



Request for Proposal

2022 Storm Sewer Replacement Project City of Charleston, WV

E3-08/22-146

Jamie Bowles
Purchasing Director
City of Charleston
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F: (304) 348-8157
bids@cityofcharleston.org

Please be sure the following documents are included in this bid package:

1. Purchasing Affidavit
2. Purchasing Affidavit for Local Vendor Preference (If applicable)
3. Signed Protest Page
4. Addendum Acknowledgement Form, if an addendum was issued.
5. List of Stockholders
6. Bid Surety Bond
7. Signed Drug Free Workplace Affidavit

INTENT

This project entails two separate storm sewer improvements. Locations of each improvement are shown on the drawings. A brief description of each location is as follows:

Project 1 Emerald Road- The intent of this project is to replace an existing storm sewer between 1157 & 1161 Emerald Road. The existing 12-inch diameter Corrugated Metal Pipe (CMP) is to be replaced with a new 12-inch diameter ADS Dual Wall Corrugated Plastic Pipe (CPP) or equivalent. The depth of the existing storm sewer varies but the deepest section is estimated to be approximately 9 feet. The project includes installing approximately 112 LF of 12-inch CPP pipe, installing one Type B Inlet and replacing a four-foot section of concrete pipe that connects to the Type B inlet, the 12-inch concrete pipe is to be replaced with 12-inch CPP. The project requires removing and disposing of a timber retaining wall. The contractor will also need to remove a section of chain link fence to install the storm sewer, the fence is to be reinstalled after the storm sewer is installed. This work includes but is not limited to: excavation, removal of deteriorated pipe and inlet, locating lateral taps, installation of pipe and drain inlet, reconnecting existing lateral taps, back filling, compacting, concrete street repair, grading surface, grass seed and mulch. All work shall be in compliance with the City's Specifications & Drawings along with the most current edition of WVDOH Standard Specifications Roads & Bridges, ASTM and OSHA standards. The work shall include the furnishing of all material, labor, tools, and equipment necessary to complete all phases of the work in accordance with the specifications.

Project 2 Ariel Heights-It is the intent of this project to replace the City of Charleston's existing storm sewer pipe and inlets, located at 205 & 207 Ariel Heights, Charleston, WV, by abandoning and grouting a deteriorated two foot diameter Corrugated Metal Pipe (CMP) and installing a new 18-inch diameter ADS Dual Wall Corrugated Plastic Pipe (CPP) or equivalent. This work includes but is not limited to: excavation, removal of deteriorated pipe sections and inlets, locating lateral taps, installation of pipe and drain inlets, reconnecting existing lateral taps, grouting, back filling, compacting, street repair, concrete and asphalt paving, grading surface, grass seed and mulch. All work shall be in compliance with the City's Specifications & Drawings along with the most current edition of WVDOH Standard Specifications Roads & Bridges, ASTM and OSHA standards. The work shall include the furnishing of all material, labor, tools, and equipment necessary to complete all phases of the work in accordance with the specifications.

The work shall consist of the Vendor furnishing all materials, equipment and labor necessary for the satisfactory completion of this project. All materials, equipment, and workmanship shall be in accordance with the West Virginia Department of Transportation, Division of Highways, Standard Specifications for Roads and Bridges, 2017, as amended.

The details contained in the following specifications are not designed to exclude any manufacturer from bidding but are offered as a means of describing the needs of the City of Charleston. Where brand names are used, the words "or equal" are assumed to follow. All specifications are minimum requirements unless otherwise stated. Any deviations from the stated specifications must be described in detail. The merit of such

deviations will be considered with regard to the City of Charleston's intended use.

INFORMATION FOR BIDDERS

1. Receipt and Opening of Bids

The City of Charleston (City) invites bids on the attached forms. Sealed bids will be received in the City Manager's Office until **Thursday August 25, 2022, 10:30 a.m.** The bid opening will be held immediately following in the City Manager's Office.

2. Preparation of Bid

Each bid must be submitted in a sealed envelope with the following information marked on the outside: name of bidder, address, project name, and bid opening date and time. The bid must be submitted to the City Manager's Office located at 501 Virginia Street East, Room 101, Charleston, WV 25301. Vendors may hand deliver or mail their submissions to the aforementioned address. Bid packages shall contain one (1) original and one (1) copy of the vendor's entire bid submission. All documents in bid packet must be signed, dated and notarized where applicable or bid may be disqualified.

3. Addenda

All questions pertaining to the specifications shall be submitted in writing to Purchasing Director, Jamie Bowles via email to bids@cityofcharleston.org no later than **12:00pm, Thursday, August 18, 2022**. Questions submitted will then be compiled and answered in an addendum to be issued no later than **5:00pm, Friday, August 19, 2022**. The City of Charleston will not be held responsible for oral interpretations of the specifications given by any of its employees, representatives, or others. The issuance of a written addendum is the only official method whereby interpretation, clarification, or additional information pertaining to this RFP can be given. If any addenda are issued to this RFP, the Interim Purchasing Director will attempt to notify all prospective bidders who have secured the original RFP document. However, it will be the responsibility of each vendor, prior to submitting their proposal, to contact the Purchasing Director via phone at (304) 348-8014, by email to bids@cityofcharleston.org, or by checking the City of Charleston Website at <https://charlestonwv.gov/bids-purchasing/current-bids>, to determine if any addenda were issued and to make such addenda a part of their competitive proposal.

4. Bid Surety Bond

Each bid must be accompanied by a bid surety in the form of a cashier's or certified check, or a bond written by a company licensed to do business in West Virginia, in the amount of 5% of the total bid for the project. The bid surety shall be made payable to the City of Charleston.

The bid surety will be forfeited to the City if the Contractor fails or refuses to execute and deliver the contract and construction bond. All bidders will receive a full refund upon execution of the contract.

5. Method of Award

The City Council or City Manager reserves the right to reject any or all bids and is not necessarily bound to accept the lowest bid if that bid is contrary to the best interest of the City. In making an award, intangible factors such as bidder's service, integrity, facilities, equipment, reputation and past performance will be weighed.

6. Mandatory Pre-Bid Conference

A **mandatory** pre-bid conference for the purpose of discussing and clarifying the project drawings and specifications will be held in the City Engineering Office at 114 Dickinson Street at **10:00 am, August 17, 2022.**

7. Stockholders

A list of all stockholders by name and address owning 5% or more of the bidder's current stock must be submitted with the bid. In the case of partnerships or sole proprietorships, those receiving a 5% or more share of the company's net profit must be listed.

8. Equal Employment Opportunities

All bidders acknowledge and agree that, in the performance of any City contract, they will not discriminate against any employee or applicant for employment because of race, color, religion, age, sex, sexual orientation, gender identity, disability, or national origin.

9. Immigration Reform and Control Act (IRCA)

All bidders in connection with the performance of this project shall certify that they are in complete compliance with the above noted Act.

10. Payment Terms

Payment terms are net 30 days from the first or fifteenth day of the month for invoices received by the first or fifteenth day of the month. The Contractor shall supply a certified payroll with each invoice submitted. Mail invoices to: City Engineer, City of Charleston, P.O. Box 2749, Charleston, WV 25330. Hand deliver invoices to: 114 Dickinson St., Charleston, WV. An acceptance letter/final invoice must be reviewed and signed by an authorized representative of the Department responsible for payment.

11. Local Vendor Preference

A local vendor may qualify for a competitive advantage applied to its bid when certain conditions are met. Such as, the vendor has marked on its bid submission that it is requesting to be considered a local vendor for bid evaluation purposes; the vendor provides documentation evidencing that it has the right to conduct business in the State of West Virginia; and the vendor submits an affidavit confirming that it

has paid all applicable business taxes to the city or has a non-delinquent payment plan with the city and has had an active and current business and occupation tax account with the city collector during the entire preceding one-year period.

Competitive advantages shall be applied in the following manner:

- (1) A competitive advantage of 4% shall be applied to the local vendor's bid when, prior to applying the competitive advantage, the apparent lowest responsible bidder submits a bid that is greater than \$25,000 but does not exceed \$125,000.
- (2) The competitive advantage of \$5,000 shall be applied to the local vendor's bid when, prior to applying the competitive advantage, the apparent lowest responsible bidder submits a bid that is greater than \$125,000.

12. Business & Occupation Tax

The City of Charleston broadly imposes a Business & Occupation Privilege Tax for the act or privilege of engaging in business activities within the City of Charleston. Business & Occupation Tax is measured by the application of rates against gross receipts or gross income of the business. All business activities are classified, and the classifications are significant inasmuch as the tax liability varies based on the different rates established for the specific types of business activities.

Individuals or businesses who do not have a physical location or office located in the City of Charleston are also subject to Business & Occupation Tax if they: 1) lease tangible personal property to lessees in Charleston, or 2) perform construction or installation contracts in Charleston or 3) render services in Charleston. Additionally, anyone who sells and/or delivers goods or products in Charleston may also be subject to Business & Occupation Tax.

Business & Occupation Tax should be considered when preparing your bid. If you are uncertain as to your business activity or how your business should properly calculate the tax when preparing your bid, please contact us at botax@cityofcharleston.org.

NOTE: No contract or purchase of materials or equipment will be awarded to a company whose Business & Occupation Tax status is delinquent.

GENERAL CONDITIONS

- Bid shall be delivered F.O.B. to: the City Manager's Office located at 501 Virginia Street East, Room 101, Charleston, WV 25301.
- **Equipment Delivery Information if needed.**
- Only new equipment will be accepted. No factory refurbished, display or used equipment is allowed. All manuals, warranties and agreements must arrive at the time the equipment is delivered.
- Bidder shall state on bid proposal form number of days allowed for delivery of equipment following date of firm order. Time is of the essence with regard to this project. Therefore, the completion date will be considered in deciding the successful bidder. The successful bidder will be held accountable to honor the delivery date.
- **Only one bid will be accepted from each vendor.**
- The unit will not be accepted by the City if all specifications and any other requirements have not been met. Return of the equipment, if necessary, will be at the expense of the bidder.
- Any deviations from the bid specifications must be included on a separate sheet and attached to the bid form.
- Enclose with this bid proposal all manufacturer brochures, all warranty agreements on equipment proposed, a list of the company's stockholders, the city's Purchasing Affidavit and any other documents as required by the City and described in this document. Firms must acknowledge the City's protest process, attached herein, by submitting a signed copy with their bid proposal. **Firms may not be considered, at the City's discretion, if any of the listed enclosures are not included with the bid submission.**
- Per City Code, facsimile, telephonic or oral bids will not be accepted.
- Debarred vendors may not submit bids or be awarded contracts.
- The City of Charleston is exempt from state and local taxes.
- The City Council or the City Manager reserves the right to reject any and all bids.
- Contract and Contract Documents

The Contract includes the invitation for bids, proposal, contract form, contract bond, specifications, special provisions, plans, notice to proceed, any change orders and other supplemental agreements that are required to complete the construction of the work in an acceptable manner.

Specifications shall include applicable sections of the West Virginia Department of

Transportation Division of Highways Standard Specifications for Roads and Bridges, Adopted 2017 (WVDOH Specifications), including the most recent supplemental specifications and the Standard Details Book, Volume 1, Drainage, Guardrail, Pavement, Fence, and Markers, Issue Date: May, 2016 (WVDOH Standard Details).

The quantities listed in the contract documents are estimates. The City will pay for quantities actually in place. The City reserves the right to vary the quantities up to 50 % with no change in unit price, except for optional items that may or may not be completed as part of this project.

- **Materials, Services, and Facilities**

The Contractor shall provide and pay for all materials, labor, tools, equipment, and all other services and supplies to complete the project in the specified time except as noted in the Contract Documents.

- **Surveys, Permits, and Regulations**

Survey/Grade information is provided for informational purposes only. The Contractor shall verify existing information and obtain additional information as necessary. The Contractor shall establish horizontal and vertical control as necessary for proper layout of the work.

- **Contractor's Obligations and Retainage**

The Contractor agrees to indemnify, defend and hold the City harmless against any property damage or personal injury claim as a result of any activity resulting from this project. The Contractor shall carry general liability insurance in amounts equal to or in excess of \$1,000,000 per occurrence/claim and shall name the City as an additional insured on its liability policy.

The Contractor shall remove all debris and leave the site in a clean and orderly condition following the completion of the work. The City will hold a 10% retainage pending final acceptance of the job.

The Contractor shall guarantee that his work is free from defects for one (1) year after acceptance of the project by the City.

- **Weather Conditions**

In the event of temporary suspension of work due to inclement weather, or whenever the Engineer shall direct, the Contractor shall, and then cause his subcontractors to carefully protect their work and materials against damage or injury. If, in the opinion of the Engineer, any work or materials have been damaged or injured by reason of failure on the part of the Contractor or his Subcontractors to protect their work, such materials shall be removed and replaced at the expense of the Contractor. Each inclement weather day shall extend the completion date by one day.

- Responsibility of Avoiding Structures

The Contractor shall assume full responsibility for the protection of all property in the vicinity of the project. The Contractor shall notify the Engineer if their work encroaches on structures in the area of the project. The Contractor shall replace or repair anything damaged as a result of the Contractor's work at no additional cost to the City. The Contractor shall be responsible for notifying all utility companies prior to any construction and shall also be responsible for having any utility lines, valves, meters, manholes, etc. relocated or adjusted that may interfere with the completion of this project. The cost and scheduling of utility relocations shall be included in the base bid and shall be performed at no additional cost to the City.

- Traffic Control

A minimum of one lane of traffic is to be maintained on all streets whenever possible. The Contractor shall provide adequate cones, signs, and if necessary flag persons with appropriate clothing and equipment to control traffic during all phases of the operation. It shall be the responsibility of the Contractor to notify the City Traffic Department, the City Engineer and the local residents of traffic and parking disruptions prior to beginning work.

Costs for all traffic control is incidental to the project.

- Cleanup

It shall be the responsibility of the contractor to keep the construction area clean from trash and debris at all times. The final cleanup shall be reviewed by the City Engineer prior to final payment.

- Superintendence by Contractor

The Contractor shall provide a superintendent or foreman who shall have full authority to act for the Contractor.

- Changes in Work

No changes in the work will be allowed without prior approval of the City. Changes will be accounted for by unit bid prices, an agreed lump sum, or the actual cost of labor, materials, rental costs, and other applicable costs.

- Time of Completion

The project shall be substantially complete within 3 months after the Notice to Proceed is issued.

- Payment and Performance Bonds

At the time of the execution of this contract, the successful bidder shall execute and deliver to the City Payment and Performance Bonds payable to the City of Charleston, both in the amount of **one hundred percent (100%)** of the contract

price. As an alternate, the successful bidder may furnish cash bonds or U.S. Government Bonds in the amount of **one hundred percent (100%)** of the contract price for each of the Payment and Performance Bonds. Firms may also elect to provide the City with an irrevocable standby Letter of Credit in the amount of **two hundred percent (200%)** of the contract price, with the City as beneficiary, issued by a reputable lending institution with terms satisfactory to the City and its legal counsel in lieu of performance and payment bonds.

- Licenses

Bidders must be licensed contractors by the State of West Virginia and licensed to do business in the City of Charleston.

2022 Storm Sewer Replacement Project

Description	Date
Advertisement	Wednesday August 3, 2022
Pre-bid Meeting	Wednesday August 17, 10:00 am City Engineers Office
Bid Receipt Deadline	Thursday, August 25, 2022, 10:30 a.m.
Bid Opening	Immediately Following Bid Receipt Deadline
Award	Tentatively Monday, Sept. 5, 2022

3.0 DETAIL SPECIFICATIONS

3.01 Mobilization

3.01.01 Description

This work shall consist of the preparation for construction, movement of personnel, equipment, and materials to the project site. This item also shall include site preparation, clean-up and demobilization. The price bid for ITEM 3.01 – MOBILIZATION shall not exceed 5% of the Project Total.

3.01.02 Materials & Methods

Equipment and material shall be transported and delivered to and from the site. The Contractor shall remove all debris and leave the site in a clean and orderly condition before, during and following the completion of the work. Site shall be in preconstruction condition or better after cleanup and demobilization.

3.01.03 Measurement & Payment

Mobilization will be measured and paid on a lump-sum basis for ITEM 3.01 MOBILIZATION. The City will hold a 10% retainage pending final acceptance of the job. No decrease or increases will be made on this item bid price regardless of the decrease or increase in the final total contract amount or for any other cause.

3.02 Site Preparation

3.02.01 Description

This work shall include, but not necessarily be limited to, the following:

- i.) Sediment and erosion control;
- ii.) Clear and grub vegetation (including trees);
- iii.) Grade and revegetate disturbed areas.

Trees shall be removed as shown on plans or as directed by the City Engineer's Office. The contractor shall notify the City Engineer's Office prior to removing any trees.

The price bid for Item 3.02 - Site Preparation shall not exceed 5% of the Project Total.

3.02.02 Materials & Methods

No decrease or increases will be made in the lump sum bid for Item 3.02 - Site Preparation regardless of the decrease or increase in the final total Contract amount or for any other cause.

3.02.03 Measurement & Payment

Site Preparation will be measured and paid on a LUMP-SUM basis bid for ITEM 3.02 -

Site Preparation. The City will hold a 10% retainage pending final acceptance of the job.

3.03 12-inch Corrugated High Density Polyethylene Pipe

3.03.01 Description

This work shall consist of the construction or reconstruction of pipe culverts, in accordance with the WVDOH Standard Specs Roads & Bridges, adopted 2017, and in reasonably close conformity with the lines, grades, dimensions, and locations shown on the plans or established by the engineer.

3.03.02 Materials & Methods

The material will be 12-inch ADS Dual Wall CPP or equivalent, installed in accordance to the manufacturer's specs, see Appendix for ADS Installation Guide for the manufacturer's recommended procedure.

The bedding for any pipe installed in the roadway shall consist of a continuous four (4) inch layer of crushed aggregate shaped to fit the lower pipe exterior and to the plan details. Recesses shall be made to accommodate for the bell where necessary. Pipe placing shall begin at the downstream end. The lower segment of the pipe shall be in contact with the shaped bedding throughout its full length. Bell ends of pipe shall be placed facing upstream. Pipe installed outside of the roadway may be installed using native soil which shall be installed and according to the manufacturer's recommended procedures.

The pipe end sections shall be such that the pipe inverts are fully entered and reasonably flush and even. At the pipe alignment beginning and end, where two different types of pipes meet, a Fernco Coupling or equivalent shall be installed. The coupling shall be encased in concrete, and the joined sections shall be soil tight. A minimum of four (4) inches of portland cement concrete with a compressive strength of 3 KSI or greater shall be used to fill the voids and seal the two different pipe end sections.

Care shall be taken to compact the material under the haunches of the pipe, #57 aggregate shall be used for any pipe within the roadway. Place the backfill evenly on each side of pipe to retain its vertical axis, and to avoid displacement and/or floating. Backfill material above the haunches shall be #57 aggregate for any pipe installed in the roadway. For pipe installed outside of the roadway native soil shall be used assuming it is suitable material free from particles larger than three (3) inches. After the pipe is installed the backfill shall be placed along the pipe in layers not to exceed nine (9) inches, uniformly compacted with approved tampers. The use of bulldozers or other bladed equipment is prohibited. Mechanical equipment with various buckets may be used. This method of backfilling and compacting shall be followed until the top of the trench is reached.

Any lateral pipe connections that were encountered while removing the existing pipe shall be reconnected.

The road shall be restored as per Standard Detail A-2 in the Appendix. All materials,

labor, equipment and incidentals necessary to complete the road restoration shall be considered incidental.

3.03.03 Measurement and Payment

Pipe Culvert shall be measured by the linear feet (LF) in place, the measurement being made along the centerline of pipe installed. The quantities will be paid for at the contract unit price bid for this item, which shall be full compensation for backfilling, furnishing all material and doing all work prescribed in a workmanlike and acceptable manner, including all labor, tools equipment, supplies, and incidentals necessary to complete the work. Materials, installation, and other items incidental to item will be measured and paid on a unit basis LINEAR FOOT (LF) for ITEM 3.03 12-inch Corrugated High Density Polyethylene Pipe

3.04 18-inch Corrugated High Density Polyethylene Pipe

3.04.01 Description

This work shall consist of the construction or reconstruction of pipe culverts, in accordance with the WVDOT Standard Specs Roads & Bridges, adopted 2017, and in reasonably close conformity with the lines, grades, dimensions, and locations shown on the plans or established by the engineer.

3.04.02 Materials & Methods

The material will be 18-inch ADS Dual Wall CPP or equivalent, installed in accordance to the manufacturer's specs, see Appendix for ADS Installation Guide for the manufacturer's recommended procedure.

The bedding for any pipe installed in the roadway shall consist of a continuous four (4) inch layer of crushed aggregate shaped to fit the lower pipe exterior and to the plan details. Recesses shall be made to accommodate for the bell where necessary. Pipe placing shall begin at the downstream end. The lower segment of the pipe shall be in contact with the shaped bedding throughout its full length. Bell ends of pipe shall be placed facing upstream. Pipe installed outside of the roadway may be installed using native soil which shall be installed and according to the manufacturer's recommended procedures.

The pipe end sections shall be such that the pipe inverts are fully entered and reasonably flush and even. At the pipe alignment beginning and end, where two different types of pipes meet, a Fernco Coupling or equivalent shall be installed. The coupling shall be encased in concrete, and the joined sections shall be soil tight. A minimum of four (4) inches of portland cement concrete with a compressive strength of 3 KSI or greater shall be used to fill the voids and seal the two different pipe end sections.

Care shall be taken to compact the material under the haunches of the pipe, #57 aggregate shall be used for any pipe within the roadway. Place the backfill evenly on each side of pipe to retain its vertical axis, and to avoid displacement and/or floating. Backfill material above the haunches shall be #57 aggregate for any pipe installed in the

roadway. For pipe installed outside of the roadway native soil shall be used assuming it is suitable material free from particles larger than three (3) inches. After the pipe is installed the backfill shall be placed along the pipe in layers not to exceed nine (9) inches, uniformly compacted with approved tampers. The use of bulldozers or other bladed equipment is prohibited. Mechanical equipment with various buckets may be used. This method of backfilling and compacting shall be followed until the top of the trench is reached.

Any lateral pipe connections that were encountered while removing the existing pipe shall be reconnected.

The street shall be restored as per Standard Detail A-1 in the Appendix. All materials, labor, equipment and incidentals necessary to complete the road restoration shall be considered incidental.

3.04.03 Measurement and Payment

Pipe Culvert shall be measured by the linear feet (LF) in place, the measurement being made along the centerline of pipe installed. The quantities will be paid for at the contract unit price bid for this item, which shall be full compensation for backfilling, furnishing all material and doing all work prescribed in a workmanlike and acceptable manner, including all labor, tools equipment, supplies, and incidentals necessary to complete the work. Materials, installation, and other items incidental to item will be measured and paid on a unit basis LINEAR FOOT (LF) for ITEM 3.04 18-inch Corrugated High Density Polyethylene Pipe

3.05 Type-B Drain Inlets

3.05.01 Description

This work shall consist of the construction of new Type-B inlets in accordance with the WVDOH Standard Specs Roads & Bridges, adopted 2017, and in reasonably close conformity with the lines, grades, dimensions and locations shown on the plans or established by the engineer.

3.05.02 Material & Methods

Concrete inlets may be precast when shapes and dimensions conform to those shown on the plans and when final installed top surfaces are flush with adjacent finish surfaces such as pavement, gutters, curbs, and/or sidewalks. Portland cement concrete or a high strength, non-shrink grout shall form neatly and tightly around all pipes connecting to the drain inlet.

The asphalt or concrete around the inlet shall be saw-cut and restored as per the appropriate Standard Detail in the Appendix. The street restoration is considered incidental.

3.05.03 Measurement & Payment

Inlets will be measured by the units in place. The quantities will be paid for at the contract unit price bid for this item, which shall be full compensation for backfilling, concrete, aggregate, reinforcing steel, fabric, grates, covers, frames, hardware, and other material shown on the plans and for doing all work, including all labor, tools equipment, supplies, and incidentals necessary to complete the work. Materials, installation, and other items incidental to item will be measured and paid on a unit basis EACH (EA) for ITEM 3.05 Type-B Drain inlet.

3.06 Plug Abandoned Pipe

3.06.01 Description

Project 2 Ariel Heights includes approximately 50 cubic yards of CLSM Type-A (WVDOH Sect. 219) to be placed in the existing storm sewer to be abandoned in place. This material shall have compressive strength of 50-psi min. /150-psi max.

3.06.02 Materials & Methods

The work shall consist of plugging the existing storm sewer at the lowest elevation and any other openings, then filling pipe with CLSM. It is anticipated that it may be required to open cut the existing pipe midway (at possibly one or two locations) to allow a flowable fill installation to seal entirely all the voids within the existing system. Additional open cuts or plugging, if required, will be considered incidental to this bid item.

3.06.03 Measurement & Payment

Materials, installation and other items incidental to proper construction will be measured and paid on a unit price basis CUBIC YARDS (CY) for Item 3.06 – Plug Abandoned Pipe.

3.07 Allowances

3.06.01 Description

This section specifies procedures for Allowances which shall be included in the contract price. Allowances have been established to accommodate for, at a later date, the actual cost of unanticipated work which the exact quantity cannot be determined at the time of bidding and to defer the selection of actual materials, labor and equipment.

3.07.02 Material & Methods

Utilization of Allowances will not be allowed without prior approval of the City. Unanticipated work will be accounted for by unit bid prices, an agreed upon lump sum, or the actual cost of labor, materials, rental and/or other applicable costs.

The Contractor shall submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.

The Contactor shall submit time sheets and other documentation to show labor time and

cost for installation of allowance items that include installation as part of the allowance.

3.07.03 Measurement & Payment

A lump sum for Allowances has been provided for the City's contingency fund to be used as the City directs. Allowances will be paid on an agreed upon manner with the contractor. If there are no unanticipated works, then the Allowances will not be utilized or paid.

EXCEPTIONS AND DEVIATIONS

Bidder shall fully describe every variance, exception and/or deviation. Please include with your bid form. Additional sheets may be used if required.

**CITY OF CHARLESTON
BID AND PROPOSAL FORM**

2022 Storm Sewer Replacement Project

We agree to sell and perform for the City of Charleston the above project as described in the attached specifications for the price listed below:

Description	Unit	Quantity	Unit Cost	Item Total
Item 3.01 –Mobilization (5% Max.)	LS	1		
Item 3.02 –Site Preparation (5% Max.)	TON	1		
Item 3.03 –12-inch Corrugated High Density Polyethylene Pipe	LF	120		
Item 3.04 – 18-inch Corrugated High Density Polyethylene Pipe	LF	240		
Item 3.05 –Type-B Drain inlet	LF	3		
Item 3.06- Plug Abandoned Pipe	CY	50		
Item 3.07 -Allowance		1	\$20,000	\$20,000
			BASE BID TOTAL:	

All items required for project completion but not listed separately shall be considered incidental to the items shown. Quantities are estimates for bidding purposes only; the City of Charleston will only pay for actual quantities installed. The City of Charleston reserves the right to vary quantities up to 50% with no increase in unit price.

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CITY OF CHARLESTON
BID AND PROPOSAL FORM

2022 Storm Sewer Replacement Project

☐ By checking this box and signing below, I hereby certify and attest I have read the Local Vendor Preference statement found on page 5, item 11 and understand that a vendor must qualify that all conditions have been met to be given a competitive advantage.

☐ By checking this box and signing below, I hereby certify and attest I have read the Business & Occupation Tax statement found on pages 5-6, item 12 and understand that Business & Occupation Tax may apply to the sale of my product or service to the City of Charleston.

☐ I certify that this vendor has in place equal employment opportunity policies and have included with this bid submission all enclosures listed below (including applicable purchasing affidavits).

Authorized Bidder's Signature

Title

Printed/Typed Bidder's Name

Date

Company Name: _____

Address: _____

Street

City

State

Zip

Telephone Number: _____

Fax Number: _____

Email Address: _____

2022 Storm Sewer Replacement Project

CITY OF CHARLESTON PURCHASING AFFIDAVIT

VENDOR OWING A DEBT TO THE STATE OR POLITICAL SUBDIVISION:

West Virginia Code §5A-3-10a provides that: No contract or renewal of any contract may be awarded by the state or any of its political subdivisions to any vendor or prospective vendor when the vendor or prospective vendor or a related party to the vendor or prospective vendor is a debtor and the debt owed is an amount greater than one thousand dollars (\$1,000) in the aggregate.

PUBLIC IMPROVEMENT CONTRACTS & DRUG-FREE WORKPLACE ACT:

If this is a solicitation for a public improvement construction contract, the vendor, by its signature below, affirms that it has a written plan for a drug-free workplace policy in compliance with Article 1D, Chapter 21 of the **West Virginia Code**. The vendor **must** make said affirmation with its bid submission. Further, public improvement construction contracts may not be awarded to a vendor who does not have a written plan for a drug-free workplace policy in compliance with Article 1D, Chapter 21 of the **West Virginia Code** and who has not submitted that plan to the appropriate contracting authority in a timely fashion. For a vendor who is a subcontractor, compliance with Section 5, Article 1D, Chapter 21 of the **West Virginia Code** may take place before their work on the public improvement is begun.

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 a 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 materials, 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.

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, the West Virginia Insurance Commission or any other state agencies or political subdivision. Furthermore, 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.

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>.

Under penalty of law for false swearing (**West Virginia Code §61-5-3**), it is hereby certified that the vendor affirms and acknowledges the information in this affidavit and is in compliance with the requirements as stated.

Vendor's Name: _____

Authorized Signature: _____ Date: _____



CITY OF CHARLESTON, WEST VIRGINIA

LOCAL VENDOR AFFIDAVIT

Pursuant to § 2-480 of the Charleston City Code, a Local Vendor may qualify for a competitive advantage applied to its bid when certain conditions are met. One condition requires the vendor to submit this affidavit confirming that **(1)** the vendor has paid all applicable business taxes to the City or has a non-delinquent payment plan with the City, and **(2)** the vendor must state that it has had an active and current business & occupation tax account with the City Collector during the entire one-year period prior to the bid opening.

AFFIRMATION: By signing this form, the vendor's authorized signer affirms and acknowledges under the penalty of law for false swearing (W. Va. Code § 61-5-3) that **(1)** the vendor has paid all applicable business taxes to the City or has a non-delinquent payment plan with the City, and **(2)** the vendor has had an active and current business & occupation tax account with the City Collector during the entire one-year period prior to the scheduled bid opening for the procurement listed below.

WITNESS THE FOLLOWING SIGNATURE:

Vendor's Corporate Name: _____

Authorized Signature: _____ Date: _____

(Printed Name and Title)

State of _____

County of _____, to wit:

Taken, subscribed, and sworn before me this _____ day of _____, 20 ____.

[SEAL]

Notary Public

My Commission expires _____, 20 ____.

Name of Procurement: _____ Bid Opening Date: _____

2022 Storm Sewer Replacement Project

PROTEST

In the event that any vendor desires to protest City's selection, such vendor (hereinafter "Protestor") shall submit its protest in writing, which must be received by City within two (2) business days of receipt of the Notice of Award letter. Provided that the City Manager reserves the right to extend the time for submission of the protest if he determines it is reasonable under the circumstances.

The written protest must be submitted to the City Manager's Office, Attention: Jonathan Storage 501 Virginia Street East, Room 101; Charleston, WV 25301.

Only vendors who have submitted a timely and responsive proposal may protest City's selection. No protest may be filed if the RFP is withdrawn or if all proposals received in response to the RFP are rejected.

Protests shall include the following information:

1. The RFP title and project description;
2. The Protestor's name, address, telephone number, and fax number;
3. A detailed statement of the legal and/ or factual grounds for the protest;
4. A statement as to how the objectionable matter(s) resulted in prejudice to the Protestor;
5. Copies of all relevant documents;
6. A request for a ruling by City;
7. A statement as to the form of relief requested;
8. All information establishing that Protestor is an interested party with authority for the purpose of filing a protest.

At the time of submitting the written protest, Protestor shall submit a certified check in the amount of one thousand dollars (\$1,000.00) or bond equal to five percent (5%) of the price of the selected proposal, whichever is greater. In the event the proposal being protested is for contracted services, an estimated average of the contract value will be determined in order to calculate the five percent (5%) bond value. This bonding requirement is designed to protect against frivolous claims and unnecessary expenditures of public funds and to allow City to offset any and all costs, fees, expenses or damages of any kind whatsoever incurred by City as the result of an unsuccessful protest.

In the event the protest is unsuccessful, the certified check or bond will be used by City to recoup any and all costs, fees, expenses, or damages of any kind whatsoever incurred by City and related in any way to the unsuccessful protest. Costs, fees, expenses, and damages shall include, but shall not be limited to, increased costs of labor, materials or services resulting from any delay, professional fees, including, but not limited to, attorney fees, and all costs, fees or expenses of any kind whatsoever related in any way to the unsuccessful protest. By signing this document, Protestor waives the right to receive any money retained by City as set forth herein. If there are any funds remaining after City has recouped amounts as permitted herein, the remaining funds will be returned to Protestor. In the event Protestor is successful, the full amount of the certified check or bond will be returned to Protestor.

Upon receipt of a timely written protest, City shall provide notice of the protest to vendor selected as the successful bidder (hereinafter "Selected Vendor") and provide Selected Vendor with a copy of the written protest and any documents related thereto. **Selected Vendor will have two (2) business days to file a written response to the protest.** A hearing will be held within five (5) business days of the **date of receipt of the written protest by Selected Vendor**; provided that, City may, in its sole discretion, set the date of the hearing beyond the five (5) day time period specified herein if deemed necessary or convenient to do so by City. At the hearing, both Protestor and Selected Vendor will have an opportunity to appear and present evidence and testimony in support of their positions. The hearing will be held before the City Manager or his designee. The department head of the department seeking the RFP and the City Attorney shall be in attendance.

A decision will be made by City within five (5) business days of the hearing. Upon a decision having been made, both Protestor and Selected Vendor will be notified in writing of City's decision.

In the event City's selection is reversed, City will reevaluate all proposals which were originally and timely submitted, in accordance with state and city laws and regulations. During the reevaluation, issues addressed during the protest proceedings may be considered.

Once a written protest is filed, no work will be performed by Selected Vendor until such time as City has rendered a final decision on the protest; provided that, if City, in its sole discretion, determines time is of the essence regarding receipt of the goods or completion of the services to be performed, City may permit Selected Vendor to proceed pursuant to its proposal and any Agreement with City, until/unless the protest is successful.

By submitting a proposal, each vendor agrees that the procedure outlined herein is the exclusive remedy available to challenge/protest the award of a contract to a successful bidder. Each vendor further agrees that, in the event any qualified vendor fails to submit a written protest and certified check or bond within the time period specified, that vendor thereby forever waives its right to any further claim, action, or remedy, including, but not limited to, the right to bring an action before any administrative agency or any court of competent jurisdiction.

Vendor Signature

Date

**CITY OF CHARLESTON
DRUG-FREE WORKPLACE CONFORMANCE AFFIDAVIT**

STATE OF WEST VIRGINIA,

COUNTY OF _____, TO-WIT:

I, _____, after being first duly sworn, depose
and state as follows:

1. I am an employee of _____; and,
(Company Name)
2. I do hereby attest that _____
(Company Name)

maintains a valid written drug-free workplace policy and that such policy is in
compliance with **West Virginia Code** §21-1D-5.

The above statements are sworn to under the penalty of perjury.

(Company Name)

By: _____

Title: _____

Date: _____

Taken, subscribed and sworn to before me this _____ day of _____
20____.

My Commission expires on _____.

(seal)

(Notary Public)

NOTE: This affidavit must be submitted with the bid in order to comply
with WV Code provisions. Failure to include the affidavit with the
bid may result in disqualification of the bid.

**CITY OF CHARLESTON
BID AND PROPOSAL FORM**

2022 Storm Sewer Replacement Project

APPENDIX

**CITY OF CHARLESTON
CONSTRUCTION CONTRACT**

Corrugated Plastic Pipe

Storm



//ADS

Introduction

Both corrugated high density polyethylene (HDPE) and polypropylene (PP) pipes are available for a variety of applications. These applications include gravity flow storm and sanitary sewer, low head pressure applications as well as many others as deemed appropriate by the design engineer. This installation pocket guide is intended to provide guidance on typical installation requirements for ADS plastic pipe used for storm drainage. Product specific exception to this pocket guide in the area of acceptable backfill, fill heights, joint connections and other product specific information may be found by referencing the appendix for additional resources.

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Job Site Handling and Receiving

Receiving Recommendations

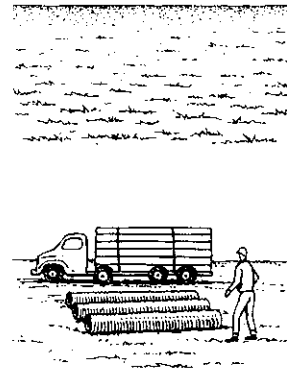
Our distributors and customer service personnel make service and customer satisfaction their highest priority. If your order is incorrect, contact your distributor or our customer service personnel.

- Direct driver to a smooth, flat area, free of rocks and debris.

- Examine load quantities and quality immediately after unloading.

Inspect pipe carefully for possible damage from transportation or unloading.

- Note damaged or missing items on delivery receipt.
- Shortages and damaged material are not automatically reshipped. Reorder replacement material.
- Do not dispose of damaged items. Check with driver for proper return method. If driver is unsure, contact our customer service personnel.

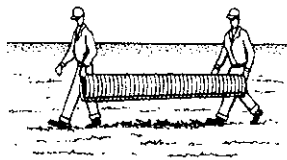


Handling Recommendations

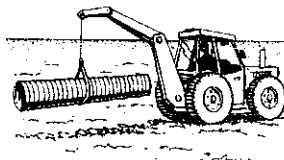
To avoid damage to the pipe and fittings the following handling recommendations should be followed:

- OSHA safety requirements.

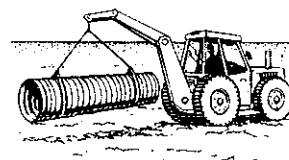
- Do not drop pipe.
- Avoid any impact to the bell or spigot.
- 18" (450 mm) and smaller pipe can be moved by hand. Larger pipe requires a backhoe with a nylon sling.
- Lift 36" (900 mm) and larger diameter pipe with a sling at two points, spaced approximately 10 feet (3 m) apart. Smaller diameters can use one lift point. Refer to Table 1 for recommended handling methods.



≤18" (450mm)



24"-30" (600-750mm)



≥36" (900mm)

- Contractor assistance is required to unload palletized pipe.
- Do not use a loading boom or forklift directly on or inside pipe.

Table 1: Recommended Pipe Handling Method

Diameter in (mm)	HDPE Approx. lb/ft (kg/m)	HP DW Approx. lb/ft (kg/m)	Handling Method
4" (100)	0.44 (.65)	n/a	Labor
6" (150)	0.85 (1.3)	n/a	Labor
8" (200)	1.5 (2.2)	n/a	Labor
10" (250)	2.1 (3.1)	n/a	Labor
12" (300)	3.2 (4.8)	3.6 (5.4)	Labor
15" (375)	4.6 (6.9)	5.3 (7.9)	Labor
18" (450)	6.4 (9.6)	7.1 (10.5)	Labor
24" (600)	11.0 (16.4)	11.9 (17.7)	Sling (1 point)
30" (750)	15.2 (22.6)	16.8 (24.9)	Sling (1 point)
36" (900)	19.8 (29.5)	20.3 (30.2)	Sling (2 points)
42" (1050)	24.3 (36.1)	25.1 (37.4)	Sling (2 points)
48" (1200)	30.9 (45.9)	32.4 (48.2)	Sling (2 points)
60" (1500)	44.5 (66.3)	49.6 (73.8)	Sling (2 points)

**Recommended handling methods are based on two laborers per pipe length, neither of which is carrying more than 100 lb. (45kg).*

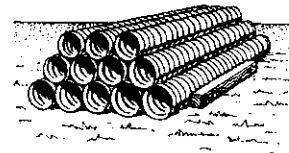
Job Site Pipe Storage

Storage Recommendations

To ensure that your delivered pipe products do not become damaged during job site storage, follow these simple guidelines:

- Non-palletized pipe may be temporarily stockpiled on a flat, clear area.
- Use securing timbers (or blocks) to ensure the stockpile does not collapse.
- Failure to block pipe may result in stack collapsing, pipe damage, or personal injury.

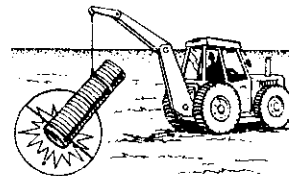
- Stack pipe no higher than approximately 6 feet (1.8 m).



- While supporting lengths of pipe evenly, alternate bells for each row of pipe.



- To prevent damage to the bell or spigot when moving pipe sections, do not drag or strike pipe ends against anything.



Trench Construction

- Information provided in this pocket installation guide is intended as a quick reference only and does not supersede requirements specified on project plans.
- The trench or ditch should be wide enough to place and compact backfill around the entire pipe.
- Refer to Table 2 for recommended minimum trench widths. The design engineer may modify the trench width based on site specific conditions.

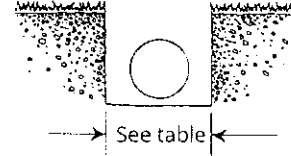


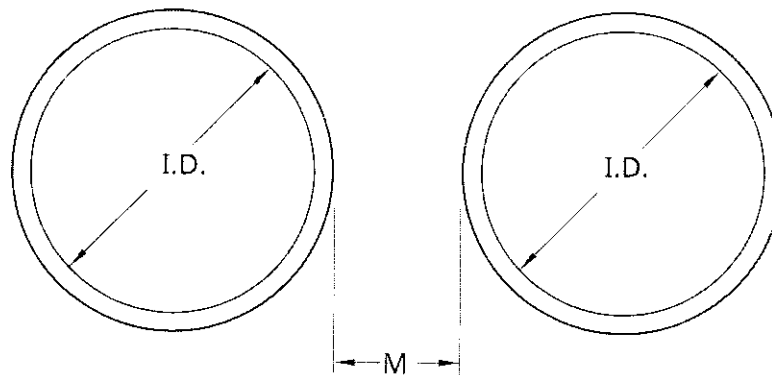
Table 2: Minimum Trench Widths

Pipe Diameter in (mm)	Trench Width in (mm)
4"-8" (100-200)	*
10" (250)	28" (711)
12" (300)	30" (762)
15" (375)	34" (863)
18" (450)	39" (990)
24" (600)	48" (1219)
30" (750)	56" (1422)
36" (900)	64" (1625)
42" (1050)	72" (1828)
48" (1200)	80" (2032)
60" (1500)	96" (2438)

**Usually dependent on smallest bucket size available.*

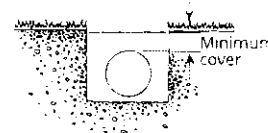
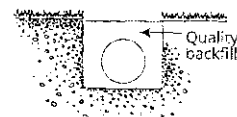
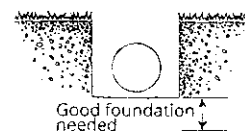
- For parallel pipe installations, allow space between pipes for proper compaction. Refer to Figure 1 for minimum pipe spacing. Spacing will differ for retention/detention systems due to the intended use of this product.

Figure 1: Parallel Pipe Installation



UP TO 24" (600MM) I.D.: M=12" (300MM)
 MORE THAN 24" (600MM) I.D.: M=1/2 I.D.

- Trench or ditch bottoms containing bedrock, soft muck or refuse, or other material unable to provide long-term uniform pipe support are **unacceptable**.
- All unsuitable foundation shall be excavated before pipe installation proceeds.
- Where the trench bottom is unstable, the contractor shall excavate to a depth required by the engineer and replace with suitable material as is specified by the engineer.



- If native soil can migrate into backfill, use synthetic fabric (geotextile) to separate native soil from backfill.

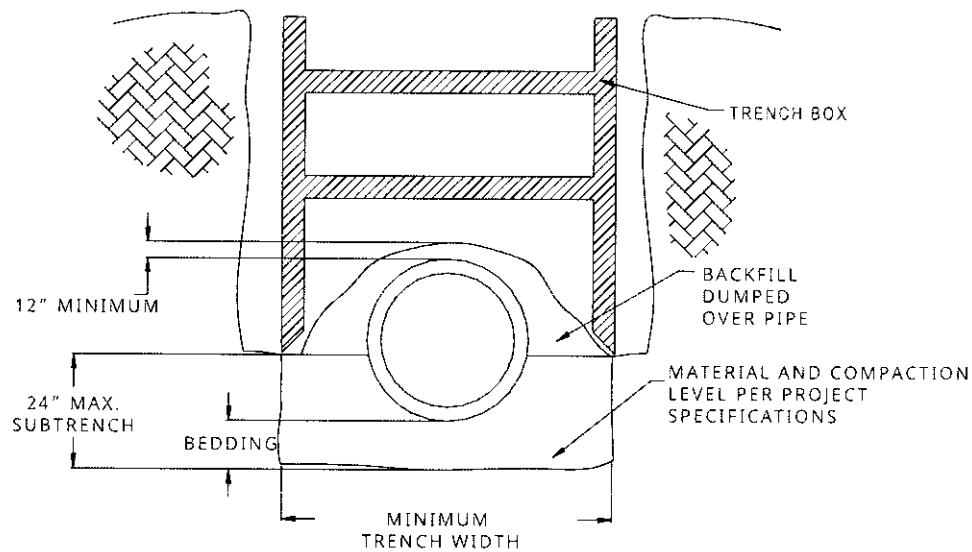
Trench Boxes

Trench boxes provide a safe work area to install pipe in deep trenches or in soils that have insufficient stability. **Always** follow OSHA requirements when using a trench box.

The length of the trench box should be suitable for the pipe length. Nominal length for pipe is 20 ft. (6.1 m) although shorter lengths can be supplied.

The most effective way to maintain a sound system is to provide a 'subtrench' within which to place the pipe and backfill. The subtrench shall not be greater than 24" (600 mm) above the bottom on the trench as shown in Figure 2. Backfill and compact according to the design specifications within the subtrench. The trench box can be pulled along the top edge of the subtrench without affecting the backfill in the pipe embedment zone.

Figure 2: Subtrench Installation

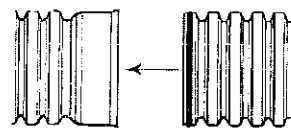
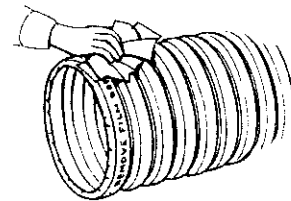
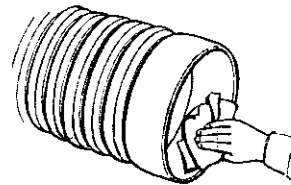


In installations not involving a subtrench, dragging a trench box should only be done if it does not damage the pipe or disrupt the backfill; otherwise, the box should be lifted vertically into its new position, again taking great care not to disturb the pipe or backfill.

Bell & Spigot Joint Assembly

For pipe with a bell-and-spigot connection, it is imperative that the joint be assembled properly to ensure that the product performs to expectations. The steps that must be followed to obtain a quality joint are provided below. Failure to follow these instructions may cause the joint quality to be severely compromised.

- Lower pipe into trench by hand, or use nylon straps and excavating equipment.
- Begin by inspecting the bell and remove any foreign matter.
- Use a clean rag or brush to lubricate bell of pipe lubricant.
- Clean spigot end of pipe.
- Remove protective wrap from gasket.
- Using clean rag or brush, lubricate exposed gasket with pipe lubricant.
- Do not allow lubricated section to touch dirt or backfill. Foreign matter could adhere to surface and compromise joint integrity.
- Place spigot into bell and align.
Note: It is recommended that one always lay pipe starting at the down stream end, pushing spigots into bells with the bells facing upstream. Always push spigot ends into bell, **not** bell end into spigot.

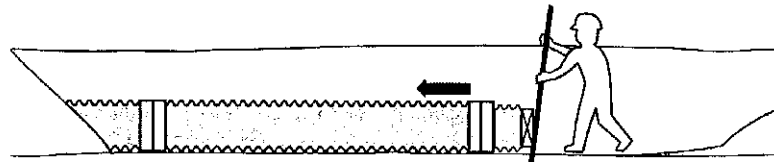


Assemble joint using one of the following methods. (For smaller diameters, pipe may be joined manually.)

- For all methods, ensure bell and spigot are adequately “homed” for proper installation and tight joining seal. If no homing mark is present, measure the depth of the bell and use a crayon or other material to place a homing mark on appropriate corrugation of the spigot end. Care should be taken to not over home the pipe during assembly.
- Installation stubs, mentioned in the assembly instructions, can be purchased or made following the information on page 15.
- Some high joint performance applications may require the joint to be held in place for a short time, immediately after insertion, to properly set the gasket.

Bar & Block Method

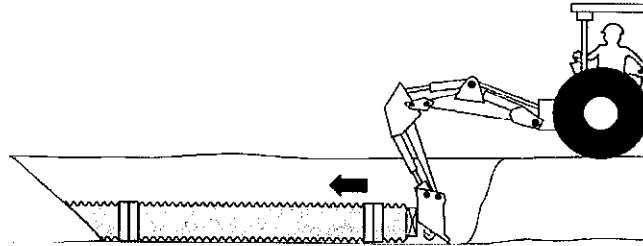
- Place installation stub into bell end of pipe.
- Place wooden block horizontally across end of installation stub.
- With a bar, push against wooden block until pipe is fully inserted into bell.



NOTE: This method requires use of installation stub. DO NOT push directly against pipe.

Backhoe Method

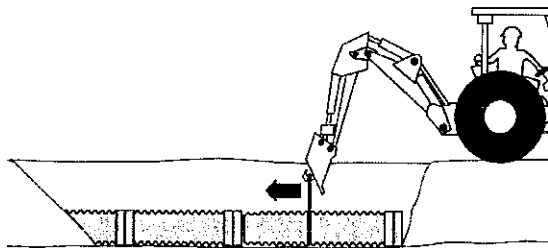
- Place installation stub into bell end of pipe.
- Place wooden block horizontally across installation stub.
- Carefully push back of backhoe bucket against block until pipe is fully inserted into bell.



NOTE: This method requires use of installation stub. DO NOT push backhoe directly against pipe.

Backhoe and Sling Method

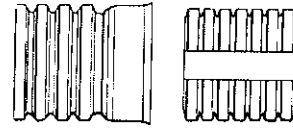
- Wrap nylon sling around pipe. Pipe 36" (900 mm) or larger should be picked up at two points approximately 10' (3m) apart.
- Hook other end of nylon sling to backhoe bucket.
- Operator should carefully push strap tight toward bell of downstream pipe until spigot is fully inserted into bell.
- Ensure pipe slides **squarely** into bell to avoid misalignment.
- **Keep pipe level.**



NOTE: Distance from bedding to bottom of pipe not to exceed 6" (150mm) for a 20' (6m) pipe.

Installation Stub Fabrication

To push “home” bell-and-spigot pipe, an installation stub can be used to prevent accidental damage to the bell. Installation stubs are not required if the bell is not pushed on directly. Installation stubs in all sizes are available from your distributor, or you can fabricate your own on site by following the proceeding steps:



- Cut a section of pipe five corrugations long in the center of the corrugation valley.
- Using a saw, remove a strip of pipe wall from the short stub of pipe (Figure 3).
Note: Strip width depends on pipe size.
See Table 3 for recommended widths.

Figure 3: Installation Stub

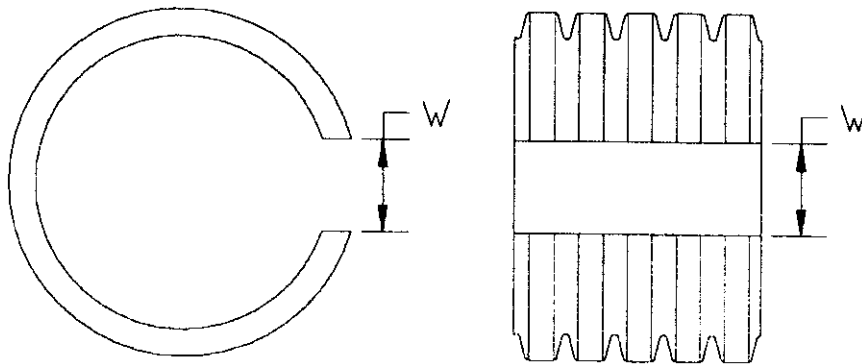


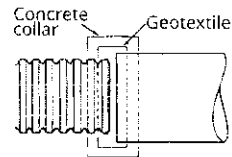
Table 3: Strip Width for Installation Stub

Pipe Diameter in (mm)	Trench Width in (mm)
4"-6" (100-150)	2 (51)
8" (200)	2.5" (64)
10"-12" (250-300)	4" (102)
15" (375)	5" (127)
18" (450)	6" (152)
24" (600)	7.5" (191)
30"-42" (750-1050)	10" (254)
48"-60" (1200-1500)	12" (305)

- To use stub, push on pipe walls to change O.D. of stub to I.D. of bell to be installed.

Joining Different Pipe Types or Sizes

Drainage systems often involve connecting pipes of different materials or sizes. Options to make these transitions are often limited by the joint quality required. One very common method of connecting different types of pipe of the same size, and in some cases different sizes, is through the use of a concrete collar. This generally provides a minimum silt-tight joint quality but the resulting quality ultimately depends on workmanship.



- A concrete collar is formed by butting the two pipe ends tightly together, wrapping the junction with a geotextile to keep out most soil and concrete, and then pouring a concrete collar that covers both pipe ends.

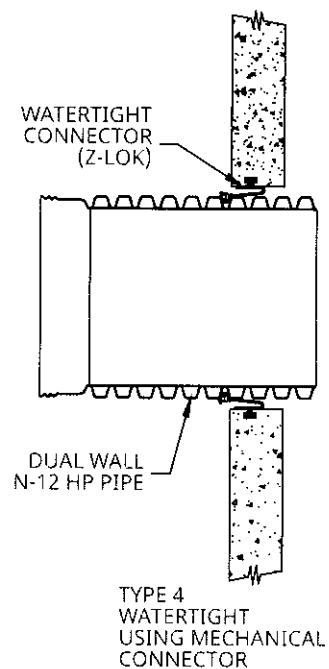
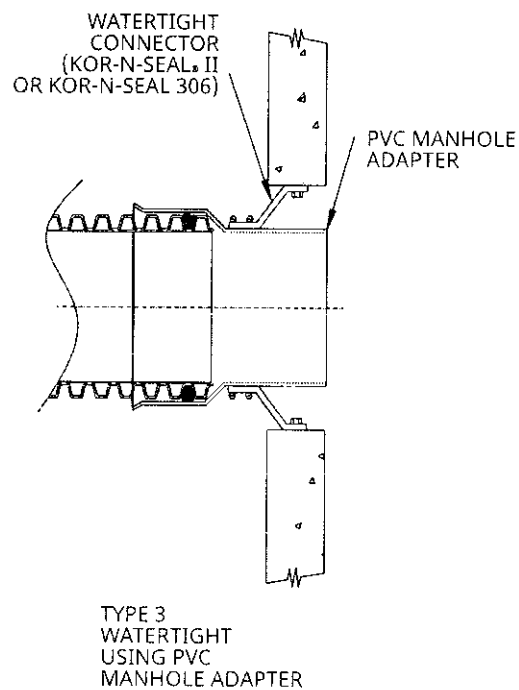
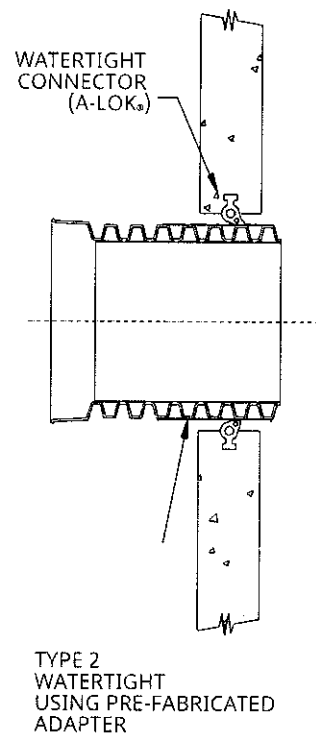
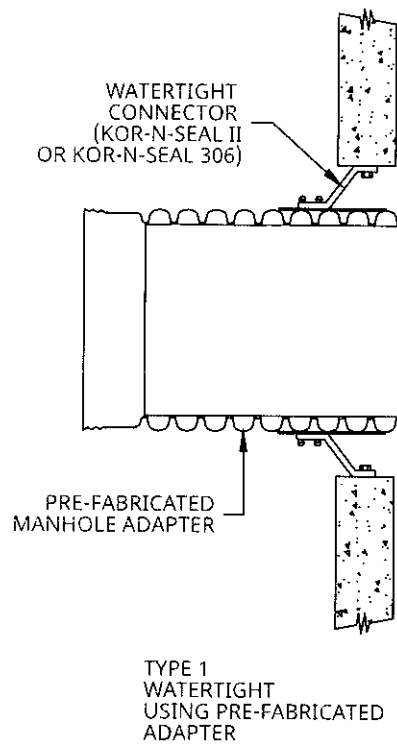
Another option may be using fittings or adapters specifically designed for this application. A selection of fittings designed to make the transition from one material directly to another is available. In other cases a fitting may need to be used in combination with another manufacturer's gasket or coupler to complete the transition. Transitions made in this manner may provide for a higher performance joint than a concrete collar.

Manholes and Catch Basin/Connections

Manholes or catch basins can be used at changes in pipe material, size, grade, direction and elevation. Manholes and catch basins can be more costly than other alternatives but also allow grade and directional changes in addition to changes in pipe material and size.

- Local regulations should be consulted to determine if manholes or catch basins are required at any or all pipe changes.
- Refer to Figure 4 for the acceptable methods of connecting plastic pipe to manholes or basins.
- See appendix for references to additional product specific resources applicable to connecting pipe to manholes.

Figure 4: Manhole Connection Product Details



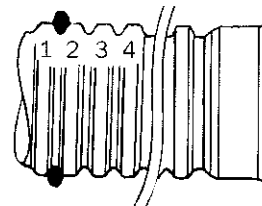
Field Gasket Assembly

When standard lengths of pipe must be cut to fit in a field application, the following instructions will ensure proper performing joints:

- For reduced spigot pipe ONLY, reducing spigot must be removed.
- Using a saw, cut in the center of the valley of the first full corrugation.
- Trim remaining plastic burrs from saw cut. *Note: Failure to smoothly trim burrs may compromise joint integrity.*
- Wipe clean first valley from end of pipe. *This is where gasket will be placed.*
- Hold gasket with both hands so printing is facing you.
- With printing on gasket face-up and toward spigot end of pipe, slide gasket into first corrugation valley, starting at bottom. *Note: It is easier to pull gasket up to conform to valley.*
- Slide gasket into first corrugation valley by hand.
- Ensure printing on gasket is face-up and toward spigot end of pipe.
- Vent tubes shall be appropriately scaled at joint where applicable, see *Technical Note 5.10: Integral Bell Transition for HDPE.*



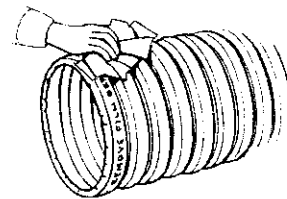
Gasket printing should be visible in this location when properly installed.



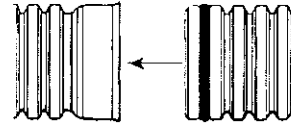
Fittings Assembly

This section includes information necessary for:

1. Soil-tight belled fittings
2. Watertight fittings
3. Repair couplers
 - Cut pipe to desired length in the center of the corrugation valley before placing in trench.
 - Trim remaining polyethylene burrs from saw cut. Note: Failure to smoothly trim burrs may compromise joint integrity.
 - Excavate bedding from around spigot end where fitting shall be used. A bell hole will help prevent dirt and debris from contaminating joint during assembly.
 - Install gasket in accordance with gasket assembly procedure (page 19).
 - Measure the depth of the bell and use a crayon or other material to place a homing mark on appropriate corrugation of the spigot end.
 - Vent tubes shall be appropriately sealed at joint where applicable, see *Technical Note 5.10: Integral Bell Transition for HDPE*.
 - Using clean rag or brush, lubricate exposed gasket with pipe lubricant.
 - Do not let lubricated section touch dirt or backfill, as foreign material could adhere to surface and compromise joint integrity.



- Inspect fitting and remove any foreign matter.
- Align and center pipe.
- Lubricate inside of bell.
- Align fitting with pipe end.
- Use installation stub or blocking where required.
- Take care not to damage pipe or fittings.
- Ensure pipe is straight and bell reaches homing mark.
- Assemble other end of pipe or fitting as described in the pipe assembly section on page 12.
- Special care should be taken to replace and compact bedding material in bell hole to provide adequate support under the joint.



Backfill Recommendations

Plastic pipe and a well-constructed backfill envelope work together to support soil and traffic loads. Correct installation will ensure long-term trouble-free service for all types of pipe systems.

Backfill Material Selection

- Provided the plans meet minimum recommendations as stated in Table 4, they should take precedence.
- Locally available materials may be acceptable for backfill use, but must meet one of the acceptable soil classifications outlined in Table 4.
- Class I materials can be dumped around pipe. Voids must be eliminated by knifing under and around pipe or by some other technique.
- Non-cohesive sand, sand/gravel mixes and other Class II and III materials must be compacted to a minimum of 85% and 90% standard Proctor density, respectively.
- Inorganic silts, and gravelly, sandy or silty clays, and other Class IV materials are not permitted.
- Flowable fill is another acceptable backfill material. Misalignment or flotation may occur unless added precautions are taken, such as anchoring the pipe or pouring the flowable fill in lifts.
- See appendix for references to additional product specific resources that may be used when installing corrugated plastic pipe.

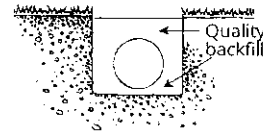
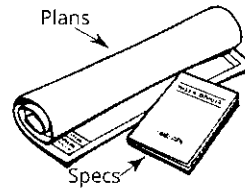


Table 4: Acceptable Backfill Material and Compaction Requirements

Description	Soil Classification			Minimum Standard Proctor Density %
	ASTM D2321	ASTM D2487	AASHTO M43	
Graded or crushed, crushed stone, gravel	Class I	-	5 56	Dumped
Well-graded sand, gravels and gravel/sand mixtures; poorly graded sand, gravels and gravel/sand mixtures; little or no fines	Class II	GW GP SW SP	57 6	85%
Silty or clayey gravels, gravel/sand/silt or gravel and clay mixtures; silty or clayey sands, sand/clay or sand/silt mixtures	Class III	GM GC SM SC	Gravel and sand (<10% fines)	90%

* Layer heights should not exceed ½ the pipe diameter. Layer heights may also need to be reduced to accommodate compaction method.

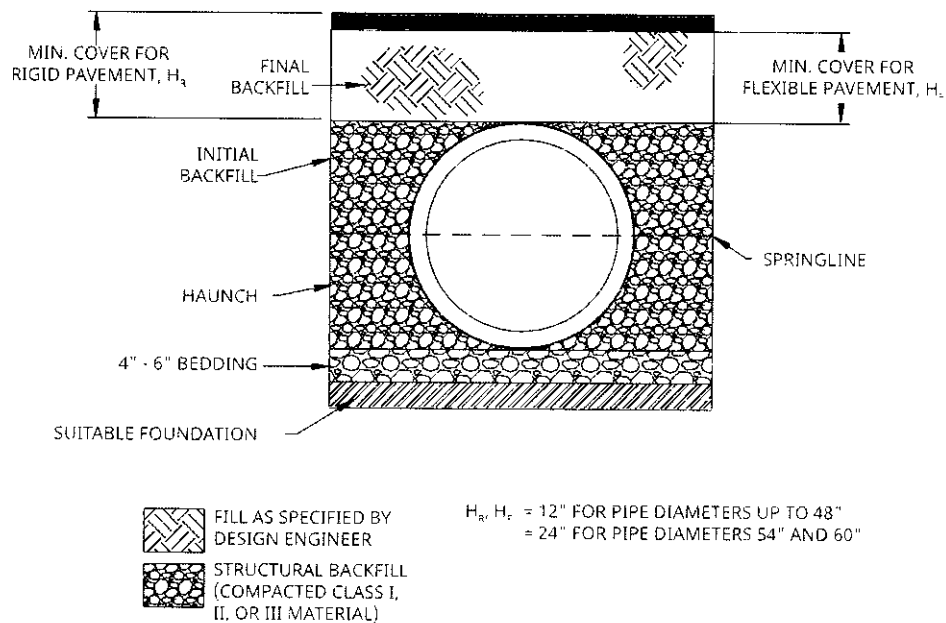
Groundwater or Surface Runoff

When groundwater or surface runoff is present in the work area, dewater to maintain stability of native and imported materials. Maintain water level below pipe foundation to provide a stable trench bottom.

Backfill Envelope Construction

- If native soil cannot carry load, import, compact and level adequate bedding material as in Figure 5.
- Figure 5 represents typical trench construction applicable to all products. See appendix for references to additional product specific resources.

Figure 5:



- Place and compact backfill in layers to meet requirements of Table 4 and project requirements. Note that the large diameter pipes may require layer heights less than those indicated in the table to achieve proper compaction.
- Avoid impacting pipe with compaction equipment.
- 4" - 48" (100-1200 mm) single pipe runs receiving H-25 traffic requires final backfill 12" (0.3 m) above initial backfill to provide at least 12" (0.3 m) of total cover as measured from the top of pipe to bottom of flexible pavement or to top of rigid pavement.
- 60" (1500 mm) single pipe runs receiving H-25 traffic require final backfill 24" (0.6 m) above initial backfill to provide at least 24" (0.6 m) of total cover as measured from top of the pipe to the bottom of flexible pavement or to top of rigid pavement.
- Minimum cover may be reduced in areas with no or infrequent light traffic. These situations must first be reviewed by the pipe manufacturer.

Other Installation Considerations

All unique situations cannot be anticipated; however, several common questions are answered in the following material.

Construction and Paving Traffic

- Some construction vehicles, such as many types of paving equipment, are not as heavy as the design load.
- For situations with relatively light construction vehicles, the 12" (0.3 m) and 24" (0.6 m) minimum covers criteria discussed earlier can be decreased during the construction phase.
- Table 5 presents the surface applied loads and the corresponding minimum cover that can be permitted on a temporary basis. *These criteria should only be employed during construction; finished projects should always have a minimum*

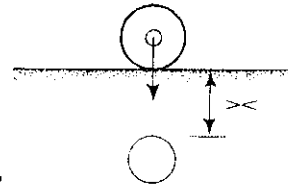


Table 5: Temporary Cover Requirements for Light Construction Traffic

Type of Vehicle	Vehicular Load at Surface psi (kPa) ASTM D2321	Temporary Minimum Cover in (mm) for:	
		4"-48" (100-1200) Diameter Pipe	54"-60" (1350-1500) Diameter Pipe
Semi-tractor ¹	75 (517)	9 (230)	12 (300)
Loaded pick-up truck ²	50 (345)	6 (150)	9 (230)
Skid steer loader ³	25 (172)	3 (80)	6 (15)

1. Based on typical 3-axel day-trip tractor without trailer.

2. Chevy® 3500 series, fully loaded.

3. Bobcat® T180 model skid steer loader.

cover of at least 12" (0.3 m) for 4" - 48" (100-1200 mm) diameters and minimum cover of at least 24" (0.6 m) for 60" (1500 mm) diameters.

- *Vehicles exceeding these criteria must not be permitted to drive over the installation.*
- Areas receiving heavy construction equipment traffic between 30 and 60 tons require at least 3 feet (0.9 m) of cover. Higher loads require cover greater than 3 feet (0.9 m), depending on the load.
- If sufficient cover is not provided, mound and compact material over pipe to provide minimum cover needed for load during construction.
- For heavy duty compaction equipment, such as a hoe-pack or equivalent type compactor, a minimum of 3 feet (0.9 m) of compacted backfill shall separate the pipe from the equipment.

Maximum Cover

The maximum burial depth is highly influenced by the type of backfill installed around the pipe. Maximum cover limits for dual wall HDPE pipe made to the requirements of AASHTO M252, M294 and ASTM F2306 are shown in Table 6 for a variety of backfill conditions. Maximum cover limits for HP pipe made to the requirements of ASTM F2881 and AASHTO M330 are shown in Table 7. Greater cover heights may be possible but should be reviewed by the Engineering Department.

Table 6: Maximum Cover for ADS N-12, N-12 ST & N-12 WT Pipe (per AASHTO) ft (m)

Diameter in (mm)	Class 1		Class 2			Class 3	
	Compacted	Dumped	95%	90%	85%	95%	90%
4" (100)	37 (11.3)	18 (5.5)	25 (7.6)	18 (5.5)	12 (3.7)	18 (5.5)	13 (4.0)
6" (150)	44 (13.4)	20 (6.1)	29 (8.8)	20 (6.1)	14 (4.3)	21 (6.4)	15 (4.6)
8" (200)	32 (9.8)	15 (4.6)	22 (6.7)	15 (4.6)	10 (3.0)	16 (4.9)	11 (3.4)
10" (250)	38 (11.6)	18 (5.5)	26 (7.9)	18 (5.5)	12 (3.7)	18 (5.5)	13 (4.0)
12" (300)	35 (10.7)	17 (5.2)	24 (7.3)	17 (5.2)	8 (2.4)	17 (5.2)	11 (3.4)
15" (375)	38 (11.6)	17 (5.2)	25 (7.6)	17 (5.2)	8 (2.4)	18 (5.5)	11 (3.4)
18" (450)	36 (11.0)	17 (5.2)	24 (7.3)	17 (5.2)	8 (2.4)	17 (5.2)	11 (3.4)
24" (600)	28 (8.5)	13 (4.0)	20 (6.1)	13 (4.0)	7 (2.1)	14 (4.3)	10 (3.0)
30" (750)	28 (8.5)	13 (4.0)	20 (6.1)	13 (4.0)	7 (2.1)	14 (4.3)	9 (2.7)
36" (900)	26 (7.9)	12 (3.7)	18 (5.5)	12 (3.7)	7 (2.1)	13 (4.0)	9 (2.7)
42" (1050)	23 (7.0)	11 (3.4)	16 (4.9)	11 (3.4)	7 (2.1)	11 (3.4)	7 (2.1)
48" (1200)	25 (7.6)	11 (3.4)	17 (5.2)	11 (3.4)	7 (2.1)	12 (3.7)	7 (2.1)
60" (1500)	25 (7.6)	11 (3.4)	17 (5.2)	11 (3.4)	6 (1.8)	12 (3.7)	7 (2.1)

Notes:

- Results based on calculations shown in the Structures section of the Drainage Handbook (N20.2). Calculations assume no hydrostatic pressure and a density of 120 pcf (1926 kg/m³) for overburden material.
- Installation assumed to be in accordance with ASTM D2321 and the installation section of the Drainage Handbook.
- For installations using lower quality backfill materials or lower compaction efforts, pipe deflection may exceed the 5% design limit; however controlled deflection may not be a structurally limiting factor for the pipe. For installations where deflection is critical, pipe placement techniques or periodic deflection measurements may be required to ensure satisfactory pipe installation.
- Backfill materials and compaction levels not shown in the table may also be acceptable. Contact ADS for further detail.
- Material must be adequately "knifed" into haunch and in between corrugations. Compaction and backfill material is assumed uniform throughout entire backfill zone.
- Compaction levels shown are for standard Proctor density.
- For projects where cover exceeds the maximum values listed above, contact ADS for specific design considerations.
- Calculations assume no hydrostatic pressure. Hydrostatic pressure will result in a reduction in allowable fill height. Reduction in allowable fill height must be assessed by the design engineer for the specific field conditions.
- Fill height for dumped Class I material incorporate an additional degree of conservatism that is difficult to assess due to the large degree of variation in the consolidation of this material as it is dumped. There is limited analytical data on its performance. For this reason, values as shown are estimated to be conservatively equivalent to Class 2, 90% SPD.

Table 7: Maximum Cover for ADS HP Storm Pipe with Uniform Backfill ft (m)

Diameter in (mm)	Class 1	Class 2			Class 3		Class 4
	Compacted	95%	90%	85% ³	95%	90% ³	95% ³
12" (300)	41 (12.5)	28 (8.5)	21 (6.4)	16 (4.9)	20 (6.1)	16 (4.9)	16 (4.9)
15" (375)	42 (12.8)	29 (8.8)	21 (6.4)	16 (4.9)	21 (6.4)	16 (4.9)	16 (4.9)
18" (450)	44 (13.4)	30 (9.1)	21 (6.4)	16 (4.9)	22 (6.7)	17 (5.2)	16 (4.9)
24" (600)	37 (11.3)	26 (7.9)	18 (5.5)	14 (4.3)	19 (5.8)	14 (4.3)	14 (4.3)
30" (750)	39 (11.9)	27 (8.2)	19 (5.8)	14 (4.3)	19 (5.8)	15 (4.6)	14 (4.3)
36" (900)	28 (8.5)	20 (6.1)	14 (4.3)	10 (3.0)	14 (4.3)	11 (3.4)	10 (3.0)
42" (1050)	30 (9.1)	21 (6.4)	14 (4.3)	10 (3.0)	15 (4.6)	11 (3.4)	10 (3.0)
48" (1200)	29 (8.8)	20 (6.1)	14 (4.3)	9 (2.7)	14 (4.3)	10 (3.0)	10 (3.0)
60" (1500)	29 (8.8)	20 (6.1)	14 (4.3)	9 (2.7)	14 (4.3)	10 (3.0)	9 (2.7)

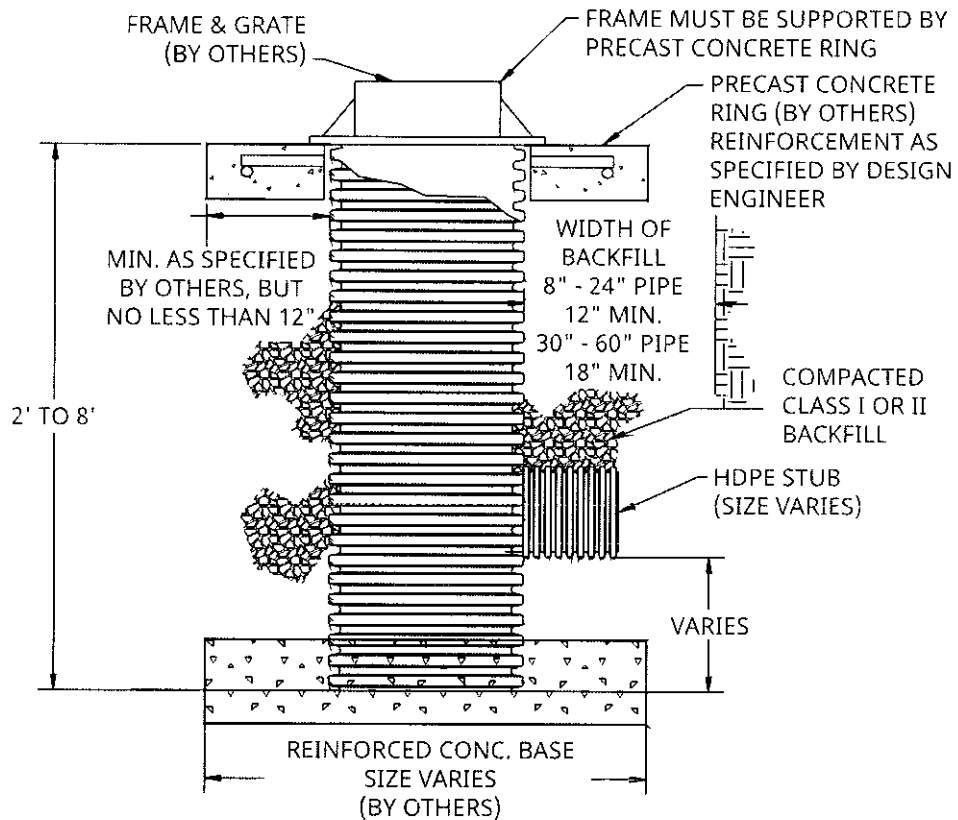
Notes:

- 1) Results based on calculations shown in the Structures section of the Drainage Handbook (v20.7). Calculations assume no hydrostatic pressure and a density of 120 pcf (1926 kg/m³) for overburden material.
- 2) Installation assumed to be in accordance with ASTM D2321 and the installation section of the Drainage Handbook.
- 3) For installations using lower quality backfill materials or lower compaction efforts, pipe deflection may exceed the 5% design limit; however controlled deflection may not be a structurally limiting factor for the pipe. For installation where deflection is critical, pipe placement techniques or periodic deflection measurements may be required to ensure satisfactory pipe installation.
- 4) Backfill materials and compaction levels not shown in the table may also be acceptable. Contact ADS for further detail.
- 5) Material must be adequately "knifed" into haunch and in between corrugations. Compaction and backfill material is assumed uniform throughout entire backfill zone.
- 6) Compaction levels shown are for standard Proctor density.
- 7) For projects where cover exceeds the maximum values listed above, contact ADS for specific design considerations.
- 9) See ADS Standard Detail STD-101D for additional details.

Vertical Installations

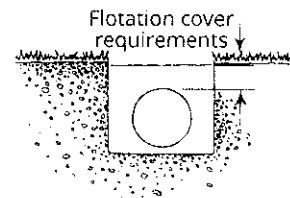
- Corrugated plastic pipe is sometimes installed vertically for use as catch basins or manholes, meter pits, and similar applications.
- Backfill should extend a minimum of 12" (300 mm) completely around the vertical structure.
- Backfill material recommendations are identical to those for a horizontal installation; compaction levels and maximum lift requirements must be strictly followed (refer to Table 4 for material selection).
- Height of the vertical structure must not exceed 8' (2.4 m), unless the Engineering Department reviews the design.
- If traffic will be driving over a vertical structure, a concrete collar similar to that shown in Figure 6 shall be used to transfer the load into the ground.
- Cast iron frames holding grates or lids must be seated on a concrete collar or similar structure so that the weight of the frame and grate or lid is transferred into the ground, *not* to the vertical pipe.
- There may also be other product performance limits depending on the application. Contact Engineering for further information.

Figure 6: Vertical Riser



Flotation

Table 8 shows minimum cover heights for various plastic pipe sizes to prevent flotation.



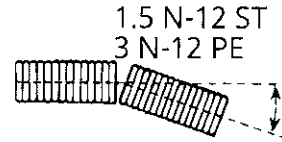
**Table 8: Required Minimum Cover*
to Prevent Flotation**

Pipe Type	Nominal Diameter in (mm)	Minimum Cover in (mm)
Dual Wall HDPE & HP	4" (100)	3" (77)
	6" (150)	4" (102)
	8" (200)	5" (127)
	10" (250)	7" (178)
	12" (300)	9" (228)
	15" (375)	11" (280)
	18" (450)	13" (330)
	24" (600)	17" (432)
	30" (750)	22" (559)
	36" (900)	25" (635)
Single Wall HDPE	42" (1050)	29" (737)
	48" (1200)	33" (838)
	60" (1500)	40" (1016)
	3" (75)	2" (50)
	4" (100)	3" (77)
	6" (150)	4" (102)
	8" (200)	6" (152)
	10" (250)	7" (178)
	12" (300)	9" (228)
	15" (375)	11" (280)
	18" (450)	13" (330)
	24" (600)	17" (432)

**Based on the pipe being completely empty, water table at the ground surface, soil density of 130 pcf (2083 kg/m³), and a soil friction angle appropriate for most sand/gravel mixtures. The average of the inside and outside diameters was used to determine soil and water displacement.*

Bending Radius

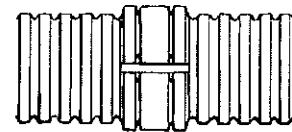
A curved pipe alignment is sometimes desired in pipe systems so that they can be installed around buildings or utilities without the use of fittings. Plastic pipe can be angled slightly at the joints to create this curvature. Coupling bands allow approximately 3° of angular misalignment at each joint, while each bell-and-spigot joint can accommodate 1-1.5° and remain at its specified joint quality. Additional information can be obtained through your Sales Representative or the Engineering Department.



Soil Tight Repair Methods

Option 1: Split Band Coupler

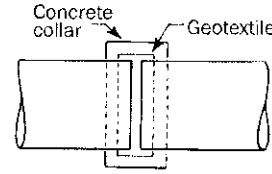
For repairs of 4" - 30" (100-750 mm) pipe with a damaged area less than 10% of the diameter of pipe in a non-trafficked area, use a split band coupler as described in the following steps:



- Center split band coupler around damaged section of pipe.
- Wrap the coupler around the pipe and tighten nylon straps.
- Carefully replace and compact bedding and backfill to provide proper support for pipe and coupler.

Option 2: Concrete Collar

For repairs of 4" - 60" (100-1500 mm) pipe with a damaged area less than 25% the diameter of pipe, use a concrete collar as described in the following steps:



- Excavate area beneath damaged section of pipe about 6" (0.15 m).
- Wrap the damaged area with a geotextile to completely cover the area to be repaired.
- Strut or brace damaged section as necessary.
- Encase damaged section of pipe with a concrete collar.
- Carefully replace bedding and backfill to provide proper support for pipe.

Option 3: Mastic Banding

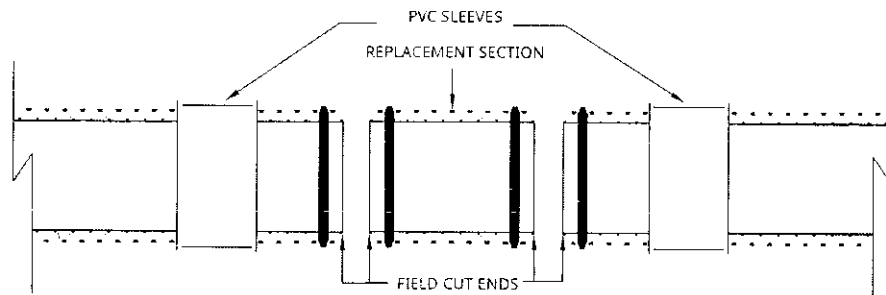
Typically with external sealing of 4" - 60" (100-1500 mm) pipe, a mastic material is used to wrap a small section of pipe. The use of the Mar-Mac® Polyseal Pipe Coupler by Mar-Mac Construction Products, Inc., or a comparable equal is recommended. This band is a self-adhering rubberized mastic that wraps around the damaged section or joint. A protective peelable paper is removed from the back of the band to expose a tacky mastic surface. The band is then adhered to the entire circumference of the pipe. Straps on the band tighten for a positive seal.

**Note: Mar-Mac bands shall be installed in accordance with manufacturer's recommendations.*

Watertight Repair Methods

Option 1: PVC Slip Coupling

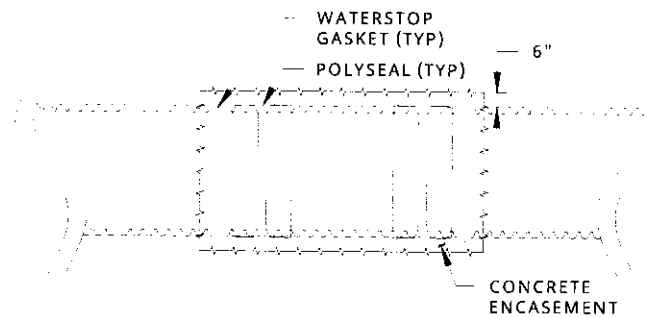
For repairs of 12" - 24" (300-600 mm) pipe, a PVC slip coupling is recommended. The PVC slip coupling is typically used when a damaged section of pipe is cut and removed in an existing line. Couplings provide a bell-bell connection to join the existing pipe to a replacement section of pipe or other end of the existing pipe. Installation of PVC slip coupling should follow recommendations listed on page 20.



Option 2: Concrete Collar

For 12" - 60" (300-1500 mm) pipe, a concrete collar can provide a water tight repair testable to most hydrostatic test with an appropriate leakage requirement. Installing a concrete collar involves building a form around the area to be repaired and encasing it in concrete. A *Mar Mac® Polyseal Pipe Coupler* is wrapped around the repair area or joint prior to pouring the collar to keep the concrete from seeping into the pipe. *WaterStop* gaskets are installed outside of the *Polyseal* coupler towards the outside edge of the concrete collar. Typically, approximately

6" (150 mm) is excavated beneath the pipe to allow for proper application of the Polyseal coupler and a concrete encasement. If the pipe itself is damaged, the damaged area shall be removed and a replacement pipe section spliced in prior to pouring the collar.



Option 3: Chemical Grouting

For repairs of 4" - 60" (100-1500 mm) pipe with improperly assembled joints, chemical grouting can be considered an optional repair method. Chemical grout creates a waterproof collar around leaking pipes and joints.

Option 4: Internal Sealing

For repairs of 18"-60" (450-1500 mm) pipe with a damaged area on the interior, a repair with internal sealing methods may be used. Internal mechanical sealing is usually comprised of a metal band with a rubber gasket, which expands to conform to the inner wall of the pipe. The feasibility of this repair method depends on the size of the damaged section or joint and available access into the pipe.

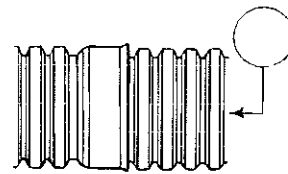
Recommendations for In-Field Testing

Normally, a visual inspection is all that is necessary to identify proper line and excessive deflection. If it is determined that additional in-field testing is necessary, the following criteria or methods should be used:



Leakage Testing (where applicable):

After watertight pipe has been installed, sections of pipe may be tested for leakage. When required, pipe shall be tested by water infiltration or by air pressure. The test method must be in accordance with ASTM F2487 for water and F1417 or F3058 for air.



Deflection Testing:

If considered necessary, pipe deflection can be tested within 30 days of installation by pulling a mandrel through the installed pipe. Testing 10% of the overall project should provide a reasonable indication of installation quality. Table 8 lists the inside diameters that result from common testing limits of 5% and 7.5% deflection. Mandrel tests yield only pass/fail results and can provide misleading results. Before excavating, further investigate to make sure the problem is not being caused by foreign material in the pipe, a slightly offset joint, or some other similar situation.

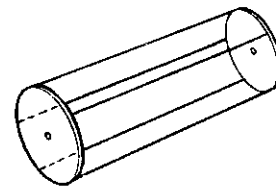


Table 9: HDPE Pipe Base Inside Diameters

Nominal Pipe Diameter in (mm)	Base Inside Diameter in (mm)	Base Inside Diameter with 5% Deflection in (mm)	Base Inside Diameter with 7.5% Deflection in (mm)
4" (100)	3.88 (99)	3.68 (93)	3.59 (91)
6" (150)	5.82 (148)	5.53 (140)	5.38 (137)
8" (200)	7.76 (197)	7.37 (187)	7.17 (182)
10" (250)	9.69 (246)	9.21 (234)	8.97 (228)
12" (300)	11.63 (295)	11.05 (281)	10.76 (273)
15" (375)	14.54 (369)	13.82 (351)	13.45 (342)
18" (450)	17.45 (443)	16.58 (421)	16.14 (410)
24" (600)	23.27 (591)	22.10 (561)	21.52 (547)
30" (750)	29.08 (739)	27.63 (702)	26.90 (683)
36" (900)	34.90 (886)	33.16 (842)	32.28 (820)
42" (1050)	40.72 (1034)	38.68 (982)	37.66 (957)
48" (1200)	46.54 (1182)	44.21 (1123)	43.05 (1093)
60" (1500)	58.17 (1478)	55.26 (1404)	53.81 (1367)

* Value is per AASHTO M252¹ (4"-10" diameter) and AASHTO M294² (12"-60" diameter). If designing to a specific standard, please review allowable minimum diameter.

All sales of our product are subject to a limited warranty and purchasers are solely responsible for installation and use of our products and determining whether a product is suited for any specific needs. Please consult a full copy of the Terms and Conditions of Sale at adspipe.com.

Appendix

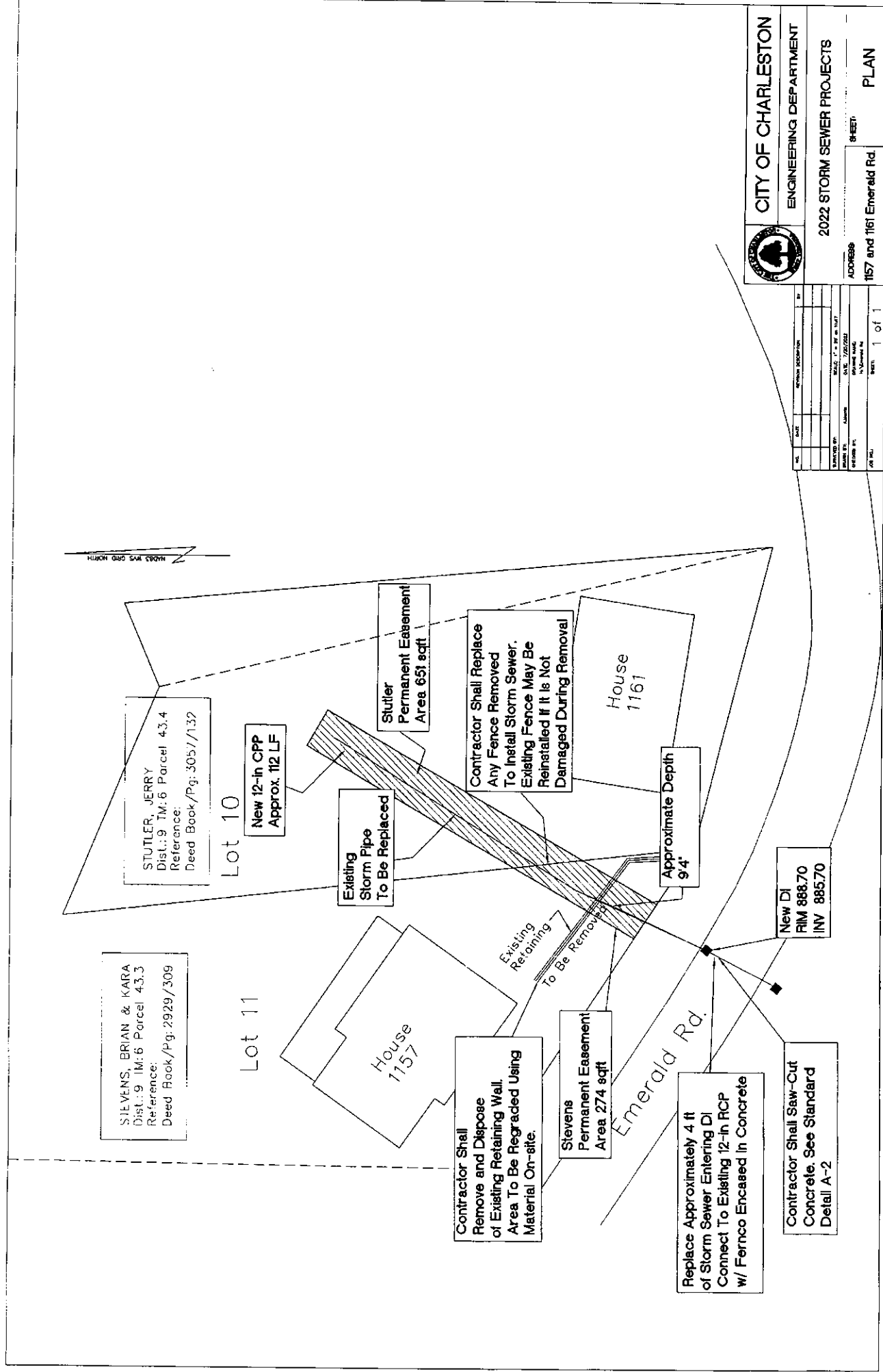
All product specific resources are available from the manufacturer's web site: adspipe.com

- Drainage Handbook
- Technical Note 2.01 Minimum and Maximum Burial Depths for HDPE Pipe per AASHTO
- Technical Note 2.02 Minimum and Maximum Burial Depths for ASTM F2648 Pipe
- Technical Note 2.03 Minimum and Maximum Burial Depths for Single Wall HDPE
- Technical Note 2.04 Minimum and Maximum Burial Depths for HP Storm for Storm Drainage
- Technical Note 5.01 Recommended Use for Trench Boxes
- Technical Note 5.02 Flowable Fill Backfill for Thermoplastic Pipe
- Technical Note 5.03 HDPE Pipe Repair Options
- Technical Note 5.04 HDPE and HP Storm Connections to Manholes and Structures
- Technical Note 5.05 Pipe Flotation
- Technical Note 5.06 Culvert Sliplining with HDPE Pipe
- Technical Note 5.07 Post-Installation Testing for HDPE
- Technical Note 5.10 Integral Bell Transition
- Technical Note 5.11 Sliplining Extended Lengths with HDPE Pipe
- Technical Note 5.12 HP Storm Drainage Pipe Repair Options
- Technical Note 5.14 Culvert Sliplining with HP Pipe
- STD-100 series, Trench Installation Details for N-12, HP Storm and SaniTite HP
- STD-200 series, Manhole Connection Details for N-12, HP Storm and SaniTite HP
- STD-600 series, Adapting to Dissimilar Materials



adspipe.com

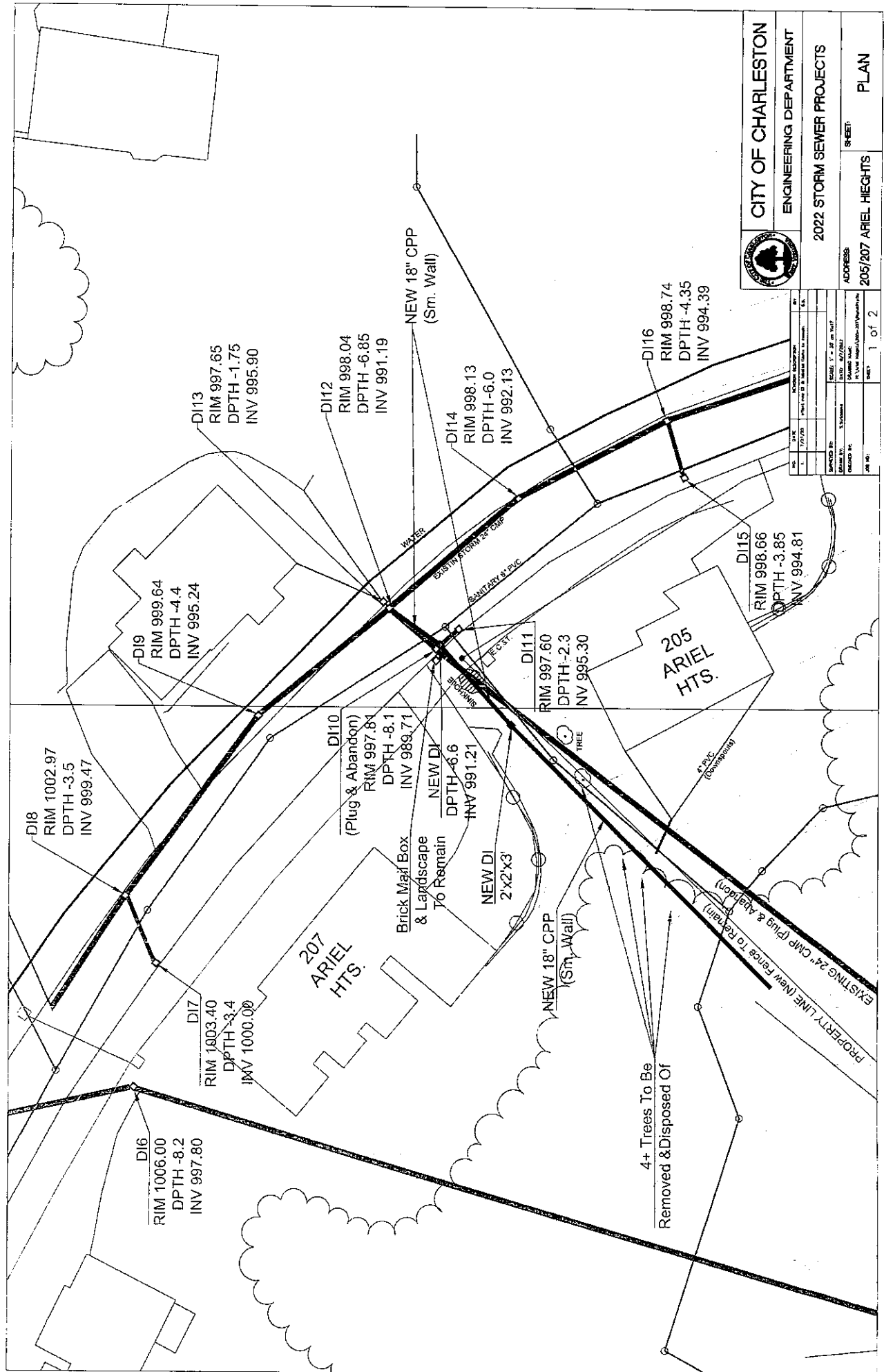
800-821-6710




North Arrow

CITY OF CHARLESTON
 ENGINEERING DEPARTMENT
 2022 STORM SEWER PROJECTS
 ADDRESS: 1157 and 1161 Emerald Rd.
 SHEET: 1 of 1

NO.	DATE	REVISION DESCRIPTION
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CITY OF CHARLESTON
ENGINEERING DEPARTMENT

2022 STORM SEWER PROJECTS

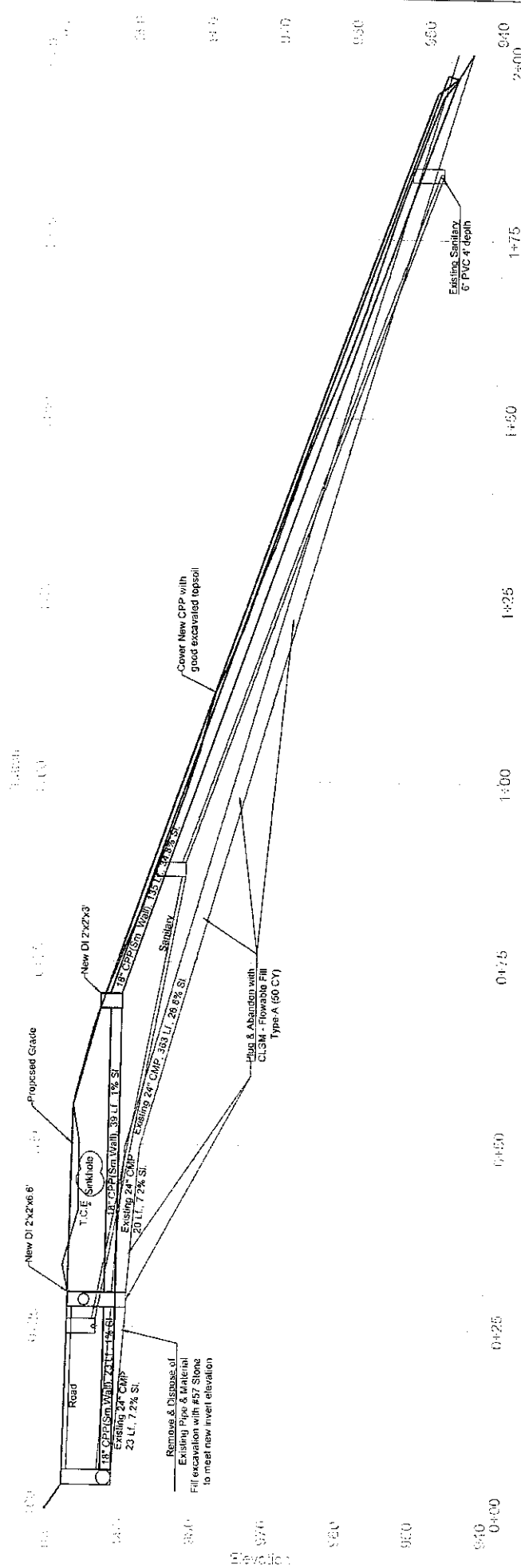
ADDRESS: 205/207 ARIEL HEIGHTS


SHEET: 1 of 2

PLAN

DATE: 11/1/2021	SCALE: 1" = 30' (AS SHOWN)	DESIGNED BY: J. J. JONES	CHECKED BY: J. J. JONES
DATE: 11/1/2021	SCALE: 1" = 30' (AS SHOWN)	DESIGNED BY: J. J. JONES	CHECKED BY: J. J. JONES
DATE: 11/1/2021	SCALE: 1" = 30' (AS SHOWN)	DESIGNED BY: J. J. JONES	CHECKED BY: J. J. JONES
DATE: 11/1/2021	SCALE: 1" = 30' (AS SHOWN)	DESIGNED BY: J. J. JONES	CHECKED BY: J. J. JONES

205/207 ARIEL HILLS PROFILE





CITY OF CHARLESTON

ENGINEERING DEPARTMENT

2022 STORM SEWER PROJECTS

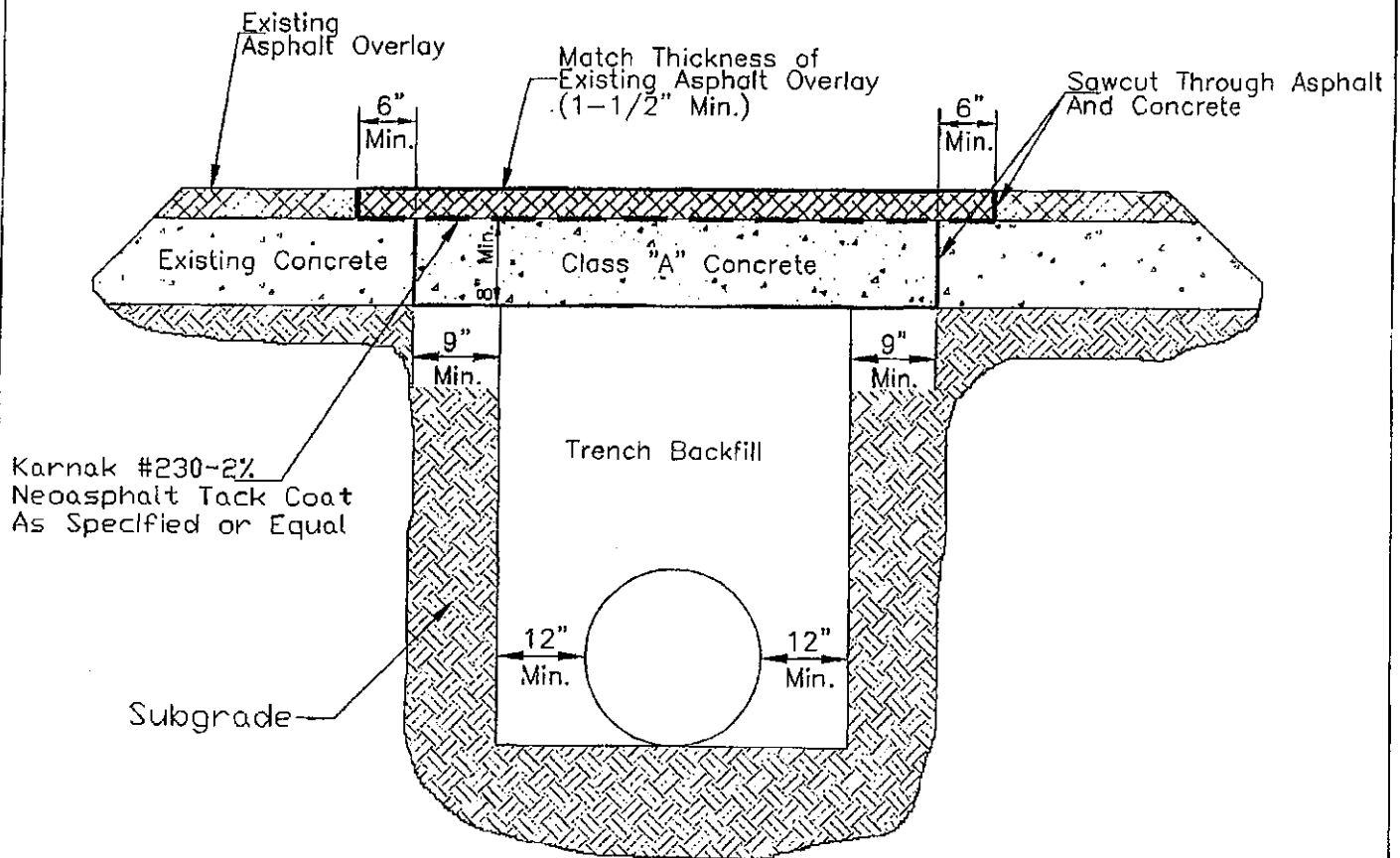
ADDRESS: 205/207 ARIEL HEIGHTS

SHEET: PROFILE

NO.	DATE	REVISION DESCRIPTION	BY
1.	7/7/22	changed data to match real	S.S.

SHEETED BY:	SCALE:	As Shown
DRAWN BY:	DATE:	8/7/2022
CHECKED BY:	DESIGN NAME:	
	14 West Highland - 207/208/209/210	
DWG NO:	SHEET: 2 of 2	

CITY OF CHARLESTON STANDARD DETAIL A-1 FOR ASPHALT OVER CONCRETE STREET RESTORATION



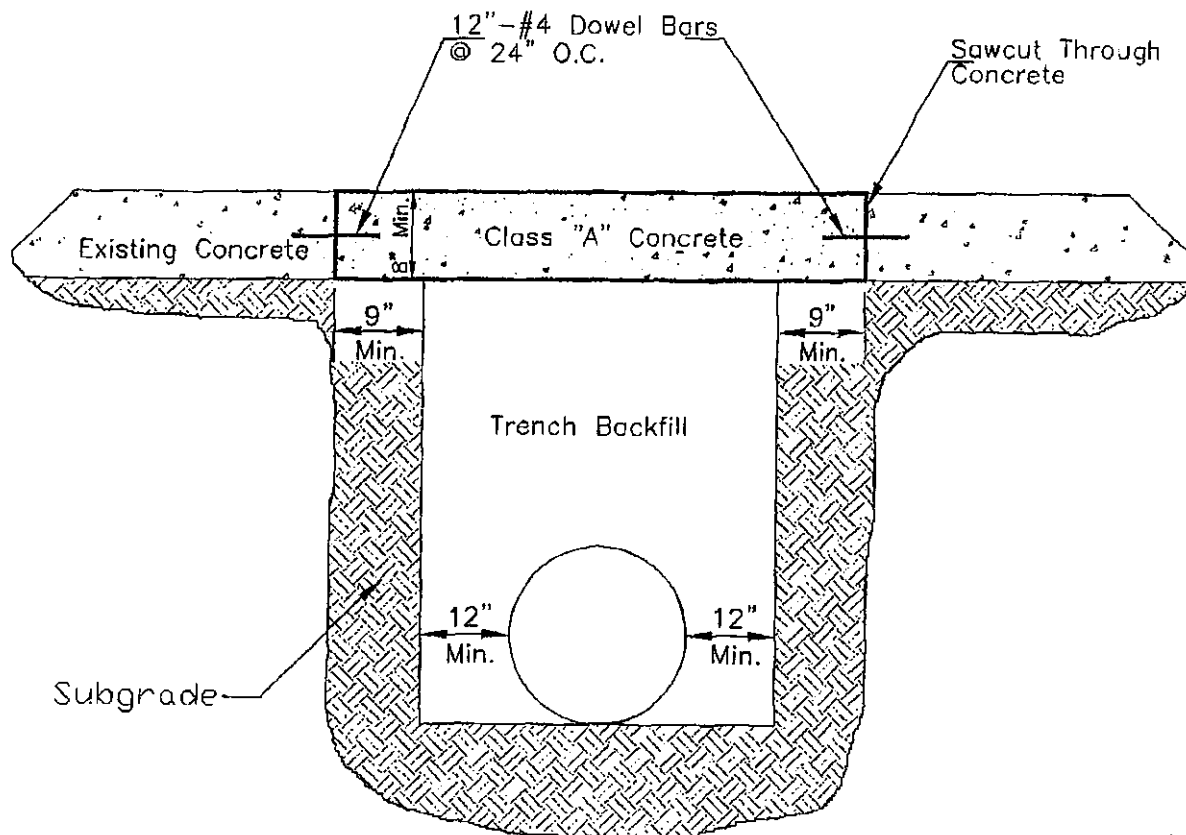
NOTES:

Decrease width of excavation by 6" on each side of trench if CLSM is used.

Concrete is to be removed to the construction or expansion joint if repairs are done within 2' of the joints.

Use 1/2" dia., 18" long, corrosion-resistant dowels, 24" on-center if existing concrete street is 6" thick or greater.

CITY OF CHARLESTON STANDARD DETAIL A-2 FOR CONCRETE STREET RESTORATION



NOTES:

Decrease width of excavation by 6" on each side of trench if CLSM is used.

Concrete is to be removed to the construction or expansion joint if repairs are done within 2' of the joints.

Use 1/2" dia., 18" long, corrosion-resistant dowels, 24" on-center if existing concrete street is 6" thick or greater.

Seal perimeter of concrete area repaired with an approved silicone sealant