

**INSTALLATION OF PROPOSED MONITORING WELL MW-24
WESTERN AUTO UST AREA
TUTU WELLS SITE, ST. THOMAS
PROO13.028**

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PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Work by CONTRACTOR**
- B. CONTRACTOR use of site and premises**

1.02 WORK BY CONTRACTOR

- A.** This section is intended to provide a general description of the work to be performed, and is not to be taken as complete in all respects. The CONTRACTOR shall provide all necessary labor, materials, equipment, tools, utilities, and protective equipment as required to effect a complete and finished project, acceptable to the Tutu Environmental Investigation Committee, herein referred to as The COMMITTEE, Fourwinds Plaza representatives, herein referred to as OWNER, Geraghty & Miller, Inc., herein referred to as the ENGINEER, and in compliance with the latest edition of applicable Local, State, and Federal Codes.

Work to be performed by the CONTRACTOR includes but is not limited to the following items:

- 1.** Excavate asphalt covered area underlain by clay and wet gravel. This excavation will require shoring, sump pump, piping, materials and equipment. The excavation will be completed in two stages, including one 4 foot by 4 foot section to a depth of 7 feet related to the repair of a polyvinyl chloride (PVC) non pressurized line and second 4 foot by 4 foot section to a depth of 7 feet related to locating obstruction and to set a permanent well casing. Dimensions are approximate.
- 2.** Repair 4 inch schedule 40 PVC non-pressurized pipe at approximately 5 feet below land surface.
- 3.** Install 8 feet of 24-inch nominal diameter PVC casing, vertically from bottom of excavation to 1' above land surface.

**01010-1
SUMMARY OF WORK**



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4. Backfill and compact.
5. Install coarse stone and replace concrete paving with 8 feet long by 4 feet wide by 6 inches thick concrete slab.
6. Dispose of soil, debris, and other waste generated during excavation and construction activities. Vehicles and containers for off-site disposal shall be provided by the CONTRACTOR.
7. Restoration of the site to "original conditions" after performing the required Work. This includes removing trash, debris, and construction waste generated by the CONTRACTOR. An inspection by the ENGINEER shall determine completion of Work.
8. Work shall be conducted at night after business hours or between the hours of 6:30 p.m. and 6:30 a.m.

1.03 CONTRACTOR USE OF SITE AND PREMISES

- A. The CONTRACTOR shall not interrupt the normal activities of the plaza, and shall keep the access road clear at all times.
- B. The CONTRACTOR shall exercise extreme care to avoid any spillage, leakage or dripping of gasoline, solvent or any other hazardous material. The work will be performed in a critical environmentally protected area, and the CONTRACTOR will be held responsible for any adverse environmental impact resulting from willful actions or negligence. Particular care must be exercised to avoid bringing hazardous materials onto the site, and refueling of vehicles and construction equipment, cleaning of tools with solvents, etc. should be performed offsite to the extent possible.
- C. Site access is limited to the hours between 6:30 p.m. and 6:30 a.m.

1.04 SCOPE

- A. These specifications shall constitute the design and construction requirements for

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SUMMARY OF WORK**



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this project. The CONTRACTOR shall provide necessary labor, materials, equipment, tools, and appurtenances as required to effect a complete and finished work, acceptable to the OWNER, and the ENGINEER, and in compliance with the respective codes.

1.05 MATERIAL AND EQUIPMENT

1. Equipment, piping and backfill material shall be stored in an area designated by the OWNER and ENGINEER.
2. Store and protect products in accordance with manufacturer's instructions, with seals and labels intact and legible. Store sensitive products in weather-tight, climate controlled enclosures.
3. The CONTRACTOR will be responsible for providing heating, cooling, and weather protection for equipment and materials that requires that level of care.

A. SUBSTITUTIONS

1. Substitutions after project initiation may be considered only when a product becomes unavailable through no fault of the CONTRACTOR.
2. Substitution of components is allowed as follows:
 - A. "No substitution" or unspecified means substitutions will be allowed unless compelling reasons exist to require the substitution and the ENGINEER concurs with the CONTRACTOR and approves the substitution.

1.06 REFERENCES

Specific codes and standards are cited in each section.

END OF SECTION

PR0013.***WP-4/01010SUM.SPE

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SUMMARY OF WORK**



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PART 1 - GENERAL

1.01 WORK INCLUDED

The CONTRACTOR shall:

Excavate the required areas for repair of 4-inch diameter PVC pipe and installation of 8 feet of 24-inch PVC casing.

1.02 RELATED WORK

A. Section 02222- Backfilling.

1.03 PROTECTION

The CONTRACTOR shall:

- A. Comply with all federal, state and local codes, ordinances and laws governing excavation.
- B. Protect existing buildings, structures, sidewalks, paving, and curbs from damage caused by execution of the work and equipment.
- C. Protect above and below grade utilities that are to remain in use.
- D. Protect excavation by the use of sheeting, bracing and/or shoring where required to prevent sidewall caving or excessive groundwater in-flow.
- E. Protect adjacent structures, including foundations, service utilities and pipe chases, which might be damaged by excavation work.
- F. Notify the ENGINEER of unexpected subsurface conditions interfering with normal construction methods and discontinue Work in the area until given written notice of how to proceed.
- G. Repair any areas or property damaged as a result of the operations of the CONTRACTOR.

**02222-1
EXCAVATION**



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- H. Provide safety barricades around open excavations as needed.

PART 2 - PRODUCTS

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Not used.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Identify required lines, levels, contours, and datum.
- B. Identify all underground utilities. Identify and mark the location and depth of existing underground pipelines and other identified utilities.
- C. Identify and mark the location of surface and overhead utilities.
- D. Identify and mark the areas which will be excavated.
- E. Maintain and protect the utilities which pass through the Work area and are to remain in use.
- F. Notify utility company to remove or relocate utilities, if required.
- G. Disconnect and cap utilities which are to be abandoned.
- H. Notify the ENGINEER PRIOR TO COMMENCEMENT OF EXCAVATION.

3.02 EXCAVATION

- A. Shore adjacent structures which may be damaged by excavation work, including utilities and pipe chases, as directed by the ENGINEER.
- B. Excavate subsoil required to accommodate piping, and construction operations as directed by the ENGINEER.

**02222-2
EXCAVATION**



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- C. Do not excavate in excess of that required by these Specifications unless authorized to do so in writing by the ENGINEER. Unnecessary and excessive excavation work shall be rectified at no extra expense to the COMMITTEE.
- D. Excavated materials if appropriate may be used for backfill on approval of the ENGINEER. Fill materials will contain no organic material.
- E. Excavated material, not reused, will be stockpiled as directed by the ENGINEER and as specified, examined materials shall be disposed of offsite in accordance with federal and state regulations.

3.03 FIELD QUALITY CONTROL

- A. The CONTRACTOR and ENGINEER shall conduct routine visual inspections of the excavation activities for compliance with these Specifications.

END OF SECTION

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PR0013.***WP-4/02222EXC.SPE

**02222-3
EXCAVATION**



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PART 1 - GENERAL

1.01 WORK INCLUDED

- A. The CONTRACTOR shall furnish all fill for the backfill from an on-site or off-site borrow area, and provide the equipment necessary for spreading, placement, and compaction to densities specified and/or as called for in these Specifications.
- B. The CONTRACTOR shall furnish clean fill material certification from a certified laboratory for all off-site borrow material, including chemical analysis of the borrow material.

1.02 RELATED WORK

- A. Section 02222- Backfilling.

1.03 REFERENCES

- A. ANSI/ASTM C136 - Particle size analysis of soils.
- B. ANSI/ASTM D698 - Moisture-Density Relations of Soils and Soil-Aggregate Mixture Using 5.5 lb (2.49 kg) Rammer and 12 inch (305 mm) Drop (Standard Proctor Test).
- C. ANSI/ASTM D1556 - Density of Soil in Place by the Sand-Cone Method (or ASTM D2922 - Density of Soil in Place by Nuclear Methods).

**02223-1
BACKFILLING**



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PART 2 - PRODUCTS

2.01 MATERIALS

- A. Type A - Coarse Stone: Angular, washed natural stone; free of shale, clay, friable material, sand, debris; graded in accordance with ANSI/ASTM C136 within the following limits:

<u>Sieve Size</u>	<u>Percent Passing</u>
2 inches (50 mm)	100
1 inch (25 mm)	95-100
3/4 inch (19 mm)	75-90
5/8 inch (16 mm)	35-60
3/8 inch (9.5 mm)	15-35
No. 4 (4.75 mm)	0-5

This shall be used for sub base material for concrete slab.

- B. Type B - Sand: Natural river or bank sand; washed, free of silt, clay, loam, friable or soluble materials, or organic matter; graded in accordance with ANSI/ASTM C136, within the following limits:

<u>Sieve Size</u>	<u>Percent Passing</u>
No. 4 (4.75 mm)	100
No. 16 (1.18 mm)	10-100
No. 50 (0.30 mm)	5-90
No. 100 (0.15 mm)	4-30
No. 200 (0.075 mm)	0-1

This shall be used as structural fill where required by the ENGINEER.

- C. Type C - Subsoil: Reused, free of gravel larger than 3 inches (75 mm) in size and debris. This shall be used as the commonfill for non-structural fill, as directed by the ENGINEER.

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BACKFILLING**



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PART 3 - EXECUTION

3.01 INSPECTION

Prior to actual placement of backfill materials the following will be field verified by the CONTRACTOR:

- A. Verify that all materials have been approved for use by the ENGINEER.
- B. Verify that areas to be backfilled are free of miscellaneous debris, or standing water.
- C. Verify that items to be buried during backfilling process have been inspected prior to backfilling.
- D. Verify that subgrade has been properly compacted and is ready to receive work specified in this section.

3.02 PREPARATION

- A. Compact subgrade to 95 percent maximum dry density in accordance with ANSI/ASTM D698.
- B. Cut out soft areas of subgrade not capable of in situ compaction. Backfilling with Type B fill and compact to density equal to or greater than requirements for subsequent backfill material.

3.03 BACKFILLING

The CONTRACTOR shall:

- A. Place the backfill or bedding material in 6-inch lifts that conform to the dimensional data as shown in the Specifications.
- B. Remove and properly dispose of all surplus backfill materials in accordance with these Specifications.
- C. Do not place backfill during freezing or excessively wet field conditions.

**02223-3
BACKFILLING**



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- D. Compact to 95 percent maximum dry density in accordance with ANSI/ASTM D698. Maintain optimum moisture content to attain required density.
- E. The ENGINEER may require the CONTRACTOR to verify the compacted density by field testing at locations specified by the ENGINEER.

3.04 SCHEDULE OF LOCATIONS

- A. Refer to the Site Location Map for identification of the backfill placement locations.

END OF SECTION

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PR0013.***WP-4/02223BCK.SPE

**02223-4
BACKFILLING**



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PART 1 - GENERAL

1.01 WORK INCLUDED

The CONTRACTOR shall:

- A. Lower and control ground-water levels and hydrostatic pressures to facilitate the excavation work, PVC pipeline repair, casing installation and backfilling.
- B. Recovered water will be drummed in containers provided by the COMMITTEE. The COMMITTEE shall dispose of drums in accordance to Federal, State and Local regulations.

1.02 RELATED WORK

- A. Section 02222 - Excavation
- B. Section 02223 - Backfilling

PART 2 - MATERIALS

2.01 MATERIALS

The CONTRACTOR shall:

- A. Provide materials and equipment required for the dewatering system operations.

PART 3 - EXECUTION

3.01 PREPARATION

The CONTRACTOR shall:

- A. Identify and mark the location of the existing and/or proposed excavation work.
- B. Excavate a sump for water collection and pumping at the expected low point in the excavation.

**02224-1
DEWATERING**



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- C. The ENGINEER shall estimate the depth to ground water and the expected volume of inflow for informational purposes only, and supply this information to the CONTRACTOR.

3.02 DEWATERING

The CONTRACTOR shall:

- A. Provide an appropriate dewatering system which is capable of obtaining the required ground-water control to complete the required excavation and backfill activities.
- B. Select equipment based on existing hydrogeologic site data and local experience. Equipment shall be adequately sized to handle volume of ground water anticipated plus the normal volume of rainfall expected to occur during the period of the construction work.

END OF SECTION

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PR0013.***WP-4/02224DEW.SPE

**02224-2
DEWATERING**



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PART 1 - GENERAL

1.01 WORK INCLUDED

- A. The CONTRACTOR shall furnish all required materials and shall properly place in the concrete, at the specified locations and in the manner indicated in these Specifications, or as directed by the ENGINEER, all required reinforcing steel for properly reinforcing all structures built under this Contract.

1.02 RELATED SECTIONS

- A. Section 03300, Cast-in-Place Concrete

PART 2 - PRODUCTS

2.01 QUALITY AND GRADE

- A. All welded wire fabric reinforcement shall be of approved make and of the minimum weight indicated in these Specifications. Welded wire fabric shall meet the requirements of ASTM A82 Cold-Drawn Steel Wire for Concrete Reinforcement.
- B. All steel used for reinforcement purposes shall be clean, rust-free, new stock, and free from defects and bends not required by these Specifications. Only corrugated or deformed bars, of an approved type, shall be used in the Work.

2.02 TESTS

- A. Wire mesh shall be inspected and tested at the mill at which they are rolled or fabricated, in accordance with A.S.T.M. Designation: A 615-82 and A 185-79, respectively, and two (2) certified copies of such tests shall be furnished to the ENGINEER.

**03200-1
CONCRETE REINFORCEMENT**



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PART 3 - EXECUTION

3.01 STORAGE AND PROTECTION

- A. All steel for reinforcement shall be delivered at the site of the Work without rust, other than that which may have accumulated in normal transit.
- B. All steel shall be kept free from oil, grease, dirt, or other objectionable adhering substances, and it shall be satisfactorily cleaned of scale and heavy or flaky rust before being placed in the Work.
- C. If, after having been placed in the Work, the concreting shall be delayed or interrupted for any considerable number of days, the steel shall be well protected.

3.02 PLACING/SPACING

- A. Joints shall be wired with annealed iron wire, of diameter not less than No. 18 U.S. Standard gauge, or by using acceptable clips.
- B. All reinforcement shall be firmly supported and properly spaced by the use of metal bolsters, bars, spacers, chairs, or hangers.
- C. Care shall be used in maintaining proper spacing between the forms and reinforcing steel.

3.03 CONCRETE COVER

- A. The minimum concrete cover for the protection of reinforcing steel shall be in accordance with the requirements shown in ACI 318. In general, the following shall apply:
 - (i) Concrete cast against and permanently exposed earth 3 inches
 - (ii) Concrete exposed to earth or weather
 - for #6 through #18 bars 2 inches
 - for #5 or D31 wire, and smaller 1 1/2 inches

**03200-2
CONCRETE REINFORCEMENT**



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3.04 FIELD QUALITY CONTROL

- A. The ENGINEER shall perform a field inspection for conformance with these specifications.

END OF SECTION

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PR0013.***WP-4/03200CON.SPE

**03200-3
CONCRETE REINFORCEMENT**



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PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Formwork for the cast-in-place concrete.
- B. All concrete construction shall conform with applicable recommendations of the American Concrete Institute.

1.02 RELATED WORK

- A. Section 03200 - Concrete Reinforcement

1.03 REFERENCES

- A. ACI-318 - Building Code Requirements of Reinforced Concrete
- B. ACI-MCP-1-74 - Manual of Concrete Practice
- C. ASTM C 33 - Concrete Aggregates
- D. ASTM C 94 - Ready-Mixed Concrete
- E. ASTM C 150 - Portland Cement

1.04 QUALITY ASSURANCE

- A. Placement of concrete shall be in accordance with ACI 301.
- B. Obtain materials from same source throughout the Work.
- C. Defective Work: Any concrete found to be defective from any cause whatever, at any time before the final acceptance of the Work, shall be either repaired or removed and replaced at the expense of the CONTRACTOR.
- D. Submittals: Sieve analysis for aggregate, and samples of aggregate, which the CONTRACTOR proposes to use, shall be submitted to the ENGINEER prior to

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CAST-IN-PLACE CONCRETE**



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construction. If materials are found to be inferior to those specified or referred to herein, the CONTRACTOR shall remove and replace the products or those defective at the expense of the CONTRACTOR.

E. Codes and Standards:

1. ACI 301, "Specifications for Structural Concrete for Buildings."
2. ACI 304, "Recommended Practice for Measuring, Mixing, Transporting, and Placing Concrete."
3. ACI 308, "Standard Practice for Curing Concrete."
4. ACI 318, "Building Code Requirements for Reinforced Concrete."
5. Concrete Reinforcing Steel Institute, "Manual of Standard Practice."

PART 2 - PRODUCTS

2.01 CONCRETE MATERIALS

- A. Cement: ASTM C150 - Type I - All cement shall be dry, free from lumps, and its color shall be a uniform bluish-gray.
- B. Ready-Mix Concrete: Type I General Purpose
- C. Fine Aggregates: ASTM C 33 - The fine aggregate shall be clean, siliceous sand, having not more than three (3) percent by weight of foreign matter such as loam, clay, dirt, or other impurities and shall be free from injurious amounts of organic impurities.

Fine aggregates shall be well graded from coarse to fine.
- D. Coarse Aggregates: ASTM C33 - Coarse aggregate, unless otherwise specified, shall be well graded.

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CAST-IN-PLACE CONCRETE**



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- E. Water: The water used in mixing concrete shall be clean and accurately measured for each batch. In general, all water for mixing and curing purposes shall be obtained locally. Water contaminated with sewage or oil, or water containing dirt, clay, filth or vegetable matter, or river or lake water, shall not be used.

2.02 CONCRETE MIX

- A. Concrete to be used in the work shall contain coarse aggregate with a maximum diameter of 3/4-inch, shall have 6 percent air-entraining, and shall have a minimum 4,000 psi compressive strength after 28 days (corresponding to 7-day strength of approximately 2,800 psi).
- B. Proportions: Concrete shall be composed of a thorough mixture of cement and fine and coarse aggregates with mixing water. Prior to the beginning of concrete Work, a statement of the proportions proposed for the concrete mixture shall be submitted to the ENGINEER in quadruplicate, for his information and appropriate action.
- C. Cement: Unless specifically permitted by the ENGINEER, the cement content of the concrete shall not be less than the following:

Class A - 6 bags per cubic yard

The weight of a bag of Portland cement will be taken as ninety-four (94) pounds.

- D. Aggregates: The relative volume of fine and coarse aggregates shall be subject to adjustments by the ENGINEER to obtain the concrete mix best suited to the use intended, but except as otherwise required, the fine aggregate shall constitute not less than thirty (30) percent nor more than fifty (50) percent of the total volume of aggregates.
- E. Water: The amount of water used in concrete, inclusive of free water contained in the aggregates but exclusive of water absorbed by the aggregates, shall not exceed five (5) gallons per bag of cement for Class A concrete. So long as the water-cement ratio is kept below these maxima, the water content may be varied by the ENGINEER to obtain desired consistencies measured by "slump," not to exceed 4 inches determined by the procedures of "Standard Test Method for Slump of Portland Cement Concrete," A.S.T.M. Designation: C 143-78.

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CAST-IN-PLACE CONCRETE**



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2.03 FORMWORK

- A. The forms for such exposed surfaces shall be of metal or plywood, adequately supported, or shall be lined with plywood, masonite board or similar lining, and/or with metal. The design of the forms shall be satisfactory to the ENGINEER, but need not be submitted for approval unless specifically requested.
- B. Twisted wire ties will not be permitted.

2.04 REINFORCING MATERIALS

- A. Steel Wire: ASTM A82, Cold-Drawn Steel Wire for Concrete Reinforcement.

2.05 ACCESSORIES

- A. Joint Filler: Ram-Nek Plastic Joint Sealer or approved equal, thickness indicated on Contract Drawings.
- B. Epoxy: Mastic Coating.
- C. Moisture Barrier: Provide 6 mil polyethylene moisture barrier over prepared sub-base material in the concrete slab area. Use only materials which are resistant to decay when tested in accordance with ASTM E154 as follows.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Design, erect, support, brace, and maintain formwork to support vertical and lateral loads that might be applied until such loads can be supported by the concrete structure. Construct formwork so concrete members and structures are of correct size, shape, alignment, elevation, and position.
- B. Design formwork to be readily removable without impact, shock, or damage to cast-in-place concrete surfaces and adjacent materials.

**03300-4
CAST-IN-PLACE CONCRETE**



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- C. Construct forms to sizes, shapes, lines, and dimensions required, and to obtain accurate alignment, location, grades, and level in finished structures. Provide for openings, offsets, keyways, anchorages, and inserts, and other features required in Work. Use selected materials to obtain required finishes. Solidly butt joints and provide back-up at joints to prevent leakage of cement paste.
- D. All forms shall be thoroughly cleaned and wetted just before placing the concrete, and if necessary to secure a smooth surface, they shall be coated with an approved nonstaining release agent. Suitable moldings or bevel strips shall be placed in the forms to prevent inside or outside sharp edges. No sharp edges will be permitted in the finished Work.
- E. Verify reinforcement, and other items to be cast into concrete are accurately placed, held securely, and will not cause hardship in placing concrete.
- F. Prepare previously placed concrete by cleaning with steel brush and applying bonding agent. Apply bonding agent in accordance with Manufacturer's instructions.

3.02 PLACING REINFORCEMENT

- A. Comply with Concrete Reinforcing Steel Institute's recommended practice for "Placing Reinforcing Bars," for details and methods of reinforcement placement and supports, and as herein specified.
- B. Clean reinforcement of loose rust and mill scale, earth, and other materials which reduce or destroy bond with concrete.
- C. Accurately position, support, and secure reinforcement against displacement by formwork, construction, or concrete placement operations. Locate and support reinforcing by metal chairs, runners, bolsters, spacers, and hangers, as required.

3.03 PLACING CONCRETE

- A. Notify ENGINEER a minimum of 24 hours prior to commencement of concreting operations. Comply with ACI 304, "Recommended Practice for Measuring, Mixing, Transporting, and Placing Concrete," and as herein specified.

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CAST-IN-PLACE CONCRETE**



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- B. Delivery: Weigh-tickets shall be prepared for each truck showing the normal batch size; the actual weights of cement, aggregate and water; and the time of loading at the plant.
 - 1. A blank shall also be provided on the weigh ticket for the time of arrival at the site, to be filled in and initialed by the CONTRACTOR's Superintendent or Foreman.
 - 2. A copy of the weigh-ticket shall be delivered to the ENGINEER for each batch of concrete delivered to the site.
- C. Rejection of Concrete: Ready-mixed concrete (central-mixed and transit-mixed) will be rejected if there is evidence of any of the following:
 - 1. Improper proportions of ingredients, inclusive of water;
 - 2. Initial set;
 - 3. More than sixty (60) minutes transpires after batching or mixing before concrete is placed;
 - 4. Mixers or trucks are overloaded; and/or
 - 5. Successive batches are not uniform.
- D. Except as provided herein, water shall not be added to the concrete mixtures at the site unless approved by the ENGINEER for each instance.
- E. Ensure reinforcement, inserts, embedded parts, and formed joints are not disturbed during concrete placement.
- F. In no case shall the concrete have a free fall sufficient to cause segregation of the aggregate. In general, the limit of free fall shall be six (6) feet.

3.04 BONDING AND JOINTS

- A. Joints, either vertical or horizontal, shall be made only where called for by the ENGINEER.

**03300-6
CAST-IN-PLACE CONCRETE**

GERAGHTY & MILLER, INC.

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3.05 FINISHING

- A. Forms shall not be struck or removed until permitted by the ENGINEER. In general, forms shall not be removed until the concrete has attained sufficient strength to assure structural stability under all dead and construction loads, and until removal can be accomplished without marring concrete surfaces.
- B. All form ties shall be carefully snapped back, to a depth of at least one and one-half (1-1/2) inches below the concrete surface.
- C. All horizontal surfaces shall receive the following initial floating operation:
 - 1. The concrete surface shall be accurately struck off and screened with a long straight edge to the required elevation; suitable guides shall be used, as necessary, to carry the proper grade, pitch or slope; and
 - 2. The surface shall be bull-floated to an even surface, with no unevenness exceeding 1/8-inch in 10 feet in any direction.
- D. Float Finish: After screening, consolidating, and leveling concrete slabs, do not work surface until ready for floating. Begin floating when surface water has disappeared or when concrete has stiffened sufficiently to permit operation of power-driven floats, or both. Consolidate surface with power driven floats, or by hand floating if area is small or inaccessible to power units. Check and level surface plane so that depressions between high spots do not exceed 5/16 inch under a 10-foot straightedge. Cut down high spots and fill low spots. Immediately after leveling, refloat surface to a uniform, smooth, granular texture.
- E. Unless otherwise directed, all edges and corners which will be exposed in the finished Work shall be beveled or rounded by the use of appropriate forms or form inserts, and care shall be taken to prevent chipping or cracking of finished edges.

3.06 FIELD QUALITY CONTROL

- A. Maintain records of placed concrete items. Record date, location of pour, quantity, air temperature, and test samples taken. A copy of these records will be submitted to the ENGINEER as soon as they are available.

**03300-7
CAST-IN-PLACE CONCRETE**

GERAGHTY & MILLER, INC.

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TUTU WELLS SITE, ST. THOMAS
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3.07 CONCRETE CURING AND PROTECTION

- A. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.
- B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.
- C. Concrete temperature shall be maintained above fifty (50) degrees Fahrenheit and in a continuously moist condition for a least the first seven (7) days after placement. Curing compounds shall not be used. Concrete curing shall be in accordance with ACI 308, "Standard Practice for Curing Concrete."

3.08 WEATHER CONDITIONS

- A. When concrete is mixed during extremely warm weather, the ENGINEER may require the CONTRACTOR to pre-cool aggregates with water sprays and to schedule the placing of successive layers of concrete so as to cause maximum release and dissipation of the heat of setting. All concrete placed during hot weather shall conform to ACI 305R.

DRAFT

END OF SECTION

PR0013.***WP-4/03300CAS.SPE

**03300-8
CAST-IN-PLACE CONCRETE**

GERAGHTY & MILLER, INC.

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**INSTALLATION OF PROPOSED MONITORING WELL MW-24
WESTERN AUTO UST AREA
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PART 1 - GENERAL

1.01 WORK INCLUDED

A. The CONTRACTOR is responsible for the supply and installation of all piping and accessories including, but not limited to, the following items:

1. Pipe (PVC), pipe fittings, and couplings.
2. Temporary Supports.

1.02 RELATED WORK

- A. Section 02222 - Excavation.
- B. Section 02223 - Backfilling.

1.03 REFERENCES

The following standards shall be adhered to as applicable:

- A. ASTM D1784 - Standard Specification for Ridged PVC and CPVC compounds.
- B. ASTM D1785 - PVC Plastic Pipe, Schedule 40 and 80.
- C. ASTM D2467 - Socket-Type PVC Plastic Pipe Fittings, Schedule 40 and 80.

1.04 TESTS

- A. Any damaged or defective materials or equipment, including, but not limited to pipe, and fittings that are discovered shall be repaired or replaced at no cost to the COMMITTEE or the OWNER.
- B. The ENGINEER shall inspect the piping installation for leaks prior to backfill. If the piping leaks, the piping shall be repaired or replaced at no additional cost to the OWNER or the COMMITTEE.

**15101-1
PIPING AND ACCESSORIES**



**INSTALLATION OF PROPOSED MONITORING WELL MW-24
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PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Materials and Equipment supplied for this Work shall conform to the requirements of these Specifications.

2.02 PVC PIPE, FITTINGS, AND COUPLINGS

- A. Pipe and fittings shall be manufactured from PVC which meets the Type 1, Grade 1, cell clarification conforming to ASTM D1784. Schedule 40 PVC pipe and Schedule 40 PVC fittings shall be used in all instances unless otherwise indicated in these Specifications.
- B. Fittings shall be socket type outline in ASTM D2467, and the socket diameters shall be such that they are compatible with the Schedule 40 PVC pipe.

Fittings shall have a minimum working pressure rating of 100 psi.

PART 3 - EXECUTION

3.01 INSPECTION

The CONTRACTOR shall:

- A. Visually verify that the fill to be used is clean and approved by the ENGINEER before placement.
- B. Visually verify that the excavation is free of miscellaneous debris and standing water.

3.02 BACKFILL PREPARATION

- A. The CONTRACTOR shall compact the excavation subgrade bottom surface prior to placing backfill material.

**15101-2
PIPING AND ACCESSORIES**



**INSTALLATION OF PROPOSED MONITORING WELL MW-24
WESTERN AUTO UST AREA
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DRAFT

3.03 EXCAVATION

- A. Excavate the soil trench sufficiently wide to allow installation and inspection of the pipe.

3.04 PIPE PREPARATION

The CONTRACTOR shall:

- A. Inspect for defective or damaged spool pieces prior to assembly.
- B. Remove scale and dirt, inside and outside, prior to assembly.

3.05 PIPE INSTALLATION

- A. All PVC pipe shall have solvent-welded joints and fittings unless otherwise specified in these Specifications. Follow manufacturers recommendations for preparation and joining.
- D. The CONTRACTOR shall:
 - 1. Route piping in an orderly manner and maintain gradient.
 - 2. Cut pipe to exact measurement and install without forcing or springing.
 - 3. Install piping to conserve building space and not interfere with use of space.

3.06 SCHEDULE OF OPERATIONS

The CONTRACTOR shall:

- A. Support the pipe to prevent movement during placement and compaction of the backfill.
- B. Backfill systematically and promptly to allow maximum time for natural settlement. Do not backfill on top of porous, wet, or spongy subgrade surfaces. Compact soil in 6-inch lifts to minimum of 95 percent of the maximum dry density as determined by a Standard Proctor Test (ASTM D698).

**15101-3
PIPING AND ACCESSORIES**

**INSTALLATION OF PROPOSED MONITORING WELL MW-24
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- C. Employ a placement method that shall not disturb nor damage existing building foundations in close proximity.
- D. Maintain optimum moisture content of the backfill materials to attain the required compaction density. The ENGINEER may require the CONTRACTOR to verify the compacted density by field testing at locations specified by the ENGINEER.
- E. Remove from the site any excess fill materials.

END OF SECTION

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PR0013.***WP-4/15101Pip.Spec

**15101-4
PIPING AND ACCESSORIES**



**INSTALLATION OF PROPOSED MONITORING WELL MW-24
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PR0013.028**

PART 1 - GENERAL

DRAFT

1.01 WORK INCLUDED

The CONTRACTOR shall:

Install 24-inch nominal diameter PVC (ASTM DF679) permanent casing.

1.02 RELATED WORK

- A. Section 02222 - Excavation
- B. Section 02223 - Backfilling

1.03 REFERENCES

The following standards shall be adhered to as applicable:

ASTM DF679 PVC Gravity sewer pipe sizes 18"-24"

PART 2 - PRODUCTS

2.01 MATERIALS

- A. The CONTRACTOR shall use 24-inch nominal diameter (ASTM DF 679) PVC or approved equal for the permanent casing.

PART 3 - EXECUTION

3.01 INSPECTION

- A. The CONTRACTOR shall inspect the excavation and verify the integrity.

**16100-1
WELL CASING INSTALLATION**

GERAGHTY & MILLER, INC.

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**INSTALLATION OF PROPOSED MONITORING WELL MW-24
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3.02 REMOVAL OF EXISTING PAVEMENT

The CONTRACTOR shall:

- A. Saw-cut the existing pavement and remove, with pneumatic chisels, backhoe or other suitable methods, all material for prompt disposal off-site.

3.03 WELL CASING INSTALLATION PROCEDURE

- 1. The permanent casing shall be placed in a vertical orientation and perpendicular to the excavated bottom. The top of the casing shall be 1'-0" above the top of finished slab and capped.
- 3. The permanent casing shall be braced to avoid movement during backfilling.
- 4. The CONTRACTOR shall backfill around casing as specified.
- 7. The CONTRACTOR shall install concrete slab sub-grade and concrete slab as specified.

3.04 FIELD QUALITY CONTROL

- A. The ENGINEER shall perform a field inspection for conformance with these specifications.

END OF SECTION

PR0013.***WP-4/16100CAS.SPE

**16100-2
WELL CASING INSTALLATION**

GERAGHTY & MILLER, INC.

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