APPENDICES

Appendix A

Florida Department of Transportation
Utility Accommodation Guide Manual
Appendix A
Standard Specifications for Road and Bridge Construction

PREFACE - APPENDIX A

This Appendix A contains standard specifications from the Department's 2007 Standard Specifications for Road and Bridge Construction that supplement the requirements found in this UAM for utility restoration and certain other utility operations deemed necessary to preserve the condition of the R/W. Should the particular conditions in the field indicate that the standard specifications contained in this Appendix A are insufficient to restore FDOT R/W to the condition existing prior to utility work and that a standard specification not contained within this Appendix A is absolutely necessary to restore FDOT R/W to the condition existing prior to utility work, such standard specification shown in the Department's 2007 Standard Specifications for Road and Bridge Construction, Division II (Sections 100-715), and Division III (Sections 901-925), will be prescribed by FDOT. To the extent it is possible to do so, such standard specification shall be identified on the permit, so adjustments to the utility work can be made by the utility. The Standard Specifications for Road and Bridge Construction, Division II (Sections 100-715), and Division III (Sections 901-925), can be found on FDOT's website at http://www.dot.state.fl.us/specificationsoffice/2007BK/TOC.htm.

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SECTION 4
SCOPE OF THE WORK

4-3.8 Changes Affecting Utilities: The Contractor shall be responsible for identifying and assessing any potential impacts to a utility that may be caused by the changes proposed by the Contractor, and the Contractor shall at the time of making the request for a change notify the Department in writing of any such potential impacts to utilities.

Department approval of a Contractor proposed change does not relieve the Contractor of sole responsibility for all utility impacts, costs, delays or damages, whether direct of indirect, resulting from Contractor initiated changes in the design or construction activities from those in the original Contract Specifications, design plans (including traffic control plans) or other Contract Documents and which effect a change in utility work different from that shown in the utility plans, joint project agreements or utility relocation schedules.

SECTION 7
LEGAL REQUIREMENTS AND RESPONSIBILITY TO THE PUBLIC

7-11.6 Utilities: Applies Only On FDOT Construction Projects.

This specification was written to instruct an FDOT Contractor and the Utility in the coordination of work which may involve utility facilities. The following are excerpts which identifies Utility and Department related responsibilities.

7-11.6.1 Arrangements for Protection or Adjustment: Do not commence work at points where the construction operations are adjacent to utility facilities or other property, until making arrangements with the utility facilities to protect against damage that might result in expense, loss, disruption of service, or other undue inconvenience to the public or to the owners. The Contractor is solely and directly responsible to the owners and operators of such properties for all damages, injuries, expenses, losses, inconveniences, or delays caused by the Contractor's operations.

The Department will make the necessary arrangements with utility owners for removal or adjustment of utilities where the Engineer determines that such removal or adjustment is essential to the performance of the required construction. The Department will not consider relocation or adjustment requests based on the Contractor's proposed use of a particular method of construction or a particular type of equipment as essential to the construction of the project if the Contractor could use other common methods and equipment without relocating or adjusting the utility. The Engineer will determine the responsibility for any such required adjustments of utilities. The Contractor shall make all requested relocations or adjustments because of delivery to the job site of Contractor-furnished materials, at no expense to the Department.

The Department considers relocations and adjustments (or other protection) under the following circumstances as essential to the construction of the project:

(1) Utilities lying within the vertical and horizontal construction limits, plus the reasonably required working room necessary for operation of equipment normally used for the particular type of construction, all as determined by the Engineer (and except as provided in paragraph (4) below). (In the case of overhead electrical conductors that carry more than 400 V, a minimum of 10 feet clearance between the conductor and the nearest possible approach of any part of the equipment is required, except where the utility owner effects safeguards approved by OSHA.)

(2) Utilities lying within the horizontal limits of the project and within 12 inches below the ground surface or the excavation surface on which the Contractor operates construction equipment, or within 12 inches below the bottom of any stabilizing course specified in the plans.

(3) Utilities lying within the normal limits of excavation for underground drainage facilities or other structures (except as provided in paragraph (4) below). Such normal limits shall extend to side slopes along the angle of repose, as established by sound engineering practice, unless the Contract Documents require support of the excavation sides by sheeting or the Contractor elects to sheet such excavation for his own convenience.

(4) Where utilities cross pipe trenches transversely within the excavation area, but not within positions from which relocation or removal is necessary, the utility owner is responsible for providing and effecting all reasonable measures for their support and protection during construction operations. Cooperate with the utility owner in the owner's effecting of such support and protective measures. The Contractor is responsible for all damage to the utility that is caused by the Contractor's neglect or failure to cooperate or to use proper precaution in performing his work.

In the event that a temporary relocation of a utility or a particular sequence of timing in the relocation of a utility is necessary, the Engineer will direct such relocation so as to cause the least impediment to the overall construction operations. The Department is not responsible for utility adjustments or temporary relocation work, or for the conditions resulting therefrom, where such adjustments are (1) not necessitated by the construction of the project, (2) done solely for the benefit or convenience of the utility owner or its contractor, or the highway contractor where the Department considers his construction procedures to be other than normal, or (3) not shown on the approved plans for the utility relocation or the construction of the project.

7-11.6.2 Cooperation with Utility Owners: Cooperate with the owners of all underground or overhead utility lines in their removal and rearrangement operations in order that these operations may progress in a reasonable manner, that duplication or rearrangement work may be reduced to a minimum, and that services rendered by the utility owners will not be unnecessarily interrupted.

In the event of interruption of water or other utility services as a result of accidental breakage, exposure, or lack of support, promptly notify the proper authority and cooperate with the authority in the prompt restoration of service. If water service is interrupted and the Contractor is performing the repair work, the Contractor shall work continuously until the service is restored. Do not begin work around fire hydrants until the local fire authority has approved provisions for continued service.

7-11.6.3 Utility Adjustments: Certain utility adjustments and reconstruction work may be underway during the progress of the Contract. Cooperate with the various utility construction crews who are maintaining utility service. Exercise due caution when working adjacent to relocated utilities. The Contractor shall repair all damage to the relocated utilities resulting from his operations at no expense to the Department. The requirements of 7-11.1 and 7-11.6.2 outline the Contractor's responsibility for of protecting utility facilities. The Department will include in the Contract the utility authorities who are scheduled to perform utility work on the project.

7-11.6.4 Weekly Meetings: Conduct weekly meetings on the job site with all the affected utility companies and the Engineer in attendance to coordinate project construction and utility relocation. Submit a list of all attendees one week in advance to the Engineer for approval.

Provide the approved Work Progress Schedule and Work Plan for the project, as specified in 8-3.2, to document the schedule and plan for road construction and utility adjustments.

When utility relocations no longer affect construction activities, the Contractor may discontinue the meetings with the Engineer's approval.

SECTION 102 MAINTENANCE OF TRAFFIC

102-1 Description.

Maintain traffic within the limits of the project for the duration of the construction period, including any temporary suspensions of the work. Construct and maintain detours. Provide facilities for access to residences, businesses, etc., along the project. Furnish, install and maintain traffic control and safety devices during construction. Furnish and install work zone pavement markings for maintenance of traffic in construction areas. Provide any other special requirements for safe and expeditious movement of traffic specified on the plans. Maintenance of Traffic includes all facilities, devices and operations as required for safety and convenience of the public within the work zone.

102-2.1 Temporary Traffic Control Devices: Use only the materials meeting the requirements of Section 990, Design Standards and the MUTCD.

102-7 Traffic Control Officer.

Provide uniformed law enforcement officers, including marked law enforcement vehicles, to assist in controlling and directing traffic in the work zone when the following types of work is necessary on projects:

1. Traffic control in a signalized intersection when signals are not in use.
2. When Standard Index no. 619 is used on Interstate at nighttime and required by the plans.
3. When pacing/rolling blockade specification is used.

102-8 Driveway Maintenance.

102-8.1 General: Ensure that each residence and or business has safe, stable, and reasonable access.

102-8.2 Construction Methods: Place, level, manipulate, compact, and maintain the material, to the extent appropriate for the intended use.

As permanent driveway construction is accomplished at a particular location, the Contractor may salvage and reuse previously placed materials that are suitable for reuse on other driveways.

102-9 Temporary Traffic Control Devices.

102-9.1 Installation and Maintenance: Install and maintain adequate traffic control devices, warning devices and barriers to protect the traveling public and workers, and to safeguard the work area. Erect the required traffic control devices, warning devices and barriers to prevent any hazardous conditions and in conjunction with any necessary traffic re-routing. Use only those devices that are included on the Qualified Products List (QPL). Specific requirements for Maintenance of Traffic devices, additional to the requirements of this Section, are contained in the 600 series of the Design Standards. Immediately remove, turn or cover any devices or barriers that do not apply to existing conditions.

All QPL approved safety devices must meet the requirements of National Cooperative Highway Research Report 350 (NCHRP 350) and current FHWA directives. Manufacturers seeking evaluation must furnish certified test reports showing that their product meets all test requirements set forth by NCHRP 350.

Keep traffic control devices, warning devices, safety devices and barriers in the correct position, properly directed, clearly visible and clean, at all times. Immediately repair, replace or clean damaged, defaced or dirty devices or barriers.

102-9.2 Work Zone Signs: Provide signs in accordance with the plans and Design Standards. Meet the requirements of 700-2.5 and 700-5.5

Note: The Utility will construct and maintain detours, and provide pavement markings when called for in the Traffic Control Plan or when necessary to provide safe and expeditious movement of traffic.

SECTION 121 FLOWABLE FILL

121-1 Description.

Furnish and place Flowable Fill as an alternative to compacted soil as approved by the Engineer. Applications for this material include, beddings, encasements, closures for tanks, pipes, and general backfill for trenches.

121-2 Materials.

Meet the following requirements: Fine Aggregate*..... Section 902 Portland Cement (Types I, II, or III)..... Section 921 Fly Ash, Slag and other Pozzolanic Materials ..... Section 929 Air Entraining Admixtures** ..... Section 924 Water..... Section 923 *Any clean fine aggregate with 100% passing a 3/8 inch mesh sieve and not more than 15% passing a No. 200 sieve may be used.

**High air generators or foaming agents may be used in lieu of conventional air entraining admixtures and may be added at jobsite and mixed in accordance with manufacturers recommendation.

121-3 Mix Design.

Flowable Fill is a mixture of portland cement, fly ash, fine aggregate, air entraining admixture and water. Flowable fill contains a low cementitious content for reduced strength development. Submit mix designs to the Engineer for approval. The following are suggested mix guides for excavatable and non-excavatable flowable fill:

	Excavatable	Non-Excavatable
Cement Type 1	75-100 lb/yd3	75-150 lb/yd3
Fly Ash	None	150-600 lb/yd3
Water	*	*
Air**	5-35%	5-15%
28 Day Compressive Strength**	Maximum 100 psi	Minimum 125 psi
Unit Weight (Wet)**	90-110 lb/yd3	100-125 lb/yd3

*Mix designs shall produce a consistency that will result in a flowable self-leveling product at time of placement. **The requirements for percent air, compressive strength and unit weight are for laboratory designs only and are not intended for jobsite acceptance requirements. Fine Aggregate shall be proportioned to yield 1 yd3.

121-4 Production and Placing.

Use flowable fill manufactured at a production facility that meets the requirements of 347-3.

Deliver flowable fill using concrete construction equipment. Revolution counter are waived. Place flowable fill by chute, pumping or other methods approved by the Engineer. Tremie flowable fill through water.

121-5 Construction Requirements.

Use straps, soil anchors or other approved means of restraint to ensure correct alignment when flowable fill is used as backfill for pipe or where flotation or misalignment may occur.

Protect flowable fill from freezing for a period of 36 hours after placement.

Place flowable fill to the designated fill line without vibration or other means of compaction. Do not place flowable fill during inclement weather, e.g. rain or ambient temperatures below 40°F. Take all necessary precautions to prevent any damages caused by the hydraulic pressure of the fill during placement prior to hardening. Provide the means to confine the material within the designated space.

121-6 Acceptance.

Acceptance of flowable fill will be based on the following documentation and a minimum temperature of flowable fill at the point of delivery of 50°F.

Furnish a delivery ticket to the Engineer for each load of flowable fill delivered to the worksite. Ensure that each ticket contains the following information:

.(1) Project designation,
.(2) Date,
.(3) Time,
.(4) Class and quantity of flowable fill,
.(5) Actual batch proportions,
.(6) Free moisture content of aggregates,
.(7) Quantity of water withheld.

Leave the fill undisturbed until the material obtains sufficient strength. Sufficient strength is 35 psi penetration resistance as measured using a hand held penetrometer in accordance with ASTM C 403. Provide a hand held penetrometer to measure the penetration resistance of the hardened flowable fill.

SECTION 125
EXCAVATION FOR STRUCTURES AND PIPE

125-6 Disposal of Surplus.

Use suitable excavated materials for backfilling over or around the structure. Dispose of unsuitable materials. Meet the disposal requirements pertaining to water pollution contained in Section 104 and in 7-1.1.

125-8 Backfilling.

125-8.1 General Requirements for Structures and Pipe:

125-8.1.1 General: Backfill in the Dry whenever normal dewatering equipment and methods can accomplish the needed dewatering. A LOT is defined as one lift of backfill material placement, not to exceed 500 feet in length or a single run of pipe connecting two successive structures, whichever is less. Backfill around structures compacted separately from the pipe will be considered as separate LOTs. Backfill on each side of the pipe for the first lift will be considered a separate LOT. Backfill on opposite sides of the pipe for the remaining lifts will be considered separate LOTs, unless the same compactive effort is applied. For multiple phase backfill, a LOT shall not extend beyond the limits of the phase.

When placing backfill within a trench box each lift of backfill is considered a LOT. Placement of backfill within trench box limits will be considered a complete operation before trench box is moved for next backfill operation. When the trench box is moved for next backfill operation this will start new LOTs for each lift.

125-8.1.2 Equipment and Methods: Provide normal dewatering equipment including, but not limited to, surface pumps, sump pumps, wellpoints and header pipe and trenching/digging machinery. Provide normal dewatering methods including, but not limited to, constructing shallow surface drainage trenches/ditches, using sand blankets, perforated pipe drains, sumps and siphons.

125-8.1.3 Backfill Materials: Backfill to the original ground surface or subgrade surface of openings made for structures, with a sufficient allowance for settlement. The Engineer may require that the material used for this backfill be obtained from a source entirely apart from the structure. Use only material accepted by the Engineer.

Do not allow heavy construction equipment to cross over culvert or storm sewer pipes until placing and compacting backfill material to the finished earthwork grade or to an elevation at least 4 feet above the crown of the pipe.

125-8.1.4 Use of A-7 Material: In the backfilling of trenches, A-7 material may be used from a point 12 inches above the top of the pipe up to the elevation shown on the Design Standards as the elevation for undercutting of A-7 material.

125-8.1.5 Time of Placing Backfill: Do not place backfill against any masonry or concrete abutment, wingwall, or culvert until the Engineer has given permission to do so, and in no case until the masonry or concrete has been in place seven days or until the specified 28-day compressive strength occurs.

125-8.1.6 Placement and Compaction: Place the material in horizontal

layers not exceeding 6 inches compacted thickness, in depth above water level, behind abutments, wingwalls and end bents or end rest piers, under the haunches of the pipes and around box culverts and all structures including pipe culverts. When the backfill material is deposited in water, compact as specified in 125-8.2.5 and 125-8.3.4.

The Contractor may elect to place material in thicker lifts of no more than 12 inches compacted thickness outside the soil envelope if he can demonstrate with a successful test section that density can be achieved. Notify the Engineer prior to beginning construction of a test section. Construct a test section of the length of one LOT. Perform five QC tests at random locations within the test section. All five tests must meet the density required by 125-9.2 and be verified by the Department. Identify the test section with the compaction effort and soil classification in the Logbook. In case of a change in compaction effort or soil classification, construct a new test section. When a QC test fails the requirements of 125-9.2 or when the QC tests cannot be verified, construct a new test section. The Contractor may elect to place material in 6 inches compacted thickness at any time.

125-8.2 Additional Requirements for Structures Other than Pipe:

125-8.2.1 Density: Where the backfill material is deposited in water, obtain a 12 inches layer of comparatively dry material, thoroughly compacted by tamping, before verifying the layer and density requirements. Meet the requirements of the density Acceptance Criteria.

125-8.2.2 Box Culverts: For box culverts over which pavement is to be constructed, compact around the structure to an elevation not less than 12 inches above the top of the structure, using rapid-striking mechanical tampers.

125-8.2.3 Other Limited Areas: Compact in other limited areas using mechanical tampers or approved hand tampers, until the cover over the structure is at least 12 inches thick. When hand tampers are used, deposit the materials in layers not more than 4 inches thick using hand tampers suitable for this purpose with a face area of not more than 100 in^2. Take special precautions to prevent any wedging action against the masonry, and step or terrace the slope bounding the excavation for abutments and wingwalls if required by the Engineer.

125-8.2.4 Culverts and Piers: Backfill around culverts and piers on both sides simultaneously to approximately the same elevation.

125-8.2.5 Compaction Under Wet Conditions: Where wet conditions do not permit the use of mechanical tampers, compact using hand tampers. Use only A-3 material for the hand tamped portions of the backfill. When the backfill has reached an elevation and condition such as to make the use of the mechanical tampers practical, perform mechanical tamping in such manner and to such extent as to transfer the compaction force into the sections previously tamped by hand.

125-8.3 Additional Requirements for Pipe 15 Inches Inside Diameter or Greater: 125-8.3.1 General: Trenches for pipe may have up to four zones that must be backfilled. Lowest Zone: The lowest zone is backfilled for deep undercuts up to within 4 inches of the bottom of the pipe.

Bedding Zone: The zone above the Lowest Zone is the Bedding Zone. Usually it will be the backfill which is the 4 inches of soil below the bottom of the pipe. When rock or other hard material has been removed to place the pipe, the Bedding Zone will be the 12

inches of soil below the bottom of the pipe.

Cover Zone: The next zone is backfill that is placed after the pipe has been laid and will be called the Cover Zone. This zone extends to 12 inches above the top of the pipe. The Cover Zone and the Bedding Zone are considered the Soil Envelope for the pipe.

Top Zone: The Top Zone extends from 12 inches above the top of the pipe to the base or final grade.

125-8.3.2 Material:

125-8.3.2.1 Lowest Zone: Backfill areas undercut below the Bedding Zone of a pipe with coarse sand, or other suitable granular material, obtained from the grading operations on the project, or a commercial material if no suitable material is available.

125-8.3.2.2 Soil Envelope: In both the Bedding Zone and the Cover Zone of the pipe, backfill with materials classified as A-1, A-2, or A-3. Material classified as A-4 may be used if the pipe is concrete pipe.

125-8.3.2.3 Top Zone: Backfill the area of the trench above the soil envelope of the pipe with materials allowed on Design Standard, Index No. 505.

125-8.3.3 Compaction:

125-8.3.3.1 Lowest Zone: Compact the soil in the Lowest Zone to approximately match the density of the soil in which the trench was cut.

125-8.3.3.2 Bedding Zone: If the trench was not undercut below the bottom of the pipe, loosen the soil in the bottom of the trench immediately below the approximate middle third of the outside diameter of the pipe.

If the trench was undercut, place the bedding material and leave it in a loose condition below the middle third of the outside diameter of the pipe. Compact the outer portions to meet the density requirements of the Acceptance Criteria. Place the material in lifts no greater than 6 inches (compacted thickness).

125-8.3.3.3 Cover Zone: Before placing the Cover Zone material, lay pipe according to Section 430. Excavate for pipe bells before laying pipe. Place the material in 6 inches layers (compacted thickness), evenly deposited on both sides of the pipe, and compact with mechanical tampers suitable for this purpose. Hand tamp material below the pipe haunch that cannot be reached by mechanical tampers. Meet the requirements of the density Acceptance Criteria.

125-8.3.3.4 Top Zone: Place the material in layers not to exceed 12 inches in compacted thickness. Meet the requirements of the density Acceptance Criteria.

125-8.3.4 Backfill Under Wet Conditions: Where wet conditions are such that dewatering by normal pumping methods would not be effective, the procedure outlined below may be used when specifically authorized by the Engineer in writing. The Department will pay for any select material which is not available from the grading as Unforeseeable Work. The Department will not pay for select material that might be used by the Contractor for his own convenience instead of dewatering.

The Department will permit the use of granular material below the elevation at which mechanical tampers would be effective, but only material classified as A-3. Place and compact the material using timbers or hand tampers until the backfill reaches an elevation such that it's moisture content will permit the use of mechanical tampers. When the backfill has reached such elevation, use normally acceptable backfill material. Compact the material using mechanical tampers in such manner and to such extent as to transfer the compacting force into the material previously tamped by hand.

The Department will permit the use of coarse aggregate below the elevation at which mechanical tampers would be effective. Use coarse aggregate as specified in Section 901 for Aggregate Size Number 89, 8, 78, 7, 68, 6, or 57. Place the coarse aggregate such that it will be stable and firm. Fully wrap the aggregate with a layer of Type D-4 filter fabric, as specified on Design Standard, Index No. 199. Do not place coarse aggregate within 4 feet of the ends of the trench or ditch. Use normally accepted backfill material at the ends.

SECTION 160 STABILIZING

160-1 Description.

Stabilize designated portions of the roadbed to provide a firm and unyielding subgrade, having the required bearing value specified in the plans. When specified in the plans, provide additional strengthening of the subbase by additional stabilizing of the upper portion of the previously stabilized subgrade, within the limits specified. Perform work in accordance with an approved Quality Control Plan meeting the requirements of 6-8.

160-2 Stabilized Subgrade.

For stabilized subgrade, choose the type of material, Commercial or Local.

When the stabilizing is designated as Type B, the Engineer will determine compliance with the bearing value requirements by the Limerock Bearing Ratio (LBR) Method. If approved by the Engineer and only for materials requiring an LBR value of 40, the Engineer may omit Sections 6.0 and 6.1 of Florida Method of Test for Limerock Bearing Ratio (FM 5-515) and perform an Unsoaked LBR Test. The Engineer or the Contractor may request to use this method. If the Unsoaked LBR Test results in a failing test, then the Engineer will perform a standard Soaked LBR Test.

Take responsibility for making the finished roadbed section meet the bearing value requirements, regardless of the quantity of stabilizing materials necessary to be added. Also, the Department will make full payment for any areas where the existing subgrade materials meet the design bearing value requirements without the addition of stabilizing additives, as well as areas where the Contractor may elect to place select high-bearing materials from other sources within the limits of the stabilizing.

After substantially completing the roadbed grading operations, determine the type and quantity (if any) of stabilizing material necessary for compliance with the bearing value requirements. Notify the Engineer of the approximate quantity to be added. Obtain the Engineer's approval for spreading and mixing-in of such quantity of materials to achieve uniformity and effectiveness.

The Engineer may allow, at no additional cost to the Department, the substitution of 6 inches of Granular Subbase meeting the requirements of Section 290, when 12 inches of Type B Stabilization requiring an LBR value of 40 is specified.

160-3 Stabilized Subbase..

When Stabilized Subbase is required, after the mixing operations for the stabilization of the entire subgrade limits, strengthen the upper portion of the subgrade, within the limits shown, by adding and mixing-in a loose depth of commercial stabilizing material as designated in the plans or as may be otherwise designated by the Engineer. Provide a minimum depth of spread 3 inches (loose measurement).

160-4 Materials

160-4.1 Commercial and Local Materials: Meet the requirements of Section 914 for the particular type of stabilizing material to be used.

160-4.2 Use of Materials from Existing Base: When the use of materials from an existing base is required as all, or a portion, of the stabilizing additives, the Engineer will direct the location, placement, and distribution of such materials. Perform this work prior to the spreading of any additional commercial or local materials. Do not remove any section of existing base until the need for it in maintaining traffic is fulfilled.

The Engineer may direct the Contractor to use materials from an existing base in combination with either of the designated types of stabilizing.

160-5 Construction Methods.

160-5.1 General: A LOT is defined as a single lift of finished Subgrade, not to exceed 500 feet. Isolated mixing operations will be considered as separate LOTs. Curbpads and shoulders compacted separately shall be considered separate LOTs. Isolated compaction operations will be considered as separate LOTs. For multiple phase construction, a LOT shall not extend beyond the limits of the phase. Prior to the beginning of stabilizing operations, construct the area to be stabilized to an elevation such that, upon completion of stabilizing operations, the completed stabilized subgrade will conform to the lines, grades, and cross-section shown in the plans. Prior to spreading any additive stabilizing material, bring the surface of the roadbed to a plane approximately parallel to the plane of the proposed finished surface.

The Contractor may process the subgrade to be stabilized in one course, unless the equipment and methods being used do not provide the required uniformity, particle size limitation, compaction, and other desired results, in which case, the Engineer will direct that the processing be done in more than one course.

160-5.2 Application of Stabilizing Material: When additive stabilizing materials are required, spread the designated quantity uniformly over the area to be stabilized. When materials from an existing base are to be used in the stabilizing at a particular location, place and spread all of such materials prior to the addition of other stabilizing additives.

Spread commercial stabilizing material by the use of mechanical material

spreaders, except that where use of such equipment is not practicable, use other means of spreading, but only upon written approval of the proposed alternate method.

160-5.3 Mixing: Perform mixing using rotary tillers or other equipment meeting the approval of the Engineer. The Contractor may mix the materials in a plant of an approved type suitable for this work. Thoroughly mix the area to be stabilized throughout the entire depth and width of the stabilizing limits.

Perform the mixing operations, as specified, (either in place or in a plant) regardless of whether the existing soil, or any select soils placed within the limits of the stabilized sections, have the required bearing value without the addition of stabilizing materials.

160-5.4 Maximum Particle Size of Mixed Materials: At the completion of the mixing, ensure that the gradation of the material within the limits of the area being stabilized is such that 97% will pass a 3 1/2 inch sieve and that the material does not have a plasticity index greater than eight or liquid limit greater than 30. Remove any materials not meeting the plasticity requirements from the stabilized area. The Contractor may break down or remove from the stabilized area materials, including clay lumps or lumps made of clay-size particles (any particle size 2 microns or less), not meeting the gradation requirements.

160-5.5 Compaction: Except where a stabilized subbase is also to be constructed (as specified in 160-6), after completing the mixing operations and satisfying the requirements for bearing value, uniformity, and particle size. Compact the materials at a moisture content permitting the specified compaction in 160-7.2.3. If the moisture content of the material is improper for attaining the specified density, either add water or allow the material to dry until reaching the proper moisture content for the specified compaction.

160-5.6 Finish Grading: Shape the completed stabilized subgrade to conform with the finished lines, grades, and cross-section indicated in the plans. Check the subgrade using elevation stakes or other means approved by the Engineer.

160-5.7 Requirements for Condition of Completed Subgrade: After completing the stabilizing and compacting operations, ensure that the subgrade is firm and substantially unyielding to the extent that it will support construction equipment and will have the bearing value required by the plans.

Remove all soft and yielding material, and any other portions of the subgrade which will not compact readily, and replace it with suitable material so that the whole subgrade is brought to line and grade, with proper allowance for subsequent compaction.

160-5.8 Maintenance of Completed Subgrade: After completing the subgrade as specified above, maintain it free from ruts, depressions, and any damage resulting from the hauling or handling of materials, equipment, tools, etc. The Contractor is responsible for maintaining the required density until the subsequent base or pavement is in place including any repairs, replacement, etc., of curb and gutter, sidewalk, etc., which might become necessary in order to recompact the subgrade in the event of underwash or other damage occurring to the previously compacted subgrade. Perform any such recompaction at no expense to the Department. Construct and maintain ditches and drains along the completed subgrade section.

160-6 Stabilized Subbase (Additional Strengthening of Upper Portion).

When a stabilized subbase is to be constructed in conjunction with the stabilization operations, after the mixing of the stabilization area as specified in 160-5.3, and determination that the bearing value requirements specified in 160-7.2.1 have been met, shape the area over which the stabilized subbase is to be constructed as provided in 160-5.1, and compact it sufficiently to provide a firm surface for the operations to follow. Spread the amount of commercial stabilizing material specified in 160-3 for this operation, in accordance with 160-5.2, and mix it to the depth indicated in the plans, in accordance with 160-5.3. Allow a tolerance of 1 inch in excess of the plan depth in this mixing. The Engineer will not perform any additional tests for bearing value after the mixing of materials for the Stabilized Subbase.

Compact and finish grading, as specified in 160-5.5 and 160-5.6, and meet the provisions of 160-5.4, 160-5.7, and 160-5.8 for this work.

When commercial materials are used as the stabilizing additives for the initial subgrade stabilization, the Engineer may eliminate the work of Stabilized Subbase, either entirely or in designated sections of the overall limits for this work as may be specified in the plans.

160-7 Acceptance Program.

160-7.1 General Requirements: Meet the requirements of 120-10.1, except use 160-7.2 instead of 120-10.2.

160-7.2 Acceptance Criteria:

160-7.2.1 Bearing Value Requirements:

160-7.2.1.1 General: Within the entire limits of the width and depth of the areas to be stabilized, obtain the required minimum bearing value for each LOT. For any area where the bearing value obtained is deficient from the value indicated in the plans, in excess of the tolerances established herein, spread and mix additional stabilizing material in accordance with 160-5.3. Perform this reprocessing for the full width of the roadway being stabilized and longitudinally for a distance of 50 feet beyond the limits of the area in which the bearing value is deficient.

Determine the quantity of additional stabilizing material to be used in reprocessing.

160-7.2.1.2 Undertolerances in Bearing Value Requirements: Use the following undertolerances from the specified bearing value, as based on tests performed on samples obtained after completing mixing operations:

Specified Bearing Value	Tolerance
LBR 40	5.0
LBR 35	4.0
LBR 30 (and under)	2.5

The following unsoaked bearing value requirement is based on tests performed on

samples obtained after completing mixing operations:

Specified Bearing Value	Unsoaked Bearing Value Required	Tolerance
LBR 40	LBR 43	0.0

160-7.2.2 Mixing Depth Requirements: Do not exceed individual depth tolerance of 2 inches or LOT-average depth tolerance of 1 inch.

As an exception to the above mixing requirements, where the subgrade is of rock, the Engineer may waive the mixing operations (and the work of stabilizing), and the Department will not pay for stabilization for such sections of the roadway.

160-7.2.3 Density Requirements:

160-7.2.3.1 General: Within the entire limits of the width and depth of the areas to be stabilized, other than as provided in 160-7.2.3.2, obtain a minimum density at any location of 98% of the Modified Proctor maximum density as determined by FM 1-T 180, Method D.

160-7.2.3.2 Exceptions to Density Requirements: The Contractor need not obtain the minimum density specified in 160-7.2.3.1 if within the following limits:

.(a) The width and depth of areas which are to be subsequently incorporated into a base course under the same contract.

.(b) The upper 6 inches of areas to be grassed under the same contract. Compact these areas to a reasonably firm condition as directed by the Engineer.

SECTION 522 CONCRETE SIDEWALK

522-1 Description.

Construct concrete sidewalks.

522-2 Materials.

Meet the requirements specified in 520-2.

522-3 Forms.

Provide forms as specified in 520-3.

522-4 Foundation.

Compact fill areas, including cut areas under the sidewalk that have been excavated more than 6 inches below the bottom of sidewalk, to a minimum of 95% of AASHTO T 99 density. The area to be compacted is defined as that area directly under the sidewalk and 1 foot beyond each side of the sidewalk when right-of-way allows.

522-5 Joints.

522-5.1 Expansion Joints: Form 1/2 inch expansion joints between the sidewalk and the curb or driveway or at fixed objects and sidewalk intersections with a preformed joint filler

meeting the requirements specified in 932-1.1.

522-5.2 Contraction Joints:

522-5.2.1 Types: The Contractor may use open type or sawed contraction joints.

522-5.2.2 Open-Type Joints: Form open type contraction joints by staking a metal bulkhead in place and depositing the concrete on both sides. After the concrete has set sufficiently to preserve the width and shape of the joint, remove the bulkhead. After finishing the sidewalk over the joint, edge the slot with a tool having a 1/2 inch radius.

522-5.2.3 Sawed Joints: If electing to saw the contraction joints, cut a slot approximately 3/16 inch wide and not less than 1 1/2 inches deep with a concrete saw after the concrete has set, and within the following periods of time:

Joints at not more than 30 feet intervals .....within 12 hours after finishing.
Remaining joints .....within 96 hours after finishing.

522-6 Placing Concrete.

Place the concrete as specified in 520-5.

522-7 Finishing.

522-7.1 Screeding: Strike-off the concrete by means of a wood or metal screed, used perpendicular to the forms, to obtain the required grade and remove surplus water and laitance.

522-7.2 Surface Requirements: Provide the concrete with a broom finish. Ensure that the surface variations are not more than 1/4 inch under a 10 foot straightedge, or more than 1/8 inch on a 5 foot transverse section. Finish the edge of the sidewalk with an edging tool having a radius of 1/2 inch.

Apply a tine finish by an approved hand method to curb cut ramps in lieu of a broom finish.

Ensure that the tine finish consists of transverse grooves which are 0.03 to 0.12 inch in width and 0.10 to 0.15 inch in depth, spaced at approximately 1/2 inch center to center.

522-8 Curing.

Cure the concrete as specified in 520-8.

SECTION 555
DIRECTIONAL BORE

555-1 Description.

555-1.1 Scope of Work: The work specified in this Section documents the approved construction methods, procedures and materials for Directional Boring, also commonly called Horizontal Directional Drilling (HDD).

555-1.2 General: HDD is a trenchless method for installing a product that serves as a conduit for liquids, gasses, or as a duct for pipe, cable, or wire line products. It is a multi-stage process consisting of site preparation and restoration, equipment setup, and drilling a pilot bore along a predetermined path and then pulling the product back through the drilled space. When necessary, enlargement of the pilot bore hole may be necessary to accommodate a product larger than the pilot bore hole size. This process is referred to as back reaming and is done at the same time the product is being pulled back through the pilot bore hole.

Accomplish alignment of the bore by proper orientation of the drill bit head as it is being pushed into the ground by a hydraulic jack. Determine orientation and tracking of the drill bit by an above ground radio detection device which picks up a radio signal generated from a transmitter located within the drill bit head. Then electronically translate the radio signal into depth and alignment. In order to minimize friction and prevent collapse of the bore hole, introduce a soil stabilizing agent (drilling fluid) into the annular bore space from the trailing end of the drill bit. The rotation of the bit in the soil wetted by the drilling fluid creates a slurry. The slurry acts to stabilize the surrounding soil and prevent collapse of the bore hole as well as provides lubrication.

Select or design drilling fluids for the site specific soil and ground water conditions. Confine free flowing (escaping) slurry or drilling fluids at the ground surface during pull back or drilling. Accomplish this by creating sump areas or vacuum operations to prevent damage or hazardous conditions in surrounding areas. Remove all residual slurry from the surface and restore the site to preconstruction conditions.

555-2 Materials.

555-2.1 General: Materials are defined as pipe or conduit that becomes the installed product. Incidental materials that may or may not be used to install the product depending on field requirements are not paid for separately and will be included in the cost of the installed product.

555-2.2 Material Type: The following material standards are to be interpreted as the minimum in place standards. Use materials that are appropriate for the stresses generated by the selected equipment and field conditions. It is not intended to portray that the use of materials with these minimum material standards will retain their required properties if the stress limits are exceeded for which they were designed during installation. Ensure that the appropriate material is used to retain compliance once it is installed.

Material Standards for HDD Installation		
Material Type	Non-Pressure	Pressure
Polyethylene (PE)	ASTM D 2447	ASTM 2513

Material Standards for HDD Installation		
		ASTM D 2447
High Density Polyethylene (HDPE)	ASTM D 2447 ASTM D 3350 ASTM F714	ASTM D 2447 ASTM D 3350 ASTM F714 ASTM 2513
Polyvinyl-Chloride (PVC)	ASTM F 789	N/A
Steel	ASTM A139 Grade B [1]	AWWA C200 API 2B[2]
[1] No hydrostatic test required [2] Dimensional tolerances only		

555-3 Construction Site Requirements.

555-3.1 The Americans With Disabilities Act: When and where installations temporarily disrupt pedestrian use of sidewalk areas for periods exceeding two consecutive work days, provide an alternate route that meets ADA requirements.

555-3.2 Site Conditions:

(a) Carry out excavation for entry, exit, recovery pits, slurry sump pits, or any other excavation as specified in Section 120. Sump pits are required to contain drilling fluids if vacuum devices are not operated throughout the drilling operation, unless approved by the Engineer.

(b) Within 48 hours of completing installation of the boring product, clean the work site of all excess slurry or spoils. Take responsibility for the removal and final disposition of excess slurry or spoils. Ensure that the work site is restored to pre-construction conditions or as identified on the plans.

(c) Provide MOT in accordance with the Department Design Standards and the MUTCD when and where the former is silent.

(d) Exposure of product shall be limited to 3 feet and 14 consecutive days unless approved by the Engineer.

555-3.3 Damage Restoration: Take responsibility for restoration for any damage caused by heaving, settlement, separation of pavement, escaping drilling fluid (frac-out), or the directional drilling operation, at no cost to the Department.

555-3.3.1 Remediation Plans: When required by the Engineer, provide detailed plans which show how damage to any roadway facility will be remedied. These details will become part of the As-Built Plans Package. Remediation Plans must follow the same guidelines for development and presentation of the As-Built Plans. When remediation plans are required, they must be approved by the Engineer before any work proceeds.

555-4 Quality Control.

555-4.1 General: Take control of the operation at all times. Have a representative who is thoroughly knowledgeable of the equipment, boring and Department procedures, present at the job site during the entire installation and available to address immediate concerns and emergency operations. Notify the Engineer 48 hours in advance of starting

work. Do not begin installation until the Engineer is present at the job site and agrees that proper preparations have been made.

555-4.1.1 Product Testing: When there is any indication that the installed product has sustained damage and may leak, stop all work, notify the Engineer and investigate damage. The Engineer may require a pressure test and reserves the right to be present during the test. Perform pressure test within 24 hours unless otherwise approved by the Engineer. Furnish a copy of test results to the Engineer for review and approval. The Engineer is allowed up to 72 hours to approve or determine if the product installation is not in compliance with the specifications. The Engineer may require non-compliant installations to be filled with excavatable flowable fill.

555-4.1.2 Testing Methods: Testing may consist of one of the following methods and must always meet or exceed the Department's testing requirements:

(a) Follow the product manufacturer's pressure testing recommendations.

(b) Ensure that product carrier pipes installed without a casing meet the pressure requirements set by the owner. If the owner does not require pressure testing, the Engineer may require at least one test.

(c) A water tight pipe and joint configuration where the product is installed beneath any pavement (including sidewalk) and front shoulders is required. The Engineer will determine when and where water tight joint requirements will be applied to the ultimate roadway section for future widening. When a product is located elsewhere, the pipe and joint configuration must meet or exceed soil tight joint requirements. Conduct tests for joint integrity for one hour. The test for a soil tight joint allows up to 0.1 gallon of water leakage at a sustained pressure of 2 PSI. The water tight joint criteria allows no leakage at all for a sustained pressure of 5 PSI.

555-4.1.3 Failed Bore Path: If conditions warrant removal of any materials installed in a failed bore path, as determined by the Engineer, it will be at no cost to the Department. Promptly fill all voids by injecting all taken out of service products that have any annular space with excavatable flowable fill.

555-4.2 Product Locating and Tracking: The method of locating and tracking the drill head during the pilot bore will be shown in the plans. The Department recognizes walkover, wire line, and wire line with surface grid verification, or any other system as approved by the Engineer, as the accepted methods of tracking directional bores. Use a locating and tracking system capable of ensuring that the proposed installation is installed as intended. If an area of radio signal interference is expected to exceed 5 feet, the Engineer may specify the use of a suitable tracking system. The locating and tracking system must provide information on:

(a) Clock and pitch information

(b) Depth

(c) Transmitter temperature

(d) Battery status

(e) Position (x,y)

(f) Azimuth, where direct overhead readings (walkover) are not possible (i.e. subaqueous or limited access transportation facility)

(g) Ensure proper calibration of all equipment before commencing directional drilling operation.

(h) Take and record alignment readings or plot points such that elevations on top of and offset dimensions from the center of the product to a permanent fixed feature are provided. Such permanent fixed feature must have prior approval of the Engineer. Provide elevations and dimensions at all bore alignment corrections (vertical and horizontal) with a minimum distance between points of 100 feet. Provide a sufficient number of elevations and offset distances to accurately plot the vertical and horizontal alignment of the installed product. A minimum of three elevation and plot points are required.

Install all facilities such that their location can be readily determined by electronic designation after installation. For non-conductive installations, attach a minimum of two separate and continuous conductive tracking (tone wire) materials, either externally, internally or integral with the product. Use either a continuous green sheathed solid conductor copper wire line (minimum #12 AWG for external placement or minimum #14 AWG for internal placement in the conduit/casing) or a coated conductive tape. Conductors must be located on opposite sides when installed externally. Connect any break in the conductor line before construction with an electrical clamp, or solder, and coat the connection with a rubber or plastic insulator to maintain the integrity of the connection from corrosion. Clamp connections must be made of brass or copper and of the butt end type with wires secured by compression. Soldered connections must be made by tight spiral winding of each wire around the other with a finished length minimum of 3 inches overlap. Tracking conductors must extend 2 feet beyond bore termini. Test conductors for continuity. Each conductor that passes must be identified as such by removing the last 6 inches of the sheath. No deductions are allowed for failed tracking conductors. Failed conductor ends must be wound into a small coil and left attached for future use.

555-4.3 Product Bore Hole Diameter: Minimize potential damage from soil displacement/settlement by limiting the ratio of the bore hole to the product size. The size of the back reamer bit or pilot bit, if no back reaming is required, will be limited relative to the product diameter to be installed as follows:

Maximum Pilot or Back-Reamer Bit Diameter When Rotated 360 Degrees	
Nominal Inside Pipe Diameter Inches	Bit Diameter Inches
2	4
3	6
4	8
6	10
8	12
10	14
12 and greater	Maximum Product OD plus 6

555-4.4 Drilling Fluids: Use a mixture of bentonite clay or other approved stabilizing agent mixed with potable water with a minimum pH of 6.0 to create the drilling fluid for lubrication and soil stabilization. Vary the fluid viscosity to best fit the soil conditions encountered. Do not use any other chemicals or polymer surfactants in the drilling fluid without written consent from the Engineer. Certify to the Engineer in writing that any chemicals to be added are environmentally safe and not harmful or

corrosive to the facility. Identify the source of water for mixing the drilling fluid. Approvals and permits are required for obtaining water from such sources as streams, rivers, ponds or fire hydrants. Any water source used other than a potable water may require a pH test.

555-4.5 Equipment Requirements: Ensure that appropriate equipment is provided to facilitate the installation as follows:

HDD Equipment				
System Description	Pipe [1] Diameter Inches	Bore Length Feet	Torque Ft-Lbs	Trust/Pullback Lbs
Maxi-HDD	18 and greater	>1,000	>10,000	>70,000
Midi-HDD	Up to 16	Up to 1,000	1,900 to 9,999	20,001 to 69,999
Mini-HDD	Up to 6	Up to 600	Up to 1,899	Up to 20,000

[1] For the above, multiple pipe or conduit installations must not exceed the total outside pipe diameters stated above.

Match equipment to the size of pipe being installed. Obtain the Engineer's approval for installations differing from the above chart. Ensure that the drill rod can meet the bend radius required for the proposed installation.

555-4.6 Thrust/Pullback Requirements: Unless approved by the Engineer, limit use of HDD equipment to installing the following product sizes and lengths based on the following product size, force and length relationships.

HDD Bore Equipment Thrust/Pullback Capacity						
Lbs	5,000 to 7,000	7,001 to 12,000	12,001 to 16,000	16,001 to 25,000	25,001 to 40,000	>40,000
Product Size [1] Inches	Maximum Pullback Distance In Feet					
4 or <	400 or <					
6 or <		600 or <				
8 or <			800 or <			
10 or <				1,000 or <		
12 or <					2,000 or <	
> 12						Engineer's Discretion

[1] for the above, where a single pull of multiple conduits is to be attempted, the applicable product size must be determined by the diameter of a circle that will circumscribe the individual conduits as a group.

555-5 Drilling Operations:

555-5.1 Installation Process: Ensure adequate removal of soil cuttings and stability of the bore hole by monitoring the drilling fluids such as the pumping rate, pressures, viscosity and density during the pilot bore, back reaming and pipe installation. Relief holes can be used as necessary to relieve excess pressure down hole. Obtain the Engineer's approval of the location and all conditions necessary to construct relief holes to ensure the proper disposition of drilling fluids is maintained and unnecessary inconvenience is minimized to other facility users.

To minimize heaving during pull back, the pull back rate is determined in order to maximize the removal of soil cuttings without building excess down hole pressure. Contain excess drilling fluids at entry and exit points until they are recycled or removed from the site or vacuumed during drilling operations. Ensure that entry and exit pits are of sufficient size to contain the expected return of drilling fluids and soil cuttings.

Ensure that all drilling fluids are disposed of or recycled in a manner acceptable to the appropriate local, state, or federal regulatory agencies. When drilling in suspected contaminated ground, test the drilling fluid for contamination and appropriately dispose of it. Remove any excess material upon completion of the bore. If in the drilling process it becomes evident that the soil is contaminated, contact the Engineer immediately. Do not continue drilling without the Engineer's approval.

The timing of all boring processes is critical. Install a product into a bore hole within the same day that the pre-bore is completed to ensure necessary support exists.

555-5.2 Boring Failure: If an obstruction is encountered during boring which prevents completion of the installation in accordance with the design location and specification, the pipe may be taken out of service and left in place at the discretion of the Engineer. Immediately fill the product left in place with excavatable flowable fill. Submit a new installation procedure and revised plans to the Engineer for approval before resuming work at another location. If, during construction, damage is observed to the FDOT facility, cease all work until resolution to minimize further damage and a plan of action for restoration is obtained and approved by the Engineer.

555-6 Documentation Requirements.

555-6.1 Boring Path Report: Furnish a Bore Path Report to the Engineer within seven days of the completion of each bore path. Include the following in the report:

(a) Location of project and financial project number including the Permit Number when assigned

(b) Name of person collecting data, including title, position and company name

(c) Investigation site location (Contract plans station number or reference to a permanent structure within the project right-of-way)

(d) Identification of the detection method used

(e) Elevations and offset dimensions as required in 555-4.3

555-6.2 As-Built Plans: Provide the Engineer a complete set of As-Built Plans showing all bores (successful and failed) within 30 calendar days of completing the work. Ensure that the plans are dimensionally correct copies of the Contract plans and include roadway plan and profile, cross-section, boring location and subsurface conditions as directed by the Engineer. The plans must show appropriate elevations and be referenced

to a Department Bench Mark when associated with a Department project, otherwise to a USGS grid system and datum, or a specific location on top of an existing Department head wall. Plans must be same scale in black ink on white paper, of the same size and weight as the Contract plans. Submittal of electronic plans data in lieu of hard copy plans is preferred and may be approved by the Engineer if compatible with the Department software. Specific plans content requirements include but may not be limited to the following:

(a) The Contract plan view shows the center line location of each facility installed, or installed and placed out of service, to an accuracy of 1 inch at the ends and other points physically observed in accordance with the bore path report.

(b) As directed by the Engineer, provide either a profile plan for each bore path, or a cross-section of the roadway at a station specified by the Engineer, or a roadway centerline profile. Show the ground or pavement surface and crown elevation of each facility installed, or installed and placed out of service, to an accuracy within 1 inch at the ends and other exposed locations. On profile plans for bore paths crossing the roadway show stationing of the crossing on the Contract plans. On the profile plans for the bore paths paralleling the roadway, show the Contract plans stationing. If the profile plan for the bore path is not made on a copy of one of the Contract profile or cross-section sheets, use a 10 to 1 vertical exaggeration.

(c) If, during boring, an obstruction is encountered which prevents completion of the installation in accordance with the design location and specification, and the product is left in place and taken out of service, show the failed bore path along with the final bore path on the plans. Note the failed bore path as "Failed Bore Path - Taken Out of Service". Also show the name of the Utility owner, location and length of the drill head and any drill stems not removed from the bore path.

(d) Show the top elevation, diameter and material type of all utilities encountered and physically observed during the subsoil investigation. For all other obstructions encountered during a subsoil investigation or the installation, show the type of material, horizontal and vertical location, top and lowest elevation observed, and note if the obstruction continues below the lowest point observed.

(e) Include bore notes on each plan stating the final bore path diameter, product diameter, drilling fluid composition, composition of any other materials used to fill the annular void between the bore path and the product, or facility placed out of service. Note if the product is a casing as well as the size and type of carrier pipe placed within the casing as part of the Contract work.

SECTION 556
JACK AND BORE

556-1 Description.

556-1.1 Scope of Work: The work specified in this Section documents the approved construction methods, procedures and materials for Jack and Bore (J&B), also known as auger boring. Micro tunneling (MT) is also included in the category of J&B for purposes of specifications.

556-1.2 General: J&B is a method for installing a product (often called a casing) that may serve as a direct conduit for liquids or gases, or as a duct for carrier (Pipe, cable, or wire line products). It is a multi-stage process consisting of constructing a temporary horizontal jacking platform and a starting alignment track in an entrance pit at a desired elevation. The product is then jacked by manual control along the starting alignment track with simultaneous excavation of the soil being accomplished by a rotating cutting head in the leading edge of the product's annular space. The ground up soil (spoil) is transported back to the entrance pit by helical wound auger flights rotating inside the product. J&B typically provides limited tracking and steering as well as limited support to the excavation face.

Micro tunneling is conducted similar to J&B with the exception that it is remotely controlled, guided pipe jacking process that provides continuous support to the excavation face. The guidance system usually consists of a laser mounted in the tunneling drive shaft which communicates a reference line to a target mounted inside the MT machine's articulated steering head. The MT process provides the ability to control the excavation face stability by applying mechanical or fluid pressure to counterbalance the earth and hydrostatic pressures.

Removal and disposition of excess material varies, is the responsibility of the boring contractor and is not covered under this Specification. However, the cost of removal or final disposition is included in the cost of the J&B operation.

No J&B conduit may be left open ended without approval of the Engineer to prevent the conduit from acting as a drainage structure.

556-2 Materials.

Select materials approved for installation within the right-of-way based on their suitability for the construction method as defined in Table 556-2.1. After determining product suitability, individual material standards as contained in Table 556-2.2 apply.

Table 556-2.1
Product Suitability by Construction Method

Type	Pipe/Casing Installation Mode	Suitable Pipe/Casing
Jack and Bore	Jacking	Steel, Plastic
Micro tunneling	Jacking	DI, FRPM, PC, PCCP, RCCP, RCP, Steel

Table 556-2.2
Material Standards Acceptable for J&B and MT Installations

Material Type	Non-Pressure	Pressure
Ductile Iron (DI)	AWWA C150/C151 ASTM A716, A747	AWWA C150/C151
Fiberglass Reinforced Polymer Mortar (FRPM)	ASTM D 3262	ASTM D 3517 AWWA C950
Polymer Concrete (PC)	DIN 54815-1 & 2	N/A
Prestressed Concrete Cylinder Pipe (PCCP)	N/A	AWWA C300
Reinforced Concrete Cylinder Pipe (RCCP)	N/A	ASTM C361
Reinforced Concrete Pipe (RCP)	ASTM C 79 ASCE xx-97	ASTM C361 AWWA C300/C302
Steel	ASTM A139 Grade B[1] API 2B[2]	AWWA C200 API 2B[2]
Polyvinyl Chloride (PVC)	ASTM D 1785	N/A
Polyethylene (PE)	ASTM D 2447 ASTM D 2513 FOR GAS > 3 Inches	N/A
Polybutylene (PB)	ASTM D 2662	N/A
Cellulose Acetate Butyrate (CAB)	ASTM D 1503	N/A
Acrylonitrile Butadiene Styrene (ABS)	ASTM D 1527	N/A
Reinforced Thermosetting Resin Pipe (RTRP)	ASTM D 2296 OR ASTM D2997	N/A

[1] No hydrostatic test required
[2] Dimensional tolerances only

Unless otherwise tested and approved by the Department, only use encasement pipe or uncased carrier pipe material that is new and has smooth interior and exterior walls.

556-2.1 Steel Pipe Casing and Welds: In addition to meeting or exceeding the conditions contained in Tables 556-2.1 and Table 556-2.2, meet the following requirements:

(a) The size of the steel casing must be at least 6 inches larger than the largest outside diameter of the carrier.

(b) The casing pipe must be straight seam pipe or seamless pipe.

(c) All steel pipe may be bare inside and out, with the manufacturer's recommended minimum nominal wall thicknesses to meet the greater of either installation, loading or carrier requirements.

(d) All steel casing pipe must be square cut and have dead-even lengths which are compatible with the J&B equipment.

Use steel pipe casings and welds meeting or exceeding the thickness requirements to achieve the service life requirements noted in the Department Drainage Manual Chapter 6. For purposes of determining service life, ensure that casings installed under roadways meet or exceed cross drain requirements and casings under driveways

meet or exceed side drain pipe requirements. For purposes of material classification, consider steel pipe casing structural plate steel pipe. Ensure that steel pipe casing of insufficient length achieves the required length through fully welded joints. Ensure that joints are air-tight and continuous over the entire circumference of the pipe with a bead equal to or exceeding the minimum of either that required to meet the thickness criteria of the pipe wall for jacking and loading or service life. A qualified welder must perform all welding.

556-2.2 Reinforced Concrete Pipe Casing: In addition to meeting or exceeding the conditions contained in Tables 556-2.1 and Table 556-2.2, meet the following requirements:

Ensure that concrete pipe complies with the following minimum requirements:

(a) 5,000 psi concrete compressive strength

(b) Class III, IV, or V as required by load calculations, with a C-wall

(c) Full circular inner and/or outer reinforcing cage

(d) Multiple layers of steel reinforcing cages, wire splices, laps and spacers are permanently secured together by welding in place

(e) Straight outside pipe wall with no bell modification

(f) No elliptical reinforcing steel is allowed

(g) Single cage reinforcement with a 1 inch minimum cover from the inside wall

(h) Double cage reinforcement with a 1 inch minimum cover from each wall

(i) Joints are gasket type

(j) Additional joint reinforcement

Upon installation, the Engineer may, at his discretion, require the Contractor to perform concrete wiping or injection of the joints if it is believed the joints have not maintained their water tightness during the jacking operation. No additional payment will be made for this operation.

556-2.3 Plastic Pipe Casing: Plastic pipe may be jacked and bored if its physical properties are sufficient, and it is rigid such that when supported or suspended at mid point it maintains a straight alignment. If plastic pipe is Jacked and Bored it may not be used as a pressurized carrier. Plastic pipe casing installed by the jack and bore method requires the use of an auger. Open end jacking without the use of an auger for continuous cleanout of the bore as the pipe is advanced is not permitted. Closed end jacking is not permitted.

556-2.4 Pipe Couplings and Joints: In addition to meeting or exceeding the conditions contained in Tables 556-2.1 and 556-2.2, to minimize potential for bore failure, couplings must not project at right angles from the casing diameter by more than 3/4 inch.

(a) Steel Pipe Coupling and Joints:

1. Welds must comply with 556-2.1(d) when couplings are not used or when the coupling thickness is less than the casing thickness.

2. When couplings are used the casing joint needs only to be tack welded. Couplings must have a full bead weld such that the thickness, when measured at

an angle of 45 degrees to the casing and coupling interface, must be no less than the casing thickness.

(b) Plastic Pipe Couplings and Joints:

1. Must meet or exceed all ASTM strength and composition standards established for the casing material to which they are being attached.

2. Joints must be made sufficiently strong to withstand the pressures of jacking. All chemical welds must be completely set and cured before any jacking is attempted.

556-3 Construction Site Requirements.

556-3.1 The Americans With Disabilities Act: When and where installations temporarily disrupt pedestrian use of sidewalk areas for periods exceeding two consecutive work days, provide an alternate route that meets ADA requirements.

556-3.2 Site Conditions:

(a) Carry out excavation for entry, exit, recovery pits, auger slurry sump pits, or any other excavation as specified in Section 120. Unless approved by the Engineer, sump pits are required to contain auger fluids if vacuum devices are not operated throughout the boring operation.

(b) Within 48 hours of completing installation of the boring product, ensure that the work site is cleaned of all excess auger fluids or spoils. Removal and final disposition of excess fluids or spoils is the responsibility of the boring Contractor and ensure that the work site is restored to pre-construction conditions or as identified on the plans.

(c) Restore excavated areas in accordance with the specifications and Design Standards.

(d) Provide MOT in accordance with the Department Design Standards and the MUTCD when and where the former is silent.

(e) Ensure that equipment does not impede visibility of the roadway user without taking the necessary precautions of proper signing and Maintenance of Traffic Operations.

556-3.3 Ground Water Control: Investigate all sites for possibility of having to manage groundwater problems that may occur due to seasonal changes or natural conditions.

(a) When ground water level must be controlled, use a system and equipment that is compatible with the properties, characteristics, and behavior of the soils as indicated by the soil investigation report.

556-3.4 Damage Restoration: Take responsibility for restoring any damage caused by heaving, settlement, separation of pavement, escaping boring fluid (fracout) of the J&B operation at no cost to the Department.

556-3.4.1 Remediation Plans: When required by the Engineer, provide detailed plans which show how damage to any roadway facility will be remedied. These details will become part of the As-Built Plans Package. Remediation Plans must follow the same guidelines for development and presentation of the As-Built Plans. When remediation plans are required, they must be approved by the Engineer before any work proceeds.

556-4 Quality Control.

556-4.1 General: Take control of the operation at all times. Have a representative who is thoroughly knowledgeable of the equipment, boring, and Department procedures present at the job site during the entire installation and available to address immediate concerns and emergency operations. Notify the Engineer 48 hours in advance of starting work. Do not begin the installation until the Engineer is present at the job site and agrees that proper preparations have been made.

556-4.2 Construction Process and Approval: For all installations, submit sufficient information to establish the proposed strategy for providing the following:

(a) An indication of where the leading edge of the casing is located with respect to line and grade and the intervals for checking line and grade. Indication may be provided by using a water gauge (Dutch level) or electronic transmitting and receiving devices. Other methods must have prior approval. Maintain a record of the progress at the job site.

(b) Equipment of adequate size and capability to install the product and including the equipment manufacturer's information for all power equipment used in the installation.

(c) A means for controlling line and grade.

(d) A means for centering the cutting head inside the borehole.

(e) Provide a means for preventing voids by assuring:

1. The rear of the cutting head from advancing in front of the leading edge of the casing by more than 1/3 times the casing diameter and in stable cohesive conditions not to exceed 8 inches.

2. In unstable conditions, such as granular soil, loose or flowable materials, the cutting head is retracted into the casing a distance that permits a balance between pushing pressure, pipe advancement and soil conditions.

3. Development of and maintaining a log of the volume of spoil material removal relative to the advancement of the casing.

(f) Adequate casing lubrication with a bentonite slurry or other approved technique.

(g) An adequate band around the leading edge of the casing to provide extra strength in loose unstable materials when the cutting head has been retracted into the casing to reduce skin friction as well as provides a method for the slurry lubricant to coat the outside of the casing.

(h) At least 20 feet of full diameter auger at the leading end of the casing. Subsequent auger size may be reduced, but the reduced auger diameter must be at least 75% of the full auger diameter.

(i) Water to be injected inside the casing to facilitate spoil removal. The point of injection shall be no closer than 2 feet from the leading edge of the casing.

556-4.3 Testing:

556-4.3.1 Product Testing: When there is any indication that the installed product has sustained damage and may leak, stop the work, notify the Engineer and investigate damage. The Engineer may require a pressure test and reserves the right to be present during the test. Perform pressure test within 24 hours unless otherwise approved by the Engineer. Furnish a copy of the test results to the Engineer for review and approval. The Engineer shall be allowed up to 72 hours to approve or determine if the

product installation is not in compliance with specifications. The Engineer may require non-compliant installations to be filled with excavatable flowable fill.

556-4.3.2 Testing Methods: Testing may consist of one of he following methods but must always meet or exceed Department testing requirements.

(a) Follow the Product Manufacturer's pressure testing recommendations.

(b) Ensure that the product carrier pipes installed without a casing meet the pressure requirements set by the owner. If the owner does not require pressure testing, the Engineer may require at least one test.

1. The Department requires a water tight pipe and joint configuration where the product is installed beneath any pavement (including sidewalk) and front shoulders. The Engineer will determine when and where water tight joint requirements shall be applied to the ultimate roadway section for future widening. When under the pavement conduct an air pressure test for leaks in the presence of the Engineer at a minimum test pressure of 20 PSI by either of the following methods.

i. Standard 24 hour pressure test with a recording chart or,

ii. A dragnet type leak detector or equivalent device capable of detecting pressure drops of 1/2 PSI for a time period recommended by the manufacturer.

2. When a product is not located under the pavement, the pipe and joint configuration must meet or exceed soil tight joint requirements. The test for a soil tight joint allows up to 0.1 gallon of water leakage at a sustained pressure of 2 PSI. The water tight joint criteria allows no leakage at all for a sustained pressures of 5 PSI. Conduct test for joint integrity for one hour.

556-4.4 Product Locating and Tracking: Install all facilities such that their location can be readily determined by electronic designation after installation. For non-conductive installations, attach a minimum of two separate and continuous conductive tracking (tone wire) materials, either externally, internally, or integral with the product. Use either a continuous green sheathed solid conductor copper wire line (minimum #12 AWG for external placement or minimum #14 AWG for internal placement in the conduit/casing) or a coated conductive tape. Ensure that conductors are located on opposite sides when installed externally. Connect any break in the conductor line before construction with an electrical clamp or solder, and coat the connection with a rubber or plastic insulator to maintain the integrity of the connection from corrosion. Clamp connections must be made of brass or copper and of the butt end type with wires secured by compression. Soldered connections must be made by tight spiral winding of each wire around the other with a finished length minimum of 3 inches overlap. Tracking conductors must extend 2 feet beyond bore termini. Conductors must be tested for continuity. Identify each conductor that passes by removing the last 6 inches of the sheath. No deductions are allowed for failed tracking conductors. Failed conductor ends must be wound into a small coil and left attached for future use.

556-4.5 Augering Fluids: Use a mixture of bentonite clay or other approved stabilizing agent mixed with potable water with a minimum pH of 6.0 to create the drilling fluid for lubrication and soil stabilization. Vary the fluid viscosity to best fit the soil conditions encountered. Do not use other chemicals or polymer surfactant in the

drilling fluid without written consent of the Engineer. Certify in writing to the Engineer that any chemicals to be added are environmentally safe and not harmful or corrosive to the facility. Identify the source of water for mixing the drilling fluid. Approvals and permits are required for obtaining water from such sources as streams, rivers, ponds or fire hydrants. Any water source used other than potable water may require a pH Test.

556-4.6 Micro-Tunneling (MT) and Micro Tunnel Boring Machine (MTBM) Requirements.

556-4.6.1 Performance Requirements: The MTBM must meet the following minimum performance requirements:

(a) Capable of providing positive face support regardless of the MTBM type.

(b) Articulated to enable controlled steering in both the vertical and horizontal direction to a tolerance of plus or minus 1 inch from design alignment.

(c) All functions are controlled remotely from a surface control unit.

(d) Capable of controlling rotation, using a bi-directional drive on the cutter head or by using anti-roll fins or grippers. The Engineer must approve other methods.

(e) Capable of injecting lubricant around the exterior of the pipe being jacked.

(f) Indication of steering direction.

For slurry systems, the following is also required:

(g) The volume of slurry flow in both the supply and return side of the slurry loop.

(h) Indication of slurry bypass valve position.

(i) Indication of pressure of the slurry in the slurry chamber.

556-4.7 Failed Bore Path: If conditions warrant removal of any materials installed in a failed bore path, as determined by the Engineer, it will be at no cost to the Department. Promptly fill all voids by injecting all taken out of service products that have any annular space with excavatable flowable fill.

556-5 Jack and Bore and Micro-Tunneling Operations:

556-5.1 Installation Process: Provide continuous pressure to the face of the excavation to balance groundwater and earth pressures. Ensure that shafts are of sufficient size to accommodate equipment, the pipe selected and to allow for safe working practices. Provide entry and exit seals at shaft walls to prevent inflows of groundwater, soil, slurry and lubricants. Use thrust blocks designed to distribute loads in a uniform manner so that any deflection of the thrust block is uniform and does not impart excessive loads on the shaft itself or cause the jacking frame to become misaligned.

The jacking system must have the capability of pushing the pipe in J&B operations or MTBM and pipe for MT operations through the ground in a controlled manner and be compatible with the anticipated jacking loads and pipe capacity. Monitor the jacking force applied to the pipe and do not exceed the pipe manufacturer's recommendations.

Ensure that the pipe lubrication system is functional at all times and sufficient to reduce jacking loads. Use pipe lubrication systems that include a mixing

tank, holding tank and pumps to convey lubricant from the holding tank to application points at the rear of the MTBM. Maintain sufficient fluids on site to avoid loss of lubrication.

Power Distribution System must be identified in the plans package or permit provisions as well as any noise constraints. Identity spoil removal capability and method to avoid creating hindrance to other activities which may be necessary in the area.

556-5.2 Excess Material and Fluids: Monitor the pumping rate, pressures, viscosity and density of the boring fluids to ensure adequate removal of soil cuttings and the stability of the borehole. Contain excess drilling fluids, slurry and soil cuttings at entry and exit points in pits until they are recycled or removed from the site.

Ensure that all boring fluids are disposed of or recycled in a manner acceptable to the appropriate local, state or federal regulatory agencies. When jacking and boring in suspected contaminated ground, test the boring fluid for contamination and dispose of appropriately. Remove any excess material upon completion of the bore. If it becomes evident that the soil is contaminated, contact the Engineer immediately. Do not continue boring without the Engineer's approval.

556-5.3 Boring Failure: If an obstruction is encountered which prevents completion of the installation in accordance with the design location and specifications; the pipe may be taken out of service and left in place at the discretion of the Engineer. Immediately fill the product left in place with excavatable flowable fill. Submit a new installation procedure and revised plans to the Engineer for approval before resuming work at another location. If damage is observed to any property, cease all work until a plan of action to minimize further damage and restore damaged property is submitted and approved by the Engineer.

556-6 Documentation Requirements.

556-6.1 Boring Path Report: Furnish a Bore Path Report to the Engineer within 14 days of the completion of each bore path. Submit the As-Built-Plans to the Engineer within 30 calendar days. No payment will be made for directional boring work until the Bore Path Report has been delivered to the Department. Include the following information in the report:

(a) Location of project and financial project number including the Permit Number when assigned.

(b) Name of person collecting data, including title, position and company name.

(c) Investigation site location (Contract plans station number or reference to a permanent structure within the project right-of-way).

(d) Identification of the detection method used.

(e) Spoils removal log.

(f) As-built placement plans showing roadway plan and profile, cross-section, boring location and subsurface conditions as defined in Bore Path Plans below. Reference the shown plan elevations to a Department Bench Mark when associated with a Department project, otherwise to a USGS grid system and datum or to the top of an existing Department head wall. These plans must be the same scale in black ink on white paper, of the same size and weight and as the Contract plans. Submittal of electronic

plans data in lieu of hard copy plans may be approved by the Engineer if compatible with the Department software.

556-6.2 As-Built Plans: Provide the Engineer with a complete set of As-Built-Plans showing all bores (successful and failed) within 30 calendar days of completion of the work. Plans must be dimensionally correct copies of the Contract plans. Include notes on the plans stating the final bore path diameter, facility diameter, drilling fluid composition, composition of any other materials used to fill the annular void between the bore path and the facility or facility placed out of service. If the facility is a casing, note this, as well as the size and type of carrier pipes to be placed within the casing as part of the Contract work. Produce the plans as follows:

(a) On the Contract plan view, show the centerline location of each facility, installed or installed and placed out of service to an accuracy within 1 inch at the ends and other points physically observed. They show the remainder of the horizontal alignment of the centerline of each facility installed or installed and placed out of service and note the accuracy with which the installation was monitored.

(b) As directed by the Engineer, provide either a profile plan for each bore path, or a cross-section of the roadway at a station specified by the Engineer, or a roadway centerline profile. Also show the ground or pavement surface and the crown elevation of each facility installed, or installed and placed out of service, accurately to within 1 inch at the ends and other points physically observed. Show the remainder of the vertical alignment of the crown of each facility installed, or installed and placed out of service and note the accuracy with which the installation was monitored. On profile plans for bore paths crossing the roadway, show the contract plans stationing. On the profile plans for bore paths paralleling the roadway show the contract plans stationing. If the profile plan for the bore path is not made on a copy of one of the contract profile or cross-section sheets, use a 10 to 1 vertical exaggeration.

(c) If a bore path is not completed, show on the plans the failed bore path along with the name of the utility owner and the final bore path. Note the failed bore path as "Failed Bore Path." Also show the location and length of the cutting head and any product not removed from the bore path.

(d) Show the crown elevation, diameter and material type of all utilities encountered and physically observed during the subsoil investigation. For all other obstructions encountered during subsoil investigation or the installation, show the type of material, horizontal and vertical location, top elevation and lowest elevation observed, and note if the obstruction continues below the lowest point observed.

SECTION 557
VIBRATORY PLOWING

557-1 Description.

557-1.1 Scope of Work: The work specified in this Section documents the approved construction methods, procedures and materials for Vibratory Plowing, also known as cable plowing.

557-1.2 General: Vibratory Plowing is a trenchless method for installing a product which typically consists of a cable or small conduit for later insertion of wire line products. It is a multi-stage process consisting of positioning a vibrating plow equipped with a trailing product guide which feeds the cable or conduit to the depth setting of the plow as it moves forward. The product is inserted into the ground continuously along a predetermined path and depth. Reshape any disturbance of the ground surface such as localized residual mounding or grooves, by grading and compaction. If a conduit is installed, subsequent operations may involve pulling a desired product back through the conduit. The vertical depth of installation is controlled by two factors, hydraulic adjustment of the plow shear head and the surface contours. The depth of insertion must be continually adjusted to compensate for changes in terrain to ensure compliance with depth criteria. Horizontal profiles or steering the bore is accomplished by proper orientation of a tractor which pulls the vibratory plow. Alignments are generally limited to straight sections with minor deviation unless approved by the Engineer.

557-2 Construction Site Requirements.

557-2.1 Site Conditions: Consider vibratory plowing an excavation method and comply with all applicable provisions required of excavation methods.

(a) Ensure that subsequent excavation for manholes, hand pulls, or other service vaults, recovery pits or any other excavation is carried out as specified in Section 120.

(b) After completing installation of the product, restore the work site. Restore excavated or plowed areas in accordance with the Specifications and Design Standards.

(c) It is the plowing Contractor's responsibility for removal of excess material or debris created during the construction process as well as restoring the site to the condition which existed before construction.

(d) Exposure may be allowed for periods exceeding 14 consecutive days if the exposure is limited to 3 feet or less. Periods longer than described above may be approved by the Engineer if it will not affect maintenance or construction activities.

(e) Ensure that equipment does not impede visibility of the roadway user without taking the necessary precautions of proper signing and Maintenance of Traffic Operations.

557-2.2 Damage Restoration: Take responsibility for restoring any damage caused by cutting, heaving, settlement or separation of pavement at no cost to the Department.

557-2.2.1 Remediation Plans: When required by the Engineer, provide detailed plans which show how damage to any roadway facility will be remedied and

include this as part of the As-Built Plans Package. Remediation Plans must follow the same guidelines for development and presentation of the As-Built Plans.

557-3 Quality Control.

557-3.1 General: Take control of the operation at all times, have a representative who is thoroughly knowledgeable of the equipment and procedures, present at the job site during the entire installation and available to address immediate concerns and emergency operations. Notify the Engineer 48 hours in advance of starting work. Do not begin installation until the Engineer is present at the job site and agrees that proper preparations have been made.

557-3.2 Alignment: Ensure that the plow operator maintains a true and consistent alignment. Deviation from the approved alignment more than 1 foot in either direction to avoid obstructions such as boulders, stumps or general vegetation will not be allowed unless approved by the Engineer. Document all approved deviations from the original permitted alignment.

557-3.3 Product Locating and Tracking: For all installations, submit sufficient information to establish the proposed strategy for compliance with the permit.

(a) Define what reference will be used to control and ensure alignment as permitted will be maintained with respect to line and grade. Also indicate the intervals for checking line and grade and maintain a record at the job site.

(b) Ensure the equipment is of adequate size and capability to install the project. This includes the equipment manufacturer's information for all power equipment used in the installation.

(c) Define the means for controlling line and grade.

Install all facilities in such a way that their location can be readily determined by electronic designation after installation. For non-conductive installations, accomplish this by attaching a minimum of two separate and continuous conductive wires (minimum 12 gauge) either externally, internally, or integrally with the product. Any break in the conductor must be connected by electrical clamp of brass or solder and coated with a rubber or plastic insulator to maintain the integrity of the connection from corrosion.

557-4 Documentation.

557-4.1 Plowing Path Report: Furnish a Plowing Path Report to the Engineer within 14 days of the completion of each installation. Include the following information on the report:

(a) Location of project and financial project number including the Permit Number when assigned.

(b) Name of person collecting data, including title, position and company name.

(c) Contract plans station number or reference to a permanent structure within the project right-of-way.

(d) As-built placement plans showing roadway plan and profile, cross-section and plowing location and elevations every 100 feet along the alignment. Reference shown plan elevations to a Department Bench Mark when associated with a Department project, otherwise to a USGS grid system and datum, or to the top of an existing Department head wall. These plans must be the same scale in black ink on white

paper, of the same size and weight and as the Contract plans. Submittal of electronic plans data in lieu of hard copy plans may be approved by the Engineer if compatible with the Department software.

557-4.2 As-Built Plans: Submit the completed As-Built Plans to the Engineer within 30 Calendar days. Ensure that the plans are dimensionally correct copies of the Contract plans. Include notes on each plan stating the final plow path, facility diameter and any facility placed out of service. If the facility is a duct, note this, as well as the size and type of product to be placed within the duct as part of the permitted work. Produce the plans as follows:

(a) On the Contract plan view, show the centerline location of each facility installed to an accuracy within 1 inch at the ends and other points physically observed. Show the remainder of the horizontal alignment of the centerline of each facility installed and note the accuracy with which the installation was monitored.

(b) As directed by the Engineer, provide either a profile plan for each path, or a cross-section of the roadway at a station specified by the Engineer, or a roadway centerline profile. Show the ground or pavement surface and the crown elevation of each facility installed to an accuracy within 1 inch at the ends and other points physically observed. Show the remainder of the vertical alignment of the crown of each facility installed and note the accuracy with which the installation was monitored. On profile plans for paths crossing the roadway show the Contract plans stationing of the crossing. On the profile plans for paths paralleling the roadway also show the Contract plans stationing. If the profile plan for the path is not made on a copy of one of the Contract profile or cross-section sheets, use a 10 to 1 vertical exaggeration.

(c) If, during installation, an obstruction is encountered which prevents installation of the product in accordance with this Specification, submit a new installation procedure and revised plans to the Engineer for approval before resuming work along a new alignment. If a section of a plowing path fails without installing a product or it has been removed, show the failed section of the plow path along with the final plow path on the plans. Note the failed path as "Failed Plow Path." Do not leave any products in a failed plow path. If breakage occurs or the plow path fails, remove all products from the broken or failed section of the plow path.

(d) On all of the plans, show the crown elevation, diameter and material type of all utilities encountered and physically observed during installation. For all other obstructions encountered during a subsoil investigation or the installation, show the type of material, horizontal and vertical location, top elevation and lowest elevation observed, and note if the obstruction continues below the lowest point observed.

SECTION 700 HIGHWAY SIGNING

700-2.5 Sign Background: is expanded by the following:

Use fluorescent orange Type VI or VII for all orange work zone signs on interstates and all roll-up signs starting July 2004. Use fluorescent orange Type VI or VII for all orange work zone signs on all State Highway System Roads starting July 2005. Do not mix work zone signs having fluorescent orange sheeting with signs having orange reflective sheeting. Mesh signs shall meet the color, daytime luminance and non-reflective property requirements of Section 994, Type VI.

700-3.8 Process Colors: Use transparent and black opaque process colors meeting the requirements of 994-4 on reflective and non-reflective sheeting.

SECTION 994 RETROREFLECTIVE AND NONREFLECTIVE SIGN SHEETING

994-1 Description.

994-1.1 General: This Section specifies the requirements for retroreflective and nonreflective sheeting materials, transparent and opaque process inks for retroreflective sheeting materials, and film overlays for traffic control devices. The sheeting materials used shall be one of the products included on the Qualified Products List (QPL), as specified in 6-1.

994-3.3 Color: The retroreflective and non-reflective sheeting or film shall have the same daytime and nighttime color when viewed by reflective light regardless of type classification. The diffused color of the retroreflective sheeting, through instrumental color testing, shall conform to the requirements of ASTM D4956. In addition to ASTM D4956 Table 13, the fluorescent orange, fluorescent yellow-green and fluorescent pink colors shall meet the following x, y chromaticity coordinates:

Fluorescent	1	2	3	4
Yellow/Green				
x	.387	.368	.421	.460
y	.610	.539	.486	.540
Orange				
x	.583	.535	.595	.645
y	.416	.400	.351	.355

Fluorescent Pink	1	2	3	4
X	.450	.590	.644	.536
Y	.270	.350	.290	.230

The daytime luminance for fluorescent orange, fluorescent yellow-green and fluorescent pink sheeting shall have a luminance factor of 25 minimum, 60 minimum and 25 minimum respectively, in addition to ASTM D4956 Table 9.

Appendix B

Geotechnical Investigation – Boring Logs And Laboratory Analysis
Force Main 1a, 2a, And 16a Replacement
Manatee County, Florida
Driggers Engineering Services, Incorporated

TRANSMITTAL OF SOIL BORING LOGS AND LABORATORY TEST DATA

FORCE MAIN 1A, 2A AND 16A REPLACEMENT MANATEE COUNTY, FLORIDA

DRIGGERS ENGINEERING SERVICES INCORPORATED
Geotechnical Engineering & Construction Materials Testing

May 6, 2010

CH2MHill
4350 W. Cypress Street
Suite 600
Tampa, Florida 33607-4155

Attention: Mr. Robert Cannarella

RE: Transmittal of Soil Boring Logs and Laboratory Test Data
Force Main 1A, 2A and 16A Replacement
Manatee County, Florida
Our File: DES 096469

Dear Bob:

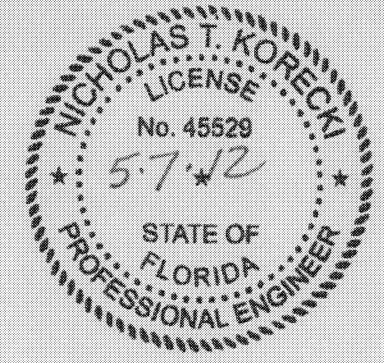
Transmitted herewith are logs of the seventeen (17) requested Standard Penetration Test (SPT) borings conducted for the subject project and results of the requested laboratory classification testing program. The borings were positioned as close as practicable to the requested locations and are as depicted on the attached Plates I-A through I-L.

DRIGGERS ENGINEERING SERVICES, INC. appreciates the opportunity to be of assistance to you on this project. Should you have any questions, please do not hesitate to give me call.

Respectfully submitted,
DRIGGERS ENGINEERING SERVICES, INC.

Nicholas T. Korecki

Nicholas T. Korecki, P.E.
Senior Geotechnical Engineer
FL Registration No. 45529



NTK-LET\096469
Copies submitted: (3)

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Fax: 813.948.7645
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APPENDIX

PLATES I-A thru I-L - BORING LOCATION PLANS

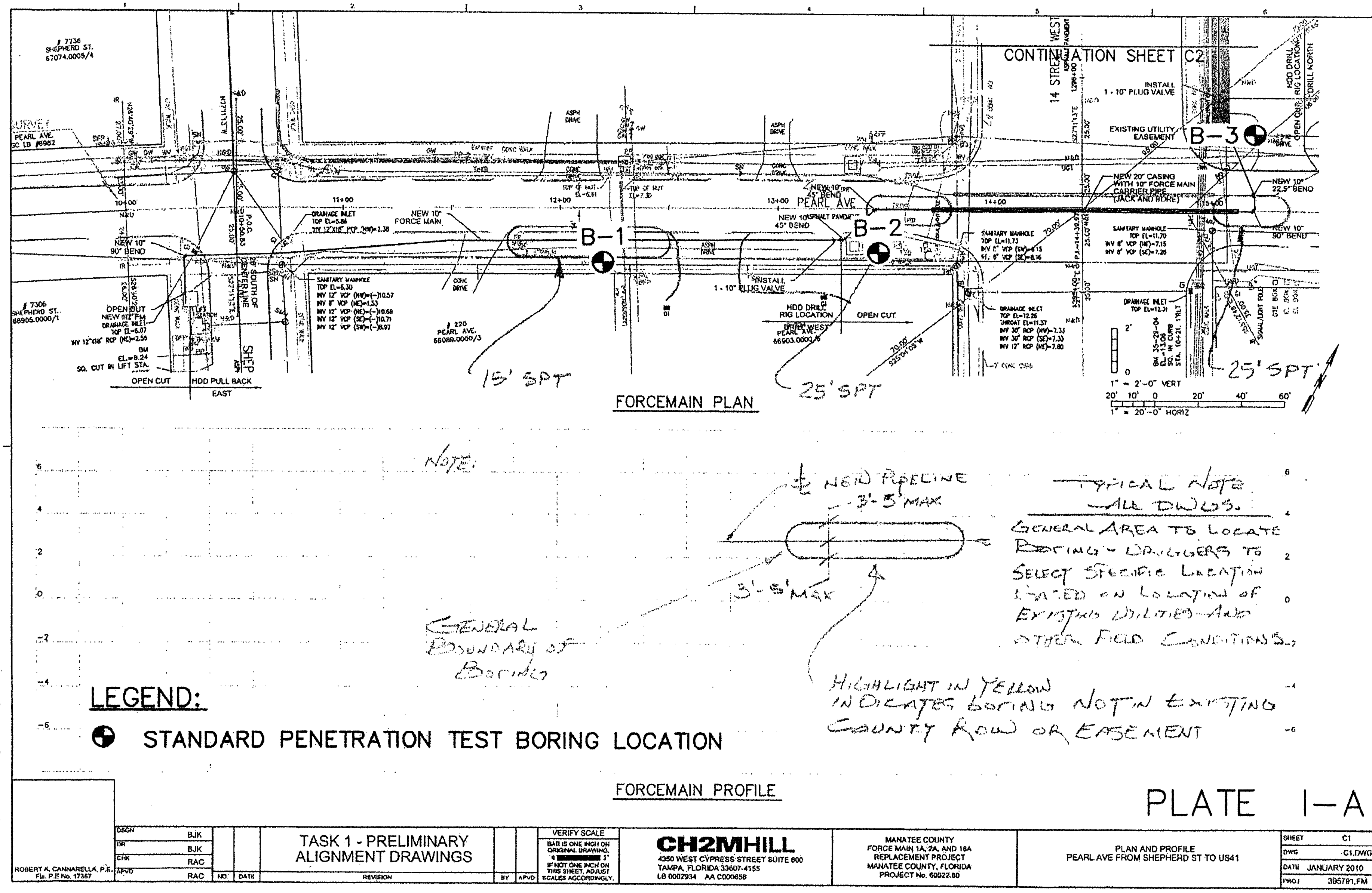
STANDARD PENETRATION TEST BORINGS

SUMMARY OF LABORATORY TEST RESULTS

GRAINSIZE ANALYSES

METHOD OF TESTING

PLATES I-A thru I-L - BORING LOCATION PLANS



CONTINUATION SHEET C2
14 STREET WEST
PEARL AVE
B-1
B-2
B-3
15' SPT
25' SPT
25' SPT
NEW 10" FORCE MAIN
NEW 20" CASING WITH 10" FORCE MAIN CARRIER PIPE (JACK AND BORE)
INSTALL 1 - 10" PLUG VALVE
EXISTING UTILITY EASEMENT
HDD DRILL RIG LOCATION
HDD PULL BACK
OPEN CUT
1" = 2'-0" VERT
1" = 20'-0" HORIZ
FORCEMAIN PLAN
NOTE:
℄ NEW PIPELINE
3'-5' MAX
3'-5' MAX
TYPICAL NOTE ALL DWGS.
GENERAL AREA TO LOCATE BORING - DRILLERS TO SELECT SPECIFIC LOCATION BASED ON LOCATION OF EXISTING UTILITIES AND OTHER FIELD CONDITIONS.
GENERAL BOUNDARY OF BORING
HIGHLIGHT IN YELLOW INDICATES BORING NOT IN EXISTING COUNTY ROW OR EASEMENT
LEGEND:
STANDARD PENETRATION TEST BORING LOCATION
FORCEMAIN PROFILE
PLATE I-A
ROBERT A. CANNARELLA, P.E. Fla. P.E No. 17367
DSGN BJK
DR BJK
CHK RAC
APVD RAC
TASK 1 - PRELIMINARY ALIGNMENT DRAWINGS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.
CH2MHILL
4350 WEST CYPRESS STREET SUITE 600
TAMPA, FLORIDA 33607-4155
LB 0002934 AA C000658
MANATEE COUNTY
FORCE MAIN 1A, 2A, AND 18A
REPLACEMENT PROJECT
MANATEE COUNTY, FLORIDA
PROJECT No. 60022.80
PLAN AND PROFILE
PEARL AVE FROM SHEPHERD ST TO US41
SHEET C1
DWG C1.DWG
DATE JANUARY 2010
PROJ 385791.FM

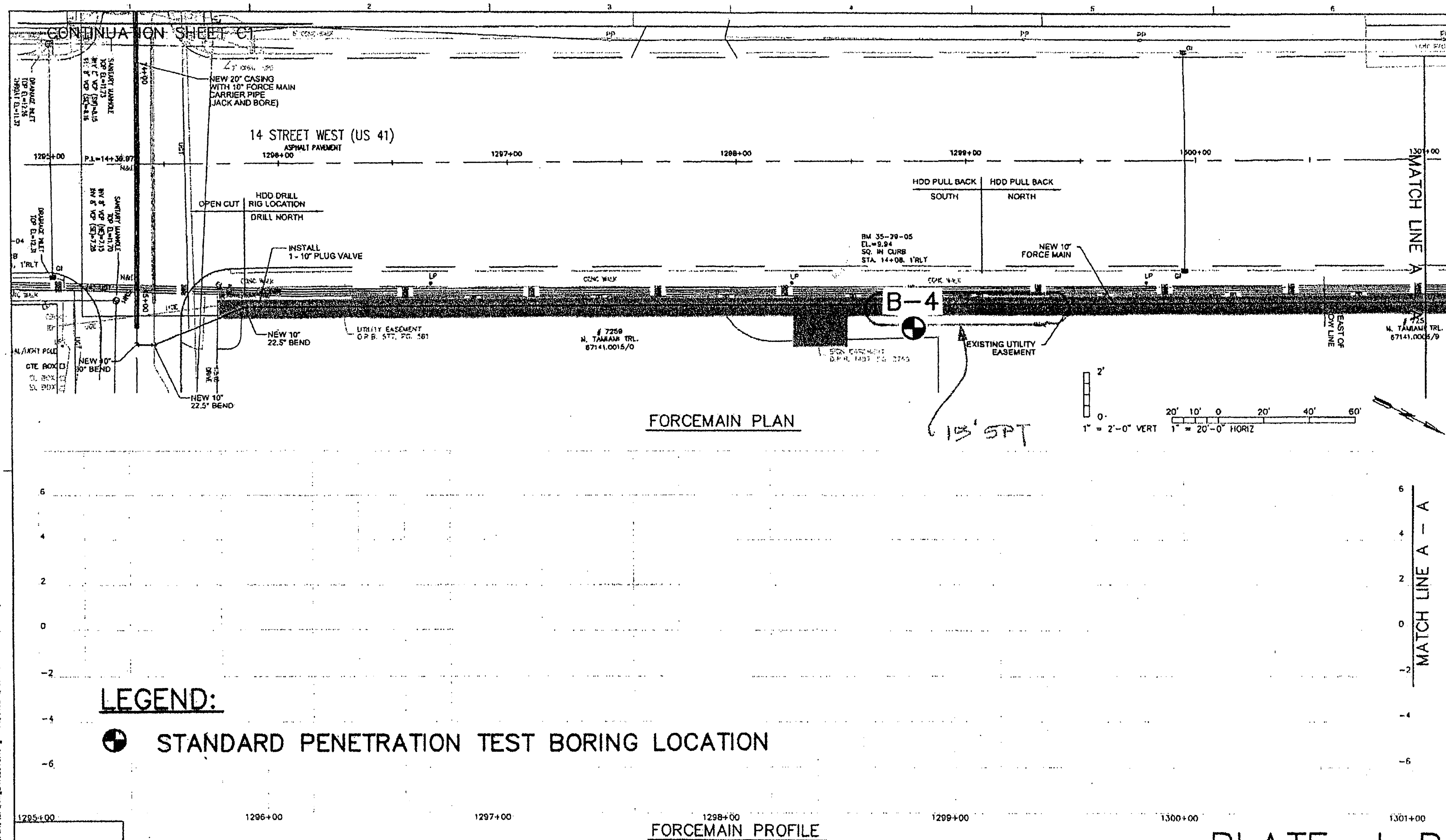
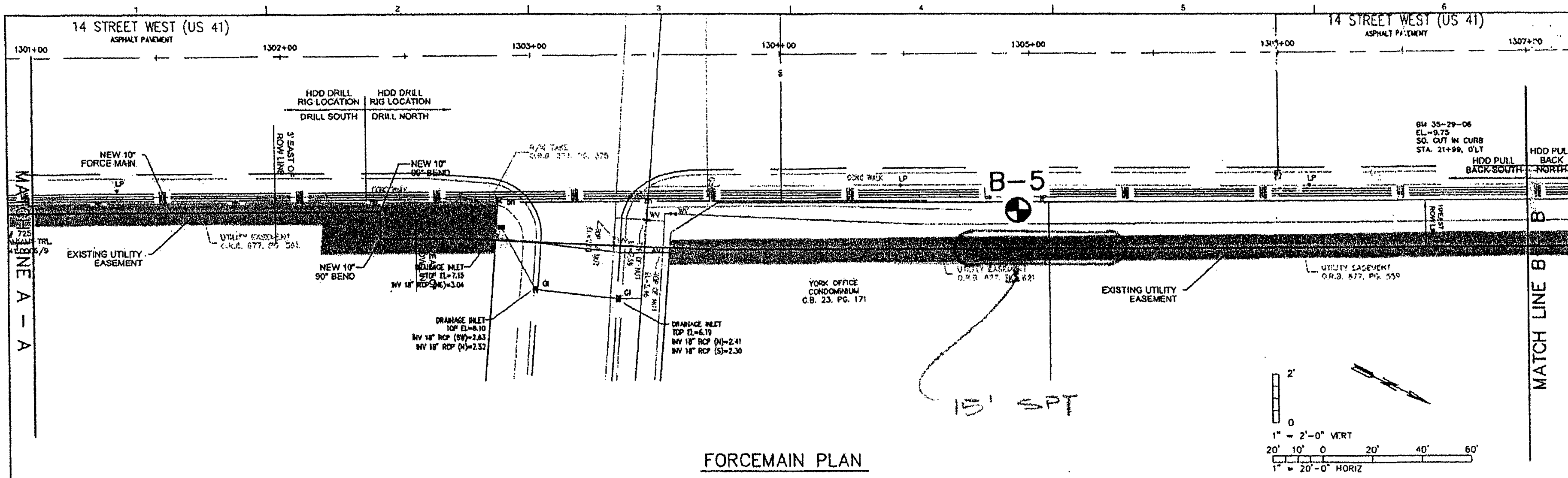


PLATE I-B

ROBERT A. CANNARELLA, P.E. Fla. P.E No. 17387	DSGN BJK / DR BJK / CHK RAC / APVD RAC	TASK 1 - PRELIMINARY ALIGNMENT DRAWINGS	VERIFY SCALE: BAR IS ONE INCH ON ORIGINAL DRAWING. 0 — 1". IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.
CH2MHILL 4350 WEST CYPRESS STREET SUITE 600 TAMPA, FLORIDA 33607-4156 LB 0002934 AA C000656	MANATEE COUNTY FORCE MAIN 1A, 2A, AND 18A REPLACEMENT PROJECT MANATEE COUNTY, FLORIDA PROJECT No. 60522.80	PLAN AND PROFILE US 41 STA: 1295+00 TO 1301+00	SHEET C2 / DWG C2.DWG / DATE JANUARY 2010 / PROJ 395791.FM



FORCEMAIN PLAN

LEGEND:

STANDARD PENETRATION TEST BORING LOCATION

FORCEMAIN PROFILE

PLATE I-C

DSGN	BJK
DR	BJK
CHK	RAC
APVD	RAC

ROBERT A. CANNARELLA, P.E.
Fla. P.E No. 17307

TASK 1 - PRELIMINARY ALIGNMENT DRAWINGS

NO. | DATE | REVISION | BY | APVD

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

CH2MHILL
4350 WEST CYPRESS STREET SUITE 600
TAMPA, FLORIDA 33607-4155
LB 0002934 AA C000656

MANATEE COUNTY,
FORCE MAIN 1A, 2A, AND 18A
REPLACEMENT PROJECT
MANATEE COUNTY, FLORIDA
PROJECT No. 60522.60

PLAN AND PROFILE
US 41 STA: 1301+00 TO 1307+00

SHEET	C3
DWG	C3.DWG
DATE	JANUARY 2010
PROJ	395791.FM

V:\Manatee County Waterline\Drawings\TLcovering Plotted 2/18/2009 013 pm By bkleinl Model Plot Scale 1=10 Xref Dwg's

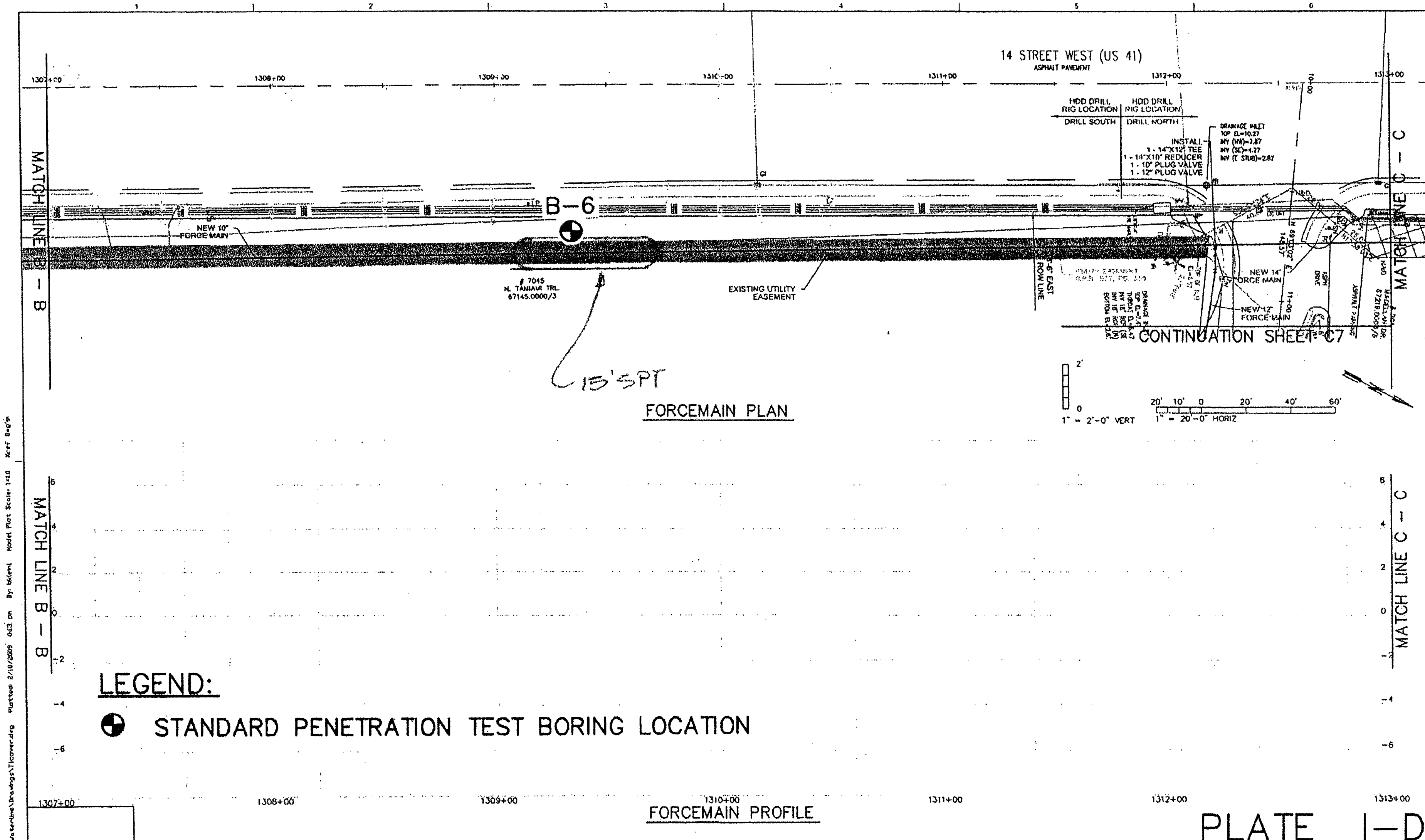


PLATE I–D

DSGN	BJK		
DR	BJK		
CHK	RAC		
APVD	RAC	NO.	DATE

ROBERT A. CANNARELLA, P.E. Fla. P.E No. 17367

TASK 1 - PRELIMINARY ALIGNMENT DRAWINGS

REVISION | BY | APVD

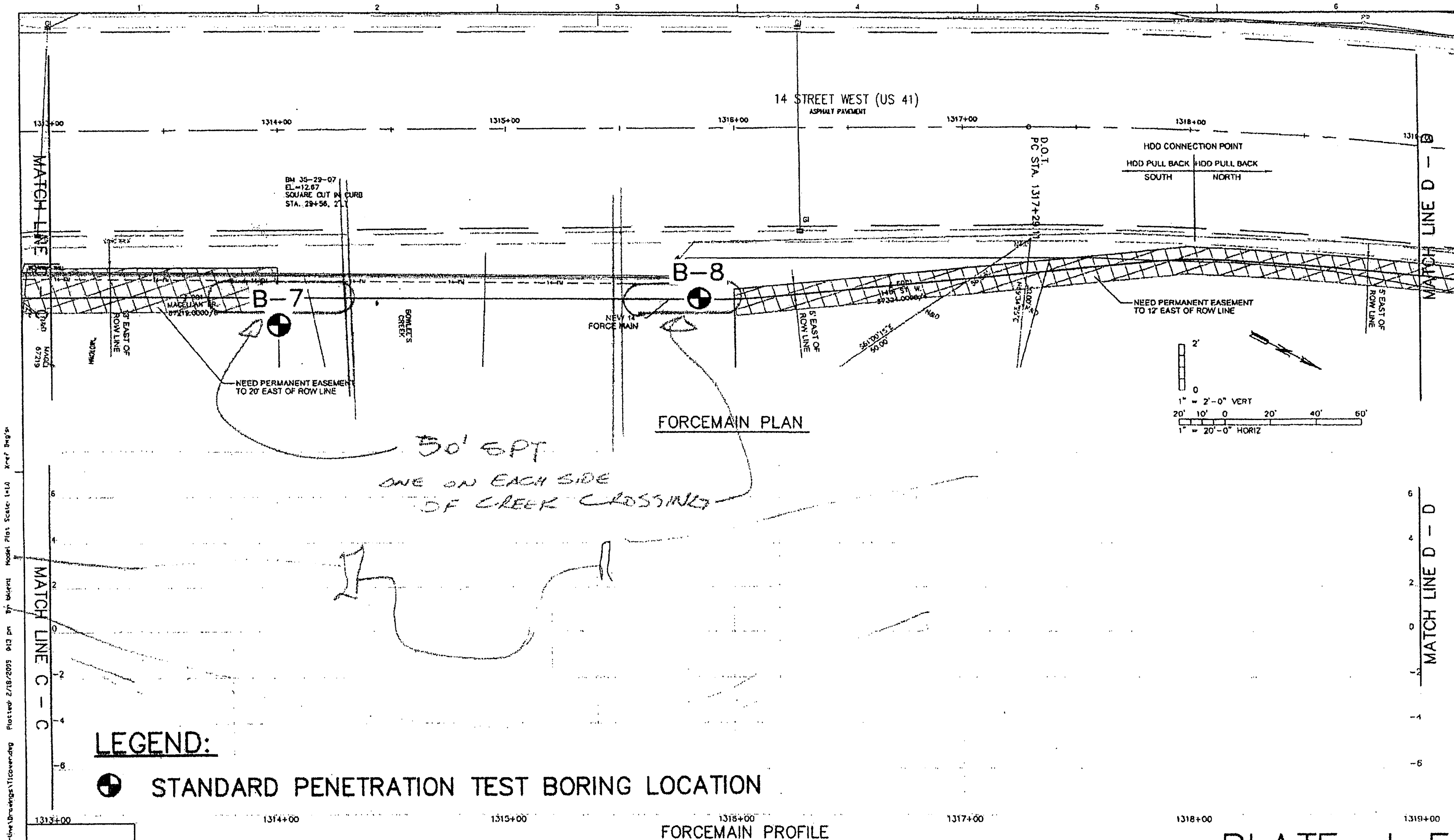
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 ▬▬▬ 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

CH2MHILL
4350 WEST CYPRESS STREET SUITE 600
TAMPA, FLORIDA 33607-4155
LB 0002934 AA C000656

MANATEE COUNTY
FORCE MAIN 1A, 2A, AND 16A
REPLACEMENT PROJECT
MANATEE COUNTY, FLORIDA
PROJECT No. 60522.80

PLAN AND PROFILE
US 41 STA: 1307+00 TO 1313+00

SHEET	C4
DWG	C4.DWG
DATE	JANUARY 2010
PROJ	395791.FM



LEGEND:

⊕ STANDARD PENETRATION TEST BORING LOCATION

PLATE I-E

DSGN	BJK	
DR	BJK	
CHK	RAC	
APVD	RAC	

ROBERT A. CANNARELLA, P.E
Fla. P.E No. 17387

TASK 1 - PRELIMINARY ALIGNMENT DRAWINGS

NO. | DATE | REVISION | BY | APVD

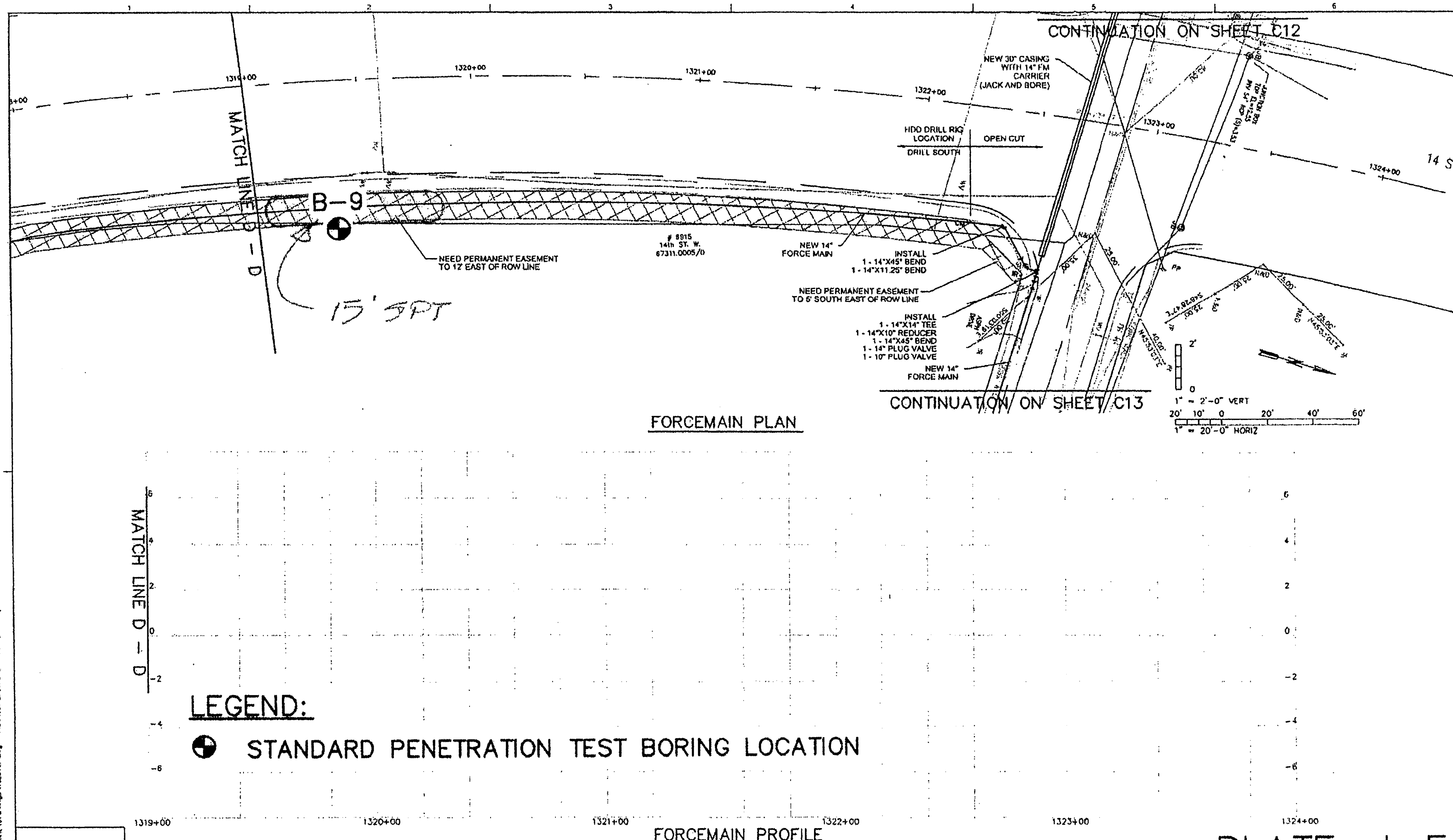
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 ▬▬ 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

CH2MHILL
4350 WEST CYPRESS STREET SUITE 600
TAMPA, FLORIDA 33607-4155
LB 0002934 AA C000656

MANATEE COUNTY
FORCE MAIN 1A, 2A, AND 16A
REPLACEMENT PROJECT
MANATEE COUNTY, FLORIDA
PROJECT No. 60522.80

PLAN AND PROFILE
US 41 STA: 1313+00 TO 1319+00

SHEET	C5
DWG	C5.DWG
DATE	JANUARY 2010
PROJ	395781.FM



LEGEND:

⊕ STANDARD PENETRATION TEST BORING LOCATION

PLATE I–F

DSGN	BJK		
DR	BJK		
CHK	RAC		
APVD	RAC	NO.	DATE

ROBERT A. CANNARELLA, P.E.
Fla. P.E No. 17367

TASK 1 - PRELIMINARY
ALIGNMENT DRAWINGS

REVISION | BY | APVD

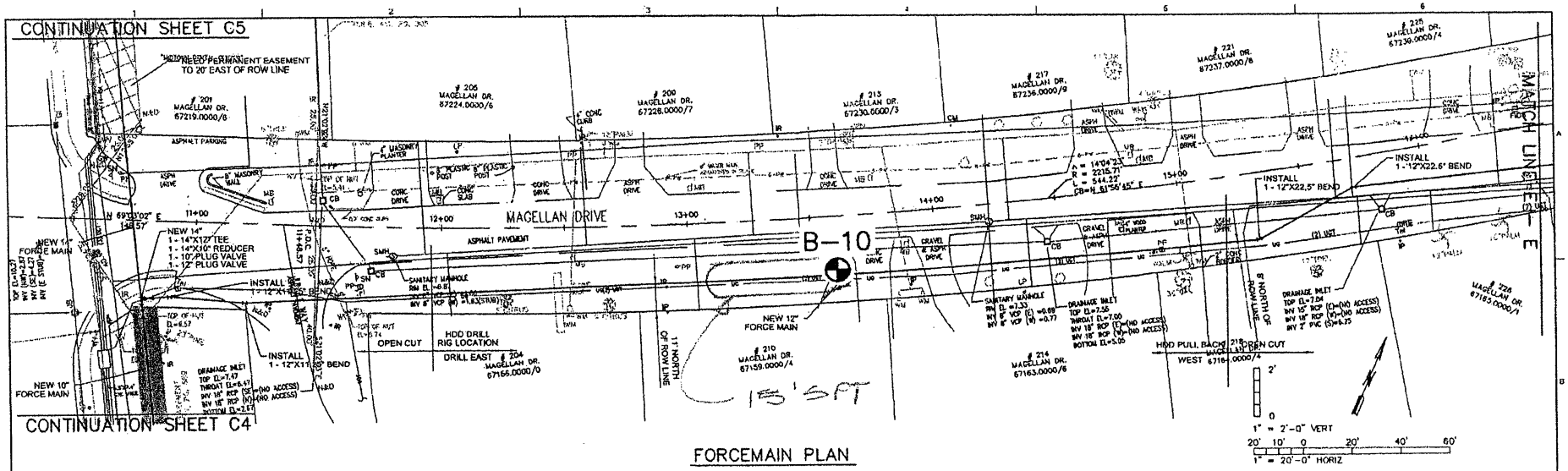
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

CH2MHILL
4350 WEST CYPRESS STREET SUITE 600
TAMPA, FLORIDA 33607-4155
LB 0002834 AA C000856

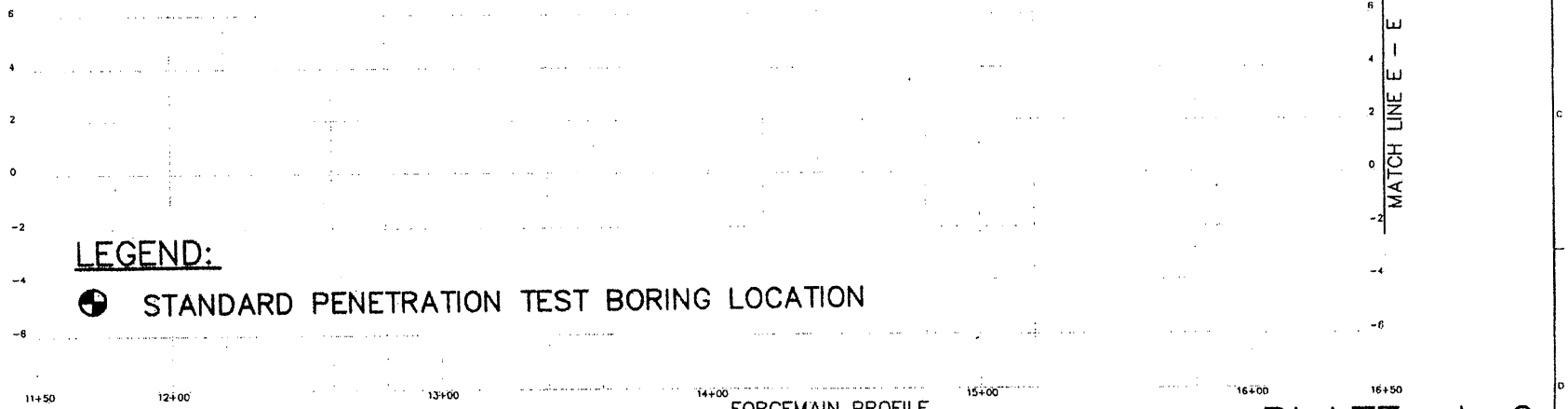
MANATEE COUNTY
FORCE MAIN 1A, 2A, AND 16A
REPLACEMENT PROJECT
MANATEE COUNTY, FLORIDA
PROJECT No. 60622.80

PLAN AND PROFILE
US 41 STA: 1319+00 TO 69th AVE

SHEET	C8
DWG	C8.DWG
DATE	JANUARY 2010
PROJ	395791.FM



FORCEMAIN PLAN



FORCEMAIN PROFILE

PLATE I-G

ROBERT A. CANNARELLA, P.E.
Fla. P.E No. 17367

DSGN	BJK
DR	BJK
CHK	RAC
APVD	RAC

NO.	DATE	REVISION	BY	APVD

TASK 1 - PRELIMINARY ALIGNMENT DRAWINGS

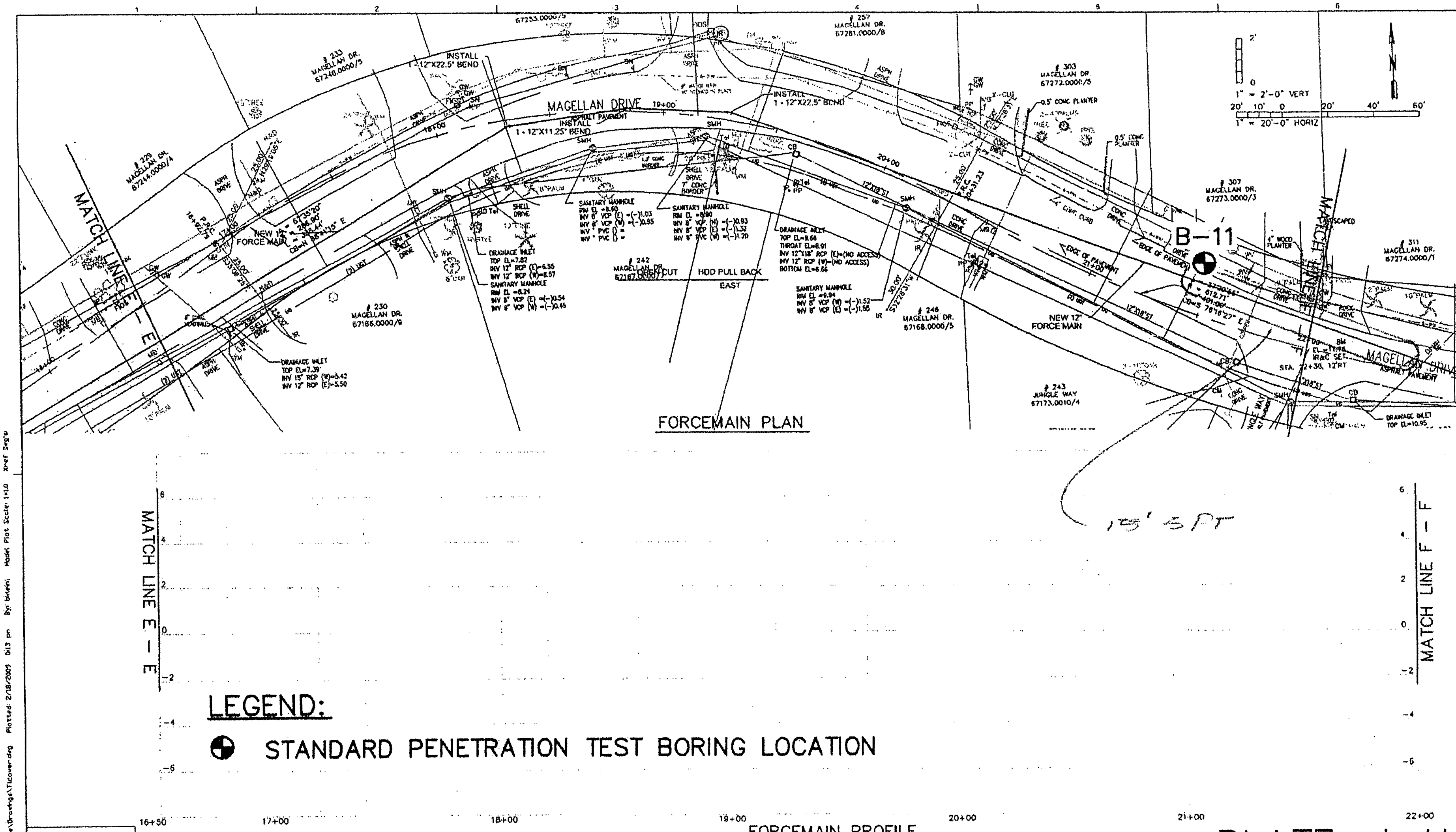
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

CH2MHILL
4350 WEST CYPRESS STREET SUITE 600
TAMPA, FLORIDA 33607-4155
LB 0002934 AA C000656

MANATEE COUNTY
FORCE MAIN 1A, 2A, AND 16A REPLACEMENT PROJECT
MANATEE COUNTY, FLORIDA
PROJECT No. 60522.80

PLAN AND PROFILE
MAGELLAN DR FROM US 41 TO STA: 16+50

SHEET	C7
DWG	C7.DWG
DATE	JANUARY 2010
PROJ	395791.FM



LEGEND:

⊕ STANDARD PENETRATION TEST BORING LOCATION

PLATE I-H

DSGN	BJK	NO.	DATE	REVISION	BY / APVD
DR	BJK				
CHK	RAC				
APVD	RAC				

ROBERT A. CANNARELLA, P.E.
Fla. P.E No. 17367

TASK 1 - PRELIMINARY
ALIGNMENT DRAWINGS

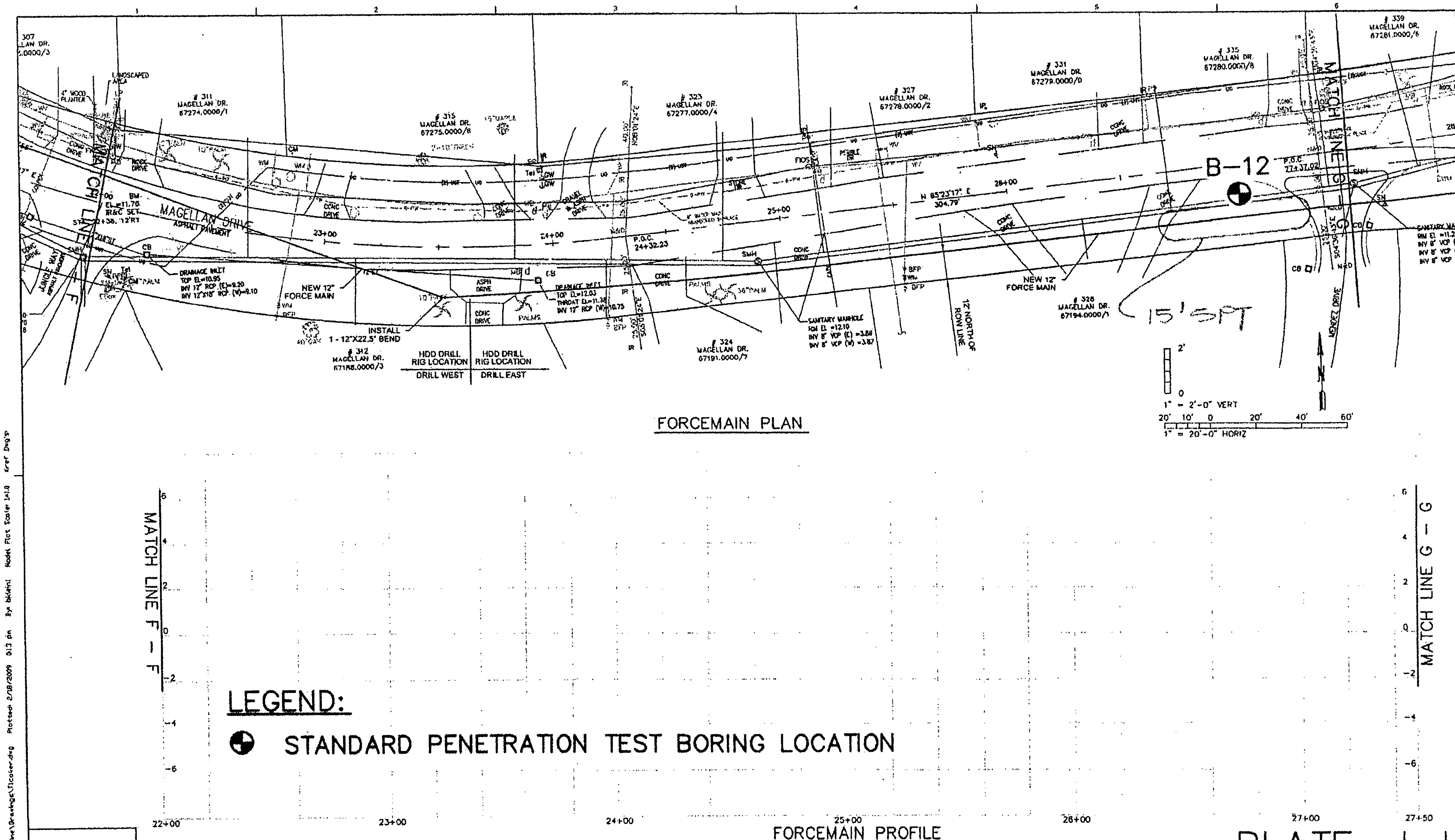
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

CH2MHILL
4350 WEST CYPRESS STREET SUITE 600
TAMPA, FLORIDA 33607-4155
LB 0002934 AA C000656

MANATEE COUNTY
FORCE MAIN 1A, 2A, AND 16A
REPLACEMENT PROJECT
MANATEE COUNTY, FLORIDA
PROJECT No. 60522.80

PLAN AND PROFILE
MAGELLAN DR STA: 16+50 TO 22+00

SHEET	C8
DWG	C8.DWG
DATE	JANUARY 2010
PROJ	395791.FM



LEGEND:

⊕ STANDARD PENETRATION TEST BORING LOCATION

PLATE I–I

DSGN	BJK		
DR	BJK		
CHK	RAC		
APVD	RAC	NO.	DATE

ROBERT A. CANNARELLA, P.E.
Fla. P.E No. 17367

TASK 1 - PRELIMINARY ALIGNMENT DRAWINGS

REVISION | BY | APVD

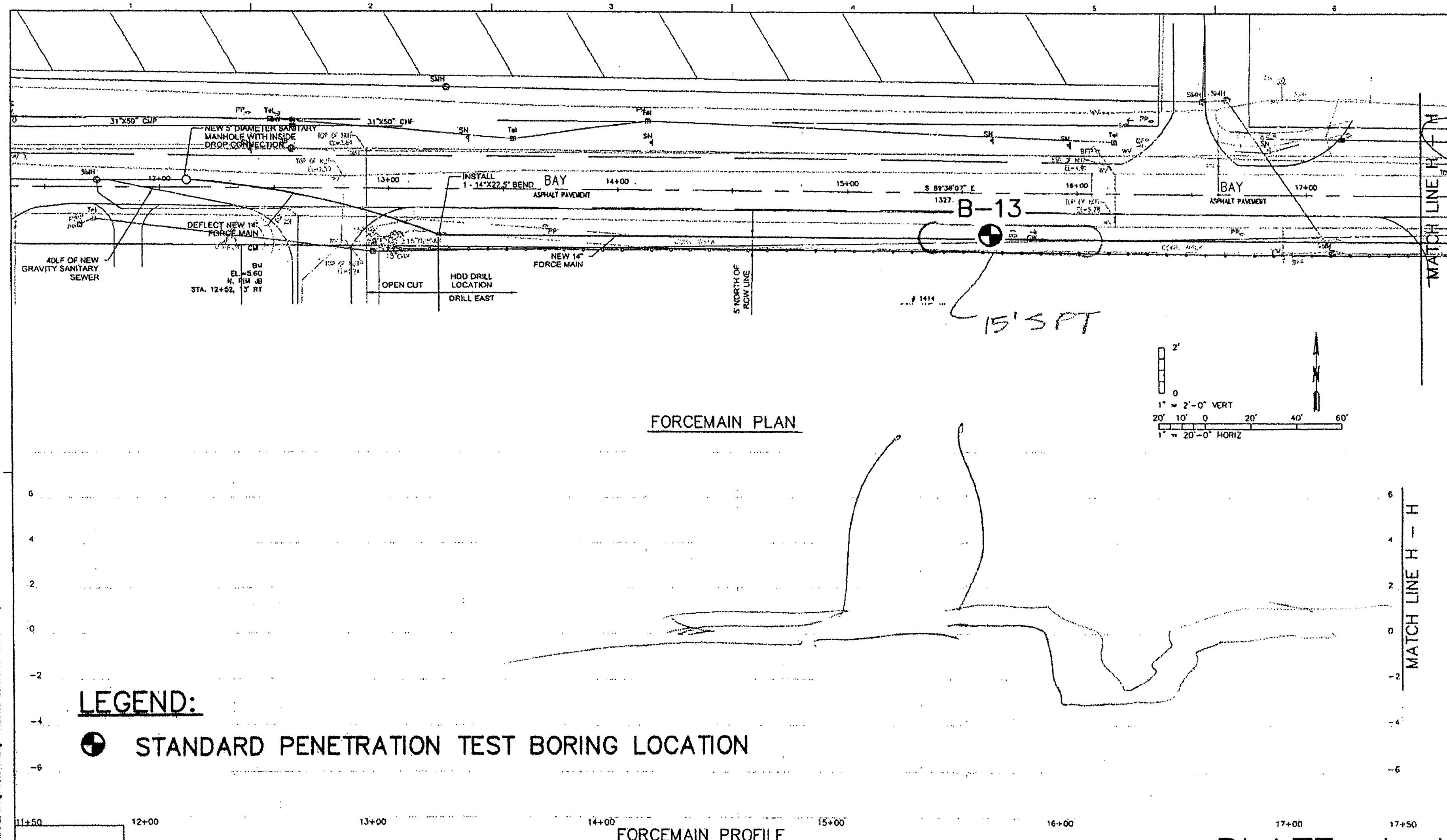
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 ▬▬▬ 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

CH2MHILL
4350 WEST CYPRESS STREET SUITE 600
TAMPA, FLORIDA 33607-4155
LB 0002834 AA C000656

MANATEE COUNTY
FORCE MAIN 1A, 2A, AND 16A
REPLACEMENT PROJECT
MANATEE COUNTY, FLORIDA
PROJECT No. 60522.80

PLAN AND PROFILE
MAGELLAN DR STA: 22+00 TO 27+50

SHEET	C9
DWG	C9.DWG
DATE	JANUARY 2010
PROJ	395791.FM



LEGEND:

⊕ STANDARD PENETRATION TEST BORING LOCATION

PLATE I–J

DSGN	BJK		
DR	BJK		
CHK	RAC		
APVD	RAC		

ROBERT A. CANNARELLA, P.E.
Fla. P.E No. 17367

TASK 1 - PRELIMINARY ALIGNMENT DRAWINGS

NO. | DATE | REVISION | BY | APVD

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

CH2MHILL
4350 WEST CYPRESS STREET SUITE 600
TAMPA, FLORIDA 33607-4155
LB 0002934 AA C000658

MANATEE COUNTY
FORCE MAIN 1A, 2A, AND 16A
REPLACEMENT PROJECT
MANATEE COUNTY, FLORIDA
PROJECT No. 60522.80

PLAN AND PROFILE
69th AVE (BAY) STA: 11+50 TO 17+50

SHEET	C11
DWG	C11.DWG
DATE	JANUARY 2010
PROJ	395791.FM

V:\Manatee County Waterline\Drawings\11coverdwg Plotted: 2/18/2009 012 pm By: bklefnl Model Plot Scale: 1:1 Xref Dwg's

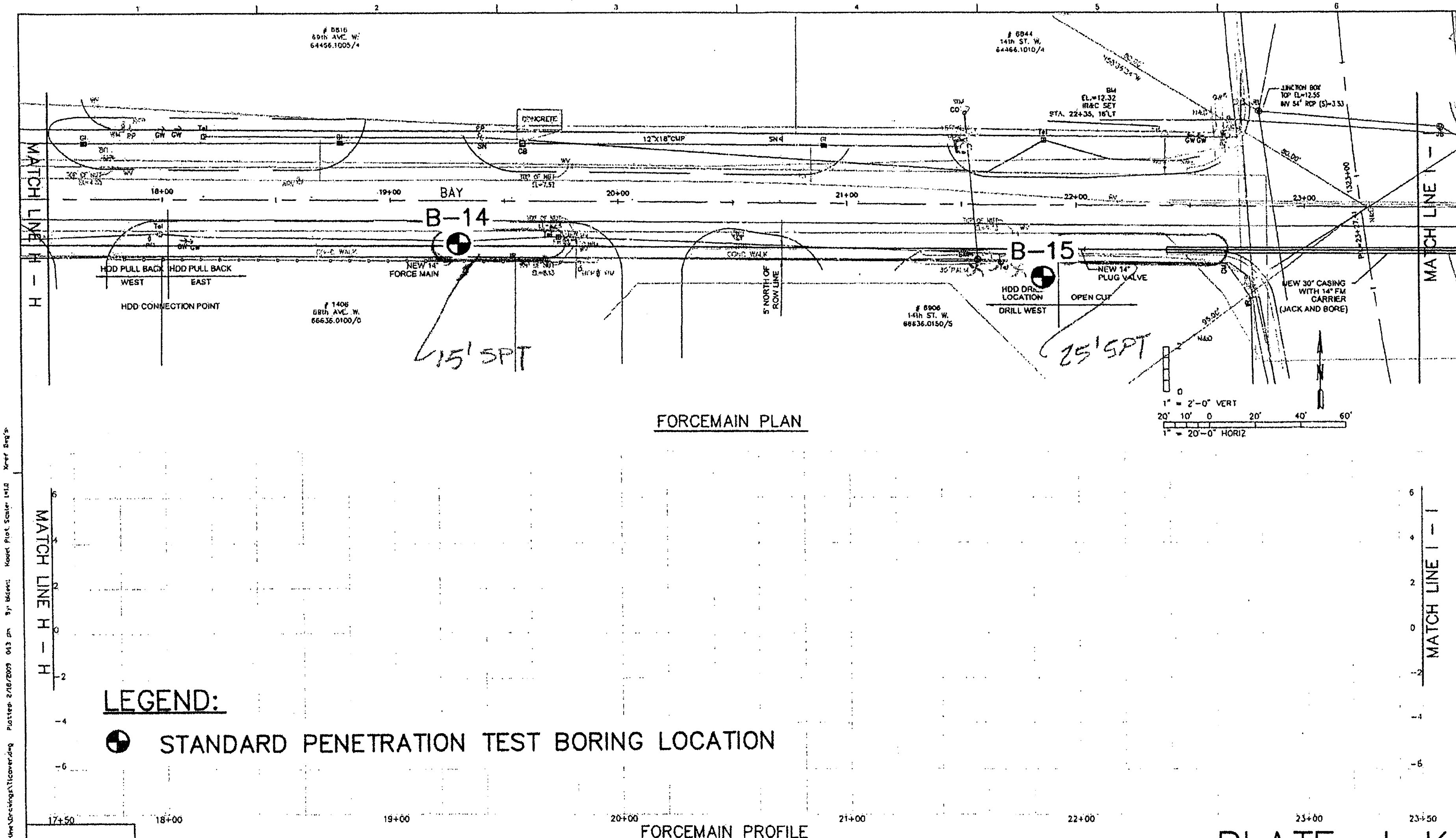


PLATE I–K

DSGN	BJK		
DR	BJK		
CHK	RAC		
APVD	RAC	NO.	DATE

ROBERT A. CANNARELLA, P.E.
Fla. P.E No. 17387

TASK 1 - PRELIMINARY ALIGNMENT DRAWINGS

REVISION | BY | APVD

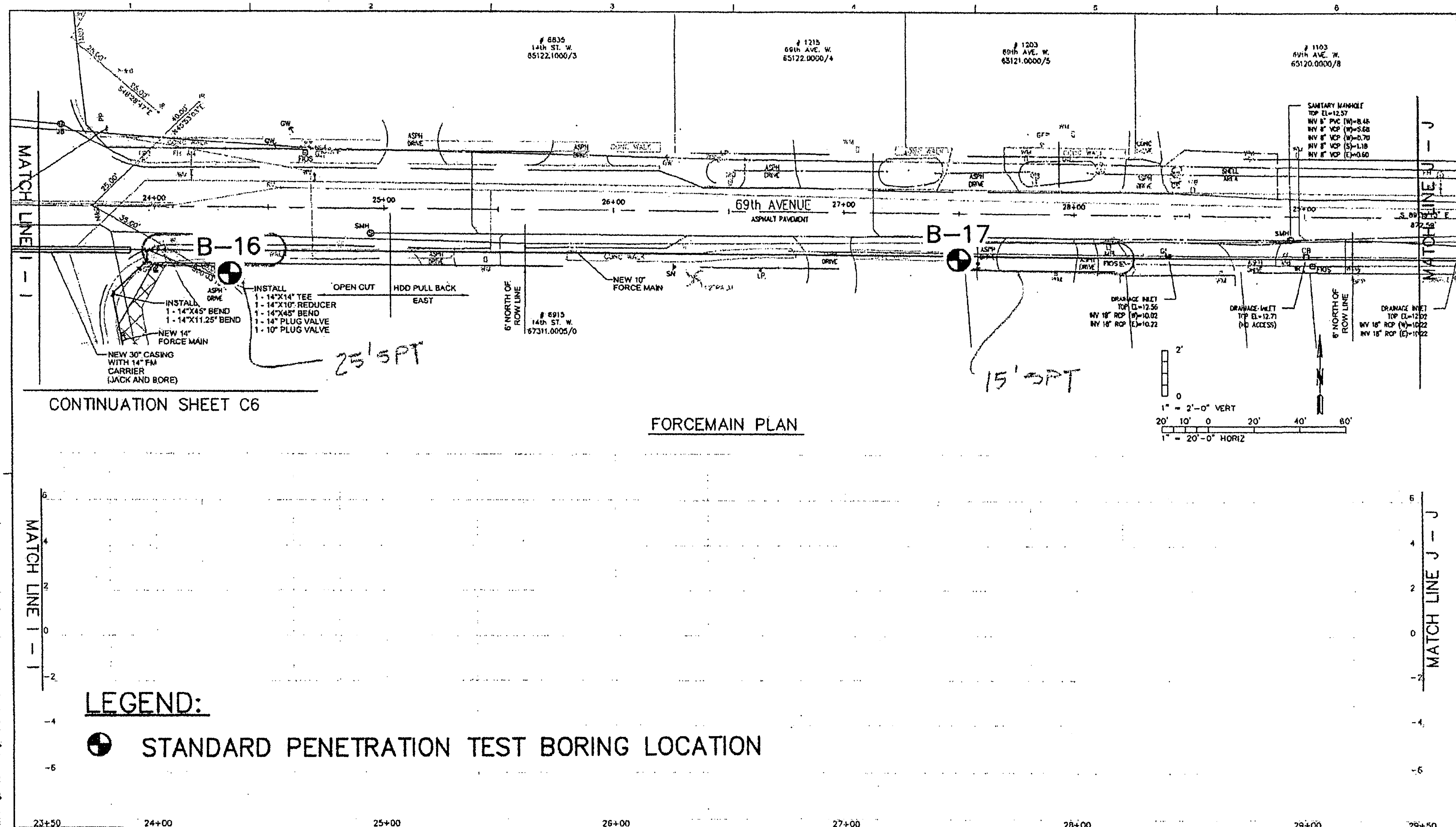
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 — 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

CH2MHILL
4350 WEST CYPRESS STREET SUITE 600
TAMPA, FLORIDA 33607-4155
LB 0002934 AA C000856

MANATEE COUNTY
FORCE MAIN 1A, 2A, AND 16A
REPLACEMENT PROJECT
MANATEE COUNTY, FLORIDA
PROJECT No. 60522.80

PLAN AND PROFILE
69th AVE (BAY) STA: 17+50 TO 23+50

SHEET	C12
DWG	C12.DWG
DATE	JANUARY 2010
PROJ	395791.FM



LEGEND:

⊕ STANDARD PENETRATION TEST BORING LOCATION

PLATE I-L

DSGN	BJK	
DR	BJK	
CHK	RAC	
APVD	RAC	

ROBERT A. CANNARELLA, P.E. Fla. P.E No. 17387

TASK 1 - PRELIMINARY ALIGNMENT DRAWINGS

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

CH2MHILL
4350 WEST CYPRESS STREET SUITE 600
TAMPA, FLORIDA 33607-4155
LB 0002934 AA C000656

MANATEE COUNTY
FORCE MAIN 1A, 2A, AND 18A
REPLACEMENT PROJECT
MANATEE COUNTY, FLORIDA
PROJECT No. 60522.80

PLAN AND PROFILE
69th AVE STA: 23+50 TO 29+50

SHEET	C13
DWG	C13.DWG
DATE	JANUARY 2010
PROJ	395791.FM

STANDARD PENETRATION TEST BORINGS

DRIGGERS ENGINEERING SERVICES INCORPORATED

Project No. DES 096469 **BORING NO.** B-1

Project Force Main 1A, 2A & 16A Replacement, Manatee County, Florida

Location See Plate I-A **Foreman** M.B.

Completion Depth 16.5' **Date** 3/18/10 **Depth To Water** 2.8' **Time** _____ **Date** 3/18/10

DEPTH, FT	SYMBOL	SAMPLES	SOIL DESCRIPTION SURF. EL:	BLOWS ON SAMPLER PER 6" OR PEN. STR.	STANDARD PENETRATION TEST BLOWS/FT. ON 2" O.D. SAMPLER-140 LB. HAMMER, 30" DROP 10 20 40 60 80
0			Brown Fine SAND with roots (SP)		
			Gray, light gray and brown Fine SAND (SP)		
			Dark brown Fine SAND with trace of finely divided organic material (SP)		
5			Loose to medium dense brown Fine SAND (SP)	2/5/5	
				3/5/7	
10			Very loose light brown Fine SAND (SP)	2/1/2	
			Very loose gray slightly silty Fine SAND (SP-SM)	2/2/1	
15			Very loose gray silty Fine SAND with shell (SM)	1/0/1	
20					
25					
30					

Remarks _____

Casing Length _____

DRIGGERS ENGINEERING SERVICES INCORPORATED

Project No. DES 096469 **BORING NO. B-2**

Project Force Main 1A, 2A & 16A Replacement, Manatee County, Florida

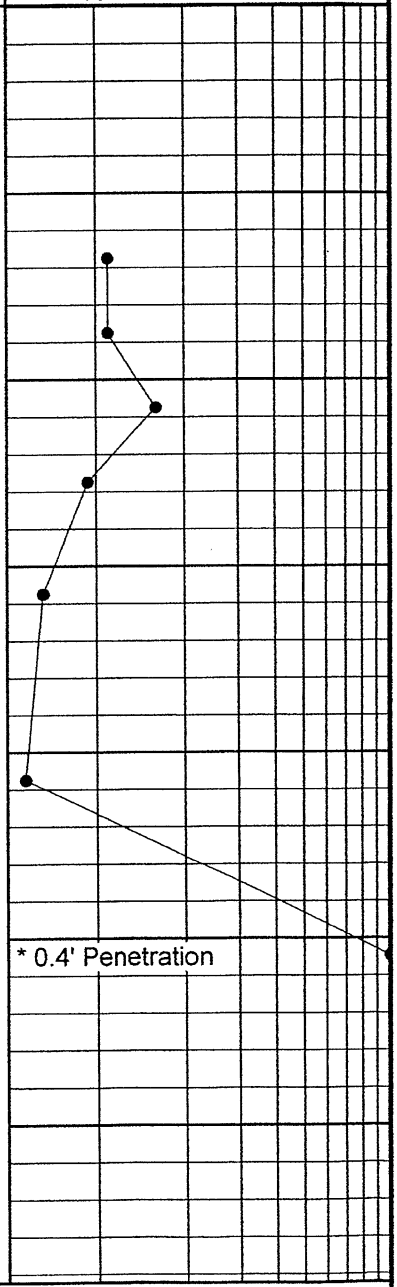
Location See Plate I-A **Foreman** M.B.

Completion Depth 25.9' **Date** 3/18/10 **Depth To Water** 4.3' **Time** _____ **Date** 3/18/10

DEPTH, FT	SYMBOL	SAMPLES	SOIL DESCRIPTION	BLOWS ON SAMPLER PER 6" OR PEN. STR.
			SURF. EL:	
0			Gray Fine SAND (SP)	
			Light gray Fine SAND (SP)	
			Dark brown Fine SAND (SP)	
5			Dark gray Fine SAND with finely divided organic material (SP)	
			Medium dense brown Fine SAND (SP)	4/4/7
				4/5/6
10				9/7/9
			Loose to very loose light brown Fine SAND (SP)	4/4/5
15				2/2/2
			Very loose gray silty to clayey Fine SAND with shell (SM) to (SC)	
20				1/1/1
			Cream colored weathered LIMESTONE and green CLAY	
25				17/50*
30				

STANDARD PENETRATION TEST BLOWS/FT. ON 2" O.D. SAMPLER-140 LB. HAMMER, 30" DROP

10 20 40 60 80



Remarks _____

Casing Length _____

DRIGGERS ENGINEERING SERVICES INCORPORATED

Project No. DES 096469 **BORING NO.** B-3

Project Force Main 1A, 2A & 16A Replacement, Manatee County, Florida

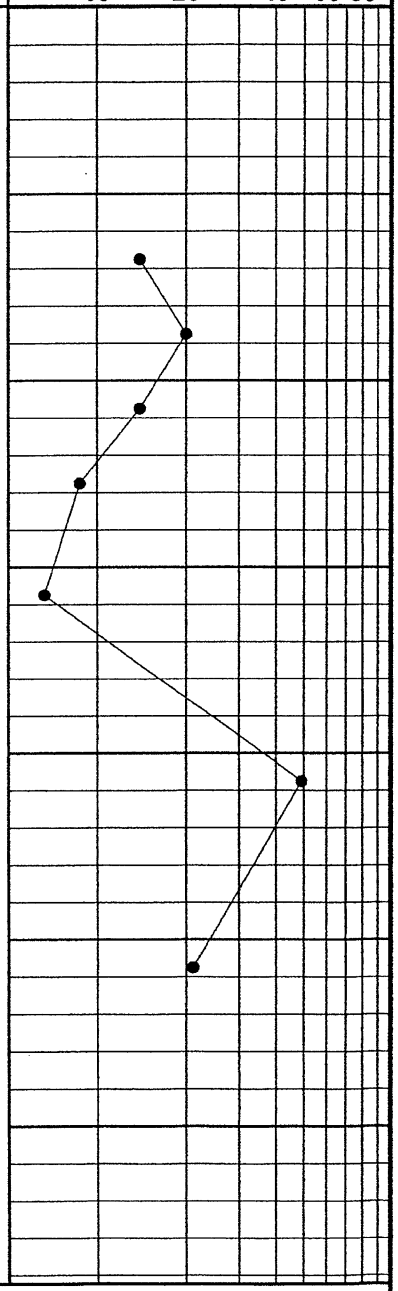
Location See Plate I-A **Foreman** M.B.

Completion Depth 26.5' **Date** 3/18/10 **Depth To Water** 3.0' **Time** _____ **Date** 3/18/10

DEPTH, FT	SYMBOL	SAMPLES	SOIL DESCRIPTION	BLOWS ON SAMPLER PER 6" OR PEN. STR.
			SURF. EL:	
0			Brown and gray Fine SAND with roots (SP)	
			Dark gray Fine SAND with roots (SP)	
			Dark gray and gray Fine SAND (SP)	
			Dark gray organic Fine SAND with roots (SP-SM/Pt)	
5			Dark brown slightly silty Fine SAND with finely divided organic material (SP-SM)	
			Medium dense dark brown Fine SAND (SP)	2/6/8
				6/10/10
10			Medium dense to loose brown Fine SAND (SP)	4/7/7
				4/4/4
15			Very loose dark brown and brown weakly cemented Fine SAND (SP)	2/2/2
			Cream colored LIMESTONE with trace of CLAY	
20				4/21/28
			Cream colored weathered LIMESTONE	
25				10/9/12
30				

STANDARD PENETRATION TEST BLOWS/FT. ON 2" O.D. SAMPLER-140 LB. HAMMER, 30" DROP

10 20 40 60 80



Remarks _____

Casing Length _____

DRIGGERS ENGINEERING SERVICES INCORPORATED

Project No. DES 096469 **BORING NO. B-4**

Project Force Main 1A, 2A & 16A Replacement, Manatee County, Florida

Location See Plate I-B **Foreman** M.B.

Completion Depth 16.5' **Date** 3/18/10 **Depth To Water** 4.3' **Time** _____ **Date** 3/18/10

DEPTH, FT	SYMBOL	SAMPLES	SOIL DESCRIPTION	BLOWS ON SAMPLER PER 6" OR PEN. STR.	STANDARD PENETRATION TEST BLOWS/FT. ON 2" O.D. SAMPLER-140 LB. HAMMER, 30" DROP
			SURF. EL:		10 20 40 60 80
0			7" Abundant Shell		
			Dark gray slightly organic Fine SAND (SP)		
			Gray Fine SAND with trace of rock and shell fragments (SP)		
5					
			Soft dark gray highly organic SILT (Pt)	1/3/3	
			Loose dark gray to gray Fine SAND (SP)		
			Medium dense gray slightly silty Fine SAND (SP-SM)	8/8/7	
10			Loose brown Fine SAND with roots (SP)	2/4/5	
			Very loose to loose light brown to light grayish-brown Fine SAND (SP)	2/2/2	
15				2/3/2	
20					
25					
30					

Remarks Borehole Grouted

Casing Length _____

DRIGGERS ENGINEERING SERVICES INCORPORATED

Project No. DES 096469 **BORING NO.** B-5

Project Force Main 1A, 2A & 16A Replacement, Manatee County, Florida

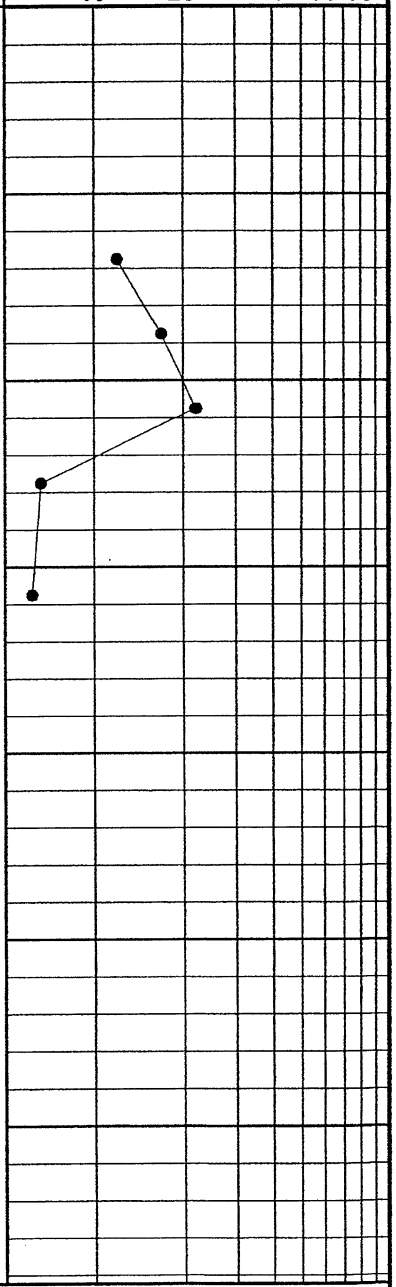
Location See Plate I-C **Foreman** M.B.

Completion Depth 16.5' **Date** 3/18/10 **Depth To Water** 3.2' **Time** _____ **Date** 3/18/10

DEPTH, FT	SYMBOL	SAMPLES	SOIL DESCRIPTION	BLOWS ON SAMPLER PER 6" OR PEN. STR.
			SURF. EL:	
0			Gray Fine SAND with roots (SP)	
			Dark gray and gray Fine SAND (SP)	
5			Brown Fine SAND (SP)	
			Medium dense light brown to light brownish-gray Fine SAND (SP)	4/5/7
				5/7/10
10				6/10/12
			Very loose light gray and brown Fine SAND with trace of phosphate fragments (SP)	3/2/2
15			Very loose light gray silty Fine SAND with abundant shell (SM)	2/1/2
20				
25				
30				

STANDARD PENETRATION TEST BLOWS/FT. ON 2" O.D. SAMPLER-140 LB. HAMMER, 30" DROP

10 20 40 60 80



Remarks _____

Casing Length _____

DRIGGERS ENGINEERING SERVICES INCORPORATED

Project No. DES 096469 **BORING NO.** B-6

Project Force Main 1A, 2A & 16A Replacement, Manatee County, Florida

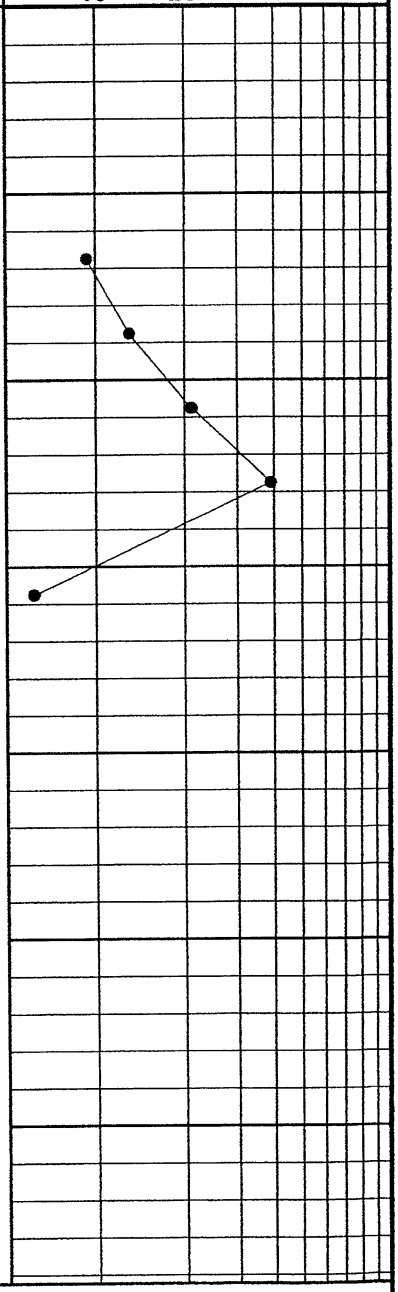
Location See Plate I-D **Foreman** M.B.

Completion Depth 16.5' **Date** 3/18/10 **Depth To Water** 3.4' **Time** _____ **Date** 3/18/10

DEPTH, FT	SYMBOL	SAMPLES	SOIL DESCRIPTION	BLOWS ON SAMPLER PER 6" OR PEN. STR.
			SURF. EL:	
0			Gray Fine SAND (SP)	
			Gray and brown Fine SAND (SP)	
			Light gray Fine SAND (SP)	
5			Brown slightly organic, slightly silty Fine SAND with roots (SP-SM)	
			Loose dark gray Fine SAND (SP)	3/5/4
			Medium dense brown to light brown Fine SAND (SP)	4/6/7
10				6/9/12
			Dense light tannish-gray Fine SAND (SP)	11/16/23
15			Very loose gray slightly silty Fine SAND (SP-SM)	4/1/2
20				
25				
30				

STANDARD PENETRATION TEST BLOWS/FT. ON 2" O.D. SAMPLER-140 LB. HAMMER, 30" DROP

10 20 40 60 80



Remarks _____ **Casing Length** _____

DRIGGERS ENGINEERING SERVICES INCORPORATED

Project No. DES 096469 **BORING NO.** B-7

Project Force Main 1A, 2A & 16A Replacement, Manatee County, Florida

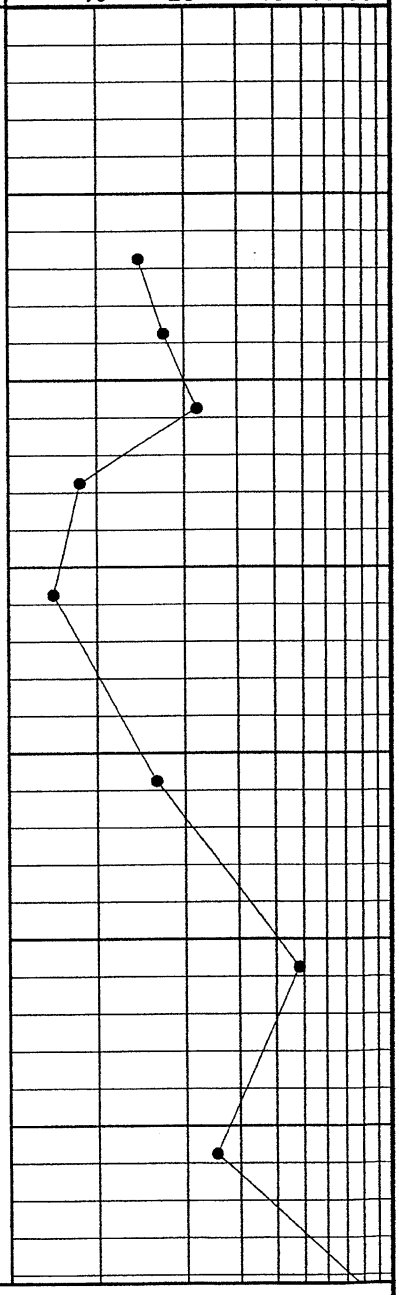
Location See Plate I-E **Foreman** M.B.

Completion Depth 31.5' **Date** 3/19/10 **Depth To Water** 5.5' **Time** _____ **Date** 3/19/10

DEPTH, FT	SAMPLES	SOIL DESCRIPTION	BLOWS ON SAMPLER PER 6" OR PEN. STR.
		SURF. EL:	
0		Gray Fine SAND with roots (SP)	
		Gray and light gray Fine SAND (SP)	
		Dark gray Fine SAND (SP)	
		Light gray Fine SAND (SP)	
5		Dark gray Fine SAND with finely divided organic material and trace of roots (SP)	
		Medium dense dark grayish-brown slightly silty Fine SAND with roots and trace of finely divided organic material (SP-SM)	8/7/7
		Medium dense light grayish-brown Fine SAND (SP)	4/7/10
10			4/9/13
		Loose gray Fine SAND (SP)	15/6/2
15		Firm green CLAY with seams of gray Fine SAND (CH/SP) (Pocket Penetrometer = 3.25 TSF)	20/2/3
		Very stiff green CLAY with trace of cream colored weathered LIMESTONE (CH) (Pocket Penetrometer = 3.25 TSF)	
20			10/8/8
		Hard to very stiff green CLAY (CL)	
25		(Pocket Penetrometer = 4.5+ TSF)	22/22/26
30		(Pocket Penetrometer = 3.5 TSF)	7/11/14
		Gray weathered LIMESTONE with trace of CLAY	

STANDARD PENETRATION TEST BLOWS/FT. ON 2" O.D. SAMPLER-140 LB. HAMMER, 30" DROP

10 20 40 60 80



Remarks Borehole Grouted

Casing Length 25.0'

DRIGGERS ENGINEERING SERVICES INCORPORATED

Project No. DES 096469 **BORING NO.** B-7

Project Force Main 1A, 2A & 16A Replacement, Manatee County, Florida

Location See Plate I-E **Foreman** M.B.

Completion Depth 31.5' **Date** 3/19/10 **Depth To Water** 5.5' **Time** _____ **Date** 3/19/10

DEPTH, FT	SYMBOL	SAMPLES	SOIL DESCRIPTION	BLOWS ON SAMPLER PER 6" OR PEN. STR.	STANDARD PENETRATION TEST BLOWS/FT. ON 2" O.D. SAMPLER-140 LB. HAMMER, 30" DROP
			SURF. EL:		10 20 40 60 80
35			Gray weathered LIMESTONE with trace of CLAY	50*	* 0.1' Penetration
			Cream colored weathered, clayey LIMESTONE		
40				11/15/21	
			Gray to gray and cream colored LIMESTONE		
45				14/22/21	
50				26/26/10	
			Very stiff gray and cream colored SILT (ML)		
55					
60					
65					

Remarks Borehole Grouted

Casing Length 25.0'

DRIGGERS ENGINEERING SERVICES INCORPORATED

Project No. DES 096469 **BORING NO.** B-8

Project Force Main 1A, 2A & 16A Replacement, Manatee County, Florida

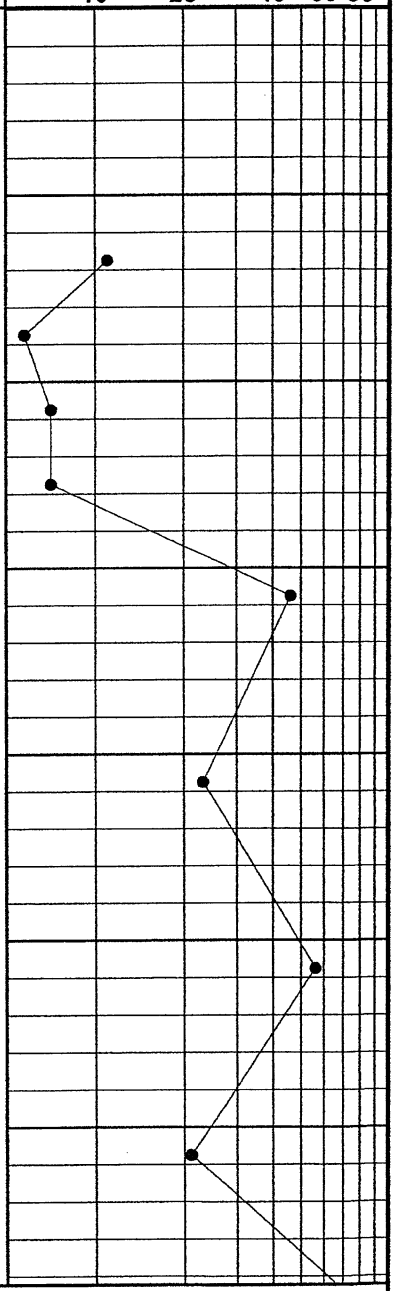
Location See Plate I-E **Foreman** M.B.

Completion Depth 50.5' **Date** 3/19/10 **Depth To Water** 6.4' **Time** _____ **Date** 3/19/10

DEPTH, FT	SYMBOL	SAMPLES	SOIL DESCRIPTION SURF. EL:	BLOWS ON SAMPLER PER 6" OR PEN. STR.
0			2" Asphalt Pavement	
			Gray slightly silty Fine SAND with trace of small rock fragments (SP-SM)	
			Gray and brown Fine SAND with shell fragments (SP)	
5			Dark brown and brown Fine SAND (SP)	
			Dark brown organic Fine SAND (SP-SM/Pt)	
			Medium dense gray Fine SAND with trace of shell (SP)	4/6/5
			Very soft dark brown highly organic, sandy SILT with trace of small roots (Pt)	1/1/1
10			Loose dark gray silty Fine SAND with roots (SM)	1/2/3
			Loose gray Fine SAND with trace of roots (SP)	2/3/2
15			Soft greenish-gray CLAY with trace of cream colored LIMESTONE (CH) (Pocket Penetrometer = 4.5+ TSF)	2/1/45
			Gray LIMESTONE and green CLAY	
20				16/12/11
			Hard greenish-brown cemented CLAY (CL)	
25			(Pocket Penetrometer = 4.25 TSF)	26/31/25
			Very stiff greenish-gray CLAY (CH)	
30			(Pocket Penetrometer = 3.75 TSF)	6/10/11
			Hard grayish-green cemented CLAY (1)	

STANDARD PENETRATION TEST BLOWS/FT. ON 2" O.D. SAMPLER-140 LB. HAMMER, 30" DROP

10 20 40 60 80



Remarks Borehole Grouted

(1) with trace of gray LIMESTONE (CL) **Casing Length** 20.0'

DRIGGERS ENGINEERING SERVICES INCORPORATED

Project No. DES 096469 **BORING NO.** B-8

Project Force Main 1A, 2A & 16A Replacement, Manatee County, Florida

Location See Plate I-E **Foreman** M.B.

Completion Depth 50.5' **Date** 3/19/10 **Depth To Water** 6.4' **Time** _____ **Date** 3/19/10

DEPTH, FT	SYMBOL	SAMPLES	SOIL DESCRIPTION	BLOWS ON SAMPLER PER 6" OR PEN. STR.	STANDARD PENETRATION TEST BLOWS/FT. ON 2" O.D. SAMPLER-140 LB. HAMMER, 30" DROP
			SURF. EL:		10 20 40 60 80
35		S	Hard grayish-green cemented CLAY with trace of gray LIMESTONE (CL) (Pocket Penetrometer = 3.5 TSF)	17/50*	* 0.4' Penetration
40			Cream colored and gray weathered, clayey LIMESTONE	27/21/46	
45			Cream colored and gray weathered LIMESTONE	4/5/7	
50			Gray and cream colored LIMESTONE	50*	* 0.5' Penetration
55					
60					
65					

Remarks Borehole Grouted

Casing Length 20.0'

DRIGGERS ENGINEERING SERVICES INCORPORATED

Project No. DES 096469 **BORING NO.** B-9

Project Force Main 1A, 2A & 16A Replacement, Manatee County, Florida

Location See Plate I-F **Foreman** M.B.

Completion Depth 16.5' **Date** 3/19/10 **Depth To Water** 4.3' **Time** _____ **Date** 3/19/10

DEPTH, FT	SYMBOL	SAMPLES	SOIL DESCRIPTION	BLOWS ON SAMPLER PER 6" OR PEN. STR.	STANDARD PENETRATION TEST BLOWS/FT. ON 2" O.D. SAMPLER-140 LB. HAMMER, 30" DROP
			SURF. EL:		10 20 40 60 80
0			Gray Fine SAND with roots (SP)		
			Grayish-brown slightly silty Fine SAND with shell (SP-SM)		
			Brown Fine SAND (SP)		
			Dark gray Fine SAND (SP)		
5			Light gray Fine SAND (SP)		
			Medium dense dark brown slightly silty Fine SAND with finely divided organic material (SP-SM)	5/7/6	
			Medium dense to very loose brown to brown and light brown Fine SAND (SP)	3/5/7	
10				5/5/8	
				2/1/1	
15			Very loose light grayish-brown slightly silty Fine SAND (SP-SM)	2/1/1	
20					
25					
30					

Remarks Borehole Grouted

Casing Length _____

DRIGGERS ENGINEERING SERVICES INCORPORATED

Project No. DES 096469 **BORING NO. B-10**

Project Force Main 1A, 2A & 16A Replacement, Manatee County, Florida

Location See Plate I-G **Foreman** M.B.

Completion Depth 16.5' **Date** 3/19/10 **Depth To Water** 3.1' **Time** _____ **Date** 3/19/10

DEPTH, FT	SYMBOL	SAMPLES	SOIL DESCRIPTION SURF. EL:	BLOWS ON SAMPLER PER 6" OR PEN. STR.	STANDARD PENETRATION TEST BLOWS/FT. ON 2" O.D. SAMPLER-140 LB. HAMMER, 30" DROP 10 20 40 60 80
0			Dark brownish-gray Fine SAND with roots (SP)		
			Brown Fine SAND with trace of rock and shell fragments (SP)		
			Grayish-brown Fine SAND (SP)		
			Brown Fine SAND with seam of organic SILT and piece of large root (SP/Pt)		
5			Dark gray Fine SAND (SP)		
			Loose dark brown Fine SAND (SP)	5/5/5	
			Very loose brown slightly silty Fine SAND (SP-SM)	1/1/3	
10			Loose light brownish-gray to dark brownish-gray Fine SAND (SP)	4/4/6	
				7/2/5	
15			Stiff green weakly cemented CLAY with trace of gray LIMESTONE (CL) (Pocket Penetrometer = 2.75 TSF)	3/4/6	
20					
25					
30					

Remarks Borehole Grouted

Casing Length _____

DRIGGERS ENGINEERING SERVICES INCORPORATED

Project No. DES 096469 **BORING NO.** B-11

Project Force Main 1A, 2A & 16A Replacement, Manatee County, Florida

Location See Plate I-H **Foreman** M.B.

Completion Depth 16.5' **Date** 3/23/10 **Depth To Water** 3.5' **Time** _____ **Date** 3/23/10

DEPTH, FT	SYMBOL	SAMPLES	SOIL DESCRIPTION	BLOWS ON SAMPLER PER 6" OR PEN. STR.	STANDARD PENETRATION TEST BLOWS/FT. ON 2" O.D. SAMPLER-140 LB. HAMMER, 30" DROP
			SURF. EL:		10 20 40 60 80
0			Dark grayish-brown Fine SAND with roots (SP)		
			Light brownish-gray Fine SAND (SP)		
			Very light gray Fine SAND (SP)		
5			Dark grayish-brown Fine SAND with trace of finely divided organic material (SP)		
			Medium dense dark brown to light brown Fine SAND (SP)	2/4/8	
				11/13/15	
10			Very loose dark brown and brown Fine SAND (SP)	4/2/2	
			Medium dense brownish-gray Fine SAND (SP)	5/8/14	
15				10/13/3	
20					
25					
30					

Remarks Borehole Grouted

Casing Length _____

DRIGGERS ENGINEERING SERVICES INCORPORATED

Project No. DES 096469 **BORING NO.** B-12

Project Force Main 1A, 2A & 16A Replacement, Manatee County, Florida

Location See Plate I-I **Foreman** M.B.

Completion Depth 16.5' **Date** 3/23/10 **Depth To Water** 3.3' **Time** _____ **Date** 3/23/10

DEPTH, FT	SYMBOL	SAMPLES	SOIL DESCRIPTION	BLOWS ON SAMPLER PER 6" OR PEN. STR.	STANDARD PENETRATION TEST BLOWS/FT. ON 2" O.D. SAMPLER-140 LB. HAMMER, 30" DROP (10 20 40 60 80)
			SURF. EL:		
0			Grayish-brown Fine SAND with roots, rock and shell fragments (SP)		
			Brownish-gray Fine SAND (SP)		
5			Brownish-gray Fine SAND with trace of cemented sand and shell (SP)		
			Very loose dark gray Fine SAND (SP)	WH/1/2	
				2/2/2	
10				1/0/1	
			Loose light gray, brown and gray Fine SAND (SP)	3/3/3	
			Very loose gray silty Fine SAND with shell (SM)		
15			Soft gray weakly cemented CLAY with trace of gray LIMESTONE (CH)	2/2/2	
20					
25					
30					

Remarks Borehole Grouted

WH = Weight of Hammer **Casing Length** _____

DRIGGERS ENGINEERING SERVICES INCORPORATED

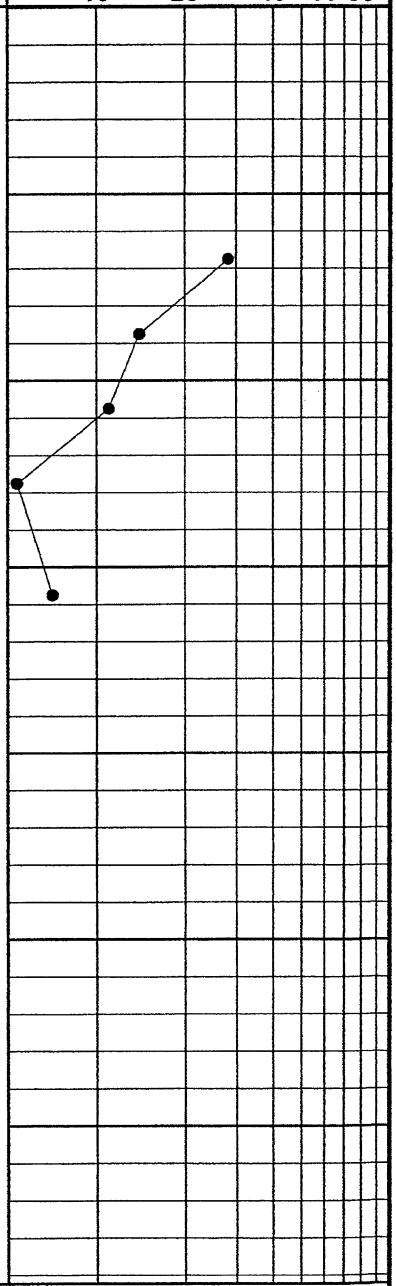
Project No. DES 096469 **BORING NO.** B-13

Project Force Main 1A, 2A & 16A Replacement, Manatee County, Florida

Location See Plate I-J **Foreman** M.B.

Completion Depth 16.5' **Date** 3/19/10 **Depth To Water** 6.2' **Time** _____ **Date** 3/19/10

DEPTH, FT	SYMBOL	SAMPLES	SOIL DESCRIPTION	BLOWS ON SAMPLER PER 6" OR PEN. STR.	STANDARD PENETRATION TEST BLOWS/FT. ON 2" O.D. SAMPLER-140 LB. HAMMER, 30" DROP
			SURF. EL:		10 20 40 60 80
0			Gray Fine SAND with roots (SP)		
			Light gray Fine SAND (SP)		
			Very light gray Fine SAND (SP)		
5			Dark brown Fine SAND (SP)		
			Medium dense grayish-brown to light tannish-brown Fine SAND (SP)	5/13/15	
			- light brown at depth 8.0'	5/7/7	
10				3/6/5	
			Very soft dark gray silty, sandy CLAY (CH)	1/0/1	
15			Firm green weakly cemented CLAY and gray weathered LIMESTONE (CL) (Pocket Penetrometer = 1.0 TSF)	3/3/2	
20					
25					
30					



Remarks Borehole Grouted

Casing Length _____

DRIGGERS ENGINEERING SERVICES INCORPORATED

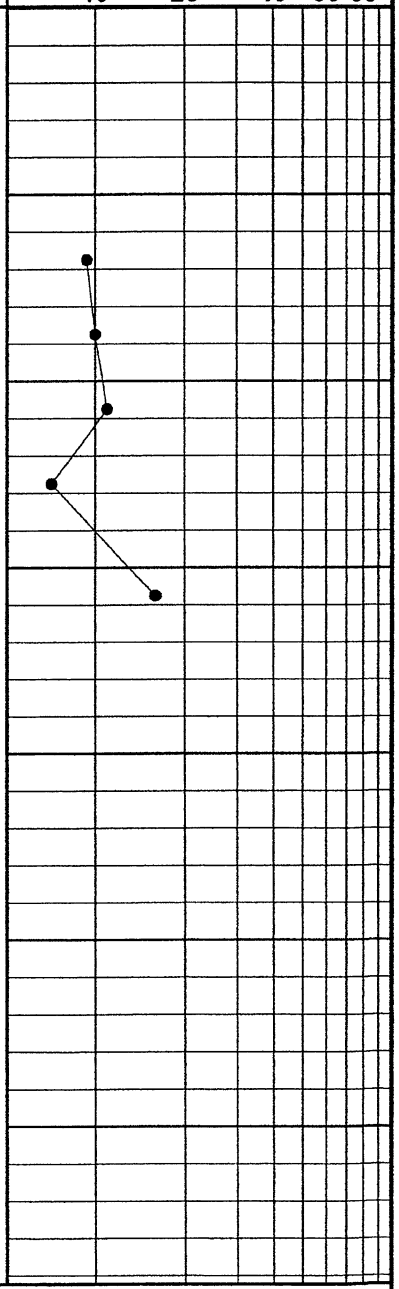
Project No. DES 096469 **BORING NO.** B-14

Project Force Main 1A, 2A & 16A Replacement, Manatee County, Florida

Location See Plate I-K **Foreman** M.B.

Completion Depth 16.5' **Date** 3/19/10 **Depth To Water** 4.7' **Time** _____ **Date** 3/19/10

DEPTH, FT	SYMBOL	SAMPLES	SOIL DESCRIPTION	BLOWS ON SAMPLER PER 6" OR PEN. STR.	STANDARD PENETRATION TEST BLOWS/FT. ON 2" O.D. SAMPLER-140 LB. HAMMER, 30" DROP
			SURF. EL:		10 20 40 60 80
0			Dark gray Fine SAND with roots (SP)		
			Light gray Fine SAND (SP)		
5			Dark brown slightly organic Fine SAND (SP)		
			Loose to medium dense dark brown to light grayish-brown Fine SAND (SP)	5/4/5	
			- light tan from depth 8.0' - 11.5'	3/3/7	
10				3/5/6	
			- light brown at depth 12.0'	3/2/3	
15				3/7/9	
20					
25					
30					



Remarks Borehole Grouted

Casing Length _____

DRIGGERS ENGINEERING SERVICES INCORPORATED

Project No. DES 096469 **BORING NO. B-15**

Project Force Main 1A, 2A & 16A Replacement, Manatee County, Florida

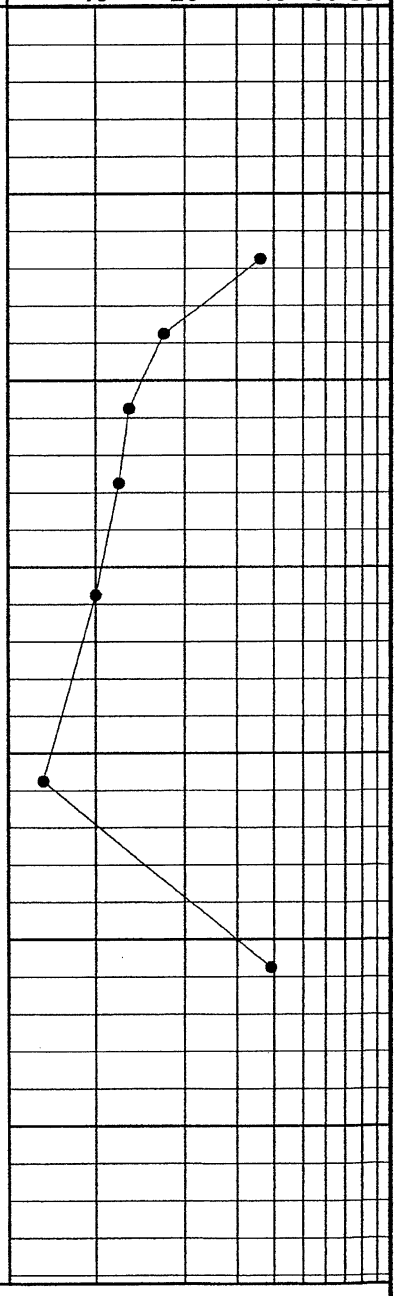
Location See Plate I-K **Foreman** M.B.

Completion Depth 26.5' **Date** 3/19/10 **Depth To Water** 6.3' **Time** _____ **Date** 3/19/10

DEPTH, FT	SYMBOL	SAMPLES	SOIL DESCRIPTION	BLOWS ON SAMPLER PER 6" OR PEN. STR.
			SURF. EL:	
0			Gray Fine SAND with roots (SP)	
			Light gray Fine SAND (SP)	
			Very light gray Fine SAND (SP)	
5			Dark brown Fine SAND with finely divided organic material (SP)	
			Dense dark brown slightly silty Fine SAND with finely divided organic material (SP-SM)	6/15/21
			Medium dense to loose brown and dark brown to light tannish-gray Fine SAND (SP)	8/8/9
10			- light brown at depth 10.0'	5/5/8
				6/4/8
15				3/5/5
			Very loose gray clayey Fine SAND (SC)	
20				3/2/2
			Gray weathered, clayey LIMESTONE	
25				13/18/21
30				

STANDARD PENETRATION TEST BLOWS/FT. ON 2" O.D. SAMPLER-140 LB. HAMMER, 30" DROP

10 20 40 60 80



Remarks Borehole Grouted

Casing Length _____

DRIGGERS ENGINEERING SERVICES INCORPORATED

Project No. DES 096469 **BORING NO. B-16**

Project Force Main 1A, 2A & 16A Replacement, Manatee County, Florida

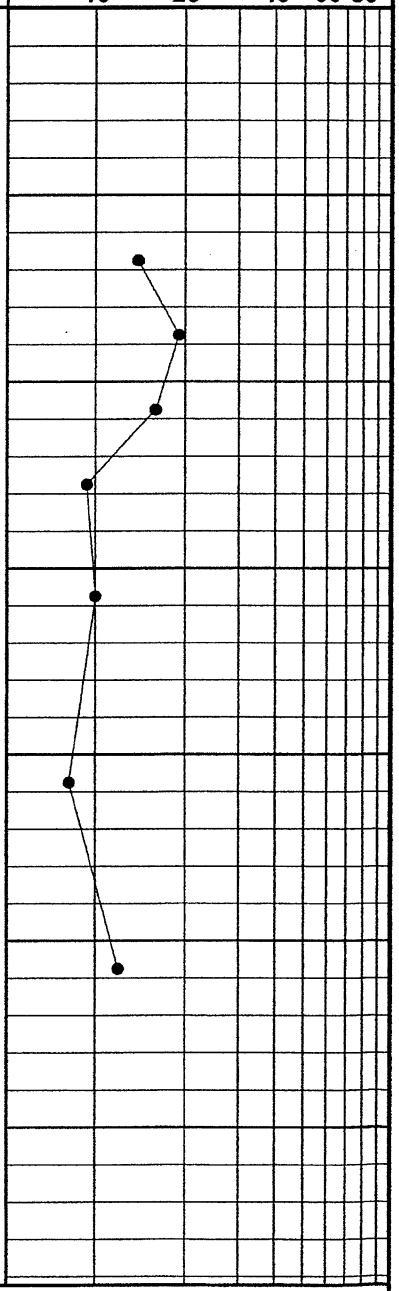
Location See Plate I-L **Foreman** M.B.

Completion Depth 26.5' **Date** 3/19/10 **Depth To Water** 4.3' **Time** _____ **Date** 3/19/10

DEPTH, FT	SYMBOL	SAMPLES	SOIL DESCRIPTION	BLOWS ON SAMPLER PER 6" OR PEN. STR.
			SURF. EL:	
0			Brownish-gray Fine SAND with roots (SP)	
			Gray Fine SAND (SP)	
			Light gray Fine SAND (SP)	
5			Light brownish-gray Fine SAND (SP)	
			Medium dense brownish-gray Fine SAND (SP)	3/6/8
			Medium dense dark brown Fine SAND with finely divided organic material (SP)	6/8/11
10			Medium dense to loose tan and light brown to tannish-gray Fine SAND (SP)	5/7/9
			- tan at depth 12.0'	5/4/5
15				5/5/5
			Gray weathered, clayey LIMESTONE	
20				3/3/4
			Stiff green CLAY with limestone fragments (CH)	
25			(Pocket Penetrometer = 1.75 TSF)	5/5/7
30				

STANDARD PENETRATION TEST BLOWS/FT. ON 2" O.D. SAMPLER-140 LB. HAMMER, 30" DROP

10 20 40 60 80



Remarks Borehole Grouted

Casing Length _____

DRIGGERS ENGINEERING SERVICES INCORPORATED

Project No. DES 096469 **BORING NO. B-17**

Project Force Main 1A, 2A & 16A Replacement, Manatee County, Florida

Location See Plate I-L **Foreman** M.B.

Completion Depth 16.5' **Date** 3/19/10 **Depth To Water** 4.5' **Time** _____ **Date** 3/19/10

DEPTH, FT	SYMBOL	SAMPLES	SOIL DESCRIPTION	BLOWS ON SAMPLER PER 6" OR PEN. STR.	STANDARD PENETRATION TEST BLOWS/FT. ON 2" O.D. SAMPLER-140 LB. HAMMER, 30" DROP
			SURF. EL:		10 20 40 60 80
0			Dark brown organic Fine SAND with roots (SP-SM/Pt)		
5			Dark gray Fine SAND with finely divided organic material (SP)		
			Dark brownish-gray cemented Fine SAND with finely divided organic material (SP)	4/10/7	
			Medium dense dark brown Fine SAND with finely divided organic material (SP)	4/3/5	
10			Loose brown to light brown and brown Fine SAND with trace of roots (SP)	3/3/2	
			Loose to medium dense light tannish-gray to light brownish-gray Fine SAND (SP)	4/4/6	
15				4/4/8	
20					
25					
30					

Remarks Borehole Grouted

Casing Length _____

SUMMARY OF LABORATORY TEST RESULTS

SUMMARY OF LABORATORY TEST RESULTS

BORING NO.	DEPTH (ft)	DESCRIPTION	W %	Y_d (pcf)	G_s	ATTERBERG LIMITS			P.P. (tsf)	U.C. (tsf)	CON.	G.S.	ORG. (%)	pH	Cl. (ppm)	SO_4 (ppm)	RES. (Ohm-cm)
						LL	PL	SL									
B-1	6.0-7.5	Brown Fine SAND										*					
B-2	12.0-13.5	Light brown Fine SAND										*					
B-2	20.0-21.5	Gray silty to clayey Fine SAND with shell										*					
B-3	8.0-9.5	Dark brown Fine SAND										*					
B-3	15.0-16.5	Dark brown and brown weakly cemented Fine SAND										*					
B-3	20.0-21.5	Cream colored LIMESTONE with trace of CLAY		N/A						N/T							
B-4	8.0-9.5	Gray slightly silty Fine SAND										*					
B-5	6.0-7.5	Light brown Fine SAND										*					
B-6	8.0-9.5	Brown to light brown Fine SAND										*					
B-7	10.0-11.5	Light grayish-brown Fine SAND										*					
B-7	25.0-26.5	Green CLAY	30.8	92.7		49	25		> 4.5	1.6		** 72.8					
B-7	40.0-41.5	Cream colored weathered, clayey LIMESTONE		102.8						N/T							
B-8	25.0-26.5	Greenish-brown cemented CLAY	30.6	107.5					> 4.5	4.0							
B-8	40.0-41.5	Cream colored and gray weathered, clayey LIMESTONE		68.8						N/T							
B-10	8.0-9.5	Brown slightly silty Fine SAND										*					
B-11	6.0-7.5	Grayish-brown Fine SAND with trace of finely divided organic material										*					
B-13	12.0-13.5	Dark gray silty, sandy CLAY	47.4			43	18					** 47.7					

W % = Water Content
Y_d (pcf) = Dry Density
G_S = Specific Gravity
LL = Liquid Limit
PL = Plastic Limit
SL = Shrinkage Limit
P.P. (tsf) = Pocket Penetrometer
U.C. = Unconfined Compression

Con. = Consolidation Test
G.S. (+1) = Grainsize Analysis (Hydrometer)
ORG. (%) = Organic Content
Cl. (ppm) = Total Chloride
SO_4 (ppm) = Total Sulfate
RES. (ohm-cm) = Lab Resistivity
* = See Test Curves
** = Percent Passing No. 200 Sieve
N/T = No Test Possible (Fractured Sample)

CLIENT: CH2M Hill, Inc.

PROJECT: Force Main 1A, 2A & 16A Replacement, Manatee County, Florida

FILE: DES 096469

SUMMARY OF LABORATORY TEST RESULTS

BORING NO.	DEPTH (ft)	DESCRIPTION	W %	Y_d (pcf)	G_s	ATTERBERG LIMITS			P.P. (tsf)	U.C. (tsf)	CON.	G.S.	ORG. (%)	pH	Cl. (ppm)	SO_4 (ppm)	RES. (Ohm-cm)
						LL	PL	SL									
B-14	6.0-7.5	Dark brown slightly organic Fine SAND										*					
B-15	12.0-13.5	Light tannish-gray Fine SAND										*					
B-15	20.0-21.5	Gray clayey Fine SAND	24.3									*					
B-16	20.0-21.5	Gray weathered, clayey LIMESTONE		95.1						N/T							

W % = Water Content
Y_d (pcf) = Dry Density
G_S = Specific Gravity
LL = Liquid Limit
PL = Plastic Limit
SL = Shrinkage Limit
P.P. (tsf) = Pocket Penetrometer
U.C. = Unconfined Compression

Con. = Consolidation Test
G.S. (+1) = Grainsize Analysis (Hydrometer)
ORG. (%) = Organic Content
Cl. (ppm) = Total Chloride
SO_4 (ppm) = Total Sulfate
RES. (ohm-cm) = Lab Resistivity
* = See Test Curves
** = Percent Passing No. 200 Sieve
N/T = No Test Possible (Fractured Sample)

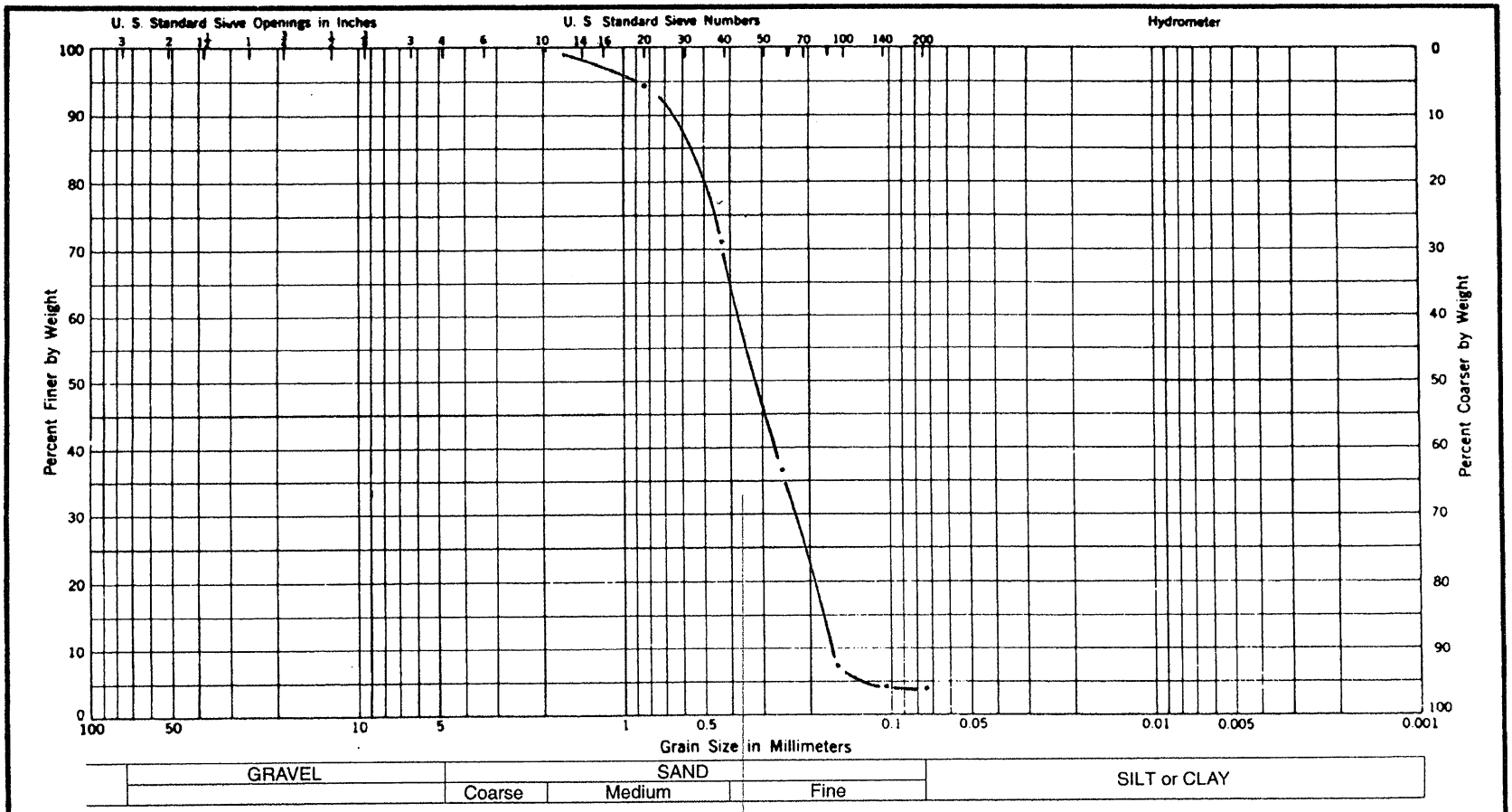
CLIENT: CH2M Hill, Inc.

PROJECT: Force Main 1A, 2A & 16A Replacement, Manatee County, Florida

FILE: DES 096469

GRAINSIZE ANALYSES

DRIGGERS ENGINEERING SERVICES, INC.



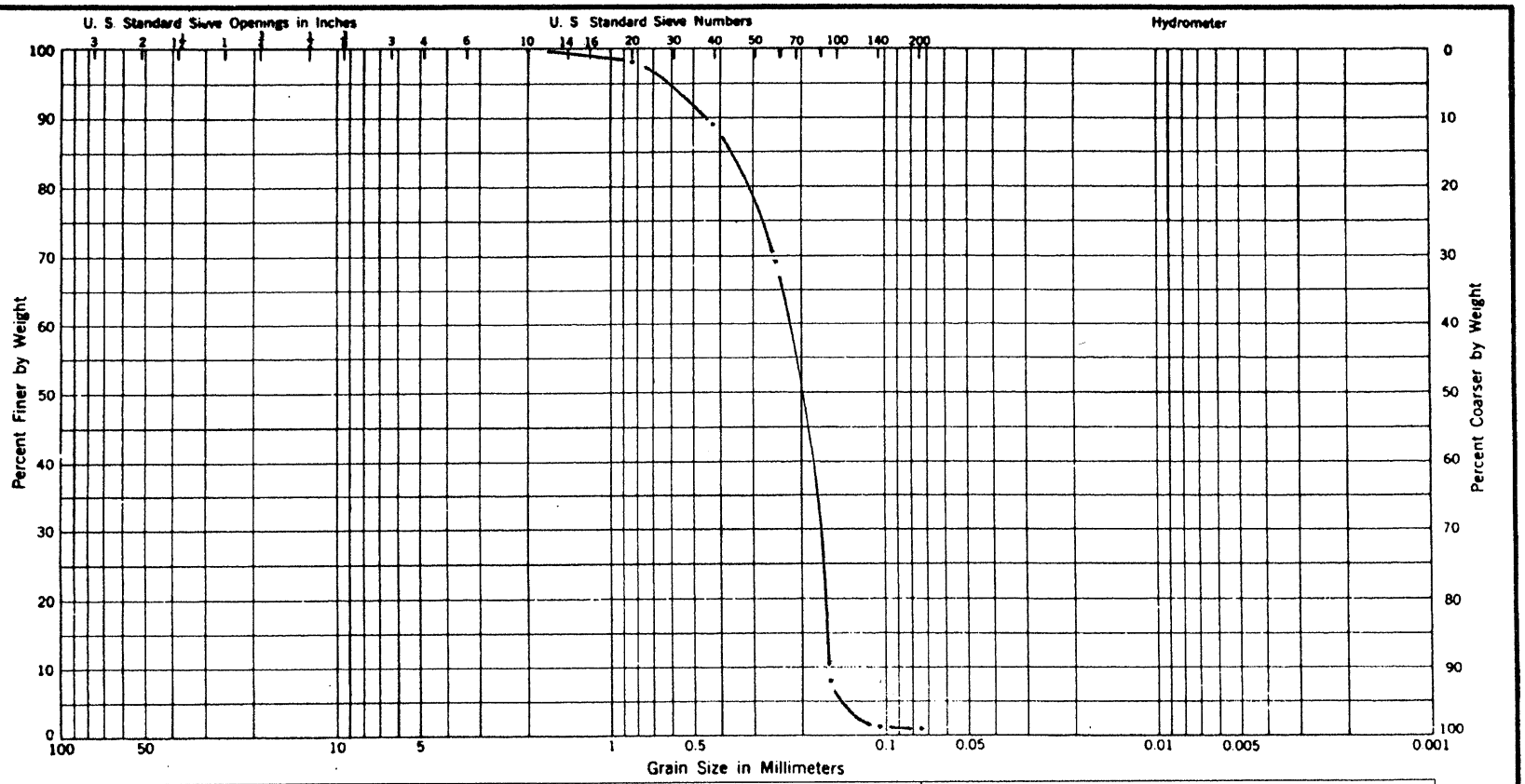
Number	Depth	Natural Moisture	L. L.	P. L.	P. I.	Classification
B-1	6.0' - 7.5'					Brown Fine SAND

CLIENT: CH2M Hill, Inc.

PROJECT: Force Main 1A, 2A & 16A Replacement, Manatee County, Florida

FILE: DES 096469

DRIGGERS ENGINEERING SERVICES, INC.



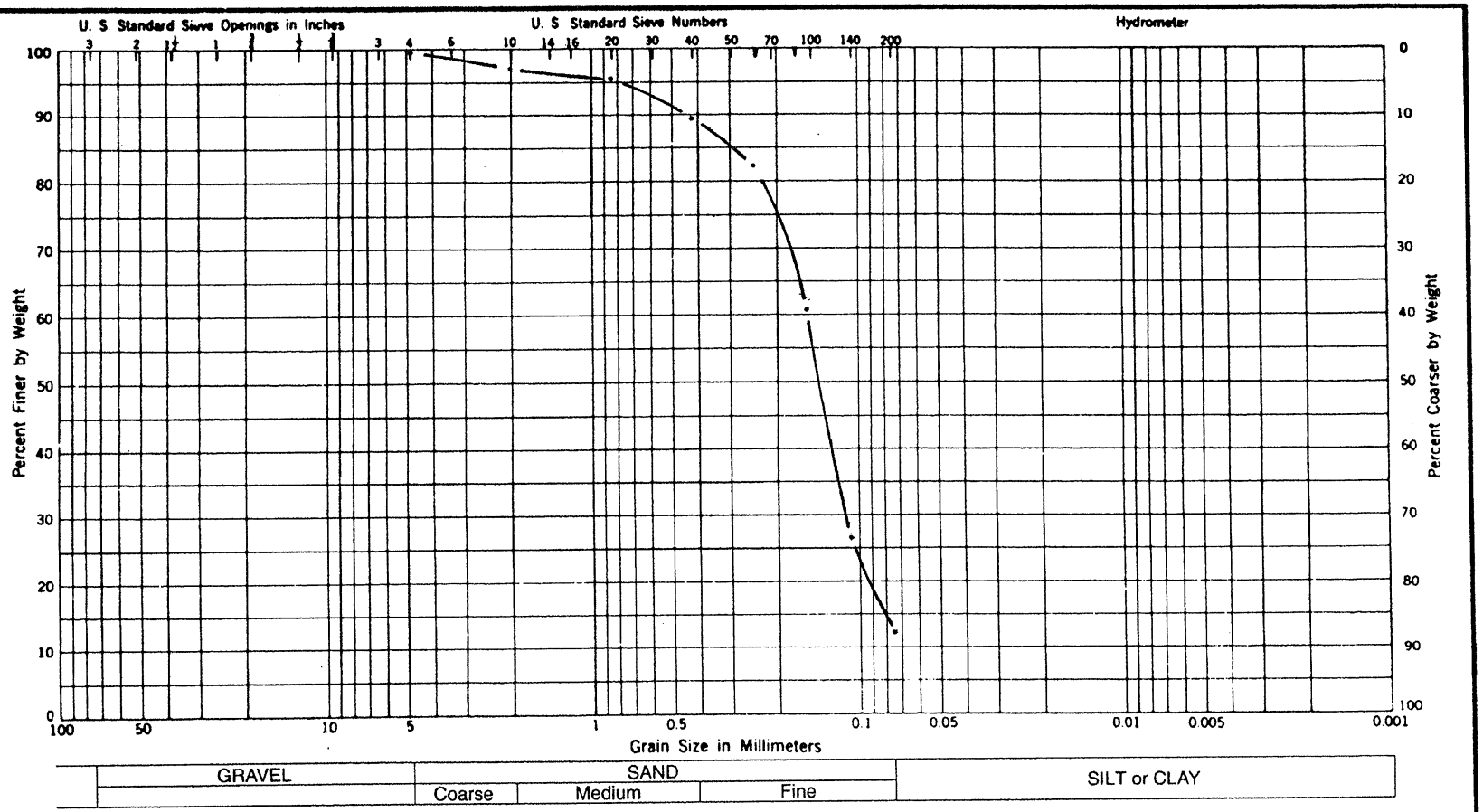
Number	Depth	Natural Moisture	L. L.	P. L.	P. I.	Classification
B-2	12.0' - 13.5'					Light brown Fine SAND

CLIENT: CH2M Hill, Inc.

PROJECT: Force Main 1A, 2A & 16A Replacement, Manatee County, Florida

FILE: DES 096469

DRIGGERS ENGINEERING SERVICES, INC.



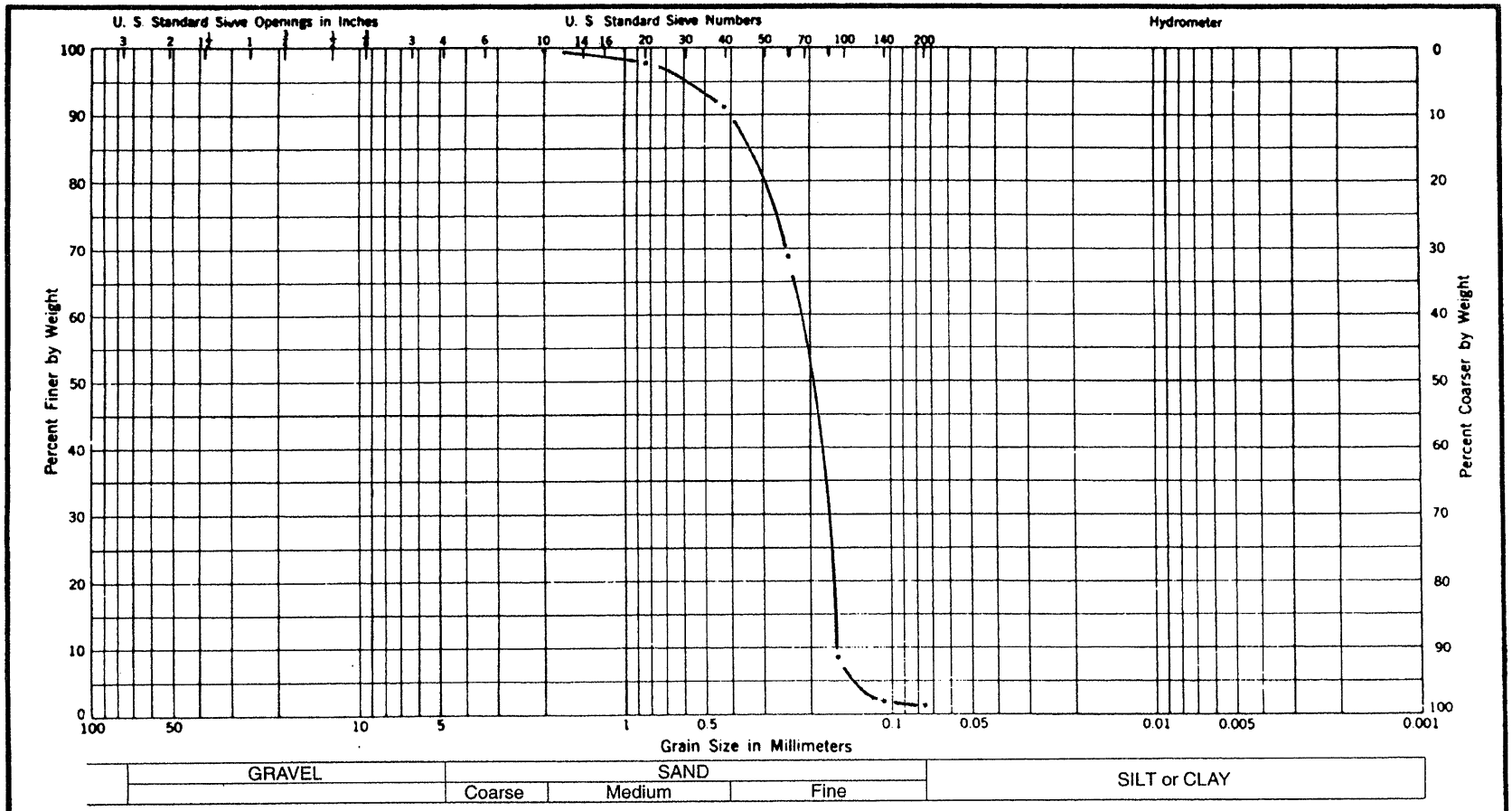
Number	Depth	Natural Moisture	L L	P. L	P. I.	Classification
B-2	20.0' - 21.5'					Gray silty to clayey Fine SAND with shell

CLIENT: CH2M Hill, Inc.

PROJECT: Force Main 1A, 2A & 16A Replacement, Manatee County, Florida

FILE: DES 096469

DRIGGERS ENGINEERING SERVICES, INC.



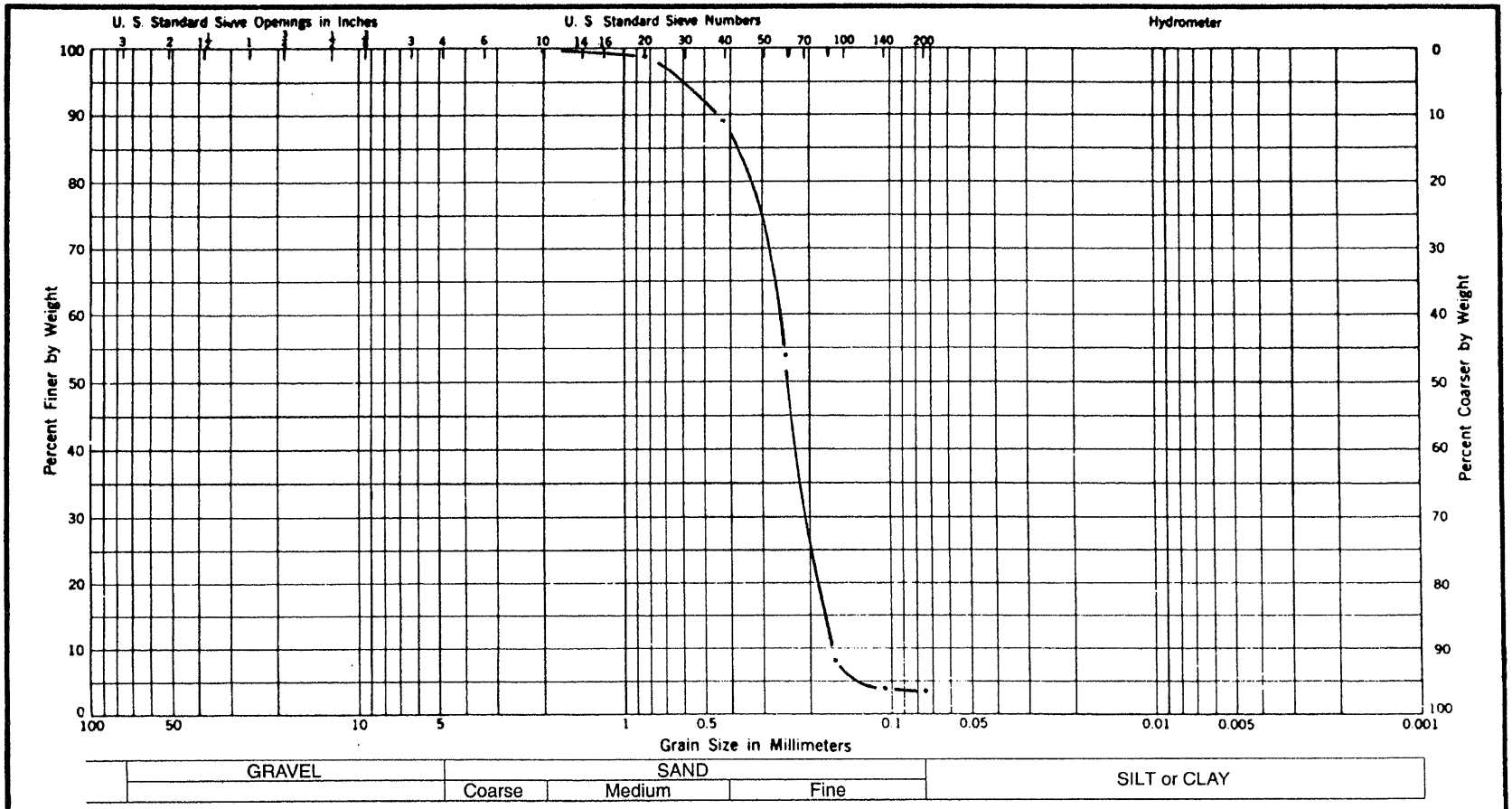
Number	Depth	Natural Moisture	L L	P. L	P. I.	Classification
B-3	8.0' - 9.5'					Dark brown Fine SAND

CLIENT: CH2M Hill, Inc.

PROJECT: Force Main 1A, 2A & 16A Replacement, Manatee County, Florida

FILE: DES 096469

DRIGGERS ENGINEERING SERVICES, INC.



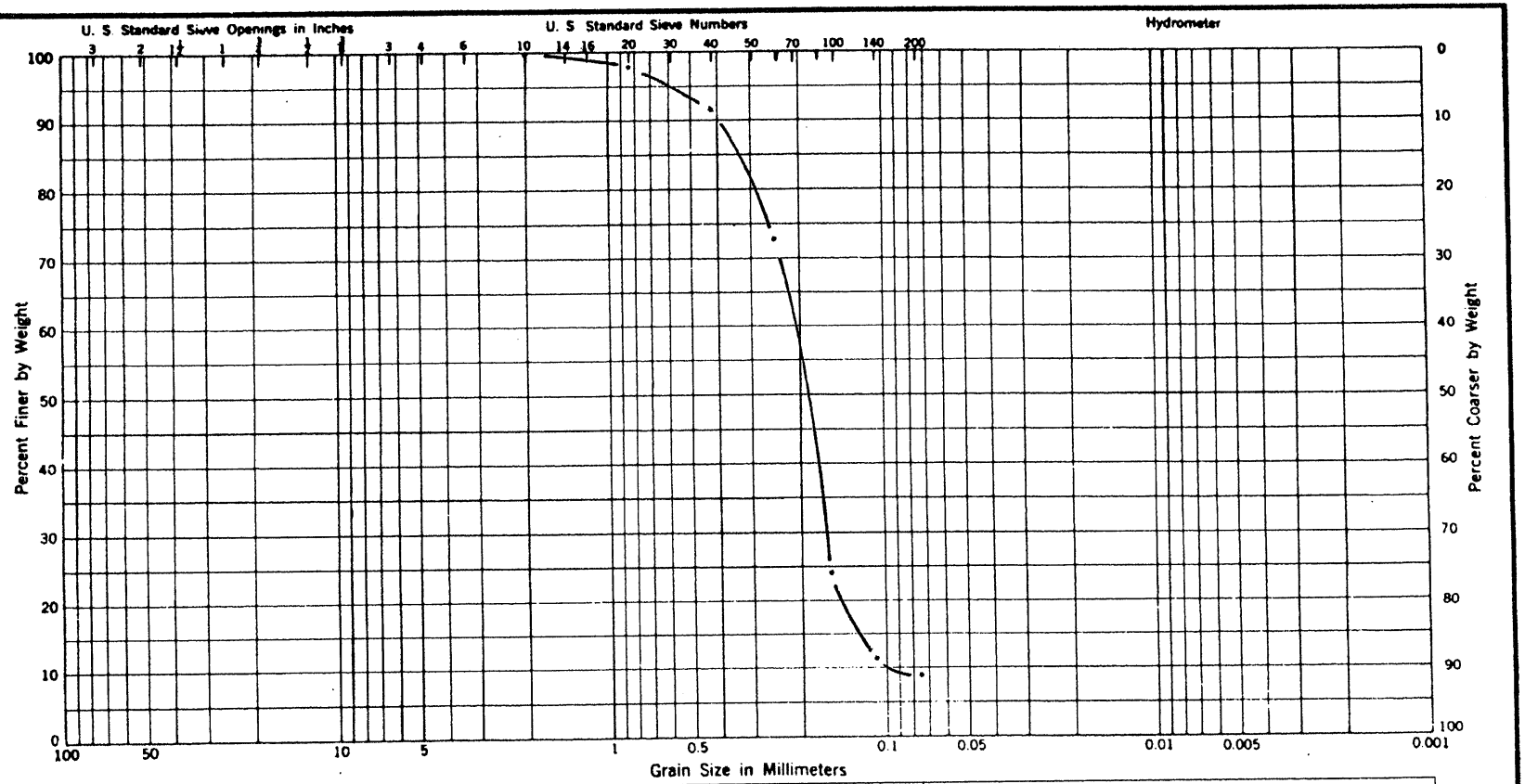
Number	Depth	Natural Moisture	L. L.	P. L.	P. I.	Classification
B-3	15.0' - 16.5'					Dark brown and brown weakly cemented Fine SAND

CLIENT: CH2M Hill, Inc.

PROJECT: Force Main 1A, 2A & 16A Replacement, Manatee County, Florida

FILE: DES 096469

DRIGGERS ENGINEERING SERVICES, INC.



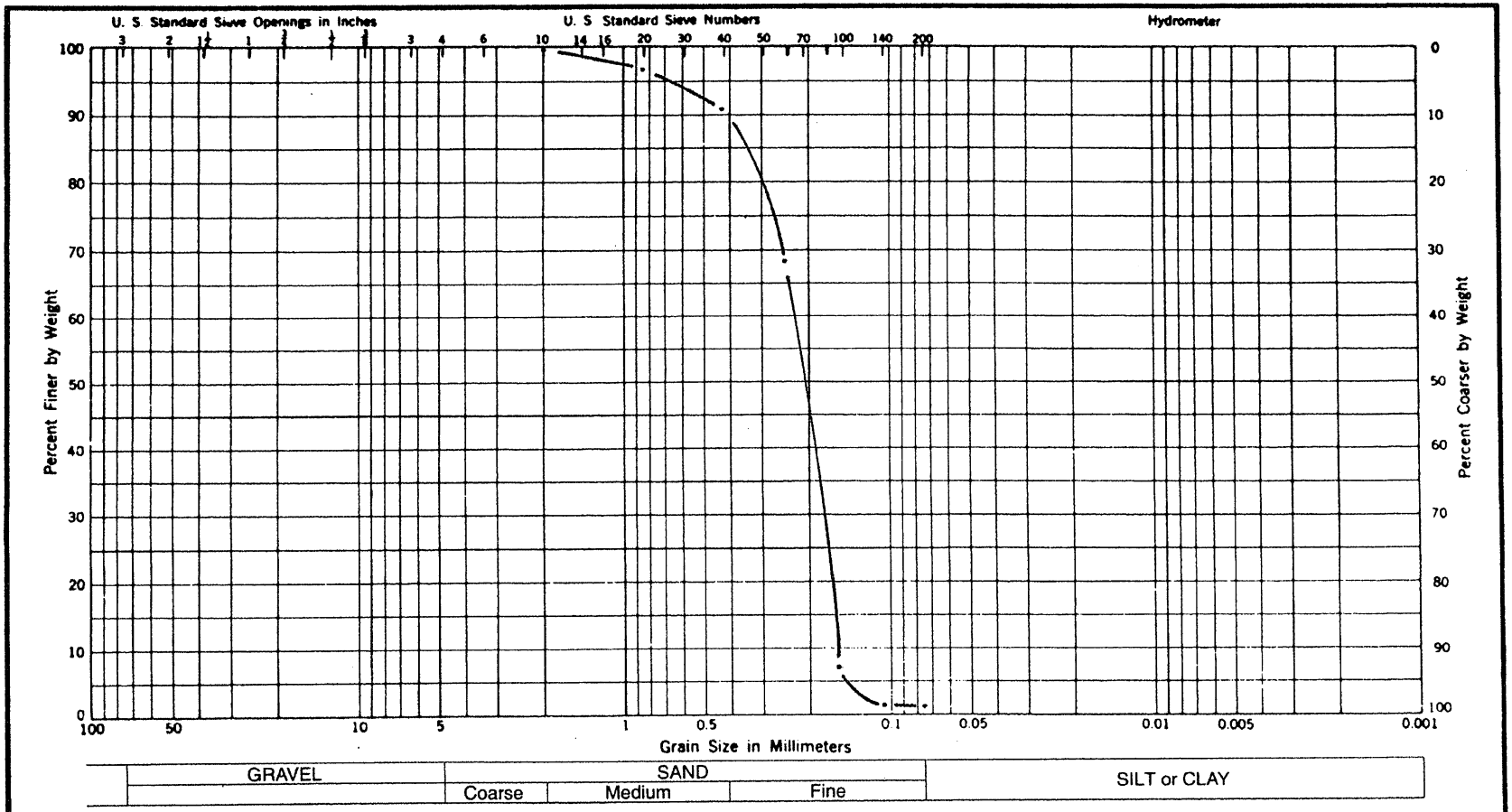
Number	Depth	Natural Moisture	L. L.	P. L.	P. I.	Classification
B-4	8.0' - 9.5'					Gray slightly silty Fine SAND

CLIENT: CH2M Hill, Inc.

PROJECT: Force Main 1A, 2A & 16A Replacement, Manatee County, Florida

FILE: DES 096469

DRIGGERS ENGINEERING SERVICES, INC.



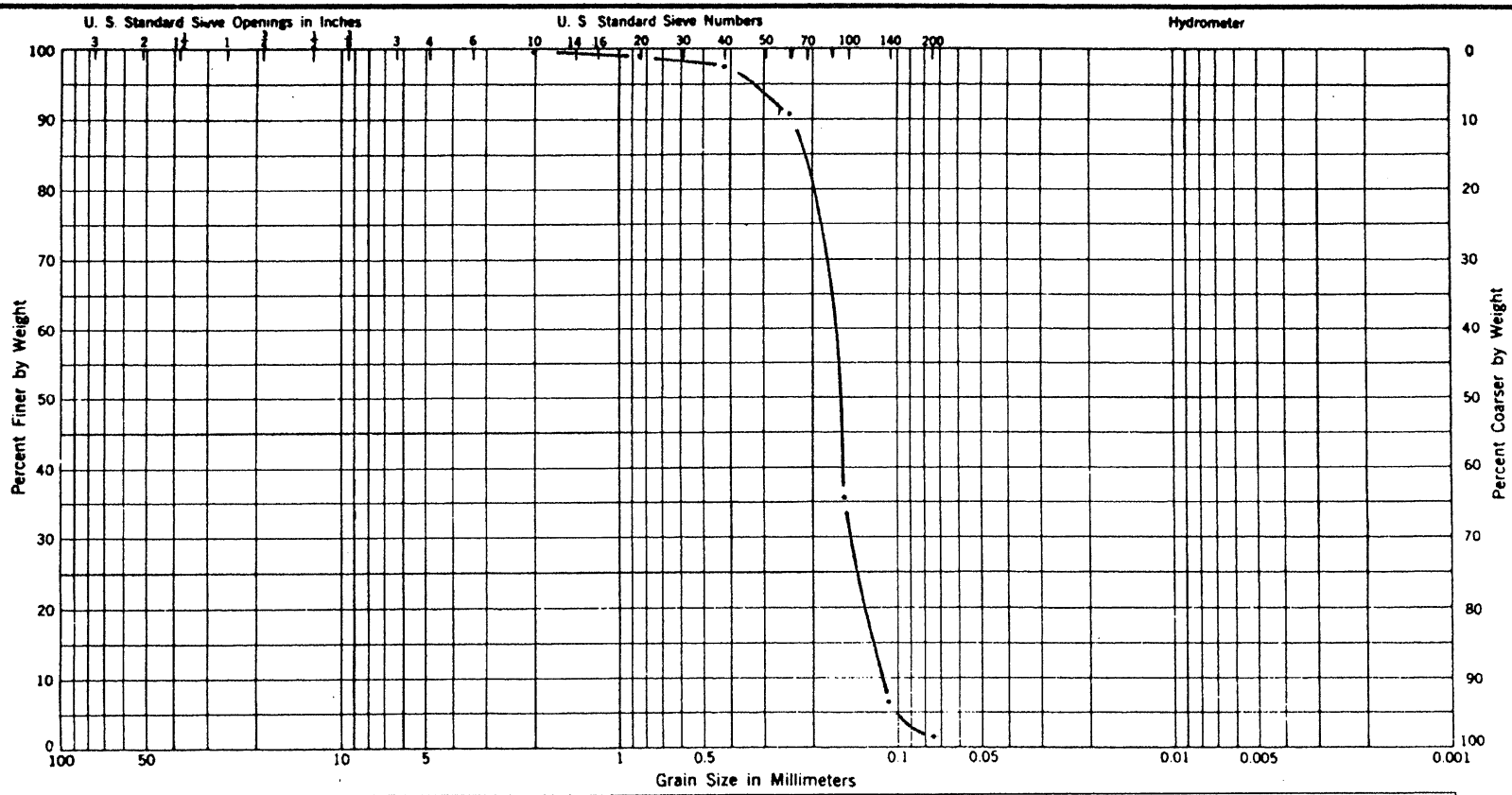
Number	Depth	Natural Moisture	L L	P. L	P. I	Classification
B-5	6.0' - 7.5'					Light brown Fine SAND

CLIENT: CH2M Hill, Inc.

PROJECT: Force Main 1A, 2A & 16A Replacement, Manatee County, Florida

FILE: DES 096469

DRIGGERS ENGINEERING SERVICES, INC.



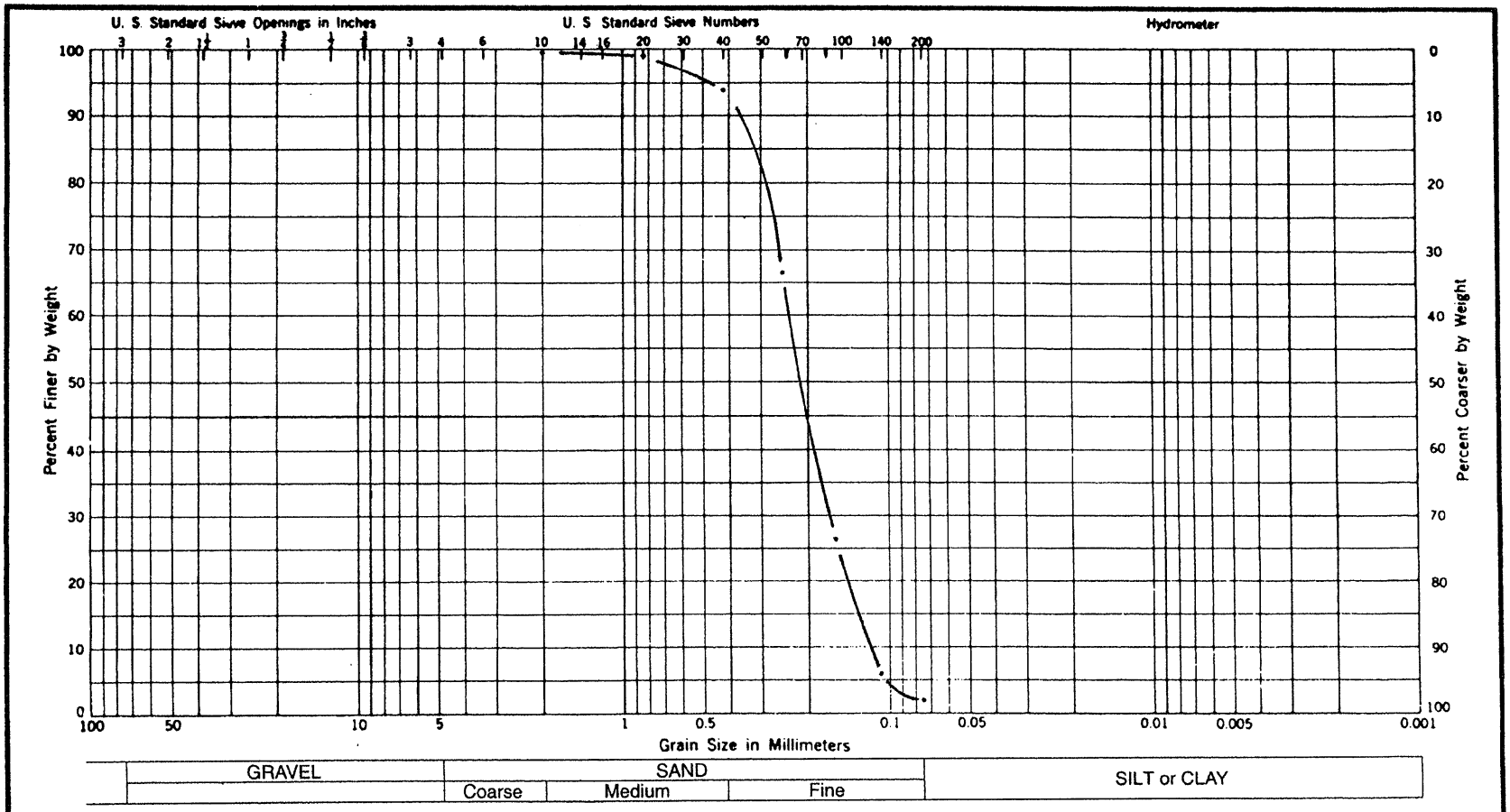
Number	Depth	Natural Moisture	L. L.	P. L.	P. I.	Classification
B-6	8.0' - 9.5'					Brown to light brown Fine SAND

CLIENT: CH2M Hill, Inc.

PROJECT: Force Main 1A, 2A & 16A Replacement, Manatee County, Florida

FILE: DES 096469

DRIGGERS ENGINEERING SERVICES, INC.



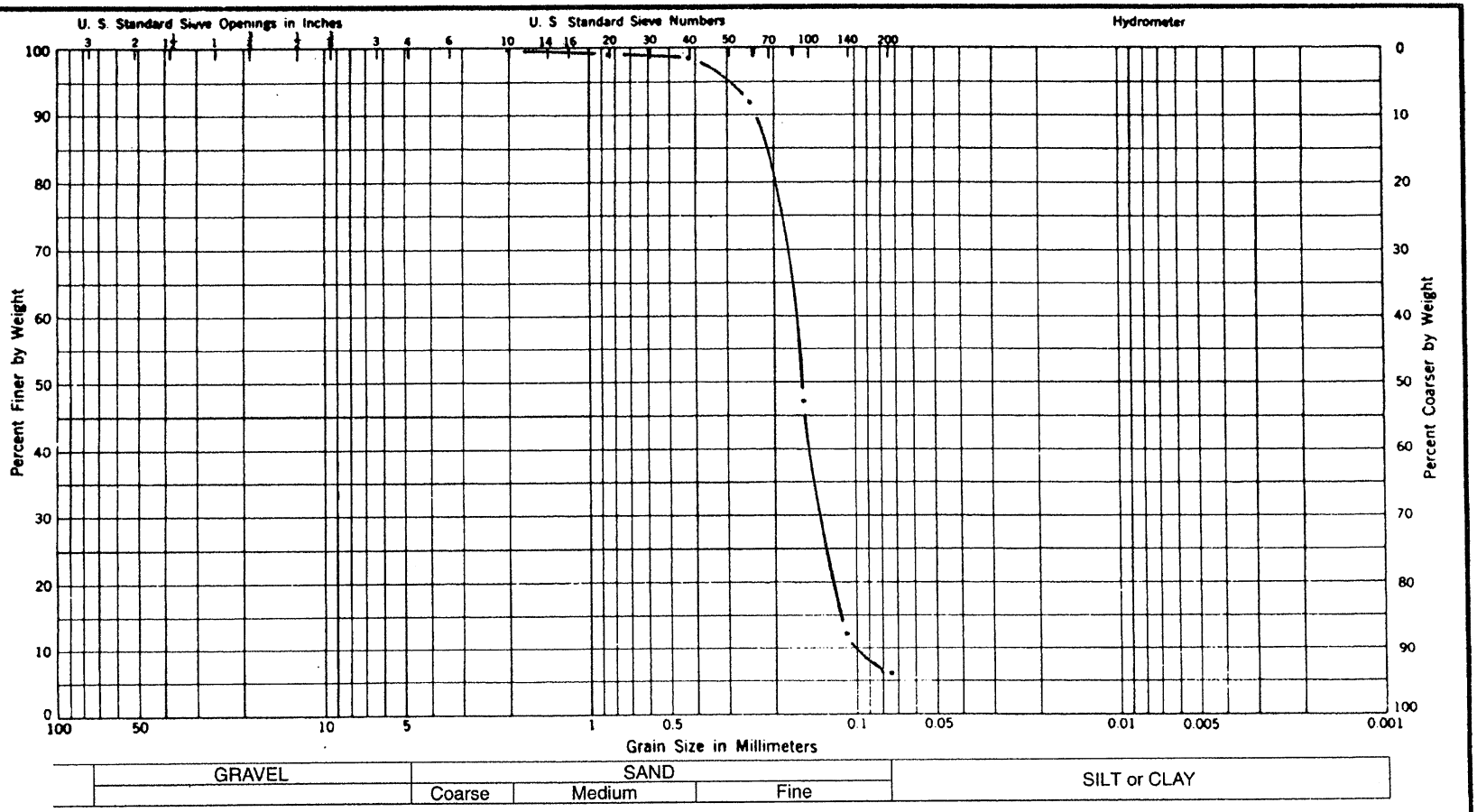
Number	Depth	Natural Moisture	L. L.	P. L.	P. I.	Classification
B-7	10.0' - 11.5'					Light grayish-brown Fine SAND

CLIENT: CH2M Hill, Inc.

PROJECT: Force Main 1A, 2A & 16A Replacement, Manatee County, Florida

FILE: DES 096469

DRIGGERS ENGINEERING SERVICES, INC.



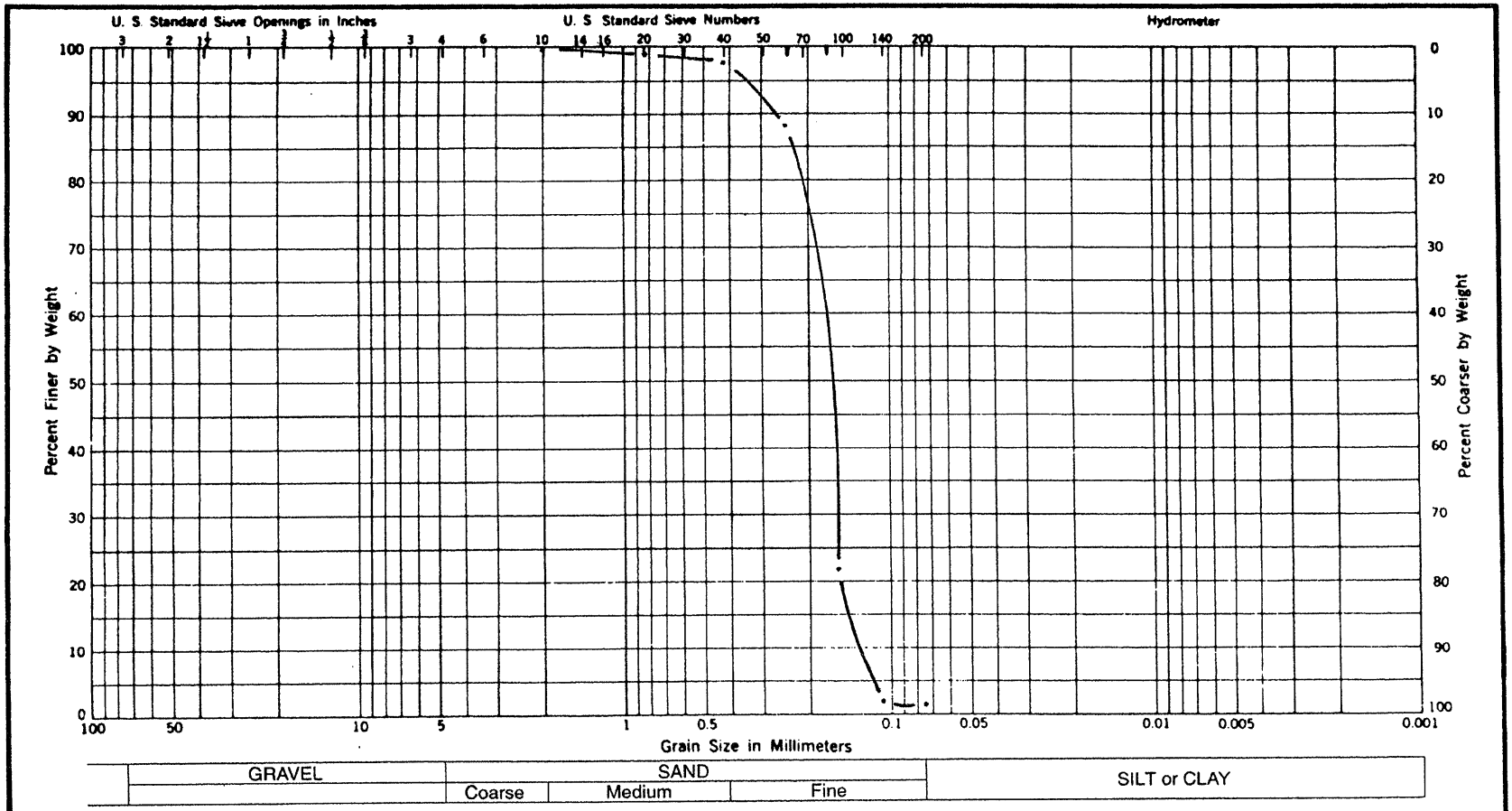
Number	Depth	Natural Moisture	L. L.	P. L.	P. I.	Classification
B-10	8.0' - 9.5'					Brown slightly silty Fine SAND

CLIENT: CH2M Hill, Inc.

PROJECT: Force Main 1A, 2A & 16A Replacement, Manatee County, Florida

FILE: DES 096469

DRIGGERS ENGINEERING SERVICES, INC.



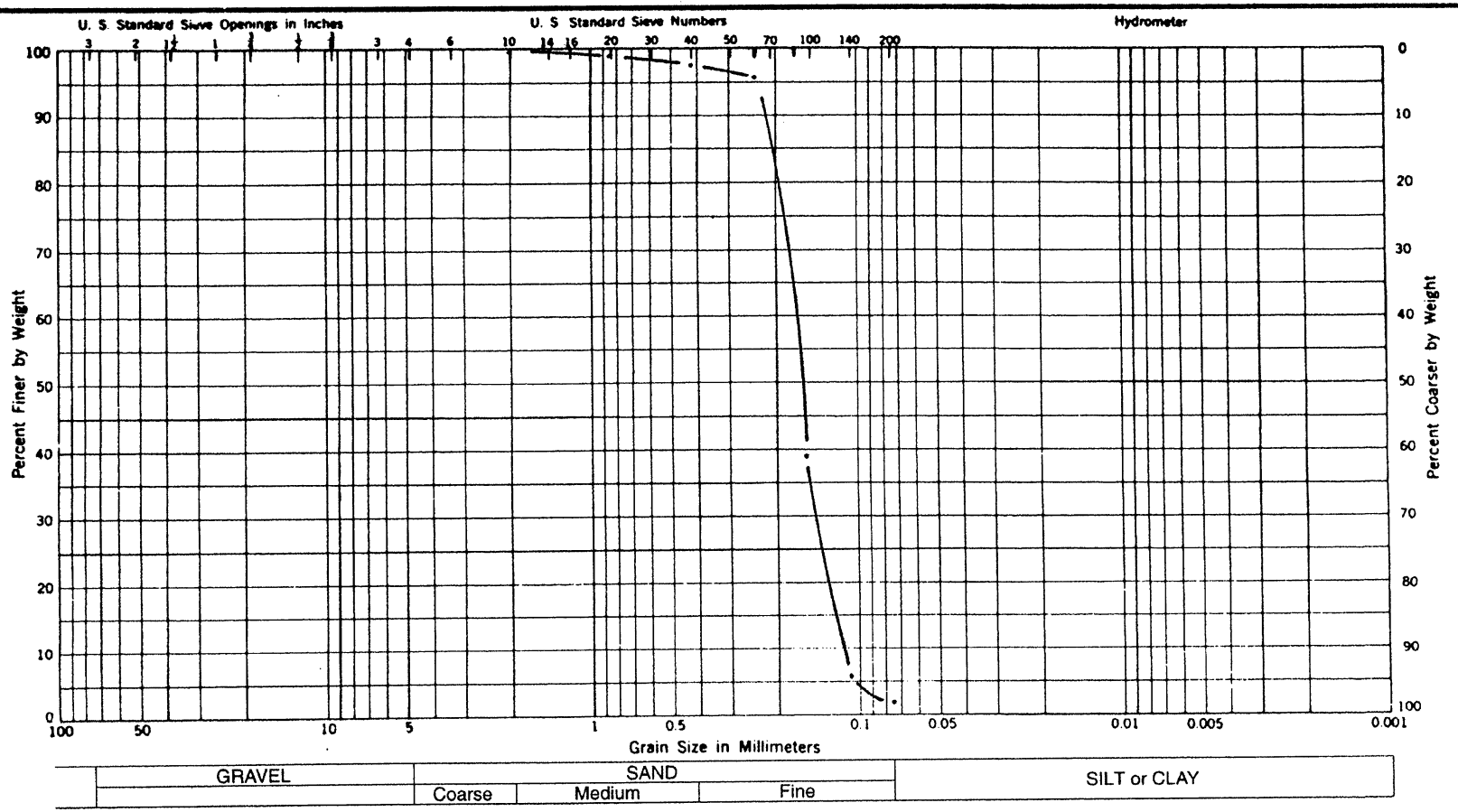
Number	Depth	Natural Moisture	L. L.	P. L.	P. I.	Classification
B-11	6.0' - 7.5'					Grayish-brown Fine SAND with trace of finely divided organic material

CLIENT: CH2M Hill, Inc.

PROJECT: Force Main 1A, 2A & 16A Replacement, Manatee County, Florida

FILE: DES 096469

DRIGGERS ENGINEERING SERVICES, INC.



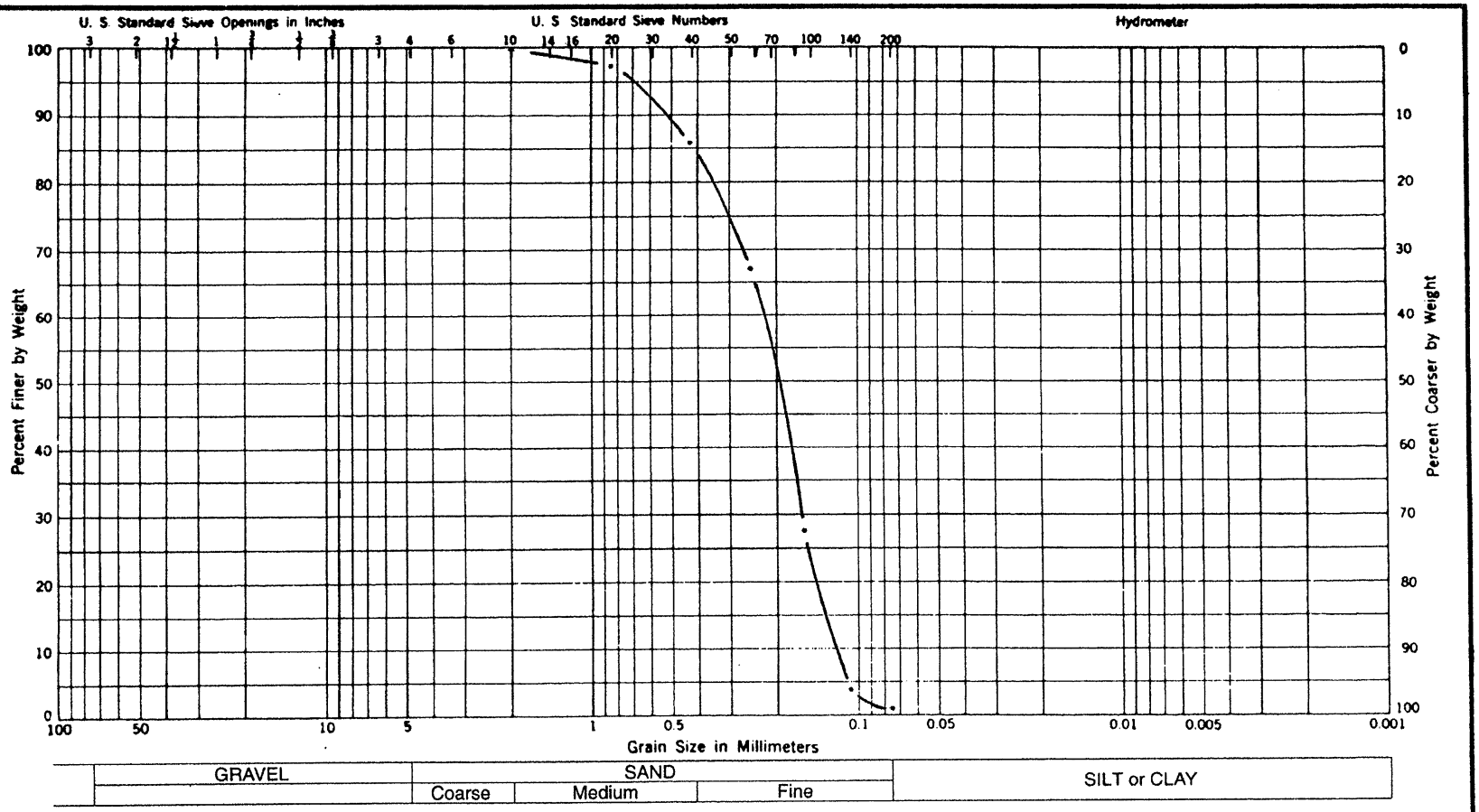
Number	Depth	Natural Moisture	L. L.	P. L.	P. I.	Classification
B-14	6.0' - 7.5'					Dark brown slightly organic Fine SAND

CLIENT: CH2M Hill, Inc.

PROJECT: Force Main 1A, 2A & 16A Replacement, Manatee County, Florida

FILE: DES 096469

DRIGGERS ENGINEERING SERVICES, INC.



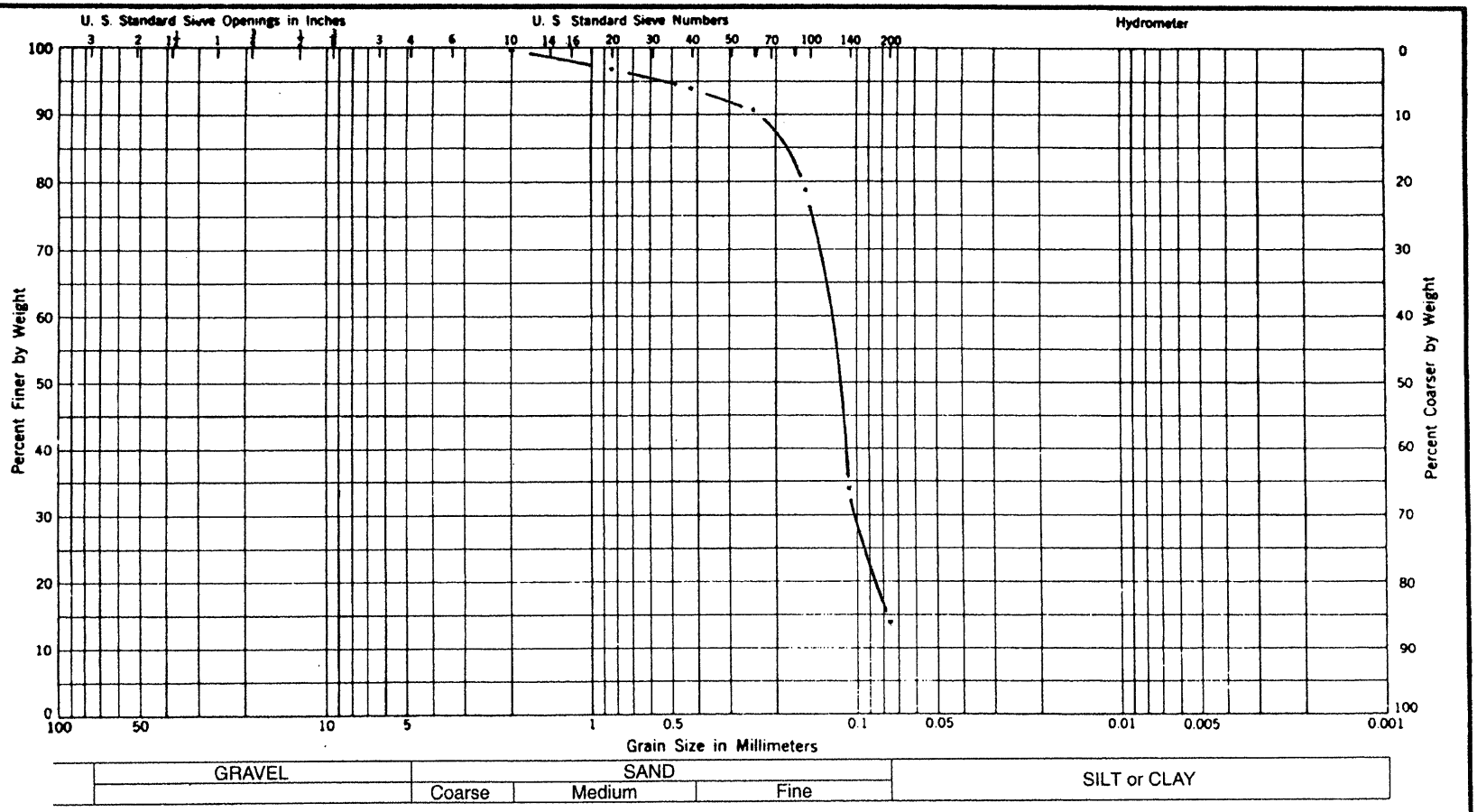
Number	Depth	Natural Moisture	L. L.	P. L.	P. I.	Classification
B-15	12.0' - 13.5'					Light tannish-gray Fine SAND

CLIENT: CH2M Hill, Inc.

PROJECT: Force Main 1A, 2A & 16A Replacement, Manatee County, Florida

FILE: DES 096469

DRIGGERS ENGINEERING SERVICES, INC.



Number	Depth	Natural Moisture	L. L.	P. L.	P. I.	Classification
B-15	20.0' - 21.5'					Gray clayey Fine SAND

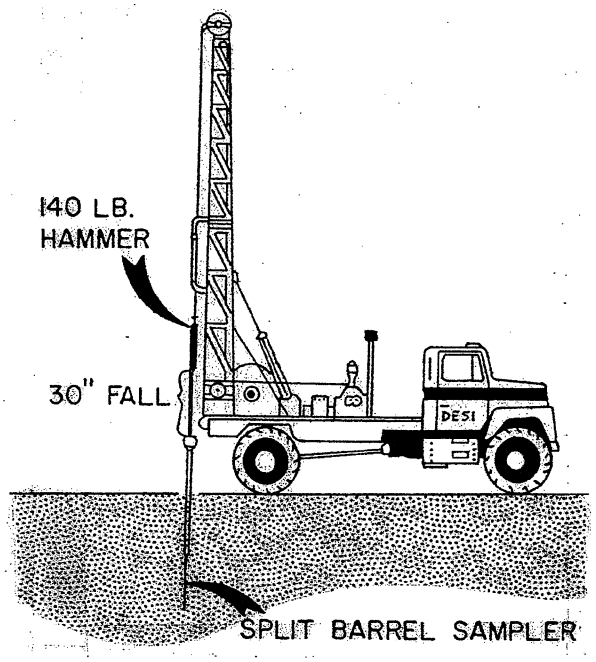
CLIENT: CH2M Hill, Inc.

PROJECT: Force Main 1A, 2A & 16A Replacement, Manatee County, Florida

FILE: DES 096469

METHOD OF TESTING

STANDARD PENETRATION TEST
AND
SOIL CLASSIFICATION

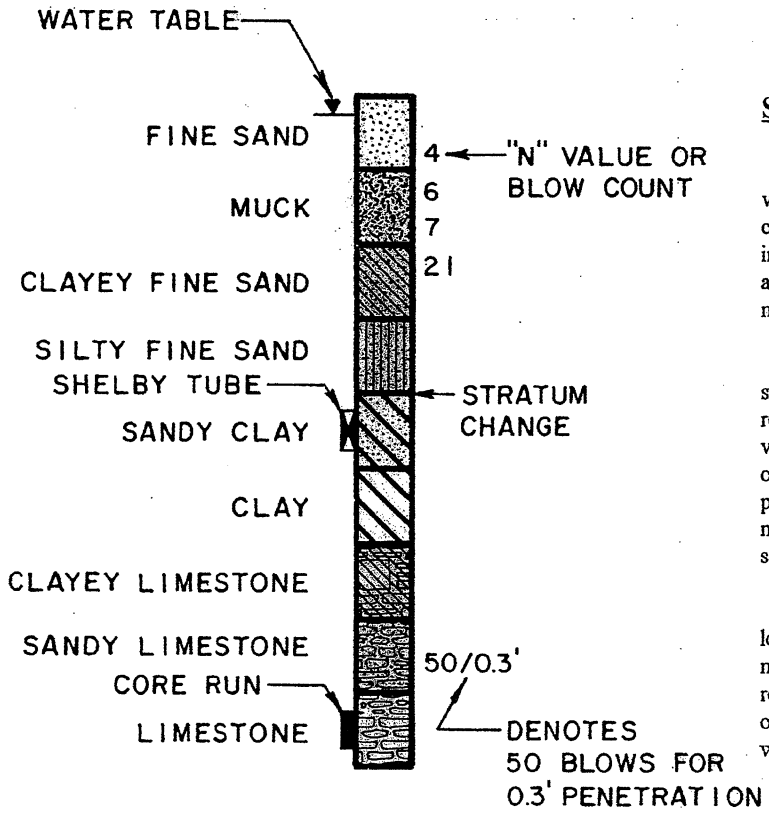


STANDARD PENETRATION TEST (ASTM D-1586)

In the Standard Penetration Test borings, a rotary drilling rig is used to advance the borehole to the desired test depth. A viscous drilling fluid is circulated through the drill rods and bit to stabilize the borehole and to assist in removal of soil and rock cuttings up and out of the borehole.

Upon reaching the desired test depth, the 2 inch O.D. split-barrel sampler or "split-spoon", as it is sometimes called, is attached to an N-size drill rod and lowered to the bottom of the borehole. A 140 pound hammer, attached to the drill string at the ground surface, is then used to drive the sampler into the formation. The hammer is successively raised and dropped for a distance of 30 inches using a rope and "cathead" assembly. The number of blows is recorded for each 6 inch interval of penetration or until virtual refusal is achieved. In the above manner, the samples are ideally advanced a total of 18 inches. The sum of the blows required to effect the final 12 inches of penetration is called the blowcount, penetration resistance of "N" value of the particular material at the sample depth.

After penetration, the rods and sampler are retracted to the ground surface where the core sample is removed, sealed in a glass jar and transported to the laboratory for verification of field classification and storage.



SOIL SYMBOLS AND CLASSIFICATION

Soil and rock samples secured in the field sampling operation were visually classified as to texture, color and consistency. Soil classifications are presented descriptively and symbolically for ease of interpretation. The stratum identification lines represent the approximate boundary between soil types. In many cases, this transition may be gradual.

Consistency of the soil as to relative density or undrained shear strength, unless otherwise noted, is based upon Standard Penetration resistance values of "N" values and industry-accepted standards. "N" values, or blowcounts, are presented in both tabular and graphical form on each respective boring log at each sample interval. The graphical plot of blowcount versus depth is for illustration purposes only and does not warrant continuity in soil consistency or linear variation between sample intervals.

The borings represent subsurface conditions at respective boring locations and sample intervals only. Variations in subsurface conditions may occur between boring locations. Groundwater depths shown represent water depths at the dates and time shown only. The absence of water table information does not necessarily imply that groundwater was not encountered.

Appendix C

FDEP Email Regarding FDEP Construction Permit Requirements for the Project

From: Hilton, Jeff
To: Cannarella, Bob/TPA
Subject: RE: Manatee County Force Main Replacement
Date: Friday, January 13, 2012 9:07:38 AM
Attachments: image001.png

I have reviewed the project as described below. No permit would be needed for the domestic wastewater collection system portion of this project in accordance with 62-604.600(2)(a), F.A.C.

Jeff Hilton, P.E.
Manager
Domestic Wastewater Program
813.632.7600, x443
813.632.7662 fax
jeff.hilton@dep.state.fl.us

Please take a few minutes to share your comments on the service you received from the department by clicking on this link DEP Customer Survey.
From: Bob.Cannarella@CH2M.com [mailto:Bob.Cannarella@CH2M.com]
Sent: Thursday, January 12, 2012 4:02 PM
To: Hilton, Jeff
Cc: Bob.Cannarella@CH2M.com
Subject: RE: Manatee County Force Main Replacement

Jeff for further reference, this project is entitle Force Main 1A, 2A and 16A replacement project. The 1A,2A and 16A references the lift stations these force mains service.
Thanks

From: Cannarella, Bob/TPA
Sent: Thursday, January 12, 2012 3:58 PM
To: 'jeff.hilton@dep.state.fl.us'
Subject: Manatee County Force Main Replacement

Jeff, you may recall we talked several months ago regarding a sanitary sewer force main replacement project that Manatee County is about to proceed with. My name is Bob Cannarella, and I am with CH2M HILL and I am the engineer of record on the replacement project. During our discussion earlier today and previously, you indicated that since this is a replacement project, we could forward this email to affirm what the County is doing and a permit was not required.

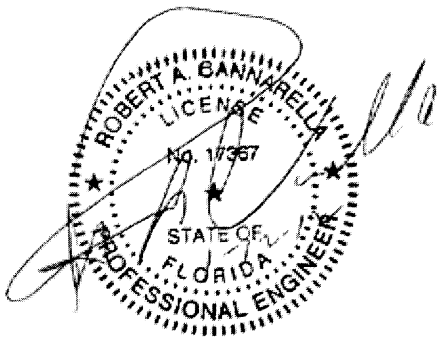
Here are the facts about this force main replacement project.

- The force main system being replaced is in the Whitfield Estates area of the County and the County has determined that this force main has reached the end of its useful life and is therefore going to replace it to maintain system integrity.
- The total replacement includes approximately 7,000 lf of 10, 12 and 14 inch CIP which has

reached the end of its useful life.

- There is no change to the force main service area. No change to the service area flows being transmitted by the current force main system.
- No changes to capacity or modification will be made to the lift stations feeding this force main network.
- The replacement force main will be constructed of HDEP and will follow the route of the existing CIP force main system which is being replaced
- The replacement force main will be located in public ROW and Utility easements that now contain the existing force main which is being replaced. The replacement alignment provides for all appropriate regulatory clearances.
- No change or increase in force main carrying capacity is associated with this project.
- The replacement force main will be installed in strict accordance with FDEP Regulations and Manatee County Utility standards.
- Upon completion of construction, Manatee County will forward the FDEP a set of record drawings for the replacement force main system for your records.

We trust the foregoing provides the information you require and we appreciate your consideration of this information.



Appendix D

FDEP General ERP Permit Requirements for the Project

Florida Department of Environmental Protection

Southwest District Office
13051 North Telecom Parkway
Temple Terrace, Florida 33637-0926

Rick Scott
Governor

Jennifer Carroll
Lt. Governor

Herschel T. Vinyard Jr.
Secretary

JAN 20 2012

Manatee County, Public Works Department
c/o: Sia Mollanazar, Deputy Director
1022 26th Street East
Bradenton, FL 34208-7344

File No. 41-0309388-002, Manatee County

Dear Mr. Mollanazar:

This is to acknowledge receipt of your notice on December 29, 2011 of intent to use a Noticed General Permit (NGP), pursuant to Rule 62-341.453, Florida Administrative Code (F.A.C.) to replace an existing sanitary sewer force main with 7,100 linear feet of new pipeline construction. The project will be constructed in public right-of-ways and utility easements running along Pearl Avenue, U.S. 41, Magellan Drive and 69th Avenue West. The method of installation will be via open cut and horizontal directional drill. No other construction activities are authorized under this permit. The project is located in Section 26, Township 35 South, Range 17 East, in Manatee County.

In addition to regulatory authorization under Rule 62-341.453, F.A.C., this type of activity also requires both proprietary and federal authorizations. Proprietary authorization is required pursuant to Chapters 253 and 258, Florida Statute (F.S.), to use state-owned submerged lands for private purposes. Federal authorization is needed for works in waters of the United States through the State Programmatic General Permit (SPGP) program.

Your notice has been reviewed by Department staff for all three types of authorizations: regulatory, proprietary and federal. The authority for review and the outcomes of the reviews are listed below. Please read each section carefully. Your project may not have qualified for all three authorizations. If your project did not qualify for one or more of the authorizations, the specific section dealing with that authorization will advise you how to obtain it. **You may NOT commence your project without all three authorizations.** If you change the project from what you submitted, the authorization(s) granted may no longer be valid at the time of commencement of the project. Please contact us prior to beginning your project if you wish to make any changes.

REGULATORY REVIEW - APPROVED

Based on the forms, drawings, and documents submitted/revised with your notice, it appears that the project meets the requirements for the Noticed General Permit under Rule 62-341.453, F.A.C.

Please be advised that the construction phase of the NGP must be completed within five years from the date the notice to use the NGP was received by the Department. If you wish to continue this NGP beyond the expiration date, you must notify the Department at least 30 days before its expiration. Any activities performed under a noticed general permit are subject to general conditions required in Rule 62-341.215, F.A.C. (attached), and the specific conditions of Rule 62-341.453, F.A.C. (attached). Any deviations from these conditions may subject the permittee to enforcement action and possible penalties.

Authority for review- Part IV of Chapter 373, F.S., Title 62, F.A.C. and in accordance to operating agreements executed between the Department and the water management districts, as referenced in Chapter 62-113, F.A.C.

PROPRIETARY REVIEW -APPROVED

Please be advised that any use of sovereign submerged lands without specific prior authorization from the Board of Trustees will be considered a violation of Chapter 253, Florida Statutes and may subject the affected upland riparian property owners to legal action as well as potential fines for the prior unauthorized use of sovereign land.

A review of the location of your proposed project indicates that it is not on state-owned submerged lands. Therefore, your project is exempt from the further requirements of Chapter 253, F.S.

Authority for review - Chapter 253, F. S., Chapter 18-21, F.A.C., and Section 62-343.075, F.A.C. as required.

SPGP REVIEW – NOT APPROVED

Your project does not qualify for federal authorization for works in waters of the United States through the State Programmatic General Permit (SPGP) program.

A copy of your application also has been sent to the U.S. Army Corps of Engineers (USACOE) for review. The USACOE may require a separate permit. Failure to obtain this authorization prior to construction could subject you to enforcement action by that agency. For further information, you should contact the USACOE Tampa Regulatory Field Office at (813) 769-7060 or the Gainesville Regulatory Field Office at (352) 264-7672.

If you revise your project after submitting the initial joint application the above authorization(s) may no longer be valid. Please contact us prior to construction if you wish to make any changes. Also, if you have any questions, please contact Sara Gonzalez at (813) 632-7600, ext. 331. When referring to this project, please use the file number listed above.

Executed in Hillsborough County, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION

Allyson Minick
Environmental Manager
Submerged Lands and Environmental
Resource Program
Southwest District

Copies furnished to:
U.S. Army Corps of Engineers
Robert A. Cannarella, P.E., CH2HILL, 4350 West Cypress Street, Suite # 600. Tampa, FL 33607
File

Enclosures:
Ch. 62-341.453, F.A.C.
Ch. 62-341.215, F.A.C.
Notice of Rights of Substantially Affected Persons

Attachments:
Project Drawings, 16 pages

CERTIFICATE OF SERVICE

The undersigned duly designated deputy clerk hereby certifies that this determination, including all copies, was mailed before the close of business on 1/20/12, to the above listed persons.

FILING AND ACKNOWLEDGMENT

FILED, on this date, pursuant to 120.52(7),
Florida Statutes, with the designated Department Clerk,
receipt of which is hereby acknowledged.

Clerk E Robinson Date 1/20/12

62-341.453 General Permit for Installation, Maintenance, Repair, and Removal of Underground Cable, Conduit, or Pipeline.

(1) A general permit is hereby granted for the installation, maintenance, repair, and removal of underground cable, conduit, or pipeline that transmit electricity, communication signals, potable water, raw water, reclaimed water, domestic wastewater, propane gas or natural gas.
(2) This general permit is subject to the following special conditions:
(a) The maximum width of the disturbed corridor in wetlands shall not exceed 30 feet. The maximum width of the excavated trench shall not exceed eight feet, with temporary spoil storage banks not to exceed ten feet in width;
(b) The total area of wetland disturbance shall not exceed 0.5 acres of forested wetlands per ten miles of cable, conduit, or pipeline;
(c) For a trench with a top width greater than three feet in herbaceous wetlands, the upper layer of the soil horizon shall initially be scraped and segregated into a spoil bank that is separated from the spoil bank resulting from the excavation of the trench for the utility line. The upper layer of the soil horizon shall be replaced as the last step of restored grades to facilitate natural revegetation;
(d) Maintenance trimming or removal of trees in wetlands will be conducted only within the impacted areas authorized under this general permit and only as necessary to perform repairs on the cable, conduit, or pipeline;
(e) This general permit does not authorize construction in surface waters other than wetlands;
(f) There shall be no net placement of permanent fill resulting from the activities authorized by this general permit;
(g) There shall be no dredging or filling in wetlands to access the work areas authorized by this general permit, except for temporary mats. All temporary mats shall be removed within thirty days after completion of the installation of the line within the wetland portion of the project;
(h) The works authorized by this general permit shall not impede the flow of water in wetlands or other surface waters, except for a maximum period of 30 days during construction, provided that the impeded flow does not cause flooding and shall not adversely affect the wetlands or other surface waters;
(i) Temporary spoil banks shall contain breaches that prevent impoundment or restriction of surface water flows;
(j) This general permit does not authorize the installation of conduit for draining wetlands or other surface waters;
(k) Pre-construction ground elevations and the contours of all disturbed soils, including vehicle ruts in wetlands and other surface waters, shall be restored within 30 days of completion of line installation. Restored grades shall be stabilized within 72 hours following completion of elevation and contour restoration to minimize erosion;
(l) Vehicle usage in wetlands and other surface waters shall be conducted so as to minimize tire rutting and erosion impacts;
(m) For purposes of this general permit, vehicular access in wetlands and other surface waters shall be limited to existing roads, trails, rights-of-way or easements, and to other previously disturbed corridors where they exist;
(n) This general permit shall not apply in Outstanding Florida Waters, Outstanding National Resource Waters, Aquatic Preserves, or Class I waters; and
(o) During the initial clearing event and when conducting subsequent normal maintenance activities, the permittee shall eradicate all Brazilian pepper (*Schinus terebinthifolius*), Australian pine (*Casuarina* spp.), and punk tree (*Melaleuca quinquinerva*) from the wetland portions of the utility right of way.
Specific Authority 373.026(7), 373.043, 373.118(1), 373.406(5), 373.414(9), 373.418, 403.805(1) FS. Law Implemented 373.118(1), 373.406(5), 373.413, 373.414(9), 373.416, 373.418 FS. History–New 10-3-95.

GENERAL CONDITIONS FOR ALL NOTICED GENERAL PERMITS

Rule 62-341.215, Florida Administrative Code

(1) The terms, conditions, requirements, limitations, and restrictions set forth in this section are general permit conditions and are binding upon the permittee for all noticed general permits in this chapter. These conditions are enforceable under Part IV of Chapter 373, F.S.

(2) The general permit is valid only for the specific activity indicated. Any deviation from the specified activity and the conditions for undertaking that activity shall constitute a violation of the permit. A violation of the permit is a violation of Part IV of Chapter 373, F.S., and may result in suspension or revocation of the permittee's right to conduct such activity under the general permit. The Department also may begin legal proceedings seeking penalties or other remedies as provided by law for any violation of these conditions.

(3) This general permit does not eliminate the necessity to obtain any required federal, state, local and special district authorizations prior to the start of any construction, alteration, operation, maintenance, removal or abandonment authorized by this permit.

(4) This general permit does not convey to the permittee or create in the permittee any property right, or any interest in real property, nor does it authorize any entrance upon or activities on property which is not owned or controlled by the permittee, or convey any rights or privileges other than those specified in the general permit as provided by Chapter 62-330, F.A.C.

(5) The general permit does not relieve the permittee from liability and penalties when the permitted activity causes harm or injury to: human health or welfare; animal, plant or aquatic life; or property. It does not allow the permittee to cause pollution in contravention of Florida Statutes and Department rules.

(6) The permittee is hereby advised that Section 253.77, F.S., states that a person may not commence any excavation, construction, or other activity involving the use of sovereign or other lands of the state, the title to which is vested in the Board of Trustees of the Internal Improvement Trust Fund without obtaining the required is responsible for obtaining any necessary authorizations from the Board of Trustees prior to commencing activity on sovereignty lands or other state-owned lands.

(7) The authorization to conduct activities pursuant to a general permit may be modified, suspended or revoked in accordance with Chapter 120, F.S., and Section 373.429, F.S.

(8) This permit shall not be transferred to a third party except pursuant to Section 62-343.130, F.A.C. The permittee transferring the general permit shall remain liable for any corrective actions that may be required as a result of any permit violations prior to sale, conveyance, or other transfer of ownership or control of the permitted system or the real property at which the permitted system is located.

(9) Upon reasonable notice to the permittee, Department staff with proper identification shall have permission to enter, inspect, sample and test the permitted system to insure conformity with the plans and specifications approved by the permit.

(10) The permittee shall maintain any permitted system in accordance with the plans submitted to the Department and authorized in this general permit.

(11) A permittee's right to conduct a specific noticed activity under this noticed general permit is authorized for a duration of five years.

(12) Construction, alteration, operation, maintenance, removal and abandonment approved by this general permit shall be conducted in a manner which does not cause violations of state water quality standards, including any anti-degradation provisions of Sections 62-4.242(1)(a) and (b), 62-4.242(2) and (3), and 62-302.300, F.A.C., and any special standards for Outstanding Florida Waters and Outstanding National Resource Waters. The permittee shall implement best management practices for erosion, turbidity, and other pollution control to prevent violation of state water quality standards. Temporary erosion control measures such as sodding, mulching, and seeding shall be

implemented and shall be maintained on all erodible ground areas prior to and during construction. Permanent erosion control measures such as sodding and planting of wetland species shall be completed within seven days of any construction activity. Turbidity barriers shall be installed and maintained at all locations where the possibility of transferring suspended solids into wetlands and other surface waters exists due to the permitted activity. Turbidity barriers shall remain in place and shall be maintained in a functional condition at all locations until construction is completed and soils are stabilized and vegetation has been established. Thereafter the permittee shall be responsible for the removal of the barriers. The permittee shall correct any erosion or shoaling that causes adverse impacts to the water resources.

(13) The permittee shall hold and save the Department harmless from any and all damages, claims, or liabilities, which may arise by reason of the construction, alteration, operation, maintenance, removal, abandonment or use of any system authorized by the general permit.

(14) The permittee shall immediately notify the Department in writing of any previously submitted information that is later discovered to be inaccurate. Specific Authority: 373.026, 373.043, 373.044, 373.118, 373.406, 403.813, 403.814, F.S. Law Implemented: 373.026, 373.043, 373.046, 373.118, 373.403, 373.413, 373.416, 373.418, 373.419, 373.422, 373.423, 373.426, 403.813, 403.814, F.S. History—New 10-3-95.

RIGHTS OF AFFECTED PARTIES

This letter acknowledges that the proposed activity may be conducted under general permit rule 62-341.453, F.A.C. This determination is final and effective on the date filed with the Clerk of the Department unless a sufficient petition for an administrative hearing is timely filed under sections 120.569 and 120.57 of the F.S. as provided below. If a sufficient petition for an administrative hearing is timely filed, this determination automatically becomes only proposed agency action subject to the result of the administrative review process. Therefore, on the filing of a timely and sufficient petition, this action will not be final and effective until further order of the Department. Because an administrative hearing may result in the reversal or substantial modification of this action, the applicant is advised not to commence construction or other activities until the deadlines noted below for filing a petition for an administrative hearing or request for an extension of time have expired.

Mediation is not available.

A person whose substantial interests are affected by the Department's action may petition for an administrative proceeding (hearing) under sections 120.569 and 120.57 of the F.S. The petition must contain the information set forth below and must be filed (received by the clerk) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida 32399-3000.

Under rule 62-110.106(4) of the F.A.C., a person whose substantial interests are affected by the Department's action may also request an extension of time to file a petition for an administrative hearing. The Department may, for good cause shown, grant the request for an extension of time. Requests for extension of time must be filed with the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida 32399-3000, before the applicable deadline. A timely request for extension of time shall toll the running of the time period for filing a petition until the request is acted upon. If a request is filed late, the Department may still grant it upon a motion by the requesting party showing that the failure to file a request for an extension of time before the deadline was the result of excusable neglect.

If a timely and sufficient petition for an administrative hearing is filed, other persons whose substantial interests will be affected by the outcome of the administrative process have the right to petition to intervene in the proceeding. Intervention will be permitted only at the discretion of the presiding officer upon the filing of a motion in compliance with rule 28-106.205 of the Florida Administrative Code.

In accordance with rule 62-110.106(3), F.A.C., petitions for an administrative hearing by the applicant must be filed within 21 days of receipt of this written notice. Petitions filed by any persons other than the applicant, and other than those entitled to written notice under section 120.60(3) of the F.S., must be filed within 21 days of publication of the notice or within 21 days of receipt of the written notice, whichever occurs first. Under section 120.60(3) of the F.S, however, any person who has asked the Department for notice of agency action may file a petition within 21 days of receipt of such notice, regardless of the date of publication.

The petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. The failure of any person to file a petition for an administrative hearing within the appropriate time period shall constitute a waiver of that right.

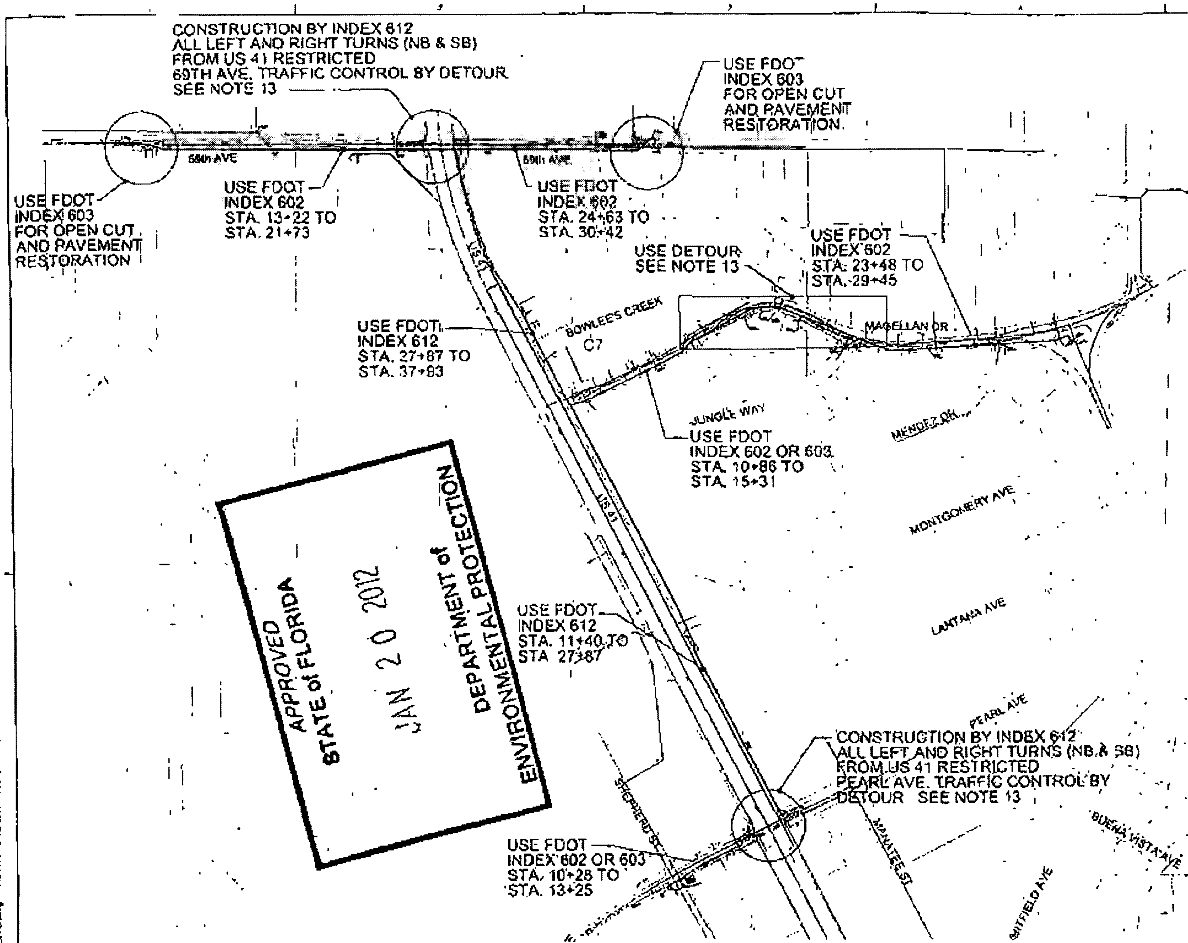
A petition that disputes the material facts on which the Department's action is based must contain the following information:

(a) The name and address of each agency affected and each agency's file or identification number, if known;
(b) The name, address, and telephone number of the petitioner; the name, address, and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests are or will be affected by the agency determination;
(c) A statement of when and how the petitioner received notice of the agency decision;
(d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate;
(e) A concise statement of the ultimate facts alleged, including the specific facts that the petitioner contends warrant reversal or modification of the agency's proposed action;
(f) A statement of the specific rules or statutes that the petitioner contends require reversal or modification of the agency's proposed action; and
(g) A statement of the relief sought by the petitioner, stating precisely the action that the petitioner wishes the agency to take with respect to the agency's proposed action.

A petition that does not dispute the material facts on which the Department's action is based shall state that no such facts are in dispute and otherwise shall contain the same information as set forth above, as required by rule 28-106.301.

Under sections 120.569(2)(c) and (d) of the F.S., a petition for administrative hearing must be dismissed by the agency if the petition does not substantially comply with the above requirements or is untimely filed.

This determination constitutes an order of the Department. Subject to the provisions of paragraph 120.68(7)(a) of the F.S., which may require a remand for an administrative hearing, the applicant has the right to seek judicial review of the order under section 120.68 of the Florida Statutes, by the filing of a notice of appeal under rule 9.110 of the Florida Rules of Appellate Procedure with the Clerk of the Department in the Office of General Counsel, 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida, 32399-3000; and by filing a copy of the notice of appeal accompanied by the applicable filing fees with the appropriate district court of appeal. The notice of appeal must be filed within 30 days from the date when the final order is filed with the Clerk of the Department. The applicant, or any party within the meaning of section 373.114(1)(a) or 373.4275 of the F.S., may also seek appellate review of this order before the Land and Water Adjudicatory Commission under section 373.114(1) or 373.4275 of the F.S. Requests for review before the Land and Water Adjudicatory Commission must be filed with the Secretary of the Commission and served on the Department within 20 days from the date when the final order is filed with the Clerk of the Department. The applicant, or any party within the meaning of paragraph 20.255(5)(a) of the F.S., may also seek appellate review of the order before the Land and Water Adjudicatory Commission under subsection 20.255(5) of the F.S. Requests for review before the Land and Water Adjudicatory Commission must be filed with the Secretary of the Commission and served on the Department within 20 days from the date when the order is filed with the Clerk of the Department.



TRAFFIC CONTROL GENERAL NOTES

1. THIS TRAFFIC CONTROL PLAN IS SHOWN AS A MINIMUM GUIDELINE ONLY. CONTRACTOR IS RESPONSIBLE FOR ANY TRAFFIC CONTROL PLAN IMPLEMENTED. THE CONTRACTOR MAY MODIFY THE TRAFFIC CONTROL PLANS PROVIDED HEREIN. ALL MODIFICATIONS SHALL ADHERE TO THE REQUIREMENTS SET FORTH IN THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D LATEST EDITION) AND THE FDOT ROADWAY AND TRAFFIC DESIGN STANDARDS LATEST EDITION (600 SERIES). ANY CHANGE RECOMMENDED BY THE CONTRACTOR MUST BE SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF FLORIDA AND SUBMITTED TO THE ENGINEER AT LEAST FOURTEEN (14) DAYS PRIOR TO THE START OF CONSTRUCTION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN COUNTY APPROVAL (PRIOR TO IMPLEMENTATION) AND FAILURE TO OBTAIN APPROVAL SHALL NOT BE GROUNDS FOR ANY DELAY CLAIM FOR TIME OR ADDITIONAL COMPENSATION.
2. THE RECOMMENDED FDOT DESIGN STANDARD INDICES ARE CONCEPTUAL. THE CONTRACTOR SHALL AT ALL TIMES ADHERE TO THE REQUIREMENTS SET FORTH IN THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D LATEST EDITION) AND THE FDOT ROADWAY AND TRAFFIC DESIGN STANDARDS, LATEST EDITION (600 SERIES).
3. IT IS NOT THE INTENT OF THESE PLANS TO SHOW ALL TEMPORARY DRAINAGE AND INCIDENTAL CONSTRUCTION NECESSARY TO MAINTAIN TRAFFIC. THE CONTRACTOR SHALL BE REQUIRED TO PROVIDE TEMPORARY DRAINAGE. THERE WILL BE NO DIRECT PAY FOR THIS WORK. COSTS SHALL BE INCLUDED IN THE COST OF THE PIPE.
4. MOTORIZED AND MECHANICAL EQUIPMENT SHALL BE EFFECTIVELY SHIELDED, PADDED, OR LOCATED TO MINIMIZE NOISE AS DIRECTED BY THE ENGINEER.
5. THE CONTRACTOR WILL NOTIFY ALL EMERGENCY AND RESCUE AGENCIES LOCATED IN THE PROJECT VICINITY 24 HOURS IN ADVANCE OF ANY PROPOSED LANE CLOSURES OR DETOURS.
6. ACCESS TO ALL SIDE STREETS AND DRIVEWAYS MUST BE PROVIDED AND MAINTAINED DURING CONSTRUCTION.
7. FOR TRAFFIC CONTROL MEASURES WHEN CONSTRUCTION EQUIPMENT IS DRIVEN ON OPEN TRAVEL LANES USE INDEX NO. 627. THE REGULATORY SPEED IN WORK ZONES SHOULD BE AS CLOSE TO NORMAL CONDITIONS AS POSSIBLE UNLESS NOTED ON TRAFFIC CONTROL PLANS.
8. THE CONTRACTOR SHALL PROVIDE SAFE PEDESTRIAN ACCESS THROUGH THE WORK ZONE AT ALL TIMES.
9. THE CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES PRIOR TO WORKING NEAR THEIR EXISTING FACILITIES.
10. CONSTRUCTION SEQUENCES SHALL BE COORDINATED TO PROVIDE POSITIVE DRAINAGE OF THE TRAVELED WAY AT ALL TIMES.
11. ANY MOT ITEM NOT SPECIFICALLY LISTED UNDER A PARTICULAR PAY ITEM SHALL BE CONSIDERED SUBSIDIARY TO OTHER BID ITEMS. THERE SHALL BE NO SEPARATE PAYMENT.
12. THE MAXIMUM SPACING BETWEEN WARNING DEVICES USED FOR DELINEATION BETWEEN THE TRAVEL WAY AND CONSTRUCTION AREA SHALL BE AS PER FDOT STANDARD INDEX 600.
13. ALL DETOURS SHALL ADHERE TO THE REQUIREMENTS SET FORTH IN THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D LATEST EDITION) AND THE FDOT ROADWAY AND TRAFFIC DESIGN STANDARDS LATEST EDITION (600 SERIES). ANY DETOUR RECOMMENDED BY THE CONTRACTOR MUST BE SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF FLORIDA AND SUBMITTED TO THE ENGINEER AT LEAST FOURTEEN (14) DAYS PRIOR TO THE START OF CONSTRUCTION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN COUNTY APPROVAL (PRIOR TO IMPLEMENTATION) AND FAILURE TO OBTAIN APPROVAL SHALL NOT BE GROUNDS FOR ANY DELAY CLAIM FOR TIME OR ADDITIONAL COMPENSATION.

ROBERT A. CANNARELLA, P.E. STATE OF FLORIDA PROFESSIONAL ENGINEER

DSGN	RAC			
DR	BJK			
CHK	HLB			
APVD	RAC	NO.	DATE	REVISION

ROBERT A. CANNARELLA, P.E. FL. P.E. No. 17362

General ERP Permit Application Drawings
Right-of-Way and Easement Construction Areas

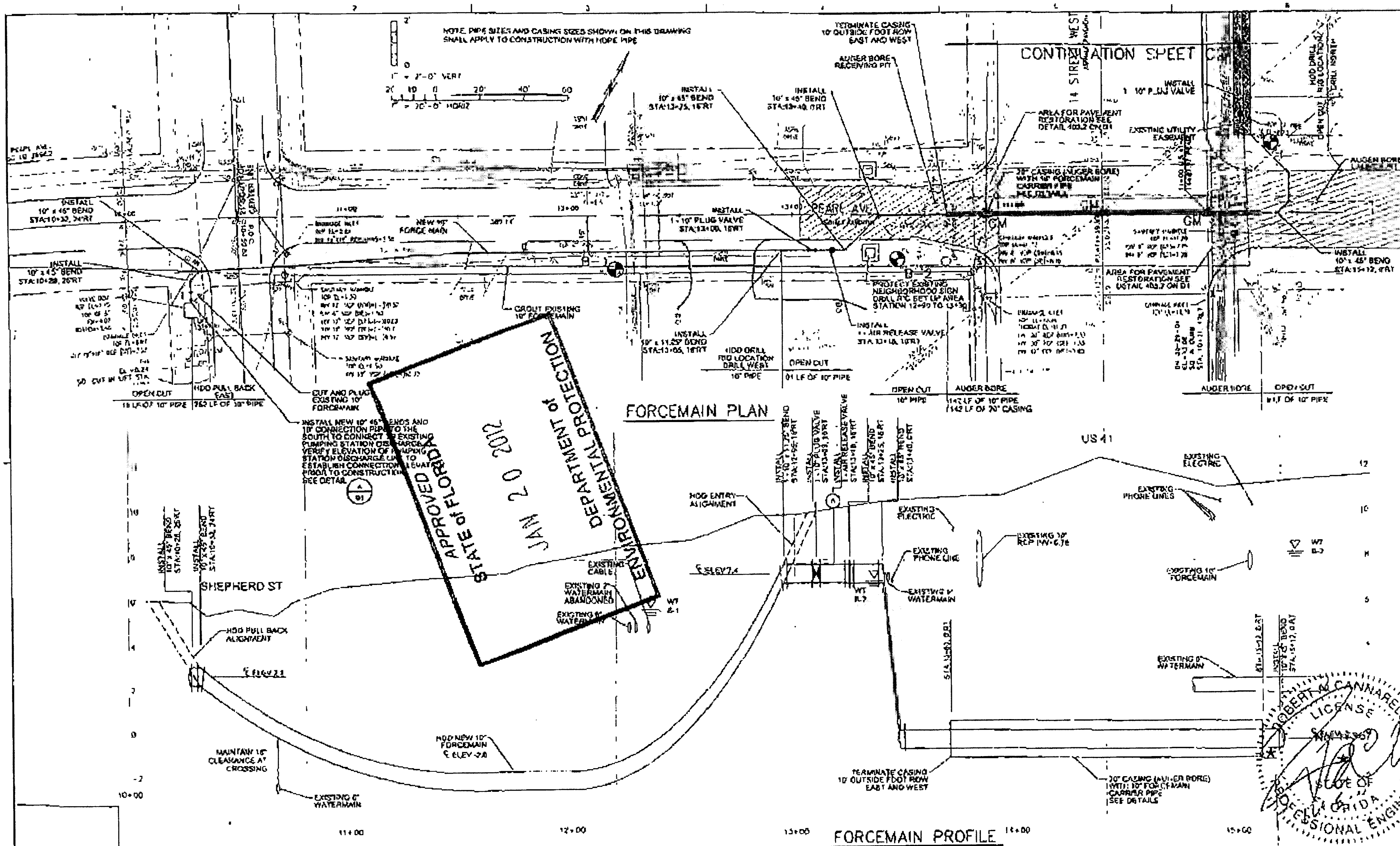
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 — 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

CH2MHILL
4350 WEST CYPRESS STREET SUITE 600
TAMPA, FLORIDA 33607-4155
LB 0000384 AA 0000025

MANATEE COUNTY
FORCE MAIN 1A, 2A, AND 18A
REPLACEMENT PROJECT
MANATEE COUNTY, FLORIDA
PROJECT No. 90522.80

MAINTENANCE OF TRAFFIC

SHEET	C4
DWG	C4.DWG
DATE	NOVEMBER 2011
PROJ	395791.FM



DSGN	RAC			
DR	BJN			
CHK	HLP			
APVD	RAC	NO	DATE	REVISION

ROBERT A. CANNARELLA, P.E.
FL P.E. No. 17287

General ERP Permit Application Drawings
Right-of-Way and Easement Construction Areas

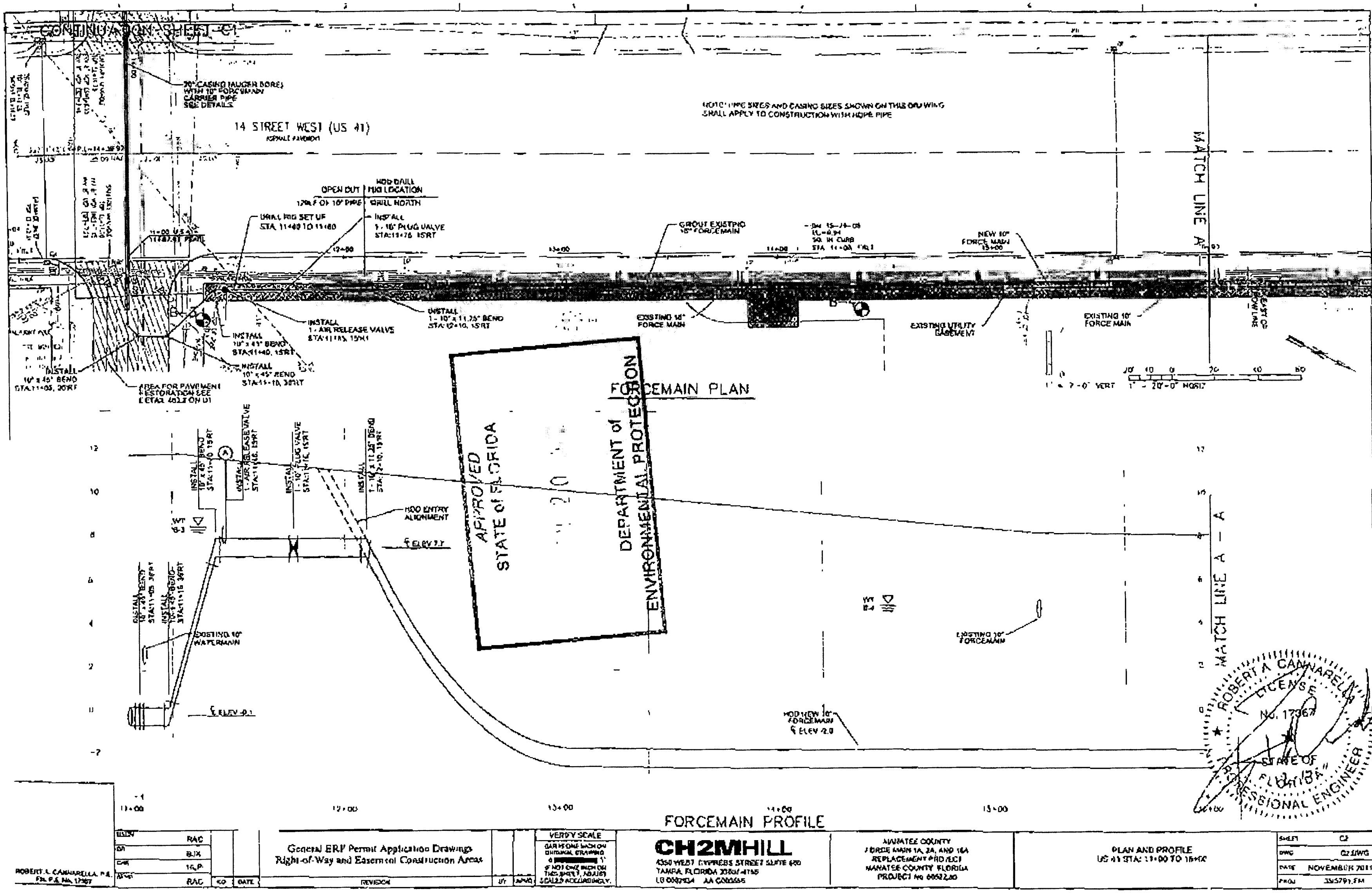
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

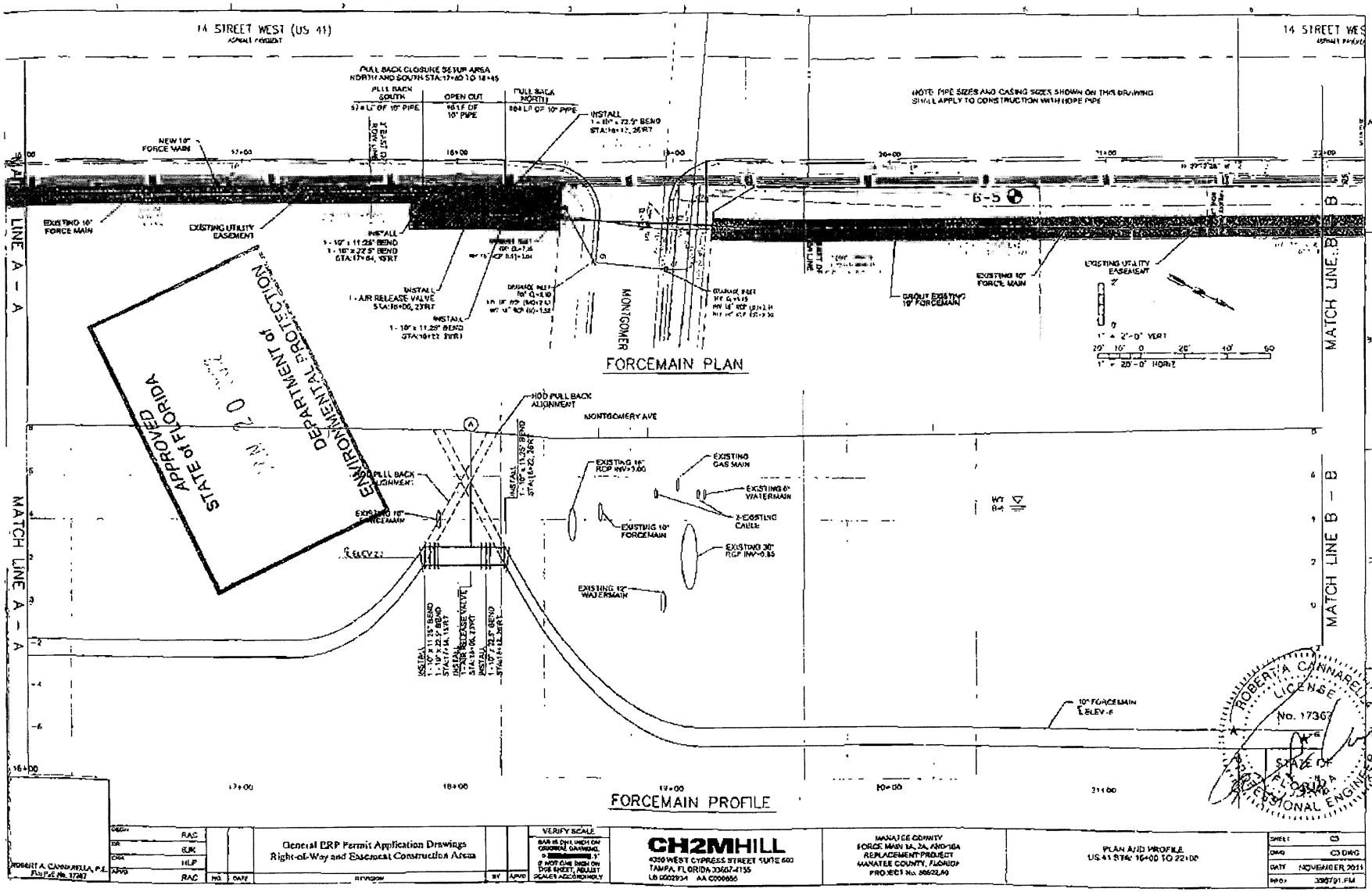
CH2MHILL
4350 WEST CYPRESS STREET SUITE 900
TAMPA, FLORIDA 33607-4155
LB 0002354 AA C000656

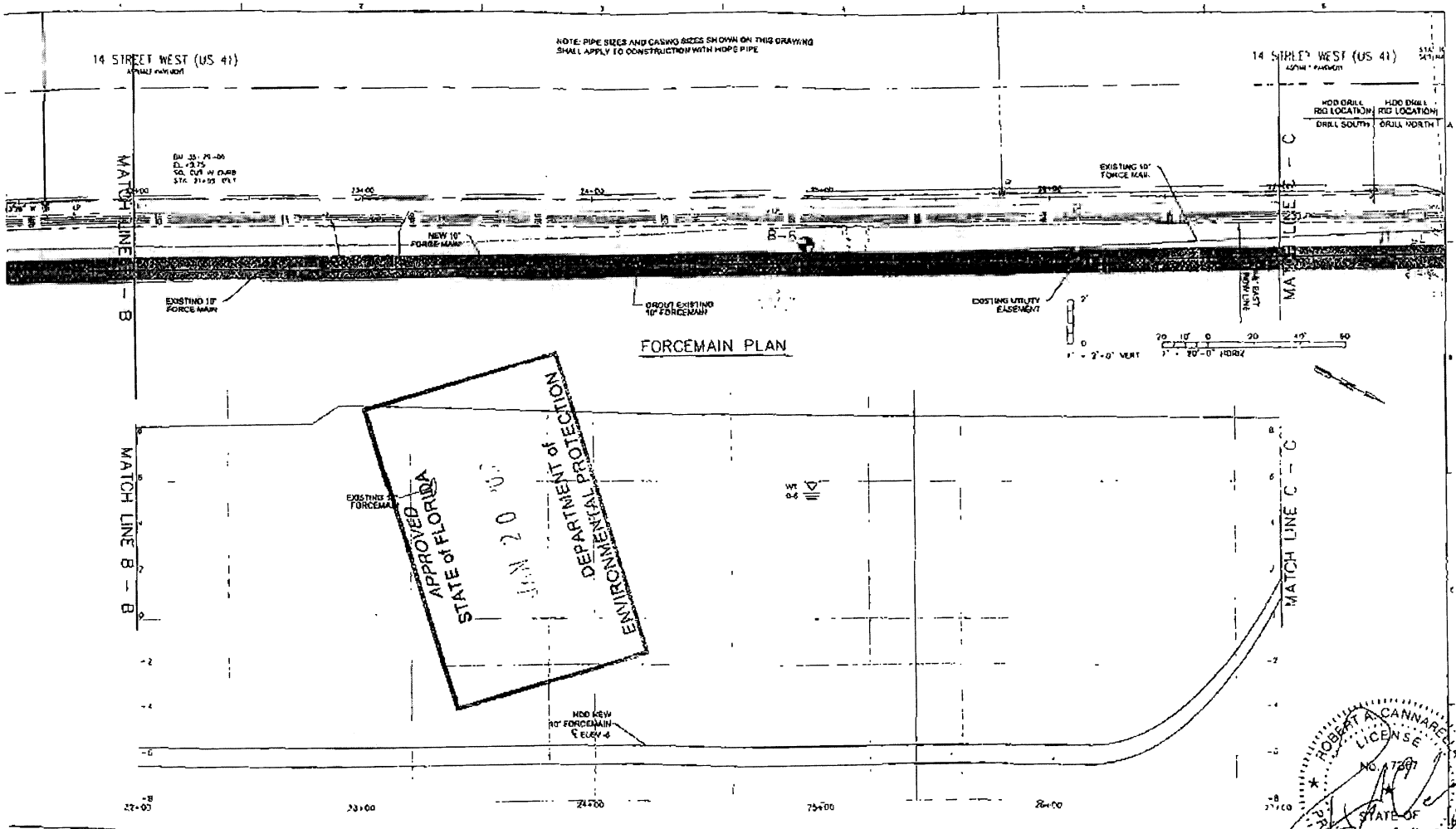
MANATEE COUNTY
FORCE MAIN 1A, 2A, AND 16A
REPLACEMENT PROJECT
MANATEE COUNTY, FLORIDA
PROJECT No. F0032.00

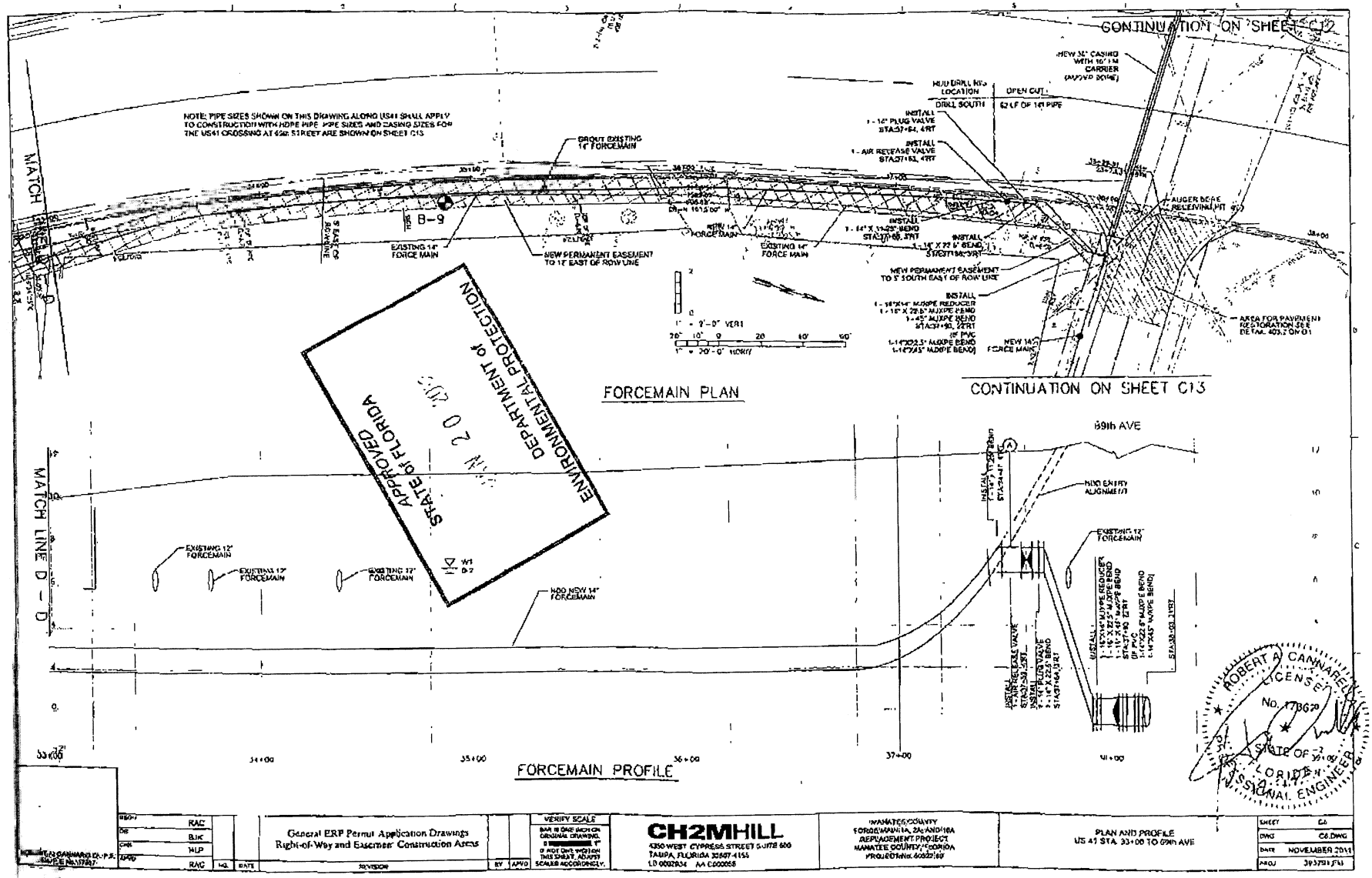
PLAN AND PROFILE
PEARL AVE FROM SHEPHERD ST TO US 41

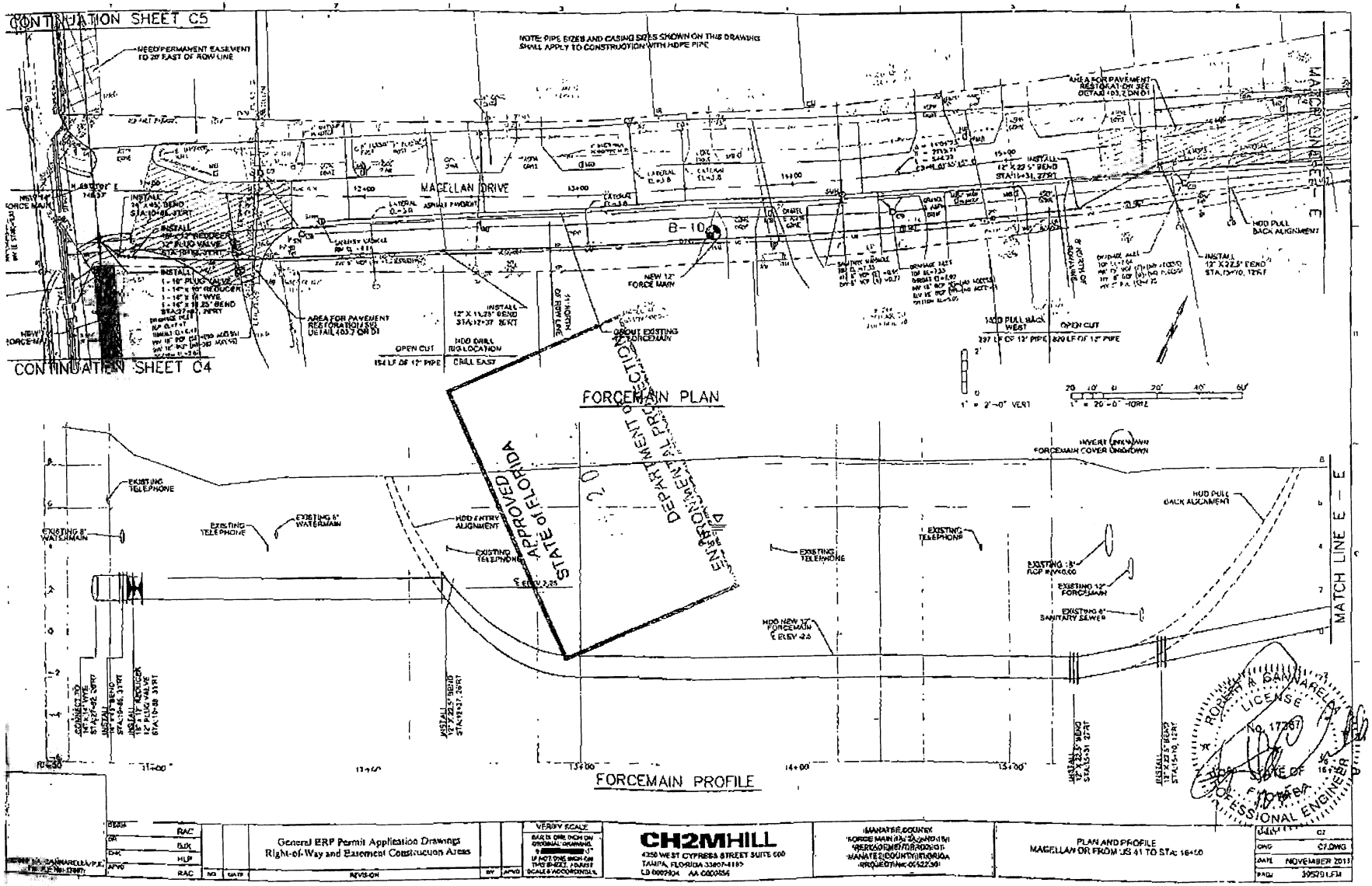
SHEET	C7
DWG	C1.DWG
DATE	NOVEMBER 2011
PROJ	395981.FM

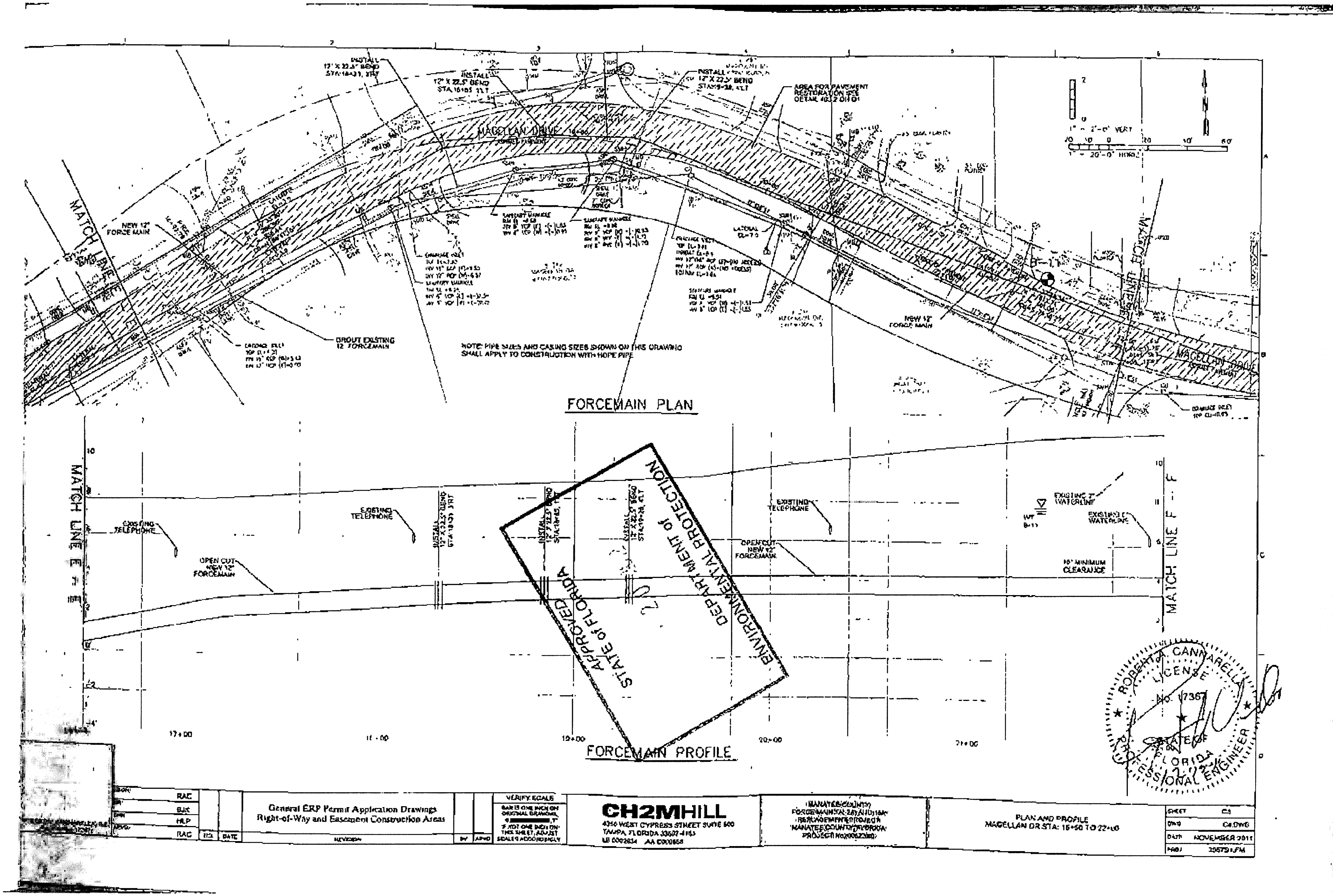

CONTINUATION SHEET C1
14 STREET WEST (US 41)
NOTE: PIPE SIZES AND CASING SIZES SHOWN ON THIS DRAWING SHALL APPLY TO CONSTRUCTION WITH HDPE PIPE
MATCH LINE A
FORCEMAIN PLAN
FORCEMAIN PROFILE
EXISTING 10" FORCE MAIN
EXISTING UTILITY EASEMENT
GROUT EXISTING 16" FORCEMAIN
HDD ENTRY ALIGNMENT
EXISTING 10" WATERMAIN
EXISTING 10" FORCEMAIN
MATCH LINE A – A
APPROVED
STATE of FLORIDA
DEPARTMENT of
ENVIRONMENTAL PROTECTION
ROBERT A CANNARELLA
LICENSE
No. 17367
STATE OF FLORIDA
PROFESSIONAL ENGINEER
General ERP Permit Application Drawings
Right-of-Way and Easement Construction Areas
CH2MHILL
MANATEE COUNTY
PLAN AND PROFILE
US 41 STA: 11+00 TO 15+00
NOVEMBER 2011

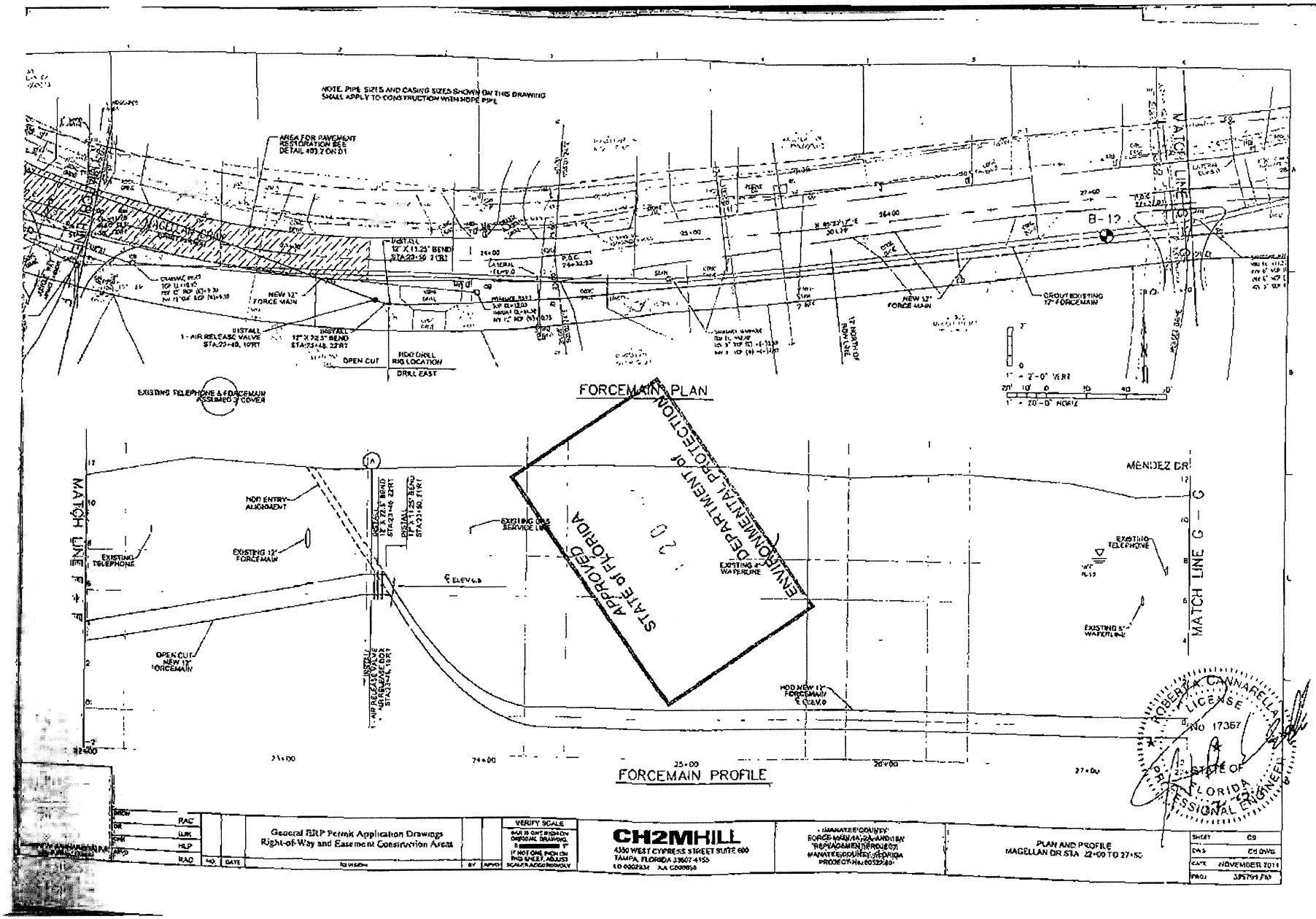

14 STREET WEST (US 41)
PULL BACK CLOSURE SETUP AREA
NOTE: PIPE SIZES AND CASING SIZES SHOWN ON THIS DRAWING SHALL APPLY TO CONSTRUCTION WITH HDPE PIPE
NEW 10" FORCE MAIN
EXISTING 10" FORCE MAIN
EXISTING UTILITY EASEMENT
INSTALL 1 - AIR RELEASE VALVE
GROUT EXISTING 10" FORCEMAIN
B-5
FORCEMAIN PLAN
MONTGOMER
MATCH LINE A - A
MATCH LINE B - B
APPROVED
STATE of FLORIDA
DEPARTMENT of ENVIRONMENTAL PROTECTION
HDD PULL BACK ALIGNMENT
MONTGOMERY AVE
EXISTING 16" RCP INV=3.00
EXISTING GAS MAIN
EXISTING 6" WATERMAIN
EXISTING CABLE
EXISTING 10" FORCEMAIN
EXISTING 30" RCP INV=0.85
EXISTING 12" WATERMAIN
10" FORCEMAIN
ELEV-6
FORCEMAIN PROFILE
ROBERT A. CANNARELLA
LICENSE
No. 17367
STATE OF FLORIDA
REGISTERED
PROFESSIONAL ENGINEER
General ERP Permit Application Drawings
Right-of-Way and Easement Construction Areas
CH2MHILL
4350 WEST CYPRESS STREET SUITE 600
TAMPA, FLORIDA 33607-4155
MANATEE COUNTY
FORCE MAIN 1A, 2A, AND 18A
REPLACEMENT PROJECT
MANATEE COUNTY, FLORIDA
PROJECT No. 38602.A0
PLAN AND PROFILE
US 41 STA: 16+00 TO 22+00
NOVEMBER 2011

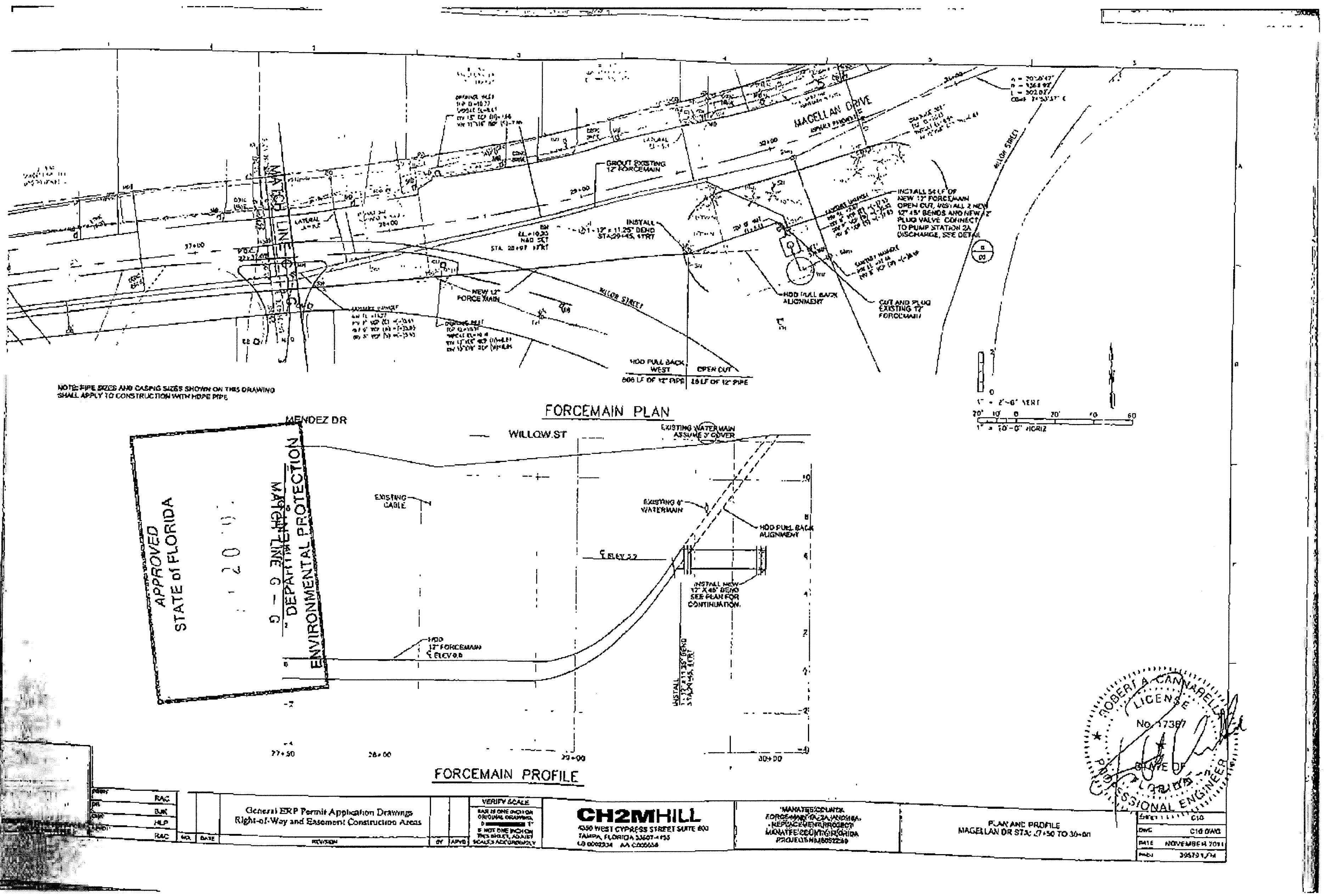

14 STREET WEST (US 41)
NOTE: PIPE SIZES AND CASING SIZES SHOWN ON THIS DRAWING SHALL APPLY TO CONSTRUCTION WITH HDPE PIPE
14 STREET WEST (US 41)
HDD DRILL RIG LOCATION
DRILL SOUTH
HDD DRILL RIG LOCATION
DRILL NORTH
MATCH LINE B - B
MATCH LINE C - C
EXISTING 10" FORCE MAIN
NEW 10" FORCE MAIN
GROUT EXISTING 10" FORCEMAIN
EXISTING UTILITY EASEMENT
FORCEMAIN PLAN
1" = 2'-0" VERT
1" = 20'-0" HORIZ
APPROVED
STATE of FLORIDA
DEPARTMENT of
ENVIRONMENTAL PROTECTION
HDD NEW 10" FORCEMAIN
22+00
23+00
24+00
25+00
26+00
27+00
FORCEMAIN PROFILE
ROBERT A. CANNARELLA
LICENSE
NO. 17307
STATE OF FLORIDA
PROFESSIONAL ENGINEER
CH2MHILL
4350 WEST CYPRESS STREET SUITE 600
TAMPA, FLORIDA 33607-4155
LB 0007934 AA C000558
MANATEE COUNTY
FORCE MAIN 9A,3A, AND 16A
REPLACEMENT PROJECT
MANATEE COUNTY, FLORIDA
PROJECT No. M0922.00
PLAN AND PROFILE
US 41 STA. 22+00 TO 27+00
General ERP Permit Application Drawings
Right-of-Way and Easement Construction Areas
DESIGN RAC
DR BJK
CHK HLP
APVD RAC
VERIFY SCALE
SHEET C4
DWG C4.DWG
DATE NOVEMBER 2011
PROJ 393791.FM


CONTINUATION ON SHEET C12
NOTE: PIPE SIZES SHOWN ON THIS DRAWING ALONG US41 SHALL APPLY TO CONSTRUCTION WITH HDPE PIPE. PIPE SIZES AND CASING SIZES FOR THE US41 CROSSING AT 65th STREET ARE SHOWN ON SHEET C13
GROUT EXISTING 14" FORCEMAIN
EXISTING 14" FORCE MAIN
NEW PERMANENT EASEMENT TO 15' EAST OF ROW LINE
NEW PERMANENT EASEMENT TO 5' SOUTH EAST OF ROW LINE
NEW 14" FORCE MAIN
AUGER BORE RECEIVING PIT
AREA FOR PAVEMENT RESTORATION SEE DETAIL 403.2 ON D1
FORCEMAIN PLAN
CONTINUATION ON SHEET C13
APPROVED STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
89th AVE
NDD ENTRY ALIGNMENT
EXISTING 12" FORCEMAIN
EXISTING 16" FORCEMAIN
NDD NEW 14" FORCEMAIN
MATCH LINE D - D
FORCEMAIN PROFILE
ROBERT A CANNAVELLA LICENSED No. 17867 STATE OF FLORIDA SIGNAL ENGINEER
General ERP Permit Application Drawings Right-of-Way and Easement Construction Areas
CH2MHILL
4350 WEST CYPRESS STREET SUITE 600 TAMPA, FLORIDA 33607-4155
MANATEE/SARASOTA FORCEMAIN 16A AND 16B REPLACEMENT PROJECT MANATEE COUNTY, FLORIDA
PLAN AND PROFILE US 41 STA. 33+00 TO 69th AVE
SHEET C6
DWG C6.DWG
DATE NOVEMBER 2011

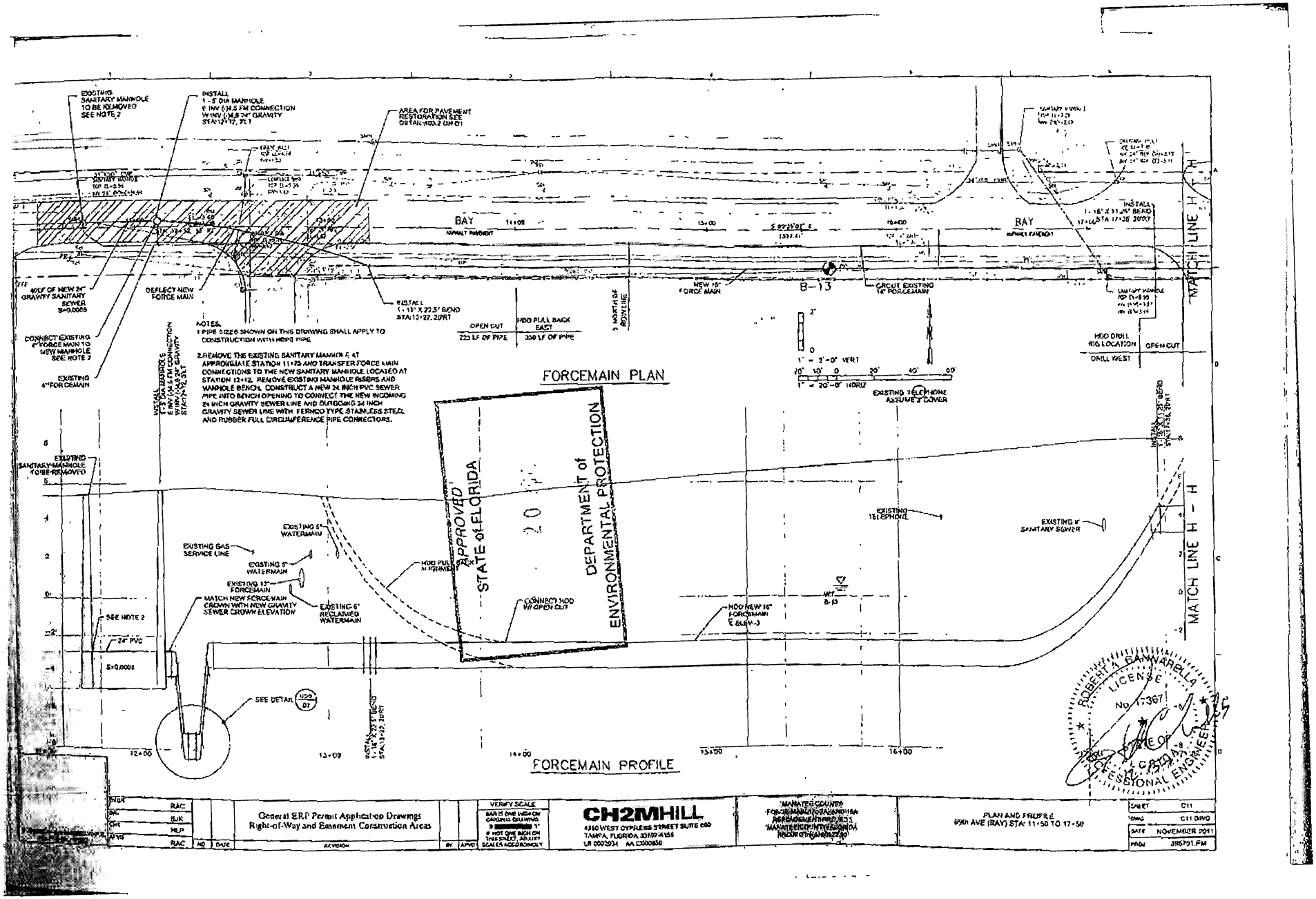

CONTINUATION SHEET C5
NOTE: PIPE SIZES AND CASING SIZES SHOWN ON THIS DRAWING SHALL APPLY TO CONSTRUCTION WITH HDPE PIPE
MAGELLAN DRIVE
B-10
NEW 12" FORCE MAIN
GROUT EXISTING FORCEMAIN
HDD PULL BACK ALIGNMENT
1400 PULL back WEST
OPEN CUT
397 LF OF 12" PIPE, 820 LF OF 12" PIPE
CONTINUATION SHEET C4
FORCEMAIN PLAN
APPROVED
STATE of FLORIDA
DEPARTMENT of TRANSPORTATION
EXISTING TELEPHONE
EXISTING 8" WATERMAIN
HDD ENTRY ALIGNMENT
EXISTING 12" FORCEMAIN
EXISTING 6" SANITARY SEWER
HDD NEW 12" FORCEMAIN
MATCH LINE E - E
FORCEMAIN PROFILE
ROBERT A. DANIELS
LICENSE
No. 17267
STATE OF FLORIDA
PROFESSIONAL ENGINEER
General ERP Permit Application Drawings
Right-of-Way and Easement Construction Areas
CH2MHILL
4350 WEST CYPRESS STREET SUITE 600
TAMPA, FLORIDA 33607-4157
LD 0007904 AA 0000656
PLAN AND PROFILE
MAGELLAN DR FROM US 41 TO STA: 16+50
NOVEMBER 2013


FORCEMAIN PLAN
FORCEMAIN PROFILE
MATCH LINE E - E
MATCH LINE F - F
MAGELLAN DRIVE
NEW 12" FORCE MAIN
GROUT EXISTING 12" FORCEMAIN
AREA FOR PAVEMENT RESTORATION SEE DETAIL 4032 OI 01
NOTE: PIPE SIZES AND CASING SIZES SHOWN ON THIS DRAWING SHALL APPLY TO CONSTRUCTION WITH HDPE PIPE
EXISTING TELEPHONE
OPEN CUT NEW 12" FORCEMAIN
EXISTING WATERLINE
10" MINIMUM CLEARANCE
17+00
18+00
19+00
20+00
21+00
APPROVED
STATE of FLORIDA
DEPARTMENT of
ENVIRONMENTAL PROTECTION
ROBERT A. CANNARELLA
LICENSE
No. 17367
STATE OF FLORIDA
PROFESSIONAL ENGINEER
General ERP Permit Application Drawings
Right-of-Way and Easement Construction Areas
VERIFY SCALE
CH2MHILL
4350 WEST CYPRESS STREET SUITE 600
TAMPA, FLORIDA 33607-4183
PLAN AND PROFILE
MAGELLAN DR STA: 15+50 TO 22+00
C3
NOVEMBER 2011

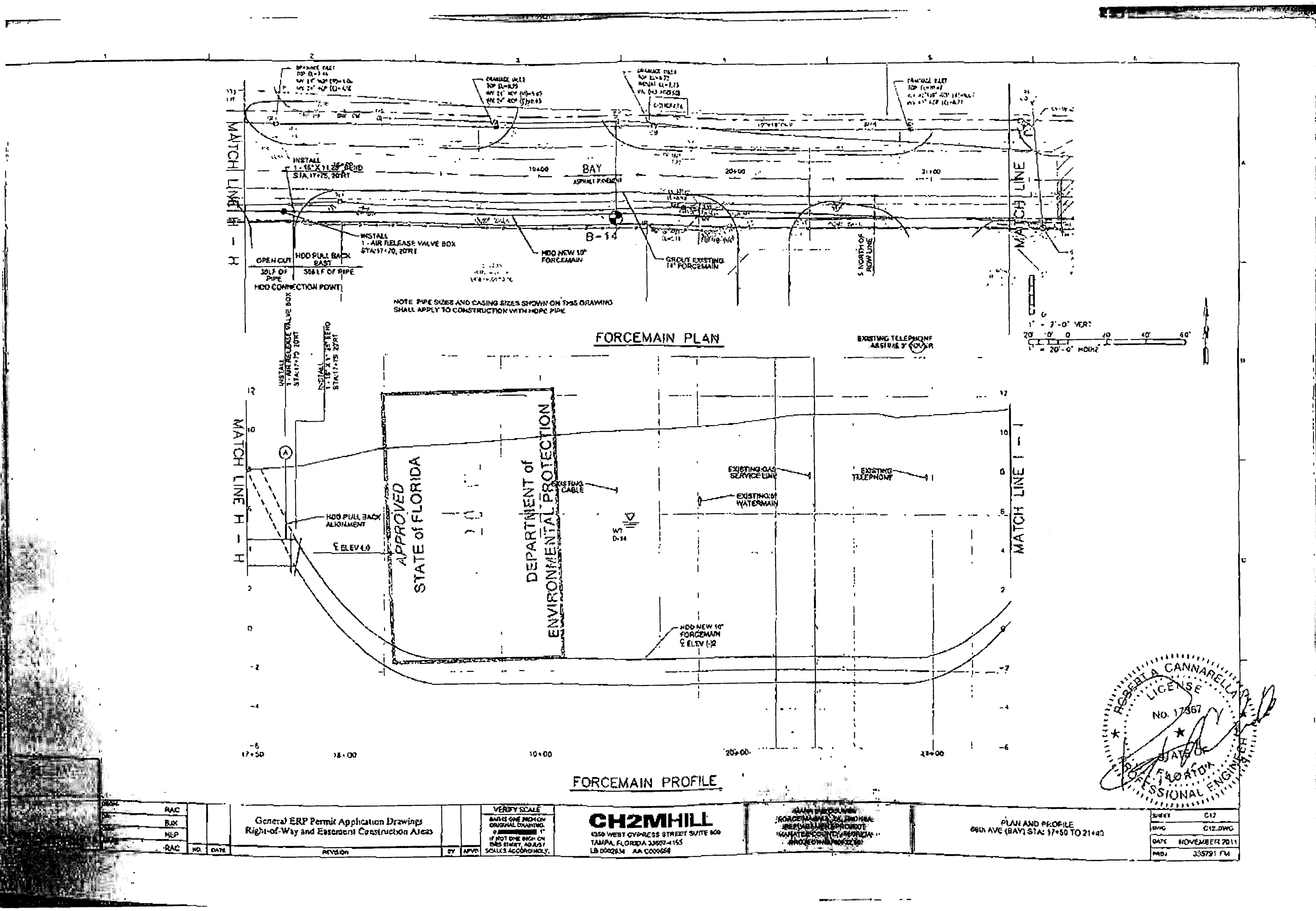

NOTE: PIPE SIZES AND CASING SIZES SHOWN ON THIS DRAWING SHALL APPLY TO CONSTRUCTION WITH HDPE PIPE
AREA FOR PAVEMENT RESTORATION SEE DETAIL #03.2 ON D1
MAGELLAN DRIVE
MATCH LINE F - F
MATCH LINE G - G
MENDEZ DR
NEW 12" FORCE MAIN
GROUT EXISTING 12" FORCEMAIN
INSTALL 1 - AIR RELEASE VALVE STA:23+49, 10'RT
INSTALL 12" X 22.5° BEND STA:23+49, 22'RT
OPEN CUT
HDD DRILL RIG LOCATION
DRILL EAST
EXISTING TELEPHONE & FORCEMAIN ASSUMED 3' COVER
FORCEMAIN PLAN
1" = 2'-0" VERT
1" = 20'-0" HORIZ
NOD ENTRY ALIGNMENT
EXISTING 12" FORCEMAIN
EXISTING TELEPHONE
EXISTING GAS SERVICE LINE
EXISTING 4" WATERLINE
EXISTING TELEPHONE
EXISTING 8" WATERLINE
OPEN CUT NEW 12" FORCEMAIN
INSTALL 1 - AIR RELEASE VALVE STA:23+41, 10'RT
MOD NEW 12" FORCEMAIN
APPROVED STATE of FLORIDA DEPARTMENT of ENVIRONMENTAL PROTECTION
FORCEMAIN PROFILE
ROBERT A. CANNARELLA LICENSE NO 17367 STATE OF FLORIDA PROFESSIONAL ENGINEER
General ERP Permit Application Drawings Right-of-Way and Easement Construction Areas
CH2MHILL
4350 WEST CYPRESS STREET SUITE 600 TAMPA, FLORIDA 33607-4155
MANATEE COUNTY FORCE MAIN 12A AND 13A REPLACEMENT PROJECT MANATEE COUNTY, FLORIDA PROJECT No. 605228
PLAN AND PROFILE MAGELLAN DR STA 22+00 TO 27+50
NOVEMBER 2011

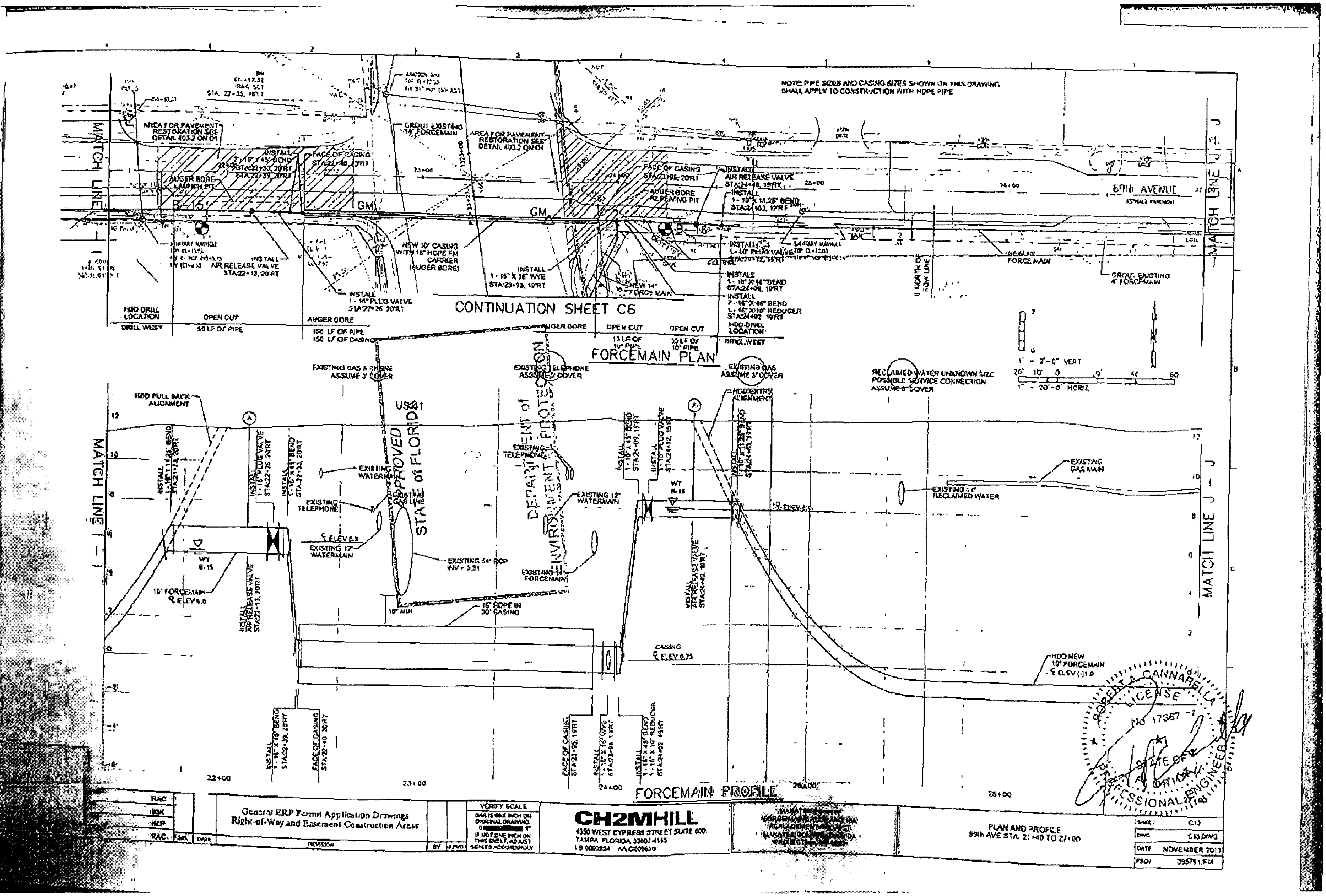


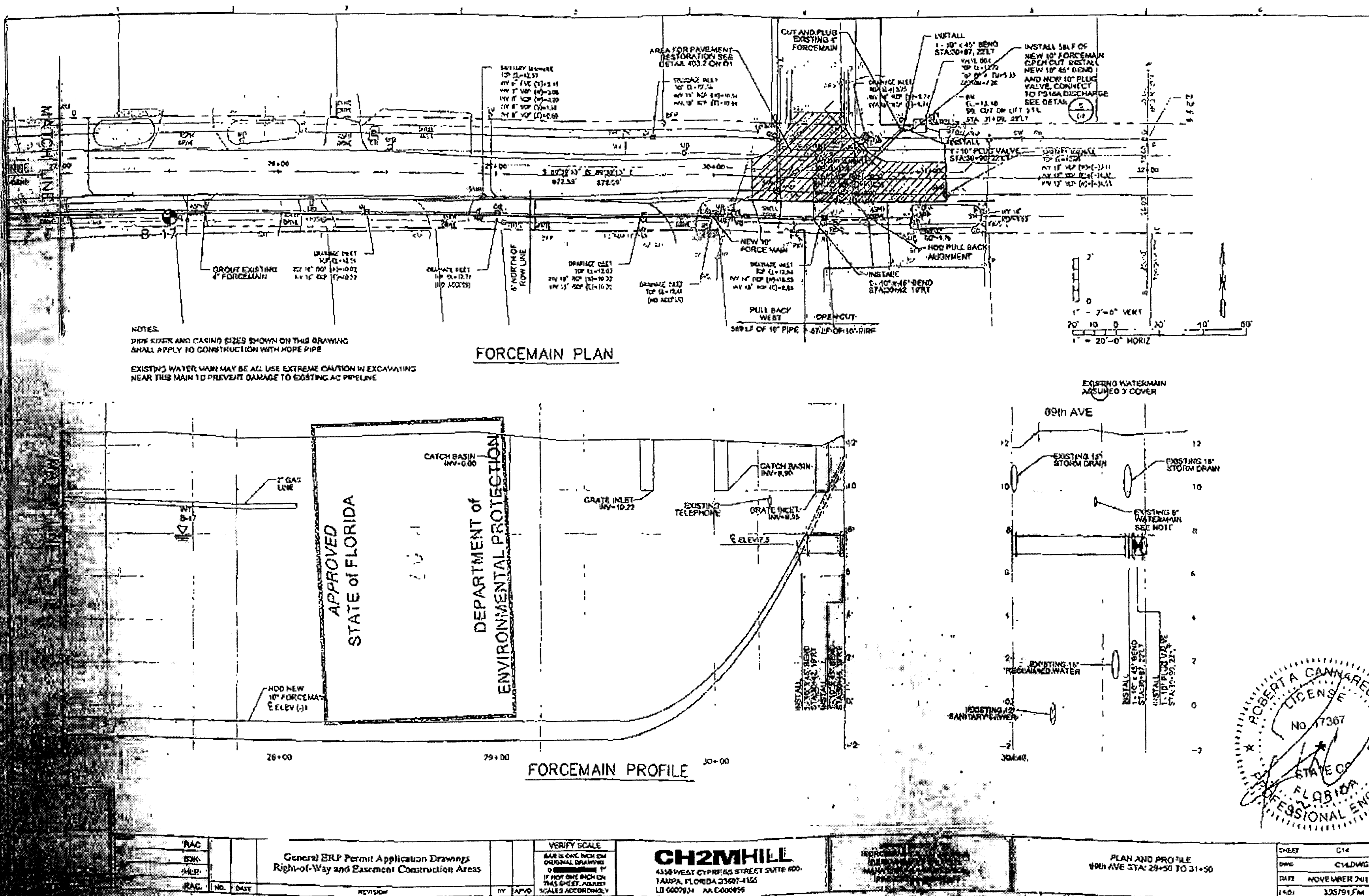
MAGELLAN DRIVE
WILLOW STREET
MATCH LINE G – G
GROUT EXISTING 12" FORCEMAIN
INSTALL 12" x 11.25° BEND STA29+45, 5'RT
NEW 12" FORCE MAIN
HDD PULL BACK ALIGNMENT
INSTALL 54 LF OF NEW 12" FORCEMAIN OPEN CUT, INSTALL 2 NEW 12" 45° BENDS AND NEW 12" PLUG VALVE CONNECT TO PUMP STATION 2A DISCHARGE, SEE DETAIL
CUT AND PLUG EXISTING 12" FORCEMAIN
HDD PULL BACK WEST
606 LF OF 12" PIPE
OPEN CUT
18 LF OF 12" PIPE
NOTE: PIPE SIZES AND CASING SIZES SHOWN ON THIS DRAWING SHALL APPLY TO CONSTRUCTION WITH HDPE PIPE
FORCEMAIN PLAN
MENDEZ DR
WILLOW ST
EXISTING WATERMAIN ASSUME 3' COVER
EXISTING CABLE
EXISTING 6" WATERMAIN
HDD PULL BACK ALIGNMENT
INSTALL NEW 12" X 45° BEND SEE PLAN FOR CONTINUATION.
HDD 12" FORCEMAIN ℄ ELEV 0.0
27+50
28+00
29+00
30+00
FORCEMAIN PROFILE
APPROVED
STATE of FLORIDA
DEPARTMENT of ENVIRONMENTAL PROTECTION
1" = 2'-0" VERT
1" = 10'-0" HORIZ
General ERP Permit Application Drawings
Right-of-Way and Easement Construction Areas
VERIFY SCALE
CH2MHILL
4350 WEST CYPRESS STREET SUITE 600
TAMPA, FLORIDA 33607-4155
PLAN AND PROFILE
MAGELLAN DR STA: 27+50 TO 30+00
C10
C10.DWG
NOVEMBER 2011
ROBERT A. CANNARELLA
LICENSE No. 17387
STATE OF FLORIDA
PROFESSIONAL ENGINEER

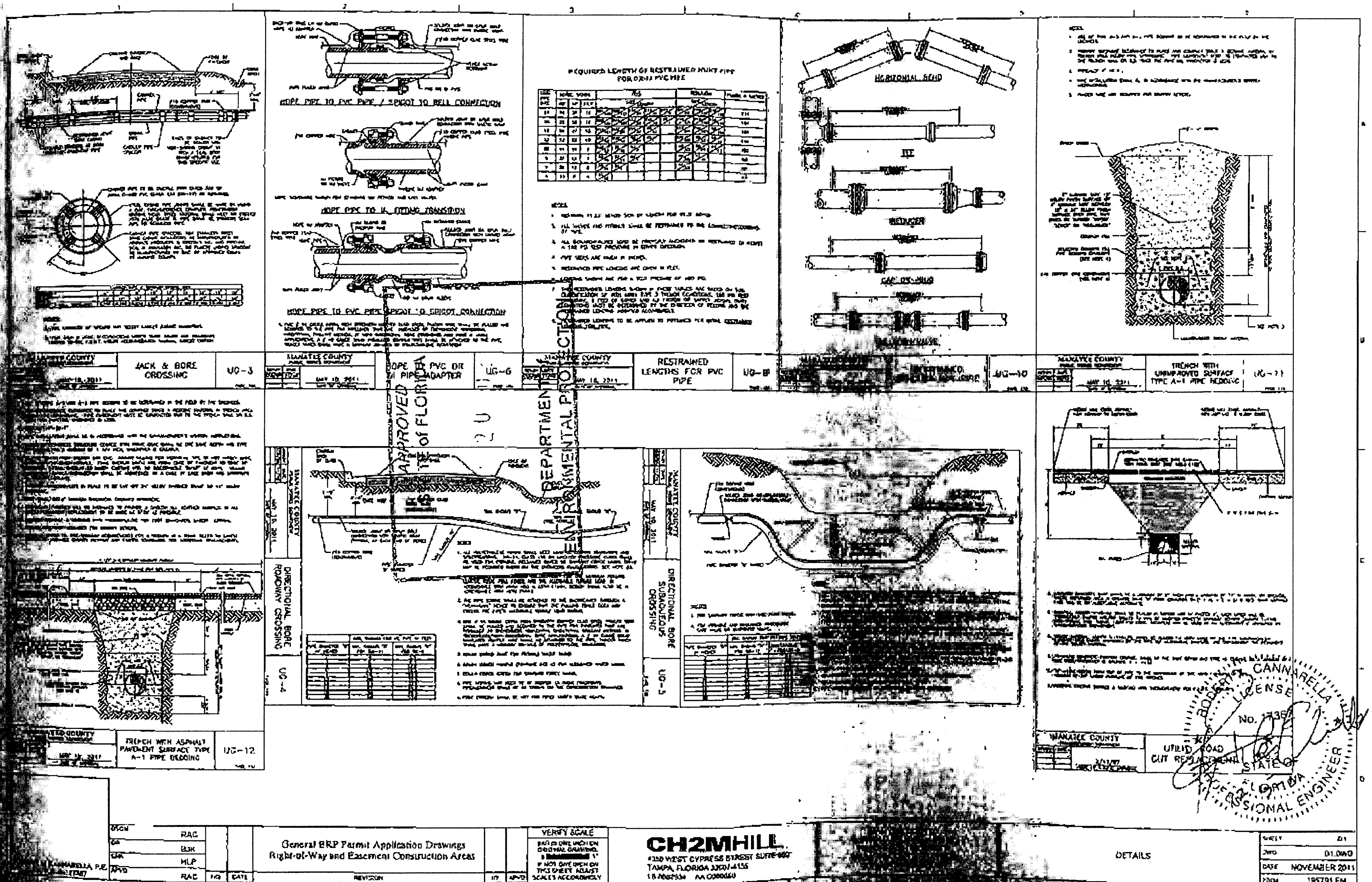


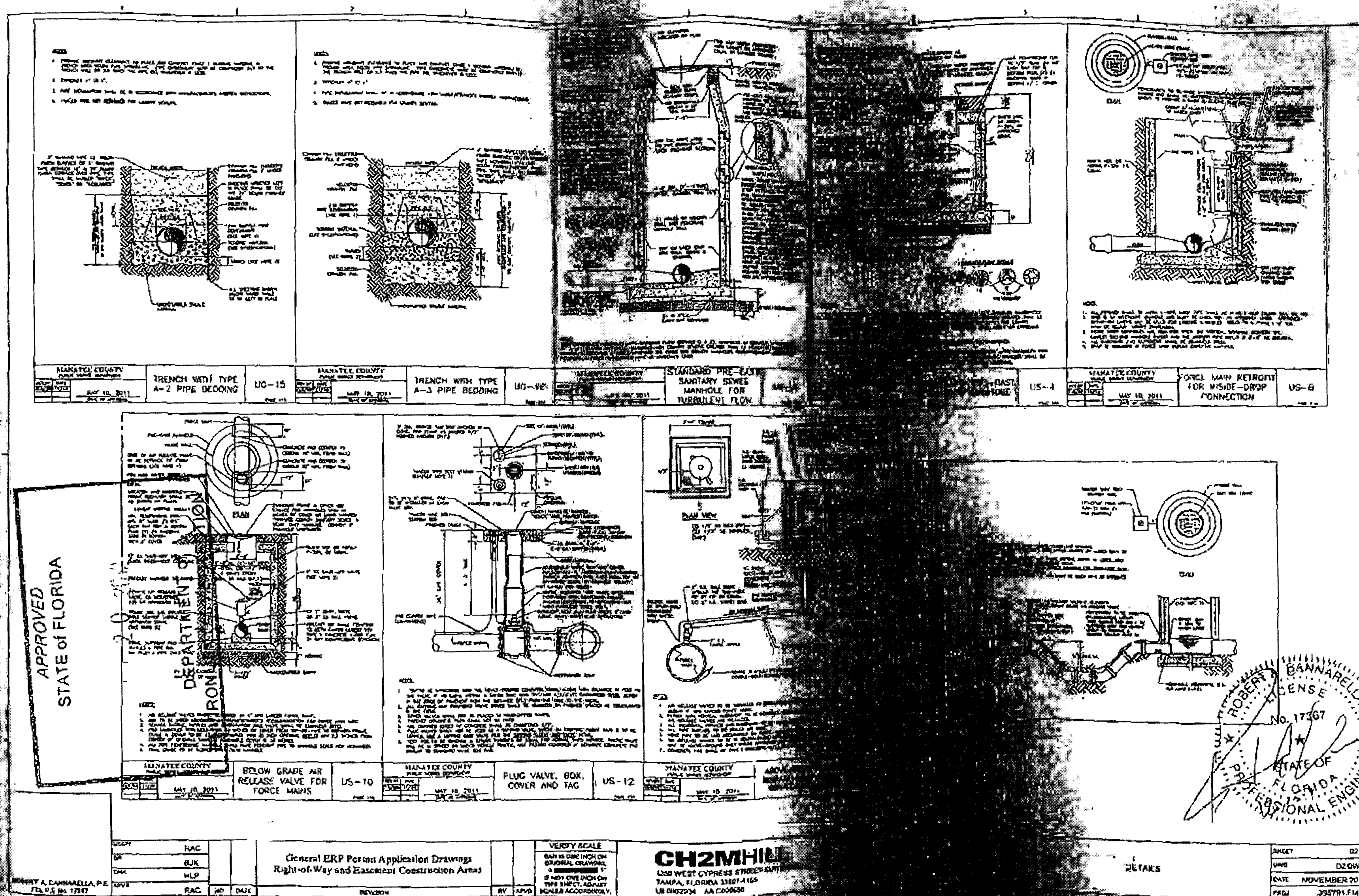
DSGN	RAC	General ERP Permit Application Drawings Right-of-Way and Easement Construction Areas	VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	CH2MHILL 4350 WEST CYPRESS STREET SUITE 600 TAMPA, FLORIDA 33607-4155 LB 0002934 AA C000858	MANATEE COUNTY FOR CONSTRUCTION PURPOSES MANATEE COUNTY, FLORIDA	PLAN AND PROFILE 59th AVE (BAY) STA 11+50 TO 17+50	SHEET D11 DWG C11 DWG DATE NOVEMBER 2011 PROJ 395791.PM
DRN	BJK						
CHK	MLP						
APVD	RAC						
NO	DATE	REVISION	BY	APVD			


MATCH LINE H – H
MATCH LINE I – I
INSTALL 1 - 16" X 11.25° BEND STA 17+75, 20' RT
INSTALL 1 - AIR RELEASE VALVE BOX STA 17+70, 20' RT
OPEN CUT 30 LF OF PIPE
HDD PULL BACK EAST 356 LF OF PIPE
HDD CONNECTION POINT
BAY
B-14
HDD NEW 10" FORCEMAIN
GROUT EXISTING 14" FORCEMAIN
5' NORTH OF ROW LINE
NOTE: PIPE SIZES AND CASING SIZES SHOWN ON THIS DRAWING SHALL APPLY TO CONSTRUCTION WITH HDPE PIPE.
FORCEMAIN PLAN
EXISTING TELEPHONE ASSUME 3' COVER
1" = 2'-0" VERT
1" = 20'-0" HORIZ
HDD PULL BACK ALIGNMENT
℄ ELEV 4.0
APPROVED
STATE of FLORIDA
DEPARTMENT of
ENVIRONMENTAL PROTECTION
EXISTING CABLE
EXISTING GAS SERVICE LINE
EXISTING 10" WATERMAIN
EXISTING TELEPHONE
HDD NEW 10" FORCEMAIN ℄ ELEV (-)2
FORCEMAIN PROFILE
17+50
18+00
19+00
20+00
21+00
ROBERT A. CANNARELLA
LICENSE No. 17367
STATE OF FLORIDA
PROFESSIONAL ENGINEER
General ERP Permit Application Drawings
Right-of-Way and Easement Construction Areas
REVISION
VERIFY SCALE
CH2MHILL
4350 WEST CYPRESS STREET SUITE 600
TAMPA, FLORIDA 33607-4155
PLAN AND PROFILE
69th AVE (BAY) STA: 17+50 TO 21+40
SHEET C12
DWG C12.DWG
DATE NOVEMBER 2011
PROJ 335791.FM


NOTE: PIPE SIZES AND CASING SIZES SHOWN ON THIS DRAWING SHALL APPLY TO CONSTRUCTION WITH HDPE PIPE
MATCH LINE I – I
MATCH LINE J – J
AREA FOR PAVEMENT RESTORATION SEE DETAIL 403.2 ON D1
AUGER BORE LAUNCH PIT
AUGER BORE RECEIVING PIT
GROUT EXISTING 14" FORCEMAIN
NEW 30" CASING WITH 16" HDPE FM CARRIER (AUGER BORE)
INSTALL AIR RELEASE VALVE STA22+13, 20'RT
INSTALL 1 - 16" PLUG VALVE STA22+26 20'RT
INSTALL 1 - 16" X 16" WYE STA23+93, 19'RT
FACE OF CASING STA22+40, 20'RT
FACE OF CASING STA23+95, 20'RT
INSTALL AIR RELEASE VALVE STA24+40, 19'RT
89th AVENUE
NEW 10" FORCE MAIN
GROUT EXISTING 4" FORCEMAIN
NEW 14" FORCE MAIN
CONTINUATION SHEET C6
HDD DRILL LOCATION
DRILL WEST
OPEN CUT
50 LF OF PIPE
AUGER BORE
150 LF OF PIPE
150 LF OF CASING
FORCEMAIN PLAN
EXISTING GAS & PHONE ASSUME 3' COVER
EXISTING TELEPHONE ASSUME 3' COVER
EXISTING GAS ASSUME 3' COVER
RECLAIMED WATER UNKNOWN SIZE POSSIBLE SERVICE CONNECTION ASSUME 3' COVER
1" = 2'-0" VERT
1" = 20'-0" HORIZ
HDD PULL BACK ALIGNMENT
HDD ENTRY ALIGNMENT
US 41
EXISTING WATERMAIN
EXISTING TELEPHONE
EXISTING 12" WATERMAIN
EXISTING 54" RCP INV = 3.31
EXISTING FORCEMAIN
15" ROPE IN 30" CASING
16" FORCEMAIN ℄ ELEV 6.0
CASING ℄ ELEV 6.75
HDD NEW 10" FORCEMAIN ℄ ELEV (-)1.0
EXISTING GAS MAIN
EXISTING 6" RECLAIMED WATER
FORCEMAIN PROFILE
APPROVED STATE of FLORIDA DEPARTMENT of ENVIRONMENTAL PROTECTION
ROBERT A. CANNARELLA LICENSE No 17367 STATE OF FLORIDA PROFESSIONAL ENGINEER
General ERP Permit Application Drawings Right-of-Way and Easement Construction Areas
VERIFY SCALE
CH2MHILL
4350 WEST CYPRESS STREET SUITE 600 TAMPA, FLORIDA 33607-4155
PLAN AND PROFILE
89th AVE STA. 21+40 TO 27+00
NOVEMBER 2011
355791.FM


FORCEMAIN PLAN
FORCEMAIN PROFILE
MATCH LINE
NOTES:
PIPE SIZES AND CASING SIZES SHOWN ON THIS DRAWING SHALL APPLY TO CONSTRUCTION WITH HDPE PIPE
EXISTING WATER MAIN MAY BE AC. USE EXTREME CAUTION IN EXCAVATING NEAR THIS MAIN TO PREVENT DAMAGE TO EXISTING AC PIPELINE
CUT AND PLUG EXISTING 4" FORCEMAIN
AREA FOR PAVEMENT RESTORATION SEE DETAIL 403.2 ON 01
INSTALL 1 - 10" x 45° BEND STA:30+87, 22'LT
INSTALL 58LF OF NEW 10" FORCEMAIN OPEN CUT. INSTALL NEW 10" 45° BEND AND NEW 10" PLUG VALVE. CONNECT TO PS16A DISCHARGE SEE DETAIL
GROUT EXISTING 4" FORCEMAIN
6' NORTH OF ROW LINE
NEW 10" FORCE MAIN
HDD PULL BACK ALIGNMENT
INSTALL 1 - 10" x 45° BEND STA:30+42, 10'RT
PULL BACK WEST
389 LF OF 10" PIPE
OPEN CUT
47 LF OF 10" PIPE
1" = 2'-0" VERT
1" = 20'-0" HORIZ
EXISTING WATERMAIN ASSUMED 3' COVER
69th AVE
EXISTING 15" STORM DRAIN
EXISTING 18" STORM DRAIN
EXISTING 6" WATERMAIN SEE NOTE
EXISTING 16" RECLAIMED WATER
EXISTING 12" SANITARY SEWER
2" GAS LINE
HDD NEW 10" FORCEMAIN
CATCH BASIN INV=0.00
GRATE INLET INV=10.22
EXISTING TELEPHONE
CATCH BASIN INV=8.90
GRATE INLET INV=8.35
28+00
29+00
30+00
APPROVED
STATE of FLORIDA
DEPARTMENT of ENVIRONMENTAL PROTECTION
ROBERT A. CANNARELLA
LICENSE No. 17367
STATE OF FLORIDA
PROFESSIONAL ENGINEER
General ERP Permit Application Drawings
Right-of-Way and Easement Construction Areas
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY
CH2MHILL
4350 WEST CYPRESS STREET SUITE 600
TAMPA, FLORIDA 33607-4155
PLAN AND PROFILE
69th AVE STA: 29+50 TO 31+50
SHEET C14
DATE NOVEMBER 2011
335791.FM


JACK & BORE CROSSING
UG-3
HDPE PIPE TO PVC PIPE / SPIGOT TO BELL CONNECTION
HDPE PIPE TO D.I. FITTING TRANSITION
HDPE PIPE TO PVC PIPE SPIGOT TO SPIGOT CONNECTION
HDPE TO PVC OR D.I. PIPE ADAPTER
UG-6
REQUIRED LENGTH OF RESTRAINED JOINT PIPE FOR DR18 PVC PIPE
RESTRAINED LENGTHS FOR PVC PIPE
UG-8
HORIZONTAL BEND
TEE
REDUCER
CAP OR PLUG
UG-10
TRENCH WITH UNIMPROVED SURFACE TYPE A-1 PIPE BEDDING
UG-11
MANATEE COUNTY
MAY 10, 2011
DIRECTIONAL BORE ROADWAY CROSSING
UG-4
DIRECTIONAL BORE SUBAQUEOUS CROSSING
UG-5
TRENCH WITH ASPHALT PAVEMENT SURFACE TYPE A-1 PIPE BEDDING
UG-12
UTILITY ROAD CUT REPLACEMENT
APPROVED
STATE of FLORIDA
DEPARTMENT of ENVIRONMENTAL PROTECTION
ROBERT A. CANNARELLA
LICENSE
No. 17367
STATE OF FLORIDA
PROFESSIONAL ENGINEER
DSGN RAC
DR BJK
CHK HLP
APVD RAC
General BRP Permit Application Drawings
Right-of-Way and Easement Construction Areas
REVISION
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY
CH2MHILL
4350 WEST CYPRESS STREET SUITE 600
TAMPA, FLORIDA 33607-4155
DETAILS
SHEET D1
DWG D1.DWG
DATE NOVEMBER 2011
PROJ 395791.FM


MANATEE COUNTY
MAY 10, 2011
TRENCH WITH TYPE A-2 PIPE BEDDING
UG-15
TRENCH WITH TYPE A-3 PIPE BEDDING
STANDARD PRE-CAST SANITARY SEWER MANHOLE FOR TURBULENT FLOW
US-4
FORCE MAIN RETROFIT FOR INSIDE-DROP CONNECTION
US-6
PLAN
BELOW GRADE AIR RELEASE VALVE FOR FORCE MAINS
US-10
PLUG VALVE, BOX, COVER AND TAG
US-12
PLAN VIEW
APPROVED
STATE of FLORIDA
ROBERT A. CANNARELLA
LICENSE
No. 17367
STATE OF FLORIDA
PROFESSIONAL ENGINEER
ROBERT A. CANNARELLA, P.E.
FL P.E. No. 17367
RAC
BJK
HLP
RAC
General ERP Permit Application Drawings
Right-of-Way and Easement Construction Areas
REVISION
VERIFY SCALE
CH2MHILL
TAMPA, FLORIDA 33607-4165
DETAILS
SHEET
D2
DWG
D2.DWG
DATE
NOVEMBER 2011
PROJ
395791.F14

Appendix E

FDEP DeMininus ERP Permit Requirements for Bowlees Creek Crossing

Florida Department of Environmental Protection

Southwest District Office
13051 North Telecom Parkway
Temple Terrace, Florida 33637-0926

Rick Scott
Governor

Jennifer Carroll
Lt. Governor

Herschel T. Vinyard Jr.
Secretary

JAN 23 2012

Manatee County, Public Works Department
c/o: Sia Mollanazar, Deputy Director
1022 26th Street East
Bradenton, FL 34208-7344

File No.: 41-0309388-001, Manatee County

Dear Mr. Mollanazar:

Thank you for your request to the Department for an exemption determination to install a portion of a sanitary sewer force main under surface waters by horizontal directional drilling, as shown on the attached project drawings. In the event that drilling fluid is released into the surface water, the attached Horizontal Direction Drill Plan (Frac-out Plan) shall be implemented. This authorization does not include the installation of the pipelines through uplands or wetlands, which will be authorized under Department permit 41-0309388-002. The project site is located under Bowlees Creek contiguous to Tamiami Trail (U.S. 41), Section 26, Township 35 South, Range 17 East, in Manatee County.

This type of activity requires a regulatory authorization for construction and operation of the project pursuant to Part IV, Chapter 373, Florida Statute (F.S.), unless otherwise exempt by statute or rule, proprietary authorization to use state-owned submerged lands Chapters 253 and 258 F.S., and federal authorization for works in waters of the United States through the State Programmatic General Permit (SPGP) program. Your request has been reviewed for all three authorizations. The authorizations you have been granted are listed below. Please read each section carefully. Your project may not have qualified for all three authorizations. If your project did not qualify for one or more of the authorizations, that specific section will advise you how to obtain it. You may NOT commence your project without all three authorizations. If you change the project from what you submitted, the authorization(s) granted may no longer be valid at the time of commencement of the project. Please contact us prior to beginning your project if you wish to make any changes.

REGULATORY REVIEW – APPROVED

Pursuant to Section 373.406(6), F.S., and based upon the forms, drawings, and documents submitted on December 29, 2011, the proposed project appears to have only minimal or insignificant individual or cumulative adverse impacts on the water resources of the State. Therefore, the proposed project appears to qualify as an activity that is exempt from regulation pursuant to Chapter 373.406(6), F.S. A copy of Chapter 373.406(6), F.S. is attached. This determination is based solely on the information provided to the Department and the statutes and rules in effect when the exemption determination request was submitted, and is effective only for the specific activity proposed. This determination shall automatically expire if site conditions materially change or the governing statutes or rules are amended. In addition, any substantial modifications in your plans should be submitted to the Department for review, as changes may result in a permit being required. In any event, this determination shall expire after one year.

This determination that your activity qualifies for an exemption does not relieve you from the need to comply with all applicable water quality standards during the construction and operation of the facility. Activities conducted under this exemption must be constructed and operated using appropriate best

management practices and in a manner that does not cause water quality violations, pursuant to Rule 62-302, Florida Administrative Code (F. A. C.).

The determination that your project qualifies as an exempt activity pursuant Chapter 373.406(6), F.S. may be revoked if the installation is substantially modified, if the basis for the exemption is determined to be materially incorrect, or if the installation results in water quality violations. Any changes made in the construction plans or location of the project may necessitate a permit or certification from the Department. Therefore, you are advised to contact the Department before beginning the project and before beginning any work in waters or wetlands not specifically described in your submittal.

Authority for review- Part IV of Chapter 373, F.S., Title 62, F.A.C. and in accordance to operating agreements executed between the Department and the Water Management Districts, as referenced in Chapter 62-113, F.A.C.

PROPRIETARY REVIEW – APPROVED

Please be advised that any use of sovereign submerged lands without specific prior authorization from the Board of Trustees will be considered a violation of Chapter 253, Florida Statutes and may subject the affected upland riparian property owners to legal action as well as potential fines for the prior unauthorized use of sovereign land.

As your project meets the provisions of Rule 18-21.005(1)(a), F.A.C., this letter is your authorization to use state-owned submerged land (if applicable) for the construction of your project, as required by Chapter 253.77, F.S., and Chapters 18-20 and 18-21, F.A.C.

Authority for review - Chapter 253, F. S., Chapter 18-21, F.A.C., and Section 62-343.075, F.A.C. as required.

SPGP REVIEW – NOT APPROVED

A copy of your application also has been sent to the U.S. Army Corps of Engineers (USACOE) for review. The USACOE may require a separate permit. Failure to obtain this authorization prior to construction could subject you to enforcement action by that agency. For further information, you should contact the USACOE Tampa Regulatory Field Office at (813) 769-7060.

Thank you for your assistance in protecting the natural resources of the State of Florida. If you have any questions, please contact Sara Gonzalez at 813-632-7600, extension 331. When referring to this project, please use the file number listed above.

Sincerely,

William L. Vorstadt
Program Administrator
Submerged Lands and Environmental Resource Program
Southwest District

cc: Doug Fry, Tallahassee
Robert A. Cannarella, P.E., CH2MHILL, 4350 West Cypress Street, Suite # 600, Tampa, FL 33607

Enclosures:
Chapter 373.406(6), F.S.
Notice of Rights of Substantially Affected Persons
General Consent Conditions for Use of Sovereignty Submerged Lands
Standard Manatee Construction Conditions
Attachment "A" for Discretionary Publication

Attachments:
Project Drawings, 2 pages
Horizontal Direction Drill Plan, 4 pages

CERTIFICATE OF SERVICE

The undersigned duly designated deputy clerk hereby certifies that this determination including all copies, was mailed before the close of business on 1/23/12, to the above listed persons.

FILING AND ACKNOWLEDGMENT

FILED, on this date, under 120.52(7) of the F.S., with the designated Department Clerk, receipt of which is hereby acknowledged.

Clerk E Robinson Date 1/23/12

Chapter 373.406(6), F.S.

Any district or the Department may exempt from regulation under this part those activities that the district or Department determines will have only minimal or insignificant individual or cumulative adverse impacts on the water resources of the district. The district and the Department are authorized to determine, on a case-by-case basis, whether a specific activity comes within this exemption. Requests to qualify for this exemption shall be submitted in writing to the district or Department, and such activities shall not be commenced without a written determination from the district or Department confirming that the activity qualifies for the exemption.

RIGHTS OF AFFECTED PARTIES

This determination is final and effective on the date filed with the Clerk of the Department unless a sufficient petition for an administrative hearing is timely filed under sections 120.569 and 120.57 of the F.S. as provided below. If a sufficient petition for an administrative hearing is timely filed, this determination automatically becomes only proposed agency action subject to the result of the administrative review process. Therefore, on the filing of a timely and sufficient petition, this action will not be final and effective until further order of the Department. The procedures for petitioning for a hearing are set forth in the attached notice.

This determination is based on the information you provided the Department and the statutes and rules in effect when the application was submitted and is effective only for the specific activity proposed. This determination shall automatically expire if site conditions materially change or the governing statutes or rules are amended. In addition, any substantial modifications in your plans should be submitted to the Department for review, as changes may result in a permit being required. In any event, this determination shall expire after one year.

Be advised that your neighbors and other parties who may be substantially affected by the proposed activity allowed under this determination of exemption have a right to request an administrative hearing on the Department's decision that the proposed activity qualifies for this exemption. Because the administrative hearing process is designed to redetermine final agency action on the application, the filing of a petition for an administrative hearing may result in a final determination that the proposed activity is not authorized under the exemption established under Chapter 373.406(6), F.S.

The Department will not publish notice of this determination. Publication of this notice by you is optional and is not required for you to proceed. However, in the event that an administrative hearing is held and the Department's determination is reversed, proceeding with the proposed activity before the time period for requesting an administrative hearing has expired would mean that the activity was conducted without the required permit.

If you wish to limit the time within which all substantially affected persons may request an administrative hearing, you may elect to publish, at your own expense, the enclosed notice (Attachment A) in the legal advertisement section of a newspaper of general circulation in the county where the activity is to take place. A single publication will suffice.

If you wish to limit the time within which any specific person(s) may request an administrative hearing, you may provide such person(s), by certified mail, a copy of this determination, including Attachment A. For the purposes of publication, a newspaper of general circulation means a newspaper meeting the requirements of sections 50.011 and 50.031 of the F.S.. In the event you do publish this notice, within seven days of publication, you must provide to the following address proof of publication issued by the newspaper as provided in section 50.051 of the F.S. If you provide direct written notice to any person as noted above, you must provide to the following address a copy of the direct written notice.

SUBMERGED LANDS AND ENVIRONMENTAL RESOURCES PROGRAM
GENERAL CONSENT CONDITIONS FOR USE OF SOVEREIGNTY SUBMERGED LANDS

Chapter 18-21.004(7), F.A.C., provides that all authorizations granted by rule or in writing under Rule 18-21.005, F.A.C., except those for aquaculture activities and geophysical testing, shall be subject to the general conditions as set forth in paragraphs (a) through (i) below. The general conditions shall be part of all authorizations under this chapter, shall be binding upon the grantee, and shall be enforceable under Chapter 253 or Chapter 258, Part II, F.S.

Chapter 18-21.004(7), F.A.C., General Conditions for Authorizations:

(a) Authorizations are valid only for the specified activity or use. Any unauthorized deviation from the specified activity or use and the conditions for undertaking that activity or use shall constitute a violation. Violation of the authorization shall result in suspension or revocation of the grantee's use of the sovereignty submerged land unless cured to the satisfaction of the Board.

(b) Authorizations convey no title to sovereignty submerged land or water column, nor do they constitute recognition or acknowledgment of any other person's title to such land or water.

(c) Authorizations may be modified, suspended or revoked in accordance with their terms or the remedies provided in Sections 253.04 and 258.46, F.S., or Chapter 18-14, F.A.C.

(d) Structures or activities shall be constructed and used to avoid or minimize adverse impacts to sovereignty submerged lands and resources.

(e) Construction, use, or operation of the structure or activity shall not adversely affect any species which is endangered, threatened or of special concern, as listed in Rules 68A-27.003, 68A-27.004, and 68A-27.005, F.A.C.

(f) Structures or activities shall not unreasonably interfere with riparian rights. When a court of competent jurisdiction determines that riparian rights have been unlawfully affected, the structure or activity shall be modified in accordance with the court's decision.

(g) Structures or activities shall not create a navigational hazard.

(h) Structures shall be maintained in a functional condition and shall be repaired or removed if they become dilapidated to such an extent that they are no longer functional. This shall not be construed to prohibit the repair or replacement subject to the provisions of Rule 18-21.005, F.A.C., within one year, of a structure damaged in a discrete event such as a storm, flood, accident, or fire.

(i) Structures or activities shall be constructed, operated, and maintained solely for water dependent purposes, or for non-water dependent activities authorized under paragraph 18-21.004(1)(f), F.A.C., or any other applicable law.

[NOTE: These conditions were adopted in rule March 8, 2004, and replace the previous General Consent Conditions.]

(3/08/2004)

STANDARD MANATEE CONDITIONS FOR IN-WATER WORK
2011

The permittee shall comply with the following conditions intended to protect manatees from direct project effects:

a. All personnel associated with the project shall be instructed about the presence of manatees and manatee speed zones, and the need to avoid collisions with and injury to manatees. The permittee shall advise all construction personnel that there are civil and criminal penalties for harming, harassing, or killing manatees which are protected under the Marine Mammal Protection Act, the Endangered Species Act, and the Florida Manatee Sanctuary Act.

b. All vessels associated with the construction project shall operate at "Idle Speed/No Wake" at all times while in the immediate area and while in water where the draft of the vessel provides less than a four-foot clearance from the bottom. All vessels will follow routes of deep water whenever possible.

c. Siltation or turbidity barriers shall be made of material in which manatees cannot become entangled, shall be properly secured, and shall be regularly monitored to avoid manatee entanglement or entrapment. Barriers must not impede manatee movement.

d. All on-site project personnel are responsible for observing water-related activities for the presence of manatee(s). All in-water operations, including vessels, must be shutdown if a manatee(s) comes within 50 feet of the operation. Activities will not resume until the manatee(s) has moved beyond the 50-foot radius of the project operation, or until 30 minutes elapses if the manatee(s) has not reappeared within 50 feet of the operation. Animals must not be herded away or harassed into leaving.

e. Any collision with or injury to a manatee shall be reported immediately to the FWC Hotline at 1-888-404-3922. Collision and/or injury should also be reported to the U.S. Fish and Wildlife Service in Jacksonville (1-904-731-3336) for north Florida or Vero Beach (1-772-562-3909) for south Florida, and to FWC at ImperiledSpecies@myFWC.com

f. Temporary signs concerning manatees shall be posted prior to and during all in-water project activities. All signs are to be removed by the permittee upon completion of the project. Temporary signs that have already been approved for this use by the Florida Fish and Wildlife Conservation Commission (FWC) must be used (see MyFWC.com/manatee). One sign which reads *Caution: Boaters* must be posted. A second sign measuring at least 81/2" by 11" explaining the requirements for "Idle Speed/No Wake" and the shut down of in-water operations must be posted in a location prominently visible to all personnel engaged in water-related activities. Questions concerning these signs can be sent to the email address listed above.

CAUTION: MANATEE HABITAT

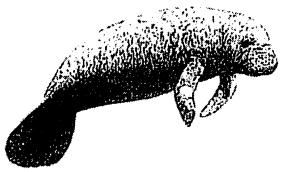
All project vessels

IDLE SPEED / NO WAKE

When a manatee is within 50 feet of work all in-water activities must

SHUT DOWN

Report any collision with or injury to a manatee:



Wildlife Alert:

1-888-404-FWCC(3922)

cell *FWC or #FWC

ATTACHMENT "A" FOR DISCRETIONARY PUBLICATION OF NOTICE OF DETERMINATION OF QUALIFICATION FOR AN EXEMPTION

In the Matter of an Application
for a Determination of Qualification
for an Exemption by:

Manatee County, Public Works Department
c/o: Sia Mollanazar, Deputy Director
1022 26th Street East
Bradenton, FL 34208-7344

DEP File No.: 41-0309388-001; Manatee County

The Department of Environmental Protection gives notice that it has received a request for authorization to install a portion of a sanitary sewer force main under surface waters by horizontal directional drilling, as shown on the attached project drawings. This authorization does not include the installation of the pipelines through uplands or wetlands, which will be authorized under Department permit 41-0309388-002. The project site is located along Bowlees Creek contiguous to Tamiami Trail (U.S. 41), Section 26, Township 35 South, Range 17 East, in Manatee County. This activity appears to have only minimal or insignificant individual or cumulative adverse impacts on the water resources of the State, and has therefore determined the activity to be exempt from regulation under Chapter 373.406(6), F.S.

A person whose substantial interests are affected by the Department's action may petition for an administrative proceeding (hearing) under sections 120.569 and 120.57 of the F.S. The petition must contain the information set forth below and must be filed (received by the clerk) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida 32399-3000.

Mediation is not available.

If a timely and sufficient petition for an administrative hearing is filed, other persons whose substantial interests will be affected by the outcome of the administrative process have the right to petition to intervene in the proceeding. Intervention will be permitted only at the discretion of the presiding officer upon the filing of a motion in compliance with rule 28-106.205 of the F.A.C..

In accordance with rule 62-110.106(3), F.A.C., petitions for an administrative hearing must be filed within 21 days of publication of the notice or receipt of written notice, whichever occurs first. Under rule 62-110.106(4) of the F.A.C., a person whose substantial interests are affected by the Department's action may also request an extension of time to file a petition for an administrative hearing. The Department may, for good cause shown, grant the request for an extension of time. Requests for extension of time must be filed with the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida 32399-3000 prior to the applicable deadline. A timely request for extension of time shall toll the running of the time period for filing a petition until the request is acted upon. Upon motion by the requesting party showing that the failure to file a request for an extension of time before the deadline was the result of excusable neglect, the Department may also grant the requested extension of time.

The petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. The failure of any person to file a petition for an administrative hearing within the appropriate time period shall constitute a waiver of that right.

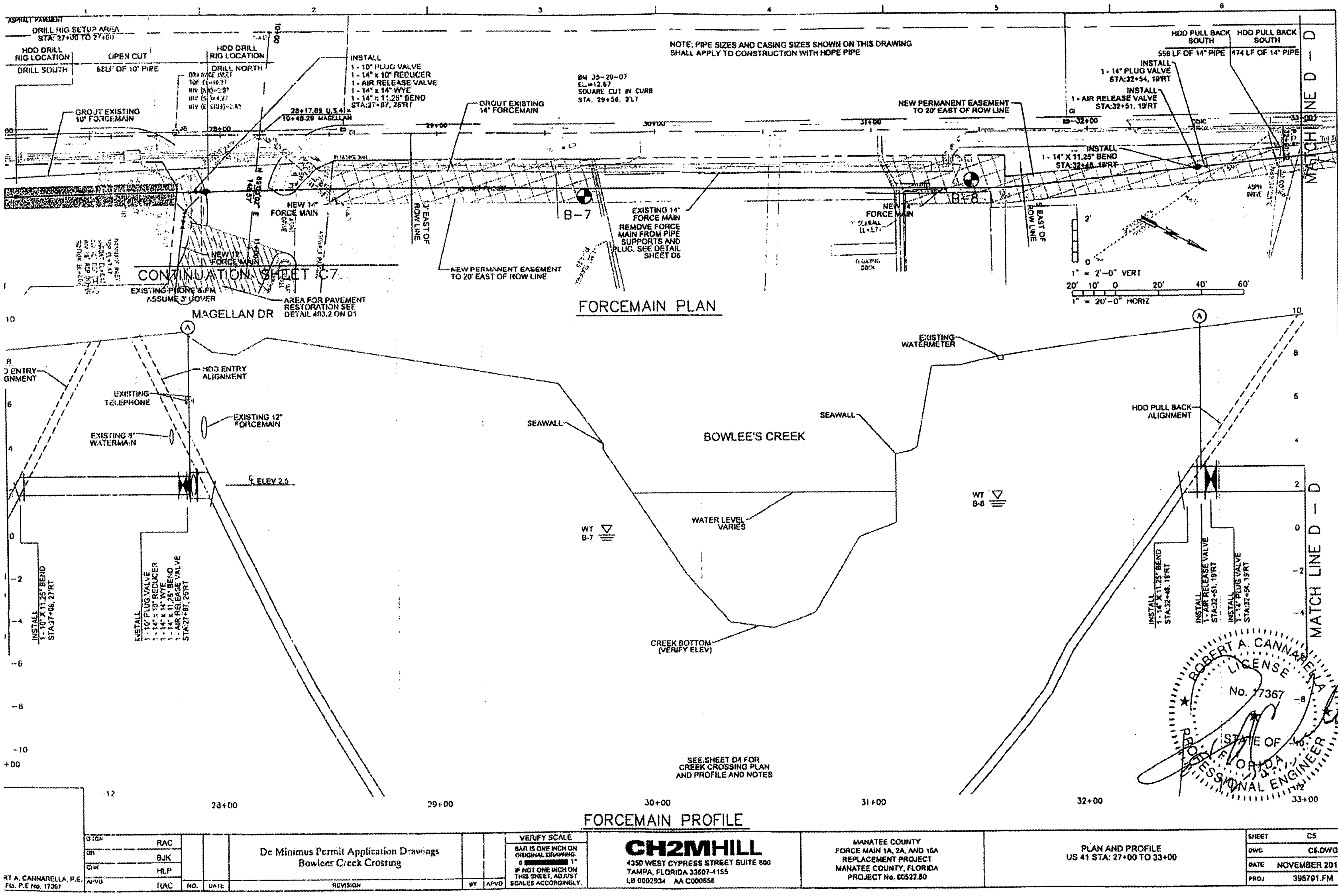
A petition that disputes the material facts on which the Department's action is based must contain the following information:

(a) The name and address of each agency affected and each agency's file or identification number, if known;
(b) The name, address, and telephone number of the petitioner; the name, address, and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests are or will be affected by the agency determination;
(c) A statement of when and how the petitioner received notice of the agency decision;
(d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate;
(e) A concise statement of the ultimate facts alleged, including the specific facts the petitioner contends warrant reversal or modification of the agency's proposed action;
(f) A statement of the specific rules or statutes that the petitioner contends require reversal or modification of the agency's proposed action; and
(g) A statement of the relief sought by the petitioner, stating precisely the action that the petitioner wishes the agency to take with respect to the agency's proposed action.

A petition that does not dispute the material facts on which the Department's action is based shall state that no such facts are in dispute and otherwise shall contain the same information as set forth above, as required by rule 28-106.301.

Under sections 120.569(2)(c) and (d) of the F.S., a petition for administrative hearing shall be dismissed by the agency if the petition does not substantially comply with the above requirements or is untimely filed.

Complete copies of all documents relating to this determination of exemption are available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, at the Department's Southwest District Office, 13051 North Telecom Parkway, Temple Terrace, FL 33637-0926.


NOTE: PIPE SIZES AND CASING SIZES SHOWN ON THIS DRAWING SHALL APPLY TO CONSTRUCTION WITH HDPE PIPE
DRILL RIG SETUP AREA STA 27+00 TO 27+61
HDD DRILL RIG LOCATION DRILL SOUTH
OPEN CUT 68 LF OF 10" PIPE
HDD DRILL RIG LOCATION DRILL NORTH
GROUT EXISTING 10" FORCEMAIN
INSTALL 1 - 10" PLUG VALVE 1 - 14" x 10" REDUCER 1 - AIR RELEASE VALVE 1 - 14" x 14" WYE 1 - 14" x 11.25° BEND STA 27+87, 25'RT
28+17.09 U.S.41= 10+48.29 MAGELLAN
GROUT EXISTING 14" FORCEMAIN
BM 35-29-07 EL=12.67 SQUARE CUT IN CURB STA. 29+56, 2'LT
NEW PERMANENT EASEMENT TO 20' EAST OF ROW LINE
HDD PULL BACK SOUTH 558 LF OF 14" PIPE
HDD PULL BACK SOUTH 474 LF OF 14" PIPE
INSTALL 1 - 14" PLUG VALVE STA 32+54, 19'RT
INSTALL 1 - AIR RELEASE VALVE STA 32+51, 19'RT
INSTALL 1 - 14" X 11.25° BEND STA 32+48, 19'RT
NEW 14" FORCE MAIN
3' EAST OF ROW LINE
B-7
B-8
EXISTING 14" FORCE MAIN REMOVE FORCE MAIN FROM PIPE SUPPORTS AND PLUG. SEE DETAIL SHEET D6
CONTINUATION SHEET C7
EXISTING PHONE & FM ASSUME 3' COVER
AREA FOR PAVEMENT RESTORATION SEE DETAIL 403.2 ON D1
MAGELLAN DR
FORCEMAIN PLAN
MATCH LINE D - D
1" = 2'-0" VERT
1" = 20'-0" HORIZ
HDD ENTRY ALIGNMENT
EXISTING TELEPHONE
EXISTING 12" FORCEMAIN
EXISTING 8" WATERMAIN
℄ ELEV 2.5
INSTALL 1 - 10" X 11.25° BEND STA 27+06, 27'RT
SEAWALL
BOWLEE'S CREEK
WATER LEVEL VARIES
CREEK BOTTOM (VERIFY ELEV)
WT B-7
WT B-8
EXISTING WATERMETER
HDD PULL BACK ALIGNMENT
SEE SHEET D4 FOR CREEK CROSSING PLAN AND PROFILE AND NOTES
28+00
29+00
30+00
31+00
32+00
33+00
FORCEMAIN PROFILE
ROBERT A. CANNARELLA LICENSE No. 17367 STATE OF FLORIDA PROFESSIONAL ENGINEER
DSGN RAC
DR BJK
CHK HLP
APVD RAC
ROBERT A. CANNARELLA, P.E. Fla. P.E No. 17367
De Minimus Permit Application Drawings
Bowlees Creek Crossing
REVISION
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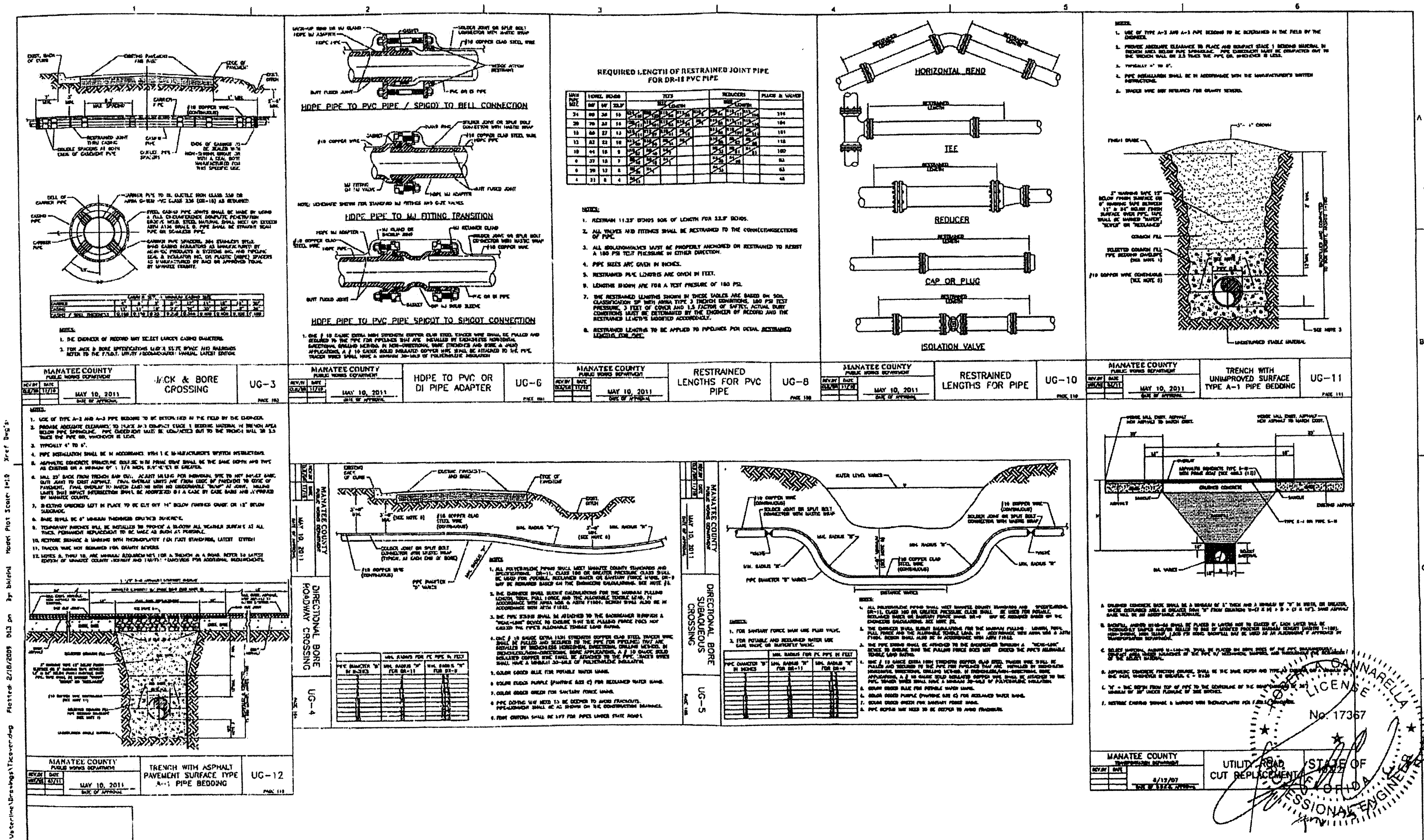
CH2MHILL
4350 WEST CYPRESS STREET SUITE 600
TAMPA, FLORIDA 33607-4155
LB 0002934 AA C000656
MANATEE COUNTY
FORCE MAIN 1A, 2A, AND 1GA REPLACEMENT PROJECT
MANATEE COUNTY, FLORIDA
PROJECT No. 00522.80
PLAN AND PROFILE
US 41 STA: 27+00 TO 33+00
SHEET C5
DWG C5.DWG
DATE NOVEMBER 2011
PROJ 395791.FM



DSGN	RAC			
DR	BJK			
CHK	HLP			
APVD	RAC	NO	DATE	REVISION

ROBERT A. CANNARELLA, P.E.
Fla. P.E No. 17367

De Minimus Permit Application Drawings
Bowlees Creek Crossing

BY | APVD

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 — 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

CH2MHILL
4350 WEST CYPRESS STREET SUITE 600
TAMPA, FLORIDA 33607-4155
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MANATEE COUNTY
FORCE MAIN 1A, 2A, AND 16A
REPLACEMENT PROJECT
MANATEE COUNTY, FLORIDA
PROJECT No. 80522.80

DETAILS

SHEET	D1
DWG	D1.DWG
DATE	NOVEMBER 2011
PROJ	395791.FM

V:\Manatee County Waterline\Drawings\Tcover.dwg Plotted 2/18/2009 ... Model Plot Scale: 1=1.0 Xref Dwg's:

HORIZONTAL DIRECTIONAL DRILL PLAN
MANATEE COUNTY UTILITIES
FORCE MAIN 1A, 2A AND 16A REPLACEMENT PROJECT

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INTRODUCTION

Manatee County owns and operates a sanitary sewer force main system serving the Whitfield Estates area of the southern part of Manatee County. The project involves replacement of 4 basic segments of the manifold force main system:

- A 10 inch force main running within the right-of-way, from Shepherd St east to the east side of US 41
- A 10 inch force main running north within a utility easement behind the US 41 right-of-way in private developed property to Magellan Drive.
- A 12 in force main running west within the right-of-way, from Willow St.to US 41.
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The details of force main construction on shown on the construction documents.

As indicated, a portion of the force main construction will be conducted in public right-of-way and utility easements running along Pearl St., US 41, Magellan Drive, and 69th Ave West. These upland none jurisdictional portions of the project cover approximately 6,900 linear feet of new pipeline construction. The new pipeline will be constructed using Horizontal Directional Drilling or High Density Polyethylene pipe. This replacement will be conducted under a General ERP permit.

A portion of the force main (approximately 200 linear feet traverses bank to bank at Bowless Creek and will be replaced using Horizontal Directional Drilling (HDD) of High Density Polyethylene Pipe. The replacement will be conducted under a De minimus Permit.

This document provides the drilling plan that will be used for this construction activity.

This document provides an overview of the HDD process and procedures that will be used to complete the work in a manner that complies with Florida Department of Protection Environmental Resource Permitting requirements. This document supplements the detailed plans and specifications completed for the project and which will govern completion of the work.

HORIZONTAL DIRECTIONAL DRILLING PROCESS

Installation of a pipeline by HDD is generally accomplished in the following three stages:

Horizontal Directional Drilling Plan

1. The first stage consists of directionally drilling a small diameter pilot hole along a predetermined path. During drilling of the pilot hole, directional control is achieved by using a non-rotating drill string with an asymmetrical leading edge. The asymmetry of the leading edge creates a steering bias, which allows the operator to control the direction of the drill bit. The actual path of the pilot hole is determined during drilling by a very accurate monitoring and control system, which tracks the progress and exact location of the drilling head at all times.
2. The second stage begins once the pilot hole is complete, when the pilot hole is enlarged (reamed) to a diameter that will accommodate the pipeline. Typically, numerous "reaming" passes are necessary with each pass enlarging the diameter of the pilot hole incrementally. The reamers typically attached to the drill string at the exit point and are rotated and drawn to the drilling rig, thus enlarging the pilot hole with each pass. To minimize heaving during pullback, a pullback rate that maximizes the removal of soil cuttings and minimizes compaction of the ground around the borehole is used. The pullback rate is also set to minimize overcutting of the borehole during the back reaming operation to ensure excessive voids are not created resulting in post installation settlement.
3. The third stage of pipe installation is accomplished by attaching a prefabricated pipeline pull section behind a reaming assembly at the exit point and pulling the entire pipeline string assembly back through the drilled hole to the drilling rig. After the pipe is in place, tie-in welds on each side of the crossing are completed.

HDD installation of HDPE has been provided to be a staff, efficient and environmentally friendly of installing pipelines under jurisdictional waterways. Therefore, as discussed in a preapplication meeting with representatives of the FDEP ERP group, this HDD installation qualifies for Deminimus ERP permit approval. This document supports the deminimus application for this project.

MONITORING AND IMPACT CONTROL PROCEDURES

Contractor personnel will be on-site during HDD activities and will continuously monitor all operations during drilling activities. The drilling operator will maintain records on drilling fluid pumping rates, pressures, viscosity and density, etc. throughout the course of drilling activities. Drilling is typically done during daytime hours. If nighttime drilling activities are necessary, appropriate lighting will be provided to assure continued drilling fluid release monitoring.

Contractor personnel will:

- Place silt fence between all drilling operations and any drainage, wetland, waterway or other area designated for such protection by contract documents, state, federal and local regulations. Contractor shall place hay bales, or approved protection, to limit intrusion upon project area. Additional environmental protection necessary to contain any hydraulic or drilling fluid spills shall be put in place, including berms, liners, turbidity curtains and other measures. Contractor shall adhere to all applicable environmental regulations including

environmental condition stated in local, state and federal permits. Fuel may not be stored in bulk containers (greater than 25 gallons) within 200' of any water-body or wetland.

- Visually inspect the drill path, including monitoring the channel for evidence of drilling fluid release;
- Continuously check drilling fluid pressures and return flows; and
- Inspect the site during and after break-down and equipment move-off to establish that drilling fluid releases have been documented, appropriately cleaned-up and did not impact any jurisdictional area along the pipeline.

HDD procedures include a very accurate monitoring and control system to track the progress and exact location of the drilling head at all times. Horizontal and vertical adjustments are made throughout the procedure to ensure that the drilling profile matches the planned profile. Drilling fluid is used during the advancement of the drill string to erode the formation and aid in stabilizing the pilot hole. The specific weight of the drilling fluid is adjusted throughout the procedure to ensure hydrological stability. Jetting pressures will be limited to avoid a drilling fluid release during drilling.

Should a release of drilling fluid occur in the project area, operations will stop immediately and the following measures will be implemented:

Measures to Contain a Release of Drilling Fluid within develop, urban, upland areas such as public right-of-way or developed easements:

- If a land release is detected, the drilling crew will take immediate corrective action to contain the release and to prevent migration off-site.

- Pits and/or berms will be constructed around the bore hole entry point to contain drilling fluids and returns.

- Containment equipment including earth moving equipment, portable pumps, hand tools, sand bags, hay bales, silt fencing, lumber, and vacuum trucks will be stored and readily available at the drilling site.

- If the amount of drilling fluid from an on-land release does not allow practical collection, the drilling fluid will be diluted with fresh water and allowed to dry. Steps will be taken (such as berm, silt fence and/or hay bale installation) to prevent silt laden water from escaping the affected area.

- If hand tools cannot contain a small on-land release, small collection sumps (less than 5 cubic yards) may be constructed to pump the release material into the drilling fluid processing system.

- Any drilling fluid seepage will be removed using sump pumps or a vacuum truck and then transported to an approved disposal site.

Measures to Contain a Possible Release of Drilling Fluid in a Waterway:

- If a release of drilling fluid occurs within Bowlees Creek, appropriate federal and state agencies will be contacted immediately and informed about any threat to public

health and safety. Drilling fluid pressure will be reduced and operations will be suspended to assess the extent of the release and to implement other possible corrective actions.

- Pumping equipment, floating barriers portable pumps, hand tools, sand bags, hay bales, and vacuum trucks will be stored and readily available at the drilling site.

- will be used remove observed drilling fluid at the creek crossing in the event of a discharge

- If public health and safety is threatened, drilling fluid circulation pumps will be turned off. This measure will be taken as a last resort because of the potential for drill hole collapse resulting from loss of down-hole pressure.

NOTIFICATION PROCEDURES

Agency contact names and telephone numbers will be provided before construction of the HDDs. At a minimum, the following agencies will be notified immediately in the event an inadvertent release of drilling fluid is discovered that impacts a jurisdictional area:

1. FDEP
2. Manatee County
3. U.S. Army Corps of Engineers (ACOE)
4. Florida Department of Fish and Game (FDFG)

ABANDONMENT PLAN

If for any reason, it becomes necessary to suspend HDD operations and/or abandon the partially completed drill holes, the following procedures will be implemented.

During Pilot Hole Drilling. If drilling is suspended during pilot hole drilling, the drill string will be withdrawn and the hole will be pumped with cement or industry approved fill material to displace the drilling fluid.

During Reaming. If drilling is suspended during the reaming of the hole

1. If possible, the reamer will be pushed back to the exit end, then:

a. Reamer will be replaced with a cementing head.

b. Drill string will be withdrawn and the hole will be pumped with cement or industry approved fill material to displace the drilling fluid.

2. If the reamer can not be pushed back to the exit end, then:

a. Drill string will be withdrawn and the hole will be pumped with cement or industry approved fill material to displace the drilling fluid.

b. Drilling rig will rig down at the entry end and rig up at the exit end.

c. Drilling rig will run in the pilot hole with cement head on pilot hole drill string until previously cemented reamed hole is bumped.

d. Drill string will be withdrawn and hole pumped with cement or industry-approved fill material to displace the drilling fluid.

HDD Realignment. If it is found necessary to abandon the original location, the proposed alignment will be modified to accommodate a new drill. The proposed new exit and entry areas will be surveyed for sensitive biological and cultural resources, and agencies with regulatory control will be contacted to amend approvals as needed.

Appendix F

USACOE Nation Wide Permit for DeMininus ERP Permit Requirements for Bowlees Creek Crossing

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS
10117 PRINCESS PALM AVE, SUITE 120
TAMPA, FLORIDA 33610-8302

REPLY TO
ATTENTION OF

February 28, 2012

Tampa Regulatory Office
SAJ-2012-00558(NW-CSH)

Manatee Co. Public Works Department
c/o Rober A. Cannarella, P.E.
CH2MHILL
4350 West Cypress Street, Suite 600
Tampa, Florida 33607

Dear Mr. Cannarella:

Your application for a Department of the Army permit has been assigned number SAJ-2012-00558. A review of the information and drawings provided shows the proposed work is to install a portion of a sanitary sewer force main under surface waters by horizontal directional drilling. The project is located under Bowlees Creek contiguous to Tamiami Trail (U.S. 41), in Section 26, Township 35 South, Range 17 East, Manatee County, Florida, Latitude 27.416384, Longitude -82.574440.

Your project, as depicted on the [enclosed/received] drawings, is authorized by Nationwide Permit (NWP) Number 12. In addition, project specific conditions have been enclosed. This verification is valid until March 18, 2012. This verification is valid until the NWP is modified, reissued, or revoked prior to March 18, 2012. It is incumbent upon you to remain informed of changes to the NWPs. We will issue a public notice when the NWPs are issued. Furthermore, if you commence or are under contract to commence this activity before the date that the relevant nationwide permit is modified or revoked, you will have 12 months from the date of the modification or revocation of the NWP to complete the activity under the present terms and conditions of this nationwide permit. Please access the U.S. Army Corps of Engineers' (Corps) Jacksonville District's Regulatory webpage to access web links to view the Final Nationwide Permits, Federal Register Vol. 72, dated March 12, 2007, the Corrections to the Final Nationwide Permits, Federal Register 72, May 8, 2007, and the List of Regional Conditions. The website address is as follows:

http://www.saj.usace.army.mil/Divisions/Regulatory/sourcebook.htm.

Please be aware this web address is case sensitive and should be entered as it appears above. Once there you will need to click on "Nationwide Permits." These files contain the description of the Nationwide Permit authorization, the Nationwide Permit general conditions, and the regional conditions, which apply specifically to this verification for NWP 12. Enclosed is a list of the six General Conditions, which apply to all Department of the Army authorizations. You must comply with all of the special and general conditions and any project specific condition of this authorization or you may be subject to enforcement action. In the event you have not

completed construction of your project within the specified time limit, a separate application or re-verification may be required.

The following special conditions are included with this verification:

1. Within 60 days of completion of the work authorized, the attached "Self-Certification Statement of Compliance" must be completed and submitted to the U.S. Army Corps of Engineers. Mail the completed form to the Regulatory Division, Special Projects and Enforcement Branch, 10117 Princess Palm Ave, Suite 120, Tampa, Florida 33610.

2. The Permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structures or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the Permittee will be required, upon due notice from the U.S. Army Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

3. No structure or work shall adversely affect or disturb properties listed in the National Register of Historic Places or those eligible for inclusion in the National Register. Prior to the start of work, the Applicant/Permittee or other party on the Applicant's/Permittee's behalf, shall conduct a search of known historical properties by contracting a professional archaeologist, contacting the Florida Master Site File at 850-245-6440 or SiteFile@dos.state.fl.us. The Applicant/Permittee can also research sites in the National Register Information System (NRIS). Information can be found at http://www.cr.nps.gov/nr/research/.

If, during the initial ground disturbing activities and construction work, there are archaeological/cultural materials unearthed (which shall include, but not be limited to: pottery, modified shell, flora, fauna, human remains, ceramics, stone tools or metal implements, dugout canoes or any other physical remains that could be associated with Native American cultures or early colonial or American settlement), the permittee shall immediately stop all work in the vicinity and notify the Compliance and Review staff of the State Historic Preservation Office at 850-245-6333 and the Corps Regulatory Project Manager to assess the significance of the discovery and devise appropriate actions, including salvage operations. Based, on the circumstances of the discovery, equity to all parties, and considerations of the public interest, the Corps may modify, suspend or revoke the permit in accordance with 33 CFR Part 325.7.

In the unlikely event that human remains are identified, they will be treated in accordance with Section 872.05, Florida Statutes; all work in the vicinity shall immediately cease and the local law authority, the State Archaeologist (850-245-6444), and the Corps Regulatory Project Manager shall immediately be notified. Such activity shall not resume unless specifically authorized by the State Archaeologist and the Corps.

4. This letter of authorization does not obviate the necessity to obtain any other Federal, State, or local permits, which may be required. In Florida, projects qualifying for this NWP must be authorized under Part IV of Chapter 373 by the Department of Environmental Protection, a water management district under §. 373.069, F.S., or a local government with delegated authority under §. 373.441, F.S., and receive Water Quality Certification (WQC) and Coastal Zone Consistency Concurrence (CZCC) (or a waiver), as well as any authorizations required by the State for the use of sovereign submerged lands. You should check State-permitting requirements with the Florida Department of Environmental Protection or the appropriate water management district.

This letter of authorization does not give absolute Federal authority to perform the work as specified on your application. The proposed work may be subject to local building restrictions mandated by the National Flood Insurance Program. You should contact your local office that issues building permits to determine if your site is located in a flood-prone area, and if you must comply with the local building requirements mandated by the National Flood Insurance Program.

If you are unable to access the internet or require a hardcopy of any of the conditions, limitations, or expiration date for the above referenced NWP, please contact Caitlin Hoch by telephone at 813-769-7074.

Thank you for your cooperation with our permit program. The Corps Jacksonville District Regulatory Division is committed to improving service to our customers. We strive to perform our duty in a friendly and timely manner while working to preserve our environment. We invite you to take a few minutes to visit http://per2.nwp.usace.army.mil/survey.html and complete our automated Customer Service Survey. Your input is appreciated – favorable or otherwise. Again, please be aware this web address is case sensitive and should be entered as it appears above.

Sincerely,

Charles A. Schnepel

Charles A Schnepel
Chief, Tampa Section

Enclosures

Copy/ies Furnished:

bcc:
CESAJ-RD-PE

GENERAL CONDITIONS
33 CFR PART 320-330
PUBLISHED FEDERAL REGISTER DATED 13 NOVEMBER 1986

1. The time limit for completing the work authorized ends on **date identified in the letter**. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.

2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.

3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and state coordination required to determine if the remains warrant a recovery effort of if the site is eligible for listing in the National Register of Historic Places.

4. If you sell the property associated with this permit you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.

5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.

6. You must allow a representative from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

SELF-CERTIFICATION STATEMENT OF COMPLIANCE

Permit Number: NW-12
Application Number: SAJ-2012-00558(NW-CSH)

Permittee's Name & Address (please print or type):_____

_____

_____

Telephone Number:_____

Location of the Work:_____

_____

Date Work Started:_____ Date Work Completed:_____

Description of the Work (e.g., bank stabilization, residential or commercial filling, docks, dredging, etc.):_____

_____

_____

Acreage or Square Feet of Impacts to Waters of the United States:

_____

Describe Mitigation completed (if applicable):_____

_____

_____

Describe any Deviations from Permit (attach drawing(s) depicting the deviations): _____

_____

_____

****

I certify that all work, and mitigation (if applicable) was done in accordance with the limitations and conditions as described in the permit. Any deviations as described above are depicted on the attached drawing(s).

_____
Signature of Permittee

_____
Date

DEPARTMENT OF THE ARMY PERMIT TRANSFER REQUEST

PERMIT NUMBER: SAJ-2012-00558(NW-CSH)

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. Although the construction period for works authorized by Department of the Army permits is finite, the permit itself, with its limitations, does not expire.

To validate the transfer of this permit and the associated responsibilities associated with compliance with its terms and conditions, have the transferee sign and date below and mail to the U.S. Army Corps of Engineers, Enforcement Section, Post Office Box 4970, Jacksonville, FL 32232-0019.

_____
(TRANSFEREE-SIGNATURE)

_____
(DATE)

_____
(NAME-PRINTED)

_____

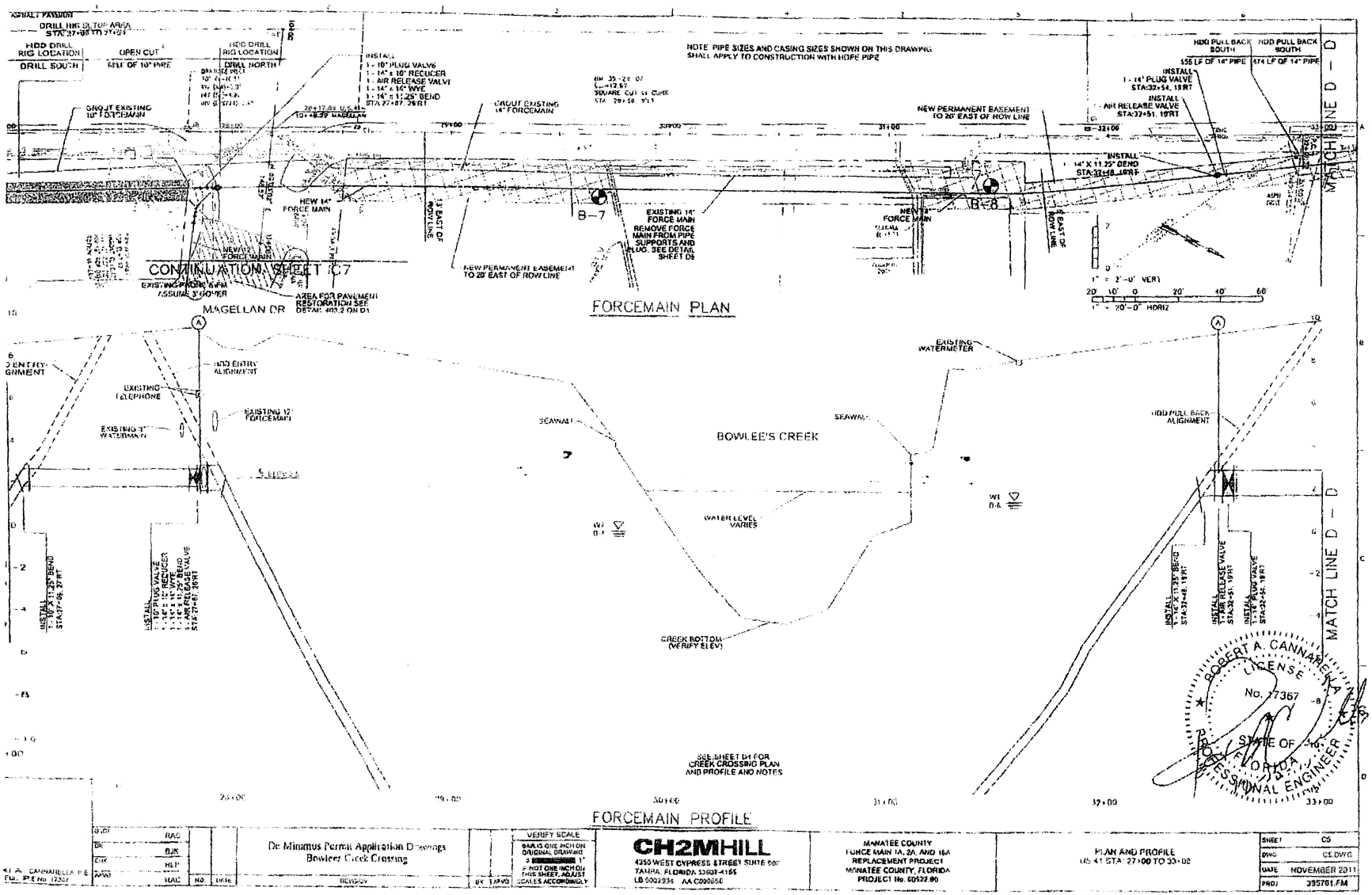
_____
(MAILING ADDRESS)

_____
(CITY, STATE, ZIP CODE)

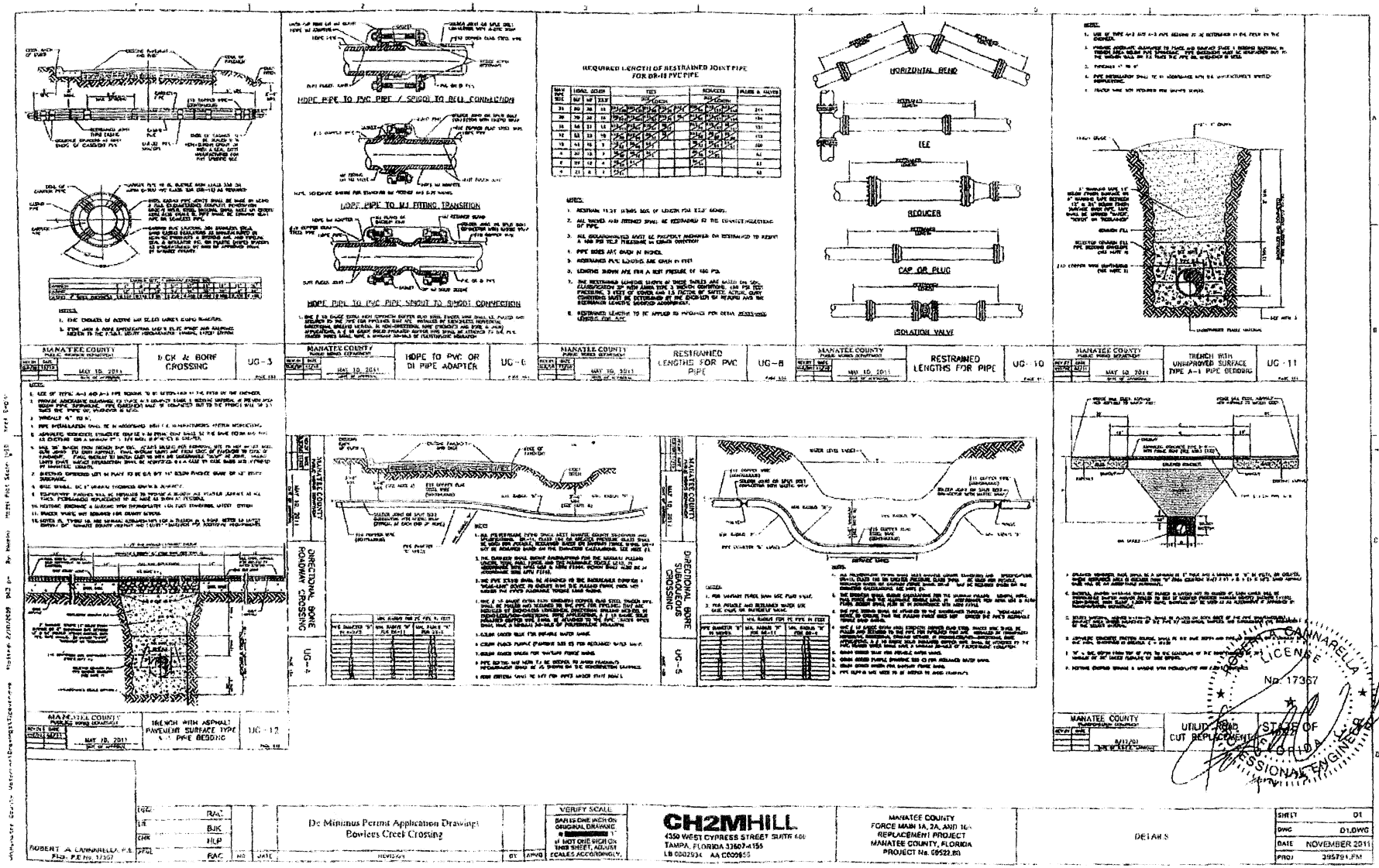
_____
(SUBDIVISION)

_____ _____
(LOT) (BLOCK)

_____
(STREET ADDRESS)



SAJ-2012-00558
28 February 2012



SAJ-2012-00558
28 February 2012

HORIZONTAL DIRECTIONAL DRILL PLAN
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FORCE MAIN 1A, 2A AND 16A REPLACEMENT PROJECT

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d. Drill string will be withdrawn and hole pumped with cement or industry-approved fill material to displace the drilling fluid.

HDD Realignment. If it is found necessary to abandon the original location, the proposed alignment will be modified to accommodate a new drill. The proposed new exit and entry areas will be surveyed for sensitive biological and cultural resources, and agencies with regulatory control will be contacted to amend approvals as needed.

ROBERT A. CANNARELLA, P.E. Fla. P.E No. 17357	DSGN RAC DR BJK CHK HLP APVD RAC	NO.	DATE	De Minimus Permit Application Drawings Bowlees Creek Crossing REVISION	BY	APVD	VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	CH2MHILL 4350 WEST CYPRESS STREET SUITE 600 TAMPA, FLORIDA 33607-4155 LB 0002934 AA C000656	MANATEE COUNTY FORCE MAIN 1A, 2A, AND 16A REPLACEMENT PROJECT MANATEE COUNTY, FLORIDA PROJECT No. 60522 80	KEY PLAN	SHEET G3 DWG G3KEYPLAN.DWG DATE NOVEMBER 2011 PROJ 395791.FM

SAJ-2012-00558
28 February 2012

Appendix G

FDOT Permit for Auger Bore Crossings of US 41 At Pearl Street and 69th Street West

To: Whom it may concern,

Enclosed are 2 sets of an approved permit, 1 set is for the Permittee and 1 set is for the Engineer/Field Construction.

If a lane closure is within the project limits, the Permittee MUST notify the Department 7 days prior to the lane closure to inform the motoring public. If no lane is required please notify our office 48 hours prior to beginning work. Failure to call may result in a delay to begin work.

Please note any Special Conditions that this permit may require.

Thank you,
Valerie A. Everts
Permits Coordinator
Sarasota Operations Center
email: valerie.everts@dot.state.fl.us
☎: 941-359-7305

PERMIT VOID UNLESS DOT OPERATIONS CENTER IS NOTIFIED 48 HRS IN ADVANCE OF STARTING WORK PHONE (941) 359-7300 VERIFICATION NO

RULE 14-46

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

UTILITY PERMIT

ALL CONTRACTORS AND SUBCONTRACTORS SHALL BE RESPONSIBLE FOR COMPLIANCE WITH PERMITTED MOT PLAN.

710-010-85
UTILITIES
OGC – 08/10

PERMIT NO.: 2012-H-194-1	SECTION NO.:13010	STATE ROAD 45	COUNTY Manatee
FDOT construction is proposed or underway.	☒ Yes	☐ No	Financial Project ID: 4233491, 4294961
Is this work related to an approved Utility Work Schedule?	☐ Yes	☒ No	If yes, Document Number:

PERMITTEE:	Manatee County Public Works Department , Attention Mr. Sia Mollanazar, PE Deputy Director Engineering Services		
ADDRESS:	1022 26th St East	TELEPHONE NUMBER: (941) 708 - 7450	
CITY/STATE/ZIP:	Bradenton, FL 34208-7344		

The above PERMITTEE requests permission from the State of Florida Department of Transportation, hereinafter called the FDOT, to construct, operate and maintain the following: Construct replacement Force Main Crossing US 41 ROW at two locations. Crossing US 41 at Pearl Ave (10 inch force main in 20 inch casing); Crossing US41 at 69th Ave. W (16 inch force main in 36 inch casing). Both Crossings via auger boring (bore and jack) see drawings. All access excavation outside FDOT ROW.

FROM: Crossing at Pearl St. - FDOT Mile Post 1.732	TO: Crossing at 69th Ave. W - FDOT Mile Post 2.252

Submitted for the PERMITTEE by: Name and Company (Typed or Printed Legibly)	Contact Information Address/Telephone/E-Mail (if applicable)	Signature	Date
Robert A. Cannarella, PE/CH2MHILL	st. 600 4350 West Cypress Street Tampa, FL 33607		

1. The Permittee declares that prior to filing this application, the location of all existing utilities that it owns or has an interest in, both aerial and underground, are accurately shown on the plans and a letter of notification was mailed on Oct. 11, 2011 to the following utilities known to be involved or potentially impacted in the area of the proposed installation:
   Manatee County, BrightHouse Networks, Teco Peoples Gas, Florida Power and Light, Verizon.
2. The local Maintenance or Resident Engineer, hereafter referred to as the FDOT Engineer, shall be notified a minimum of forty eight (48) hours in advance prior to starting work and again immediately upon completion of work. The FDOT's Engineer is Lance Grace, PE, located at 1840 61st St E Sarasota, FL 34343-2233, Telephone Number 941-359-7300.
   The Permittee's employee responsible for MOT is defined at precon,
   Telephone Number at precon (This name may be provided at the time of the forty eight (48) hour advance-notice prior to starting work).
3. All work, materials, and equipment shall be subject to inspection and approval by the FDOT Engineer.
4. All plans and installations shall conform to the requirements of the FDOT's UAM in effect as of the date this permit is approved by FDOT, and shall be made a part of this permit. This provision shall not limit the authority of the FDOT under Paragraph 8 of this Permit.
5. This Permittee shall commence actual construction in good faith within 120 days after issuance of permit, and shall be completed within 180 days after the permitted work has begun. If the beginning date is more than sixty (60) days from the date of permit approval, the Permittee must review the permit with the FDOT Engineer to make sure no changes have occurred to the Transportation Facility that would affect the permitted construction.
6. The construction and maintenance of such utility shall not interfere with the property and rights of a prior Permittee.
7. It is expressly stipulated that this permit is a license for permissive use only and that the placing of utilities upon public property pursuant to this permit shall not operate to create or vest any property right in said holder, except as provided in executed subordination and Railroad Utility Agreements.
8. Pursuant to Section 337.403, Florida Statutes, any utility placed upon, under, over, or along any public road or publicly owned rail corridor that is found by FDOT to be unreasonably interfering in any way with the convenient, safe, or continuous use, or maintenance, improvement, extension, or expansion, of such public road of publicly owned rail corridor shall, upon thirty (30) days written notice to the utility or its agent by FDOT, be removed or relocated by such utility at its own expense except as provided in Section 337.403(1), Florida Statutes, and except for reimbursement rights set forth in previously executed subordination and Railroad Utility Agreements, and shall apply to all successors and assigns for the permitted facility.
9. It is agreed that in the event the relocation of said utilities are scheduled to be done simultaneously with the FDOT's construction work, the Permittee will coordinate with the FDOT before proceeding and shall cooperate with the FDOT's contractor to arrange the sequence of work so as not to delay the work of the FDOT's contractor, defend any legal claims of the FDOT's contractor due to delays caused by the Permittee's failure to comply with the approved schedule, and shall comply with all provisions of the law and the FDOT's current UAM. The Permittee shall not be responsible for delay beyond its control.
10. In the case of non-compliance with the FDOT's requirements in effect as of the date this permit is approved, this permit is void and the facility will have to be brought into compliance or removed from the R/W at no cost to the FDOT, except for reimbursement rights set forth in previously executed subordination and Railroad Utility Agreements. This provision shall not limit the authority of the FDOT under Paragraph 8 of this Permit.
11. It is understood and agreed that the rights and privileges herein set out are granted only to the extent of the State's right, title and interest in the land to be entered upon and used by the Permittee, and the Permittee will, at all times, and to the extent permitted by law, assume all risk of and indemnify, defend, and save harmless the State of Florida and the FDOT from and against any and all loss, damage, cost or expense arising in any manner on account of the exercise or attempted exercises by said Permittee of the aforesaid rights and privileges.
12. During construction, all safety regulations of the FDOT shall be observed and the Permittee must take measures, including placing and the display of safety devices that may be necessary in order to safely conduct the public through the project area in accordance with the Federal MUTCD, as amended by the UAM.
13. Should the Permittee be desirous of keeping its utilities in place and out of service, the Permittee, by execution of this permit acknowledges its present and continuing ownership of its utilities located between N/A
    and
    within the FDOT's R/W as set forth above. Whenever the Permittee removes its facilities, it shall be at the Permittee's sole cost and expense. The Permittee, at its sole expense, shall promptly remove said out of service utilities whenever the FDOT determines said removal is in the public interest.
14. In the event contaminated soil is encountered by the Permittee or anyone within the permitted construction limits, the Permittee shall immediately cease work and notify the FDOT. The FDOT shall notify the Permitee of any suspension or revocation of the permit to allow contamination assessment and remediation. Said suspension or revocation shall remain in effect until otherwise notified by FDOT
15. For any excavation, construction, maintenance, or support activities performed by or on behalf of the FDOT, within its R/W, the Permittee may be required by the FDOT or its agents to perform the following activities with respect to a Permittee's facilities: physically expose or direct exposure of underground facilities,

CALL BEFORE YOU DIG 1-800-432-4770 IT'S THE LAW IN FLORIDA

NOTE: ALL ABOVE GROUND APPURTENANCES ARE TO BE LOCATED AT R/W LINE

UTILITY PERMIT

provide any necessary support to facilities and/or cover, de-energize or alter aerial facilities as deemed necessary for protection and safety.

16. Pursuant to Section 337.401(2), Florida Statutes, the permit shall require the permit holder to be responsible for damage resulting from the issuance of the permit. The FDOT may initiate injunctive proceedings as provided in s.120.69 to enforce provisions of this subsection or any rule or order issued or entered into pursuant thereto.
17. Pursuant to Section 337.402, Florida Statutes, when any public road or publicly owned rail corridor is damaged or impaired in any way because of the installation, inspection, or repair of a utility located on such road or publicly owned rail corridor, the owner of the utility shall, at his or her own expense, restore the road or publicly owned rail corridor to its original condition before such damage. If the owner fails to make such restoration, the authority is authorized to do so and charge the cost thereof against the owner under the provisions of s.337.404.
18. The Permittee shall comply with all provisions of Chapter 556, Florida Statutes, Underground Facilities Damage Prevention and Safety Act.
19. Special FDOT instructions: The permittee needs to be aware that there is an upcoming project and it is early in the design phase. If there line ends up in conflict they will have to relocate at their own expense. I have attached the signal plan sheet for the intersection of SR 45 and 69th Ave W.

It is understood and agreed that commencement by the Permittee is acknowledgment and acceptance of the binding nature of all the above listed permit conditions and special instructions.

20. By receipt of this permit, the Permittee acknowledges responsibility to comply with Section 119.07, Florida Statutes.
21. By the below signature, the Permittee hereby represents that no change to the FDOT's standard Utility Permit form, as incorporated by reference into Rule 14-46.001, for this Utility Permit has been made which has not been previously called to the attention of the FDOT (and signified to by checking the appropriate box below) by a separate attached written document showing all changes and the written and dated approval of the FDOT Engineer. Are there attachments reflecting change/s to the standard form? ☒NO ☐ YES If Yes, _____ pages are attached.

PERMITTEE	Sia Mollanazar, PE	**SIGNATURE**		**DATE:**	
	Name & Title of Authorized Permittee or Agent (Typed or Printed Legibly)		11-28-11		
APPROVED BY:	Albert Rosenstein			**ISSUE DATE:**	1.26.12
	District Maintenance Engineer or Designee				

UTILITY PERMIT FINAL INSPECTION CERTIFICATION

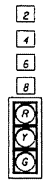
DATE:	
DATE WORK STARTED:	
DATE WORK COMPLETED:	
INSPECTED BY:	
(Permittee or Agent)	
CHANGE APPROVED BY:	**DATE:**
District Maintenance Engineer or Designee	

the undersigned Permittee do hereby CERTIFY that the utility construction approved by the above numbered permit was inspected and installed in accordance with he approved plans made a part of this permit and in accordance with the FDOT's current UAM. All plan changes have been approved by the FDOT's Engineer and ıre attached to this permit. I also certify that the work area has been left in as good or better condition than when the work was begun.

PERMITTEE:	**SIGNATURE:**	**DATE:**
Name & Title of Authorized Permittee or Agent (Typed or Printed Legibly)		

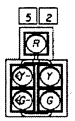
:C: District Permit Office
Permittee

DETAIL OF SIGNAL HEADS



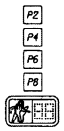
3-SECT., 1-WAY SIGNAL 12" LED

650-51-311



5-SECT., 1-WAY SIGNAL 12" LED

650-51-511



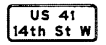
PED. SIGNAL COUNT-DOWN, LED 1-SECT., 1-WAY

653-191

INTERNALLY ILLUMINATED SIGNS

SEE GUIDE SIGN WORK SHEET FOR DETAILS

SIGN E



699-1-1

SIGN F

699-1-1

STREET NAME SIGNS ARE DOUBLE-PANEL, TWO-WAY, INTERNALLY ILLUMINATED LED SIGN ASSEMBLIES.

INSTALL NEW STREET NAME SIGNS ON MAST ARM UPRIGHT.

NOTE: CONTRACTOR'S ATTENTION IS DIRECTED TO THE EXISTENCE OF OVERHEAD UTILITIES WHICH MAY INTERFERE WITH NORMAL CONSTRUCTION PRACTICES AT THIS LOCATION.

PAY ITEM NUMBERS ARE PROVIDED ONLY FOR THE PURPOSE OF DESCRIBING THE WORK TO BE PERFORMED. PAY ITEM DESCRIPTIONS ARE FOUND IN THE DEPARTMENT'S BASIS OF ESTIMATES MANUAL.

1" = 40'

CONTROLLER & OPERATION NOTES:

1. THE MAJOR STREET IS SR 45 (US 41 BUS / 14TH STREET WEST), MOVEMENTS 1, 2, 5 AND 6 AND THE MINOR STREET IS 69TH AVENUE WEST MOVEMENTS 3, 4, AND 8.
2. EXISTING SOP NO. 10 WITH THE FOLLOWING:
   (A) CONCURRENT / ACTUATED PEDESTRIANS FOR MOVEMENTS 4 (P4) AND 8 (P8) AND MOVEMENTS 2 (P2) AND 6 (P6).
3. EXISTING CONTROLLER PHASING TO REMAIN.
4. BACKPLATES WITH A 2" YELLOW REFLECTORIZED (TYPE III REFLECTIVITY) OUTER EDGE BORDER ARE TO BE PROVIDED FOR ALL VEHICULAR SIGNAL HEADS.
5. TUNNEL VISORS ARE TO BE PROVIDED FOR ALL VEHICULAR SIGNAL INDICATIONS.

SPECIAL NOTES:

1. POWER SERVICE FOR SIGNAL IS TO BE OBTAINED FROM THE EXISTING POWER POLE LOCATED APPROXIMATELY 300 FT NORTH OF SR 45 (US 41 BUS / 14TH STREET WEST) AND 57TH AVENUE WEST. POWER IS TO RUN UNDERGROUND TO THE SERVICE POLE LOCATED IN THE NORTHWEST QUADRANT THEN TO THE EXISTING CONTROLLER.
2. SPARE RUNS OF CONDUIT ARE PROVIDED FOR FUTURE USE.
3. STREET NAMES FOR PEDESTRIAN DETECTOR SIGNS SHALL BE 14TH ST W (P4 & P8) AND 69TH AVE W (P2 & P6).

VIDEO VEHICLE DETECTION ASSIGNMENTS			
CAMERA DETECTOR	DETECTION ZONE	CONNECT TO TIMING FUNCTION	DELAY TIME (SECS.)
CD1	DZ4	TF 4	5
CD2	DZ1	TF 1	5
	DZ61	TF 6	0
	DZ6C	TF 6	0
	DZ6O	TF 6	0
CD3	DZ3	TF 3	5
	DZ8	TF 8	0
CD4	DZ21	TF 2	0
	DZ2C	TF 2	0
	DZ2O	TF 2	0
	DZ5	TF 5	5

CONTROLLER TIMINGS									
TIMING FUNCTION		1	2	3	4	5	6	7	8
MOVEMENT NUMBER		1	2	3	4	5	6	7	8
TIMING FUNCTION	MINIMUM GREEN	7	20	.	7	7	20	.	7
	EXTENSION	3.0	3.0	.	3.0	3.0	3.0	.	3.0
	MAXIMUM GREEN 1	18	40	.	30	18	40	.	30
	MAXIMUM GREEN 2	25	50	.	45	25	50	.	45
	YELLOW CLEARANCE	4.5	4.5	.	4.0	4.5	4.5	.	4.0
	ALL RED	2.0	2.0	.	2.5	2.0	2.0	.	2.5
	PEDESTRIAN WALK	-	7	.	7	-	7	.	7
	PED. CLEARANCE	-	21	.	27	-	21	.	27
	RECALL	OFF	MIN	.	OFF	OFF	MIN	.	OFF
	DETECTION FUNCTION	NON LOCK	LOCK	.	NON LOCK	NON LOCK	LOCK	.	NON LOCK

EXIST. SIGNAL EQUIPMENT TO BE REMOVED

690-10
690-20
690-31
690-32-1
690-60
690-70
690-80
690-90
690-100
700-48-60

▲ SERVICE WIRE TO INCLUDE A FLOOD SEAL CONNECTOR WITH A NON-FUSED NEUTRAL SLUG AT THE PULL BOX LOCATED AT THE BASE OF THE FPL POWER POLE.

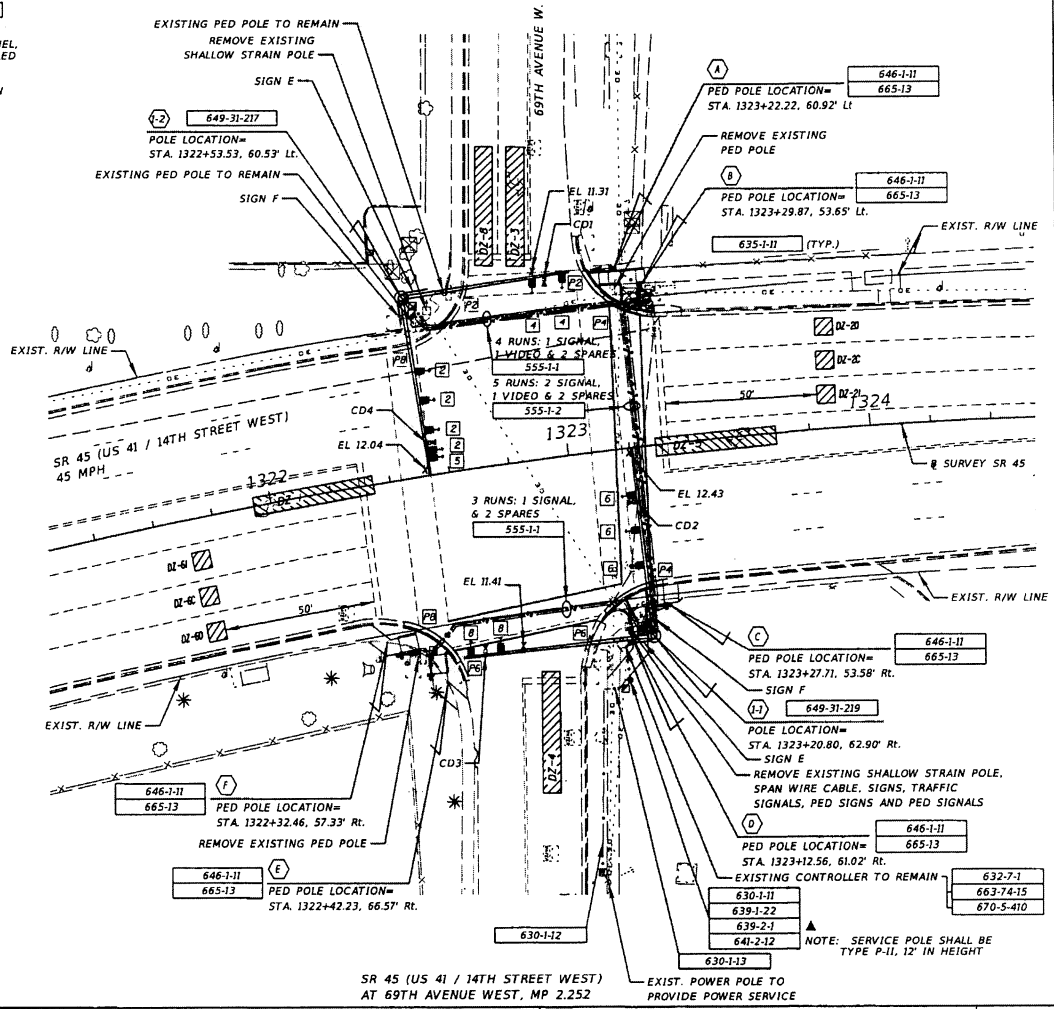
SPECIAL SYMBOLOGY

VIDEO DETECTOR

DZ-1 ... VIDEO DETECTION ZONE

PRELIMINARY

1/4/2012 3:38:36 PM



NOTICE: THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE SIGNED AND SEALED UNDER RULE 61G15-23.003, F.A.C.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

CES Comprehensive Engineering Services, Inc.
201 S Orange Ave, Suite 1300 Orlando, FL 32801-3442
Certificate of Authorization Number : 7862
Ryan K. Baderschneider, P.E., License No. 60851

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
45	MANATEE	429496-1-52-01

SIGNALIZATION PLAN

SHEET NO. 4

CH2M HILL
4350 W. Cypress Street
Suite 600
Tampa, FL 33607-4178
Tel 813.874.0777
Fax 813.874.3056

CH2MHILL

December 19, 2011

Florida Department of Transportation
Attention: Ed Giddons
Sarasota Operations Center
1840 61st. Street
Sarasota, FL 34243

Subject: Manatee County - Force Main Force Main 1A, 2A and 16A Replacement Project
FDOT Utility Permit - Form 710-010-85 OGC - 1007
for Two Auger Bore Crossings of US 41

Dear Mr. Giddons:

Manatee County is required to replace an existing sanitary sewer force main that has reached the end of its useful life. The replacement force main will require that two auger bores be constructed, each one at locations where the replacement force main will cross US 41, at Pearl Street and the second at 69th Ave in the southern part of Manatee County.

We previously met with FDOT personnel to discuss the project and are not submitting a utility permit application to complete the work which will cross FDOT right-of-way.

We are transmitting herewith four (4) copies of a utility permit application for your review and approval. All auger bore work and resurfacing work required will be conducted in accordance with FDOT requirements. Please advise should you require any additional information.

Sincerely,

CH2M HILL

Robert A. Cannarella, PE
Senior Project Manager

TPA/Document3
c: Mr. Anthony Benitez, PE, Manatee County Public Works

FLORIDA DEPARTMENT OF TRANSPORTATION
Stormwater Pollution Control Reminder

- *Stormwater Management*

Contact your local municipality and/or the Southwest Florida Management District.

Bartow	(863) 534-1448
Venice (Sarasota)	(941) 278-7396
Fort Myers (Sarasota)	(941) 278-7396

- Fort Myers is also part of South Florida Water Management District (800) 432-2045.

- *Used Oil recycling*

Contact the Florida Department of Environmental Protection at (813) 744-6100 or your local automotive parts store.

- *Hazardous Waste Disposal*

Contact the Florida Department of Environmental Protection at (813) 744-6100.

- *Spill Reporting*

State Warning Point	(800) 320-0519
Federal Response Center	(800) 424-8802

- *Pesticides & Fertilizers*

Contact your Local County Agricultural Extension Service.

Charlotte	(941) 764-4340
Collier	(239) 353-4244
DeSota	(863) 993-4846
Glades	(863) 946-0244
Hardee	(863) 773-2164
Hendry	(863) 674-4094
Highlands	(863) 402-6540
Lee	(239) 461-7500
Manatee	(941) 722-4524
Okeechobee	(863) 763-6469
Polk	(863) 519-8677
Sarasota	(941) 316-1000

LET'S WORK TOGETHER TO KEEP OUR ENVIRONMENT CLEAN...

AND INVEST IN FLORIDA'S FUTURE

PERMIT VOID UNLESS DOT SARASOTA OPERATIONS OFFICE NOTIFIED 48 HOURS IN ADVANCE OF STARTING WORK.
PHONE: (941) 359-7300

IF A LANE CLOSURE IS WITHIN THE PROJECT LIMITS, THE PERMITTEE MUST NOTIFY THE DEPARTMENT 7 DAYS PRIOR TO A LANE CLOSURE TO ALLOW THE DEPARTMENT TO INFORM THE MOTORING PUBLIC. FAILURE TO CALL MAY RESULT IN A DELAY TO BEGIN WORK.

IF NO CLOSURES ARE REQUIRED THE SARASOTA OPERATIONS OFFICE MUST BE NOTIFIED 48 HOURS IN ADVANCE OF STARTING WORK. FAILURE TO CALL MAY RESULT IN A DELAY TO BEGIN WORK.

LANE CLOSURES AND OTHER WORK MAY BE RESTRICTED BY THE FDOT DUE TO HEAVY TRAFFIC AND POTENTIAL BACKUPS CAUSED BY THIS CONSTRUCTION. NIGHT WORK MAY BE REQUIRED.

DISTRICT ONE LANE CLOSURE POLICY MAY REQUIRE WORK TO BE PERFORMED DURING NIGHT TIME HOURS DUE TO LANE ANALYSIS AND/OR LANE RESTRICTIONS.

APPLICANT IS RESPONSIBLE FOR NOTIFYING OWNERS OF ALL EXISTING AERIAL AND BURIED UTILITIES OF PROPOSED DRIVEWAY AND RESOLVING ANY CONFLICTS BEFORE CONSTRUCTION BEGINS.

IN ACCORDANCE WITH FLORIDA STATUS 335.18 PERMITTEE SHALL BE REQUIRED TO BEAR THE COST OF FUTURE ACCESS MODIFICATIONS, TRAFFIC CONTROL DEVICES OR OTHER IMPROVEMENTS, WHEN DETERMINED BY THE FLORIDA DEPARTMENT OF TRANSPORTATION TO BE IN CONJUNCTION WITH ACCEPTED ENGINEERING PRACTICES.

ALL CONSTRUCTION AND/OR MAINTENANCE ON THE DEPARTMENT'S RIGHT-OF-WAY SHALL CONFORM TO THE FEDERAL MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) THE DEPARTMENT'S ROADWAY AND TRAFFIC DESIGN STANDARDS AND BRIDGE CONSTRUCTION.

PERMITTEE/CONTRACTOR MUST WAIT 30 DAYS TO ALLOW ASPHALT FRICTION COURSE TO CURE BEFORE PLACING THERMOPLASTIC STRIPING.

OUR REVIEW COMMENTS ARE NOT INCLUDED TO BE INCLUSIVE OF ALL ERRORS AND OMISSIONS. OUR COMMENTS ARE ALSO NOT INTENDED TO AFFECT THE SCOPE OF WORK OR TO BE CONTRARY TO FHWA POLICY, FDOT DESIGN CRITERIA OR SOUND ENGINEERING PRACTICE. THE CONSULTANT/ENGINEER IS SOLELY RESPONSIBLE FOR THE TECHNICAL ACCURACY, ENGINEERING JUDGEMENT, AND QUALITY OF HIS WORK.

ALL CONTRACTORS AND SUBCONTRACTORS SHALL BE RESPONSIBLE FOR COMPLIANCE WITH PERMITTED M.O.T. PLAN.

SOD ALL PORTIONS OF DISTURED RIGHT-OF-WAY.

NOTE: ALL ABOVE GROUND APPURTENANCES TO BE LOCATED AT RIGHT-OF-WAY LINE.

DENSITY REPORTS ARE TO BE SUBMITTED PRIOR TO PLACEMENT OF PAVEMENT.

"PRIOR TO EXCAVATING CONTACT THE CLERK OF THE CIRCUIT COURT FOR POSSIBLE GASOLINE CONFLICT."

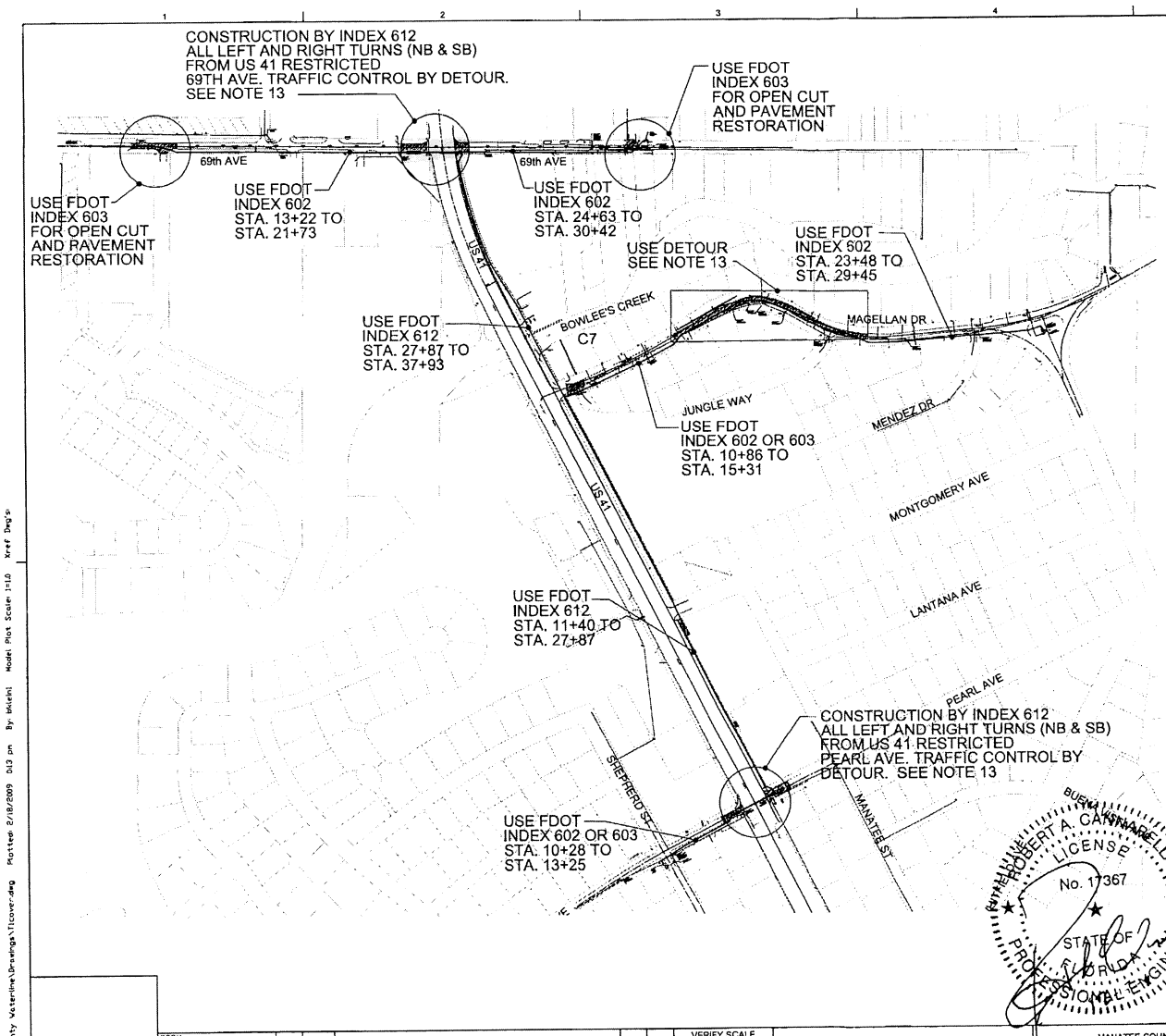
THE APPLICANT SHALL NOT, DURING AND AFTER COMPLETION OF PERMITTED CONSTRUCTION, INTRODUCE ANY FORM OR METHOD OF SITE DRAINAGE DISCHARGE INTO THE DRAINAGE FACILITIES ON THE DEPARTMENT OF TRANSPORTATION RIGHT-OF-WAY OR EASEMENT. ANY DISCHARGE SHALL BE IN VOILATION OF THIS PERMIT.

"PERMITTEE IS CAUTIONED THAT UTILITIES MAY BE LOCATED WITHIN THE CONSTRUCTION AREA."

IT IS THE RESPONSIBILITY OF THE PERMITTEE TO DETERMINE AND COMPLY WITH ALL COUNTY AND MUNICIPAL ORDINANCES THAT ARE RELATIVE TO THE CONSTRUCTION OR OTHER ACTIVITY DESCRIBED ON THIS PERMIT AND ARE MORE STRINGENT THAN DEPARTMENT OF TRANSPORTATION REQUIREMENTS.

N.P.D.E.S. REQUIRES THAT STORM WATER CONTROL MEASURES BE IMPLEMENTED ON ANY PROJECT ON PUBLIC TRANSPORTATION FACILITY RIGHTS-OF-WAY INCLUDING, BUT NOT LIMITED TO MEASURES DESCRIBED IN F.D.O.T. STANDARD DESIGN INDEX DRAWING NUMBERS 102, 103 AND 104.

"IF CONSTRUCTION, RECONSTRUCTION, REPAIR OR MAINTENANCE ACTIVITY NECESSITATES THE CLOSING OF ONE OR MORE TRAVEL LANES OF ANY ROAD ON THE STATE PRIMARY, COUNTY ROAD OR CITY STREET SYSTEM, FOR A PERIOD OF TIME EXCEEDING TWO HOURS, THE PARTY PERFORMING SUCH WORK WILL BE RESPONSIBLE TO GIVE NOTICE TO THE APPROPRIATE LOCAL LAW ENFORCEMENT AGENCY WHICH HAS JURISDICTION WHERE SUCH ROAD IS LOCATED PRIOR TO COMMENCING WORK ON THIS PROJECT"
335.15 F.S.91, 336.048 F.S.91



200' 100' 0 200' 400' 600'
1" = 200'-0"

TRAFFIC CONTROL GENERAL NOTES

1. THIS TRAFFIC CONTROL PLAN IS SHOWN AS A MINIMUM GUIDELINE ONLY. CONTRACTOR IS RESPONSIBLE FOR ANY TRAFFIC CONTROL PLAN IMPLEMENTED. THE CONTRACTOR MAY MODIFY THE TRAFFIC CONTROL PLANS PROVIDED HEREIN. ALL MODIFICATIONS SHALL ADHERE TO THE REQUIREMENTS SET FORTH IN THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D. LATEST EDITION) AND THE FDOT ROADWAY AND TRAFFIC DESIGN STANDARDS, LATEST EDITION (600 SERIES). ANY CHANGE RECOMMENDED BY THE CONTRACTOR MUST BE SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF FLORIDA AND SUBMITTED TO THE ENGINEER AT LEAST FOURTEEN (14) DAYS PRIOR TO THE START OF CONSTRUCTION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN COUNTY APPROVAL (PRIOR TO IMPLEMENTATION) AND FAILURE TO OBTAIN APPROVAL SHALL NOT BE GROUNDS FOR ANY DELAY CLAIM FOR TIME OR ADDITIONAL COMPENSATION.
2. THE RECOMMENDED FDOT DESIGN STANDARD INDICES ARE CONCEPTUAL. THE CONTRACTOR SHALL AT ALL TIMES ADHERE TO THE REQUIREMENTS SET FORTH IN THEMANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D. LATEST EDITION) AND THE FDOT ROADWAY AND TRAFFIC DESIGN STANDARDS, LATEST EDITION (600 SERIES).
3. IT IS NOT THE INTENT OF THESE PLANS TO SHOW ALL TEMPORARY DRAINAGE AND INCIDENTAL CONSTRUCTION NECESSARY TO MAINTAIN TRAFFIC. THE CONTRACTOR SHALL BE REQUIRED TO PROVIDE TEMPORARY DRAINAGE. THERE WILL BE NO DIRECT PAY FOR THIS WORK. COSTS SHALL BE INCLUDED IN THE COST OF THE PIPE.
4. MOTORIZED AND MECHANICAL EQUIPMENT SHALL BE EFFECTIVELY SHIELDED, PADDED, OR LOCATED TO MINIMIZE NOISE AS DIRECTED BY THE ENGINEER.
5. THE CONTRACTOR WILL NOTIFY ALL EMERGENCY AND RESCUE AGENCIES LOCATED IN THE PROJECT VICINITY 24 HOURS IN ADVANCE OF ANY PROPOSED LANE CLOSURES OR DETOURS.
6. ACCESS TO ALL SIDE STREETS AND DRIVEWAYS MUST BE PROVIDED AND MAINTAINED DURING CONSTRUCTION.
7. FOR TRAFFIC CONTROL MEASURES WHEN CONSTRUCTION EQUIPMENT IS DRIVEN ON OPEN TRAVEL LANES USE INDEX NO. 627. THE REGULATORY SPEED IN WORK ZONES SHOULD BE AS CLOSE TO NORMAL CONDITIONS AS POSSIBLE UNLESS NOTED ON TRAFFIC CONTROL PLANS.
8. THE CONTRACTOR SHALL PROVIDE SAFE PEDESTRIAN ACCESS THROUGH THE WORK ZONE AT ALL TIMES.
9. THE CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES PRIOR TO WORKING NEAR THEIR EXISTING FACILITIES.
10. CONSTRUCTION SEQUENCES SHALL BE COORDINATED TO PROVIDE POSITIVE DRAINAGE OF THE TRAVELED WAY AT ALL TIMES.
11. ANY MOT ITEM NOT SPECIFICALLY LISTED UNDER A PARTICULAR PAY ITEM SHALL BE CONSIDERED SUBSIDIARY TO OTHER BID ITEMS: THERE SHALL BE NO SEPARATE PAYMENT.
12. THE MAXIMUM SPACING BETWEEN WARNING DEVICES USED FOR DELINEATION BETWEEN THE TRAVEL WAY AND CONSTRUCTION AREA SHALL BE AS PER FDOT STANDARD INDEX. 600
13. ALL DETOURS SHALL ADHERE TO THE REQUIREMENTS SET FORTH IN THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D. LATEST EDITION) AND THE FDOT ROADWAY AND TRAFFIC DESIGN STANDARDS, LATEST EDITION (600 SERIES). ANY DETOUR RECOMMENDED BY THE CONTRACTOR MUST BE SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF FLORIDA AND SUBMITTED TO THE ENGINEER AT LEAST FOURTEEN (14) DAYS PRIOR TO THE START OF CONSTRUCTION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN COUNTY APPROVAL (PRIOR TO IMPLEMENTATION) AND FAILURE TO OBTAIN APPROVAL SHALL NOT BE GROUNDS FOR ANY DELAY CLAIM FOR TIME OR ADDITIONAL COMPENSATION.

ROBERT A. CANNARELLA LICENSE No. 17367 STATE OF FLORIDA PROFESSIONAL ENGINEER

DSGN	RAC			FDOT Permit			
DR	BJK						
CHK	HLP						
APVD	RAC	NO.	DATE	REVISION	BY	APVD	

ROBERT A. CANNARELLA, P.E.
Fla. P.E No. 17367

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

CH2MHILL
4350 WEST CYPRESS STREET SUITE 600
TAMPA, FLORIDA 33607-4155
LB 0002934 AA C000656

MANATEE COUNTY
FORCE MAIN 1A, 2A, AND 16A
REPLACEMENT PROJECT
MANATEE COUNTY, FLORIDA
PROJECT No. 60522.80

MAINTENANCE OF TRAFFIC

SHEET	G4
DWG	G4.DWG
DATE	NOVEMBER 2011
PROJ	395791.FM

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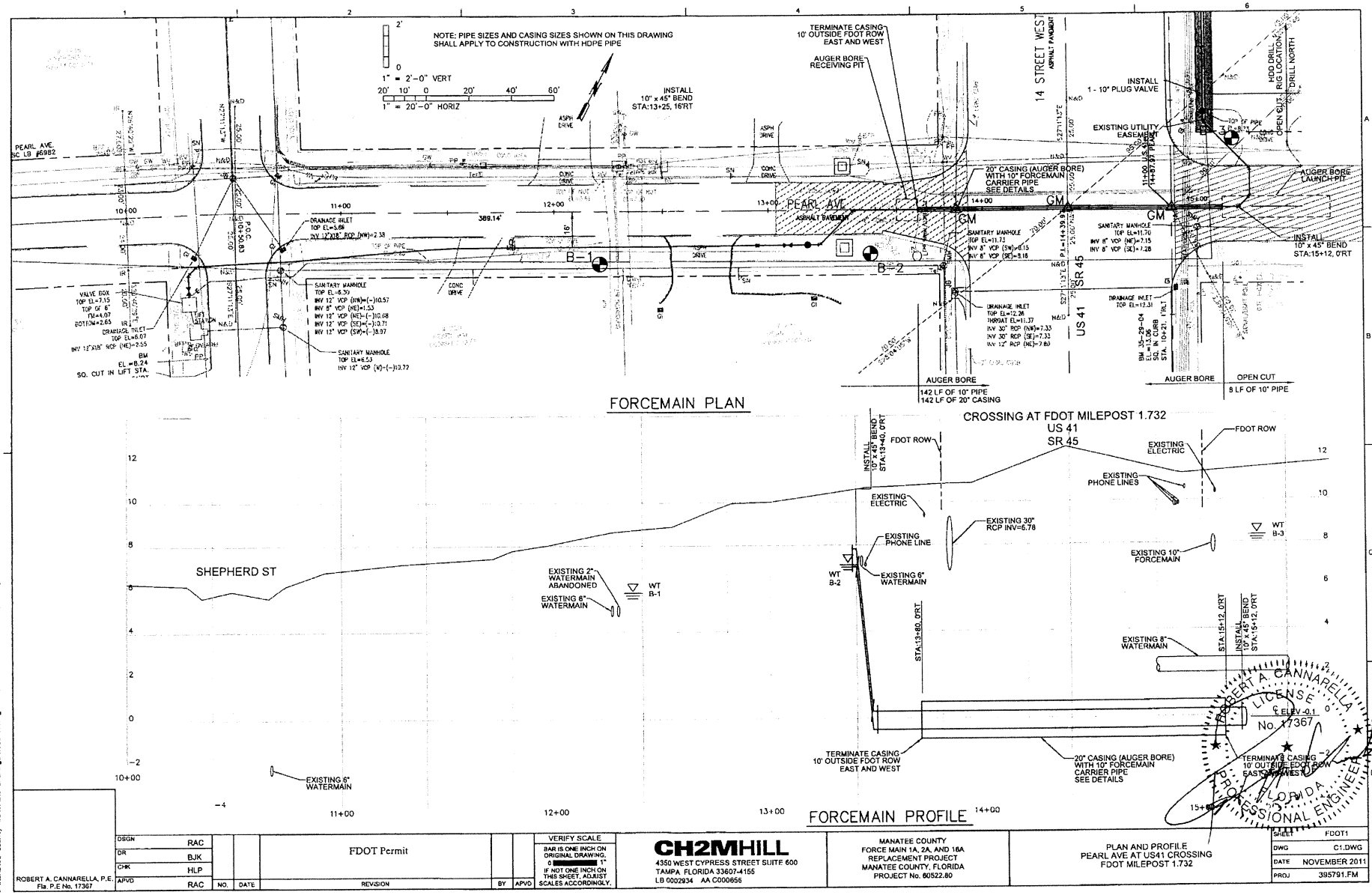

DSGN	RAC			FDOT Permit			VERIFY SCALE	
DR	BJK						BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.	
CHK	HLP							
APVD	RAC	NO.	DATE	REVISION	BY	APVD		

ROBERT A. CANNARELLA, P.E. Fla. P.E No. 17367

CH2MHILL
4350 WEST CYPRESS STREET SUITE 600
TAMPA FLORIDA 33607-4155
LB 0002934 AA C000656

MANATEE COUNTY
FORCE MAIN 1A, 2A, AND 16A
REPLACEMENT PROJECT
MANATEE COUNTY, FLORIDA
PROJECT No. 60522.80

PLAN AND PROFILE
PEARL AVE AT US41 CROSSING
FDOT MILEPOST 1.732

SHEET	FDOT1
DWG	C1.DWG
DATE	NOVEMBER 2011
PROJ	395791.FM

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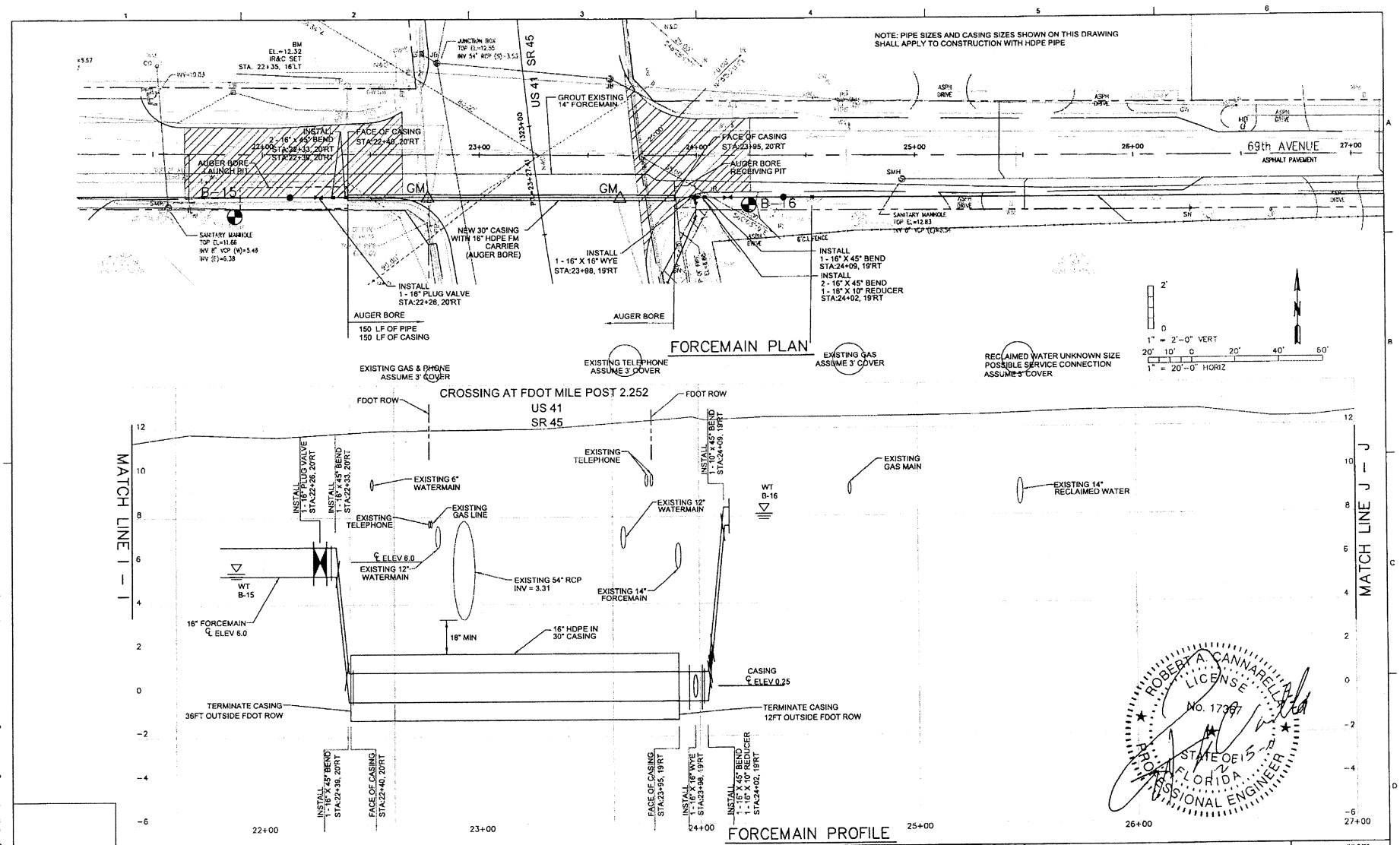

DSGN	RAC			FDOT Permit			VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.	CH2MHILL 4350 WEST CYPRESS STREET SUITE 600 TAMPA, FLORIDA 33607-4155 LB 0002934 AA C000656	MANATEE COUNTY FORCE MAIN 1A, 2A, AND 16A REPLACEMENT PROJECT MANATEE COUNTY, FLORIDA PROJECT No. 60522.80	PLAN AND PROFILE 69th AVE AND US 41 CROSSING FDOT MILE POST 2.252	SHEET FDOT2
DR	BJK										DWG C13.DWG
CHK	HLP										DATE NOVEMBER 2011
APVD	RAC	NO.	DATE	REVISION	BY	APVD					PROJ 395791.FM

ROBERT A. CANNARELLA, P.E. Fla. P.E No. 17367

V:\Manatee County Waterline\Drawings\Tlcover.dwg Plotted: 6/18/2009 9:43 pm By: bkiefol Model Plot Scale: 1=10 Xref Dwgs: