

DIVISION 5
SPECIFICATIONS FOR MISCELLANEOUS ITEMS

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SECTION 501

WEIGHING MATERIALS IN TRUCKS

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501.01 SCOPE

This specification covers the Department's requirements for weighing materials in trucks for those instances where payment is based on the weight of the material.

501.02 GENERAL

Where the contract includes items that require measurement for payment by weighing, the Contractor, as part of the work to be carried out under these items, shall provide, install, and maintain as necessary, truck weigh scales meeting the requirements of the Government of Canada Weights and Measures Act and Regulations, and also the requirements of this specification. On completion of the work, the Contractor shall remove temporary scales and scale ramps and clean up and trim the site on which the scale was located. Weighing of all construction materials shall be the sole responsibility of the Contractor. All materials shall be weighed by the Contractor and the truck driver provided with a ticket of the weighed material to be received by a Department of Transportation and Infrastructure official once delivered to the project site.

501.03 LOCATION

Scales for weighing hot mix asphaltic concrete shall be located at a site convenient to the asphalt plant. Scales for weighing other materials shall be installed at locations selected by the Contractor subject to the approval of the Owner's Representative.

When, for the above locations, in the opinion of the Owner's Representative, there is a waste or loss of material between the point of origin and the materials intended destination on the contract, the hauling operation may be terminated by the Owner's Representative until the Contractor has, at his own expense, provided on a site approved by the Owner's Representative, a scale which is close enough to the intended destination to preclude the possibility of waste or loss.

501.04 WEIGH SCALES

The scales shall be of such capacity to accurately weigh any single loaded truck arriving on the site. The Contractor is advised that split weighing will not be permitted under any circumstances. The vehicle being weighed must be fully supported by the scale platform. Split or axle weighing is a method to be used only for highway weight restriction control.

The scale shall be equipped with a portable scale house complete with furniture and adequate provision for heat and light.

Scale house and furniture shall be of a standard not less than that shown on the Department's Portable Scale House plan which is shown in Section 1202 for Beam type Scales and Section 1204 for Electronic Scales. Should the Contractor wish to supply a scale house or furniture other than that shown on the plan then prior written approval by the department will be required before substitution may be made.

Scales may not be used for weighing materials on the contract unless the scale house heater and lights are in working order.

The Contractor shall periodically clean the scale house and maintain all lights and heating in good working condition at all times when the scales are in use. The lights shall provide adequate lighting for general office work and the heater must be able to maintain the temperature in the scale house at 20 degrees Celsius.

In order to minimize the effect of impact loads on the scale adjustment and to reduce the effect of vehicle braking and kickback on the scale platform and scale adjustments, the approach ramp shall be constructed on a straight and level grade at the same elevation as the scale platform, for a distance at least equal to the length of the scale platform.

Vehicles shall enter and leave the platform at a speed not exceeding 8 kilometers per hour.

The scale platform and mechanism shall at all times be maintained clean and free from encumbrances such as gravel, asphalt, snow, and ice.

Scale houses must be equipped with suitable washroom facilities that meet the OHS Act and Regulations under Sections 61 and 62 of the Regulations. These facilities must be located within 100 meters of the scale house.

The sanitary provisions shall be in accordance with the various Provincial Government and Municipal Government Regulations.

If portable toilets are used they must be a minimum of 2 metres (height) x 1 metre x 1 metre and must be approved by the Government Service Center. The Contractor shall transport the waste from these units, using a collection company (whenever possible) licensed by the Government Service Center.

Toilet facilities must also be approved by the Owner's Representative. These facilities must be cleaned twice weekly and in the case of a portable toilet, emptied of sewage as well. Contractor must also supply toiletries for the facility. Also, adequate and suitable provisions for washing (hot and cold water, soap, towels OR ample supply of hand sanitizer liquid) must be included with the facility. The door to the facility must contain a lock and key and shall be provided to the Owner's Representative.

All associated costs to provide and maintain the sanitary provisions as outlined above shall be considered incidental to the cost of weighing materials in trucks.

501.05 TESTING AND CERTIFICATION

The Contractor shall engage an independent company to test and certify the weigh scales in accordance with the current acts and regulations of Measurement Canada.

All scales shall be tested by the proper authority at the Contractor's expense after each set-up and prior to use on every contract. After certification, the Contractor must provide, to the Owner's Representative, a certificate of compliance from the scale testing company before the scales may be used.

When considered necessary by the Owner's Representative, the Contractor shall have the scales re-tested and re-certified.

The re-testing shall be at the Contractor's own expense.

501.06 ELECTRONIC WEIGH TICKETS

All scale houses must be equipped with all the necessary equipment to produce and print electronic copies of all weigh scale tickets for all materials that would normally be weighed. These materials shall include, but are not limited to: Surface Course Asphalt, Base Course Asphalt, Leveling Course Asphalt, Granular A, Granular B, Rock Fill, Other Material Fill, Maintenance Grade III and all other material types noted in the contract document where payment is in tonnes. The electronic ticket system shall include the following:

Hardware:

- Micro controller c/w internal USB flash drive and operating software.
- Ticket printer with RS - 232 interfaces, capable of printing 4 layered copies
- All components require 120 Volts AC.
- Provide electronic ticket system with backup power supply, 20 minutes minimum

Software:

- Must be able to store up to 750 transactions
- Must be able to store and recall up to 50 trucks
- Must be able to store and recall up to 20 products
- Must be able to store and recall project numbers
- Must be able to store and recall truck tare weights
- Must be able to export data to a USB flash drive, to be used with Microsoft Excel
- Must have the option to delete data after exporting
- Must have password protection for exporting data
- Must be able to recall the amount of material weighed at any particular time

Must provide ticket with the following information:

- Government name and address
- Date and time
- Ticket number
- Project number
- Product ID
- Truck ID
- Gross, Tare, and Net Weight

- Time loaded
- Station line
- Rear axle line
- Signature line
- Checker line
- Time unloaded line

The Contractor is advised that the electronic ticket system must include all the requirements above and is subject to prior approval by the Owner's Representatives. The Contractor shall ensure that the system is installed and working properly before weighing any materials. Weighing of any material will not commence until the electronic ticketing system is working and is verified by the Owner's Representative. All data and tickets shall be provided to the Owner's Representative or designate at the end of each working day.

501.07 DETERMINING TRUCK TARES

All trucks must have a tare weight verified at the beginning of the project and at any time a dump is changed. Additional "tare checks" will be at the Owner's Representatives request and can be made at any time of day and the number of tare checks is unlimited. If the tare check is different than that of the original tare, the tare check weight will be used for the tare of that truck until a subsequent change in the tare weight. Tare weights and tare checks must be provided to the Owner's Representative at the end of each working day. Should the Department at any time find abnormal discrepancies in any tare weight, the Contractor will be given written notification. Any further discrepancies will result in suspension of scale house operations pending an investigation. The Owner's Representative or designate will complete a "tare check verification" each time a tare is verified in their presence.

501.08 LICENSED WEIGHTS

The Contractor will be responsible for compliance with Service NL regulations with respect to maximum allowable weights for all Contractor and sub-contractor owned trucks hauling material for the project. Should the Contractor send an overweight truck to the project site, the Department of Transportation and Infrastructure shall only pay the maximum allowable weight for that truck. For example, the Contractor sends a truck with a gross weight of 34500 kilograms and the maximum allowable weight for that truck is 34000 kilograms the Department will pay 34000 kilograms and the additional 500 kilograms will be forfeited to the Department.

501.09 WEIGHT VERIFICATION

The Department reserves the right to re-weigh loaded trucks for verification of weights entered on the weigh ticket. Trucks may be taken from any location within the project limits and at any point between the scale house and the project site and returned to the scales for weight verification in the presence of the Owner's Representative. The Department reserves the right to re-weigh trucks at any time and the number of checks will be unlimited for the duration of the project. Should there be a discrepancy in the ticket weight and the verification weight, the Contractor will be given a written notification. Any further discrepancies will result in suspension of scale house operations pending an investigation. The Owner's Representative will complete a "weigh check verification" each time a truck is re-weighed and a copy will be provided to the Contractor.

501.10 SCALE HOUSE ACCESS

The Owner's Representative shall have free access to the scale house for inspection and compliance purposes for the duration of the project. This shall include, but not limited to: inspection of scales, witnessing tare checks and weighing of materials, acquiring completed weigh tickets and transfer of electronic data.

501.11 USE OF WEIGH SCALES BY ENFORCEMENT OFFICERS

Weigh scales, during weigh scale operating hours, shall be at the disposal of Police Officers and Highway Enforcement Officers of Service NL for the purposes of checking the various weights of vehicles hauling materials for use on this contract or on any departmental or private work the Contractor may undertake.

501.12 WEIGHING COSTS

The Contractor shall supply a scale operator to take measurements for weights. Weighing of all construction materials shall be the sole responsibility of the Contractor. However, at the discretion of the Owner's representative the Department may also operate the scales and take measurements for weights.

The Contractor is advised that all costs associated with the supply of labour, materials, installation, operation, maintenance and removal of the weigh scales, complete with scales, scale house, electronic ticket system, furniture and washroom facilities together with all costs of testing and certification in accordance with this specification shall be borne by the Contractor as part of the work to be carried out at the contract price for items which are measured by weighing.

The supply of blank tickets shall be considered incidental to the project.

No additional payment shall be made and the Department will not be liable for any associated delays related to issues with the electronic weigh ticket system or testing and certification of the scales. In addition, any delays associated with any of the requirements above, notably tare checks and verification of truck weights shall not be considered.

SECTION 510

CUTTING ASPHALTIC PAVEMENT

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- 510.02 MEASUREMENT FOR PAYMENT**
- 510.03 BASIS OF PAYMENT**

510.01 DESCRIPTION

This work shall include labour, materials, and equipment-use to cut asphaltic pavement along lines set by the Owner's Representative.

Cuts shall be made using an approved pavement cutter. The cuts shall be made straight and vertical and be made in such a manner that will allow neat tie-ins with new pavement.

510.02 MEASUREMENT FOR PAYMENT

Measurement for payment shall be the length of the required cuts, regardless of the actual thickness of the asphalt. The length shall be measured in metres rounded to one decimal place.

510.03 BASIS OF PAYMENT

Payment shall be at the Contract Unit Price per metre for cutting of asphaltic pavement. Such payment shall be full compensation for labour, materials, and equipment-use to carry out the operations herein described.

SECTION 511

CUTTING CONCRETE SLAB AND CURB AND GUTTER

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- 511.04 BASIS OF PAYMENT**

511.01 SCOPE

This specification concerns the cutting of concrete curb and gutter and concrete slab where part of a continuous length of concrete slab and/or curb and gutter has to be removed.

511.02 DESCRIPTION

The Contractor shall make cuts along the lines as marked by the Owner's Representative.

The cuts shall be made straight and vertical and be made in such a manner that will allow neat butt joints with future new concrete.

511.03 MEASUREMENT FOR PAYMENT

Measurement for payment shall be the total length of the required cuts measured in metres to one decimal place.

511.04 BASIS OF PAYMENT

Payment shall be at the Contract Unit Price per metre for cutting concrete slab and curb and gutter and such payment shall be full compensation for all labour, materials, and equipment-use to carry out the operations herein described.

SECTION 520

STORAGE OR DISPOSAL OF OLD ASPHALTIC PAVEMENT

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520.06.02 Basis of Payment for Disposal of Old Asphaltic Pavement

520.01 SCOPE

This specification covers the requirements for the cutting and excavation of asphaltic pavement, together with either the storage of the debris, or the disposal of the debris.

520.02 EXCAVATION

The Contractor shall cut and excavate the asphaltic pavement from within the limits staked by the Owner's Representative. Cuts shall be made using an approved pavement cutter. The cuts shall be made straight and vertical and be made in such a manner that will allow neat tie-ins with new pavement.

Care shall be taken in excavating the pavement so as not to contaminate the underlying granular base course. In the case when the asphaltic pavement debris is to be stored, care shall also be taken not to excavate underlying granular materials with the pavement.

Pavement debris shall be broken into pieces of greatest dimension not more than one metre in length.

520.03 STORAGE

Where the contract item designates that old asphaltic pavement is to be stored, the Owner's Representative shall select a site where all the excavated asphaltic pavement is to be stockpiled. The site shall comply with requirements of Section 830.

The stockpile shall be made on a flat well drained area on firm ground so that the asphaltic debris will not become contaminated with deleterious materials when it is moved at some future date prior to recycling.

Should the Owner's Representative require that grading work be carried out to prepare the stockpile site, then such grading shall be carried out and paid for in accordance with Section 206 and Section 204.

After any required grading operations have been completed, the stockpile site shall be treated with an even mat of Granular "A" 100 millimetres thick. The Granular "A" mat shall be supplied and paid for in accordance with the contract price for Granular "A".

Old asphaltic pavement that is to be stored shall be handled, transported, and stockpiled at all times in such a manner that will avoid contamination by any deleterious material.

The pavement debris shall be hauled to the stockpile site and spot-dumped and levelled and then succeeding loads shall be dumped and levelled on top of the others to form a neat, unified, elevated stockpile.

520.04 DISPOSAL

On those jobs where the contract item states that the old asphaltic pavement is to be disposed of, then the old asphaltic pavement debris for disposal shall become the property of the Contractor.

If the Contractor wishes, the Contractor will be permitted to use Recycled Asphalt Pavement (RAP) in levelling course asphalt. The amount of Recycled Asphalt in the mixture of RAP plus Virgin Aggregate will be limited to a maximum of 10%.

In addition, the Contractor will be permitted to use RAP in Granular "B". The Recycled Asphalt in the mixture of Virgin Granulars plus RAP will be limited to a maximum of 30% under the asphalt and 50% in the granular shoulders.

The Department reserves the right to accept or reject any particular source of RAP, irrespective of its quality.

As approved by the Owner's Representative, the Contractor shall be permitted to use old asphalt pavement in shouldering operations and as a surface stabilizer on gravel roads. The latest Department procedure for these operations shall be strictly adhered to by the Contractor in these operations.

The Contractor shall be aware of Division 8.

520.05 MEASUREMENT FOR PAYMENT

Measurement for payment will be by means of the volume of pavement excavated from within the required limits, calculated as the product of the exposed surface area of the excavated pavement before removal, times the centreline thickness of the asphalt and shall include any cutting required to complete the excavation. Should individual areas of asphalt removal exceed 100 metres in length, then the thickness used for volume calculation will be the average of the thickness of the asphalt measured at 100 metre intervals.

The volume of the excavated pavement shall be calculated in cubic metres rounded to one decimal place.

520.06 BASIS OF PAYMENT

520.06.01 Basis of Payment for Storage of Old Asphaltic Pavement

Payment at the contract price for storage of old asphaltic pavement hauled 1 kilometre or under, shall be payment in full for all labour, materials, and use of equipment to: cut and excavate the old pavement, break-up the pavement, transport the debris up to 1 kilometre, and place the debris in a stockpile.

However, where the Owner's Representative requires that excavated material be hauled in excess of the 1 kilometre freehaul before being stored, additional payment for overhaul will be made in accordance with Section 215, at the appropriate rate for overhaul on excavation other material.

In the case of storage of old asphaltic pavement, the grading of the stockpile floor and the supply and placing of the Granular "A" mat for the stockpile shall be paid for in accordance with Section 206 and Section 315 for Granular "A", respectively.

520.06.02 Basis of Payment for Disposal of Old Asphaltic Pavement

Payment at the contract price for disposal of old asphaltic pavement, shall be payment in full for all labour, materials, and use of equipment to cut and excavate the old pavement, and provide all transportation and any other costs to remove the debris from the site.

SECTION 521

DEMOLITION AND REMOVAL OF SIDEWALKS, CURB AND GUTTER, MANHOLES, CATCH BASINS, DITCH INLETS, FENCES, GUIDE RAIL AND GUIDE POSTS

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521.01 SCOPE

This specification covers the requirements for demolishing, salvaging, and removing wholly or in part, sidewalks, curb and gutter, manholes, catch basins, ditch inlets, fences, guide rail, and wooden guide posts, together with the backfilling, compaction, and trimming of the resultant trenches, holes, and pits.

521.02 CUTTING

Where a section of sidewalk, or curb and gutter is to be removed either as part of the removal of sidewalk, or curb and gutter, or as a necessary prerequisite prior to the removal of a manhole or catch basin, then the Contractor shall first cut the curb and gutter or sidewalk along lines staked by the Owner's Representative. The cuts shall be made straight and vertical and be made in such a manner that will allow neat butt joints with new concrete.

Where bituminous pavement must be removed prior to removing a manhole or catch basin, the pavement shall be cut and excavated. The work of cutting and excavating the pavement shall be carried out and paid for in accordance with Section 520.

521.03 DEMOLITION

Demolition shall be carried out in such a manner and with such equipment so as not to disturb adjacent pavement, utilities, or other works to be left in place and with such care as to leave undamaged, materials designated to be salvaged. The removal of all accompanying posts shall be included in the work of removal of guide rails and fences.

521.04 SALVAGE

Where manholes, catch basins, and ditch inlets are to be demolished, castings, and riveted gratings shall be carefully removed and stored at a safe storage place on the job site prior to their collection by Department forces, or re-installation elsewhere on the job.

Where fences are to be dismantled, the materials including posts and gates shall be neatly piled at the edge of the right of way, or the fences and gates shall become the property of the Contractor and removed from the right of way whichever the Owner's Representative shall direct.

Where guide rail and guide posts are to be salvaged, the work shall be carried out and paid for in accordance with Section 643.

Should any material, designated for salvage, be damaged or lost by the Contractor, then the Contractor shall be charged with the cost of replacement with equivalent new material. Damaged material shall become the property of the Contractor and shall be disposed of.

521.05 DISPOSAL OF DEBRIS

Waste materials shall be removed and disposed of in an approved waste disposal area provided by the Contractor at their own expense.

521.06 EXCAVATION

Where bituminous pavement must be removed prior to carrying out excavation, then such excavation of pavement shall be carried out and paid for in accordance with Section 520.

Where sidewalk and/or curb and gutter must be removed prior to excavation of the structure in question, then such removal shall be carried out and additional payment made for the removal, in accordance with this specification.

Excavation required for the removal of the structure shall be performed in such a manner as to leave undisturbed, adjacent structures or other work to be left in place and to save where necessary, for purposes of backfill, the acceptable excavated materials.

521.07 BACKFILLING, COMPACTION, AND TRIMMING

Where concrete is placed in the excavation under another specification, such as concrete plugs in the ends of pipes after a catch basin has been removed, then backfilling shall not take place until the concrete has reached at least the specified strength at 28 days.

The Contractor shall backfill to the required grade using the excavated materials, if suitable. Should the excavated material be unsuitable, or should there be insufficient suitable backfill material from the excavation, then the Owner's Representative shall direct that material from a cut or from a borrow areas that will be used to complete the backfilling.

Backfill shall be placed in layers not exceeding 200 millimetres in thickness loose measurement. Each layer shall then be compacted to the required compaction before a further layer is placed.

Backfill consisting of other material or other material borrow shall be compacted to not less than 95% of the Standard Proctor Density (ASTM D698).

In rock backfill material where Standard Proctor tests cannot be carried out, compaction shall be continued until a compaction is achieved that is equivalent to that obtained in a fill when there is no visible movement of fill under a vibrating vibratory compactor with vibratory roller of length not less than 1.5 metres.

The backfilled hole or trench shall be levelled and trimmed to provide slight contours and adequate drainage.

521.08 MEASUREMENT FOR PAYMENT

521.08.01 Measurement for Payment for Removal of Concrete Sidewalk

Quantities for the removal of concrete sidewalk shall be measured in square metres rounded to one decimal place.

Measurements shall be made before removal and shall be the superficial area calculated as the product of the width of sidewalk times its length.

521.08.02 Measurement for Payment for Removal of Concrete Sidewalk and Abutting Curb and Gutter

Quantities for the removal of concrete sidewalk and abutting curb and gutter shall be measured in square metres rounded to one decimal place.

Measurements shall be made before removal and shall be the superficial area calculated as the product of the width between the outer edge of the gutter and the outer edge of the sidewalk, times the length of the sidewalk.

521.08.03 Measurement for Payment for Removal of Curb and Gutter

Measurement for payment shall be the length in metres, rounded to one decimal place, as measured along the exposed face of the curb before excavation.

521.08.04 Measurement for Payment for Removal of Manholes, Catch Basins, and Ditch Inlets

Measurement for payment will be based on the number of manholes, catch basins, and ditch inlets removed. No distinction being drawn between the types of manhole, catch basin, or ditch inlet.

521.08.05 Measurement for Payment for Removal of Fences

Measurement for payment for the removal of a fence of a particular type shall be the length in metres, rounded to one decimal place, of the assembled fence together with all accompanying gates.

521.08.06 Measurement for Payment for Removal of Guide Rail

Measurement for payment for the removal of guide rail shall be the length in metres, rounded to one decimal place, of the assembled guide rail measured end to end along the face of the railing from the extreme tip of one end piece to the extreme tip of the other piece at the opposite end.

521.08.07 Measurement for Payment for Removal of Wooden Guide Posts

Measurement for payment will be based on the number of wooden guide posts removed.

521.09 BASIS OF PAYMENT

Payment at the contract prices for the tender items covered by this specification shall be full compensation for all labour, materials, and equipment-use to: carry out any necessary other material excavation, dewatering, and necessary cutting of: pipe, sidewalk, curb, and gutter, demolish the structure, salvage where required, haul away and dispose of debris, backfill, compact, and trim the excavation.

Where additional backfill materials are required to complete backfilling, then, these materials shall be paid for in accordance with Section 206 or Section 207 , as the case may be, but the additional requirements for backfilling, compaction, and trimming as stipulated in this specification shall be considered compensated for in the contract price for this specification.

Should the additional backfill materials be hauled in excess of 1 kilometre, additional payment for overhaul will be made in accordance with Section 215.

SECTION 522

DISPOSAL OR SALVAGE OF CULVERT OR PIPE

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 - 522.06.02 Basis of Payment for Salvage of Pipe**

522.01 SCOPE

This specification covers the requirements for the excavation and removal of culvert, sanitary sewer, storm sewer, or other pipe followed with the backfilling and compaction of the excavated material together with either; the salvage, or the disposal of the pipe, as specified in the Contract item.

Excavation above and around the pipe shall be compensated for under Section 403 but any additional hand work excavation required to remove the pipe shall be considered part of Section 522.

522.02 ENVIRONMENTAL AND SAFETY REQUIREMENTS

The Contractor shall be aware of Division 8. Where unwatering is required, it shall be carried out as specified in Section 180.

The Contractor is advised that all work shall be in accordance with Section 190.

522.03 EXCAVATION AND DISPOSAL OR SALVAGE

After Excavation for Foundations operations have been carried out to expose the pipe the Contractor shall dispose of, or salvage the pipe, as designated, within the limits as required by the Owner's Representative.

The excavation of material abutting the top and sides of the pipe shall be performed in such a manner as to leave undisturbed, adjacent structure or other work to be left in place, and so that no damage occurs to pipe designated to be salvaged.

All excavated material shall be piled in a manner that will not endanger the work, and that will avoid obstructing sidewalks, driveways, and gutters.

Where pipe is designated to be salvaged, the Contractor shall carefully disassemble the couplers and joints and carefully remove the pipe from the trench in such a way as not to cause damage to the pipe. The salvaged pipe together with couplers shall be stored at a safe place on the job site prior to reinstallation or transported to the nearest Department Depot.

Should any pipe lengths, designated for salvage, be damaged or lost by the Contractor, then the Contractor shall not receive payment for pipe salvage for the damaged lengths. Damaged material shall become the property of the Contractor and shall be disposed of by the Contractor at their own expense. Any damaged pipe will be replaced at the Contractor's expense.

Where pipe is designated for disposal, the Contractor shall remove and dispose of the pipe and couplers. The Contractor shall also remove and dispose of any existing fish baffles or beveled end treatments.

Pipe for disposal shall be removed and disposed of in an approved waste disposal area provided by the Contractor at their own expense.

The Contractor shall be aware of Section 825.

522.04 BACKFILLING AND COMPACTION

Where concrete is placed in the excavation under another specification, such as concrete plugs in the ends of pipes left in place, then backfilling shall not take place until the concrete has reached at least the specified strength at 28 days.

Material excavated as part of the removal or salvage operations shall be used as backfill in the trench.

Backfill shall be placed in layers not exceeding 200 millimetres in un-compacted depth. Each layer shall then be compacted to not less than 95% of the Standard Proctor density (ASTM D698) before a further layer is placed.

522.05 MEASUREMENT FOR PAYMENT

522.05.01 Measurement for Payment for Disposal of Pipe

Measurement for payment for disposal of pipe of a particular diameter and material type shall be the length in metres, to one decimal place, of that length of pipe required to be disposed of as measured along the centreline of the pipe before excavation.

522.05.02 Measurement for Payment for Salvage of Pipe

Measurement for payment for the salvage of pipe of a particular diameter and material type shall be the length in metres, to one decimal place, of the pipe of that size and type, when measured after being removed from the ground.

Pipes that are damaged to the extent that they will be unsuitable for re-use, will not be included in measurement for payment for pipe salvage.

522.06 BASIS OF PAYMENT

522.06.01 Basis of Payment for Disposal of Pipe

Payment at the contract price for the disposal of pipe of a particular material and size shall be compensation in full for all materials, labour, and use of equipment to: provide any dewatering necessary to carry out the work; provide any hand work excavation necessary to complete the pipe disposal operation; provide an approved waste disposal site; remove and properly dispose of: pipe culverts, couplers, fish baffles and beveled end treatments; and backfill and compact the excavated material.

Excavation above and around the pipe shall be compensated for under Section 403, but any additional hand work excavation required to remove the pipe shall be considered compensated for as part of payment for Section 522.

The removal and disposal of any existing fish baffles or beveled end treatments shall be considered incidental to this item, no additional compensation will be made for this requirement.

522.06.02 Basis of Payment for Salvage of Pipe

Payment at the contract price for the salvage of pipe of a particular material and size shall be compensation in full for all materials, labour, and use of equipment to: provide any

dewatering necessary to carry out the work; provide any hand work excavation necessary to complete the pipe salvage operation; remove and properly dispose of any existing: fish baffles and beveled end treatments; remove and salvage: pipe culverts and couplers; transport salvaged pipe culverts and couplers to the storage site; stockpile the salvaged pipe culverts and couplers as directed by the Owner's Representative; and backfill and compact the excavated material including the temporary stockpiling of the excavated material for reuse in the backfilling process.

In the case of driveway culverts, excavation and backfill of the driveway culvert will be included in the price of disposal or salvage and reinstallation of culvert or pipe.

Excavation above and around the pipe, in roadways, shall be compensated for under Section 403, but any additional hand work excavation required to salvage the pipe shall be compensated for as part of payment for Section 522.

Any damaged pipe will be replaced at the Contractor's expense, where it is deemed the pipe was salvageable.

The removal and disposal of any existing fish baffles or beveled end treatments shall be considered incidental to this item, no additional compensation will be made for this requirement.

SECTION 523

SALVAGE AND REINSTALLATION OF CULVERT OR PIPE

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523.01 SCOPE

523.02 EXCAVATION AND SALVAGE

523.03 BACKFILLING AND COMPACTION AND REINSTALLATION

523.04 MEASUREMENT FOR PAYMENT

523.04.01 Measurement for Payment for Salvage and Reinstallation of Pipe

523.05 BASIS OF PAYMENT

523.05.01 Basis of Payment for Salvage and Reinstallation of Pipe

523.01 SCOPE

This specification covers the requirements for the excavation and removal of culvert, sanitary sewer, storm sewer, or other pipe followed with the backfilling and compaction of the excavated material together with the salvage and the reinstallation of the pipe, as specified in the Contract item.

Excavation above and around the pipe shall be compensated for under Section 403 but any additional hand work excavation required to remove and reinstall the pipe shall be considered part of Section 523.

523.02 EXCAVATION AND SALVAGE

After Excavation for Foundations operations have been carried out to expose the pipe the Contractor shall salvage the pipe, as designated, within the limits as required by the Owner's Representative.

The excavation of material abutting the top and sides of the pipe shall be performed in such a manner as to leave undisturbed, adjacent structure or other work to be left in place, and so that no damage occurs to pipe designated to be salvaged.

All excavated material shall be piled in a manner that will not endanger the work, and that will avoid obstructing sidewalks, driveways, and gutters.

The Contractor shall carefully disassemble the pipe at the couplers and joints and carefully remove the pipe from the trench in such a way as not to cause damage to the pipe. The salvaged pipe together with couplers shall be stored at a safe place on the job site prior to reinstallation.

Should any pipe lengths, designated for salvage, be damaged or lost by the Contractor, then the Contractor shall not receive payment for pipe salvage for the damaged lengths. Damaged material shall become the property of the Contractor and shall be disposed of by the Contractor at their own expense. Any damaged pipe will be replaced at the Contractor's expense.

The Contractor shall be aware of Section 825.

523.03 BACKFILLING AND COMPACTION AND REINSTALLATION

Where concrete is placed in the excavation under another specification, such as concrete plugs in the ends of pipes left in place, then backfilling shall not take place until the concrete has reached at least the specified strength at 28 days.

Material excavated as part of the removal or salvage operations shall be used as backfill in the trench, which shall include any necessary stockpiling of the excavated material.

Backfill shall be placed in layers not exceeding 200 millimetres in un-compacted depth. Each layer shall then be compacted to not less than 95% of the Standard Proctor density (ASTM D698) before a further layer is placed.

Reinstallation of the pipe or culvert shall be carried out as per Section 421.04.

523.04 MEASUREMENT FOR PAYMENT

523.04.01 Measurement for Payment for Salvage and Reinstallation of Pipe

Measurement for payment for the salvage of pipe of a particular diameter and material type shall be the length in metres, to one decimal place, of the pipe of that size and type, when measured after being removed from the ground and reinstalled at the designated reinstallation location.

Pipes that are damaged to the extent that they will be unsuitable for re-use, will not be included in measurement for payment for pipe salvage and reinstallation.

523.05 BASIS OF PAYMENT

523.05.01 Basis of Payment for Salvage and Reinstallation of Pipe

Payment at the contract price for the salvage of pipe of a particular material and size shall be compensation in full for all materials, labour, and use of equipment to: provide any hand work excavation necessary to complete the pipe salvage operation, remove and salvage the pipe and couplers, provide any dewatering necessary to carry out the work, transport pipes and couplers to the storage site, store the salvaged pipes and couplers, and backfill and compact the excavated material and reinstall the salvaged pipe at the same or new location for the pipe, including the temporary stockpiling of the excavated material for reuse in the backfilling process. (In the case of driveway culverts excavation and backfill of the driveway culvert will be included in the price of salvage and reinstallation of culvert or pipe.)

Any damaged pipe will be replaced at the contractor's expense, where it is deemed the pipe was salvageable.

Excavation above and around the pipe, in roadways, shall be compensated for under Section 403, but any additional hand work excavation required to salvage the pipe shall be compensated for as part of payment for Section 523.

SECTION 525

CUTTING PREVIOUSLY INSTALLED CORRUGATED STEEL PIPE

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- 525.01 SCOPE**
- 525.02 MATERIALS**
- 525.03 OPERATIONS**
- 525.04 MEASUREMENT FOR PAYMENT**
- 525.05 BASIS FOR PAYMENT**

525.01 SCOPE

This specification deals with the work of cutting a previously installed corrugated steel pipe which was placed as part of another contract. This section does not apply to cutting new corrugated steel pipe culverts, perforated pipe or storm sewers which are to be installed in this contract. Cutting new corrugated steel pipe is not a pay item, but is included in payment as part of Section 421 and Section 420.

525.02 MATERIALS

Metal conditioner and cold galvanizing compound shall meet the requirements of CSA G401. The cold galvanizing compound shall be of a type that imparts cathodic actions against corrosion.

525.03 OPERATIONS

At the point designated by the Owner's Representative, the Contractor shall sever the pipe by making a neat cut perpendicular to the axis of the pipe. All soil and dirt sticking to the pipe near the cut shall be thoroughly brushed off using a wire brush.

The clean surface shall receive at least one application of metal conditioner to de-oxidize, de-grease, and phosphatise the metal surface. Pre-mixed ready-to-apply, liquid zinc compound shall be applied to the prepared clean dry metal surface. The cold galvanizing compound shall be applied with an overlap of at least 50 millimetres over the surrounding undamaged galvanized metal.

These compounds are toxic to fish and other aquatic life. Extreme care shall be taken to ensure that this material does not enter streams or ponds.

525.04 MEASUREMENT FOR PAYMENT

Measurement for payment for cutting a previously installed corrugated steel pipe of the size indicated shall be by the number of complete severing cuts made to pipe of that size.

525.05 BASIS FOR PAYMENT

Payment at the contract price for Cutting Previously Installed Corrugated Steel Pipe of the size stipulated shall be compensation in full for all labour, materials, and use of equipment to: sever the pipe at the point designated, clean the cut, and supply and apply metal conditioner and cold galvanized compound to the cut.

SECTION 530

SUPPLY AND INSTALLATION OF TRAFFIC LIGHT CONDUIT

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- 530.01 SCOPE**
- 530.02 MATERIALS**
- 530.03 PROCEDURE**
- 530.04 MEASUREMENT FOR PAYMENT**
- 530.05 BASIS OF PAYMENT**

530.01 SCOPE

This specification covers the requirements for the supply and installation of electrical conduit for the installation of traffic signal systems.

530.02 MATERIALS

Conduit will be rigid polyvinyl chloride (PVC) conduit suitable for electrical applications. The use of telephone duct will not be permitted. Concrete for encasement of the PVC conduit shall meet the requirements for substructure concrete set forth in Section 904.

530.03 PROCEDURE

All electrical conduit must be installed by a registered electrical contractor. The electrical contractor must obtain a permit from the Department of Digital Government and Service NL or the local municipality as the case may be, prior to commencing work on the conduit. All inspections that are required are to be arranged with the proper authority by the electrical contractor. Copies of the permit and inspection certificates must be provided to the Owner's Representative.

Conduit shall be laid in continuous lengths in the trench not less than 1 metre below finished grade, or as directed by Owner's Representative. Where joints are necessary, they shall be made with couplings as approved by the Owner's Representative. Conduits shall be placed in the trench on a uniform grade and compacted bed, free of sharp stones. No sharp bends will be permitted. Where two or more conduits are to be laid in a trench, they shall be laid side by side and spaced as shown in the contract drawings.

All conduit ends shall be terminated in junction boxes, pole bases or traffic signal controller foundation. All rigid PVC connections must be made with solvent cement.

The conduit is to be encased in concrete with a minimum cover thickness of 75 millimetres around each conduit in the installation. At least 3 hours shall occur before the trench is backfilled to allow the concrete to stiffen.

Immediately after the concrete has been poured, the Contractor, by using a suitable size testing mandrel, or by other means acceptable to the Owner's Representative, shall prove the complete system to ensure the conduits are clean and free of obstructions.

Except by permission from the Owner's Representative, the trenches shall be backfilled prior to completion of the days work and shall not be left open over night.

Except for such material as may be specified for bedding purposes or conduit protection, and unless otherwise directed by the Owner's Representative, material used for backfilling trenches shall correspond in quality and depth with the material in the faces of the trenches. Each material shall be compacted to 100% of maximum dry density.

The Contractor shall place 6 millimetre twisted nylon fish lines into the conduits for the future easy installation of cables. The ends of the fish line are to be secured to the satisfaction of the Owner's Representative.

All facilities and surface features affected by excavation shall be restored by the Contractor to their original condition or to a condition satisfactory to the Owner's Representative.

530.04 MEASUREMENT FOR PAYMENT

Measurement will be made in metres, rounded to the nearest 0.1 metre, horizontally along the longitudinal axis of the trench and shall be from centre to centre of junction boxes, poles and traffic signal controller foundations for each type of conduit installation.

530.05 BASIS OF PAYMENT

Payment at the contract price shall be full compensation for all labour, equipment and material required to supply and install conduit, including: cutting, removal and disposal of asphalt, excavation of trench, supply and installation of conduit, couplings, elbows, and end caps; supply and installation of fish lines, supply and installation of concrete form work, supply and place concrete, backfilling and compaction of trench, removal of surplus material and repairing of trench area, including reinstatement of the disturbed area to its original condition.

SECTION 535

SUPPLY AND INSTALLATION OF TRAFFIC SIGNAL FOUNDATIONS

INDEX

- 535.01 SCOPE**
- 535.02 GENERAL**
- 535.03 MEASUREMENT FOR PAYMENT**
- 535.04 BASIS OF PAYMENT**

535.01 SCOPE

This specification covers the requirements for the supply and installation of concrete foundations for traffic signal poles, both post top and cantilever styles.

535.02 GENERAL

Concrete shall conform to the requirements for substructure concrete as stipulated in Section 904.

All concrete reinforcement shall be in accordance with Section 905.

All formwork shall be in accordance with Section 907. The forms shall be held to the established lines and grades, and upper edges shall conform to the grade established by the Owner's Representative.

As soon as the concrete has been placed and consolidated, it shall be struck off and screened to the established grade. The surface shall be immediately floated with a wood or metal float to remove ridges and fill the voids remaining on the surface following screening. The concrete shall not receive any floating or working when bleed water or free water, is present on the surface. The surface shall not be permanently worked or subsequently overworked to cause excessive fines and water to be forced to the surface.

The method and materials used to cure and protect the concrete shall be in accordance with the provisions of Section 904

The anchorage assembly shall be accurately orientated in order that future pole brackets and signal heads will be right angles to the roadway being served. The template shall be

firmly positioned and fixed in a level position before concrete is placed. The template shall remain in place until the pole is to be erected.

Steel reinforcing bolts and ties shall be as shown on Forms 1286 or 1287, as the case may be.

Conduit sleeves shall be firmly fixed to formwork or steel reinforcing prior to the pouring of concrete.

All sleeve openings not to be utilized on this contract shall be plugged using approved PVC plugs.

All components shall be accurately placed, secured and supported in a manner approved by the Owner's Representative so that there can be no shifting or deflection of the components due to the placing of concrete and such other loads as may be superimposed during construction.

All rigid PVC connections shall be made with solvent cement.

Immediately after concrete has been poured, the contractor, by using a suitable size testing mandrel, or by other means acceptable to the Owner's Representative, shall prove the complete system to ensure that conduits are clean and free of obstructions.

The ends of the ducts shall be capped with plastic plugs after a twisted nylon fish line has been pulled through each duct and a 1.5 metre length brought out at each end past the plastic plugs and left coiled for future use.

All exposed studs and appropriate nuts shall be thoroughly cleaned and smeared with a suitable anti-seizer lubricating component to prevent the nuts from freezing to the studs.

One nut shall be turned down on each anchor stud.

535.03 MEASUREMENT FOR PAYMENT

Measurement for payment for Supply and Installation of Traffic Signal Foundations shall be by the number of Traffic Signal Foundations of each type installed.

535.04 BASIS OF PAYMENT

Payment at the contract price for Supply and Installation of Traffic Signal Foundations will be compensation in full for all plant, labour, equipment and material use required to supply

and install a traffic signal foundation including: excavation, supply and installation of formwork, reinforcing, concrete, anchor bolts, conduits, elbows and fish lines.

SECTION 537

SUPPLY AND INSTALLATION OF TRAFFIC POLES

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537.02.02 Traffic Pole

537.02.03 Traffic Fixtures and Signals

537.03 CONSTRUCTION

537.03.01 Bases and Foundations

537.04 MEASUREMENT OF PAYMENT

537.05 BASIS OF PAYMENT

537.01 SCOPE

The work covered by this specification shall cover the supply and installation of traffic and light poles, anchor bolts, mounting arms and associated hardware.

537.02 MATERIALS

537.02.01 General

Steel poles shall be designed to meet the latest version of CSA-S6 Canadian Highway Bridge Design Code Standards. The traffic pole shall have a design life of 75 years.

Wind load should be calculated using the hourly mean wind pressure for a 50 year return period for the specific location, or 800 pascals, whichever is greater. A gust factor of 2.5 shall be used.

Ice loading shall be calculated based upon nominal ice thickness for the extreme icing zone, or 66 millimetres, whichever is greater.

The design shall be prepared by a Professional Engineer who shall submit shop drawings and installation procedures to the Department at least two weeks prior to start of construction. Shop drawings are required to detail the effective projected area and reactions to be transferred to the foundation from the base of the pole to the foundation

and shall bear the stamp and signature of a Professional Engineer licensed to practice in the Province of Newfoundland and Labrador.

537.02.02 Traffic Pole

Unless otherwise specified, traffic poles shall be hot dipped galvanized steel having offsets and mounting heights as specified in the contract documents.

Traffic poles shall be galvanized in accordance with CSA G164M/ ASTM A123.

537.02.03 Traffic Fixtures and Signals

Traffic fixtures and signals shall be as specified in the contract documents.

537.03 CONSTRUCTION

537.03.01 Bases and Foundations

The Contractor shall supply under separate pay items concrete bases and foundations for the installations of poles, however, the supplying and placing of anchor bolts for these bases and foundations shall be considered included in the price bid for supplying and installing poles.

Where poles are of the direct bury type then excavation to the required grade and backfilling shall be included in the price bid for supply and installation of poles.

537.04 MEASUREMENT OF PAYMENT

Measurement for payment for Traffic Poles shall be by each Traffic Pole of that type that are supplied and installed, as specified in the contract documents.

537.05 BASIS OF PAYMENT

Payment shall be at the unit price for each pole supplied and installed complete with anchor bolts, nuts, washers, template, leveling grout, shop drawings and incidentals.

SECTION 540

CAST-IN-PLACE CONCRETE MEDIAN BARRIER

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540.03.05 Control Joints

540.03.06 Construction Joints

540.04 MEASUREMENT FOR PAYMENT

540.05 BASIS OF PAYMENT

540.01 SCOPE

This item consists of the construction of concrete median barrier using the slip-forming method in accordance with the contract documents and specifications.

540.02 MATERIALS

540.02.01 Concrete

Concrete shall meet the requirements for substructure concrete as outlined in Section 904.

540.03 CONSTRUCTION

540.03.01 Concrete Mix Design

The Contractor shall submit to the Owner's Representative for acceptance a proposed mix design 14 days prior to its use.

540.03.02 Concrete Placement

The concrete for the median barrier shall be placed by the use of an approved slip-form paver. The slip form shall be cleaned and oiled with an approved form oil prior to each use. The vibration technique used will be such as to ensure the concrete in place shall be void of air pockets.

Adequate workforce shall be scheduled and concrete trucks sequenced to provide for uniform placing of the concrete with a minimum of interruption.

Precautions shall be taken to prevent any damage to the pavement by the slip-form paver, concrete trucks or other equipment. Damaged surfaces shall be repaired by the Contractor at their own expense.

The surfaces of the median barrier shall not vary by more than 5 millimetres when measured with a 3-metre straight edge.

Concrete spilled on the highway shall be removed and the highway cleaned to the satisfaction of the Owner's Representative.

540.03.03 Finishing

Hand finishing shall be kept to a minimum. Repair of air holes less than 15 millimetres in diameter will not be required. Care shall be taken in any hand finishing that may be required to maintain the correct alignment and grade.

A textured broom or brush finish shall be applied to the finished surface. Hand finishing shall be done with a magnesium or wood float but shall be kept to a minimum.

540.03.04 Curing

White membrane curing compound, if used, shall be applied immediately after finishing. Curing shall consist of two spray applications of the compound with the second application applied in a direction perpendicular to the first.

540.03.05 Control Joints

Control joints shall be saw cut with an approved power saw, as soon as the concrete has hardened sufficiently to permit sawing without excessive raveling and before shrinkage cracking takes place. Uncontrolled shrinkage cracks that occur shall be subject to the approval of the Owner's Representative. If not acceptable, a section of concrete median, of not less than 1 metre surrounding the crack, shall be removed and replaced at the Contractor's expense.

Control joints shall be sawed to a minimum depth of 50 millimetres and shall be spaced at equidistant intervals along the length of the barrier, but not longer than 5 metre spacing, unless otherwise specified on the contract plans or specifications.

Contraction joints shall be cut neatly in a vertical plane.

540.03.06 Construction Joints

Vertical construction joints at the ends of slip-formed barrier segments shall include a vertical key in the joint surface as shown on the plans or approved by the Owner's Representative.

540.04 MEASUREMENT FOR PAYMENT

Measurement for payment for cast-in-place concrete median barrier will be by means of the required completed and accepted median barrier, measured in linear metres rounded to one decimal place.

540.05 BASIS OF PAYMENT

Payment at the contract price per linear metre of cast-in-place concrete barrier median shall be compensation in full for all plant, labour, materials and equipment use to, supply and place concrete with an approved slip-form paver to the line and grade established by the Owner's Representative, cure the concrete, and finish the concrete.

SECTION 541

PRECAST CONCRETE TRAFFIC BARRIER

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541.03.05 Tolerances

541.03.06 Handling

541.03.07 Installation

541.04 MEASUREMENT FOR PAYMENT

541.05 BASIS FOR PAYMENT

541.01 SCOPE

This item consists of the supply and installation of precast concrete traffic barrier elements in accordance with the plans and specifications.

541.02 MATERIALS

541.02.01 Concrete

Concrete shall meet the requirements of substructure concrete as stipulated in Section 904.

541.02.02 Welded Steel Wire Fabric

The welded wire fabric shall conform to ASTM A185.

541.03 CONSTRUCTION

541.03.01 Welded Wire Mesh

The reinforcing steel may be tack welded to the welded wire mesh. The bar cover tolerance for the reinforcing steel shall be plus 12.5 millimetres and minus 6 millimetres.

Supporting chairs for welded steel wire fabric shall be heavy plastic tipped, approved by the Owner's Representative. The bar cover tolerance of the wire mesh shall be plus 1.5 millimetres and minus 6 millimetres.

541.03.02 Forms

Only steel side forms and steel bottom forms shall be used. Forms shall be clean and of a configuration to ensure compliance with the tolerances outlined in this particular specification. Forms previously used shall be thoroughly cleaned of all mortar and foreign material before being re-used. Inside formwork shall be, coated with a commercial quality form varnish or other equivalent coating before concrete is placed which will permit the ready release of the forms and will not discolour the concrete.

The Owner's Representative shall be informed of the time and location of the concrete pour for the precast barrier elements.

541.03.03 Curing

Exposed sharp edges shall be chamfered with triangular fillets, measuring 12.5 millimetres by 12.5 millimetres, so as to prevent mortar runs and to preserve smooth straight lines. Triangular fillets or chamfer strips shall be made of steel, plastic or milled from clear, straight grain lumber planed on the side exposed to concrete.

Curing shall be carried out naturally or artificially accelerated by the use of heat. When curing naturally, the methods outlined in Section 904.05 shall apply.

Forms may be removed and no further curing required when the concrete has obtained 80% of its specified 28 day strength. When curing is artificially accelerated, the following methods shall be used for precast barrier elements.

Immediately after the concrete in each element is placed, the element shall be covered with an approved enclosure. During the initial curing period, which is from 4 to 5 hours after completion of casting, the temperature within the enclosure shall be maintained at approximately 20 degrees Celsius, with a maximum moisture content in the air. The element shall be kept wet by the application of sufficient water at the same temperature

as the air within the enclosure. Condensate from steam will be an acceptable source of water.

During the next stage of curing, the temperature within the enclosure shall be raised to a minimum of 40 degrees Celsius and a maximum of 70 degrees Celsius at a rate not exceeding 15 degrees Celsius per hour. This temperature, combined with maximum moisture content in the air, shall be maintained until the required concrete strength is reached. Throughout the curing time, the element shall be kept wet by applying water of the same temperature as the air within the enclosure. Condensate from steam will be an acceptable source of water.

After the required strength has been reached the temperature shall be lowered at a rate of 15 degrees Celsius per hour until the element is at air temperature. The elements shall not be exposed to temperatures below freezing until they have undergone two days of drying in warm temperatures following the above curing. After drying, such elements shall be cooled at not more than 5 degrees Celsius per hour until the outside air temperature is reached.

When forms are removed during the curing period, particular care shall be taken to maintain the required temperature. Steam jets shall be directed so that the steam does not strike directly on the forms or concrete surfaces.

541.03.04 Finishing

In general the bottom surface (top surface when pouring) of the precast section shall be a smooth wood float finish.

The permanently exposed surfaces shall be true, smooth and free from honeycomb. Small surface voids due to entrapped air shall be filled with an approved cement mixture. All ridges occurring at junctions of form panels and all bottom edges shall be ground smooth.

The Owner's Representatives permission must be received before patching any defects other than minor surface imperfections.

541.03.05 Tolerances

The barrier element surfaces shall be true line and dimensions within the following tolerances.

Overall Depth of Elements = + 5 millimetres

Width of Elements = + 3 millimetres

Exposed Element End Deviation from Square (Measured where Element is 762 millimetres in width) Horizontal = 6 millimetres

Exposed Element End Deviation from Square Vertical = 6 millimetres

541.03.06 Handling

Elements shall not be shipped until the concrete in the elements has reached the specified 28 day strength.

Elements shall be stored and transported in the final upright position only and shall be supported on a dry firm base as required by the Owner's Representative.

Elements shall not be placed on other elements unless otherwise approved by the Owner's Representative.

Elements damaged by improper handling, storage or transportation by the Contractor will not be acceptable to the Department, until acceptable repairs have been made by the Contractor.

541.03.07 Installation

Barrier sections shall be installed at locations as directed by the Owner's Representative. The barrier shall become the property of the Department.

541.04 MEASUREMENT FOR PAYMENT

The quantities to be measured for payment shall be the number of linear metres, rounded to the nearest 0.1 metre, of traffic barrier acceptably built, delivered to the job site and installed according to the plans and specifications.

541.05 BASIS FOR PAYMENT

Payment at the contract price per linear metre of barrier shall be full compensation for all plant, labour, equipment and materials used to construct formwork, supply and place reinforcing steel and wire mesh, supply, place and compact the concrete, cure the concrete, remove formwork, load, transport and unload the barrier at the work site and place the barrier at the line and grade established by the Owner's Representative.

SECTION 570

INSTALLATION OF CONCRETE SIDEWALK

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570.11	BASIS OF PAYMENT
570.12	CONCRETE ACCEPTANCE AND REDUCED PAYMENT CRITERIA ON CONCRETE LOCATED IN CONCRETE SIDEWALK

570.01 SCOPE

This specification covers the requirements for the construction of concrete sidewalk on a prepared bed of Granular Base Course.

570.02 MATERIALS

All concrete shall conform to the requirements of, “Curb, Gutter, Sidewalks, Catch Basins and Weir Baffle” Concrete in accordance with Section 904.

Material for forming isolation joints shall be 12 millimetre thick bituminous fibre material of depth equal to the depth of the sidewalk.

Material for forming control joints shall be 12 millimetre thick bituminous fibre material for the set-in- place type, or a bituminous filler material for the groove or saw-cut type.

All materials, including formwork, shall be supplied by the Contractor.

570.03 PREPARATION WORK

Should excavation be required prior to placing the bed for the sidewalk, then such work shall be carried out and paid for in accordance with Section 206.

When fill is required prior to placing the bed for the sidewalk, then this work shall be carried out in accordance with Section 204.

After the site has been graded, as described above, a bed shall be laid composed of Selected Granular Base Course Granular "B". The bed shall be laid to the lines and grades as staked by the Owner's Representative.

At those places where a sidewalk is to be placed behind a drop curb, then the bed shall be graded in such a way that will allow the finished sidewalk to have a configuration as shown in the drawing in Form 1276.

The compacted depth of the bed should not be less than 100 millimetres. The bed shall be compacted to not less than 95% of the Standard Proctor Density (ASTM D698).

570.04 FORMWORK

After the bed has been prepared, suitable forms shall be placed to conform to the lines and grades furnished by the Owner's Representative.

Formwork shall conform to the requirements of Section 907.

The forms shall be placed as to provide for a slope of 2% towards the curb, or for such other slopes as may be set by the Owner's Representative.

At those places where a sidewalk is to be placed behind a drop curb, then the forms shall be set so as to obtain a finished concrete surface and joints as shown in the drawing in Form 1276 and Form 1278.

570.05 PLACING THE CONCRETE

Sidewalk may be placed in isolation or it may be placed adjacent to a curb.

The thickness of the sidewalk slab shall be not less than 125 millimetres. The width shall be as staked by the Owner's Representative.

Concrete shall be placed in accordance with the requirements of Section 904.

As soon as the concrete has been placed and consolidated, it shall be struck off true to grade and cross-section, by an oscillating movement of a straight-edge or template inclining towards the curbing with an inclination of 2% or such other slope as may be determined by the Owner's Representative.

The surface shall then be floated with a wooden flat until the mortar flushes to the top, and the entire surface presents a tight and compact appearance. No deviation of greater than 3 millimetres in a 3 metre straight edge shall be tolerated. The divisions between each block shall be marked, rounded, and tooled with proper finishing tools in the neatest possible manner, and to the approval of the Owner's Representative. The jointing tool shall have a radius of 12 millimetres. Under no circumstances will it be permitted to grout any portion the sidewalk which does not in the opinion of the Owner's Representative present a satisfactory surface. Such portion or portions must be entirely removed and replaced by the Contractor, to the satisfaction of the Representative, without extra remuneration.

570.06 JOINTS

When the sidewalk is to be placed adjacent to another structure, such as a curb, then the Contractor shall place a full length isolation joint between the back of the structure and the sidewalk. Isolation joints shall be placed at all places where a change in slope on the sidewalk occurs such as adjacent to drop curbs and tapered curbs. See drawing in Form1276 for an illustration of the location of isolation joints behind a curb and also at places where a change in slope of the sidewalk occurs.

Isolation joints shall also be placed around all water services, lamp posts, hydrants, and utility poles which occur within the limits of the sidewalk. The joint material shall be set so as not to protrude above the surface of the sidewalk.

Control joints shall be constructed adjacent to all transverse control or isolation joints in the curb and gutter. In addition control joints shall be placed at intervals not more than 2 metres apart. They shall have a depth of not less than one quarter the thickness of the sidewalk, and extend the full width of the sidewalk. The cast-in -place control joint shall consist of 12 millimetre wide bituminous filler material of length equal to the width of the sidewalk. Alternative control joints may be cut using a saw or made with a tool before the concrete is completely set. The cuts or groove shall be between 3 and 5 millimetres wide. This groove or saw-cut type of control joint shall be completely filled with a bituminous filler material when the concrete is dry. Immediately prior to the filling, the groove or saw-cut shall be thoroughly cleansed of all dust and particles of foreign matter.

Construction joints shall be built at convenient stopping places in the placement of the concrete. They may be either a butt type joint, or an isolation type joint. They shall be built at the end of each day's construction or when there is a delay in the supply of concrete and cold joints may develop.

570.07 CURING THE CONCRETE

Concrete shall be cured in accordance with the requirements of Section 904.

570.08 TRIMMING

After the removal of the forms and after the initial curing of the concrete, the Contractor shall grade and tamp adjacent other material against the exposed edges of the sidewalk to form shoulders to the sidewalk. These shoulders shall be made trim to slightly proportions.

570.09 PROTECTION OF SIDEWALK FROM TRAFFIC AND PEDESTRIANS

The Contractor shall use barricades, watchmen, or other means, to protect all sidewalk surfaces from harm by traffic or pedestrians, until the Owner's Representative authorizes the sidewalk to be opened to public use.

The Contractor shall at all times prior to the opening to traffic provide suitable bridging as other means of access to adjacent properties.

570.10 MEASUREMENT FOR PAYMENT

This item will be measured by the length and width as laid according to the instructions of the Owner's Representative and such measurements will be computed into square metres, rounded to one decimal place.

570.11 BASIS OF PAYMENT

Payment at the contract price for installation of concrete sidewalk shall be compensation for labour, materials, and equipment-use to supply and place formwork and concrete, to construct joints, to provide and place joint filler, to cure the concrete, to protect the sidewalk from traffic, to provide suitable bridging, to remove the forms, to shoulder the exposed edges of the sidewalk with adjacent other material, and to tamp the O.M. shoulders of the sidewalk.

Selected Granular Base Course Granular "B", for providing the bed shall be paid for in accordance to the Contract Unit Price for Selected Granular Base Course Granular "B", but any additional labour required to place this bed as specified shall be considered compensated for in the contract price for concrete sidewalk.

570.12 CONCRETE ACCEPTANCE AND REDUCED PAYMENT CRITERIA ON CONCRETE LOCATED IN CONCRETE SIDEWALK

Concrete on a project for sidewalk, and also as defined by its specified strength at 28 days, must have an average tested strength at 28 days equal to or greater than that specified for payment at the bid price.

Concrete for concrete sidewalk having an average strength of less than that specified will be accepted into the job at a reduced payment, provided the difference between specified strength and tested strength is no greater than 5MPa. If the average of tests in a particular predefined portion of concrete sidewalk is less than that specified by more than 5MPa then that concrete shall be rejected.

When concrete is rejected, those provisions outlined in CSA-A23.1 shall be followed to determine whether or not the concrete may remain in the work. Such work will be done at the Contractor's cost. Notwithstanding the above, should the concrete remain in the work it will be subject to a reduction, as outlined below, for having a strength less than that specified.

Concrete for concrete sidewalk otherwise acceptable but having an average strength deficiency as tested of less than 5 MPa compared with that specified, will be accepted but the bid price for all concrete in the predefined portion will be reduced according to the following procedure:

For concrete work where the Unit Price Table states the unit to be square metres the adjusted price shall be calculated as follows:

$$(Adjusted\ Concrete\ Price) = (Tested\ Strength/Specified\ Strength) \times $(Bid\ Concrete\ Unit\ Price)$

Division of the sidewalk into predefined portions will be done by the Owner's Representative as the concrete placement is carried out. A predefined portion shall generally be established as that concrete placed within one operation.

There will be no bonus payment under the contract when the average strength is in excess of the specified strength.

SECTION 575

INSTALLATION OF ASPHALT SIDEWALK

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- 575.01 DESCRIPTION**
- 575.02 MEASUREMENT FOR PAYMENT**
- 575.03 BASIS OF PAYMENT**

575.01 DESCRIPTION

This specification covers the requirements for the provision of asphalt sidewalk.

The sidewalk shall be constructed as shown in Form 1272. The Granular "A" shall meet the requirements set forth in Section 315 and the Asphalt shall meet the requirements for surface course set forth in Section 330, 332 and 333, as appropriate.

575.02 MEASUREMENT FOR PAYMENT

This item will be measured by the length and width, as laid according to the instructions of the Owner's Representative, and such measurements will be used to determine the number of square meters, rounded to one decimal place, of asphalt sidewalk incorporated into the work.

575.03 BASIS OF PAYMENT

Payment at the contract price for Asphalt Sidewalk shall be compensation in full for all equipment and labour to install the asphalt sidewalk.

Granular "A" placed beneath the asphalt sidewalk will be paid for in accordance to the contract price for Granular "A" and the Hot Mix Asphaltic Surface Course used for the sidewalk shall be paid in accordance with the contract price for Hot Mix Asphaltic Surface Course, but all additional labour and equipment use required to place and compact the Granular "A" and Hot Mix Asphaltic Surface Course shall be considered compensated for in the contract price for Asphalt Sidewalk.

SECTION 580

SIGN AND SIGNPOST INSTALLATIONS

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580.07 BASIS OF PAYMENT

580.01 SCOPE

This specification covers the requirements for the supply and installation of various types of signposts and the actual placing of highway signs on those signposts.

580.02 CLASSIFICATION OF SIGNPOST INSTALLATIONS

There are nine basic types of signpost installations, namely; Type A, Type B, Type C, Type D, Type E, Type F, Type G, Type H and Type I.

Type A and Type B signpost installations are of various dimensions, but all are intended to support signs that require only one wooden vertical member for support. For Type A and Type B signpost installations, the number following the letter denotes the required height of the sign to be placed on the post, measured in millimetres. See Forms 1290 and 1291 for typical details.

Type C and Type D signpost installations are of various dimensions, but all are intended to support signs that require two wooden vertical members for support. Type C installations are intended for signs of width less than or equal to 2440 millimetres and a height of less than or equal to 1220 millimetres. Type D installations are intended for signs wider than 2440 millimetres but less than 4880 millimetres and/or higher than 1220 millimetres.

For Type C and Type D signpost installations the upper number following the letter denotes the required height of the sign board in millimetres, and the lower number denotes the length of the sign board in millimetres. See Forms 1292 and 1293 for typical details.

Type E signpost installations will be of various dimensions and are intended to support signs less than or equal to 2440 millimetres in height and between 4880 and 6096 millimetres in length which require three wooden vertical members for support. For Type E signpost installations, the upper number following the letter denotes the height of the signboard in millimetres and the lower number denotes the length of the signboard in millimetres. See Form 1294 for typical details.

Type F signpost installations are intended to support signs between 2440 and 3050 millimetres in height and less than or equal to 4880 millimetres in length which require two vertical structural steel members for support. For Type F signpost installations, the upper number following the letter denotes the height of the sign panel in millimetres and the lower number denotes the length of the sign panel in millimetres. See Form 1295 for typical details.

Type G signpost installations are intended to support signs greater than 2440 millimetres in height and less than or equal to 6100 millimetres in length which require three vertical structural steel members for support. For Type G signpost installations, the upper number following the letter denotes the sign panel height in millimetres and the lower number denotes the sign panel length in millimetres. See Form 1296 for typical details.

Type H signpost installations will be of various dimensions and are intended to support signs less than or equal to 2440 millimetres in height and between 6706 and 7925 millimetres in length which require four wooden vertical members for support. For Type H signpost installations, the upper number following the letter denotes the height of the signboard in millimetres and the lower number denotes the length of the signboard in millimetres. See Form 1294a for typical details.

Type I signpost installations are intended to support signs greater than 2440 millimetres in height and between 6700 and 7925 millimetres in length that require four vertical structural steel members for support. For Type I signpost installations, the upper number following the letter denotes the sign panel height in millimetres and the lower number denotes the sign panel length in millimetres. See Section 1296a for typical details.

580.03 MATERIALS

The Contractor shall supply all materials required to complete sign and signpost installations in accordance with these specifications.

All posts, footings, and braces for Types A to E and H shall be pressure treated eastern hemlock, western hemlock, or British Columbia fir and be of the size specified for each post type.

Nails shall be galvanized with a length of 100 millimetres.

Lag bolts shall be galvanized with a length of 80 millimetres and a diameter of 10 millimetres and with Hex or Square Head only (carriage type head is not to be used on signs).

Washers shall be galvanized flat washers to fit 10 millimetre diameter lag bolts.

Posts for Type F, Type G and Type I shall be W 250x49 structural steel members, grade 350W in accordance with CSA G40-21, latest edition. All welding is to conform to CSA W59 and companies are to be certified to W47.1, latest edition. All fabrication of structural steel shall be done in accordance with Section 910. No splicing of the vertical member

will be permitted. The sign post shall be painted in accordance with Section 921. The complete penetration groove weld between the vertical member and the base plate shall be designed by a qualified welding engineer to handle a factored moment of 135 kN-M (ultimate limit states), 103.85kN-M (fatigue limit states) a factored horizontal shear force of 32.5 kN (Ultimate limit states), 25.0 kN (fatigue limit states). The fatigue category shall be "B" for 2,000,000 cycles. Shop drawings bearing the seal of a registered professional engineer, licensed to practice in the Province of Newfoundland and Labrador, and shall be submitted for approval.

Brackets for attaching the aluminum panels to the steel post shall be manufactured from 8 millimetre steel plate to the dimensions shown on Forms 1295, 1296 and 1296a. The brackets are to be painted in accordance with Section 921.

A 6 millimetre thick x 245 millimetre wide neoprene gasket shall be placed between the steel post and aluminium sign panels. The gasket is to extend the full height of the aluminium panels.

580.03.01 Additional Material Requirements for Type A Installations

Vertical members shall be 114 millimetre x 114 millimetre pressure treated lumber of length not less than that as calculated for the appropriate sign drawings as explained by Section 580.02 and as illustrated on Form 1290.

Footings for each post shall consist of six pieces of 38 millimetre x 89 millimetre pressure treated lumber of length not less than 450 millimetres.

Cross bracing shall consist of one or two pieces of 38 millimetre x 89 millimetre pressure treated lumber of sufficient length to provide cross bracing for the installation of the required size and shape.

580.03.02 Additional Material Requirements for Type B Installations

Vertical members shall be 140 millimetre x 140 millimetre pressure treated lumber of length not less than that as calculated for the appropriate sign indicated by the contract drawings, as explained by Section 580.02 and as illustrated on Form 1291.

Footings for each post shall consist of six pieces of 38 millimetre x 89 millimetre pressure treated lumber of length not less than 450 millimetres.

Cross bracing shall consist of one or two pieces of 38 millimetre x 89 millimetre pressure treated lumber of sufficient length to provide cross bracing for the installation of the required size and shape.

580.03.03 Additional Material Requirements for Type C Installations

Vertical members shall be 140 millimetre x 140 millimetre pressure treated lumber. Footings for each installation shall consist of two pieces of 38 millimetre x 89 millimetre pressure treated lumber. The length of vertical members and footings shall not be less than that as calculated for the appropriate sign board indicated by the contract drawings, as explained by Section 580.02 and as illustrated on Form 1292 and Form 1299.

Cross bracing shall consist of two pieces of 38 millimetre x 89 millimetre pressure treated lumber of sufficient length to provide cross bracing for the installation of the required size.

580.03.04 Additional Material Requirements for Type D Installations

Vertical members shall be 184 millimetre x 184 millimetre pressure treated lumber. Footings for each installation shall consist of two pieces of 38 millimetre x 89 millimetre pressure treated lumber. Cross members for each installation shall consist of two pieces of 89 millimetre x 89 millimetre pressure treated lumber.

The length of vertical members, footings, and cross members shall not be less than that as calculated for the appropriate sign board indicated by the contract drawings, as explained by Section 580.02 and as illustrated on Form 1293 and Form 1299.

Cross bracing shall consist of two pieces of 38 millimetre x 89 millimetre pressure treated lumber of sufficient length to provide cross bracing of the installation of the required size.

Nuts, bolts, and washers for connecting cross members shall be galvanized. The bolt shall be of length 150 millimetres and be of diameter not less than 15 millimetres or greater than 25 millimetres.

580.03.05 Additional Material Requirements for Type E Installations

Vertical members shall be 184 millimetre x 184 millimetre pressure treated lumber. Footings for each installation shall consist of two pieces of 38 millimetre x 89 millimetre pressure treated lumber. Cross members for each installation shall consist of three pieces of 89 millimetre x 89 millimetre pressure treated lumber.

The length of vertical members, footings, and cross members shall not be less than that as calculated for the appropriate sign board indicated by the contract drawings, as explained by Section 580.02 and as illustrated in Forms 1294 and 1299.

Cross bracing shall consist of four pieces of 38 millimetre x 89 millimetre pressure treated lumber of sufficient length to provide cross bracing of the installation of the required size. Nuts, bolts, and washers for connecting cross members shall be galvanized. The bolt shall be of length 300 millimetres and be of diameter not less than 12 millimetres or greater than 25 millimetres.

580.03.06 Additional Material Requirements for Type F, Type G and Type I Installations

Vertical members shall be W250x49 Structural Steel sections as specified by Forms 1295, 1296 and 1296a. Footings for each installation shall consist of reinforced concrete complete with anchor bolts as shown on the contract drawings. Neoprene gaskets shall be used to isolate the aluminum panels from the vertical members.

The length of vertical members shall not be less than that as calculated for the appropriate sign board indicated by the contract drawings, as explained by Section 580.02 and as illustrated in Forms 1295, 1296, 1296a and 1299a.

580.03.07 Additional Material Requirements for Type H Installations

Vertical members shall be 184 millimetre x 184 millimetre pressure treated lumber. Footings for each installation shall consist of two pieces of 38 millimetre x 89 millimetre pressure treated lumber. Cross members for each installation shall consist of six pieces of 89 millimetre x 89 millimetre pressure treated lumber.

The length of vertical members, footings, and cross members shall not be less than that as calculated for the appropriate sign board indicated by the contract drawings, as explained by Section 580.02 and as illustrated in Forms 1294-2 and 1299a.

Cross bracing shall consist of six pieces of 38 millimetre x 89 millimetre pressure treated lumber of sufficient length to provide cross bracing of the installation of the required size.

Nuts, bolts, and washers for connecting cross members shall be galvanized. The bolt shall be of length 150 millimetres and be of diameter not less than 15 millimetres or greater than 25 millimetres.

580.03.08 Materials Used For the Installation of Signs

Signs will be made by the Department and must be picked up by the Contractor. Signs will be made available to the Contractor at the nearest main Depot, (i.e. White Hills Depot, Clarenville Depot, Grand Falls Depot, Deer Lake Depot, or Goose Bay Depot).

Signs will be placed on wooden signposts with 80 millimetre x 10 millimetre lag bolts and washers in accordance with Forms 1290, 1291, 1292, 1293 and 1294.

Signs will be placed on steel posts with 6 millimetre x 100 millimetre brackets. Bolts are to be stainless steel. See Forms 1295, 1296 and 1296a.

580.04 ASSEMBLY

Should any piece of lumber become split or cracked during nailing or installing the sign, then the Contractor shall replace the damaged piece with sound lumber at their own expense. For aluminum installations, posts or panels which become damaged in any manner shall be replaced by the Contractor at their own expense.

580.04.01 Assembly of Type A and Type B

The footings shall be secured to the vertical member at the spacing shown on Forms 1290 and 1291.

Each piece of footing and cross bracing shall be nailed near its centre to the vertical member, by means of two nails as shown on Forms 1290 and 1291.

580.04.02 Assembly of Type C

The footings, cross bracing, and vertical members shall be assembled and secured at the spacing shown on the Form 1292.

Each piece of footing and cross bracing shall be secured to the vertical members with four nails, that is, with two nails at each joint.

580.04.03 Assembly of Type D

The footings, cross bracing, cross members and vertical members shall be assembled and secured at the spacing shown on Forms 1293 and 1299.

Each joint shall be secured with a nut, bolt, and washer. The head of the bolt shall be placed at the front of the installation. The head shall be counter sunk so that the top of the bolt is flush with the front of the installation.

Each piece of footing and cross bracing shall be secured to the vertical members with four nails, that is, with two nails at each joint.

580.04.04 Assembly of Type E

The footings, cross bracing, cross members and vertical members shall be assembled and secured at the spacing shown on Forms 1294 and 1299.

Each joint shall be secured with a nut, bolt, and washer. The head of the bolt shall be placed at the front of the installation. The head shall be counter sunk so that the top of the bolt is flush with the front of the installation.

Each piece of footing and cross bracing shall be secured to the vertical members with four nails, that is, with two nails at each joint.

580.04.05 Assembly of Type F, Type G and Type I

The footings shall be constructed of reinforced concrete as shown on Forms 1295, 1296 1296a, or 1299a, as the case may be.

All concrete shall meet all requirements for "Substructure Concrete" as specified in Section 904. However, the slump must be 60 millimetres \pm 20 millimetres. All reinforcing steel shall meet the requirements stipulated in Section 905. The top of the footing is to be steel float finished, dead level.

The foundation backfill material shall be compacted to 95% of the maximum standard dry density (ASTM D698).

Prior to placing the post, bottom nuts are to be placed and levelled. The post is then to be set and the top nuts tightened. Ensure that the post is true and plumb. Hand pack non-shrink grout under base plate and trowel exposed edges to a smooth bevel.

580.04.06 Assembly of Type H

The footings, cross bracing, cross members and vertical members shall be assembled and secured at the spacing shown on Forms 1294 and 1299a.

Each joint shall be secured with a nut, bolt, and washer. The head of the bolt shall be placed at the front of the installation. The head shall be counter sunk so that the top of the bolt is flush with the front of the installation.

Each piece of footing and cross bracing shall be secured to the vertical members with four nails, that is, with two nails at each joint.

580.05 INSTALLATION

The Owner's Representative will stake the locations where signpost installations are to be installed and designate the sign number of the signpost installation that is required for each location.

The Contractor shall place signpost installations at these locations only of the required type and size for the sign as noted on the drawings.

The Contractor shall excavate holes for the footings, such that when installed the installation is at least the required minimum depth in the ground.

Signpost installations shall be placed with the vertical axis plumb, and with at least the required minimum depth in the ground. The vertical post edge nearest the road shall be 2500 millimetres from the edge of the shoulder, as illustrated in Forms 1298 and 1299. The vertical post edge nearest the road shall be 3500 millimetres from the edge of the shoulder, as illustrated in Form 1299a.

Footings shall be backfilled with selected fill which meets with the Owner's Representative's approval. Backfill material shall not contain stones larger than 150 millimetres in any one dimension.

Backfill material shall be placed in layers of thickness not greater than 150 millimetres. Each layer shall be thoroughly compacted before the successive layer is placed. Dry granular backfill shall be moistened before tamping.

Backfill material around the signpost installations shall be brought up level with the surrounding ground and surplus excavated material together with surplus backfill material shall be disposed of on the sides of fills, or as directed by the Owner's Representative.

The Contractor shall be responsible for placing each sign on the correct posts, and at the location as set by the Owner's Representative, taking care to ensure that each sign is placed undamaged, horizontally levelled, and attached to the posts and cross members with 80 millimetre x 10 millimetre galvanized lag bolts and galvanized washers. Nails cannot be substituted for this job.

Sign board size, sign post type, and the location of each will be specified on drawings as set by the Engineer.

580.05.01 Additional Installation Requirements for Type A and Type B

Type A and Type B sign post installations shall be placed so that at least 1250 millimetres of the vertical member is in the ground. They shall be installed so that the face of the post that is to take the sign is perpendicular to the direction of traffic, or as directed by the Owner's Representative.

580.05.02 Additional Installation Requirements for Type C, Type D, Type E, Type F, Type G, Type H and Type I

Type C and Type D sign post installations shall be placed so that both vertical members are at least 1500 millimetres in the ground.

Type E installation shall be placed so that the three vertical members are at least 2500 millimetres in the ground.

Type F, Type G, Type H and Type I installations shall be placed as shown on the contract drawings.

Special care should be taken with the placing of the above sign post installations so as to minimize specular glare.

On straight stretches of roadway, Type C, Type D, Type E, Type F, Type G, Type H and Type I sign post installations shall be set with the horizontal axis at an angle of 93 degrees with the traffic lane which the proposed sign will serve, or as directed by the Owner's Representative.

On the horizontal curves, these installations shall be set with the horizontal axis at an angle of 93 degrees with a straight line brackets between the sign and the point at which the sign is to be read, or as directed by the Owner's Representative.

580.05.03 Additional Installation Instructions for the Sign Board

On Type A and Type B sign posts, the sign board will be mounted flush with the top of the sign post.

On Type C and Type D signposts, the sign board will be mounted with the top of the sign board, 100 millimetres above the signpost.

On Type A and Type B signposts, the top and bottom lag bolts must be placed 100 millimetres from the top and bottom edges of the sign board, EXCEPT for those pre-drilled sign boards that are normally supplied to the Contractor. See also Forms 1290 and 1291.

On Type C, Type D, Type E and Type H signposts, lag bolts must be placed 250 millimetres down from the top edge of the sign board and follow down the sign board at a maximum spacing of 600 millimetres apart with the lowest lag bolt placed approximately 100 millimetres above the bottom edge of the sign board (for each post). See also Forms 1292, 1293, 1294 and 1294-2.

On Type C, Type D, Type E, and Type H signposts, lag bolts must be placed 300 millimetres from each outside edge of the sign board and spaced a maximum of 600 millimetres apart (for each cross member). See also Forms 1292, 1293 and 1294.

The Contractor is advised that care must be taken when installing the sign board to see that all lag bolts are seated into the frame and without the washer indenting the signs reflective sheeting. Care must be taken to see that damage to the sign while installing it to the post is minimal.

For Type F, Type G and Type I signposts, all aluminum sign panels must be bolted together with 3/8" x 1" stainless steel stitch bolts and washers (supplied by Department) at a maximum spacing of 600 millimetres. The entire aluminum sign must be attached to the steel posts with brackets at a spacing not exceeding 900 millimetres with a bracket band at the extreme top and bottom panels of the sign. See Forms 1295, 1296 and 1296a.

For signs with tabs in the upper corners, the Contractor is to supply and install 2 pieces of aluminum T-Bar, 75 millimetre x 100millimetre x 6 millimetre thick x 1600 millimetres long with 10-9.5millimetre x 25 millimetre stainless steel bolts with 15 millimetre x 25 millimetre x 5 millimetre rectangular heads and nuts to brace the tabs to the back of the sign.

580.06 MEASUREMENT FOR PAYMENT

Measurement for payment will be by means of the number of each type of signpost installation placed at the required locations.

580.07 BASIS OF PAYMENT

Payment at the contract price for sign and signpost installation of a particular type shall be compensation in full for all labour, handling, materials, and equipment-use to: supply all materials, handling of signs from Department Depots, assemble the installation, excavate a hole for the footings, install the signposts, backfill the hole, compact the backfill, install the sign board and dispose of all surplus materials, all in accordance with this specification. Concrete footings, reinforcing, anchor bolts, neoprene gaskets, base

plates, posts, brackets, and hardware to install the signs for Type F, Type G and Type I installations are also included in the contract price for these items.

Should excavation of solid rock be required to complete the installation of a signpost, payment for the rock excavation will be made according to Section 403.

SECTION 582

DISPOSAL OR SALVAGE OF SIGNS AND SIGNPOSTS

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582.05.02 Basis of Payment for Salvage of Sign and Signpost

582.01 SCOPE

This specification covers the requirements for the excavation and removal of signs and signposts followed with the backfilling and compaction of the excavated material together with either; the salvage, or the disposal of the sign and signposts, as specified in the Contract item.

Excavation above and around the sign and signposts including any hand work excavation required to remove the sign and signposts shall be considered part of Section 582.

582.02 EXCAVATION AND DISPOSAL OR SALVAGE

After excavation operations have been carried out to expose the signpost foundation the Contractor shall dispose of, or salvage the sign and signposts, as designated, within the limits as required by the Owner's Representative.

The excavation of material abutting the top and sides of the signposts shall be performed in such a manner as to leave undisturbed, adjacent structure or other work to be left in place, and so that no damage occurs to the sign and signpost designated to be salvaged.

All excavated material shall be piled in a manner that will not endanger the work, and that will avoid obstructing sidewalks, driveways and gutters.

Where a sign and signpost is designated to be salvaged, the Contractor shall carefully disassemble the sign and signpost and carefully remove the sign and signpost from the trench in such a way as not to cause damage to the sign and signpost. The salvaged sign and signpost shall be stored at a safe place on the job site prior to reinstallation or transportation and stockpile at the nearest Department Depot.

Should any sign and signpost, designated for salvage, be damaged or lost by the Contractor, then the Contractor shall not receive payment for sign and signpost salvage for the damaged sign and signpost. Damaged material shall become the property of the Contractor and shall be disposed of.

Where a sign and signpost is designated for disposal, the Contractor shall remove and dispose of the sign and signpost.

Signs and signposts for disposal shall be removed and disposed of in an approved waste disposal area provided by the Contractor at their own expense.

The Contractor shall be aware of Section 825.

582.03 BACKFILLING AND COMPACTION

Where concrete is placed in the excavation under another specification, such as concrete for signpost foundations, then backfilling shall not take place until the concrete has cured to at least 70% of the specified design strength at 28 days or cured for at least 7 days, whichever comes first.

Material excavated as part of the removal or salvage operations shall be used as backfill in the trench.

Backfill shall be placed in layers not exceeding 200 millimetres in thickness loose measurement. Each layer shall then be compacted to not less than 95% of the Standard Proctor density (ASTM D698) before a further layer is placed.

582.04 MEASUREMENT FOR PAYMENT

582.04.01 Measurement for Payment for Disposal of Sign and Signpost

Measurement for payment for disposal of a sign and signpost of a particular type shall be in units of each sign and signpost type required to be disposed of as measured per location.

582.04.02 Measurement for Payment for Salvage of Sign and Signpost

Measurement for payment for the salvage of a sign and signpost of a particular type shall be in units of each sign and signpost type required to be salvaged, when measured after being removed from the ground.

Sign and signposts that are damaged to the extent that they will be unsuitable for re-use, will not be included in measurement for payment for sign and signpost salvage.

582.05 BASIS OF PAYMENT

582.05.01 Basis of Payment for Disposal of Sign and Signpost

Payment at the contract price for the disposal of sign and signpost of a particular type shall be compensation in full for all materials, labour, and use of equipment to: provide any hand work excavation necessary to complete the sign and signpost disposal operation, remove the sign and signpost, provide any dewatering necessary to carry out the work, provide an approved waste disposal site, transport the sign and signpost to the waste disposal site, dispose of the sign and signpost, and backfill and compact the excavated material.

Excavation above and around the sign and signpost shall be compensated for under this item including any additional hand work excavation required to remove the sign and signpost which shall be considered compensated for as part of payment for Section 582.

582.05.02 Basis of Payment for Salvage of Sign and Signpost

Payment at the contract price for the salvage of sign and signpost of a particular type shall be compensation in full for all materials, labour, and use of equipment to: provide any hand work excavation necessary to complete the sign and signpost salvage operation, remove and salvage the sign and signpost, provide any dewatering necessary to carry out the work, transport sign and signpost to any temporary storage site, store the salvaged sign and signpost, and backfill and compact the excavated material including the temporary stockpiling of the excavated material for reuse in the backfilling process, and transporting the sign and signpost to the nearest Department Depot.

Any additional hand work or excavation required to salvage the sign and signpost shall be compensated for as part of payment for Section 582.

Any damaged sign and signpost will be replaced at the contractor's expense, where it is deemed the sign and signpost was salvageable.

SECTION 583

SALVAGE AND REINSTALLATION OF SIGNS AND SIGNPOSTS

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583.05.01 Basis of Payment for Salvage and Reinstallation of Sign and Signpost

583.01 SCOPE

This specification covers the requirements for the excavation and removal of a sign and associated signpost followed with the backfilling and compaction of the excavated material together with the salvage, and the reinstallation of the sign and signpost, as specified in the Contract item.

Excavation above and around the sign and signpost shall be compensated for under this item including any additional hand work excavation required to remove and reinstall the sign and signpost shall be considered part of Section 583 .

583.02 EXCAVATION AND SALVAGE

After Excavation for Foundations operations have been carried out to expose the sign and signpost the Contractor shall salvage the sign and signpost, as designated, within the limits as required by the Owner's Representative.

The excavation of material abutting the sides of the sign and signpost foundation shall be performed in such a manner as to leave undisturbed, adjacent structure or other work to be left in place, and so that no damage occurs to the sign and signpost designated to be salvaged.

All excavated material shall be piled in a manner that will not endanger the work, and that will avoid obstructing sidewalks, driveways, and gutters.

The Contractor shall carefully disassemble the sign and signpost as required and carefully remove the sign and signpost from the trench in such a way as not to cause damage to the sign and signpost. The salvaged sign and signpost shall be stored at a safe place on the job site prior to reinstallation.

Should any sign and signpost, designated for salvage and reinstallation, be damaged or lost by the Contractor, then the Contractor shall not receive payment for sign and signpost salvage for the damaged sign and signpost type. Damaged material shall become the property of the Contractor and shall be disposed of by the Contractor at their own expense.

The Contractor shall be aware of Section 825.

583.03 BACKFILLING AND COMPACTION AND REINSTALLATION

Where concrete is placed in the excavation under another specification, such as concrete for signposts foundations, then backfilling shall not take place until the concrete has cured to at least 70% of the specified design strength at 28 days or cured for at 7 days, whichever comes first.

Material excavated as part of the removal or salvage operations shall be used as backfill in the trench, which shall include any necessary stockpiling of the excavated material.

Backfill shall be placed in layers not exceeding 200 millimetres in thickness loose measurement. Each layer shall then be compacted to not less than 95% of the Standard Proctor density (ASTM D698) before a further layer is placed.

Reinstallation of the sign and signpost shall be carried out as per Section 580.

583.04 MEASUREMENT FOR PAYMENT

583.04.01 Measurement for Payment for Salvage and Reinstallation of Sign and Signpost

Measurement for payment for the salvage of sign and signpost of a particular type shall be per each sign and signpost type, when measured after being removed from the ground and reinstalled at the designated reinstallation location.

Signs and signposts that are damaged to the extent that they will be unsuitable for re-use, will not be included in measurement for payment for sign and signpost salvage and reinstallation.

583.05 BASIS OF PAYMENT

583.05.01 Basis of Payment for Salvage and Reinstallation of Sign and Signpost

Payment at the contract price for the salvage of sign and signpost of a particular type shall be compensation in full for all materials, labour, and use of equipment to: provide any hand work and excavation necessary to complete the sign and signpost salvage operation, remove and salvage the sign and signpost, provide any dewatering necessary to carry out the work, transport the sign and signpost to the storage site, store the salvaged sign and signpost, and backfill and compact the excavated material and reinstall the salvaged sign and signpost at the same or new location for the sign and signpost including the temporary stockpiling of the excavated material for reuse in the backfilling process. Any damaged sign and signpost will be replaced at the Contractor's expense, where it is deemed the sign and signpost was salvageable.

Excavation around the sign and signpost shall be considered compensated for under Section 583, including any additional hand work excavation required to salvage the sign and signpost which shall be considered compensated for as part of payment for Section 583.

SECTION 590

WOOD PRESERVATION

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590.07 METHOD OF PAYMENT

590.01 SCOPE

This specification covers the requirements for the preservation treatment of any wood or wood products as may be required in the construction of Departmental projects.

The specification covers the particular requirements for the pressure impregnation of woods with chemical preservatives and other compounds and the specific requirements for the handling, storage, and placement of treated materials.

590.02 GENERAL

All preservation treatments, unless otherwise specified, shall be applied through the use of approved pressure impregnation processes by licensed operators as issued by the appropriate governing authorities.

All operations associated with treatment (before, during, and after treatment) shall be carried out in complete accordance with the Canadian Standards Association (CSA), Standard 080, Wood Preservation, and with the American Wood Preservers Association (AWPA) Standards. These standards are complimentary and as such, the CSA standard or the AWPA standard may be considered incomplete if read separately.

590.03 MATERIALS

All materials to be pressure treated with chemical preservatives shall be sound, of good quality, and of satisfactory species and grade as required in the plans and Supplementary General Conditions.

All species shall be treated with specified chemical preservatives to the required tolerances or the minimum acceptable tolerances as outlined in the CSA Standard "080 Wood Preservation" and the "AWPA Standards".

These standards cannot give complete instructions for all conditions and all uses. The net retentions required shall be governed by the severity of the service conditions and by a number of other considerations, such as, service life desired, cost of replacement, climate, ground contact, exposure to weather, exposure to insect attack, size of material and depth of sapwood. The specified net retentions therefore, may be greater than indicated in the applicable standards and the supplementary specifications shall take precedence.

590.04 PREPARATION AND HANDLING

All materials to be pressure treated with chemical preservatives shall be prepared in a manner as required by the particular treatment process to be undertaken and shall be in accordance with appropriate sections of the CSA and AWPA Standards.

All pressure preserved materials shall be transported, stored, stacked, and handled or otherwise used in a manner that will avoid damage or field fabrication causing alteration of the original pressure preserved surface.

In particular, the use of cant hooks, peavies, pickaroons, and end hooks shall not be permitted on the side surface of treated materials. The handling of pressure preserved piles, poles, ties, lumber or timber with such pointed tools shall be confined to end grain only.

Any pressure treated materials damaged through improper handling or misuse by the Contractor, shall be repaired or replaced at cost to the Contractor under the direction of the Engineer.

Insofar as practicable, all adzing, boring, chamfering, framing, graining, incising, surfacing, or trimming shall be undertaken prior to treatment.

590.05 FIELD TREATMENT

590.05.01 Material Requirements

Any unavoidable damage or necessary field fabrication shall be field treated in an approved manner with appropriate preservatives.

Preservatives for field treatment shall be at the same type and chemical composition as those used in their original treatment and shall be obtained from the supplier of the pressure preserved material or other licensed authority and shall be applied in the following manner.

590.05.02 Requirements for Field Application of Creosote and Creosote Mixtures

Creosote for field treatment of material originally treated with creosote or any creosote solution, shall meet the requirements of Commodity Standards P1 and P7 of CSA Standard 080, with the temperature of the solution while being applied, maintained at 65°C to 95°C. Where particularly heavy coatings are required, a suitable plastic compound shall be prepared by mixing 10 to 20 percent of creosote with 80 to 90 percent of pitch.

590.05.03 Requirements of Field Application of Oil-Borne Preservatives

Pentachlorophenol used for field treatment of material originally treated with this preservative shall consist of a solution prepared with solvent conforming to Commodity Standard P9 of CSA Standard 080. The toxicant concentration shall be a minimum of 5 percent of the solution weight. The Contractor shall prepare material for field treatment and field treatment with these preservatives shall be as directed by the manufacturers of the preservative or as directed by the Engineer.

590.05.04 Requirement of Field Application of Water-Borne Preservatives

The concentration of water-borne preservatives shall be 3 to 5 times greater than the concentration of the original treating solution.

590.05.05 Requirements for Application of Field Treatment

All cuts, holes, and injuries, including all abrasions and unused nail and spike holes and other damage to the surface of treated material shall be field protected by liberal brushing, spraying, dipping, soaking, or coating of preservatives.

Any procedures for field application of preservative shall be as the manufacturers recommend and as certified by the Engineer.

Any cuts, damages, and other like damages shall be cleaned of all deleterious substances and thoroughly saturated with two coats of field preservative.

All holes, including horizontal holes bored in pressure preserved material shall be poured full of appropriate preservative. The use of pressure equipment in the application of preservatives to boreholes is recommended.

All bolt holes having a diameter equal to or greater than the diameter of the bolt shall be treated with preservative. Bolt holes having a diameter of 15 mm less than the bolt diameter shall not require application.

All unused bore holes and spike holes shall be poured full of preservatives and plugged with tight-fitting treated plugs.

Where the on-site application of wood preservative is necessary, the Contractor shall where practical, apply the wood preservative at a location at least 15 m from the nearest watercourse or waterbody. The application shall in all cases be carried out carefully, so as to prevent spillage or leakage.

The Contractor shall be aware of Section 820.02.

590.06 SPECIFIC REQUIREMENTS FOR FIELD TREATMENT OF PILES

590.06.01 General Requirements

Immediately after making final cut-off, the cut area should be given two applications of preservative followed by a heavy application of coal-tar pitch, or other sealer. Piles shall be cut square, except in the case of piles to be capped with masonry.

Piles which will have the cut-off surface exposed in the structure shall be further protected by the application of two thickness of tar saturated fabric which cover the cut-off and overlap the side of the pile at least 50 mm. The overlap should be folded down along the side and glued in place with the sealer used. The fabric should then be coated with one coat of sealer.

In addition, under no circumstances shall treated piles be chopped or sawn to permit installation of sway bracing or other framing members. To avoid the necessity of cutting, piles shall, as far as possible, be selected of uniform size for each bent. Treated filler blocks shall be used when necessary to fill spaces between piles or caps and sway bracing.

590.06.02 Alternative Procedures

The Engineer may, if it is determined to be necessary (based upon insect or decay hazards or other economic or environmental considerations) require the Contractor to provide additional protection or implement special procedures as the case may be.

The application of preservative to pile cut-off may be undertaken using procedures as follows:

a. **Steel Ring**

A 2.6 mm sheet metal ring 100 mm in height and of a diameter slightly less than that of the pile at the point of cut-off should be driven into the pile so that the untreated center of the cut-off is enclosed by the ring. The ring should be driven into the wood until it forms an oil tight seal. The space enclosed by the ring should be filled to a depth of at least 50 mm above with preservatives chosen for field treatment. Treatment should continue until the flow of preservative liquid into the end grain of the pile ceases. The ring can be removed for reuse.

b. **Jacket Ring**

A strip of roofing felt or thin metal tightly bonded to the pile at the cut-off point to form a cup extending 100 mm from the end of the pile may be used in place of a more rigid ring as above. The penetration procedure and reuse of the material are as indicated above.

590.07 METHOD OF PAYMENT

No separate payment shall be made for the preservative treatment of any wood or wood products to be incorporated into department projects.