

CET SPECIFICATIONS
AND
SKETCHES

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GENERAL PROVISIONS FOR PRIVATE UTILITY FACILITIES

1. This document contains the current list of standard CET specifications and CET Sketches issued by the private utility companies to support, protect, maintain, adjust, remove, and replace private utility facilities during the performance of City of New York sponsored contracts. These specifications and sketches are to be used in conjunction with City of New York contracts that contain Section U. These specifications and sketches provide descriptions of the CET Items that have been included in Section U. These specifications and sketches may be revised or amended at any time and such revisions or amendments will be included in Section U.
2. The facility operator(s) shall provide to the Contractor, where specified all specialized materials necessary to accomplish the work specified in Section U. The Contractor shall notify the facility operator(s) of the installation schedule at least five days before such materials are required on the site.
3. All materials supplied by the facility operator(s) shall be delivered F.O.B. to the Contractor's requested location. It shall then be the Contractor's responsibility and expense to unload, handle, store, deliver and/or distribute the material supplied by the facility operator(s) to the required job location(s) for the duration of the contract. It shall also be the Contractor's responsibility to inspect and verify upon delivery that the correct quantity of material has been delivered and advise the facility operator(s), through its authorized representative, of all damaged material. Any material which is damaged or lost after the Contractor's inspection and acceptance shall be replaced by the Contractor at no additional expense to the facility operator(s).

CET 100 - 116 - TRENCH CROSSINGS SUPPORT AND PROTECTION OF UTILITY FACILITIES

A. Description

Under this section, the Contractor shall provide all labor, materials, equipment, insurance and incidentals required to support and maintain and protect and accommodate the integrity of utility facilities, including but not limited to:

1. Conduits;
2. Conductors;
3. Concrete Encased Conduit Banks;
4. Steel Pipes; Steam Facilities;
5. Oil-o-Static Facilities; and
6. Non-Cost Sharing Gas;

Of various sizes and configurations; crossing at various angles as shown on the Contract Documents above the sewer, catch basin chute connection pipes, water main trench excavation at the locations shown in the contract documents or as encountered during construction. The support, maintenance, protection, and accommodation of utility facilities encountered during performance of test pits as ordered by the City are also covered under this item.

The above reference to facilities crossing at "various angles" shall mean that such facilities are crossing sewer, water and catch basin chute excavations at a 90 degree angle to the proposed sheeting line or side of excavation (for unsheeted trenches) with an allowable deviation of 60 degrees in any direction. The only exceptions to this definition shall be where greater angles are shown on the contract documents.

B. Materials

All materials used to support and protect shall be as indicated on the attached standard Sketches CET 100 A, A-1, B, C, C-1 and D shall be supplied by the Contractor and approved by the facility operator.

C. Methods of Construction

The Contractor shall support and protect all utility facilities crossing excavations as shown on the Standard sketches. Sketches CET 100A and CET 100A-1 are to be used as a guide. Alternate methods and/or one or a combination of methods shown on the CET sketches shall be permitted if proposed by the Contractor and approved by the facility operator. It is the intent of this item to support and maintain and protect and accommodate the integrity of utility facilities and all combinations and configurations of utility facilities encountered in the course of the work. Support Requirements for utility facilities crossing Items (Sketch CET 100A) are intended to support the actual square foot cross section area of the utility facilities. Where multiple facilities are measured for payment purposes as one facility, conditions may require that each facility be supported separately. Sketch 100A can be used as a guide to determine support requirements.

The facility operator shall identify the locations of all utilities within the contract area as required by New York State Industrial Code Rule 753. As provided by the Rule, the contractor shall use hand excavation methods (pick and shovel or hand held power tools) directly below the pavement base to expose the facilities and to ascertain the numerical relationships and/or dimensions of these utilities with respect to the proposed excavation and/or sheeting operations. Upon exposing the affected utilities sufficiently at the sole discretion of the facility operator, to determine relationships and/or dimensions, the contractor shall be permitted to proceed with a combination of hand and machine excavation, as appropriate, with a zone of protection whose limit shall be defined as a perimeter located 12 inches from the outside face of each utility crossing or interference.

Combination of hand and hand and machine excavation may be required within the limits of the city trench under and between zones of protection and/or between utility facilities and other existing structures.

D. Method of Measurement

The quantity to be measured for payment shall be each (EA) type of utility facility crossing any new sewer, catch basin chute connection pipe or water pipe trench excavation. The various types of facility crossings (described below) shall be defined as "ranges" of their cross sectional areas, measured in square feet (SF) along a plane cutting through the trench parallel to the water/sewer and catch basin chute connection pipe trench. The area shall be a rectangle or square vertical plane enclosing and touching the outside limits of the utility. The sides of the rectangle or square shall be approximately level and plumb as shown on attached Sketch CET 100 E. When utility facilities are located and overlap at any point along the utility spans crossing the trench excavation and are over, or under and within one foot of each other, both horizontally and vertically, (except oil-o-static lines which shall be within two feet of each other), the utility facilities involved shall be considered, for the purposes of this section, as one utility crossing limited by the outside faces of the extreme pipes, conduits, ducts, and/or duct banks. The cross sectional area to be measured shall be selected at the point of the greatest area along the utility spanning the trench excavation, as previously described, and as shown on the attached Sketch CET 100 E. Each type of utility crossing shall be paid for separately. The types of utility crossings are defined as follows:

- Type .1 = Cross sectional area of utility up to and including 0.75 SF
- Type .2 = Cross sectional area of utility over 0.75 SF, up to and including 2.0 SF
- Type .3 = Cross sectional area of utility over 2.0 SF, up to and including 6.0 SF
- Type .4 = Cross sectional area of utility over 6.0 SF, up to and including 10.0 SF
- Type .5 = Cross sectional area of utility over 10.0 SF, up to and including 15.0 SF
- Type .6 = Cross sectional area of utility over 15.0 SF, up and including 20.0 SF
- Type .7 = Cross sectional area of utility over 20.0 SF

E. Price to Cover

The price shall cover the cost of all labor, material, equipment, insurance, and incidentals necessary to completely support and maintain and protect and accommodate the integrity of the utilities without disruption of service to the customers and in accordance with contract documents. The price shall also include the cost of: supports, slings and beams installed for utility support; additional supports necessary for multiple facilities that for payment purposes are measured as one facility; changes of sheeting method and configuration where necessary to accommodate the utility; installation of new sewer, water, and catch basin chute connection pipes under the utilities; (including the removal of any abandoned existing facilities to be removed under the City Contract as shown on the Contract Drawings) a combination of hand and hand and machine excavation within the zone of protection, backfilling and compacting around, over, under and between the zones of protection of the utilities; and removal of sheeting around the utilities, and the cost of any impact with maintenance and protection of traffic. The price shall also cover any additional excavations, including hand and hand and machine excavations under and in between zones of protection for single and multiple utilities; tunneling; additional pipe cutting and joining; removal of existing city facilities; snaking and/or in between utility facilities and other existing structures.

F. References

1. Sketches CET 100A, A-1, B, C, C-1, D
2. NYS Industrial Code Rule 753
Sketch CET 100E

CET 1006V - 1020V VERTICAL OR ROLLED WATERMAIN OFFSET

A. Description

Under this section, the contractor shall provide all incremental labor, materials, equipment, insurance and incidentals required to offset water mains for vertical or rolled movement around exposed subsurface utilities encountered during construction. The work shall be performed in accordance with the contract plans, specifications and at the direction of the facility operator, upon **written** approval from the resident engineer. The trenches to be excavated shall be determined by the size of the water main and the extent of adjustment required to avoid utilities interferences during all phases of contract work. This work shall be performed in accordance with all the applicable City and utility specifications, and at the direction of the facility operator.

B. Materials

The contractor shall supply all materials necessary to offset the city water main(s) in accordance with the City standard water main specifications and approved by the facility operator.

C. Methods of Construction

The contractor shall cut, break and remove various thicknesses of surface and base pavement, excavate by hand to expose all utility facilities within the trench. Upon exposing the affected utility(s) determine clearances at the sole discretion of the facility operator. The contractor shall then be permitted to proceed with a combination of hand and machine excavation sufficient to accommodate the appropriate water main offset(s) under or above all utility facilities interfering with the installation of the water main as directed by the facility operator.

The contractor shall layout, measure, load and transport, unload, job store, as necessary, handle and lay fittings or portion of pipe, including labor, equipment and material for the complete installation of a water main offset including, but not limited to, fittings, all types of joints, retainer glands, rods and bands.

D. Method of Measurement

The quantity to be measured for vertical or rolled water main offset(s) shall be each (ea) water main offset which shall be defined as one (1) vertical or rolled water main offset in its final location with four (4) fittings and all appurtenances to avoid a single or multiple utility interference as directed by the facility operator. Each type of water main offset shall be paid for separately. The types of water main offsets are defined as follows:

1. – CET-1006V – 6" Vertical or rolled water main offset
2. – CET-1008V – 8" Vertical or rolled water main offset
3. – CET-1012V – 12" Vertical or rolled water main offset
4. – CET-1016V – 16" Vertical or rolled water main offset
5. – CET-1020V – 20" Vertical or rolled water main offset

E. Price to Cover

The price for a water main offset shall include the cost of all labor, materials, equipment, insurance, and incidentals necessary to completely install a full water main offset inclusive of, but is not limited to, four (4) fittings, all types of joints, retainer glands, rods and bands. The contractor shall protect and maintain the integrity of the interfering facilities without disruption of service to the utility facility customers and in accordance with the contract documents. All associated incremental maintenance of traffic, traffic plates, sheeting, cutting, breaking and removal of various thickness of surface and base pavement, excavating by hand to expose existing facilities, extra depth, widening the trench to facilitate the work, snaking, furnish, place and tamp backfill after water main installation, required removing, trucking, storing, and dispensing of material shall be deemed included in the unit price. The price shall also include the cost of providing temporary pavement restoration, as required. Permanent pavement restoration and support and protection of utilities encountered while performing this work shall be paid under other items.

CET 200 -EXTRA DEPTH EXCAVATION OF CATCH BASIN CHUTE CONNECTION PIPES

A. Description

Under this section, the Contractor shall provide all labor, materials, equipment, insurance, and incidentals required to install catch basin chute connection pipes at a depth greater than specified in order to accommodate the integrity of utility facilities. These facilities of various sizes and configurations will cross the catch basin chute connection at various angles as shown on the Contract Documents. The support and maintenance and protection and accommodation of facilities encountered during the performance of this item shall be paid under other CET items. This item includes the additional excavation, material and effort(s), above and beyond the theoretical alignment for the installation of catch basin chute connection pipes caused by interference with utility facilities.

B. Material – N/A

C. Methods of Construction

Upon supporting and maintaining and protecting and accommodating the affected utilities sufficiently at the sole discretion of the facility operator(s) as deemed included under other CET items, the contractor shall be permitted to proceed with a combination hand and machine excavation, as appropriate, within and below a zone of protection whose limit shall be defined as a perimeter located 12 inches from the outside face of each utility crossing or interference. Combination of hand and hand and machine excavation may be required within the limits of the City trench under and in between the zones of protection and/or between utility facilities and other existing structures.

D. Method of Measurement

The measurement for payment shall be the linear footage (L.F.) of catch basin chute connection pipe actually installed at a depth greater than specified. This shall be at an upstream invert depth lower than four (4) feet for Type II Catch Basins and four feet six inches (4'-6") for Type III Catch Basins from the proposed pavement grade because of interference from private utility facilities as shown on Sketches CET 200 A and B measured from the inside face of the catch basin to the inside face of the manhole, along the center line of the catch basin chute connection pipe at locations where the catch basin sewer chute connection pipes are installed. Utility facility owners will jointly determine the percentage of ownership when two or more facilities with different owners cause the extra depth.

E. Price to Cover

The price shall cover the cost of all additional labor, material, equipment, insurance, and incidentals necessary to install catch basin chute connections at a depth greater than specified in order to accommodate the integrity of the utility facilities without disruption of service to the customers. The price shall further include the additional cost of sheeting; changes of sheeting method and configuration to accommodate the utilities; installation and snaking of catch basin chute pipes under the utilities; all additional hand and machine excavations, backfilling and compacting around, over, under and between the zone of protection for single and multiple utility facilities and/or in between utility facilities and other existing structures of the utilities; tunneling; removal of sheeting around the utilities; and the cost of any impact with maintenance and protection of traffic. The price shall also cover the cost of breaking out the new POE (point of entry); modifying the existing POE; sealing the existing abandoned POE opening; and all

other additional items necessary to perform all work incidental thereto; including widening of the trenches to facilitate the above work; subsequent additional backfill; additional sheeting and/or changing sheeting method to accommodate chute connection pipe and utility crossings; and installing traffic plates that may be required to temporarily close and/or complete the work.

F. References

1. Sketches CET 200A and 200B

CET 225 - INSTALLATION AND/OR REMOVAL OF CATCH BASINS WITH UTILITY INTERFERENCES

A. Description

Under this section, the Contractor shall provide all incremental labor, materials, equipment, insurance and incidentals required to support and/or protect the integrity of utility facilities required during the excavation, installation and/or removal of catch basins within maximum excavation limits shown on Sketch No. CET 225. This shall include but not be limited to the following types of utility facilities:

1. Conduits;
2. Conductors;
3. Concrete Encased Conduit Banks;
4. Steel Pipes;
5. Oil-o-Static Facilities;
6. Non Cost Sharing Gas; and

Encroaching catch basin excavation and sheeting lines as described further in this section and attached sketch CET 225. This item also includes the use of slurry backfill adjacent to catch basins within the maximum excavation limits shown on Sketch No. CET 225, in accordance with attached NYSDOT Specification Item No. 17502.9503 (Low Strength Slurry Backfill.) All backfill within the maximum excavation limits shown in Sketch No. CET 225 shall be slurry backfill in compliance with NYSDOT Item No. 17502.9503, and its cost shall be deemed included under Item CET-225.

B. Materials

Furnish slurry fill or backfill as required and specified in NYSDOT Specification Item No. 17502.9503 (Low Strength Slurry Backfill.) All materials used to support and protect utility facilities shall be as indicated on standard Sketches CET 100 A, A-1, B, C, C-1 and D, contained elsewhere in this contract, shall be supplied by the Contractor and approved by the facility operator(s).

C. Methods of Construction

The Contractor shall use sheeting methods that permit maintenance and support and protection of all utility facilities covered by this section. It is the intent of this item to support and maintain and protect any and all combinations and configurations of utility facilities located within limits indicated on Sketch No. CET 225. For the construction of Type III basins, the spillway shall be constructed in a separate stage where the excavation limits may be waived after the basin structure has been installed and backfilled. Excavation for the spillway shall not exceed 3' beyond the exterior finished surface of the proposed spillway. Excavation method for spillway construction shall be done by hand. Utility facilities located closer than the established minimum limits (as shown on Sketch CET 225) are not covered by this section and shall be removed or adjusted by the Contractor under other CET items within this contract or by facility operator at their own expense. This section shall then cover the adjusted facilities.

Utility facilities located beyond the established maximum excavation limits are not affected by work specified and shall not be disturbed during any type of catch basin installation and/or removal. Contractor shall be solely and totally responsible for disturbances and/or any damages to such facilities. The facility operator(s) shall identify the locations of all utilities within the contract area as required by New York State Industrial Code Rule 753. As provided by the Rule, the Contractor shall use hand excavation methods (pick and shovel or hand held power tools) directly below the pavement base to expose the facilities and to ascertain the numerical relationships and/or dimensions of these utilities with respect to the proposed excavation. Upon exposing the affected utilities sufficiently at the sole discretion of the facility operator(s), to determine relationships and/or dimensions, the Contractor shall be permitted to proceed with a combination of hand and machine excavation, as appropriate, within a zone of protection whose limit shall be defined as a perimeter located 12 inches from the outside face of each utility interference.

D. Method of Measurement

The quantity to be measured for payment shall be each basin where utility facilities are located within the limits indicated on CET Sketch No. CET 225. Utility facilities located closer than the established minimum limits (as shown on Sketch CET 225) shall be removed or adjusted by the contractor under other CET items within this contract. This section shall then cover the adjusted facilities. Payment will be made only one time at locations where a new basin is to be installed at the same location as a pre-existing basin as specified on contract drawings.

CET 225.1 Installation/removal of catch basins with utility interferences (EA.)

CET 225.2 Installation/removal of catch basin at an additional depth of up to 3 feet. (EA.)

E. Price to Cover

CET 225.1: The price shall cover the cost of all labor, material, equipment, insurance and incidentals necessary to completely support and protect and maintain the integrity of the utilities without disruption of service to the customers and in accordance with other types of utility items. The price shall also include the cost of: supports, slings and beams installed for utility support; changes of sheeting method and configuration where necessary to accommodate the utility; a combination of hand and machine excavation within the excavation limits specified; the disposal of excess backfill material; the placing of backfill material and/or slurry backfill adjacent to catch basins within the maximum excavation limits shown on Sketch 225; backfilling and compacting around over, under and in between utility facilities; installation and removal of sheeting around facilities; support and protection of utility facilities encountered during construction of the spillway; and the cost of any impact with maintenance and protection of traffic. The price shall also cover any additional excavations including hand and hand and machine excavations under and in between single and multiple facilities; and/or in between utility facilities and other existing structures. The unit price shall be deemed to cover all incremental cost for all labor, material, equipment, and incidentals necessary to excavate, install and/or remove specified catch basins while completely supporting, protecting, maintaining and/or adjusting the catch basin to accommodate the integrity of the encroaching utility facilities without disruption of service to the customers in accordance with the contract documents. All cost to support maintain, protect, and accommodate the integrity of utility facilities shall be deemed included in the price for this item. The price shall also cover all additional restricted excavating, sheeting, backfilling, and compaction around, over, under, and between utility facilities and all other existing structures and/or newly installed and/or removed catch basin.

CET 225.2: The price to cover shall include all work as described in price to cover for CET 225.1 plus installation of the catch basin at an additional depth of up to three feet.

Payment for all work herein specified shall be made on a one-time basis only; no payment for work herein specified shall be made for the same area more than one time. Payment will be made only one time if the Contractor elects to install new basins next to existing basins to accommodate their operations. No payment will be made for the removal of the existing basins if performed at a later sequence.

F. References

1. Sketch CET 225
2. Item 17502.9503 – Low Strength Slurry Backfill
3. Sketches CET 100-A, A-1, B, C, C-1 and D
4. NYS Industrial Code Rule 753

ITEM 17502.9503 - LOW STRENGTH SLURRY BACKFILL
(For reference only. See SECTION CET 225)

DESCRIPTION:

The work shall consist of furnishing and placing a slurry backfill composed of fly ash, cement and water as shown on the plans or as directed by the Engineer, in writing, and in accordance with this Specification. This slurry backfill material shall have a 28-day compressive strength of between 40 psi and 140 psi.

MATERIALS:

The fly ash shall be tested for toxicity pursuant to a testing protocol approved by New York State Department of Environmental Conservation (NYSDEC) and certified to be non-toxic. The Engineer shall be provided with a copy of documentation issued by NYSDEC attesting to its conformance with applicable NYSDEC rules and regulations.

The materials used for slurry backfill material shall meet the requirements of the following subsections:

Portland Cement, Type 1 or Type 2	701-01
Water	712-01

Fly Ash shall conform to the chemical and physical requirements for mineral admixture, Class F listed in A.S.T.M. C618 including Table 2 (except for Footnote A). The loss on ignition shall be waived.

CONSTRUCTION DETAILS:

Prior to mixing of any slurry backfill material the Contractor shall submit to the Deputy Chief Engineer, Technical Services results of laboratory tests, or results of tests made previously on slurry backfill used for other work. Test results shall show source and type or class of materials, batch proportions and conformance to the strength requirements.

All equipment for this work shall be subject to approval of the Engineer at all times. No work under this section will be permitted until all equipment and the processing facilities are established, inspected and approved.

The materials shall be mixed at a stationary mixing plant. The mixer shall be either a continuous or a batch type plant, designed to accurately proportion either by volume or by weight, so that when the fly ash material and cement are incorporated in the mix, a thorough and uniform mix will result. The mixer shall be capable of providing accurate control at all times of the amount of fly ash, cement and water entering the mixer per time interval. The mixer shall be equipped to mechanically interlock the fly ash feed with the cement feed, such that the uniformity of the mixtures is assured at all times.

The mix may be transported in open haul units when the material is placed within 30 minutes of the end of mixing. Material placed in excess of 30 minutes after the end of mixing shall be transported in a rotating drum unit capable of 2 - 6 rpm.

Cylinders shall be cast in accordance with Materials Method 9.2 to verify that compressive strength is within the specified limits. The frequency of test specimens will be determined by the Regional Soils Engineer.

The method of placing of slurry backfill material shall be as approved by the Engineer.

The slurry backfill material shall be accepted on the basis of inspection and approval by the Engineer.

CET 300 - SPECIAL CARE EXCAVATION AND BACKFILLING

A. Description

Under this section, the Contractor shall provide all incremental labor, materials, equipment, insurance and incidentals required for trench excavation when protecting and maintaining and accommodating the integrity of utility facilities, including but not limited to:

1. Conduits;
2. Conductors;
3. Concrete Encased Conduit Banks;
4. Steel Pipes; Steam Facilities and
5. Non Cost Sharing Gas;

of various sizes and configurations, encroaching (partially exposed) or paralleling (not exposed) within 6" of the approved City trench lines for all phases of contract excavation as shown on contract drawings or as encountered during construction, except excavations to the ultimate depth for curbs, sidewalks and roadway/base/sub-base removal which are covered under specific CET items. This item shall also apply for facilities that cross excavations for water service installation and extensions or excavations for water tap searches. The contract items specified under this section shall not be measured for payment in conjunction with any other types of utility items. All work shall be performed in accordance with the contract plans, specifications, the attached Sketch # CET 300 A and at the directions of the facility operator(s).

B. Materials – N/A

C. Method of Construction

The Contractor shall maintain and protect and accommodate the integrity of all utility facilities encroaching/paralleling within excavations as schematically shown on the attached Sketches # CET 300 A. The facility operator(s) shall identify the locations of all utilities within the contract area as required by New York State Industrial Code Rule 753. As provided by the Rule, the Contractor shall use hand excavation methods (pick and shovel or hand held power tools) directly below the pavement base to expose the facilities and ascertain the numerical relationships and/or dimensions of these utilities with respect to the proposed excavation. Upon exposing the affected utilities sufficiently at the sole discretion of the facility operator(s) to determine relationships and/or dimensions, the Contractor shall be permitted to proceed with a combination of hand and machine excavation, as appropriate, within a zone of protection whose limit shall be defined as a perimeter located 12 inches from the outside face of each utility encroaching.

D. Method of Measurement

The unit price for this work item shall be based on the volume (CY) of special care excavation calculated as follows:

- For paralleling facilities (not exposed): Depth shall be measured from the bottom of the existing roadway base to 5'-0" below existing street surface grade or bottom of trench, whichever is less. The width shall be measured as 1 foot from the face of excavation toward the center of excavation. The length shall be measured as the length of the of parallel facility. (see Sketch CET 300 A.)

- For encroaching facilities; Depth as defined above multiplied by the width of encroachment (pipe partially or fully exposed) plus 1 foot, multiplied by the length of facility encroachment. (see Sketch CET 300 A.)
- For facilities crossing water service excavations; Depth as defined above multiplied by the width taken as the outside diameter of or width of structure plus one foot on either side (2 feet) multiplied by the length of the exposed facility crossing the trench.

The volume calculation shall in all cases include, the volume occupied by the utility proper within the payment area described above. Overlapping volume dimensions measured as described above may occur when multiple utilities are encroaching trench excavations. In such cases, all such utilities shall be counted as one utility limited by the maximum encroachment of pipes, conduit(s), and conduit banks faces. The volume shall then be calculated as described above and shown on attached Sketch # CET 300 A. Utilities identified as abandoned by the facility operator prior to be beginning of excavation, are not included for payment under this item.

E. Price to Cover

The price shall cover the cost of all labor, material, equipment, insurance and incidentals necessary to completely protect and maintain and accommodate the integrity of the facilities without disruption of service to the customers and in accordance with contract documents. The price shall also include the cost of: difficulties encountered during the performance of contract work items under, over and around the facilities, loss of productivity due to slower rate of excavation (special care) during excavation, including water tap search excavations and the use of such methods as hand excavation around existing single and multiple facilities; backfilling and compaction around, over and under the utilities including the use of special methods; removal of sheeting from around the facilities; and traffic plates that may be required to temporarily close and/or complete the work.

F. References

1. Sketch CET 300A
2. NYS Industrial Code Rule 753

CET 301 - SPECIAL CARE EXCAVATION AND BACKFILLING FOR OIL-O-STATIC PIPES

A. Description

Under this section, the Contractor shall provide all incremental labor, materials, equipment, insurance and incidentals required for trench excavation when maintaining, protecting, and accommodating the integrity of the facility operator's oil-o-static pipe(s). This system consists of steel pipes containing the high tension cables and cooling oil (oil-o-static pipes) encroaching (partially exposed) or paralleling (not exposed) within 12 inches of the face of the approved city excavations for all phases of contract excavation as encountered during construction, except excavations to the ultimate depth for curbs, sidewalks and roadway/base/subbase which are covered under specific contract items. The work shall be performed in accordance with the contract plans, specifications, attached Sketch CET 301 A and at the directions of the facility operator.

B. Materials

Backfill material to be used around oil-o-static pipes will be paid for under Item CET-303.

C. Method of Construction

The Contractor shall maintain, protect and accommodate the integrity of oil-o-static pipes encroaching/paralleling excavations as schematically shown on attached Sketch CET 301 A. The facility operator shall identify the locations of oil-o-static pipe(s) within the contract area as required by New York State Industrial Code Rule 753. As provided by the Rule, the Contractor shall use hand excavation methods (pick and shovel or hand held power tools) directly below the pavement base to expose the oil-o-static pipe(s) and ascertain the numerical relationships and/or dimensions of these utilities with respect to the proposed excavation. Upon exposing the affected oil-o-static pipe(s) sufficiently at the sole discretion of the facility operator to determine relationships and/or dimensions, the Contractor shall be permitted to proceed with hand excavation only, within a zone of protection whose limit shall be defined as a perimeter located 12 inches from the outside face of each oil-o-static encroaching/paralleling.

D. Method of Measurement

The unit price for this work shall be based on the volume(C.Y.) of special care excavation calculated as follows:

- For paralleling (not exposed) oil-o-static pipe(s) within 12 inches of the outside edge of the approved City trench line, the volume included for payment shall be calculated as the depth from below the existing pavement base to the bottom of the unsheeted trench excavation or to the bottom of the oil-o-static pipe whichever is greater, multiplied by the width, measured as one foot from the face of the excavation toward the center of excavation, multiplied by the length of the parallel oil-o-static line. See Sketch CET 301 A.

- For encroaching (exposed) oil-o-static pipe(s) the volume shall be calculated as the width of the encroachment (facility partially or fully exposed in the trench) plus one foot, multiplied by length of the encroachment, multiplied by the depth as defined above. See Sketch CET 301 A.

The volume calculation shall in all cases include, the volume occupied by the utility proper within the payment area described above. Overlapping volume dimensions measured as described above may occur when multiple utilities are encroaching trench excavations. In such cases, all such utilities shall be counted as one utility limited by the maximum encroachment of pipes, conduit(s), and conduit banks faces. The volume shall then be calculated as described above and shown on attached Sketch # CET 300 A. Utilities identified as abandoned by the facility operator prior to beginning of excavation, are not included for payment under this item.

E. Price to Cover

The price shall cover the cost of all incremental labor, material, equipment, insurance and incidentals necessary to completely protect, and maintain, and accommodate the integrity of oil-o-static pipe(s) without disruption of service to the customers and in accordance with contract documents. The price shall also include the cost of: difficulties encountered during the performance of contract work items under, over and around the oil-o-statics; installation and removal of sheeting; loss of productivity due to slower rate of excavation (special care) during excavation, including the use of such methods as hand excavation around existing oil-o-static pipe(s); trucking and disposing of unsuitable fill; backfilling and compaction around, over and under the facilities including the use of special methods; and traffic plates that may be required to temporarily close and/or complete the work.

F. References

1. Sketch CET-301A
2. CET-303
3. NYS Industrial Code Rule 753

CET 302 – FIELD COATING OF OIL-O-STATIC FEEDER PIPES

A. Description

Under this section, the Contractor shall provide all labor, tools, equipment, insurance and incidentals required to apply field coating and wrapping on Oil-O-Static feeder pipes at various locations within the contract limits in accordance with the specifications and as directed by the facility operator. The Oil-O-Static system consists of steel pipes containing high voltage cables and cooling oil. All work shall be in accordance with the Con Edison requirement G-8209, System B, included within this section.

B. Materials

All materials required to apply coatings and wrappings as referenced in G-8209 shall be supplied by Con Edison.

C. Method of Construction

Some of the existing coatings on Oil-O-Static pipes may consist of coal tar wrap and may contain asbestos and/or PCB's. The Con Edison representative prior to backfilling must visually inspect all Oil-O-Static lines that are exposed during the performance of this contract. The Contractor shall notify the Con Edison representative to perform this inspection. Con Edison shall be allowed to perform an electrical spark test (jeeping) inspection of these pipes and obtain a sample of the coating for testing. The electrical spark test will indicate the amount of coating required to be applied and the sample test will determine the coating materials. If the tests are negative, the Con Edison representative will direct the Contractor to perform the required amount of coating prior to the pipes being backfilled. If the tests reveal the presence of asbestos and/or PCB's, the work will be considered "specialty work" and be performed by Con Edison forces or by a specialty Contractor hired by Con Edison. The Contractor will coordinate his operations to allow this work to be performed.

The work shall be performed in accordance with Con Edison specification G-8209, which is included within this section. System B will be the only method that will be allowed. The coating shall be verified and accepted by the Con Edison representative prior to backfilling.

D. Method of Measurement

The quantity to be measured for payment shall be the actual number of linear feet (L.F.) of each Oil-O-Static pipe for which coating is applied by the Contractor as prescribed.

E. Price to Cover

The price shall cover the cost of all labor, tools, equipment, insurance and incidentals necessary to unload, store and handle the necessary material and to perform all associated work to coat and wrap the Oil-O-Static lines as outlined in Con Edison specification G-8209, System B. The price shall also include the cost of all difficulties encountered to apply the coating in the area of other underground facilities and the additional excavation that may be required to obtain the necessary clearances to apply the coating; coordination with Con Edison forces or their Specialty Contractor; modifications to work methods or construction sequencing, any impact with maintenance and protection of traffic, and loss of productivity.

Payment for all work herein specified shall be made on a one-time basis only; no payment for work herein specified shall be made for the same area more than one time. If the Contractor subsequently damages any coatings paid for under this contract, the pipe shall be recoated in accordance with this item at the Contractor's expense.

F. References

1. Con Edison Gas Operations Standard G-8209 – Field Coating of Steel Pipe and Fittings Installed Underground and in Subsurface Structures

SPECIFICATION:

G-8209

TITLE:

**"FIELD COATING OF STEEL PIPE AND
FITTINGS INSTALLED UNDERGROUND AND IN
SUBSURFACE STRUCTURES"**

VOLUME:

**2 (Section 1.0), 9, 10 and Gas Service Book/
3 (Section 21) Electric Construction Standards**

REVISIONS:

This specification is being issued for the first time and
supersedes G-8101, "Field Coating of Steel Pipe and
Fittings for Buried Installations" and G-8187 "Field
Coating of Electric Feeder Pipes and Fittings Installed
Underground



G-8209

Gas Operations Standards

**TITLE: FIELD COATING OF STEEL PIPE AND FITTINGS
INSTALLED UNDERGROUND AND IN
SUBSURFACE STRUCTURES**

EFFECTIVE DATE: January 5, 1999

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PREPARED BY:	APPROVED BY:	DATE:	VOLUME: 2 (Section 1.0), 9, 10 and Gas Service Book/Electric Vol 3 (Section 21)	PAGE 1 OF
P. Carnevale	Anthony B. Codner Chief Gas Engineer	12/2/98	Construction Standards, Field Edition, O&M Manual and Gas Service Book/Electric Construction Standards	12 PAGES



**TITLE: FIELD COATING OF STEEL PIPE AND FITTINGS
INSTALLED UNDERGROUND AND IN
SUBSURFACE STRUCTURES**

1.0 SCOPE

1.1 This specification covers the field coating of all steel gas, electric feeder and related equipment, cooling water, gasoline, and diesel pipe and fittings installed underground and in subsurface structures:

- A) System A: Mastic
- B) System B: Cold Applied Tape
- C) System C: Hot Coal Tar Enamel (See Section 1.2)

1.2 Hot Coal Tar Enamel may only be used with approval from Corrosion Operations.

2.0 ENVIRONMENTAL IMPACT

2.1 Effective coatings will result in minimizing product leaks due to corrosion on portions of piping systems and related equipment installed underground and/or in subsurface structures.

2.2 All operations that are performed (i.e. coal tar removal, disposal, installation, etc.) must be in compliance with all applicable specifications, Corporate Environmental Procedures (CEPs) and General Environmental Instructions (GEIs).

2.3 All employees should be given updated, product specific Hazardous Communication Training for the products/materials used in this specification.

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TITLE: FIELD COATING OF STEEL PIPE AND FITTINGS INSTALLED UNDERGROUND AND IN SUBSURFACE STRUCTURES

3.0 MATERIAL

System	Material	Unit	Stock No.	Product	Manufacturer
A	Mastic	Gallon	631-1211	Roskote R-28 CE Mastic	Royston Labs Inc.
	Felt	Roll	000-0067	Thick'n Quick 15# Roofing Paper (Asphalt)	Royston Labs Inc.
B	Cold Applied Tape 2" Width	Roll	631-3324	Tapecoat H35 Gray (Primerless)	Tapecoat Company
	or 4" Width	Roll	631-3316	Royston One Step Tape (Primerless)	Royston Labs Inc.
C	Enamel	-	-	Hot Service Enamel	Reilly
	Primer	-	-	Black Magic Primer	Reilly
	Felt	-	-	Duramat	Power Marketing Group, Inc.
A, B, C	Degreaser	Quart	634-1853	Envirosolv 655	Fine Organics Corp.

4.0 COATING SELECTION

Unless otherwise specified, Table 1 shall be used in selecting the proper coating system.

TABLE 1: COATING SELECTION

ITEMS TO BE COATED

Welded joints, elbows, offsets, sleeves, damaged coating on pipe, pipe in manholes, straight pipe, etc.

PREFERRED METHOD

System B

ALTERNATE

System C

Irregular surface fittings, all bolted fittings, valves, reinforcements, weldolets, non-bolted compression couplings, posi-hold type couplings, irregular pipe surfaces in manholes, etc.

System A

System C

Con Edison

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TITLE: FIELD COATING OF STEEL PIPE AND FITTINGS INSTALLED UNDERGROUND AND IN SUBSURFACE STRUCTURES

5.0 SURFACE PREPARATION – ALL SYSTEMS

5.1 Coal Tar Mill/Field Coating

A) Coal tar wrap may contain asbestos and/or PCBs. If a painted surface is encountered, lead, cadmium, and chromium may be present. Refer to Industrial Hygiene Instruction Memorandum IH-012, "Lead Management Program". See applicable GEIs or CEPs for Personal Protective Equipment (PPE), handling, training, and disposal requirements.

B) All existing loose/disbonded coal tar coating shall be removed from the area to be coated in accordance with procedures specified in applicable GEIs, CEPs or variances. Remaining edges shall be cut on a taper.

5.2 Other Mill/Field Coatings

These coatings may contain asbestos and/or PCBs. If a painted surface is encountered, lead, cadmium, and chromium may be present; refer to Industrial Hygiene Instruction Memorandum IH-012, "Lead Management Program." All handling of mill/field coatings shall be removed in accordance with procedures specified in applicable GEIs and CEPs. All mill coating adhesive shall be removed from the pipe surface to be coated.

5.3 Wash the surface to be coated (to remove oil, grease, dirt, etc.) using only the degreaser listed in Section 3.0. This washing shall be done by wiping the surface to be coated with clean rags soaked with the degreaser. Chemical resistant gloves should be worn. The coating shall not be applied until all of the degreaser has evaporated from the surface being coated.

6.0 APPLICATION OF PRIMER

6.1 There is no primer required with System A – **Mastic** or System B – **Cold Applied Tape**.

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6.0 **APPLICATION OF PRIMER** (Continued)

- 6.2 System C – **Hot Coal Tar Enamel** requires primer. The approved primer shall be stirred thoroughly. Apply the primer to a clean dry pipe surface by brushing, leaving a uniform coating completely covering the surface of the pipe or fitting and overlapping the mill coating on each side by at least four inches. Allow the primer to dry. The hot coal tar enamel shall be applied immediately after the primer has dried.

7.0 **COATING APPLICATION**

7.1 **System A – Mastic**

- A) The mastic is furnished properly formulated for application. Normal appearance is thicker than most coatings, but it can be brushed evenly. Stir mastic thoroughly prior to use. Apply mastic by **brush**, keeping generous amounts of mastic on the brush; however apply by brushing on **thin** coats. Use only clean brushes that are not caked or hard due to prolonged use.
- B) Apply a first thin coat of mastic and let dry for approximately 15 minutes; then apply a second coat. It takes approximately 45 minutes for the second coat to dry. Each coat of mastic shall overlap any adjacent coating.

NOTE: The drying times mentioned here are variable and dependent upon ambient temperature and relative humidity. Drying times longer than those indicated are possible.

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7.0 COATING APPLICATION (Continued)

- C) Do not backfill until the mastic is completely dry. If emergency backfilling is required, as authorized by Con Edison's Field Representative, pipeline felt shall be wrapped loosely around the coating to protect it against abrasion.
- D) For touch-ups of factory (mill) coated fittings with mastic, follow surface preparation steps as in Section 5.0 for exposed metal and 1/2" of adjacent mill coating. Apply mastic as in Section 7.1 overlapping mill coating by 1/2". Only one coat of mastic shall be applied for touch-ups.

NOTE: All bolt threads, heads, and nuts shall be given one coat of mastic regardless of the condition of the factory coating.

7.2 System B – Cold Applied Tape

- A) Field coating of welded joints, elbows, offsets, etc. using cold applied tape shall be done as follows:
- 1) Use 2" wide tape for pipe 8" diameter and smaller. Use 4" wide tape for larger diameters.
 - 2) Remove paper separator from side of tape which will be in contact with pipe.
 - 3) The tape shall be applied by the "spiral wrap" method. Overlap each adjacent tape layer 1/2". Wrap first and last turn of tape 1 1/4 times around pipe, overlapping mill coating by 4".

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7.0 COATING APPLICATION (Continued)

- 4) For pipe, sleeves, barrels, couplings, etc., 16" in diameter and larger, a second layer of tape shall be applied following steps "1" through "3". This second layer of tape shall be started at the opposite end, and the application angle reversed.
- 5) For pipe, sleeves, barrels, couplings, etc., 16" diameter and larger, a "cigarette wrap" application is acceptable using wider tape as long as there are no wrinkles, bubbles, or voids in the tape. Wrap shall be 1 1/4 turns with 1/2" overlap between adjacent tape wraps and 4" on the mill coating. Two layers of tape shall be applied.

7.3 System C – Hot Coal Tar Enamel(See Section 1.2)

A) An alternate for System A or B is System C – Hot Coal Tar Enamel. Pipe and fittings shall be coated with the coal tar enamel specified herein. The enamel shall be heated in kettles equipped with accurate and easily read thermometers. Upon removal from its container, the enamel shall be broken into small pieces before it is placed in the heating kettle. Overheating the enamel results in green-yellow acrid smoke and will carbonize the enamel rendering it useless. Continued stirring is essential to obtain uniform heating. The heating and pouring temperatures are: Maximum Kettle Temp., 525°F. Minimum Pouring Temp., 485°F. The enamel shall be kept free flowing and above the minimum pouring temperature both in the kettle and in the pouring buckets.

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7.0 **COATING APPLICATION** (Continued)

- B) Field coating of welded joints, elbows, offsets, etc., using **Hot Coal Tar Enamel**, shall be done as follows:
- 1) Strips of felt shall be cut long enough to go around the pipe 1 1/4 times. Using the felt strips as slings, enamel shall be poured onto the surface of the pipe and felt and spread to at least 3/32 inch thickness over the area to be coated. The felt sling shall be discarded and disposed of in an approved manner after the first coat of enamel.
 - 2) The enamel shall be inspected for voids, thin spots, sags, wrinkles, and other defects. Defects shall be corrected before the application of the second coat.
 - 3) A second coat of enamel, at least 1/32 inch thick, shall be applied over the first coat using new strips of felt. The second enamel coat with a felt wrapper shall extend over the area being coated and overlap previously applied mill coatings by at least four inches.
 - 4) Excess enamel shall be evident along all felt edges to get good sealing properties.
 - 5) The inside face of all felt strips shall be sealed with enamel to keep out moisture.
 - 6) Where hot enamel overlaps mill coatings other than coal tar, a transition area forms between the mill and field coatings. After the enamel is applied, this area shall be wrapped with cold applied tape, System "B", 1 1/4 times around the pipe.

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7.0 COATING APPLICATION (Continued)

- C) Field coating of irregular fittings, using Hot Coal Tar Enamel, shall be done using two separate coats of enamel. The first coat of enamel shall be at least 3/32-inch thick. It shall be inspected for voids, thin spots, wrinkles, sags, blisters and other defects which shall be repaired prior to the application of the second coat. The second coat of enamel shall be at least 1/32-inch thick. The working parts of valves shall be coated in accordance with Sections 5.0 and 7.1 of this Specification using System A – Mastic.

8.0 REPAIRS OF DAMAGED COATING

- 8.1 Repairs of damaged coating on fittings only using System A – Mastic shall be done in accordance with Sections 5.0 and 7.1 of this Specification.

- 8.2 Repair of damaged coating using:

A) Cold Applied Tape – System "B"

- 1) Follow all applicable steps in accordance with Sections 5.0 and 7.2.
- 2) Cut a piece of tape (patch) large enough to cover damaged area, overlapping mill coating by at least 2".
- 3) Cut a second piece of tape long enough to wrap around the pipe 1 1/4 times.
- 4) Remove the paper separator from side of tape which will be in contact with pipe.
- 5) Apply the patch.

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8.0 **REPAIRS OF DAMAGED COATING** (Continued)

- 6) Wrap the second piece of tape around the pipe 1 1/4 times, covering the patch. Avoid too much handling and stretching of tape, which will result in wrinkles and bubbles in the tape.

B) **Hot Coal Tar Enamel – System "C"** (See Section 1.2)

- 1) Follow all applicable steps in Sections 5.0, 6.2, and 7.3 with the following exceptions:
- a) This coating shall be used only to repair hot coal tar enamel coatings.
 - b) The loose or disbonded coating shall be removed in accordance with procedures specified in applicable GEIs, CEPs, and variances. The edges of the coating shall be cut on a taper.
 - c) When the primer has become dry, hot enamel shall be poured on the primed metal, and a first piece of felt shall be carefully applied over the opening.
 - d) After a second application of hot enamel, a second piece of felt, larger than the first by not less than 4" in any direction, shall be immediately placed over the patched area.

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**TITLE: FIELD COATING OF STEEL PIPE AND FITTINGS
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9.0 INSPECTIONS

- 9.1 For System A – **Mastic**, no electrical inspections shall be performed. A thorough visual inspection of the finished coating shall be performed in order to insure that no holidays or voids are present in the coating.
- 9.2 For System B – **Cold Applied Tape**, an Electrical Spark Inspection, using an approved Holiday Detector, shall be made on all coated pipe and fittings just prior to backfilling. Where practical, the coated pipe in manholes shall be electrically spark inspected; where impractical, a visual inspection of the coated pipe will suffice. The peak voltage of the Holiday Detector shall be between 12,000 and 15,000 volts (except electric feeder pipe which shall be 18,000 to 20,000 volts) measured with the electrode in contact with the coated pipe. Additional exceptions to this electrical inspection are natural gas service lines and distribution mains less than 100 feet in length, which only require a thorough visual inspection.
- 9.3 For System C – **Hot Coal Tar Enamel**, an Electrical Spark Inspection, shall be made on all coated pipe and fittings as per Section 9.2. The peak voltage of the Holiday Detector shall be as in Section 9.2. There are no exceptions to this electrical inspection.

9.4 All coating defects found from the inspections described in Sections 9.1, 9.2, and 9.3 shall be repaired as per Section 8.0 and inspected again.

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10.0 PROTECTION, PRECAUTIONS, QUALITY CONTROL

10.1 The mastic and primer are flammable materials and must be kept away from open flames, sparks or high temperatures. Avoid breathing vapors and use only with adequate ventilation and/or approved respiratory protection. Keep containers closed when not in use. Contact with the skin shall be avoided.

10.2 The enamel pieces, placed in the heating kettles, shall be kept clean, dry and free of dirt, grass, weeds, or foreign matter.

10.3 All heating kettles, pouring buckets, daubers, etc., shall be cleaned once a day and kept in a workmanlike condition. Enamel left in the kettle overnight or from a previous day will be removed and disposed of in an approved manner.

10.4 Rolls of pipeline felt and cold applied tape shall be stored in sheds or on platforms under suitable cover to keep them dry. All rolls shall be carefully handled to prevent distortion of the rolls and damage to the edges which may interfere with their use.

10.5 When practical do not coat in rain, snow, fog, or windy weather which may cause moisture, dust or dirt to collect on the surface to be coated. Wet or dirty pipe or fittings shall not be coated until properly cleaned as per Section 5.0 and dried.

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CET 303 - FURNISH, DELIVER AND INSTALL TYPE 3/8 CLEAN SAND BACKFILL

A. Description

Under this section, the Contractor shall provide all labor, materials, equipment, insurance and incidentals necessary to furnish, deliver and install Type 3/8 clean sand backfill for use around utility facilities at various locations within the contract limits as directed by the facility operator.

B. Materials

The Contractor shall supply Type 3/8 clean sand backfill. Type 3/8 clean sand backfill shall have a pH value greater than 5.5 and shall be free of cinders, ashes, vegetable matter, rubbish or any foreign matter. The sand must conform to the following sieve analysis.

<u>Sieve Size</u>	<u>Percent Passing</u>
3/8 inch	100
#4	95-100
#8	80-100
#16	50-85
#30	25-60
#50	10-30
#200	0

C. Method of Construction

The Contractor shall furnish, deliver and install Type 3/8 clean sand for use as backfill material around utility facilities. The amount of Type 3/8 clean sand backfill material shall extend one foot under, around, and over the facilities or as directed by the facility operator.

D. Method of Measurement

The quantity to be measured for payment shall be the actual number of cubic yards (CY) of Type 3/8 clean sand backfill in place after compaction as ordered by the facility operator. The amount measured for payment is not to exceed the limits of one foot under, around, and over the facilities unless approved by the facility operator.

E. Price to Cover

The price shall cover the cost of all labor, materials, equipment, insurance and incidentals necessary to furnish, deliver and install Type 3/8 clean sand backfill for use around utility facilities. The price shall also include the incremental cost for all labor, material, equipment, insurance and incidentals necessary and required to place, compact, sample and test the backfill material.

CET 304 – FURNISH, DELIVER AND INSTALL CONCRETE PAVEMENT FOR ROADWAY OR SIDEWALK

A. Description

Under this section the contractor shall provide all labor, materials, equipment, Insurance and incidentals necessary to furnish, deliver and install concrete pavement for roadway or sidewalk restoration as directed by the facility operator and Approved by the Resident Engineer.

B. Materials

The contractor shall supply concrete material for roadway or sidewalk restoration in compliance with the requirements of the governmental authority having jurisdiction.

C. Method of Construction

The contractor shall furnish, deliver and install concrete pavement for roadway or sidewalk restoration as directed by the facility operator and in compliance with the requirements of the governmental authority having jurisdiction. During unfavorable weather, pavement surfaces shall be protected by approved methods. The protective materials shall remain in place until the concrete has hardened sufficiently to warrant their removal.

D. Method of Measurement

The quantity to be measured for payment shall be the actual number of cubic yards (CY) of concrete pavement in place, as ordered by the facility operator and Approved by the Resident Engineer.

E. Price to Cover

The price shall cover the cost of all labor, materials, equipment, insurance and incidentals necessary to furnish, deliver and install concrete pavement for roadway or sidewalk restoration as directed by the facility operator and Approved by the Resident Engineer.

CET 305 – FURNISH, DELIVER AND INSTALL ASPHALT PAVING MIXTURES

A. Description

Under this section, the contractor shall provide all labor, materials, equipment, insurance and incidentals necessary to furnish, deliver and install asphalt-paving mixtures for road restoration as directed by the facility operator and Approved by the Resident Engineer.

B. Material

The contractor shall supply asphalt paving material mixtures for roadway restoration in compliance with the requirements of the governmental authority having jurisdiction.

C. Method of Construction

The contractor shall furnish, deliver and install asphalt-paving mixtures for roadway restoration as directed by the facility operator and in compliance with the requirements of the governmental authority having jurisdiction. After the proper installation, the contractor shall compact the asphalt paving mixtures to the appropriate thicknesses, as directed by the facility operator and Approved by the Resident Engineer.

D. Method of Measurement

The quantity to be measured for payment shall be the actual number of tons (ton) of asphalt paving mixtures in place after compaction to the appropriate thicknesses, as directed by the facility operator and Approved by the Resident Engineer.

E. Price to Cover

The price shall cover the cost of all labor, materials, equipment, insurance and incidentals necessary to furnish, deliver and install asphalt paving mixtures for roadway restoration as directed by the facility operator and Approved by the Resident Engineer.

CET 305 – FURNISH, DELIVER AND INSTALL ASPHALT PAVING MIXTURES

A. Description

Under this section, the contractor shall provide all labor, materials, equipment, insurance and incidentals necessary to furnish, deliver and install asphalt-paving mixtures for road restoration as directed by the facility operator and Approved by the Resident Engineer.

B. Material

The contractor shall supply asphalt paving material mixtures for roadway restoration in compliance with the requirements of the governmental authority having jurisdiction.

C. Method of Construction

The contractor shall furnish, deliver and install asphalt-paving mixtures for roadway restoration as directed by the facility operator and in compliance with the requirements of the governmental authority having jurisdiction. After the proper installation, the contractor shall compact the asphalt paving mixtures to the appropriate thicknesses, as directed by the facility operator and Approved by the Resident Engineer.

D. Method of Measurement

The quantity to be measured for payment shall be the actual number of tons (ton) of asphalt paving mixtures in place after compaction to the appropriate thicknesses, as directed by the facility operator and Approved by the Resident Engineer.

E. Price to Cover

The price shall cover the cost of all labor, materials, equipment, insurance and incidentals necessary to furnish, deliver and install asphalt paving mixtures for roadway restoration as directed by the facility operator and Approved by the Resident Engineer.

CET 330E - SUPPORT AND PROTECTION OF ELECTRIC, GAS AND STEAM FACILITIES DURING EXCAVATION OF CITY TRENCH WHEN FACILITIES LIE WITHIN TRENCH LIMITS

A. Description

Under this section, the Contractor shall provide all labor, materials, equipment, insurance and incidentals required to support and maintain and protect and accommodate the integrity of electric, gas and steam utility facilities when facilities lie completely within the trench limits, including but not limited to:

1. Conduits;
2. Conductors;
3. Concrete Encased Conduit Banks;
4. Steel Pipes; Steam Facilities;
5. Oil-o-Static Facilities; and
6. Non-Cost Sharing Gas;

Of various sizes and configurations, as shown on the contract documents or as encountered during construction. The facility operator through its authorized representatives shall be solely responsible for the approval of methods used by the contractor to support and protect utility facilities. All work shall be performed without risking the integrity of the utility facility and be done consistent with all applicable safety standards as directed by the facility operator.

B. Materials

All materials used to support and protect shall be as indicated on the attached standard Sketches CET 100 A, A-1, B, C, C-1 and D shall be supplied by the Contractor and approved by the facility operator.

C. Methods of Construction

The Contractor shall support and protect all electric, gas and steam utility facilities which lie completely within the trench limits as shown on the Standard sketches. Sketches CET 100A and CET 100A-1 are to be used as a guide in determining the appropriate support and protection requirements. Alternate methods and/or one or a combination of methods shown on the CET sketches shall be permitted if proposed by the Contractor and approved by the facility operator. It is the intent of this item to support and maintain and protect and accommodate the integrity of electric, gas and steam utility facilities and all combinations and configurations of the utility facilities encountered in the course of the work. Support Requirements for electric, gas and steam utility facilities which lie completely within the trench limits (Sketch CET 100A) are intended to support the actual square foot cross section area of the utility facilities. Where multiple facilities are measured for payment purposes as one facility, conditions may require that each facility be supported separately. Sketch 100A can be used as a guide to determine support requirements.

The facility operator shall identify the locations of all electric, gas and steam utilities within the contract area as required by New York State Industrial Code Rule 753.

As provided by the Rule, the contractor shall use hand excavation methods (pick and shovel or hand held power tools) directly below the pavement base to expose the facilities and to ascertain the numerical relationships and/or dimensions of these utilities with respect to the proposed excavation and/or sheeting operations. Upon exposing the affected utilities sufficiently at the sole discretion of the facility operator, to determine relationships and/or dimensions, the contractor shall be permitted to proceed with a combination of hand and machine excavation, as appropriate, with a zone of protection whose limit shall be defined as a perimeter located 12 inches from the outside face of the electric, gas and steam utility facility that lie completely within the trench limits.

Combination of hand and hand and machine excavation may be required within the limits of the city trench under and between zones of protection and/or between utility facilities and other existing structures.

D. Method of Measurement

The quantity to be measured for payment shall be Linear Foot (L.F.) of electric, gas and steam utility facility actually excavated and supported and protected. The various types of utility facilities encountered (described below) shall be defined as "ranges" of their cross sectional areas, measured in square feet (SF) along a plane cutting through the City trench parallel. The area shall be a rectangle or square vertical plane enclosing and touching the outside limits of the utility. The sides of the rectangle or square shall be approximately level and plumb as shown on attached Sketch CET 100 E. When electric, gas and steam utility facilities are located and overlap at any point along the utility spans crossing the trench excavation and are over, or under and within one foot of each other, both horizontally and vertically, (except oil-o-static lines which shall be within two feet of each other), the utility facilities involved shall be considered, for the purposes of this section, as one utility facility limited by the outside faces of the extreme pipes, conduits, ducts, and/or duct banks. The cross sectional area to be measured shall be selected at the point of the greatest area along the utility spanning the trench excavation, as previously described, and as shown on the attached Sketch CET 100 E. Each type of utility facility encountered shall be paid for separately. The types of electric, gas and steam utility facilities are defined as follows:

- Type .1 = Cross sectional area of utility up to and including 0.75 SF
- Type .2 = Cross sectional area of utility over 0.75 SF, up to and including 2.0 SF
- Type .3 = Cross sectional area of utility over 2.0 SF, up to and including 6.0 SF
- Type .4 = Cross sectional area of utility over 6.0 SF, up to and including 10.0 SF
- Type .5 = Cross sectional area of utility over 10.0 SF, up to and including 15.0 SF
- Type .6 = Cross sectional area of utility over 15.0 SF, up and including 20.0 SF
- Type .7 = Cross sectional area of utility over 20.0 SF

E. Price to Cover

The price shall cover the cost of all labor, material, equipment, insurance, and incidentals necessary to completely support and maintain and protect and accommodate the integrity of the electric, gas and steam utilities facilities, which lie completely within the City trench without disruption of service to the customers

and in accordance with contract documents. The price shall also include the cost of: supports, slings and beams installed for electric, gas and steam utility support; additional supports necessary for multiple facilities that for payment purposes are measured as one facility; any changes to the contractor's proposed or standard methods of operation, changes of sheeting method and configuration where necessary to accommodate the utility; installation of new sewer, water, and catch basin chute connection pipes under, parallel to or near the utilities, and associated house connections; (including the removal of any abandoned existing facilities to be removed under the City Contract as shown on the Contract Drawings) a combination of hand and hand and machine excavation within the zone of protection, backfilling and compacting around, over, under and between the zones of protection of the utilities; and removal of sheeting around the utilities, and the cost of any impact with maintenance and protection of traffic. The price shall also cover any additional excavations, including hand and hand and machine excavations under and in between zones of protection for single and multiple utilities, replacement and restoration of any and all conduits and their encasements which may have been temporarily removed during the course of work in order to facilitate supporting and protecting the integrity of the utility facility; tunneling; additional pipe cutting and joining; removal of existing city facilities; snaking and/or in between electric, gas and steam utility facilities and other existing structures.

F. References

1. Sketches CET 100A, A-1, B, C, C-1, D
2. NYS Industrial Code Rule 753
Sketch CET 100E

CET 330T - SUPPORT AND PROTECTION OF COMMUNICATION UTILITY FACILITIES DURING EXCAVATION OF CITY TRENCH WHEN FACILITIES LIE IN OR IN CLOSE PROXIMITY TO TRENCH LIMITS

A. Description

Under this section, the Contractor shall provide all incremental labor, materials, equipment and incidentals required for trench excavation when protecting, maintaining and accommodating the integrity of Communication utility facilities of various sizes and configurations, which may include but not limited to:

1. Conduits
2. Conductors
3. Concrete Encased Conduit Banks
4. Steel Pipes

When:

- (1) Paralleling Communication facilities lie completely in the proposed trench.
- (2) Paralleling Communication facilities lie adjacent to trench and Contractor modifies trench and or sheeting.

The contract items specified under this section shall **not** be measured for payment in conjunction with any other types of utility items. All work shall be performed in accordance with Contract plans, specifications, attached sketches CET 330A, CET 330B and CET 330C. Construction method guidelines for other CET Items, although not used for payment purposes, shall be used as specified or as deemed applicable by the facility operator. The facility operator through its authorized representatives shall be solely responsible for the approval of methods used by the contractor to support and protect utility facilities. All work shall be performed without risking the integrity of the utility facility but be done consistent with all applicable safety standards as directed by the facility operator.

B. Materials

Contractor shall assume that all materials used shall be supplied by the contractor and approved by the facility operator(s). All materials subject to approval by NYC shall comply with all applicable NYC DEP/DOT/DDC Specifications.

C. Method of Construction

The Facility operator shall identify the locations of all Communication utility facilities within the Contract area as required by New York State Industrial Code Rule 753. The limits of the proposed city trenches shall be determined as per DEP/DDC Standards. Before the start of excavation, the Contractor shall locate the Communication utility facility in question to the utility operator(s) satisfaction, whether via test pitting or other means, the facility operator(s) may direct the Contractor to expose the facility. If so directed, the Contractor shall use hand excavation methods (pick and shovel or hand held power tools) directly below the pavement base to expose the top and 1 foot of each side of the Communication facilities, in order to ascertain the numerical relationships and/or dimensions of these facilities with respect to the proposed excavation. Dependant on the findings, the Contractor shall proceed as follows:

(1) Paralleling Communication facilities lie completely in the proposed trench

The Contractor, after having successfully exposed the Communication facilities to the satisfaction of the utility operator, and confirming that the facilities lie within the proposed city trench limits, see Sketch CET 330A, shall support, maintain and protect these facilities using methods and materials approved by the facility operator. The contractor shall have the option, with the concurrence of the facility operator and dependent on the conduit material, to modify the Communication utility facility, such as remove concrete encasement or cables from their conduits. This operation and the final restoration of the conduit shall be performed as described in applicable CET Items, or shall be a method approved by the facility operator.

(2) Paralleling Communication facilities lie adjacent to proposed trench and Contractor modifies trench

Once the location of the Communication utility facility has been identified to the satisfaction of the facility operator(s) and the Communication facility is outside but adjacent to the proposed trench excavation limit, the Contractor shall confer with the facility operator(s) to determine any possible damage to the integrity of the facility due to the proposed trench. If the facility operator determines that the utility integrity is in question – even though the utility facility shall be outside the limits of the proposed excavation:

(2.1) Communication Facility operator(s) requests the trench be widened

The Contractor shall develop a method, satisfactory to the Communication facility operator, to capture the utility facility within the proposed trench. In addition, the contractor shall develop a support method satisfactory to the facility operator and consistent with the Contract drawings. The contractor shall then be permitted to widen the proposed trench in order to excavate around the Communication facility. Refer to Sketch CET 330B. This special care excavation denoted as Area 'A' shall be done with a combination of hand, and hand and machine excavation as described in (1) above. Prior to starting work the Contractor shall notify and obtain the approval of the Resident Engineer for trench modification.

(2.2) Communication Facility operator(s) requests the trench and/or sheeting be modified

The Contractor shall develop a method, satisfactory to the facility operator, to exclude the Communication facility from the proposed trench and sheeting. The contractor shall, as part of his investigation, obtain the approval of the NYC Resident Engineer for his proposed sheeting modification. If deemed feasible by both the utility operator and the Resident Engineer the Contractor may proceed.

Refer to Sketch CET 330C.

D. Method of Measurement

(1) Paralleling Communication facilities lie completely in the proposed trench

The contractor shall be paid per Linear Foot (L.F.) of trench actually excavated to the limits directed and to the satisfaction of the Communication facility operator(s).

(2) Paralleling Communication facilities lie adjacent to proposed trench and Contractor modifies trench

(2.1) Communication Facility operator(s) requests the trench be widened

The contractor shall be paid per Linear Foot (L.F.) of trench actually excavated to the limits directed and to the satisfaction of the Communication facility operator(s).

(2.2) Communication Facility operator(s) requests the trench/sheeting be modified

The Contractor shall be paid per Linear Foot (L.F.) of trench/sheeting modified, to the limits directed and to the satisfaction of the Communication facility operator(s).

E. Price to Cover

The price shall include the cost of all labor, material, equipment, insurance, and incidentals necessary to completely expose, support, maintain, protect and accommodate the integrity of the Communication utility without disruption of service to the utility customers and in accordance with contract documents, associated maintenance of traffic and traffic plates and the modification of sheeting method and means, the cutting, breaking and removal of various thickness of surface and base pavement beyond the limits of the contract bid items, the excavation by hand to expose existing structures, the furnishing, placing and tamping of backfill when vertical and/or horizontal adjustments are required. The price shall also include the cost of: supports, slings and beams installed for Communication utility support; additional supports necessary for multiple facilities that may require their support to be modified, changes of sheeting method and configuration where necessary to accommodate the Communication utility and any changes to the contractor's proposed or standard method of operation; installation of new sewer, water, catch basin chute connection pipes and associated house connections under the Communication utility; (including the removal of any abandoned existing facilities to be removed under the City Contract as shown on the Contract Drawings) a combination of hand and hand and machine excavation within the zone of protection, backfilling and compacting around, over, under and between the zones of protection of the utility; and removal of sheeting around the utility, cost of any temporary pavement and the cost of any impact to the maintenance and protection of traffic. The price shall also cover any additional excavations, including hand and hand and machine excavations under and in between zones of protection for single and multiple Communication utility; tunneling; additional pipe cutting and joining; removal of existing city facilities; snaking and/or in-between utility facilities and other existing structures.

Where the facility operator has determined that additional excavation is required for the horizontal and/or vertical adjustment required beyond the trench limits, the price will also cover the cost of: breaking out, removal and disposal of plain or reinforced concrete encasement and conduits, replacement with field split, split and solid conduits, adapters, clamps, straps and couplings, unloading and storage of the same, furnish and install concrete encasement, supports, slings and beams for Communication utility support, changes of sheeting method and/or configuration when required and where necessary to accommodate the utility during all phases of contract work, cost of any additional excavation and restoration, both temporary and permanent, any and all lost productivity costs related to installation of proposed City facility, and removal of sheeting around the utility and all else necessary and required to complete the work. The price shall also include any additional cost arising from the contractor's loss of productivity, bonus or delay incentives, weather related losses, time delays or any changes to the contractor's standard or proposed methods due to the modification of trench measurements to accommodate the utility.

F. References

1. Sketches CET 330A, 330B and 330C
2. NYS Industrial Code Rule 753
3. NYC Standard Water Main Specification
4. NYC Standard Sewer Specification