



State of West Virginia
 Department of Administration
 Purchasing Division
 2019 Washington Street East
 Post Office Box 50130
 Charleston, WV 25305-0130

Request for Quotation

RFQ NUMBER
PTR11054

PAGE
1

ADDRESS CORRESPONDENCE TO ATTENTION OF
FRANK WHITTAKER
304-558-2316

RFQ COPY
 TYPE NAME/ADDRESS HERE

DIVISION OF PUBLIC TRANSIT
 BUILDING 5, ROOM 906
 1900 KANAWHA BOULEVARD, EAST
 CHARLESTON, WV
 25305-0432 304-558-0428

VENDOR

SHIP TO

DATE PRINTED	TERMS OF SALE	SHIP VIA	F.O.B.	FREIGHT TERMS
02/20/2011				

BID OPENING DATE: **03/17/2011** BID OPENING TIME **01:30PM**

LINE	QUANTITY	UOP	CAT. NO.	ITEM NUMBER	UNIT PRICE	AMOUNT
***** ADDENDUM NO. 1 *****						
THIS ADDENDUM IS ISSUED TO PROVIDE THE ATTACHED:						
1) CHANGES TO THE BIDDING DOCUMENTS & REVISED DRAWINGS						
2) TECHNICAL QUESTIONS AND ANSWERS.						
3) MANDATORY PRE-BID SIGN IN SHEET.						
0001	1	EA		968-20		
CONSTRUCITON: OFFICE AND MAINTENANCE FACILTIY						
***** THIS IS THE END OF RFQ PTR11054 ***** TOTAL: _____						

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

SIGNATURE	TELEPHONE	DATE
TITLE	FEIN	ADDRESS CHANGES TO BE NOTED ABOVE

WHEN RESPONDING TO RFQ, INSERT NAME AND ADDRESS IN SPACE ABOVE LABELED 'VENDOR'

GENERAL TERMS & CONDITIONS REQUEST FOR QUOTATION (RFQ) AND REQUEST FOR PROPOSAL (RFP)

1. Awards will be made in the best interest of the State of West Virginia.
2. The State may accept or reject in part, or in whole, any bid.
3. Prior to any award, the apparent successful vendor must be properly registered with the Purchasing Division and have paid the required \$125 fee.
4. All services performed or goods delivered under State Purchase Order/Contracts are to be continued for the term of the Purchase Order/Contracts, contingent upon funds being appropriated by the Legislature or otherwise being made available. In the event funds are not appropriated or otherwise available for these services or goods this Purchase Order/Contract becomes void and of no effect after June 30.
5. Payment may only be made after the delivery and acceptance of goods or services.
6. Interest may be paid for late payment in accordance with the *West Virginia Code*.
7. Vendor preference will be granted upon written request in accordance with the *West Virginia Code*.
8. The State of West Virginia is exempt from federal and state taxes and will not pay or reimburse such taxes.
9. The Director of Purchasing may cancel any Purchase Order/Contract upon 30 days written notice to the seller.
10. The laws of the State of West Virginia and the *Legislative Rules* of the Purchasing Division shall govern the purchasing process.
11. Any reference to automatic renewal is hereby deleted. The Contract may be renewed only upon mutual written agreement of the parties.
12. **BANKRUPTCY:** In the event the vendor/contractor files for bankruptcy protection, the State may deem this contract null and void, and terminate such contract without further order.
13. **HIPAA BUSINESS ASSOCIATE ADDENDUM:** The West Virginia State Government HIPAA Business Associate Addendum (BAA), approved by the Attorney General, is available online at www.state.wv.us/admin/purchase/vrc/hipaa.htm and is hereby made part of the agreement. Provided that the Agency meets the definition of a Cover Entity (45 CFR §160.103) and will be disclosing Protected Health Information (45 CFR §160.103) to the vendor.
14. **CONFIDENTIALITY:** The vendor agrees that he or she will not disclose to anyone, directly or indirectly, any such personally identifiable information or other confidential information gained from the agency, unless the individual who is the subject of the information consents to the disclosure in writing or the disclosure is made pursuant to the agency's policies, procedures, and rules. Vendor further agrees to comply with the Confidentiality Policies and Information Security Accountability Requirements, set forth in <http://www.state.wv.us/admin/purchase/privacy/noticeConfidentiality.pdf>.
15. **LICENSING:** Vendors must be licensed and in good standing in accordance with any and all state and local laws and requirements by any state or local agency of West Virginia, including, but not limited to, the West Virginia Secretary of State's Office, the West Virginia Tax Department, and the West Virginia Insurance Commission. The vendor must provide all necessary releases to obtain information to enable the director or spending unit to verify that the vendor is licensed and in good standing with the above entities.
16. **ANTITRUST:** In submitting a bid to any agency for the State of West Virginia, the bidder offers and agrees that if the bid is accepted the bidder will convey, sell, assign or transfer to the State of West Virginia all rights, title and interest in and to all causes of action it may now or hereafter acquire under the antitrust laws of the United States and the State of West Virginia for price fixing and/or unreasonable restraints of trade relating to the particular commodities or services purchased or acquired by the State of West Virginia. Such assignment shall be made and become effective at the time the purchasing agency tenders the initial payment to the bidder.

I certify that this bid is made without prior understanding, agreement, or connection with any corporation, firm, limited liability company, partnership, or person or entity submitting a bid for the same material, supplies, equipment or services and is in all respects fair and without collusion or Fraud. I further certify that I am authorized to sign the certification on behalf of the bidder or this bid.

INSTRUCTIONS TO BIDDERS

1. Use the quotation forms provided by the Purchasing Division. Complete all sections of the quotation form.
2. Items offered must be in compliance with the specifications. Any deviation from the specifications must be clearly indicated by the bidder. Alternates offered by the bidder as **EQUAL** to the specifications must be clearly defined. A bidder offering an alternate should attach complete specifications and literature to the bid. The Purchasing Division may waive minor deviations to specifications.
3. Unit prices shall prevail in case of discrepancy. All quotations are considered F.O.B. destination unless alternate shipping terms are clearly identified in the quotation.
4. All quotations must be delivered by the bidder to the office listed below prior to the date and time of the bid opening. Failure of the bidder to deliver the quotations on time will result in bid disqualifications: Department of Administration, Purchasing Division, 2019 Washington Street East, P.O. Box 50130, Charleston, WV 25305-0130
5. Communication during the solicitation, bid, evaluation or award periods, except through the Purchasing Division, is strictly prohibited (W.Va. C.S.R. §148-1-6.6).

Little Kanawha Bus Administrative and Maintenance Facility

Addendum No.: 1
 Issue Date: February 17, 2011
 Architects Project No.: 118985
 Bid Opening: 1:30 p.m. March 17, 2011

From: **Michael Baker Jr., Inc.**
 5088 Washington Street, West
 Charleston, West Virginia 25313

To: Prospective Bidders

This addendum forms a part of the Contract Documents and modifies the original Contract Documents dated **October 07, 2010** as noted below. Acknowledge receipt of this Addendum by inserting the number and issue date of this addendum in the blank space provided on the Bid Form. Failure to do so may subject the Bidder to disqualification.

This Addendum consists of **2 pages** and the attached documents:

A1-1 – Div 33 – 330501, 330513, 330530, 330534, 330540, 330541 & 334100	- 28 pages
A1-2 – Window Schedule – Drawing A-602	- 1 page
A1-3 – Revised Water Heater Detail – Drawing P-401	- 1 page
A1-4 – Revised Gas Furnace Schedule – Drawing M-601	- 1 page

CHANGES TO BIDDING REQUIREMENTS:

1. All Contractors to verify the date on the Contract Documents before submitting their bid. The bid documents are dated **10/07/10**.

CHANGES TO SPECIFICATIONS (DIVISIONS 2 THRU 16):

1. ADD Division 33 - Specification Sections 330501, 330513, 330530, 330534, 330540, 330541 & 334100 These sections were inadvertently omitted from some sets issued, and are to be considered a part of the Contract Documents.
2. ADD to Specification Section 042000 paragraph 2.4.L1 the following manufacturer: Essroc Italcementi Group – “Bravo Non-Chloride Mortar Accelerator.

CHANGES TO DRAWINGS:

3. REVISE Window Schedule on drawing A-602 as per attachment A1-2.
4. REVISE Detail 4 / P-401 and water heater schedule on P-601 per attachment A1-3.
5. REVISE Gas Furnace Schedule on M-601 per attachment A1-4.
1. REVISE Drawing E-201: Change Standby Generator size from 50 KW to 20 KW
2. REVISE Drawing E-701: Change Standby Generator size from 50 KW to 20 KW.
3. REVISE Drawing E-701: Change Automatic Transfer Switch (ATS) size from 200A to 100A.
4. REVISE Drawing E-701: Change feeder sizes as follows:
 - a. Feeder from Standby Generator to ATS: From 4-3/0 AWG, 8 AWG GND. IN 2" C to 4-1 AWG+ 8 AWG GND. IN 1-1/2"C.

- b. From MDP to ATS: From 4-3/0 AWG, 8 AWG GND. IN 2" C to 4-1 AWG+ 8 AWG GND. IN 1-1/2"C.
 - c. From ATS to panel EP: From 4-3/0 AWG, 8 AWG GND. IN 2" C to 4-1 AWG+ 8 AWG GND. IN 1-1/2"C.
5. REVISE Drawing E-701: Change circuit breaker in MDP that feeds the ATS from 200A, 3P to 100A, 3P.
 6. REVISE Drawing E-701: Delete keyed note 2 and replace with:
STANDBY 20 KW, 208/120V, 3 PHASE 4 WIRE NATURAL GAS GENERATOR, CUMMINS MODEL GGMA WITH ALTERNATOR YD0575 OR EQUIVALENT, WEATHER ENCLOSURE, REMOTE ANNUNCIATOR PANEL, BLOCK HEATER, ALTERNATOR STRIP, BATTERY, BATTERY CHARGER, BATTERY HEATER, IN-LINE CIRCUIT BREAKER, RODENT GUARDS, 5-YEAR BASIC WARRANTY. SEE SPECIFICATIONS.
 6. REVISE Drawing E-901: Change Panel EP from 225A MAIN CIRCUIT BREAKER to 100A MAIN CIRCUIT BREAKER.

END OF ADDENDUM

Attachment A1-1

Division 33 – Utilities

Little Kanawha Bus Administrative and Maintenance Facility**SECTION 330501 – CONNECTIONS TO EXISTING MAINS AND SEWERS****PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 DESCRIPTION OF WORK

- A. Scope of Work. The Contractor shall provide the labor, tools, equipment, and materials necessary to accomplish connections to pipelines and sewers in service in accordance with the plans and as specified herein.
- B. Utility. Installation shall be in conformance with all utility requirements. All utility connection costs including service and tap fees will be paid for by the Contractor.

1.3 QUALITY ASSURANCE

- A. Codes and Regulatory Agencies. Perform all work in compliance with all federal, state, and local codes and regulatory agencies.

1.4 SUBMITTALS

- A. Not used.

1.5 JOB CONDITIONS

- A. Notification. The Contractor shall notify the Owner at least 2 working days in advance and all affected users at least 24 hours in advance of shutoffs. The notification shall include planned starting time and duration of interruption in service. The time and duration of interruption of service must be approved by the Owner. All work will be coordinated with the utility company.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Not used.

1.7 SPECIAL WARRANTY

Not used.

Little Kanawha Bus Administrative and Maintenance Facility

PART 2 - PRODUCTS – Not applicable.

PART 3 - EXECUTION

3.1 CONNECTING TO EXISTING UTILITIES AND STRUCTURES

A. Examination

1. Verification of Conditions. Verify the location and elevation of required construction. Confirm that conditions are acceptable to begin construction of work covered in the specification. Complete coordination with other construction or operation activity on the same facility or area. The Contractor shall expose all existing pipes within the work area to permit confirmation of pipe sizes, all required dimensions, elevations, precise locations, and materials of construction prior to ordering new materials and not less than 7 working days prior to date planned for actual connection.

B. Main Connection.

1. Sequence of Work.
 - a. The Contractor shall complete as much work as possible before making connections. New mains must be blocked, tested, sterilized, and approved prior to connecting to existing mains.
 - b. The Contractor shall coordinate the work so that all labor, materials, tools, and equipment are on the site at the start of the work.
 - c. The Contractor shall work continuously (24 hours per day, 7 days per week) until service is restored.
 - d. The Contractor shall schedule the work to correspond with minimum flows, such as nights and weekends, to minimize inconvenience to customers.
2. Disinfection. The Contractor shall disinfect contaminated potable water pipe in accordance with Section 01 89 19, "Leakage Test and Disinfection."
3. Testing. The connection shall be tested before backfilling.
4. Refilling. The Contractor shall refill the pipe from the system and evacuate all air through hydrants and air releases.
5. Demonstration. Comply with requirements of Section 33 05 30 Item 3.6.

C. Sewer Connection

1. Description. The Contractor shall provide for intercepting existing sewers and connecting new sewers to existing manholes where shown on the plans or where directed by the Engineer/Architect and as specified herein.
2. General. This work shall include neatly cutting out existing sewers within new manholes; abandoning sewers within new and existing manholes and plugging with concrete; connecting into and reshaping inverts within existing manholes to accommodate new sewers; and temporarily plugging new sewers within existing manholes. All plugs and connections shall be made watertight.

END OF SECTION 330501

Little Kanawha Bus Administrative and Maintenance Facility

SECTION 330513 -- VAULTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 DESCRIPTION OF WORK

- A. General. Provide the labor, tools, equipment, and materials necessary to furnish and install the vaults.

1.3 QUALITY ASSURANCE

- A. Codes and Standards. Perform all work required to furnish and install the vaults in compliance with applicable requirements of governing agencies having jurisdiction.

1.4 SUBMITTALS

- A. General
 - 1. Submit all submittals in accordance with the Division I Submittal Requirements and the requirements within this specification section.
- B. Submittal Package No. 1 – Shop Drawings and Product Data
 - 1. Product Data. Furnish samples, manufacturer's product data, test reports, and materials certifications as required.
 - 2. Shop Drawings. Provide detail drawings, sketches, and specifications as may be required to establish that the proposed vaults conform to the requirements of the plans and specifications.

1.5 JOB CONDITIONS

- A. Not used.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. General
 - 1. Inspect all vaults and accessories for damage immediately upon delivery to the site.
 - 2. Handle all vaults and accessories carefully using proper handling devices.
 - 3. Materials cracked, gouged, chipped, dented, or otherwise damaged will be rejected.

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1.7 SPECIAL WARRANTY

Not used.

PART 2 - PRODUCTS

2.1 VAULTS to be constructed as follows except when noted otherwise on the drawings and details.

- A. Concrete. Provide Class A, 4,000-pound-per-square-inch (psi), 28-day-strength Portland cement concrete as specified in Section 033000, "Concrete," in the construction of manholes and inlets.
- B. Concrete Reinforcement. Provide reinforcement as shown on the drawings and as specified in Section 033000, "Concrete," in the construction of manholes and inlets.
- C. Mortar
 - 1. Mortar shall be composed of Portland cement and sand mixed in the proportions of one bag of cement to 2 cubic feet of sand.
 - 2. Measure the sand loose in a bucket or in some other suitable measure of known volume.
 - 3. Mix the dry cement and sand thoroughly and uniformly first. Then wet with water to make a stiff paste which will be plastic under the trowel, but not so soft as to run after being placed.
 - 4. Use the mortar before it has begun to stiffen.
 - 5. Mortar that has set shall not be remixed and used.
- D. Masonry
 - 1. All masonry joints shall be smooth and completely filled with mortar.
 - 2. Brick shall conform to Grade MS as specified in ASTM C 32.
 - 3. Concrete brick may be used on approval, providing they meet all of the requirements specified in ASTM C 139.
 - 4. Solid concrete block shall conform to Grade N-1 as specified in ASTM C 145.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Cold Weather. If the work is carried on in cold weather, provide the necessary means for heating concrete, brick, and mortar and for complying with all the requirements of the Engineer/Architect to thoroughly protect the masonry and concrete work during and after construction from damage by frost. Do not perform any masonry or backfilling during days, in the opinion of the Engineer, that are unsuitable for good workmanship.
- B. Completion. All vaults, upon their completion, are to be clean and free from rubbish until the acceptance of the work. Repairs or alterations made to the manholes after performing the leakage test may be justification for a retest of the section of sewer involved; see Section OJ 89 19 for the leakage test.

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- C. Concrete and Mortar Placement. Place no mortar or concrete in water, and don't allow water to flow over or against the concrete or mortar before it has set for a period of time deemed sufficient to prevent damage to the structure.

END OF SECTION 330513

Little Kanawha Bus Administrative and Maintenance Facility**SECTION 330530 – PRESSURE PIPE, FITTINGS, AND VALVES, INSTALLATION****PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

- A. General. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 DESCRIPTION OF WORK

- A. General. Provide the labor, tools, equipment, and materials necessary to furnish and install the pipe and fittings in accordance with the drawings and as specified herein. The work includes, but is not limited to, the following:
1. Excavation, preparation of the trench bottom and bedding.
 2. Shoring and bracing.
 3. Piping beginning at the outside face of structures or building foundations, unless specifically included under other sections.
 4. Installation of supports, restraints, and thrust blocks.
 5. Installation of all joints, fittings, specials, couplings, adapters, sleeves, tie rods, jointing and gasketing materials, and all other work required to complete the piping installation.
 6. Valves, gates, and specials shown or specified for the piping systems.
 7. Testing and disinfection.
 8. Cleaning.
 9. Trench maintenance.

1.3 QUALITY ASSURANCE

- A. Codes and Standards. Conform all materials and workmanship with the following standards:
1. AASHTO -American Association of State Highway and Transportation Officials.
 2. ANSJ -American National Standards Institute.
 3. ASTM -American Society for Testing and Materials.
 4. AWWA -American Water Works Association.
 5. PPJ -Plastic Pipe Institute.

1.4 SUBMITTALS

- A. General
1. Submit all submittals in accordance with the Division I Submittal Requirements and the requirements within this specification section.

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1.5 JOB CONDITIONS

- A. Testing. Provide all water required for testing at no additional cost to the Owner. Do not pressure-test polyvinyl chloride (PVC) and polyethylene (PE) pipe when the temperature of the pipe is over 80 degrees Fahrenheit (0 F.).
- B. Cleaning. Provide all water required for cleaning and flushing at no additional cost to the Owner.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. General
 - 1. Delivery, storage, and handling shall be in accordance with Section 01 60 00, "Materials and Equipment."
 - 2. Pipe, fittings, and accessories that are cracked, damaged, or in poor condition, or have damaged linings will be rejected.
 - 3. Pipe handled on skidways shall not be skidded or rolled against other pipe.
 - 4. Protect PVC or PE pipe from exposure to heat or direct sunlight (ultraviolet rays).

1.7 SPECIAL WARRANTY

Not used.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Pipe and Fittings. Conform all buried piping, fittings, and joints to the drawings and requirements specified in the corresponding section for each type of pipe installed.
- B. Manufacturer
 - 1. All new buried piping of one material shall be by a single manufacturer.
 - 2. All buried fittings of one material shall be by a single manufacturer.
 - 3. All pipe and fittings manufactured outside the United States shall be certified to ISO 9001:2000 standards for quality assurance.
- C. Identification
 - 1. Paint or cast all pipe and fittings 4 inches in diameter and larger with the pipe size, material, and class or schedule on the exterior pipe surface.
 - 2. Factory-mark all piping less than 4 inches in diameter with the pipe size, material, and class or schedule on the exterior pipe surface.
 - 3. Provide 4-inch wide manufactured colored plastic warning tape identifying buried water line.

2.2 BACKFILL

- A. See Section 312323.14, "Trench Backfill."

Little Kanawha Bus Administrative and Maintenance Facility**PART 3 - EXECUTION****3.1 EXAMINATION****A. Verification of Conditions**

1. Verify the location and elevation of required construction.
2. Confirm that conditions are acceptable to begin construction of the work covered in the specification.
3. Coordinate with other construction or activities in the same facility or area.

3.2 PREPARATION**A. Safety.** For the security and safety of persons in and adjacent to trenches or construction operations, follow the safety regulations of the appropriate federal, state, and local agency.**B. Dewatering**

1. Should water be encountered, furnish and operate suitable pumping equipment of adequate capacity to dewater the trench.
2. Sufficiently dewater the trench so that the laying and joining of the pipe is in the dry.
3. Convey all trench water in accordance with the requirements contained in the National Pollutant Discharge Elimination System (NPDES) program.
4. Convey all trench water to a natural drainage channel or storm sewer without causing any property damage.

C. Construction Equipment. Where mains are located in or adjacent to pavements, all backfilling and materials handling equipment shall have rubber tires. Use crawler equipment only where there is no danger of damaging pavement.**D. Noise, Dust, and Odor Control.** Conduct construction activities so as to eliminate all unnecessary noise, dust, and odors. Do not use oil or other materials for dust control which may cause tracking.**3.3 INSTALLATION****A. Protection of Trees**

1. Take special care to avoid damage to trees and their root systems.
2. Do not use machine excavation when, in the opinion of the Engineer/Architect, it would endanger the tree.
3. Where the line of trench falls within the limits of the limb spread, headers are required across the trench to protect the tree.
4. Conduct the operation of all equipment (particularly when employing booms), the storage of materials, and the deposition of excavation in a manner which will not injure trees, trunks, branches, or their roots unless such trees are designated for removal.

B. Excavation and Construction Materials

1. Place all excavated material and all construction materials used in the work so as not to endanger the work, annoy the public, or interfere with natural drainage courses.

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2. During the process of the work, maintain all material piles in a neat, workmanlike manner.

C. Trench Support

1. Unsupported open cut trenches will not be permitted where they may cause unnecessary damage to pavement, trees, structures, poles, utilities, or other private or public property.
2. During the progress of the work, support the sides of the excavation by adequate and suitable sheeting, shoring, bracing, or other approved means.
3. Remove trench support material and equipment when backfilling operations have progressed to the point where they may be withdrawn without endangering property.
4. If all the sheeting is to be removed, remove it without causing damage to the pipe.

D. Trench Excavation and Bottom Preparation

1. Trench Width. Hold widths of trenches to a minimum to accommodate the pipe and

Minimum	Outside diameter of the pipe barrel plus 8 inches, i.e., 4 inches each side
Maximum	Nominal pipe diameter plus 24 inches

appurtenances. Measure the trench width at the top of the pipe barrel and shall conform to the following limits:

- a. Pipe.

Earth

Rock

	Nominal Pipe Diameter 24 inches or less	Nominal Pipe Diameter Larger than 24 inches
Minimum	Outside diameter of the pipe barrel plus 12 inches, i.e., 6 inches each side	Outside diameter of the pipe barrel plus 18 inches, i.e., 9 inches each side
Maximum	Nominal pipe diameter plus 24 inches	Nominal pipe diameter plus 24 inches

- b. Structures. The minimum excavation limits for structures shall be as excavated. In rock, the excavation limits shall not exceed 12 inches from the outside wall and 6 inches below the footer.
 - c. Excessive Trench Width. If for any reason the trench width exceeds the maximum trench width defined in this section, provide granular pipe bedding, additional strength pipe, or concrete encasement, at no cost to the Owner and subject to acceptance.
2. Trench Depth.
 - a. Earth.
 - 1) Excavate the trench to the depth required.

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- 2) Provide a uniform and continuous bearing and support for the pipe barrel on solid and undisturbed ground at every point between joints.
 - 3) Provide bell holes.
 - 4) Accurately prepare the finished trench bottom by means of hand tools.
 - b. Rock.
 - 1) Where excavation is made in rock or boulders, excavate the trench 6 inches below the pipe barrel for pipe 24 inches in diameter or less, and 9 inches for pipe larger than 24 inches in diameter.
 - 2) Remove all loose material from the trench bottom.
 3. Rock Excavation.
 - a. Rock excavation is defined as the removal of:
 - 1) Unanticipated solid concrete (excluding pavements), unanticipated solid masonry, or boulders each of which has a volume greater than 1 cubic yard.
 - 2) Bedrock which requires for its removal drilling and blasting, wedging, sledging, barring, or breaking up with a power-operated tool.
 - b. Rock excavation is not excavating:
 - 1) Existing concrete or masonry structures or pavements shown on the plans.
 - 2) Material which can be excavated using an appropriately sized, heavy-duty, power-operated excavator, backhoe, or shovel, all of which are equipped with bucket mounted ripping teeth.
 - 3) Material that can be excavated with a hand pick and shovel.
 - 4) Soft or disintegrated bedrock such as weathered shale, clay shale, claystone, or mudstone, or over consolidated soils such as "hardpan."
 - 5) Previously blasted materials or materials that are intermittently drilled and blasted to merely increase production.
- E. Pipe, Fittings, and Valve Installation
1. Pipe Laying.
 - a. Lay pipe with bell ends facing in the direction of laying, unless otherwise directed.
 - b. After placing a length of pipe in the trench, center the spigot end in the bell and force the pipe home.
 - c. Lay all pipe with ends abutting and true to line and grade.
 - d. Deflection of pipe joints in excess of the manufacturer's recommendations will not be permitted.
 - e. Provide a watertight pipe plug or bulkhead to prevent the entrance of foreign material whenever pipe laying operations are not in progress.
 - f. Inspect cast metal pipe and fittings for cracks by ringing the pipe with a light hammer while it is suspended.
 2. Pipe Cutting.
 - a. Cut pipe in a neat and workmanlike manner without damage to the pipe or lining.
 - b. The end shall be smooth and at right angles to the axis of the pipe.
 - c. Flame cutting of metal pipe by means of an oxyacetylene torch will not be permitted.
 3. Push-On Joints.
 - a. Thoroughly clean the surfaces with which the rubber gasket comes in contact just before assembly.
 - b. Then insert the gasket into the groove in the bell.
 - c. Before starting joint assembly, apply a liberal coating of special lubricant to the spigot end.
 - d. With the spigot end centered in the bell, push the spigot end home.
 4. Mechanical Joints.

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- a. Center the spigot in the bell.
 - b. Thoroughly clean the surface with which the rubber gasket comes in contact just before assembly.
 - c. Brush these clean surfaces with a special lubricant just before slipping the gasket over the spigot end and into the bell.
 - d. Also brush the lubricant over the gasket before installation to remove the loose dirt and lubricate the gasket as it is forced into its retaining space.
5. **Restrained Joints.**
- a. **Ball and Socket or Push-On.** Assemble and install the ball and socket joint according to the manufacturer's recommendations. Thoroughly clean and lubricate the joint. Check the retainer ring fastener.
6. **Joints between Dissimilar Pipe Materials.** Make connections to pipe of different materials with adaptors designed to join those materials.
7. **Setting Valves.**
- a. Set valves on a firm foundation so that no load will be transferred to the connecting pipe.
 - b. Provide a valve box for every buried valve.
 - c. The valve box shall not transmit shock or stress to the valve and shall be centered and plumb over the operating nut of the valve.
 - d. Set the box cover flush with the surface of the finished pavement unless otherwise shown.
8. **Anchoring.** Provide all plugs, caps, tees, and bends with a concrete backing. If shown or specified, prevent movement by attaching suitable metal rods, clamps, or restrained fittings.
- a. **Concrete Backing.**
 - 1) Concrete backing shall be Design Mix A concrete as specified in Section 033000, "Cast-In-Place Concrete." 2) Place backing between undisturbed ground and the fitting to be anchored. 3) The area of bearing on the fitting and on the ground shall be as shown. 4) Place the backing, unless otherwise shown, so that the pipe and fitting joints will be accessible for repair.
 - b. **Tie Rods.**
 - 1) Place steel tie rods or clamps, where permitted, of adequate strength to prevent movement. 2) Paint steel tie rods or clamps with three coats of an approved bituminous paint or coal tar enamel.
 - c. **Restrained Fittings.** Restrained fittings shall be subject to the acceptance of the Engineer/Architect.
- F. **Trench Backfill.** Backfill all trench excavations immediately after pipe is laid as shown and specified. See Trench Backfill, Section 312323.14.
1. **Foundation.**
 - a. Build the mains on a good foundation.
 - b. If, in the Engineer/Architect's opinion, the material forming the trench bottom is not suitable for a good foundation, replace it with granular pipe bedding as directed.
 - c. Authorized excavation and restoration of the foundation below the trench bottom will be paid for in accordance with the General Conditions.
 - d. Fill unauthorized excavation below the trench bottom with pipe bedding at no cost to the Owner.
 2. **Pipe Bedding.**
 - a. Install all plastic or fiberglass-reinforced plastic (FRP) pipes with a 6-inch deep granular pipe bed.

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- b. Install all other pipe materials with no pipe bed unless foundation is rock.
- c. For rock foundation, provide a 6-inch granular pipe bed between rock and pipe for pipes 24 inches in diameter or less and a 9-inch granular pipe bed for pipes larger than 24 inches in diameter.
- d. Spread granular pipe bedding the full width of trench bottom.
- 3. Haunching.
 - a. Use compacted selected excavated trench material unless noted otherwise.
 - b. Place in uniform 6-inch loose layers and compact each layer to eliminate the possibility of settlement, pipe misalignment, or damage to joints.
- 4. Initial Backfill.
 - a. Use selected excavated trench material unless noted otherwise.
 - b. Take care to avoid injuring or moving the pipe.
- 5. Final Backfill.
 - a. Use excavated trench material unless noted otherwise.
 - b. Use mechanical equipment to place the backfill.
 - c. Do this in such a manner that the material does not free fall, but so that it will flow onto the previously placed material.
 - d. Consolidate the backfill to ensure the minimum possible settlement.
 - e. No compacting of the backfill with mechanical equipment, such as wheeled vehicles, will be permitted unless sufficient cover is provided over the pipe to prevent damage to the pipe.
- 6. Granular Backfill. When backfilling under pavements, driveways, or as directed, use granular backfill in place of the selected excavated trench material and the excavated trench material.
- 7. Backfill trenches with Class C concrete where trench excavations pass within 18 inches of column or wall footings and that are carried below bottom of such footings or that pass under wall footings. Place concrete to level of bottom of adjacent footing.
- 8. Provide 4-inch-thick concrete base slab support for piping or conduit less than 2'-6" below surface of roadways. After installation and testing of piping or conduit, provide minimum 4-inch-thick encasement (sides and top) of concrete prior to backfilling or placement of roadway sub base.
- 9. Surface Conditions. Periodically attend to the trench surface during the course of the Contract. Maintain the trench surface in a safe condition and not interfering with natural drainage. Install marking tape at 12 inches below finished grade.

3.4 CLEANING

- A. Cleanup. After a section of main is tested and accepted, clean the ground surface of all surplus materials including stone, broken pipe, construction material, and all other debris.

3.5 DEMONSTRATION

- A. Pressure Test. Provide full working pressure test for not less than a 2-hour duration. Loss shall not exceed requirements set forth by AWWA 605-05. Notify Architect 24 hours prior to test. Record and certify test and provide to Architect.
- B. Visual. With Owner and/or Engineer/Architect, visually review the main installation for completion. Demonstrate that all main materials and appurtenances are in conformance with the Contract Documents.

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- C. Final Acceptance. The visual demonstration for completion of the main installation shall not be considered as final acceptance of the work. Correct all discrepancies "punch listed" at final inspection to the satisfaction of the Engineer/Architect and Owner.
- 3.6 PROTECTION. Protect the main appurtenances (valves, hydrants, etc.) from damage during subsequent construction operations. Remove any and all protection at the completion of the project.

END OF SECTION 330530

Little Kanawha Bus Administrative and Maintenance Facility**SECTION 330534 – PRESSURE PIPE AND FITTINGS, POLYVINYL CHLORIDE (C900/C905) AND 2-INCH ASTM-2241 IPS OD****PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

- A. General. Drawings and general provisions of the Contract, including General and Supplementary Conditions, Division 01, Section 330530, and all related specification sections, apply to this Section.

1.2 DESCRIPTION OF WORK

- A. Scope of Work. Provide the labor, tools, equipment, and materials necessary to furnish the polyvinyl chloride (PVC) pipe and fittings in accordance with the plans and the specifications.

1.3 QUALITY ASSURANCE

- A. General. In accordance with Section 330530, "Pressure Pipe, Fittings, and Valves, Installation."

1.4 SUBMITTALS

- A. General
 - 1. Submit all submittals in accordance with the Division 1 Submittal Requirements and the requirements within this specification section.

1.5 JOB CONDITIONS

- A. General. In accordance with Section 330530, "Pressure Pipe, Fittings, and Valves, Installation."

1.6 DELIVERY, STORAGE, AND HANDLING

- A. General. In accordance with Section 330530, "Pressure Pipe, Fittings, and Valves, Installation."

1.7 SPECIAL WARRANTY

Not used.

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PART 2 - PRODUCTS

2.1 MATERIALS

A. PVC Pipe. PVC pipe shall meet the requirements of the following standards.

Pipe Inside Nominal Diameter (inches)	AWWA Standard or ASTM
4	C900
2	ASTM-2241 / I.P.S. 00

1. Dimensions.
 - a. Unless otherwise shown, the minimum thickness of the barrel of the pipe shall be Dimension Ratio (DR) 25.
 - b. The pipe shall have cast iron pipe equivalent outside dimensions for the nominal size indicated.
2. Painted Ring. The plain end of the pipe shall have a painted ring to facilitate proper positioning during assembly of the joint.

B. Fittings

1. Fittings shall conform to one of the following standards and have a pressure rating equal to or greater than the pipe.
 - a. Ductile iron.
 - 1) AWWA C110 or C153.
 - 2) Polyethylene encase all ductile iron fittings furnished for use with PVC pipe in accordance with AWWA C105.
 - b. Fabricated PVC Fittings, C900 or C905.
 - c. Injection molded PVC fittings.
 - 1) C907. Only available for DR 25 and DR 18 pipe with diameters between 4 and 12 inches.

C. Pipe Joints

1. Push-on. Conform to ASTM D3139, "Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals."
2. Solvent-Cemented. Solvent-cemented joints are prohibited.

PART 3 - EXECUTION

3.1 INSTALLATION

A. General. See Section 330530, "Pressure Pipe, Fittings, and Valves, Installation."

END OF SECTION 330534

Little Kanawha Bus Administrative and Maintenance Facility**SECTION 330540 – SEWER PIPE, INSTALLATION****PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

- A. General. Drawings and general provisions of the Contract, including General and Supplementary Conditions, Division 1, and all related specification sections, apply to this Section.
1. Section 312323.14 "Trench Backfill".

1.2 DESCRIPTION OF WORK

- A. Scope of Work. Provide the labor, tools, equipment, and materials necessary to install the pipe in accordance with the drawings and the specifications. The work includes, but is not limited to, the following:
1. Excavation, preparation of the trench bottom, bedding, and backfilling.
 2. Piping work beginning at the outside face of structures or building foundations, unless specifically included under other sections.
 3. Pipe beneath structures.
 4. Shoring, bracing, and dewatering.
 5. Work on existing buried pipelines.
 6. Testing for leakage and displacement inspection.
 7. Disposal of all excess material.
 8. Cleaning.
 9. Trench maintenance.

1.3 QUALITY ASSURANCE

- A. Standards. Conform all materials and workmanship with the following standards:
1. AASHTO – American Association of State Highway and Transportation Officials.
 2. ASTM – American Society for Testing and Materials.
- B. Trench Maintenance. Be responsible for the condition of the trenches for 1 year after final acceptance. The year must include the period November 1 to April 30 of the following year.

1.4 SUBMITTALS

- A. General
1. Submit all submittals in accordance with the Division 1 Submittal Requirements and the requirements within this specification section.

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1.5 JOB CONDITIONS

- A. General. Provide all water required for testing at no additional cost to the Owner.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. General.
 1. Delivery, storage, and handling shall be in accordance with Section 01 60 00, "Materials and Equipment."
 2. Pipe, fittings, and accessories that are cracked, damaged, or in poor condition, or have damaged linings will be rejected.
 3. Pipe handled on skidways shall not be skidded or rolled against other pipe.
 4. Protect PVC or PE pipe from exposure to beat or direct sunlight (ultraviolet rays).

1.7 SPECIAL WARRANTY

Not used.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Pipe and Fittings. Conform all buried piping, fittings, and joints to the drawings and requirements specified in the corresponding section for each type of pipe installed.
- B. Manufacturer
 1. All new buried piping of one material shall be by a single manufacturer.
 2. All buried fittings of one material shall be by a single manufacturer.
 3. All pipe and fittings manufactured outside the United States shall be certified to ISO 9001:2000 standards for quality assurance.
- C. Identification
 1. Paint or cast all pipe and fittings 4 inches in diameter and larger with the pipe size, material, and class or schedule on the exterior pipe surface.
 2. Factory-mark all piping less than 4 inches in diameter with the pipe size, material, and class or schedule on the exterior pipe surface.
 3. Provide 4-inch wide manufactured color plastic warning tape identifying buried sewer line.

2.2 BACKFILL

- A. Granular Pipe Bedding. Crushed stone or gravel meeting the following requirements, install to 4" above top of pipe:

Nominal Pipe Size	AASHTO M43 Size
Less than 16 "	67,7, or 8
16" -30"	6 or 67

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Greater than 30"	57 or 67
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- B. See Section 312323.14 "Trench Backfill" for remainder of fill work.
- C. Install warning tape one (1) foot below finished grade.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verification
 1. Verify the location, line, and grade of the sewer trench.
 2. Confirm that all conditions are acceptable to begin construction of the work covered in this specification.
 3. Coordinate with other construction or facility operations activity at the same facility or area.

3.2 PREPARATION

- A. Safety. For the security and safety of person in and adjacent to trenches or construction operations, follow the safety regulations of the appropriate federal, state, and local agency.
- B. Dewatering
 1. Should water be encountered, furnish and operate suitable pumping equipment of adequate capacity to dewater the trench.
 2. Dewater the trench so that the laying and joining of the pipe is made in the dry.
 3. Convey all trench water in accordance with the requirements contained in the National Pollutant Discharge Elimination System (NPDES) program.
 4. Convey all trench water to a natural drainage channel or storm sewer without causing any property damage.
- C. Construction Equipment. Where sewers are located in or adjacent to pavements, all backfilling and materials handling equipment shall have rubber tires. Use crawler equipment only where there is no danger of damaging pavement.
- D. Noise, Dust, and Odor Control. Conduct construction activities to minimize all unnecessary noise, dust, and odors. Do not use oil or other material that may cause tracking for dust control.
- E. Alignment and Grade
 1. Laser Beam.
 - a. If using a laser beam for horizontal and vertical control of the sewer, place line and grade stakes at 25 feet and 50 feet from the downstream manhole and then at every 50-foot station to the next manhole.
 - b. Set up the laser unit so that the alignment of the beam is through the pipe directly on the centerline of the pipe or outside the pipe directly above and parallel to the centerline of the pipe.
 - c. If the laser unit is set up on the centerline of the pipe, use a blower to provide positive continuous air circulation within the pipe.

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- d. Establish a target on line and grade to provide a method of checking the setting of the laser beam as construction progresses.
 - e. Make sure that the grade pole is plumb when checking pipe grade.
 - f. Set the grade pole on the invert of the pipe when checking alignment and grade.
2. Batter Boards.
- a. If using batter boards, place line and grade stakes at regular intervals, not to exceed 25 feet, at some convenient offset from the centerline of the pipe.
 - b. Carefully place batter boards immediately following the excavating equipment and maintain a continuous check on trench depth.
 - c. Utilize suitable equipment for measuring from a line drawn taut over the batter boards.
 - d. Carefully locate such a line on the centerline of the pipe.
 - e. Do not lay pipe unless a minimum of three batter boards is in place and checked.

3.3 INSTALLATION

A. Protection of Trees

- 1 Take special care to avoid damage to trees and their root systems.
- 2 Do not use machine excavation when, in the opinion of the Engineer/Architect, it would endanger the tree.
- 3 Where the line of trench falls within the limits of the limb spread, headers are required across the trench to protect the tree.
- 4 Conduct the operation of all equipment (particularly when employing booms), the storage of materials, and the deposition of excavation in a manner which will not injure trees, trunks, branches, or their roots unless such trees are designated for removal.

B. Excavation and Construction Materials

- 1. Deposit an excavated material and all construction materials used in the work so as not to endanger the work, create unnecessary annoyance to the public, or interfere with natural drainage courses.
- 2. During the work, keep all material piles trimmed up and maintained in a neat, workmanlike manner.

C. Trench Support

- 1 Unsupported open cut for sewers will not be permitted where trenching may cause unnecessary damage to street pavement, trees, structures, poles, utilities, or other private or public property.
- 2 During the progress of the work, support the sides of the excavation by adequate and suitable sheeting, shoring, bracing, or other approved means.
- 3 Leave trench support material and equipment in place until backfilling operations have progressed to the point where the supports may be withdrawn without endangering property.
- 4 In lieu of removing all the sheeting, you may cut off the sheet 2 feet above the top of the pipe and remove the upper portion.
- 5 If all the sheeting is to be removed, remove it without causing damage to the pipe.
- 6 No sheeting, shoring, or bracing will be paid for by the Owner unless remaining in place on written order. In this case, payment will be made in accordance with the General Conditions.

D. Trench Excavation and Bottom Preparation

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1. Trench Width. Hold trench widths to a minimum to accommodate the pipe and appurtenances. Measure the trench width at the top of the pipe barrel and conform it to the following limits:

	Earth	Rock
Minimum	Outside diameter of the pipe barrel plus 8 inches, i.e., 4 inches each side	Outside diameter of the pipe barrel plus] 2 inches, i.e., 6 inches each side
Maximum	30 inches or the outside diameter of the pipe barrel plus 16 inches, whichever is greater	30 inches or the outside diameter of the pipe barrel plus 16 inches, whichever is greater

2. Excessive Trench Width. If for any reason the trench width exceeds the maximum trench width defined above, provide additional bedding and, backfill.
3. Trench Depth. Excavate the trench to a point not less than one-fourth the nominal pipe diameter, and in no case less than 4 inches or more than 12 inches below the barrel of the pipe. Remove all loose material from the trench bottom.
4. Foundation.
 - a. Build the sewers on a good foundation.
 - b. If the material forming the trench bottom is not suitable for a good foundation, excavate farther and fill the same with suitable material.
 - c. Authorized excavation and the restoration of the foundation below the trench bottom will be paid for in accordance with the General Conditions.
 - d. Fill unauthorized excavation below the trench bottom with pipe bedding at no cost to the Owner.

E. Pipe Bedding and Installation

1. Pipe Bedding.

- a. After preparation of the trench bottom, prepare a pipe bed using crushed stone or crushed gravel meeting the following requirements:

Nominal Pipe Size	AASHTO M43 Size
Less than 15"	67,7,or8
15" to 30"	6 or 67
Greater than 30"	57 or 67

- b. Spread the bedding material over the full width of the trench bottom.
 - c. Carefully prepare the bed for the pipe both from a line and grade standpoint.
 - d. After the pipe is laid, aligned, and graded, bring the bedding material halfway up the pipe for the full width of the trench.
 - e. Place the bedding material under the lower part of the pipe by slicing under the haunches with a shovel.
2. Pipe Laying.
 - a. Commence laying on the prepared bed from the lowest point, with the spigot ends pointing in the direction of flow.
 - b. Lay all pipe with ends abutting and true to line and grade.
 - c. Carefully center pipe so that when it is laid, it will form a sewer with a uniform invert.

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- d. Provide a pipe plug or bulkhead to prevent the entrance of foreign material whenever pipe laying operations are not in progress.
- 3. Pipe Joints.
 - a. Before making pipe joints, clean and dry all surfaces of the pipe to be joined.
 - b. Use lubricants, primers, adhesives, or other jointing materials as recommended by the pipe or joint manufacturer.
 - c. Place, fit, join, and adjust the pipe to obtain the degree of watertightness required.
 - d. Remove and relay pipe previously laid that is subsequently disturbed.

F. Backfilling

- 1. Initial Backfill.
 - a. Backfill all trench excavations immediately after pipe is laid.
 - b. Use granular material meeting the requirements of paragraph 3.3 E.1 to backfill the trench from the bedding to a level of 4 inches over the top of the pipe barrel.
- 2. Final Trench Backfill.
 - a. See Section 312323.14 "Trench Backfill".

3.4 FIELD QUALITY CONTROL

A. Leakage Test

- 1. See Section 018919, "Leakage Test."
- 2. A minimum of four sections of sewer (one section defined as the sewer between two successive manholes) will be permitted to remain untested at any time.
- 3. Storm sewers will not require leakage tests unless shown or specified otherwise.

B. Displacement Inspection

- 1. After other required tests have been performed and the trench backfill completed above the top of the pipe to the finished grade surface and a minimum of 30 days has elapsed, inspect the pipe to determine whether any displacement has occurred.
- 2. Visual alignment tests lamping; pipe will be set straight and true. No ponding permitted, a full visual diameter of the pipe is required from manhole to manhole. Conduct this inspection in the presence of the Engineer/Architect.
- 3. If the interior of the pipe shows poor alignment or any other defects that would cause improper functioning of the system, redo the leakage test and remedy any defects as directed at no additional cost to the Owner.

3.5 DEMONSTRATION

- A. Visual. With Owner, and/or Engineer/Architect, visually review the sewer installation for completion. Demonstrate that all sewer materials and appurtenances are in conformance with the Contract Documents.
- B. Final Acceptance. The visual demonstration will not be considered as final acceptance of the work. Correct all and any discrepancies "punch listed" at final inspection to the satisfaction of the Engineer/Architect and Owner.

Little Kanawha Bus Administrative and Maintenance Facility**3.6 CLEANING**

- A. Cleanup. After a section of sewer is tested and accepted, clean the ground surface of all surplus material including stone, broken pipe, and construction material to the satisfaction of the Engineer/Architect.

- 3.7 PROTECTION. Protect the sewer appurtenances (manholes, wye poles, etc.) from damage during subsequent construction operations. Remove any and all protection at the completion of the project.

END OF SECTION 330540

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SECTION 330541 – POLYVINYL CHLORIDE SEWER PIPE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. General. Drawings and general provisions of the Contract, including General and Supplementary Conditions, Division 1, Section 330540, and all related specification sections, apply to this Section.

1.2 DESCRIPTION OF WORK

- A. Scope of Work. Provide the labor, tools, equipment, and materials necessary to furnish and install the polyvinyl chloride (PVC) sanitary or storm sewer pipe in accordance with the plans and as specified herein.

1.3 QUALITY ASSURANCE

- A. General. In accordance with Section 330540, "Sewer Pipe, Installation."

1.4 SUBMITTALS

- A. General
1. Submit all submittals in accordance with the Division 1 Submittal Requirements and the requirements within this specification section.
 2. Certifications. Submit certification of compliance with the referenced standards.
 3. Test Reports. Submit description of proposed testing methods, procedures, and apparatus.

1.5 JOB CONDITIONS

- A. Pipe Identification. On each length of pipe, with waterproof paint, paint the class and specification designation, date of manufacture, name or trademark of manufacturer, and identification of plant.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. General. In accordance with Section 330540, "Sewer Pipe, Installation."

1.7 SPECIAL WARRANTY

Not used.

Little Kanawha Bus Administrative and Maintenance Facility**PART 2 - PRODUCTS****2.1 MATERIALS**

- A. Polyvinyl Chloride (PVC) Pipe. PVC sewer pipe and fittings shall conform to ASTM D 3034.
- 1 Dimensions. Unless otherwise shown, the minimum thickness of the barrel of the pipe shall be Dimension Ratio (DR) 35.
 - 2 Home Mark. All pipe spigots shall have a "home" mark to facilitate joint closure.
 - 3 Fittings. PVC fittings shall be factory made and provided with joints of proper design to connect to the pipe or approved adapters shall be furnished to connect the pipe to the fittings. Adapters shall be provided for connection to pipes of different materials. All joints and fittings shall be formed to provide as nearly as practical a leak free and easily assembled system.
 - 4 Straightness. Pipe intended to be straight shall have a maximum deviation from straightness of 1/16 inch per lineal foot when measured in accordance with ASTM D 2122.
 - 5 Site Observation. Pipe and fittings may be reviewed by the Engineer/Architect or his authorized representative prior to installation and all rejected pieces must be completely removed from the project. Pipe acceptable to the Engineer/Architect shall be substituted for rejected pieces at the Contractor's expense. No repairs of pipe or fittings will be allowed; undamaged lengths of straight pipe may be salvaged by neatly sawing off the damaged portion of the pipe.
- B. Pipe Joints. PVC sewer pipe joints shall be elastomerically gasketed conforming to ASTM D 3212 push-on type. The Contractor shall furnish evidence of satisfactory performance of the joint for previous installations.
1. Factory Testing. Testing of PVC sewer pipe joints, when so directed by the Engineer/Architect, shall be made in accordance with ASTM D 3212 for gasketed joints, with modification as specified below. All equipment necessary to conduct the pipe joint test shall be provided by the Contractor.
 - a. Test Specimens. The Engineer/Architect or his authorized representative may initially and periodically select random sewer pipe for test purposes. The tests shall be performed on not less than two specimens and not more than 1 percent of the total pipe length of each size and joint type required for the project.

PART 3 - EXECUTION**3.1 INSTALLATION**

- A. General. In accordance with Section 330540, "Sewer Pipe, Installation."

END OF SECTION 330541

Little Kanawha Bus Administrative and Maintenance Facility**SECTION 334100 - STORM UTILITY DRAINAGE PIPING****PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY**A. Section Includes:**

1. Pipe and fittings.
2. Cleanouts.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.

1.4 INFORMATIONAL SUBMITTALS

- A. Product Certificates: For each type of pipe and fitting, from manufacturer.
- B. Field quality-control reports.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Do not store plastic, pipe, and fittings in direct sunlight.
- B. Protect pipe, pipe fittings, and seals from dirt and damage.

PART 2 - PRODUCTS**2.1 ABS PIPE AND FITTINGS**

- A. ABS Sewer Pipe and Fittings: ASTM D 2751, with bell-and-spigot ends for gasketed joints.
 1. NPS 3 to NPS 6: SDR 35.
 2. NPS 8 to NPS 12: SDR 42.
- B. Gaskets: ASTM F 477, elastomeric seals.

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2.2 NONPRESSURE TRANSITION COUPLINGS

- A. Comply with ASTM C 1173, elastomeric, sleeve-type, reducing or transition coupling, for joining underground nonpressure piping. Include ends of same sizes as piping to be joined, and corrosion-resistant-metal tension band and tightening mechanism on each end.
- B. Sleeve Materials:
 - 1. For Cast-Iron Soil Pipes: ASTM C 564, rubber.
 - 2. For Plastic Pipes: ASTM F 477, elastomeric seal or ASTM D 5926, PVC.
 - 3. For Dissimilar Pipes: ASTM D 5926, PVC or other material compatible with pipe materials being joined.

2.3 CLEANOUTS

- A. Plastic Cleanouts:
 - 1. Manufacturers: Subject to compliance with requirements available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Canplas LLC.
 - b. IPS Corporation.
 - c. NDS Inc.
 - d. Plastic Oddities; a division of Diverse Corporate Technologies, Inc.
 - e. Sioux Chief Manufacturing Company, Inc.
 - f. Zurn Light Commercial Products Operation; Zurn Plumbing Products Group.
 - 2. Description: PVC body with PVC threaded plug. Include PVC sewer pipe fitting and riser to cleanout of same material as sewer piping.

PART 3 - EXECUTION

3.1 EARTHWORK

- A. Excavation, trenching, and backfilling are specified in Division 31 Section "Earth Moving."

3.2 PIPING INSTALLATION

- A. Install piping beginning at low point, true to grades and alignment indicated with unbroken continuity of invert. Place bell ends of piping facing upstream. Install gaskets, seals, sleeves, and couplings according to manufacturer's written instructions for use of lubricants, cements, and other installation requirements.
- B. Install proper size increasers, reducers, and couplings where different sizes or materials of pipes and fittings are connected. Reducing size of piping in direction of flow is prohibited.
- C. Install gravity-flow, nonpressure drainage piping according to the following:
 - 1. Install ABS sewer piping according to ASTM D 2321 and ASTM F 1668.

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3.3 PIPE JOINT CONSTRUCTION

- A. Join gravity-flow, nonpressure drainage piping according to the following:
 1. Join ABS sewer piping according to ASTM D 2321 and ASTM D 2751 for elastomeric-seal joints.

3.4 CLEANOUT INSTALLATION

- A. Install cleanouts and riser extensions from sewer pipes to cleanouts at grade. Use cast-iron soil pipe fittings in sewer pipes at branches for cleanouts and cast-iron soil pipe for riser extensions to cleanouts. Install piping so cleanouts open in direction of flow in sewer pipe.
 1. Use Medium-Duty, top-loading classification cleanouts in unpaved areas.
 2. Use Heavy-Duty, top-loading classification cleanouts in paved.
- B. Set cleanout frames and covers in concrete pavement and roads with tops flush with pavement surface.

3.5 CONNECTIONS

- A. Connect nonpressure, gravity-flow drainage piping in building's storm building drains specified in Division 22 Section "Facility Storm Drainage Piping."

3.6 IDENTIFICATION

- A. Materials and their installation are specified in Division 31 Section "Earth Moving." Arrange for installation of green warning tape directly over piping and at outside edge of underground structures.
 1. Use detectable warning tape over nonferrous piping and over edges of underground structures.

3.7 FIELD QUALITY CONTROL

- A. Inspect interior of piping to determine whether line displacement or other damage has occurred. Inspect before backfill is in place, and again at completion of Project.
 1. Submit separate reports for each system inspection.
 2. Defects requiring correction include the following:
 - a. Alignment: Less than full diameter of inside of pipe is visible between structures.
 - b. Deflection: Flexible piping with deflection that prevents passage of ball or cylinder of size not less than 92.5 percent of piping diameter.
 - c. Damage: Crushed, broken, cracked, or otherwise damaged piping.
 - d. Infiltration: Water leakage into piping.
 - e. Exfiltration: Water leakage from or around piping.
 3. Replace defective piping using new materials, and repeat inspections until defects are within allowances specified.
 4. Reinspect and repeat procedure until results are satisfactory.

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- B. Test new piping systems for leaks and defects.
 - 1. Do not enclose, cover, or put into service before inspection and approval.
 - 2. Test completed piping systems according to requirements of authorities having jurisdiction.
 - 3. Schedule tests and inspections by authorities having jurisdiction with at least 24 hours' advance notice.
 - 4. Submit separate report for each test.
- C. Leaks and loss in test pressure constitute defects that must be repaired.
- D. Replace leaking piping using new materials, and repeat testing until leakage is within allowances specified.

3.8 CLEANING

- A. Clean interior of piping of dirt and superfluous materials. Flush with water.

END OF SECTION 334100

WINDOW SCHEDULE					
MARK	SIZE		MATERIAL	HORIZONTAL BLINDS	NOTES
	WIDTH	HEIGHT			
1	3'-4"	5'-4"	AL	AL	FIXED UNIT W/ FIXED TRANSOM
2	9'-8"	5'-4"	AL	AL	FIXED UNIT W/ FIXED TRANSOM
3	3'-4"	5'-4"	AL	NONE	STOREFRONT - FIXED
4	3'-0"	4'-0"	AL	NONE	SLIDER (INTERIOR)

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A-602

WINDOW SCHEDULE

SCALE : NONE

Baker

Michael Baker Jr., Inc.

508B West Washington Street
Charleston, West Virginia 25313
Phone (304) 769-0821
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Drawing Title:
WINDOW SCHEDULE

Project
LITTLE KANAWHA BUS FACILITY

Revision Description:
REVISED WINDOW SCHEDULE

Date:
11/30/10

Project No.:
118985

Scale:
NTS

Drawing
Number:

A-602

Sheet 1 of 1

ADDENDUM #1-ATTACHMENT "A1-3"³⁴

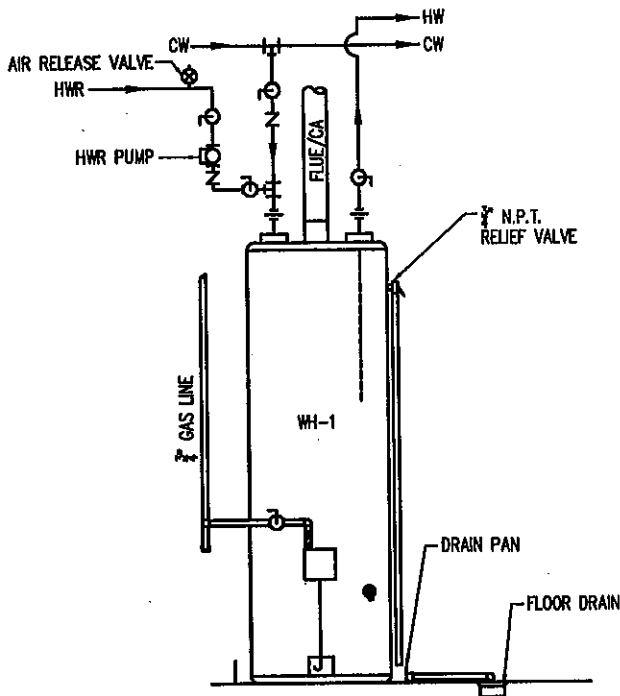
GAS WATER HEATER SCHEDULE

TAG	LOCATION	MANUFACTURER	MODEL NUMBER	TYPE	STORAGE GALLONS	INPUT MBH	RECOVERY RATE GAL/HR	PHYSICAL SIZE HT x DIA	FLUE SIZE	NOTES
WH-1	MECHANICAL ROOM 112	BRADFORD WHITE WATER HEATING	DS1-40S6FH	DIRECT VENT / TALL TANK	40	38	41	48-3/4" x 20"	4"	① ② ③

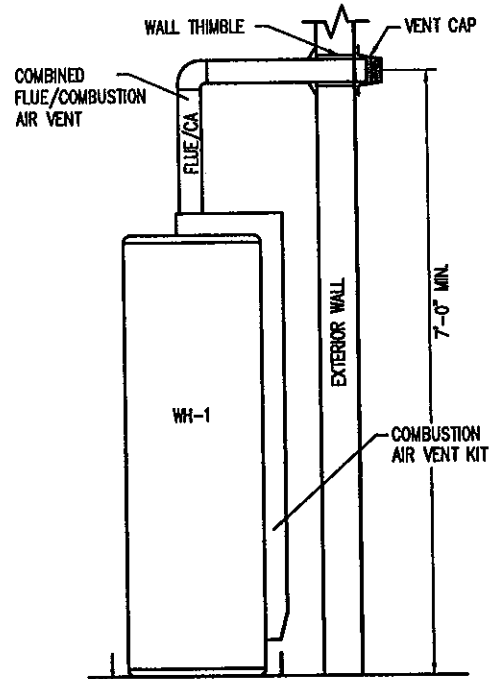
KEYNOTES:

① PROVIDE COMBINATION FLUE / COMBUSTION VENT KIT PER MANUFACTURERS RECOMMENDATIONS. ③ PROVIDE TEMPERATURE AQUASTAT CONTROL OF PUMP.

② PROVIDE 1/2" HP HOT WATER CIRCULATION PUMP, GRUNDFOS MODEL UP15-1887 OR EQUAL.



FRONT VIEW



SIDE VIEW

4 **GAS WATER HEATER WH-1**
 P-401 SCALE: NONE

Baker

Michael Baker Jr., Inc.

5088 West Washington Street
 Charleston, West Virginia 25313
 Phone (304) 769-0821
 Fax (304) 769-0822

Drawing Title: GAS WATER HEATER	Date: 11/30/10
Project: LITTLE KANAWHA BUS FACILITY	Project No.: 118985
Revision Description: REVISED WATER HEATER DETAIL	Scale: NTS

Drawing Number:

P-401

Sheet 1 of 1

GAS FURNACE SCHEDULE

TAG	SERIES	TYPE	MANUFACTURER	MODEL	SUPPLY FAN			COOLING			HEATING			ELECTRICAL			REMARKS	
					OA CFM	ESP (IN WG)	OA CFM	SENSIBLE (MBH)	TOTAL (MBH)	INPUT (MBH)	OUTPUT (MBH)	% EFF	AIR TEMP RISE °F	MOTOR (HP)	VOLTS/ PHASE/ HERTZ	AMPS		MOP
F-1	SOUTH OFFICE AREA	UP FLOW/CONDENSING/GAS-FRED	TRANE	TUX2D120A	2000	0.75	468	32.4	46.1	120	112	90	40-70	3/4	120/1/60	13.5	20	(1) (2) (3)
F-2	OFFICE AREA	UP FLOW/CONDENSING/GAS-FRED	TRANE	TUX2B060A	930	0.5	279	13.0	18.2	60	56	90	30-60	1/5	120/1/60	8.7	15	(1) (2) (3)
F-3	TRAINING ROOM	UP FLOW/CONDENSING/GAS-FRED	TRANE	TUX2B060A	720	0.5	218	13.0	21.9	40	38	90	30-60	1/5	120/1/60	8.7	15	(1) (2) (3)

NOTES:
 ① PROVIDE/INSTALL WITH VERSION ISOLATORS AND LINKS TO DUCT CONTROLS
 ② PROVIDE COMBINATION DIRECT VENT KIT
 ③ TWO STAGE HEATING

Baker

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Michael Baker Jr., Inc.

Drawing Title:
 GAS WATER HEATER

Project:
 LITTLE KANAWHA BUS FACILITY

Revision Description:
 REVISED WATER HEATER DETAIL

Date:
 11/30/10

Project No.:
 118985

Scale:
 NTS

Drawing Number:

M-601

Sheet 1 of 2

ADDENDUM #1 -- ATTACHMENT "A1-5"
Little Kanawha Bus Administrative and Maintenance Facility

SECTION 230993 - SEQUENCE OF OPERATIONS FOR HVAC CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes control sequences for HVAC systems, subsystems, and equipment.
- B. Related Sections include the following:
 - 1. Division 23 Section "Instrumentation and Control for HVAC" for control equipment and devices and for submittal requirements.

1.3 DEFINITIONS

- A. DDC: Direct digital control.
- B. F: Gas Fired Furnace.
- C. ERV: Energy Recovery Unit.
- D. IRH: Infrared Heater
- E. UH: Unit Heater.

1.4 DESIGN SETTINGS (Conditioned Office Area)

Cooling

- 1. Room temperature set point, occupied 75° F.
- 2. Fan operates at constant air volume under occupied mode.
- 3. Room temperature set point, unoccupied 80° F.
- 4. Fan controlled by cooling demand under unoccupied mode.

Heating

- 1. Room temperature set point, occupied 70° F.
- 2. Fan operates at constant air volume under occupied mode.
- 3. Room temperature set point, unoccupied 65° F
- 4. Fan controlled by heating demand under unoccupied mode.

ADDENDUM #1 – ATTACHMENT “A1-5”
Little Kanawha Bus Administrative and Maintenance Facility

1.5 OPERATION SEQUENCE (Office Area)

- A. F-1 System, Zone 1 (South and West offices)
1. Unoccupied/ night setback: The furnace and condenser operate as required to meet night setback demand. Furnace heats (gas burners fire) or cools (CU-1 energized) to meet room set point. Outdoor air serving F-1 from (ERV-1) is set to off.
 2. Occupied: The furnace and condenser operate as required for morning warm up or cool down, one hour before the business opens and will continue operation until one hour after the closing of business. Outdoor air serving F-1 from (ERV-1).
 3. Stand-by power operation: During a power outage; F-1 burners and fan operate normally. Outdoor air serving F-1 from (ERV-1) is not on stand-by power and therefore will be off.
- B. F-1 System, Zone 1A (Conference room)
1. Unoccupied/ night setback: The furnace and condenser operate as required to meet night setback demand. MOD's are set to a minimum position and actuators are disabled for night setback.
 2. Occupied: Control of MODs is tied into the room light switch and local thermostat. MODs will energize when room is occupied until the set point is reached by a conference room thermostat. The supply MOD modulates to full open and the bypass MOD modulates to the closed position. Outdoor air serving this room is from (ERV-1) and is set to cfm as indicated on drawings.
- C. F-1 System, Zone 1B (Dispatch room)
1. Unoccupied/ night setback: The furnace and condenser operate as required to meet night setback demand. AC-1 is off. Outdoor air serving this room is from (ERV-2) and is set to off.
 2. Occupied: The furnace and condenser operate as described in A.2. Air flow to the dispatch room is varied due to therma-fuser set point in heating or cooling. AC-1 energizes when room cooling set point cannot be reached by F-1 supply air.
 3. Stand-by power operation: During a power outage; the dispatch room AC does not operate. Heating is supplied by F-1 as required.
- D. F-2 System, Zone 2 (Central work area)
1. Unoccupied/ night setback: The furnace and condenser operates as required to meet night setback demand; heating or cooling. Outdoor air serving F-2 from (ERV-2) is set to off.
 2. Occupied: The furnace and condenser operates for morning warm up or cool down one hour before the business opens and will continue operation until one hour after the closing of business. Outdoor air serving F-2 from (ERV-2) is set to cfm as indicated on drawings.
- E. F-3 system, Zone 3 (Training room)
1. Unoccupied/ night setback: The furnace and condenser operates as required to meet night setback demand. Outdoor air serving this F-3 from (ERV-2) is set to off.
 2. Occupied: The furnace and condenser operates under normal operation until the set point is reached. Outdoor air serving this room from (ERV-2) is set to cfm as indicated on drawings.

ADDENDUM #1 – ATTACHMENT “A1-5”
Little Kanawha Bus Administrative and Maintenance Facility

- F. AC-1 (Telephone / Data room)
1. Occupied/Unoccupied/ night setback: Unit will operate on low fan speed and normal operation until the set point is reached. Unit comes on to meet room set point in cooling (68° F). No outdoor air required.
 2. Stand-By power operation: During a power outage AC-1 will operate.
- G. CU-1,2,3 (Outdoor Condensing Units)
1. Occupied/Unoccupied/ night setback: Each condenser operates in conjunction with an indoor air handler (furnace) fan, as required for cooling.
- H. CEILING PLENUM SPACE
1. Install refrigerant monitors as required in ceiling plenums and connect these to the DDC to show an alarm warning when acceptable refrigerant gas levels are exceeded.
- I. ERV-1 (Serves AHU-1, Conference Room units and Parts Storage unit)
1. Unoccupied/ night setback: Outdoor/ Exhaust air from ERV-1 is set to off.
 2. Occupied: ERV-1 will begin to operate for morning ventilation one hour before the business opens and will continue operating until one hour after the closing of business. Outdoor/Exhaust air from ERV-1 is set to cfm as indicated on drawings.
 3. Freeze Protection: ERV will have internal timed Outdoor/Exhaust air control as provided by the ERV manufacturer. The freeze-up set point will be per the manufacturer’s recommendations.
- J. ERV-2 (Serves AHU-2, Training Room units and Dispatch Room unit)
1. Unoccupied/ night setback: Outdoor/ Exhaust air from ERV-2 is set to off.
 2. Occupied: ERV-2 will begin to operate for morning ventilation one hour before the business opens and will continue operation until one hour after the closing of business. Outdoor/Exhaust air from ERV-2 is set to cfm as indicated on drawings.
 3. Freeze Protection: ERV will have internal timed Outdoor/Exhaust air control as provided by the ERV manufacturer. The freeze-up set point will be per the manufacturer’s recommendations.
- K. Exhaust Gooseneck (Serves ERV-1 & 2)
1. Unoccupied/ Occupied: Associated MOD will close when both ERV’s are off and will open when either ERV is in operation.

ADDENDUM #1 – ATTACHMENT “A1-5”
Little Kanawha Bus Administrative and Maintenance Facility

L. SF-1 / UH-1 (Parts Storage)

1. Occupied/Unoccupied/ night setback: The supply fan (SF-1) operates on preset speed required to keep parts room pressurized with respect to the garage bays. Fan brings in filtered, 100% outdoor air into the room. When room temperatures drop below heating set point, gas unit heater (UH-1) energizes until set point is satisfied. No cooling supplied to room.
 - a. Room temperature set point: heating 60° F.

1.6 DESIGN SETTINGS (Garage Bays)

Heating Maintenance Bay

1. Room temperature set point, occupied 65° F.
2. Room temperature set point, unoccupied 60° F.

Heating Parking Bay

3. Room temperature set point, occupied 56° F.
4. Room temperature set point, unoccupied 56° F.

1.7 OPERATION SEQUENCE (Garage Bays)

A. IRH-1 thru 4 (Serves Maintenance Bay)

1. Unoccupied/ night setback: Burners operate as required to meet night setback demand.
2. Occupied: Burners will begin to operate for morning warm up 30 minutes before the business opens and will continue normal operation until 30 minutes after the closing of business or as required to meet the scheduled set point. IRH-1 will be disabled when vehicle lift is in use. All other normal operation will be as per manufacturer's recommendations.

B. UH-2 & 3 (Serves Parking Bay)

1. Occupied/Unoccupied: Burners and Fan operates as required to meet set point.

1.8 VENTILATION (Garage Bays)

A. EF-1 (Serves Both Maintenance and Parking Bays)

1. Unoccupied/ night setback: Exhaust Fan operates at minimum (unoccupied) setting. One MOD in each Bay is open.
2. Occupied: Fan will begin to operate in occupied mode for morning ventilation one hour before the business opens and will continue occupied ventilation until one hour after the

ADDENDUM #1 – ATTACHMENT “A1-5”
Little Kanawha Bus Administrative and Maintenance Facility

closing of business. DDC will monitor if garage bay doors are open or closed and when doors are open, fan may operate on minimum setting.

3. Alarm: CO and NO₂ will be monitored continually and if they exceed acceptable levels fan will go into alarm mode and all associated MODs will be opened. Under CO / NO₂ alarm, fan will operate at maximum speed and will continue to operate at maximum for 30 minutes after CO / NO₂ levels have returned to normal.

B. VER-1 & 2 (Serves Maintenance Bay)

1. Occupied/ In use: Connect directly to vehicle exhaust pipe. Wall mounted Push Button control to activate Motorized Hose Reel and Exhaust Fan.

1.9 VENTILATION SEQUENCE (Compressor room)

A. EF-2

1. Unoccupied/Occupied: Temperature sensor to activate Exhaust fan upon room temperature exceeding set point. Constant Volume Exhaust, Transfer air from Parts Storage

a. Room temperature set point: Heating 80° F

1.10 VENTILATION SEQUENCE (Liquid Storage)

A. EF-3

1. Unoccupied/Occupied: Continuous constant volume fume exhaust, Transfer air duct from Parts Storage, system operates on stand-by power in a power outage. A fan disconnect switch is located outside liquid storage room for fan emergency shutdown.
2. Stand-By Power: During a power outage; Fan will continue to operate.

1.11 VENTILATION SEQUENCE (kitchenette)

A. EF-4 Range Exhaust Fan:

1. Normal Operation: Exhaust fan operates only when the range is in operation and will be connected as per kitchenette manufacturer recommendations.

1.12 BUILDING MONITORING SYSTEM

A. Lighting: (Entire Building)

1. Monitor: Interface with lighting control system provided by Electrical contractor. Coordinate system equipment and location with owner.

ADDENDUM #1 – ATTACHMENT “A1-5”
Little Kanawha Bus Administrative and Maintenance Facility

- B. Security: (Entire Building)
 - 1. Monitor: Interface with security system provided by Security contractor. Coordinate system equipment and location with owner.

- C. Fire Alarm: (Entire Building)
 - 1. Monitor: Monitor fire alarm system to show if it is operating properly, a problem exists or it is in alarm. This is read only, no switching or controls. Interface with fire alarm system provided by Fire Protection contractor. Coordinate system monitoring equipment and location with owner.

1.13 GENERAL

- A. All miscellaneous motorized dampers shall be open when the associated air systems are on and closed when off.

- B. Coordinate all alarming with owner and provide required alarming.

PART 2 APPLICATION

2.1 PRODUCTS (Not Applicable)

2.2 EXECUTION (Not Applicable)

END OF SECTION 230993

LITTLE KANAWHA TRANSIT AUTHORITY
PTR11054
ADDENDUM #1

1. QUESTION

Since this project is for the State of WV, and the State is tax-exempt, will the potential vendor have to pay sales taxes on purchases?

RESPONSE

Yes, the vendor is required to pay any/all applicable taxes.

LKB

SIGN IN SHEET

Page 1 of 4

Request for Proposal No. PTR11054

Please Print

Date: 2.15.11

*PLEASE BE SURE TO PRINT LEGIBLY - IF POSSIBLE, LEAVE A BUSINESS CARD

TELEPHONE & FAX NUMBERS

MAILING ADDRESS

FIRM & REPRESENTATIVE NAME

Company: <u>MID ATLANTIC COAST</u>	<u>BOX 190</u>	PHONE <u>304-675-8810</u>
Rep: <u>KENNY MCNULTAN</u>	<u>OLD TOWNE RA</u>	TOLL FREE <u>884</u>
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Company: <u>Mid-Atlantic Coast.</u>	<u>190 camp Conley Rd.</u>	PHONE <u>304-675-8810</u>
Rep: <u>Jason W. McMillan</u>	<u>Pt. Pleasant, WV 25550</u>	TOLL FREE
Email Address: <u>Mac @ siddenlink@mail.com</u>		FAX <u>304-675-8811</u>
Company: <u>DAN HILL CONSTRUCTION</u>	<u>P.O. Box 685</u>	PHONE
Rep: <u>MIKE SIEMIAZKO, JR</u>	<u>GABLEY BEIDGE, WV 25085</u>	TOLL FREE <u>304-632-1600</u>
Email Address: <u>pollockinwv@hotmail.com</u>		FAX <u>304 632-1501</u>
Company: <u>City Electric</u>	<u>P.O. Box 6550, Charleston WV.</u>	PHONE <u>304-345-6150</u>
Rep: <u>Chad Kunde</u>	<u>25362</u>	TOLL FREE
Email Address: <u>Cwhitlock@cityelectric.com</u>		FAX <u>304-345-6151</u>
Company: <u>Robert Cantrabing</u>	<u>Bob, Cantrabing, Conn</u>	PHONE <u>304-623-8388</u>
Rep: <u>JOEL SHIRES INC</u>		TOLL FREE
Email Address: <u>JOEL SHIRES INC</u>	<u>Bluefield WV.</u>	FAX <u>304323-3032</u>

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TELEPHONE & FAX NUMBERS

FIRM & REPRESENTATIVE NAME Mailing Address

Company: <u>City Construction Company Inc</u>	<u>Rt#2 Box 285</u>	<u>1-304-623-2573</u>
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Email Address: <u>beauh@wvdsi.net</u>	<u>26301</u>	<u>1-304-326-6970</u>
Company: <u>Phoenix Associates, Inc.</u>	<u>501 East Street</u>	<u>PHONE (304) 485-3255</u>
Rep: <u>John Coffman, Jim Coffman</u>	<u>Parkersburg, WV 26101</u>	<u>TOLL FREE</u>
Email Address: <u>jms.phoenixinc@wirefire.com</u>		<u>FAX (304) 485-3261</u>
Company: <u>G.A. Brown & Son, Inc.</u>	<u>215 Mill Street</u>	<u>PHONE 304-363-4500</u>
Rep: <u>GARY HIGHLAND</u>	<u>Fairmont, WV 26534</u>	<u>TOLL FREE</u>
Email Address: <u>ghighland@gabrown.com</u>		<u>FAX 304-366-9456</u>
Company: <u>MARC (Carpenters Union)</u>	<u>458 Cedar Grove Rd</u>	<u>PHONE 304-494-5885</u>
Rep: <u>Joe Elliott</u>	<u>Parkersburg WV 26101</u>	<u>TOLL FREE</u>
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Company: <u>B & B BUILDERS</u>	<u>500 Corporate Centre Drive</u>	<u>PHONE 304 757-9196</u>
Rep: <u>MARK FREELAND</u>	<u>SUITE 550</u>	<u>TOLL FREE</u>
Email Address: <u>hmassie@bandbuilders.com</u>	<u>Schoff Depot WV 25560</u>	<u>FAX 304-757-0993</u>

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TELEPHONE & FAX NUMBERS

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 FAX (304) 765-7679

Company: C & C Electrical Solutions LLC RT 3 Box 275 E
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 Email Address: allen145@marshall.edu
 PHONE 304-741-1317
 TOLL FREE
 FAX 304-722-3858

Company: Kyle Const Co
 Rep: Kenneth Kyle
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kkyle.41@gmail.com
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Company: Venture One Construction 3883 Virginia Ave
 Rep: Pat Habel Cincinnati, OH 45227
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 FAX 513 527-4066

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 FAX 304-425-5931

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 Rep: JIM CARUS CHARLESTON, WV 25322
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 PHONE 304-347-8820
 TOLL FREE _____
 FAX 347-8821

Company: TODD DORRIS 1900 KANAWHA BLDG E
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 Email Address: Todd.M.Dorris@wv.gov BUILDING # 5 ROOM 906
 PHONE 304.558.0428
 TOLL FREE _____
 FAX _____

Company: CINDY FISH _____
 Rep: WV / DOT / DPT _____
 Email Address: CINDY.F.FISH@WV.GOV _____
 PHONE 304.558.0428
 TOLL FREE _____
 FAX _____

Company: SUSAN O'CONNOR _____
 Rep: WV / DOT / DPT _____
 Email Address: SUSAN.L.O'CONNOR@WV.GOV _____
 PHONE 304.558.0428
 TOLL FREE _____
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Company: ROY L. BOLEN _____
 Rep: MICHAEL BAKER JR. _____
 Email Address: rboleme@mbakercorp.com _____
 PHONE 304.762.0824
 TOLL FREE _____
 FAX _____