

## **CONTRACT SPECIFICATIONS**

### **SCOPE OF WORK**

The Department of Environmental Protection, Bureau of Abandoned Mine Reclamation, requires a contractor to conduct subsurface drilling investigations, on an as-needed basis, within the counties indicated on Map A and B. The Contractor shall furnish all labor, technical assistance, equipment, tools and material necessary to perform the contract tasks.

The work to be performed under this Contract will require carrying on a drilling program at a series of sites, each site being called a Work Site. A Work Site is defined as an area to be subjected to subsurface investigations of a contiguous mining or reclamation problem by utilizing boreholes, core holes and cased core holes. Work Sites may include developed properties, where drilling must be accomplished in residential or industrial settings requiring minimal disturbance of landscaped or paved surfaces and allowances for ongoing cultural or business activities. Work Sites may also include extremely steep and rough rural or un-reclaimed mining areas, and often heavily vegetated terrain. The use of ATV or track mounted drilling rigs may be appropriate on some Work Sites.

The Contractor will receive work orders for a specific Work Site via e-mail in pdf format. These work orders will define the Work Site location, Work Site plan on which will be plotted the number and approximate borehole locations, a list of landowners, any special directives or instructions and general information related to cultural setting or public utilities. The Contractor will be required to be on the Work Site until work is completed.

The Contractor shall be required to furnish no more than two (2) drilling rigs at one time unless more rigs are mutually agreed upon. When requested by the Department's Representative, the Contractor shall provide a completely mobilized core drilling rig on a Work Site within fourteen (14) days of being notified to proceed.

The Contractor will have to move the drilling rig(s) to the Work Site together with all necessary supporting equipment and provide water for drilling. The work at a site will include drilling core holes, overburden drilling, and/or obtaining samples of unconsolidated material above and below the soil/bedrock interface to determine subsurface conditions. The work at a site may also include advancing casing through unconsolidated materials and/or fill and/or mine spoil. The completion of the work at each Work Site will require removal of all equipment, backfilling of boreholes and the restoration of the surface to a condition equal to or better than that existing prior to the start of the project work.

Due to the nature of the work, it might be necessary to slightly modify the tasks for a Work Site while the work is being conducted. Such modifications could include: 1) relocation of boreholes, 2) deletion of some boreholes, 3) addition of boreholes in the vicinity of the Work Site, and 4) variation of the depth of the boreholes proposed for a Work Site.

The Contractor agrees to furnish all necessary labor, material and equipment and to perform all

the work and labor required herein in an expeditious, substantial and workman-like manner.

Any questions regarding the Specifications should be directed to Art Crossman at 814.472.1800. Any questions concerning the contracting or bidding process should be directed to Tammy Cree at 814.472.1811.

## **SPECIFICATION NO. 1: WORK SITE MOBILIZATION AND DEMOBILIZATION**

### **1.1 SCOPE**

The work covered by this Specification consists of the delivery to the Work Site of all equipment, material and supplies, acquisition of any permits, removal from the site of all equipment after the completion of work, delivery of records, clean-up of the site and final inspection by the Department's Representative.

### **1.2 PROCEDURE**

Mobilization shall consist of the delivery to the Work Site of all equipment, material and supplies to be furnished by the Contractor, the complete assembly in satisfactory working order of all such equipment on the job, and the satisfactory storage at the site of all such material and supplies. Moving between boreholes and set-ups at borehole locations included under the Contract shall be incidental to the other appropriate Contract Items and no separate payment will be made.

Demobilization shall consist of the removal of all equipment from the project site, the clean-up and the restoration of any damaged areas to as good or better condition than that which existed prior to the commencement of work. This work will include reseeded of areas designated by the Department's Representative.

All equipment and methods to be used by the Contractor shall be subject to approval by the Department's Representative. However, approval of the equipment shall not be construed as approval of the performance thereof. The Contractor shall furnish any additional or "special" equipment necessary for him to obtain the desired end results.

The Contractor, at his expense, shall obtain all permits, of whatever nature, necessary for the completion of this work, and the Contractor shall comply with all existing laws, ordinances, rules and regulations relating to his operations. Consent for Entry from property owners will be obtained by the Department or its designated representative.

Every effort shall be made to minimize damage incidental to site access and the drilling operations. Maximum use will be made of existing roads and lanes for access. Where it is necessary to deviate from roads and lanes, such deviation shall be by one track, at a location causing the least damage.

The Contractor shall be liable to the property owners for any damage to vegetation, crops and/or property, irrespective of whether the damage was caused by his negligence or was

an unavoidable consequence of drilling operations. The Contractor shall be liable for any and all damage, including damages for necessary access. The Contractor shall be required to consult with property owners as to when he intends to move equipment to the drilling locations, unless said locations are on streets. In the event that boring locations are on the streets, traffic will be maintained at all times.

### **1.3 DELIVERY OF RECORDS**

The Contractor shall be responsible for furnishing the following records for each Work Site within the following time constraints:

- A. One (1) pencil copy of each boring log, not later than forty-eight (48) hours after the completion of each borehole.
- B. One (1) typed copy and one (1) electronic copy (PDF or similar format) of each borehole log, not later than fourteen (14) days after completion of all of the boreholes. Each log shall provide pertinent information such as, but not limited to:
  - 1. Borehole number.
  - 2. Borehole completion date.
  - 3. Beginning and end of each core run and percent recovery.
  - 4. Overburden/spoil types, casing depth, rock types, void depths and thicknesses.
  - 5. Rock Quality Designation (RQD).
  - 6. Water elevations.
  - 7. Well Construction details: casing and screen interval, sand pack and bentonite seal elevation.
- C. Copies of any other records kept by the Contractor, which in the opinion of the Department's Representative, will aid in the interpretation of the core borings at any time requested during the course of the Contract.

No additional payment will be made for delivery of records, since delivery is included in Contract Item, "Work Site Mobilization and Demobilization."

### **1.4 MEASUREMENT AND PAYMENT**

Measurement, when accepted and approved, will be made on the basis of a complete unit, Work Site, but only to the extent directed by the Department's Representative.

Payment will be made at the Contract Unit Price bid per Work Site for Contract Item, "Work Site Mobilization and Demobilization," which price and payment shall constitute full compensation for furnishing all labor, material, equipment, supplies and all necessary incidentals required to satisfactorily complete this item of work.

Mobilization will be paid in the amount of forty percent (40%) of the unit price bid following complete mobilization at the Work Site.

Demobilization will be paid in the amount of sixty percent (60%) of the unit price bid following complete demobilization from the Work Site.

## **SPECIFICATION NO. 2: OVERBURDEN DRILLING**

### **2.1 SCOPE**

The work covered by this Specification consists of furnishing all labor, material, equipment, supplies and all necessary incidentals required to drill borings through the overburden.

### **2.2 TEST BORING LOCATIONS**

The site(s) of the work to be performed shall be at locations within the boundaries of the counties on Maps A and B. The test boring locations indicated on the drawing(s) released for each Work Site area are approximate. All test boring sites will be exactly located in the field by the Department's Representative and the Commonwealth will furnish the surface elevations of each borehole. It is the Contractor's responsibility to ascertain exact locations of utilities from the appropriate utility company and to verify all measurements in order to insure that all borings are made at locations which will not interfere with, or harm existing surface or subsurface utilities. The Contractor shall notify the Department's Representative when a conflict occurs. The Contractor shall bear sole responsibility for any damage to existing utilities resulting from his operations. The number of test borings proposed for a Work Site will be noted in the Department's instructions to the Contractor and outlined on the drawing(s) accompanying the site work order.

### **2.3 PROCEDURE**

The Contractor shall make borings into earth and material other than rock for the purpose of penetrating to the top of solid rock or for ascertaining the depth and thickness of overburden material. Sampling of overburden material will not be necessary unless directed by the Department's Representative. The Contractor may decide what method to use in approaching rock. If the Contractor penetrates weathered bedrock to any depth, the depth and thickness of said weathered bedrock shall be carefully documented.

### **2.4 MEASUREMENT AND PAYMENT**

Measurement, when accepted and approved, will be made on the basis of the linear feet (L.F.) of borehole actually drilled in overburden, but only to the extent directed by the Department's Representative. No separate payment will be made for coring or other methods of advancing overburden drilling through boulders or other obstructions unless said obstructions are cored and greater than five feet (5') in thickness, in which case

payment will be made as Core Drilling.

Payment will be made at the Contract Unit Price bid per Linear Foot (L.F.) for Contract Item, "Overburden Drilling," which price and payment shall constitute full compensation for furnishing all labor, material, equipment, supplies and all necessary incidentals required to satisfactorily complete this item of work.

### **SPECIFICATION NO. 3: SPLIT SPOON TESTING OF OVERBURDEN**

#### **3.1 SCOPE**

The work covered by this Specification consists of furnishing all labor, material, equipment, supplies and all necessary incidentals required to conduct split spoon testing of unconsolidated material above the overburden/bedrock interface.

#### **3.2 PROCEDURE**

Unconsolidated material above the overburden/bedrock interface shall be continuously sampled according to the method described in ASTM D1586 or by an equivalent method approved by the Department's Representative. In brief, a two-inch (2") minimum diameter split tube drive sampler will be used to obtain samples. "AWJ" size rods may be used for this sampling. The sampler will be driven with an automatic drop hammer utilizing a one-hundred forty (140) pound weight with a thirty-inch (30") free fall. The number of blows for each six inches (6") of penetration will be recorded. Other equipment and/or methods may be accepted by the Department's Representative and should be discussed and approved during the pre-drilling conference.

Representative samples from each eighteen-inch (18") run will be placed into tightly sealed jars, labeled with the project number, borehole number, sample depth and blows per six-inch (6") interval. These sample jars shall then be included in a core box for the particular borehole involved. Prior to taking each eighteen-inch (18") sample, the borehole will be reamed and cleaned out, so as to offer no resistance to seating the spoon on the bottom of the borehole. In no event will the Contractor be permitted to drive the sampler more than eighteen inches (18") at a time without first emptying its contents unless otherwise specified by the Department's Representative.

#### **3.3 MEASUREMENT AND PAYMENT**

Measurement, when accepted and approved, will be made on the basis of the linear feet (L.F.) of borehole actually sampled in overburden, but only to the extent directed by the Department's Representative.

Payment will be made at the Contract Unit Price bid per linear foot (L.F.) for Contract Item, "Split Spoon Testing of Overburden," which price and payment shall constitute full compensation for furnishing all labor, material, equipment, supplies and all necessary incidentals required to satisfactorily complete this item of work.

**SPECIFICATION NO. 4: HQ CORE DRILLING: TWO AND ONE-HALF INCH (2 ½") SIZE INCLUDING SPLIT TUBE DRIVE SAMPLING OF UNCONSOLIDATED MATERIAL BELOW THE BEDROCK TO SOIL INTERFACE**

**4.1 SCOPE**

The work covered by this Specification consists of furnishing all labor, material, equipment, supplies and all necessary incidentals required to drill core borings through rock and mined coal beds.

**4.2 EQUIPMENT AND SUPPLIES**

Equipment for core drilling shall include hydraulic feed core drilling machinery of a type or types approved by the Department's Representative, complete with pressure gauge for measuring down pressure, water pressure gauge and relief valve assembly, together with all other accessories for taking complete and continuous rock cores of at least two and one-half inches (2 ½") in diameter. In no event will a core size less than two and one-half inches (2 ½") be acceptable.

Unless otherwise directed by the Department's Representative, the Contractor shall use a standard ball bearing, swivel type, double tube core barrel, equipped with diamond core bits and standard core lifters.

Supplies for core drilling shall include all casing, drill rods, core barrels, diamond coring bits, reaming shells, piping, pumps, water, tools, power, all boxes and containers required for core samples and all other items not included herein, but required for satisfactory performance of required work. Bits shall be set with the proper size stones for the kind of rock being cored.

If the Contractor feels that the core size will have to be reduced during the drilling of any single core hole then the Contractor shall initiate the drilling with a larger size core. In no event will a core size less than two and one-half inches (2 ½") be acceptable, unless specifically approved by the Department's Representative.

All equipment and methods to be used by the Contractor shall be subject to approval by the Department's Representative. However, approval of the equipment shall not be construed as approval of the performance thereof. The Contractor shall furnish any additional or "special" equipment necessary to obtain the desired end results.

Contractor shall provide a secure, firm and level work platform at each borehole location. Borings shall not be offset from locations shown on the boring layout plan without approval of the Department's Representative.

Water for the drilling will be the responsibility of the Contractor. No separate payment will be made for obtaining water.

### 4.3 PROCEDURE

The Contractor shall be responsible for drilling plumb boreholes. At the elevation where the test boring encounters rock, the casing or hollow stem auger shall be seated tightly in the rock to a depth of one foot (1') provided that the rock is stable. If the rock is unstable, the casing or hollow stem auger shall be seated tightly in the rock to a depth of two feet (2'). In either case, the casing or hollow stem auger shall be thoroughly cleaned out preparatory to commencement of rock coring. All drill rod sections shall be tightly sealed to each other by means of commercial seals made for the purpose or by the application of wicking to the joints. In coring rock (including shale and indurated clays), the Contractor shall operate his drills at such speeds, feeds and water pressure as will insure maximum core recovery. During the initial run and where soft or broken zones in rock are anticipated, the Contractor shall limit the length of "runs" to five feet (5') or less in order to reduce core loss and keep core disturbance to a minimum. Bottom discharge bits shall be used to increase recovery in soft and broken rock. The Contractor shall frequently check the condition of the core lifter, reaming shell and rotation of the inner barrel to avoid any grinding of the core. Whenever blockage of the core barrel occurs, the "run" shall be terminated immediately and the rods and barrel pulled. The core barrel shall then be removed from the borehole and the recovered core placed in the core box. The core barrel shall be dismantled horizontally and the core pushed out into a trough when, in the opinion of the Department's Representative, such steps are necessary for the protection of the core during removal from the barrel. **Prior to placing the core into core boxes, the Contractor shall lay the core out on a bench in a tray or other suitable place for inspection by the Department's Representative.**

The Contractor shall insure a minimum core recovery of ninety-five percent (95%) since high recovery is considered necessary for any proper interpretation of the subsurface conditions. When a "run" is made which results in complete core loss, the tools shall be checked for damage or malfunction and a second attempt made to recover the material by coring an additional few inches. If there is still no recovery or very poor recovery because the material has the characteristics of overburden or decomposed rock, the borehole shall be advanced by driving a split spoon sampler.

Failure to comply with the foregoing procedure, when ample warning of unusual subsurface conditions have been received in advance, shall constitute justification for the Department to require redrilling, at the Contractor's expense, of any boring from which the core recovery is unsatisfactory. Since the function of core boring includes determination of the width, orientation, extent and spacing of rock fractures, the Contractor shall exercise particular care in recording water losses, rod jerks and other unusual coring experiences, which, supplementing the core record, will yield information pertaining to the nature and extent of the fracturing.

#### **4.4 SPLIT TUBE DRIVE SAMPLING**

When unconsolidated material is encountered below the elevation ascertained to be “top of bedrock,” a two-inch (2”) minimum diameter split tube drive sampler will be used to obtain samples of the material. “AWJ” size rods may be used for this sampling. The sampler will be driven with a one hundred and forty (140) pound safety hammer, dropped in a free-fall fashion through thirty inches (30”) and a manila rope operated over a cathead will be used to raise and drop the hammer. The number of blows for each six-inch (6”) interval will be recorded. Other equipment and/or methods, such as different diameter samplers and/or automatic hammers, may be accepted by the Department’s Representative and should be discussed and approved in a pre-drilling conference.

Representative samples from each eighteen-inch (18”) run will be placed into tightly sealed jars, labeled with the project number, borehole number, sample depth and blows per six-inch (6”) interval. These sample jars shall then be included in the core box for the particular borehole involved. Prior to taking each eighteen-inch (18”) sample, the borehole will be reamed and cleaned out, so as to offer no resistance to seating the spoon on the bottom of the borehole. In no event will the Contractor be permitted to drive the sampler more than eighteen inches (18”) at a time without first emptying its contents unless otherwise specified by the Department’s Representative.

#### **4.5 LOGS**

The Contractor shall keep accurate logs and records of all core borings on a form similar to Figure No. 1, which shall include the following information:

- A. Project name and contract number, borehole number, location of borehole, ground elevation, total depth of borehole, time-date of starting, time-date of completion, driller's name, and logger’s name.
- B. Size and depth of casing and size and type of drilling tools used to advance the borehole.
- C. Depth of top and bottom of each run.
- D. Total length of core recovered plus the RQD for each run.
- E. Color changes in drill-water returned.
- F. Depths at which sudden losses or gains of drill-water return occur and estimated quantities involved.
- G. Visual classification of rock, including color, grain size and inclination of beds or layers as measured from the horizontal.



- H. Nature and extent of fracturing of the rock cored, as determined by a field description of recorded core and the “feel” of the drill during the coring.
- I. Depth of top of firm or fresh rock and all other contacts between dissimilar materials.
- J. Location of soft zones, voids, or “break-through,” as indicated by rod chatter or change in the rate of penetration.
- K. Depth of water at completion of borehole and, where possible, after twenty-four (24) hours.
- L. Notes, remarks and information on pertinent incidents occurring during drilling operations.

#### **4.6 CONTAINERS**

Longitudinally partitioned wooden core boxes shall be used for all rock cores. As many boxes as may be required shall be used in submitting each rock core or group of cores. Core boxes, including partitions, shall be substantially constructed of dressed lumber or other approved material, in general accordance with the arrangement and dimensions shown in Figure No. 2. Core boxes shall be completely equipped with all necessary partitions, covers, hinges, spacer blocks, hooks and eyes for holding down the cover, complete identification and other accessories.

All cores shall be arranged neatly in the partitioned boxes, in a sequence consistent with that in which they were drilled. Facing the open box, the cores shall be arranged in descending sequence, beginning with the left end of the partition nearest the hinges and continuing into other partitions, from left to right. Wood spacers shall be inserted at beginning and end of each run and depths shall be shown on the blocks. If voids are encountered, a spacer block shall be inserted, on which is clearly noted that a void occurred and the depth to the top and bottom of the void. In cases where split tube drive samples are taken of gob or other refuse contained in a mined coal bed, the sample jars containing the sample shall be placed into the core box at the depth the mined coal bed occurred. Spacer blocks will be placed above and below the interval. The same procedure shall apply when split tube drive samples are taken at intervals other than coal beds, at the direction of the Department’s Representative.

During the course of the drilling at a Work Site, the Contractor shall have the responsibility for storing the cores/core boxes and shall take adequate precautions to protect the cores from mechanical damage as well as from extreme temperature changes. Once recovered and cleaned, the core shall not again be allowed to become wet. The Contractor has the responsibility to have all project cores on the Work Site during normal work hours for logging and review by Department personnel.

After drilling at a Work Site is completed, the cores/core boxes for the Bituminous

Region shall be delivered to the **Department of Environmental Protection, Bureau of Abandoned Mine Reclamation Garage, 310 Industrial Park Road, Ebensburg, PA 15931-4119.**

#### **4.7 SEALING BOREHOLES**

At the direction of the Department's Representative, the Contractor shall be required to seal each borehole in the following manner:

- A. Upon completion of the borehole and acceptance by the Department's Representative, the Contractor inserts a plug of his choice, which is acceptable to the Department's Representative, in the borehole a minimum of ten feet (10') below the overburden/rock interface or below the bottom of the casing, whichever is deeper, or to a point selected by the Department's Representative. In the event that significant quantities of water are encountered, the Contractor might be required to set the plug below the aquifer and build the seal from that elevation (see Figure No. 3).
- B. A minimum of ten feet (10') of cement concrete is placed on top of the plug and allowed to set for twenty-four (24) hours. Additives to accelerate the curing period may be used when approved by the Department's Representative.
- C. The casing is withdrawn and the borehole is stemmed to within one foot (1') of the surface with sand, gravel, 2B stone, or refuse material.
- D. In the event the casing cannot be recovered, it shall be cut off one foot (1') or eighteen inches (18") below the ground surface, depending on land use, and the borehole shall be sealed as indicated in the preceding Items A, B and C.
- E. The top one foot (1') or eighteen inches (18") of the borehole, depending on land use, shall be filled with topsoil or concrete to the existing material elevation.
- F. **The surface will be restored to as good as or better than original condition.**
- G. The cost of sealing the boreholes will be incidental to other Contract Items and no separate payment will be made.

#### **4.8 ABANDONED BORINGS**

Except with the permission of the Department's Representative, the Contractor shall not abandon nor complete any boring, or remove any casing or drilling equipment, without first affording the Department's Representative the opportunity to obtain the position and the depth of the boring to abandonment or completion and to secure samples of material already penetrated and any other information which the Department's Representative may require.

No payment will be made for any boring which has been abandoned by the Contractor before reaching the depth, elevation or condition specified, unless the Department's Representative approves and accepts the boring as being completed. Any boring abandoned by the Contractor without the Department's Representative's approval shall be sealed at the Contractor's expense in accordance with Specification 4.7. The Department's Representative may, at his option, accept a boring which fails to reach the required depth due to an unusual obstruction, which, in his opinion, could not reasonably have been anticipated.

#### **4.9 MEASUREMENT AND PAYMENT**

Measurement, when accepted and approved, will be made on the basis of the linear feet (L.F.) of boreholes actually drilled into rock and coal beds, but only to the extent directed by the Department's Representative.

Payment will be made at the Contract Unit Price bid per linear foot (L.F.) for Contract Item, "HQ Core Drilling: Two and One-Half Inch (2 ½") Size Including Split Tube Drive Sampling of Unconsolidated Material Below the Bedrock to Soil Interface," which price and payment shall constitute full compensation for furnishing all labor, material, equipment, supplies and all necessary incidentals required to satisfactorily complete this item of work.

### **SPECIFICATION NO. 5: FURNISHING AND INSTALLING THREE INCH (3") PLASTIC AND/OR TWO INCH (2") PLASTIC CASING PIPE**

#### **5.1 SCOPE**

The work covered by this Specification consists of furnishing and installing three-inch (3") inside diameter plastic and two inch (2") plastic casing pipe and/or caps/covers. The three-inch (3") inside diameter casing pipe is typically used in placing TV camera equipment in the core hole for observation of a mined-out void, but may also be used for permanent mine pool. The two inch (2") plastic casing is typically used for temperature monitoring purposes. The TV camera equipment, its operation and any borehole monitoring will be the responsibility of the Department.

#### **5.2 PROCEDURE**

The Contractor shall furnish and install either new three-inch (3") plastic or new/acceptable used two-inch (2") plastic inside diameter casing pipe. Plastic casing pipe shall be Schedule 40 with threaded flush-joint couplings. The Department's Representative shall approve all casing pipe before it is installed in the borehole. The casing pipe shall be installed in the core hole as designated by the Department's Representative from the surface, flush or with standpipe, to the roof of the desired void or to the elevation specified.

When directed by the Department's Representative, the Contractor shall cover completed,

cased boreholes with temporary “slip-fit” or “screw top” casing caps/covers according to the type of casing pipe installed (see Figure Nos. 4 and 5). The caps/covers are meant to protect the borehole from surface traffic and also serve to prevent unauthorized access. The cost of furnishing and installing “slip-fit” or “screw top” casing caps/covers shall be incidental to the Contract Items, “Furnishing and Installing Plastic Casing Pipe, Three-Inch (3”) Plastic or Two-Inch (2”) Plastic I.D. Casing Pipe.”

The Department’s Representative may require that casing for selected boreholes be left in place to permit the Department to use the borehole for continued monitoring purposes. All casing left in place shall be securely grouted, equipped with a threaded top, a screw cap and/or plug (see Figure No. 5) as approved by the Department’s Representative.

The Contractor shall provide the Department’s Representative with a wrench or tool for removing the cap and/or plug. The cost of grouting and furnishing/installing threaded tops, screw caps and plugs shall be incidental to the Contract Items, “Furnishing and Installing Plastic Casing Pipe, Three-Inch (3”) Plastic or Two-Inch (2”) Plastic I.D. Casing Pipe, Including Grouting, Cap and Plug.” The length and depth to the bottom of the casing shall be recorded in the drilling log.

### **5.3 MEASUREMENT AND PAYMENT**

Measurement, when accepted and approved for casing pipe, will be made on the basis of the linear feet (L.F.) of casing pipe of the diameter and type specified actually furnished and installed, but only to the extent directed by the Department’s Representative.

Payment will be made at the Contract Unit Price bid per linear foot (L.F.) for Contract Items, “Furnishing and Installing Plastic Casing Pipe, Three-Inch (3”) Plastic or Two-Inch (2”) Plastic I.D. Casing Pipe, Including Grouting, Cap and Plug”; which price and payment shall constitute full compensation for furnishing all labor, material, equipment, supplies and all necessary incidentals required to satisfactorily complete this item of work.

## **SPECIFICATION NO. 6: RESTORATION OF BOREHOLES**

### **6.1 SCOPE**

The work included in this Specification is considered discretionary and must be directed, approved and accepted by the Department’s Representative. The allocation of work for Restoration of Boreholes should be documented during a pre-drilling conference and are subject to inspection and approval by the Department’s Representative before demobilization. The work covered under this Specification consists of providing all labor, material, equipment and other incidentals necessary to restore the area surrounding each borehole and the access route to each borehole to a condition equal to or better than that, which existed prior to the start of work. Clean-up and restoration of a Work Site is considered incidental to and included in Contract Item, “Work Site Mobilization and Demobilization.”

## **6.2 PROCEDURE**

In the case of a borehole located on developed private property, restoration includes, but is not limited to, repairing or replacing any sidewalks, fences, lawns (including landscaping with topsoil) and other improvements to the property which may have been damaged or removed as a result of the work, but only to the extent directed, approved and accepted by the Department's Representative.

In the case of a borehole located on paved surfaces (driveways, streets, roads, alleys) where damage is limited to a borehole drilled through the paved surface, restoration includes, but is not limited to, patching the borehole with the same pavement material and clean-up of the site, but only to the extent directed, approved and accepted by the Department's Representative. The Department's Representative will record it on a daily basis with dates and times and reasons for Incidental Restoration of Boreholes.

## **6.3 MEASUREMENT AND PAYMENT**

Measurement, when accepted and approved for restoration of boreholes at the specified locations, will be made on the basis of each borehole restored, but only to the extent directed, approved and accepted by the Department's Representative.

Payment will be made at the Contract Unit Price bid per Borehole for Contract Item, "Restoration of Boreholes," which price and payment shall constitute full compensation for furnishing all labor, material, equipment, supplies and all necessary incidentals required to satisfactorily complete this item of work. No payment will be made for restoration of boreholes that have not been directed, approved and accepted by the Department's Representative since clean-up and restoration is considered incidental to and included in Contract Item, "Work Site Mobilization and Demobilization."

## **SPECIFICATION NO. 7: STAND-BY TIME**

### **7.1 SCOPE**

The work item covered by this Specification is intended to address any delays in drilling in which a drill rig and crew is ordered by the Department's Representative to stand idle.

### **7.2 PROCEDURE**

When the Contractor is ordered by the Department's Representative to stand idle on the job site delaying the drilling of any borings, the Contractor will be reimbursed for any such delays providing the delays are the sole responsibility of the Department's Representative and the delays are in excess of one-half (1/2) hour in duration.

Stand-by time shall not be used for payment to the Contractor for delays caused by equipment breakdown and malfunctions or for delays caused by non-availability of necessary equipment and supplies. Such delays shall be considered the sole responsibility of the Contractor and shall be incidental to other items of work and no additional compensation will be allowed. No payment for stand-by time will be made for items of equipment other than a complete drill rig and crew in full operating condition.

A crew shall consist of a driller and helper and if any delay does occur, the Department's Representative will record it on a daily basis with dates and times directed to be idle.

### **7.3 MEASUREMENT AND PAYMENT**

Measurement, when accepted and approved, will be made on the basis of hours a drill rig and crew is ordered to stand idle, but only to the extent directed by the Department's Representative.

Payment will be made at the Contract Unit Price bid per Hour for Contract Item, "Stand-by Time" and will be divided no finer than by one-half (1/2) hour increments, which price and payment shall constitute full compensation for the delay of a drill rig and crew.

### **SPECIFICATION NO. 8: INSPECTIONS**

Ample opportunity shall be furnished at all times to the Department's Representative for inspecting the work. If any imperfect work is performed at any time, the defects therein shall be remedied by the Contractor, at his expense, to the full satisfaction of the Department's Representative. No drilling, nor set-up, nor restoration, nor field testing shall be done except in the presence of the inspector or Department's Representative, unless specific permission has been granted to the contrary. The presence of an inspector, or the keeping of separate drilling records by the Department's Representative, shall not relieve the Contractor of the responsibility for work specified in the Contract.