Grove Way/Bush Street Realignment and CDA Site Improvements

Supplemental Specifications and Additional Information

September 8, 2016

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SECTION 26 6010
ELECTRICAL GENERAL REQUIREMENTS

1.0 - GENERAL

1.01 SCOPE OF WORK

A. Contractor shall install all electrical work covered by the below specifications and approved drawings. Provide all material, labor transportation, tools, supervision, etc., necessary to complete the total electrical job. All items not specifically mentioned herein which are obviously necessary to make a complete working installation shall be provided by the contractor, including any necessary field engineering and/or detail drawings required. Drawings shall be submitted for approval as provided for in 26 6010-1.04 Shop Drawings.

B. The work shall consist of, but shall not be limited to, the installation of the following systems:

1. Exterior and interior electrical systems for parking lot lighting, site power and modifications to the existing electrical power distribution system as indicated on the Drawings.

2. Temporary Power as required for the project.

3. Lowering of the existing Georgia Power Co. pad mounted service transformer and revisions to the service conductors/conduits and coordination with GPCo for new HV service conductors as required.

1.02 CODES AND FEES:

A. All work shall be done in accordance with the requirements of the National Electrical Code, NFPA #70, 2014 Edition, all local and state codes and the requirements of the local utility company providing service.

B. The contractor shall obtain and pay for all permits and inspections required by the building and safety codes and ordinances and the rules and regulations of any legal body having jurisdiction.

C. All electrical items covered by this specification shall be U.L. labeled and listed for the purpose.

1.03 DRAWINGS:

A. The drawings indicate the general arrangement of electrical equipment.

B. Do not scale drawings. Dimensions for layout of equipment shall be obtained from the electrical drawings.

C. Discrepancies shown on different drawings, between Drawings and Specifications or between documents and field conditions shall be promptly brought to the attention of the Engineer.

1.04 SHOP DRAWINGS:

A. The contractor shall submit for review by the Architect/Engineer, eight sets of complete schedules and data of materials and equipment to be incorporated in the work. Submittals shall be supported by descriptive materials, such as catalog sheets, product data sheets, diagrams, performance curves, and charts published by the manufacturer, to show conformance to specification and drawing requirements, model numbers alone will not be acceptable. Data submitted for review shall contain all information required to indicate compliance with equipment specified. Complete electrical characteristics shall be provided for all equipment. Submittals for lighting fixtures shall include photometric data. The Architect/Engineer reserves the right to require sample of any equipment to be submitted for approval.

B. Each individual submittal item for materials and equipment shall be marked to show specification section and paragraph number which pertains to the item.

C. Prior to submitting shop drawings, the contractor shall review the submittal for compliance with the contract documents and place a stamp or other confirmation thereon which states that the submittal complies with contract requirements. Submittals without such verification will be returned without review.

D. Eight complete sets of Submittals shall be made for each of the following items:

Inground Junction Boxes	Light Fixtures and Poles
Lighting Control Components	Wiring Devices
Panelboards / Circuit Breakers	Disconnect Switches/Fuses
Dry Type Transformers	EV Charging Stations
Compatible Circuit Breakers	

1.05 RECORD DRAWINGS:

A. At the time of final inspection, provide three (3) sets of complete data on electrical equipment used in the project and Reproducible As-Built drawings reflecting all field changes. This data shall be in bound form and shall include the following items:

1. Copies of the final panelboard circuit directories reflecting all field changes.
2. Data sheets indicating electrical characteristics of all devices and equipment.
3. All conduits that are buried less than 36” below grade shall be identified on the As-Built Drawings. Indicate the entire length of the conduit run that is less than 36” below grade on the “As-Built Drawings”.
4. All "As-Built" Drawings shall have the Contractor's name, address, telephone number, date and indication that the drawings are "As-Built".

1.06 UTILITY SERVICES:

A. Electrical power service shall be as indicated on the drawings. The contractor shall be responsible for coordination with the Local Utility Company for the lowering of the existing pad mounted transformer and the date the electrical service is required.

1.07 SITE INVESTIGATION:

A. Prior to submitting bids of the project, the contractor shall visit the site of the work to become aware of **ALL EXISTING** conditions which may affect the cost of the project.

1.08 EQUIPMENT CONNECTIONS:

A. All equipment requiring electrical connections shall be connected under this section of these specifications. Where electrical connections to equipment require specific locations, such location shall be obtained from shop drawings. Do not scale drawings for location of conduit stub-ups or boxes mounted in wall or floor to serve specific equipment, unless dimensioned on the electrical drawings.

1.09 COOPERATION:

A. The contractor shall coordinate his electrical activities with other trades so as to avoid delays, interference's, and any unnecessary work.

1.10 GUARANTEE:

A. For guarantee of work under Division 26, refer to the general and special conditions.

2.0 - PRODUCTS

2.01 MATERIALS:

A. Materials or equipment specified by manufacturer's name shall be used.

B. All material shall be new and shall conform to the applicable standard or standards where such have been established for the particular material in question. Publications and standards of the organization listed below are applicable to materials specified herein.
   1. American Society for Testing and Materials (ASTM).
   2. Underwriters' Lab (UL).
   3. National Electrical Manufacturer Association (NEMA).
   4. Insulated Cable Engineers Association (ICEA).
   5. Institute of Electrical and Electronic Engineers (IEEE).
   6. Edison Electric Institute (EEI).
   7. National Fire Protection Association (NFPA).
   8. American Wood Preservers Association (AWPA).

9. American National Standards Institute (ANSI).

C. Material of the same type shall be the product of a single manufacturer.

D. All cost incurred by the acceptance of substitutions shall be borne by the contractor. Proof for all substitution shall be by the contractor.

E. Perform the following test after the installation but prior to energizing equipment:

3.0 - EXECUTION

3.01 WORKMANSHIP:

A. All work shall be neatly, orderly, and securely installed with conduits, panels, boxes, switches, etc., perpendicular and/or parallel with the principle structural members. Exposed raceways shall be offset where they enter surface mounted equipment. Wiring installed in panels and other enclosures shall be looped and laced and not wadded or bundled.

3.02 TESTS:

A. At final inspection, a test will be made and the entire system shall be shown to be in proper working order as per these specifications and the approved drawings.

B. Contractor shall provide all instruments, labor and materials for any essential intermediate and final testing.

C. Equipment covers (i.e., panelboard trims, motor controls, device plates, and junction box covers) shall be removed, as directed, for inspection of internal wiring. All circuits throughout project shall be energized and shall be tested for operation and equipment connections in compliance with contract requirements.

D. Perform the following test after the installation but prior to energizing equipment:

1. Megger test all feeders and branch circuits 50 Amps or greater and all high voltage circuits. Allowances for leakages shall be within the manufacturers recommend tolerances. Testing methods shall be per the cable manufacturer’s recommendations. Certified test results and the manufacturers data/recommendations shall be provided to the Architect/Engineer at the Record Drawings Submittal Phase of the project.

2. The Contractor shall perform any other test which may be required by any legal authority having jurisdiction to verify this installation meets that requirement or requirements.

3.03 IDENTIFICATION:

A. Contractor shall identify each device such as circuit breakers, panelboards, contactor, timeclock, controllers, etc. with Black on White Phenolic Tags using machine cut letters, 1/4" minimum height, unless otherwise noted. Permanently attach to each device as required. For all panelboards, switchboards, transformers, fusible disconnecting motor starters, fusible disconnect switches and remote ballast enclosures include name, voltage, phase, number of wires, ampacity rating, short circuit rating and name/location of feed to the device.

3.04 CLEANING AND PAINTING:

A. Oil, dirt, grease, and other foreign materials shall be removed from all raceways, fittings, boxes, panelboard trims, and cabinets to provide a clean surface for painting. Scratched or marred surfaces of lighting fixtures, panelboard and cabinet trims, switchboard, or other equipment enclosures shall be touched up with paint furnished by the equipment manufacturers specifically for that purpose. Painting in general is specified under other sections of the specifications.

B. Trim covers for flush-mounted panelboards, telephone cabinets, pull boxes, junction boxes and control cabinets shall not be painted unless specifically required by the architect. Where such painting is required, trim covers shall be removed for painting. Under no conditions shall locks, latches or exposed trim clamps be painted.

3.05 EXCAVATION, TRENCHING AND BACKFILLING:

A. All conduits shall be buried a minimum of 36” below finished grade. Provide and install magnetic warning tape 12” below finished grade over the entire length of all buried conduits.

B. The contractor shall perform all excavation to install the electrical work herein specified. During excavation, material for backfilling shall be piled back from the banks of the trench to avoid overloading and to prevent slides and cave-ins. All excavated materials not to be used for backfill shall be removed and disposed of by the contractor. Grading shall be done to prevent surface water from flowing into trenches and other excavation and any water accumulating therein shall be removed by pumping. All excavation shall be made by open cut. No tunneling shall be done. Any area disturbed during excavation shall be repaired back to its original condition, i.e.: paving, concrete, grassing, sod, gravel, sidewalks, etc.

C. The bottom of the trenches shall be graded to provide uniform bearing and support for conduits, cables, or duct bank on undisturbed soil at every point along its entire length. Overdepths shall be backfilled with loose, granular, moist earth, tamped. Remove unstable soil that is not capable of supporting equipment or installation and replace with specified material for a minimum of 12" below invert of equipment or installation.

D. The trenches shall be backfilled with the excavated materials approved for backfilling, consisting of earth, loam, sandy clay, sand and gravel or soft shale, free from large clods of earth and stones, deposited in 6" layers and rammed until the installation has a cover of not less than the adjacent ground but not greater than 2" above existing ground. The backfilling shall be carried on simultaneously on both sides of the trench so that injurious pressures do not occur. The compaction of the filled trench shall be at least equal to 95% of the maximum density as determined by the Standard Proctor Test. Settling the backfill with water will not be permitted. Reopen any trenches not meeting compaction requirements or where settlement occurs, refill, compact, and restore the surface to the grade and compaction indicated, mounded over and smoothed off.

E. Contractor shall repair all surfaces disturbed by the installation of all underground conduit systems back to their original condition with the same type of material and construction and/or up-grade as approved by the Owners Representative and Engineer. Any paved area or hard surface disturbed (asphalt or concrete paving) shall be saw cut to have clean and straight edges for the required trenching and repaired back to its original condition as indicated above.

F. The Contractor shall provide **ALL REQUIRED** erosion control for this project as required by the County / City / State Officials.

3.06 DIRECT BORING:

A. The contractor shall direct bore conduit runs in this project where indicated on the Drawings or as an alternate to trenching, at the Contractor's option. Minimum depth of all conduits shall be 36" below finished grade. All excavated materials shall be removed and disposed of by the contractor. Any area disturbed during boring shall be repaired back to its original condition, i.e.: paving, grassing, sod, gravel, etc.

B. Contractor shall repair all surfaces disturbed by the installation of all underground conduit systems back to their original condition with the same type of material and construction and/or up-grade as approved by the Architect and Owner. No holes or trenches shall be left open after the end of each work day. See Paragraph 3.5 - F above for instructions and procedures.

C. All direct bore conduits shall be accurately located on the Contractor's "As-Built" Documents that are to be provided to the Owner at the completion of the project.

D. The Contractor shall provide **ALL REQUIRED** erosion control for this project as required by the County / City / State Officials.

End of Section 26 6010

SECTION 26 6100
BASIC MATERIALS AND METHODS

1.0 - GENERAL

1.01 GENERAL:

A. Provide complete conduit system including boxes, fittings and supports. All empty conduits shall be left with fiber polyline pull cord

1.02 RACEWAYS:

A. Contractor shall install all conduits as per the below requirements.
   1. Intermediate Metal Conduit (IMC) shall be ferrous galvanized conduit and shall comply with Article 342 of the National Electrical Code.
   2. Rigid steel conduit shall be ferrous galvanized conduit and shall comply with Article 344 of the National Electrical Code.
   3. Rigid nonmetallic conduit shall be polyvinyl chloride Schedule 40 (PVC) and comply with Article 352 of the National Electrical Code. No exposed PVC Conduit will be accepted, transition from PVC to metal at the last 90 degree bend prior to the conduit exiting from below grade.
   4. Electrical Metallic Tubing (EMT) shall be ferrous galvanized conduit and shall comply with Article 358 of the National Electrical Code. EMT conduit shall be used only in areas with concealed conduits. No exposed EMT will be allowed.
   5. Liquid tight flexible metal conduit shall comply with Article 350 of the National Electrical Code.
   6. Flexible metal conduit shall comply with Article 348 of the National Electrical Code.

B. Coordinate all raceways with the mechanical ductwork and plumbing work installed in the job.

C. Seal all penetrations through any rated floor, wall or ceiling back to its original condition after the installation of the conduit(s).

2.0 - PRODUCTS

2.01 CONDUCTORS:

A. All conductors shall be copper and have 600 volt type THHN/THWN insulation except where noted on drawings. Conductors installed where fixtures are used as raceway shall be 90^{o}C Type THHN or XHHN.

B. All branch circuits shall be a minimum of #12 AWG solid or stranded copper except for motor leads, which shall be a minimum #12 AWG, stranded copper, unless otherwise noted on drawings.

C. All branch circuit and feeder conductors, No. 6 AWG and smaller shall be color coded as follows: 208/120 volt, three phase system, Phase A--Black, Phase B--Red, Phase C--Blue, Neutral--White, Ground--Green. 120/240 volt, single phase system, Phase A--Black, Phase B--Red, Neutral--White, Ground--Green. 480Y/277 volt, three phase system, Phase A--Brown, Phase B--Orange, Phase C--Yellow, Neutral--Gray, Ground--Green with stripe.

2.02 PULLBOXES:

A. All pull boxes shall be constructed of code gauge galvanized sheet steel and comply with Article 314 of the National Electrical Code, for the number, size and position of conduits entering the box, size of box and maximum number of conductors in a box.

2.03 OUTLET BOXES:

A. All exposed outlet boxes shall be in cast Type FD boxes with covers as required below.

2.04 RECEPTACLES:

A. Receptacles shall be of the type and size indicated on the drawings. Equal quality devices manufactured by Bryant, Hubbell or P & S may be used.

1. GFCI duplex outlets shall be 20 amp 125 volt A.C. 3 wire Specification grade straight blade with gray face.

B. All devices installed in areas exposed to the weather and where specifically indicated shall be provided with a metal weatherproof extra duty in-use device plate.

3.0 - EXECUTION

3.01 RACEWAYS:

A. Exposed conduits shall be installed parallel or at right angles to existing walls, ceilings, and structural members. Support exposed conduits at not more than ten foot intervals and within three feet of outlets, junction boxes, cabinets and fittings. Individual runs of conduits shall be supported by one hole conduit straps; groups of conduits shall be supported on 1 1/2" X 1 1/2" fourteen gauge channel; Kindorf, Unistrut, Powers or approved equivalent, suspended from structure with 3/8" threaded steel rods with spring steel conduit supporters. Attach rods to structure with swivel type clamps. Individual runs of exposed conduits attached to structural steel shall be supported by beam clamps. Where conduits must pass through structural members obtain approval of architect with respect to location and size of hole prior to drilling.

B. Concealed branch circuit conduits shall be supported at intervals not exceeding ten feet and within three feet of each outlet, junction box, cabinet or fitting. Individual branch circuit conduits shall be attached to structural steel members with spring steel type conduit clips and to non-metallic structural members with one hole conduit straps. Where branch circuit conduits must be suspended below structure,

conduits shall be supported by trapeze type support, typical to the type for exposed conduits indicated above. Conduits shall not be attached to channels of ceiling suspension system or suspension wires. Concealed feeder conduits larger than one inch trade diameter, above ceiling, shall be attached to structure on intervals not exceeding twelve feet with conduit beam clamps, one hole conduit straps or trapeze type support in accordance with conditions encountered.

C. Conduit support device shall be attached to structure with wood screws on wood, toggle bolts on hollow masonry, lead shield on solid masonry and machine bolts, clamps or spring steel clips on steel. Nails are not acceptable.

D. Rigid conduit shall be attached to sheet metal enclosures with two bonding type lock nuts and insulated bushing. EMT connectors and couplings shall be watertight compression type and manufactured by Thomas and Betts, Appleton or approved equivalent. All connectors shall be of the insulated throat type. Rigid conduit stub ups not attached to enclosure shall be terminated with steel insulated throat, grounding type bushing. All connectors and couplings shall be approved for the purpose.

E. Expansion fittings shall be provided in all feeder conduits where conduits pass through building expansion joints. All conduits penetrating rated fire walls or rated fire floors shall be installed with devices to maintain the fire rating of the wall or floor penetrated. Use O.Z. Gedney "Fire-Seal" or approved equivalent. Contractor shall caulk holes on both sides of smoke walls where conduits penetrate.

F. Protect conduits against dirt, plaster, and foreign debris with conduit plugs. Plugs shall remain in place until all masonry work is complete.

G. All conduits entering buildings from below grade shall be sealed with fiber and insulating electrical putty to prevent entrance of moisture.

3.02 PULL OR JUNCTION BOXES:

A. Inground junction boxes shall be provided where specifically indicated on the Documents.

B. Splices shall not be permitted in pull boxes except when specifically approved in writing by the Engineer or where specifically shown on the drawings.

C. Surface mounted boxes shall be Type "FD" with coverplates as specified.

3.03 CONDUCTORS:

A. All feeder and branch circuit conductors No. 4 AWG and larger shall be phase identified in each accessible enclosure by 1" wide plastic tape attached to conductors in a readily visible location. Tape colors shall match color requirements specified herein.

B. All branch circuit conductors shall be connected as indicated on the drawings. Common neutrals and ground wires may be pulled in conduits where only opposite phase conductors are run. All conduits shall have a ground wire pulled and shall

comply with Article 250 of the National Electrical Code.

C. Conductors within enclosures, i.e., panels, terminal cabinets, control cabinets shall be grouped and laced with nylon tie straps. Conductors within pull boxes shall be grouped and identified with nylon tie straps with circuit identification tag.

D. Splices in conductors shall be made only within junction boxes, wiring troughs and other enclosures as permitted by the National Electrical Code, 2014 Edition. Do not splice conductors in panelboards, safety switches, or motor control enclosures. Splices in conductors No. 10 AWG or smaller shall be made with Skotchlok insulated spring connectors, Ideal wing nuts, Ideal steel crimp connectors with wrap-cap insulating caps or approved equivalent. Splices in conductors No. 8 AWG and larger shall be made with split bolt connectors taped with No. 88 plastic electrical tape or Ideal Type GP or GT tap connectors and insulating cover or approved equivalent unless splices are specifically indicated to be made with crimping sleeve applied to conductors with hydraulic operated crimping tool. All splices and terminations that are made in underground junction boxes shall be made with watertight connectors.

E. Conductors used only for 120 volt control wiring systems shall be minimum No. 14 AWG stranded type MTW 600 volt insulation. Control conductors to be J.I.C. color coded. Where control conductors terminate on terminal strip, make termination with lug applied to conductor with crimping tool.

F. Phase rotation established at service equipment shall be maintained throughout entire project.

G. Pull wires shall be 500# minimum test continuous fiber polyline.

3.04 OUTLET BOXES:

A. Outlet boxes shall be sized as per the NEC and as required for the installation and installed where required for the installation and as per the NEC.

End of Section 26 6100

SECTION 26 6400
SERVICE / DISTRIBUTION EQUIPMENT

1.0 - GENERAL

1.01 GENERAL:

A. Provide and install all electrical distribution equipment as specified, scheduled or indicated on the approved drawing and these specifications.

2.0 - PRODUCTS

2.01 PANELBOARDS:

A. Shall be bolt-in circuit breaker type with a rated main breaker or rated main lugs only as noted on drawings. All shall have UL approved interrupting capacity of equal to or greater than the Fault Currents indicated on the Power Riser Diagram. All multiple breakers shall be common trip type only. GFCI (Ground Fault Circuit Interrupter) breakers shall be provided where specifically indicated. All panels shall be fully rated, no series ratings are acceptable. All circuit breakers shall have 75 degree C rated lugs.

B. End and side gutter shall have minimum clearance as required by the NEC. Depth shall be 5 3/4" minimum.

C. Approved manufacturers are: General Electric, Square D, Eaton, Siemens or approved equal.

D. Circuit breakers shall be numbered and connected to panel bus in the following sequence: Circuit 1, Phase A; Circuit 3, Phase B and Circuit 5, Phase C for three phase panelboards. Where bus diagrams are indicated on the drawings, breakers shall be positioned in panel to conform to diagrams; otherwise, single pole breakers shall occupy top positions in panel with blank spaces in lower positions and two pole breakers in between.

E. Main lugs of panels or main circuit breaker shall be UL listed for copper or aluminum conductors. Lugs shall be of the proper range for feeder conductors indicated on the drawings. Each circuit protective device shall be identified with numeral designation, cross referenced with typewritten circuit directory on interior of panel door. A copy of each panel directory, reflecting all field changes shall be included in the bound data to be provided by the contractor at the time of final inspection.

F. Conductors within panels shall be grouped and laced with nylon tie straps. Splicing of conductors within panels is not acceptable. Only one conductor shall be installed under terminal of individual circuit breaker.

G. All panels throughout project shall be keyed alike. All panels shall be identified in accordance with the Paragraph 26 6010 - 3.03 Identification of these specifications.

H. Circuit breakers shall be provided with trip rating class and poles as indicated on the drawings. Class indicated is designation according to Federal Specification W-C-375C/GEN-2000 and indicates the frame size and interrupting rating required. Operation of multiple breakers shall be by single handle; tie handles are not acceptable, except for single pole circuit breakers that have a common neutral as per the NEC.

I. Circuit breakers used for the control of discharge lighting and fluorescent lighting shall be designated for the purpose and bear the marking “HID” or "SWD" as required.

J. All panels and switchboards shall be marked with Arc Flash Warning Labels as required by Article 110.16 of the NEC.

2.02 DISCONNECT SWITCHES:

A. Fusible or Non-Fusible disconnect switches shall be Heavy Duty type and be provided for all motors located out of sight of motor controller and where specifically indicated on the drawings. Disconnect switches shall disconnect all underground conductors. When exposed to weather, enclosure shall be NEMA 3R (Raintight); otherwise, enclosure shall be NEMA-1. Switches shall be installed to be fully accessible in accordance with Article 110.26 of the National Electrical Code.

B. Disconnect switches for single phase motors shall be horsepower rated, motor switches without overload protection, voltage rating as per motor nameplate voltage or greater.

C. Fusible disconnect switch shall disconnect all ungrounded conductors and shall be supplied with the proper sized fuse clips and fuses. Fuse size over frame size will be noted on drawings. Fuses shall be current limiting, time delay, dual element Type RK-5 fuses.

D. Disconnect switches shall be Square D, General Electric, Siemens or Eaton. All disconnect switches shall be identified in accordance with the Paragraph 26 6010 - 3.3 Identification of these specifications and Article 110.22 of the National Electrical Code.

E. All disconnect switches shall be marked with Arc Flash Warning Labels as required by Article 110.16 of the NEC.

2.03 BACKBOARDS:

A. Provide and install backboards at all panels and power distribution equipment and as required by the local authorities. Backboards shall be 3/4" Fire rated (FRP) grade plywood.

2.04 DRY TYPE TRANSFORMERS:

A. Dry type transformers shall be provided where shown to provide service to Specific panelboards as indicated on the drawings. Primary and secondary ratings are as indicated on the drawings. KVA ratings shall be as shown on the drawings. Transformers shall be constructed in accordance with NEMA Standard STI-20 and ANSI Standard C89.2 and DOE Federal Registry Final Rule 10 CFR Parts 429 and 431.

B. Transformers shall be provided with six 2 1/2% full capacity taps, two above and four below normal voltage unless only four 2 1/2% taps, two above and two below are standard NEMA taps for the specific KVA rating. Vibration dampers shall be provided as a standard feature of all transformers.

C. Transformers shall be provided with Class H insulation rated for temperature rise of 150 degrees C. over 40 degrees C. ambient. Temperature rating shall be a rated KVA. Maximum hot spot temperature shall be 220 degrees C.

D. Shop drawings for dry type transformers shall indicate sound and temperature rating, BIL, overload capacity and efficiency at 25%, 50% and 100% load, physical dimensions and net weight. Shop drawings shall also contain certification that transformers are constructed and tested in accordance with standards specified herein.

E. Primary and secondary connections to dry type transformers shall be made with liquidtight flexible metal conduit. Transformers shall be the product of Square D or prior approved equal.

F. Provide approved wall bracket where indicated or as required by space limitations. Provide vibration isolators under all transformers. All transformers shall be either wall mounted or mounted on the top of the interior room where the transformer/panels are mounted.

G. All transformers shall be marked with Arc Flash Warning Labels as required by Article 110.16 of the NEC.

2.05 COMPATIBLE CIRCUIT BREAKERS:

A. Shall be compatible with existing panelboard. All shall have UL approved interrupting capacity of equal to or greater than the AIC rating of the existing panelboard. All multiple breakers shall be common trip type only. GFCI (Ground Fault Circuit Interrupter) breakers shall be provided where specifically indicated.

B. Circuit breakers shall be provided with trip rating class and poles as indicated on the drawings. Class indicated is designation according to Federal Specification W-C-375C/GEN 2000 and indicates the frame size and interrupting rating required. Operation of multiple breakers shall be by single handle; tie handles are not acceptable.

3.0 - EXECUTION

3.01 MANUFACTURERS' RECOMMENDATIONS:

A. The contractor shall install all electrical distribution equipment in accordance with the manufacturer's recommendations and these specifications.

End of Section 26 6400

SECTION 26 6450
GROUNDING

1.0 - GENERAL

1.01 GROUNDING:

A. Shall comply with Article 250 of the National Electrical Code and all state and local codes and the requirements of the utility company serving the site.

B. Grounding shall be provided as per these specifications and the approved drawings.

C. The electrical system shall be a grounded wye supplemented with equipment grounding systems. All non-current carrying parts of the electrical system i.e., raceways, equipment enclosures and frames, junction and outlet boxes, machine frames and other conductive items in close proximity with electrical circuits, shall be grounded to provide a low impedance path for potential ground faults.

D. The neutral conductor of the 480Y/277 Volt, Three Phase, 4 Wire System or the 208Y/120 Volt, Three Phase, 4 Wire system shall be grounded to the ground system as indicated on the drawings. Grounding conductor shall be copper sized in accordance with Table 250.66 of the National Electrical Code and as indicated on the drawings. Conductor shall be installed in PVC Conduit to the ground point connection.

2.0 - PRODUCTS

2.01 PRODUCTS:

A. Ground rods shall be 3/4" copperweld sectional rods 10'-0" in length. Top of the ground rod shall be twelve (12) inches below finished grade. Connection to the ground rod shall be made by chemical weld process. Resistance to ground shall not exceed twenty-five (25) ohms.

3.0 - EXECUTION

3.01 GROUNDING:

A. Each panelboard shall be provided with a copper or aluminum equipment grounding bar brazed or riveted to the associated enclosures or cabinet and an insulated neutral bar. The related feeder and branch circuit grounding conductors shall be brazed to the grounding bar or connected with pressure connector.

B. A grounding conductor shall be installed in all power and lighting conduit installations. All circuit grounding conductors shall be sized as per Table 250.122 of the National Electrical Code.

End of Section 26 6450

SECTION 26 6500
LIGHTING FIXTURES

1.0 - GENERAL

1.01 GENERAL:

A. Lighting fixtures shall be selected from those fixtures included in the Lighting Fixture Schedule.

B. Fixtures shall be selected from the Lighting Fixture Schedule not only by catalog number, but with consideration to mounting, number and types of lamps, and reference notes all as contained in the Fixture Schedule and/or Drawings.

C. Lamps shall be provided for all fixtures in accordance with Lighting Fixture Schedule and/or manufacturer's recommendations.

D. Verify fixture numbers, before placing order, to assure that fixtures will be furnished with proper frames, fitting and devices for installation in the ceiling system into which it is to be installed.

E. Request for fixture substitution must be accompanied by construction specifications, photometric test data including foot lambert reading, and complete dimensions. Data for exterior lighting luminaries must also contain isocandle curves and average lumen distribution data.

2.0 - PRODUCTS

2.01 LAMPS:

A. All lamps shall be furnished and installed by the Contractor as per the Lighting Fixture Schedule

3.0 - EXECUTION

3.01 MANUFACTURER'S RECOMMENDATIONS:

A. Install all lighting fixtures in accordance with the manufacturer's recommendations, as herein specified, or as indicted on the drawings.

End of Section 26 6500

Section 32 14 13.19

PERMEABLE INTERLOCKING PRECAST CONCRETE UNIT PAVING

PART 1 – GENERAL SPECIFICATIONS

1.01 Section Includes

A. Work consists of furnishing and construction of a Permeable Interlocking Concrete Pavement System in accordance with these specifications and in close conformity with the lines, grades, design, and dimensions shown on the plans.
B. Installation work includes:
   1. Verifying Subgrade is to the lines, grades, infiltration rate, and density shown on the construction drawings;
   2. Furnishing and installing Geotextile and/or Membrane Liner (where required), Horizontal Drainage Piping (where required), Sub-base Course, Base Course, Bedding Course, Edge Restraint, Concrete Pavers and Permeable Joint Material to the lines and grades shown on the construction drawings.

1.03 References

A. American Association of State Highway and Transportation Officials (AASHTO)
   1. GDPS-4-M Guide for Design of Pavement Structures

B. American Society of Civil Engineers (ASCE)
   1. ASCE 58-10 Structural Design of Interlocking Concrete Pavement for Municipal Streets and Roadways

C. American Society for Testing and Materials (ASTM)
   1. ASTM C-29 Bulk Density (“Unit Weight”) and Voids in Aggregate
   2. ASTM C-94 Standard Specification for Ready Mixed Concrete
   3. ASTM C-131 Resistance to Degradation of Small-Sized Course Aggregate by Abrasion and Impact in the Los Angeles Machine
   4. ASTM C-136 Sieve Analysis of Fine and Course Grained Aggregates
   5. ASTM C-140 Sampling and Testing Concrete Masonry Units and Related Units
   6. ASTM C-936 Solid Concrete Interlocking Paving Units
   7. ASTM C-979 Pigments for Integrally Colored Concrete
   8. ASTM C-1645 Freeze-thaw and De-icing Salt Durability of Solid Interlocking Paving Units
   9. ASTM D-448 Standard Classification for Sizes of Aggregates for Road and Bridge Construction
   10. ASTM D-698 Laboratory Compaction Characteristics of Soil Using Standard Effort
   11. ASTM D-1557 Laboratory Compaction Characteristics of Soil Using Modified Effort
   12. ASTM D-1883 CBR (California Bearing Ratio) of Laboratory Compacted Soils

13. ASTM D-2488 Description and Identification of Soils (Visual-Manual Procedure)
14. ASTM D-3034 Type PSM Poly Vinyl Chloride (PVC) Sewer Pipe and Fittings
15. ASTM D-3350 Polyethylene Plastic Pipe and Fittings Materials
16. ASTM D-4873 Identification, Storage and Handling of Geosynthetic Rolls and Samples
17. ASTM D-6928 Resistance of Course Aggregates to Degradation by Abrasion in the Micro-Deval Apparatus

D. Interlocking Concrete Pavement Institute (ICPI)
1. Permeable Interlocking Concrete Pavement manual (latest edition)
2. Permeable Design Pro software for hydrologic and structural design
3. Tech Spec Technical Bulletins.

1.04 Submittals

A. Contractor shall submit to the owner for approval, and retain for the balance of the project, a minimum of four full size samples of each Concrete Paver type/size/thickness/color/finish specified; the samples shall represent the range of shape, texture and color permitted for the respective type. Color(s) will be selected by Engineer/Owner from Manufacturer's standard colors.

B. Prior to delivery of the associated material to the site, the Contractor shall submit the following product specific documentation for approval:
1. Aggregates
    1.) Sieve analysis per ASTM C-136
    2.) Durability of aggregates using Micro Deval Degradation using ASTM D-6928.
    3.) Percentage of angular and sub-angular particles per ASTM D-2488.
    4.) Source test results for void ratio and bulk density of the Base and Sub-base aggregates per ASTM C-29.
2. Concrete Pavers:
    1.) Test results from an independent testing laboratory for compliance to ASTM C-936 or other applicable requirements.
    2.) Warranty documentation
    3.) Close out Operations and Maintenance program
    4.) Material Safety Data Sheets
3. Geosynthetics
    1.) Material Safety Data Sheets
4. Written Method Statement and Quality Control Plan that describes material staging and flow, paving direction and installation procedures, including representative reporting forms that ensure conformance to the project specifications.

1.05 Quality Assurance

A. At a minimum, the Paver Contractor's Site Foreman shall hold PICP Technician Certificate from the Interlocking Concrete Pavement Institute (ICPI) contractor certification program. The Site Foreman is expected to be onsite for the entire installation.

B. Contractor shall conform to all local, state/provincial licensing and bonding requirements.
C. Contractor will hold a mandatory pre-construction meeting with Design Engineer, Owner, and affected sub-trades accessing PICP work area to review method statement and quality control plan and communicate to all parties a work flow that is most desirable to meet the construction schedule as set forth by the General Contractor. Additional details of Pre-Construction meeting are outlined in Article 3.01.

1.06 Mock-Ups

A. Install a 10 ft x 10 ft paver area following the installation practices described in Article 3.02.
B. This area will be used to verify: surcharge of the Bedding Course; joint sizes; lines; laying pattern(s); color(s); and, texture of the job.
C. To provide a proper representation of color blend, a minimum of 3 cubes for manual installation, and 6 cubes for mechanical installation, will be pulled from.
D. This area shall be the standard from which the work will be judged.
E. Subject to approval by the Owner, the mock-up may be retained as part of the finished work. If mock-up is not retained, remove and dispose of mock-up at the completion of the project.

1.07 Delivery, Storage And Handling

A. Comply with Manufacturer's ordering instructions and lead time requirements to avoid construction delays.
B. Coordinate delivery and paving schedule to minimize interference with normal use of buildings adjacent to paving.
C. Contractor shall check all materials upon delivery to assure that the proper materials have been received and are in good condition before signing off on the manufacturer's packing slip.
D. Contractor shall protect all materials from damage or contamination due to jobsite conditions and in accordance with manufacturer's recommendations. Damaged or contaminated materials shall not be incorporated into the work.
E. Deliver Concrete Pavers to the site in steel banded, plastic banded, or plastic wrapped cubes capable of transfer by fork lift or clamp lift. Unload and store Concrete Pavers at job site in such a manner that no damage occurs to the product.
F. Handle and transport aggregates to avoid segregation, contamination and degradation. Keep different materials sufficiently separated as to prevent mixing. Do not dump or store one material on top of another unless it is part of the installation process. Cover material with waterproof covering to prevent exposure to rainfall or removal by wind – secure the covering in place.
G. Geosynthetics shall be delivered, stored and handled in accordance with ASTM D-4873.

1.08 Environmental Conditions

A. Do not install during heavy rain, freezing conditions or snowfall.

B. Do not install on frozen soil subgrade.
C. Do not install frozen aggregates.

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1.09 Maintenance Materials

A. Provide 250 square feet additional paver material for use by Owner for maintenance and repair as attic stock.
B. Pavers to be from the same production run as installed materials.
C. Store paver materials in Owner designated location.

PART 2 – PRODUCTS

2.01 Definitions

A. Base Course – within the context of this specification, a washed open graded free draining aggregate material (#57 Stone) of a designed thickness that provides both structural support over the Sub-base and water storage capacity (within the voids). It also serves as a choking material between the Bedding Course and Sub-base.
B. Bedding Course – within the context of this specification, a two-inch thick layer of washed open graded free draining aggregate material (#8 Stone) loosely screeded smooth for bedding of the Concrete Pavers.
C. Concrete Pavers – within the context of this specification, solid individual paving units manufacturing from concrete that are either specifically designed for use in permeable applications (include joints and voids) or are laid in a pattern that creates large enough openings to provide infiltration. Concrete Pavers are shipped in clusters called bundles or cubes, which consist of several layers of pavers strapped or wrapped together.
    a. Voids – larger openings between the individual pavers that provide for infiltration.
    b. Joints – smaller openings between the individual pavers that provide vertical and horizontal interlock between units.
D. Edge Restraint – within this specification, a cast in place concrete curb, building or other stationary object that prevents the lateral movement of the Bedding Course and Concrete Pavers so they do not spread and loose interlock.
E. Geotextile – Woven or non-woven fabrics made from plastic fibers used primarily for separation between Sub-base and Subgrade.
F. Horizontal Drainage Piping – series of horizontal pipes within the sub-base that discharge to a catchbasin, ditch or other receiving body beyond the extent of the paved area. Piping is typically elevated in a Partial Exfiltration System, and at the bottom of the Sub-base in a No Exfiltration System.
G. Laying Face – the working edge of the pavement where the laying of pavers is occurring.
H. Mechanical Installation - The use of specialized machines to lift whole layers of pavers from the bundles and place them on the prepared bedding course. These specialized machines are designed specifically for this application.
I. Membrane Liner – impermeable liner placed at the bottom and sides of a No Exfiltration System, used to prevent the exfiltration/discharge of water other than through the Horizontal Drainage Piping. Usually includes a geotextile on top (possibly bottom) for protection.

J. Permeable Joint Material – a washed open graded free draining aggregate material (typically #8, #89 or #9 Stone) used to fill the spaces (joints and voids) between Concrete Pavers to create interlock and still maintain infiltration.

K. Permeable Interlocking Concrete Pavement System – a system of paving consisting of Concrete Pavers placed in an interlocking pattern with the joints and voids filled with Permeable Joint Material. The minimum rate of infiltration of the Concrete Pavers and Permeable Jointing Material is 10 inches per hour, or the design storm, whichever is greater. The Bedding Course, Base Course and Sub-base Courses provide structural support over the Subgrade and stores, exfiltrates (into the Subgrade) and/or drains the infiltrating water.

L. Sub-base Course – within the context of this specification, an open graded free draining aggregate material (#2 Stone) of a designed thickness that provides both structural support over the Subgrade and water storage capacity (within the voids).

M. Subgrade – the soil upon which the pavement structure and shoulders are constructed.

2.02 Concrete Pavers

A. Supplied by:
Belgard Location:

AL, GA, MS	Georgia Masonry Supply 1443 Battle Creek Road, Jonesboro, GA 30236 678-758-7155 770-471-2128 Fax

B. The Concrete Paver product required include:
Product Type: Aqualine 4.5x9®
Product Size: 4 1/2”x 9”
Product Thickness: 3 1/8”
Product Color: Standard Country Blend
Product Finish: Standard smooth textured
Pattern: Aqualine 1-Piece Herringbone Patterns

C. Concrete Pavers shall conform to the following requirements set forth in ASTM C-936:
1. Measured length or width of test specimens shall not differ by more than +/- 0.063 in, while measured thickness shall not differ by more than +/- 0.125 in.
2. Average compressive strength of 8,000 psi (55 MPa) with no individual unit under 7,200 psi (50 MPa) when tested in accordance with ASTM C-140.
3. Average absorption of 5% with no unit greater than 7% when tested in accordance with ASTM C-140.
4. Where freeze-thaw testing is required, the average mass loss of all specimens tested shall not be greater than (A) 225 g/m2 when subject to 28 freeze thaw cycles, or (b) 500 g/m2 when subject to 49 freeze thaw cycles. Testing shall be conducted using a 3% saline solution in according to ASTM C-1645.

D. Efflorescence shall not be a cause for rejection.

E. Pigment in Concrete Pavers shall conform to ASTM C-979.

2.03 Bedding Course

A. Clean, non-plastic aggregate, free from deleterious or foreign matter, manufactured from crushed rock.
B. Micro Deval Degradation of less than 8% as per ASTM D-6938.
C. Percent of angular and sub-angular particles greater than 90%. Do not use rounded river gravel.
D. LA Abrasion <40 as per ASTM C-131, minimum CBR of 80% as per ASTM D-1883.
E. Gradation to conform to Table 1 as tested in accordance to ASTM C-136. All aggregates shall have equal to or less than 2% passing the No. 200 (0.075 mm) sieve.

Table 1
Grading Requirements for Bedding Course (ASTM No. 8 Stone per ASTM D-448)

Sieve Size	Percent Passing
1/2 in. (12.5 mm)	100
3/8 in.(9.5 mm)	85 to 100
No. 4 (4.75 mm)	10 to 30
No. 8 (2.36 mm)	0 to 10
No. 16 (1.18 mm)	0 to 5

2.04 Permeable Joint Material

A. Where joints are greater than or equal to ¼ inch, use ASTM No. 8 Stone as specified for the Bedding Course.
B. Where joints are less than ¼ inch, use pre-bagged Permeable Joint Material as supplied by Belgard.

2.04 Base and Sub-base

A. Clean, non-plastic aggregate, free from deleterious or foreign matter, manufactured from crushed rock.
B. Micro Deval Degradation of less than 8% as per ASTM D-6938.
C. Percent of angular and sub-angular particles greater than 90%. Do not use rounded river gravel.
D. LA Abrasion <40 as per ASTM C-131, minimum CBR of 80% as per ASTM D-1883.
E. Gradation of Base Course to conform to Table 2 as tested in accordance to ASTM C-136. Gradation of Sub-base Course to conform to Table 3 as tested in accordance to ASTM C-136. All aggregates shall have equal to or less than 2% passing the No. 200 (0.075 mm) sieve.

Table 2
Grading Requirements for Base Course (ASTM No. 57 Stone per ASTM D-448)

Sieve Size	Percent Passing
1-½ in. (37.5 mm)	100
1 in. (25 mm)	95 to 100
1/2 in. (12.5 mm)	25 to 60
3/8 in.(9.5 mm)	0 to 10
No. 4 (4.75 mm)	0 to 5

Table 3
Grading Requirements for Sub-base Course (ASTM No. 2 Stone per ASTM D-448)

Sieve Size	Percent Passing
3 in. (75 mm)	100
2- ½ in. (63 mm)	90 to 100
2 in. (50 mm)	35 to 70
1-½ in. (37.5 mm)	0 to 15
¾ in. (19 mm)	0 to 5

2.06 Edge Restraints

A. Edge restraints shall be cast in place concrete curbs constructed at the dimensions of the plans.

2.07 Geosynthetics

A. Impermeable Liner: HDPE Geomembrane Liner, 50 mil.
B. Geotextile: Nonwoven Geotextile meeting AASHTO M-288-06 for Class 2 applications (US 160NW or equivalent).

2.08 Horizontal Drainage Piping

A. The Horizontal Drainage Piping shall be perforated or slotted PVC pipe manufactured in accordance with ASTM D-3034.

PART 3 – EXECUTION

3.01 Inspection

A. Prior to commencement of any work, the Contractor shall conduct a pre-construction meeting with the Owner, Design Engineer and affected sub-trades. The pre-construction meeting should, at a minimum, verify:
   a. The location of the Mock Up, and whether it will be part of the final construction or need to be removed.
   b. The site layout conforms to the Site Plan. In particular, the location and elevation of discharge points (if any) of the Horizontal Drainage Pipes.
   c. The excavation work conforms to the specified lines and elevations. Subgrade shall be trimmed to within 0 and ½ in of the specified grades. The surface of the prepared Subgrade shall not deviate by more than 3/8 in from the bottom edge of a 10-foot straight edge laid in any direction.
   d. The condition of the subgrade, in particular that the surface infiltration (where desired) has not been adversely impacted by the excavation work. Where compaction is desired, that the compaction densities have been met.
   e. Locations of curbs, grade beams, utility structures, light standards, tree wells or any other protrusions as applicable to the project.
   f. The details of the site's 'Erosion and Sediment Control Plan'.

B. Although the Owner may provide soil testing and quality assurance inspection during earthwork and Subgrade preparation, the Owner's quality assurance program does not relieve the Contractor of responsibility for quality control and system performance. Contractor shall obtain any quality control testing or inspection not provided by the Owner that is necessary to satisfy the Contractor with the condition of the Subgrade prior to commencement of the work. This may include:
   a. Proof rolling of the subgrade to determine presence of soft spots or localized pockets of objectionable materials.
   b. Infiltration testing to verify the subgrade has not been adversely impacted.
   c. Compaction testing.

C. Where deficiencies or inconsistencies are identified, the Contractor shall notify the Design Engineer in writing. The Contractor will not proceed with the work until the Design Engineer has verified that the deficiencies or inconsistencies have been addressed.

D. Beginning of Installation means acceptance of Subgrade.

3.02 Installation Base Course

A. Keep area where pavement is to be constructed free from sediment during the entire job. Any materials contaminated with sediment shall be removed and replaced with clean material.

B. Install Membrane Liner in accordance with the manufacturer's recommendations. The Membrane Liner is applied to the bottom and sides of the excavation where indicated on plan (see details). Allow for enough Membrane Liner to exceed the final elevation of the surface. After completion of the surface, the excess liner should be cut flush with the finished grade,

C. Install Geotextiles as required in accordance with the specifications and drawings. The Geotextile is applied to the bottom and sides of the excavation with overlapping joints a minimum of 18 inches. Overlaps to follow down slope.

Allow for enough geotextile to exceed the final elevation of the surface. After completion of the surface, the excess geotextile should be cut flush with the finished grade,

D. Install the Sub-base Course and Base Course at the thicknesses, compaction rates, surface tolerances, and elevations outlined in the specifications.
   1. Place and spread the first layer of Sub-base without displacing or damaging the geosynthetics (if used). To prevent damage, tracked vehicles must not be used to spread the initial Sub-base layer.
   2. The aggregate should be spread and compacted in uniform layers not exceeding 6 inch loose thickness. Compaction is performed using either a 10 T (10 ton) vibratory roller or a minimum 13,500 lbf centrifugal force reversible vibratory plate compactor. For each lift, make at least two passes in the vibratory mode and at least two passes in the static mode – continue compaction until there is visible movement in the materials.
   3. At the specified elevation(s), install the Horizontal Drain Pipes in accordance with the manufacturer's recommendations. Ensure the Pipes are properly sloped to provide proper drainage to the outlets Pipes shall be surrounded by a minimum of 4 inches of Base Course material to prevent damage from the Sub-base material. Care must be taken not to damage Horizontal Drain Pipes during subsequent aggregate installation.
   4. Final surface tolerance should be plus or minus 1 inch over a 10 foot straight edge laid in any direction.
   5. Attention will be paid to providing proper compaction near curbs, grade beams, concrete collars around utility structures, lights standards, tree wells, building edges and other protrusions as applicable to the project. In areas not accessible to large compaction equipment, compact to specified density with mechanical tampers (jumping jacks).

E. Before commencing the placing of the Bedding Course, the base shall be inspected by the Owner or the Consultant

3.03 Installation Edge Restraints

A. Adequate edge restraint shall be provided along the perimeter of all paving as specified. The face of the edge restraint, where it abuts pavers, shall be vertical.
B. All concrete edge restraints shall be constructed to dimensions and level specified and shall be supported on a compacted Base not less than 6 inch thick.
C. Concrete used for the construction of edge restraints shall be air-entrained and have a compressive strength as specified. All concrete shall be in accordance with ASTM C94 requirements.

3.04 Installation Bedding Course, Concrete Pavers and Permeable Joint Material

A. Spread the Bedding Course evenly over the Base Course and screed to a nominal 2 in. thickness. Do not use the bedding material to fill depressions in the Base Course surface.
B. The Contractor shall screed the Bedding Course using either an approved mechanical spreader (e.g.: an asphalt paver) or by the use of screed rails and boards.
C. Moisten and lightly compact the Bedding Course using a Plate Compactor. Surface tolerances shall be 3/8 inch over a 10-foot straight edge.

D. Loose screed the bedding course.

E. Ensure that Concrete Pavers are free of foreign material before installation. Concrete Pavers shall be inspected for color distribution and all chipped, damaged or discolored Concrete Pavers shall be replaced. Initiation of Concrete Paver placement shall be deemed to represent acceptance of the pavers.

F. Lay the Concrete Pavers in the pattern(s) as shown on the drawings. Maintain straight pattern lines.

G. Paving units shall be installed from a minimum of 3 bundles for hand installations, 6 bundles for mechanical installations, simultaneously to ensure color blending.

H. Joints between the individual Concrete Pavers shall be maintained according to the spacer bars.

I. Fill gaps at the edges of the paved area with cut pavers or edge units. Do not install cut pavers smaller than one-third of a whole paver along edges subject to vehicular traffic – trim two pavers to fit.

J. Cut pavers using a masonry saw. Upon completion of cutting, the area must be swept clean of all debris to facilitate inspection and to ensure the Concrete Pavers are not damaged during compaction.

K. Using a low amplitude plate compactor capable of at least 5,000 lbs. (22 kN) compaction at a frequency of 75 hz –100 hz, compact and seat the Concrete Pavers into the Bedding Course.

L. The pavers shall be compacted to achieve consolidation of the Bedding Course and brought to level and profile by not less than three passes. Initial compaction should proceed as closely as possible following the installation of the paving units and prior to the acceptance of any traffic or application of Permeable Joint Material.

M. Any units that are structurally damaged during compaction shall be immediately removed and replaced.

N. Apply a dressing of Permeable Joint Material to the surface and sweep into the joints and voids. Fill joints and voids, then sweep off excess material before vibrating the material down into the joints using a plate compactor. This will require at least two or three passes with the compactor.

O. Do not compact within 6 feet of the unrestrained edges of the paving units.

P. All work to within 3 ft (1 m) of the laying face must be left fully compacted at the end of each day. Cover the laying face with plastic sheets overnight if not closed with cut and compacted pavers.

Q. Sweep off excess aggregate when the job is complete.

3.05 Quality Assurance/Quality Control

A. Quality Assurance - The Owner may engage inspection and testing services, including independent laboratories, to provide quality assurance and testing services during construction. This does not relieve the Contractor from securing the necessary construction quality control testing.

B. Quality Control – The Contractor shall engage inspection and testing services to perform the minimum quality control testing described in the design plans and specifications. Only qualified and experienced technicians and engineers shall perform testing and inspection services.

C. Quality control testing shall include backfill testing to verify soil types and compaction, and verification that the system is being constructed in accordance with the design plans and project specifications.

3.06 As-built Construction Tolerances

A. Final inspection shall be conducted to verify conformance to the drawings after removal of excess aggregate. All pavements shall be finished to lines and levels to ensure positive drainage at all drainage outlets and channels.

B. The final surface elevations shall not deviate more than +/- 3/8 inch under a 10 ft long straight edge.

END OF SECTION

Section 32 32 23.01

MODULAR CONCRETE RETAINING WALL SYSTEM

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work consists of furnishing and construction of a Mega-Tandem™ Retaining Wall System (or engineer and owner approved equal) in accordance with these specifications and in reasonably close conformity with the lines, grades, design, and dimensions shown on the plans.

B. Earthwork includes:
   1. Preparing Foundation Soil and Retained Soil to the lines and grades shown on the construction drawings;
   2. Furnishing and installing Leveling Pad, Reinforced Fill (where required) and Low Permeability Soil (where required) to the lines and grades shown on the construction drawings; and,

C. Installation work includes:
   1. Furnishing and installing Mega Tandem Modular Concrete Facing Units, Mega Tandem Connectors, and Unit Fill to achieve the lines and grades shown on the construction drawings.
   2. Furnishing and installing Subsurface Drainage System, including necessary fittings, of the type, size, and location designated on the construction drawings.
   3. Furnishing and installing Geogrid Soil Reinforcement and Separation Geotextiles of the type, size, location, and lengths designated on the construction drawings (where required).
   4.

1.02 REFERENCE DOCUMENTS

A. American Society of State Highway and Transportation Officials (AASHTO)
   1. AASHTO LRFD Bridge Design Specifications, 6th Edition, 2012
   2. AASHTO National Transportation Product Evaluation Program (NTPEP)

B. American Society for Testing and Materials (ASTM)
   1. ASTM C140 Sampling and Testing Concrete Masonry Units and Related Units
   2. ASTM C1262 Evaluating the Freeze Thaw Durability of Dry-Cast Segmental Retaining Wall Units and Related Concrete Units
   3. ASTM C1372 Dry- Cast Segmental Retaining Wall Units
   4. ASTM D422 Particle Size Analysis of Soils
   5. ASTM D638 Tensile Properties of Plastics
   6. ASTM D698 Laboratory Compaction Characteristics of Soil Using Standard Effort
   7. ASTM D790 Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials
   8. ASTM D3034 Type PSM Poly Vinyl Chloride (PVC) Sewer Pipe and Fittings
   9. ASTM D4318 Liquid Limit, Plastic Limit and Plasticity Index of Soils
   10. ASTM D5818 Standard Practice for Obtaining Samples of Geosynthetics from a Test Section for Assessment of Installation Damage
   11. ASTM F405 Standard Specification for Corrugated Polyethylene (PE) Tubings and Fittings

C. National Concrete Masonry Associates (NCMA)

1. NCMA Design Manual for Segmental Retaining Walls, 3rd Edition, 2010

1.03 DEFINITIONS

A. Connectors – plastic items of a designated length that are specifically designed to connect to individual, and span between two, Modular Facing Units.

B. Foundation Soil – compacted native soil that supports the Leveling Pad for a conventional retaining wall and the Leveling Pad and Reinforced Soil Zone and for a reinforced retaining wall.

C. Geogrid Soil Reinforcement - a structural element formed by a regular network of integrally connected tensile elements with apertures of sufficient size to allow interlocking with the Reinforced Fill, and function primarily as reinforcement.

D. Leveling Pad – A level surface, consisting of crushed stone and unreinforced concrete, which distributes the weight of the Modular Retaining Wall Units over a wider area of the Foundation Soil and provides a working surface during construction.

E. Low Permeability Soil – compacted layer of soil above the Unit Fill and Reinforced Fill Zone (where required) to minimize surface water infiltration into the System.

F. Modular Concrete Facing Units – pairs of concrete retaining wall elements machine made from Portland cement, water, and aggregates that are joined together by Connectors to create a bin that when filled with Unit Fill material will act as a singular entity to create the mass necessary for structural stability in a conventional SRW, and a facing for a reinforced SRW.

G. Reinforced Fill – Compacted structural fill used for the full length of the Geogrid Soil Reinforcement behind the rear Facing Unit.

H. Retained Soil – the undisturbed soil behind the retaining wall system.

I. Separation Geotextile - A geotextile filter installed between the rear Facing Unit and the Reinforced Soil Zone or Retained Soil to protect the Subsurface Drainage System from clogging. Also required below the Low Permeability Soils (where used).

J. Subsurface Drainage System – horizontal pipe at or near the base of Unit Fill to facilitate water drainage.

K. Unit Fill and Drainage Aggregate – Free draining granular material placed between the Facing Units to facilitate the removal of incidental groundwater, minimize buildup of hydrostatic pressure, and increase the weight and shear capacity of the system.

1.04 SUBMITTALS / CERTIFICATION

A. Product Data
   1. Product data for the Modular Concrete Facing Units and Geosynthetic Reinforcement.
   2. Name and address of the production facility where the proposed facing units will be manufactured. All units to be manufactured at the same facility.
   3. Notarized letter from the facing unit manufacturer stating that the units supplied for this project are manufactured in complete compliance with this specification. The letter shall state that the units shown in the attached test reports are representative samples of the plants normal mix design and regular production runs.
   4. Notarized letter from the reinforcement manufacturer stating that the geosynthetic reinforcement has been manufactured in complete compliance with the

reinforcement manufacturer's current NTPEP report. Only geosynthetic reinforcement with a current NTPEP report shall be used.

B. Samples:
   1. Contractor shall submit to the owner for approval, and retain for the balance of the project, a minimum of four Facing Units that represent the range of texture and color permitted.

C. Test Reports:
   1. Laboratory reports indicating compressive strength, moisture absorption and freeze-thaw durability of the concrete retaining wall units from the proposed production facility.
   2. Independent test reports verifying the long-term design strength properties (creep, installation damage, and durability) and soil interaction properties of the geosynthetic reinforcement.
   3. Independent test reports verifying the connection capacity between the geosynthetic reinforcement and the concrete retaining wall units.

D. Wall Design Engineer Qualifications:
   1. Current insurance policy verifying professional liability and errors and omissions insurance coverage for an aggregate and per claim limit of at least two million dollars ($1,000,000).
   2. Notarized letter certifying the proposed retaining wall Design Engineer is a licensed professional engineer in the state of wall installation and has a minimum of 4 years and 200,000 square feet of retaining wall system design experience.

E. Retaining Wall Contractor Qualifications:
   1. Notarized statement showing that the retaining wall contractor has installed a minimum of 100,000 square feet of segmental retaining walls.
   2. The Retaining Wall Installer shall furnish five (5) project references of similar size and scope to this project including the wall(s) height and square footage. References shall include the contact information of Owner or General Contractor.

F. Retaining Wall Final Design Submittals
   1. Shop Drawings: Four (4) sets or one digitally signed set of the retaining wall system design, including wall elevation views, geosynthetic reinforcement layout, pertinent details, and drainage provisions. A registered professional engineer licensed in the state of wall installation shall sign and certify that the shop drawings are designed in accordance with the project civil plans and specifications.
   2. Design Calculations: Four (4) sets or one digitally signed set of engineering design calculations prepared in accordance with the NCMA Design Manual for Segmental Retaining Walls, 3rd Edition or the AASHTO Standard Specifications for Highway Bridges (whichever is applicable). Analysis shall include Internal, External and Bearing Capacity Calculations. In addition:
      a. Design shall address hydrostatic loading, seismic loading, rapid drawdown, surcharge, and back slopes where appropriate. Minimum Design Live Load of 150 psf shall be used for all walls supporting parking areas. Minimum Design Live Load of 250 psf shall be used for walls supporting entrance drives, service drives and other areas subject to traffic.
      b. Minimum reinforcement length shall be 70 percent of the wall height. Reinforcement coverage at each layer shall be 100 percent (no gaps).

c. The maximum vertical distance between layers of soil reinforcement shall be limited to a maximum of 2 times the Modular Concrete Facing Unit depth (front to back) not to exceed 24".
d. Drainage Aggregate shall be placed within and between the segmental concrete facing units and extend a minimum a minimum depth of 24" from the wall face.
e. The bottom of the wall shall be embedded the greater of 6" or 5% of the exposed wall height below the final grade elevation 4' in front of the wall.
f. Global Stability analysis should be coordinated with the project geotechnical engineer and incorporated into the retaining wall design.

1.05 DELIVERY, STORAGE AND HANDLING

A. Contractor shall check all materials upon delivery to assure that the proper type, grade, color, and certification have been received.

B. Contractor shall protect all materials from damage or contamination due to jobsite conditions and in accordance with manufacturer's recommendations. Damaged or contaminated materials shall not be incorporated into the work.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Modular Concrete Facing Units: Belgard Mega-Tandem™ Retaining Wall System (or engineer and owner approved equal)
1. Modular Facing Units shall conform to the following architectural requirements:
a. Face color – Avondale Blend or similar from the local Belgard supplied color catalog.
b. Face finish – Non-split formed face.
c. Bond configuration – running bonds nominally located at midpoint of vertically adjacent units in both straight and curved alignment.
d. Exposed surfaces of units shall be free of cracks or major imperfections when viewed from a distance of 20 feet under diffused lighting. Surface irregularities are expected with the non-split formed face texture and are acceptable unless adversely affecting installation or structural performance.
2. Modular Facing Units shall meet the Strength and Absorption requirements of ASTM C1372 when tested in accordance with ASTM C140 Annex A3 and as follows.
a. Compressive strength = 6000 psi minimum for an average of three units with a minimum of 5400 psi for an individual unit
b. Absorption ≤ 7%
c. Unit size - 12 " (H) x 24" (W) x 3" (D).
d. Dimensional tolerances = ± 0.063" from the specified standard overall dimension for height and width, ± 0.125" from the specified standard overall dimension for depth (panel thickness).
3. Where freeze thaw testing is required the units shall meet the following durability requirements of ASTM C1372 when tested in accordance with ASTM C1262 in water:
a. Weight loss of each of five test specimens at the conclusion of 100 cycles ≤ 1% of its initial weight; or,
b. Weight loss of each of four of the five test specimens at the conclusion of 150 cycles ≤ 1.5% of its initial weight.

4. Modular concrete units shall conform to the following constructability requirements:
   a. Batter 2.4 degrees (1/2" setback per 12" course)

B. Connectors: Mega-Tandem™ Connectors
   1. Connectors shall be manufactured from fiber reinforced post-industrial copolymer propylene, black.
      a. Minimum tensile strength of 5,800 psi per ASTM D638.
      b. Minimum flexural modulus of 305,000 psi, minimum flexural strength of 13,000 psi, per ASTM D790.
      c. Connectors shall be capable of holding the Facing Units in the proper position and at the proper alignment during backfilling with the Unit Fill.

C. Base Leveling Pad Material
   1. Material shall consist of a compacted crushed stone base with an optional non-reinforced concrete skim-coat or concrete starter units as shown on the construction drawings. Total thickness shall be 6" minimum.

D. Unit Fill / Drainage Aggregate
   1. Unit Fill shall consist of clean 1" minus crushed stone or crushed gravel meeting the following gradation tested in accordance with ASTM D422:

Sieve Size	Percent Passing
1 inch	100
3/4 inch	75 - 100
No. 4	0 - 60
No. 40	0 - 50
No. 200	0 - 5

   2. Unit Fill shall be placed between the Modular Concrete Facing Units and behind the rear wall panel if indicated on the retaining wall plans.

E. Reinforced Fill
   1. Reinforced Fill shall be free of debris and meet the following gradation tested in accordance with ASTM D422:

Sieve Size	Percent Passing
1 inch	100
No. 4	100-20
No. 40	0-60
No. 200	0-35

      Plasticity Index (PI) <20 and Liquid Limit <40 per ASTM D4318.
   2. The maximum aggregate size shall be limited to 2 inches unless field tests have been performed to evaluate potential strength reductions to the Geogrid Soil Reinforcement design due to damage during construction per ASTM D5818.
   3. Material can be site-excavated soils where the above requirements can be met. Unsuitable soils for backfill (high plastic clays or organic soils) shall not be used.

F. Geogrid Soil Reinforcement
   1. Geosynthetic reinforcement shall consist of geogrids manufactured specifically for soil reinforcement applications and shall be manufactured from high tenacity polyester yarn. Only geogrid reinforcement with an NTPEP evaluation report shall be used and the NTPEP confirmed design values shall not be exceeded.
   2. Material Identification – The geogrid shall be labeled on the material indicating product style. Roll labels shall also be provided indicating manufacturer, style and roll number.

G. Low Permeability Soil: A low permeability soil suitable for the intended purpose of minimizing surface water infiltration into the System

H. Subsurface Drainage System
   1. The piping shall be perforated or slotted PVC pipe manufactured in accordance with ASTM D3034, or corrugated HDPE pipe manufactured in accordance with ASTM F405.
   2. All connectors and fittings shall match the piping material.

I. Separation Geotextile: When required, Geotextile filter fabric shall be minimum 4.0 oz/sy, polypropylene, needle-punched nonwoven fabric.

PART 3 – EXECUTION

3.01 EXAMINATION

A. Prior to commencing work, the retaining wall contractor shall examine the areas and conditions under which the retaining wall system is to be erected, and notify the [Architect] [Engineer] [Owner] [General Contractor] in writing of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected.

B. Promptly notify the wall design engineer of site conditions which may affect wall performance, soil conditions observed other than those assumed, or other conditions that may require a reevaluation of the wall design.

C. Verify the location of existing structures and utilities prior to excavation. Ensure surrounding structures are protected from the effects of wall excavation. Excavation support, if required, is the responsibility of the Contractor, including the stability of the excavation and its influence on adjacent properties and structures.

3.02 EXCAVATION AND FOUNDATION SOIL PREPARATION

A. Contractor shall excavate to the lines and grades shown on the construction drawings.

B. The Project geotechnical engineer will examine foundation soil to ensure that the actual foundation soil strength meets or exceeds that indicated on the Drawings. At the direction of the project geotechnical engineer, remove soil not meeting the required strength. Oversize resulting excavation sufficiently from the front of the block to the back of the reinforcement, and backfill with suitable compacted backfill soils. The Project geotechnical engineer will determine if the foundation soils will require special treatment or correction to control total and differential settlement.

C. Fill over-excavated areas with suitable compacted backfill, as recommended by the Project geotechnical engineer.

3.03 LEVELING PAD

A. Leveling pad material shall be placed to the lines and grades shown on the construction drawings.

B. Leveling pad shall extend a minimum of 6 inches beyond both the front and back of the lowermost Facing Units.

C. Leveling pad materials shall have a minimum thickness of 6 inches, and be compacted to a minimum of 95 % Standard Proctor density per ASTM D698.

D. If shown on the drawings a concrete leveling pad skim coat shall have a minimum thickness of 2 inches, and shall be made from unreinforced low strength concrete. Alternately, concrete starter units may be used.

E. Final surface of Leveling pad shall be prepared to insure full contact to the base surface of the concrete Facing Units and have a tolerance within +/- 1 inch over a 10 foot span.

F.

3.04 FACING UNIT ERECTION

A. General: Erect facing units in accordance with manufacturer's instructions and recommendations, and as specified herein.

B. First course of Facing Units and Connectors shall be placed on the Leveling Pad at the appropriate line and grade. Manufacturer may supply jigs designed to help hold up Facing Units until Connectors are installed. Connectors shall be fully inserted into the grooves on the back-side of the Facing Units with the offset knobs being at the rear Facing Unit and pointed upwards. A minimum of two Connectors is required per front Facing Unit.

C. Alignment and level shall be checked in all directions.

D. Ensure that all units are in full contact with the Leveling Pad and properly seated.

E. Ensure the front Facing Units are side-by-side. Do not leave gaps between adjacent units along the exposed face(s). Layout of corners and curves shall be in accordance with manufacturer's recommendations.

F. Place the Subsurface Drainage System as shown on the design drawings. Ensure proper slope to create gravity flow of water, and verify there are no low spots or dips in the Pipe. Provide outlets through the face of the wall where required.

G. Place Unit Fill between the Facing Units. Fill to top of Facing Units, then compact using a light walk-behind vibratory plate compactor or rod Unit Fill to insure all voids are completely filled. Fill and compact one course at a time.

H. Maximum stacked vertical height of wall units, prior to Reinforced Fill (where required) and Compacted Native Backfill placement and compaction, shall not exceed one course.

I. Check each course for level and alignment. Adjust units as necessary to maintain level and alignment prior to proceeding with each additional course.

J. For subsequent courses, brush top surface of underlying Facing Units clean. Set next Facing Units squarely and verify there is no rocking on the underlying row, then install Connectors. Ensure the rear Facing Unit is against the offset extension of the lower Connectors.

3.05 REINFORCED FILL PLACEMENT

A. Place Separation Geotextile as required by the design drawings.

B. Place and compact Reinforced Fill (where required) behind rear Facing Units all the way back to the Retained Soil in equal lifts. Follow wall erection closely with Reinforced Fill (where required).

C. Reinforced Fill shall be placed, spread, and compacted in such a manner that minimizes the development of slack in the geogrid and installation damage.

D. Reinforced Fill shall be placed and compacted in lifts not to exceed 6 inches where hand compaction is used, or 8 inches where heavier compaction equipment is used. Lift thickness shall be decreased to achieve the required density as required.

E. Reinforced Fill shall be compacted to 95% of the maximum density respectively as determined by ASTM D698. The moisture content of the material prior to and during compaction shall be uniformly distributed throughout each layer and shall be within +/- 2% of the optimal moisture content.

F. Generally only lightweight hand-operated equipment should be used within 3 feet from the rear of the modular concrete unit.

G. At the end of each day's operation, the Contractor shall slope the last lift of Reinforced Fill away from the wall units to direct runoff away from wall face. The Contractor shall not allow surface runoff from adjacent areas to enter the wall construction site.
   1. The General Contractor is responsible for ensuring that the finished site drainage is directed away from the retaining wall system.
   2. In addition, the General Contractor is responsible for ensuring that surface water runoff from adjacent construction areas is not allowed to enter the retaining wall area of the construction site.

3.06 STRUCTURAL GEOGRID INSTALLATION (IF REQUIRED BY THE DESIGN)

A. Geogrid shall be oriented with the highest strength axis perpendicular to the wall alignment.

A. Geogrid reinforcement shall be placed at the strengths, lengths, and elevations shown on the construction design drawings or as directed by the Engineer.

B. Insure the Reinforced Fill is flat for the full depth, and level with the back of the rear Facing Units, prior to proceeding with geogrid installation. The geogrid shall be laid horizontally across the Reinforced Fill and Facing Units. Geogrid shall be placed to within 1 inch of the front face of the front Facing Units to insure subsequent units remain level, but should not be visible on the front face when viewed from a distance of 20'. Place the next course of Facing Units over the geogrid. The geogrid shall be pulled taut and secured with staples, stakes or 6 inches of loose backfill prior to backfill placement over the geogrid.

C. Geogrid reinforcements shall be continuous throughout their embedment lengths and placed side-by-side to provide 100% coverage at each level – directly overlapping sections of geogrid is not permitted. Spliced connections between shorter pieces of geogrid or gaps between adjacent pieces of geogrid are not permitted.

D. Tracked construction equipment shall not be operated directly upon the Geogrid Soil Reinforcement. A minimum fill thickness of 6 inches is required prior to operation of tracked vehicles over the geogrid. Tracked vehicle turning should be kept to a minimum to prevent tracks from displacing the fill and damaging the geogrid. Rubber tired equipment may pass over Geogrid Soil Reinforcement at slow speeds, less than 10 MPH. Sudden braking and sharp turning shall be avoided.

3.07 CAP UNIT INSTALLATION

A. Install cap units in accordance with the plan details.

B. Apply adhesive to the top surface of the unit below including the support units as applicable and place the cap unit into desired position.

C. Cut cap units as necessary to obtain the proper fit.

D. Backfill and compact to top of cap unit.

3.08 LOW PERMEABILITY SOIL INSTALLATION

A. Low Permeability Soil (where required) shall be compacted to 92% of the maximum density as determined by ASTM D698. The surface of Low Permeability Soil shall be sloped to provide surface water drainage as per design drawings and vegetated to prevent erosion.

3.09 CONSTRUCTION TOLERANCES

A. Vertical alignment: ± 1.25" over any 10' distance.

B. Wall Batter: within 2 degrees of design batter.

C. Horizontal alignment: ± 1.25" over any 10' distance.

D. Corners, bends and curves ± 1 ft to theoretical location.

E. Maximum horizontal gap between erected units shall be 1/2 inch.

3.10 FIELD QUALITY CONTROL

A. Quality Assurance - The Owner shall/may engage inspection and testing services, including independent laboratories, to provide quality assurance and testing services during construction. This does not relieve the Contractor from securing the necessary construction quality control testing. Quality Assurance should include foundation soil inspection, verification of geotechnical design parameters and verification that the contractor’s quality control testing is adequate as a minimum. Quality Assurance shall also include observation of construction for general compliance with design drawings and project specifications.

B. Quality Control – The Contractor shall engage inspection and testing services to perform the minimum quality control testing described in the retaining wall design plans and specifications. Only qualified and experienced technicians and engineers shall perform testing and inspection services.

C. The wall contractor shall correct work that does not meet these specifications or the requirements shown on the Drawings at the wall contractor's expense.

D. Quality control testing shall include soil and backfill testing to verify soil types and compaction and verification that the retaining wall is being constructed in accordance with the design plans and project specifications. The compaction test locations should vary and cover the entire area of the reinforced soil zone, including the area compacted by the hand-operated compaction equipment.

3.11 MEASUREMENT AND PAYMENT

THIS ONLY APPLIES TO WORK UNDER PHASE 1

A. Measurement of segmental retaining wall shall be on an installed square foot basis computed on the total face area of wall installed. Wall face area includes the bottom of the base course to the top of the wall, and the entire length of the wall.

B. Payment for the wall will be made on a square foot basis at the agreed upon Contract Unit Price.

1. Payment should be considered full compensation for labor, materials, equipment and testing required to install the wall in accordance with these specifications and the Drawings.
2. Quantities may vary from that shown on the Drawings depending on existing topography. Change to the total quantity of wall face area will be paid or withheld at the agreed upon Contract Unit Price.

END OF SECTION

SECTION 32 32 23
CONCRETE SEGMENTAL RETAINING WALL SYSTEM

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work consists of furnishing and construction of an Anchor Diamond Pro Retaining Wall System in accordance with these specifications and in general conformity with the lines, grades, design, and dimensions shown on the plans.

B. Earthwork includes:
   1. Preparing Foundation Soil and Retained Soil to the lines and grades shown on the construction drawings;
   2. Furnishing and installing Leveling Pad, Reinforced Fill (where required) and Low Permeability Soil (where required) to the lines and grades shown on the construction drawings; and,

C. Installation work includes:
   1. Furnishing and installing Diamond Pro Concrete Facing Units and Unit Fill to achieve the lines and grades shown on the construction drawings.
   2. Furnishing and installing Geosynthetic Reinforcement and Separation Geotextile of the type, size, location and lengths designated on the construction drawings (if required).
   3. Furnishing and installing Subsurface Drainage System, including necessary fittings, of the type, size, and location designated on the construction drawings.

1.02 REFERENCES

A. American Association of State Highway Transportation Officials (AASHTO)
   1. AASHTO Standard Specifications for Highway Bridges
   2. AASHTO M 288 Geotextile Specifications for Highway Applications
   3. AASHTO M 252 Corrugated Polyethylene Drainage Pipe
   4. AASHTO National Transportation Product Evaluation Program (NTPEP)

B. American Society for Testing and Materials (ASTM)
   1. ASTM C140 Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units
   2. ASTM C1262 Standard Test Method for Evaluating the Freeze-Thaw Durability of Manufactured Concrete Masonry Units and Related Concrete Units
   3. ASTM C1372 Standard Specification for Segmental Retaining Wall Units
   4. ASTM D448 Standard Classification for Sizes of Aggregate for Road and Bridge Construction
   5. ASTM D698 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/f3)(600 kN-m/m3)
   6. ASTM D1556 Standard Test Method for Density and Unit Weight of Soil In Place by the Sand Cone Method
   7. ASTM D1557 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/f3)(2700 kN-m/m3)
   8. ASTM D2487 Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System)

9. ASTM D2922 Standard Test Methods for Density of Soil and Soil-Aggregate In Place by Nuclear Methods (Shallow Depth)
10. ASTM D3034 Standard Specification for Type PSM Poly (Vinyl Chloride) (PVC) Sewer pipe and Fittings
11. ASTM D4318 Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils
12. ASTM D4491 Standard Test Method for Water Permeability of Geotextiles by the Permittivity Method
13. ASTM D4595 Standard Test Method for Tensile Properties of Geotextiles by the Wide-Width Strip Method
14. ASTM D4873 Standard Guide for Identification, Storage and Handling of Geosynthetics
15. ASTM D5084 Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter.
16. ASTM D5262 Standard Test Method for Evaluating the Unconfined Tension Creep Behavior of Geosynthetics
17. ASTM D5321 Standard Test Method for Determining the Coefficient of Soil and Geosynthetic or Geosynthetic and Geosynthetic Friction by the Direct Shear Method
18. ASTM D5818 Standard Practice for Obtaining Samples of Geosynthetics from a Test Section for Assessment of Installation Damage
19. ASTM D6637 Standard Test Method for Determining Tensile Properties of Geogrids by the Single or Multi-Rib Tensile Method
20. ASTM D6638 Standard Test Method for Determining Connection Strength Between Geosynthetic Reinforcement and Segmental Concrete Units
21. ASTM D6916 Standard Test Method for Determining the Shear Strength Between Segmental Concrete Units
22. ASTM D6706 Standard Test Method for Measuring Geosynthetic Pullout Resistance in Soil
23. ASTM F405 Standard Specification for Corrugated Polyethylene (PE) Tubings and Fittings
24. ASTM G51 Standard Test Method for Measuring pH of Soil for Use in Corrosion Testing

C. Federal Highway Administration
   1. Samtani, Naresh C., Christopher, B., and Berg, R., “Design and Construction of Mechanically Stabilized Earth Walls and Reinforced Soil Slopes”, Volumes 1 and 2, Federal Highway Administration Report Nos. FHWA-NHI-10-024 and FHWA-NHI-10-025, November 2009.
   2. Elias, V., Fishman, K., Christopher, B., and Berg, R., “Corrosion/Degradation of Soil Reinforcements for Mechanically Stabilized Earth Walls and Reinforced Soil Slopes”, Federal Highway Administration Report No. FHWA-NHI-09-087, November 2009.

D. National Concrete Masonry Association (NCMA)
   1. NCMA Design Manual for Segmental Retaining Walls, Third Edition, 2010

1.03 DEFINITIONS

A. Segmental Retaining Wall (SRW) Units: Dry-stacked concrete masonry units used as

the retaining wall fascia.

B. Reinforced Fill: Soil which is used as fill behind the SRW unit and within the reinforced soil mass (if applicable).

C. Unit Fill and Drainage Aggregate: Material used (if applicable) within, between, and directly behind the concrete retaining wall units.

D. Geotextile Separation Fabric: Material used for separation and filtration of dissimilar soil types.

E. Foundation Soil: Soil mass supporting the leveling pad and reinforced soil zone of the retaining wall system.

F. Retained Soil: The soil mass located behind the reinforced soil zone, either undisturbed native soils or compacted fill.

G. Leveling Pad: A level surface consisting of crushed stone, sand and gravel or unreinforced concrete placed to provide a working surface for placement of the SRW unit.

H. Geosynthetic Reinforcement: Polymeric material designed specifically to reinforce the soil mass.

I. Pre-fabricated Drainage Composite: three-dimensional geosynthetic drainage medium encapsulated in a geotextile filter, used to transport water.

J. Subsurface Drainage System: horizontal pipe encapsulated within drainage aggregate at or near the base of the reinforced soil to facilitate removal of water from the wall system.

K. Low Permeability Soil: Clay soil or low permeability geosynthetic used to prevent water percolation into the drainage zone and reinforced backfill behind the wall.

L. Global Stability: The general mass movement of a soil reinforced segmental retaining wall structure and adjacent soil mass.

M. Project Geotechnical Engineer: A registered engineer who provides site observations, recommendations for foundation support/global stability, and verifies soil shear strength parameters.

1.04 SUBMITTALS / CERTIFICATION

A. Product Data
   1. Product Data: Material description and installation instructions for each manufactured product specified
   2. Name and address of the production facility where the proposed facing units will be manufactured. All units shall be manufactured at the same facility.
   3. Notarized letter from the facing unit manufacturer stating that the units supplied for this project are manufactured in complete compliance with this specification.

The letter shall state that the units shown in the attached test reports are representative samples of the plants normal mix design and regular production runs.

4. Notarized letter from the reinforcement manufacturer stating that the geosynthetic reinforcement has been manufactured in complete compliance with the reinforcement manufacturer's current NTPEP report.

B. Samples:
   1. Contractor shall submit to the owner for approval, and retain for the balance of the project, a minimum of one SRW unit that represents the range of texture and color permitted.

C. Test Reports:
   1. Independent Laboratory reports indicating compressive strength, moisture absorption and freeze-thaw durability of the concrete retaining wall units from the proposed production facility.
   2. Independent test reports verifying the long-term design strength properties (creep, installation damage, and durability) and soil interaction properties of the geosynthetic reinforcement.
   3. Independent test reports verifying the connection capacity between the geosynthetic reinforcement and the concrete retaining wall units.

D. Wall Design Engineer Qualifications:
   1. Current insurance policy verifying professional liability and errors and omissions insurance coverage for an aggregate and per claim limit of at least one million dollars ($1,000,000).
   2. Notarized letter certifying the proposed retaining wall Design Engineer is a licensed professional engineer in the state of wall installation and has a minimum of 4 years and 200,000 square feet of retaining wall system design experience.

E. Retaining Wall Contractor Qualifications:
   1. Notarized statement showing that the retaining wall contractor has installed a minimum of 100,000 square feet of segmental retaining walls.
   2. The Retaining Wall Installer shall furnish five (5) project references of similar size and scope to this project including the wall(s) height and square footage. References shall include the contact information of Owner or General Contractor.

F. Retaining Wall Design:
   1. Shop Drawings: One digitally signed set of the retaining wall system design, including wall elevation views, geosynthetic reinforcement layout, pertinent details, and drainage provisions. A registered professional engineer licensed in the state of wall installation shall sign and certify that the shop drawings are designed in accordance with the project civil plans and specifications.
   2. Design Calculations: One digitally signed set of engineering design calculations prepared in accordance with the NCMA Design Manual for Segmental Retaining Walls, 3rd Edition or the AASHTO Standard Specifications for Highway Bridges (whichever is applicable). Analysis shall include Internal, External and Bearing Capacity Calculations and include the short term and long term loading conditions on the wall. A Global Stability analysis should be coordinated with the project geotechnical engineer and incorporated into the wall design.

1.05 DELIVERY, STORAGE AND HANDLING

A. SRW Units and Accessories: Deliver, store, and handle materials in accordance with manufacturer's recommendations, in such a manner as to prevent damage. Check the materials upon delivery to assure that proper material has been received. Store SRW units above ground on wood pallets or blocking. Remove damaged or otherwise unsuitable material, when so determined, from the site.

B. Exposed faces of SRW units shall be relatively free of chips, cracks, stains, and other imperfections detracting from their appearance, when viewed from a distance of 20 feet under diffused lighting.

C. Prevent mud, wet cement, adhesives and similar materials that may harm appearance of SRW units, from coming in contact with system components.

D. Geosynthetics (including geosynthetic reinforcement, geotextile filter, pre-fabricated drainage composite) shall be delivered, stored, and handled in accordance with ASTM D4873.

1.06 EXTRA MATERIALS

A. Furnish Owner with 3 replacement SRW units identical to those installed on the Project.

PART 2 - PRODUCTS

2.01 MATERIALS

A. SRW Units: Anchor Diamond Pro Retaining Wall Units" as manufactured under license from Anchor Wall Systems or engineer and owner approved equal.
    1. Physical Requirements:
        a. Meet requirements of ASTM C1372, except the unit height dimensions shall not vary more than plus or minus 1/16 inch from that specified in the ASTM reference, not including textured face.
        b. Unit Face Area: Not less than 1.0 square foot.
        c. Color: Selected by the Engineer and Owner from manufacturer's full range of standard colors.
        d. Face Pattern Geometry: Beveled
        e. Texture: Split Rock Face.
        f. Batter: Include an integral concrete shear connection flange/locator to provide a 1 inch setback for each wall course.

B. Geosynthetic Reinforcement: Polyester fiber geogrid or geotextile, or polypropylene woven geotextile, as shown on the Drawings.

C. Leveling Pad
    1. Aggregate Base: Crushed stone or granular fill meeting the following gradation as determined in accordance with ASTM D448:

Sieve Size	Percent Passing
1 inch	100
No. 4	35 to 70
No. 40	10 to 35
No. 200	3 to 10

a. Base Thickness: 6 inches (minimum compacted thickness).

2. Concrete Base: Non-reinforced lean concrete base.
   a. Compressive Strength: 3,000 psi (maximum).
   b. Base Thickness: At least 2 inches.

D. Unit Fill and Drainage Aggregate: Clean crushed stone or granular fill meeting the following gradation as determined in accordance with ASTM D448:

Sieve Size	Percent Passing
1 inch	100
3/4 inch	75 to 100
No. 4	0 to 60
No. 40	0 to 50
No. 200	0 to 5

E. Reinforced Fill: Soil free of organics and debris and consisting of either GP, GW, SP, SW, or SM type, classified in accordance with ASTM D2487 and the USCS classification system and meeting the following gradation as determined in accordance with ASTM D448:

Sieve Size	Percent Passing
1 inch	100
No. 4	20 to 100
No. 40	0 to 60
No. 200	0 to 35

1. Plasticity Index (PI) < 6 per ASTM D4318.
2. Maximum particle size for backfill is 1 inch unless field tests have been performed to evaluate potential strength reduction to the geosynthetic reinforcement due to damage during construction per ASTM D5818.
3. Unsuitable soils are organic soils and those soils classified as SC, CL, ML, CH, OH, MH, OL, or PT.

F. Low Permeability Soil: Clayey soil or other similar material which will prevent percolation into the drainage zone behind the wall.

G. Drainage Pipe: Perforated or slotted PVC or corrugated HDPE pipe manufactured in accordance with D3034 and/or ASTM F405. All connectors and fittings shall match the piping material.

H. Geotextile Separation Fabric: Geotextile Separation fabric shall be minimum 4.0 oz/sy, polypropylene, needle-punched nonwoven fabric.

I. Construction Adhesive: Exterior grade adhesive as recommended by the retaining wall unit manufacturer.

PART 3 – EXECUTION

3.01 EXAMINATION

A. Prior to commencing work, the retaining wall contractor shall examine the areas and conditions under which the retaining wall system is to be erected, and notify the Engineer and Owner in writing of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected.

B. Promptly notify the wall design engineer of site conditions which may affect wall performance, soil conditions observed other than those assumed, or other conditions that may require a reevaluation of the wall design.

C. Verify the location of existing structures and utilities prior to excavation.

3.02 PREPARATION

A. Ensure surrounding structures are protected from the effects of wall excavation.

B. Excavation support, if required, is the responsibility of the Contractor, including the stability of the excavation and its influence on adjacent properties and structures.

3.03 EXCAVATION

A. Excavate to the lines and grades shown on the Shop Drawings. Over-excavation not approved by the Owner (or Owner's representative) will not be paid for by the Owner. Replacement of these soils with compacted fill and/or wall system components will be required at the Contractor's expense. Use care in excavating to prevent disturbance of the base beyond the lines shown.

3.04 FOUNDATION PREPARATION

A. Excavate foundation soil as required for footing or base dimension shown on the Shop Drawings, or as directed by the Project geotechnical engineer.

B. The Project geotechnical engineer will examine foundation soil to ensure that the actual foundation soil strength meets or exceeds that indicated on the Shop Drawings. At the direction of the project geotechnical engineer, remove soil not meeting the required strength. Oversize resulting excavation sufficiently from the front of the block to the back of the reinforcement, and backfill with suitable compacted backfill soils.

C. The Project geotechnical engineer will determine if the foundation soils will require special treatment or correction to control total and differential settlement.

D. Fill over-excavated areas with suitable compacted backfill, as recommended by the

Project geotechnical engineer.

3.05 LEVELING PAD PREPARATION

A. Place base materials to the depths and widths shown on the Shop Drawings, upon undisturbed soils, or foundation soils prepared in accordance with Article 3.04.
   1. Extend the leveling pad laterally at least 6 inches in front and behind the lowermost SRW unit.
   2. Provide aggregate base compacted to 6 inches thick (minimum) or as shown on the drawings.
   3. The Contractor may at their option, provide a concrete leveling pad as specified in Subparagraph 2.01.C.2, in lieu of the aggregate base.
   4. Where a reinforced footing is required by local code official, place footing below frost depth.

B. Compact aggregate base material to provide a level, hard surface on which to place the first course of SRW units.

C. Prepare base materials to ensure complete contact with SRW units. Gaps are not allowed.

3.06 ERECTION

A. General: Erect SRW units in accordance with manufacturer's instructions and recommendations, and as specified herein.

B. Place first course of concrete wall units on the prepared base material. Check units for level and alignment. Maintain the same elevation at the top of each unit within each section of the base course.

C. Ensure that foundation units are in full contact with the leveling pad.

D. Place concrete wall units side-by-side for full length of wall alignment. Alignment may be done by using a string line measured from the back of the block. Gaps are not allowed between the foundation concrete wall units.

E. Place drainage aggregate between and directly behind the SRW. Fill any voids in SRW units with drainage aggregate. Provide a drainage zone behind the SRW units a minimum of 12 inches wide to within 8 inches of the final grade. Cap the backfill and drainage aggregate zone with separation fabric and then 8 inches of low permeability soil.

F. Install drainage pipe at the lowest elevation possible to maintain gravity flow of water to outside of the reinforced zone. Slope the main collection drainage pipe 2 percent (minimum) to provide gravity flow to the daylighted areas. Daylight the main collection drainage pipe through the face of the wall, and/or to an appropriate location away from the wall system at each low point or at 50 foot (maximum) intervals along the wall. Alternately, the drainage pipe can be connected to a storm sewer system at 50 foot (maximum) intervals.

G. Remove excess fill from top of SRW units and install next course. Ensure drainage

aggregate and backfill are compacted before installation of next course.

H. Check each course for level and alignment. Adjust SRW units as necessary to maintain level and alignment prior to proceeding with each additional course.

I. Install each succeeding course. Backfill as each course is completed. Pull the SRW units forward until the locating surface of the SRW unit contacts the locating surface of the SRW units in the preceding course. Interlock wall segments that meet at corners by overlapping successive courses. Attach SRW units at exterior corners with adhesive specified.

J. Install geosynthetic reinforcement in accordance with geosynthetic manufacturer's recommendations and the shop drawings.
    1. Orient geosynthetic reinforcement with the highest strength axis perpendicular to the wall face.
    2. Prior to geosynthetic reinforcement placement, place the backfill and compact to the elevation of the top of the wall units at the elevation of the geosynthetic reinforcement.
    3. Place geosynthetic reinforcement at the elevations and to the lengths shown on the Drawings.
    4. Lay geosynthetic reinforcement horizontally on top of the SRW units and the compacted backfill soils. Place the geosynthetic reinforcement within one inch of the face of the SRW units. Place the next course of SRW units on top of the geosynthetic reinforcement.
    5. The geosynthetic reinforcement shall be in tension and free from wrinkles prior to placement of the backfill soils. Pull geosynthetic reinforcement hand-taut and secure in place with staples, stakes, or by hand-tensioning until the geosynthetic reinforcement is covered by 6 inches of loose fill.
    6. The geosynthetic reinforcements shall be continuous throughout their embedment lengths. Splices in the geosynthetic reinforcement strength direction are not allowed.
    7. Do not operate tracked construction equipment directly on the geosynthetic reinforcement. At least 6 inches of compacted backfill soil is required prior to operation of tracked vehicles over the geosynthetic reinforcement. Keep turning of tracked construction equipment to a minimum.
    8. Rubber-tired equipment may pass over the geosynthetic reinforcement at speeds of less than 10 miles per hour. Turning of rubber-tired equipment is not allowed on the geosynthetic reinforcement.

3.07 BACKFILL PLACEMENT

A. Place reinforced fill, spread and compact in a manner that will minimize slack in the reinforcement.

B. Place fill within the reinforced zone and compact in lifts not exceeding 6 inches (loose thickness) where hand-operated compaction equipment is used, and not exceeding 12 inches (loose thickness) where heavy, self-propelled compaction equipment is used.
    1. Only lightweight hand-operated compaction equipment is allowed within 3 feet of the back of the retaining wall units. If the specified compaction cannot be achieved within 3 feet of the back of the retaining wall units, replace the reinforced soil in this zone with drainage aggregate material.

C. Compaction testing shall be done in accordance with ASTM D1556 or ASTM D2922.

D. Minimum Compaction Requirements for Fill Placed in the Reinforced and Retained Zone.
   1. The minimum compaction requirement shall be determined by the project geotechnical engineer testing the compaction. At no time shall the soil compaction requirements be less than 95 percent of the soil's standard Proctor maximum dry density (ASTM D698) for the entire wall height.
   2. Utility Trench Backfill: Compact utility trench backfill in or below the reinforced soil zone to 98 percent of the soil's standard Proctor maximum dry density (ASTM D698).
      a. Utilities must be properly designed (by others) to withstand all forces from the retaining wall units, reinforced soil mass, and surcharge loads, if any.
   3. Moisture Content: Within 2 percentage points of the optimum moisture content for all wall heights.
   4. These specifications may be changed based on recommendations by the Project geotechnical engineer.
      a. If changes are required, the Contract Sum will be adjusted by written Change Order.

E. At the end of each day's operation, slope the last level of compacted backfill away from the interior (concealed) face of the wall to direct surface water runoff away from the wall face.
   1. The General Contractor is responsible for ensuring that the finished site drainage is directed away from the retaining wall system.
   2. In addition, the General Contractor is responsible for ensuring that surface water runoff from adjacent construction areas is not allowed to enter the retaining wall area of the construction site.

F. Refer to Article 3.10 for compaction testing.

3.08 CAP UNIT INSTALLATION

A. Apply adhesive to the top surface of the SRW unit below and place the cap unit into desired position.

B. Cut cap SRW units as necessary to obtain the proper fit.

C. Backfill and compact to top of SRW unit.

3.09 SITE CONSTRUCTION TOLERANCES

A. Site Construction Tolerances
   1. Vertical Alignment: Plus or minus 1-1/2 inches over any 10-foot distance, with a maximum differential of 3 inches over the length of the wall.
   2. Horizontal Location Control from Grading Plan
      a. Straight Lines: Plus or minus 1-1/2 inches over any 10-foot distance.

b. Corner and Radius Locations: Plus or minus 12 inches.
c. Curves and Serpentine Radii: Plus or minus 2 feet.

3. Immediate Post Construction Wall Batter: Within 2 degrees of the design batter of the concrete retaining wall units.
4. Bulging: Plus or minus 1-1/4 inches over any 10-foot distance.

3.10 FIELD QUALITY CONTROL

A. Installer is responsible for quality control of installation of system components.

B. The Owner or General Contractor, at their expense, will retain a qualified professional to perform quality assurance checks of the installer's work.

C. Correct work which does not meet these specifications or the requirements shown on the Drawings at the installer's expense.

D. Perform compaction testing of the reinforced backfill placed and compacted in the reinforced backfill zone.
   1. Testing Frequency
      a. One test for every 2 feet (vertical) of fill placed and compacted, for every 50 lineal feet of retaining wall.
      b. Vary compaction test locations to cover the entire area of the reinforced soil zone, including the area compacted by the hand-operated compaction equipment.

3.11 ADJUSTING AND CLEANING

A. Replace damaged SRW units with new units as the work progresses.

B. Remove debris caused by wall construction and leave adjacent paved areas broom clean.

3.12 MEASUREMENT AND PAYMENT

APPLIES TO PHASE ONE WORK ONLY

A. Measurement of segmental retaining wall shall be on an installed square foot basis computed on the total face area of wall installed. Wall face area includes the bottom of the base course to the top of the wall, and the entire length of the wall.

B. Payment for the wall will be made on a square foot basis at the agreed upon Contract Unit Price.
   1. Payment should be considered full compensation for labor, materials, equipment and testing required to install the wall in accordance with these specifications and the Drawings.
   2. Quantities may vary from that shown on the Drawings depending on existing topography. Change to the total quantity of wall face area will be paid or withheld at the agreed upon Contract Unit Price.

END OF SECTION

SECTION 00801
CDBG CONTRACT CONDITIONS WITH WAGE RATES AND SECTION 3 SOLICITATION PACKAGE

DO YOU USE THIS PACKAGE?

(ANSWER ALL 3 QUESTIONS)

YES NO

1. Did you contract for $200,000 or more directly from DCA? If so, you are a Sub-recipient and this package is applicable to you.

2. Did you contract for $100,000 or more directly from the Sub-recipient (see above)? If so, you are a Contractor and this package is applicable to you.

3. Did you contract for $100,000 or more directly from the Contractor (see above)? If so, you are a Sub-Contractor and this package is applicable to you.

If you answered "**YES**" to **any** question, this package **IS** applicable to you

---

IMPORTANT NOTE!!!

Even if you answered "**NO**" to **ALL** questions, this package **BECOMES APPLICABLE** to you when, during the life of your contract, you trigger "**YES**" to any of the above questions.

This form must be returned to the soliciting entity with your bid package. Failure to return this documentation will render your bid package as non-responsive.

_____ _____ _____

Signature Print Name Position Title

_____ _____

Entity Name Date

Georgia Department of Community Affairs
60 Executive Park South, NE, Atlanta, GA 30329

Mandatory Section 3 Solicitation Package

This mandatory solicitation package has been developed in accordance with DCA's Section 3 Policy for Covered HUD Funded Activities. DCA encourages all sub-recipients, contractors, and sub-contractors to review this policy prior to completion of the solicitation package. For those solicitations that meet the applicable Section 3 thresholds, this package must be returned in its entirety to the contracting entity. The Section 3 Clause, required forms, and instructions are included in this package.

The following Section 3 forms must be completed and returned as instructed:

- Section 3 Self Certification and Action Plan
- Previous Section 3 Compliance Certification
- Assurance of Compliance Certification

Additionally, if the contractor is claiming certification as a 51% Resident Owned Business (ROB) or is certifying as a 30% employer, the Resident Self-Certification and Skills Data Form must be returned for all employees who meet the low- or very low-income requirement as well as the appropriate Section 3 Business Certification.

Section 3 Solicitation Overview and Instructions for Contractors

The DCA Section 3 Policy requires that, when the **Section 3 regulation is triggered,** every effort within the contractor's disposal must be made, to the greatest extent feasible, to offer all available employment and contracting opportunities to Section 3 residents and Section 3 businesses based on the compliance methods below.

All Contracts and All Contractors must meet Section 3 compliance by:

A. Giving notice of any and all opportunities for employment and contracting to residents of the local Public Housing Authority (PHA), and other low and very low income area residents and businesses, by posting the opportunity in community sources generally available to low income residents and the general public. Exercising a ***minimum of three (3)*** of the following listed sources must be completed prior to offering employment to anyone not covered by Section 3 requirements:

   1. The local community newspaper
   2. The most widely distributed newspaper
   3. Company or agency website
   4. The management office of the local housing authority/homeless service agency/local low income housing community
   5. Local Workforce Board (i.e. Department of Labor)
   6. Local office of the Georgia Division of Family and Children Services
   7. Dodge Room http://www.construction.com/dodge/dodge.asp
   8. Other locations as approved by DCA

B. Clearly stating in notices that the position is a "Section 3 covered position under the HUD Act of 1968 and that Section 3 Residents and Business Concerns are encouraged to apply."

C. Placing the Section 3 Clause provided in Appendix A in ALL solicitations.

D. When possible, other activities may be done to demonstrate effort to comply with the Safe Harbor Limits. These other efforts are listed in the appendix to part 135 of the Code of Federal Regulations—24 CFR Part 135 and include:

   1. Distributing or posting flyers advertising positions to be filled;
   2. Contacting the local government or housing authority for a list of residents who have expressed interest in Section 3 employment;
   3. Holding job informational meetings for residents, contractors, etc…;
   4. Contacting agencies administering HUD YouthBuild programs and requesting their assistance in recruiting HUD YouthBuild program participants for training and employment positions.

E. Linking residents or businesses to local resources that may be available to help prepare them for applying for and achieving the opportunity.

F. Working with DCA, the subrecipient or contractor as applicable in developing a communication and follow up process to track and report all Section 3 applications and hiring activities to ensure the reporting of compliance efforts, and that contracting and sub-contracting are accurate. Provide preference in hiring and contracting to Section 3 applicants and contractors when employment or contracting opportunities are offered and all requirements are met and remain equal. Contractors must:

1. Provide this package to all sub-contractors when soliciting bids for all contracts or sub-contracts;
2. Meet all the same processes in A-E; and
3. Provide Preference to all sub-contractors meeting the definitions as stated in Section VI of DCA's Section 3 Policy for Covered HUD Funded Activities.

G. In order for Preference as a Section 3 Contractor to be factored into the award decision, all elements of the solicitation criteria must be equal between contracts. This means price and all other factors must be equal. Then the contractors that elect Preference on the Certification and Action Plan form that meet that Preference criterion will be provided Preference in the award of the contract as provided in Part VI., Preferences and Eligibility of DCA's Section 3 Policy for Covered HUD Funded Activities.

Example:
Bill's electrical and Sue's Electrical bid a job where the housing authority has a budget of $500,000. Bill bids $480,000 and elects a Preference as a Section 3 business concern because he qualifies as a 51% Resident Owned Business. Sue bids $450,000 but does not elect any Preference. Both companies met all the other requirements. Sue will be awarded the contract because Bill's bid was higher.

Important items to remember about receiving Preferences in contract award:

All contractors and/or subcontractors that elect a Preference and are awarded a contract must be in compliance prior to the issuance of a Notice to Proceed by DCA, the subrecipient, or the contractor based on the policies established for the applicable DCA funding program. The contractor and/or subcontractor must maintain the elected Preference standard during the entire contract or risk having the contract terminated for failure to comply. **See Appendix B for further details.**

When a contractor and/or subcontractor that elected a Preference is unable to identify a Section 3 resident or a Section 3 business for employment or contracting opportunities, the contractor then ***must*** offer employment related training to the Section 3 residents in the county. The training must be provided according to Part VII – Other Economic Opportunities in DCA's Section 3 Policy.

Appendix A
Section 3 Clause

Training and Employment Opportunities for Residents in the Project Area (Section 3, HUD Act of 1968; 24 CFR 135)

(a) The work to be performed under this contract is subject to the requirements of section 3 of the Housing and Urban Development Act of 1968, as amended, 12 U.S.C. 1701u (section 3). The purpose of section 3 is to ensure that employment and other economic opportunities generated by HUD assistance or HUD-assisted projects covered by section 3, shall, to the greatest extent feasible, be directed to low- and very low-income persons, particularly persons who are recipients of HUD assistance for housing.

(b) The parties to this contract agree to comply with HUD's regulations in 24 CFR Part 135, which implement section 3. As evidenced by their execution of this contract, the parties to this contract certify that they are under no contractual or other impediment that would prevent them from complying with the Part 135 regulations.

(c) The contractor agrees to send to each labor organization or representative of workers with which the contractor has a collective bargaining agreement or other understanding, if any, a notice advising the labor organization or workers' representative of the contractor's commitments under this section 3 clause, and will post copies of the notice in conspicuous places at the work site where both employees and applicants for training and employment positions can see the notice. The notice shall describe the section 3 preference, shall set forth minimum number and job titles subject to hire, availability of Section 3 apprenticeship and training positions, the qualifications for each; and the name and location of the person(s) taking applications for each of the positions; and the anticipated date the work shall begin.

(d) The contractor agrees to include this section 3 clause in every subcontract subject to compliance with regulations in 24 CFR Part 135, and agrees to take appropriate action, as provided in an applicable provision of the subcontract or in this section 3 clause, upon a finding that the subcontractor is in violation of the regulations in 24 CFR Part 135. The contractor will not subcontract with any subcontractor where the contractor has notice or knowledge that the subcontractor has been found in violation of the regulations in 24 CFR Part 135.

(e) The contractor will certify that any vacant employment positions, including training positions, that are filled (1) after the contractor is selected but before the contract is executed, and (2) with persons other than those to whom the regulations of 24 CFR Part 135 require employment opportunities to be directed, were not filled to circumvent the contractor's obligations under 24 CFR Part 135.

(f) Noncompliance with HUD's regulations in 24 CFR Part 135 may result in sanctions, termination of this contract for default, and debarment or suspension from future HUD assisted contracts.

Appendix B

Section 3 Contract Non-Compliance Cure /Termination Processes

This language is a component of contract compliance with the work to which you are responding in this solicitation. The full requirements are provided in the Section 3 Clause found elsewhere in this package and in DCA's Section 3 Policy for Covered HUD Funded Activities.

Any subrecipient or contractor claiming Preference **must be in compliance prior to issuance of a notice to proceed by DCA, subrecipient, or contractor based on the policies established for the applicable DCA funding program. This preference can be met by any of the three qualifications:**

1. Resident Owned Businesses (ROBs) owned and operated at 51% by Section 3 Residents.
2. Businesses that employ Section 3 residents at no less than 30% of the contractors aggregate full time staff.
3. Contractors that at the time of bid show evidence (meaning the specific name and preference met) of their intent to award no less than 25% of their total award to Section 3 business concerns.

The subrecipient or contractor must maintain compliance throughout the life of the contract. The contractor understands and agrees that a compliance management firm may be used to conduct routine and certified payroll reviews to ensure compliance. The Contractor agrees to provide the payroll data in an Excel or Word format each time the payroll is processed throughout the contract.

Failure to meet the Section 3 requirements will result in penalties up to and including contract termination. Any contractor triggering the regulation by doing any hiring or contracting once they are awarded the contract through execution must comply with the Section 3 requirements by executing the efforts on their Certification and Action Plan in accordance with DCA's Section 3 Policy.

DCA, the subrecipient or contractor shall execute these remedies to achieve compliance in this order:

NON-COMPLIANCE CURE PROCESS

A. Based on the first observation or report of non-compliance with Section 3, the subrecipient or contractor will be sent an e-mail by the compliance manager notifying them of their non-compliance issue. The subrecipient or contractor will have until the next payroll or 10 business days, whichever is less, to bring the contract into compliance and/or justify in writing why they cannot meet compliance requirements.

B. DCA, the subrecipient or contractor must render a response to the violating party within 10 business days of receipt of the violating party's letter of reason for non-compliance. If DCA, the subrecipient, or the contractor deems the reason to be unacceptable, at its

option, DCA, the subrecipient, or the contractor can extend the response period one time for up to 5 business days to allow the violating party to identify and secure other compliance options.

NON-COMPLIANCE TERMINATION PROCESS

If the violating party fails to take any corrective action to bring the contract into compliance within the allotted time, or DCA, the subrecipient, or the contractor rejects any of the corrective plans and justifications for non-compliance, DCA, the subrecipient, or the contractor will either terminate the contract immediately or impose liquidated damages equal to the number of days out of compliance divided by the total contract period multiplied by the contract amount. For example, if a violating party is out of compliance for 30 days of a total contract period of 120 days and as part of total contract of $600,000, then the liquidated damages will equal 25% (30/120) of the total contract amount ($600,000), or $150,000. At DCA's determination, any liquidated damages received must be paid to the subrecipient or DCA, at DCA's determination, and be used to promote economic opportunities for Section 3 Residents and Business Concerns.

DCA, the sub-recipient, or the contractor will hold **all funds due to the violating party until such time that a financial workout is completed**.

Additionally the violating party may be banned by DCA, the sub-recipient, and the contractor on future HUD funded projects.

Appendix C
Section 3 Forms

Georgia Department of Community Affairs
Required Submittal - Section 3 Self-Certification and Action Plan

All firms and individuals intending to do business with DCA, its subrecipients and contractors MUST complete and submit this Action Plan and submit it with the bid, offer, or proposal. ***Any solicitation response that does not include this document (completed, signed, and notarized) will be considered non-responsive and not eligible for award.***

Business Name:		
D.B.A. (if different from above):		
Address:	City:	State/Zip:
Business Phone: ( )	Fax: ( )	
E-Mail:	Business Website:	
Federal Employer Identification Number:	Owner Social Security Number (if no EIN):	
Contact Person & Title:	Contact Phone:	

Trade Description:

☐ Carpentry	☐ Heating (HVAC)	☐ Electrical	☐ Painting
☐ Masonry Restoration	☐ Asbestos	☐ Plumbing	☐ Roofing
☐ Lead (Abatement)	☐ General Contractor	☐ Concrete	☐ Ironwork
☐ Carpet/Flooring	☐ Rubbish Removal/Hauling	☐ Appraisal Services	☐ Landscaping
☐ Demolition	☐ Other:		

Date Business was established (MM/DD/YYYY): _____

Type of Business (Check One): ☐Corporation ☐ Partnership ☐ Sole Proprietorship
☐ Limited Liability Corporation (LLC) ☐ Limited Liability Partnership (LLP) ☐ Joint Venture
☐ Other (Describe):

_____

_____

Number of employees: Full-time: _____ Part-time: _____ Contract: _____ **Total:** _____

Section 3 employees: Full-time: _____ Part-time: _____ Contract: _____ **Total:** _____

I am Certifying as a Section 3 Business Concern and requesting Preference accordingly (Select only One Option):

Option 1

☐ A business claiming status as a Section 3 Resident-Owned Business Concern (ROB) entity:

_____Initial here to confirm selection of this option

Option 2

☐ A business claiming Section 3 status, because at least 30% of the existing or newly hired workforce for this specific contract will be Section 3 residents throughout the entire contract period. If a Prime or General Contractor is electing this option, the 30% employment requirement will be for the entire project including all the sub-contractors' employees:

Check all methods you will employ to secure Section 3 Residents/Persons

Posting the position in community sources that are generally available to low income residents and the general public is a standard requirement. **Check at least three (3) methods you will employ:**

- ☐ The local community newspaper
- ☐ The most widely distributed newspaper
- ☐ Company or agency website
- ☐ The management office of the local housing authority, or homeless service agency, or local low income housing community
- ☐ Local Workforce Board (i.e., Department of Labor)
- ☐ Local office of the Georgia Division of Family and Children Services
- ☐ Local office of the Georgia Department of Public Health
- ☐ Dodge Room http://www.construction.com/dodge/dodge.asp
- ☐ Other locations identified below and subject to DCA approval:

_____

_____

_____Initial here to confirm selection of this option

I anticipate my total number of employees for this contract to be ____ and _____ will be qualified Section 3 Residents/persons.

Option 3

☐ A business claiming Section 3 status by subcontracting 25% of the dollar award to qualified Section 3 Business:

Attach a list of intended subcontract Section 3 business(es) with subcontract amount.

Attach certification & all supporting documentation for each planned subcontract Section 3 Business.

_____Initial here to confirm selection of this option

I am NOT Requesting Preference under Section 3:

☐ *I am **NOT** certifying as a qualified Section 3 Business Concern and I am not requesting a preference.* However ***if*** *I do trigger the regulation by doing any sub-contracting or hiring, I will comply by meeting all requirements of DCA's Section 3 policy and am* committing to do the outreach as specified below.

Check all methods you will employ to secure Section 3 Residents/Businesses

Posting the position/contract opportunity in community sources that are generally available to low income residents and Section 3 Businesses and the general public is a standard requirement. **Check at least three (3) methods you will employ:**

- ☐ The local community newspaper
- ☐ The most widely distributed newspaper
- ☐ Company or agency website
- ☐ The management office of the local housing authority, or homeless service agency, or local low income housing community
- ☐ Local Workforce Board (i.e., Department of Labor)
- ☐ Local office of the Georgia Division of Family and Children Services
- ☐ Local office of the Georgia Department of Public Health
- ☐ Dodge Room http://www.construction.com/dodge/dodge.asp
- ☐ Other locations identified below and subject to DCA approval:

_____

_____

_____Initial here to confirm selection of this option

Signature: _____

Printed/Typed Name:_____

Title:_____

Date:_____

Notarial Affadavit

Sworn to and subscribed before me this _____ day of _____, 20_____.

_____

Signature of Notary Public

_____

Printed Name of Notary Public

Commission Expiration Date: _____

(Notarial Seal)

Georgia Department of Community Affairs
Required Submittal - Previous Section 3 Compliance Certification

Name of Business: _____

Address of Business: _____

Type of Business (Check One): ☐ Corporation ☐ Partnership

☐ Sole Proprietorship ☐ Other

Business Activity: _____

All firms and individuals intending to do business with DCA, its subrecipients, or contractors **MUST** complete and submit this certification of prior compliance with their bid, offer, or proposal. Any solicitation response that does not include this document will be considered non-responsive and not eligible for award. Please check the appropriate line box below and sign and date the form.

1. I am certifying that I have complied with the HUD Section 3 Regulations, when triggered by new hiring or contracting opportunities, in my past contracts **when required** by the recipient, subrecipient or contractor by either:

i. Certifying as Resident Owned Business (ROB); or,
ii. Employing Section 3 residents for at least 30% of the newly hired workforce; or,
iii. Subcontracting 25% of the total dollar award to a qualified Section 3 Business; or,
iv. Hiring or contracting to the "greatest extent feasible" with Section 3 Residents or Section 3 Businesses.

☐ Check this box

2. I have never done any HUD funded contracting.

☐ Check this box

3. I completed HUD Section 3 covered contracts in the past three years but the regulation was not triggered because either there were no new hires on the contract(s) and/or I did not do any new contracting or subcontracting.

☐ Check this box

Signature: _____
Print Name: _____
Title: _____

Required Submittal - Assurance of Compliance Certification
Section 3 Action Plan
Housing and Urban Development Act of 1968
(12 U.S.C. 1701 U)

Contract/Solicitation Name or Number:

_____

DCA Funding Program:_____

Entity Receiving DCA Funding Award:_____

Purpose: To ensure that regulations promulgated under 24 CFR Part 135 Employment Opportunities for Businesses and Lower Income Persons in Connection with Assisted Projects and the Section 3 Policy of DCA, its subrecipients and contractors to the greatest extent feasible is adhered to, and to serve as the "assurance of compliance" certification and action plan as required in the bid documents, supplemental general conditions, and required forms for the contract for any HUD work funded by DCA.

Description of the project's work detail: The project work will be as listed in the final scope of work in the contract with DCA, its subrecipients and contractors including any change orders. List all known subcontractors below:

Subcontractor(s): _____

Subcontractor(s): _____

Subcontractor(s): _____

Subcontractor(s): _____

Subcontractor(s): _____

Subcontractor(s): _____

Subcontractor(s): _____

Subcontractor(s): _____

Use an additional sheet if required.

Note: If subcontractors are unknown at this time, print UNKNOWN on the line above. Also, the contractor must notify DCA or subrecipient if subcontractors are added or changed during the contract.

Any changes to this certification requires a resubmission of this form to DCA or subrecipient.

Preliminary Statement for Work Force Needs:

DCA intends to meet Section 3 compliance at the highest level and it is our intent to identify any short-term and long-term employment or contracting opportunities for qualified Section 3 persons and Business Concerns during the course of the contract funded by DCA via its subrecipients and contractors. Please list the status of all planned employment positions and opportunities for this contract. **Preference for all opportunities must be given to low and very low-income residents if they qualify. If awarded a contract,** regardless of whether your firm has elected a preference, **you are <u>required</u> to provide a list of your aggregate workforce on this project. Any changes to that workforce during the project will constitute NEW hires. You must notify DCA, its subrecipient or contractor (respectively) overseeing your contract of any new hire opportunities that arise during the life of your contract.** The a*nticipated workforce list may be provided on a separate sheet or in a different format.*

<u>List All Employees</u>	<u>Date Hired</u>	<u>Section 3 Resident (Yes/No)</u>	<u>Job Title/Trade</u>	<u>Salary Range</u>
Name: Address: City, ZIP:				
Name: Address: City, Zip Code:				
Name: Address: City, Zip Code:				
Name: Address: City, Zip Code:				

Use additional pages as needed.

"To the Greatest Extent Feasible":

The Contractor has identified ___ # of **OPEN** positions with respect to this contract. The positions are filled by the _____ (Position title) of the Contractor.

Should the scope of work or duties of the contractor change to a degree requiring a modification of the work force needs, the contractor shall put forth a reasonable effort to fill vacant positions with eligible Section 3 residents.

Documentation of "To the Greatest Extent Feasible":

The contractor will work with DCA, its subrecipients, and contractors staff to notify residents of any opportunities afforded under the contract. The contractor will partner with DCA, its subrecipients, and contractors by giving preference of any employment opportunities to the Section 3 persons or businesses.

The contractor shall recruit or attempt to recruit from the Section 3 area the necessary number of low-income and very low-income residents and Section 3 businesses, as applicable. The contractor must also document their recruiting efforts and any impediments to compliance with DCA's Section 3 policy and the requirements of this solicitation package. This documentation must be submitted to the recipient or sub-recipient.

1. DCA, its subrecipients and contractors shall: Maintain a list of all low-income area residents who have applied, either on their own or from referral from any source, and employ such person if otherwise eligible and if a trainee vacancy exists.
2. Conduct solicitation in accordance with DCA's Section 3 policy and the requirements outlined in the solicitation package.

The contractor shall review all employment applications and determine if low-income and very low-income residents or Section 3 businesses meet minimum hiring or contracting qualifications. If these applicants meet such minimum qualifications, but are not hired due to lack of employment opportunities or for other reasons, they will be placed on a priority list and offered positions/contracts upon the occurrence of the first available appropriate opening.

Utilization of Section 3 Businesses Located Within the County:

The subrecipient or contractor does ___ does not ___ intend to subcontract any of the work indentified in the scope of work cited in the bid specifications, scope of work or General Conditions. Should the scope of work or needs of the contractor change, the contractor shall, to the greatest extent feasible, assure that subcontracts be awarded to business concerns within the Section 3 covered area, or to business concerns owned in the substantial part (at least 51%) by persons residing in the Section 3 covered area.

Record Keeping:
The subrecipient, contractor or subcontractor, as applicable, shall maintain on file all records related to employment and job training of low-income and very low-income residents or other such records, advertisements, legal notices, brochures, flyers, publications, assurances of compliance from sub-contractors, etc, in connection with this contract. If a report is needed in the future, the subrecipient,

contractor or subcontractor, as applicable, agrees to provide all records upon request. The contractor shall, upon request, provide such records or copies of records to HUD, DCA, their subrecipients, contractors, staff, or agents. Records shall be maintained for at least three (3) years after the close of the contract.

Reports:
The subrecipient or contractor shall provide reports as required in connection with the contractor specifications. All certified and regular payrolls shall clearly detail which employees qualify under Section 3.

Certification:
The subrecipient or contractor will certify that any vacant employment positions, including training positions that filled:

1) After the subrecipient or contractor is selected but before the contract is executed, and
2) With persons other than those to who the regulations of 24 CFR Part 135 require employment opportunities to be directed, were not filled to circumvent the subcontractor's obligations under 24 CFR Part 135.

Grievance and Compliance:
The subrecipient, contractor or subcontractor hereby acknowledges that they understand that any low-income and very low-income resident of the project area, for him/her or as representatives of persons similarly situated, seeking employment or job training opportunities in the project area, or any eligible business concerns seeking contract opportunities may file a grievance if efforts to the greatest extent feasible were not executed. The grievance must be filed with HUD not later than one hundred eighty (180) calendar days from the date of the action (or omission) upon which the grievance is based.

I attest that the information on the preceding pages is true and correct.

_____ _____
Signature Date

_____
Print Name

_____
Title

RESIDENT SECTION 3 SELF-CERTIFICATION AND SKILLS DATA FORM

The purpose of this form is to comply with HUD Section 3 administration and certification regulations.

Certification for Section 3 Residents or other Low-Income Persons Seeking Employment, Training or Contracting

I, _____, am a legal resident of the United States and meet the income eligibility and federal guidelines for a Section 3 Resident as defined within this Certification.

My home address is: _____

Must be a **Street** address not a P O Box # Apt Number

_____

City State Zip Home # Cell #

_____

County of Residence

Graduated High School or GED (month/year): _____ I Read and Speak English Fluently: Yes or No

Attended College, Trade, or Technical School: Yes or No Graduated? Yes or No Year Graduated:_____

Check the Skills, Trades, and/or Professions in which you have been employed or contracted to do for others:

☐Drywall Hanging	☐Drywall Finishing	☐Interior Painting	☐Framing
☐HVAC	☐Electrical	☐Interior Plumbing	☐Exterior Plumbing
☐Siding	☐Cabinet Hanging	☐Door Replacement	☐Trim/Carpentry
☐Stucco	☐Window/Door Replacement	☐Construction Cleaning	☐Exterior Framing
☐Data Entry	☐Receptionist	☐ Sales	☐Telephone Customer Service
☐Administrative	☐Teaching/Training	☐Personal Care Aide	☐Landscaping
☐CDL License	☐Roofing	☐Concrete/Asphalt Work	☐Heavy Equipment Operator
☐Fencing	☐Metal/Steel Work	☐Welding	
☐Other		☐Other	

I am certifying as a Section 3 Resident**:** ☐ **Person seeking Training** **or** ☐ **Person seeking employment**

(Check all that apply):

☐ I am a public housing or section 8 Leaseholder ☐ I live in the service area

My total annual household income is $_____. There are a total of _____ people living in my household.

I certify that all of the information given on this Certification is true and correct. If found to be inaccurate, I understand that I may be disqualified as an applicant and/or a certified Section 3 individual which may be grounds for termination of training, employment, or contracts that resulted from this certification. I attest under penalty of perjury that my total household income annually, based on my total household size as listed above is at or below the income amount for that specific size at the time of this document is being signed and notarized. I understand that proof of this statement may be requested in the future.

_____ _____

Signature Date

Printed Name: _____

Purpose:
The purpose of Section 3 of the Housing and Urban Development of 1968 (12 U.S.C. 1701u) (Section 3) is to ensure that employment and other economic and business opportunities generated by HUD Financial Assistance shall be directed to the Authority Residents and other low- and very low-income persons, particularly those who are recipients of government housing assistance and to business concerns which provide economic opportunities to Residents and other low- and very low-income persons.

Section 3 resident means:

(1) A public housing resident; or

(2) An individual who resides in the metropolitan area or non-metropolitan county in which the section 3 covered assistance is expended, and who is:
   I. A low-income person, as this term is defined in section 3(b)(2) of the 1937 Act (42 U.S.C. 1437a(b)(2)). Section 3(b)(2) of the 1937 Act defines this term to mean families (including single persons) whose incomes do not exceed 80% of the median family income for the area, as determined by the Secretary, with adjustments for smaller and larger families, except that the Secretary may establish income ceilings higher or lower than 80% of the median for the area on the basis of the Secretary's findings that such variations are necessary because of prevailing levels of construction costs or unusually high or low-income families; or

   II. A very low-income person, as this term is defined in section 3(b)(2) of the 1937 Act (42 U.S.C. 1437a(b)(2). Section 3(b)(2) of the 1937 Act (42 U.S.C. 1437a(b)(2) defines this term to mean families (including single persons) whose incomes do not exceed 50% of the median family income for the area, as determined by the Secretary with adjustments made for smaller or larger families, except that the Secretary may establish income ceilings higher or lower than 50% of the median for the area on the basis of the Secretary's findings that such variations are necessary because of unusually high or low family incomes.

(3) A person seeking the training and employment preference provided by section 3 bears the responsibility of providing evidence (if requested) that the person is eligible for the preference.

Service area means the geographical area in which the persons benefiting from the Section 3-covered project reside.

The figures below represent very low-income families; bottom figures represent low-income families. The most recent income limits established for each county may be found at:
http://www.hud.gov/offices/cpd/affordablehousing/programs/home/limits/income/.

Subrecipient or Contractor to Insert 2013 Income Limits for Project Location

FY 2014 Income Limit Area	Median Income	FY 2014 Income Limit Category	1 Person	2 Person	3 Person	4 Person	5 Person	6 Person	7 Person	8 Person
Lamar County	$46,600.00	Very Low (50%) Income Limits	$16,350	$18,650	$21,000	$23,300	$25,200	$27,050	$28,900	$30,800
Lamar County	$46,600.00	Low (80%) Income Limits	$26,150	$29,340	$33,600	$37,300	$40,300	$43,300	$46,300	$49,250

RESIDENT SECTION 3 SELF-CERTIFICATION
AND SKILLS DATA FORM
AFFADAVIT

STATE OF _____

County of _____

I, _____, a Notary Public of the City/County of _____, State of _____, do hereby certify that, _____, whose name is signed to the writing above bearing date on the _____ Day of _____, 20_____, has acknowledged the same before me in my State aforesaid.

Given under my hand and official seal, this the _____ day of _____, 20___.

_____
Signature of Notary Public

_____
Printed Name of Notary Public

Commission Expiration Date: _____

(Notarial Seal)

SECTION 3 BUSINESS CONCERN SELF CERTIFICATION

The Georgia Department of Community Affairs (DCA) is seeking to extend the benefits of and to promote compliance with Section 3 by identifying Section 3 Business Concerns and targeting Section 3 Business Concerns for business opportunities, events and educational programs.

In an effort to comply with Federal Section 3 Regulations which promote contract, employment and training opportunities for State of Georgia residents, DCA has instituted a Section 3 Self Certification process.

Businesses seeking certification must complete and submit the attached Section 3 Business Concern Self Certification forms as follow:

1. If your company is qualified because it is owned (51% or more) by one or more Section 3 residents, then complete **Form A, "Section 3 Business Concern – Resident Business Owner(s) Verification";**

   OR

2. If your company is qualified because 30% or more of its full time permanent workforce are Section 3 Residents*, then complete **Form B, "Section 3 Business Concern – 30% + Workforce".**

   OR

3. If more than 25% of all subcontract work to be awarded shall be performed by Section 3 business concerns as described above, then complete **Form C, "Section 3 Business Concern-Subcontractor".**

Please answer all questions, sign the completed forms, and notarize the affidavit.

Completed packets must be returned to the subrecipient or contractor as follows:

Name of subrecipient/contractor: _____
Attn:_____
Mailing Address:_____
_____

If you have any questions or require assistance, please contact:

Name:_____
Phone Number:_____
Email Address:_____

Form A
SECTION 3 BUSINESS CONCERN
Resident Business Owner(s) Verification

A business can be certified as a Section 3 Business Concern if the business is owned (51% or more) by Georgia Section 3 Resident(s).

Name of Owner: _____

Home Street Address: _____

Home City, County, & Zip Code:_____

Name of Business: _____

Percentage of Ownership: _____%

Low- to – Moderate Income (80% of Median)
Check the appropriate box for your family size and income *if your total household income is equal to or less than the Gross Household Income Maximum amount listed for your appropriate household size*:

Check Box	# of Persons in Household	Gross Household Income Maximum
	1 Individual	
	2 Individuals	
	3 Individuals	
	4 Individuals	
	5 Individuals	
	6 Individuals	
	7 Individuals	
	8 Individuals	

(Effective _____, 2013)

If the business is owned by more than one Section 3 resident, list each owner below and each should submit a separate Resident Business Owner Verification Form (Form A).

Please list additional Section 3 Resident owners of the business below:

Name	Position	% Percentage of Ownership

I certify that I am a resident of the State of Georgia and my total household income last year was not more than the amount shown above for my family size. I further certify the information provided is true and accurate and agree to provide upon request, documents verifying the information submitted to qualify as a Section 3 Business Concern.

Print: _____ Signature: _____ Date: _____

Form B

SECTION 3 BUSINESS CONCERN

30% + Workforce

A business can be certified as a Section 3 Business Concern if at least 30% of its permanent, full-time employees are Section 3 residents, or were Section 3 residents within three years of the date of the first employment with the business. You may also certify as a Section 3 Business Concern if, for this award, you will hire Section 3 residents for at least 30% of your permanent, full-time employees for this specific project. For your firm to be eligible UNDER THIS CRITERIA, you must provide the following information for **all permanent, full-time employees.**

You may attach additional copies of this chart, if necessary.

List All Employees	**Date Hired**	**Section 3 Resident**	**Job Title/Trade**	**Salary Range**
Name: Address: City/Zip:				
Name: Address: City/Zip:				
Name: Address: City/Zip:				
Name: Address: City/Zip:				
Name: Address: City/Zip:				
Total Number of Employees:	**Full-Time:** _____	**Part-Time:** _____	**Contract:** _____	
Number of Section 3 Residents:				
Section 3 % of Total Workforce:				

I certify that the information provided is true and accurate and agree to provide upon request, any/all documents verifying the information submitted to qualify as a Section 3 Business Concern.

Print Name: _____

Title: _____

Company Name: _____

Signature: _____

Date: _____

Form C
SECTION 3 BUSINESS CONCERN
Subcontractor Awarded

A business can be certified as a Section 3 Business Concern if the firm makes a commitment to subcontract in excess of twenty-five percent (25%) of the total amount of subcontracts to be awarded to: A) Section 3 Resident Owned Businesses; or B) Businesses for which 30% or more of their permanent full-time workforce is comprised of Section 3 Residents.

List all work performed by Section 3 Business Concerns Identified (This Form is to be updated as Section 3 Business Concerns are awarded through the completion of the project):

Name of Business	Qualifying Conditions	Total Contract Award

All identified Section 3 Business Concerns listed above are required to complete a Section 3 Self Certification Application (Forms A – C as appropriate) or provide proof of Section 3 Certification status. Attach all required documents to this form.

I certify that the information provided is true and accurate and agree to provide upon request, any/all documents verifying the information submitted to qualify as a Section 3 business concern.

Print Name: _____

Title: _____

Company Name: _____

Signature: _____

Date: _____

CDBG Contract Conditions
(Reprinted September 1, 2011)

Note: Determine if contract provision is required by reference to the "Contract Review Checklist" on page 26.

Section 3 Clause of the Urban Development Act of 1968

1.) The work to be performed under this contract is on a project assisted under a program providing direct Federal financial assistance from the Department of Housing and Urban Development and is subject to the requirements of section 3 of the Housing and Urban Development Act of 1968, as amended, 12 U.S.C. 1701u. Section 3 requires that to the greatest extent feasible opportunities for training and employment be given lower income residents of the project area and contracts for work in connection with the project to be awarded to business concerns which are located in, or owned in substantial part by persons residing in the area of the project.

2.) The parties to this contract will comply with the provisions of said Section 3 and the regulations issued pursuant thereto by the Secretary of Housing and Urban Development set forth in 24 CFR Part 135, and all applicable rules and orders of the Department issued thereunder prior to the execution of this contract. The parties to this contract certify and agree that they are under no contractual or other disability which would prevent them from complying with these requirements.

3.) The contractor will send to each labor organization or representative of workers with which he has a collective bargain-agreement or other contract or understanding, if any, a notice advising the said labor organization or workers' representative of his commitments under this Section 3 clause and shall post copies of the notice in conspicuous places available to employees and applicants for employment or training.

4.) The contractor will include this Section 3 clause in every subcontract for work in connection with the project and will, at the direction of the applicant for or recipient of Federal financial assistance, take appropriate action pursuant to the subcontract upon a finding that the subcontractor is in violation of regulations issued by the Secretary of Housing and Urban Development, 24 CFR Part 135. The contractor will not subcontract with any subcontractor where it has notice or knowledge that the letter has been found in violation of regulations under 24 CFR Part 135 and will not let any subcontract unless the subcontractor has first provided it with a preliminary statement of ability to comply with the requirements of these regulations.

5.) Compliance with the provisions of Section 3, the regulations set forth in the 24 CFR Part 135, and all applicable rules and orders of the Department issued thereunder prior to the execution of the contract, shall be a condition of the Federal financial assistance provided to the project, binding upon the applicant or recipient for such assistance, its successors, and assigns. Failure to fulfill these requirements shall subject the applicant or recipient, its contractors and subcontractors, its successors, and assigns to those sanctions specified by the grant or loan agreement or contract through which Federal assistance is provided, and to such sanctions as are specified by 24 CFR Part 135.

"Provision for Remedies" Clause

1.) **Termination:** Unearned payments under this contract may be suspended or terminated upon refusal to accept any additional conditions that may be imposed by City/County; or if the grant to the City/County under the Community Development Block Grant Program is suspended or terminated. Moreover, if through any cause, the contractor shall fail to fulfill its obligations under this contract in a timely and proper manner or if the contractor shall violate any of the covenants, agreements, conditions or obligations of the contract documents; the City/County may terminate this contract by giving written notice to the contractor and surety of such termination and specifying the effective date of such termination. In such event, the City/County may take over the work and prosecute the same to completion, by contract or otherwise, and the contractor and his sureties shall be liable to the City/County for any additional cost incurred by the Owner in its completion of the work and they shall also be liable to the Owner for liquidated damages for any delay in the completion of the work as provided below. Furthermore, the Contractor will be paid an amount which bears the same ratio to the total compensation as the work and services actually performed bear to the total work and services required. Provided, however, that if less than sixty percent of the services required by this Contract have been performed upon the effective date of such termination, the Contractor shall be reimbursed (in addition to the above payment) for that portion of the actual out-of-pocket expenses (not otherwise reimbursed under this Contract) incurred by the Contractor during the Contract period which are directly attributable to the uncompleted portion of the services required by this Contract.

2.) **Liquidated Damages for Delays**. If the work is not completed within the time stipulated, therefore, including any extensions of time for excusable delays as herein provided, the Contractor shall pay to the Owner as fixed and agreed liquidated damages (it being impossible to determine the damages occasioned by the delay) for each working day of delay, until the work is completed, the amount as set forth in *(insert location of liquidated damages statement, normally found in the Contract General Conditions*) and the Contractor and his sureties shall be liable to the Owner for the amount thereof.

3.) **Excusable Delays.** The right of the Contractor to proceed shall not be terminated nor shall the Contractor be charged with liquidated damages for any delays in the completion of the work due:

(a) To any acts of the Government, including controls or restrictions upon or requisitioning of materials, equipment, tools, or labor by reason of war, National Defense, or any other national emergency;

(b) To any acts of the Owner;

(c) To causes not reasonable foreseeable by the parties to this Contract at the time of the execution of the Contract which are beyond the control and without the fault or negligence of the Contractor, including, but not restricted to, acts of God or of the public enemy, acts of another Contractor in the performance of some other contract with the Owner, fires, floods, epidemics, quarantine, strikes, freight embargoes, and weather of unusual severity such as hurricanes, tornadoes, and cyclones; and

(d) To any delay of any subcontractor occasioned by any of the causes specified in subparagraphs (a) (b) and (c) or this subparagraph "d".

Provided, however, that the Contractor promptly notified the Owner within ten (10) days of the cause of the delay. Upon receipt of such notification, the Owner shall ascertain the facts and the cause and extent of delay. If upon the basis of the terms of this contract the delay is properly excusable, the Owner shall extend the time for completing the work for a period of time commensurate with the period of excusable delay.

"Termination for Convenience Clause"

1.) **Termination for Convenience of the Owner:**

The Owner may terminate this contract at any time for any reason by giving at least thirty (30) days notice in writing to the contractor. If the contract is terminated by the Owner as provided herein, the contractor will be paid a fair payment as negotiated with the Owner for the work completed as of the date of termination.

Equal Employment Opportunity (EEO) Clause

During the performance of this contract, the Contractor agrees as follows:

1.) The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and the employees are treated during employment without regard to their race, color, religion, sex or national origin. Such action shall include, but not be limited to the following: Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.
2.) The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex or national origin.
3.) The Contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representative of the Contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
4.) The Contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations and relevant orders of the Secretary of Labor.
5.) The Contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations and orders.
6.) In the event of the Contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by the rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.
7.) The Contractor will include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The Contractor will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance. Provided, however, that in the event a Contractor becomes involved in, or is threatened with litigation with a subcontractor or vendor as a result of such direction by the administering agency the contractor may request the United States to enter into such litigation to protect the interests of the United States.

STANDARD FEDERAL EQUAL EMPLOYMENT OPPORTUNITY CONSTRUCTION CONTRACT SPECIFICATIONS (EXECUTIVE ORDER 11246)

1.) As used in these specifications:

a. "Covered area" means the geographical area described in the solicitation from which this contract resulted;

b. "Director" means Director, Office of Federal Contract Compliance Program, United States Department of Labor, or any person to whom the Director delegates authority;

c.. "Employer identification number" means the Federal Social Security Number used on the Employer's Quarterly Federal Tax Return, US. Treasury Department Form 941.

d. "Minority" includes:

(i) Black (all persons having origins in any of the Black African racial groups not of Hispanic origin);

(ii) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish Culture or origin, regardless of race);

(iii) Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and

(iv) American Indian or Alaskan Native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).

2.) Whenever the Contractor, or any Subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of $10,000 the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this contract resulted.

3.) If the Contractor is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the US. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trade which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each Contractor or Subcontractor participating in an approved Plan is individually required to comply with its obligations under the EEO clause, and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other Contractors or Subcontractors toward a goal in

an approved Plan does not excuse any covered Contractor's or Subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.

4.) The Contractor shall implement the specific affirmative action standards provided in paragraphs 7a through p of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the Contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. The Contractor is expected to make substantially uniform progress toward its goals in each craft during the period specified.

5.) Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the Contractor has a collective bargaining agreement, to refer either minorities or women shall excuse the Contractor's obligations under these specifications. Executive Order 11246, or the regulations promulgated pursuant thereto.

6.) In order for the non-working training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the Contractor during the training period and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U. S. Department of Labor.

7.) The Contractor shall take specific affirmative action to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:

a. Ensure and maintain a working environment free of harassment, intimidation and coercion at all sites, and in all facilities at which the Contractor's employees are assigned to work. The Contractor, where possible, will assign two or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents and other on-site supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.

b. Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the Contractor or its unions have employment opportunities available, and maintain a record of the organizations' responses.

c. Maintain a current file of the names, addresses and telephone numbers of each minority and female off-the street applicant and minority or female referral from a union, a recruitment source or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for

referral and was not referred back to the Contractor by the union, or if referred, not employed by the Contractor, this shall be documented in the file with the reasons therefore, along with whatever additional actions the Contractor may have taken.

d. Provide immediate written notification to the Director when the union or unions with which the Contractor has a collective bargaining agreement has not referred to the Contractor a minority person or woman sent by the Contractor, or when the Contractor has other information that the union referral process has impeded the Contractor's efforts to meet its obligations.

e. Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to the sources compiled under 7b above.

f. Disseminate the contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.

g. Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, lay-off, termination or other employment decisions including specific review of these items with on-site supervisory personnel such as Superintendents, General Foremen, etc., prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed and disposition of the subject matter.

h. Disseminate the Contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the contractor's EEO policy with other contractors and Subcontractors with whom the Contractor does or anticipates doing business.

i. Directs its recruitment efforts, both oral and written, to minority, female and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source. The Contractor shall send written notification to organizations such as the above, describing the openings, screening procedures, and tests to be used in the selection process.

j. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer and vacation employment of minority and female youth both on the site and in other areas of a Contractor's workforce.
k. Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR Part 60-3.

l. Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.

m. Ensure that seniority practices, job classifications, work assignments and other personnel practices, do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the Contractor's obligations under these specifications are being carried out.

n. Ensure that all facilities and company activities are nonsegregated except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.

o. Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.

p. Conduct a review, at least annually, of all supervisors' adherence to and performance under the Contractor's EEO policies and affirmative action obligations.

8.) Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations (7a through p). The efforts of a contractor association, joint contractor-union, contractor-community, or other similar group of which the contractor is a member and participant may be asserted as fulfilling any one or more of its obligations under 7a through p of those Specifications provided that the Contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the Contractor's minority and female workforce participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply, however, is the Contractor's and failure of such a group to fulfill an obligation shall not be a defense for the Contractor's noncompliance.

9.) A single goal for minorities and a separate single goal for women have been established. The Contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, the Contractor may be in

violation of the Executive Order if a particular group is employed in a substantially disparate manner (for example, even though the Contractor has achieved it goals for women generally, the Contractor may be in violation of the Executive Order if a specific minority group of women is underutilized).

10.) The Contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race color, religion, sex or national origin.

11.) The Contractor shall not enter into any Subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.

12.) The Contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the Office of Federal Contract Compliance Programs. Any Contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.

13.) The Contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action stops, at least as extensive as those standards prescribed in paragraph 7 of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-4.S.

14.) The Contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government and to keep records. Records shall at least include for each employee the name, address, telephone numbers, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice, trainee, helper or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.

15.) Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO EQUAL EMPLOYMENT OPPORTUNITY (EXECUTIVE ORDER 11246)

1.) The Offerer's or Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Opportunity Construction Contract Specifications" set forth herein.

2.) The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work in the covered area, are as follows:

Timetable:	Goals for minority participation	Goals for female participation
Until Further Notice	19.5%	6.9%

These goals are applicable to each non-exempt contractor's total on-site construction workforce, regardless of whether or not part of that workforce is performing work on a Federal, Federally assisted or non-Federally related project, contract or sub-contract.

The contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a), and its efforts to meet the goals established for the geographical area where the contract resulting from this solicitation is to be performed. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

3.) The Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs within 10 working days of award of any construction subcontract in excess of $10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address and telephone number of the subcontractor; employer identification number; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the contract is to be performed.

4.) As used in this Notice, and in the contract resulting from this solicitation, the "covered area" is *(insert description of the economic area in which the contract will be performed, giving the city, SMSA or non SMSA designation, and a list of the counties included in the economic area)*.

Certification of Nonsegregated Facilities

By the submission of this bid, the bidder, offerer, applicant or subcontractor certifies that s/he does not maintain or provide for his/her employees any segregated facility at any of his/her establishments, and that s/he does not permit employees to perform their services at any location, under his/her control, where segregated facilities are maintained. S/He certifies further that s/he will not maintain or provide for employees any segregated facilities at any of his/her establishments, and s/he will not permit employees to perform their services at any location under his/her control where segregated facilities are maintained. The bidder, offerer, applicant or subcontractor agrees that a breach of this certification is a violation of the Equal Opportunity Clause of this contract. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, rest rooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, or national origin, because of habit, local custom, or otherwise. S/He further agrees that (except where s/he has obtained identical certifications from proposed subcontractors for specific time periods) s/he will obtain identical certification from proposed subcontractors prior to the award of subcontracts exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity Clause; that s/he will retain such certifications in his/her files; and that s/he will forward the following notice to such proposed subcontractors (except where proposed subcontractors have submitted identical certifications for specific time periods).

FEDERAL LABOR STANDARDS PROVISION
Georgia Community Development Block Grant

Applicability

The Project or Program to which the construction work covered by this contract pertains is being assisted by the United States of America and the following Federal Labor Standards Provisions are included in this Contract pursuant to the provisions applicable to such Federal assistance.

A.1.(i) **Minimum Wages**. All laborers and mechanics employed or working upon the site of the work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the project), will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR Part 3), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics. Contributions made or costs reasonably anticipated for bona fide fringe benefits under Section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of 29 CFR Part 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under 29 CFR Part 5.5(a)(1)(ii)) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

(ii)(a) The contracting officer shall require that any class of laborers or mechanics, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(1) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(2) The classification is utilized in the area by the construction industry; and

(3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(b) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and HUD or its designee agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by HUD or its designee to the Administrator of the Wage and Hour Division, Employment Standards Administration, US. Department of Labor, Washington, D.C. 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise HUD or its designee or will notify HUD or its designee within the 30-day period that additional time is necessary.

(c) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and HUD or its designee do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), HUD or its designee shall refer the questions, including the views of all interested parties and the recommendation of HUD or its designee, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise HUD or its designee or will notify HUD or its designee within the 30-day period that additional time is necessary.

(d) The wage rate (including fringe benefits where appropriate) determined pursuant to subparagraphs (1)(b) or (c) of this paragraph, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, provided, that the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program. (Approved by the Office of Management and Budget under OMB Control Number 1215-0140.)

2. **Withholding**. HUD or its designee shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of

failure to pay any laborer or mechanic, including any apprentice, trainee or helper, employed or working on the site of the work (or under the United States Housing Act of 1937 for under the Housing Act of 1949 in the construction or development of the project), all or part of the wages required by the contract, HUD or its designee may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased. HUD or its designee may, after written notice to the contractor, disburse such amounts withheld for and on account of the contractor or subcontractor to the respective employees to whom they are due. The Comptroller General shall make such disbursements in the case of direct Davis-Bacon Act contracts.

3. (i) **Payrolls and basic records.** Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work (or under the United States Housing Act of 1937, or under the Housing Act of 1949, in the construction or development of the project.) Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in Section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in Section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable program (Approved by the Office of Management and Budget under OMB Control Numbers 1215-0140 and 1215-0017.)

(ii)(a) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to HUD or its designee if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit the payrolls to the applicant, sponsor, or owner, as the case may be, for transmission to HUD or its designee. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR Part 5.5(a)(3)(i). This information may be submitted in any form desired. Optional Form WH-347 is available for this purpose and may be purchased from the Superintendent of Documents (Federal Stock Number 029-005-00014-1), US. Government Printing Office, Washington, DC, 20402. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. (Approved by the Office of Management and Budget under OMB Control Number 1215-0149.)

(b) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) That the payroll for the payroll period contains the information required to be maintained under 29 CFR Part 5.5(a)(3)(i) and that such information is correct and complete;

(2) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly from the full wages earned, other than permissible deductions as set forth in 29 CFR Part 3;

(c) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph A.3(ii)(b) of this section.

(d) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under Section 1001 of Title 18 and Section 231 of Title 31 of the United States Code.

(iii) The contractor or subcontractor shall make the records required under paragraph A.3(i) of this section available for inspection, copying, or transcription by authorized representatives of HUD or its designee or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, HUD or its designee may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR Part 5.12.

4.(i) **Apprentices and Trainees.** Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the US. Department of Labor, Employment and Training Administration, Bureau of Apprenticeship and Training, or with a State Apprenticeship Agency recognized by the Bureau, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Bureau of Apprenticeship and Training or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage

rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ration permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeymen's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification.

If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Bureau of Apprenticeship and Training, or a State Apprenticeship Agency recognized by the Bureau, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) **Trainees.** Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the US. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journey hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the work actually performs. In addition, any trainee performing work on the job site in excess of the ration permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(iii) **Equal employment opportunity**. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR Part 30.

5. **Compliance with Copeland Act requirements**. The contractor shall comply with the requirements of 29 CFR Part 3 which are incorporated by reference in this contract.

6. **Subcontracts**. The contractor or subcontractor will insert in any subcontracts the clauses contained in 29 CFR 5.5(a)(1) through (10) and such other clauses as HUD or its designee may be appropriate instructions require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR Part 5.5.

7. **Contract termination:** debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounded for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. **Compliance with Davis-Bacon and Related Act Requirements**. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR Parts 1, 3, and 5 are herein incorporated by reference in this contract.

9. **Disputes concerning labor standards**. Disputes arising out of a labor standards provision of this contract shall to be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR Parts 5, 6 and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and HUD or its designee, the US. Department of Labor, or the employees or their representatives.

10. (i) **Certification of Eligibility**. By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of Section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1) or to be awarded HUD contracts or participate in HUD programs pursuant to 24 CFR Part 24.

(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of Section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1) or to be awarded HUD contracts or participate in HUD programs pursuant to 24 CFR Part 24.

(iii) The penalty for making false statements is prescribed in the US. Criminal Code, 18 U.S.C. 1001. Additionally, US. Criminal Code, Section 1010, Title 18, U.S.C., "Federal Housing Administration transactions", provides in part: "Whoever, for the purpose of ...influencing in any way the action of such Administration...makes, utters or publishes any statement, knowing the same to be false...shall be fined not more than $5,000 or imprisoned not more than two years, or both."

11. **Complaints, Proceedings, or Testimony by Employees**. No laborer or mechanic to whom the wage, salary, or other labor standards provisions of this Contract are applicable shall be discharged or in any other manner discriminated against by the Contractor or any subcontractor because such employee has filed any complaint or instituted or caused to be instituted any proceeding or has testified or is about to testify in any proceeding under or relating to the labor standards applicable under this Contract to his employer.

B. **Contract Work Hours and Safety Standards Act.** As used in this paragraph, the terms "laborers" and "mechanics" include watchmen and guards.

(1) **Overtime requirements:** No contractor or subcontractor contracting for any part of the contract work may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

(2) **Violation:** liability for unpaid wages, liquidated damages. In the event of any violation of the clause set forth in subparagraph (1) of this paragraph, the contractor and any subcontractor responsible therefore shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in subparagraph (1) of this paragraph, in the sum of $10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in subparagraph (1) of this paragraph.

(3) **Withholding for unpaid wages and liquidated damages:** HUD or its designee shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any money payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in subparagraph (2) of this paragraph.

(4) **Subcontracts:** The contractor or subcontractor shall insert in any subcontracts the clauses set forth in subparagraph (1) through (4) of this paragraph and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower

tier subcontractor with the clauses set forth in subparagraphs (1) through (4) of this paragraph.

C. **Health and Safety**

(1) No laborer or mechanic shall be required to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to his health and safety as determined under construction safety and health standards promulgated by the Secretary of Labor by regulation.

(2) The Contractor shall comply with all regulations issued by the Secretary of Labor pursuant to Title 29 Part 1926 (formerly part 1518) and failure to comply may result in imposition of sanctions pursuant to the Contract Work Hours and Safety Standards Act (Public Law 91-54, 83 Stat. 96).

(3) The Contractor shall include the provisions of this Article in every subcontract so that such provisions will be binding on each subcontractor. The Contractor shall take such action with respect to any subcontract as the Secretary of Housing and Urban Development or the Secretary of Labor shall direct as a means of enforcing such provisions.

ACCEPTABLE ALTERNATE WORK SHEET FOR CONTRACTOR CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION (LOWER-TIER PARTICIPANT) FOR HUD PROGRAMS

Certification regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower-Tier Covered Transactions pursuant to 24 Code of Federal Regulations, Part 24.510(b).

By signing and submitting this proposal, the prospective lower-tier participant certifies that neither it, its principals nor affiliates, is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency. Further, the Participant provides the certification set out below.

The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that an erroneous certification was rendered, in addition to other remedies available to the Federal Government, the Department or agency with which this transaction originated may pursue available remedies.

Further, the Participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the Participant learns that this certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

By submitting this proposal, it is agreed that should the proposed covered transaction be entered into, the Participant will not knowingly enter into any lower-tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction unless authorized by the agency with which this transaction originated.

It is further agreed that by submitting this proposal, the Participant will include this Certification, without modification, in all lower-tier covered transactions and in all solicitations for lower-tier covered transactions.

Contractor
Name_____Date_____
Title_____Address_____
City_____State_____Zip_____

NON-CERTIFICATION:

As the perspective lower-tier participant, I am unable to certify to statements in this Certification as explained in the attachment to this proposal.

Contractor
Name_____Date_____
Title_____Address_____
City_____State_____Zip_____

The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

COMPLIANCE WITH CLEAN AIR AND WATER ACTS

The contract is subject to the requirements of the Clean Air Act, as amended, 42 USC 1857 et. seq., and the regulations of the Environmental Protection Agency with respect thereto, at 40 CFR Part 15, as amended from time to time.

In compliance with said regulations:

1.) The Contractor shall require of subcontractors that any facility to be utilized in the performance of any nonexempt contract or subcontract is not listed on the List of Violating Facilities issued by the Environmental Protection Agency (EPA) pursuant to 4C CFR 15.20.

2.) The Contractor will comply with all the requirements of Section 114 of the Clean Air Act, as amended, (42 USC 1857c-8) and section 308 of the Federal Water Pollution Control Act as amended, (330 USC 1318) relating to inspection, monitoring, entry, reports, and information, as well as all other requirements specified in said section 114 and section 308, and all regulations and guidelines issued thereunder.

3.) The Contractor will provide prompt notice of any notification received from the Director, Office of Federal Activities, EPA, indicating that a facility utilized or to be utilized for the contract is under consideration to be listed on the EPA List of Violating Facilities.

4.) The Contract will include or cause to be included the criteria and requirements to paragraph (1) through (4) of this section in every nonexempt subcontract and take such action as the Government will direct as a means of enforcing such provisions.

PERFORMANCE, PAYMENT and BID BONDS

Contract Performance and Payment Bonds issued in the full amount of the contract are required by federal procurement rules if the contract is for $100,000 or more.

A Bid Bond or other security is required by federal rules whenever the contract is for $100,000 or more.

Generally these bonds must be issued by a surety company satisfactory to the local government, qualified to do business in Georgia, and in a format meeting the federal and state legal requirements. The bonding company must also appear on the "List of Acceptable Sureties" published annually by the US Department of the Treasury.

DCA recommends that CDBG Recipients be sure to assign responsibility for reviewing construction bonds. This job may be given to the local attorney, the grant administrator, or the project architect/engineer. Specific duties include verification that the agent is licensed by the state and authorized by the bonding company and verification through the Insurance Commissioner that the company is financially sound and licensed in Georgia. The actual bond should also be reviewed and verified as being valid.

CONTRACTOR AFFIDAVIT AND AGREEMENT

By executing this affidavit, the undersigned contractor verifies its compliance with O.C.G.A. 13-10-91, stating affirmatively that the individual, firm or corporation which is contracting with the **City of Roswell, Georgia** has registered with, is authorized to use and is participating in a federal work authorization program* [any of the electronic verification work authorization programs operated by the United States Department of Homeland Security or any equivalent federal work authorization program operated by the United States Department of Homeland Security to verify information of newly hired employees, pursuant to the Immigration Reform and Control Act of 1986 (IRCA), P.L. 99-603], in accordance with the applicability provisions and deadlines established in O.C.G.A. 13-10-91. The user identification number and the date of authorization for the affiant are set forth below. The undersigned contractor is using and will continue to use the federal work authorization program throughout the contract period.

The undersigned further agrees that, should it employ or contract with any subcontractor(s) in connection with the physical performance of services pursuant to this contract with the **City of Roswell, Georgia**, that undersigned shall require as a condition of such employment or contract that contractor or subcontractor registers and participates in a federal work authorization program to verify information of all newly hired employees. In addition, contractor will secure from such contractor(s) or subcontractor(s) similar verification of compliance with O.C.G.A. 13-10-91 on the Subcontractor Affidavit provided in Rule 300-10-01-.08 or a substantially similar form. Contractor further agrees to maintain records of such compliance and provide a notice of identity of such contractor or subcontractor together with a copy of each such verification to the **City of Roswell, Georgia** within five (5) business days after the time the contractor(s) or subcontractor(s) is retained to perform such service.

_____ _____

E-Verify* User identification Number Date of Authorization for Contractor

_____

Company Name

_____ _____

By: Authorized Officer or Agent Date

_____

Title of Authorized Officer or Agent of Contractor

_____

Printed Name of Authorized Officer or Agent

SUBSCRIBED AND SWORN BEFORE ME THIS
_____ DAY OF_____, _____.

Notary Public:_____
My Commission expires: _____ (SEAL)

**As of the effective date of O.C.G.A. 13-10-91, the applicable federal work authorization program is "E-Verify" operated by the U.S. Citizenship and Information Services Bureau of the U.S. department of Homeland Security, in conjunction with the Social Security Administration (SSA).*

SUBCONTRACTOR AFFIDAVIT

By executing this affidavit, the undersigned subcontractor verifies its compliance with O.C.G.A. 13-10-91, stating affirmatively that the individual, firm or corporation which is engaged in the physical performance of services as a subcontractor for _____, the contractor which has a contract with the **City of Roswell, Georgia**, has registered with, is authorized to use and is participating in a federal work authorization program* [any of the electronic verification work authorization programs operated by the United States Department of Homeland Security or any equivalent federal work authorization program operated by the United States Department of Homeland Security to verify information of newly hired employees, pursuant to the Immigration Reform and Control Act of 1986 (IRCA), P.L. 99-603], in accordance with the applicability provisions and deadlines established in O.C.G.A. 13-10-91. The user identification number and the date of authorization for this subcontractor to use the federal work authorization program are set forth below. The undersigned subcontractor is using and will continue to use the federal work authorization program throughout the contract period.

_____ _____

E-Verify* User identification Number Date of Authorization for Subcontractor

_____

Company Name

By: _____ _____

Authorized Officer or Agent of Subcontractor Date of signing this Affidavit

_____

Title of Authorized Officer or Agent of Subcontractor

_____

Printed Name of Authorized Officer or Agent of Subcontractor

SUBSCRIBED AND SWORN BEFORE ME THIS
_____ DAY OF_____, _____.

Notary Public:_____
My Commission expires: _____ (NOTARY SEAL)

**As of the effective date of O.C.G.A. 13-10-91, the applicable federal work authorization program is "E-Verify" operated by the U.S. Citizenship and Information Services Bureau of the U.S. department of Homeland Security, in conjunction with the Social Security Administration (SSA).*

CDBG CONTRACT AND CONTRACTOR PROCUREMENT REVIEW CHECKLIST

CDBG Grantee/Recipient:	Grant Number:	Contract Amount:	Reviewer:	Date of Review:

□ Contractor/Subcontractor Affidavit	(Compliance with OCGA 13-10-91) Applicable to ALL Contracts and subcontracts						
□ Section 3 Clause, DCA Solicitation Package	**In spec book:**	**Yes:_____**	**No:_____**	**Does the Owner/Contract Agreement included S3?**			**Yes:___ No:___**
□ Provision for Remedies	**ALL CONTRACTS**						
	ARCHITECTURAL and ENGINEERING SERVICES	**HOUSING REHAB**		**CONSTRUCTION CONTRACTS**			
		□ Less than 8 units	□ 8 or More Units	□ Over $100,000	□ Over $40,000	□ Over $10,000	□ Over $2,000
□ Provision for Termination	If over $10,000	If over $10,000	If over $10,000	•	•	•	
Executive Orders 11246/11375							
□ EEO CLAUSE	If over $10,000	If over $10,000	If over $10,000	•	•	•	
□ EEO Specifications				•	•	•	
□ Affirmative Action Clause				•	•	•	
□ Non-Segregated Facilities				•	•	•	
Federal Labor Standards							
□ Copeland Anti-Kickback			•	•	•	•	•
□ Davis Bacon Clause			•	•	•	•	•
□ Wage Rate from DCA Wage Rate #			•	•	•	•	•
□ Work Hours and Safety			If over $100,000	•			
□ Performance & Payment Bonds				•			
□ 5% Bid Bond				•			
□ Clean Air/Water Clause				•			
□ Provision for Disability Accessibility (if a bldg)	•						
□ Provision for Ga Energy Code (if a building)	•						

The following are ASC additions to the DCA form:	
ENGINEER/ARCHITECT FIRM:	
Number of Days Bids are Good?	
Number of Construction Days Allowed in Contract, if applicable	
Immigration & Security Certification Forms Contractor & Subcontract	Yes:___ No:_____
Addendum Received on Bid Form?	Yes:___ No:_____
Number of Days Recipient Has in Contract to Pay Contractor after Pay Request is Submitted	Yes:___ No:_____
Sample Pay Request Form provided in Contract Documents?	Yes:___ No:_____
Sample Change Order Provided in Contract Documents?	Yes:___ No:_____
Section 3 Job Training List in Spec Book	Yes:___ No:_____

General Decision Number: GA160003 01/08/2016 GA3

Superseded General Decision Number: GA20150003

State: Georgia

Construction Type: Highway

Counties: Cherokee, Clayton, Cobb, Dekalb, Douglas, Fayette, Fulton, Gwinnett, Henry and Rockdale Counties in Georgia.

HIGHWAY CONSTRUCTION PROJECTS

Note: Under Executive Order (EO) 13658, an hourly minimum wage of $10.15 for calendar year 2016 applies to all contracts subject to the Davis-Bacon Act for which the solicitation was issued on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least $10.15 (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2016. The EO minimum wage rate will be adjusted annually. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/08/2016

SUGA2011-003 03/07/2011

	Rates	Fringes
CARPENTER	$ 11.16	
CEMENT MASON/CONCRETE FINISHER	$ 10.99	
LABORER		
Asphalt Raker	$ 11.00	
Asphalt Screed Person	$ 10.50	
Common or General	$ 9.00	
Form Setter	$ 10.35	
Guardrail Erector	$ 13.50	
Milling Machine Ground Person	$ 10.00	
Pipe Layer	$ 10.20	
Traffic Control Barricade Flagger	$ 10.00	
POWER EQUIPMENT OPERATOR:		
Asphalt Distributor	$ 14.10	
Asphalt Paver/Spreader	$ 12.28	
Backhoe/Excavator	$ 10.80	
Bulldozer	$ 11.60	
Compactor	$ 10.00	
Concrete Curb Machine	$ 16.45	
Crane/Dragline	$ 17.50	

Crusher.....$ 14.00
Front End Loader.....$ 10.70
Material Transfer Vehicle
(Shuttle Buggy).....$ 11.30
Mechanic.....$ 14.47
Milling Machine.....$ 12.37
Motorgrader Fine Grade.....$ 14.55
Motorgrader/Blade.....$ 14.39
Roller.....$ 10.00
Scraper-Pan.....$ 10.00
Sweeper Truck.....$ 14.21
Water Truck.....$ 11.25

TRUCK DRIVER
26,000 GVW & Under.....$ 10.76
26,001 GVW & Over.....$ 14.91

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than "SU" or "UAVG" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing

this classification and rate.

Survey Rate Identifiers

Classifications listed under the "SU" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.)

and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION

CITY OF ROSWELL
COMMUNITY DEVELOPMENT BLOCK GRANT
FY15-FY16 GROVE WAY/BUSH STREET REALIGNMENT AND WATERLINE PROJECT

SECTION 3 FEDERAL REQUIREMENTS LIST OF PLACES THAT JOB TRAINING OR EMPLOYMENT COULD BE AVAILABLE OR WHERE INFORMATION ABOUT JOB TRAINING OR EMPLOYMENTCAN BE FOUND

HOMESTRETCH HOUSING INITIATIVE OF NORTH FULTON
89 GROVE WAY
ROSWELL, GA 30075
(770) 642-9185

HOUSING AUTHORITY OF THE CITY OF ROSWELL
199 GROVE WAY
ROSWELL, GA 30075
(770) 993-6226

NORTH FULTON COMMUNITY CHARITIES
11270 ELKINS ROAD
ROSWELL, GA 30076
(770) 640-0399

SECTION 01150
MEASUREMENT AND PAYMENT

1 GENERAL

1.1 SCOPE OF WORK

A. Work includes furnishing, installing and testing all labor, equipment, tools and materials, and performing all operations required to complete the work satisfactorily, in place, as necessary for a complete, warranted and fully functional water main project as indicated on the drawings and specified herein.

B. All work shall be completed in accordance with City of Roswell Standard Construction Specifications and Subdivision Regulations.

1.2 MEASUREMENT AND PAYMENT

A. The Bid Proposal lists each item of work for which payment will be made. No payment will be made for any items other than those listed in the Bid Proposal. Required items of work and incidentals necessary for the satisfactory completion of the Project which are not specifically listed in the Bid Proposal, and which are not specified in this Section to be measured or to be included in one of the items listed in the Bid Proposal, shall be considered as incidental to the work. All costs thereof, including Contractor's overhead costs and profit, shall be considered as included in the lump sum or unit prices bid for the various Bid Proposal items. The Contractor shall prepare the Bid Proposal accordingly.

B. Periodic payment for unit price items will be based on periodic measurements of actual work completed multiplied by the unit price. For lump sum bid items, estimates of percentage complete established by an approved schedule shall be the basis by which payments will be authorized. Measurements and estimates shall be submitted by the Contractor and shall be subject to approval by the Engineer. Contractor shall make certain all work has been measured before concealing.

C. Any portion of work that, in the opinion of the Engineer, does not meet the requirements of the contract will not be considered for payment.

1.3 PAY ITEMS

A. Ductile Iron Pipe

1. Ductile iron pipe for water mains will be measured in length above the center of the pipe, parallel to the slope from end to end without deduction for valves and fittings. Payment will be at the bid price for each size and type of pipe listed in the bid proposal and shall include construction staking, clearing and grubbing including removal of specimen trees where indicated, excavation, bedding material, backfilling, clean up, property restoration, pressure testing, flushing, disinfection and other incidentals necessary to complete the items that are not covered under another pay item.

B. Copper Pipe

1. Copper pipe for water mains will be measured in length above the center of the pipe, parallel to the slope from end to end without deduction for valves and fittings. Payment will be at the bid price for each size and type of pipe listed in the bid proposal and shall include construction staking, clearing and grubbing including removal of specimen trees where indicated, excavation, bedding material, backfilling, clean up, property restoration, pressure testing, flushing, disinfection and other incidentals necessary to complete the items that are not covered under another pay item.

C. Galvanized Steel Pipe

1. Galvanized steel pipe for water mains will be measured in length above the center of the pipe, parallel to the slope from end to end without deduction for valves and fittings. Payment will be at the bid price for each size and type of pipe listed in the bid proposal and shall include construction staking, clearing and grubbing including removal of specimen trees where indicated, excavation, bedding material, backfilling, clean up,

property restoration, pressure testing, flushing, disinfection and other incidentals necessary to complete the items that are not covered under another pay item.

D. Ductile Iron Fittings

1. Ductile iron fittings that are not specified for payment under another bid item will be counted in place and paid for at the bid price per pound under this bid item. Weight of fittings for payment purposes will be taken as the nominal weight from manufacturer's catalog for compact style fittings of the type specified at each location, not including joint accessories.

E. Restrained Joint Gaskets

1. Restrained joint gaskets used on push-on joint pipe will be counted in place and paid at the unit price for each size listed in the Bid Form. Regular push-on joint gaskets will not be paid for separately and shall be included in the cost of the pipe.

F. Restrained Joint Glands

1. Restrained joint glands used on mechanical joint ductile iron fittings will be counted in place and paid at the unit price for each size listed in the Bid Form. Flanged joints and swivel joints are not counted for payment as restrained joints.

G. Line Stop

1. Line stops will be counted in place and paid for at the unit price listed in the Bid Form. Unit price shall include all labor, tools, equipment, materials, and all necessary incidentals required to complete the work.

H. Wet Tap/Cut-In

1. Wet taps/cut-ins will be counted in place and paid for at the unit price listed in the Bid Form. Unit price shall include all labor, tools, equipment, materials, and all necessary incidentals required to complete the work.

I. Gate Valve Assembly

1. Gate valve assemblies will be counted in place and paid for at the unit price for each size listed in the Bid Form. Unit price shall include all labor, tools, equipment, materials, and all necessary incidentals required to complete the work. The cost for gate valve, valve box, concrete collar, operator, stone, installation, and all other necessary incidentals to complete the work shall be included in the unit price. Restrained joint glands will be paid for separately under the corresponding bid item.

J. Concrete Valve Marker

1. Valve Markers will be counted in place and paid for at the unit price bid for each. Unit price shall include all items necessary for the installation of the valve marker.

K. Abandon Existing Valve – In Pavement

1. This item shall cover all work related to the abandonment of an existing valve that is located in the pavement. Abandoned valves will be counted and paid for at the unit price listed in the Bid Form. The price bid shall be include all labor, tools, equipment, materials, and all necessary incidentals required to abandon the valve. Abandonment of the valve shall include, but not be limited to, closing the valve, removing the valve cover, and backfilling the valve box with stone and concrete. The cost for stone and concrete shall be included in the unit price. Valve box covers shall be returned to the City of Roswell.

L. Connect Existing Service to New Water Main – Short Side

1. This item shall cover all work related to connecting an existing water service to the new water main where the water meter is located on the same side of the road as the water main. Existing service connections will be counted and paid for at the unit price listed in the Bid Form. The price bid shall include all labor, tools, equipment, material, and all necessary incidentals required to connect the existing service to the new water main.

M. Connect Existing Service to New Water Main – Long Side

1. This item shall cover all work related to connecting an existing water service to the new water main where the water meter is located on the opposite side of the road from the water main. Existing service connections will be counted and paid for at the unit price listed in the Bid Form. The price bid shall include all labor, tools, equipment, material, and all necessary incidentals, including boring under roadway, required to connect the existing service to the new water main. The cost for installing the service line under the road shall be included in the unit price.

N. Concrete Thrust Block

1. This item covers the installation of concrete required for blocking at pipe fittings, including reinforcing steel where indicated on drawings, and concrete thrust collars. Measurement of this item will be calculated according to the concrete volume shown on the drawings for the particular nominal pipe diameter, unless different volumes are approved by the Engineer. Payment will be at the bid price per cubic yard listed in the Bid Form.

O. 6" Water Meter Vault

1. Meter vaults will be counted in place and paid for at the unit price listed in the Bid Form. Unit price shall include all labor, tools, equipment, materials, and all necessary incidentals required to complete the work. The cost for the vault, hatch, pipe supports, steps, and all other appurtenances shall be included in the unit price. Water meter will be provided by the City of Roswell. Installation of water meter shall be by contractor.

P. 6" Backflow Preventer

1. Backflow preventers will be counted in place and paid for at the unit price listed in the Bid Form. Unit price shall include all labor, tools, equipment, materials, and all necessary incidentals required to complete the work. The cost for the backflow preventer, vault, hatch, pipe supports, steps, and all other appurtenances shall be included in the unit price.

Q. Fire Department Connection (FDC)

1. Fire Department Connections (FDC) will be counted in place and paid for at the unit price listed in the Bid Form. Unit price shall include all labor, tools, equipment, material, and all necessary incidentals required to complete the work. The cost for the FDC, check valve, concrete pad, stone, and all other necessary materials to complete the work shall be included in the unit price. Restrained joint glands and concrete thrust block will be paid for separately under the corresponding bid item.

R. Fire Hydrant Assembly

1. Fire hydrant assemblies will be counted in place and paid for at the unit price listed in the Bid Form. Unit price shall include all labor, tools, equipment, material, and all necessary incidentals required to complete the work. The cost for the hydrant tee, gate valve, valve box, concrete collar, operator, anchor coupling, tie rods and hardware, fire hydrant, stone, and all other necessary materials to complete the work shall be included in the unit price. Restrained joint glands for the hydrant tee and concrete thrust block will be paid for separately under the corresponding bid item.

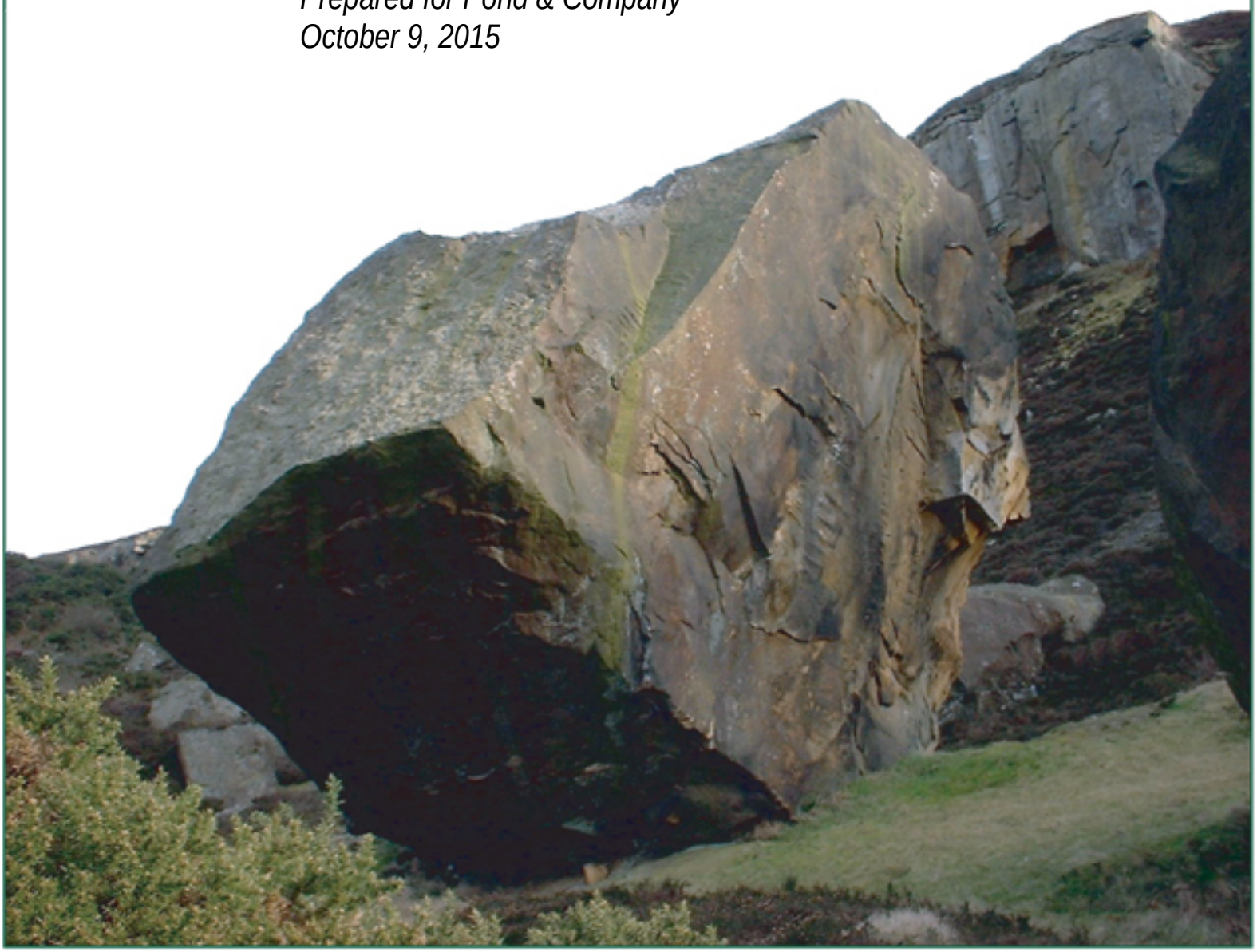
** END OF SECTION **

GEO HYDRO ENGINEERS

Report of Subsurface Exploration and Geotechnical Engineering Evaluation

Roadway and Parking Lot Improvements
Child Development Association
Roswell, Georgia

Prepared for Pond & Company
October 9, 2015



Mr. Kevin Hendrix, P.E., LEED AP
Pond & Company
3500 Parkway Lane, Suite 600
Norcross, Georgia 30092

October 9, 2015

Report of Subsurface Exploration and
Geotechnical Engineering Evaluation
Roadway and Parking Lot Improvements
Child Development Association
Roswell, Georgia
Geo-Hydro Project Number 150630.20

Dear Mr. Hendrix:

Geo-Hydro Engineers, Inc. has completed the authorized subsurface exploration for the above referenced project. The scope of services for this project was outlined in our proposal number 18110.2 dated July 14, 2015.

Project Information

The project site is located north and west of the Child Development Association (CDA) facility at 89 Grove Way in Roswell, Georgia. Figure 1 in the Appendix shows the approximate facility location.

The project includes improvements to the parking lot servicing the CDA facility and the intersection of Grove Way and Bush Street, just northwest of the facility. The existing parking lot west of the facility slopes down relatively steeply from northwest to southeast and contains over 20 feet of vertical relief. After the planned improvements are implemented, the same area will contain about 10 feet of vertical relief. The proposed regrading of the parking lot and roadways will necessitate new site walls to be constructed along the south and east boundaries of the west parking lot, the north boundary of the north parking lot, and the northeast corner of the intersection of Grove Way and Bush Street. Based on the site grading plan provided to us, the walls will have a maximum height of approximately 10 feet.

The project will also include stormwater improvements consisting of an infiltration system to be installed within the west CDA parking lot. The site is currently in use as an active parking lot servicing the CDA facility. The aerial photograph to the right shows existing site conditions as well as proposed site wall locations.

Exploratory Procedures

The subsurface exploration consisted of seven machine-drilled soil test borings and two infiltration tests performed at the approximate locations shown on Figure 2 included in the Appendix. The test borings and infiltration test locations were located in the field by Geo-Hydro by measuring angles and distances from existing site features. The elevations shown on the boring logs were interpolated from the topographic site plan provided to us and have been rounded to the nearest foot. In general, the boring locations and elevations should be considered approximate.

Standard penetration testing, as provided for in ASTM Dl586, was performed at select intervals in the soil test borings. Soil samples obtained from the drilling operation were examined and classified in general accordance with ASTM D2488 (Visual-Manual Procedure for Description of Soils). Soil classifications include the use of the Unified Soil Classification System described in ASTM D2487 (Classification of Soils for Engineering Purposes). The soil classifications also include our evaluation of the geologic origin of the soils. Evaluations of geologic origin are based on our experience and interpretation and may be subject to some degree of error.

Descriptions of the soils encountered, groundwater conditions, standard penetration resistances, and other pertinent information are provided in the test boring records included in the Appendix.

Regional Geology

The project site is located in the Northern Piedmont Geologic Province of Georgia. Soils in this area have been formed by the in-place weathering of the underlying crystalline rock, which accounts for their classification as “residual” soils. Residual soils near the ground surface that have experienced advanced weathering frequently consist of red-brown clayey silt (ML) or silty clay (CL). The thickness of this surficial clayey zone may range up to roughly 6 feet. For various reasons, such as erosion or local variation of mineralization, the upper clayey zone is not always present.

With increased depth, the soil becomes less weathered, coarser grained, and the structural character of the underlying parent rock becomes more evident. These residual soils are typically classified as sandy micaceous silt (ML) or silty micaceous sand (SM). With a further increase in depth, the soils eventually become quite hard and take on an increasing resemblance to the underlying parent rock. When these materials have a standard penetration resistance of l00 blows per foot or greater, they are referred to as partially weathered rock. The transition from soil to partially weathered rock is usually a gradual one, and may occur at a wide range of depths. Lenses or layers of partially weathered rock are not unusual in the soil profile.

Partially weathered rock represents the zone of transition between the soil and the indurated metamorphic rocks from which the soils are derived. The subsurface profile is, in fact, a history of the weathering process that the crystalline rock has undergone. The degree of weathering is most advanced at the ground surface, where fine-grained soil may be present. Conversely, the weathering process is in its early stages immediately above the surface of relatively sound rock, where partially weathered rock may be found.

The thickness of the zone of partially weathered rock and the depth to the rock surface have both been found to vary considerably over relatively short distances. The depth to the rock surface may frequently range from the ground surface to 80 feet or more. The thickness of partially weathered rock, which overlies the rock surface, may vary from only a few inches to as much as 40 feet or more.

Geologic conditions in parts of at the site have been modified by previous grading activities.

Soil Test Boring Summary

Starting at the ground surface, all of the borings except for B-1 encountered 2½ to 3 inches of asphalt pavement underlain by 2 to 3 inches of graded aggregate base. No graded aggregate base course was encountered beneath the asphalt in boring B-7.

Beneath surface materials or starting at the ground surface, borings B-1, B-2, B-6, and B-7 encountered fill materials extending to depths ranging from about 3 to 15 feet. The fill materials were classified as silty sand with varying mica content. Standard penetration resistances in the fill ranged from 11 to 19 blows per foot. Boring B-7 encountered conditions causing auger refusal at a depth of 15 feet without obtaining a sample of residual soil. The drilling conditions and auger cuttings suggest that the fill materials extend to a depth of about 14 feet and residual material was encountered just before auger refusal occurred. However, the boring log indicates that fill materials extend to the auger refusal depth because a residual soil sample was not obtained.

Beneath fill materials or surface materials, all of the borings except B-7 encountered residual soil or partially weathered rock typical of the Piedmont Region. The residual soils were classified as sandy silt and silty sand with varying amounts of mica and rock fragments. Standard penetration resistances ranging from 16 to 69 blows per foot were encountered in the residual soils.

Partially weathered rock was encountered in all of the borings except B-1 and B-7 at depths ranging from about 3 to 8 feet. Partially weathered rock is locally defined as residual material with a standard penetration resistance of 100 blows per foot or greater.

Conditions causing auger refusal were encountered in all of the borings except B-1 and B-6 at depths ranging from 5 to 15 feet. Auger refusal is the condition that prevents further advancement of the boring using conventional soil drilling techniques. Auger refusal may be indicative of a boulder, a lens or layer of rock, a rock pinnacle, or a larger rock mass.

Twenty-four hours after drilling completion, groundwater was not encountered in the test borings. After the groundwater check, the borings were backfilled with soil cuttings and patched with asphalt as appropriate. It should be noted that groundwater levels will fluctuate depending on yearly and seasonal rainfall variations and other factors, and may rise in the future.

For more detailed descriptions of subsurface conditions, please refer to the test boring records included in the Appendix.

Summary of Subsurface Conditions

Boring	Approx. Existing Ground Elevation	Bottom of Fill Material		Top of PWR		Depth to Auger Refusal		Groundwater	
		Approx. Depth (feet)	Approx. Elevation	Approx. Depth (feet)	Approx. Elevation	Depth (feet)	Approx. Elevation	Depth (feet)	Approx. Elevation
B-1	1058	6	1052	NE	-	NE	-	NE	-
B-2	1054	3	1051	3	1051	10	1044	NE	-
B-3	1054	NE	-	3	1051	10	1044	NE	-
B-4	1046	NE	-	3	1043	5	1041	NE	-
B-5	1049	NE	-	8	1041	15	1034	NE	-
B-6	1040	8	1032	8	1032	NE	-	NE	-
B-7	1032	15*	1017*	NE	-	15	1017	NE	-

NE: Not Encountered
* Boring B-7 did not obtain a sample of residual soil although drilling conditions suggest that residual material was encountered just above the auger refusal depth.

Infiltration Testing Summary

Percolation testing was performed using the Modified Taft Engineering Center Method at a depth of 6 feet. Percolation test results were adjusted to estimate the infiltration rate for design of the new stormwater management system. The following table summarizes the infiltration test results.

Percolation Test	Infiltration Rate (inches/hour)
I-1	1.60
I-2	1.60

Evaluations and Recommendations

The following evaluations and recommendations are based on the information available on the proposed construction, the data obtained from the test borings, and our experience with soils and subsurface conditions similar to those encountered at this site. Because the test borings represent a statistically small sampling of subsurface conditions, it is possible that conditions may be encountered during construction that are substantially different from those indicated by the test borings. In these instances, adjustments to the design and construction may be necessary.

Geotechnical Considerations

The following geotechnical characteristics of the site should be taken into account for planning and design:

- Borings B-3 and B-4 encountered partially weathered rock above planned grades. Excavation of partially weathered rock typically requires large equipment capable of ripping. Also, boring B-4 encountered conditions causing auger refusal at an elevation of approximately 1041, which corresponds to approximately 1 foot above planned finished grades. For planning purposes, it should be assumed that blasting or a rock hammer will be necessary to remove materials below the depth of auger refusal. It is also important to note that the depth to rock can vary drastically in the Piedmont over relatively short distances, and it would not be unusual to encounter rock at higher elevations in areas between the test borings.

- Borings B-6 and B-7 encountered existing fill materials extending to depths of about 8 and 15 feet, respectively. Fill material will likely be present at the bearing elevation for the south site wall, and some of the fill material may not be capable of supporting the wall. The wall foundation bearing surface should be thoroughly evaluated by Geo-Hydro as part of typical construction-phase testing services, and any unstable fill material that cannot be densified in place should be removed and replaced with graded aggregate base within the footing excavation.

- Contingent upon thorough bearing surface evaluations, it is our opinion that the proposed site walls can be supported using conventional shallow foundations. For design purposes, we recommend an allowable bearing pressure of 2,500 psf or less.

- Twenty-four hours after drilling completion, groundwater was not encountered in the test borings. Groundwater is not expected to be a concern for design or construction. However, the contractor must be prepared to manage surface runoff during wet weather conditions and subsurface drainage will be necessary behind all below-grade walls.

The following sections provide recommendations regarding these issues and other geotechnical aspects of the project.

Existing Fill Materials

Existing fill materials were encountered in four of the seven borings. There are several important facts that should be considered regarding existing fill materials and the limitations of subsurface exploration.

- The quality of existing fill materials can be highly variable, and test borings are often not able to detect all of the zones or layers of poor quality fill materials.

- Layers of poor quality fill materials that are less than about 2.5 to 5 feet thick may often remain undetected by soil test borings due to the discrete-interval sampling method used in this exploration.

- The interface between existing fill materials and the original ground surface may include a layer of organic material that was not properly stripped off during the original grading. Depending on its relationship to the foundation and floor slab bearing surfaces, an organic layer might adversely affect support of footings and floor slabs. If such organic layers are encountered during construction, it may be necessary to "chase out" the organic layer by excavating the layer along with overlying soils.

- The construction budget should include funds for management of poor quality existing fill materials.

- Subsurface exploration is simply not capable of disclosing all conditions that may require remediation.

General Site Preparation

Topsoil, gravel, pavements, and other deleterious materials should be removed from the proposed construction area. All existing utilities should be excavated and removed unless they are to be incorporated into the new construction. Additionally, site clearing, grubbing, and stripping should be performed only during dry weather conditions. Operation of heavy equipment on the site during wet conditions could result in excessive subgrade degradation. All excavations resulting from rerouting of underground utilities should be backfilled in accordance with the *Structural Fill* section of this report.

We recommend that areas to receive structural fill be proofrolled prior to placement of structural fill. Areas of proposed excavation should be proofrolled after rough finished subgrade is achieved. Proofrolling should be performed with multiple passes in at least two directions using a fully loaded tandem axle dump truck weighing at least 18 tons. If low consistency soils are encountered that cannot be adequately densified in place, such soils should be removed and replaced with well compacted fill material placed in accordance with the *Structural Fill* section of this report. Proofrolling should be observed by Geo-Hydro to determine if remedial measures are necessary.

For budgeting purposes, we suggest considering that approximately 30 percent of the planned pavement area will require undercutting and replacement extending to a depth of 2 feet below current grades. The suggested stabilization approach is intended only as a tool to estimate a cost associated with ground stabilization. Ground stabilization can be achieved by using geosynthetics, crushed stone, cement stabilization, etc. The need for, extent of, location, and optimal method of ground stabilization should be

determined by Geo-Hydro at the time of construction based on actual site conditions. The extent and cost of ground stabilization may exceed the suggested budgetary estimate.

During site preparation, burn pits or trash pits may be encountered. On sites located in or near developed areas, this is not an unusual occurrence. All too frequently such buried material occurs in isolated areas which are not detected by the soil test borings. Any buried debris or trash found during the construction operation should be thoroughly excavated and removed from the site.

Excavation Characteristics

Borings B-3 and B-4 encountered partially weathered rock above planned grades. Excavation of partially weathered rock typically requires large equipment capable of ripping. Also, boring B-4 encountered conditions causing auger refusal at an elevation of approximately 1041, which corresponds to 1 foot above planned finished grades. For planning purposes, it should be assumed that blasting or a rock hammer will be necessary to remove materials below the depth of auger refusal. It is also important to note that the depth to rock can vary drastically in the Piedmont over relatively short distances, and it would not be unusual to encounter rock at higher elevations in areas between the test borings.

For construction bidding and field verification purposes it is common to provide a verifiable definition of rock in the project specifications. The following are typical definitions of mass rock and trench rock:

- Mass Rock: Material which cannot be excavated with a single-tooth ripper drawn by a crawler tractor having a minimum draw bar pull rated at 56,000 pounds (Caterpillar D-8K or equivalent), and occupying an original volume of at least one cubic yard.

- Trench Rock: Material occupying an original volume of at least one-half cubic yard which cannot be excavated with a hydraulic excavator having a minimum flywheel power rating of 123 kW (165 hp); such as a Caterpillar 322C L, John Deere 230C LC, or a Komatsu PC220LC-7; equipped with a short tip radius bucket not wider than 42 inches.

Reuse of Excavated Materials

Based on the results of test borings and our observations, most of the existing fill materials appear to be suitable for reuse as structural fill. However, fill materials containing organic debris will be considered unsuitable for reuse. It should be anticipated that a fraction of the fill materials excavated at the site will not be suitable for reuse. Geo-Hydro should observe the excavation of existing fill materials to evaluate their suitability for reuse. Soft, unstable fill soils free of deleterious materials may be reusable after routine moisture adjustment.

Some of the soils on site are highly micaceous. Micaceous soils can be reused as structural fill, but can be difficult to compact due to the relatively narrow moisture content range in which the soils can be properly compacted. Generally, highly micaceous soils require very close attention to moisture content during fill placement.

It is important to establish as part of the construction contract whether soils having elevated moisture content will be considered suitable for reuse. We often find this issue to be a point of contention and a source of delays and change orders. From a technical standpoint, soils with moisture contents wet of optimum as determined by the standard Proctor test (ASTM D698) can be reused provided that the moisture is properly adjusted to within the workable range. From a practical standpoint, wet soils can be very difficult to dry in small or congested sites and such difficulties should be considered during planning and budgeting. A clear understanding by the general contractor and grading subcontractor regarding the reuse of excavated soils will be important to avoid delays and unexpected cost overruns.

Partially weathered rock materials will be suitable for reuse as structural fill only if they break down into a reasonably well-graded material that can be satisfactorily compacted. The presence of cobble size or boulder size material, which does not break down under the action of compaction equipment, will limit the suitability of partially weathered rock materials. Engineering judgment will be required in the field to evaluate the acceptability of partially weathered rock materials for reuse as structural fill.

Structural Fill

Materials selected for use as structural fill should be free of organic debris, waste construction debris, and other deleterious materials. The material should not contain rocks having a diameter over 4 inches. It is our opinion that the following soils represented by their USCS group symbols will typically be suitable for use as structural fill and are usually found in abundance in the Piedmont: (SM), (ML), and (CL). The following soil types are typically suitable but are not abundant in the Piedmont: (SW), (SP), (SC), (SP-SM), and (SP-SC). The following soil types are considered unsuitable: (MH), (CH), (OL), (OH), and (Pt).

Laboratory Proctor compaction tests and classification tests should be performed on representative samples obtained from the proposed borrow material to provide data necessary to determine acceptability and for quality control. The moisture content of suitable borrow soils should generally be no more than 3 percentage points below or above optimum at the time of compaction. Tighter moisture limits may be necessary with certain soils.

It is possible that highly micaceous soils could be utilized as structural fill material. The use of such materials will require very close attention to quality control of moisture content and density. Additionally, it is our experience that highly micaceous soils tend to rut under rubber-tired vehicle traffic. Continuous maintenance of areas subjected to construction traffic is typically required until construction is completed.

Suitable fill material should be placed in thin lifts. Lift thickness depends on the type of compaction equipment, but a maximum loose-lift thickness of 8 inches is generally recommended. The soil should be compacted by a self-propelled sheepsfoot roller. Within small excavations such as in utility trenches, around manholes, above foundations, or behind retaining walls, we recommend the use of “wacker packers” or “Rammax” compactors to achieve the specified compaction. Loose lift thicknesses of 4 to 6 inches are recommended in small area fills.

We recommend that structural fill be compacted to at least 95 percent of the standard Proctor maximum dry density (ASTM D698). Additionally, the maximum dry density of structural fill should be no less than

90 pcf. Following Georgia DOT guidelines, the upper 12 inches of pavement subgrade soils should be compacted to at least 100 percent of the standard Proctor maximum dry density. Geo-Hydro should perform density tests during fill placement.

Earth Slopes

Temporary construction slopes should be designed in strict compliance with OSHA regulations. The exploratory borings indicate that most soils at the site are Type C as defined in 29 CFR 1926.650 (1994 Edition). This dictates that temporary construction slopes be no steeper than 1.5H:1V for excavation depths of 20 feet or less. Temporary construction slopes should be closely observed on a daily basis by the contractor's "competent person" for signs of mass movement: tension cracks near the crest, bulging at the toe of the slope, etc. The responsibility for excavation safety and stability of construction slopes should lie solely with the contractor.

We recommend that extreme caution be observed in trench excavations. Several cases of loss of life due to trench collapses in Georgia point out the lack of attention given to excavation safety on some projects. We recommend that applicable local and federal regulations regarding temporary slopes, and shoring and bracing of trench excavations be closely followed.

Formal analysis of slope stability was beyond the scope of work for this project. Based on our experience, permanent cut or fill slopes should be no steeper than 2H:1V to maintain long term stability and to provide ease of maintenance. The crest or toe of cut or fill slopes should be no closer than 10 feet to any foundation. The crest or toe should be no closer than 5 feet to the edge of any pavements. Erosion protection of slopes during construction and during establishment of vegetation should be considered an essential part of construction.

Earth Pressure (Cast-In-Place Walls)

Three earth pressure conditions are generally considered for retaining wall design: "at rest", "active", and "passive" stress conditions. Retaining walls which are rigidly restrained at the top and will be essentially unable to rotate under the action of earth pressure (such basement walls) should be designed for "at rest" conditions. Retaining walls which can move outward at the top as much as 0.5 percent of the wall height (such as free-standing walls) should be designed for "active" conditions. For the evaluation of the resistance of soil to lateral loads the "passive" earth pressure must be calculated. It should be noted that full development of passive pressure requires deflections toward the soil mass on the order of l.0 percent to 4.0 percent of total wall height.

Earth pressure may be evaluated using the following equation:

$$p_h = K\,(D_w Z + q_s) + W_w(Z-d)$$

where: p_h = horizontal earth pressure at any depth below the ground surface (Z).
W_w = unit weight of water
Z = depth to any point below the ground surface

d = depth to groundwater surface

D_w = wet unit weight of the soil backfill (depending on borrow sources). The wet unit weight of most residual soils may be expected to range from approximately 115 to 125 pcf. Below the groundwater level, D_w must be the buoyant weight.

q_s = uniform surcharge load (add equivalent uniform surcharge to account for construction equipment loads)

K = earth pressure coefficient as follows:

Earth Pressure Condition	Coefficient
At Rest (K_o)	0.5
Active (K_a)	0.33
Passive (K_p)	3.0

The groundwater term, $W_w(Z-d)$, should be used if no drainage system is incorporated behind retaining walls. If a drainage system is included which will not allow the development of any water pressure behind the wall, then the groundwater term may be omitted. The development of excessive water pressure is a common cause of retaining wall failures. Drainage systems should be carefully designed to insure that long term permanent drainage is accomplished.

The above design recommendations are based on the following assumptions:

- Horizontal backfill
- 95 percent standard Proctor compactive effort on backfill (ASTM D698)
- No safety factor is included

For convenience, equivalent fluid densities are frequently used for the calculation of lateral earth pressures. For "at rest" stress conditions, an equivalent fluid density of 63 pcf may be used. For the "active" state of stress an equivalent fluid density of 42 pcf may be used. These equivalent fluid densities are based on the assumptions that drainage behind the retaining wall will allow *no* development of hydrostatic pressure; that native sandy silts or silty sands will be used as backfill; that the backfill soils will be compacted to 95 percent of standard Proctor maximum dry density; that backfill will be horizontal; and that no surcharge loads will be applied.

For analysis of sliding resistance of the base of a cast-in-place concrete retaining wall, the coefficient of friction may be taken as 0.4 for the soils at the project site. This is an ultimate value, and an adequate factor of safety should be used in design. The force which resists base sliding is calculated by multiplying the normal force on the base by the coefficient of friction. Full development of the frictional force could require deflection of the base of roughly 0.l to 0.3 inches.

Wall Foundation Support

After general site preparation and site grading have been completed in accordance with the recommendations of this report, it is our opinion that the proposed site walls can be supported using conventional shallow foundations. We recommend that footings be designed for an allowable soil bearing

pressure of 2,500 psf or less for walls up to 10 feet in height. Footings should bear at a minimum depth of 18 inches below the prevailing exterior ground surface elevation to avoid potential problems due to frost heave.

The recommended allowable soil bearing pressure is based on an estimated maximum total foundation settlement no greater than approximately 1 inch, with anticipated differential settlement along the wall alignments not exceeding about ½ inch. If the architect or structural engineer determine that the estimated total or differential settlement cannot be accommodated by the proposed structure, please contact us.

Foundation bearing surface evaluations should be performed in all footing excavations prior to placement of reinforcing steel. These evaluations should be performed by Geo-Hydro to confirm that the design allowable soil bearing pressure is available. Foundation bearing surface evaluations should be performed using a combination of visual observation, hand augering, and portable dynamic cone penetrometer testing (ASTM STP-399).

Because of natural variation, it is possible that some of the soils at the project site may have an allowable bearing pressure less than the recommended design value. Likewise, existing fill materials can be highly variable, and may have an allowable bearing pressure less than the recommended design value. Therefore, foundation bearing surface evaluations will be critical to aid in the identification and remediation of these situations.

Remedial measures should be based on actual field conditions. However, in most cases we expect the use of the stone replacement technique to be the primary remedial measure. Stone replacement involves the removal of soft or loose soils, and replacement with well-compacted graded aggregate base (GAB) meeting Georgia Department of Transportation specifications for gradation. Stone replacement is generally performed to depths ranging from a few inches to as much as 2 times the footing width, depending on the actual conditions. For budgetary purposes, we suggest considering that as much as 30 percent of the foundation excavations will require overexcavation and stone replacement extending to a depth of 3 feet below bearing elevation. The actual quantity of stone replacement will be different and may exceed the provided estimate.

Flexible Pavement Design

Based on our experience with similar projects, assuming standard pavement design parameters, and contingent upon proper pavement subgrade preparation, we recommend the following pavement sections:

Entrance/Exit Driveways and Truck Traffic Areas

Material	Thickness (inches)
Asphaltic Concrete 9.5mm Superpave	2
Asphaltic Concrete 19mm Superpave	2
Graded Aggregate Base (GAB) (Base Course)	6
Subgrade compacted to at least 100% standard Proctor maximum dry density (ASTM D-698)	12

Automobile Parking and Automobile Traffic Only

Material	Thickness (inches)
Asphaltic Concrete 9.5mm Superpave	2
Graded Aggregate Base (GAB) (Base Course)	6
Subgrade compacted to at least 100% standard Proctor maximum dry density (ASTM D-698)	12

A concrete thickness of 6 inches is recommended for the approach and collection zone in front of any dumpsters. Please refer to the *Concrete Pavement* section of this report for concrete pavement recommendations.

The top 12 inches of pavement subgrade soils should be compacted to at least 100 percent of the standard Proctor maximum dry density (ASTM D698). Scarification and moisture adjustment will likely be required to achieve the recommended subgrade compaction level. Allowances for pavement subgrade preparation should be considered for budgeting and scheduling.

GAB must be compacted to at least 100 percent of the modified Proctor maximum dry density (ASTM D1557).

All pavement construction should be performed in general accordance with Georgia DOT specifications. Proper subgrade compaction, adherence to Georgia DOT specifications, and compliance with project plans and specifications, will be critical to the performance of the constructed pavement.

Concrete Pavement

A rigid portland cement concrete pavement may be considered. Although usually more costly, a portland cement concrete pavement is typically more durable and requires less maintenance throughout the life cycle of the facility. Concrete thicknesses of 5 inches in automobile parking areas and 6 inches in driveways and truck traffic areas are recommended. A concrete thickness of 6 inches is recommended for the approach and collection zone in front of the dumpster. A 650-psi flexural strength concrete mix with 4 to 6 percent air entrainment should be used. The concrete pavement should be underlain by no less than 4 inches of compacted graded aggregate base (GAB). GAB should be compacted to at least 100 percent of the modified Proctor maximum dry density (ASTM D1557). The top 12 inches of soil subgrade should be compacted to at least 100 percent of the standard Proctor maximum dry density (ASTM D698).

The concrete pavement may be designed as a “plain concrete pavement” with no reinforcing steel, or reinforcing steel may be used at joints. Construction joints and other design details should be in accordance with guidelines provided by the Portland Cement Association and the American Concrete Institute.

In general, all pavement construction should be in accordance with Georgia DOT specifications. Proper subgrade compaction, adherence to Georgia DOT specifications, and compliance with project plans and specifications will be critical to the performance of the constructed pavement.

Pavement Design Limitations

The pavement sections discussed above are based on our experience with similar type facilities. After traffic information has been developed, we recommend that you allow us to review the traffic data and revise our recommendations as necessary.

Pavement Materials Testing

In order to aid in verifying that the pavement system is installed in general accordance with the design considerations, the following materials testing services are recommended:

- Density testing of subgrade materials.
- Proofrolling of pavement subgrade materials immediately prior to placement of graded aggregate base (GAB). This proofrolling should be performed the same day GAB is installed.
- Density testing of GAB and verification of GAB thickness. In-place density should be verified using the sand cone method (ASTM D1556).
- Coring of the pavement to verify thickness and density (asphalt pavement only). Two cores should suffice to evaluate the finished pavement.
- Preparation and testing of beams and cylinders for flexural and compressive strength testing (portland cement concrete only). The total number of test specimens required will depend on the number of concrete placement events necessary to construct the pavement.

* * * * * *

We appreciate the opportunity to serve as your geotechnical consultant for this project, and are prepared to provide any additional services you may require. If you have any questions concerning this report or any of our services, please call us.

Sincerely,

GEO-HYDRO ENGINEERS, INC.

A. Marty Peninger, P.E.
Senior Geotechnical Engineer
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Luis E. Babler, P.E.
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AMP/LEB/150630.20 - Roadway and Parking Lot Improvements - CDA Facility - Geotechnical Report

APPENDIX

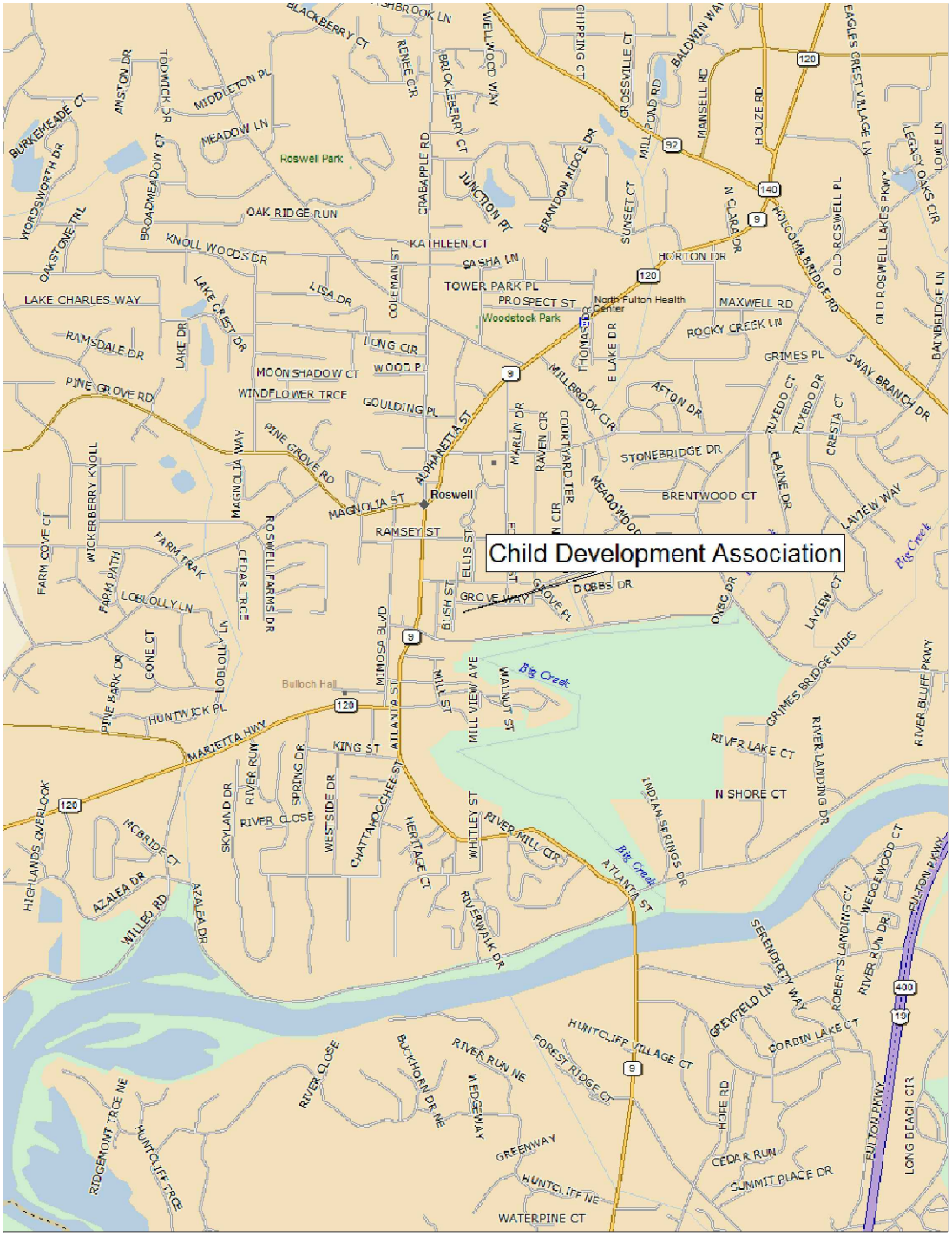

Figure 1: Site Location Plan

Roadway and Parking Lot Improvements
Child Development Association
Roswell, Georgia
Geo-Hydro Project Number 150630.20

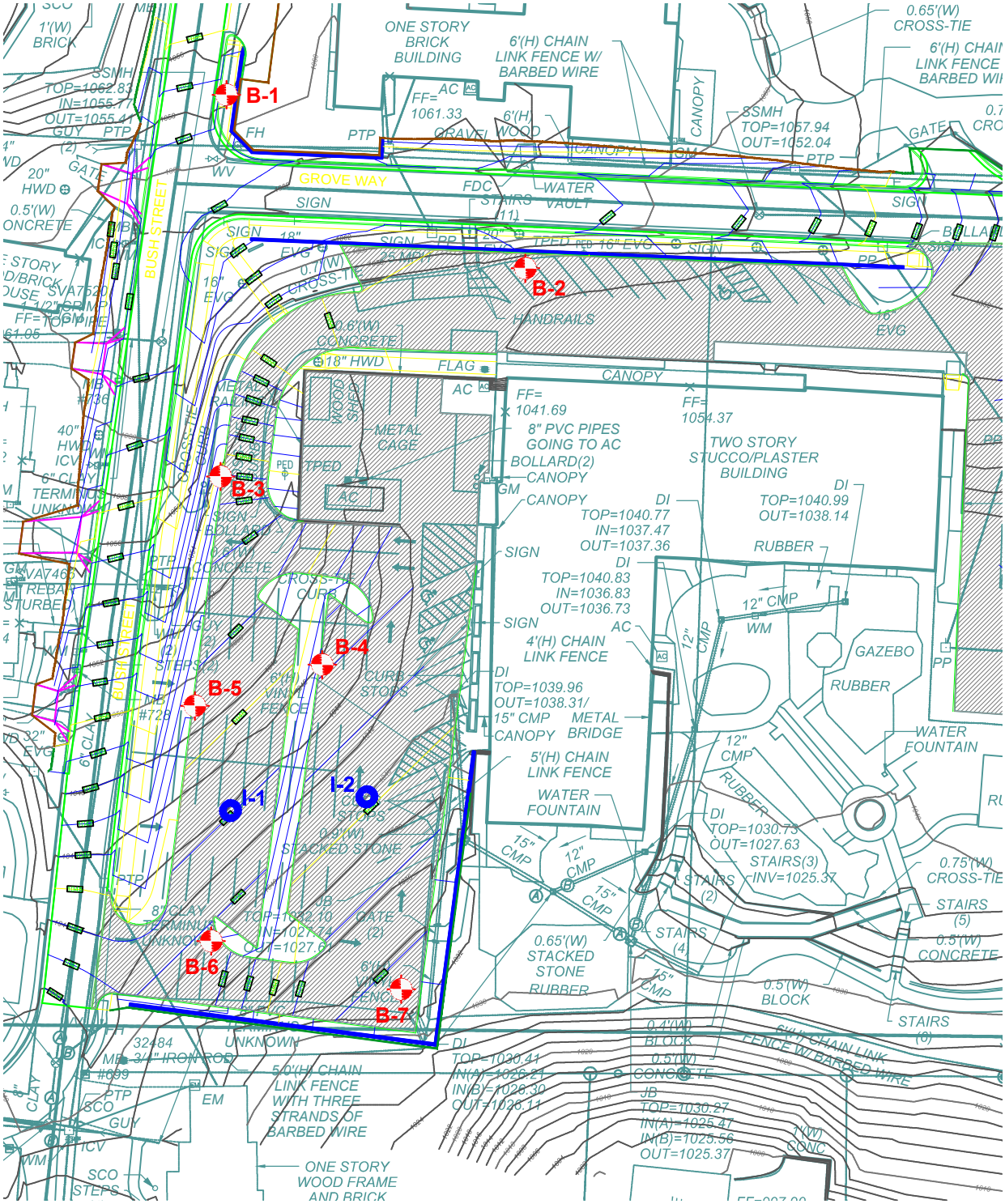

Figure 2: Boring Location Plan

Roadway and Parking Lot Improvements
Child Development Association
Roswell, Georgia
Geo-Hydro Project Number 150630.20

Symbols and Nomenclature

Symbols

▌	Thin-walled tube (TWT) sample recovered
▯	Thin-walled tube (TWT) sample not recovered
●	Standard penetration resistance (ASTM D1586)
50/2”	Number of blows (50) to drive the split-spoon a number of inches (2)
65%	Percentage of rock core recovered
RQD	Rock quality designation - % of recovered core sample which is 4 or more inches long
GW	Groundwater
	Water level at least 24 hours after drilling
	Water level one hour or less after drilling
ALLUV	Alluvium
TOP	Topsoil
PM	Pavement Materials
CONC	Concrete
FILL	Fill Material
RES	Residual Soil
PWR	Partially Weathered Rock
SPT	Standard Penetration Testing

Penetration Resistance Results	Number of Blows, N	Approximate Relative Density
Sands	0-4	very loose
	5-10	loose
	11-20	firm
	21-30	very firm
	31-50	dense
	Over 50	very dense

	Number of Blows, N	Approximate Consistency
Silts and	0-1	very soft
Clays	2-4	soft
	5-8	firm
	9-15	stiff
	16-30	very stiff
	31-50	hard
	Over 50	very hard

Drilling Procedures

Soil sampling and standard penetration testing performed in accordance with ASTM D 1586. The standard penetration resistance is the number of blows of a 140-pound hammer falling 30 inches to drive a 2-inch O.D., 1.4-inch I.D. split-spoon sampler one foot. Rock coring is performed in accordance with ASTM D 2113. Thin-walled tube sampling is performed in accordance with ASTM D 1587.

GEO HYDRO ENGINEERS

B-1

Test Boring Record

GEO HYDRO ENGINEERS

Project: **Roadway and Parking Lot Improvements**		Project No: **150630.20**
Location: **Child Development Association - Roswell, Georgia**		Date: **9/17/15**
Method: **HSA- ASTM D1586**	GWT at Drilling: **Not Encountered**	G.S. Elev: **1058**
Driller: **ACS (Rope & Cathead)**	GWT at 24 hrs: **NE: Caved at 11 feet**	Logged By: **JTR**

Elev. (Ft)	Depth (Ft)	GWT	Symbol	Description	N	Standard Penetration Test (Blows/Foot)
1055	0			Firm brown silty fine sand (SM) (FILL)	12	
	5			Dense brown and orange silty fine to medium sand (SM) (FILL)	31	
1050				Dense gray and white silty fine to coarse sand (SM) (RESIDUUM)	42	
	10				45	
1045				Very dense brown highly micaceous silty fine sand (SM)		
	15			Boring Terminated at 15 feet	69	
1040						
	20					
1035						
	25					

0 10 20 30 40 50 60 70 80 90 100

Remarks:

TEST BORING RECORD BORING LOGS.GPJ GEO HYDRO.GDT 10/9/15

B-2

Test Boring Record

GEO HYDRO ENGINEERS

Project: **Roadway and Parking Lot Improvements**		Project No: **150630.20**
Location: **Child Development Association - Roswell, Georgia**		Date: **9/17/15**
Method: **HSA- ASTM D1586**	GWT at Drilling: **Not Encountered**	G.S. Elev: **1054**
Driller: **ACS (Rope & Cathead)**	GWT at 24 hrs: **NE: Caved at 5 feet**	Logged By: **JTR**

Elev. (Ft)	Depth (Ft)	GWT	Symbol	Description	N	Standard Penetration Test (Blows/Foot)
				Asphalt (Approximately 3 inches)		
				Graded Aggregate Base (Approximately 3 inches)		
				Very firm brown micaceous silty fine sand (SM) (FILL)	25	
1050				Partially weathered rock sampled as brown and tan to brown micaceous silty fine sand (SM) (RESIDUUM)		
	5				50/6"	
					50/6"	
1045						
	10			Auger Refusal at 10 feet	50/1"	
1040						
	15					
1035						
	20					
1030						
	25					

0 10 20 30 40 50 60 70 80 90 100

Remarks:

TEST BORING RECORD BORING LOGS.GPJ GEO HYDRO.GDT 10/9/15

B-3

Test Boring Record

GEO HYDRO ENGINEERS

Project: **Roadway and Parking Lot Improvements**		Project No: **150630.20**
Location: **Child Development Association - Roswell, Georgia**		Date: **9/17/15**
Method: **HSA- ASTM D1586**	GWT at Drilling: **Not Encountered**	G.S. Elev: **1054**
Driller: **ACS (Rope & Cathead)**	GWT at 24 hrs: **NE: Caved at 4 feet**	Logged By: **JTR**

Elev. (Ft)	Depth (Ft)	GWT	Symbol	Description	N	Standard Penetration Test (Blows/Foot) 0 10 20 30 40 50 60 70 80 90 100
				Asphalt (Approximately 2 1/2 inches)		
				Graded Aggregate Base (Approximately 3 inches)		
				Dense brown silty fine to medium sand (SM) with rock fragments (RESIDUUM)	35	
1050				Partially weathered rock sampled as brown and white micaceous silty fine to coarse sand (SM)		
	5				50/5"	
					50/4"	
1045						
	10			Auger Refusal at 10 feet	50/0"	
1040						
	15					
1035						
	20					
1030						
	25					

Remarks:

TEST BORING RECORD BORING LOGS.GPJ GEO HYDRO.GDT 10/9/15

B-4

Test Boring Record

GEO HYDRO ENGINEERS

Project: **Roadway and Parking Lot Improvements**		Project No: **150630.20**
Location: **Child Development Association - Roswell, Georgia**		Date: **9/17/15**
Method: **HSA- ASTM D1586**	GWT at Drilling: **Not Encountered**	G.S. Elev: **1046**
Driller: **ACS (Rope & Cathead)**	GWT at 24 hrs: **NE: Caved at 2 feet**	Logged By: **JTR**

Elev. (Ft)	Depth (Ft)	GWT	Symbol	Description	N
1045				Asphalt (Approximately 2 1/2 inches)	
				Graded Aggregate Base (Approximately 3 inches)	
				Very firm light brown slightly micaceous silty fine sand (SM) (RESIDUUM)	21
				Partially weathered rock sampled as brown slightly micaceous silty fine sand (SM)	
	5			Auger Refusal at 5 feet	50/1"
1040					
	10				
1035					
	15				
1030					
	20				
1025					
	25				

Standard Penetration Test (Blows/Foot)

0 10 20 30 40 50 60 70 80 90 100

Remarks:

TEST BORING RECORD BORING LOGS.GPJ GEO HYDRO.GDT 10/9/15

B-5

Test Boring Record

GEO HYDRO ENGINEERS

Project: **Roadway and Parking Lot Improvements**		Project No: **150630.20**
Location: **Child Development Association - Roswell, Georgia**		Date: **9/17/15**
Method: **HSA- ASTM D1586**	GWT at Drilling: **Not Encountered**	G.S. Elev: **1049**
Driller: **ACS (Rope & Cathead)**	GWT at 24 hrs: **NE: Caved at 10 feet**	Logged By: **JTR**

Elev. (Ft)	Depth (Ft)	GWT	Symbol	Description	N	Standard Penetration Test (Blows/Foot)
				Asphalt (Approximately 2 1/2 inches)		
				Graded Aggregate Base (Approximately 3 inches)		
				Very stiff orange-brown slightly micaceous fine sandy silt (ML) (RESIDUUM)	16	
1045				Very dense white to brown highly micaceous silty fine to medium sand (SM)		
	5				52	
					59	
1040				Partially weathered rock sampled as brown to white slightly micaceous silty fine to coarse sand (SM)		
	10				50/3"	
1035						
	15			Auger Refusal at 15 feet	50/3"	
1030						
	20					
1025						
	25					

0 10 20 30 40 50 60 70 80 90 100

Remarks:

TEST BORING RECORD BORING LOGS.GPJ GEO HYDRO.GDT 10/9/15

B-6

Test Boring Record

GEO HYDRO ENGINEERS

Project: **Roadway and Parking Lot Improvements**		Project No: **150630.20**
Location: **Child Development Association - Roswell, Georgia**		Date: **9/17/15**
Method: **HSA- ASTM D1586**	GWT at Drilling: **Not Encountered**	G.S. Elev: **1040**
Driller: **ACS (Rope & Cathead)**	GWT at 24 hrs: **NE: Caved at 15 feet**	Logged By: **JTR**

Elev. (Ft)	Depth (Ft)	GWT	Symbol	Description	N
				Asphalt (Approximately 3 inches)	
				Graded Aggregate Base (Approximately 2 inches)	
				Loose to firm dark brown slightly micaceous silty fine to medium sand (SM) (FILL)	9
1035	5				13
				Very firm red silty fine sand (SM) with organics (FILL)	29
				Partially weathered rock sampled as gray slightly micaceous silty fine sand (SM) (RESIDUUM)	50/6"
1030	10				
				Dense brown and tan micaceous silty fine sand (SM)	
1025	15				40
1020	20			Boring Terminated at 20 feet	43
1015	25				

Standard Penetration Test (Blows/Foot)

0 10 20 30 40 50 60 70 80 90 100

Remarks:

TEST BORING RECORD BORING LOGS.GPJ GEO HYDRO.GDT 10/9/15

B-7

Test Boring Record

GEO HYDRO ENGINEERS

Project: **Roadway and Parking Lot Improvements**		Project No: **150630.20**
Location: **Child Development Association - Roswell, Georgia**		Date: **9/17/15**
Method: **HSA- ASTM D1586**	GWT at Drilling: **Not Encountered**	G.S. Elev: **1032**
Driller: **ACS (Rope & Cathead)**	GWT at 24 hrs: **NE: Caved at 9 feet**	Logged By: **JTR**

Elev. (Ft)	Depth (Ft)	GWT	Symbol	Description	N
1030	0			Asphalt (Approximately 3 inches) Brown to gray-brown micaceous silty fine to coarse sand (SM) (FILL)	15
	5				31
1025				Black to brown micaceous silty fine to medium sand (SM) (FILL) (No sample recovered at 15 feet)	20
	10				19
1020					
	15			Auger Refusal at 15 feet	50/1"
1015					
	20				
1010					
	25				

Standard Penetration Test (Blows/Foot)

0 10 20 30 40 50 60 70 80 90 100

Remarks:

TEST BORING RECORD BORING LOGS.GPJ GEO HYDRO.GDT 10/9/15