# Technical Specifications

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TECHNICAL SPECIFICATIONS

Steele Brook Pedestrian Bridge
Watertown Public Works Department

Bidders shall:

- Provide a list of equipment available for the project
- Provide a list of references for work performed over the last five years in the State of Connecticut
- Provide a list of references for installation of pre-engineered bridge structures over the last five years in the state of Connecticut
- Provide a written description of the Contractor’s concrete repair ability, including equipment, facilities, personnel and a list of similar complete projects.
- Provide a copy of OSHA 10 certification for each person working on project, including proposed subcontractors, if any.

Project Description

This entire project will consist of modifying the existing bridge substructure, installation of a pre-engineered metal bridge structure and incidental related work on the bridge over the Steele Brook in Watertown, CT. The contractor shall be responsible for the following with regards to the bridge:

- Provide shop drawings for review and approval
- Schedule delivery
- Steel assembly consisting of bolted connections
- Preparation of substructure including installation of bearing plates
- Installation of anchor bolts
- Touch-up paint work
- Unload and set structure using crane
- Furnish and install site improvements
- Third party testing

A Certified Bridge Installation Expert must be provided during the assembly and installation of structure.

TECHNICAL SPECIFICATIONS

All work is to be performed in accordance with the State of Connecticut Department of Transportation “Standard Specifications for Roads, Bridges and Incidental Construction, Form 817”, as supplemented and as amended below and in accordance with the plans, specifications and shop drawings or direction from manufacturer(s). It should be noted that references to the Form 817 are for convenience only and that this is not an 817 project nor do all of the terms and conditions in the Form 817 apply except as specifically noted herein.

A sedimentation and erosion control plan and a water handling plan must be submitted and approved by the town of Watertown inland Wetland agent prior to commencing any work.

Mobilization, demobilization, construction survey and staking, permits, sawcutting, tack coating, water handling, dust control, dewatering, sanitary facilities on-site, contractor office or storage space, laydown area, project clean up and incidental related work will not be measured or paid for separately but shall be included in the work paid for in the items. Town will provide a benchmark for use by the Contractor.

All work shall be in accordance with the CT DOT permit obtained by the contractor and the Watertown Conservation Commission permit (attached).

Trafficmen:
Uniformed Police Officers will be required. Contractor is to arrange for police officers directly with Watertown Police Department at (860) 945-5200. Town to pay for officers directly. Contractor will be responsible for payment when officers are not cancelled in accordance with Watertown Police Department policy.
002.0 PREPARATION OF SITE

002.1 General: The Contractor shall furnish all labor, materials, tools, and equipment necessary and shall do all work to prepare the site as indicated on the drawings and as herein specified.

002.2 Trees and shrubs: within the right-of-way or within any property owned by the Town of Watertown that are in the area of disturbance and therefore are for removal must be posted as such by the Watertown Tree Warden for a period of 10 days prior to removal. **No trees over six inches (6") in diameter at breast height (dbh) or shrubs within the Town of Watertown right-of-way shall be cut or removed until such posting has been completed and subsequent approval given by the Tree Warden at least 10 days in advance.**

In general, no trees, etc. in public streets and highways are to be cut or damaged in any way except as noted on the plans. Trees, bushes, and growing crops on other lands may be cut, removed, or trimmed only to the extent provided in the terms of the rights-of-way or access rights possessed by the Town, and also only within the limits and in the manner, if any, indicated by the Engineer or by the drawings or Special Conditions. Invasive or non-native species are to be removed to the maximum extent practicable form within the project limits.

002.3 Tree Trimming: Trimming of trees by a Connecticut Licensed Arborist is included under this item as required for clearance of construction equipment and pedestrians below the tree canopy. When the canopy of a tree must be elevated for clearance above the proposed improvements, trimming shall be done around the entire circumference of the tree.

002.4 Tree Protection and Care of Property: The Contractor shall install high visibility construction fence at the drip line of the tree canopy as shown on the plans and as directed by the Engineer to protect existing trees that are not to be cut from damage during construction. The Engineer, at his sole discretion, may also direct the Contractor to enclose the trunks of trees adjacent to his work that are not to be cut with substantial wooden boxes of such height as may be necessary to protect them from injury from piled material, from equipment, from his operations, or otherwise due to his work. Excavating machinery and cranes shall be of suitable type and be operated with care to prevent injury to trees not to be cut, and particularly to overhanging branches and limbs.

Branches, limbs, and roots shall not be cut except by permission of the Engineer. All cutting shall be smoothly and neatly done without splitting or crushing. In case of cutting or unavoidable injury to branches, limbs, and trunks of trees, the cut or injured portions shall be neatly trimmed and covered with an application of grafting wax or tree-healing paint, as directed.

Cultivated hedges, shrubs, and plant that might be injured by the Contractor’s operations shall be protected by suitable means or shall be dug up and temporarily replanted and maintained. After the construction operations have been substantially completed, they shall be replanted in their original positions and cared for until growth is re-established. If cultivated hedges, shrubs, and plants are injured to such a degree as to affect their growth or diminish their beauty or usefulness, they shall be replaced by items of kind and quality at least equal to the kind and quality existing at the start of the work.

On paved surfaces, the Contractor shall not use or operate tractors, bulldozers, or other power-operated equipment, the treads of wheels that are so shaped as to cut or otherwise injure such surfaces.

002.5 Clearing: From areas to be cleared, the Contractor shall cut or otherwise remove all trees, saplings, brush, vines, and other vegetable matter such as snags, sawdust, bark, etc., and refuse. The area to be cleared shall be confined to the width shown on the plans or as stipulated in the Proposal. Vines, brush, and similar undergrowth shall be cut as close to the
ground as practicable. Trees may be cut leaving a longer stump to facilitate their removal by power-operated equipment. No trees shall be cut or trimmed unless they are so indicated on the drawings.

Clearing shall also include removal and disposal of all items shown on the plans to be removed, or directed by the Engineer to be removed as part of the project, including, but not limited to, removal and disposal of existing concrete sidewalk, concrete steps, drainage structures, fences, and any and all other structures or materials not specifically listed in the Bid Proposal but required to be removed to accomplish the work.

002.6 Grubbing: Grubbing shall consist of the complete removal of all tree stumps and roots larger than two inches in diameter to a minimum depth of 12-inches below the subgrade surface. All excavations made below the finished surface by the removal of trees, stumps, etc. shall be filled with suitable material and thoroughly compacted in such a manner that its surface will conform to the surrounding surface.

Stump grinding shall be used for stump removal where the potential for damage to adjacent improvements or underground utilities exists due to the excavation of stumps, or as directed by the Engineer. The requirements for grubbing noted above shall also apply to stump grinding operations.

002.7 Disposal: All materials removed during trimming, tree removal, and clearing and grubbing operations shall be disposed of by the Contractor in a manner satisfactory to the Engineer.

002.8 Payment: Except as provided otherwise in the Bid Proposal or Special Conditions, this work shall be paid for at the Contract Lump Sum Price for “Preparation of Site”, which price shall include protection of existing trees and vegetation, tree removal and tree trimming under the supervision of a Connecticut Licensed Arborist, clearing and grubbing within the limits of the work, stump grinding, removal and disposal of trees, roots, stumps, brush, concrete steps, and other objects, leveling of areas to accommodate the work, and all labor, materials, tools, and equipment necessary thereto.
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**103.0 ROCK EXCAVATION AND DISPOSAL**

103.1 **General:** The Contractor shall excavate rock (as defined below), if encountered, to the lines and grades indicated on the drawings or as directed, shall dispose of the excavated material, and shall furnish acceptable materials for backfill in place of the excavated rock.

Definition of Rock: The work "rock", whenever used as the name of an excavated material or material to be excavated, shall mean only boulders and pieces of concrete or masonry exceeding one-half (½) cubic yard in volume, or solid ledge which, in the opinion of the Engineer, requires for its removal drilling, and blasting, wedging, sledger, barring, or breaking up with a power-operated tool. No soft or disintegrated rock that can be removed with a hand pick or power-operated excavator or shovel, no loose, shaken, or previously blasted rock or broken stone in rock fillings or elsewhere, and no rock exterior to the maximum limits of measurement allowed that may fall into the excavation will be measured or allowed as "rock".

103.2 **Excess Rock Excavation:** If rock is excavated beyond the limits of payment indicated on the drawings, specified, or authorized in writing by the Engineer, the excess excavation, whether resulting from overbreakage or other causes, shall be backfilled by and at the expense of the Contractor as specified before in this Section.

In excavations for structures, excess excavation in the rock beneath foundations shall be filled with Class A concrete. Other excess excavation shall be filled with earth as specified in the Section entitled "Backfilling Around Structures" under BACKFILLING AND CONSOLIDATION.

103.3 **Blasting:** Not permitted.

103.4 **Shattered Rock:** If the rock below normal depth is shattered due to drilling and/or excavation operations of the Contractor and the Engineer considers such shattered rock to be unfit for foundations, the shattered rock shall be removed and the excavation shall be backfilled with concrete as required. All such removal and backfilling shall be done by and at the expense of the Contractor.

103.5 **Preparation of Rock Surfaces:** Whenever so directed during the progress of the work, the Contractor shall remove all dirt and loose rock from designated areas and shall clean the surface of the rock thoroughly using steam to melt snow and ice, if necessary. Water in depressions shall then be removed, as required, so that the whole surface of the designated area can be inspected to determine whether seams or other defects exist.

The surfaces of rock foundations shall be left sufficiently rough to bond well with the masonry and embankments to be built thereon and, if required, shall be cut to rough benches or steps.

Before any masonry or embankment is built on or against the rock, the rock shall be scrupulously freed from all vegetation, fragments, ice, snow, and other objectionable substances. Picking, barring, wedging, streams of water under sufficient pressure, stiff brushes, hammers, steam jets, and other effective means shall be used to accomplish this cleaning. All free water left on the surface of the rock shall be removed.

103.6 **Removal of Boulders:** Piles of boulders or loose rock encountered within the limits of earth embankments shall be removed to a suitable place of disposal.

103.7 **Disposal of Excavated Rock:** Surplus excavated rock shall be disposed of as specified for surplus excavated earth.
103.8 **Backfilling Rock Excavations:** Where the rock has been excavated and the excavation is to be backfilled, the backfilling above normal depth shall be done as specified under EARTH EXCAVATION BACKFILL. If material suitable for backfilling is not available in sufficient quantity from other excavations, the Contractor shall, at his own expense, furnish suitable material from outside sources.

103.9 **Compaction of Backfill Material:** Consolidation of backfill material in a trench where rock has been blasted shall be obtained through the use of a water-jetting method, or as approved by the Engineer.

103.10 **Measurement and Payment:** Where rock (as defined in this Section) is encountered, it shall be stripped of the overlaying material and the Engineer will measure the same. All rock excavated before the Engineer shall have examined it shall be estimated by the Engineer based on obvious evidence of rock.

The quantity of rock excavation to be paid for shall be the number of cubic yards of rock in place, as if measured before excavation, that would have been removed if the excavation had been made everywhere exactly to the lines of payment shown in the Section entitled "Earth Trench Excavation", Table 3-1.
105.0 PERMANENT PAVEMENT REPAIR

105.1 General: The Contractor shall furnish all labor, materials, tools, and equipment necessary to replace pavement removed or damaged by his operations and in proposed areas of full depth reconstruction as herein specified and as directed.

Prior to excavation in paved areas, the Contractor shall cut the surface of the existing pavement in as straight a line as possible on both sides of the proposed trench for the entire length of the job.

In the replacement of pavement, the Contractor shall not feather the edges between the new and existing pavement. Materials and methods of construction shall conform, insofar as applicable, to the Form 817.

105.2 Subbase: The Contractor shall furnish and place the pavement base course on not less than ten (10) inches compacted thickness of an acceptable Subbase material per Section 2.12 of Form 817. Care should be taken to prevent the separation of the fines from the aggregate during dumping and grading operations. The Contractor shall apply water to the base, as needed, to obtain the desired compaction.

105.3 Permanent Paving: Permanent pavement shall consist of three (3) inches of HMA S0.5 top course and 6 inches of HMA S1.0 binder course over the previously prepared processed stone base.

All binder courses shall conform to the Form 817, Section 4.06, and all top courses shall conform to the Form 817, Section 4.06.

All depth measurements shall be considered to be compacted depths. Bituminous material shall be compacted to a minimum of 90% density.

The bituminous base course may be installed in two equal lifts of three-inches (3") thick and the top course in two lifts of 1.5" inches thick unless the method of compaction of the bituminous base course can achieve compaction to the desired density of one lift. The determination shall be made by the Engineer.

All joints shall be sealed with a hot bituminous asphalt sealer approved by the Engineer.

The Contractor shall remove and acceptably dispose of all excavated material before proceeding with the remainder of the work.

Permanent pavement, in all cases, shall be applied so that the whole roadway or paved area shall have a true and uniform surface, and the pavement shall conform to the proper grade and cross-section with a smooth transition to existing pavement.

105.4 Surface Maintenance: Until the expiration of the guarantee period, the Contractor shall maintain surfacing placed under this Contract and shall promptly correct any defect such as cracks, depressions, and holes that may occur. At all times, the surfacing shall be kept in a safe and satisfactory condition for traffic. If defects occur in surfacing constructed by the Contractor, the Contractor shall remove all bituminous concrete and base course as necessary to properly correct the defect. The Contractor shall replace the base course and bituminous concrete as specified herein.

105.5 Measurement and Payment: Permanent pavement repairs will be measured and paid by the square yard complete in place to the depth as indicated within these specifications or as directed by the Engineer. This item shall include removal of temporary pavement, excavation,
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process stone base course, bituminous concrete binder and top courses, saw cutting, compaction, sealing joints, and all other labor, equipment, and materials incidental thereto.
106.0 EARTH EXCAVATION AND GRANULAR FILL

106.1 General: Earth Excavation item shall conform to Section 2.02 ROADWAY EXCAVATION, FORMATION OF EMBANKMENT AND DISPOSAL OF SURPLUS MATERIAL, of the Form 817. Granular Fill shall conform to Section 2.14 of the Form 817.

106.2 Materials: Granular fill shall meet the requirements of Article M.02.02 of the Form 817. Contractor shall supply a sieve analysis of material for review and approval by Town prior to bringing any material on-site.

106.3 Measurement & Payment: The lump sum price for earth excavation shall include all labor equipment, materials, transportation, fuel, disposal, etc., for excavation of earth, on site relocation of earth products and transportation and/or disposal of surplus earth materials. Granular Fill shall be measured in place after compaction within the payment lines or as specified by the Town. Granular Fill shall be paid for at the contract unit price per cubic yard, complete in place, which price shall include all labor, equipment tools, material and work incidental thereto.

NOTE: All surplus earth materials shall be hauled off-site by the contractor and shall become property of the contractor. There shall be no separate payment for transportation or disposal of any surplus materials.
201.0  CONCRETE WALKWAY AND BENCH CONCRETE BASE SLAB

201.1  General: The Contractor is to construct concrete walkway to lines and grades as shown on the drawings or at locations as directed by the Engineer. The sidewalks shall be of monolithic construction and five inches thick, except at industrial and commercial driveways where it shall be eight inches thick and reinforced with 6” x 6” 10/10 steel mesh.

201.2  Forms: The forms used shall be five-inch steel or 2” x 6” wood firmly supported and staked to the line and grade given by the Engineer. The forms shall be free from warp and shall be of sufficient strength to resist springing out of shape. All forms shall be cleaned and oiled before use.

201.3  Concrete: The concrete furnished shall conform with respect to composition, transportation, mixing and placing, to Class F Concrete, 4,400 PSI 28 day strength, as specified in Section 9.21 of Form 817. An approved air-entraining admixture shall be used to entrain 5% to 7% air in the concrete. Welded wire mesh reinforcement is specified in Item 640.0 - Deformed Steel Bars and Welded Wire Fabric, if used in lieu of fiber mesh reinforcement.

201.4  Expansion Joints: At maximum intervals of 20 feet or as shown on plans, an expansion joint shall be placed to the full depth of the concrete slab. The material for expansion joints shall be either ¼-inch thick cork asphalt or ¾-inch thick asphalt impregnated bonded cellular fiber, or approved equal. Expansion joints of the same material shall also be placed at points abutting existing structures.

201.5  Surface Finish: The surface finish shall be struck off, forcing coarse aggregate below mortar surface. After strike-off, the surface shall be worked and floated with a wooded, aluminum, or magnesium float followed by steel troweling. The slab shall then be broomed cross-wise with a fine hair broom. The outside edges of the slab shall be edged with a ¼-inch radius tool. All edging lines shall be removed.

201.6  Curing: The Contractor shall use a liquid membrane-forming curing compound. The curing compound shall be similar or equal to Demicon “Cure Hard” with fugitive dye and shall meet the latest ASTM Specification C-156. Waterproof paper or plastic membrane are acceptable alternatives.

Newly constructed sidewalk surfaces shall be protected from all foot or vehicular traffic for a period of seven days. The Contractor shall have on the job, at all times, sufficient polyethylene film or waterproof paper to provide complete coverage in the event of rain.

201.7  Temperature: No concrete is to be placed when air temperature is below 40°F, or at 45°F and falling, unless prior approval is given by the Engineer. In the event weather conditions may be such that concrete that is not completely cured is subject to freezing, the Contractor shall provide a minimum of a six-inch layer of hay, straw, or thermal blankets for protection. Any concrete laid during cold weather that is damaged by freezing shall be the responsibility of the Contractor and shall be replaced at his expense.

201.8  Basis of Payment: Concrete Walkway and Bench Concrete Base Slab shall be measured and paid for at the Contract unit price per square foot for “Concrete Walkway and Bench Concrete Base Slab” as contained in the Bid Proposal, which price shall include the base course underneath walkways, welded wire fabric reinforcement, excavation, and all other materials and all labor, tools, and equipment necessary for completion of the work.

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204.0 GRADING AND TOPSOILING

204.1 Description: This work shall consist of furnishing, placing, and shaping topsoil in areas shown on the plans where directed by the Engineer. The topsoil shall be placed to the depth stated in the Contract or specifications.

204.2 Material: The material shall conform to the requirements of Article M.13.01.1 of the Form 817.

204.3 Construction Methods: The areas on which topsoil is to be placed shall be graded to a reasonably true surface and cleaned of all stones, brickbats, and other unsuitable materials. After areas have been brought to proper subgrade and approved by the Engineer or his agent, loam shall be spread to a depth as indicated in the Contract, or to a depth of no less than four inches, with due allowance made for settlement. All stones, roots, debris, sod, weeds, and other undesirable material shall be removed from the topsoil. After shaping and grading, all trucks and other equipment shall be excluded from the topsoiled area to prevent excessive compaction. The Contractor shall perform such work as required to provide a friable surface for seed germination and plant growth prior to seeding.

During hauling and spreading operations, the Contractor shall immediately remove any material dumped or spilled on the shoulders or pavement.

It shall be the Contractor’s responsibility to restore to line, grade, and surface all eroded areas with approved material and to keep topsoiled areas in acceptable condition until the completion of the construction work.

204.4 Payment: This work will be measured for payment by the number of square yards of area on which the placing of the topsoil has been completed and the work accepted.

The limits of payment shall be to the slope limits as shown on the plans. In the absence of slope limits, the maximum area of measurement shall be the area extending two feet behind the sidewalk and the area between the sidewalk and edge of pavement. No payment shall be made outside of these limits unless the disturbance was directed or approved by the Engineer. No payment shall be made for areas disturbed for staging, storage of materials, or other area disturbed for the convenience of the Contractor.

This work will be paid for at the Contract unit price per square yard for “Grading and Topsoil”, which price shall include all materials, equipment, tools, labor, and work incidental thereto.
205.0 TURF ESTABLISHMENT

205.1 General: The work included in this item shall consist of providing an accepted uniform stand of established perennial turf grasses or wetland vegetation by furnishing and placing fertilizer, seed, and mulch on all areas to be treated as shown on the plans or where designated by the Engineer.

The work will also include the installation of erosion control matting of the type indicated where shown on the plans or as directed by the Engineer.

205.2 Materials: The materials for this work shall conform to the requirements of Section M.13 of the Form 817, except as noted below.

Seed mix for residential lawn areas shall consist of 30% Crest Kentucky Bluegrass, 30% Baron Kentucky Bluegrass, 20% Victory II Chewings Fescue, and 20% Perennial Rye Grass.

Seed mix for other roadside areas designated for turf establishment shall consist of 70% Red Fescue, 20% Kentucky Blue Grass, and 10% Perennial Rye Grass.

The wetland seed mix to be used shall be 25% New England Roadside Matrix Wet Meadow Seed Mix and 75% New England Erosion Control / Restoration Mix, as listed within New England Wetland Plants, Inc.’s catalog or approved equal.

Erosion Control Matting shall be a product approved by the Connecticut Department of Transportation for the intended application as described in the "Qualified Products List" publication, latest edition.

Hydroseeding, when required by the Engineer, shall be performed using a homogenous slurry consisting of wood fiber mulch, fertilizer, live seed, and organic tackifiers conforming to Section M.13 of the Form 817.

Material certificates shall be provided for all materials supplied under this item.

205.3 Construction Methods: Construction Methods shall be those established as agronomically acceptable and feasible and which are approved by the Engineer.

1. Preparation of the Seedbed:
   (a) Level areas, medians, interchanges and lawns: These areas shall be made friable and receptive for seeding by diskng or by other approved methods to the satisfaction of the Engineer. In all cases the final prepared and seeded soil surface shall meet the lines and grades for such surface as shown in the plans, or as directed by the Engineer.

   (b) Slope and Embankment Areas: These areas shall be made friable and receptive to seeding by approved methods which will not disrupt the line and grade of the slope surface. In no event will seeding be permitted on hard or crusted soil surface.

   (c) All areas to be seeded shall be reasonably free from weeds taller than 3 inches. Removal of weed growth from the slope areas shall be by approved methods, including hand-mowing, which do not rut or scar the slope surface, or cause excessive disruption of the slope line or grade. Seeding on level areas shall not be permitted until substantially all weed growth is removed. Seeding on slope areas shall not be permitted without removal or cutting of weed growth except by written permission of the Engineer.

2. Seeding Season: The calendar dates for seeding shall be:
   Spring—March 15 to June 15
   Fall—August 15 to October 15
All disturbed soil areas shall be treated during the seeding seasons as follows:

(a) Areas at final grade: Seeding will be accomplished.
(b) "Out-of-season" seedings shall be performed in the same manner as "in-season" seedings. Since acceptable turf establishment is less likely, the Contractor shall be responsible for "in-season" reseeding until the turf stand conforms to this specification.

(c) During "out-of-season" periods unseeded areas shall be treated in accordance with Section 2.10, Water Pollution Control.

3. Seeding Methods: The seed mixture shall be applied by any agronomically acceptable procedure. The rate of application shall be no less than 175 pounds per acre or according to manufacturer instructions. Fertilizer conforming to M.13.03 shall be initially applied at a rate of 320 pounds per acre during or preceding seeding. When wood fiber mulch is used, it shall be applied in a water slurry at a rate of 2,000 pounds per acre with or immediately after the application of seed, fertilizer and limestone.

When hydroseeding is required by the Engineer, it shall be performed by a qualified Contractor who has a minimum of three year experience in the successful performance of this work and has been approved by the Engineer. Hydroseed mix shall be applied in a slurry consisting of wood fiber mulch, fertilizer, live seed, and organic tackifiers with each component applied at the rate described above. The slurry shall be hydraulically sprayed on the soil surface as required to form a blotter-like ground cover with a uniform coating. Contractor shall exercise special care as required to prevent slurry from being sprayed onto adjacent paved areas, sidewalks, buildings, or signs. All slurry sprayed onto adjacent surfaces shall be cleaned at the Contractor's expense.

When the grass seeding growth has attained a height of 6 inches, the specified areas designated herein shall be mowed to a height of 3 inches. Following mowing, all seeding grass areas (mowed and un-mowed) shall receive a uniform application of fertilizer hydraulically placed at the rate of 320 pounds per acre.

4. Compaction: The Contractor shall keep all equipment and vehicular and pedestrian traffic off areas that have been seeded to prevent excessive compaction and damage to young plants. Where such compaction has occurred, the Contractor shall rework the soil to make a suitable seedbed; then re-seed and mulch such areas with the full amounts of the specified materials, at no extra expense to the Town.

5. Stand of Perennial Turf Grasses: The Contractor shall provide and maintain a uniform stand of established turf grass or wetland vegetation having attained a height of 6 inches consisting of no less than 100 plants per square foot throughout the seeded areas until the entire project has been accepted.

6. Establishment: The Contractor shall keep all seeded areas free from weeds and debris, such as stones, cables, baling wire, and he shall mow at his own expense, on a one-time-only basis, all slopes 4:1 or less (flatter) and level turf established (seeded) areas to a height of 3 inches when the grass growth attains a height of 6 inches. Clean-up shall include, but not be limited to, the removal of all debris from the turf establishment operations on the shoulders, pavement, and/or elsewhere on adjacent properties publicly and privately owned.

7. Erosion Control Matting: Erosion control matting shall be installed following seeding where called for on the plans or as directed by the Engineer. Staples shall be installed as per Manufacturer's recommendations. Where two lengths of matting are joined, the end of the upgrade strip shall overlap the down-grade strip. The Contractor shall maintain and protect the areas with erosion control matting until such time as the turf grass is established. The Contractor shall replace or repair at his own expense any and all erosion control matting areas
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damaged by fire, water or other causes including the operation of construction equipment. No mowing will be required in the locations where erosion control matting is installed.

205.4 Method of Measurement: This work will be measured for payment by the number of square yards of surface area of accepted established perennial turf grass or wetland vegetation as specified or by the number of square yards surface area of seeding actually covered and as specified.

Restoration of areas disturbed for staging, storage of materials, or other area disturbed for the convenience of the Contractor will not be measured for payment.

Erosion control matting will be measured by the number of square of surface yards area of erosion control matting installed and accepted.

205.5 Basis of Payment: This work will be paid for at the contract unit price per square yard for "Turf Establishment", which price shall include all materials, mowing, maintenance, equipment, tools, labor, and work incidental thereto. Partial payment of up to 60% may be made for work completed, but not accepted.

Erosion control matting will be paid for at the contract unit price per square yard for "Erosion Control Matting" complete in place and accepted, which price shall include the hay mulch, netting, staples, maintenance, equipment, tools, labor, and work incidental thereto.
206.0 SEDIMENTATION CONTROL SYSTEM

206.1 General: This item shall conform to Section 2.19 of the Form 817.

206.2 Basis of Payment (Section 2.19.05): Payment for this work will be made at the contract unit price per linear foot for “Sedimentation Control System” complete in place, which price shall include all materials, equipment, tools and labor incidental to the installation, maintenance, replacement, removal and disposal of the system and surplus material. No payment shall be made for the clean out of accumulated sediment.
207.0  SEDIMENT CONTROL SACK

207.1 General: This work shall consist of furnishing, installing, maintaining, and removing a sedimentation control sack for control of sediment entering catch basins within the project area as directed by the Engineer or as shown on the contract drawings.

207.2 Materials: Sediment control sacks shall be Siltsack® as manufactured by SI® Geosolutions or approved equal, and shall be manufactured from a specially designed woven polypropylene geotextile.

The sediment control sack shall be manufactured to fit the opening of the catch basin or drop inlet to be protected. Sediment control sack shall have the following features: two dump straps attached at the bottom to facilitate emptying; lifting loops shall be included as an integral part of the system to be used to lift the sedimentation control sack from the basin; sediment control sack shall have a restraint cord approximately halfway up the sack to keep the sides away from the catch basin walls, this yellow cord is also a visual means of indicating when the sack should be emptied. Once the strap is covered with sediment, sediment control sack should be emptied, cleaned and placed back into the basin.

207.3 Construction Sequence: To install the sediment control sack in the catch basin, remove the grate and place the sack in the opening. Hold out approximately six inches of the sack outside the frame. This is the area of the lifting straps. Replace the grate to hold the sack in place.

When the restraint cord is no longer visible, the sediment control sack is full and should be emptied.

To remove the sediment control sack, take two pieces of 1” diameter rebar and place through the lifting loops on each side of the sack.

To empty the sediment control sack, place it where the contents will be collected. Place the rebar through the lift straps (connected to the bottom of the sack) and lift. This will turn the sedimentation control sack inside out and empty the contents. Clean out and rinse. Return the sedimentation control sack to its original shape and place back in the basin.

The sediment control sack is reusable. Once the construction cycle is complete, the sedimentation control sack shall be removed from the basin and cleaned. The sedimentation control sack shall then be provided to the Town for re-use.

207.4 Basis of Payment: Sediment control sacks shall be paid for as a unit at the contract unit price listed in the Bid Proposal for each “Sedimentation Control Sack” provided and installed. Maintenance of the sediment control sacks and cleaning after completion of construction as described herein shall also to be included in this bid price.
213.0 EARTHWORK AND GRADING FOR WALKWAY CONSTRUCTION

213.1 General: This item includes the excavation, formation of embankment, and regrading of project areas as required for construction of the proposed walkway to the lines and grades shown on the plans and as directed by the Engineer.

The Contractor is to exercise caution to prevent unnecessary damage to lawns, trees, bushes, or any other existing improvements. If, in the opinion of the Engineer, existing improvements are damaged due to the carelessness of the Contractor, the same shall be repaired or replaced at the Contractor’s expense.

213.2 Earthwork: The Contractor shall remove and dispose of grass, rubbish, and other objectionable materials within the limits of the walkway construction. The Contractor shall perform all excavation necessary to construct sidewalks to the grades as shown on the construction plans. Excavation shall include the saw cutting, removal, and disposal of bituminous concrete and concrete walkways, driveways, and pavements, including curbing and tree roots, where necessary, due to the new sidewalk grade and as shown on the plans or as directed by the Engineer. Existing house lateral walks and driveways adjacent to the sidewalk shall be removed and base graded and prepared for a smooth connection. The Contractor shall remove and dispose of all excess material.

Suitable excavated material shall be re-used within the project limits as directed by the Engineer to form embankment for the sidewalks where required. Embankment formation shall be completed as described in Article 2.02.03 of the Form 817, and shall meet the proposed subgrade elevations described on the plans or directed by the Engineer. Excess earth materials shall become the property of the Contractor and shall be disposed of at no additional cost to the Town.

213.3 Grading Existing Topsoil: Upon completion of sidewalk construction, the Contractor is to grade the areas between walkways and curbs, if the typical section indicates a grass plot, and disturbed areas back of the walkway. The Contractor shall backfill and compact these areas so as to conform to the typical cross-section. The upper four inches of the backfill shall be loam or topsoil, loose and friable and free of sticks, rocks, roots, weeds, or other unsuitable material.

213.4 Lawn Restoration: This work will consist of restoring grass areas disturbed in the Contract work. All work will be in conformance with Section 205.0 TURF ESTABLISHMENT.

213.5 Basis of Payment: Except as noted below, all of the above-described work under the heading of EARTHWORK AND GRADING FOR WALKWAY CONSTRUCTION including excavation, formation of embankment, and re-grading of project areas for walkway construction and permanent pavement installation will not be measured for payment. Rather, this work shall be included in the Contract unit price for sidewalks, permanent pavement, or other items associated with the work.
214.0 BASE COURSE UNDERNEATH WALKWAYS

214.1 **Description:** The Contractor shall make the necessary excavation and furnish material for base construction under walkways.

214.2 **Subbase:** The Contractor shall furnish and place the pavement base course on not less than six (6) inches compacted thickness of an acceptable Subbase material per Section 2.12 of Form 817. Care should be taken to prevent the separation of the fines from the aggregate during dumping and grading operations. The Contractor shall apply water to the base, as needed, to obtain the desired compaction.

214.3 **Construction Method:** The material for the base course shall be spread upon the prepared subgrade to such depth as to give a compacted thickness of eight inches. The material shall be uniformly spread in two layers of equal depth in the entire base course excavation and each layer shall be wetted and compacted to a firm even surface with a roller weighing not less than 500 pounds or by use of pneumatic tampers or vibratory compactors.

214.4 **Basis of Payment:** There will be no separate payment for this item. All of the above-described work under the heading “Base Course Underneath Walkways” shall be included in the Contract Unit Prices for Concrete Walkway and/or Bituminous Concrete Walkway.
### Technical Specifications

**215.0 BITUMINOUS CONCRETE WALKWAY**

**215.1 Description:** This item shall consist of bituminous concrete surfaced walkway constructed on a processed stone base course in the locations and to the dimensions and details shown on the plans or as directed by the Engineer and in accordance with these specifications. This item shall also include the removal and disposal of existing bituminous pavement necessary for driveway replacement work.

**215.2 Materials:** Materials for this work shall conform to the following requirements:

1. **Base Course:** The material used for base course construction shall conform to the requirements specified in Section M.02.02 and M.02.06 of the Form 817 for Subbase.

2. **Bituminous Concrete Surface:** Materials for this surface shall conform to the requirements of Section M.04, HMA S0.25 and HMA S0.375.

**215.3 Construction Methods:**

1. **Excavation:** Excavation, including removal of any existing sidewalk, or driveway, shall be made to the required depth below the finished grade, as shown on the plans or as directed by the Engineer. All soft and yielding material shall be removed and replaced with suitable material.

2. **Forms:** When the bituminous concrete is spread by hand, forms shall be used. Forms shall be of metal or wood, straight, free from warp and of sufficient strength to resist springing from the impact of the roller. If made of wood, they shall be of 2-inch (38-millimeter) surfaced plank except that at sharp curves thinner material may be used; if made of metal, they shall be of an approved section. All forms shall be of a depth equal to the depth of the sidewalks or driveways and shall be securely staked, braced, and held firmly to the required line and grade. All forms shall be cleaned and oiled each time they are used.

3. **Base Course:** Processed stone base course shall be uniformly spread to the required depth and thoroughly compacted with a roller with a mass of not less than 500 pounds (226 kilograms).

4. **Bituminous Concrete Surface:** The edges of existing pavement shall be painted with an asphalt emulsion prior to the placement of permanent pavement. Hot laid bituminous concrete shall be placed so as to give a three-inch compacted surface, or a surface that has a depth equal to the existing driveway surface, whichever is greater.

5. **This surface shall be constructed in accordance with the requirements of Section 4.06, except that the material may be spread by hand and thoroughly compacted by multiple passes of a power-driven roller weighing (with a mass) of not less than 500 pounds (226 kilograms). The finished surface shall be free from waves or depressions.**

6. **Backfilling and Removal of Surplus Material:** The sides of the sidewalk or driveway shall be backfilled with suitable material thoroughly compacted and finished flush with the top of the sidewalk or driveway. All surplus material shall be removed and the site left in a neat and presentable condition to the satisfaction of the Engineer. In sections inaccessible to the roller, the base course, surface course and backfill shall be hand-tamped with tampers weighing not less than 12 pounds (with a mass of not less than 5.5 kilograms), the face of which shall not exceed 50 square inches (32,000 square millimeters) in area.

**Method of Measurement:** This work will be measured for payment as follows:
1. Bituminous Concrete Walkway: This work will be measured by the actual number of square yards of completed and accepted sidewalk or driveway.

2. Excavation: Excavation below the finished grade of the sidewalk or driveway, including removal and disposal of existing bituminous concrete, backfilling, and disposal of all surplus materials will not be measured for payment; but the cost shall be included in the price bid for the sidewalk or driveway. Excavation above the finished grade of a proposed sidewalk or driveway, when necessary for the proper installation, will be classified and paid for as described in the Section 2.02 of the Form 817.

3. Base Course: This work will not be measured for payment but the cost thereof shall be included in the price bid for the sidewalk or driveway.

215.4 Basis of Payment: This work will be paid for at the contract unit price per square yard for “Bituminous Concrete Walkway,” complete in place, which price shall include all excavation as specified above, backfill, disposal of surplus material, processed stone base course, and all equipment, tools, labor and materials incidental thereto.
221.0 REMOVE AND RESET METAL BOX BEAM RAIL AND CHAIN LINK FENCE

221.1 Description: This work shall consist of removing, storing, and re-installing sections of metal box beam rail and chain link fence along Main Street at the location indicated on the plans and as ordered by the Engineer. The removed rail and fence elements and posts shall be securely stored by Contractor until re-installation.

221.2 Materials: When resetting rail, the Contractor shall reuse any undamaged existing rail and fence elements, appropriate posts, delineators, and lap bolts within the Project limits, as approved by the Engineer to construct the reset rail. The Contractor shall use new materials conforming to the requirements of M.10 of the Form 817 to replace any parts of the existing rail or fence system that are damaged or missing and cannot be obtained from other rail systems being removed or reset within the Project limits.

221.3 Construction Methods: The Construction Methods described in the Form 817 Section 9.10, 9.12, and 9.13 when applicable, shall apply to the resetting of existing rail systems. Prior to commencement of work, the Contractor and Engineer shall inventory the existing rail and fencing systems within the Project limits to determine which materials are suitable for reuse.

If resetting or removing railing, the Contractor must complete that work, including any required grading and any replacement of materials, by the end of each day’s work. When it is not practical to complete such rail work by the end of the day’s work, the Engineer may allow the Contractor to temporarily attach the existing rail to the new rail, concrete barrier curb or temporary terminal treatment.

221.4 Basis of Payment: Remove and Reset Metal Beam Box Rail and Chain Link Fence will be paid for at the contract lump sum price for “Remove and Reset Metal Beam Rail and Chain Link Fence” as listed in the Bid Proposal, complete in place. This price shall include the complete removal, storage and resetting of existing rail and fencing, including excavation, backfilling and disposal of surplus or unsuitable material, storage, and all equipment, tools and labor incidental thereto.
223.0 MODIFY EXISTING STONE ABUTMENTS AND PIER

223.1 General: Work under this item shall consist of the preparation of existing stone abutments and piers, as required, to accommodate the proposed reinforced concrete abutment and pier caps. Work also includes raising the top of the existing stone masonry wingwalls of the easterly abutment to the elevation, as indicated on the contract drawing.

223.2 Materials: Stones shall consist of existing stones removed and prepared for reuse as necessary to complete the work. Cracked, deteriorated, and missing stones shall be replaced as directed by the engineer with stones conforming to Article M.11.02 of Form 817 for rubble masonry stone.

223.3 Construction Methods: Existing stone masonry shall be removed to the limits necessary to complete the work, approved by the Engineer prior to removal. Due precaution shall be taken to avoid damage to existing construction to remain, new construction, public utility installations or abutting property. Any damage shall be repaired by the Contractor, as directed by the Engineer, and at no cost to the Town.

The Contractor shall take necessary precautions to prevent any damage to the portions of the structure to remain. Any damage shall be repaired by the Contractor, as directed by the Engineer, and at no cost to the Town.

All material that is not salvaged for reuse due to damage or deterioration shall be considered debris. All debris shall be legally disposed of, from the site, by the Contractor.

Resetting stone masonry with Dry Rubble Masonry construction shall conform to Article 6.07.03 of the Form 817.

223.4 Method of Measurement: Since this is a lump-sum item, it will not be measured separately for payment.

223.5 Basis of Payment: This work will be paid for at the contract lump sum price for “Modify Stone Wall” complete in place, including all materials, equipment, tools, labor, and miscellaneous materials and items incidental thereto.
225.0 DRILLING HOLES AND GROUTING DOWELS

225.1 **Description:** Work under this item shall consist of drilling holes in existing dry stone masonry and grouting dowels at the locations shown on the plans, in accordance with the plans, and as directed by the Engineer.

225.2 **Construction Methods:** The Contractor shall drill holes into the existing dry stone masonry and epoxy grout dowels into the holes to the depth and at the locations shown on the plans.

225.3 **Method of Measurement:** This work will be measured for payment by the actual length of the holes drilled and grouted, completed and accepted.

225.4 **Basis of Payment:** This work will be paid for at the contract unit price per linear foot for “Drilling Holes and Grouting Dowels”, which price shall include drilling and preparing holes, and applying non-shrink grout in the holes. It shall also include all materials, except dowels, and all equipment, tools, shipping, and labor incidental thereto.
301.0 MAINTENANCE AND PROTECTION OF TRAFFIC

301.1 Description: Unless other provisions are made on the plans or in the Special Conditions, the Contractor shall keep the roadway open to traffic for the full duration of the project and shall provide a sufficient number of travel lanes and pedestrian pathways to move that traffic ordinarily using the roadway. The travel lanes and pedestrian pathways shall be drained and kept reasonably smooth and in suitable condition at all times in order to provide minimum interference with traffic and consistent with proper execution of the work. The Contractor shall maintain and protect one lane of through traffic in each direction during the entire duration of the project. Each lane shall be not less than 11 feet in width. Suitable ingress and egress shall be provided at all times where required for all intersecting roads and for all abutting properties that have legal access.

The Contractor shall maintain and protect traffic as follows and as limited in the SPECIAL CONDITIONS Section 17.00 Prosecution and Progress of the Form 817 and the CT DOT permit.

COMMERCIAL AND RESIDENTIAL DRIVEWAYS

The Contractor shall maintain access to and egress from all commercial and residential driveways throughout the project limits.

MAIN STREET (CT ROUTE 73)

For any proposed activity within the State of Connecticut highway right-of-way the Contractor shall obtain an advance permit from the District 4 Office Connecticut Department of Transportation:

Permit Engineer
Connecticut Department of Transportation, District 4
359 South Main Street
Thomaston, CT 06787
Phone: 860-585-2796

The permit application shall be prepared based on the following information:

301.2 Alternate Traffic Management Schemes: When a scheme for maintenance of traffic is shown on the plans or approved by the Legal Traffic Authority, this shall govern unless an alternate scheme acceptable to the Engineer is offered by the Contractor at no additional cost. If no scheme is shown on the plans or described in the Special Conditions of the Contract and the Contractor wishes to deviate from the provisions of maintaining traffic as described in this Section, the Contractor must submit, and the Engineer may approve, a schedule showing a proposed sequence of operations and a compatible method of maintaining traffic.

301.3 Signs and Sign Patterns: The Contractor shall maintain all existing signs throughout the project limits during the duration of the project. The Contractor shall temporarily relocate signs as many times as deemed necessary as directed by the Engineer. When the necessary construction is completed, the Contractor shall re-install the existing signs in their original locations or as directed by the Engineer.

The Contractor shall erect and maintain all signing patterns in accordance with the traffic control plans contained herein. Proper distances between advance warning signs and proper taper lengths are mandatory. All temporary traffic control devices as called for by the contract or
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ordered by the Engineer must be on-hand and available in sufficient quantity for immediate installation prior to any stage change.

The Contractor will furnish additional approved signs, barricades, traffic cones, and traffic delineators to forewarn traffic of the construction. The Contractor will also provide such safety measures, pavement markings, warning devices, and signs as deemed necessary to safeguard and guide the traveling public through detours ordered by the Engineer or included in the approved scheme for maintenance of traffic. Signs and barricades will be delivered adjacent to the project and traffic cones and delineators will be provided when required, at no cost to the Town. The Contractor shall erect, maintain, move, adjust, relocate and store these signs, barricades, traffic cones, and delineators when, where, and in accordance with the "Manual on Uniform Traffic Control Devices", or as directed by the Engineer.

The use of unauthorized or unapproved signs, barricades, traffic cones, or traffic delineators will not be permitted.

The Contractor shall keep all signs in proper position and clean and legible at all times. Care shall be taken so that weeds, shrubbery, construction materials or equipment, and soil are not allowed to obscure any sign, light, or barricade. Signs that do not apply to existing conditions shall be removed or adjusted so that the legend is not visible to approaching traffic.

Traffic Control During Construction Operations: The following guidelines shall assist field personnel in determining when and what type of traffic control patterns to use for various situations. These guidelines shall provide for the safe and efficient movement of traffic through work zones and enhance the safety of work forces in the work area.

TRAFFIC CONTROL PATTERNS: Traffic control patterns shall be used when a work operation requires that all or part of any vehicle or work area protrudes onto any part of a travel lane or shoulder. For each situation, the installation of traffic control devices shall be based on the speed and volume of traffic, duration of operation, and exposure to hazards.

Traffic control patterns shall be uniform, neat and orderly so as to command respect from the motorist.

In the case of a horizontal or vertical sight restriction in advance of the work area, the traffic control pattern shall be extended to provide adequate sight distance for approaching traffic.

If a lane reduction taper is required to shift traffic, the entire length of the taper should be installed on a tangent section of roadway so that the entire taper area can be seen by the motorist.

Any existing signs that are in conflict with the traffic control patterns shall be removed, covered, or turned so that they are not readable by oncoming traffic.

When installing a traffic control pattern, a Buffer Area should be provided and this area shall be free of equipment, workers, materials and parked vehicles.

Traffic control patterns will not be required when vehicles are on an emergency patrol type activity or when a short duration stop is made and the equipment can be contained within the shoulder. Flashing lights and appropriate trafficperson shall be used when required.

Although each situation must be dealt with individually, conformity with the typical traffic control plans contained herein is required. In a situation not adequately covered by the typical traffic control plans, the Contractor must contact the Engineer for assistance prior to setting up a traffic control pattern.
PLACEMENT OF SIGNS: Signs must be placed in such a position to allow motorists the opportunity to reduce their speed prior to the work area. Signs shall be installed on the same side of the roadway as the work area. On multi-lane divided highways, advance warning signs may be installed on both sides of the highway. On directional roadways (on-ramps, off-ramps, one-way roads), where the sight distance to signs is restricted, these signs should be installed on both sides of the roadway.

Allowable Adjustment of Signs and Devices Shown on the Traffic Control Plans
The traffic control plans contained herein show the location and spacing of signs and devices under ideal conditions. Signs and devices should be installed as shown on these plans whenever possible.

The proper application of the traffic control plans and installation of traffic control devices depends on actual field conditions.

Adjustments to the traffic control plans shall be made only at the direction of the Engineer to improve the visibility of the signs and devices and to better control traffic operations. Adjustments to the traffic control plans shall be based on safety of work forces and motorists, abutting property requirements, driveways, side roads, and the vertical and horizontal curvature of the roadway.

The Engineer may require that the traffic control pattern be located significantly in advance of the work area to provide better sight line to the signing and safer traffic operations through the work zone.

Table I indicates the minimum taper length required for a lane closure based on the posted speed limit of the roadway. These taper lengths shall only be used when the recommended taper lengths shown on the traffic control plans cannot be achieved.

**TABLE I – MINIMUM TAPER LENGTHS**

<table>
<thead>
<tr>
<th>POSTED SPEED LIMIT MILES PER HOUR</th>
<th>MINIMUM TAPER LENGTH IN FEET FOR A SINGLE LANE CLOSURE</th>
</tr>
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<tbody>
<tr>
<td>30 OR LESS</td>
<td>180</td>
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<tr>
<td>35</td>
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<tr>
<td>55</td>
<td>660</td>
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<tr>
<td>65</td>
<td>780</td>
</tr>
</tbody>
</table>

INSTALLING AND REMOVING TRAFFIC CONTROL PATTERNS
a) Lane Closures shall be installed beginning with the advanced warning signs and proceeding forward toward the work area.

b) Lane Closures shall be removed in the reverse order, beginning at the work area, or end of the traffic control pattern, and proceeding back toward the advanced warning signs.

c) Stopping traffic may be allowed as per the contract for such activities as blasting, steel erection, etc; or during paving, milling operations, etc. where, in the middle of the operation, it is necessary to flip the pattern to complete the operation on the other half of the roadway and traffic should not travel across the longitudinal joint or difference in roadway elevation; or to move slow moving equipment across live traffic lanes into the work area.
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d) Under certain situations when the safety of the traveling public and/or that of the workers may be compromised due to conditions such as traffic volume, speed, roadside obstructions, or sight line deficiencies, as determined by the Engineer and/or State Police, traffic may be briefly impeded while installing and/or removing the advanced warning signs and the first ten traffic cones/drums only. Appropriate measures shall be taken to safely slow traffic.
e) The Contractor must adhere to using the proper signs, placing the signs correctly, and ensuring the proper spacing of signs.
f) Additional devices are required on entrance ramps, exit ramps, and intersecting roads to warn and/or move traffic into the proper travel path prior to merging/exiting with/from the main line traffic. This shall be completed before installing the mainline pattern past the ramp or intersecting roadway.
g) Prior to installing a pattern, any conflicting existing signs shall be covered with an opaque material. Once the pattern is removed, the existing signs shall be uncovered.
h) On limited access roadways, workers are prohibited from crossing the travel lanes to install and remove signs or other devices on the opposite side of the roadway. Any signs or devices on the opposite side of the roadway shall be installed and removed separately.

USE OF TRAFFIC DRUMS AND TRAFFIC CONES

a) Traffic drums shall be used for taper channelization on limited-access roadways, ramps, and turning roadways and to delineate raised catch basins and other hazards.
b) Traffic drums shall be used in place of traffic cones in traffic control patterns that are in effect for more than a 72-hour duration.
c) Traffic Cones less than 42 inches in height shall not be used on limited-access roadways or on non-limited access roadways with a posted speed limit of 45 mph and above.
d) Typical spacing of traffic drums and/or cones shown on the Traffic Control Plans in the Contract are maximum spacings and may be reduced to meet actual field conditions as required.

301.5 Schedule: The Contractor shall submit a proposed schedule and sequence of operations for review and approval by the CT DOT as part of the permit. Submittal shall include any and all work or impact upon the CT DOT Right of Way.

301.6 Snow Removal: The Contractor, when order by the Engineer, shall remove snow and take care of icy conditions on temporary, new, and existing sidewalks on any part of the right-of-way within the limits of the project.

Snow removal and correction of icy conditions other than those resulting from the Contractor’s operations, and snow removal on uncompleted contracts under traffic, will remain the obligation of the Town.

301.7 Failure to Provide: Should the Contractor fail to perform any of the work required under this Section, the Town may perform, or arrange for others to perform, such work. In such cases, the Town will deduct from monies due or to become due the Contractor, all expenses connected therewith.

301.8 Basis of Payment: Maintenance and Protection of Traffic will be paid for at the Contract Lump Sum price for “Maintenance and Protection of Traffic”. This price shall include all costs for labor, equipment, and services involved in the erection, maintenance, moving, adjusting, relocating and storing of signs, barricades, traffic cones, and traffic delineators furnished by the Contractor, as well as all cost of labor and equipment involved in the maintenance of traffic lanes and detours ordered or included in the approved scheme for maintenance of traffic.
The contract lump sum price for “Maintenance and Protection of Traffic” shall also include furnishing, installing, and removing the material for the temporary traversable slope in those areas where a longitudinal dropdown exists.

If there is no method for payment for the temporary transition in those areas where a transverse dropdown exists, then the contract lump sum price for the “Maintenance and Protection of Traffic” shall also include furnishing, installing, and removing the material for the temporary transition.

The contract lump sum price for “Maintenance and Protection of Traffic” shall also include temporarily relocating existing signs and sign supports as many times as deemed necessary and furnishing, installing, and removing temporary sign supports and foundations if necessary during construction of the project.

NOTE: The Town of Watertown CHIEF OF POLICE, acting in the capacity of the LEGAL TRAFFIC AUTHORITY, shall be the sole and final authority for the Maintenance and Protection of Traffic.
THE 16-S SIGN SHALL BE USED ON ALL PROJECTS THAT REQUIRE SIDEWALK RECONSTRUCTION OR RESTRICT PEDESTRIAN TRAVEL ON AN EXISTING SIDEWALK.

SERIES 16 SIGNS SHALL BE INSTALLED IN ADVANCE OF THE TRAFFIC CONTROL PATTERNS TO ALLOW MOTORISTS THE OPPORTUNITY TO AVOID A WORK ZONE. SERIES 16 SIGNS SHALL BE INSTALLED ON ANY MAJOR INTERSECTING ROADWAYS THAT APPROACH THE WORK ZONE. ON LIMITED-ACCESS HIGHWAYS, THESE SIGNS SHALL BE LOCATED IN ADVANCE OF THE NEAREST UPSTREAM EXIT RAMP AND ON ANY ENTRANCE RAMPS PRIOR TO OR WITHIN THE WORK ZONE LIMITS.

THE LOCATION OF SERIES 16 SIGNS CAN BE FOUND ELSEWHERE IN THE PLANS OR INSTALLED AS DIRECTED BY THE ENGINEER.

SIGNS 16-E AND 16-H SHALL BE POST-MOUNTED.

SIGN 16-E SHALL BE USED ON ALL EXPRESSWAYS.

SIGN 16-H SHALL BE USED ON ALL RAMPS, OTHER STATE ROADWAYS, AND MAJOR TOWN/CITY ROADWAYS.

SIGN 16-M SHALL BE USED ON OTHER TOWN ROADWAYS.

REGULATORY SIGN "ROAD WORK AHEAD, FINES DOUBLED"

THE REGULATORY SIGN "ROAD WORK AHEAD FINES DOUBLED" SHALL BE INSTALLED FOR ALL WORK ZONES THAT OCCUR ON ANY STATE HIGHWAY IN CONNECTICUT WHERE THERE ARE WORKERS ON THE HIGHWAY OR WHEN THERE IS OTHER THAN EXISTING TRAFFIC OPERATIONS.

THE "ROAD WORK AHEAD FINES DOUBLED" REGULATORY SIGN SHALL BE PLACED AFTER THE SERIES 16 SIGN AND IN ADVANCE OF THE "ROAD WORK AHEAD" SIGN.

"END ROAD WORK" SIGN

THE LAST SIGN IN THE PATTERN MUST BE THE "END ROAD WORK" SIGN.
NOTES FOR TRAFFIC CONTROL PLANS

1. IF A TRAFFIC STOPPAGE OCCURS IN ADVANCE OF SIGN (A), THEN AN ADDITIONAL SIGN (A) SHALL BE INSTALLED IN ADVANCE OF THE STOPPAGE.

2. SIGNS (A), (A), AND (D) SHOULD BE OMITTED WHEN THESE SIGNS HAVE ALREADY BEEN INSTALLED TO DESIGNATE A LARGER WORK ZONE THAN THE WORK ZONE THAT IS ENCOMPASSED ON THIS PLAN.

3. SEE TABLE 1 FOR ADJUSTMENT OF TAPERS IF NECESSARY.

4. IF THIS PLAN REMAINS IN CONTINUOUS OPERATION FOR MORE THAN 36 HOURS, THEN TRAFFIC DRUMS SHALL BE USED IN PLACE OF TRAFFIC CONES.

5. ANY LEGAL SPEED LIMIT SIGNS WITHIN THE LIMITS OF A ROADWAY / LANE CLOSURE AREA SHALL BE COVERED WITH AN OPAQUE MATERIAL WHILE THE CLOSURE IS IN EFFECT, AND UNCOVERED WHEN THE ROADWAY / LANE CLOSURE IS RE-OPENED TO ALL LANES OF TRAFFIC.

6. IF THIS PLAN REMAINS IN CONTINUOUS OPERATION FOR MORE THAN 36 HOURS, THEN ANY EXISTING CONFLICTING PAVEMENT MARKINGS SHALL BE ERADICATED OR COVERED, AND TEMPORARY PAVEMENT MARKINGS THAT DELINEATE THE PROPER TRAVELPATHS SHALL BE INSTALLED.

7. DISTANCES BETWEEN SIGNS IN THE ADVANCE WARNING AREA MAY BE REDUCED TO 100' ON LOW-SPEED URBAN ROADS (SPEED LIMIT < 40 MPH).

8. IF THIS PLAN IS TO REMAIN IN OPERATION DURING THE HOURS OF DARKNESS, INSTALL BARRICADE WARNING LIGHTS - HIGH INTENSITY ON ALL POST-MOUNTED DIAMOND SIGNS IN THE ADVANCE WARNING AREA.

9. A CHANGEABLE MESSAGE SIGN SHALL BE INSTALLED ONE HALF TO ONE MILE IN ADVANCE OF THE LANE CLOSURE TAPER.

10. SIGN (D) SHALL BE MOUNTED A MINIMUM OF 7 FEET FROM THE PAVEMENT SURFACE TO THE BOTTOM OF THE SIGN.

TABLE 1 - MINIMUM TAPER LENGTHS

<table>
<thead>
<tr>
<th>POSTED SPEED LIMIT (MILES PER HOUR)</th>
<th>MINIMUM TAPER LENGTH FOR A SINGLE LANE CLOSURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 OR LESS</td>
<td>180' (55m)</td>
</tr>
<tr>
<td>35</td>
<td>250' (75m)</td>
</tr>
<tr>
<td>40</td>
<td>320' (100m)</td>
</tr>
<tr>
<td>45</td>
<td>540' (165m)</td>
</tr>
<tr>
<td>50</td>
<td>600' (180m)</td>
</tr>
<tr>
<td>55</td>
<td>660' (200m)</td>
</tr>
<tr>
<td>65</td>
<td>780' (240m)</td>
</tr>
</tbody>
</table>

METRIC CONVERSION CHART (1" = 25mm)

<table>
<thead>
<tr>
<th>ENGLISH</th>
<th>METRIC</th>
<th>ENGLISH</th>
<th>METRIC</th>
<th>ENGLISH</th>
<th>METRIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>12&quot;</td>
<td>300mm</td>
<td>42&quot;</td>
<td>1050mm</td>
<td>72&quot;</td>
<td>1800mm</td>
</tr>
<tr>
<td>18&quot;</td>
<td>450mm</td>
<td>48&quot;</td>
<td>1200mm</td>
<td>78&quot;</td>
<td>1950mm</td>
</tr>
<tr>
<td>24&quot;</td>
<td>600mm</td>
<td>54&quot;</td>
<td>1350mm</td>
<td>84&quot;</td>
<td>2100mm</td>
</tr>
<tr>
<td>30&quot;</td>
<td>750mm</td>
<td>60&quot;</td>
<td>1500mm</td>
<td>90&quot;</td>
<td>2250mm</td>
</tr>
<tr>
<td>36&quot;</td>
<td>900mm</td>
<td>66&quot;</td>
<td>1650mm</td>
<td>96&quot;</td>
<td>2400mm</td>
</tr>
</tbody>
</table>

CONSTRUCTION TRAFFIC CONTROL PLAN

NOTES

CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED

PRINCIPAL ENGINEER

DCS- 31
Technical Specifications

WORK IN TRAVEL LANE AND SHOULDER
TWO LANE HIGHWAY
ALTERNATING ONE-WAY TRAFFIC OPERATIONS

DENOTES APPROXIMATE LOCATION OF
UNIFORMED FLAGGER. TRAFFIC PERSON
OTHER THAN POLICE OFFICERS SHALL
USE SIGN 80-9950 MOUNTED ON A 6' MIN. STAFF.

SIGN FACE
108 SQ. FT (MIN.)

PLAN 13 - SHEET 1 OF 2
SEE NOTES 1, 2, 4, 6, 7, 8

CONSTRUCTION TRAFFIC CONTROL PLAN

CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

WORK IN TRAVEL LANE AND SHOULDER
TWO LANE HIGHWAY
ALTERNATING ONE-WAY TRAFFIC OPERATIONS

HAND SIGNAL METHODS TO BE USED BY UNIFORMED FLAGGERS

THE FOLLOWING METHODS FROM SECTION 6597 FLAGGER PROCEDURES IN THE "MANUAL ON UNIFORM TRAFFIC CONTROL" ARE TO BE USED INSIDE THE WORK AREA.
WORK IN TRAVEL LANE AND SHOULDER
TWO LANE HIGHWAY
ALTERNATING ONE-WAY TRAFFIC OPERATIONS

HAND SIGNAL METHODS TO BE USED BY UNIFORMED FLAGGERS

THE FOLLOWING METHODS FROM SECTION 6E.07, FLAGGER PROCEDURES, IN THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES," SHALL BE USED BY UNIFORMED FLAGGERS WHEN DIRECTING TRAFFIC THROUGH A WORK AREA. THE STOP/SLOW SIGN PADDLE (SIGN NO. 80-9950) SHOWN ON THE TRAFFIC STANDARD SHEET TR-1220 01 ENTITLED, "SIGNS FOR CONSTRUCTION AND PERMIT OPERATIONS" SHALL BE USED.

A. TO STOP TRAFFIC

TO STOP ROAD USERS, THE FLAGGER SHALL FACE ROAD USERS AND ARM THE STOP PADDLE FACE TOWARD ROAD USERS IN A STATIONARY POSITION WITH THE ARM EXTENDED HORIZONTALLY AWAY FROM THE BODY. THE FREE ARM SHALL BE HELD WITH THE PALM OF THE HAND ABOVE SHOULDER LEVEL TOWARD APPROACHING TRAFFIC.

B. TO DIRECT TRAFFIC TO PROCEED

TO DIRECT STOPPED ROAD USERS TO PROCEED, THE FLAGGER SHALL FACE ROAD USERS WITH THE SLOW PADDLE FACE AIMED TOWARD ROAD USERS IN A STATIONARY POSITION WITH THE ARM EXTENDED HORIZONTALLY AWAY FROM THE BODY. THE FLAGGER SHALL MOTION WITH THE FREE HAND FOR ROAD USERS TO PROCEED.

C. TO ALERT OR SLOW TRAFFIC

TO ALERT OR SLOW TRAFFIC, THE FLAGGER SHALL FACE ROAD USERS WITH THE SLOW PADDLE FACE AIMED TOWARD ROAD USERS IN A STATIONARY POSITION WITH THE ARM EXTENDED HORIZONTALLY AWAY FROM THE BODY. TO FURTHER ALERT OR SLOW TRAFFIC, THE FLAGGER HOLDING THE SLOW PADDLE FACE TOWARD ROAD USERS MAY MOTION UP AND DOWN WITH THE FREE HAND, PALM DOWN.
WORK IN TRAVEL LANE AND SHOULDER
TWO LANE HIGHWAY

SIGN FACE
62 SQ. FT (MIN.)

END ROAD WORK

ROAD WORK AHEAD

TRAFFIC CONE OR TRAFFIC DRUM
OPTICAL TRAFFIC DRUM - PORTABLE SIGN SUPPORT
HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW
302.0 TRAFFICPERSON

302.1 General: This item shall conform to Section 9.70 TRAFFICPERSON, of the Form 817.

302.2 Description: Add the following to the first paragraph of Section 9.70.01

“Trafficpersons shall consist of certified, uniformed flaggers meeting acceptable criteria or extra duty officers of the Watertown Police Department. The Contractor shall provide Uniformed Flaggers meeting the requirements of this specification as required for safe traffic operations in the project area. Extra-duty police officers will be used only when specifically required by the Police Chief, as the Legal Traffic Authority, who will make this determination based on the Contractor’s proposed operations, traffic volumes, and traffic conditions.”

“All work under this item shall be paid only for the duration of the Contract as contained in the Special Conditions under ‘Time for Completion/Notice to Proceed’ and for any time extensions granted in writing by the Town. Payment for police officers required after the duration of the Contract and approved time extensions shall be made directly by the Town and such costs deducted from future payments due the Contractor.”

302.3 Basis of Payment: Replace Section 9.70.05 with the following:

Town of Watertown Police Officers will be at the site, on Route 73, continuously during the project, paid by the Town and upon request or direction of the Watertown Police Department. Contractor is responsible for arranging for Uniformed Police Officers directly with the town of Watertown Police Department at (860) 945-5240. Any charges incurred as a result of failure to notify the Watertown police Department in time to cancel officers shall be the responsibility of the contractor.

Uniformed flaggers will not be measured or paid for separately, but shall be included in the item for “Maintenance and Protection of Traffic.”
Technical Specifications

308.0 CONSTRUCTION BARRICADE TYPE III

308.1 General: The Contractor shall furnish construction barricades to conform to the requirements of NCHRP Report 350 (TL-3) and to the requirements stated in Article 9.71 “Maintenance and Protection of Traffic,” as shown on the plans and/or as directed by the Engineer.

308.2 Materials: Prior to using the construction barricades, the Contractor shall submit to the Engineer a copy of the Letter of Acceptance issued by the FHWA to the manufacturer documenting that the devices conform to NCHRP Report 350 (TL-3).

Alternate stripes of white and orange Type III or Type VI reflective sheeting shall be applied to the horizontal members as shown on the plans. Application of the reflective sheeting shall conform to the requirements specified by the reflective sheeting manufacturer. Only one type of sheeting shall be used on a barricade and all barricades furnished shall have the same type of reflective sheeting. Reflective sheeting shall conform to the requirements of Article M.18.09.01.

Construction barricades shall be designed and fabricated so as to prevent them from being blown over or displaced by the wind from passing vehicles. Construction barricades shall be approved by the Engineer before they are used.

308.3 Construction Methods: Ineffective barricades, as determined by the Engineer and in accordance with the ATSSA guidelines contained in “Quality Standards for Work Zone Traffic Control Devices”, shall be replaced by the Contractor at no cost to the State.

Barricades that are no longer required shall be removed from the project and shall remain the property of the Contractor.

308.4 Method of Measurement: Construction Barricade Type III will not be measured for payment

308.5 Basis of Payment: There will be no separate payment for this item. All of the above-described work is to be included under the item for “Maintenance and Protection of Traffic.”
310.0 CONSTRUCTION SIGNS – TYPE III REFLECTIVE SHEETING

310.1 General: The Contractor shall furnish construction signs with Type III reflective sheeting and their required portable supports or metal sign posts that conform to the requirements of NCHRP Report 350 (TL-3) and to the signing requirements stated in Article 9.71 “Maintenance and Protection of Traffic,” as shown on the plans and/or as directed by the Engineer.

310.2 Materials: Prior to using the construction signs and their portable supports, the Contractor shall submit to the Engineer a copy of the Letter of Acceptance issued by the FHWA to the manufacturer documenting that the devices (both sign and portable support tested together) conform to NCHRP Report 350 (TL-3).

Portable sign supports shall be designed and fabricated so that the signs do not blow over or become displaced by the wind from passing vehicles. Portable sign supports shall be approved by the Engineer before they are used.

Mounting height of signs on portable sign supports shall be a minimum of 1 foot and a maximum of 2 feet, measured from the pavement to the bottom of the sign.

All sign faces shall be rigid and reflectorized. Reflective sheeting shall conform to the requirements of Article M.18.09.01 (Type III). Sheet aluminum sign blanks shall conform to the requirements of Article M.18.13. Metal sign posts shall conform to the requirements of Article M.18.14. Application of reflective sheeting, legends, symbols, and borders shall conform to the requirements specified by the reflective sheeting manufacturer. Attachments shall be provided so that the signs can be firmly attached to the portable sign supports or metal posts without causing damage to the signs.

The following types of construction signs shall not be used: mesh, non-rigid, roll-up.

The following portable sign support systems or equivalent systems that meet the above requirements may be used:

- Korman Model #SS548 flexible sign stand with composite aluminum sign substrate (APOLIC)
- Traffix “Little Buster” dual spring folding sign stand with corrugated polyethylene (0.4 in. thick) sign substrate (InteCel)

310.3 Construction Methods: Ineffective signs, as determined by the Engineer and in accordance with the ATSSA guidelines contained in “Quality Standards for Work Zone Traffic Control Devices”, shall be replaced by the Contractor at no cost to the State.

Signs and their portable supports or metal posts that are no longer required shall be removed from the project and shall remain the property of the Contractor.

310.4 Method of Measurement: This item will not be measured for payment.

310.5 Basis of Payment: There will be no separate payment for this item. All of the above-described work is to be included under the item for “Maintenance and Protection of Traffic.”
Technical Specifications

600.0 PRE-FABRICATED PEDESTRIAN BRIDGE

600.1 General: These specifications are for a fully engineered two-span continuous truss bridge of welded steel construction (weathering steel) and shall be regarded as minimum standards for design and construction as manufactured by Contech Bridges of 9025 Centre Pointe Drive, West Chester, OH 45069 or approved equal.

The specific style of bridge required will be a Steadfast Express Connector bridge or approved equal with the following main dimensions:

Width: Inside clear width of bridge shall be 10 feet 0 inches.
Total length: 75 feet 0 inches, measured horizontally along the bridge centerline, between the abutment baselines.
Spans: 30 feet 0 inches (westerly span) and 45 feet 0 inches (easterly span)
Camber: Bridge shall be cambered to offset dead load and appear flat.
Skew angle: 60°-00'-00"

The bridge manufacturer shall have been in the business of design and fabrication of welded steel pedestrian bridges for a minimum of five years and shall provide a list of five successful bridge projects of similar construction, each of which has been in service at least three years as part of the bid response. List the location, bridge size, owner and contact reference for each bridge.

600.2 Design: Open truss bridges shall be designed by a professional engineer who is experienced in pony truss bridge design and top chord stability criteria elastic utilizing lateral restraints. Design and Rating documents shall be as required by the Connecticut Department of Transportation for structures of this class.

Complete design calculations and drawings signed and sealed by a professional engineer licensed in the State of Connecticut shall be submitted to the owner for approval prior to fabrication. The design calculations shall entail a full report of vertical and horizontal support reactions as well as live load ratings of the superstructure on the Inventory and Operating levels.

In addition to normal dead loads, the bridge shall be designed for the following loads:

UNIFORM LIVE LOAD: The pedestrian bridge superstructure shall be designed for an evenly distributed live load of 90 pounds per square foot in accordance with the latest AASHTO LRFD Guide Specification for the Design of Pedestrian Bridges.

VEHICLE LOAD: Bridges will also be designed to withstand a moving vehicle load which weighs 10,000 pounds. This concentrated load is in addition to a 20 pounds per square foot evenly distributed live load. The vehicle load shall be distributed such that 80% of the load is on the rear axle (per AASHTO).

WIND LOAD: All bridges shall be designed for a minimum wind load of 35 pounds per square foot (approximately 120 mph). The wind is calculated on the entire vertical surface of the bridge as if fully enclosed.

DESIGN CRITERIA: The design of the bridge shall be in accordance with the "American Institute of Steel Construction"; 13th Edition. Tubular members and their connections shall be designed per the CISC "Hollow Structural Sections Connections Manual" latest edition or the AISC Manual 13th Edition.

SEISMIC: The steel truss superstructure shall be designed for seismic loads of the intensity required by local codes. Assume Site Class A.
TEMPERATURE: Bridge shall be designed to accommodate a temperature differential of 120 degrees Fahrenheit. Slip pads of UHMW polyethylene shall be placed between the smooth surface of this setting plate and the smooth bearing plate of the bridge. At least 1” clearance shall be provided between the bridge and concrete backwalls.

DEFLECTION: The vertical deflection of the bridge due to pedestrian live load shall not exceed 1/400 of the span length. The maximum deflection due to vehicular loads shall not exceed 1/800 of the span length. For pedestrian comfort, the load used for the deflection check be a minimum of 500 pounds per lineal foot of bridge or the uniform load used in Section 3.2, whichever is greater. The horizontal deflection due to lateral wind load shall not exceed 1/500 of the span length.

SUBSTRUCTURE: The bridge manufacturer shall provide the Contractor with support reactions, anchor bolt locations and placement as part of the working drawings. The Contractor shall compare the information provided by the bridge manufacturer to the contract plans for the pier and the abutments. The Contractor shall be responsible make any modifications to the design of the substructure if needed. The Contractor shall submit the support reactions, anchor bolt locations and placements, and any necessary modifications of the abutments to the Engineer for approval prior to construction of the substructure. All modifications to the substructure shall be designed, sealed, and stamped by a Professional Engineer registered in the State of Connecticut.

600.3 Materials:

All structural members shall have a minimum thickness of material of at least 3/16”.

Unpainted Weathering Steel Bridge shall be fabricated from ASTM A242 or ASTM A588 steel for plates and structural shapes and ASTM A606 or ASTM A847 for tubular sections. Minimum yield (Fy) shall be greater than 50,000 psi.

Wood Decking shall be No. 1 grade Southern Yellow Pine, 3-inch nominal thickness. Wood decking shall be treated to a minimum of 0.40 pounds of preservative per cubic foot of wood. The wood deck shall be designed for 90 PSF local live loading condition. Floor planks shall not be spliced and shall be attached with at least two plated fasteners where planks cross supporting members. Planks shall be designed to carry a wheel footprint load per AASHTO.

Field splices shall be bolted with High Strength ASTM A325 bolts; type 3 bolts shall be used for weathering steel bridges.

Welding materials shall be in strict accordance with the American Welding Society (AWS). Structural welding code, D1.1 Filler metal as specified in 4.1 shall be used for the particular welding process required. Welders will be certified in accordance with AWS D1.1.

Anchor bolts shall conform to ASTM A449 with nuts and washers conforming to ASTM A563, Grade B. Anchor bolts, nuts, and washers shall be galvanized in conformance with ASTM A153. Anchor bolts shall be cast-in-place.

Elastomeric bearing pads shall be provided under each of the six (6) superstructure supports. Elastomeric bearing pads shall be durometer hardness grade 60, conform to the requirements of Section M.17.01 of the Form 817.
Fabrication and Quality Control:

Bridge fabricator shall be certified by the American Institute of Steel Construction to have the personnel, organization, experience, capability, and commitment to produce fabricated structural steel for Major Steel Bridge Structures with Fracture Critical and Sophisticated Paint Endorsements as set forth in the AISC Certification Program.

Workmanship, fabrication, and shop connections shall be in accordance with American Association of State Highway and Transportation Officials Specifications (AASHTO).

Welding operators shall be properly accredited experienced operators, each of whom shall submit satisfactory evidence of experience and skill in welding structural steel with the kind of welding to be used in the work, and who have demonstrated the ability to make uniform good welds meeting the size and type of weld required.

All welding shall utilize E70 or E80 series electrodes. The weld process used shall be Flux Core Arc Welding (FCAW) or Gas Metal Arch Welding (GMAW).

The connection of bridge end post to top chord should be a mitered joint with the exposed welds ground smooth. The connection of the floor beam in a pony truss system shall not be solely into the side of a tubular bottom chord without the use of additional stiffeners to prevent chord ovalization.

All structural elements used in the bridge shall be identified by heat number of the steel member used. Specific mill test reports and individual welder certificates shall be tracked and kept on file to be provided at the request of the owner or engineer.

The bridge design Professional Engineer shall inspect the bridge structure after fabrication and furnish a signed and sealed Conformance Report and Affidavit verifying that the bridge has been inspected by the Engineer and fabricated in accordance with the Engineer’s design calculations and approved shop drawings. This inspection and report shall not be delegated to any other engineer or person. For weathering steel bridges, the report shall include a summary of computations of the corrosion index (per ASTM G101) for every heat number of structural steel used in the bridge to verify that the steel is of a weathering grade.

Each bridge shall be inspected by a Certified Welding Inspector that is qualified under the AWS QC-1 program. This inspection shall include as a minimum requirement the following: review of shop drawings, weld procedures, welder qualifications, and weld testing reports, visual inspection of welds and verification of overall dimensions and geometry of the bridge. A report shall be produced indicating the above items were reviewed and shall be signed and sealed by the CWI signifying compliance with AWS D1.1 codes.

Railings & Other Bridge Accessories:

All railings shall have a smooth inside surface with no protrusions or depressions. All ends of angles and tubes shall be closed and ground smooth.

Railings shall be suitable for bicycle use and shall be a minimum height of 54 inches above the floor deck.

Safety Rails: Continuous rails shall be located on the inside of the trusses. The safety rails shall conform to applicable standards for height, spacing, and other dimensions.

Toe Plate: A 5” steel channel shall be located 2” above the floor deck.

Bridge Weight Limit Signs: shall be supplied with the bridge by the fabricator and shall be attached to the end column of the right side of the superstructure at each end of the bridge.
600.6 **Finishes:** All boldly exposed surfaces of weathering steel bridges shall be sand blasted in accordance with the Steel Structures Painting Council (SSPC) Surface Preparation Specification No. 7 "Brush Blast Cleaning".

600.7 **Delivery and Erection:** Hauling permits and freight charges are the responsibility of the Contractor. Unloading, splicing, bolting, and proper lifting equipment are the responsibility of the Contractor. The Contractor shall install the anchor bolts in accordance with the manufacturer's anchor bolt spacing dimensions and specifications.

The Contractor is hereby alerted that the hours of operation for the delivery and installation of the pre-fabricated bridge superstructure are restricted to between 9:30 AM and 3:00 PM, Monday through Friday, or as otherwise directed by the Chief of Police (Legal Traffic Authority) as required to avoid significant traffic congestion during this operation. If a road closure/detour is required for this operation, a plan depicting the proposed detour route with signing shall be submitted to the Engineer and Chief of Police a minimum of 14 calendar days prior to the intended date of delivery.

600.8 **Warranty:** The manufacturer shall warranty the pedestrian bridge against defects in material and workmanship for a period of fifteen years.

600.9 **Measurement and Payment:** The pedestrian bridge will be paid for at the contract lump sum price as listed in the bid proposal for "Pre-fabricated Pedestrian Bridge", which price shall include all materials, equipment, accessories, bearing pads, labor, and work necessary for and incidental to the design, construction, delivery, unloading, assembly, and placement of the bridge on concrete abutments as shown in the contract plans, including bearing pads and all railings on the superstructure.

The cost of determining support reactions of the supplied bridge, comparing these to the Design Loads given in this specification, and any analysis and design modifications to the substructure by a CT Licensed Professional Engineer shall be included in the lump sum price for "Pre-fabricated Pedestrian Bridge".
610.0 STRUCTURE EXCAVATION

610.1 General: This item applies to the construction of reinforced concrete abutment and pier cap beams, wingwalls, and wingwall footings for the proposed pedestrian bridge as indicated on the contract plans as prepared by Lenard Engineering, Inc.

This item shall conform to Section 2.03 STRUCTURE EXCAVATION of the Form 817, with the following section(s) replaced.

610.2 Basis of Payment (Section 2.03.05): Payment for this work will be made at the Contract unit price per cubic yard for: Structure Excavation—Earth (complete) or "Structure Excavation—Rock (complete)," whichever applies, in whole or in part, which price shall include all materials, tools, and equipment; all work related to earth support, including their design, construction, dewatering, repair, removal of obstructions, and any required reconstruction; all labor necessary to complete the excavation in conformity with the requirements of the plans or as ordered by the Engineer; the preparation of foundations as described under Article 2.03.03 of the Form 817; all necessary filling, except as otherwise provided in the Contract; and the removal of all surplus or unsuitable material resulting from the excavations.
620.0  GRANULAR FILL

620.1  **General:** This item shall include the furnishing, placing, and compaction of granular material under the wingwall footings and the abutment cap beams for the proposed pedestrian bridge as indicated on the contract plans, as prepared by Lenard Engineering, Inc., or as ordered by the Engineer. Also included in this item the furnishing and placing of Geotextile as shown on the Plan and details.

620.2  **Materials:** Granular fill shall consist of 3/8" crushed stone and meet the rest of the requirements of Article M.02.01 of the Form 817. Geotextile shall be Mirafi 500X or approved equal.

620.3  **Construction Methods:** When granular fill is used for foundation for structures or to replace rock or unsuitable material in trenches, it shall be deposited in layers not over 6 inches in depth, with each layer thoroughly compacted before the addition of other layers.

620.4  **Method of Measurement:** Granular fill will be measured in place after compaction within the payment lines shown or specified by the Engineer.

620.5  **Basis of Payment:** This work will be paid for at the contract unit price per cubic yard for "Granular Fill," complete in place, which price shall include all materials, tools, equipment and labor incidental thereto.
624.0 PERVIOUS STRUCTURE BACKFILL

624.1 General: Pervious structure backfill shall include the furnishing, placing, and compaction of pervious material adjacent to the pedestrian bridge abutments and wingwalls, as indicated on the contract plans prepared by Lenard Engineering, Inc., or as ordered by the Engineer.

624.2 Material: Pervious structure backfill shall conform to the requirements of Article M.02.05 of the Form 817.

624.3 Construction Methods: Pervious structure backfill shall be placed adjacent to the footings and abutments as called for or as shown on the plans.

Each layer of pervious structure backfill shall be spread to a thickness not exceeding 6 inches in depth after compaction and shall be thoroughly compacted as directed by the Engineer by the use of power rollers or other motorized vehicular equipment, by tamping with mechanical rammers or vibrators, or by pneumatic tampers. Any equipment not principally manufactured for compaction purposes and equipment, which is not in proper working order in all respects, shall not be used within the area described above.

Special attention shall be given to compaction in places close to walls where motorized vehicular equipment cannot reach. Within 3 feet of the back face of walls and within a greater distance at angle points of walls, each layer of pervious structure backfill shall be compacted by mechanical rammers, vibrators, or pneumatic tampers.

The dry density of each layer of pervious structure backfill formed from broken or crushed stone, broken or crushed gravel or reclaimed miscellaneous aggregate free of bituminous concrete shall have a dry density after compaction that is no less than 100 percent of the dry density for that material when tested in accordance with AASHTO T180, Method D. If a layer formed from reclaimed miscellaneous aggregate containing bituminous concrete is placed as pervious structure backfill, the wet density of this layer after compaction shall not be less than 100 percent of the wet density of that material when tested in accordance with AASHTO T180, Method D.

In this test, material retained on the ¾ inch sieve shall be replaced with material retained on the number 4 sieve, as noted as an option in the specifications for this test.

Each layer of the pervious structure backfill shall be compacted at optimum moisture content. No Subsequent layer shall be placed until the specified compaction is obtained for the pervious layer.

624.4 Method of Measurement: Payment lines for pervious structure backfill shall coincide with the limits of the compacted pervious structure backfill as actually placed and ordered by the Engineer. There shall be no direct payment for bagged stone, but the cost thereof shall be considered as included in the cost of the work for “Pervious Structure Backfill”.

624.5 Basis of Payment: Pervious structure backfill will be paid for the contract unit price per cubic yard for “Pervious Structure Backfill”, complete in place.
Technical Specifications

630.0 CLASS “A” CONCRETE

630.1 General: This item applies to the construction of the reinforced concrete abutment and pier caps, wingwalls, and wingwall footings for the proposed pedestrian bridge as indicated on the contract as prepared by Lenard Engineering, Inc. This item shall conform to Section 6.01 CONCRETE FOR STRUCTURES, of the Form 817, with the following sections amended or replaced:

Surface Finish:

All exposed surfaces shall receive be rubbed finish within 24 hours after removal of forms per Section 6.01.03–10(b) of Form 817.

630.2 Basis of Payment (Section 6.03.05): Payment for this work will be made as follows:

This material will be paid for at the contract unit price per cubic yard for "Class A Concrete", complete in place, which price shall include all materials, equipment, tools, labor and work incidental thereto, including heating, all admixtures and joint sealer.

All concrete testing will be done by the Town at no cost to the Contractor.

There shall be no direct payment for the cost of forming keys or construction joints, but the cost thereof shall be considered as included in the cost of the concrete items.

Where steel dowels are used, this material will be paid for under the reinforcement item.

There shall be no direct payment for the work of placing anchor rods. Payment for placing the anchor rods shall be included in this item for “Class “A” Concrete”.
640.0 DEFORMED STEEL BARS AND WELDED WIRE FABRIC

640.1 General: This item applies to the construction of the reinforced concrete abutment and pier caps, wingwalls, and wingwall footings for the proposed pedestrian bridge as indicated on the contract as prepared by Lenard Engineering, Inc. This item shall conform to Section 6.02 REINFORCING STEEL, of the Form 817, with the following section(s) replaced:

640.2 Basis of Payment (Section 6.02.05): Payment for this work will be made as follows:

This work will be paid for at the contract unit price per pound for "Deformed Steel Bars", complete in place and accepted, including shop drawings, furnishing, fabricating and placing reinforcing steel, welding splices and all materials, equipment, tools, labor and work incidental thereto. Payment for Welded Wire Mesh Reinforcement is included in item 201.0
**660.0** DAMPPROOFING

660.1 **General:** This item applies to the construction of the reinforced concrete abutment and pier caps, wingwalls, and wingwall footings for the proposed pedestrian bridge as indicated on the contract as prepared by Lenard Engineering, Inc. This item shall conform to Section 7.08 DAMPPROOFING of the Form 817, with the following section replaced:

660.2 **Basis of Payment (Section 7.08.05):** This work will be paid for at the contract unit price per square yard for "Dampproofing," complete in place, including all material, equipment, tools, labor and incidental expense.
670.0  REMOVABLE BARRIER POST

670.1 Description: Removable barrier posts shall be of prefabricated, welded, heavy duty steel construction, painted black, with reflectorized tapes at the upper end of the removable section. The product shall be as shown on the construction drawings. Also included in this item is the concrete footing, as shown in the detail in the construction drawings.

670.2 Materials: Structural steel: shall be ASTM A500, Grade B structural steel, complying with Section M06.02.1 of the Standard Specifications. Reflectorized tape shall comply with Reflective Sheeting per Article 12.08.02 and Material Section M.18.09.2.(1). Locking mechanism shall be stainless, heavy duty padlock, one per barrier post to be supplied by Town in standard pattern.

670.3 Concrete: Concrete for footing shall be Portland cement concrete, Class “A”, complying with item 630.0 in this specification.

670.4 Method of Measurement: This work will be measured for payment by the number of Removable Barrier Posts, completed, operating, and accepted in place.

670.5 Basis of Payment: Payment for this work will be paid for at a contract unit price each for “Removable Barrier Post”, which price shall include all material, fabrication, shipping to the site, installation, equipment labor, paint, painting tools, and work incidental thereto.
680.0 WOOD RAIL FENCE

680.1 Description: The Wood Rail Fence along the approach walkways to the pedestrian bridge shall be constructed to the exact dimensions, angles, sizes and slopes as shown on the Contract Drawings and as stipulated in these specifications.

680.2 Wood Material: Wood material shall be West Coast Region Douglas Fir or Southern Yellow Pine, Grade 1, select structural. Pressure treatment shall be according to Article M.12.13.3 of Form 817 for components not in contact with earth. Pressure treatment of all other timber parts shall be according to Article M.12.13.2 of Form 817.

680.3 Concrete: Concrete for footing shall be Portland cement concrete, Class “A”, complying with item 630.0 in this specification.

680.4 Construction Methods: All wood rail fences shall be constructed as shown on the plans to the generally accepted standards of the industry.

680.5 Method of Measurement: Wood Rail Fence in this work will be measured for payment by the actual number of linear feet of the type specified, installed and accepted.

680.6 Basis of Payment: The work involved in the construction of the Wood Rail Fence will be paid for at the contract listed unit price for “Wood Rail Fence”, which price shall include all material, equipment, tools, concrete, footing, work, and labor incidental thereto.
690.0 STREET BENCH

690.1 Description: This work consists of providing street benches of the type and general appearance, according to the details and specifications, and installed at locations indicated in the contract drawings.

690.2 Materials: Street Benches shall be Model LB72, as Manufactured by Petersen Mfg. Co., Inc. (2471 Highway 30, P.O. Box 664, Danielson, IA 51442. Ph: 712-263-2442), or approved equal. Concrete for base slabs shall be Class “F”, conforming to item 201.0 of these specifications. Welded wire fabric reinforcement shall be as specified in item 640.0 of these specifications. Anchor bolts shall be ASTM A 325, ½ inch diameter, 6 inch long, stainless steel with stainless steel threaded inserts.

690.3 Construction Methods: The concrete mounting slab shall be constructed to the dimensions and specification on the contract drawing. Bench shall be installed according to the contract drawing and the manufacturer’s specifications.

690.4 Method of Measurement: This work will be measured for payment by the number of Street Benches, completed accepted in place.

690.5 Basis of Payment: Payment for this work will be paid for at a contract unit price each for “Street Bench”, which price shall include all material, fabrication, shipping to the site, installation, equipment labor, paint, painting tools, and work incidental thereto. Concrete base slabs for benches will be paid under item 201.0 of these specifications.
700.0 SITE LIGHTING UNIT

700.1 **Description:** This work consists of providing site lighting units on concrete base, of the type and general appearance, according to these specifications, and installed at locations indicated in the contract drawings.

700.2 **Materials:** Supera Series GS-LED-290 (80W) solar powered, on 26 foot pole, per the product information in the Appendix, or approve equal. The concrete pole base shall be Class “A” concrete as specified in item 630.0 of these specifications.

700.3 **Construction Methods:** Per the manufacturer’s instructions.

700.4 **Method of Measurement:** This work will be measured for payment by the number of Site Lighting Unit, completed accepted in place.

690.5 **Basis of Payment:** Payment for this work will be paid for at the contract unit price each for “Site Lighting Unit”, which price shall include all material, fabrication, shipping to the site, furnishing and construction of the concrete base, installation, equipment labor, activation, administrative work, and any other work incidental thereto.
701.0 OUTDOOR DISPLAY BOARD

701.1 Description: This work consists of providing outdoor display board of the type and general appearance, according to the details and/or specifications, and installed at locations indicated in the contract drawings or as directed.

701.2 Materials: Outdoor Display Boards 57-180, medium, 44.5" W X 22.5" H, with model 57-195 sliding door lock, 57-205 post Attachment Kit, and two line custom sign with inscription "Watertown Park Department – Call 860-945-5246 for Information", as manufactured by Lincoln Aquatics, 2051 Commerce Avenue, Concord, CA 94520 USA, Ph. (800) 223-5450 / Fax (888) 680-2825 or approved equal. Color shall be dark green.

701.3 Construction Methods: The outdoor display board shall be installed on 2’ X 8’ recycled plastic posts and associated hardware in accordance with the manufacturer’s specifications.

701.4 Method of Measurement: This work will be measured for payment by the number of Outdoor Display Boards, completed accepted in place.

701.5 Basis of Payment: Payment for this work will be paid for at a contract unit price each for "Outdoor Display Board", which price shall include all material, fabrication, shipping to the site, installation, equipment labor, paint, painting tools, base and work incidental thereto.
The following items shall be provided in accordance with the State of Connecticut Department of Transportation “Standard Specifications for Roads, Bridges and Incidental Construction”, Form 817, as amended.

**NOTE:** The Computed Totals are for convenience in initial comparison of bids and are not an official part of this Proposal. The Town reserves the right to eliminate any Item or portion of the work, which it deems to be in its best interest.

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**Item # 1**
Preparation of Site

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**Item # 2**
Rock Excavation and Disposal

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**Item # 3**
Permanent Pavement Repair

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**Item # 4**
Earth Excavation

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**Item # 5**
Concrete Walkway and Bench Concrete Base Slab

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**Item # 6**
Grading and Topsoiling

The unit price of
Technical Specifications

Item # 7
Turf Establishment

The unit price of

$__________

per square yard (S.Y.)

182 S.Y.

Item # 8
Sedimentation Control System

The unit price of

$__________

per linear foot (L.F.)

155 L.F.

Item # 9
Sediment Control Sack

The unit price of

$__________

ever each (EA)

1 EA

Item # 10
Bituminous Concrete Walkway

The unit price of

$__________

per square yard (S.Y.)

48 S.Y.

Item # 11
Remove and Reset Metal Box Beam and Chain Link Fence

The lump sum price of

$__________

per lump sum (L.S.)

1 L.S.

Item # 12
Drilling Holes and Grouting Dowels

The unit price of

$__________

per linear foot (L.F.)

38 L.F.

Item # 13
Maintenance and Protection of Traffic

The lump sum price of

DCS- 56
### Technical Specifications

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<td>Class “A” Concrete</td>
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Technical Specifications

The unit price of _______________________________ Dollars and ___________________________ Cents ($               ) per cubic yard (C.Y.) 21 C.Y. $__________

**Item # 21**
**Deformed Steel Bars**
The unit price of _______________________________ Dollars and ___________________________ Cents ($               ) per pound (LB) 1,716 LB $__________

**Item # 22**
**Dampproofing**
The unit price of _______________________________ Dollars and ___________________________ Cents ($               ) per square yard (S.Y.) 45 S.Y. $__________

**Item # 23**
**Removable Barrier Post**
The unit price of _______________________________ Dollars and ___________________________ Cents ($               ) per each (EA) 4 EA $__________

**Item # 24**
**Wood Rail Fence**
The unit price of _______________________________ Dollars and ___________________________ Cents ($               ) per linear foot (L.F.) 46 L.F. $__________

**Item # 25**
**Street Bench**
The unit price of _______________________________ Dollars and ___________________________ Cents ($               ) per each (EA) 2 EA $__________

**Item # 26**
**Site Lighting Unit**
The unit price of _______________________________ Dollars and ___________________________ Cents ($               ) per each (EA) 2 EA. $__________

**Item # 27**
**Outdoor Display Board**
The unit price of
Technical Specifications

Item # 28
Erosion Control Matting

The unit price of

_________________________ Dollars and ___________________________ Cents
($      ) per square yard (S.Y.) 47 S.Y.  $_________

Computed Total –  
$________________________________________

NOTE: The Town reserves the right to eliminate any item or portion of the work which it deems to be in its best interest.

Payment Terms ________________________________________________________________

Time to Completion ________________________________________ Working Days

Warranty _________________________________________________________________

Have you taken any exceptions or have you deviated from our printed specification and if so, are such suggested changes clearly noted on the page provided for exceptions to specifications?:

___ yes  ___ no
Technical Specifications

APPENDIX A

Street Lighting Unit Product Information
Technical Specifications

APPENDIX A

Watertown Conservation Commission Permit