlet control areas.

The area needing to be cleared is within the existing Right Of Way and has been previously altered. It consists of grasses, sedges, and other herbaceous plants. The reach of the stream is a migration corridor (Beak Type 4) located at the outlet of Rushy Pond. The substrate consists of sand, silt and organic matter due to low velocities.

The Department of Transportation and Infrastructure will consult with the Water Resources Division of the Department of Environment and Climate Change to ensure that the best available data is utilized to design the bridge. The Water Resources Division's Environmental Guidelines for work around watercourses will be used during the design and construction phases.

The bridge will be designed and constructed in consultation with Fisheries and Oceans Canada (DFO). A qualitative assessment of fish habitat along upstream and downstream areas adjacent to the crossing will be carried out. The bridge will be designed and constructed to have minimal impact on fish and fish habitat and in accordance with:

- DFO's Guidelines for Protection of Freshwater Fish Habitat in Newfoundland and Labrador (1998);
- DFO's Measures to avoid causing harm to fish and fish habitat (http://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures/measures-mesures-eng.html) and
- fish passage guidelines and other applicable guidelines and Fact Sheets

Construction

The project will encompass two parts:

1) Temporary Diversion:

A temporary diversion is proposed to be constructed parallel to and upstream of the existing bridge. The diversion shall have a 10.5 meter subgrade width and is to be constructed out of clean rock fill with 1.5:1.0 side slopes. Total length of the diversion is approximately 496m containing a 33.54m span Mabey Panel Bridge with a 9.870m width. The finished elevation of the temporary structure will be comparable to the existing structure, providing ample hydraulic capacity. Upon completion of the permanent structure the temporary diversion shall be completely removed and any disturbed ground within the existing right of way will be rehabilitated.

2) Existing/Proposed Structure:

The existing structure was built in 1965 and is a two span, pre-stressed concrete girders structure with concrete abutments with a piled foundation in the substructure. There is a reinforced concrete center pier designed to the HS-20 design load code. The width of the existing travel way is approximately 9.75m. The structure is located on Route 1 12.7 km to the west of the town of Grand Falls-Windsor. The intent of this project is to replace the existing bridge on the same alignment. The horizontal alignment is to remain unchanged. The proposed replacement is comprised of a two span 50m x 14m (overall width) bridge constructed using girders supported by concrete abutments and steel piles

The Contractor shall submit a demolition plan for the old bridge to the Resident Engineer/Senior Environmental Planner for review and approval prior to commencing demolition work. Demolition and removal of the existing structure shall be carried out such that no significant debris enters the river. Busting of the existing structure while in place shall not be permitted. The Contractor shall ensure that all waste material from the bridge demolition is disposed of in accordance with the *Environmental Protection Act, SNL2002 CHAPTER E-14.2* and prior approval by the Department of Environment and Climate Change. The Contractor's Demolition Plan shall clearly demonstrate that there is compliance with all environmental requirements for the project and adhere to the Contractor's

Responsibilities – Regulatory Agencies Section 805.

All work under this item will be in accordance with Section 919.04 of the Departments Specifications Book, MAINTENANCE OF TRAFFIC, except where superseded by the requirements of this or another Supplementary General Conditions. The Contractor shall construct a temporary paved bypass to a RLU 70 (Modified) standard to accommodate traffic. This work will also involve the design and installation of a 496m, two lane temporary diversion upstream of the existing bridge. The temporary bridge and substructure shall be designed in accordance with CAN/ CSA S6-19, "Canadian Highway Bridge Design Code".

Fording or moving equipment through the river, or across any other watercourse, will be strictly prohibited. Temporary culverts or temporary bridging are preferred at such locations where frequent fording would be required.

Bridge construction will meet RAU 100 standards and the design load is CL-625. The Department of Transportation and Infrastructure will be improving upon the hydrology of this crossing by increasing the opening (end area) and raising the grade of the new permanent structure to allow for 100 year flooding projections. It will be performed by contract forces. The various phases will involve:

(a) field surveys;
(b) temporary crossing installation;
(c) demolition of old bridge
(d) new bridge construction;
(e) clean-up and rehabilitation.

The potential sources of pollution during construction would be limited to the possible siltation of the river during subgrade construction. To prevent siltation within the river during construction the contractor shall use the mitigation in the Specification book, Sections 815, 816, 817, 818 and 845 (Appendix B). In addition, the potential exists for hydrocarbon spillage from temporary fuel storage facilities. Contractors will be advised of the environmental requirements for stream crossings and for hydrocarbon spill reporting and the necessity of strict compliance.

Owner's Policy (Division 8, General Specifications Book, 2011)

To ensure protection of the environment, the work at all times shall be subject to inspection by the staff of relevant municipal, provincial and federal agencies. Normally, all inspections other than by the Engineer will be arranged in advance through the Engineer. Any specific matters relating to environmental protection will be dealt with between the Contractor and the Engineer.

Any violations of environmental permits or authorizations or any environmental related incidents which are observed by inspectors representing regulatory agencies are to be reported by them prior to leaving the site to the Engineer. Except in emergency situations, environmental protection measures required by other agencies must be approved by the Engineer prior to implementation by the Contractor.

It is Owner's policy to protect the environment along the route of the project, in areas adjacent the route, and in associated work areas such as pit or quarry sites. DTW is committed to cost-effective environmental protection measures that will prevent serious or irreversible environmental damage through the planning and implementation phases of the project.

Protection of Vegetation and Wetlands

The Contractor shall be made aware that the work required in and around water crossings shall be performed with due care and caution so as to prevent undue disturbance to adjacent vegetation and the environment from construction activities and off Right Of Way travel (Section 850 Appendix B). Immediately following and during some construction activities, the Engineer may identify areas requiring seeding/sodding or stabilization by a method to prevent erosion. Damage or disturbance of vegetation and/or wetlands outside the ROW shall be re-vegetated and/or restored to the satisfaction of the Resident Engineer at the Contractor's expense (Section 855 Appendix B).

Storage and Handling of Fuels and Other Hazardous, Toxic, or Dangerous Material

All storage tank systems must be registered under and in compliance with Newfoundland Regulation 58/03, The Storage and Handling of Gasoline and Associated Products Regulations, 2003 before commencing operation. Registration does not apply to storage tank systems of a capacity less than 2500 litres that are connected to a heating appliance. Contractors shall supply verification of storage tank registration to the Engineer prior to the commencement of work (Section 820 Appendix B).

Contractor Environmental Mitigation Plan

A Contractor Environmental Mitigation Plan (**CEMP**), completed by the contractor and approved by DTW before work commences, is required for this project.

Elements required in a **CEMP** are:

- Pre-construction planning, including the identification project-environmental interactions (e.g., Valuable Ecosystem Components including: public and worker safety, wildlife, habitat, plants, resource users, etc.);
- Detailed environmental mitigation measures to avoid negative or irreversible environmental impacts;
- Contingency plans for unplanned events;
- List of DTW and Contractor contacts and reporting numbers; and
- Decommissioning Plan that includes site rehabilitation measures.

The potential for adverse environmental impacts during construction will be minimized as all construction activities will be undertaken in accordance with the environmental requirements of the Department of Transportation Specification Book for transportation projects (Appendix B).

Prohibitions

The following are directives for the Owner and Contractor in carrying out this project. Reference is also provided to the Section where this prohibition is located in Division 8, Appendix B herein.

- Contractors, subcontractors and their personnel shall not harass wildlife or waterfowl or unduly disturb fish (Section 805);
- No pesticides or other products shall be used without prior approval of the Owner and the Department of Environment and Climate Change (Section 810);
- The Contractor shall not wash equipment or containers, nor dump herbicides in or near any fresh or salt water bodies, or at any location where the herbicide may enter a body of water (Section 810);
- No person shall discharge into a body of water any sewage or effluent (Section 815);
- The use of equipment or machinery in a watercourse or water body is not permitted (Section 815);
- The contractor shall not ford a watercourse without prior approval from the Resident Engineer (Section 815);
- Silted or muddy water is not permitted to be released into any watercourse or water body or into any ditch or areas that leads directly to a watercourse or waterbody (Section 815.07);
- Smoking shall be prohibited within 10 m of a fuel storage area or during refueling operations (Section 820.03);
- Fueling or servicing of mobile equipment shall not be allowed within 100 m of a watercourse, water body, or designated wetlands (Section 820.03);
- The Contractor shall ensure that no servicing or washing of heavy equipment occurs adjacent to watercourses and designated wetlands. Fueling, servicing or washing of equipment shall not be allowed within 100 m of a watercourse (Section 820.04);
- No waste material shall be deposited in any watercourse or wetland (Section 825.01);
- There shall be no open burning of waste material, slash or grubbing material onsite. Rubber tires, waste oil, or similar material shall not be used to ignite slash or used to maintain the burning operation (Section 835);

- Unnecessary cutting of trees is to be avoided. Care will be taken during construction to prevent damage to trees and shrubs adjacent to the flagged clearing limits which are to remain after construction (Section 850);
- The Contractor shall not use living trees as survey marks and shall not cut blazes or otherwise mark live trees except with removable surveyor's tape and/or tags (Section 850);
- The Contractor shall limit equipment travel to the surveyed right-of-way and existing municipal and provincial roads. Use of equipment of any type is not permitted outside the clearing limits of the right of way without prior approval (Section 850); and
- Should any archaeological remains be encountered, such as stone, bone or iron tools, concentrations of bone, fireplaces, house pits and/or foundations, work in the area of the find shall cease immediately in accordance with the Historic Resources Act (RSNL1990 CHAPTER H-4) (Section 860).

Operation

The bridge is a permanent operation. Winter maintenance will consist of snow clearing and the application of sand and salt for ice control.

The temporary bridge will serve to allow traffic to continue during the construction of the new bridge. It will be removed once the new bridge is open to traffic.

Occupations

The various types of occupations anticipated for this project include:

(a) Civil Engineers;
(b) Structural Engineers; 2231
(c) Engineering Technicians; 2231
(d) Road Surveyors; 2154
(e) Heavy Equipment Operators; 7521
(f) Drillers and Blasters; 7372
(g) Carpenters; 7271
(h) Heavy Equipment Mechanics; 7312

(i) Labourers; 7621
(j) Truck Drivers; 7511
(k) Concrete Finishers; 7282
(l) Concrete Technicians; 7282
(m) Material Technicians and Engineers; 2231
(n) Steel Erectors. 7236
(o) Senior Environmental Planner 2121

Contract completion is expected to be September 30, 2022. There is an estimate of approximately 50-100 general construction workers during the course of building. Specialities may include 1-2 welders (2 weeks estimated), 5-10 rebar tiers (1 month estimated), 1-2 crane drivers (2 months estimated). All of the above could change depending on the contractor and when tender is awarded. Numbers and duration of employment of individuals can't be determined as the winning bidder, the Contractor, has the responsibility of choosing their own employees. This occurs after the project goes to tender which takes place only after the project receives approval from the EA process.

Project-related Documents

- Environmental Protection Plan and Contractor Environmental Mitigation Plan.
- Department of Transportation and Infrastructure Specifications Manual

APPROVAL OF THE UNDERTAKING

The following is a list of the permits, licences, approvals that may be necessary for this project:

MAJOR REGULATORY APPROVALS BY TYPE AND AGENCY

Type of Permit	Agency
1. Stream crossing approvals	Dept. of Fisheries & Oceans
3. Stream crossing approval	Water Resources
4. Fuel storage & handling	Government Service Centre
5. Solid waste disposal	Government Service Centre
6. Commercial Cutting	Fisheries and Land Resources
7. Environmental Assessment	Municipal Affairs and Environment

SCHEDULE

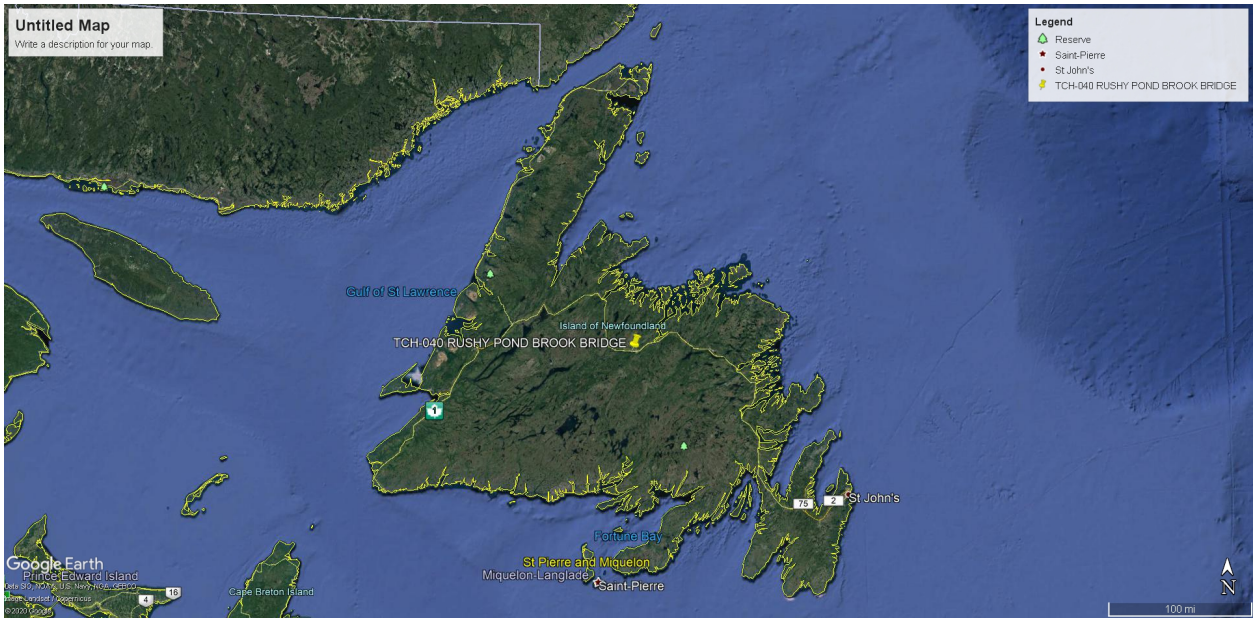
The Department of Transportation and Infrastructure would like to complete the requirements of the Environmental Assessment Act and seek approval for the project by 2021 03 31. A tender call could take place in spring of 2021 with construction starting shortly after.

FUNDING

The project is approximately $7 million and will be cost shared 50/50 with the Federal Government under the Disaster Mitigation and Adaptation Fund. The provincial portion (50%) of the project will likely be funded under the provincial capital program.

Appendix A

General Project Details



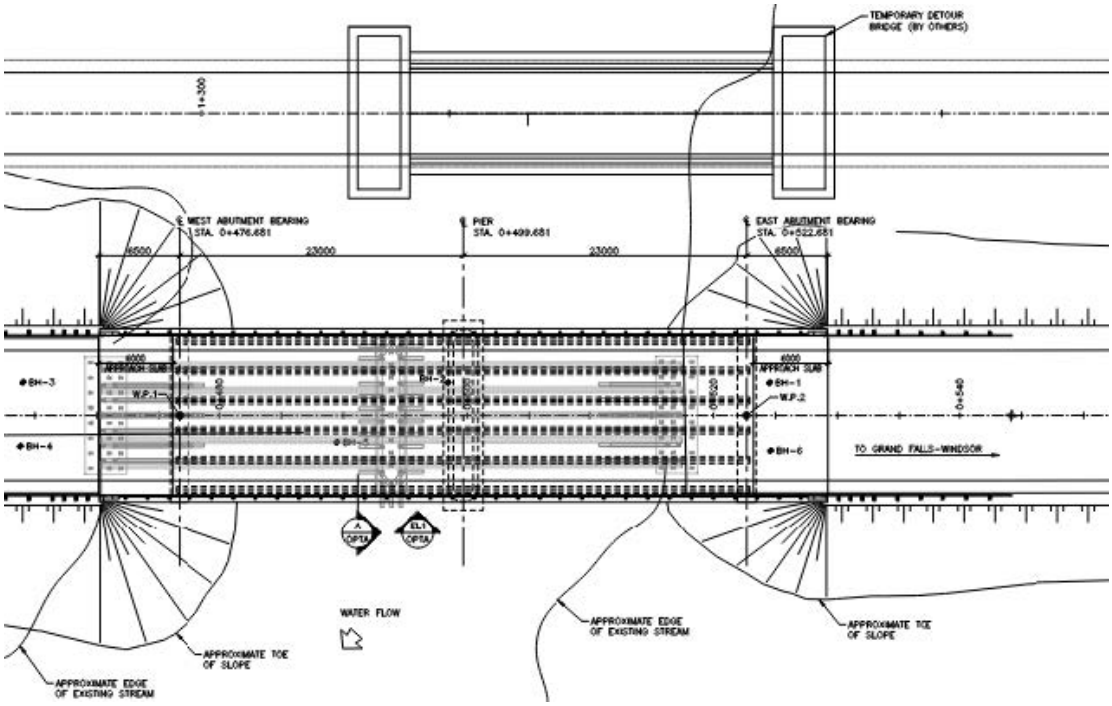
Map 1: Location on Island

Map 2: Close up of site

Map 3: Close-up of Bridge Site

Photo 1: Upstream looking East

Photo 2: Upstream looking West



Bridge and Temporary Crossing Plan

Appendix B

Division 8: General Environmental Requirements

DIVISION 8
GENERAL ENVIRONMENTAL REQUIREMENTS

INDEX

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801	Owner's Policy	1
805	Contractor's Responsibilities - Regulatory Agencies	2
810	Use of Herbicides for Brush Control Operations	6
815	Protection of Watercourses and Water Bodies	5
816	Silt Fence	2
817	Check Dam Sediment Trap	2
818	Floating Silt Curtain/Turbidity Barrier	2
820	Storage & Handling of Fuels and Other Hazardous, Toxic or Dangerous Material	2
825	Waste Management	1
830	Marshalling Yards & Temporary Work Camps	1
835	Forest Fire Protection	1
840	Dust Control	1
845	Equipment Operation & Prevention of Erosion and Siltation	2
850	Protection of Vegetation and Wetlands	2
855	Re-vegetation	2
860	Protection of Historic Resources	1
865	Other Environmental Requirements	1

SECTION 801
OWNER'S POLICY

To ensure protection of the environment, the work at all times shall be subject to inspection by the staff of relevant municipal, provincial and federal agencies. Normally, all inspections other than by the Engineer will be arranged in advance through the Engineer. Any specific matters relating to environmental protection will be dealt with between the Contractor and the Engineer.

Any violations of environmental permits or authorizations or any environmental related incidents which are observed by inspectors representing regulatory agencies are to be reported by them prior to leaving the site to the Engineer. Except in emergency situations, environmental protection measures required by other agencies must be approved by the Engineer prior to implementation by the Contractor.

SECTION 805
CONTRACTOR'S RESPONSIBILITIES - REGULATORY AGENCIES

The Contractor shall ensure that its employees, Sub-contractors and their employees, machinery and equipment operators, and truckers comply with the conditions of the contract and with all applicable environmental laws, regulations, permits, and requirements of federal, provincial and municipal authorities, and such other rules and regulations as the Owner may establish.

Contractors, Subcontractors and their personnel shall not harass wildlife or waterfowl or unduly disturb fish. Any contravention of environmental requirements, including employee actions accidental or otherwise, resulting in environmental damage shall be reported to the Engineer without delay.

The Contractor may be required to obtain all or some of the following permits where such are required:

MAJOR REGULATORY APPROVALS BY TYPE AND AGENCY

TYPE OF PERMIT	**AGENCY**
1. Stream Crossing Authorizations	Fisheries and Oceans Canada Water Resources Division Department of Environment
2. Wood Cutting/Clearing	Forestry Division, Department of Natural Resources
3. Burning Permit	Forestry Division, Department of Natural

	Resources
4. Fuel Storage/ Handling	Government Services Center, Department of Government Services
5. Water Supply/ Sewage Disposal	Government Services Center, Department of Government Services
6. Asphalt Plants	Government Services Center, Department of Government Services
7. Solid Waste Disposal	Local Municipal Authority
8. Quarry or Pit Operations	Mineral Lands Division, Department of Natural Resources
9. Structures at Navigable Waters	Canadian Coast Guard, Transport Canada
10. Herbicide Application	Pesticide Control Branch, Department of Environment and Conservation
11. Stream Crossings (Designed by the Contractor)	Water Resources Division, Department of Environment and Conservation

The Contractor shall obtain all other permits and approvals which may be necessary to comply with government laws and regulations. Prior to the commencement of specific work elements, the Contractor shall immediately provide the Engineer with two copies of all permits.

Contractor's failure to comply with the regulations of any authority having jurisdiction over the works, or part thereof, or any aspect of the performance of the work and the manner of carrying out the work, will entitle and result in the Owner appointing such engineer, engineers, compliance officer or officers as may be necessary to more fully cause compliance by the Contractor with the requirements of the relevant regulatory authority.

The Owner may thereafter, and for so long as the Owner may keep such engineer, engineers, compliance officer or officers, on the site of the works, deduct from the progress payments otherwise due to the Contractor the costs including but not limited to payroll, payroll burdens, accommodations, meals, and transportation costs associated with the work of such engineer, engineers, compliance officer or officers as the case may be. The Contractor shall have no right to dispute the Owner's right to appoint such engineer, engineers, compliance officer or officers, the reasonableness of the deduction of such costs or the amount thereof and the Engineer's

certificate of the amount of such costs shall be final and binding upon the Contractor and the Owner.

SECTION 815
PROTECTION OF WATERCOURSES AND WATER BODIES

INDEX
815.01 SCOPE
815.02 LEGISLATIVE REQUIREMENTS
815.03 FORDING OF WATERCOURSES
815.04 CLEARING AND/OR GRUBBING ADJACENT TO WATERCOURSES
815.05 GENERAL PROCEDURES FOR INSTALLING WATERCOURSE CROSSINGS
815.06 USE OF FRESH CONCRETE IN OR NEAR BODIES OF WATER
815.07 CONTROL AND TREATMENT OF SILTED WATER
815.08 FILL PLACEMENT AT WATER BODIES

815.01 SCOPE

This specification covers the environmental requirements for work being carried out at watercourses and water bodies. It includes references to Federal and Provincial Legislation and prescribed methods and procedures to employ when carrying out such work as culvert or bridge installations, stream diversions, fording, fill placement at water bodies, and any other work which may alter or impact any watercourse or water body, or the quality of the water therein.

815.02 LEGISLATIVE REQUIREMENTS

The Contractor shall be aware of all Federal and Provincial Legislation governing the protection of watercourses and water bodies and all revisions and amendments to this legislation.

815.02.01 PROTECTION OF INLAND FISHERIES ENVIRONMENT

All permanent or temporary works or undertakings which are proposed for watercourses or water bodies constituting fish habitat require authorization from the Fish Habitat Management Branch of the Department of Fisheries and Oceans Canada at least two weeks prior to the commencement of any work. The Contractor is required to obtain approval for all temporary stream crossings and provide the Engineer with two copies prior to any work.

Application forms for authorization for works or undertakings affecting fish habitat are available at Department of Fisheries and Oceans Canada offices located at St. John's, Grand Bank, Grand Falls, Goose Bay, and Corner Brook.

Contractors are referred to the Department of Fisheries and Oceans Canada publication entitled "Resource Road Construction - Environmental Guidelines and Design Criteria", latest edition, (and to other technical information). The DFO “fact sheets” contain recommended guidelines for culvert installations, road and bridge construction, and other works. They include mitigative measures and procedures intended to assist Contractors in minimizing impacts on fish and fish habitat.

Contractors are advised that Environmental and Fisheries regulations require that any work done in or near a watercourse, deemed to be viable fish habitat, must be restricted to the minimum of disturbance. The establishment of temporary and permanent buffer zones are required. (Reference, Standard Drawing No.1237). Great care must be taken during construction not to harmfully alter, disrupt, or destroy fish habitat or to deposit any substance which may be harmful to fish habitat in or near any watercourse where it may enter the watercourse. Culvert pipes must be constructed, according to the requirements of the applicable permits, to allow free movement of fish.

Contractors are advised to refer to the Fisheries Act with particular attention to:

- Section 35 - Outlines required authorization for work or undertaking which may affect fish habitat.
- Section 36 - Prohibits the deposit of a harmful substance of any type into water frequented by fish.
- Section 37 - Powers of the Minister for the provision of information such as: plans, specifications, studies, etc.; and to require any modifications to such plans and/or related information.
- Section 38 - Powers of a Ministerial Inspection.
- Sections 40-42 - Enforcement and Penalties.

815.02.02 THE ENVIRONMENTAL CONTROL (WATER AND SEWAGE) REGULATIONS

Contractors shall maintain compliance with the Environmental Control (Water and Sewage) Regulations, 2003 or latest edition. This legislation is administered by the Water Resources Division of the NL Department of Environment.

No person shall discharge into a body of water any sewage or effluent.

815.02.03 THE WATER RESOURCES ACT DEPARTMENT OF ENVIRONMENT

Where the Contractor must carry out any alteration of a body of water **which is not required specifically as part of the contractual work with the Department of Transportation and Infrastructure,** the Contractor must obtain a Permit from the Department of Environment and Conservation before carrying out the work. Alterations to watercourses and water bodies such as culvert installations, bridges, stream diversions, rock fill placement in water bodies, etc., which are typically required as part of the contractual work are authorized and administered by DT&W and do not require separate approval from the Department of Environment and Conservation. All such alterations to bodies of water must be carried out according to established procedures of the regulatory agencies so as to prevent pollution or damage to the environment.

The Contractor is referred to the following **Environmental Guidelines** of the NL Department of Environment and Conservation, Water Resources Division, regarding construction procedures at watercourses:

Chapter	Title	Chapter	Title
3	WATERCOURSE CROSSINGS	7	DIVERSIONS, NEW CHANNELS, AND MAJOR ALTERATIONS
4	BRIDGES	9	PIPE CROSSINGS
5	CULVERTS	13	GENERAL CONSTRUCTION PRACTICES
6	FORDING		

815.03 FORDING OF WATERCOURSES

The use of equipment or machinery in a watercourse or water body is generally not permitted. Should it be necessary for equipment to ford a watercourse, then the approval of the Resident Engineer is required for the specified equipment only and at a designated location. The same crossing point shall be used each time that a fording is required. When extensive or frequent crossing of a watercourse is necessary, a temporary culvert or bridge installation may be required instead of fording. The Contractor is referred to the NL Environmental Guidelines

Chapter 6, “Fording” of the Dept. of Environment and Conservation, regarding the selection, site preparation, and use of fording sites. The Contractor shall discuss all proposed fording sites with DT&W a minimum of 5 working days before any fording activity. Site selection require the written approval of the Engineer.

815.04 CLEARING AND/OR GRUBBING ADJACENT TO WATERCOURSES

The Engineer shall mark limits for clearing and grubbing adjacent to watercourses. Buffer zones of undisturbed vegetation shall be maintained at watercourse crossings as marked in the field. (Reference, Standard Drawing No.1237, Typical Temporary and Permanent Buffer Zones at Stream Crossings.) A permanent buffer zone shall be maintained both sides of the construction zone at watercourse crossings, wherein, no disturbance or cutting of vegetation is to take place. A temporary ungrubbed buffer zone shall be maintained on both sides of the watercourse, unless otherwise directed by the Engineer, within the construction zone at watercourse crossings until such time as the installation of the crossing is to be carried out. The Contractor shall use appropriate mitigative measures such as the use of silt fencing, sedimentation basins and take-off ditches to control sediment laden runoff from entering watercourses.

815.05 GENERAL PROCEDURES FOR INSTALLING WATERCOURSE CROSSINGS

The Contractor shall present to the Engineer for approval, a plan for the construction of unwatering systems including diversion systems, pumping systems, settling and/or filtration systems, a minimum of **3 working days** prior to the start of any work at the site.

A pre-construction meeting shall be convened on-site between the Contractor and the Engineer to review environmental protection measures and associated contract details pertaining to the watercourse crossing, prior to any work being carried out at the proposed crossing site.

All work carried out at watercourses shall be performed in the dry and with due care and caution so as to prevent unnecessary disturbance or impact on adjacent land or downstream areas. Where watercourses are deemed fish habitat, work within the channel is generally prohibited between September 15 and June 1, on the island portion of the province, and between September 1 and June 30 for Labrador, unless otherwise approved by DFO and the Resident Engineer. The Contractor shall carry out all work in and around watercourses in accordance with all Federal and Provincial permits and requirements, the relevant sections of the DT&W Specifications Book, and the contract drawings.

The Contractor shall give **3 working days** notice prior to any in stream or near stream grubbing or excavation.

Buffer zones shall be established and maintained as described in section 815.04.

An approved cofferdam shall be installed at the low end of the construction zone to collect all site water which is to be disposed of in an approved manner. (See Section 815.07 Treatment of Silted Water).

The operation of heavy equipment shall be confined to dry stable areas in order to prevent the generation of mud and silted water. All flow shall be diverted or pumped around or through the

work area, by a means acceptable to the Engineer, so as to maintain flow in the watercourse immediately below the site, prevent erosion, and maintain acceptable water quality. The flow diversion system shall have sufficient freeboard to be capable of accommodating rain events or provision shall be made to safely discharge elevated flows without causing washouts of constructed works, erosion, or siltation in downstream areas. The discharge location of the pumping or diversion system shall be stabilized to prevent erosion. All unwatering operations shall be constantly monitored by the Contractor.

Work should be carried out from the downstream section of the work area and progress to the upstream.

The Contractor shall ensure that fish are not left stranded in the work area at the time the diversion system is made operational. All stranded fish shall be removed by appropriate means and quickly returned to the watercourse below the construction area to prevent mortalities. An impermeable cofferdam of non-erodible material, such as sandbags and sheet plastic, shall be constructed at the outlet area of the construction zone to prevent any silted water from entering downstream areas and to assist in unwatering operations.

The location, size, construction, and operation of sedimentation basins shall be carried out according to Department specifications or as directed by the Engineer and so as to achieve adequate settling parameters within the basins and ensure that discharged water from the basins, which is entering any watercourse, meets the water quality standards set forth in the Environmental Control (Water and Sewage) Regulations, (See Section 815.02.02).

Operation of the sedimentation basins shall be continuously monitored by the Contractor to ensure proper functioning and maintenance.

Excavation shall be carried out to the limits marked in the field by the Engineer. All excavations shall be carried out using a tracked excavator which will operate within the limits of the work area or as directed by the Engineer.

Excavated material shall be removed from the site and stockpiled at an approved location where it will not enter any watercourse.

When corrugated steel pipes are installed, impervious material shall be placed under the invert of the pipe and around the haunches of the pipe at the inlet area so as to ensure that all flow is confined within the pipe, particularly during low flow conditions, and not lost into the porous fill zones outside the pipe.

All sections of newly constructed channel and pipe inlet and outlet areas shall be adequately stabilized so as to prevent destabilization, erosion, or scouring of the channel and fill embankments. Rip-rap on road slopes shall be placed concurrently with backfilling operations on the pipe so that inlet and outlet areas are protected immediately from erosion.

Any disturbed areas or exposed soils within the high water zone of the watercourse shall be stabilized by such means as placing rip-rap or well staked sodding within 48 hours of completion of backfilling operations. Other adjacent disturbed areas shall be rehabilitated by sodding or seeding, or as directed by the Resident Engineer.

Upon completion of the work, flow shall be introduced slowly into the new channel or watercourse crossing. Any silted water generated as a result shall be prevented from entering downstream areas of the watercourse, and pumped or treated as required.

Where baffles are required as part of a culvert installation all activities associated with the baffle pipe installation including the diversion of all water flow from the natural watercourse into the baffled pipe, abandonment of any temporary stream diversion system and rehabilitation of the surrounding disturbed area shall be carried out efficiently without delay so as to not interfere with fish migration.

All construction related waste materials shall be removed from the work site(s).

Sedimentation basins shall be pumped dry and backfilled with the original excavated material and compacted. Hand seeding, hydroseeding and/or sodding of disturbed areas shall be carried out as directed by the Resident Engineer. Additional rehabilitation may be required by the Engineer.

815.06 USE OF FRESH CONCRETE IN OR NEAR BODIES OF WATER

When concrete is placed in or adjacent to a watercourse or water body, all necessary precautions shall be taken to prevent the concrete from adversely affecting water quality. Whenever possible, fresh concrete shall not come in contact directly with the waters of a watercourse. Standing water zones shall be drawn down prior to placing fresh concrete. All form work shall be well secured and made tight to prevent leakage of fresh concrete into any adjacent waters. Where tremmie concrete is required, the work shall be carried out under the specific directions of the Engineer. The washing of concrete delivery trucks or chutes is not permitted within 100 m of any watercourse or water body. All necessary precautions shall be taken when handling related substances such as form coatings and concrete admixtures to prevent any spill or leakage of these substances.

815.07 CONTROL AND TREATMENT OF SILTED WATER

Silted or muddy water is not permitted to be released into any watercourse or water body or into any ditch or area that leads directly to a watercourse or water body. Runoff from adjacent areas shall be channeled, piped, diverted, or confined to prevent the water from entering construction zones and becoming polluted. Where due to rain events, runoff from construction zones and areas of exposed soils contains mud or silt, appropriate measures shall be taken by the Contractor to confine, settle, or channel such water so that adjacent watercourses or water bodies are not

adversely affected. Such measures may include the provision of mud basins, settling basins, ditch blocks, silt fencing, temporary ditching, or other means necessary to prevent pollution. Silted runoff water or water released or pumped from construction zones may be discharged to an approved vegetated area where ground absorption will occur or to an approved settling area or to a settling basin constructed in accordance with contract drawings or as directed by the Engineer.

815.08 FILL PLACEMENT AT WATER BODIES

Fill material placed in or at water bodies shall be clean blasted rock. Where in the opinion of the Engineer, significant silty bottom sediments will disperse with potential of creating water quality problems, the fill zone shall be isolated from the remainder of the water body by such means as a silt curtain as approved by the Engineer. Rock shall be placed into the water zone so as to create the least amount of disturbance of bottom sediments. Rock shall be placed along the outer edge of the fill zone to close off and isolate the fill zone from the rest of the water body. Fill placement shall proceed with runs of rock along the inside of the first outer run of fill. Successive runs of rock fill shall be placed in this manner until the zone is filled back to the inner fill limits. Height of the placed rock fill shall be maintained a minimum of 300 mm above water level during fill operations. Equipment shall not operate in standing water zones. Removal of displaced sediments and/or bog shall be carried out as directed by the Owner. Pumping of water from the fill zone to a designated area may be required by the Owner to reduce water levels in the fill zone and prevent movement of silted water through the rock fill back into the water body.

SECTION 816
SILT FENCE
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816.01 SCOPE
816.02 MATERIALS
816.03 CONSTRUCTION
816.04 MAINTENANCE AND CLEAN OUT
816.05 REMOVAL
816.06 MEASUREMENT FOR PAYMENT
816.07 BASIS OF PAYMENT

816.01 SCOPE

This specification deals with the requirements for the provision, maintenance, and eventual removal of silt fence. Silt Fences are intended for reducing the amount of silt present in run off from highway projects during the construction process.

816.02 MATERIALS

The silt fence shall consist of a filter fabric fence held in place by posts. The filter fabric shall be of a weight of at least 200g/m^2. The fabric shall be at least 900mm wide. The fence posts shall be of sufficient length to support the fabric, be sturdy and be of dimensions of at least 50mm square. The staples shall be sufficiently sturdy to support the fabric for the required life of the fence.

816.03 CONSTRUCTION

The silt fence shall be constructed as shown on Form 1238 "Typical Silt Fence", and placed at the location, or locations, as required by the Engineer.

At the location required by the Engineer, the Contractor shall excavate a trench in a crescent shape across the projected flow path with ends pointing up slope. The trench shall have a width of approximately 100mm, and a depth of approximately 100mm.

The posts shall be secured at 3m intervals on the immediate down slope side of the trench.

The filter fabric shall be taken from a continuous roll, and cut to the required length. The filter fabric shall be stapled to the upstream side of the stakes, with 200mm of fabric extending into the trench and spread over the trench bottom.
The trench shall be backfilled and compacted to secure the fabric in the ground. The silt fence shall be properly constructed to ensure continuous protection along its perimeter. Under no circumstances are silt fences to be installed in a watercourse or waterbody.

816.04 MAINTENANCE AND CLEAN OUT

The Contractor shall maintain the silt fence, until such times as the Engineer requires that the silt fence be removed.
The Contractor shall carry out such silt and debris clean out, as required, in order that the silt fence continues to perform its function of reducing the amount of silt present in the run-off. Should the fabric become clogged, and rendered useless, then the Contractor shall replace the fabric with new fabric at his own expense.

816.05 REMOVAL

The Contractor shall remove the silt fence, when required to do so by the Engineer. The posts shall be taken out of the ground and the site cleaned up. Waste materials shall be disposed of in an approved waste disposal area, provided by the Contractor.

816.06 MEASUREMENT FOR PAYMENT

Measurement for payment will be made on the basis of the required length of fence installed, computed in metres rounded to one decimal place.

816.07 BASIS OF PAYMENT

Payment at the contract unit price for silt fence shall be compensation in full for all materials, labour and use of equipment: to supply the filter fabric, posts and staples, to excavate the trench, to install the posts, to secure the fabric to the posts, to backfill and compact the trench, to maintain and clean out the fence, to replace any worn out filter fabric with new fabric provided by the Contractor at his own expense, to remove the silt fence and posts, dispose of waste materials and clean up the site.

SECTION 817
CHECK DAM SEDIMENT TRAP

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817.03 CONSTRUCTION
817.04 MAINTENANCE AND CLEAN OUT
817.05 DISPOSAL
817.06 MEASUREMENT FOR PAYMENT
817.07 BASIS OF PAYMENT

817.01 SCOPE

This specification deals with the requirements for the provision, maintenance, and eventual disposal of a check dam sediment trap. Check dam sediment traps are intended for reducing the amount of silt present in run off from highway cuts during the construction process.

817.02 MATERIALS

The check dam sediment trap shall consist of rock fill with filter fabric on the upstream face held in place with small shot rock.

The filter fabric, and shall be of a weight of at least 200g/m^2.

The rock fill shall be clean rock, with rock fragments sized between 100 and 150mm.

The small shot rock shall be clean rock, with fragments no larger than 120mm.

817.03 CONSTRUCTION

The check dam sediment trap shall be constructed as shown on Form 1239"Typical Check Dam Sediment Trap". The silty water storage area shall be excavated, and the check dam constructed, at the location as required by the Engineer.

817.04 MAINTENANCE AND CLEAN OUT

The Contractor shall maintain the checkdam, until such time as the Engineer requires that the check dam be removed.

The Contractor shall carry out such silt and debris clean outs as are required, in order that the check dam continue to perform its function of reducing the amount of silt present in the run-off.

817.05 DISPOSAL

The Contractor shall remove the check dam sediment trap, when required to do so by the Engineer.

On removal of the check dam, the fabric shall be disposed of in an approved waste disposal area provided by the Contractor. The ditch shall be cleaned up and graded to the required ditch cross section.

817.06 MEASUREMENT FOR PAYMENT

Measurement for payment will be based on the number of required check dam sediment traps constructed.

817.07 BASIS OF PAYMENT

Payment at the contract unit price for each check dam sediment trap shall be compensation in full for all labour, materials and use of equipment to: excavate the silty water storage area, load the rock fill and small shot rock at the source and haul to the check dam site, supply the filter fabric, construct the check dam as required, maintain and clean out the check dam sediment trap as required, and finally remove the check dam, dispose of the waste materials, clean up and grade the site.

The rock fill and small shot rock shall be paid for under: “Excavation hauled 1km or under - Solid Rock”, Excavation hauled 1km or under - Ditching Solid Rock”, or “Excavation hauled 1km or under - Quarried Rock”, as applicable. However, any additional hand work required to sort the rock fill and the small shot rock to obtain the required size of fragments, and to grade the rock to the required check dam dimensions, shall be included in the payment for the check dam sediment trap.

SECTION 818
FLOATING SILT CURTAIN/TURBIDITY BARRIER

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818.01 SCOPE
818.01.01 General

818.02 MEASUREMENT FOR PAYMENT

818.03 BASIS FOR PAYMENT

818.01 SCOPE

This specification covers the supply, installation, and operation of a floating silt curtain or turbidity barrier.

Specific locations the Silt Curtain is to be used shall be designated by the Engineer.

818.01.01 General

The Contractor and Subcontractor(s) are required to comply with environmental protection measures contained in this section and all applicable environmental protection regulations of Federal, Provincial, and Municipal Authorities.

This specification is to be used in applications where a floating silt curtain/turbidity barrier is specified to be used around the leading edge of the advancing fill for construction operations to control any silt that may be generated from the bottom of the fill or other materials that may be used in construction of the road or other structure in a submerged portion of a water body. The turbidity barrier is to be a floating silt curtain (such as Brockton Equipment/Spilldam, Inc. Siltdam

Type I) meeting the requirements of the Federal Department of Fisheries and Oceans. This item may be designed locally but must adequately control and prevent the migration of silt or other deleterious substances from the work area to the main water body. The turbidity barrier system must be approved with shop drawings/literature stamped by a professional engineer registered in the province of Newfoundland and Labrador submitted prior to its use.

The turbidity curtain is to consist of the following elements or approved equivalents:304mm diameter flotation, 22oz polyvinylchloride (PVC) float cover, 8mm PVC coated top tension cable, silt film skirt to required depth to reach from water surface to the water body bottom, 9.5mm galvanized ballast chain, polyplate/lacing grommets (ends).

The turbidity barrier is to be anchored at 15m intervals. The anchoring system will consist of Mushroom style anchors or other suitable type anchors for the bottom condition present, yellow inflatable cautionary mooring buoys, and nylon mooring line or approved equivalents. Where navigation conditions are present in the area of the turbidity curtain the cautionary buoys shall be lighted and a plan will be required to be submitted for approval showing where the buoys are to be located.

The turbidity barrier shall be a minimum of 100m in length but may be otherwise specified in the Unit Price Table. The barrier will form a long arc extending from the shoreline approximately 35m, across the work zone (parallel to the shore) approximately 30m, and back to the shoreline for approximately 35m. The barrier is to be installed to reach the bottom of the water body from the water surface. Installation plan can be seen on the drawing titled “Silt and Bubble Curtain”, as shown on Form 1223 of the Specifications.

As the leading edge of the fill advances, and the work site changes, the turbidity barrier will have to be moved and reinstalled. Movement of the turbidity barrier shall be considered incidental to the work and should be included in the price for the turbidity barrier.

In addition to these requirements for use of the turbidity curtain for permanent works in the contract the contractor will be required to use a turbidity barrier for any temporary works requiring installation or removal of fill in the construction in the water body. The contractor may reuse the turbidity barrier required for use for the permanent works installation in the water body for a contract, but at all times during installation or removal of fill in the water a turbidity barrier may be required to be used.

818.02 MEASUREMENT FOR PAYMENT

Measurement will be based on a per contract basis for the Floating Silt Curtain/Turbidity Barrier by the Engineer. Fifty percent of the total of the item will be paid on the progress estimate after

which the silt curtain has been deployed for its intended use, and fifty percent will be paid on the last progress estimate where the in water body construction operation has been completed.

818.03 BASIS OF PAYMENT

Payment for the turbidity barrier will be lump sum. Payment shall be for compensation in full for engineering, design, transportation to site, installation, removal, reinstallation, equipment, labour, and all other materials necessary to complete the above, at the locations indicated to be used on the contract.

SECTION 820
STORAGE AND HANDLING OF FUELS AND OTHER HAZARDOUS, TOXIC, OR DANGEROUS MATERIAL

INDEX

820.01 STORAGE TANK REGISTRATION, INSPECTION, AND REMOVAL

820.02 SPILL REPORTING AND CLEANUP PROCEDURES

820.03 FUEL STORAGE AND HANDLING PROCEDURES

820.04 EQUIPMENT SERVICING PROCEDURES

820.05 USE OF HAZARDOUS, TOXIC OR DANGEROUS MATERIAL

820.01 STORAGE TANK REGISTRATION, INSPECTION, AND REMOVAL

All storage tank systems must be registered under and in compliance with Newfoundland Regulation 58/03, The Storage and Handling of Gasoline and Associated Products Regulations, 2003 before commencing operation. Registration does not apply to storage tank systems of a capacity less than 2500 litres that are connected to a heating appliance. Contractors shall supply verification of storage tank registration to the Engineer prior to the commencement of work.

Storage tank systems shall be operated as per Section 18 of Newfoundland Regulation 58/03 Storage and Handling of Gasoline and Associated Products. This involves, but is not limited to, gauging or dipping, reconciliation of records and the proper maintenance of reconciliation records

for a period of two years. Records shall be maintained for inspection by the Engineer, ESO and/or Government Service Centre Inspectors.

The operator of a storage tank system shall, within 30 days of known abandonment, empty the system of all products, remove the tank and associated piping from the ground, remove any contaminated soil, clean the area and restore the site to the satisfaction of the Engineer and in accordance with the criteria of the Government Services Centre.

820.02 SPILL REPORTING & CLEANUP PROCEDURES

The Contractor, Subcontractors, and their personnel shall take all necessary precautions to prevent the spillage, misplacement, or loss of fuels and other hazardous material.
The Contractor and Subcontractors shall abide by the following measures in the event of the detection of a fuel or hazardous material spill of 70 litres or more:

(i) make every effort to stop leakage and contain contaminant flow;
(ii) immediately upon detection, report spill location and size to the Canadian Coast Guard spill report number 772-2083, Pesticides Control Section 729-3395 and to the Owner; follow up with a full written report containing information on the cause of the spill, remedial action taken, damage or contamination estimate, and any further action to be taken;
(iii) remove contaminant from spill site by absorbent, pumping, burning, or whatever method is appropriate and acceptable to Owner. Clean-up the affected area in accordance with the requirements of the Government Services Centre and then dispose of contaminated debris at an approved waste disposal site.
(iv) take all necessary action to ensure the incident does not recur.

The Contractor shall apply the following criteria in reaching decisions on contaminant and clean-up procedures:
(i) minimize danger to persons;
(ii) minimize pollution to watercourses and wetlands;

(iii) minimize the size of the area affected by a spill; and
(Iv) minimize the degree of disturbance to the area and watercourses during clean-up

The Contractor shall dispose of any soil contaminated by small leaks of oil or lubricating fluids from equipment in a manner approved by the Engineer and in accordance with the criteria of the Government Services Centre. The Contractor shall have on site a suitable quantity of absorbent material such as “Oclansorb” or similar product which can be accessed quickly and effectively in the event of any hydrocarbon spill. The contractor shall advise fuel handling staff of its location and application.

820.03 FUEL STORAGE & HANDLING PROCEDURES

Contractor shall ensure that fuels and hazardous materials are handled only by personnel who are trained and qualified in handling these materials in accordance with manufacturers' instructions and government regulations. The Contractor will be required to verify personnel qualifications as they pertain to this item and provide written confirmation of same to the Engineer. The Contractor shall supply a copy of the product safety data sheet to the Engineer of all hazardous, toxic or dangerous materials or substances which will be used during the course of the contract. Refuelling operations shall be supervised at all times. Under no circumstances shall any refuelling procedure be left unattended by the operator.

Handling and fueling procedures shall be carried out to prevent the contamination of soil or water. Smoking shall be prohibited within 10 m of a fuel storage area or during refuelling operations. Fuelling or servicing of mobile equipment shall not be allowed within 100 m of a watercourse, water body, or designated wetlands. Oils, greases, gasoline, diesel, hydraulic and transmission fluids or other fuels shall be stored at least 100m (horizontal distance) from any water course, water body, or designated wetland unless otherwise approved by the Engineer.

Any above ground fuel containers, with the exception of those exempted under Newfoundland Regulation 58/03, shall be self dyked units that are in compliance with the terms and conditions of the approval of the Government Services Center. Fuel storage areas and non-portable transfer lines shall be clearly marked or barricaded to ensure that they are not damaged by moving vehicles. The markers shall be visible under all weather conditions. The storage, handling and disposal of used oils shall be in accordance with the Used Oil Control Regulations (82-02) under the NL Environmental Protection Act.

820.04 EQUIPMENT SERVICING PROCEDURES

All heavy equipment maintenance shall be carried out by using suitable fluid collection equipment and in a manner which ensures all waste material is collected and suitably disposed of. The Contractor shall ensure that all equipment is mechanically sound to avoid leaks of grease, oil, diesel, gasoline, and hydraulic and transmission fluids. The Contractor shall ensure that no servicing or washing of heavy equipment occurs adjacent to watercourses and designated wetlands. Fueling, servicing or washing of equipment shall not be allowed within 100 m of a watercourse except within a refueling site approved by the Engineer where conditions allow for containment of accidentally spilled fuels. The Contractor shall remove from the work area and properly dispose of all waste oil, filters, containers or other such debris at an approved waste disposal site.

820.05 USE OF HAZARDOUS TOXIC OR DANGEROUS MATERIAL

Toxic construction material e.g., creosote treated timber, shall be stored at least 100 m away from all areas where drainage is directed into any watercourse or wetlands.

Toxic or dangerous substances such as form release agents, fuels, concrete additives (including superplasticisers), and other such substances, shall be transported, stored, and handled with all necessary precautions so as to prevent any spillage from occurring. Drip pans shall be used at locations where such liquids are being drawn off in order to contain any minor spills, and as a safety measure for containment of a significant spillage.

SECTION 825
WASTE MANAGEMENT

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825.01 SOLID WASTE DISPOSAL
825.02 SANITARY FACILITIES/SEWAGE DISPOSAL

825.01 SOLID WASTE DISPOSAL

The Contractor shall collect and dispose of all waste produced by its employees and those of its Subcontractors in a manner approved by the Engineer, and in accordance with the Newfoundland and Labrador Environmental Protection Act, 2002. Through the placement of suitable containers at the site, the Contractor shall collect and dispose of rubbish and domestic garbage generated by employees. During the progress of the work, the Contractor shall keep the areas occupied by it and access to such areas in a neat, clean, and safe condition, and free from the accumulation of all waste materials including crating materials, rubbish, drink containers, cigarette cartons, and all other waste. All solid waste shall be removed from the job site and recycled or disposed of at an Approved Waste Disposal Site, with the permission of the municipal authority. No waste material shall be deposited in any watercourse or wetland.
Upon completion of the work the Contractor shall, at its own expense, and to the satisfaction of the Engineer, dispose of or remove from the job site all construction plant, rubbish, unused material, including concrete forms, filter fabric material, sediment fencing, sand bags, and other equipment and materials belonging to it or used under its direction during the performance of the work. The site shall be left in a neat and clean condition.
In the event of the Contractor's failure to comply with any of the foregoing, the same may be accomplished by the owner within 30 days of the completion of the work and the cost of same may be deducted from any money due or owing to the Contractor whether under this or any other contract.

825.02 SANITARY FACILITIES/ SEWAGE DISPOSAL

The Contractor shall maintain portable latrines on site or systems approved by the Government Services Center. The sanitary facilities shall be used by all Contractor employees and those of subcontractors. The Contractor shall transport the waste from these units, using a collection company (whenever possible) licensed by Government Services Center. Otherwise, transportation and disposal shall be by a means and at a facility or location as approved by the Government Services Center.

SECTION 830
MARSHALING YARDS & TEMPORARY WORK CAMPS

MARSHALING YARDS & TEMPORARY WORK CAMPS

Equipment or material storage yards and temporary work camps shall be located at least **100 m** from any watercourse or designated wetland.
The Contractor is responsible for obtaining **all** appropriate permits from government agencies with legislation and regulations relevant to camp facilities. These permits include, but are not necessarily limited to, those related to: solid and liquid waste disposal, water supply, sewage treatment, development control, Crown Lands, and any Municipal Authority having jurisdiction over the area.
Any site proposed for a marshaling yard or work camp should be of low value with respect to its potential for other uses when compared to other lands in the area. Abandoned gravel pits, abandoned commercial enterprises, or other previously disturbed areas are preferred locations. Any site must be located so as to minimize potential traffic hazards. Incoming and outgoing vehicles should be able to merge safely with other traffic. Prior to the commencement of construction the Contractor will submit a list of candidate sites, which will be reviewed and approved by the Engineer and any other relevant agency.

SECTION 835
FOREST FIRE PREVENTION

FOREST FIRE PREVENTION

The Contractor shall obtain a burning permit as may be required by the Forestry Division of the Department of Natural Resources, where burning is to be conducted, and shall abide by the terms and conditions of the permit.

The Contractor shall take all precautions necessary to prevent fire hazards when working at the job site and shall keep the job site free of all flammable waste.

Fires shall be located a minimum of **10m** from the existing tree line or adjacent piles of slash. Fires and slash piles will be kept to small manageable sizes to prevent igniting or scorching of adjacent vegetation.

The Contractor shall have available, in proper operating condition, sufficient fire fighting equipment, as recommended by the Forestry Division of the Department of Natural Resources, to suit its location, labour force, and construction plant. Such equipment shall comply with the standards of, and have approvals of, Underwriters Laboratories of Canada Limited and shall be maintained in accordance with National Fire Prevention Association Codes.

The Contractor shall ensure that specific employees are assigned to and trained in the use of fire fighting equipment. A list of these personnel shall be available on request by the Owner.

Rubber tires, waste oil, or similar material shall not be used to ignite slash or used to maintain the burning operation.

SECTION 840

DUST CONTROL

The Contractor shall ensure that dust does not become a problem for adjacent property owners or construction site personnel or a hazard to vehicular traffic. When required, or as directed by the Engineer, water or an acceptable dust suppressant such as calcium chloride shall be used by the Contractor on haul routes or other locations on the project to control dust.

SECTION 845
EQUIPMENT OPERATION AND PREVENTION OF EROSION AND SILTATION

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845.01 STORM WATER MANAGEMENT
845.02 TEMPORARY TRAVEL ROUTES
845.03 EROSION CONTROL MEASURES
845.04 LIMITATION OF OPERATIONS

845.01 STORM WATER MANAGEMENT

The Contractor is responsible for storm water and drainage management during the period of the contract. This includes the collection, channeling, containment, settling, discharge and any other operation to effectively control storm runoff and prevent problems of erosion or siltation of adjacent or downstream areas. (See Section 815.07 Control and Treatment of Silted Water).

845.02 TEMPORARY TRAVEL ROUTES

Linear travel along the right of way by vehicles and equipment shall be restricted to one track or travel route, particularly during the early stages of opening access along the route, unless otherwise approved by the Engineer. The route shall be maintained by the Contractor free of standing water. Surface drainage will not be permitted to run along the route which can generate extensive mud and silt, and adversely affect materials to be excavated such as grubbing, unsuitable material, and overburden. Surface drainage shall be vented off the route at frequent intervals. Where drainage courses are encountered, and frequent crossings are required, temporary pipes (CSP or iron) shall be installed to permit passage of equipment and vehicles in the dry, without causing erosion and siltation. At certain locations fording may be permitted by the Engineer. (See Section 815.03 Fording of Watercourses).

845.03 EROSION & SILT CONTROL MEASURES

845.03.01 GENERAL PROTECTION MEASURES

The Contractor shall minimize terrain disturbance and erosion resulting from its activities. The Contractor shall, as part of its work, implement erosion and silt control measures where its activities result in a blockage of natural drainage, the diversion of natural drainage, or the exposure of soil or subsoil to potential erosion. Particular measures which may be required include:

(i) using an erosion control blanket;
(ii) using an appropriate hydraulic mulch;
(iii) spreading hay over exposed soils;
(iv) spreading a thin layer of brush or slash over disturbed areas;

(v) the installation of baffles or sediment traps at appropriate intervals within the area of disturbance;
(vi) the installation of drainage collectors across the disturbed area to channel drainage into vegetated areas;
(vii) the re-routing of disturbed drainage courses back into the natural course;
(viii) the stabilization of exposed soils at drainage locations with appropriate rip-rap;
(ix) where so directed by the Engineer, to construct check dams to confine mud or slurry at such locations as unsodded ditch lines, catch-basins and culvert inlets.
(x) the pumping of silted water to settling or designated vegetated areas;
(xi) the installation of sedimentation basins of adequate size at run-off locations from exposed areas to contain heavy silt and mud as directed by the Engineer.

845.04 LIMITATION OF OPERATION

During periods of heavy rain, where in the opinion of the Engineer, the movement of excavated material and equipment may give rise to extensive mud conditions, or the potential to seriously impact watercourses, or adjacent land, the Contractor may be required to suspend operations until such time as site conditions allow operations to resume. The Contractor shall not be paid for such downtime.

SECTION 850
PROTECTION OF VEGETATION AND WETLANDS

INDEX

850.01 MAINTAIN NATURAL DRAINAGE PATTERN
850.02 PROTECTION OF TREES AND SHRUBS
850.03 OFF RIGHT OF WAY TRAVEL
850.04 BOGS AND WETLANDS

850.01 MAINTAIN NATURAL DRAINAGE PATTERN

Drainage is to be maintained in its natural state wherever possible, with provision being made for spring flooding. Where existing drainage patterns cannot be maintained, alternate drainage will be installed to approximate normal conditions with the approval of the Engineer.

850.02 PROTECTION OF TREES & SHRUBS

Some trees, shrubs and plants within the clearing limits may be required for use by the Owner or other groups. Where necessary, and as directed by the Engineer, such trees, shrubs and plants shall be flagged for removal. Also see Section 855.02 (Planting of Trees and Shrubs).

Where branches of trees are to be removed as a result of damage or where roots 2.5 cm in diameter or larger are exposed as a result of contractors excavation work, the stumps shall be cut cleanly using a saw or lopping tool. The roots shall be cut back level to the surface of the cut slope within 24 hours following their exposure.

The Contractor shall adhere to the following protection measures:

(i) No unnecessary cutting of trees is to be conducted. Care will be taken during construction to prevent damage to trees and shrubs adjacent to the flagged clearing limits which are to remain after construction.
(ii) Care shall be taken when sloping embankments not to expose roots of trees, or put the soil at the base of such trees in danger of future erosion or extensive downslope drainage.
(iii) The Contractor shall not use living trees as survey marks and shall not cut blazes or otherwise mark live trees except with removable surveyor's tape and/or tags.
(iv) Where cutting is necessitated, the Contractor shall stockpile and remove all merchantable timber not required by the Owner. Other wood waste and slash remaining near the uncut zone shall be disposed of by chipping, burning, or removal, as acceptable to the Engineer.

850.03 OFF RIGHT OF WAY TRAVEL

The Contractor shall limit equipment travel to the surveyed right-of-way and existing municipal and provincial roads. Use of equipment of any type is not permitted outside the clearing limits of the right of way without prior approval. To obtain approval for additional or new travel routes, the Contractor shall notify the Engineer a minimum of five working days in advance of such requirements and not commence work until written approval is given by the Engineer.

850.04 BOGS AND WETLANDS

Bogs and wetlands are considered sensitive terrain because of their high disturbance potential. Travel by machinery across bogs and wetlands shall be avoided whenever possible. When such travel is necessary, it shall be carried out as directed by the Engineer. Bog excavation shall conform with good construction practices and be carried out in accordance with other relevant sections of these specifications.

SECTION 855
REVEGETATION
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855.01 REVEGETATION FOR SURFACE STABILIZATION

Immediately following and during some construction activities, the Engineer will identify areas requiring seeding/sodding or stabilization by a method to prevent erosion. These will include:

(i) Extensive cuts in overburden material. These areas shall be hydro seeded within **three** calender days of a cut being prepared and the work shall be carried out as directed by the Engineer;
(ii) Stream crossing sites. Topsoil placement, sodding, and shrub or tree plantings may be required as directed by the Resident Engineer.
(iii) All remaining disturbed areas, designated, will be hydro seeded or sodded as soon as possible in accordance with the DWST Specification Book - Section 632- Hydroseeding, Section 634 - Soil for Hydroseeding, Section 635- Lime for Hydroseeding, and Section 633- Sodding.

Where the potential for erosion exists, as on steep slopes, long slopes, or soft erodible type material, an appropriate erosion control material shall be applied to the surface. This can be in the form of an erosion control fabric or a sprayed on erosion control product which is approved by the Engineer and which will be in addition to hydroseeding as indicated in the contract documents or as directed by the Resident Engineer. Also see Section 845.03 (Erosion and Silt Control Measures).

The Engineer will inspect all revegetated areas periodically to ensure that adequate results have been achieved. During adverse dry conditions watering of revegetated areas shall be carried out as directed by the Engineer. Additional REVEGETATION work will be undertaken upon direction from the Engineer if the desired results are not achieved.

855.02 PLANTING OF TREES AND SHRUBS

855.02.01 GENERAL INSTRUCTIONS

The planting of trees will be carried out in those areas identified in the contract documents. The types of species, quantity, size, and exact location will be specified in the contract documents or otherwise the Contractor will be advised by the Engineer. **Nursery stock**, (purchased trees and

shrubs in pots), or **site stock**, (trees and shrubs removed from a site and held over or planted out directly), may be used as specified in the contract documents or as directed by the Engineer.

Native species of trees and shrubs are generally preferred, however, non-native species may be specified where, for example, a faster growing species or a disease resistant species or variety is needed.
The following species of trees are recommended:

SCIENTIFIC NAME	**COMMON NAME**	**SCIENTIFIC NAME**	**COMMON NAME**
PICEA	SPRUCE	ACER SPICATUM	MOUNTAIN MAPLE
ABIES BALSAMEA	FIR	ACER RUBRUM	RED MAPLE
BETULA PAPYRIFERA	BIRCH	ACER PLATANOIDES	NORWEGIAN MAPLE
SORBUS	DOG BERRY	SALIX DISCOLOR	WILLOW
LARIX LARICINA	LARCH, JUNIPER	SALIX BEBBIANA	WILLOW
LARIX KAEMPFERI	JAPANESE LARCH	POPULUS TREMULOIDES	TREMBLING ASPEN, POPLAR, APS
PRUNUS PENSYLVANICA	PIN CHERRY	POPULUS BALSAMEA	COTTONWOOD, BALSAM POPLAR

The following species of large shrubs are recommended:

SCIENTIFIC NAME	**COMMON NAME**	**SCIENTIFIC NAME**	**COMMON NAME**
AMELANCHIER	CHUCKLEY PEAR	CORYLUS CORNUTA	HAZELNUT
VIBURNUM CASSINOIDES	NORTHERN WILD RAISON	ARONIA MELANOCARPA	EASTERN CHOKEBERRY, CHOKECHERRY
ALNUS CRISPA	ALDER	ARONIA PRUNIFOLIA	EASTERN CHOKEBERRY, CHOKECHERRY
CORNUS STOLONIFERA	RED OSIER DOGWOOD		

The following species of small shrubs are recommended:

SCIENTIFIC NAME	COMMON NAME	SCIENTIFIC NAME	COMMON NAME
MYRICA GALE	SWEET GALE, BOG MYRTLE	SAMBUCUS PATENS	RED ELDERBERRY
RHODODENDRON CANADENSE	RODORA	ROSA NITIDA	WILD ROSE
NEMOPANTHUS MUCRONATA	MOUNTAIN HOLLY	ROSA VIRGINIANA	WILD ROSE
VIBERNUM EDULE	SQUASHBERRY	RUBUS IDAEUS	RED RASPBERRY
CHAMAEDAPHNE CALICULATA	LEATHERLEAF	SPIRAEA LATIFOLIA	MEADOWSWEET

855.02.02 PLANTING METHODS AND MAINTENANCE

The Contractor is referred to the **Manual for Native Plant Material Recovery**, available from the Department of Transportation and Infrastructure, for general information and recommended practices for the removal of trees and shrubs for either planting out directly or holding over for subsequent planting, and other aspects of care and maintenance.

All trees and shrubs do best when planted in early spring prior to the buds opening, but may also be successfully planted in late fall during their dormancy period. While it is possible to plant trees and shrubs at any time of the year, a regular watering program prepared by the Contractor and approved by the Resident Engineer to reduce or prevent mortalities is required during the active growing period. A watering program is required for all planted stock (nursery stock or site stock) in the first year. This should commence as soon as active growth begins, and as determined by the prevailing weather conditions and dryness of the soil throughout the growth season. Watering and other necessary maintenance such as the provision of staking or supports, pruning, mulching, etc. is the responsibility of the Contractor and no extra compensation will be paid for these items.

855.02.03 PAYMENT AND WARRANTY

Measurement for payment shall be by the number of individual trees of the specified species and size planted. The Contractor is responsible for preventing mortalities in planted stock. Trees and shrubs which die within 18 months of being planted shall be replaced by the Contractor at no additional cost to the Owner.

SECTION 860

PROTECTION OF HISTORIC RESOURCES

The Contractor shall be aware that the Historic Resources Act (1985) requires the protection of archaeological sites and artifacts, and sets forth procedures to be followed in the event that either are found. The Contractor shall be aware of the following sections of the Act:

Section 10(1) - A person who discovers an archaeological object in, on, or forming part of the land within the province shall report the discovery forthwith to the Minister stating the nature of the object, the location where it was discovered and the date of the discovery.

Section 10(2) - No person, other than the one to whom a permit has been issued under this Act, who discovers an archaeological object shall move, destroy, damage, deface or obliterate, alter, add to, mark or in any other way interfere with, remove or cause to be removed from the province that object.

Section 11(1) - The property in all archaeological objects found in, on or taken from the land within the province, whether or not these objects are in the possession of Her Majesty is vested in Her Majesty.

Should any archaeological remains be encountered, such as stone, bone or iron tools, concentrations of bone, fireplaces, house pits and/or foundations, work in the area of the find shall cease immediately. The Contractor shall immediately notify the Owner through the Engineer, or the Senior Environmental Planner, or the Environmental Surveillance Officer immediately upon discovery of any historic resources. The Owner shall immediately notify the Historic Resources Division.

SECTION 865
OTHER ENVIRONMENTAL REQUIREMENTS

The Contractor shall be aware that other environmental requirements are contained in other sections. The attention of the Contractor is directed to:

SECTION 180	**UNWATERING INCIDENTAL TO WORK**
SECTION 201	**CLEARING AND GRUBBING**
SECTION 202	**CLEARING**
SECTION 203	**GRUBBING**
SECTION 204	**GRADING OF FILL**
SECTION 207	**BORROW**
SECTION 208	**EXCAVATION OF DITCHES**
SECTION 305	**APPLICATION OF CALCIUM CHLORIDE**
SECTION 310	**USE OF PITS, QUARRIES, AND STOCKPILES FOR PRODUCTION OF MATERIALS SUPPLIED BY CONTRACTOR**
SECTION 317	**WINTER SAND**
SECTION 320	**TACK COAT**
SECTION 330	**HOT MIX ASPHALTIC CONCRETE**
SECTION 401	**DITCHING FOR OF STREAMS**
SECTION 402	**PERMANENT DIVERSION OF STREAMS**
SECTION 403	**EXCAVATION FOR FOUNDATIONS**
SECTION 405	**TEMPORARY DIVERSION OF STREAMS**
SECTION 421	**INSTALLATION OF PIPE CULVERTS**
SECTION 423	**SUPPLY AND INSTALLATION OF STRUCTURAL PLATE PIPE**
SECTION 424	**SUPPLY AND INSTALLATION OF STRUCTURAL PLATE ARCH**
SECTION 426	**DESIGN, SUPPLY, AND INSTALLATION OF LONG SPAN STRUCTURAL PLATE ARCH**
SECTION 520	**STORAGE OR DISPOSAL OF OLD ASPHALTIC PAVEMENT**
SECTION 521	**DEMOLITION AND REMOVAL OF SIDEWALKS, CURB AND GUTTER, MANHOLES, CATCH BASINS, DITCH INLETS, FENCES, GUIDE RAIL AND GUIDE POSTS**
SECTION 522	**DISPOSAL OR SALVAGE OF CULVERT OR PIPE**
SECTION 634	**SOIL FOR HYDROSEEDING**
SECTION 635	**LIME FOR HYDROSEEDING**
SECTION 632	**HYDROSEEDING**
SECTION 902	**EXCAVATION FOR FOUNDATION, UNWATERING AND EXTRA BACKFILL FOR STRUCTURES**
SECTION 914	**BRIDGE DECK WATERPROOFING**

919.04 MAINTENANCE OF TRAFFIC

919.04.01 General

The Contractor shall pay particular attention to the flow of traffic through the construction zone. Any damage incurred to vehicles or their cargo or injury sustained to their occupants as direct or indirect result of the Contractor's actions, procedures or negligence, shall be the sole responsibility of the Contractor.

The Contractor shall indemnify and save harmless the Department with regard to claims arising from damages or injury. The Contractor shall maintain at least one lane of traffic through the construction zone for the duration of the project. The Contractor shall be responsible for the placement and maintenance of all traffic signs, barricades and other traffic control devices deemed necessary as per Division 7 "Temporary Conditions, Signs and Devices".

Three copies of a detailed drawing shall be submitted by the Contractor for approval showing the following:

1. The sign and barricade layout.
2. The structure across the river.

919.04.02 Temporary By-pass

For certain projects a temporary by-pass will be required, and it shall be stated in the Supplementary General Conditions detailing span and load carrying capacity.

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The Contractor shall be responsible for the location and route of the by-pass, the hydrological, hydraulic, and structural design of the river crossing, the maintenance and upkeep, and the placement and maintenance of all traffic control devices as stated above.

Section 140, "Environmental Requirements" shall be adhered to by the Contractor.

Three copies of a detailed drawing signed and sealed by a Professional Engineer licensed to practise in the Province of Newfoundland, shall be submitted by the Contractor for approval to the Engineer showing the following:

1. The proposed route of the by-pass.
2. The structure.
3. The sign and barricade layout.

4. Design and posted speed through the construction zone

All repairs to the by-pass deemed necessary by the Department shall be implemented by the Contractor immediately after written notification by the Engineer. If after notification the Contractor fails to initiate repairs, repairs will be done by others. The cost of such repairs will be deducted from progress payments.

919.04.03 Traffic Resumption

Under normal circumstances, curing time required for deck concrete is wet curing for seven (7) days and a further thirty (30) days for air drying. Also, the specified design strength must be obtained.

Until the above conditions are satisfied, no traffic will be permitted on a new deck or overlay. If it is not practical to achieve this, as there is no temporary by-pass, the above curing times may be reduced only at the discretion of the Engineer but in no case will traffic be allowed onto a new deck or overlay until seven (7) days of wet curing and an additional seven (7) days of air drying have elapsed. The area used as a route for the by-pass must be returned to its original condition.