

**SOUTH WINDSOR BOARD OF EDUCATION
1737 MAIN STREET
SOUTH WINDSOR, CONNECTICUT**

SPECIFICATIONS

FOR

Bid No. 1920-005

**FUEL OIL TANK REPLACEMENT
PRESENT PHILIP R. SMITH @ 350 FOSTER STREET**

BIDS WILL BE RECEIVED UNTIL:

Friday, September 20, 2019

AT

11:00 A.M.

Ms. Chris Chemerka Director of Finance & Operations

Mr. Patrick T. Hankard Director of Facility Operations

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SECTION I
INVITATION TO BID

PRESENT PHILIP R. SMITH @ 350 FOSTER STREET
FUEL OIL TANK REPLACEMENT

1. Specifications for the Bid No. 1920-005, Present Philip R. Smith @ 350 Foster Street Fuel Oil Tank Replacement, may be obtained on the South Windsor Public Schools' website, <http://www.southwindsorschools.org> under "Central Office," "Business Services," "Bids and RFPs".
2. **A mandatory pre-bid walk through will be conducted on Friday, September 13, 2019 at 1:30 P.M.** Bidders should meet at the present Philip R. Smith School Hill, **350 Foster Street, SW.**
3. Sealed bids will be received at the Office of the Director of Facility Operations, Rm. 100, 1737 Main Street, SW until **11:00 a.m. on Friday, September 20, 2019.** Bids will be publicly opened and read aloud soon after in Room 106.
4. The South Windsor Board of Education reserves the right to waive any informalities in Bids; to reject any or all bids; or to accept the one that in their judgement will be for the best interest of the South Windsor Board of Education.

Patrick T. Hankard
Director of Facility Operations

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SECTION II **SUBMISSION OF BIDS**

1. Bids must be submitted on forms supplied in this bid document.
2. Time and date for submission is contained within this document. Bids received after the specified time and date of bid opening given shall not be considered. Bid envelopes must clearly indicate the bid number as well as the date and time of the bid opening. Name and address of the Bidder should appear in the upper left hand corner of the envelope.
3. Incomplete bids may result in the rejection of the bid. An original and one copy of the proposal schedule shall be submitted to the BOE. All bids must be signed by a person duly authorized to sign bids on behalf of the bidder. Unsigned bids shall be rejected. Errors, alterations or corrections on both the original and copy of the proposal schedule to be returned must be initialed by the person signing the bid proposal.
4. Conditional bids are subject to rejection in whole or in part. A conditional bid is defined as one which limits, modifies, expands or supplements any of the terms and conditions and/or specifications of the invitation to bid.
5. The BOE is exempt from excise, transportation and sales taxes imposed by the Federal Government and/or State. Such taxes must not be included in bid prices.
6. In the event of a discrepancy between the unit price and the extension, the unit price shall govern.
7. By its submission the Bidder represents that the bid is not made in connection with any other Bidder submitting a bid for the same commodity or service and is in all respects fair and without collusion or fraud.
8. All bids will be opened and read publicly; and upon award are subject to public inspection.
9. **References: Include the name, title, and contact information of the authorized owner's representative for at least three recent projects of similar size, scale, and timeframe.**
10. Interested parties are encouraged to submit supporting documentation that is pertinent to the thorough evaluation of the bid.
11. The lump sum price for this Project shall include all materials, equipment, labor, supervision, overhead items, profit, protection and precautions and all other incidental costs necessary for construction. Lead Time to prepare shop drawing submittals. Lead Time from date of receipt of approved shop drawing submittals to shipping date.

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SECTION III **AWARD OF CONTRACT**

1. The owner reserves the right to award the contract to the bidder offering the best value in the interest of the Owner but not necessarily award the contract to the bidder submitting the lowest bid.
2. The Owner reserves the right to reject any or all bids and to waive defects or informalities in any bid if it is deemed to be in the best interests of the Owner to do so. The Owner also reserves the right to select or reject in part or in total any and/or all the supplemental bid items and not necessarily in the order in which they appear in the proposal form.
3. The intent of this Project is to have a completed, finished, working Project whether or not any particular wording or direction is inadvertently omitted or not clearly stated.
4. Any and all reference to trade names, types, styles, models or catalogs are intended to be descriptive only and not restrictive. The intention is to indicate to bidders the type and quality of the articles and/or materials that will be satisfactory. Bids received on other makes or models with reference to other catalogs will be considered. The bidder is to clearly state in his bid exactly what he intends to furnish, and to furnish with his bid a cut or illustration or other descriptive matter which will clearly indicated and give specification as to the product he proposes to furnish. Where a bid is offered on an item other than the trade standard used in the specification, the item should be identified on the bid form by entering the i) make, ii) trade name, and iii) model number. Samples are to be submitted, if requested, at the bidder's expense. It is understood that any substitutes which might be offered are guaranteed by the bidder to be of equal or better quality than is requested in the bid. It shall be further understood that during original, as well as subsequent shipments, spot checks will be performed to insure that the items received are in fact the items offered in the bid. Should items/materials prove to be different in any way, the bidder agrees to the return of the items and agrees to supply the correct items (per bid specifications) at bidder's expense
5. All supplies and workmanship shall be subject to inspection and test after arrival at destination. In case articles are found to be defective, or otherwise not in conformity with the specification or requirements, the Board shall have the right to reject such articles, and shall incur no cost whatsoever for a reject article(s).

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SECTION IV **SPECIFICATIONS**

SECTION 15001-SUMMARY OF WORK

1.01 GENERAL

- A. The South Windsor Public Schools is seeking proposals from qualified fuel tank removal and replacement contractors to remove one existing 10,000 gallon buried fiberglass fuel oil tank serving the boilers at the present Philip R. Smith Elementary School at 350 Foster Street in South Windsor, CT and to replace that tank with a new 2,000 gallon above ground fuel tank, piping and associated work.
- B. The intent of this Request for Proposal is to seek a lump sum price to provide a turnkey project to excavate, remove the existing tank, piping and manholes and backfill and restore site conditions and to provide the new above ground tank, piping, connections to boilers and other indicated modifications.
- C. The project will be funded by the Town of South Windsor.
- D. The oil tank and piping is presently located under existing lawn areas on the south side of the school.
- E. The contract will be turnkey, complete with all required topsoils removal, excavation, soils testing, tank and concrete pad removal, removal of oil piping and appurtenances, patching of underground building openings, backfill and restoration of lawn areas. A new above ground fuel tank will be provided along with new oil piping and accessories from the tank to the boiler burners and modifications to the existing fuel inventory management system. Included in the proposal shall be the following scope of work:
 - 1. Pump out remaining oil in tank and dispose.
 - 2. Sawcut existing pavement around oil tank (if necessary) and piping path to facilitate excavation and removal of tank.
 - 3. Remove lawn areas around tank and piping path.
 - 4. Test soils in area around tank and piping path. Remove any and all contaminated soils and dispose.
 - 5. Remove existing containment oil supply and return piping to boiler room. Patch openings in building walls watertight.
 - 6. Protect adjacent classroom windows (2 rooms with 2 windows each)
 - 7. Remove tank manhole risers and fill and vent pipe and fittings.
 - 8. Provide two (2) 275 gallons temporary fuel tanks and pipe for use.
 - 9. Remove tank, render unusable and dispose.
 - 10. Prepare concrete base pad for new above ground fuel tank.

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11. Furnish and install new 2,000 gallon above ground fuel tank, accessories, and piping to existing boiler-burners.
12. Make modifications to existing Veeder Root fuel tank inventory management panel and components.
13. Backfill site and restore existing lawn areas, matching existing grades. Repair pavement areas as required.
14. Provide manifests and certifications of tank, piping materials and soils disposals.

F. Work will occur during the fall of 2019 and shall be completed by November 1, 2019.

1.02 PRE-BID CONFERENCE

A. A mandatory pre-bid conference will be held at the site on Friday, September 13, 2019 at 1:30 pm in order to acquaint all potential bidders with project site, typical site conditions and to field technical and administrative questions. Bids will not be accepted from any contractors who are not present at the pre-bid conference.

1.03 SUBMISSION OF PROPOSALS

A. Proposals shall include the following information:

- Total lump sum cost of materials, labor, overhead and profit (Tax exempt)
- Lead Time to mobilize
- Acknowledgement of receipt of any and all addenda.

B. Sealed bids clearly marked "Oil Tank Replacement – PRS @350 Foster Street Fuel Oil Tank Replacement" in triplicate, shall be received by 11:00 a.m. on Friday, September 20, 2019 at:

South Windsor Public Schools
1737 Main Street.
South Windsor, CT 06074
Attention: Patrick Hankard
Director of Facility Operations

There will be a public bid opening at 11:00 am at 1737 Main Street South Windsor Room 100. Bidders are welcome to attend the bid opening.

1.04 ACCEPTANCE OF PROPOSALS

The South Windsor Public Schools reserves the right to accept or reject any or all proposals in the best interest of South Windsor Public Schools and the Town of South Windsor.

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1.05 RELATED DOCUMENTS

A. General Conditions, Terms and Conditions and any other documents provided by South Windsor Public Schools at the time of documents issuance are a part of the Request for Proposal and shall apply to all equipment, materials or work specified or relating to this project.

B. Where items of the General Conditions or other documents are repeated herein or in other Sections of the Specifications, it is merely intended to qualify or to call particular attention to them. It is not intended that any other parts of those General Conditions or other documents shall be assumed to be omitted if not repeated herein.

C. In the event of a discrepancy between specifications and drawings, or between this section and other sections of the Contract Documents, the Owner and/or Engineer shall decide which shall prevail and such decision shall be binding.

D. The following drawings shall be included as a part of these contract documents:

- M-1 Mechanical Plans
- M-2 Mechanical Details

E. The following Specification Sections are included:

- Section 15001 – Summary of Work
- Section 15010 – General Conditions
- Section 15450 – Fuel Oil Systems
- Section 15610 – Oil Tank Removal
- Section 23000 – Earthwork
- Section 25000 – Pavement
- Section 29200 – Lawns and Grasses
- Section 33000 - Concrete

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SECTION 15010-GENERAL CONDITIONS

PART 1-GENERAL

1.01 WORK INCLUDED

- A. The work included shall be as specified in Section 15001, this Project Manual and as indicated on the Drawings. In summary and without limiting the generality thereof, the work shall consist of the following:

1.02 BASE BID

Cleaning, removal and disposal of existing underground tank system (tank, fittings and piping.)

Removal and replacement of existing site improvements including as concrete pads and lawn areas as required for tank removal and installation.

1.03 UNIT PRICES

- A. Removal and on-site stockpile of contaminated soil, provision of gravel fill to replace contaminated soil and transportation and disposal of contaminated soil.
- B. The Contractor shall be reimbursed at a unit price for removal and on-site stockpiling of any soil contaminated prior to the project by leakage or spillage associated with the existing tank systems. The horizontal and vertical limits of the contaminated soil excavation shall be determined by Owner's Environmental Consultant. Unit price to also include provision on gravel fill to replace contaminated soil removed and transportation and disposal of the contaminated soil at an in-state or out-of-state soil recycling facility that is recognized by the State of Connecticut to accept approved non-hazardous Connecticut regulated waste. The contractor's unit price shall include the cost of sampling, profiling and completion of the required applications required by the disposal facility for acceptance of the soil. Weight tickets are to be submitted by the Engineer for use as the basis of payment.
- C. Base Bid shall include an allowance of 10 tons of contaminated soil removal, transportation, disposal and fill at the above unit price.

1.04 QUALITY ASSURANCES

- A. Only the best of workmanship in accordance with present standards and generally accepted construction practices will be acceptable. Any work installed which the workmanship is judged by the Engineer to be below present standards or generally accepted construction practices shall be taken out and replaced with properly done work at the contractor's expense.

1.05 SITE CONDITIONS

- A. The Drawings shall be taken in a sense as diagrammatic and are not intended to show every offset and fitting, nor every obstacle that may be encountered during the installation of the work. Where necessary, and after approval from the Engineer, the alignment of work and equipment shall be varied from that shown on Drawings.

Should there appear to be any discrepancy between the specifications, the Drawings, and field conditions the Contractor shall refer the matter to the Engineer for settlement.

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1.06 SUBMITTALS

- A. Furnish to the Engineer electronic product information, shop drawings, and catalogue cuts for all new equipment and as otherwise required in the Contract Documents.

1.07 ACCEPTABLE MANUFACTURERS

- A. The systems design is based on the manufacturer of equipment and accessories as scheduled or otherwise specified within the contract documents.

Equivalent equipment and accessories from the acceptable manufacturers listed within each section of this specification may be accepted if the proposed equipment and accessories meet or exceed the requirements of this specification and the capacity and other requirements shown on the drawings. Inclusion in the list of the manufacturers does not guarantee the listed manufacturer can furnish an acceptable product for this project. The Engineer is the sole arbiter of equivalence and acceptability.

1.08 SUBSTITUTIONS:

- A. Substitution request from Contractors may be submitted only after the award of Contract. Requests shall be in writing on Contractor's letterhead and shall include:

Contractor's statement to the effect that proposed substitution will result in overall work equal to, or better than, the work originally intended.

Contractor's detailed comparison of significant qualities between specified item and proposed substitution.

Statement of effect on construction time, coordination with other affected work, and cost information or proposal.

Substitution requests from contractors will only be considered if: (1) extensive revisions to Contract Documents are NOT required; (2) changes are in keeping with general intent of Contract Documents; (3) requests are submitted in a timely and proper manner, fully documented; and (4) one or more of following conditions is satisfied; all as judged by Engineer:

Where request is directly related to the "or equal" clause or words of similar effect in Contract Documents.

Where specified product, material or method can NOT be provided within Contract Time; but NOT as a result of Contractor's failure to pursue the work promptly to coordinate various activities properly.

Where specified product, material or method can NOT be provided in manner which is compatible with other materials of the work and where Contractor certifies that proposed substitution is compatible.

Where specified product, material or method can NOT be properly coordinated with other materials of the work and where Contractor certifies that proposed substitution can be properly coordinated.

Where specified product, material or method can NOT be warranted as required and where Contractor certifies that proposed substitution can be so warranted.

Where specified product, material or method can NOT be used without adversely affecting Owner's insurance coverage on completed work and where Contractor certifies that proposed substitution can be so used.

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Where specified product, material or method will encounter other substantial non-compliances which are NOT possible to otherwise overcome except by using proposed substitution.

Where specified product, material or method can NOT receive required approval by governing authority and proposed substitution can be so approved.

Where a substantial advantage is offered to the Owner; in terms of cost, time, energy conservation or other valuable considerations; after deducting offsetting responsibilities that this Contractor may be required to bear, including additional compensation to Engineer for any redesign or evaluation services, increased cost of other work by other contractors, and similar considerations.

The burden is upon the Contractor, supplier and manufacturer to satisfy the Engineer that:

The proposed substitute is equal to, or superior to, the item specified.

The intent of the Contract Documents, including required performance, capacity, efficiency, quality, durability, safety, function, appearance, space clearances and delivery date, will be equaled or bettered.

Changes in work of other trades, such as structural supports or additional electrical capacity, which are required as a result of the substitution, and the associated costs for such changes, shall be the complete responsibility of the Contractor proposing the substitution. There shall be NO additional expense to the Owner

1.09 PLANS AND SPECIFICATIONS AT THE SITE:

- A. The Contractor shall maintain at the Work Site, one copy of all Drawings, Specifications, Addenda, approved Shop Drawings, Change Orders and other modifications, Schedules, Instructions, etc. in good order and marked to record all changes made during construction. These shall be available at all times to the Engineer or his authorized representatives.

1.10 CONSTRUCTION PHASE LOG

- A. The Contractor shall maintain a written record of daily work progress. Included shall be work completed, problems encountered, date of Engineer's approval of shop drawings, change orders, submittals, etc., and a list of all visitors to Work Area.

1.11 ENGINEER'S APPROVAL

- A. The Contractor shall notify the Engineer (in writing) when the Work is completed.

1.12 SCHEDULE OF VALUES:

- A. At the pre-construction meeting, the selected Contractor shall submit to the Owner a schedule of values that breaks down the costs associated with each major phase of work at each of the buildings.

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1.13 SCHEDULE OF WORK:

- A. All work shall be scheduled during normal working hours unless special arrangements are made with the Owner. The Contractor shall coordinate all aspects of the work schedule with the Owner's representative to ensure minimum disruption of building use. The Contractor shall submit to the Owner for approval a proposed schedule of work on a weekly basis. If schedule is approved by the Owner, it shall be rigidly adhered to by the Contractor in the following week. The Engineer will be available to resolve technical issues arising in the negotiations of the weekly work schedule. The Contractor shall be responsible for maintaining adequate communication with the Owner and Engineer.

1.14 WORK AREA:

- A. Construction will be confined to the immediate work area only. Trespass on property other than the Owner's property or easements acquired by the Owner for the project will be by written permission of the property owner only. Coordinate access and security conditions with Owner.

1.15 WARRANTY

- A. The Contractor shall guarantee all material and workmanship under these Specifications and the Contract for a period of one (1) year from the date of final acceptance by Owner.
- B. During this guarantee period, all defects developing through faulty equipment, materials or workmanship shall be corrected or replaced immediately by this Contractor without expense to the Owner. Such repairs or replacements shall be made to the Engineer's satisfaction.
- C. Manufacturer's warranties exceeding the one year period shall be provided to the Owner with appropriate documentation and contact information.

PRODUCTS

2.01 NEW MATERIALS:

- A. Unless otherwise specified, all equipment, accessories, and materials shall be new and undamaged. Where two or more units of the same class of new equipment are required, these units shall be products of the same manufacturer.

2.02 LABELS:

- A. All equipment shall bear a Manufacturer's label that shows manufacturer's name, equipment model and serial numbers and appropriate operating information such as flow rates, capacities, voltage, current, etc. All equipment and material that is listed with UL shall bear a UL label.

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EXECUTION

3.01 EMERGENCY AND FIRE EGRESS

- A. Legal fire and emergency egress shall be maintained at all times. Contractor shall take all measures necessary to maintain safe egress from all areas of building.

3.02 PERMITS:

- A. The Contractor shall give all necessary notices, file all required plans, obtain and pay for all required permits, obtain all necessary approvals and obtain all required certificates and inspections from City, State and Federal government departments and utilities having jurisdiction over the work.

3.03 DEMOLITION

- A. The Contractor shall remove from the job site and dispose of, in an approved manner, all material demolished under this Contract.
- B. All demolition work shall be done with care to protect against injury to life and existing construction to remain shall be protected to prevent damage. Any damage done to existing construction (which is to remain) shall be corrected and patched to match surrounding area.

All materials removed (unless hereinafter described as Salvage) as a part of demolition shall become the property of the Contractor and be removed from the job site.

Material to be reused shall be removed with utmost care to prevent damage of any kind. The Fair Value of any item to be reused which is damaged during removal or handling shall be charged to the Contractor.

All material to be reused shall be stored on site. Contractor shall coordinate with Owner as to location.

Masonry to be removed shall be cut clean and smooth, rough edges shall be ground to match surrounding. Damaged joints shall be repointed.

All mechanical utilities encountered in the demolition areas shall be capped or rerouted. Electrical lines, plumbing lines, heating and ventilating lines shall be capped or rerouted in accordance with the Mechanical & Electrical Drawings, Specifications and local codes. The Contractor shall coordinate with Owner and obtain approval prior to any interruption in the Owner's use of utilities.

3.04 MANUFACTURER'S INSTRUCTIONS

- A. All material and equipment shall be installed in accordance with the Manufacturer's instructions or requirements for proper operation. If such instructions or requirements conflict with the Specifications and/or Contract Drawings, the Contractor shall obtain written instructions from the Engineer before violating the Manufacturer's requirements

3.05 EQUIPMENT CLEARANCES

- A. Whether or not shown in detail or dimensioned on the Drawings, no equipment shall be installed in such a manner that it cannot be serviced. Contractor shall make field measurements to ensure that furnished equipment shall fit in available space. If field measurements indicate that specified equipment does not fit the Contractor shall notify the Engineer in writing, so that appropriate changes can be made.

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3.06 COORDINATION OF WORK WITH OTHER TRADES

- A. Subcontractors shall schedule work with each other to avoid conflicts, delays, and changes that would affect the intended appearance and function of installed material. No piping, ducts, conduit, valves, boxes, or architectural material shall be installed until all clearances have been checked and work coordinated with other trades. Subcontractors will be responsible for taking their own field measurements.

3.07 PRECONSTRUCTION MEETING

- A. The Owner and Engineer will conduct a preconstruction meeting with the selected Contractor. The purpose of the meeting will be to answer any questions the Contractor may have about scheduling, the scope of work, the methods of work to be applied, and/or other technical or contractual issues.

3.08 MEETINGS

- A. To enable orderly review during progress of the Work and to provide for systematic discussion of problems the Contractor, Owner and Engineers will conduct periodic project meetings throughout the construction period. Persons designated by the Contractor to attend and participate in the project meetings shall have all required authority to commit the Contractor to solutions agreed upon in the project meetings.

3.09 TESTING

- A. Functional testing of all systems and equipment shall be required. Test shall be attended by representatives of the Contractor, equipped with instruments required to demonstrate proper functioning of each system. The Contractor shall demonstrate that all Equipment is installed and operating in accordance with manufacturer's specifications and instructions, local and state codes.

3.10 SAFETY

- A. The Contractor is responsible for safety at the job site. The Contractor shall adhere to all OSHA job safety requirements and otherwise observe safe working procedures. The Contractor shall provide all of the necessary measures to ensure the safety of workers, School District personnel, students and the general public during the construction and during periods when the Contractor is not on site. Job site safety is the sole responsibility of the Contractor. The Contractor shall ensure no debris from demolition or construction remains at the close of each workday and that work area and areas adjacent to the work area are maintained in a safe and usable condition. Open excavations and other hazards shall be completely barricaded, lighted, and shall be manned 24 hours, if necessary, to ensure public safety.

3.11 PAINTING, PATCHING AND REPAIR

- A. Contractor shall patch, paint and otherwise repair existing building structures and equipment where called out in other Sections of the Specification and/or Drawings. Areas damaged or altered as a result of any Work under this Contract shall also be repaired and painted using materials and methods of the same quality as existing conditions in order to obtain the same appearance and function of existing materials. Damaged, altered or new surfaces shall be painted with sealer, primer and finish coat to match existing color and texture. If required by the Engineer, painting shall be carried to existing wall or ceiling break.

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3.12 PROTECTION OF WORK AND MATERIALS:

- A. Work shall include receiving, unloading, uncrating, storing, protecting, setting in place and completely connecting equipment and materials supplied. Work shall also include exercising special care in handling and protecting equipment and materials and shall include the cost of replacing any of the equipment or materials which are missing or damaged.

Equipment and material stored on or off the job site shall be protected from the weather, vehicles, dirt and damage by workers or machinery. Insure that all absorbent materials are protected from moisture during storage.

Contractor shall take all necessary measures to protect the property of the Owner from damage that might be caused as a result of the Work included under this Contract.

3.13 CLEANING:

- A. Contractor shall conduct cleaning and disposal operations to maintain a clean and safe Work area. Contractor shall comply with local ordinances and anti-pollution laws when conducting cleaning and disposal operations.

The Contractor shall NOT burn or bury rubbish and waste materials on project site. The Contractor shall not dispose of volatile wastes such as mineral spirits, oil, or paint thinner in storm or sanitary drains.

The Contractor shall wet down dry discarded materials and rubbish to prevent blowing dust, provide on-site containers for collection of waste materials and rubbish, and at reasonable times during progress of work, remove waste materials and rubbish from site and legally dispose of at public or private dumping areas off the Owner's property.

Interior building areas shall be cleaned when ready to receive finish painting and continue cleaning on an as-needed basis until building is ready for Substantial Completion and/or occupancy. Cleaning operations shall be scheduled so that dust and other contaminants resulting from cleaning process will not fall on wet, newly painted surfaces.

Cleaning materials recommended by manufacturers shall be used to clean surfaces of equipment, etc.

Remove grease, dust, dirt, stains, labels, fingerprints, and other foreign materials from sight-exposed interior and exterior surfaces. This includes cleaning of the Work of all finishing trades where needed whether or not cleaning by such trades is included in their respective Section.

Leave pipe and duct spaces, plenums, furred spaces, and the like clean of debris and decayable materials.

In cleaning items with manufacturer's finish or items previously finished by a subcontractor, care shall be taken not to damage such manufacturer's or subcontractor's finish. In cleaning glass and finish surfaces, care shall be taken not to use detergents or other cleaning agents that may stain adjoining finish surfaces. Any damage to finishes caused by cleaning operations shall be repaired by the Contractor at his own expense.

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3.14 WORKMANSHIP

- A. All Work shall be performed in a first-class, neat, substantial and workmanlike manner, by workers with adequate experience and training to perform the work.

END OF SECTION

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SECTION 15450-FUEL OIL SYSTEMS

PART 1 GENERAL

1.01 INTENT

- A. The intent of this section is to establish the material and equipment standards for new and modified existing fuel oil storage, piping and utilization systems and the acceptable construction, installation and workmanship standards for same.

1.02 SECTION INCLUDES

- A. Aboveground fuel storage tanks.
- B. Fuel Oil Piping, Fittings and Accessories.
- C. Valves.
- D. Accessories.
- E. Fuel Inventory Management Systems

1.03 RELATED DOCUMENTS

- A. Section 15001 – Summary of Work
- B. Section 15010 – General Conditions
- C. Section 33000 - Concrete.

1.04 REFERENCE STANDARDS

- A. UL 142 - Steel Aboveground Tanks for Flammable and Combustible Liquids; Current Edition, Including All Revisions.
- B. UL 2085 - two-hour furnace fire test and two hour simulated pool fire test for insulated and protected tanks.
- C. UL 2085 and UFC Test Standard (Article 79 or APPENDIX #A-II-F-1) - for both Vehicle Impact Protection and Projectile Resistance.
- D. UL 2085- Protected aboveground tanks for flammable and combustible liquids.
- E. UL 2085 - Non-Metallic Secondary Containment protected tanks for flammable and combustible liquids with secondary containment Emergency Venting by "Form of Construction".
- F. ASME B16.3 - Malleable Iron Threaded Fittings: Classes 150 and 300; 2011.
- G. ASME B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings; 2012.
- H. ASME B16.26 - Cast Copper Alloy Fittings for Flared Copper Tubes; 2013.
- I. ASME B31.9 - Building Services Piping; The American Society of Mechanical Engineers; 2008 (ANSI/ASME B31.9).
- J. ASME B36.10M - Welded and Seamless Wrought Steel Pipe; The American Society of Mechanical Engineers; 2004.
- K. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2012.
- L. ASTM B75/B75M - Standard Specification for Seamless Copper Tube; 2011.

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- M. ASTM B88 - Standard Specification for Seamless Copper Water Tube; 2014.
 - N. MSS SP-58 - Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation; 2009.
 - O. MSS SP-80 - Bronze Gate, Globe, Angle and Check Valves; 2013.
 - P. MSS SP-110 - Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends; 2010.
 - Q. NFPA 30 - Flammable and Combustible Liquids Code; 2015.
 - R. NFPA 31 - Standard for the Installation of Oil Burning Equipment; 2011.
- 1.05 SUBMITTALS
- A. See Section 15010 - Administrative Requirements, for submittal procedures.
 - B. Product Data: Provide data on pipe materials, pipe fittings, valves and accessories. Provide manufacturers catalog information. Indicate valve data and ratings.
 - C. Shop Drawings: Indicate tanks, system layout, pipe sizes, location, and elevations. For fuel oil tanks, indicate dimensions and accessories including manholes, permanent tank fittings and hold down means.
 - D. Certificates: Certify that products meet or exceed specified requirements.
 - E. Project Record Documents: Record actual locations of piping system, storage tanks, and system components.
 - F. Maintenance Data: Include installation instructions, spare parts lists, exploded assembly views.
 - G. Warranty: Submit manufacturer's warranty and ensure forms have been completed in Town of South Windsor's name and registered with manufacturer.
- 1.06 QUALITY ASSURANCE
- A. Welding Materials and Procedures: Comply with ASME BPVC.
 - B. Welders Certification: In accordance with ASME (BPV IX).
 - C. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience.
 - D. Installer Qualifications: Company specializing in performing the type of work specified in this section with minimum 5 years of experience and approved by manufacturer.
 - E. Valves: Manufacturer's name and pressure rating marked on valve body.
- 1.07 REGULATORY REQUIREMENTS
- A. Conform to CTDEP and USEPA Regulations for installation of fuel oil system.
 - B. Conform to ASME B31.9 for installation of fuel oil piping.
 - C. Provide certificate of compliance from authority having jurisdiction indicating approval of installation of fuel oil system.
 - D. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc., as suitable for the purpose specified and indicated.

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1.08 DELIVERY, STORAGE, AND HANDLING

- A. Protect piping and fittings from soil and debris with temporary end caps and closures. Maintain in place until installation.
- B. Protect above ground fuel oil tanks from damage and tampering.

PART 2 PRODUCTS

2.01 PIPING AND FITTINGS

- A. Regulatory Requirements:
 - 1. Comply with the material, fabrication, and operating requirements of ASME B31.3, except as modified herein.
 - B. Comply with the material, fabrication, and operating requirements of ASME B31.3, except as modified herein.
 - C. Carbon Steel Pipe: Fuel oil piping outdoors and in spaces outside of the boiler room shall be carbon steel.
 - 1. Comply with One of the Following:
 - a. ASTM A53/A53M, Type E or S, Grade B, seamless or electric welded, Schedule 40.
 - 2. End Connections:
 - a. Threaded type with malleable iron fittings and joints complying with ASME B16.3, Class 150 or ASME B16.11.
 - D. Copper Pipe: Type K. Copper tubing may be used inside the boiler room only. Provide fuel oil rated dielectric couplings or unions at connections to steel piping.
 - 1. Comply with ASTM B88 and ASTM B88M.
 - 2. Fittings and End Connections:
 - a. Wrought Copper and Bronze Solder-Joint Pressure Fittings: Comply with ASME B16.22 and ASTM B75/B75M.
 - b. Cast Copper Alloy Solder-Joint Pressure Fittings: Comply with ASME B16.18.
 - c. Cast Copper Alloy Fittings for Flared Copper Tube: Comply with ASME B16.26 and ASTM B62.
 - 3. Solder:
 - a. Comply with ASTM B32, grade Sb5, tin-antimony alloy for service pressures up to 150 psig.
 - b. Comply with ASTM B813 for solder flux in non-corrosive, liquid, or paste form.

2.02 ABOVE GROUND PIPING

- A. Copper Tube: ASTM B88 (ASTM B88M), Type K (A), annealed.
- B. Steel Pipe: ASTM A53/A53M or ASME B36.10M, Schedule 40 black.

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2.03 PIPE HANGERS AND SUPPORTS

- A. Provide hangers and supports that comply with MSS SP-58.
 - 1. If type of hanger or support for a particular situation is not indicated, select appropriate type using MSS SP-58 recommendations.
- B. Conform to NFPA 31.
- C. Hangers for Pipe Sizes 1/2 to 1-1/2 Inch: Malleable iron, adjustable swivel, split ring.
- D. Hangers for Pipe Sizes 2 Inches and Over: Carbon steel, adjustable, clevis.
- E. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.
- F. Wall Support for Pipe Sizes to 3 Inches: Cast iron hook.
- G. Vertical Support: Steel riser clamp.
- H. Floor Support: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
- I. Copper Pipe Support: Carbon steel ring, adjustable, copper plated.

2.04 FLANGES, UNIONS, AND COUPLINGS

- A. Pipe Size 2 Inches and Under:
 - 1. Ferrous pipe: 150 psi malleable iron threaded unions.
 - 2. Copper tube: 150 psi bronze unions with brazed joints.

2.05 GATE VALVES

- A. Manufacturers:
 - 1. Apollo Valves; _____: www.apollovalves.com/#sle.
 - 2. Nibco, Inc; _____: www.nibco.com/#sle.
 - 3. Milwaukee Valve Company; _____: www.milwaukeevalve.com/#sle.
- B. MSS SP-80, Class 125, bronze body, bronze trim, rising stem, handwheel, inside screw, solid wedge disc, solder ends.

2.06 GLOBE VALVES

- A. Manufacturers:
 - 1. Apollo Valves; _____: www.apollovalves.com/#sle.
 - 2. Nibco, Inc; _____: www.nibco.com/#sle.
 - 3. Milwaukee Valve Company; _____: www.milwaukeevalve.com/#sle.
- B. MSS SP-80, Class 125, bronze body, bronze trim, handwheel, bronze disc, solder ends.

2.07 BALL VALVES

- A. Manufacturers:
 - 1. Apollo Valves; _____: www.apollovalves.com/#sle.
 - 2. Nibco, Inc; _____: www.nibco.com/#sle.
 - 3. Milwaukee Valve Company; _____: www.milwaukeevalve.com/#sle.

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- B. MSS SP-110, Class 150, 400 psi CWP, bronze, two piece body, chrome plated brass ball, regular port, teflon seats and stuffing box ring, blow-out proof stem, lever handle with balancing stops, solder.

2.08 SWING CHECK VALVES

A. Manufacturers:

1. Hammond Valve; _____: www.hammondvalve.com/#sle.
2. Nibco, Inc; _____: www.nibco.com/#sle.
3. Milwaukee Valve Company; _____: www.milwaukeevalve.com/#sle.

- B. MSS SP-80, Class 125, bronze body and cap, bronze swing disc, solder ends.

2.09 FUSIBLE (FIRE) VALVES

- A. Fusible valves shall be Preferred Utilities Type A or equal, brass globe valve with 165 deg. fusible element in handwheel.

2.10 FUEL OIL ACCESSORIES AND SPECIALTIES

- A. Refer to drawings and details for fuel oil accessories and specialties and fuel tank connections.

2.11 ABOVEGROUND FUEL STORAGE TANKS

A. Manufacturers:

1. Convault, Inc: www.convault.com/#sle.

- B. Tank: The primary steel tank shall be rectangular in shape and have continuous welds on all exterior seams, manufactured in accordance with UL listing requirements and UL Standard 142.

1. The primary steel tank shall be pressure tested at 5 psig for 24 to 48 hours
2. The primary steel tanks shall have "emergency vent" system as per NFPA 30 Code requirements
3. The protected and insulated AST systems shall have a thru-tank leak detector tube to allow for physical checkup and monitoring capability between the primary and the secondary containment.
4. The primary steel tank shall be pressurized at 5 psig during concrete encasement.
5. The outer surface of the primary steel tank shall be covered by a minimum of 1/4" thick (6.4 mm) Styrofoam insulation panels
6. The secondary containment shall consist of a 30 Mil thick (0.76 mm) High-Density Polyethylene membrane enclosing the steel tank and insulation material.
7. The primary steel tank and the secondary containment shall be encased in six inches of monolithic reinforced concrete, with minimum design strength of 4,000 and 5,000 psi at 28 days depending on the tank size. The concrete design shall include the following for long-term durability: air entrainment, water reducing admixture, and steel reinforcement. Concrete encasements with seams will not be approved.

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8. The protected and insulated AST systems shall be of concrete exterior and a continuous and visually verifiable monolithic (seamless) pour on top, bottom, ends, and sides and contain no cold joints or heat sinks (heat transfer points). The AST must be shop fabricated and tested in accordance with the UL listings. Designs that use two layers of steel with insulation material between them will not be approved.
 9. No steel or insulating material shall come in contact with the concrete or other corrosive material.
 10. All openings shall be from the top only.
 11. All exposed metal with the exception of stainless steel must be powder coated to inhibit corrosion.
 12. The protected and insulated AST systems shall include a 7 or 15-gallon powder coated or stainless steel, UL listed spill containment, and shall include normally closed valve to release spilled product into the primary steel tank. Spill containment which route the spilled product into interstitial area will not be approved.
 13. The protected and insulated AST systems shall have a coated concrete exterior to resist weather and reflect sunlight. Models with steel exteriors will not be approved.
 14. The protected and insulated AST systems shall have a warranty of 30 years for systems 2,000 gallon capacity and larger and 20 years for systems 1,000 gallon capacity and smaller with optional 30-year warranty.
 15. The protected and insulated AST systems design shall have been in use for a minimum of twenty (20) years. The manufacturer must stipulate no reportable AST containment system failure in 30,000 units produced.
 16. The protected and insulated AST systems shall have two (2) bolts for connecting grounding conductors for lightning protection in accordance with NFPA 780.
- C. Accessories: Tank fill, gauge, vent, and outlet connections as detailed on the drawings.
- D. Capacity: 2000 gallons.
- 2.12 FUEL INVENTORY MANAGEMENT AND LEAK DETECTOR
- A. The existing Veeder-Root TLS-300C Inventory Management and Leak Detection panel shall be reused. Furnish and install the following items to adapt the existing system to the new above ground fuel oil tank:
 1. Provide a new Veeder Root "Mag Plus" level probe system, appropriately sized for the new fuel tank depth and volume metrics. Provide separate fuel oil float and water level float.
 2. Provide a new non-metallic Riser Cap Kit and Schedule 40 steel riser pipe as recommended by Veeder Root.
 - B. Provide magnetostrictive level transmitters with 0.1 GPH leak test accuracy for each storage tank, suitable for product stored.
 - C. Provide tank annular space sensor and piping sump sensors as specified on the Drawings.

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- D. Contact authorized Veeder Root supplier/service organization to validate all component selections.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that site and work areas are fully prepared to receive tanks, piping and appurtenances. Ensure concrete pad is cured to at least 75% of final design strength.

3.02 PIPING INSTALLATION

- A. Route fuel oil piping from oil tank through building wall, into outdoor storage room. Run pipe along inside wall racked vertically to limit horizontal extension into room. Provide durable protection for piping where it appears contact or damage could result. Run from outdoor storage room through wall into boiler room. Do not elevate piping above the horizontal outlet level at the fuel oil tank.
- B. Pressure test primary piping with compressed air at 60 psi for not less than 15 minutes. Leaks at fittings may be repaired and retested. If leaks are found in tubing, replace entire section. Refer to manufacturer's instructions for further test procedures.
- C. Install in accordance with manufacturer's instructions and API RP 1615.
- D. Provide non-conducting dielectric connections wherever jointing dissimilar metals. Install to NACE SP0286.
- E. Route piping in orderly manner and maintain gradient. Pitch down from tank to burners.
- F. Group piping whenever practical at common elevations.
- G. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.
- H. Provide clearance for installation of insulation and access to valves and fittings.
- I. Provide access where valves and fittings are not exposed.
- J. Prepare pipe, fittings, supports, and accessories not prefinished, ready for finish painting. Paint all exterior piping with a coat of red oxide or other suitable exterior metal primer and one coat of yellow machine enamel.
- K. Install valves with stems upright or horizontal, not inverted.
- L. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system.

3.03 FUEL TANK INSTALLATION

- A. Tank installation methods shall be in accordance with the latest edition of the Connecticut State Fire Prevention Code.
- B. Tanks shall be installed according to the current installation instructions provided with the tank and API RP 1615. The installing contractor must complete the installation checklist provided with the tank and return it to the Owner upon completion of the installation.

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- C. Mount above ground tank on concrete pad as detailed. Secure tank to pad in accordance with manufacturer's recommendations.
 - D. Provide conduits for inventory management system cabling.
 - E. Install fill sumps, vent pipes, level sensor risers, supply and return piping valves and components. Cap all unused tank tappings.
 - F. Pressure test tank in accordance with manufacturer's recommendations.
 - G. After all connections are made and accepted and pressure test is satisfactory, fill tank to 20% with appropriate fuel.
 - H. Open valves and piping to fuel and fill piping and purge air from piping system.
- 3.04 EQUIPMENT START-UP
- A. Provide the services of a qualified oil burner technician for start-up of each connected boiler/burner unit. Each appliance must be in satisfactory working order.
 - B. Once fuel burning appliances are deemed to be in satisfactory working order and tank installation is inspected and approved, notify Owner that fuel tank is ready for filling.
- 3.05 INVENTORY MONITOR AND LEAK DETECTOR
- A. Engage a qualified and authorized service representative of Veeder Root to supervise and coordinate the installation of new level probes and leak detection sensors. Installations shall be in accordance with manufacturer's instructions.
 - B. Veeder Root representative shall re-program the existing TLS-300C panel and validate satisfactory operation of the inherent features and ensure proper printer operation.
 - 1. Take a signal from the Veeder Root TLS-300C panel indicating tank level of 95% and provide a contact closure for the existing high level alarm located on the exterior of the building.
 - C. Conduit for signaling cables shall be minimum 1" schedule 40 electrical IMC. All bends shall be long radius. Conduit and monitor box shall be water tight. Each sensor shall have a separated dedication cable run between the sensor and control console.
 - D. Verify proper operation of external alarm/reset console within sight of fill pipe.
 - E. Care shall be taken not to damage the probe and cables during installation. All areas shall be clean and dry of fuel during installation.
 - F. Connect signaling wires and power to monitor in accordance with manufacturer's instructions.
 - G. After system is fully installed, provide factory start-up and calibration. Test in accordance with manufacturer's specifications to verify proper operation. Instruct Owner in proper operation of system.

END OF SECTION

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SECTION 15610-OIL TANK REMOVAL

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. The General Conditions as described in the Owner's Bid Documents and General Conditions are a part of this specification and apply to all work specified or relating to this section.
- B. Where items of the other Bid Documents and General Conditions are repeated in this Section, it is intended that any other parts of the General Conditions shall not be assumed to be omitted if not repeated herein.
- C. In the event of a discrepancy between specifications and drawings, or between other sections in this Division, or between this Section and the General Conditions, the Owner or Engineer shall decide which shall prevail and such decision shall be binding.
- D. The following drawings shall be considered to be the Drawings portion of the Contract Documents. The Contractor and all subcontractors shall be bound to the requirements of every Drawing.

M-1	MECHANICAL PLANS
M-2	MECHANICAL DETAILS

- E. The following spec sections are part of the Contract Documents. The Contractor and all subcontractors shall be bound to the requirements of every Drawing.

SECTION 15001	SUMMARY OF WORK
SECTION 15010	GENERAL CONDITIONS
SECTION 15450	FUEL OIL SYSTEMS
SECTION 23000	EARTHWORK
SECTION 25000	PAVEMENT
SECTION 29200	LAWNS AND GRASSES

- F. Related Codes and Standards:

- 1. Except as modified by governing Codes and updated State Regulations, comply with applicable provisions and recommendations of the following:
 - a. The International Building Code 2015
 - b. The International Mechanical Code 2015
 - c. The International Fire Code 2015
 - d. NFPA 31 - 2001: Standard for the Installation of Oil Burning Equipment
 - e. NFPA 30 – 2003: Flammable & Combustible Liquids Code
 - e. NFPA 70: The National Electrical Code 2014
 - f. State of Connecticut DEEP and Federal EPA Standards for Non-Residential Underground Storage of Oil and Petroleum Liquids
 - (1) *Underground Storage Tank* Regulations – Sections 22a-449(d)1 and in particular, *Section 22a-449(d)-107* as applies.
 - g. OSHA 2226 - Excavation and Trenching Operations

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- h. RP 2015 - Cleaning Petroleum Storage Tanks
- i. API 1604 - Removal and Disposal of Used Underground Petroleum Storage Tanks
- j. NFPA 327 - Standard Procedures for Cleaning or Safeguarding Small Tanks and Containers Without Entry

1.02 GENERAL

- A. Provide all items and work called for in accordance with the Contract Documents, this section and the Summary of Work. This includes all incidentals, equipment, appliances, services, rigging, excavation, shoring, backfill, paving, supports, tools, supervision, labor, consumable items, fees, licenses, etc., necessary to provide complete the oil tank removal.
- B. Comply with all applicable governmental regulations. Comply with all Federal, State, City and other applicable Codes and ordinances. If any conflict arises between these Specifications, Codes and ordinances, the most stringent shall apply.
- C. Conform the work to the requirements herein. Investigate the site, access, grades, paving and finish conditions affecting the work and arrange the work accordingly. Provide such materials and accessories as may be required to meet such conditions.
- D. The Contractors shall verify in the field all measurements necessary for the work and shall assume responsibility for their accuracy.
- E. Secure and pay costs of all required permits, State of CT DEEP notifications, fees, certificates, licenses, inspections and approvals.
- F. Approvals:
 - 1. Obtain Certificates of Approval from responsible Building Official and Town Engineer. Provide 24 hour notice to local officials for field inspections.

1.03 SCOPE OF WORK

- A. Provide all labor, materials, equipment and tools required for the removal of the existing 10,000 gallon buried single wall fiberglass fuel oil storage tank, piping, fuel inventory equipment and accessories and the complete backfill, compaction and repaving/reseeding of the tank site.
 - 1. The existing concrete hold-down pad may remain in place if the concrete is deemed to be not contaminated with any oil or hydrocarbons.
 - 2. Provide a separate price to remove the concrete pad in the event that contamination is discovered or the Owner desires to have the concrete removed.
- B. Remove existing underground containment type fuel oil supply and return piping and the existing tank vent piping and inventory management cabling and conduits.
- C. The Contractor will be responsible for extracting soil samples and having sample analyses conducted to determine if any oil or other hydrocarbon contamination exists. Sampling and analyses shall be completed prior to removing any soils from the site.
- D. The Contractor will be responsible for removing contaminated soils, soils not suitable for compaction and providing new replacement fill to completely backfill the excavations. The site shall be repaved / reseeded to match existing grades and finish quality. Any

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required striping of the pavement will be by Owner.

- E. The existing buried fuel tank is situated in a grassy lawn area on the site. The Contractor shall make every effort to minimize damage to existing adjacent pavement areas and fencing from the effects of excavators, cranes and other construction equipment and activities. Any damage to pavements or fencing shall be restored to present condition by the Contractor at no additional cost to the Owner.

1.04 QUALITY ASSURANCE

- A. Materials shall conform to all local, State and National Codes and Regulations which may apply and nothing in these Drawings or Specifications shall be interpreted as an infringement of such Codes and Regulations and the authority having jurisdiction.
- B. Contractor removing the tank and appurtenances shall be a qualified tank removal contractor, certified by the State of Connecticut as having been properly trained in the removal and remediation of buried fuel oil tanks. Such certification shall be produced at time of bid.
- C. Contractor shall also hold State of Connecticut Department of Energy and Environmental Protection (DEEP) Certification.
- D. Coordinate all work with:

UNDERGROUND STORAGE TANK ENFORCEMENT PROGRAM
BUREAU OF MATERIALS MANAGEMENT AND COMPLIANCE ASSURANCE
DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION
79 ELM STREET
HARTFORD, CT 06106-5127

1.05 INTENT OF DRAWINGS

- A. Drawings are diagrammatic and indicate general arrangement of the existing work. The Contractor shall visit the site and familiarize himself with the project prior to bid. The Contractor will be held responsible for any assumptions made thereof.

1.06 SUBMITTALS

- A. Soil Analyses Reports: immediately after receipt of test reports, submit three (3) copies of said reports to the Owner.
- B. Shop drawings or product certificates shall be submitted for all backfill and paving materials.

PART 2 - PRODUCTS

PART 3 - EXECUTION

3.01 GENERAL

- A. All work must be done by a certified Oil Tank Removal Contractor and licensed by the State of Connecticut DEEP.

3.02 SOIL ANALYSIS

- A. After initial pavement and/or surface topsoil removal and prior to starting any mass

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excavations, conduct soil analysis of entire work area to be under construction. Take soil samples around all existing tanks and piping runs. Submit samples for contamination analysis to a State of Connecticut Certified Testing Laboratory.

- B. Test soil for total petroleum hydrocarbons using EPA Test Methods 8010 and 8020 or CT DEEP RCP "EPH or "ETPH" methods. Notify Owner immediately if contaminated soil is encountered.
 - 1. Use soil analyses to determine appropriate extent of excavations required. Under the base bid, the quantity of soil to be excavated and removed shall include the volume of the area of the concrete hold-down pad plus the volume of excavation required to provide the 45° trench slope around the pad.

3.03 PROTECTION OF EXISTING FACILITIES AND SYSTEMS

- A. Protect any and all existing live sewers, water and gas mains and any other underground utilities in vicinity from excavation during construction and removal of existing systems. This Contractor is responsible to repair any damaged systems occurring during construction, including contaminated soils clean-up resulting from damage.
- B. Protect existing structures, pavements, sidewalks and building immediately adjacent to excavations from damage caused by settlement, lateral movement, undermining, washout and other hazards.
- C. Provide and maintain pumps, sumps and other dewatering system components necessary to convey water away from excavations.
- D. The Contractor shall furnish, install and maintain such sheeting, shoring and bracing as may be required to support sides of excavation and to prevent movement which could in any way injure workers, new work or endanger adjacent structures. Shoring, when used, may be left in place and cleanly trimmed one foot below the finished grade
- E. The Contractor shall be responsible to provide temporary safety fencing of work area to protect the public and site occupants. Fencing shall be minimum 6' high chain link type.

3.04 TANK REMOVAL AND DISPOSAL

- A. The following shall be adhered to regarding removal of existing tanks.
 - 1. The Contractor used for said removal and disposal shall be an "approved Contractor" as set forth by the DEEP.
 - 2. Confirm with requirements as set forth by State of Connecticut Department of Energy and Environmental Protection Section 22a - 449(d)-1 and Section 22a-449(d) 107 and any new Amendments, NFPA 30, NFPA 329, NFPA 327, State and local Fire Marshal requirements and other applicable State, local and Federal Standards.
 - 3. Notifications: Notify the Commissioner of DEEP and Town of South Windsor Building/Fire Marshal's office in writing of the intent to remove the underground tank 30 days prior to removal activities. Confirm with DEEP officials, proper notification time for actual removal date. Notify DEEP and Town of South Windsor Building/Fire Marshal's office 72 hours prior to tank removal of date and time tank will be removed from the excavation. Fire Marshall MUST WITNESS the removal of the tank.
 - 4. Prepare a safe workplace by following the safety precautions and cleaning and closure procedures outlined in API 1604. Safety precautions shall include, but not be

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- limited to, no smoking, controlling static electricity, securing the area, locating and marking utilities, determining meteorological conditions and wearing personal safety equipment.
5. Remove all flammable or combustible liquids and residue from the tank and piping. Dispose of liquids and residue per DEEP requirements
 6. Excavate to top of tank.
 7. Disconnect fuel piping, fill pipe, gauge and all other devices from tank, except the vent line which shall remain connected until the tank is purged. Remove buried piping to inside building wall, ensuring any oil spills are contained and secured. Patch openings in building wall. Cap or plug all lines, such as fill lines, gauge openings, pump suction. Secure against tampering during removal. Permanently affixed manhole risers may remain affixed to the tank. No cutting torch or other flame or spark producing equipment shall be used until tank has been completely purged or otherwise rendered safe
 8. Soil samples shall be taken in the area of the existing tank and tested for evidence of contamination. Testing and clean-up procedures shall be done by an approved, certified by DEEP spill-clean-up Contractor.
 9. If a spill has occurred, immediately notify DEEP (telephone number 566-3338 emergency hot line), or State Police, 566-4240. Clean-up requirements shall be adhered to as set forth by the DEEP Guidelines, "*Contaminated Soil Removal and Disposal Guidelines*" and "*Clean-Up of PCB Contaminated Soil*".
 10. All piping to be removed shall be completely removed and disposed of by the Contractor.
 11. Tank shall be completely cleaned on the interior and oil samples taken from analysis from the tank bottom. Cleaning method is preferred to be dry absorbents and removed and disposed of properly. Wet cleaning fluids if used, shall be collected and disposed of properly.
 12. Remove existing concrete hold-down pad if determined to be contaminated or if directed by Owner. Provide separate cost for concrete removal.
 13. Make tank safe by purging tank of flammable vapors or inerting the tank atmosphere. Test tank atmosphere to determine if it is safe
 14. Plug and cap all accessible holes. One plug should have 1/8" vent hole to prevent excessive pressure build-up caused by temperature changes. This vent should be positioned on top of the tank during subsequent transportation
 15. Excavate as required and remove tank from hole. Contractor shall not cut and remove tank in sections. Check for corrosion holes and plug any found with screwed boiler plugs
 16. Prior to transporting tank, test tank atmosphere to determine if it is safe
 17. If tank is to be disposed of as junk, it shall be retested for combustible or flammable vapors and rendered gas free. Prior to releasing to junk dealer, make a sufficient number of holes or openings in tank rendering it unfit for further use.
 18. Submit certification that tanks have been disposed of properly releasing the Owner from any future liability of disposed tank. Contractor shall provide Owner and

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Engineer with copies of Tank Disposal Manifests for each tank removed

- B. Carefully protect existing live sewers, water and gas mains and other underground utilities during construction.

3.05 CONTAMINATED SOILS

- A. If contaminated soil is discovered at any point during the excavation or removal process, stop work immediately and notify DEEP, Local Fire Marshal, Owner, and Engineer
- B. Remove contaminated soil and separately stockpile any contaminated soil apart from non-contaminated soil encountered during excavation where directed by Owner. Stockpile contaminated soil on 6 mil polyethylene and cover with the same
- C. The Contractor shall include in the Base Bid price the removal of pea stone and soils immediately surrounding the existing tank with the assumption that those soils will be contaminated and the disposal shall be priced as contaminated. This volume shall include the actual volume surrounding the tank to include a 45° excavation slope on all sides. Include a unit price per cubic yard to remove additional contaminated soils, disposal and cartage for amounts exceeding that carried in the base bid and replacement with new clean fill. Such unit price will be used to compensate for removal, disposal and replacement and the cost should not be carried in the Base Bid. Identify an allowance for up to 10 tons of contaminated soils and replacement on the Bid Form. All new fill required to replace the tank volume and surrounding soils shall be carried in the Base Bid.

3.06 CLEANING

- A. Keep insides of all pipes, fittings and valves clean and free from dirt and debris.
- B. Blow all lines out with compressed, dry CO₂ or nitrogen before testing. Control release of residual fluids into containers for disposal.

3.07 SITE RESTORATION

- A. After tank removal and rough backfill, restore entire site to original condition. Restore grass areas in accordance with Section 29200.
- B. Repair any damaged pavement areas in accordance with Section 25000.

3.07 GUARANTEE

- A. Supply two (2) copies of a warranty signed and guaranteed by Contractor, stating that all defects in labor and materials of work will be repaired without cost to Owner for a period of two years from date of substantial completion and stating that any settlement of new or adjoining paving exceeding ½ inch will be corrected under such warranty.

END OF SECTION

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SECTION 23000-EARTHWORK PART 1 – GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and other provisions of the Contract, including Owner's General and Supplementary Conditions, and other Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. The Work of this Section includes but is not limited to the furnishing of all labor, materials, and equipment required to remove pavement, fill, place fill and grade the site, excavate and backfill trenches and other excavations.

1.03 RELATED SECTIONS

Section 15001	Summary of Work
Section 15010	General Conditions
Section 15610	Oil Tank Removal
Section 25000	Pavement.
Section 27000	Lawns and Grasses

1.04 REFERENCES

- A. AASHTO T180 – Moisture-Density Relations of Soils Using a 10-lb. Rammer and an 18 inch Drop ASTM D1557-78 – Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate.
- B. Mixtures using 10-lb. Rammer and an 18 inch Drop.
- C. ASTM D2922 – Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods Shallow Depth.
- D. ASTM D3017 – Test Methods for Moisture Content of Soil and Soil Aggregate Mixtures.

1.05 DEFINITIONS

- A. Bedding: Fill placed under, beside and directly over pipes, conduit or tanks, prior to subsequent backfill operations.

1.06 SUBMITTALS

- A. Product Data: Provide data indicating soil gradations and results of compaction testing.
- B. Suppliers Certificate: Certify that products meet or exceed specified requirements

1.07 REGULATORY REQUIREMENTS

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- A. Conform to Town of South Windsor Standards and Specifications and ConnDOT Form 814 for materials and installation of the work under this Section.

1.08 FIELD MEASUREMENTS

- A. Verify that all field measurements and elevations are as indicated.

1.09 COORDINATION

- A. Coordinate Work with Owner's representatives and coincident boiler room work and Gas Company service installations.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. General Borrow:

1. Material needed in addition to that available from construction operations shall be obtained from approved gravel banks or other approved deposits.
2. All material, whether from the excavations or from borrow, shall be of such nature that after it has been placed and properly compacted, it will make a dense, stable fill suitable for highway H-20 loading if in paved areas.
3. Borrow and other backfilling materials shall not contain vegetation, masses of roots, individual roots more than twelve (12) inches long, or more than ½ inch in diameter, stones over six (6) inches in diameter, porous matter, or organic matter.

- B. Bedding material: Bedding material shall be sand and conform to the requirements of ArticleM.08.01 (21), Form 814 except where otherwise described under other utility Specifications.

PART 3 - EXCAVATION

3.01 – PREPARATION:

- A. Stripping and Stockpiling soils needed for finish work:

1. Strip topsoils to whatever depths are encountered in a manner to prevent intermingling with the underlying subsoil or other objectionable materials.
2. Stockpile uncontaminated materials in separate storage piles (separate topsoils from underlying soils) surrounded by silt fence and constructed to freely drain surface water.

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- B. Contractor shall provide erosion controls in the excavation areas to prevent any release of surface water or contaminants to the surrounding paved or planted surfaces or storm drainage systems.

3.02 - EARTHWORK

A. Mass Earth Excavation:

1. Excavation shall be made in conformity with the requirements of the Contract Documents or as ordered by the Owner's Representative.
2. The Contractor shall, when necessary in excavation areas, provide and maintain ditches, sub-drains and any other means necessary to prevent water from becoming incorporated in materials to be used to form embankments, such means to be no additional expense to the Owner.
3. Excavate area as required using suitable equipment to maximize efficiency. Strive to move equipment around the excavated area in a manner that minimizes damage to existing pavements or disturbance of adjacent areas.
4. Remove all loose pea gravel and replace with dense compactable fill.

B. Trench and Pit Excavation:

1. Trench excavation shall be made in conformity with the requirements of the Contract Documents. Review field conditions with Engineer and Owner's Representative prior to commencing work and during trench excavation to verify excavation methods described herein.
2. Care shall be taken to not excavate below the depth required. All bracing, sheeting, etc., shall be removed when no longer required for the construction or safety of the Work.
3. After the excavation is completed, the Contractor shall notify the Owner's Representative and no material shall be placed in the excavated area until the Owner's Representative or Town Engineer has approved the depth of excavation and the character of the foundation material.
4. During excavation, excavated material, encasement material and granular material suitable for backfilling shall be piled in an orderly manner a sufficient distance from the banks of the trench to avoid overloading and to prevent slides or cave-ins.
5. Unless specified or approved in writing by the Owner's Representative, excavation shall be by open cut.
6. Pipe trenches shall be made as narrow as practicable and shall not be widened by scraping or loosening of material from the sides. Every effort shall be made to keep the sides of the trenches firm and undisturbed until backfilling has been completed and consolidated.

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7. The Contractor shall furnish, put in place, and maintain such sheeting, bracing, shoring pumps and other related equipment as may be necessary to support the sides of the excavation, or prevent any movement of earth other than that intended to be accomplished as a part of the Work and for the protection of property the Work and the safety of the public and employees of the Contractor and the Owner. Such sheeting, shoring, bracing, pumps and other related equipment shall comply with the safety precautions outlined in the Associated General Contractors of America, "Manual of Accident Prevention in Construction", and the "Occupational Safety and Health Act" of 1970 (OSHA) and amendments thereto.
 8. Care shall be taken to prevent voids outside of sheeting; but if voids are formed, they shall be immediately filled and well rammed.
 9. To ensure proper conditions at all times during construction, the Contractor shall provide and maintain ample means and devices with which to intercept and/or remove and properly dispose of all water entering trenches and other excavations. Excavations shall be kept dry until the structures, pipes and appurtenances to be built therein have been completed to such extent that they will not be floated or otherwise damaged.
 - a. Water pumped from excavations shall be tested for contaminants. Should water be determined to contain contaminants, such water shall be pumped into tanker trucks and disposed of in an approved manner with documentation of such disposal provided to the Owner.
 10. Provide a minimum of six (6) inches of compacted bedding material beneath tanks, pipes, cable and conduits unless specified otherwise by the Contract Documents.
 11. Mechanical rammers or pneumatic tampers shall be used only after backfill has been compacted by hand to a depth of twelve (12) inches above any remaining tanks, pipes, cables or conduits. Backfill shall be compacted in layers not more than six (6) inches compacted thickness.
 12. No stones larger than two (2) inches shall be placed within eighteen (18) inches of the pipes, cables or conduits in backfilling, each piece shall be embedded in dirt, and no stone weighing over ten (10) pounds shall be included in the backfill around any tank or pipe trench. Nesting of stones will not be allowed. The intent of this specification is to require thorough tamping of bedding and backfill material.
- C. Sub-grade backfills:
1. All soft and yielding material and other portions of the sub-grade which will not compact readily when rolled or tamped shall be removed and replaced with suitable material. The surface shall be compacted uniformly by rolling with a power roller having a minimum compression of 300 pounds per inch of width of tread on the rear wheel or wheels, and weighing not less than 10 tons.

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2. When more than one compacting unit is used, the unit exerting the greatest compactive effort shall be used to make the initial compaction. Any portion of the subgrade, which is not accessible to a roller or other compacting unit, shall be compacted thoroughly with hand tampers.
3. The rolling, or tamping shall be continued until the entire sub-grade is uniformly and thoroughly compacted, true to lines and grade given.
4. Protect the sub-grade from damage by exercising necessary precautions. At all times, the sub-grade surface shall be kept in such condition that it will drain readily and correctly. The sub-grade shall be checked and approved by the Owner's Representative before any foundation or surfacing material is placed thereon.

D. Compaction:

1. The entire area of each layer shall be uniformly compacted to at least the required minimum density by use of compaction equipment consisting of rollers, compactors or a combination thereof. Earthmoving and other equipment not specifically manufactured for compaction purposes shall not be considered as compaction equipment.
2. The dry density after compaction shall not be less than 95 percent of the dry density for the soil when tested in accordance with ASTM D1557-78, Method C in areas of paving, structures and footings. The same compaction requirements shall apply to cut areas under paving structures and footings.
3. In planted areas, the compaction shall not be less than 90 percent of that obtained by ASTM D1557-78, Method C.
4. Subgrade materials below pavement shall be in accordance with the Specifications for Pavement.

END OF SECTION

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SECTION 25000-PAVEMENT

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, and other Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. The Work of this Section includes but is not limited to, the furnishing of all labor, materials, and equipment required to repair and/or install all paved drives and parking areas including pavement markings.

1.03 RELATED SECTIONS

- A. Section 02300 - Earthwork.

1.04 REFERENCES

- A. Town of South Windsor Engineering and Highway Department Standards and Specifications as Revised.
- B. State of Connecticut DOT, Standard Specifications for Roads, Bridges, and Incidental Construction, Form 814, 1988.
- C. ASTM D1557 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10-lb Rammer and 18-in Drop.
- D. ASTM D2922 - Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods Shallow Depth.
- E. ASTM D3017 - Test Methods for Moisture Content of Soil and Soil-Aggregate Mixtures.

1.05 SUBMITTALS

- A. Product Data: Provide data indicating gravel subbase, processed aggregate, Portland cement concrete, and bituminous asphalt.
- B. Manufacturer's Installation Instructions: Indicate special procedures required to install products specified.
- C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- D. Test Reports for gravel subbase: Certified Laboratory Test Reports: Submit certified copies of the reports of all tests listed below for gravel subbase. Certified test reports shall be submitted within five (5) days after test. Test indicating a modification of a material shall be submitted and accepted by the Owner's Representative prior to beginning the modification.
 - 1. Compaction
 - 2. Gradation
 - 3. Plasticity
 - 4. Resistance to abrasion

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F. Submittals Schedule:

1. Before Installation
 - a. Test reports
 - b. Certificates
2. During Installation: Test reports

PART 2 PRODUCTS

2.01 MATERIALS

- A. Bituminous Concrete Surface Course: Conform to Article M.04 ConnDOT Form 814 Class 2.
- B. Bituminous Concrete Binder Course: Conform to Article M.04 ConnDOT Form 814 Class 1.
- C. Bituminous Concrete Base: Conform to Article M.04 ConnDOT Form 814 Class 4.
- D. Asphalt Emulsion Tack Coat: Conform to Article M.05.02(1) ConnDOT Form 814.
- E. Processed Aggregate Base: Conform to Article M.05.01 ConnDOT Form 814.
- F. Gravel Subbase: Conform to Article M.02.02(1) ConnDOT Form 814, Bank or crushed gravel, Grading "B".
- G. Crushed Stone: Conform to Article M.01.01, ConnDOT Form 814.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that the subgrade is ready to receive Work, and elevations are as indicated on drawings. Secure written approval of each material course by the Owner's Representative prior to commencement of placement of the next course.

3.02 INSTALLATION - GRAVEL SUBBASE

- A. Gravel subbase six (6) inches or less in specified depth may be constructed in one course. Gravel subbase over six (6) inches in specified depth shall be constructed in equal courses, not to exceed six (6) inches each.
- B. Gravel shall be spread upon the prepared subgrade to such depth that the resulting course will be of the specified depth after final compaction. If, after the material has been spread and shaped it is found that additional material is necessary, it shall be furnished and applied in an amount necessary to achieve the required elevation. Such material shall be carefully and uniformly incorporated with the material in place by scarifying, harrowing, brooming or by other methods approved by the Owner's Representative.
- C. The material shall then be shaped, wetted and compacted with a power roller weighing not less than ten tons or an equivalent vibratory roller or compactor until thoroughly compacted. All areas of segregated coarse or fine material shall be corrected or removed and replaced with well graded material as directed by the Owner's Representative. The compacting shall be continued until the course is

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thoroughly compacted to a firm and uniform surface satisfactory to the Owner's Representative. The material shall be recompacted and wetted on succeeding days. The rate and extent of the compacting and the quantity and method of applying water shall be as directed by the Owner's Representative.

- D. The dry density after compaction shall not be less than 95 percent of the dry density when tested in accordance with ASTM D1557-78, Method C. If necessary to obtain the required compaction, water shall be added to acquire optimum moisture content.
- E. After the first course has been compacted and bound as specified herein, the succeeding courses, if necessary in order to achieve the specified depth, shall be similarly placed.

3.03 INSTALLATION - PROCESSED AGGREGATE

- A. The material shall be spread uniformly upon the prepared subgrade or subbase as indicated in the Contract Documents. Only approved spreaders or stone boxes shall be used. Power graders shall not be used unless permitted by the Owner's Representative.
- B. After the aggregate is spread, it shall be thoroughly compacted and bound by use of equipment specifically manufactured for that purpose. Rollers shall deliver a ground pressure of not less than 300 pound per square inch of contact width and shall weigh not less than ten (10) tons. Vibratory units shall have a static weight of not less than four (4) tons.**
- C. Water may be used during the compaction and binding operation. Water shall be applied from an approved watering device. The direction and intensity of the stream shall be as ordered by the Owner's Representative (Town Engineer).
- D. The compacting and binding operation shall begin at the outside edges, overlapping the shoulders for a distance of not less than six (6) inches and progress towards the middle, parallel with the centerline of the pavement. The Work shall cover the entire surface of the course with uniform overlapping of each preceding track or pass. Areas of super-elevation and special cross slope shall be compacted by beginning at the lowest edge and proceeding towards the higher edge, unless otherwise directed by the Owner's Representative. The compacting and binding operation shall be continued until the voids in the aggregate have been reduced to provide a firm and uniform surface satisfactory to the Owner's Representative.
- E. The amount of compactive effort shall be as directed by the Owner's Representative but in no case shall be less than four (4) complete passes of the compacting equipment being used. Any surface fines shall be distributed uniformly by use of brooms during the compacting and binding operations. All aggregate shall be completely compacted and bound at the end of each day's Work or when traffic is to be permitted to operate on the base.
- F. The dry density after compaction shall not be less than 95 percent of the dry density when tested in accordance with the ASTM D1557-78, Method C. If necessary to obtain the required compaction, water shall be added to acquire optimum moisture content.
- G. Should the subbase material become churned up or mixed with the bottom course

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material at any time, the Contractor shall, without additional compensation remove the mixture. The Contractor shall add new subbase material, if required, and reshape and recompact the subbase. New aggregate material shall be added, compacted and bound, as herein before specified, to match the surrounding surface.

- H. Any surface irregularities which develop during or after the Work on the base shall be corrected by loosening material already in place and removing or adding aggregate as required, after which the entire area, including the surrounding surface, shall be recompact and rebound until it is brought to a firm and uniform surface satisfactory to the Owner's Representative.

3.04 INSTALLATION - BITUMINOUS CONCRETE PAVING

- A. The methods employed in performing the Work and all equipment, tools, machinery and other plans used in handling material and executing any part of the Work shall conform to the requirements of Article 4.06.03 (4) through 4.06.03 (12) and Article 4.06.04 ConnDOT Form 814.

- B. The line between existing pavement to remain and existing pavement to be removed shall be snapped with a chalk line and cut with a saw so as to leave a smooth straight vertical edge. Before bituminous concrete paving is placed, the kerfed edges shall be given a light tack coat of asphalt emulsion.

3.05 CLEANING

- A. Bottom courses of bituminous concrete paving, including bases placed by others, shall be cleaned of all debris and soil before surface courses are placed.
- B. Cleaning shall be done with compressed air or by flushing with water under pressure. Cleaning shall be approved by the Owner's Representative prior to commencing paving operations.
- C. If water is used, the surface shall be allowed to dry before the next surface course of bituminous concrete is placed.

3.06 FIELD QUALITY CONTROL

- A. Field inspection and testing will be performed under provisions of Section 01400.
- B. Request inspection prior to and immediately after placing each of the following.
 - 1. Subbase gravel
 - 2. Processed aggregate
 - 3. Bituminous concrete binder course
 - 4. Bituminous concrete surface course
- C. Compaction testing shall be performed in accordance with ASTM D-1557, ASTM D-2922, and ASTM D-3017.
- D. If tests indicate Work does not meet specified requirements, remove Work, replace and retest, refer to Division 1.

3.07 PROTECTION

- A. Protect finished Work under provisions of Section 01500.

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- B. Protect pavement from damage by construction operations.
- C. Repair or replace pavement damaged by construction operations to the satisfaction of the Owner's Representative.

END OF SECTION

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SECTION 29200-LAWNS AND GRASSES

PART 1 – GENERAL

1.01 SUMMARY

- A. Related Documents: The Contract documents, as defined in Division 1 – Summary of Work, apply to the Work of this Section. Additional requirements and information necessary to complete the Work of this Section may be found in other documents.
- B. Section Includes
 - 1. Seed
 - 2. Mulches
 - 3. Water
- C. Related Sections:
 - 1. Section 02300 – Earthwork
 - 2. Section 02917 – Soil Preparation
- D. Coordinate all work with the South Windsor Public Schools Director of Grounds. All work shall be subject to the approval of the Director of Grounds and Director of Physical Plant.

1.02 REFERENCES

- A. American Society for Testing and Materials (ASTM):
 - 1. ASTM C 602 – Specification for Agricultural Liming Materials.
 - 2. ASTM D 977 – Specification for Emulsified Asphalt.
- B. American Sod Producers Association (ASPA):
 - 1. ASPA STSMT – Specification for Turfgrass Sod materials and Transplanting/Installing.

1.03 SUBMITTALS

- A. Division 1 – Submittal Procedures: Procedures for submittals.
 - 1. Assurance/Control Submittals:
 - a. Submit certificate from seed supplier for each grass/wildflower/slope stabilization-seed mixture stating the botanical and common name and percentage by weight of each species and variety, and percentage of purity, germination, and weed seed. Include the year of production and date of packaging.
 - b. Submit certificate from sod supplier for each seed mixture, identifying sod source, including name and telephone number of supplier.

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1.04 QUALITY ASSURANCE

- E. Regulatory Requirements: Conform to applicable requirements of the Local and State Department of Agriculture Extension Service of the state in which the project is located.

1.05 PLANTING SEASON

- A. Seed Areas: Perform seeding between April 1 and June 15, and between August 15 and October 1 unless otherwise permitted by owner.
- B. Seed Areas: Seeding out of spring or fall planting seasons, shall require aggressive irrigation programs at the Contractor's expense.
- C. Sod Lawn Areas: May be installed at any time of the year provided that no frozen sod shall be used, nor shall sod be placed on frozen or saturated soil.
- D. Report in writing to Contracting Officer prevailing conditions that will adversely affect satisfactory execution of the Work of this section. Do not proceed with work until unsatisfactory conditions have been corrected.
- E. By beginning Work, Contractor accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to Owner.

PART 2 – PRODUCTS

2.01 SEED

A. Classification:

- 1. State-Certified of latest season's crop delivered in original sealed packages bearing producers guaranteed analysis for percentages of mixtures, purity, germination, weed seed content, and inert material.
- 2. Labeled in conformance with applicable state seed laws.
- 3. Wet, moldy, or damaged seed will be rejected.

B. Lawn Area Mixture:

- 1. Lawn Areas: Seeding Rate; 5 lb./1000 S.F.
- 2. Seed mixture shall be type as approved by South Windsor Public Schools. Owner shall provide appropriate mixture information. In the event the mixture is not specified or furnished by the Owner, the seed mixture shall be as follows:

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<u>Kind of Seed</u>	<u>Percent of Weight</u>
Magic Perennial Ryegrass	25%
Fiesta II	25%
Creeping Fescue	30%
Yorktown Perennial Ryegrass	10%
Common Kentucky Bluegrass	10%

- C. Weed Seed: maximum of 0.50%, no noxious weed seed.
- D. Purity: minimum 97% pure.
- E. Crop: maximum 0.50%.
- F. Germination Rate: minimum 80%.

2.02 WATER

- A. Suitable quality for irrigation to be provided by Owner.

2.03 EROSION CONTROL MATERIAL

- B. Net: Heavy, twisted jute mesh, plastic mesh, biodegradable paper fabric with knitted yarns, or standard weave burlap.

2.04 TOPSOIL

- B. On-site topsoil shall be used. If topsoil is brought on site, the composition requirements below shall be met.
 - 1. Containing from 5 to 20 percent organic matter as determined by soil testing service. Maximum particle size, ½ inch, with maximum 3 percent retained on ¼ inch screen.
 - 2. Component Percentages:
 - a. Silt: 25 to 50
 - b. Clay: 10 to 30
 - c. Sand: 20 to 30
 - d. pH: 5.5 to 7.0
 - e. Soluble Salts: 600 ppm maximum

- C. Soil Analysis: Provide with each load of imported topsoil.

2.05 pH ADJUSTERS

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- A. As specified in Section 02917

2.06 FERTILIZER

- A. Bonemeal: Commercial, raw, finely ground; minimum 4 percent nitrogen and 20 percent phosphoric acid.
- B. Superphosphate: Commercial-Grade complete fertilizer of neutral character consisting of fast-and-slow-release nitrogen, 50 percent derived from natural organic sources of urea-form, phosphorous, and potassium in following composition:
 - 1. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing agency.
- C. Slow-Release Fertilizer: Granular fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorous, and potassium in the following composition:
 - 1. Composition: Nitrogen, phosphorus, and potassium in amounts recommended in soil reports from qualified soil-testing agency.

PART 3 - EXECUTION

3.01 EXAMINATION

- B. Division 1 – Execution Requirements: Verification of existing conditions before starting work.
- C. Verification of Conditions: Verify that field measurements, surfaces, and conditions are as required, and ready to receive Work.

3.02 PLANTING SEASON

- A. Seed Areas: Perform seeding between April 1 and May 15, and between August 15 and October 1, unless otherwise permitted by the owner.
- B. Report in writing to Contracting Officer prevailing conditions that will adversely affect satisfactory execution of the Work of this section. Do not proceed with work until unsatisfactory conditions have been corrected.
- C. By beginning Work, Contractor accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to Owner.

3.03 PREPARATION OF SUBSOIL

- A. Prepare subsoil to eliminate uneven areas and low spots. Maintain lines, levels, profiles, and contours. Make changes in grade gradual. Blend slopes into level areas.
- B. Remove foreign materials, weeds, and undesirable plants and their roots. Remove contaminated subsoil.

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- C. Scarify subsoil to a depth of 2 inches where topsoil is to be placed. Repeat cultivation in areas where equipment, used for hauling and spreading topsoil, has compacted subsoil.
- D. Place topsoil as specified in Section 02917 and 02300.

3.03 FERTILIZING

- A. Apply fertilizer in accordance with manufacturer's published instructions.
- B. Apply after smooth after smooth raking of topsoil and prior to roller compaction.
- C. Do not apply fertilizer at same time or with same machine as will be used to apply seed.
- D. Mix thoroughly into upper 2 inches of topsoil.
- E. Lightly water to aid the dissipation of fertilizer.

3.05 SEEDING

- A. Sow one-half of seed in one direction and remainder at right angles to first sowing.
- B. Cover seed to average depth of ½ inch by means of spike-tooth harrow, cultipacker, or other recommended device.
- C. Drill Seeding:
 - 1. Use grass seed drills.
 - 2. Drill seed uniformly to an average depth of ½ inch and at manufacturers' rate in pounds per 1,000 square feet.
- D. Hydroseeding:
 - 1. Mix seed, fertilizer, and wood cellulose fiber in required amount of water to product a homogeneous slurry. Add wood cellulose fiber after seed, water, and fertilizer have been thoroughly mixed and apply at the rate of 200 pounds per acre dry weight.
 - 2. Hydraulically spray material on ground to form a blotter-like cover impregnated uniformly with grass seed.
 - 3. Immediately following application of slurry mix, make separate application of wood cellulose mulch at the rate of 1,000 pounds, dry weight, per acre.
 - 4. Apply cover so that rainfall or applied water will percolate to underlying soil.
- E. Mulch:
 - 1. Spread evenly at rate equal to manufacturer's recommendations in tons per acre.
 - 2. Anchor by crimping mulch with serrated disc, or by spraying asphalt emulsion on mulched surface.

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3. Take precautionary measures to prevent asphalt materials from marking or defacing structures, pavements, utilities, or plantings.

F. Rolling:

1. Immediately after seeding, firm entire area except for slopes in excess of 3 to 1 with roller not exceeding 90 pounds for each foot of roller width.
2. If seeding is performed with cultipacker-type seeder or hydroseeding, rolling may be eliminated.

G. Erosion Control Material: Install in accordance with manufacturer's instructions.

3.06 CLEANING AND PROTECTION

- A. Remove soil and debris created by lawn work from paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto surface of roads, walks, or other paved areas.
- B. Immediately after seeding, sodding, or sprigging, protect the area against traffic or other use.
- C. Restore existing lawn and grass areas which have been damaged during execution of this work to original condition.
- D. Keep one paved pedestrian access route and one paved vehicular access route to each building clean at all time. Clean other paving when work in adjacent areas is complete.

3.07 ESTABLISHMENT PERIOD

A. Definitions:

1. Lawns and grasses establishment period will be in effect until lawns and grasses have been mowed 4 times and established for a minimum of 8 weeks.
2. Stand of lawn and grass is 95 percent ground cover of permanent established species.

B. Maintenance During Establishment Period:

1. Mow lawns and grassed areas to an average height of 2 inches whenever average height of grass becomes 3 inches. At no time shall more than 1/3 of the grass leaf be removed. Cut lawn areas using only sharp reel-type or rotary mowers.
2. Promotion of growth: Mow, remove excess clippings, eradicate weeds, water, fertilize, overseed, and perform other operations necessary to promote growth.
3. Post-fertilize areas with commercial grade controlled release fertilizer
 - a. Approximately three months after installation.

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- b. In the fall after a spring seeding or in the spring after a fall seeding.
 - c. As directed by the Landscape Architect.
4. Apply fertilizer uniformly at the manufacturer's recommended rate of pounds per 1,000 square feet.

3.08 FINAL INSPECTION AND ACCEPTANCE

A. Final Inspection and Acceptance:

- 1. Final inspection will be made upon written request from the Contractor at least 10 days prior to last day of lawn and grasses establishment period.
- 2. Final acceptance will be based upon a satisfactory stand of lawns and grasses as defined in the paragraph entitled, "Establishment Period." Prior to final acceptance, apply final application of controlled release fertilizer at manufacturer's recommended rates per 1000 square feet.

B. Replanting: Replant areas which do not have a satisfactory stand of lawns and grasses.

END OF SECTION

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SECTION 33000-CONCRETE

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. The extent of concrete work is shown on the drawings. Construct a base pad for a new above ground fuel oil storage tank.

1.2 REFERENCES

- A. ACI 301 – Specifications for Structural Concrete for Buildings.

1.3 QUALITY ASSURANCE

- A. Concrete Testing and Inspection Service: Employ, at Contractor's expense, a testing laboratory acceptable to the Engineer to perform material evaluation tests during placement of concrete.
- B. The Contract, or testing firm, shall take cylinders and perform slump, air content and compressive strength tests in accordance with ACI 301.

1.4 SUBMITTALS

- A. Product Data: Concrete design mixture.
- B. Shop Drawings: for fabrication, bending and placement of concrete reinforcement.

PART 2 - PRODUCTS

2.1 FORM MATERIALS

- A. Forms for Exposed Finish Concrete: Construct of plywood, meal, metal-framed plywood or other acceptable materials to provide continuous, straight, smooth exposed surfaces. Provide material with sufficient thickness to withstand pressure of newly placed concrete without bow or deflection.

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B. Forms for Unexposed Finish Concrete: Construct of plywood, lumber, metal or other acceptable material. Provide lumber dressed on at least 2 edges and one side for a tight fit.

C. Cylindrical Columns and Supports: Form round-section members with paper or fiber tubes constructed of laminated plies, using water-resistant adhesive or wax-impregnated exterior for weather and moisture protection.

D. Form Coatings: Provide commercial formulation form-coating compounds that will not bond with, stain nor adversely affect concrete surfaces, and will not impair subsequent treatments of concrete surfaces

2.2 REINFORCING MATERIALS

A. Reinforcing Bars: ASTM A 615, Grade 60.

B. Supports for Reinforcement: Provide supports including bolsters, chairs, spacers and other devices for spacing, supporting and fastening reinforcing bars in place.

2.3 CONCRETE MATERIALS

A. Portland Cement: ASTM C 150, Type I.

B. Fly Ash: ASTM C 618.

C. Ground Granulated Blast Furnace Slag: ASTM C 989.

D. Normal Weight Aggregates: ASTM C 33.

E. Water: Potable.

F. Air-Entraining Admixture: ASTM C 260.

G. Water-Reducing Admixture: ASTM C 494, Type A and not containing more chloride ions than are present in municipal drinking water.

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2.4 RELATED MATERIALS

- A. Moisture Retaining Cover: One of the following, complying with ASTM C 171: Waterproof paper; polyethylene film; polyethylene-coated burlap.
- B. Membrane-Forming Curing Compound: ASTM C 309, Type I.

2.5 PROPORTIONING AND DESIGN OF MIXES

- A. Prepare design mixes for each type and strength of concrete in accordance with ACI 301. Use an independent testing facility for preparing and reporting proposed mix design.
- B. Adjustment to Concrete Mixes: Mix design adjustments may be requested by the Contractor when characteristics of materials, job conditions, or other circumstances warrant.
- C. Use air-entraining admixture for all concrete exposed to freeze-thaw cycles. Add air-entraining admixture at manufacturer's prescribed rate.
- D. Slump limits: The concrete shall be proportioned and produced to have a slump of 4 inches or less if consolidation is to be by vibration, and 5 inches or less if consolidation is to be by methods other than vibration.

2.6 CONCRETE MIXING

- A. Ready-Mix Concrete: Comply with requirements of ASTM C 94 "Standard Specification for Ready-Mixed Concrete".

PART 3 - EXECUTION

3.1 FORMS

- A. Design, erect, support, brace and maintain formwork to support vertical and lateral loads that might be applied until such loads can be supported by concrete structures. Construct formwork so concrete members and structures are of correct size, shape, alignment, elevation and position. The Contractor is solely responsible for the safe design and installation of formwork.

SOUTH WINDSOR PUBLIC SCHOOLS

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B. Construct formwork to comply with ACI 347 “Recommended Practice for Concrete Formwork”.

C. Fabricate formwork for easy removal without hammering or prying against concrete surfaces.

D. Coat contact surfaces of forms with a form-coating compound before reinforcement is placed.

3.2 PLACING REINFORCEMENT

A. Comply with Concrete Reinforcing Steel Institute’s recommended practice for “Placing Reinforcing Bars”, for details and methods of reinforcement placement and supports.

B. Clean reinforcement of loose rust and mill scale, earth, ice and other materials which reduce or destroy bond with concrete.

C. Accurately position, support and secure reinforcement against displacement by formwork, construction or concrete placement operations.

3.3 CONCRETE PLACEMENT

A. Comply with ACI 304 “Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete”. Deposit concrete continuously or in layers of such thickness to prevent the formation of seams or planes of weakness.

B. Consolidate placed concrete by mechanical vibrating equipment supplemented by hand-spading, rodding or tamping. Use equipment and procedures for consolidation of concrete in accordance with ACI recommended practices.

C. Bring slab surfaces to correct level with straightedge and strike off. Use bull floats or darbies to smooth surface, free of humps or hollows. Do not disturb slab surfaces prior to beginning finishing operations.

D. Protect concrete work from physical damage or reduced strength due to hot or cold weather in accordance with ACI 305 and 306.

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3.4 FINISHES

A. Light Broom Finish: Apply light broom finish to slabs after completion of float finishing. Lightly draw broom over concrete surface.

3.5 CONCRETE CURING

A. Protect freshly placed concrete from premature drying or excessive cold or hot temperatures.

B. Start initial curing as soon as free water has disappeared from concrete surface after placing and finishing.

C. Begin final curing procedures immediately following initial curing and before concrete has dried. Continue final curing for 7 days in accordance with ACI 301 procedures. Avoid rapid drying at the end of final curing period.

D. Perform curing of concrete by moist curing.

3.6 REMOVAL OF FORMS

A. Formwork not supporting weight of concrete may be removed after cumulatively curing at not less than 50 degrees for 24 hours, provided concrete is sufficiently hard to not be damaged by form removal operations and provided curing and protection operations are maintained.

3.7 REMEDIAL WORK

A. Repair or replace deficient work as directed by the Engineer at no additional cost to the Owner.

END OF SECTION

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SECTION V **ADDITIONAL CONDITIONS**

The execution of a contract binds the vendor to all applicable State labor laws and regulations. All such standards, laws and regulations shall be binding to the same extent as if they were copied at length herein.

Each contractor shall be subject to, and shall comply with, the following requirements, included herein by reference, to insure, through affirmative action, that qualified employees and applicants for employment are not discriminated against because of race, religious creed, national origin, age, sex, marital status, sexual orientation or disability.

Said requirements shall include compliance with all applicable, federal, state, and local statutes, ordinances, and regulations relating to discrimination in employment. It shall be the responsibility of the contractor to be familiar with and knowledgeable about the above.

The apparent successful contractor may be required to undergo a pre-award compliance review for the purpose of ascertaining whether, in the opinion of the Board, the contractor is willing and/or capable of complying with the above.

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SECTION VI
PROPOSAL FORM

DATE _____

**SOUTH WINDSOR BOARD OF EDUCATION
1737 MAIN STREET
SOUTH WINDSOR, CT 06074**

Pursuant to and in compliance with your "Advertisement" for bids and "Instructions to Bidders"; relating thereto, the undersigned,

(Name of Bidder)

Having carefully examined the premises, and complete specifications together with all addenda issued and received prior to scheduled closing time for receipt of bids hereby offers and agrees as follows:

To provide all materials, labor and equipment necessary in accordance with the attached specifications.

Bidders shall not include Federal Excise Taxes nor State of Connecticut Sales Taxes for which South Windsor Public Schools are exempt.

The right is reserved to purchase either by the item or the total items indicated.

After the opening of bids, all bids will stand available for a period of sixty (60) days.

All work shall be in accordance with the attached specifications.

The Contractor is expected to furnish all labor and materials and all costs applicable will be shown as the total Bid.

SOUTH WINDSOR PUBLIC SCHOOLS
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Total Cost: \$ _____

Lead Time to prepare shop drawing submittals _____

Lead Time from date of receipt of approved shop drawing submittals to shipping date. _____

Addenda Receipt

Receipt of the following Addenda is hereby acknowledged:

Addendum No. _____ Dated _____ Addendum No. _____ Dated _____

Addendum No. _____ Dated _____ Addendum No. _____ Dated _____

NAME OF BIDDER: _____

AUTHORIZED SIGNATURE: _____

CONTACT PERSON: _____

ADDRESS: _____

CITY & STATE: _____

PHONE: _____

E-Mail: _____

All Bid Envelopes must be sealed and marked with Bid Title, Opening Date, and Time.

SOUTH WINDSOR PUBLIC SCHOOLS
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SECTION VII
CERTIFICATE OF INSURANCE

The Contractor shall carry insurance under which the South Windsor Board of Education shall be named as an additional insured for the whole duration of this work, including the maintenance period provided herein, with an insurance company or companies licensed to write such insurance in Connecticut, against the following risks in not less than the amounts as here indicated:

A. STATUTORY WORKMEN'S COMPENSATION INSURANCE:

With Coverage B, Employer's Liability, Limit of at least \$100,000.00.

The Contractor shall maintain, for the duration of the Contract and for the protection, of all employees engaged there under, workmen's compensation as required by the Labor Laws of the States, and all Municipal and Federal Liability Laws.

B. COMPREHENSIVE GENERAL LIABILITY INSURANCE

Including completed operations, and coverage for the explosion, collapse, and underground hazards, with at least the following limits:

BODILY INJURY AND PROPERTY DAMAGE COMBINED SINGLE LIMIT

\$1,000,000 Each Occurrence	\$2,000,000 Aggregate
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C. COMPREHENSIVE AUTOMOBILE LIABILITY INSURANCE:

With at least the following limits including non-ownership and hired car coverage as well as owned vehicle:

BODILY INJURY AND PROPERTY DAMAGE COMBINED SINGLE LIMIT

\$1,000,000.00	\$1,000,000.00 Aggregate
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SOUTH WINDSOR PUBLIC SCHOOLS
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SECTION VII
CERTIFICATE OF INSURANCE (Continued)

D. UMBRELLA/EXCESS COVERAGE

Minimum \$2,000,000 Each Occurrence and Aggregate

E. OWNER'S PROTECTIVE LIABILITY INSURANCE:

The Contractor shall procure, pay for, and maintain Owner's Protective Liability Insurance in the following limits, naming the Owner and the Engineer as Named Insured's and furnishing the Owner with a copy of the Policy:

BODILY INJURY

\$ 500,000 Each Person
\$1,000,000 Each Accident

PROPERTY DAMAGE

\$100,000 Each Accident
\$500,000 Aggregate

It is further understood and agreed that any liability of the South Windsor Board of Education, or its agents concerning any and all work and material necessary is covered within policy limits set forth in this certificate. Certificates of Insurance of this Agreement to assume aforementioned liability of Owners shall be filed with Owner and be subject to his approval, prior to commencement of any work.

The above liabilities shall include not only all damages that may result to any person or property by reason of operations and/or construction, but also during the maintenance period as defined elsewhere in the Contract, where condition of construction is a factor.

The insurance policy or policies shall be delivered to the Board, for the Board to examine and rule on acceptability of the policies and of any endorsements. All premiums or other insurance carrier' charges for such policies shall be paid by the Contractor.

Failure to provide the required insurance and certificates may, at the option of the Board of Education, be held to be a willful violation of the Contract and subject to the provisions of Contract paragraph "Abandonment of Work".

SOUTH WINDSOR PUBLIC SCHOOLS
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SECTION VII
CERTIFICATE OF INSURANCE (Continued)

The Contractor agrees to indemnify and to hold the Board of Education and its employees as well as the Town of South Windsor and its employees harmless and defend in any and all liability of every nature and description which may be suffered through Bodily Injuries, including death of any persons, or damage to any property arising out of or in any manner connected with the operations to be performed under this Contract, whether or not due in whole or in part of any act, omission, or by reason of negligence of the Contractor, his agents, employees, his Subcontractors or employees or equipment of the South Windsor Board of Education and/or the Town of South Windsor.

All Policies shall be maintained for the duration of the contract.

In the event of any change in or cancellation of any one or more of said policies, the

Insurance Company will give not less than fifteen (15) days written notice to party to whom this Certificate is issued of such cancellation or change.

The above Insurance requirements shall also apply to all Subcontractors, and the Contractor shall not allow any Subcontractor to commence work until the Subcontractor' insurance has been so obtained and approved.

DATED THIS _____ DAY OF _____ 20 _____

(INSURING AGENT)

BY _____
(AUTHORIZED AGENT)

SECTION VIII
INDEMNITY

The contractor named below, to the fullest extent permitted by law, shall indemnify and hold harmless the South Windsor Public Schools and all of its agents and employees from and against any and all claims, damages, losses, costs and expenses (including attorneys' fees, consequential damages punitive damages and damages arising out of strict liability in tort) arising out of or resulting from the Contractors performance or failure to perform its work including, but not limited to, any claim, damage, loss or expense which is (a) attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property including the loss of use resulting there from, and (b) caused in whole or in part by any negligent or intentional act or omission of the Subcontractor or anyone directly or indirectly employed by him or anyone for whose acts he may be liable, regardless of whether it is caused in part by a party indemnified here under.

Signature:

Title:

Contractor:

Date:

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SECTION IX
AFFIRMATIVE ACTION

SOUTH WINDSOR PUBLIC SCHOOLS
1737 Main Street
South Windsor, CT 06074

TO: All Contractors
FROM: Chris M. Chemerka, Director of Finance & Operations
SUBJECT: Affirmative Action

The South Windsor Public Schools is an Equal Opportunity Employer. The Board of Education has made it a matter of policy that it will not transact business with firms, which are not in compliance with all Federal and State Statutes and Executive Orders pertaining to non-discrimination.

A copy of the Board of Education Affirmative Action Statement is printed on the bottom of this letter.

In order to have your firm listed on our acceptable vendor’s list and thereby be eligible for consideration as a source for goods and services, please complete and return the following Statement of Policy with your bid response.

STATEMENT OF POLICY

It is the employment policy of _____ that there will be no discrimination against anyone on the basis of race, color, religion, age, sex, marital status, sexual orientation, national origin, ancestry, disability, pregnancy, genetic information, or gender identity or expression in making employment decisions (including decisions related to hiring, assignment, compensation, promotion, demotion, disciplinary action and termination.)

In addition, this form is in full compliance with the letter and intent of the various Equal Employment Opportunities and Civil Rights Statutes noted above.

Date

Signed (Name/Title of Company Officer)

Telephone #

Street Address

Fax #

City/State