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FULTON COUNTY

CONTRACT DOCUMENTS FOR

25RFP021025K-CRB

Progressive Design/Build for Boat Rock Road Sanitary Sewer Extension – Phase 1

For

Public Works Department

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BUSINESS SEARCH

BUSINESS INFORMATION

Business Name:	**GARNEY COMPANIES, INC.**	Control Number:	**J651366**
Business Type:	**Domestic Profit Corporation**	Business Status:	**Active/Compliance**
Business Purpose:	**NONE**		
Principal Office Address:	**1700 Swift Street, Suite 200, North Kansas City, MO, 64116, USA**	Date of Formation / Registration Date:	**6/9/1986**
State of Formation:	**Missouri**	Last Annual Registration Year:	**2026**

REGISTERED AGENT INFORMATION

Registered Agent Name: **INCORP SERVICES, INC.**

Physical Address: **9040 Roswell Road, Suite 500, Atlanta, GA, 30350, USA**

County: **Fulton**

OFFICER INFORMATION

Name	Title	Business Address
Daniel Kling	CFO	1700 Swift Street, Suite 200, North Kansas City, MO, 64116, USA
David Burkhart	CEO	1700 Swift Street, Suite 200, North Kansas City, MO, 64116, USA
Natalie Dees	Secretary	1700 Swift Street, Suite 200, North Kansas City, MO, 64116, USA

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Exhibits

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EXHIBIT B:	**SPECIAL CONDITIONS**
EXHIBIT C:	**SCOPE OF WORK**
EXHIBIT D:	**PROJECT DELIVERABLES**
EXHIBIT E:	**COMPENSATION**
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CONTRACT AGREEMENT

Consultant: **Garney Companies, Inc.**

Contract No.: **25RFP021025K-CRB – Progressive Design/Build for Boat Rock Road Sanitary Sewer Extension**

Address: **1095 Windward Ridge Pkwy, Suite 140**
City, State: **Alpharetta, GA 30005**

Telephone: **913.617.1763**

Email: **bpage@garney.com**

Contact: **Billy Page**
Progressive Design-Build Manager

This Agreement made and entered into effective the 17th day of December, 2025 by and between **FULTON COUNTY, GEORGIA**, a political subdivision of the State of Georgia, hereinafter referred to as **"County"**, and **Garney Companies, Inc.**, hereinafter referred to as **"Consultant"**, authorized to transact business in the State of Georgia**.**

WITNESSETH

WHEREAS, County through its **Public Works Department** hereinafter referred to as the **"Department"**, desires to retain a qualified and experienced Consultant to perform **Progressive Design/Build for Boat Rock Road Sanitary Sewer Extension – Phase 1**, hereinafter, referred to as the **"Project"**.

WHEREAS, Consultant has represented to County that it is experienced and has qualified and local staff available to commit to the Project and County has relied upon such representations.

NOW THEREFORE, for and in consideration of the mutual covenants contained herein, and for other good and valuable consideration, County and Consultant agree as follows:

ARTICLE 1. CONTRACT DOCUMENTS

County hereby engages Consultant, and Consultant hereby agrees, to perform the services hereinafter set forth in accordance with this Agreement, consisting of the following contract documents:

I. Form of Agreement;
II. Addenda;
III. Exhibit A: General Conditions;
IV. Exhibit B: Special Conditions
V. Exhibit C: Scope of Work
VI. Exhibit D: Project Deliverables;
VII. Exhibit E: Compensation;
VIII. Exhibit F: Purchasing Forms
IX. Exhibit G: Office of Contract Compliance Forms;
X. Exhibit H: Insurance and Risk Management Forms
XI. Exhibit I: Exhibits

The foregoing documents constitute the entire Agreement of the parties pertaining to the Project hereof and is intended as a complete and exclusive statement of promises, representations, discussions and agreements oral

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or otherwise that have been made in connection therewith. No modifications or amendment to this Agreement shall be binding upon the parties unless the same is in writing, conforms to Fulton County Purchasing Code §102-420 governing change orders, is signed by the County's and the Consultant's duly authorized representatives, and entered upon the meeting minutes of the Fulton County Board of Commissioners.

If any portion of the Contract Documents shall be in conflict with any other portion, the various documents comprising the Contract Documents shall govern in the following order of precedence: 1) the Agreement, 2) the RFP, 3) any Addenda, 4) change orders, 5) the exhibits, and 6) portions of Consultant's proposal that was accepted by the County and made a part of the Contract Documents.

The Agreement was approved by the Fulton County Board of Commissioners on **December 17, 2025, BOC#25-0978.**

ARTICLE 2. SEVERABILITY

If any provision of this Agreement is held to be unenforceable for any reason, the unenforceability thereof shall not affect the remainder of the Agreement, which shall remain in full force and effect, and enforceable in accordance with its terms.

ARTICLE 3. DESCRIPTION OF PROJECT

County and Consultant agree the Project is to perform **Progressive Design/Build for Boat Rock Road Sanitary Sewer Extension – Phase 1** services. All exhibits referenced in this agreement are incorporated by reference and constitute an integral part of this Agreement as if they were contained herein.

ARTICLE 4. SCOPE OF WORK

Unless modified in writing by both parties in the manner specified in the agreement, duties of Consultant shall not be construed to exceed those services specifically set forth herein. Consultant agrees to provide all services, products, and data and to perform all tasks described in Exhibit C, Scope of Work.

ARTICLE 5. DELIVERABLES

Consultant shall deliver to County all reports prepared under the terms of this Agreement that are specified in Exhibit D, Project Deliverables. Consultant shall provide to County all deliverables specified in Exhibit D, Project Deliverables. Deliverables shall be furnished to County by Consultant in a media of form that is acceptable and usable by County at no additional cost at the end of the project.

ARTICLE 6. SERVICES PROVIDED BY COUNTY

Consultant shall gather from County all available non-privileged data and information pertinent to the performance of the services for the Project. Certain services as described in Exhibit C, Scope of Work, if required, will be performed and furnished by County in a timely manner so as not to unduly delay Consultant in the performance of said obligations. County shall have the final decision as to what data and information is pertinent.

County will appoint in writing a County authorized representative with respect to work to be performed under this Agreement until County gives written notice of the appointment of a successor. The County's authorized representative shall have complete authority to transmit instructions, receive information, and define County's policies, consistent with County rules and regulations. Consultant may rely upon written consents and approvals signed by County's authorized representative that are consistent with County rules and regulations.

ARTICLE 7. MODIFICATIONS

If during the course of performing the Project, County and Consultant agree that it is necessary to make changes in the Project as described herein and referenced exhibits, such changes will be incorporated by written

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amendments in the form of Change Orders to this Agreement. Any such Change Order and/or supplemental agreement shall not become effective or binding unless approved by the Board of Commissioners and entered on the minutes. Such modifications shall conform to the requirements of Fulton County Purchasing Code §102-420 which is incorporated by reference herein.

ARTICLE 8. SCHEDULE OF WORK

Consultant shall not proceed to furnish such services and County shall not become obligated to pay for same until a written authorization to proceed (Notice to Proceed) has been sent to Consultant from County. The Consultant shall begin work under this Agreement no later than five (5) days after the effective date of notice to proceed.

ARTICLE 9. CONTRACT TERM

Design-Builder shall commence the work for Phase 1 upon issuance of the Notice to Proceed ("NTP") and shall complete the work for Phase 1 in 180 days.

ARTICLE 10. COMPENSATION

Compensation for work performed by Consultant on Project shall be in accordance with the payment provisions and compensation schedule, attached as Exhibit E, Compensation.

The total contract amount for the Project shall not exceed $637,000.00 (Six Hundred Thirty-Seven Thousand Dollars and Zero Cents), which is full payment for a complete scope of work.

ARTICLE 11. PERSONNEL AND EQUIPMENT

Consultant shall designate in writing a person(s) to serve as its authorized representative(s) who shall have sole authority to represent Consultant on all manners pertaining to this contract.

Consultant represents that it has secured or will secure, at its' own expense, all equipment and personnel necessary to complete this Agreement, none of whom shall be employees of or have any contractual relationship with County. All of the services required hereunder will be performed by Consultant under his supervision and all personnel engaged in the work shall be fully qualified and shall be authorized or permitted under law to perform such services.

Written notification shall be immediately provided to County upon change or severance of any of the authorized representative(s), listed key personnel or sub-consultant performing services on this Project by Consultant. No changes or substitutions shall be permitted in Consultant's key personnel or sub-consultant as set forth herein without the prior written approval of the County. Requests for changes in key personnel or sub-consultants will not be unreasonably withheld by County.

ARTICLE 12. SUSPENSION OF WORK

Suspension Notice: The County may by written notice to the Consultant, suspend at any time the performance of all or any portion of the services to be performed under this Agreement. Upon receipt of a suspension notice, the Consultant must, unless the notice requires otherwise:

1) Immediately discontinue suspended services on the date and to the extent specified in the notice;
2) Place no further orders or subcontracts for material, services or facilities with respect to suspended services, other than to the extent required in the notice; and
3) Take any other reasonable steps to minimize costs associated with the suspension.

Notice to Resume: Upon receipt of notice to resume suspended services, the Consultant will immediately resume performance under this Agreement as required in the notice.

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ARTICLE 13. **DISPUTES**

Except as otherwise provided in this Agreement, any dispute concerning a question of fact arising under this contract which is not disposed of by agreement shall be decided by the County. The representative shall reduce the decision to writing and mail or otherwise furnish a copy thereof to the Consultant. The Consultant shall have 30 days from date the decision is sent to appeal the decision to the County Manager or his designee by mailing or otherwise furnishing to the County Manager or designee, copy of the written appeal. The decision of the County Manager or his designee for the determination of such appeal shall be final and conclusive. Pending any final decision of a dispute hereunder, Consultant shall proceed diligently with performance of the Agreement and in accordance with the decision of the County's designated representative.

ARTICLE 14. **TERMINATION OF AGREEMENT FOR CAUSE**

(1) Either County or Consultant may terminate work under this Agreement in the event the other party fails to perform in accordance with the provisions of the Agreement. Any party seeking to terminate this Agreement is required to give thirty (30) days prior written notice to the other party.

(2) Notice of termination shall be delivered by certified mail with receipt for delivery returned to the sender.

(3) **TIME IS OF THE ESSENCE** and if the Consultant refuses or fails to perform the work as specified in Exhibit C, Scope of Work and maintain the scheduled level of effort as proposed, or any separable part thereof, with such diligence as will insure completion of the work within the specified time period, or any extension or tolling thereof, or fails to complete said work within such time. The County may exercise any remedy available under law or this Agreement. Failure to maintain the scheduled level of effort as proposed or deviation from the aforesaid proposal without prior approval of County shall constitute cause for termination

(4) The County may, by written notice to Consultant, terminate Consultant's right to proceed with the Project or such part of the Project as to which there has been delay. In such event, the County may take over the work and perform the same to completion, by contract or otherwise, and Consultant shall be required to provide all copies of finished or unfinished documents prepared by Consultant under this Agreement to the County as stated in Exhibit D, "Project Deliverables".

(5) Consultant shall be entitled to receive compensation for any satisfactory work completed on such documents as reasonably determined by the County.

(6) Whether or not the Consultant's right to proceed with the work has been terminated, the Consultant shall be liable for any damage to the County resulting from the Consultant's refusal or failure to complete the work within the specified time period, and said damages shall include, but not be limited to, any additional costs associated with the County obtaining the services of another Consultant to complete the project.

ARTICLE 15. **TERMINATION FOR CONVENIENCE OF COUNTY**

Notwithstanding any other provisions, the County may terminate this Agreement for its convenience at any time by a written notice to Consultant. If the Agreement is terminated for convenience by the County, as provided in this article, Consultant will be paid compensation for those services actually performed. Partially completed tasks will be compensated for based on a signed statement of completion to be submitted by Consultant which shall itemize each task element and briefly state what work has been completed and what work remains to be done.

If, after termination, it is determined that the Consultant was not in default, or that the default was excusable, the rights and obligations of the parties shall be the same as if the termination had been issued for the convenience of the government.

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ARTICLE 16. WAIVER OF BREACH

The waiver by either party of a breach or violation of any provision of this Agreement, shall not operate or be construed to be, a waiver of any subsequent breach or violation of the same or other provision thereof.

ARTICLE 17. INDEPENDENT CONSULTANT

Consultant shall perform the services under this Agreement as an independent Consultant and nothing contained herein shall be construed to be inconsistent with such relationship or status. Nothing in this Agreement shall be interpreted or construed to constitute Consultant or any of its agents or employees to be the agent, employee or representative of County.

ARTICLE 18. PROFESSIONAL RESPONSIBILITY

Consultant represents that it has, or will secure at its own expenses, all personnel appropriate to perform all work to be completed under this Agreement;

All the services required hereunder will be performed by Consultant or under the direct supervision of Consultant. All personnel engaged in the Project by Consultant shall be fully qualified and shall be authorized or permitted under applicable State and local law to perform such services.

None of the work or services covered by this Agreement shall be transferred, assigned, or subcontracted by Consultant without the prior written consent of the County.

ARTICLE 19. COOPERATION WITH OTHER CONSULTANTS

Consultant will undertake the Project in cooperation with and in coordination with other studies, projects or related work performed for, with or by County's employees, appointed committee(s) or other Consultants. Consultant shall fully cooperate with such other related Consultants and County employees or appointed committees. Consultant shall provide within his schedule of work, time and effort to coordinate with other Consultants under contract with County. Consultant shall not commit or permit any act, which will interfere with the performance of work by any other consultant or by County employees. Consultant shall not be liable or responsible for the delays of third parties not under its control nor affiliated with the Consultant in any manner.

ARTICLE 20. ACCURACY OF WORK

Consultant shall be responsible for the accuracy of his work and shall promptly correct its errors and omissions without additional compensation. Acceptance of the work by the County will not relieve Consultant of the responsibility of subsequent corrections of any errors and the clarification of any ambiguities. Consultant shall prepare any plans, report, fieldwork, or data required by County to correct its errors or omissions. The above consultation, clarification or correction shall be made without added compensation to Consultant. Consultant shall give immediate attention to these changes so there will be a minimum of delay to others.

ARTICLE 21. REVIEW OF WORK

Authorized representatives of County may at all reasonable times review and inspect Project activities and data collected under this Agreement and amendments thereto. All reports, drawings, studies, specifications, estimates, maps and computations prepared by or for Consultant, shall be available to authorized representatives of County for inspection and review at all reasonable times in the main office of County. Acceptance shall not relieve Consultant of its professional obligation to correct, at its expense, any of its errors in work. County may request at any time and Consultant shall produce progress prints or copies of any work as performed under this Agreement. Refusal by Consultant to submit progress reports and/or plans shall be cause for County, without any liability thereof, to withhold payment to consultant until Consultant complies with County's request in this regard. County's review recommendations shall be incorporated into the plans by Consultant.

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ARTICLE 22. **INDEMNIFICATION**

22.1 Professional Services Indemnification. With respect to liability, damages, costs, expenses (including reasonable attorney's fees and expenses incurred by any of them), claims, suits and judgments that arise or are alleged to arise out of the Consultant's acts, errors, or omissions in the performance of professional services, the Consultant shall indemnify, release, and hold harmless Fulton County, its Commissioners and their respective officers, members, employees and agents (each, hereinafter referred to as an "Indemnified Person"), from and against liability, damages, costs, expenses (including reasonable attorney's fees and expenses incurred by any of them), claims, suits and judgments only to the extent such liability is caused by the negligence of the Consultant in the delivery of the Work under this Agreement, but such indemnity is limited to those liabilities caused by a Negligent Professional Act, as defined below. This indemnification survives the termination of this Agreement and shall also survive the dissolution or to the extent allowed by law, the bankruptcy of Consultant.

For the purposes of the Professional Services Indemnity above, a "Negligent Professional Act" means a negligent act, error, or omission in the performance of Professional Services (or by any person or entity, including joint ventures, for whom Consultant is liable) that causes liability and fails to meet the applicable professional standard of care, skill and ability under similar conditions and like surrounding circumstances, as is ordinarily employed by others in their profession.
Consultant obligation to indemnify and hold harmless, as set forth hereinabove, shall also include, but is not limited to, any matter arising out of any actual or alleged infringement of any patent, trademark, copyright, or service mark, or other actual or alleged unfair competition disparagement of product or service, or other tort or any type whatsoever, or any actual or alleged violation of trade regulations.

Consultant further agrees to indemnify and hold harmless Fulton County, its Commissioners, officers, employees, subcontractors, successors, assigns and agents from and against any and all claims or liability for compensation under the Worker's Compensation Act, Disability Benefits Act, or any other employee benefits act arising out of injuries sustained by any employees of Consultant. These indemnities shall not be limited by reason of the listing of any insurance coverage.

22.2 Notice of Claim. If an Indemnified Person receives written notice of any claim or circumstance which could give rise to indemnified losses, the receiving party shall promptly give written notice to Consultant, and shall use best efforts to deliver such written notice within ten (10) Business Days. The notice must include a copy of such written notice of claim, or, if the Indemnified Person did not receive a written notice of claim, a description of the indemnification event in reasonable detail and the basis on which indemnification may be due. Such notice will not stop or prevent an Indemnified Person from later asserting a different basis for indemnification. If an Indemnified Person does not provide this notice within the ten (10) Business Day period, it does not waive any right to indemnification except to the extent that Consultant is prejudiced, suffers loss, or incurs additional expense solely because of the delay.

22.3 Defense. Consultant, at Consultant's own expense, shall defend each such action, suit, or proceeding or cause the same to be resisted and defended by counsel designated by the Indemnified Person and reasonably approved by Consultant (provided that in all instances the County Attorney of Fulton County Georgia shall be acceptable, and, for the avoidance of doubt, is the only counsel authorized to represent the County). If any such action, suit or proceedings should result in final judgment against the Indemnified Person, Consultant shall promptly satisfy and discharge such judgment or cause such judgment to be promptly satisfied and discharged. Within ten (10) Business Days after receiving written notice of the indemnification request, Consultant shall acknowledge in writing delivered to the Indemnified Person (with a copy to the County Attorney) that Consultant is defending the claim as required hereunder.

22.4 Separate Counsel.

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22.4.1 Mandatory Separate Counsel. In the event that there is any potential conflict of interest that could reasonably arise in the representation of any Indemnified Person and Consultant in the defense of any action, suit or proceeding pursuant to Section 22.3 above or in the event that state or local law requires the use of specific counsel, (i) such Indemnified Person may elect in its sole and absolute discretion whether to waive such conflict of interest, and (ii) unless such Indemnified Person (and, as applicable, Consultant) elects to waive such conflict of interest, or in any event if required by state or local law, then the counsel designated by the Indemnified Person shall solely represent such Indemnified Person and, if applicable, Consultant shall retain its own separate counsel, each at Consultant's sole cost and expense.

22.4.2 Voluntary Separate Counsel. Notwithstanding Consultant's obligation to defend, where applicable pursuant to Section 22.3, a claim, the Indemnified Person may retain separate counsel to participate in (but not control or impair) the defense and to participate in (but not control or impair) any settlement negotiations, provided that for so long as Consultant has complied with all of Consultant's obligations with respect to such claim, the cost of such separate counsel shall be at the sole cost and expense of such Indemnified Person (provided that if Consultant has not complied with all of Consultant's obligations with respect to such claim, Consultant shall be obligated to pay the cost and expense of such separate counsel). Consultant may settle the claim without the consent or agreement of the Indemnified Person, unless the settlement (i) would result in injunctive relief or other equitable remedies or otherwise require the Indemnified Person to comply with restrictions or limitations that adversely affect or materially impair the reputation and standing of the Indemnified Person, (ii) would require the Indemnified Person to pay amounts that Consultant or its insurer does not fund in full, (iii) would not result in the Indemnified Person's full and complete release from all liability to the plaintiffs or claimants who are parties to or otherwise bound by the settlement, or (iv) directly involves the County (in which case the County of Fulton County, Georgia shall be the only counsel authorized to represent the County with respect to any such settlement).

22.5 Survival. The provisions of this Article will survive any expiration or earlier termination of this Agreement and any closing, settlement or other similar event which occurs under this Agreement.

ARTICLE 23. CONFIDENTIALITY

Consultant agrees that its conclusions and any reports are for the confidential information of County and that it will not disclose its conclusions in whole or in part to any persons whatsoever, other than to submit its written documentation to County, and will only discuss the same with it or its authorized representatives, except as required under this Agreement to provide information to the public. Upon completion of this Agreement term, all documents, reports, maps, data and studies prepared by Consultant pursuant thereto and any equipment paid for by County as a result of this Agreement, shall become the property of the County and be delivered to the User Department’s Representative.

Articles, papers, bulletins, reports, or other materials reporting the plans, progress, analyses, or results and findings of the work conducted under this Agreement shall not be presented publicly or published without prior approval in writing of County.

It is further agreed that if any information concerning the Project, its conduct results, or data gathered or processed should be released by Consultant without prior approval from County, the release of the same shall constitute grounds for termination of this Agreement without indemnity to Consultant, but should any such information be released by County or by Consultant with such prior written approval, the same shall be regarded as Public information and no longer subject to the restrictions of this Agreement.

ARTICLE 24. OWNERSHIP OF INTELLECTUAL PROPERTY AND INFORMATION

Consultant agrees that Fulton County is the sole owner of all information, data, and materials that are developed or prepared subject to this Agreement. Consultant or any sub-consultant is not allowed to use or sell any information subject to this contract for educational, publication, profit, research or any other purpose without the written and authorized consent of the County. All electronic files used in connection to this Agreement, which are by definition, any custom software files used in connection to this Agreement, (collectively, the “Software”),

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shall be turned over to the County for its use after termination hereof and Consultant shall have no interest of any kind in such electronic files. Any required licenses and fees for the Software or other required materials shall be purchased and/or paid for by Consultant and registered in the name of the County, if possible. The Software as defined hereunder, specifically excludes all software, documentation, information, and materials in which Consultant has pre-existing proprietary rights and/or has otherwise been licensed to Consultant prior to this Agreement, and any upgrades, updates, modifications or enhancements thereto. Consultant agrees to provide at no cost to County any upgrades to any software used in connection with this Agreement which may be subsequently developed or upgraded for a period of three (3) years from the date of completion of the work under the Agreement, except in the case of commercial Software licensed to the County. Any information developed for use in connection with this Agreement may be released as public domain information by the County at its sole discretion.

ARTICLE 25. COVENANT AGAINST CONTINGENT FEES

Consultant warrants that no person or selling agency has been employed or retained to solicit or secure this Agreement upon an agreement or understanding for a commission, percentage, brokerage or contingent fee, excepting bona fide employees maintained by Consultant for the purpose of securing business and that Consultant has not received any non-County fee related to this Agreement without the prior written consent of County. For breach or violation of this warranty, County shall have the right to annul this Agreement without liability or at its discretion to deduct from the Contract Price or consideration the full amount of such commission, percentage, brokerage or contingent fee.

ARTICLE 26. INSURANCE

Consultant agrees to obtain and maintain during the entire term of this Agreement, all of the insurance required as specified in the Agreement documents, Exhibit H, Insurance and Risk Management Forms, with the County as an additional insured and shall furnish the County a Certificate of Insurance showing the required coverage. The cancellation of any policy of insurance required by this Agreement shall meet the requirements of notice under the laws of the State of Georgia as presently set forth in the Georgia Code.

ARTICLE 27. PROHIBITED INTEREST

Section 27.01 **Conflict of interest:**

Consultant agrees that it presently has no interest and shall acquire no interest direct or indirect that would conflict in any manner or degree with the performance of its service hereunder. Consultant further agrees that, in the performance of the Agreement, no person having any such interest shall be employed.

Section 27.02 **Interest of Public Officials:**

No member, officer or employee of County during his tenure shall have any interest, direct or indirect, in this Agreement or the proceeds thereof.

ARTICLE 28. SUBCONTRACTING

Consultant shall not subcontract any part of the work covered by this Agreement or permit subcontracted work to be further subcontracted without prior written approval of County.

ARTICLE 29. ASSIGNABILITY

Consultant shall not assign or subcontract this Agreement or any portion thereof without the prior expressed written consent of County. Any attempted assignment or subcontracting by Consultant without the prior expressed written consent of County shall at County's sole option terminate this Agreement without any notice to Consultant of such termination. Consultant binds itself, its successors, assigns, and legal representatives of such other party in respect to all covenants, agreements and obligations contained herein.

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ARTICLE 30. **ANTI-KICKBACK CLAUSE**

Salaries of engineers, surveyors, draftsmen, clerical and technicians performing work under this Agreement shall be paid unconditionally and not less often than once a month without deduction or rebate on any account except only such payroll deductions as are mandatory by law. Consultant hereby promises to comply with all applicable "Anti-Kickback" Laws, and shall insert appropriate provisions in all subcontracts covering work under this Agreement.

ARTICLE 31. **AUDITS AND INSPECTORS**

At any time during normal business hours and as often as County may deem necessary, Consultant shall make available to County and/or representatives of the County for examination all of its records with respect to all matters covered by this Agreement.

It shall also permit County and/or representative of the County to audit, examine and make copies, excerpts or transcripts from such records of personnel, conditions of employment and other data relating to all matters covered by this Agreement. Consultant's records of personnel, conditions of employment, and financial statements (hereinafter "Information") constitute trade secrets and are considered confidential and proprietary by Consultant. To the extent County audits or examines such Information related to this Agreement, County shall not disclose or otherwise make available to third parties any such Information without Consultant's prior written consent unless required to do so by a court order. Nothing in this Agreement shall be construed as granting County any right to make copies, excerpts or transcripts of such information outside the area covered by this Agreement without the prior written consent of Consultant. Consultant shall maintain all books, documents, papers, accounting records and other evidence pertaining to costs incurred on the Project and used in support of its proposal and shall make such material available at all reasonable times during the period of the Agreement and for eight years from the date of final payment under the Agreement, for inspection by County or any reviewing agencies and copies thereof shall be furnished upon request and at no additional cost to County. Consultant agrees that the provisions of this Article shall be included in any Agreements it may make with any sub-consultant, assignee or transferee.

ARTICLE 32. **ACCOUNTING SYSTEM**

Consultant shall have an accounting system, which is established, and maintaining in accordance with generally accepted accounting principles. Consultant must account for cost in a manner consistent with generally accepted accounting procedures, as approved by Fulton County.

ARTICLE 33. **VERBAL AGREEMENT**

No verbal agreement or conversation with any officer, agent or employee of County either before, during or after the execution of this Agreement, shall affect or modify any of the terms of obligations herein contained, nor shall such verbal agreement or conversation entitle Consultant to any additional payment whatsoever under the terms of this Agreement. All changes to this shall be in writing and the form of a change order in supplemental agreement, approved by the County, and entered on the Minutes of the Board of Commissioners.

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ARTICLE 34. **NOTICES**

All notices shall be in writing and delivered in person or transmitted by certified mail, postage prepaid.

Notice to County, shall be addressed as follows:

Director
Department of Public Works
141 Pryor St. SW, Suite 6001
Atlanta, Georgia 30303
Telephone: 404.612.2804
Email: David.Clark@fultoncountyga.gov
Attention: David Clark

With a copy to:

Department of Purchasing & Contract Compliance
Chief Purchasing Agent
130 Peachtree Street, S.W. Suite 1168
Atlanta, Georgia 30303
Telephone: (404) 612-5800
Email: felicia.strong-whitaker@fultoncountyga.gov
Attention: Felicia Strong-Whitaker

Notices to Consultant shall be addressed as follows:

Progressive Design-Build Manager
1095 Windward Ridge Pkwy, Suite 140
Alpharetta, GA 30005
Telephone: 913.617.1763
Email: bpage@garney.com
Attention: Billy Page

ARTICLE 35. **JURISDICTION**

This Agreement will be executed and implemented in Fulton County. Further, this Agreement shall be administered and interpreted under the laws of the State of Georgia. Jurisdiction of litigation arising from this Agreement shall be in the Fulton County Superior Courts. If any part of this Agreement is found to be in conflict with applicable laws, such part shall be inoperative, null and void insofar as it is in conflict with said laws, but the remainder of this Agreement shall be in full force and effect.

Whenever reference is made in the Agreement to standards or codes in accordance with which work is to be performed, the edition or revision of the standards or codes current on the effective date of this Agreement shall apply, unless otherwise expressly stated.

ARTICLE 36. **EQUAL EMPLOYMENT OPPORTUNITY**

During the performance of this Agreement, Consultant agrees as follows:

Section 36.01 Consultant will not discriminate against any employee or applicant for employment because of race, creed, color, sex or national origin;

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Section 36.02 Consultant will, in all solicitations or advertisements for employees placed by, or on behalf of, Consultant state that all qualified applicants, will receive consideration for employment without regard to race, creed, color, sex or national origin;

Section 36.03 Consultant will cause the foregoing provisions to be inserted in all subcontracts for any work covered by the Agreement so that such provision will be binding upon each sub-consultant, provided that the foregoing provisions shall not apply to contracts or subcontracts for standard commercial supplies or raw materials.

ARTICLE 37. **FORCE MAJEURE**

Neither County nor Consultant shall be deemed in violation of this Agreement if either is prevented from performing its obligations hereunder for any reason beyond its control, including but not limited to acts of God, civil or military authority, act of public enemy, accidents, fires, explosions, earthquakes, floods or catastrophic failures of public transportation, provided however, that nothing herein shall relieve or be construed to relieve Consultant from performing its obligations hereunder in the event of riots, rebellions or legal strikes.

ARTICLE 38. **OPEN RECORDS ACT**

The Georgia Open Records Act, O.C.G.A. Section 50-18-70 et seq., applies to this Agreement. The Consultant acknowledges that any documents or computerized data provided to the County by the Consultant may be subject to release to the public. The Consultant also acknowledges that documents and computerized data created or held by the Consultant in relation to the Agreement may be subject to release to the public, to include documents turned over to the County. The Consultant shall cooperate with and provide assistance to the County in rapidly responding to Open Records Act requests. The Consultant shall notify the County of any Open Records Act requests no later than 24 hours following receipt of any such requests by the Consultant. The Consultant shall promptly comply with the instructions or requests of the County in relation to responding to Open Records Act requests.

ARTICLE 39. **CONSULTANT'S COMPLIANCE WITH ALL ASSURANCES OR PROMISES MADE IN RESPONSE TO PROCUREMENT**

Where the procurement documents do not place a degree or level of service relating to the scope of work, M/FBE participation, or any other matter relating to the services being procured, should any Consultant submit a response to the County promising to provide a certain level of service for the scope of work, M/FBE participation, or any other matter, including where such promises or assurances are greater than what is required by the procurement documents, and should this response containing these promises or assurances be accepted by the County and made a part of the Contract Documents, then the degree or level of service promised relating to the scope of work, M/FBE participation, or other matter shall be considered to be a material part of the Agreement between the Consultant and the County, such that the Consultant's failure to provide the agreed upon degree or level of service or participation shall be a material breach of the Agreement giving the County just cause to terminate the Agreement for cause, pursuant to ARTICLE 14 of the Agreement.

ARTICLE 40. **INVOICING AND PAYMENT**

Consultant shall submit monthly invoices for work performed during the previous calendar month, in a form acceptable to the County and accompanied by all support documentation requested by the County, for payment and for services that were completed during the preceding phase. The County shall review for approval of said invoices. The County shall have the right not to pay any invoice or part thereof if not properly supported, or if the costs requested or a part thereof, as determined by the County, are reasonably in excess of the actual stage of completion.

Time of Payment: The County shall make payments to Consultant within thirty (30) days after receipt of a proper invoice. Parties hereto expressly agree that the above contract term shall supersede the rates of interest, payment periods, and contract and subcontract terms provided for under the Georgia Prompt Pay Act, O.C.G.A.

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13-11-1 et seq., pursuant to 13-11-7(b), and the rates of interest, payment periods, and contract and subcontract terms provided for under the Prompt Pay Act shall have no application to this Agreement; parties further agree that the County shall not be liable for any interest or penalty arising from late payments.

Submittal of Invoices: Invoices shall be submitted as follows:

Via Mail:
Fulton County Government
141 Pryor Street, SW
Suite 7001
Atlanta, Georgia 30303
Attn: Finance Department – Accounts Payable
OR

Via Email:
Email: Accounts.Payable@fultoncountyga.gov

At minimum, original invoices must reference all of the following information:

1) Vendor Information
   a. Vendor Name
   b. Vendor Address
   c. Vendor Code
   d. Vendor Contact Information
   e. Remittance Address

2) Invoice Details
   a. Invoice Date
   b. Invoice Number (uniquely numbered, no duplicates)
   c. Purchase Order Reference Number
   d. Date(s) of Services Performed
   e. Itemization of Services Provided/Commodity Units

3) Fulton County Department Information (needed for invoice approval)
   a. Department Name
   b. Department Representative Name

Consultant's cumulative invoices shall not exceed the total not-to-exceed fee established for this Agreement.

County's Right to Withhold Payments: The County may withhold payments, not to exceed the total of two months' fees of the applicable SOW, for services that involve disputed costs, involve disputed audits, or are otherwise performed in an inadequate fashion. Payments withheld by the County will be released and paid to the Consultant when the services are subsequently performed adequately and on a timely basis, the causes for disputes are reconciled or any other remedies or actions stipulated by the County are satisfied. If there is a good faith dispute regarding a portion of an invoice, Consultant will notify County and detail the dispute before the invoice date. The County shall promptly pay any undisputed items contained in such invoices. Upon resolution of the dispute, any disputed amounts owed to Consultant will be promptly paid by County.

Payment of Sub-consultants/Suppliers: The Consultant must certify in writing that all sub-consultants of the Consultant and suppliers have been promptly paid for work and materials and previous progress payments received. In the event the prime Consultant is unable to pay sub-consultants or suppliers until it has received a progress payment from Fulton County, the prime Consultant shall pay all sub-consultants or supplier funds due from said progress payments within forty-eight (48) hours of receipt of payment from Fulton County and in no event later than fifteen days as provided for by State Law.

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Acceptance of Payments by Consultant; Release. The acceptance by the Consultant of any payment for services under this Agreement will, in each instance, operate as, and be a release to the County from, all claim and liability to the Consultant for work performed or furnished for or relating to the service for which payment was accepted, unless the Consultant within five (5) days of its receipt of a payment, advises the County in writing of a specific claim it contends is not released by that payment.

ARTICLE 41. **TAXES**

The Consultant shall pay all sales, retail, occupational, service, excise, old age benefit and unemployment compensation taxes, consumer, use and other similar taxes, as well as any other taxes or duties on the materials, equipment, and labor for the work provided by the Consultant which are legally enacted by any municipal, county, state or federal authority, department or agency at the time bids are received, whether or not yet effective. The Consultant shall maintain records pertaining to such taxes as well as payment thereof and shall make the same available to the County at all reasonable times for inspection and copying. The Consultant shall apply for any and all tax exemptions which may be applicable and shall timely request from the County such documents and information as may be necessary to obtain such tax exemptions. The County shall have no liability to the Consultant for payment of any tax from which it is exempt.

ARTICLE 42. **PERMITS, LICENSES AND BONDS**

All permits and licenses necessary for the work shall be secured and paid for by the Consultant. If any permit, license or certificate expires or is revoked, terminated, or suspended as a result of any action on the part of the Consultant, the Consultant shall not be entitled to additional compensation or time.

ARTICLE 43. **NON-APPROPRIATION**

This Agreement states the total obligation of the County to the Consultant for the calendar year of execution. Notwithstanding anything contained in this Agreement, the obligation of the County to make payments provided under this Agreement shall be subject to annual appropriations of funds thereof by the governing body of the County and such obligation shall not constitute a pledge of the full faith and credit of the County within the meaning of any constitutional debt limitation. The Director of Finance shall deliver written notice to the Consultant in the event the County does not intend to budget funds for the succeeding Contract year.

Notwithstanding anything contained in this Agreement, if sufficient funds have not been appropriated to support continuation of this Agreement for an additional calendar year or an additional term of the Agreement, this Agreement shall terminate absolutely and without further obligation on the part of the County at the close of the calendar year of its execution and at the close of each succeeding calendar year of which it may be renewed, unless a shorter termination period is provided or the County suspends performance pending the appropriation of funds.

ARTICLE 44. **WAGE CLAUSE**

Consultant shall agree that in the performance of this Agreement the Consultant will comply with all lawful agreements, if any, which the Consultant had made with any association, union, or other entity, with respect to wages, salaries, and working conditions, so as not to cause inconvenience, picketing, or work stoppage.

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IN WITNESS THEREOF, the Parties hereto have caused this Contract to be executed by their duly authorized representatives as attested and witnessed and their corporate seals to be hereunto affixed as of the day and year date first above written.

OWNER:

FULTON COUNTY, GEORGIA

Robert L. Pitts

Robert L. Pitts, Chairman
Fulton County Board of Commissioners

ATTEST:

Tonya R. Grier
Clerk to the Commission

(Affix County Seal)

APPROVED AS TO FORM:

David Lowman

Office of the County Attorney

APPROVED AS TO CONTENT:

David Clark

David Clark
Director, Public Works

CONSULTANT:

GARNEY COMPANIES, INC.

William Poczekaj

William Poczekaj
Director – Southeast Pipe

Please select RM or 2nd RM

RM X 2nd RM

ITEM#: ~~xx~~ **RM:** ~~xx~~ **REGULAR MEETING**	**ITEM#:** 26-0278 **2nd RM:** 05/20/2026 **SECOND REGULAR MEETING**

RM X 2nd RM 26-0278 05/20/2026

Contractor refused to sign contract as a Joint Venture, so name had to be corrected in separate BOC Meeting

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ADDENDA

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FULTON COUNTY

Date: April 25, 2025

Project Number: 25RFP021025K-CRB

Project Title: Progressive Design/Build for Boat Rock Road Sanitary Sewer Extension

This Addendum forms a part of the contract documents and **modifies** the original RFP documents as noted below:

ADDENDUM NO. 1

The undersigned Bidder/Proposer acknowledges receipt of this Addendum by uploading this form with the Bid/Proposal submittal package as outlined in 3.2 of the RFP

This is to acknowledge receipt of Addendum No. 1, 25 day of April, 2025.

Garney Companies, Inc.
Legal Name of Bidder/Proposer

Signature of Authorized Representative

Director - Pipe Southeast
Title

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FULTON COUNTY

Date: May 1, 2025

Project Number: 25RFP021025K-CRB

Project Title: Progressive Design/Build for Boat Rock Road Sanitary Sewer Extension

This Addendum forms a part of the contract documents and **modifies** the original RFP documents as noted below:

ADDENDUM NO. 2

The undersigned Bidder/Proposer acknowledges receipt of this Addendum by uploading this form with the Bid/Proposal submittal package as outlined in 3.2 of the RFP

This is to acknowledge receipt of Addendum No. 2, 1 day of May, 2025.

Garney Companies, Inc.
Legal Name of Bidder/Proposer

Signature of Authorized Representative

Director - Pipe Southeast
Title

Docusign Envelope ID: A3705B48-B7E5-4F52-8480-5FF929E99139

FULTON COUNTY

Date: May 8, 2025

Project Number: 25RFP021025K-CRB

Project Title: Progressive Design/Build for Boat Rock Road Sanitary Sewer Extension

This Addendum forms a part of the contract documents and **modifies** the original RFP documents as noted below:

ADDENDUM NO. 3

The undersigned Bidder/Proposer acknowledges receipt of this Addendum by uploading this form with the Bid/Proposal submittal package as outlined in 3.2 of the RFP

This is to acknowledge receipt of Addendum No. 3, 8 day of May, 2025.

Garney Companies, Inc.
Legal Name of Bidder/Proposer

Signature of Authorized Representative

Director - Pipe Southeast
Title

Docusign Envelope ID: A3705B48-B7E5-4F52-8480-5FF929E99139

FULTON COUNTY

Date: May 15, 2025

Project Number: 25RFP021025K-CRB

Project Title: Progressive Design/Build for Boat Rock Road Sanitary Sewer Extension

This Addendum forms a part of the contract documents and **modifies** the original RFP documents as noted below:

ADDENDUM NO. 4

The undersigned Bidder/Proposer acknowledges receipt of this Addendum by uploading this form with the Bid/Proposal submittal package as outlined in 3.2 of the RFP

This is to acknowledge receipt of Addendum No. 4, 15 day of May, 2025.

Garney Companies, Inc.
Legal Name of Bidder/Proposer

Signature of Authorized Representative

Director - Pipe Southeast
Title

Docusign Envelope ID: A3705B48-B7E5-4F52-8480-5FF929E99139

EXHIBIT A

GENERAL CONDITIONS

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General Conditions

1. Proposals may be withdrawn upon receipt of a written request prior to the stated due date and time. If a firm seeks to withdraw a proposal after the due date and time, the firm must present a notarized statement indicating that an error was made, with an explanation of how it occurred. The withdrawal request must be accompanied by documentation supporting the claim. Prior to approving or disapproving the request, an opinion will be obtained from Fulton County's Legal Counsel indicating whether the firm is bound by its proposal.

   Proposals for projects that are solicited pursuant to the Georgia Local Government Public Works Construction Law (O.C.G.A. § 36-91-1 et seq.) may be withdrawn as follows:

   The County must advise Offerors in the request for proposals of the number of days that Offerors will be required to honor their proposals. If an Offeror is not selected within 60 days of opening the proposals, any Offeror that is determined by the governmental entity to be unlikely of being selected for contract award will be released from the proposal.

2. Fulton County shall be the sole judge of the quality and the applicability of all proposals. Design, features, overall quality, local facilities, terms and other pertinent considerations will be taken into account in determining acceptability.

3. The successful Offeror must assume full responsibility for delivery of all goods and services proposed.

4. The successful Offeror must assume full responsibility for replacement of all defective or damaged goods and/or performance of contracted services within thirty (30) days' notice by the County of such defect, damage or deficiency.

5. The successful Offeror must assume full responsibility for providing warranty service on all goods, materials, or equipment provided to the County with warranty coverage. Should a vendor be other than the manufacturer, the vendor and not the County is responsible for contacting the manufacturer. The Offeror is solely responsible for arranging for the service to be performed.

6. The successful Offeror shall be responsible for the proper training and certification of personnel used in the performance of the services proposed.

7. The successful Offeror shall not assign, transfer, convey, sublet, or otherwise dispose of any contract resulting from the RFP or of any of its rights, title or interest therein without prior written consent of the Fulton County Board of Commissioners.

8. In case of default by the successful Offeror, Fulton County may procure the articles or services from another source and hold the successful Vendor responsible for any resultant excess cost.

9. All proposals and bids submitted to Fulton County are subject to the Georgia "Open Records Act", Official Code of Georgia, Annotated (O.C.G.A.) § 50-18-70 et seq.

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10. All proposals and bids submitted to Fulton County involving Utility Contracting are subject to the Georgia law governing licensing of Utility Contractors, O.C.G.A. §43-14-8.2(h).

11. Any Offeror intending to respond to this solicitation as a Joint Venture must submit an executed Joint Venture Agreement with this offer. This agreement must designate those persons or entities authorized to execute documents or otherwise bind the Joint Venture in all transactions with Fulton County, or be accompanied by a document, binding upon the Joint Venture and its constituent members, making such designation. Offers from Joint Ventures that do not include these documents will be rejected as being “non-responsive”.

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EXHIBIT B

SPECIAL CONDITIONS

Docusign Envelope ID: A3705B48-B7E5-4F52-8480-5FF929E99139

Special Conditions - Exhibit 1: Safety
Special Conditions - Exhibit 2: Easement Documents
Special Conditions - Exhibit 3: Blasting

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Special Conditions - Exhibit 1: Safety

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STATEMENT OF BIDDER'S QUALIFICATIONS AND SAFETY RECORD FORM

Docusign Envelope ID: A3705B48-B7E5-4F52-8480-5FF929E99139

STATEMENT OF BIDDER'S QUALIFICATIONS

This Statement is to accompany bids submitted for the following project:
Boat Rock Petition Sewer

1. NAME OF BIDDER: Garney Companies, Inc.

2. BUSINESS ADDRESS: 5895 Shiloh Road, Suite 114, Alpharetta, GA 30005

3. TELEPHONE NUMBER: (407) 319.1780

4. OFFICIAL REPRESENTATIVE AND TITLE: Will Poczekaj, ENV SP

   Director - Pipe Southeast

5. Using the form provided at the end of this Section, list previously completed projects which are similar in scope and complexity to this project which were completed or assigned to your firm or joint venture, including: Name of project, location of project, owner's name, address and phone number, description of work performed, initial contract amount, final contract amount, start date, scheduled completion date and actual completion date. (If a joint venture, list separately for each joint venture partner.) Limit to 3.

   Contractors must have successfully completed at least three contracts involving the installation of HDPE sanitary sewer construction.

6. Provide the following information for the organization proposed for this project:

   a. Organizational chart.

   b. Indicate the participation by the various members in the organization, as shown on the organizational chart, in the management and in the division of work (If a joint venture, indicate percent of man hours and percent of project cost to be performed by each joint venture member).

7. Using the form provided at the end of this Section, provide information for the Project Manager and the Project Superintendent.

   a. Project Manager must have been project manager for duration of project and successfully completed at least three contracts involving linear sanitary sewer construction with similar size and scope.

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b. Project Superintendent must have successfully completed at least three contracts involving linear sanitary sewer construction of similar size and scope.

8. The Contractor must have an established Safety Program. Complete the attached form entitled *"CONTRACTOR SAFETY RECORD FORM".*

9. The Contractor's Workman's Compensation Ratings (EMR-Experience Modification Rate)

Year	Experience Modification Rate (EMR)
2022	0.71
2023	0.61
2024	0.53
Average:	**0.62**

10. The Contractor's OSHA Incidence Rates. Note: the Industry Standard for Construction, published by the U.S. Department of Labor (2012) for Heavy and Civil Engineering Construction, all industries, list the Recordable Incidence Rate of 3.2 and the Days Away from Work Incidence Rate of 1.7, per OSHA definition and calculation, as the industry averages.

Year	Total Recordable Incidents	Total Hours Worked	OSHA Incidence Rate*
2024	20	5,290,799	0.76
2023	17	4,720,453	0.72
2022	22	4,002,663	1.10
Average			**0.86**

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Year	Total Days Away from Work Incidents	Total Hours Worked	OSHA Incidence Rate*
2024	7	5,290,799	0.26
2023	2	4,720,453	0.08
2022	3	4,002,663	0.15
Average			**0.16**

* Use your OSHA Form No. 200 and the formula:

(Total Incidents x 200,000 hours) ÷ (Number of hours worked) = Incidence Rate

11. If there have been any fatalities during the last five (5) years on any projects performed by the Contractor or on any work performed under the direct supervision of a proposed Project Manager and the Contractor or proposed Project Manager was cited by OSHA for "Willful", in performing the work in which the fatality occurred, the Contractor may be disqualified based on the County's review. The Contractor may also be disqualified in the event that a Recordable Incident occurred due to the same condition that existed when a previous fatality occurred and resulted in an OSHA citation for failure to implement a corrective action plan.

a. Fatalities during the last five years where Contractor was cited by OSHA for "Willful" Violation None

b. Fatalities during the last five years where the proposed Project Manager was cited by OSHA for "Willful" Violation. None

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The previous statements and attachments are true, correct, and complete to the best of my knowledge.

Date: 05/21/2025

Firm Name: Garney Companies, Inc.

By: Will Poczekaj, ENV SP

Title: Director - Pipe Southeast

Sworn to and subscribed before me

this 21st day of May , 2025

Notary Public

Sydney Cruz

SYDNEY CRUZ
MY COMMISSION # HH 589737
EXPIRES: September 25, 2028

Docusign Envelope ID: A3705B48-B7E5-4F52-8480-5FF929E99139

CONTRACTOR SAFETY RECORD FORM

A. General Information

Name of Firm: Garney Companies, Inc.	
Business Address: 5895 Shiloh Road, Suite 114, Alpharetta, GA 30005	
Telephone: (770) 754-4141	Fax: N/A
Prepared by/Title: Ryan Smith, CSP, CSM / Eastern Regional Safety Manager	Date prepared: 04/27/2025

II. Experience Modification Rates

List your firm's Workers Compensation Experience Modification Rates (EMR) for the last three years.

Year	Experience Modification Rate (EMR)
2024	0.53
2023	0.61
2022	0.71

III. OSHA Incidence Rates

A. List your firm's Occupational Safety Health Administration (OSHA) incidence rates for the last three years.

Year	Total Recordable Incidents	Total Hours Worked	OSHA Incidence Rate*
2024	20	5,290,799	0.76
2023	17	4,720,453	0.72
2022	22	4,002,663	1.10

* Use your OSHA Form No. 200 and the formula:

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(Total Incidents x 200,000 hours) ÷ (Number of hours worked) = Incidence Rate

B. Provide your incidence rates over the last three years for the following categories:

Category	Incidence Rate by Year* Year 2024	Year 2023	Year 2022
Fatalities	0	0	0
Injuries and Illnesses with Lost Work Days	7	2	3
Injuries and Illnesses with Restricted Work Days	1	1	1

* Use your OSHA Form No. 200 and the formula:

(Total Incidents x 200,000 hours) ÷ (Number of hours worked) = Incidence Rate

C. Does your firm have any upheld OSHA citations in the past five years?

Yes ☒ No ☐ (If yes, attach explanation)

IV. Safety Program Information

A. Do you have a written safety program?

Yes ☒ No ☐ (If yes, attach outline)

B. Which of the following does your safety program contain:

1. Does your company require health and safety training of its subcontractors?

Yes ☒ No ☐

2. Is documentation of health and safety training required?

Yes ☒ No ☐

3. Do you have a Hazard Communication Program (29 CFR 1910.1200, CCR Title 8 Section 5194)?

Yes ☒ No ☐

4. Do you have a Confined Space Entry and Rescue Program (29 CFR 1910.146, CCR Title 8 Section 5156-5159)?

Yes ☒ No ☐ (If yes, attach explanation)

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5. Do you have a "Hot Work" permit program (29 CFR 1910.146, CCR Title 8 5156-5159)?

Yes ☒ No ☐ (If yes, attach explanation)

IV. Safety Program Information (cont'd)

B. Which of the following does your safety program contain (cont'd):

6. Do you have a "Lock-Out/Tag-Out" program (29 CFR 1910.417)?

Yes ☒ No ☐ (If yes, attach explanation)

C. Do you have an Equipment Maintenance Program for the following:

1. Miscellaneous construction tools and equipment? Yes ☒ No ☐

2. Ladders? Yes ☒ No ☐

3. Scaffolds? Yes ☒ No ☐

4. Heavy Equipment? Yes ☒ No ☐

5. Vehicles? Yes ☒ No ☐

D. Do you have a new employee safety orientation program?

Yes ☒ No ☐

1. If yes, does it include instruction in the following:

(a) Company Safety Policy Yes ☒ No ☐
(b) Company Safety Rules Yes ☒ No ☐
(c) Safety Meeting Attendance Yes ☒ No ☐
(d) Company Safety Record Yes ☒ No ☐
(e) Hazard Recognition Yes ☒ No ☐
(f) Hazard Reporting Yes ☒ No ☐
(g) Injury Reporting Yes ☒ No ☐
(h) Non-Injury Accident Reporting Yes ☒ No ☐
(i) Personal Protective Equipment Yes ☒ No ☐
(j) Respiratory Protection Yes ☒ No ☐
(k) Fire Protection Yes ☒ No ☐
(l) Housekeeping Yes ☒ No ☐
(m) Toxic Substance Yes ☒ No ☐
(n) Electrical Safety Yes ☒ No ☐
(o) Fall Protection Yes ☒ No ☐
(p) First-Aid/CPR Yes ☒ No ☐
(q) Driving Safety Yes ☒ No ☐
(r) Hearing Conservation Yes ☒ No ☐
(s) Lock-Out/Tag-Out Yes ☒ No ☐

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(t) Bloodborne Pathogens Yes ☒ No ☐
(u) Asbestos Yes ☒ No ☐
(v) Confined Spaces Yes ☒ No ☐
(w) Hazard Communication Yes ☒ No ☐

IV. Safety Program Information (cont'd)

E. Do you conduct safety meetings for your employees? Yes ☒ No ☐

1. If yes, how often:

Daily ☐ Weekly ☒ Bi-weekly ☐ Monthly☐
As Needed ☐

F. Do you conduct health and safety audits of work in progress?

Yes ☒ No ☐

1. If yes, who conducts the audits?

Regional Safety Manager or Site Safety Representative

2. How often are the audits conducted?

Monthly

G. Do you notify all employees of accidents and precautions related to accidents and near misses?

Yes ☒ No ☐

1. If yes, how is this notification accomplished?

(a) Safety meetings Yes ☒ No ☐
(b) Post notification in office Yes ☒ No ☐
(c) Post notification at the site where the incident occurred Yes ☒ No ☐
(d) Other Weekly company email communication and text messages after incident.

H. Is safety a criteria in evaluating the performance of:

1. Employees Yes ☒ No ☐
2. Supervisors Yes ☒ No ☐
3. Management Yes ☒ No ☐

I. Does your firm hold "tailgate" safety meetings? Yes ☒ No ☐

1. If yes, how often:

Daily ☐ Weekly ☒ Bi-weekly ☐ Monthly☐
As Needed ☐

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J. Does your company have a drug and alcohol testing policy?

Yes ☒ No ☐

K. Does your company require that subcontractors participate in a drug surveillance/testing program?

Yes ☒ No ☐

L. Does your company have a method of disseminating safety information?

Yes ☒ No ☐

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GARNEY COMPANIES, INC.
OSHA CITATIONS FROM THE PAST FIVE YEARS

Within the past five years, Garney has yielded the following citations. In all cases, violations were corrected to the satisfaction of OSHA.

Report ID: 0830500 | Denver, CO | 4/25/2023

1 – Other than Serious | 19260020 B02 II
Penalty = $10,000

Issued citing the frequency and interval of inspections completed by the competent person were not in alignment with OSHA's interpretation of employer responsibilities.

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SAFETY & HEALTH

PROCESS MANUAL

March 2025

Docusign Envelope ID: A3705B48-B7E5-4F52-8480-5FF929E99139

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- **A. Respiratory Protection Program**
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SHPM UPDATE LOG

as of 03.01.25

Date of Update	Section Updated	Description of Update
3/1/2021	Section 24	Added Beryllium Awareness Section.
3/1/2021	Section 4	Updated Safety Council Section.
3/1/2021	Section 7	Adjusted Job Description Titles to match the JST titles for physicals.
3/1/2021	Section 17-I	Under Garney Specific Requirements - Added requirement for escort of contruction equipment on public roads.
3/1/2021	Section 17-A	Under Garney Specific Requirements - Added requirement for all trench boxes to be connected to rigging for overhead lifting and prohibit lifting of trench boxes by use of the spreader bar.
3/1/2021	Section 17-S	Added new section to manual - **Line Break.**
7/1/2021	Section 20	Added requirement for crews to review and acknowledge STAC after lunch. Also added requirement that if a new hazard creating tasks is required,the work will stop and it will be added to the STAC and reviewed before work can begin again.
7/8/2021	Section 5	Random Drug Testing Policy updated to match Corporate Drug and Alcohol Policy in Employee Handbook.
8/13/2021	Section 3	Changed where and who incident reports are sent.
8/13/2021	Section 4	Removed Tony Kempf.
8/13/2021	Section 8	Changed where and who incident reports are sent.
8/13/2021	Section 23	Added Stretch and Flex.
12/20/2021	Section 28	Updated Safety Training Program.
7/30/2022	Section 17-A	Added requirement to perform initial atmospheric testing in all trenches greater than 4 feet.
8/22/2022	Section 10	Added requirement for gloves to have a minimum cut protection level of 3 and deleted old examples.
1/1/2023	Section 5	Added clarification on timing of post-accident drug screenings and clarification on subsequent procedures with non-negative test results.
1/1/2023	Section 8	Updated injury management process to include the Regional Safety Manager, updated the notification process, updated recordability of using glue to close a wound with administered by a medical professional, and updated the first aid kit inspection interval to weekly instead of monthly.
1/1/2023	Section 10	Clarified that all hard hats should be Garney-issued and removed the provision to provide hi-viz shirts after 30 days of employment.
1/1/2023	Section 13	Correct oxygen upper limit.
1/1/2023	Section 14	Updated to align with Garney's DOT program.
1/1/2023	Section 17B	Removed shock absorbing lanyards as part of a PFAS.
1/1/2023	Section 17D	Removed requirement to berm around excavations.
1/1/2023	Section 17E	Added language to prohibit the use of hands to support materials when operating woodworking tools and to follow the manufactuere of the tool's recommendations on operation.
1/1/2023	Section 17H	Added requirement to develop a rescue plan using the standard form when using a mobile elevated work platform (aerial lift).
1/1/2023	Section 17O	Added language to include the Regional Safety Manager in the approval process to use lifting chains on Garney projects.
1/1/2023	Section 18	Referenced that HEAT Card should be used when heat index is over 80° F and added water bottles as a provision for water.
1/1/2023	Section 23	Replace entire section and renamed Manual Lifting and Ergonomics.
1/1/2023	Section 27	Updated personnel to nofiy in the event of a regulatory inspection.
1/1/2023	Section 28	Updated to align with our new hire safety orientation process.
1/1/2023	Section 31	Added new section "Contagious Disease / Pandemic Response Program".
1/1/2023	All Sections	Clarified "Spoggles" wording and replaced with "Paint Ball Style Mask conforming to ANSI Z87.1".
1/1/2024	Section 3	Modified Superintendent/foreman responsibilities to monthly job site safety inspections.
1/1/2024	Section 8	Added requirement that all projects should have at least one ANSI B first aid kit. Added recommendation that gel lubricating eye drops should be added to first aid kit. Added requirement that all projects and offices will have an AED.
1/1/2024	Section 10	Clarified that garments can be worn under a hard hat. Clarified the requirement for paintball style masks to be used for cutting of metal, spark producing cutting or particle producing cutting.

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SHPM UPDATE LOG

as of 03.01.25

Date of Update	Section Updated	Description of Update
1/1/2024	Section 17B	Added dropped object protection recommedations. Removed reference to shock absorbing lanyards.
1/1/2024	Section 17H	Added dropped object protection recommedations
1/1/2024	Section 17N	Clarified that no one can ride on the outside of the crane. Added procedures for use of a man basket.
1/1/2024	Section 17O	Clarified the number of broken wires allowed on wire rope.
1/1/2024	Section 30	Updated policy to to show that everyone working above water is required to wear a PFD at all times.
3/1/2025	Section 3	Modified Safety Managers responsibilities to include review of the SHPM annually. Clarified the requirements for work boots. Retricted use of headphones.
3/1/2025	Section 10	Clarified Safety Helmet decal policy. Clarified what types of face and eye protection are needed for different tasks. Modified existing requirements and added additional requirements to Hearing Consevation Plan.
3/1/2025	Section 12A	Added donning and doffing procedures for SCBAs and SARs.
3/1/2025	Section 17E	Clarified requirement for eye and face protection with hand tools.
3/1/2025	Section 17J	Clarified requirement for eye and face protection when working with concrete.
3/1/2025	Section 17M	Clarified requirements for securing a ladder.
3/1/2025	Section 23	Clarified the requirements for work boots.
3/1/2025	Section 24	Added guidance on dealing with asbestos and lead on a project site.
3/1/2025	Section 29A	Clarified the requirements for work boots.

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Confined Space Entry Program

Reference: 29 CFR 1926.1200 & 1910.146



C	T	F

Purpose:

Numerous lives are lost in the construction industry due to the lack of proper implementation and execution of a Confined Space Program. Garney has established the following program to provide guidance to our employee owners for work to be completed in Confined Spaces.

1926.1202 – Definitions

Acceptable Entry Conditions - the conditions that must exist in a permit space, before an employee may enter that space, to ensure that employees can safely enter into, and safely work within, the space.

Attendant - an individual stationed outside one or more permit spaces who assesses the status of authorized entrants and who must perform the duties specified in 1926.1209.

Authorized Entrant - an employee who is authorized by the entry supervisor to enter a permit space.

Barrier – a physical obstruction that blocks or limits access.

Blanking or Blinding - the absolute closure of a pipe, line, or duct by the fastening of a solid plate (such as a spectacle blind or a skillet blind) that completely covers the bore and that is capable of withstanding the maximum pressure of the pipe, line, or duct with no leakage beyond the plate.

Competent Person – one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has the authorization to take prompt corrective measures to eliminate them.

Confined Space - a space that:

(1) Is large enough and so configured that an employee can bodily enter it:

(2) Has limited or restricted means for entry or exit; and

(3) Is not designed for continuous employee occupancy.

Control – the action taken to reduce the level of any hazard inside a confined space using engineering methods (for example, by ventilation), and then using these methods to maintain the reduced hazard level. Control also refers to the engineering methods used for this purpose. Personal protective equipment is not a control.

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Controlling Contractor – the employer that has overall responsibility for construction at the worksite.

Note. If the controlling contractor owns or manages the property, then it is both a controlling and a host employer.

Double Block and Bleed – the closure of a line, duct, or pipe by closing and locking or tagging two in-line valves and by opening and locking or tagging a drain or vent valve in the line between the two closed valves.

Early Warning System – the method used to alert authorized entrants and attendants that an engulfment hazard may be developing. Examples of early-warning systems include but are not limited to: alarms activated by remote sensors; and lookouts with equipment for immediately communicating with authorized entrants and attendants.

Emergency - any occurrence (including any failure of hazard control or monitoring equipment) or event internal or external to the permit space that could endanger entrants.

Engulfment - the surrounding and effective capture of a person by a liquid or finely divided (flowable) solid substance that can be aspirated to cause death by filling or plugging the respiratory system or that can exert enough force on the body to cause death by strangulation, constriction, crushing, or suffocation.

Entry - the action by which a person passes through an opening into a permit-required confined space. Entry includes ensuing work activities in that space and is considered to have occurred as soon as any part of the entrant's body breaks the plane of an opening into the space, whether or not such action is intentional, or any work activities are actually performed in the space.

Entry Employer – the employer who decides that an employee it directs will enter a permit space.

Note. An employer cannot avoid the duties of the standard merely by refusing to decide whether its employees will enter a permit space, and OSHA will consider the failure to so decide to be an implicit decision to allow employees to enter those spaces if they are working in the proximity of the space.

Entry Permit - the written or printed document that is provided by the employer who designated the space as a permit space to allow and control entry into a permit space and that contains the information specified in 1926.1206 of this standard.

Entry Rescue – occurs when a rescue service enters a permit space to rescue one or more employees.

Entry Supervisor - the qualified person (such as the employer, foreman, or crew chief) responsible for determining if acceptable entry conditions are present at a permit space where entry is planned, for authorizing entry and overseeing entry operations, and for terminating entry as required by this standard.

Note: An entry supervisor also may serve as an attendant or as an authorized entrant, as long as that person is trained and equipped as required by this standard for each role he or she fills. Also, the duties of entry supervisor may be passed from one individual to another during the course of an entry operation.

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Explosives – any chemical compound, mixture, or device, the primary or common purpose of which is to function by explosion; that is, with substantially instantaneous release of gas and heat, unless such compound, mixture, or device is otherwise specifically classified by the U.S. Department of Transportation

Class A Explosives – Possessing detonating hazard, such as dynamite, nitroglycerin, picric acid, lead azide, fulminate of mercury, black powder, blasting caps, and detonating primers

Class B Explosives – Possessing a flammable hazard, such as propellant explosives, including some smokeless propellants

Class C Explosives – Include certain types of manufactured articles which contain Class A or Class B explosives, or both, as components, but in restricted quantities.

Hazard – a physical hazard or hazardous atmosphere.

Hazardous Atmosphere - an atmosphere that may expose employees to the risk of death, incapacitation, and impairment of ability to self-rescue (that is, escape unaided from a permit space), injury, or acute illness from one or more of the following causes:

(1) Flammable gas, vapor, or mist in excess of 10 percent of its lower flammable limit (LFL);

(2) Airborne combustible dust at a concentration that meets or exceeds its LFL;

Note. This concentration may be approximated as a condition in which the combustible dust obscures vision at a distance of 5 feet (1.52 meters) or less.

(3) Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent;

(4) Atmospheric concentration of any substance for which a dose or a permissible exposure limit is published in Subpart D, Occupational Health and Environmental Control, or in Subpart Z, Toxic and Hazardous Substances, of this Part and which could result in employee exposure in excess of its dose or permissible exposure limit;

Note. An atmospheric concentration of any substance that is not capable of causing death, incapacitation, impairment of ability to self-rescue, injury, or acute illness due to its health affects is not covered by this definition.

(5) Any other atmospheric condition that is immediately dangerous to life or health.

Note. For air contaminants for which OSHA has not determined a dose or permissible exposure limit, other sources if information, such as Safety Data Sheets that comply with the Hazard Communication Standard, 1926.59 of the part, published information, and internal documents can provide guidance in establishing acceptable atmospheric conditions.

Host Employer – the employer that owns or manages the property where the construction work is taking place.

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Note. If the owner of the property on which the construction activity occurs has contracted with an entity for the general management of that property and has transferred to that entity the information specified in 1926.1203(h)(1), OSHA will treat the contracted management entity as the host employer for as long as the entity manages the property. Otherwise, OSHA will treat the owner of the property as the host employer. In no case will there be more than one host employer.

Hot Work – operations capable of providing a source of ignition (for example, riveting, welding, cutting, burning, and heating).

Hot Work Permit - the employer's written authorization to perform operations (for example, riveting, welding, cutting, burning, and heating) capable of providing a source of ignition.

Immediately Dangerous to Life or Health (IDLH) - any condition that would interfere with an individual's ability to escape unaided from a permit space and that poses a threat to life or that would cause irreversible adverse health effects.

Note. Some materials – hydrogen fluoride gas and cadmium vapor, for example – may produce immediate transient affects that, even if severe, may pass without medical attention, but are followed by sudden, possibly fatal collapse 12-72 hours after exposure. The victim "feels normal" after recovery from transient affects until collapse. Such materials in hazardous quantities are considered to be "immediately" dangerous to life or health.

I**nerting** – displacing the atmosphere in a permit space by a noncombustible gas (such as nitrogen) to such an extent that the resulting atmosphere is noncombustible.

Note: This procedure produces an IDLH oxygen-deficient atmosphere.

Limited or Restricted Means for Entry or Exit – a condition that has a potential to impede an employee's movement into or out of a confined space. Such conditions include, but are not limited to, trip hazards, poor illumination, slippery floors, inclining surfaces, and ladders.

Isolate or Isolation - the process by which employees in a confined space are completely protected against the release of energy and material into the space, and contact with a physical hazard, by such means as: blanking or blinding; misaligning or removing sections of lines, pipes, or ducts; a double block and bleed system; lockout or tagout of all sources of energy; blocking or disconnecting all mechanical linkages; or placement of barriers to eliminate the potential for employee contact with a physical hazard.

Line Breaking - the intentional opening of a pipe, line, or duct that is or has been carrying flammable, corrosive, or toxic material, an inert gas, or any fluid at a volume, pressure, or temperature capable of causing injury.

Lockout – the placement of a lockout device on an energy isolating device, in accordance with an established procedure, ensuring that the energy isolating device and the equipment being controlled cannot be operated until the lockout device is removed.

Lower Flammable Limit or Lower Explosive Limit – the minimum concentration of a substance in air needed for an ignition source to cause a flame or explosion.

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Monitor or Monitoring – the process used to identify and evaluate the hazards after an authorized entrant enters the space. This is a process of checking for changes that is performed in a periodic or continuous manner after the completion of the initial testing or evaluation of that space.

Non-Entry Rescue – occurs when a rescue service, usually the attendant, retrieves employees in a permit space without entering the permit space

Non-Permit Confined Space - a confined space that meets the definition of a confined space but does not meet the requirements for a permit-required confined space, as defined in this subpart.

Oxygen Deficient Atmosphere - an atmosphere containing less than 19.5 percent oxygen by volume.

Oxygen Enriched Atmosphere - an atmosphere containing more than 23.5 percent oxygen by volume.

Permit-Required Confined Space (Permit Space) - means a confined space that has one or more of the following characteristics:

(1) Contains or has a potential to contain a hazardous atmosphere;

(2) Contains a material that has the potential for engulfing an entrant;

(3) Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section; or

(4) Contains any other recognized serious safety or health hazard.

Permit-Required Confined Space Program (Permit Space Program)- the employer's overall program for controlling, and, where appropriate, for protecting employees from, permit space hazards and for regulating employee entry into permit spaces.

Physical Hazard – an existing or potential hazard that can cause death or serious physical damage. Examples include, but are not limited to: explosives (as defined by paragraph (n) of 1926.914, definition of “explosive”); mechanical, electrical, hydraulic and pneumatic energy; radiation; temperatures extremes; engulfment; noise; and inwardly converging surfaces. Physical hazard also includes chemicals that can cause death or serious physical damage through skin or eye contact (rather than through inhalation).

Prohibited Condition - any condition in a permit space that is not allowed by the permit during the period when entry is authorized. A hazardous atmosphere is a prohibited condition unless the employer can demonstrate that personal protective equipment (PPE) will provide effective protection for each employee in the permit space and \provides the appropriate PPE to each employee.

Qualified Person – one who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated his ability to solve or resolve problems relating to the subject matter, the work, or the project.

Representative Permit Space – a mockup of a confined space that has entrance openings that are similar to, and is of similar size, configuration, and accessibility to, the permit space that authorized entrants enter.

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Rescue – retrieving, and providing assistance to, one or more employees who are in a permit space.

Rescue Service - the personnel designated to rescue employees from permit spaces.

Retrieval System - the equipment (including a retrieval line, chest or full-body harness, wristlets, if appropriate, and a lifting device or anchor) used for non-entry rescue of persons from permit spaces.

Serious Physical Damage – an impairment or illness in which a body part is made functionally useless or is substantially reduced efficiency. Such impairment or illness may be permanent or temporary and includes, but is not limited to, loss of consciousness, disorientation, or other immediate and substantial reduction in mental efficiency. Injuries involving such impairment would usually require treatment by a physician or other licensed health-care professional.

Tagout –

1. Placement of a tagout device on a circuit or equipment that has been deenergized, in accordance with an established procedure, to indicate that the circuit or equipment being controlled may not be operated until the tagout device is removed; and
2. The employer ensures that
    a. Tagout provides equivalent protection to lockout, or
    b. The lockout is infeasible and the employer had relieved, disconnected, restrained, and otherwise rendered safe stored (residual) energy.

Test or Testing - the process by which the hazards that may confront entrants of a permit space are identified and evaluated. Testing includes specifying the tests that are to be performed in the permit space.

NOTE: Testing enables employers both to devise and implement adequate control measures for the protection of authorized entrants and to determine if acceptable entry conditions are present immediately prior to, and during, entry.

Ventilate or Ventilation – controlling a hazardous atmosphere using continuous forced-air mechanical systems that meet the requirements of 1926.57 – Ventilation.

Hazardous Atmospheres

The following gases or vapors shall be tested for **prior to every entry** into a confined space and shall be continuously monitored while in all confined spaces.

1. **Oxygen Content**
    a. Oxygen levels within a confined space shall be between 19.5% and 23.5% oxygen
    b. Less than 19.5% available oxygen is an Oxygen Deficient atmosphere and entry into a space without Air Supplied Breathing Apparatus is **PROHIBITED.**



    c. A space with more than 23.5% available oxygen is an Oxygen Enriched Atmosphere. The excess oxygen levels now cause items such as clothing, wood, paper, and hair to ignite easily and burn violently.
    d. Oxygen can be displaced in a confined space by work that is being done within the space. Some examples of this work are brazing, cutting, welding, painting, etc… or oxygen levels can also decrease due to chemical reactions (rusting) or through bacterial action (fermentation).

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2. **Flammable Gases and Vapors**



   a. Atmospheres can become flammable in two ways
      i. An enriched amount of oxygen
      ii. A flammable dust, vapor, or gas in the proper mixture
   b. All gases have varying flammable ranges. These ranges can be found on the Material Safety Data Sheet for the chemical.
   c. When a source of ignition is introduced into a space with a flammable atmosphere, an explosion will result.
   d. When work is to be completed within a flammable atmosphere, only non-spark producing (intrinsically safe) tools and equipment must be used.
   e. Methane gas is a prevalent flammable gas that could be encountered during operations.

3. **Potential Toxic Air Contaminants**
   a. Many substances (gases, vapors, dusts, liquids, chemicals, solids) should be considered hazardous within a confined space.
   b. Toxic substances can come from the following:
      i. Work being performed within the space, Examples of processes that can generate toxic atmospheres are:



         1. Welding, Brazing, Cutting & Burning
         2. Painting
         3. Abrasive Grinding, Scraping, & Cleaning
         4. Blasting
      ii. Work being performed or substances / equipment located around the entrance to a space can include:
         1. Internal combustion engines producing carbon monoxide
         2. Painting and coating operations using toxic chemicals being forced into the space by wind
      iii. Materials stored within the space



         1. A container product can be absorbed into the walls of the space and be released during cleaning operations.
         2. An example would be the removal of sludge from tank. Decomposing materials can give off Hydrogen Sulfide Gas.
   c. In the event that a hazardous atmosphere is detected during continuous monitoring while the confined space is occupied:
      i. All entrants shall leave the space immediately
      ii. The space shall be evaluated to determine the cause of the hazardous atmosphere
      iii. Measures shall be implemented to eliminate the hazardous atmosphere prior to re-entry
      iv. Atmospheric testing shall be done to ensure the implemented measures have resolved the issue prior to re-entry

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General Physical Hazards

1. **Falling Objects**



   a. Workers in confined spaces shall always be aware of the possibility of objects (tools, materials, debris, etc…) falling from above, particularly in areas that have overhead openings and when work is being completed by workers above.

2. **Surface Residues**



   a. Surface residues in confined spaces can increase the already hazardous conditions of electrical shock, reaction of incompatible materials, liberation of toxic substances, and bodily injury due to slips and falls. Without protective clothing, additional hazards to health may arise due to surface residues.

3. **Engulfment Hazards**



   a. Loose, granular material or liquids stored in bins, tanks, or hoppers, such as sand, filter material, sludge, or similar material, can engulf and suffocate or drown a worker. The loose material can crust or bridge over a bin and break loose under the weight of a worker. Liquids or sludge can be accidentally released into the space, trapping and or drowning workers.

4. **Temperature Extremes**



   a. Because of the nature and design of most confined spaces, moisture content and radiant heat are difficult to control. As the body temperature rises progressively, workers will continue to function until the body core temperature reaches approximately 102°F. When this body temperature is exceeded, the workers are less efficient, and are prone to heat exhaustion, heat cramps, or heat stroke. In a cold environment, certain physiologic mechanisms come into play, which tend to limit heat loss and increase heat production. The most severe strain in cold conditions is chilling of the extremities so that activity is restricted. Special precautions must be taken in cold environments to prevent frostbite, and general hypothermia.

5. **Noise**



   a. Noise problems are usually intensified in confined spaces because the interior tends to cause sound to reverberate and thus expose the worker to higher sound levels than those found in an open environment. This intensified noise increases the risk of hearing damage to workers, which could result in temporary or permanent loss of hearing.

   b. Noise in a confined space which may not be intense enough to cause hearing damage may still disrupt verbal communication with the emergency standby person on the exterior of the confined space. If the workers inside are not able to hear commands or danger signals due to excessive noise, the probability of severe accidents can increase.

6. **Stored Energy**

   a. Stored energy hazards include but are not limited to mechanical, electrical, hydraulic and pneumatic energy

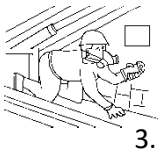
   b. Employees must ensure that these energy sources must be identified and the energy in storage must be released and the possible source locked-out / tagged-out in accordance with the Garney Lock-Out / Tag-Out Program.

Other Hazards

1. The use of scaffolding in confined spaces has contributed too many accidents caused by workers or materials falling, improper use of guardrails, and lack of maintenance to ensure worker safety. The choice of material used for scaffolding depends upon the type of work to be performed, the calculated weight to be supported, the surface on which the scaffolding is placed, and the substance previously stored in the confined space.

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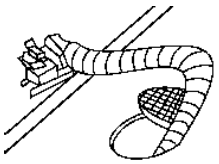
2. structural hazards within a confined space such as baffles in tanks, trays in vertical towers, bends in tunnels, overhead structural members, or scaffolding constitute physical hazards, which are exacerbated by the physical surroundings. In dealing with structural hazards, supervisors and workers must review and enforce safety precautions to assure safety.



3. Precaution shall be taken to ensure that external hazards (i.e. vehicular traffic, pedestrians, pumping operations, etc.…) shall be controlled to prevent work generated hazards within confined spaces.

Forced Air Ventilation

1. If natural ventilation is not sufficient to establish adequate air quality, the use of mechanical ventilation is required. There are several methods to ventilate a confined space dependent upon the size of the space and its openings, the type(s) of gases to be exhausted, and the source of the make-up air.
2. A common and effective method of ventilation is that of a fan (sized to the space and opening) and vents hose. The vent hose is installed inside the confined space and attached to the fan outside the confined space.
3. Ventilation shall be set-up and started in advance of entry to allow for change in the air within the space.
4. Ventilation shall be set-up to ensure the air supply is clean and will not increase the hazards within the space.
5. Ventilation shall be directed so to move air within the areas where employees are or will be present within the space and shall continue until all employees has left the space.
6. Ventilation shall be continuous during the entire entry, due to the possibility of a buildup of hazardous gases within the space if ventilation of fresh air is stopped.
7. Continuous Forced Air Ventilation shall be used, as follows:



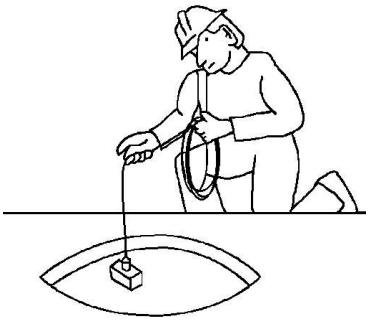
   a. An employee will not enter the space until the forced air ventilation has eliminated any hazardous atmosphere. This will be accomplished after repeated testing.
   b. The forced air ventilation will be so directed as to ventilate the immediate areas where an employee is or will be present within the space and shall continue until all employees have left the space.
   c. The air supply for the forced air ventilation shall be from a clean source and may not increase the hazards in the space.

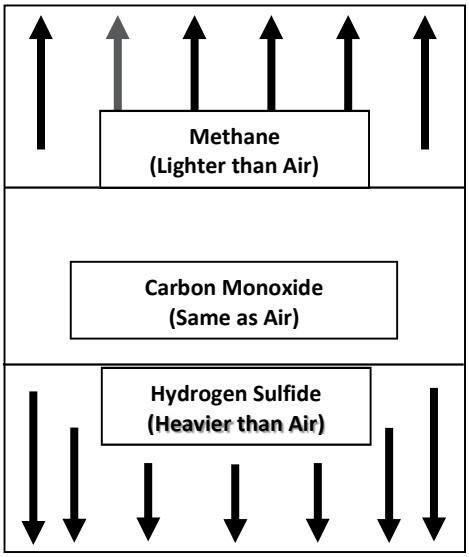
Air Monitoring

1. Prior to starting any monitoring, the competent person for the site needs to ensure that air monitors to be used are properly outfitted with the correct sensors for the project.
2. Some gases are heavier than air and will settle to the lower areas of a confined space. Other gases are lighter than air and are around the top of the space. It is therefore important to test all areas (bottom, middle, and top) of a confined space with correctly calibrated instruments to detect gases that may be present.
3. The air must also be monitored to assure sufficient, but not enriched oxygen content.

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4. **<u>Never rely upon only your senses to determine if the quality of air in a confined space is safe for entry!</u> Many toxic and deadly gases or vapors cannot be seen or smelled, nor can one determine if the correct level of oxygen is present.**





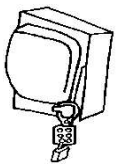
Monitor Space Outside from Top to Bottom.

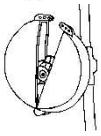
5. Before an employee enters the space, the internal atmosphere will be tested, with a calibrated direct reading device by a qualified person for the following conditions in the order given:
    a. Oxygen content between 19.5% and 23.5% of total air mixture.
    b. Flammable gases and vapors; and
    c. Potential toxic air contaminates.



6. All readings from atmospheric monitoring will be recorded on the Confined Space Entry Permit. These records will be maintained at the worksite for the duration of the project.
7. When two or more confined spaces are interconnected, each space will be tested, the results recorded, and the most hazardous condition found shall govern procedures to be followed.
8. Additional air monitoring equipment shall be made available when needed or requested by the entrants.

<u>Isolation or Lock-Out – Tag-Out</u>





1. All lines, which may convey dangerous substances into the confined space shall be disconnected, blocked, blinded or effectively isolated to prevent dangerous air contamination and/or oxygen deficiency from developing. This shall be done in such a manner that inadvertent re-connection is prevented.
2. Locking out: electrical sources, at disconnect switches remote from the equipment if possible.
3. Blanking and bleeding: pneumatic and fluid lines.
4. Disconnecting: belt and chain drives, and mechanical linkages on shaft driven equipment where possible.
5. Securing: mechanical moving parts within confined spaces with latches, chocks, blocks, or other devices.

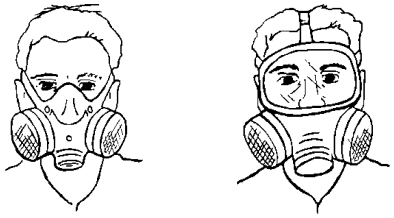
<u>Personal Protective Equipment</u>

1. Proper personal protective equipment will be available based on the types of hazards that employees might reasonably be expected to encounter. These might include, but are not limited to:
    a. self-contained breathing apparatus (SCBA)
    b. air purifying respirators with dust/mist and/or vapor filters
    c. full body harness and rescue tripod.
    d. This equipment will be used in addition to the required helmet, safety glasses, and hearing protection.

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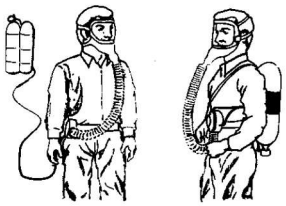
2. Respiratory protection, allow workers to safely breathe without inhaling toxic gases or particles. Two basic types are:
    a. air-purifying, which filter dangerous substances from the air
    b. air-supplying, which supply safe breathing air from a tank or breathing air compressor.

Air–Purifying Respirators



Do Not Use in Oxygen-Deficient Atmosphere

Air–Supplying Respirators



Supplied Air Self Contained

3. Respiratory protection, (if required) as mentioned above, will be administered in accordance with the respirator program of this manual.

Fire Protection

1. Appropriate provisions of this section have ensured that dangerous air contamination due to flammable and/or explosive substances does not exist or will not occur.
2. Compressed gas cylinders, other than those used for breathing air, will not be taken into a confined space.
3. If a potential fire hazard exists, the means of ingress/egress will be protected or fire resistant.
4. Fire extinguishers of the proper size and type will be immediately available.
5. If cutting, burning, welding, etc., must take place inside a permitted confined space; the "Hot Work" portion of the Confined Space Entry Permit will be completed. A person will be assigned fire watch duties. This person will monitor these activities during and immediately after to ensure that no fire conditions exist.

1926.1203 – General Requirements

1. Garney is responsible for designating a **competent person** for a job site prior to work beginning. The competent person is responsible for identifying all confined spaces in which one or more of the employees it directs may work and identifies each space that is a permit space via evaluation and testing.
2. All permit required spaces must have signs posted at the permit space. The sign must read be a Danger sign and must read "Permit Required Confined Space, Do Not Enter" (sign available in the Corporate Safety Menu).



3. **Prior to Every Entry into a Confined Space** atmospheric testing with an air monitor shall be completed. All air monitors shall be bump tested prior to every use and shall be calibrated according to the manufacture's requirements.
4. Documentation of the calibration shall be made available to all persons involved in confined space work.
5. All work by non-Garney Construction employees that involves the entry into confined spaces will follow the procedures of this program.
6. The information of this program and specific hazards of the confined spaces to be entered will be provided to Subcontractor Management prior to commencing entry or work.
7. A copy of this program must be present on Garney job sites where Garney employees enter confined spaces.

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1926.1203 (e) - Confined Space Alternate Entry Procedures (Declassification or Reclassification)

Garney may enter confined spaces has Alternate Entry if **ALL** the following conditions are met:

1. Garney can demonstrate that all physical hazards in the space are eliminated or isolated through engineering controls so that the only hazard posed by the permit space is an actual or potential hazardous atmosphere.
2. Garney can demonstrate that continuous forced-air ventilation alone is sufficient to maintain that permit space safe for entry, and that, in the event the ventilation system stops working, entrants can exit the space safely.
3. Garney must document (use the Atmospheric Testing Documentation form to be found on the Safety SharePoint Site) the air monitoring results to show the air is safe to enter.

Entry into these Alternate Entry Confined Spaces requires that these conditions are followed:

1. Any conditions making it unsafe to remove the entrance cover are eliminated.
2. Fall protection must be installed to prevent employees from falling into the opening and that will protect from foreign objects entering the space.
3. **Prior to Every Entry** air monitoring shall be completed. The space must be continuously monitored during the entire entry. All readings documented on the Atmospheric Testing Documentation form.
4. There is no hazardous atmosphere.
5. Continuous forced air ventilation must be used. Please refer to the forced air ventilation section of this program for proper procedures.

Please see Appendix A – Confined Space Flow Chart for assistance in classification of Confined Spaces

1926.1203 (g) - Non-Permit Required Confined Spaces Reclassification

Garney may reclassify a Permit-Required Confined Space as a Non-Permit required Confined Space if the competent person determines that all of the applicable requirements listed below are met:

1. The permit space poses no actual or potential atmospheric hazards and if all hazards within the space are eliminated or isolated without entry into the space. The space may be classified as non-permit required for as long as the non-atmospheric hazards remain eliminated or isolated.
2. If testing and inspection during the entry demonstrate that the hazards within the permit space have been eliminated or isolated, the permit space may be reclassified as a non-permit confined space for as long as the hazards remain eliminated or isolated. Forced air ventilation does not constitute elimination or isolation of the hazards.
3. The entry employer must document the basis for determining that all hazards in a permit space have been eliminated or isolated, through a certification that contains a date, the location of the space, and the signature of the competent person making the determination. The certification must be made available to all employees entering the space or their authorized representative.
4. If hazards arise with the permit space that has been reclassified as a non-permit space, each employee in the space must exit the space. The competent person for the entry employer must then reevaluate the space and reclassify it as a permit-required space.

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5. If there are changes in the use or configuration of the non-permit space that might increase the hazards to the entrants, the competent person for the entry employer must reevaluate the space and, if necessary, reclassify the space as a permit-required confined space.

1926.1203 (h) – Permit Space Entry Communication and Coordination

Prior to entry into confined spaces, the host employer must provide the following information, if it has it, to the controlling contractor:

1. The location of each known permit space.
2. The hazards or potential hazards in each space or the reason it is a permit space; and
3. Any precautions that the host employer or any previous controlling contractor or entry employer implemented for the protection of the employees in the permit space.

Before confined space operations begin, the controlling contractor must:

1. Obtain the host employer's information about the permit space hazards and previous entry operations; and
2. Provide the following information to each entity entering a permit space and any other entity at the worksite whose activities could foreseeably result in a hazard in the permit space.
    a. The information received from the host employer;
    b. Any additional information the controlling contractor may have about the spaces; and
    c. The precautions that the host employer, controlling contractor, or other entry employers implemented for the protection of the employees in the permit spaces.

Before confined space entry operations begin, the entry employer must:

1. Obtain all of the controlling contractor's information regarding permit space hazards and entry operations; and
2. Inform the controlling contractor of the permit space program that the entry supervisor will follow, including any hazards likely to be confronted or created in each permit space.

The controlling contractor and entry employer(s) must coordinate entry operations when:

1. More than one entity performs permit space entry at the same time; or
2. Permit space entry is performed at the same time that any activities that could foreseeably result in a hazard in the permit space are performed.

Upon completion of entry operations:

1. The controlling contractor must debrief each entity that entered a permit space regarding the permit space program followed and any hazards confronted or created in the permit space(s) during entry operations;
2. The entry employer must inform the controlling contractor in a timely manner of the permit space program followed and of any hazards confronted or created in the permit space(s) during the entry operations; and
3. The controlling contractor must apprise the host employer of the information exchanged with the entry entities.

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1926.1204 - Permit-Required Confined Space Program

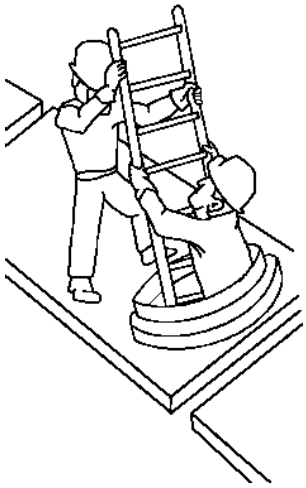
Prior to entering all confined spaces deemed as a permit required confined space, Garney's designated competent person must:

1. Implement measures to prevent unauthorized entry
2. Identify and evaluate the hazards of the space prior to entry
3. Develop and implement means, procedures, and practices necessary for safe entry into the space including, but not limited to the following:
    a. All entrants shall be provided the opportunity to observe the pre-entry atmospheric testing. The results of the pre-entry atmospheric testing must be documented on the Confined Space Permit.
    b. Isolation of the permit space and the physical hazards within the space
    c. Purge, flush, inert, or ventilate the space to eliminate or control atmospheric hazards prior to entry
    d. Constant monitoring of the air within the space is **required**
4. Provide the following equipment to at no cost to each employee, maintain the equipment properly, and ensure the employee uses the equipment properly
5. Perform atmospheric testing of the air within the space prior to every entry
6. Assign an attendant to be located outside of the space. The attendant must be present at all times during the entry
7. Complete Garney's Confined Space Permit and designate all persons involved (attendants, entrants, supervisors, etc…)
8. Coordinate entry operations when employees from more than one employer are working simultaneously in the space or elsewhere on the job site, so that employees of one employer do not endanger the employees of any other employer.

Entry Standard Operating Procedures

A Standard Operating Procedure (SOP) must be developed for each space to standardize the entry procedure. The SOP outlines:

1. Hazards
2. Hazard Control & Abatement
3. Acceptable Entry Conditions
4. Means of Entry
5. Entry Equipment Required
6. Emergency Procedures



Confined Space Entry Procedures

Each employee who enters or is involved in the entry must:

1. Understand the procedures for confined Space Entry
2. Know the Hazards of the specific space
3. Review the specific procedures for each entry
4. Understand how to use entry and rescue equipment

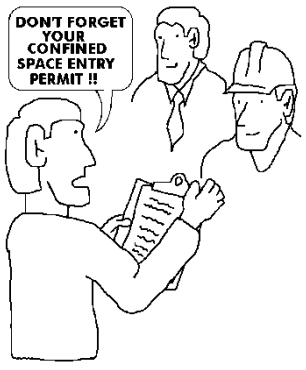
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1926.1205 & 1926.1206 - Confined Space Permitting & Entry Permits

1. Confined Space Entry Permits must be completed before any employee enters a Permit Required Confined Space. Permits are available on the Safety SharePoint Site.
2. The Confined Space Entry Permit will be filled out by the Entry Supervisor to be used for documentation for determining that all hazards in a permit space have been eliminated, along with the date, locations and signature. The permit shall be made available to each employee entering the space.
3. The permit must be signed by the entry supervisor prior entry.
4. Permits will expire before the completion of the shift or if any pre-entry conditions change.
5. Permits shall be cancelled in the event of:
    a. Completion of the operations outlined on the permit
    b. If there is a condition that arises that is not allowed under the permit
6. Suspension or cancellation of a permit is required when a condition arises within a permit required confined space and the condition is temporary in nature and does not change the configuration or the space or create new hazards within it. When these conditions arise the space must be reevaluated prior to reentry of all entrants.
7. Upon completion of work in a permit required confined space, a copy of the permit shall be sent to the Safety Department for filing and the original kept on file on the project site for a minimum of 1 year.
8. A review of cancelled confined space entry permits shall be completed by the Safety Department for all entries performed during a calendar year. Revision to the confined space program shall be completed to correct all deficiencies found during this review.

1926.1207 – Training

1. Training shall be conducted for all employees designated to work within confined spaces prior to their initial assignment to a project, prior to a change in assigned duties, and if a new hazard has been created or special deviations occurred.
2. Training is provided to all employees at no cost.
3. Training shall be provided to employees in a language and vocabulary that the employee can understand.
4. All completed training shall be documented, and a copy of the attendance sheet sent to safetytraining@garney.com for filing.
5. Training for Confined Space Entry shall include but not be limited to:
    a. Duties of Entry Supervisor, Entrant and Attendants
    b. Confined Space Entry Permits
    c. Hazards of Confined Spaces
    d. Use of Air Monitoring Equipment
    e. First Aid and CPR Training
    f. Emergency Action & Rescue Procedures
    g. Confined Space Entry & Rescue Equipment
    h. Rescue training, including entry and removal from representative spaces.



6. This training must establish the employee's proficiency upon completion of the training.

1926.1208 – Duties of Authorized Entrants

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All entrants must be authorized by the entry supervisor to enter permit spaces, have received the required training, used the proper equipment, and observe the entry procedures and permit. The following entrant duties are required:

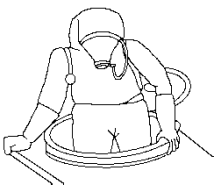
1. Know the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure;
2. Properly use the equipment required for safe entry;
3. Communicate with the attendant as necessary to enable the attendant to monitor the status of the entrants and to enable the attendant to alert the entrants of the need to evacuate the space if necessary;
4. Alert the attendant whenever; the entrant recognizes any warning signs or symptoms of exposure to a dangerous situation, or any prohibited condition is detected; and
5. Exit the permit space as quickly as possible whenever; the attendant or entry supervisor gives an order to evacuate the permit space, the entrant recognized any warning signs or symptoms of exposure to a dangerous situation, the entrant detects a prohibited condition, or an evacuation alarm activated.

1926.1209 – Duties of Attendants

At least one attendant is required outside the permit space (one pre space) into which entry is authorized for the duration of the entry operation. Responsibilities include:



1. To know the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure.
2. To be aware of possible behavioral effects of hazard exposure on entrants.
3. To continuously maintain an accurate count of entrants in the permit space and ensures a means to accurately identify authorized entrants.
4. To remain outside the permit space during entry operations until relieved by another attendant (once properly relieved, they may participate in other permit space activities, including rescue if they are properly trained and equipped.)
5. To communicate with entrants as necessary to monitor entrant status and alert entrants of the need to evacuate.



6. To monitor activities inside and outside the space to determine if it is safe for entrants to remain in the space and orders the entrants to immediately evacuate if: the attendant detects a prohibited condition, detects entrant behavioral effects of hazard exposure, detects a situation outside the space that could endanger the entrants; or if the attendant cannot effectively and safely perform all the attendant duties.
7. To summon rescue and other emergency services as soon as the attendant determines the entrants need assistance to escape the permit space hazards.
8. To perform non-entry rescues as specified by that rescue procedure and entry supervisor.
9. Not to perform duties that might interfere with the attendants' primary duty to monitor and protect the entrants.
10. To take the following action when unauthorized persons approach or enter a permit space while entry is under way:
    a. Warn the unauthorized persons that they must stay away from the permit space;
    b. Advise unauthorized persons that they must exit immediately if they have entered the space; and

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c. Inform the authorized entrants and the entry supervisor if unauthorized persons have entered the permit space.

1926.1210 – Duties of Entry Supervisors

Entry supervisors are responsible for the overall permit space entry and must coordinate all entry procedures, tests, permits, equipment and other relevant activities. The following entry supervisor duties are required:



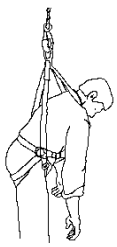
1. Know the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure.
2. Verifies, by checking that the appropriate entries have been made on the permit, all test specified by the permit have been conducted and that all procedures and equipment specified by the permit are in place before endorsing the permit and allowing entry to begin.
3. Terminate the entry and cancel the permit when the entry is complete and there is a need for terminating the permit.
4. Verify that rescue services are available and that the means for summoning them are operable.
5. Remove unauthorized persons who enter or attempt to enter the space during entry operations.
6. Determine whenever responsibility for a permit space entry operation is transferred and at intervals dictated by the hazards and operations performed within the space that entry operations remain consistent with the permit terms and that acceptable entry conditions are maintained.

Duties of Garney Management

Garney management has the overall responsibility for all confined space operations on Garney job sites. The management staff is responsible for the following:

1. Ensure proper training for entry.
2. Provide proper equipment for entry.
3. Ensure confined space assessments have been conducted.
4. Ensure all permit required confined spaces are posted.
5. Annually review this program and all Entry Permits.
6. Evaluate Rescue Teams/Service to ensure they are adequately trained and prepared.
7. Ensure rescue team at access during entry into spaces with IDLH atmospheres.
8. To ensure that Garney employees are following the requirements outlined within this program.

1926.1211 - Emergency Rescue Plan & Emergency Services



1. An emergency rescue plan will be developed for entry into each permitted confined space by the joint efforts of the Project Superintendent, Project Safety Supervisor, Regional Safety Manager and the appropriate emergency medical and rescue agencies.
2. Emergency rescue plans will take into account all foreseeable contingencies that might occur while working in the permit required confined space.
3. Prior to the start of a project, the project staff shall contact the local fire department to see if they have a technical rescue team trained in confined space and have the ability to respond to a rescue summons in a timely manner.

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4. If offsite rescue service is not available in a timely manner, Garney Construction shall establish an on-site permit required confined space rescue team. These individuals will be designated by the company and be provided with the following at no cost to the individual:
    a. Each individual will be provided proper personal protective equipment (PPE) needed to conduct rescues safely and be trained in its use;
    b. Training will be provided to the rescue team on proper rescue techniques for the assigned duties;
    c. Rescue team members will be trained in Frist Aid and CPR; and
    d. Rescue team shall complete re-training / practice making rescues prior to assignment, and at least once every 12 months.
5. Train and develop procedures for the project rescue team activation and summoning of rescue and emergency services for rescuing entrants from permit required confined spaces.
6. Provide necessary emergency services to rescued employees and prevent unauthorized personnel from attempting a rescue.
7. Employees involved with entry proceedings will be trained according to the emergency rescue plan and also will be certified in First Aid and CPR.

1926.1212 – Employee Participation

Garney Construction will consult with its employees and/or their authorized representatives on the development and implementation of this program.

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Appendix B – Example of Safe Operating Procedure (SOP)

for Permit Required Confined Space

Prior to Confined Space Entry

1. The following must be completed before entering the confined space:
    a. All entrants must complete and pass a pulmonary function test (PFT)
    b. All entrants must complete a respirator fit test and be instructed in the use and care of respirator
    c. All entrants must receive Hepatitis B series vaccinations
    d. All entrants must receive training in confined space and site specific Garney Construction safety training
    e. A Safety Task Analysis (STAC) must be completed with all entrants
    f. A confined space permit must be fully completed with each entrant's name and signature
    g. Training of standby watch personnel must be completed
    h. Location and contact made with local fire department for confined space rescue
    i. Training of personnel of monitoring and 15 minute escape devices
    j. All sources of potential energy (electrical, fluid, mechanical) shall be locked out and tagged out
2. The following must be obtained and be on hand at confined space:
    a. Retrieval unit set up at entrance to confined space.
    b. A reliable means of communication must be provided to entrants and standby watch personnel.
    c. Fifteen minute air escape units for each entrant.
    d. Required ventilation units on site and working.
    e. Two air monitoring device(s) calibrated to the anticipated contaminant(s) and oxygen.
    f. Required PPE (respirators, Tyvex suits, rubber boots, gloves)
    g. First Response first aid kit.
    h. Confined Space sign(s).
    i. Fall harness for each entrant.
    j. Flash lights (explosion proof)
    k. Lock out / tag out kit.
    l. Emergency wash station
3. Prior to entering the permit confined space, all the requirements listed above **"Prior to Confined Space Entry"** must be complete and/or obtained.

Confined Space Set-Up and Preparation

1. Open and vent man holes. Vent for a minimum of four (4) hours.
2. Set up and test retrieval mechanism.
3. Place Confined Space signs at all entrances to confined space.
4. Calibrate and test air monitor.
5. Set up and test air supplied respirators.
6. Check for and remove all internal combustion and/or flame heating devices from immediate area and/or from around ventilation system.
7. Coordinate, perform and verify all required lockout / tagout procedures.
8. Test communication devices.
9. Complete STAC with all personnel involved in confined space.

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Confined Space Monitoring

1. Monitor all entrances to confined space and record data on air monitoring form.
2. One monitor will be with entrant and second monitor will remain with attendant.
3. If alarm sound and/or set limits are exceeded all entrants shall exit immediately.
4. Both monitors must be working properly and in place during the entire operation inside.

Confined Space Entry

1. Only personnel qualified and designated by Garney Construction Project Superintendent may enter confined space.
2. All entrants' names must be on the Confined Space Permit prior to entering.
3. No smoking, eating or drinking while in confined space.
4. Constant communication must be maintained with entrants while in confined space. If communication is lost, entrants must exit the confined space immediately. If entrants do not respond to communications and do not exit immediately, emergency action plan must be initiated.
5. Ventilation shall remain on the entire time personnel are in confined space.
6. All entrants shall wear the PPE required while in confined space.
7. No chemicals, tools and/or supplies shall be taken into the confined space without approval from the Garney Construction superintendent.
8. The attendant shall remain at the confined space at all times. If the attendant must leave, the personnel in the confined space must exit or a replacement attendant must take over for the attendant.
9. Entrants to the confined space must not enter alone. The "buddy system" will be in effect at all times.
10. If any changes are made to the confined space, (ventilation, lighting, machinery added, energy release, etc.) all personnel must exit the confined space.
11. A new permit must be filled out and signed each day.
12. If any entrant should experience illness, dizziness, light-headedness, headache, shortness of breath, unusual odors and/or an injury, all personnel shall exit immediately.
13. All entrants shall be connected to a lifeline while in the confined space.
14. All entrants to the confined space shall be provided with a place and means to remove Tyvex clothing and wash hands.
15. Any personnel that are ill or with open wounds shall not enter confined space.

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Lock-Out/Tag-Out Program

Reference: 29 CFR 1926.417

29 CFR 1910.147



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Purpose:

Serious injury can result from a lack of respect paid to stored energy sources. The following section of this manual is a guideline to be followed on all Garney Projects to ensure the safety of our employee owners while performing work on pipe systems, electrical circuits, processing and/or equipment capable of having an energy source applied.

Definitions

Affected Employee - any employee who is not an Authorized Employee but is required to work in the area of equipment/machine/processes where Lockout procedures are being implemented.

Authorized Employee - any employee who utilizes Lockout procedures on equipment/machines/processes.

Control Mechanism - any lock or combination of locks, multi-lock hasps and/or other types of special mechanisms (chains, valve covers, breaker covers, etc.) applied to an energy-isolating device to ensure that it cannot be moved / operated.

Energy Isolating Device - a mechanical device that physically prevents the transmission or release of hazardous energy, including, but not limited to the following: a manually operated electrical circuit breaker; a disconnect switch; line valve; slide gate; similar device used to block or isolate energy.

Hazardous Energy Source - any type of energy that could injure anyone working on or near the equipment/machine/process if released as a result of work activities. Examples of hazardous energy sources include, but are not limited to the following: electrical; hydraulic (fluid/liquids); pneumatic (air); chemical; radiation; thermal; mechanical (from stored energy, like in flywheels and springs); and mechanical (from gravity).

Lockout - the placement of a control mechanism on an energy-isolating device that ensures that the equipment/machine/process being worked on cannot be operated / initiated until the control mechanism is removed.

Other Personnel - personnel or visitors to any work area where authorized employees are utilizing processes outlined in this Policy.

Operation Device - any switch, button, leaver, valve, etc. that is expressly intended for the starting or initiation of the equipment/machine/process.

Zero Energy State - the equipment/machine/process has been purged of and blocked from hazardous energy sources, which is no hazardous energy is present.

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Training

1. Each affected employee shall receive initial training during New Hire Safety Orientation on the procedures of the section for the expressed purpose of ensuring awareness of the prohibition of removing control mechanisms and/or operation / initiation of applicable equipment or processes.
2. Each authorized person shall receive training in the recognition of hazardous energy sources, the specific and/or common processes within their work area, types of control mechanisms, and the procedures of this section.
3. Both affected and authorized employees shall receive annual refresher training.
4. Re-training shall occur in the event that an affected or authorized employee displays violation to any part of this section during related work activities, there is a change in work assignment, equipment being used, energy control procedures or a new hazard is introduced.
5. All training shall be documented and signed by the instructor and copies of this documentation placed on the Safety SharePoint site.

General Rules

1. Each project must have one or more authorized supervisors with the responsibility to administer the Lock Out/Tag Out program.
2. All affected employees must be familiar with, and shall adhere to, the terms of this procedure. Failure to do so shall result in disciplinary action.
3. The Owner's representative must be contacted prior to locking out of any portion of an active or backup plant facility. When approval is required, this should be in writing.
4. Locks must be purchased specifically and used **only** for this purpose.
5. All locks for Lock Out/Tag Out shall be made of Xenoy (purchased from the Corporate Safety Menu) and shall be individually keyed.
6. The "DANGER" tags (available in the Corporate Safety Menu) shall be bi-lingual, must be signed by the employee applying the lock and tag and must be used where a lock is applied and never alone.





7. When more than one authorized supervisor must Lock Out/Tag Out the same equipment/process, separate locks and signed tags shall be applied by use of the multi-locking device / hasp.
8. Periodic inspections shall be done to ensure compliance with this program and shall be documented at least once a year.

Lock Out/Tag Out Procedures

1. Preparation
    a. Prior to beginning any work, a survey must be performed by an authorized supervisor to identify any/all sources and related exposures to determine if the need for Lock Out/Tag Out is required.
    b. Before turning off an energy source the authorized supervisor shall have a working knowledge of the type and magnitude of the energy, the hazards of the energy, and the method or means to control the energy before continuing.
    c. In the event shut down equipment could affect existing operations, communication and coordination with the plant representatives and affected subcontractors shall be accomplished by the authorized supervisor.

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   d. All employees working on or around the locked out energy source must receive specific instructions regarding their work under these conditions.
   e. The use of tag out devices only without a lock out device is prohibited.
2. Lock Out Application
   a. Turn off <u>all</u> energy to isolate machine/equipment in an orderly manner to avoid any additional or increased hazards.
   b. All lock out / tag out devices shall be affixed to each energy isolating device by authorized employees and shall be affixed to ensure that they will hold the energy isolating devices in a safe or off position.
   c. The "DANGER" tag shall be fastened at the same point the lock is attached. The information on the tag must include:
      i. Name of Employee and/or Company that installed the lock
      ii. Date installed
      iii. Expected completion date
3. In the event that multiple Lock Out/Tag Out locks and tags are applied, each key/lock pairing shall be numbered and keys shall be stored in a central lock box. The authorized supervisor shall apply his lock to the lock box containing all keys. One (1) supervisor shall be designated and responsible for every 15 people working within the group lock out/tag out.
4. Where lock out / tag out devices cannot be directly affixed to the energy isolating device, they shall be installed as close as safely possible to the device in a position that will be immediately obvious to anyone attempting to operate the device.
5. Removing Stored Energy
   a. Following the application of a lock and tag, all potentially hazardous stored or residual energy shall be relieved, disconnected, restrained and otherwise rendered safe.
6. Assuring Equipment is De-Energized
   a. Visually inspect the equipment/machine/process and/or use electronic or mechanical means to verify that a zero energy state has been reached and the equipment or machine has been isolated.
   b. Ensure that all affected and authorized employees are clear from the equipment/machine/process, and then try to activate the equipment/machine/process by initiating all identified operation devices to ensure that a zero energy state has been reached and that there is no possibility of accumulation of stored energy within the equipment or machine.
   c. Apply additional lockouts to any energy controlling devices having unprotected energy sources and repeat this procedure point until a zero energy state is obtained. Proceed with the required work activities for the equipment/machine/process when the zero energy state is obtained.
   d. If a zero energy state cannot be reached, contact your supervisor for instructions

<u>Release from Lock Out/Tag Out Procedures</u>

1. Before the Lock Out/Tag Out Devices are Removed
   a. The machine or equipment shall be inspected by the authorized supervisor to ensure that the equipment is free of obstructing materials (e.g., tools, dropped parts.)
   b. Affected employees shall be notified that the Lock Out/Tag Out devices are to be removed.
   c. All necessary adjustments, settings and other conditions are in proper order for the unit's start-up.
2. Lock Out/Tag Out Device Removal
   a. Each Lock Out/Tag Out device shall be removed from each energy-isolating device by the authorized supervisor who applied the device.

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   b. When the person who applied the lock or tag is unavailable, it may be removed by another employee authorized by the Project Manager if the following conditions are met:
      i. A reasonable attempt has been made to contact the person who applied the tag and verification has been obtained that he/she is not at the facility.
      ii. A thorough inspection of the process has taken place.
      iii. The person who applied the tag has knowledge of the lockout or tag out release before he/she resumes work.
      iv. A thorough search of the work area and removal of all personnel is accomplished.
3. Additional Considerations Before a Tag can be Removed
   a. When more than one crew, shift, craft, department or changing of personnel is involved:
      i. Assignment of coordination will be given to an employee authorized by the Project Superintendent who will ensure that all people involved have been notified.
      ii. The central lock box key shall be transferred to the appropriate authorized supervisor at the end of each shift.
4. Temporary Removal of Lock Out Tag Out Devices for Testing / Positioning Purposes
   a. In situation where lock out / tag out devices must be temporarily removed from the energy isolating device and the machine or equipment is to be energized to test or position the machine, the following sequence must be followed:
      i. Clear the machine or equipment of tools and materials
      ii. Remove employees from the machine or equipment area
      iii. Remove the lock out / tag out devices
      iv. Energize and proceed with testing to positioning
      v. De-energize all systems and reapply energy control measures
   b. Upon completion of the testing or positioning of the machine or equipment, follow the lock out / tag out procedures aforementioned in this section

Emergency Lock Removal Procedures

1. Every effort shall be made to personally contact authorized employees whom placed the lock prior to their lock being removed.
2. In the event the locks original owner cannot be contacted, their direct supervisor has the authority to the remove the lock. If the applicable supervisor is not physically capable, they may authorize another employee to remove the lock.
3. In either event, the direct supervisor of the authorized employee who originally placed the lockout mechanism(s) to be removed shall inform that employee of the removal **BEFORE** that employee returns to that work area.

Multi-Contractor & Sub Management

1. Authorized supervisors shall inform the supervision of other employers on a multi-employer work site of all aspects covered by this section during the Sub Contractor Outreach program.
2. Sub Contractors shall either supply their own program (which meets or exceeds this program) or must follow the procedures outlined in this section.

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HOT WORK PERMIT

(Please **TYPE or PRINT** All Information)

GARNEY

Instructions: Use this form to document work to be completed where a hot work permit would be required. The permit shall be at the location of the work being performed. This permit is only good for 8 hours or a single work shift. Upon completion of the work and closing of the permit it shall be filed on the project's SharePoint site.

JOB NAME		JOB NUMBER		DATE	
LOCATION OF WORK					
DESCRIPTION OF WORK TO BE PERFORMED					
TIME PERMIT IS OPENED	☐ AM ☐ PM	TIME PERMIT IS CLOSED	☐ AM ☐ PM		

ATMOSPHERIC TESTING MUST BE COMPLETED OF THE AREA WHERE THE WORK IS TO BE PERFORMED

OXYGEN	%	CARBON MONOXIDE	PPM	HYDROGEN SULFIDE	PPM	TIME	AM PM
LEL	%	OTHER		OTHER		CONTINUOUS TESTING	YES ☐ NO ☐

AIR MONITOR (MAKE & MODEL)		SERIAL NUMBER	
DATE AIR MONITOR WAS LAST CALIBRATED			

EMPLOYEES WORKING UNDER THIS PERMIT			FIRE WATCHES

CHECK THE APPROPRIATE BOXES

PERMITS REQUIRED LIST	YES	NO	N/A	EQUIPMENT-TOOLS-MATERIALS	YES	NO	N/A	ITEMS COMPLETED	YES	NO	N/A
CONFINED SPACE				SCAFFOLDS & LADDERS				LINES, VESSELS, SYSTEMS PURGED			
EXCAVATION				FALL PROTECTION IN PLACE				LINES, VESSELS, SYSTEMS CLEAN			
HOT TAPPING				NON SPARKING TOOLS				VENTILATION SYSTEM IN PLACE			
LINE BREAK				TEMPORARY PLATFORMS				DRAINS & SEWERS COVERED			
OTHER				AIRLINE RESPIRATORY SYSTEMS				VALVES CLOSED / IN SAFE POSITION			
TRAINING VERIFIED	YES	NO	N/A	S.C.B.A..				ENERGY SYSTEMS LOCKED OUT			
EMPLOYEES				MONITORING INSTRUMENTS				BLINDS INSTALLED			
FIRE WATCH				CHEMICALS, ACID, THERMAL SUITS				SYSTEMS DE-INERGIZED / ISOLATED			
CONFINED SPACE				FACESHIELDS, GOGGLES, HOODS				CHECKED FOR BENZENE			
EXCAVATION				FIRE EXTINGUISHING EQUIPMENT				CHECKED FOR LEAD			
EQUIPMENT OPERATOR				OTHER				CHECKED FOR ASBESTOS			
OTHER				OTHER				CHECKED FOR COMBUSTIBLES			
DRAWINGS REVIEWED	YES	NO	N/A	OTHER				MONITORING SYTEMS IN PLACE			
FLOW DIAGRAMS				OTHER				OTHER			
UNDERGROUND SYSTEMS				OTHER				OTHER			
ELECTRICAL & PNEUMATIC				OTHER				OTHER			
DRAIN & STORAGE SYSTEMS				OTHER				OTHER			
OTHER				OTHER				OTHER			

SPECIAL INSTRUCTIONS:	

COMPLETED BY		SIGNATURE		DATE	
APPROVED BY		SIGNATURE		DATE	

Revision Date: 01/2021

HWP - ___.___.___ - _____
(mm.dd.yy) Location

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STATEMENT OF BIDDER'S QUALIFICATIONS
COMPANY PROJECT EXPERIENCE
(Complete Form Only For Projects That Meet Minimum Criteria)

DESIGN TEAM DESIGN-BUILD PROJECT #1

Project Name	e2i2 Wet Weather EQ Stations with Gravity Sewer (PD/B)
Project Location	Chattanooga, TN
Contractor's Project Manager	Steve Jay (Brasfield & Gorrie)
Contractor's Project Superintendent	John Garrett (Brasfield & Gorrie)
Owners Representative & Phone Number	Mark Heinzer, P.E. // City of Chattanooga (423) 643 -7070
Design Engineer Representative Name & Phone Number	Cameron Traylor, P.E. // Gresham Smith (678) 518-3675
Site Clearing (acres)	Not Applicable
Initial Contract Amount	$ 5,130,000 (Included design through 60% and preparation of GMP)
Final Contract Amount	$ 150,000,000 (*Phase 2 with design through 100% and the cost of construction)
Project Duration	Date Started: March 2023 Date Completed: Ongoing Time Extensions: Not Applicable
Was Project Completed on Time?	Expected to be Completed On-TIme

Description of Major Project Components:

Gresham Smith serves as the Lead Design-Engineer for a Wet Weather Equalization Tank PD/B project for the City of Chattanooga consisting of two sites (10 MG and 30 MG), two large-scale diversion structures approximately 40' x 20', and two 50' deep pump stations.

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STATEMENT OF BIDDER'S QUALIFICATIONS
COMPANY PROJECT EXPERIENCE
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DESIGN TEAM DESIGN-BUILD PROJECT #2

Project Name	South Cross Bayou WRF Headworks Improvements
Project Location	Pinellas County, FL
Contractor's Project Manager	Weston Bashlor
Contractor's Project Superintendent	Jim Rudd
Owners Representative & Phone Number	Craig P. Osmanski, P.E. // Pinellas County 727.464.4000
Design Engineer Representative Name & Phone Number	Cameron Traylor, P.E. // Gresham Smith (678) 518-3675
Site Clearing (acres)	Not Applicable
Initial Contract Amount	$ 27,160,153
Final Contract Amount	$ 29,384,015 (Owner initiated change orders)
Project Duration	Date Started: February 2017 Date Completed: August 2022 Time Extensions: Not Applicable
Was Project Completed on Time?	Completed On-TIme

Description of Major Project Components:

Gresham Smith was selected as part of a PB/B team, including Garney as the Design-Builder, to provide improvements to the pretreatment systems at the South Cross Bayou Advanced Wastewater Reclamation Facility (SCBAWRF).

The PDB team developed innovative solutions for temporary bypass of the existing grit facility including large diameter above ground HDPE piping so that the structure could be demolished and replaced with the new headworks facility. During the design phase, the sequencing of construction and maintenance of plant operations was a major concern for the Owner. The team worked in close coordination with all parties to address concerns and develop a detailed construction sequencing plan that included temporary bypass of the existing grit structure with above ground HDPE piping, temporary odor control facilities, and reuse of existing structures for temporary grit removal. The new 11,200 CFM odor control system consists of twin biotrickling filter vessels, a polishing carbon scrubber, and ancillary components

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STATEMENT OF BIDDER'S QUALIFICATIONS
COMPANY PROJECT EXPERIENCE
(Complete Form Only For Projects That Meet Minimum Criteria)

DESIGN TEAM DESIGN-BUILD PROJECT #3

Project Name	Dowtown CSO Storage Basin with Gravity Sewer
Project Location	Middletown, OH
Contractor's Project Manager	Eric Rees, P.E., DBIA (Shook Construction)
Contractor's Project Superintendent	Josh Murray, Assoc. DBIA (Shook Construction)
Owners Representative & Phone Number	Scott Tadych // City of Middletown (513)425-7845
Design Engineer Representative Name & Phone Number	Cameron Traylor, P.E. // Gresham Smith (678) 518-3675
Site Clearing (acres)	Not Applicable
Initial Contract Amount	$ 2,003,022 (Phase 1 Deisgn) and $ 1,774,818 (Phase 2 Deisgn)
Final Contract Amount	$ 50,000,000 (Construction)
Project Duration	Date Started: November 2023 Date Completed: Ongoing Time Extensions: Not Applicable
Was Project Completed on Time?	Expected to be Completed On-TIme

Description of Major Project Components:

Gresham Smith and our contractor partner are working with the City of Middletown to design and build a high-performing, buried 5.1-MG CSO storage basin in downtown Middletown to meet its Consent Decree requirements with OEPA and USEPA. Aboveground design features will be included for the site to become a community attraction and asset for residents.

Making the site an asset to the downtown area will focus on working within the physical and fiscal realities of the project while maximizing community benefits. We will work with key stakeholders to align community needs and neighborhood aesthetics with this high-performing infrastructure project. The result will be a community asset that contributes to the overall health, revitalization and vibrancy of downtown Middletown.

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STATEMENT OF BIDDER'S QUALIFICATIONS
COMPANY PROJECT EXPERIENCE

CONTRACTOR DESIGN-BUILD PROJECT #1

(Complete Form Only For Projects That Meet Minimum Criteria)

Project Name	Honey Creek Force Main & Gravity Sewer Improvements Project (PD/B)
Project Location	Lithonia, Georgia
Contractor's Project Manager	**Billy Page**
Contractor's Project Superintendent	Bradley Wiggins
Owners Representative & Phone Number	Pavel Vayner // DeKalb County, GA (770) 414-2396
Design Engineer Representative Name & Phone Number	Christian Dunaway, P.E. // Tetra Tech (707) 375-8400
Site Clearing (acres)	Not Applicable
Initial Contract Amount	$ 6,007,166
Final Contract Amount	$ 6,007,166
Project Duration	Date Started: September 2016 Date Completed: October 2018 Time Extensions: Extended due toowner initiated scope changes
Was Project Completed on Time?	Project Completed On-Time with Extended Schedule

Description of Major Project Components:

This project included the removal of existing 16" DIP and the installation of 17,300 LF of 18" P-401 lined DIP sanitary force main that required a bypass using 10,000 LF of 16" fused HDPE pipe for a 1.2 MGD capacity and temporary line stops. This section required traffic control, stone backfill, and concrete cap requirements, as well as public relations with residents. Other work included extensive pavement replacement, electrical, six 48" manholes, and three 18" valves. The gravity sewer section travels up North Godard Road and included the replacement of existing 24" RCP with 6,400 LF of 30" P-401 lined DIP that required a bypass using 16" fused HDPE pipe and full road closures. A 2,000 LF section of pipe was routed through the Arabia Mountain Park preserve, which included blasting and hammering rock excavation. The rock required extra matting cover and proper execution to ensure safety and to the proper depths. This section also included an 80 LF open-cut creek crossing that required hoe-ramming rock excavation, installation of twenty 72" pre-cast manholes, asphalt pavement restoration, and 5,400 SF of seeding/sod restoration in residential yards.

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STATEMENT OF BIDDER'S QUALIFICATIONS
COMPANY PROJECT EXPERIENCE

CONTRACTOR DESIGN-BUILD PROJECT #2

(Complete Form Only For Projects That Meet Minimum Criteria)

Project Name	Gravity Sewer System Rehabilitation, Replacement and Construction - Package 3
Project Location	Decatur, Georgia
Contractor's Project Manager	**Billy Page**
Contractor's Project Superintendent	**Charles Woody**
Owners Representative & Phone Number	Tiffany Ware, Project Manager // DeKalb County, GA (770) 724-1469
Design Engineer Representative Name & Phone Number	Haydn Barnes, PE, Project Manager // River to Tap, Inc. (707) 375-8400
Site Clearing (acres)	Not Applicable
Initial Contract Amount	$ 22,957,580
Final Contract Amount	$ 40,815,270
Project Duration	Date Started: October 2020 Date Completed: July 2024 Time Extensions: Extended due to major scope changes, and various external delays
Was Project Completed on Time?	Project Completed On-Time with Extended Schedule

Description of Major Project Components:

This progressive design-build gravity sewer system replacement and rehabilitation project included a preconstruction and construction phase. The scope of work consisted of 2,000 LF of CIPP lining for 8" and 18" sewer lines, 112-point repairs with multiple existing pipe materials ranging from 8" to 30", and **29,000 LF of pipe replacement ranging from 8" to 30".** There were seven different projects within the overall construction contract with locations throughout DeKalb County. Rock excavation using hoe ramming and stream crossings occurred throughout the project. This was part of a $1.3 billion mandated consent decree project with a deadline of June 20, 2020.

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CONTRACTOR DESIGN-BUILD PROJECT #3

STATEMENT OF BIDDER'S QUALIFICATIONS
COMPANY PROJECT EXPERIENCE

(Complete Form Only For Projects That Meet Minimum Criteria)

Project Name	West Central Boulevard Gravity Sewer, Roadway, Utilitiy and Streetscape (D/B)
Project Location	Orlando, FL
Contractor's Project Manager	Dan Smolik
Contractor's Project Superintendent	Steve Mertz
Owners Representative & Phone Number	Mike Melzer // City of Orlando (407) 246-3187
Design Engineer Representative Name & Phone Number	Kurt Luman, Jr. //CPH, Inc. (407) 322-6841
Site Clearing (acres)	Not Applicable
Initial Contract Amount	$ 11,578,580
Final Contract Amount	$ 9,762,121
Project Duration	Date Started: September 2015 Date Completed: December 2018 Time Extensions: Extended due to owner initiated change orders
Was Project Completed on Time?	Project Completed On-Time with Extended Schedule

Description of Major Project Components:

The purpose of this project was to upsize the City's existing gravity sewer system to provide additional capacity for their new soccer stadium. This scope included the removal and installation of 2,758 LF of 8" gravity sewer with new 1,488 LF of 18" and 1,270 LF of 21" PVC gravity sewer lines, and twelve 48" and ten 60" manholes. The work involved bypass pumping 3.3 MGD of existing sewer flows, dewatering, 24/7 maintenance of traffic plans, and special restoration including removal and salvage of the brick roadway. After successful completion of Phase 1 in time for the stadium opener game, Phases 2 and 3 began. The purpose of Phase 2 was to prepare the ROW for Phase 3 by relocating overhead power to underground facilities. The Phase 2 scope included the installation of 2,100 LF of 6-way and 3,550 LF of 4-way underground 6" PVC duct bank, eight 15' x 7' electrical manholes and stub-outs, transformer pads, and paving. The duct bank was installed through open-cut methods within the street and included a 350 LF section of HDD. Phase 3 included rebuilding roadways, sidewalks, crosswalks, pavers, traffic signals, landscaping,and fencing.

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STATEMENT OF BIDDER'S QUALIFICATIONS
COMPANY PROJECT EXPERIENCE

(Complete Form Only For Projects That Meet Minimum Criteria)

SIMILAR SIZE AND SCOPE PROJECT #1

Project Name	Doby Creek and Little Sugar Creek Tributary to Fairview Road Sanitary Sewer Improvements (CMAR)
Project Location	Charlotte, North Carolina
Contractor's Project Manager	CJ Cahoy
Contractor's Project Superintendent	Jerry Taylor
Owners Representative & Phone Number	Chuck Bliss, PE, Engineer // Charlotte Water (704) 995-7518
Design Engineer Representative Name & Phone Number	James Struve, Vice President // Hazen & Sawyer (704) 941-6046
Site Clearing (acres)	Not Applicable
Initial Contract Amount	$ 30,068,328
Final Contract Amount	$ 29,626,256
Project Duration	Date Started: August 2017 Date Completed: September 2019 Time Extensions: Extended due to weather delays from hurricanes and heavy rain
Was Project Completed on Time?	Project Completed On-Time with Extended Schedule

Description of Major Project Components:

The Doby Creek and Little Sugar Creek Tributary to Fairview Road gravity sewers were 50 years old and could no longer accommodate growth within the Mecklenburg County service area. The design phase of this CMAR included plan review, value engineering, cost estimating, scheduling, and procurement. As the non-performing contractor, Garney managed the construction phase work. The Doby Creek segment included the installation of 3,050 LF of 36", 700 LF of 30", and 1,100 LF of 24" DIP; 3,700 LF of 30" and 7,050 LF of 24" PVC; 800 LF of 54" micro tunneling; 250 LF of 48" jack and bore crossing; and a 30" aerial crossing for 120 LF over wetlands. Additional work included bypass pumping, dewatering, 72" and 96" manholes, and rock excavation consisting of 14,200 CY of blasting and 315 CY of hoe ramming. **The Little Sugar Creek Tributary to Fairview Road gravity sewer included the installation of 3,026 LF of 30" and 3,361 LF of 24" PVC, along with 850 LF of 54" micro tunneling.** Additional work included bypass pumping, dewatering, an 84" manhole, rock excavation consisting of 4,500 CY of blasting and 200 CY of hoe ramming, 1,500 SY of paving, and tree canopy restoration.

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STATEMENT OF BIDDER'S QUALIFICATIONS
COMPANY PROJECT EXPERIENCE

(Complete Form Only For Projects That Meet Minimum Criteria)

SIMILAR SIZE AND SCOPE PROJECT #2

Project Name	Lower Bush Creek 42" Interceptor Sewer - Contract 1 and 2
Project Location	Johnson City, TN
Contractor's Project Manager	Ryan Quinn
Contractor's Project Superintendent	William Mitchell
Owners Representative & Phone Number	Jon Lane, Assistant Director // City of Johnson City, TN (423) 975-2629
Design Engineer Representative Name & Phone Number	Andrew Howe, PE, MBA, Senior Associate // Hazen & Sawyer (423) 308-7223
Site Clearing (acres)	Not Applicable
Initial Contract Amount	$ Contract 1: $13,347,960 // Contract 2: $11,748,644
Final Contract Amount	$ Contract 1: $12,708,599 // Contract 2: $11,748,644
Project Duration	Date Started: February 2021 Date Completed: August 2023 Time Extensions: Extended due to weeks due to start of construction delay
Was Project Completed on Time?	Completed on schedule

Description of Major Project Components:

Contract One of this project consisted of the installation of sanitary gravity lines within residential and rural streets including 13,355 LF of 42" PS46 PVC, 1,518 LF of 8" SDR35 PVC, 212 LF of 4" SDR-35 PVC sewer laterals, and a waterline consisting of 480 LF of 6" CL350 DIP. Also included the installation of 47 precast manholes ranging from 48" to 96" in diameter, removal of 16 and abandonment of 24 existing manholes, and removal of 6,400 LF of 30" RCP gravity sewer pipe during same ditch relay. The work included blasting and hoe ramming, clearing and erosion control, a bypass with an average daily flow of 8.5 MGD using 6,677 LF of 30", 4" to 6" dewatering using deep wells and hydraulic/electric pumps, service connections included 4" sewer and 3/4" water, and paving.

Contract Two was a continuation of Phase 1 that Garney completed and consisted of the installation of sanitary gravity pipelines including 7,602 LF of 42" and 40 LF of 36" DIP and 40 LF of 18", 400 LF of 8", 300 LF of 6", and 200 LF of 4" of PVC, with a max trench depth that reached 22 VF. The work required a 162 LF auger bore under a roadway using 60" steel casing, rock excavation consisting of 5,322 CY of hoe ramming and 2,779 CY of trenching, trench dewatering, 15 MGD of bypass pumping using 12,750 LF of 30" to keep the existing 30" RCP line in service for the duration of the project, 9,275 SF of paving, and precast manholes throughout the project including two 48", one 60", twenty 84", and five 96". The project also included the removal of 4,250 LF of 30" RCP gravity sewer pipe during the same ditch relay, the removal of nineteen manholes during the same ditch relay, and the abandonment of eleven manholes.

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STATEMENT OF BIDDER'S QUALIFICATIONS
COMPANY PROJECT EXPERIENCE

(Complete Form Only For Projects That Meet Minimum Criteria)

SIMILAR SIZE AND SCOPE PROJECT #3

Project Name	Cobb Fowler South Trunk Sewer Design
Project Location	Decatur, Georgia
Contractor's Project Manager	Contractor TBD - Currently Bidding
Contractor's Project Superintendent	Contractor TBD - Currently Bidding
Owners Representative & Phone Number	**Shawna Prescott // Dekalb County** **(770) 414.2363**
Design Engineer Representative Name & Phone Number	**Cameron Traylor, PE, Design Project Manager // Gresham Smith** (678)518.3675
Site Clearing (acres)	Not Applicable
Initial Contract Amount	$ 2,300,000 (Design)
Final Contract Amount	$ 50,000,000 (Construction)
Project Duration	Date Started: January 2023 Date Completed: July 2024 Time Extensions: N/A
Was Project Completed on Time?	On time and under budget.

Description of Major Project Components:

Gresham Smith was tasked with designing a 36-inch trunk sewer to alleviate SSOs along Cobbs Creek. This trunk sewer upsizing project, running a length of 14,835 linear feet, was required as part of DWM's Modified Consent Decree to be completed by December 2027.

The project runs from the proposed site of the Cobb Fowler Diversion Structure and then proceeds north, crossing Flat Shoals Parkway to southwest of the I-20/I-285 interchange. The project also included the replacement and redesign of the various 8-inch and 12-inch sanitary creek crossings, in addition to permitting the project though Georgia Department of Transportation (GDOT) right-of-way and Atlanta Gas Light (AGL) easements. Lastly, the project included public outreach to meet with residents and local businesses that would be impacted, and educate them on the project and how the project plan helped minimize impact to their daily lives.

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GARNEY

STATEMENT OF BIDDER'S QUALIFICATIONS
COMPANY PROJECT EXPERIENCE

(Complete Form Only For Projects That Meet Minimum Criteria)

ADDITIONAL HDPE PROJECT EXPERIENCE #1

Project Name	Eastern Shore Infrastructure Improvements - Transmission Force Main Phase I (D/B)
Project Location	Nassawadox, VA
Contractor's Project Manager	Craig Harding
Contractor's Project Superintendent	Leslie Carr
Owners Representative & Phone Number	Phil Hubbard, P.E. // Hampton Roads Sanitation District (757) 460-7049
Design Engineer Representative Name & Phone Number	Alan Edwards, P.E. // AECOM (757) 499-4224
Site Clearing (acres)	Not Applicable
Initial Contract Amount	$ 15,764,700
Final Contract Amount	$ 28,969,674 (*Owner initiated change orders)
Project Duration	Date Started: August 2021 Date Completed: Ongoing Time Extensions: Extended due to owner initiated change orders
Was Project Completed on Time?	Project Expected to be Completed On-Time with Extended Schedule

Description of Major Project Components:

This project was located on the eastern shore of Virginia and included new sanitary force mains and duplex lift stations to convey sewer flows from the Towns of Nassawadox and Exmore to the Onancock Wastewater Treatment Plant. These new facilities provided improved wastewater treatment for the Towns of Nassawadox, Exmore, Onancock, Wachapreague, and Accomac by taking advantage of unused capacity at the WWTP. The pipeline scope included the installation of 145,050 LF of 1.25" to 12" HDPE sanitary force main, 6,800 LF of 8" to 12" PVC sanitary gravity sewer, and CIPP lining of 9,800 LF of 12" existing pipe. The alignment required 26,100 LF of 4" to 18" HDPE directional drills for street crossings. The pump station work included the installation of five new duplex lift stations, and the rehabilitation of two existing lift stations, and the installation of 17 grinder pumps to private homes and businesses. All lift stations also include a wet well, piping, valves, valve vault, instrumentation and controls, and an emergency generator. After installations were completed, the new facilities were connected to the HRSD SCADA system.

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ADDITIONAL HDPE PROJECT EXPERIENCE #2

STATEMENT OF BIDDER'S QUALIFICATIONS
COMPANY PROJECT EXPERIENCE

(Complete Form Only For Projects That Meet Minimum Criteria)

Project Name	Force Main and Pump Station Memphis Regional Megasite
Project Location	Covington, TN
Contractor's Project Manager	Erich Engler
Contractor's Project Superintendent	Matt Burton
Owners Representative & Phone Number	Larry Milton // State of Tennessee - Real Estate Asset Management (615) 708-0083
Design Engineer Representative Name & Phone Number	T. Dwain Hibdon, P.E., PMP // SSOE Group (615) 661-7585
Site Clearing (acres)	Not Applicable
Initial Contract Amount	$ 45,825,000
Final Contract Amount	$ 49,572,485 (*Owner initiated change orders)
Project Duration	Date Started: January 2022 Date Completed: February 2024 Time Extensions: Extended due to scope changes
Was Project Completed on Time?	Project Completed On-Time with Extended Schedule

Description of Major Project Components:

This project provides offsite treated effluent conveyance for the new Ford Blue Oval City electric vehicle facility located in rural West Tennessee. The project included 37 miles of 18" to 20" sanitary force main piping and a 5.1 MGD wastewater pumping station. The pipeline followed highway and power line rights-of-way as it traversed portions of Haywood and Tipton County, passing through historic Covington, and terminating with an outfall into the Mississippi River near Randolph. The work included the installation of 109,400 LF of 18" HDPE, 74,700 LF of 20" HDPE, and 10,300 LF of 20" DIP sanitary force main. Crossings consisted of 1,088 LF of 30" steel casing auger bore and 40,500 LF of 18" directional drilling requiring Garney Marine support for HDD pull-back of the HDPE outfall pipe into the Mississippi River. The pump station consisted of three 400 hp vertical turbine pumps for a station capacity of 5.1 MGD including a concrete wet well and architectural building at grade.

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ADDITIONAL HDPE PROJECT EXPERIENCE #3

STATEMENT OF BIDDER'S QUALIFICATIONS
COMPANY PROJECT EXPERIENCE

(Complete Form Only For Projects That Meet Minimum Criteria)

Project Name	Greenland WRF Pipelines: Water, Reclaimed Water and Sanitary Sewer Force Mains (PD/B)
Project Location	Jacksonville, FL
Contractor's Project Manager	Rob Fults
Contractor's Project Superintendent	Humberto Del Cid Hall
Owners Representative & Phone Number	Elizabeth DiMeo // JEA (904) 665-8139
Design Engineer Representative Name & Phone Number	Kate Mechler // Mott MacDonald (412) 497-2921
Site Clearing (acres)	Not Applicable
Initial Contract Amount	$ 60,442,696
Final Contract Amount	$ 57,638,879
Project Duration	Date Started: June 2019 Date Completed: May 2024 Time Extensions:
Was Project Completed on Time?	Project Expected to be Completed On-Time

Description of Major Project Components:

Due to the construction of the new Greenland Water Reclamation Facility (WRF), Jacksonville Electric Authority (JEA) developed this project to transfer wastewater and reclaimed water to and from the WRF site. JEA selected the Progressive Design-Build procurement method including a preconstruction phase where Garney provided coordination, scheduling, route analysis, and constructability reviews during the 10%, 30%, and 60% design milestones followed by the construction phase. The scope included the installation of 1,880 LF of 36" PVC sanitary force main including a horizontal directional drilling (HDD) of 1,700 LF of 42" HDPE; a waterline consisting of 15,246 LF of 24" DIP and an HDD of 3,923 LF of 30" HDPE; reclaimed waterlines consisting of 2,806 LF of 24", 27,530 LF of 30", and 2,153 LF of 36" DIP, as well as HDDs of 1,700 LF of 30", 5,230 LF of 36", and 1,700 LF of 42" HDPE; and raw waterlines consisting of 551 LF of 30" DIP and HDDs of 1,730 LF of 36" HDPE. The project also included working within an existing railroad and FDOT right-of-way and the associated permit acquisition, traffic control, and dewatering.

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STATEMENT OF BIDDER'S QUALIFICATIONS
PROJECT MANAGER'S EXPERIENCE

(Complete Form Only For Projects That Meet Minimum Criteria)

PROJECT MANAGER EXPERIENCE #1

CONTRACTOR DESIGN-BUILD PROJECT #2

Project Name	Gravity Sewer System Rehabilitation, Replacement and Construction - Package 3
Project Location	Decatur, Georgia
Contractor's Project Manager	**Billy Page**
Owners Representative & Phone Number	Tiffany Ware, Project Manager // DeKalb County, GA (770) 724-1469
Design Engineer Representative Name & Phone Number	River to Tap, Inc. Haydn Barnes, PE, Project Manager // (707) 375-8400
Site Clearing (acres)	Not Applicable
Initial Contract Amount	$ 22,957,580
Final Contract Amount	$ 40,815,270
Project Duration	Date Started: October 2020 Date Completed: July 2024 Time Extensions: Extended due to major scope changes, and various external delays
Was Project Completed on Time?	Project Completed On-Time with Extended Schedule

Description of Major Project Components:

This progressive design-build gravity sewer system replacement and rehabilitation project included a preconstruction and construction phase. The scope of work consisted of 2,000 LF of CIPP lining for 8" and 18" sewer lines, 112-point repairs with multiple existing pipe materials ranging from 8" to 30", and **29,000 LF of pipe replacement ranging from 8" to 30".** There were seven different projects within the overall construction contract with locations throughout DeKalb County. Rock excavation using hoe ramming and stream crossings occurred throughout the project. This was part of a $1.3 billion mandated consent decree project with a deadline of June 20, 2020.

Docusign Envelope ID: A3705B48-B7E5-4F52-8480-5FF929E99139

STATEMENT OF BIDDER'S QUALIFICATIONS
PROJECT MANAGER'S EXPERIENCE

(Complete Form Only For Projects That Meet Minimum Criteria)

PROJECT MANAGER EXPERIENCE #2

CONTRACTOR DESIGN-BUILD PROJECT #1

Project Name	Honey Creek Force Main & Gravity Sewer Improvements Project (PDB)
Project Location	Lithonia, GA
Contractor's Project Manager	**Billy Page**
Owners Representative & Phone Number	Pavel Vayner // DeKalb County, GA (404) 747-3924
Design Engineer Representative Name & Phone Number	Christian Dunaway, PE // Tetra Tech, Inc. (404) 424-9956
Site Clearing (acres)	Not Applicable
Initial Contract Amount	$ 6,007,166
Final Contract Amount	$ 6,007,166
Project Duration	Date Started: September 2016 Date Completed: October 2018 Time Extensions: Extended due to additional work requested by the owner
Was Project Completed on Time?	Project Completed On-Time with Extended Schedule

Description of Major Project Components:

DeKalb County was in need of upgrading its sewer system to meet the County's anticipated sewer needs in the Honey Creek Sewer Basin for the next 45 years. Garney was selected as the progressive design-builder for a new pump station, force main, and gravity sewer. The old system at Honey Creek included the existing Honey Creek Pump Station and a 16" force main that spanned 17,000 feet along Rockland Road to an existing discharge manhole. From there, the flow was carried via a 24" gravity sewer to the Pole Bride Wastewater Treatment Plant.

This project included the removal of existing 16" DIP and re-installation of 17,300 LF of 18" P-401 lined DIP sanitary force main that required a bypass using 10,000 LF of 16" fused HDPE pipe for a 1.2 MGD capacity and temporary line stops. This section was primarily installed within streets which required traffic control, stone backfill, and concrete cap requirements. Garney partnered with DeKalb County Parks board and DeKalb County Community Outreach personnel to keep the public informed about the construction project.

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STATEMENT OF BIDDER'S QUALIFICATIONS
PROJECT MANAGER'S EXPERIENCE

PROJECT MANAGER EXPERIENCE #3

(Complete Form Only For Projects That Meet Minimum Criteria)

Project Name	Gwinnett Place Mall Sewer Upgrades - Phase 1
Project Location	Duluth, GA
Contractor's Project Manager	**Billy Page**
Owners Representative & Phone Number	Greg Jackson // Gwinnett County Department of Water Resources (678) 376-6917
Design Engineer Representative Name & Phone Number	Brian Jones // Hazen & Sawyer, PC (470) 427-718
Site Clearing (acres)	Not Applicable
Initial Contract Amount	$ 7,177,917
Final Contract Amount	$ 6,989,513
Project Duration	Date Started: November 2021 Date Completed: November 2022 Time Extensions: Schedule delays due to rock impacts, and delays caused by design issues.
Was Project Completed on Time?	Project Completed On-Time with Extended Schedule

Description of Major Project Components:

Gwinnett County purchased the Gwinnett Place Mall and transformed it into a shopping, eating, and living area. The purpose of the project was to upgrade the existing sewer in the abandoned mall area. The work included the installation of DIP sanitary gravity lines including 930 LF of 30", 3,060 LF of 24", 975 LF of 18", 26 LF of 12", 33 LF of 10", and 54 LF of 8". The work required a 30 VF deep cut for 500 LF, 40 LF of 2" dewatering, 300 LF of 4" bypass pumping line, thirty-two manholes ranging from 48" to 84", and 17,396 SF of paving. The alignment crossed multiple roads including the seven-lane I-85 highway for 475 LF using a 60" steel casing auger bore requiring interaction with the department of transportation and rock excavation using hoe ramming, as well as two smaller bores using 48" and 36" steel casings. Most of the project took place in a closed four-lane road that loops around the mall. The challenging aspect of this project included the schedule because the owner will suffer financial and other losses if milestones are not met.

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STATEMENT OF BIDDER'S QUALIFICATIONS
PROJECT SUPERINTENDENT'S EXPERIENCE
(Complete Form Only For Projects That Meet Minimum Criteria)

SUPERINTENDENT EXPERIENCE #1

CONTRACTOR DESIGN-BUILD PROJECT #2

Project Name	Gravity Sewer System Rehabilitation, Replacement and Construction - Package 3
Project Location	Decatur, Georgia
Contractor's Project Superintendent	**Charles Woody**
Owners Representative & Phone Number	Tiffany Ware, Project Manager // DeKalb County, GA (770) 724-1469
Design Engineer Representative Name & Phone Number	River to Tap, Inc. Haydn Barnes, PE, Project Manager // (707) 375-8400
Site Clearing (acres)	Not Applicable
Initial Contract Amount	$ 22,957,580
Final Contract Amount	$ 40,815,270
Project Duration	Date Started: October 2020 Date Completed: July 2024 Time Extensions: Extended due to major scope changes, and various external delays
Was Project Completed on Time?	Project Completed On-Time with Extended Schedule

Description of Major Project Components:

This progressive design-build gravity sewer system replacement and rehabilitation project included a preconstruction and construction phase. The scope of work consisted of 2,000 LF of CIPP lining for 8" and 18" sewer lines, 112-point repairs with multiple existing pipe materials ranging from 8" to 30", and **29,000 LF of pipe replacement ranging from 8" to 30".** There were seven different projects within the overall construction contract with locations throughout DeKalb County. Rock excavation using hoe ramming and stream crossings occurred throughout the project. This was part of a $1.3 billion mandated consent decree project with a deadline of June 20, 2020.

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STATEMENT OF BIDDER'S QUALIFICATIONS
PROJECT SUPERINTENDENT'S EXPERIENCE

SUPERINTENDENT EXPERIENCE #2

(Complete Form Only For Projects That Meet Minimum Criteria)

Project Name	Gwinnett Place Mall Sewer Upgrades - Phase 1
Project Location	Duluth, GA
Contractor's Project Superintendent	**Charles Woody**
Owners Representative & Phone Number	Greg Jackson // Gwinnett County Department of Water Resources (678) 376-6917
Design Engineer Representative Name & Phone Number	Brian Jones // Hazen & Sawyer, PC (470) 427-718
Site Clearing (acres)	Not Applicable
Initial Contract Amount	$ 7,177,917
Final Contract Amount	$ 6,989,513
Project Duration	Date Started: November 2021 Date Completed: November 2022 Time Extensions: Schedule delays due to rock impacts, and delays caused by design issues.
Was Project Completed on Time?	Project Completed On-Time with Extended Schedule

Description of Major Project Components:

Gwinnett County purchased the Gwinnett Place Mall and transformed it into a shopping, eating, and living area. The purpose of the project was to upgrade the existing sewer in the abandoned mall area. The work included the installation of DIP sanitary gravity lines including 930 LF of 30", 3,060 LF of 24", 975 LF of 18", 26 LF of 12", 33 LF of 10", and 54 LF of 8". The work required a 30 VF deep cut for 500 LF, 40 LF of 2" dewatering, 300 LF of 4" bypass pumping line, thirty-two manholes ranging from 48" to 84", and 17,396 SF of paving. The alignment crossed multiple roads including the seven-lane I-85 highway for 475 LF using a 60" steel casing auger bore requiring interaction with the department of transportation and rock excavation using hoe ramming, as well as two smaller bores using 48" and 36" steel casings. Most of the project took place in a closed four-lane road that loops around the mall. The challenging aspect of this project included the schedule because the owner will suffer financial and other losses if milestones are not met.

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SUPERINTENDENT EXPERIENCE #3

STATEMENT OF BIDDER'S QUALIFICATIONS
PROJECT SUPERINTENDENT'S EXPERIENCE

(Complete Form Only For Projects That Meet Minimum Criteria)

Project Name	Niles Avenue Sewer Improvements
Project Location	Atlanta, GA
Contractor's Project Superintendent	**Charles Woody**
Owners Representative & Phone Number	Mikita Browning // City of Atlanta, GA (404) 546-3333
Design Engineer Representative Name & Phone Number	Jay Landman // City of Atlanta, GA (404) 546-1767
Site Clearing (acres)	Not Applicable
Initial Contract Amount	$ 11,782,993
Final Contract Amount	$ 11,782,993
Project Duration	Date Started: September 2019 Date Completed: December 2020 Time Extensions: Extended due to change orders for coordinating MOT plans and COVID-19 restrictions.
Was Project Completed on Time?	Project Completed On-Time with Extended Schedule

Description of Major Project Components:

The work included a 60" micro tunnel for 1,856 LF including 764 LF of 72" curved rock tunnel the remaining 1,092 LF required a 48" RCP casing. Once the tunnel operation was completed, 1,856 LF of 18" DIP sanitary gravity carrier pipe was installed in the tunnel along with two 212 LF sections of 18" DIP sanitary gravity open-cut installation on each end of the tunnel. A 2 MGD bypass using 1,000 LF of 16" sewer line was required to keep the line in service during construction. There were four shafts for the tunnel operations ranging from 16' to 25' with an average shaft depth of 48 vertical feet through mix of soils and rock. Six 60" manholes were placed in each shaft to connect the sewer to the existing sewer lines and one existing manhole was sprayed with epoxy. Once all 2,280 LF of 18" DIP was in place, the tunnel segments were tested and grouted in place, and final connections were made using 60" manholes to the existing 18" pipe on each end of the new alignment, and then flows were routed into the new gravity sewer pipe. The old existing sewer line was bulk-headed on two ends and grout filled.

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END OF SECTION

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Special Conditions - Exhibit 2: Easement Documents

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Easement Documents

- Affidavit of Owner(s)
- PW Directions and Document Checklist
- Sewer Easement from Individual

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Affidavit of Owner(s)

Docusign Envelope ID: A3705B48-B7E5-4F52-8480-5FF929E99139

STATE OF GEORGIA
COUNTY OF FULTON

AFFIDAVIT OF OWNER(S)

Personally appeared before me, the undersigned attesting authority in and for said State and County, the undersigned deponents who being duly sworn, depose and say on oath that the following described property (hereinafter "Property") is owned by _____ (hereinafter "Owner" **or "Owners"**), to wit:

See Exhibit "A" Attached Hereto And By
This Reference Incorporated Herein

That the Property is also fully described in a Right of Way Deed/Sewer Easement/Water Line Easement/Water Vault Easement this date executed and delivered to **Fulton County** by Owner **or Owners** or under Owner's **or Owners'** due authorization.

That there is no outstanding indebtedness for equipment, appliances, or other fixtures attached to the Property.

That insofar as deponent is **or deponents are** aware, all improvements on the Property are within the boundary lines of the Property and do not encroach on any other land.

That the lines and corners of the Property are clearly marked, and that there are no disputes concerning the location of the lines and corners.

That there are no pending suits, proceedings, judgments, bankruptcies, liens, or executions against Owner **or Owners** either in the aforesaid County or any other County in the State of Georgia, except for those items listed on ***Exhibit B*** (if appropriate) attached hereto and by this reference incorporated herein.

That Owner has **or Owners have** been in open and peaceful possession of the Property, that deponents know of no adverse claims to Owner's **or Owners'** claim of title, and that Owner has **or Owners have** a perfect right to convey good, fee simple, marketable title to the Property free and clear of any liens or encumbrances.

That no improvements or repairs have been made on the Property during the ninety-five (95) days immediately preceding this date or, if there were any such improvements or repairs made, that the agreed price or reasonable value of all labor, services and materials has been paid to all contractors, subcontractors, suppliers, laborers, materialmen or other person providing such labor, services or materials; that the improvements or repairs have been fully completed in accordance with the terms of the contracts; that there are no contracts pending and not yet completed; and that there are no outstanding debts incurred for labor or materials used in making such improvements or repairs or for services of architects, surveyors, engineers or other person incurred in connection therewith. Deponent acknowledges **or Deponents acknowledge** that these representations regarding such improvements or repairs are made pursuant to the provisions of the Official Code of Georgia Annotated §44-14-361.2.

That there are no unpaid bills or liens against the Property for sewerage, water main, sidewalk or street improvements.

That there are no leases or tenancies on the Property.

That there are no retention of title contracts, bills of sale or other encumbrances of record affecting title to any personal property installed on the Property.

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That deponent has **or deponents have** received no notice of, nor is deponent **or are deponents** aware of, any pending, threatened or contemplated action by any governmental authority or agency having the power of eminent domain, which might result in any part of the Property being taken by condemnation or conveyed in lieu thereof.

That Owner has **Owners have** not entered into, nor are there, any agreements or contracts relating to any development, sale or leasing of the Property except to FULTON COUNTY.

That deponent has **or deponents have** received no notice (oral or written) that any municipality or other governmental or quasi-governmental authority has determined that there are any violations of zoning, health, environmental, or other statutes, ordinances or regulation affecting the Property, and deponent has **or deponents have** no knowledge of any such violation. In the event deponent has **or deponents have** knowledge of any such violations prior to the closing of the sale of the Property to FULTON COUNTY, deponent **or deponents** shall promptly notify FULTON COUNTY thereof.

That deponent has **or deponents have** no knowledge of the Property having been previously used as a landfill, dump, or storage facility for garbage or refuse.

That deponent has **or deponents have** received no notice (oral or written) of the existence of any areas on the Property where "hazardous substances or waste" (as hereinafter defined) have been disposed of, released, or found, and deponents have no knowledge of the existence of any such areas or of the storage or disposal of any hazardous substances or waste on the Property. For purposes of this Affidavit, the term "hazardous substances or waste" shall mean petroleum (including crude oil or any fraction thereof), petroleum products, asbestos or asbestos products and any substance identified in CERCLA, or any other federal, state or county legislation or ordinances regarding use, storage or disposal of substances which may be termed "hazardous" or "waste."

That Owner is **or Owners are** not classed as non-resident alien **or aliens** for purposes of income taxation by the United States of America.

Deponent is **or Deponents are** aware that this affidavit is made to induce FULTON COUNTY to accept the Property from Owner **or Owners**. Deponent acknowledges **or Deponents acknowledge** that the matters set forth herein pertain to such state of facts as exists on the date this Affidavit is given prior to the delivery of the Right of Way Deed/Sewer Easement/Water Line Easement/Water Vault Easement to FULTON COUNTY.

Signed, sealed and delivered this _____
day of _____, 20 _____
in the presence of:

_____
Witness

By: _____ (L.S)

Print Name: _____ (L.S.)

_____
Notary Public

[NOTARIAL SEAL]

Signed, sealed and delivered this _____
day of _____, 20 _____

Docusign Envelope ID: A3705B48-B7E5-4F52-8480-5FF929E99139

in the presence of:

_____ By: _____ (L.S)

Witness Print Name: _____ (L.S.)

_____

Notary Public

[NOTARIAL SEAL]

Docusign Envelope ID: A3705B48-B7E5-4F52-8480-5FF929E99139

PW Directions and Document Checklist

Docusign Envelope ID: A3705B48-B7E5-4F52-8480-5FF929E99139

RIGHT-OF-WAY/EASEMENT DEDICATION PROCESS
DIRECTIONS AND DOCUMENT CHECKLIST

DIRECTIONS

Step #1: Acquire appropriate documentation from a representative of the Department of Public Works. Documents include:

- Directions and Document Checklist
- Right-of-Way or Easement Dedication Information Summary
- Right-of-Way Deed or Easement Document
  (Note: please ensure you have the proper document for the right-of-way/easement dedication. The "individual forms" are to be executed by an individual (or individuals) whereas the corporate forms are to be utilized by corporations, LLCs, partnerships and the like.)
- Owner's Affidavit Document (Corporate or Individual)
- Signature requirements

Step #2: Prepare documents, plats, and legal description under the requirements set forth in these directions and by the representatives of the Public Works Department.

Step #3: Return completed deed or easement forms, plats, legal description (if necessary), and any other required documentation to the Public Works Department. A representative of the Public Works Department will conduct a cursory review of the documentation and ensure that the plat has been prepared correctly.

Step #4: Once plat is approved **and initialed** by a representative of the Public Works Department, submit all required documentation to the Land Division, which is located on the 8th floor of the Government Center in **Suite 8021**.

Step #5: A representative of the Land Division will conduct a thorough review of the documentation. If all of the requested information has been provided and no corrections are needed, the Land Division will accept the deed or easement for processing and will provide an approval form to be returned to the Public Works Department.

Step #6 Return Land Division approval form and copy of deed or easement to E & CD. A representative for the appropriate municipal department will then grant your land disturbance permit if all of their other requirements have been met.

IF YOU HAVE ANY REAL ESTATE-RELATED QUESTIONS REGARDING THIS PROCESS,
PLEASE CONTACT THE LAND DIVISION AT 404-730-7870.

IF YOU HAVE ANY QUESTIONS REGARDING THE PERMITTING PROCESS,
PLEASE CONTACT ENVIRONMENT & COMMUNITY DEVELOPMENT AT 404-730-8000.

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IMPORTANT NOTICE

*****RIGHT OF-WAY AND EASEMENT DEDICATIONS MAY ONLY BE RECORDED BY A REPRESENTATIVE OF THE LAND DIVISION. PLEASE DO NOT ATTEMPT TO RECORD THESE DOCUMENTS ON YOUR OWN. THANK YOU. *****

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FULTON COUNTY

RIGHT-OF-WAY/EASEMENT DEDICATION PROCESS
DIRECTIONS AND DOCUMENT CHECKLIST

CHECKLIST

The following items must be submitted to the Land Division for proper processing:

- ✓ Fully executed document signed in accordance with signature requirements included in the document entitled "Requirements for Conveying Title to Land". All documents shall be witnessed and notarized.
- ✓ Executed "Owner's Affidavit" form. This document shall also be witnessed and notarized. Please note that the "individual form" is to be executed by an individual (or individuals) whereas the corporate form is to be utilized by corporations, LLCs, partnerships and the like.
- ✓ Copy of title report showing current ownership to the property **OR** copy of most recent recorded deed to property showing current ownership
- ✓ Proof of authorization to sign for corporation, LLC, partnership, etc. (*See Item #2 on Requirements for Conveying Title to Land)*
- ✓ Completed Information Summary *(Attached to Right-of-Way Deed or Easement Document)*
- ✓ Plat map *(to be attached as **"Exhibit A"** to the right-of-way deed/easement document and the owner's affidavit; see requirements below)*
- ✓ Metes and bounds legal description of area to be dedicated

PLAT MAP REQUIREMENTS

- ✓ Plat map shall be signed, stamped, and dated by a professional engineer (P.E.) or a registered land surveyor
- ✓ Plat map shall be no smaller than **8 ½ inches by 11 inches** and no larger than **11 inches by 17 inches**
- ✓ Plat map shall provide enough information to easily identify dedicated right-of-way area or dedicated easement area in the field. Please show land lot lines.
- ✓ Name of project shall be shown on map
- ✓ Parcel identification number of each impacted property shall be included
- ✓ Name of property owner(s) of each impacted property shall be included
- ✓ Map shall have a north arrow

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- ✓ Please show scale of plat map (minimum scale 1”=20’; maximum scale 1”=100’)
- ✓ Note existing conditions within easement area

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RIGHT-OF-WAY/EASEMENT DEDICATION PROCESS
DIRECTIONS AND DOCUMENT CHECKLIST

PLAT MAP REQUIREMENTS (continued)

- ✓ Describe right-of-way and/or easement area by bearings and distances
- ✓ Describe any water/sewer lines by bearings and distances
- ✓ Easement shall be tied back to the point of beginning. Provide angle and distance tie at each property line.
- ✓ Indicate the total square feet of construction and permanent easement for each property owner (Note: Permanent easements shall be a minimum width of 20 feet)
- ✓ Indicate Grantor(s) name in title block of right of way/easement plat
- ✓ Indicate subdivision name (if known) and include plat book page and number

OTHER NOTES

- ✓ Please make sure to print names below signatures. Those signing on the behalf of a corporation, LLC, partnership, etc. should also provide their title.
- ✓ Any corrections made to the document should be crossed out and initialed by those signing the document.
- ✓ Please do not make any changes to the wording of the document without prior approval from the Land Division (404-730-7870). Any unauthorized changes to the form could delay the permitting process.
- ✓ Projects often require the acquisition of property rights from neighboring property owners. An example of this situation would involve the need to acquire a sewer or water line easement across an abutting property so that a petitioner's (developer's) property could be connected to the nearest sewer or water line. In these situations, the petitioner **must** negotiate with the neighboring property owner(s) in an attempt to acquire the necessary right-of-way and/or easements. Please note the following:

    - Right-of-way/easement dedications will only be accepted if executed on forms approved by Fulton County. As noted above, please do not make any changes to the document language without prior approval from the Land Division (404-730-7870). Any stipulations or monetary agreements between the petitioner and the neighboring property owner should be included in a separate agreement between the two parties.
    - Petitioner must provide proof of ownership (copy of recorded deed or title report) of the person or entity granting the right-of-way and/or easement to Fulton County. Please remember to obtain proof of authorization to sign for corporation, LLC, partnership, etc.
    - If the right-of-way and/or easement area required for the project has already been dedicated to Fulton County, please provide a copy of the recorded right-of-way deed, easement document, and/or plat.

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Sewer Easement from Individual

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EASEMENT DEDICATION INFORMATION SUMMARY

Fulton County Land Division
141 Pryor Street, Suite 8021
Atlanta, Georgia 30303
404-612-7870
404-730-7877 (fax)

FOR FULTON COUNTY USE ONLY

Project Name: _____
Development Type: _____
LDP Number: _____
Zoning/Special Use Number: _____
Easement Width (in Feet) _____

Easement Type (circle one) Sewer Water Vault Water Line

Approval Date & Initials _____

PETITIONER INFORMATION

(** Please attach business card if available **)

Developer Name: _____
Name of Entity or Person Dedicating Property: (if different than above) _____

Contact Person: _____
Contact Company (if different than above): _____
Contact Phone Number: _____
Contact E-mail Address: _____

SITE INFORMATION (TO BE COMPLETED BY PETITIONER)

District Number: _____ Section Number*: _____ Land Lot(s): _____
*(if applicable)

Tax Parcel Identification Number(s) of the **parcel(s) from which the easement is being dedicated** (Please note if property is a parent parcel to be subdivided): _____

If the **property to be developed** was purchased within past three years, please provide the following information:
Sales price: _____
Sales date: _____
Total acreage _____

Do you anticipate that ownership of the **parcel(s) from which the easement is being dedicated** will change within the next 60 days? (If yes, please provide date) _____

***** THESE DOCUMENTS MAY ONLY BE RECORDED BY A REPRESENTATIVE OF THE LAND DIVISION. PLEASE DO NOT ATTEMPT TO RECORD THEM ON YOUR OWN. THANK YOU.*****

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[BLANK SPACE ABOVE THIS LINE IS FOR THE SOLE USE OF THE CLERK OF SUPERIOR COURT]

*****THIS DOCUMENT MAY BE RECORDED ONLY BY PERSONNEL OF THE FULTON COUNTY LAND DIVISION*****

Return Recorded Document to:
Fulton County Land Division
141 Pryor Street, S.W. – Suite 8021
Atlanta, Georgia 30303

Project Name : _____
Tax Parcel Identification No.: _____
Land Disturbance Permit No.: _____
Zoning/Special Use Permit No.: _____
(if applicable)

For Fulton County Use Only

Approval Date: _____
Initials: _____

SEWER EASEMENT
(Individual Form)

STATE OF GEORGIA,
COUNTY OF FULTON

This indenture entered into this _____ day of _____, 20_____, between _____ of said state and county, party of the first part (hereinafter referred to as Grantor) and **FULTON COUNTY**, a Political Subdivision of the State of Georgia, party of the second part (hereinafter referred to as Grantee).

WITNESSETH, that for and in consideration of $1.00 in hand paid, at and before the sealing and delivery of these presents, the receipt whereof is hereby acknowledged and in consideration of the benefits which will accrue to the undersigned from the construction of a sewer line through subject property, and in consideration of the benefits which will accrue to the subject property from the construction of a sewer line through the subject property, said Grantor(s) has (have) granted, bargained, sold and conveyed and by these presents does grant, bargain, sell and convey to FULTON COUNTY and to successors and assigns the right, title, and privilege of easements through subject property located in Land Lot(s) _____, _____ Section *(if applicable)* of District _____, Fulton County, Georgia, and more particularly described as follows: To wit:

_____

Project Name

[See Exhibit "A" attached hereto and made a part hereof]

This right and easement herein granted being to occupy such portion of my property as would be sufficient for the construction, access, maintenance and upgrade of a sewer line through my property according to the location and size of said

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sewer line as shown on the map and profile now on file in the office of the Public Works Department of Fulton County, and which size and location may be modified from time to time including in the future after the date of this document to accommodate said sewer line within the aforesaid boundaries of the above-described easement.

For the same consideration, Grantor(s) hereby conveys (convey) and relinquishes (relinquish) to FULTON COUNTY a right of access over Grantor's (Grantors') remaining lands as necessary for FULTON COUNTY to perform maintenance and repairs on said sewer line on both a routine and emergency basis.

I (We) hereby warrants (warrant) that I (we) have the right to sell and convey said sewer line easement and right of access and bind myself (ourselves), my (our) heirs, executors, and administrators, forever to warrant and defend the right and title to the above described sewer line easement unto the said FULTON COUNTY, its successors and assigns against the claims of all persons whomever by virtue of these presents.

Said Grantor(s) hereby waives (waive) for him/herself (their selves), him/her (their) heirs, and assigns all rights to any further compensation or claim to damages on account of the construction, access, upgrade or maintenance of said sewer line for the use of the property as herein agreed.

IN WITNESS HEREOF said party of the first part has hereunto affixed his/her (their) hand(s) and seal(s) on the day and year first above written.

Signed, sealed and delivered this _____
day of _____ , 20 _____
in the presence of:

_____ By: _____ (L.S.)
Witness

_____ Print Name: _____ (L.S.)
Notary Public

[NOTARIAL SEAL]

Signed, sealed and delivered this _____
day of _____ , 20 _____
in the presence of:

_____ By: _____ (L.S.)
Witness

_____ Print Name: _____ (L.S.)
Notary Public

[NOTARIAL SEAL]

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Special Conditions - Exhibit 3: Blasting

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Blasting

Blasting may be allowed for removing rock for excavation when properly permitted.

1. Blasting will only be allowed with pre-approval from Fulton County.
2. When blasting, the Contractor must use all possible precautions against accidents or damages due to use or storage of explosives, and assumes all responsibility/liability associated with blasting activities.
3. ONLY LICENSED EMPLOYEES OR SUBCONTRACTORS WILL BE ALLOWED TO CONDUCT BLASTING ACTIVITIES – PROOF OF SUCH LICENSING MUST BE PROVIDED TO THE OWNER PRIOR TO ENGAGING IN ANY BLASTING ACTIVITIES.
4. Explosives shall be used, handled and stored as prescribed by the laws and regulations of the State of Georgia, and all applicable local laws and regulations pertaining to such.
5. All explosives shall be stored in a safe place at a sufficient distance from the work so that no damage will occur to any portion of the work should an accident occur relating to the stored explosives.
6. Conduct blasting operations in accordance with all existing ordinances and regulations. Protect all buildings and structures from the effects of the blast. Repair any resulting damage. If the Contractor repeatedly uses excessive blasting charges or blasts in an unsafe or improper manner, the Owner may direct the Contractor to employ an independent blasting consultant to supervise the preparation for each blast and approve the quantity of each charge.
7. Removal of Rock: Dispose of rock off site that is surplus or not suitable for use as rip rap or backfill.
8. The Contractor shall notify the Owner prior to any blasting. Additionally, the Contractor shall notify the Owner and local fire department before any charge is set
9. Furnish all labor, equipment and materials required to drill, blast, loosen, excavate, and dispose material to complete the work shown on the Drawings and specified herein.
10. The work includes, but is not be limited to:

    a. Blast round design.

    b. Planning and execution of appropriate site-specific safety measures to be employed during all blasting operations, and the safe handling and storage of high explosives and blasting agents.

    c. Drilling blast holes, loading blast holes with explosives, and wiring and safe detonation of blast rounds.

    d. Removal from the site of all excess excavated soil, debris, and rock as indicated in the Contract Documents, or as directed, and disposal of excess materials at a permitted disposal site.

    e. Dewatering and maintenance of groundwater and surface water in all excavations.

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f. Performance of all surveys necessary to establish and verify the lines and grades and to determine the amount of material removed.

g. Implementation of monitoring program to monitor condition of existing structures and utilities in vicinity of proposed blasting operations to insure existing features remain undamaged by blasting procedures.

12. Make all excavations in conformance with the lines, grades and cross sections on the Drawings or established by the Owner. Where blasting is required, blasting should ensure removal of six inches (6") of rock below proposed grade line.

13. All over-blast shall be removed and the resulting over-excavation backfilled and compacted with #57 gradation stone coarse aggregate.

14. Conduct all blasting operations, including transporting and storing of explosives in compliance with the Georgia State Fire Commissioner's Rules and Regulations for Explosives and Blasting Agents, latest edition and all applicable local codes.

15. Blasting Submittals

    a. Submit the following in accordance with the procedures and requirements set forth in Section 01 33 00 Submittal Procedures, at least thirty (30) working days prior to beginning any blasting operations:

        1) Names, addresses, telephone numbers, and qualifications of the blasting subcontractor(s) and explosives supplier(s) that will be used, including the designated Blaster-In-Charge.

        2) Copies of Training Certificates for the designated Blaster-In-Charge, blasting foreman and any other key personnel that will be responsible for the work, showing that they have received specialized training in the proper handling of explosives.

        3) A Blasting Plan, indicating the methods, materials and equipment to be used. The Blasting Plan should indicate the types of explosives to be used, drilling patterns, and a general layout and schedule for executing the work in accordance with state regulations.

        4) A ground vibration and air blast monitoring plan, indicating structures that will be monitored, monitoring equipment that will be used, and personnel that will perform the monitoring.

16. At least 24 hours before each blast round, submit a detailed blast round design plan to the Owner. The blasting plan submitted is for quality control and record keeping purposes. Review by the Owner does not relieve the Contractor of his responsibilities as provided herein. Include the following in the blast round design submittals:

    a. Location (state, grid coordinates) and limits of the shot.

    b. Number, diameter, and depth of blast holes to be detonated in the round, and a plan showing the drill hole pattern, spacing and distance to the free face.

    c. Depth of overburden.

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d. Total weight of explosives in the round and the types of explosives to be used.

e. Loading diagram showing the location of explosives, primers, and initiators; and location, depth, and type of stemming to be used in each hole.

f. Initiation sequence, including delay timer and delay system, total weight of explosive to be detonated on each delay, and a list of the timing of the delays.

g. Manufacturer's data sheet for all explosives, primers, and initiators to be used.

h. Planned seismic monitoring positions, distances from the blast round, and seismograph types to be used to monitor vibrations and air blast overpressures.

i. Type and amount of blasting mats and/or depth of soil cover to be used over the top surface of the shot.

j. Any other information required by applicable state and federal regulations.

17. Within 24 hours after each blast round, submit a blasting report to the Owner. Include the following in the blasting report:

a. Date and time of shot.

b. Foreman's name.

c. Number and depth of holes detonated.

d. Weather conditions at the time of detonation.

e. Type of explosives and detonators used.

f. Peak particle velocity of ground motion and primary frequency for all ground vibration monitoring stations.

g. Peak air blast overpressure measured.

h. Distance from the blast round to each monitoring station for vibrations and air blast.

i. Amount of explosive used in each hole, and maximum weight of explosive detonated on any single delay in the blast round.

E. Pre-Blast Survey

1. Contractor shall have an approved vibration consultant conduct the pre-blast survey on the residences and facilities adjacent to the proposed rock blasting in accordance with the submitted survey and monitoring plan.

2. The survey shall include, but not be limited to the following:

a. A site plan or drawing of the structure to be examined showing the structure in relationship to the proposed rock blasting area and a full description of the structure including type of materials and construction.

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b. Examination of the structure (interior and exterior surfaces) by experienced and qualified personnel, noting any visible structural and aesthetic flaws in or on the structure. Note existing cracks and flaws, with significant cracks measured, and all cracks and flaws photographed.

c. Upon completion of the examination, ask the structure's owner to review the report, note any corrections or omissions, and sign a statement that to the best of his knowledge, the examination report reflects the conditions of the structure prior to any rock blasting. If the structure's owner refuses to sign said report, it should be noted in the report by the examiner.

d. Nothing contained herein shall relieve the Contractor of responsibility for claims arising from his construction operations. Failure to inspect any structure, whether or not required by these Contract Documents, or inadequacy of the inspections shall not relieve the Contractor of his responsibility. The Contractor shall indemnify the Owner from such claim.

e. In the event that any property owner denies access for the survey of structures and facilities, notify such property owner, by certified mail, stating that this is final notification. Submit to the Owner, copies of all correspondence between the Contractor and the property owner(s). The Owner, upon review of the submitted correspondence may waive requirements set forth above. However, the Contractor is fully responsible for claims and damage arising from his construction operations regardless of property location.

f. Submit two (2) sets of copies of the examination reports to the Owner and Engineer for their records.

F. Use of Explosives

1. When the use of explosives is necessary for the prosecution of the Work, exercise the utmost care not to endanger life or property. Be responsible for any and all damage or injury to persons or property resulting from the use of explosives.

2. Store all explosives in a secure manner, in compliance with all laws, and clearly mark all such storage places "DANGEROUS EXPLOSIVES".

3. Notify any public utility company having facilities in close proximity to the site of the Work of the intention to use explosives.

   a. Provide this notice sufficiently in advance to enable the utility companies to take whatever steps they may consider necessary to protect their property from injury.

   b. Also give the Owner, all occupants of adjacent property, and all other Contractors working in or near the Project, notice of the intention to use explosives.

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4. Only non-electric type initiators maybe used.

G. Blasting Operations

1. Provide explosives of such quantity and power and use in such locations as will neither open seams nor otherwise disturb the material outside the prescribed limits of excavation.
2. As the excavation approaches its final limits, reduce the depth of holes for blasting and the amount of explosives used for each hole so that the underlying or adjacent rock will not be disturbed or shattered.
3. Do not perform blasting within 100 feet of newly placed concrete that has cured less than 7 days.
4. Do not perform blasting within 50 feet of any existing structure or any new structure in progress.

H. Blast Monitoring

1. Following review by the Owner regarding the proximity of permanent buildings and structures to the blasting site, Owner may direct the Contractor to employ an independent, qualified specialty subcontractor, approved by the Owner to:
    a. Monitor the blasting by use of seismograph,
    b. Identify the areas where light charges must be used,
    c. Conduct pre-blast and post-blast inspections of structures, including photographs or videos, and maintain a detailed written log.
2. The Contractor shall exercise the utmost care not to damage property on-site and off-site.
    a. Notify each adjoining property owner within 5,000 feet of the site of the anticipated ground vibrations and noise which will occur due to the blasting operations.
    b. Provide this notice 30 days in advance to enable the adjacent property owners to take whatever precautions they may consider necessary.
    c. Limit operations to minimize any disturbance to the adjacent property owners.
    d. Notify motorists on adjacent roadways in accordance with state regulations.
    e. Take responsibility for any damage to any structure or utility line, pipes, etc., on-site and off-site as a result of his operations.
3. For each blast round, monitor and record noise and air blast overpressures at the site perimeter nearest the blast location and at the on-site or off-site structure located nearest to the round.
    a. Peak air blast overpressure shall not exceed 0.018 psi, measured at the site perimeter.

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4. Sufficiently cover the site of every blast round with blasting mats or other devices to prevent any flying debris.
    a. The Contractor will be fully responsible for any damage caused by flying debris, both to on-site and off-site properties.
5. Whenever blasting is to be performed within 2,500 feet of any structure, measure the peak particle velocities of ground vibration resulting from each blast at the structure.
6. Monitor vibrations utilizing a seismograph capable of providing a record of particle velocity and frequency along three mutually perpendicular axes utilizing internal calibration.
7. Measured peak particle velocity of ground motion at the monitored structure shall not exceed the values shown in the following graph:

I. Blasting Notification

1. Give twenty-four (24) hour notice to Owner and adjacent residences and/or businesses prior to each blast.

J. Complaints

1. Submit notice of blasting complaints to Owner in writing within twenty-four (24) hours of receipt thereof.
    a. Identify the origin of complaint in the notice and provide a brief description of alleged damage or other circumstances upon which the complaint is predicated.
    b. Assign a number to each complaint consecutively in the order of receipt.
    c. Assign each complaint a separate number and show in each letter complaint all previous complaint numbers registered by the same complainant.
    d. In addition, make a summary report each month to Owner. Indicate date, time and name of person investigating the complaint and amount of damages (or an estimate thereof), if any, in the summary report.

K. Post Blast Survey

1. Contractor shall have the same vibration consultant who performed the pre-blast survey conduct the post-blast survey.
2. The consultant shall examine all structures from which a complaint has originated after the blast. The survey shall include, but not be limited to the following:
    a. A full description of the alleged damage caused by the blast.
        1) Where appropriate, provide a sketch to more fully describe the location and type of damage.

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2) Measure cracks and compare to any original measurements which may have been taken in the Pre-Blast Survey.

b. Take colored photographs of any alleged damage.

c. Submit two (2) copies of the Post Blast Survey report to the Owner. The report shall include the consultant's assessment of the alleged damage and an opinion as to its likely cause.

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EXHIBIT C

SCOPE OF WORK

Docusign Envelope ID: A3705B48-B7E5-4F52-8480-5FF929E99139

SCOPE OF WORK

The project will consist of the 90% design and GMP of the Boat Rock Road Sanitary Sewer Extension as described below.

The project will include, but not be limited to, the following:

- Review the 30% Schematic Design constraints and requirements provided in the RFP package.
- Review site data.
- Provide topographical information along the wastewater system's route through field surveys, drone surveys, or aerial topography.
- Upon award, determine and provide a design schedule for the work.
- Perform geotechnical analysis and surveys.
- Locate aerial and underground utilities and determine possible conflict areas.
- Submit a list of required permits and approvals and apply for any required permits and approvals to maintain the overall project schedule.
- Design gravity sewer and laterals.
- Submit DB Concept Design, Design Development, and PD/B Construction Documents for review and guidance.
- Project Management
- Planning and development

The proposed project includes installing approximately 24,000 linear feet of 8” sanitary sewers. The new sewers are broken into the general streets, as shown below.

1. Boat Rock Road and Binford Place: Approximately 8,350 lf. of 8” and 10” diameter sewers
2. Campbellton Road and New Hope Road: Approximately 7,800 lf. of 8” and 10” sewers
3. Elva Drive and in an easement: Approximately 7,850 lf. of 8” and 10” sewers
4. Provide sewer lateral connections to approximately 150 - 160 properties.
5. The key technical and functional requirements/tasks for the project require that the engineering design firm be experienced in the design of gravity sewer collection system. Experience in land disturbance permitting requirements is also an important requirement. The engineering firm shall be experienced in acquiring the permits and approval from Georgia DOT, local jurisdiction right-of-way encroachment permits, and stream buffer variances. The construction firm shall be experienced in the construction of gravity sewer collection systems. The Fulton County Department of Public Works expects to receive a quality project with low maintenance costs. The project should have low impacts on the adjoining properties.

6. 90% design and GMP determination of the gravity sewer:

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- The new gravity sewer should be able to connect to the existing collection system without any adjustment to the existing sewer system.
- The new gravity sewer system should be designed to serve all the existing homes and businesses without the need for a sump pump. P D/B should survey existing structures to determine adequate fall in the service laterals.
- The construction phase should accommodate local traffic with minimal interruption. Access to emergency vehicles should maintained at all times.

In order to accomplish these tasks, it will be required that the engineering design firm be experienced in the design of gravity sewer collection systems.The engineering firm shall be experienced in acquiring the permits and approvals from all authorities having jurisdiction over this project. The construction firm shall be experienced in the construction of gravity sewer collection systems. The Fulton County Department of Public Works expects to receive an effective and efficient gravity sewer system with low maintenance costs.

1. A possible sequence of work is as written below. The PD/B Company shall describe its approach and expected outcomes for the different stages of work:

    a) The Design / Build team shall review the included Boat Rock Road Sanitary Sewer Extension, 30% Conceptual Design documents, which include a Project Design Report, drawings, and technical specifications. These documents may be considered a baseline feasibility of the project and do not necessarily show all required features, functions, or the County's preferences.

    b. The Design / Build team shall design the gravity sewer collection system and acquire all permitting and regulatory approvals required for the 90% construction plans and GMP. The PD/B shall determine if any other regulatory approvals are required and shall obtain those approvals.

2. The Design / Build team shall submit 60% and 90% construction plans for review and approval. The GMP shall be based on these plans. Final construction plans will be required upon the GMP's acceptance under a separate contract.

3. The Design / Build Team shall follow the Fulton County Wastewater Review Checklist, the Fulton County Standard Details, the land development regulations for the local jurisdictions, and other applicable regulations. If this manual is approved prior to the project's issuance, then the design and installation shall be in accordance with the manual.

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EXHIBIT D

PROJECT DELIVERABLES

Docusign Envelope ID: A3705B48-B7E5-4F52-8480-5FF929E99139

PROJECT DELIVERABLES

1. The Design / Build team shall include a preliminary schedule with the submittal identifying when the 60% and 90% construction plans will be submitted. The schedule will be taken into consideration during the review of the submittal.

2. Fulton County will monitor and evaluate the project's status bi-weekly. Bi-weekly meetings will be held between Fulton County and the Design / Build team to discuss the project's status and any issues encountered.

3. Fulton County expects the Design / Build team to submit a detailed schedule showing the projected timeline of the project within two (2) weeks of the issuance of the Notice to Proceed. This schedule will be reviewed and approved. Fulton County expects the Design / Build team to follow the schedule. If the schedule is not being followed, then Fulton County expects the Design / Build team to provide work behind schedule to bring the project back into conformance with the schedule.

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EXHIBIT E

COMPENSATION

Docusign Envelope ID: A3705B48-B7E5-4F52-8480-5FF929E99139

COMPENSATION

The County agrees to compensate the Consultant as follows:

County agrees to compensate Consultant for all services performed under this Agreement in an amount not to exceed $637,000.00. The detailed costs are provided below:

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COST PROPOSAL FORM

Submitted To: Fulton County Government

Submitted By: Garney Companies, Inc

For: **Progressive Design/Build for Boat Rock Road Sanitary Sewer Extension**

Submitted on May 21st, 2025

In response to the Request for Proposal, the undersigned, hereby proposes to furnish all design and construction services, labor, technical and professional services, materials, supplies, equipment, Design-Builder Fees, Architectural and Engineering Fees, and General Conditions Fees for the satisfactory completion of the Project for a cost not to exceed **[Insert project not to exceed amount in words and dollar amount]**, which amount is hereinafter called the Owner's Available Funds.

We propose to furnish all design, architecture, engineering and construction services called for by the Proposal Documents for the following lump sum fees:

1. Design-Builder's Fee

$ 168,000.00

2. Architectural and Engineering Services Fee

$ 394,000.00

3. General Conditions Fee

$ 75,000.00

$ 637,000.00

(Dollar Amount In Numbers of lines 1 - 3)

$ Six Hundred Thirty Seven Thousand Dollars and Zero Cents

(Dollar Amount In Words of lines 1 - 3)

For Changes in the Work beyond those contemplated by the Proposal Documents, we propose a Design-Builder's Fee of 10 percent (%) of the actual costs reimbursable to the Design-Builder, as defined by the Proposal Documents, and an Architectural and Engineering Services Fee of 10 percent (%) of the actual costs reimbursable to the Design-Builder, as defined by the Proposal Documents.

The undersigned agrees that this Cost Proposal constitutes a firm offer to the Fulton County Government ("County"), which cannot be withdrawn for sixty (60) calendar days from and after the due date or until a Contract for the Work is executed by the undersigned and the County, whichever is earlier. If necessary, the period of time specified may be extended by written agreement between the County and the Proposer or Proposers concerned.

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The undersigned declares that the only person or persons interested in the Proposal as principal or principals is or are named herein and that no other person than herein mentioned has any interest in this Proposal or in the Contract to be entered into; that this Proposal is made without connection with any other person, company or parties making a Proposal; and that it is in all respects fair and in good faith without collusion or fraud.

The undersigned further declares that it has examined and is fully familiar with all of the provisions of the Technical Documents and any addenda; that it has carefully checked all of the words and figures shown in its Cost Proposal; that it has carefully reviewed the accuracy of all statements in this Proposal and attachments; and that it has by careful examination of the Proposal Documents and any addenda and by examination of the actual site conditions, satisfied itself as to the nature and locate of all work, the general and local conditions to be encountered in the performance of any work, the requirements of the undersigned hereby agrees that the County, its departments and agencies and their representatives shall not be responsible for any errors or omissions on the part of the undersigned in preparing this Proposal.

If awarded a Contract, the undersigned agrees that, in the case of a failure on his part to execute the Contract Agreement and Bonds within ten (10) days after receipt of conformed contract documents for execution, the Proposal Bond accompanying the proposal and the monies payable thereon shall be paid into the funds of the Owner as liquidated damages for such failure.

Enclosed is a Proposal Bond in the approved form, in the sum of ($_____)
5 Percent of The Total Bid Dollars according to the conditions of “Instructions to Proposers” and provisions thereof.

The Proposer proposes and agrees, if this Proposal is accepted, to contract with the Board of Commissioners of Fulton County, Atlanta, Georgia, in the form of contact specified, to furnish all necessary materials, equipment, machinery, tools, apparatus, means of transportation and labor necessary, and to complete the design and construction of the work in full and complete accordance with the shown, noted, and reasonably intended requirements of the Specifications and Contract Documents to the full and entire satisfaction of the Board of Commissioners of Fulton County, Atlanta, Georgia, with a definite understanding that no money will be allowed for extra work except as set forth in the attached General Conditions and Contract Documents for the following prices.

The Proposer agrees hereby to commence work under this Contract, with adequate personnel and equipment, on a date to be specified in a written order of the Contracting Officer and to fully complete all work under this Contract within **720** consecutive calendar days from and including said date.

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The undersigned acknowledges receipt of the following addenda (list by the number and date appearing on each addendum) and thereby affirms that its Proposal considers and incorporates any modifications to the originally issued Solicitation Documents included therein.

ADDENDUM # 1 DATED 04/25/2025

ADDENDUM # 2 DATED 05/1/2025

ADDENDUM # 3 DATED 05/8/2025

ADDENDUM # 4 DATED 05/15/2025

PROPOSER: Garney Companies, Inc.

By: Will Poczekaj, ENV SP
[Name Typed or Printed]

[Name Signed]

Title: Director - Pipe Southeast

Business Address: 5895 SHILOH ROAD, SUITE 114
ALPHARETTA, GA 30005

Business Phone: 770.75.4141

Bidder's Contractor License No: GCCO008525
[State/County]

License Expiration Date: 06/30/2026

Note: If the Proposer is a corporation, the Proposal shall be signed by an officer of the corporation; if a partnership, it shall be signed by a partner. If signed by others, authority for signature shall be attached.

The full name and addresses of persons or parties interested in the foregoing Proposal, as principals, are as follows:

Name	**Address**
Garney Companies, Inc.	5895 SHILOH ROAD, SUITE 114 ALPHARETTA, GA 30005

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EXHIBIT F

PURCHASING FORMS

Docusign Envelope ID: A3705B48-B7E5-4F52-8480-5FF929E99139

FULTON COUNTY

A. GEORGIA SECURITY AND IMMIGRATION COMPLIANCE ACT AFFIDAVIT

Contractor's Name:	Garney Companies, Inc.
Project No. and Project Title:	Progressive Design/Build for Boat Rock Road Sanitary Sewer Extension 25RFP021025K-CRB

CONTRACTOR AFFIDAVIT

By executing this affidavit, the undersigned contractor verifies its compliance with O.C.G.A. § 13-10-91, stating affirmatively that the individual, entity or corporation which is engaged in the physical performance of services on behalf of Fulton County Government has registered with, is authorized to use and uses the federal work authorization program commonly known as E-Verify, or any subsequent replacement program, in accordance with the applicable provisions and deadlines established in O.C.G.A. § 13-10-91.

Furthermore, the undersigned contractor will continue to use the federal work authorization program throughout the contract period and the undersigned contractor will contract for the physical performance of services in satisfaction of such contract only with subcontractors who present an affidavit to the contractor with the information required by O.C.G.A. § 13-10- 91(b). Contractor hereby attests that its federal work authorization user identification number and date of authorization are as follows:

667047
Federal Work Authorization User Identification Number (EEV/E-Verify Company Identification Number)

12/23/2020
Date of Authorization

Garney Companies, Inc.
Authorized Officer or Agent
(Name of Contractor)

I hereby declare under penalty of perjury that the foregoing is true and correct

Will Poczekaj, ENV SP
Printed Name (of Authorized Officer or Agent of Contractor)

Director - Pipe Southeast
Title (of Authorized Officer or Agent of Contractor)

Signature (of Authorized Officer or Agent)

05/21/2025
Date Signed

SUBSCRIBED AND SWORN BEFORE ME ON THIS THE

21st DAY OF May, 2025

Notary Public

SYDNEY CRUZ
MY COMMISSION # HH 599737
EXPIRES: September 25, 2028
[NOTARY SEAL]

My Commission Expires: 09/25/2028

*** As of the effective date of O.C.G.A. 13-10-91, the applicable federal work authorization program is the "EEV/Basic Pilot Program" operated by the U.S. Citizenship and Immigration Services Bureau of the U.S. Department of Homeland Security, in conjunction with the Social Security Administration (SSA).**

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CERTIFIED COPY OF RESOLUTION OF BOARD OF DIRECTORS OF GARNEY COMPANIES, INC.

The undersigned, Michael D. Strong, hereby certifies that he is the duly elected and qualified Secretary of Garney Companies, Inc. a Missouri Corporation (the "Company"), and that as Secretary, he maintains the records and the corporate seal of the Company. The undersigned further certifies that the following is a true and correct copy of the resolution adopted by the Board of Directors of the Company on the 4th day of June, 2024 and that such resolution is now in full force and effect:

RESOLVED: That the following individuals listed below

David R. Burkhart	CEO
Daniel C. Kling	CFO
Matthew T. Foster	President – Pipe Operations
Matthew W. Reaves	President – Plant Operations
Scott J. Reuter	Executive Vice President
Jordan S. Carrier	Executive Vice President
Wayne A. O'Brien	Executive Vice President
William D. Williams	Executive Vice President
Thomas J. Roberts	Vice President
Jeffrey P. Seal	Vice President
Gregory K. Harris	Vice President
Michael D. Strong	Secretary
Natalie R. Dees	Assistant Secretary
Michael Joel Heimbuck	Director – Plant West
Patrick S. Vidonish	Director – Plant Central
Eric C. Wagner	Director – Southeast
Chip J. LaBonte	Director – Mid Atlantic/Carolinas
Ronald Daniel Eckdahl	Director – Plant California
Keith M. Lemaster	Director – Pipe West
William G. Poczekaj	Director – Pipe Southeast

are hereby granted the authority incident thereto as set forth in the bylaws of the Corporation and Missouri state law, including the power and authority to act on behalf of the Corporation and execute and deliver such contracts, agreement or other documents on behalf of the Corporation consistent with such grant of authority.

IN WITNESS WHEREOF, the undersigned has hereby affixed his name as Secretary and caused the corporate seal of the Company to be affixed hereto this 4th day of June, 2024.

GARNEY COMPANIES, INC. CORPORATE SEAL STATE OF MISSOURI

Michael D. Strong, Corporate Secretary

Docusign Envelope ID: A3705B48-B7E5-4F52-8480-5FF929E99139

Gresham Smith

FULTON COUNTY

GEORGIA SECURITY AND IMMIGRATION COMPLIANCE ACT AFFIDAVIT

Contractor's Name:	Garney Companies, Inc.
Project No. and Project Title:	25RFP021025K-CRB - Progressive Design/Build for Boat Rock Road Sanitary Sewer Extension

FORM B: SUBCONTRACTOR AFFIDAVIT

By executing this affidavit, the undersigned subcontractor verifies its compliance with O.C.G.A. 13-10-91, stating affirmatively that the individual, firm or corporation which is engaged in the physical performance of services under a contract with (name of contractor) on behalf of (name of public employer) has registered with and is participating in a federal work authorization program* [any of the electronic verification of work authorization programs operated by the United States Department of Homeland Security or any equivalent federal work authorization program operated by the United States Department of Homeland Security to verify information of newly hired employees, pursuant to the Immigration Reform and Control Act of 1986 (IRCA), P.L. 99-603], in accordance with the applicability provisions and deadlines established in O.C.G.A. 13-10-91.

2121932

Federal Work Authorization User Identification Number (EEV/E-Verify Company Identification Number)

4/6/2023

Date of Authorization

Gresham Smith

Authorized Officer of Agent
(Name of Subcontractor)

I hereby declare under penalty of perjury that the foregoing is true and correct

Randall S. Booker, Jr., Ph.D., P.E.

Printed Name (of Authorized Officer or Agent of Contractor)

Vice President

Title (of Authorized Officer or Agent of Contractor)

Signature (of Authorized Officer or Agent)

4/10/25

Date Signed

SUBSCRIBED AND SWORN BEFORE ME ON THIS THE

10th DAY OF April, 2025

Kelly Christine Collazo

Notary Public

My Commission Expires: June 2, 2026

[NOTARY SEAL]

KELLY CHRISTINE COLLAZO
NOTARY PUBLIC
FORSYTH COUNTY, GEORGIA

* As of the effective date of O.C.G.A. 13-10-91, the applicable federal work authorization program is the "EEV/Basic Pilot Program" operated by the U.S. Citizenship and Immigration Services Bureau of the U.S. Department of Homeland Security, in conjunction with the Social Security Administration (SSA).

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FULTON COUNTY

GEORGIA SECURITY AND IMMIGRATION COMPLIANCE ACT AFFIDAVIT

Contractor's Name:	Garney Companies, Inc.
Project No. and Project Title:	25RFP021025K-CRB - Progressive Design/Build for Boat Rock Road Sanitary Sewer Extension

FORM B: SUBCONTRACTOR AFFIDAVIT

By executing this affidavit, the undersigned subcontractor verifies its compliance with O.C.G.A. 13-10-91, stating affirmatively that the individual, firm or corporation which is engaged in the physical performance of services under a contract with (name of contractor) on behalf of (name of public employer) has registered with and is participating in a federal work authorization program* [any of the electronic verification of work authorization programs operated by the United States Department of Homeland Security or any equivalent federal work authorization program operated by the United States Department of Homeland Security to verify information of newly hired employees, pursuant to the Immigration Reform and Control Act of 1986 (IRCA), P.L. 99-603], in accordance with the applicability provisions and deadlines established in O.C.G.A. 13-10-91.

1785025
Federal Work Authorization User Identification Number (EEV/E-Verify Company Identification Number)

01/28/2022
Date of Authorization

RK Reeves & Associates, Inc.
Authorized Officer of Agent
(Name of Subcontractor)

I hereby declare under penalty of perjury that the foregoing is true and correct

Rebecca K. Reeves
Printed Name (of Authorized Officer or Agent of Contractor)

President
Title (of Authorized Officer or Agent of Contractor)

Rebecca K. Reeves
Signature (of Authorized Officer or Agent)

4/17/2025
Date Signed

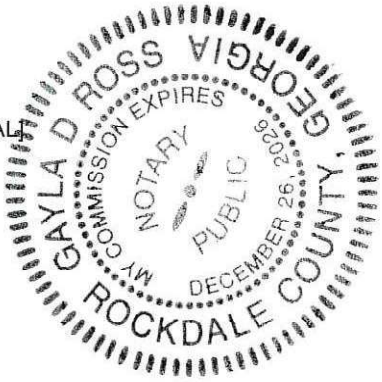
SUBSCRIBED AND SWORN BEFORE ME ON THIS THE

17th DAY OF April, 20 25

Gayla D. Ross
Notary Public

My Commission Expires: 12/26/2026

[NOTARY SEAL]



*** As of the effective date of O.C.G.A. 13-10-91, the applicable federal work authorization program is the "EEV/Basic Pilot Program" operated by the U.S. Citizenship and Immigration Services Bureau of the U.S. Department of Homeland Security, in conjunction with the Social Security Administration (SSA).**

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FULTON COUNTY

GEORGIA SECURITY AND IMMIGRATION COMPLIANCE ACT AFFIDAVIT

Contractor's Name:	Garney Companies, Inc.
Project No. and Project Title:	25RFP021025K-CRB - Progressive Design/Build for Boat Rock Road Sanitary Sewer Extension

FORM B: SUBCONTRACTOR AFFIDAVIT

By executing this affidavit, the undersigned subcontractor verifies its compliance with O.C.G.A. 13-10-91, stating affirmatively that the individual, firm or corporation which is engaged in the physical performance of services under a contract with (name of contractor) on behalf of (name of public employer) has registered with and is participating in a federal work authorization program* [any of the electronic verification of work authorization programs operated by the United States Department of Homeland Security or any equivalent federal work authorization program operated by the United States Department of Homeland Security to verify information of newly hired employees, pursuant to the Immigration Reform and Control Act of 1986 (IRCA), P.L. 99-603], in accordance with the applicability provisions and deadlines established in O.C.G.A. 13-10-91.

331909

Federal Work Authorization User Identification Number (EEV/E-Verify Company Identification Number)

June 2010

Date of Authorization

TerraMark Land Surveying, Inc.

Authorized Officer of Agent
(Name of Subcontractor)

I hereby declare under penalty of perjury that the foregoing is true and correct

William C. Wohlford, Jr.

Printed Name (of Authorized Officer or Agent of Contractor)

Principal

Title (of Authorized Officer or Agent of Contractor)

Signature (of Authorized Officer or Agent)

April 17, 2025

Date Signed

SUBSCRIBED AND SWORN BEFORE ME ON THIS THE

17 DAY OF April, 20 25

Notary Public

[NOTARY SEAL]

JOSHUA D WILSON NOTARY PUBLIC PAULDING COUNTY, GEORGIA My Commission Expires 01-25-2028

My Commission Expires: 1-25-28

*** As of the effective date of O.C.G.A. 13-10-91, the applicable federal work authorization program is the "EEV/Basic Pilot Program" operated by the U.S. Citizenship and Immigration Services Bureau of the U.S. Department of Homeland Security, in conjunction with the Social Security Administration (SSA).**

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FULTON COUNTY

C·E·R·M

GEORGIA SECURITY AND IMMIGRATION COMPLIANCE ACT AFFIDAVIT

Contractor's Name:	Garney Companies, Inc.
Project No. and Project Title:	25RFP021025K-CRB - Progressive Design/Build for Boat Rock Road Sanitary Sewer Extension

FORM B: SUBCONTRACTOR AFFIDAVIT

By executing this affidavit, the undersigned subcontractor verifies its compliance with O.C.G.A. 13-10-91, stating affirmatively that the individual, firm or corporation which is engaged in the physical performance of services under a contract with (name of contractor) on behalf of (name of public employer) has registered with and is participating in a federal work authorization program* [any of the electronic verification of work authorization programs operated by the United States Department of Homeland Security or any equivalent federal work authorization program operated by the United States Department of Homeland Security to verify information of newly hired employees, pursuant to the Immigration Reform and Control Act of 1986 (IRCA), P.L. 99-603], in accordance with the applicability provisions and deadlines established in O.C.G.A. 13-10-91.

237294

Federal Work Authorization User Identification Number (EEV/E-Verify Company Identification Number)

08/12/2009

Date of Authorization

Corporate Environmental Risk Management, LLC (CERM)

Authorized Officer of Agent
(Name of Subcontractor)

I hereby declare under penalty of perjury that the foregoing is true and correct

Terrell Gibbs, PhD, PE

Printed Name (of Authorized Officer or Agent of Contractor)

Chief Operating Officer

Title (of Authorized Officer or Agent of Contractor)

Signature (of Authorized Officer or Agent)

04/2/82025

Date Signed

SUBSCRIBED AND SWORN BEFORE ME ON THIS THE

28 DAY OF April, 20 25

Notary Public

[NOTARY SEAL]

LTANYA RENEE HALL
NOTARY PUBLIC
GWINNETT COUNTY, GEORGIA
MY COMMISSION EXPIRES AUGUST 14, 2025

My Commission Expires: 08/14/2025

*** As of the effective date of O.C.G.A. 13-10-91, the applicable federal work authorization program is the "EEV/Basic Pilot Program" operated by the U.S. Citizenship and Immigration Services Bureau of the U.S. Department of Homeland Security, in conjunction with the Social Security Administration (SSA).**

Docusign Envelope ID: A3705B48-B7E5-4F52-8480-5FF929E99139

FORM C: OFFEROR'S DISCLOSURE FORM AND QUESTIONNAIRE

1. Please provide the names and business addresses of each of the Offeror's firm's officers and directors.

   For the purposes of this form, the term "Offeror" means an entity that responds to a solicitation for a County contract by either submitting a proposal in response to a Request for Proposal or a Request for Qualification or a Bid in response to an Invitation to Bid. Describe accurately, fully and completely, their respective relationships with said Offeror, including their ownership interests and their anticipated role in the management and operations of said Offeror.

   Attached on following page.

2. Please describe the general development of said Offeror's business during the past five (5) years, or such shorter period of time that said Offeror has been in business.

   Garney is a 100% employee owned contractor established in 1961. We specialize in the construction of water and wastewater treatment facilities, pumping stations, pipelines, and water storage tanks for municipal, federal, industrial, and private clients. **Garney has not experienced any major developments during the past five years of business.**

3. Please state whether any employee, agent or representative of said Offeror who is or will be directly involved in the subject project has or had within the last five (5) years: (i) directly or indirectly had a business relationship with Fulton County; (ii) directly or indirectly received revenues from Fulton County; or (iii) directly or indirectly receives revenues from the result of conducting business on Fulton County property or pursuant to any contract with Fulton County. Please describe in detail any such relationship.

   Not applicable.

Docusign Envelope ID: A3705B48-B7E5-4F52-8480-5FF929E99139

GARNEY COMPANIES, INC.

CORPORATE OFFICER & DIRECTOR LOCATIONS

GARNEY

OFFICERS

DAVID BURKHART
CEO
KANSAS CITY, MO
1700 SWIFT STREET, SUITE 200
NORTH KANSAS CITY, MO 64116

MATTHEW FOSTER
President - Pipe Operations
KANSAS CITY, MO
1700 SWIFT STREET, SUITE 200
NORTH KANSAS CITY, MO 64116

MATTHEW REAVES
President - Plant Operations
CHARLOTTE, NC
4340 TAGGART CREEK ROAD, SUITE C
CHARLOTTE, NC 28208

SCOTT REUTER
Executive Vice President
ORLANDO, FL
370 E. CROWN POINT ROAD
WINTER GARDEN, FL 34787

JORDAN CARRIER
Executive Vice President
DC METRO
3959 PENDER DRIVE, SUITE 100
FAIRFAX, VA 22030

WAYNE O'BRIEN
Executive Vice President
DENVER, CO
7911 SHAFFER PARKWAY
LITTLETON, CO 80127

BILL WILLIAMS
Executive Vice President
DENVER, CO
7911 SHAFFER PARKWAY
LITTLETON, CO 80127

TOM ROBERTS
Vice President
KANSAS CITY, MO
1700 SWIFT STREET, SUITE 200
NORTH KANSAS CITY, MO 64116

JEFF SEAL
Vice President
NASHVILLE, TN
200 CRUTCHFIELD AVENUE
NASHVILLE, TN 37210

MIKE STRONG
Secretary
KANSAS CITY, MO
1700 SWIFT STREET, SUITE 200
NORTH KANSAS CITY, MO 64116

NATALIE DEES
Assistant Secretary
KANSAS CITY, MO
1700 SWIFT STREET, SUITE 200
NORTH KANSAS CITY, MO 64116

DIRECTORS

JOEL HEIMBUCK
Director - Plant West
DENVER, CO
7911 SHAFFER PARKWAY
LITTLETON, CO 80127

PATRICK VIDONISH
Director - Plant Central
DALLAS / FORT WORTH, TX
3360 FM 2933
MCKINNEY, TX 75071

ERIC WAGNER
Director - Plant Southeast
ORLANDO, FL
370 E. CROWN POINT ROAD
WINTER GARDEN, FL 34787

CHIP LABONTE
Director - Mid-Atlantic / Carolinas
RALEIGH, NC
12927 HIGHWAY 64, SUITE 103
APEX, NC 27523

DAN ECKDAHL
Director - Plant California
NORTHERN CALIFORNIA
17510 W. BETHANY ROAD
TRACY, CA 95391

KEITH LEMASTER
Director - Pipe West
DENVER, CO
7911 SHAFFER PARKWAY
LITTLETON, CO 80127

WILL POCZEKAJ
Director - Pipe Southeast
ORLANDO, FL
370 E. CROWN POINT ROAD
WINTER GARDEN, FL 34787

Docusign Envelope ID: A3705B48-B7E5-4F52-8480-5FF929E99139

LITIGATION DISCLOSURE:

Failure to fully and truthfully disclose the information required, may result in the disqualification of your bid or proposal from consideration or termination of the Contract, once awarded.

1. Please state whether any of the following events have occurred in the last five (5) years with respect to said Offeror. If any answer is yes, explain fully the following:

   (a) whether a petition under the federal bankruptcy laws or state insolvency laws was filed by or against said Offeror, or a receiver fiscal agent or similar officer was appointed by a court for the business or property of said Offeror;

   Circle One: YES ○ NO ⊗

   (b) whether Offeror was subject of any order, judgment, or decree not subsequently reversed, suspended or vacated by any court of competent jurisdiction, permanently enjoining said Offeror from engaging in any type of business practice, or otherwise eliminating any type of business practice; and

   Circle One: YES ○ NO ⊗

   (c) whether said Offeror's business was the subject of any civil or criminal proceeding in which there was a final adjudication adverse to said or Offeror, which directly arose from activities conducted by the business unit or corporate division of said Offeror which submitted a bid or proposal for the subject project. If so please explain.

   Circle One: YES ○ NO ⊗

2. Have you or any member of your firm or team to be assigned to this engagement ever been indicted or convicted of a criminal offense within the last five (5) years?

   Circle One: YES ○ NO ⊗

3. Have you or any member of your firm or team been terminated (for cause or otherwise) from any work being performed for Fulton County or any other Federal, State or Local Government?

   Circle One: YES ○ NO ⊗

4. Have you or any member of your firm or team been involved in any claim or litigation adverse to Fulton County or any other federal, state or local government, or private entity during the last three (3) years?

   Circle One: YES ○ NO ⊗

5. Has any Offeror, member of Offeror's team, or officer of any of them (with respect to any matter involving the business practices or activities of his or her employer), been notified within the five (5) years preceding the date of this offer that any of them are the target of a criminal investigation, grand jury investigation, or civil enforcement proceeding?

   Not Applicable.

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Circle One: YES ○ NO (X)

If you have answered "YES" to any of the above questions, please indicate the name(s) of the person(s), the nature, and the status and/or outcome of the information, indictment, conviction, termination, claim or litigation, the name of the court and the file or reference number of the case, as applicable. Any such information should be provided on a separate page, attached to this form and submitted with your proposal.

NOTE: If any response to any question set forth in this questionnaire has been disclosed in any other document, a response may be made by attaching a copy of such disclosure. (For example, said Offeror's most recent filings with the Securities and Exchange Commission ("SEC") may be provided if they are responsive to certain items within the questionnaire.) However, for purposes of clarity, Offeror should correlate its responses with the exhibits by identifying the exhibit and its relevant text.

Disclosures must specifically address, completely respond and comply with all information requested and fully answer all questions requested by Fulton County. Such disclosure must be submitted at the time of the bid or proposal submission and included as a part of the bid/proposal submitted for this project. Disclosure is required for Offerors, joint venture partners and first-tier subcontractors.

Failure to provide required disclosure, submit officially signed and notarized documents or respond to any and all information requested/required by Fulton County can result in the bid/proposal declared as non-responsive. This document must be completed and included as a part of the bid/proposal package along with other required documents.

[SIGNATURES ON NEXT PAGE]

Docusign Envelope ID: A3705B48-B7E5-4F52-8480-5FF929E99139

Under penalty or\f perjury, I declare that I have examined this questionnaire and all attachments hereto, if applicable, to the best of my knowledge and belief, and all statements contained hereto are true, correct, and complete.

On this 21st day of May, 2025

Will Poczekaj, ENV SP — 05/21/2025
(Legal Name of Proponent) (Date)

(Signature of Authorized Representative) (Date)

Director - Pipe Southeast
(Title)

Sworn to and subscribed before me,

This 21st day of May, 2025

(Notary Public) (Seal)

SYDNEY CRUZ
MY COMMISSION # HH 389737
EXPIRES: September 25, 2028

Commission Expires 09/25/2028
(Date)

Docusign Envelope ID: A3705B48-B7E5-4F52-8480-5FF929E99139

Gresham Smith

FORM C: OFFEROR'S DISCLOSURE FORM AND QUESTIONNAIRE

1. Please provide the names and business addresses of each of the Offeror's firm's officers and directors.

   For the purposes of this form, the term "Offeror" means an entity that responds to a solicitation for a County contract by either submitting a proposal in response to a Request for Proposal or a Request for Qualification or a Bid in response to an Invitation to Bid. Describe accurately, fully and completely, their respective relationships with said Offeror, including their ownership interests and their anticipated role in the management and operations of said Offeror.

Gresham Smith was established in 1967 as a privately held Tennessee partnership. Currently more than 110 individuals have an ownership interest in the partnership. All individuals with an ownership interest are employees of Gresham Smith. With this structure and breadth of ownership, minor changes in ownership are not uncommon; however, the core of the Partnership's Board and Management Team are all senior owners. As a privately held company, we keep our ownership information private, but we are happy to provide the names of our management committee members:

Rodney Chester, P.E., CEO
222 Second Avenue South, Suite 1400, Nashville, TN 37201

Peter Oram, COO
222 Second Avenue South, Suite 1400, Nashville, TN 37201

K. Dwayne West, CPA, CFO
222 Second Avenue South, Suite 1400, Nashville, TN 37201

Kelly Knight Hodges, NCIDQ, Chief Development and Engagement Officer
222 Second Avenue South, Suite 1400, Nashville, TN 37201

2. Please describe the general development of said Offeror's business during the past five (5) years, or such shorter period of time that said Offeror has been in business.

Gresham Smith is a full-service engineering and architectural firm founded 1967. Ranked in the top 100 by Engineering News Record, Gresham Smith is comprised of more than 1,200 professionals working in 26 offices. We manage a multitude of projects across the country and around the globe, providing planning and design services to a broad range of public and private sector clients such as municipalities, utility boards and industries. Gresham Smith provides our clients with a financially stable, local partner who stands solidly behind our work.

Our Water + Environment market is comprised of over 90+ professionals dedicated to providing an array of engineering services including planning, design, operations and construction administration in the areas of water, wastewater and water resources. Gresham Smith's Water Service professionals have provided engineering services on water and wastewater projects for more than 40 years, representing a total construction value in excess of $1 billion.

We have three local Atlanta offices located in Alpharetta (opened in 1994), Buford (opened in 2017) and Midtown (opened in 2016) that specialize in a number of areas including environmental engineering, civil/ site design, and utility coordination/design—to name a few.

Docusign Envelope ID: A3705B48-B7E5-4F52-8480-5FF929E99139

3. Please state whether any employee, agent or representative of said Offeror who is or will be directly involved in the subject project has or had within the last five (5) years: (i) directly or indirectly had a business relationship with Fulton County; (ii) directly or indirectly received revenues from Fulton County; or (iii) directly or indirectly receives revenues from the result of conducting business on Fulton County property or pursuant to any contract with Fulton County. Please describe in detail any such relationship.

The following is a list of work Gresham Smith has conducted with Fulton County in the last five years:

- ***Fulton County - Big Creek WRF Immediate Needs Upgrades*** - Fulton County's Department of Water Resources launched an immediate-needs project for its 25-MGD Big Creek Water Reclamation Facility, which serves residents in Roswell, Alpharetta, and other communities in the greater Atlanta area. Gresham Smith evaluated compliance scenarios under both dynamic and steady state conditions using BioWin and identified a low cost/operator friendly step-feed BNR modification to maintain reliable compliance; the modifications also provided an effective capacity expansion above 50 MGD according to staff. On solids, capital and life-cycle cost analysis proved that switching to screw press technology with new polymer feed and sludge pumping equipment would reduce operation and maintenance costs, meet more stringent effluent limits, and control odor. The final design also included upgrades to the cakesolids handling system, installation of new odor-control equipment, and rehabilitation of the truck loadout facility.
- ***Fulton County - Standby Engineering Services (2018, 2021 and 2024)*** - Under these Task Order based contracts, Gresham Smith is providing engineering and construction management services on water, wastewater and stormwater projects in Fulton County. Select Task Orders include:
  - *Owner's Support Services for the Big Creek Water Reclamation Facility MBR Expansion* - This project is a major facility expansion at the Big Creek WRF to 38-MGD maximum monthly average day flow with biological nutrient removal (BNR) treatment (TN & TP) objectives. We are serving as a trusted advisor to the client and functioning as extension of Owner's staff throughout the complete project under a progressive design-build (PDB) delivery model. .
  - *South Fulton Capacity Study* - The cities in South Fulton County are experiencing rapid growth. Gresham Smith worked with Fulton County and each of the municipalities in South Fulton to determine the current capacity of the wastewater collection system, pumping and treatment facilities in south Fulton to develop a road map for future expansions.
  - *Storage Tank Evaluation* - Fulton County owns and operates twelve water storage tanks as part of the north Fulton County water distribution system. The system consists of six tank locations with two tanks at each site. Project scope includes review of the existing yard piping and SCADA instruments with proposed improvements to allow one tank to be removed from service while the other tank remains in service.
  - *SFMOC Backup Generator Relocation and Assessment* - Projects consists of relocation of an existing 450-kW generator from Fulton County's Big Creek Water Reclamation Facility to their South Fulton Maintenance and Operations Center, including testing, electrical and civil/site engineering, and coordination to limit the power outage to eight hours at this critical facility.
  - *AWIA Emergency Response Planning* - In accordance with the American Water Infrastructure Act of 2018, Gresham Smith worked with the County to prepare a comprehensive Emergency Response Plan (ERP). Scope includes conducting multidiscipline site visits of all of the County's facilities including operations centers, pump stations and tanks.

Docusign Envelope ID: A3705B48-B7E5-4F52-8480-5FF929E99139

- *North and South Fulton Sewer Review* - Site review and preparing construction documents for installation of the proposed improvements to the Sewer located at 390 Jon Scott Drive and 1870 New Hope Road.
- *2020 Wastewater Rate Study* - As a follow-up task order to the Capacity Study, Gresham Smith is preparing a water/wastewater rate analysis with recommendations extending through 2030.
- *Resurfacing Assistance* - Pavement analysis and recommendations associated with road resurfacing of approximately 22,000 LF on Westgate Parkway, Aviation Circle, Wendell Drive, and Wendell Court.

- ***Fulton County Department of Public Works*** - Big Creek Construction Management Services - Construction management and system start-up services necessary to support the Big Creek WRF facility expansion to 38-MGD MBR process. The project includes constructability reviews, construction contract management, documents management, and specialty inspection services throughout the construction phases.

LITIGATION DISCLOSURE:

Failure to fully and truthfully disclose the information required, may result in the disqualification of your bid or proposal from consideration or termination of the Contract, once awarded.

1. Please state whether any of the following events have occurred in the last five (5) years with respect to said Offeror. If any answer is yes, explain fully the following:

   (a) whether a petition under the federal bankruptcy laws or state insolvency laws was filed by or against said Offeror, or a receiver fiscal agent or similar officer was appointed by a court for the business or property of said Offeror;

   Circle One: YES ○ NO ○

   (b) whether Offeror was subject of any order, judgment, or decree not subsequently reversed, suspended or vacated by any court of competent jurisdiction, permanently enjoining said Offeror from engaging in any type of business practice, or otherwise eliminating any type of business practice; and

   Circle One: YES ○ NO ○

   (c) whether said Offeror's business was the subject of any civil or criminal proceeding in which there was a final adjudication adverse to said or Offeror, which directly arose from activities conducted by the business unit or corporate division of said Offeror which submitted a bid or proposal for the subject project. If so please explain.

   Circle One: YES ○ NO ○

Docusign Envelope ID: A3705B48-B7E5-4F52-8480-5FF929E99139

2. Have you or any member of your firm or team to be assigned to this engagement ever been indicted or convicted of a criminal offense within the last five (5) years?

   Circle One: YES NO

3. Have you or any member of your firm or team been terminated (for cause or otherwise) from any work being performed for Fulton County or any other Federal, State or Local Government?

   Circle One: YES NO

4. Have you or any member of your firm or team been involved in any claim or litigation adverse to Fulton County or any other federal, state or local government, or private entity during the last three (3) years?

   Circle One: YES NO

5. Has any Offeror, member of Offeror's team, or officer of any of them (with respect to any matter involving the business practices or activities of his or her employer), been notified within the five (5) years preceding the date of this offer that any of them are the target of a criminal investigation, grand jury investigation, or civil enforcement proceeding?

   Circle One: YES NO

If you have answered "YES" to any of the above questions, please indicate the name(s) of the person(s), the nature, and the status and/or outcome of the information, indictment, conviction, termination, claim or litigation, the name of the court and the file or reference number of the case, as applicable. Any such information should be provided on a separate page, attached to this form and submitted with your proposal.

NOTE: If any response to any question set forth in this questionnaire has been disclosed in any other document, a response may be made by attaching a copy of such disclosure. (For example, said Offeror's most recent filings with the Securities and Exchange Commission ("SEC") may be provided if they are responsive to certain items within the questionnaire.) However, for purposes of clarity, Offeror should correlate its responses with the exhibits by identifying the exhibit and its relevant text.

Disclosures must specifically address, completely respond and comply with all information requested and fully answer all questions requested by Fulton County. Such disclosure must be submitted at the time of the bid or proposal submission and included as a part of the bid/proposal submitted for this project. Disclosure is required for Offerors, joint venture partners and first-tier subcontractors.

Failure to provide required disclosure, submit officially signed and notarized documents or respond to any and all information requested/required by Fulton County can result in the bid/proposal declared as non-responsive. This document must be completed and included as a part of the bid/proposal package along with other required documents.

[SIGNATURES ON NEXT PAGE]

Docusign Envelope ID: A3705B48-B7E5-4F52-8480-5FF929E99139

Under penalty or\f perjury, I declare that I have examined this questionnaire and all attachments hereto, if applicable, to the best of my knowledge and belief, and all statements contained hereto are true, correct, and complete.

On this 10th day of April, 20 25

Randall S. Booker, Jr., Ph.D., P.E. 4/10/25
(Legal Name of Proponent) (Date)

4/10/25
(Signature of Authorized Representative) (Date)

Vice President (Gresham Smith)
(Title)

Sworn to and subscribed before me,

This 10th day of April, 2025

Kelly Christine Collazo
(Notary Public) (Seal)

Commission Expires June 2, 2026
(Date)

KELLY CHRISTINE COLLAZO NOTARY PUBLIC FORSYTH COUNTY, GEORGIA

Docusign Envelope ID: A3705B48-B7E5-4F52-8480-5FF929E99139

FORM D: GEORGIA PROFESSIONAL LICENSE CERTIFICATION

NOTE: Please complete this form for the work your firm will perform on this project.

Contractor's Name: Gregory K Harris // Garney Companies, Inc. // Billy Page

Performing work as: Prime Contractor ☑ Subcontractor/Sub-Consultant ☐

Professional License Type:

General Contractor // Utility Contractor // Utility Manager

Professional License Number:

GCCO008525 // UC300487 // UM102789

Expiration Date of License:

06/30/2026 // 04/30/2027 // 04/30/2027

I certify that the above information is true and correct and that the classification noted is applicable to the Bid for this Project.

Signed: 

Date: 05/21/2025

(ATTACH COPY OF LICENSE)

Attached on following pages

Docusign Envelope ID: A3705B48-B7E5-4F52-8480-5FF929E99139

RENEWAL CONFIRMATION

GARNEY

PROFESSIONAL LICENSING

GEORGIA SECRETARY OF STATE BRAD RAFFENSPERGER

CORPORATIONS • ELECTIONS • LICENSING • CHARITIES

Licensee Details

Licensee Information

Name: Garney Companies, Inc. **Owner:**

Address: 1700 Swift Street

KANSAS CITY MO 64116

Primary Source License Information

Lic #:	UC300487	**Profession:**	Utility	**Type:**	Utility Contractor
Secondary:		**Method:**	Application	**Status:**	Active
Issued:	6/22/1995	**Expires:**	4/30/2027	**Last Renewal Date:**	5/8/2025

Associated Licenses

Relationship: Supervisor

Licensee:	Heitmann, Michael Harold	**License Type:**	Utility Manager		
License #:	UM000760	**License Status:**	Lapsed-Late Renewal Period		
Established:		**Association Date:**	3/31/2003	**Expiry:**	5/5/2025
Type:	Prerequisite User				

Relationship: Supervisor

Licensee:	Page, Billy	**License Type:**	Utility Manager		
License #:	UM102789	**License Status:**	Active		
Established:		**Association Date:**	7/9/2015	**Expiry:**	
Type:	Prerequisite User				

Public Board Orders

Please see Documents section below for any Public Board Orders

Other Documents

No Other Documents

Data current as of: May 9, 2025 14:25:34

This website is to be used as a primary source verification for licenses issued by the Professional Licensing Boards. Paper verifications are available for a fee. Please contact the Professional Licensing Boards at 844-753-7825.

Close Window

Docusign Envelope ID: A3705B48-B7E5-4F52-8480-5FF929E99139

GARNEY

STATE OF GEORGIA
BRAD RAFFENSPERGER, Secretary of State
State Licensing Board for Residential and General Contractors
LICENSE NO. GCCO008525
Garney Companies Inc
Gregory K Harris
5895 Shiloh Road
Suite 114
Alpharetta GA 30005

Qualifying Agent: Charles Matthew McKinnon
Qualifying Agent License NO: GCQA008523
General Contractor Company

EXP DATE - 06/30/2026 Status: Active
Issue Date: 01/17/2024

A pocket-sized license card is below. Above is an enlarged copy of your pocket card.

Please make note of the expiration date on your license. It is your responsibility to renew your license before it expires. Please notify the Board if you have a change of address.

Wall certificates suitable for framing are available at cost, see board fee schedule. To order a wall certificate, please order from the web site – www.sos.ga.gov/plb.

Please refer to Board Rules for any continuing education requirements your profession may require.

Georgia State Board of Professional Licensing
237 Coliseum Drive
Macon GA 31217
Phone: (404) 424-9966
www.sos.ga.gov/plb

Garney Companies Inc
5895 Shiloh Road
Suite 114
Alpharetta GA 30005

STATE OF GEORGIA
BRAD RAFFENSPERGER, Secretary of State
State Licensing Board for Residential and General Contractors
License No. GCCO008525
Garney Companies Inc
Gregory K Harris
5895 Shiloh Road
Suite 114
Alpharetta GA 30005

Qualifying Agent: Charles Matthew McKinnon
Qualifying Agent License NO: GCQA008523
General Contractor Company

EXP DATE - 06/30/2026 Status: Active
Issue Date: 01/17/2024

Docusign Envelope ID: A3705B48-B7E5-4F52-8480-5FF929E99139

GARNEY

STATE OF GEORGIA
BRAD RAFFENSPERGER, Secretary of State
Georgia Construction Industry Licensing Board
LICENSE NO. UC300487
Garney Companies, Inc.

1700 Swift Street
KANSAS CITY MO 64116

Utility Contractor

EXP DATE - 04/30/2027 Status: Active
Issue Date: 06/22/1995

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237 Coliseum Drive
Macon GA 31217
Phone: (404) 424-9966
www.sos.ga.gov/plb

Garney Companies, Inc.
1700 Swift Street
KANSAS CITY MO 64116

STATE OF GEORGIA
BRAD RAFFENSPERGER, Secretary of State
Georgia Construction Industry Licensing Board
License No. UC300487
Garney Companies, Inc.

1700 Swift Street
KANSAS CITY MO 64116

Utility Contractor

EXP DATE - 04/30/2027 Status: Active
Issue Date: 06/22/1995

Docusign Envelope ID: A3705B48-B7E5-4F52-8480-5FF929E99139

GARNEY

STATE OF GEORGIA
BRAD RAFFENSPERGER, Secretary of State
Georgia Construction Industry Licensing Board
LICENSE NO. UM102789
Billy Page

4280 Preserve Crossing Lane
Cumming GA 30040

Utility Manager

EXP DATE - 04/30/2027 Status: Active
Issue Date: 03/21/2024

A pocket-sized license card is below. Above is an enlarged copy of your pocket card.

Please make note of the expiration date on your license. It is your responsibility to renew your license before it expires. Please notify the Board if you have a change of address.

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Georgia State Board of Professional Licensing
237 Coliseum Drive
Macon GA 31217
Phone: (404) 424-9966
www.sos.ga.gov/plb

Billy Page
4280 Preserve Crossing Lane
Cumming GA 30040

STATE OF GEORGIA
BRAD RAFFENSPERGER, Secretary of State
Georgia Construction Industry Licensing Board
License No. UM102789
Billy Page

4280 Preserve Crossing Lane
Cumming GA 30040

Utility Manager

EXP DATE - 04/30/2027 Status: Active
Issue Date: 03/21/2024

Docusign Envelope ID: A3705B48-B7E5-4F52-8480-5FF929E99139

Gresham Smith

FORM D: GEORGIA PROFESSIONAL LICENSE CERTIFICATION

NOTE: Please complete this form for the work your firm will perform on this project.

Contractor's Name: Gresham Smith

Performing work as: Prime Contractor ☐ Subcontractor/Sub-Consultant ☑

Professional License Type: Georgia Professional Engineering License

Professional License Number: PEF000285

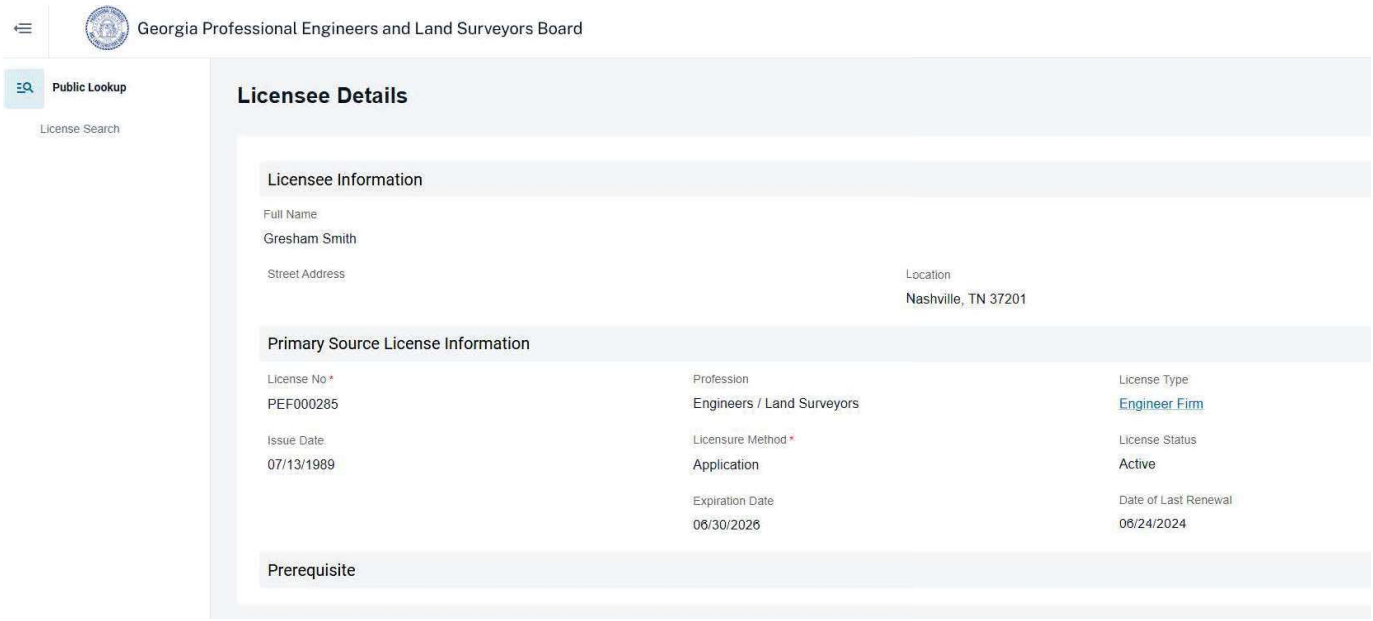
Expiration Date of License: 06/30/2026

I certify that the above information is true and correct and that the classification noted is applicable to the Bid for this Project.

Signed: Randall S. Booker, Jr., Ph.D., P.E.

Date: 04/04/2025

(ATTACH COPY OF LICENSE)



Docusign Envelope ID: A3705B48-B7E5-4F52-8480-5FF929E99139

FORM D: GEORGIA PROFESSIONAL LICENSE CERTIFICATION

NOTE: Please complete this form for the work your firm will perform on this project.

Contractor's Name: TerraMark Land Surveying, Inc.

Performing work as: Prime Contractor ☐ Subcontractor/Sub-Consultant ☑

Professional License Type: Registered Land Surveying

Professional License Number: LSF000810

Expiration Date of License: 06/30/2026

I certify that the above information is true and correct and that the classification noted is applicable to the Bid for this Project.

Signed:

Date: 04/17/2025

(ATTACH COPY OF LICENSE)

Attached on following page

Docusign Envelope ID: A3705B48-B7E5-4F52-8480-5FF929E99139

Licensee Details

Licensee Information

Full Name

TerraMark Land Surveying, Inc.

Street Address

Location

Marietta, GA 300666084

Primary Source License Information

License No *

LSF000810

Profession

Engineers / Land Surveyors

License Type

Land Surveyor Firm

Issue Date

03/11/2003

Licensure Method *

Application

License Status

Active

Expiration Date

06/30/2026

Date of Last Renewal

06/06/2024

Prerequisite

Associated Licenses

Search...

Filters

Columns

Full Name	License Type

No Rows

Page Size: 10 | 0 to 0 of 0 | Page 0 of 0

Public Documents

Filters

Columns

Docusign Envelope ID: A3705B48-B7E5-4F52-8480-5FF929E99139

FORM D: GEORGIA PROFESSIONAL LICENSE CERTIFICATION

NOTE: Please complete this form for the work your firm will perform on this project.

Contractor's Name: Corporate Environmental Risk Management

Performing work as: Prime Contractor ☐ Subcontractor/Sub-Consultant ☑

Professional License Type: Engineering & Surveying

Professional License Number: PEF005255; LSF000988

Expiration Date of License: 06/30/2026 (both)

I certify that the above information is true and correct and that the classification noted is applicable to the Bid for this Project.

Signed: 

Date: 04/28/2025

(ATTACH COPY OF LICENSE)

Docusign Envelope ID: A3705B48-B7E5-4F52-8480-5FF929E99139

Your License Pocket Card

See your pocket-sized license card below.

Please make note of the expiration date on your license. It is your responsibility to renew your license before it expires. Please request a demographic change through the portal if you have a change of address.

Wall certificates suitable for framing are available at cost, see board fee schedule. To order a wall certificate, please order from the Licensing Portal at gapelsb.evokeplatform.com/app/licensingPortal

Please refer to Board Rules for any continuing education requirements your profession may require.

Georgia Professional Engineers & Land Surveyors Board
237 Coliseum Drive
Macon-Bibb County, GA 31217
Phone: (470) 355-4505
Email: pels@sos.ga.gov

STATE OF GEORGIA
Darren Mickler, Director
Taylor Wright, Board Chair
Georgia Professional Engineering & Land Surveyors Board
Engineers / Land Surveyors
Engineer Firm

LICENSE NO. PEF005255

Corporate Environmental Risk Management
1990 Lakeside Parkway Suite 300
Tucker, GA 30084

EXP DATE - June 30, 2026
ISSUE DATE - November 16, 2007
Active

Printed on July 1, 2024 11:53 AM

Your License Pocket Card

See your pocket-sized license card below.

Please make note of the expiration date on your license. It is your responsibility to renew your license before it expires. Please request a demographic change through the portal if you have a change of address.

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Please refer to Board Rules for any continuing education requirements your profession may require.

Georgia Professional Engineers & Land Surveyors Board
237 Coliseum Drive
Macon-Bibb County, GA 31217
Phone: (470) 355-4505
Email: pels@sos.ga.gov

STATE OF GEORGIA
Darren Mickler, Director
Taylor Wright, Board Chair
Georgia Professional Engineering & Land Surveyors Board
Engineers / Land Surveyors
Land Surveyor Firm

LICENSE NO. LSF000988

Corporate Environmental Risk Management
1990 Lakeside Parkway Suite 300
Tucker, GA 30084

EXP DATE - June 30, 2026
ISSUE DATE - January 30, 2008
Active

Printed on July 1, 2024 12:18 PM

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Gresham Smith

STATE OF GEORGIA
COUNTY OF FULTON

FORM E: LOCAL PREFERENCE AFFIDAVIT OF BIDDER/OFFEROR

I hereby certify that pursuant to Fulton County Code Section 102-377, the Bidder/Offeror Gresham Smith is eligible to receive local preference points and has a staffed, fixed, physical, place of business located within Fulton County and has had the same for at least one (1) year prior to the date of submission of its proposal or bid and has held a valid business license from Fulton County or a city within Fulton County boundaries for the business at a fixed, physical, place of business, for at least one (1) year prior to the date of submission of its proposal or bid.

Affiant further acknowledges and understands that pursuant to Fulton County Code Section 102-377, in the event this affidavit is determined to be false, the business named herein shall be deemed "non-responsive" and shall not be considered for award of the applicable contract.

Gresham Smith
(BUSINESS NAME)

600 West Peachtree Street NW, Suite 1550, Atlanta, GA 30308
(FULTON COUNTY BUSINESS ADDRESS)

Vice President
(OFFICIAL TITLE OF AFFIANT)

Randy Booker
(NAME OF AFFIANT)

(SIGNATURE OF AFFIANT)

Sworn to and subscribed before me,

This 10th day of April, 2025

Kelly Christine Collazo
(Notary Public) (Seal)

Commission Expires: June 2, 2026
(Date)

KELLY CHRISTINE COLLAZO NOTARY PUBLIC FORSYTH COUNTY, GEORGIA

Docusign Envelope ID: A3705B48-B7E5-4F52-8480-5FF929E99139

CITY OF ATLANTA
55 Trinity Avenue SW
Suite 1350
Atlanta GA 30303

OCCUPATION TAX REGISTRATION CERTIFICATE
VALID ONLY WHEN OCCUPATION REGISTRATION TAX REQUIREMENTS ARE PAID

2025

Business Name:	GRESHAM SMITH	**Business Type(s):**	541330 Engineering Services
Business Location:	600 W PEACHTREE ST NW STE 1550 ATLANTA, GA 30308	**Mailing Address:**	600 W PEACHTREE ST NW STE 1550 ATLANTA, GA 30308
Owner:			
License Number:	LGB-180263-2020	**License Type:**	Business Occupational Tax Certificate
Issued Date:	2/13/2025	**Classification:**	Professional/Scientific/Technical Services
Expiration Date:	12/31/2025		

Mohamed Balla

Mohamed Balla, Chief Financial Officer

DISPLAY THIS CERTIFICATE IN A CONSPICUOUS PLACE AT BUSINESS LOCATION. NOT VALID IF BUSINESS LOCATION DOES NOT COMPLY TO CITY ZONING REQUIREMENTS. NOT VALID UNLESS ACCOMPANIED BY STATE OF GEORGIA LICENSE(S), IF REQUIRED. CERTIFICATE NOT TRANSFERABLE IF BUSINESS TERMINATES OR CHANGES OWNERSHIP DURING CERTIFICATE PERIOD. CALL THE BUSINESS LICENSE OFFICE AT 404-330-6270. THIS CERTIFICATE IS SUBJECT TO ALL APPLICABLE ORDINANCES AND LAWS.

TO BE POSTED IN A CONSPICUOUS PLACE

Docusign Envelope ID: A3705B48-B7E5-4F52-8480-5FF929E99139

EXHIBIT G

OFFICE OF CONTRACT COMPLIANCE FORMS

Docusign Envelope ID: A3705B48-B7E5-4F52-8480-5FF929E99139

EXHIBIT A – PROMISE OF NON-DISCRIMINATION

"Know all persons by these presents, that I/We (Will Poczekaj, ENV SP), Director - Pipe Southeast (Title), Garney Companies, Inc. (Company Name) Hereinafter "Company", in consideration of the privilege to bid on or obtain contracts funded, in whole or in part, by Fulton County, hereby consent, covenant and agree as follows:

1) No person shall be excluded from participation in, denied the benefit of, or otherwise discriminated against on the basis of race, color, national origin or gender in connection with any bid submitted to Fulton County for the performance of any resulting there from,

2) That it is and shall be the policy of this Company to provide equal opportunity to all businesses seeking to contract or otherwise interested in contracting with this Company without regard to the race, color, gender or national origin of the ownership of this business,

3) That the promises of non-discrimination as made and set forth herein shall be continuing in nature and shall remain in full force and effect without interruption,

4) That the promise of non-discrimination as made and set forth herein shall be made a part of, and incorporated by reference into, any contract or portion thereof which this Company may hereafter obtain,

5) That the failure of this Company to satisfactorily discharge any of the promises of non-discrimination as made and set forth herein shall constitute a material breach of contract entitling the Board to declare the contract in default and to exercise any and all applicable rights and remedies, including but not limited to cancellation of the contract, termination of the contract, suspension and debarment from future contracting opportunities, and withholding and/or forfeiture of compensation due and owning on a contract; and

6) That the bidder shall provide such information as may be required by the Director of Purchasing & Contract Compliance pursuant to Section 102.436 of the Fulton County Non-Discrimination in Purchasing and Contracting Policy.

NAME: Will Poczekaj, ENV SP **TITLE:** Director - Pipe Southeast

SIGNATURE:

ADDRESS: 5895 SHILOH ROAD, SUITE 114
ALPHARETTA, GA 30005

PHONE NUMBER: (407)319-1780 **EMAIL:** wpoczekaj@garney.com

Docusign Envelope ID: A3705B48-B7E5-4F52-8480-5FF929E99139

EXHIBIT B1 - SCHEDULE OF INTENDED SUBCONTRACTOR UTILIZATION

This form **must be** completed and **submitted with the bid/proposal.** All prime bidders/proposers **must** submit this form which lists all intended subcontractors/suppliers who will be utilized under the scope of work/services.

Prime Bidder/Proposer Company Name Garney Companies, Inc.

ITB/RFP Name & Number: Progressive Design/Build for Boat Rock Road Sanitary Sewer Extension // 25RFP021025K-CRB

1. My firm, as **Prime** Bidder/Proposer on this scope of work/service(s) **is NOT** [X] **is** [ ] a minority or female owned and controlled business enterprise. [ ] **African American (AABE);** [ ] **Asian American (ABE);** [ ] **Hispanic American (HBE);** [ ] **Native American (NABE);** [ ] **White Female American (WFBE);** [ ] **Small Business (SBE);** [ ] **Service Disable Veteran (SDVBE)** [ ] **Disadvantage Business (DBE) *If yes, Prime must submit a copy of recent certification.**

[ ] Male or [ ] Female (Check the appropriate boxes).

Indicate below the portion of work, including, percentage of bid/proposal amount that your firm will carry out directly as the Prime Contractor:

$ _____ Or _____ %

2. This information below must be completed and submitted with the bid/proposal if a **joint venture (JV)** approach is to be undertaken. Please provide JV breakdown information below and attach a copy of the executed Joint Venture Agreement.

JV Partner(s) information:

Business Name (a.)		**Business Name** (b.)	
% of JV		**% of JV**	
Ethnicity		**Ethnicity**	
Gender		**Gender**	
Certified (Y or N)		**Certified (Y or N)**	
Agency		**Agency**	
Date Certified		**Date Certified**	

Docusign Envelope ID: A3705B48-B7E5-4F52-8480-5FF929E99139

3. Lists all Sub-Contractor/suppliers participating on the project. **(COMPLETE Exhibit B2 FORM)**

Total Dollar Value of Certified Subcontractors: ($)	$110,000

Total Percentage of Certified Subcontractors: (%)	17.2%

CERTIFICATION: The undersigned certifies that he/she has read, understands and agrees to be bound by the Bid/Proposer provisions, including the accompanying Exhibits and other terms and conditions regarding sub-contractor utilization. The undersigned further certifies that he/she is legally authorized by the Bidder/Proposer to make the statement and representation in this Exhibit and that said statements and representations are true and correct to the best of his/her knowledge and belief. The undersigned understands and agrees that if any of the statements and representations are made by the Bidder/Proposer knowing them to be false, or if there is a failure of the intentions, objectives and commitments set forth herein, then in any such event the Contractor's acts or failure to act, as the case may be, shall constitute a material breach of the contract, entitling the County to terminate the Contract for default. The right to so terminate shall be in addition to, and in lieu of, any other rights and remedies the County may have for other defaults under the contract.

By submitting this form, it is understood that every firm listed as a subcontractor has been properly notified and will participate.

Signature: _____ **Title**: Director - Pipe Southeast

Business or Corporate Name: Garney Companies, Inc.

Address: 5895 Shiloh Road, Suite 114, Alpharetta, GA 30005

Telephone: (407) 319.1780

Fax Number: ( ) N/A

Email Address: wpoczekaj@garney.com

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UTILIZATION REPORT – Post Award

The awarded vendor(s) are required to report **all** payments to the prime contractor, subcontractors and sub-consultants (if applicable) during the project using the B2GNow software program. This requirement will be further explained by the Office of Contract Compliance upon determination of all awarded contracts.

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EXHIBIT B2 FORM
SUB-CONTRACTORS (INCLUDING SUPPLIERS) TO BE UTILIZED IN THE PERFORMANCE OF THE SCOPE OF WORK/SERVICES(S), IF AWARDED ARE LISTED BELOW

Certification Designation: AABE – African American Business Enterprise, HBE – Hispanic American Business Enterprise, NABE – Native American Business Enterprise, ABE – Asian American Business Enterprise, FBE – Female Business Enterprise, MBE – Minority Business Enterprise, SDVBE – Service Disabled Veteran Business Enterprise, SBE – Small Business Enterprise, DBE – Disadvantage Business Enterprise

Subcontractor Name	Email Address	City, State, Phone	Ethnic Group	Certification Agency	Certification Designation	Scope of Work	Dollar Amount	Percentage
Gresham Smith	randy.booker@greshamsmith.com	60 West Peachtree Street NW, Suite 1550 Atlanta, GA 30308	N/A	N/A	N/A	Design / Engineering	$214,000	34%
CERM Engineering	ttye@cerm.com	2800 Century Parkway, Ste. 750 Atlanta, GA 30345	AABE	Fulton County	MBE / FBE	Geotech Consultant	$100,000	15%
TerraMark Geospatial	pcannon@terramark.com	1396 Bells Ferry Road, Marietta, GA 30066	N/A	N/A	SBE	Environmental / Survey	$70,000	11%
RK Reeves	rebeccak@rkreeves.com	100 Crescent Center Parkway, Ste. 575, Tucker, GA 30084	AABE	Fulton County	MBE / FBE	Public Outreach	$10,000	2%

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EXHIBIT C
FORM SUBCONTRACTOR

Certification Designation: AABE – African American Business Enterprise, HBE – Hispanic American Business Enterprise, NABE – Native American Business Enterprise, ABE – Asian American Business Enterprise, FBE – Female Business Enterprise, MBE – Minority Business Enterprise, SDVBE – Service Disabled Veteran Business Enterprise, SBE – Small Business Enterprise, DBE – Disadvantage Business Enterprise

Subcontractor/Supplier	Business Address	Contact Name	Contact Email Address	Contact Phone	Scope of Work Solicited for Project	Certification Designation	Result of Contact
To be determined during GMP Phase	TBD	TBD	TBD	TBD	TBD	TBD	TBD

Company Name: Garney Companies, Inc.

Project # & Title: 25RFP021025K-CRB // Progressive Design/Build for Boat Rock Road Sanitary Sewer Extension

Printed Signature: 

Date: 05/21/2025

Docusign Envelope ID: A3705B48-B7E5-4F52-8480-5FF929E99139

EXHIBIT H

INSURANCE AND RISK MANAGEMENT FORMS

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INSURANCE AND RISK MANAGEMENT SIGNATURE PAGE

CONTRACTOR/VENDOR ACKNOWLEDGES HAVING READ, UNDERSTANDING, AND AGREEING TO COMPLY WITH THE AFOREMENTIONED STATEMENTS, AND THE REPRESENTATIVE OF THE CONTRACTOR/VENDOR IDENTIFIED BELOW IS AUTHORIZED TO SIGN CONTRACTS ON BEHALF OF THE RESPONDING CONTRACTOR/VENDOR.

COMPANY: Garney Companies, Inc. **SIGNATURE:** 

NAME: Will Poczekaj, ENV SP **TITLE:** Director - Pipe Southeast

DATE: 05/21/2025

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EXHIBIT I

EXHIBITS

Docusign Envelope ID: A3705B48-B7E5-4F52-8480-5FF929E99139

Exhibit 1: Specifications

Exhibit 2: Details

- Details – 100 Series
- Details – 300 Series
- Details – 400 Series
- Details – 500 Series
- Details – 700 Series

Exhibit 3: Drawing Plan Set

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Exhibit I – Exhibit 1: Specifications

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Part 1 General

1.01 Description

A. The work will consist of providing all labor, equipment, and materials necessary for the construction and installation of new sanitary sewer, manholes, laterals, erosion control measures, pavement repair and resurfacing. All work shall be in conformance with the contract documents, drawings and Fulton County Standards and Specifications.

1.02 Project Location

The project is located in the City of South Fulton, Fulton County, Georgia.

1.03 Quantities

The Owner reserves the right to alter the quantities of work to be performed or to extend or shorten the improvements at any time when and as found necessary, and the Contractor shall perform the work as altered, increased, or decreased. Payment for such increased or decreased quantity will be made in accordance with the Instructions to Bidders. No allowance will be made for any change in anticipated profits, nor shall such changes be considered as waiving or invalidating any conditions or provisions of the Contract and Bond.

1.04 Partial Owner Occupancy

The existing facilities to which these improvements are being made will continue operation during the period of construction.

1.03 Coordination of Work

A. The Contractor shall coordinate the work with third parties (such as power, natural gas, or telephone companies) in areas where such parties may have rights to underground property or facilities.

B. The Contractor shall request from involved third parties maps or other descriptive information as to the nature and location of such underground facilities or property. The Contractor shall make all necessary investigations to determine the existence and location of underground utilities.

C. The Contractor will be held responsible for any damage to and for maintenance and protection of existing utilities, and structures whether or not the utility has been located by the owner. The Contractor shall contact the utility owners and the individual property owners for the location of the utilities within the area of Work.

D. The Contractor shall coordinate the work with owners of private and public property where access is required for the performance of the work. Legal access will be acquired and provided by the Owner.

END OF SECTION

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Part 1 General

1.01 Partial Occupancy By Owner

Whenever, in the opinion of the Engineer, any section or portion of the Work or any structure is in suitable condition, it may be put into use upon the written order of the Engineer and such usage will not be held in any way as an acceptance of said Work or structure, or any part thereof, or as a waiver of any of the provisions of these Specifications and the Contract. Pending final completion and acceptance of the Work, all necessary repairs and replacements, due to defective materials or workmanship or operations of the Contractor, for any section of the Work so put into use shall be performed by the Contractor at Contractor's own expense.

END OF SECTION

Docusign Envelope ID: A3705B48-B7E5-4F52-8480-5FF929E99139

Part 1 General

1.01 Scope

A. The Bid lists each item of the Project for which payment will be made. **No payment will be made for any items other than those listed in the Bid.** The Project Manager will clarify all contradictions.

B. Required items of work and incidentals necessary for the satisfactory completion of the work which are not specifically listed in the Bid, and which are not specified in this Section to be measured, or to be included in one of the items listed in the Bid, shall be considered as incidental to the work. All costs thereof, including Contractor's overhead costs and profit, shall be considered as included in the unit prices bid for the various Bid items. The Contractor shall prepare the Bid accordingly.

C. Work includes furnishing all labor, equipment, tools, and materials, which are not furnished by the Owner and performing all operations required to complete the work satisfactorily, in place, as specified and as indicated on the Drawings.

1.02 Descriptions

A. Measurement of an item of work will be by the unit indicated in the Bid. Work performed for items not included in the Bid shall be paid in accordance with Section 8, 00700-87.

B. Final payment quantities shall be determined from actual quantities installed and measured in the field.

C. Payment for an item of work includes all necessary and incidental related work required to complete the Work, whether specified or not.

D. Unless otherwise stated in individual sections of the Specifications or in the Bid, or as approved in writing by the Engineer prior to beginning the Work, no separate payment will be made for any item of work, materials, parts, equipment, supplies or related items required to perform and complete the Work. The costs for all such items required shall be included in the price bid for item of which it is a part. In the event that the Engineer requests Work that is agreed by both the Engineer and the Contractor as not included in the Bid, that item of work will be paid in accordance with Section 8, 00700-87.

E. Payment will be made by extending unit prices multiplied by quantities provided and then summing the extended prices to reflect actual work. Such price and payment shall constitute full compensation to the Contractor for furnishing all plant, labor, equipment, tools, and materials not furnished by the Owner and for performing all operations required to provide to the Owner the entire Project, complete in place, as specified and as indicated on the Drawings.

F. “Products” shall mean materials or equipment permanently incorporated into the work.

G. “Provide” shall mean furnish and install.

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1.03 Non Payments

A. No separate payment shall be made for the restoration of developed property and the cost shall be included in the overall prices for the execution of the work unless specifically noted otherwise.

B. No separate payment shall be made for excavation, disposal of rubbish and debris including old pipe, pipe bedding, backfill, dewatering of trench, or repair of damaged properties. All testing required for the execution of the work shall be done as part of the price for the item involved.

C. No separate payment shall be made for any traffic control, work area protection, recording, safety measures, set-up of equipment and set-up of staging area except as indicated below. Payment for these items shall be part of the unit price bid for each particular item of work.

D. No separate payment shall be made for providing detail surveys needed for construction. The Contractor shall be responsible in providing further survey necessary to complete the Work. The Contractor shall carefully preserve the established points, and in case of willful or careless destruction, the Contractor shall be responsible for the costs of reestablishing the bench marks, reference points and stakes.

1.04 Contractor Mobilization

All costs associated with mobilization of all required resources, a one-time cost for each non-emergency project assigned by the Owner, shall be included in the unit prices bid for CONTRACTOR MOBILIZATION, based on the project sizes listed in the Bid.

1.05 Sewers and Accessories

A. Existing Utilities and Obstructions

1. Horizontal Conflict: Payments for conflicts with existing utilities shall be made only where additional manholes, fittings, and/or additional lengths of pipe are approved by the Engineer. Said payment shall be made at the unit prices in the Bid. No other payment will be made for any delay or extra cost encountered by the Contractor due to protection, avoidance or relocation of existing utilities, mains or services or changing the horizontal alignment of the sewer.

2. Vertical Conflict: Where authorized by the Engineer, payment for additional depth of cut required to avoid vertical conflicts shall be made at the unit prices bid for sewer line. No payment will be made for relocation of existing utilities except as authorized by the Engineer.

B. Location and Grade: No separate payment shall be made for survey work performed by or for the Contractor in the establishment of reference points, bench marks, cut sheets, limits of right of way or easement, including their restoration, as well as centerline or baseline points.

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C. Construction Along Highways, Streets and Roadways: No separate payment shall be made for traffic control or maintaining highways, streets, roadways, and driveways, except as authorized by the Engineer.

D. HDPE Pipe Gravity Sewer

1. Payment for HDPE pipe gravity sewer shall be made at the unit price bid for GRAVITY SEWER, for the quantity and type provided at the appropriate depth. Payment will be made at the one unit price for the actual depth of the sewer line.

2. Measurement for payment at the unit price for GRAVITY SEWER shall be made along the centerline of the pipe, through fittings, from inside face of structure wall penetrated to inside face of structure wall penetrated. Depth of cut shall be measured from pipe invert to ground level at pipe centerline. Cut sheets prepared by the Contractor and approved by the Engineer shall be the basis for payment.

3. The unit price bid for GRAVITY SEWER shall include all costs for installation of the sewer as required including, but not limited to, materials, labor, excavation, dewatering, shoring, bedding, haunching, backfill, compaction, clean-up, testing, bypass pumping, traffic control, and all other related items not listed as separate items in the Bid.

4. Payment for pipe INSTALLED IN STEEL CASING will be made in addition to payment for gravity sewer installed at the appropriate depth. The unit price bid for pipe INSTALLED IN STEEL CASING shall include all additional costs associated with providing the appropriate size steel casing pipe, spacers, grout, brick, as required for the complete installation of pipe in casing via open-cut installation. All costs associated with installation of the sewer line, including excavation, dewatering, etc. shall be included in the unit price bid for GRAVITY SEWER.

5. No payment shall be made for sections of pipe which are not installed.

6. No additional payment shall be made for replacement of defective materials.

7. No additional payment will be made for maintaining or stopping flow while placing the new sewer in service.

8. No payment shall be made for sections of pipe which have not passed required tests, or if the area has not been cleaned up to the satisfaction of the Engineer.

9. No separate payment will be made for cutting and beveling pipe.

10. The cost of all fittings shall be included in the price bid for pipe.

E. Clean up and Testing: No separate payment shall be made for clean-up and testing.

F. Pipe Bursting

1. Measurement for payment at the unit price for PIPE BURSTING shall be made along the centerline of the pipe from inside face of structure wall

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penetrated to inside face of structure wall penetrated.

2. No separate payment shall be made for launch pits or receiving pit.

G. HDPE Pipe Lining

1. Measurement for payment at the unit price for HDPE PIPE LINING shall be made along the centerline of the pipe from inside face of structure wall penetrated to inside face of structure wall penetrated.

H. CURED-IN-PLACE Lining

1. Measurement for payment at the unit price for CURED-IN-PLACE LINING shall be made along the centerline of the pipe from inside face of structure wall penetrated to inside face of structure wall penetrated. No payment shall be made for "downtube" or dry felt used in conjunction with an inversion.

I. Sewer Cleaning

1. No payment shall be made for normal cleaning of sewers as defined in Section 02731, paragraph 3.04 **I**

J. Manhole Rehabilitation

1. Measurement for payment at the unit price for MANHOLE REHABILITATION shall be made from the invert to the base of the manhole frame for each method of rehabilitation bid at the price for the depth range listed.

1.06 Sewer Service Connections

A. The unit price bid for 6-INCH HDPE SEWER SERVICE CONNECTIONS shall include all costs associated with installing a service connection as listed in the Bid including, but not limited to, all materials, labor, tools, excavation, backfill, compaction, manhole coring, grouting, manhole boot, fittings including wye or tee, and all incidental items required for a complete installation. No additional payment will be made for plugging the fitting or for cutting an existing sewer pipe to locate the fitting.

B. Measurement for payment for service connections will be made along the centerline of the pipe, through fittings, from centerline of manhole or pipe to the inside face of the clean-out box.

C. The unit price bid for CLEAN-OUT ASSEMBLY shall include, but is not limited to, all materials, labor, tools, fittings, vertical pipe, cleanout, cast iron box and cover, and all incidental items as required to provide a complete clean-out assembly.

D. Payment for re-establishing sewer service connections shall be made under the unit prices bid for SERVICE LINE RECONNECTIONS.

1.07 Precast Concrete Manholes and Accessories

A. The unit price bid for 4-FOOT DIAMETER PRECAST MANHOLES, at the depths listed in the Bid, shall include all costs associated with construction of a complete

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manhole on a new sewer line, including excavation, shoring, dewatering, backfilling, compaction, crushed stone bedding, concrete slab, precast base, riser sections, cone or flat top, coring, rubber boots, grouting, sleeves, concrete, invert, mastic sealant, brickwork, mortar, connection of pipes to the manhole, vacuum testing, and all incidental items required to complete the installation.

B. The unit price bid for 4-FOOT DIAMETER DOGHOUSE MANHOLES, at the depths listed in the Bid, shall include all costs associated with construction of a complete manhole on an existing sewer line, including excavation, shoring, dewatering, backfilling, compaction, crushed stone bedding, concrete slab, base, riser sections, cone or flat top, coring, rubber boots, grouting, concrete, invert, diversion of flow, cutting existing pipe, connecting pipes to manhole, mastic sealant, brickwork, mortar, vacuum testing, and all incidental items required to complete the installation.

C. Measurement for payment at the unit price for MANHOLES shall be made from the invert to the top of the top section. Payment for manholes shall be made at the unit price bid for MANHOLES, for the type provided at the appropriate depth. Payment will be made at the one unit price for the actual depth of the manhole.

D. Manhole Accessories

1. The unit price bid for SAFETY PLATFORM shall include all costs associated with installation of a safety platform in a new precast concrete manhole. Payment for SAFETY PLATFORM will be in addition to payment for PRECAST MANHOLE.

2. The unit price bid for MANHOLE RING AND COVER shall include the cost of providing the appropriate type ring and cover on a new manhole or new riser section including materials, labor, grouting, brick and mortar, minor grade adjustments (up to three inches either way vertically) and all incidental items required to complete the installation.

E. Manhole Modifications

1. The unit price bid for ADJUST EXISTING MANHOLE COVER TO GRADE shall include all costs associated with adjusting an existing manhole cover by up to three inches using steel or concrete adjusting rings or brick and mortar, as ordered by the Engineer, including pavement repair if applicable. Measurement for payment will be made based on the actual quantity of manhole covers adjusted.

2. The unit price bid for ADJUST EXISTING PRECAST MANHOLE shall include all costs associated with raising or lowering an existing manhole including, but not limited to, excavation, shoring, dewatering, backfilling, compaction, removal and replacement of existing cone or flat top, removal or addition of riser sections, disposal of removed materials, grouting, steps, brickwork, mortar, mastic and all incidental items required to complete the installation. In the event that a new cone or flat top section is required, it will be paid for at the unit price bid for 4-FOOT DIAMETER PRECAST MANHOLE.

3. The unit price bid for ADJUST EXISTING BRICK MANHOLE shall include all costs associated with raising or lowering an existing manhole including, but not limited to, excavation, shoring, dewatering, backfilling, compaction,

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removal or addition of brick, disposal of removed materials, grouting, steps, mortar, and all incidental items required to complete the installation.

4. Payment for pavement patching associated with ADJUST EXISTING MANHOLE shall be paid for at the unit price bid for FULTON COUNTY STANDARD UTILITY CUT.

5. Measurement for payment for ADJUST EXISTING MANHOLE will be made from the original manhole cover elevation to the proposed elevation of the new manhole cover. Vertical distance will be measured to the nearest tenth of a foot.

6. Measurement for payment for REESTABLISH MANHOLE INVERT shall include all costs associated with reestablishing inverts within an existing manhole including, but not limited to dewatering, concrete placement, removal of unusable materials and debris, disposal of removed materials, grouting, mortar, and all incidental items required to complete the installation. Payment for bypassing associated with REESTABLISH MANHOLE INVERT shall be paid for under the ALLOWANCE for Bypass Pumping.

F. Manhole Connections: The unit price bid for MANHOLE CONNECTIONS shall include all costs associated with connecting a new sewer line to an existing manhole, including drop connection fittings, tees, or core and boot as appropriate for the type of connection, flow diversion, penetration of manhole wall, sealing connection, forming new invert, and all incidental items required to complete the connection. Costs for excavation, shoring, dewatering, backfilling, compaction, and bedding shall be included in the unit price bid for GRAVITY SEWER.

G. Measurement for payment for drop connection vertical pipe shall be made from the invert of the upstream sewer to the invert of the manhole. Payment for the measured vertical feet of pipe will be made for the unit price bid for GRAVITY SEWER. Inside drop connection vertical piping will be paid for at the 0.0 to 6.0 foot depth price for gravity sewer. Outside drop connection vertical piping will be paid for based on the actual depth of the of the drop connection.

1.08 Section Deleted

1.09 Section Deleted

1.10 Section Deleted

1.11 Erosion and Sedimentation Control

A. General

1. No separate payment shall be made for erosion and sedimentation controls, except as noted below. All other erosion and sedimentation control costs shall be included in the unit price bid for the item to which it pertains.

2. No payment will be made for any portion of the Project for which temporary erosion and sedimentation controls are not properly maintained.

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3. Quantities for payment shall be based upon actual quantity constructed by the Contractor.

B. Construction Exits: All costs for construction exits, including installation, maintenance, repair, and removal, shall be included in the unit price bid for CONSTRUCTION EXITS. The unit price bid shall include geotextile underliner, stone, and all incidental costs associated with maintaining a construction exit to Fulton County standards.

1. If the action of the construction vehicles traveling over the gravel pad does not sufficiently remove mud and debris, the vehicle tires shall be washed prior to allowing vehicles to enter public right-of-way. No additional payment will be made for the cost of washing tires.

2. No payment will be made for construction exits that are improperly constructed or use materials that are not approved.

C. Reinforced Silt Fence: All costs for Type S silt fence, where ordered by the Engineer, including installation, maintenance, repair, replacement, and removal, shall be included in the unit price bid for REINFORCED SILT FENCE.

D. Hay Bale Check Dams: All costs for hay bale check dams, including hay bales, necessary earthwork, staking, periodic maintenance and repair, and removal of sediment and hay bales following establishment of permanent erosion control measures shall be included in the unit price bid for HAY BALE CHECK DAMS.

E. Stone Check Dams: All costs for stone check dams, including stone, geotextile underliner, necessary earthwork, periodic maintenance and repair, and removal of sediment and stone following establishment of permanent erosion control measures shall be included in the unit price bid for STONE CHECK DAM. Measurement for payment will be made to the limits allowed in accordance with the Standard Details and Specifications..

F. Inlet Sediment Traps: All costs for temporary inlet sediment traps (silt box), including installation, maintenance, repair and removal, shall be included in the unit price bid for INLET SEDIMENT TRAPS.

G. Pigs-in-a-Blanket: All costs for pigs in a blanket, including installation, maintenance, repair and removal, shall be included in the unit price bid for PIGS-IN-A-BLANKET.

H. Rip Rap With Filter Fabric Underlay: All costs for rip rap, including filter fabric, installation, maintenance, repair and removal, as required by the Standard Details and Specifications, or as directed by the Engineer, shall be included in the unit price bid for RIP RAP WITH FILTER FABRIC UNDERLAY.

I. Rip Rap: All costs for rip rap, excluding RIP RAP WITH FILTER FABRIC UNDERLAY, installation, maintenance, repair and removal, as required by the Standard Details and Specifications, or as directed by the Engineer, shall be included in the unit price bid for RIP RAP.

J. Box Gabion – 3’x3’x6’ Baskets: All costs for box gabions, including stone, wire mesh, stakes, anchors, filter fabric, assembly of box gabion, placement, excavation, backfill, compaction, and all incidental costs shall be included in the unit price bid for BOX GABION.

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K. Tree Protection Fence: All costs for tree protection fence, also known as orange mesh safety fence, including installation, maintenance, repair and removal, shall be included in the unit price bid for TREE PROTECTION FENCE.

1.12 Vegetation Restoration

A. Temporary Seeding: Temporary seeding and mulching shall be applied to all disturbed area to be left exposed for a period greater than 14 days, or as ordered by the Engineer. The unit price bid for TEMPORARY SEEDING shall include all costs associated with spreading fast growing seed, mulching, watering, maintenance and repair until permanent grassing is established.

B. Permanent Seeding: All costs for permanent seeding, including fine grading, raking, soil preparation (removal of rocks and other objectionable materials), sewing the appropriate type of grass seed, fertilizing, mulching, watering, temporary protective measures, maintenance and repair until permanent grassing is established, shall be included in the unit price bid for PERMANENT SEEDING. Permanent seed will be applied only after final grading and dress-up of disturbed area have been completed to the satisfaction of the Engineer.

C. Sod Grassing: Where ordered by the Engineer, sod shall be provided at the unit price bid for SOD GRASSING for any type. All costs for proper installation, including preparation of surface, installation, rolling, compacting, watering, maintenance, repair, and any temporary measures required to protect the sod until establishment, shall be included in the unit price bid for SOD GRASSING.

D. Hydroseeding: All costs for hydroseeding, including preparation of surface, maintenance, repair, and any temporary measures required to protect the area until establishment, shall be included in the unit price bid for HYDROSEEDING.

E. In no case shall any one area be paid more than once for temporary grassing or for permanent grassing.

F. If an area is temporarily grassed, and as directed by the Engineer the area is left that way permanently, no additional payment will be made for permanent grassing.

G. Measurement for payment will be made by square yard, along the sewer centerline, to the widths allowed by the Standard Details and Specifications.

1.13 Temporary Stream Crossing

A. Temporary Stream Crossing: All costs for constructing temporary stream crossings, whether for contractor access to the work or for work crossing streams, shall be included in the unit price bid for TEMPORARY STREAM CROSSING. Stream crossings All labor and materials including temporary culverts, stone, filter fabric underlay, check dams, bypassing, necessary earthwork, periodic maintenance and repair, and removal of sediment and all materials placed by the Contractor, following the end of the usefulness of the temporary crossing, shall be included in the unit prices bid for TEMPORARY STREAM CROSSING.

B. Stream Crossings shall be constructed as shown in the Standard Details and Specifications, limited to 10 feet upstream and 10 feet downstream from top of trench excavation and from five feet beyond top of bank, across stream or ditch bank and bottom, to five feet beyond top of bank. Any other areas at streams or

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ditches disturbed by the Contractor, which may require rip rap, shall be rip rapped at no additional cost to the Owner.

1.14 Trench Excavation and Stabilization

A. No separate or additional payment will be made for any special or unique method, means, techniques or equipment necessary for the Contractor's compliance with the Specifications, regulatory requirements, permits, laws or regulations which govern this Project.

B. Trench Excavation: No separate payment will be made for trench excavation. All costs shall be included in the unit price bid for the item to which it pertains at the appropriate depth.

C. Sheeting, Bracing and Shoring: No separate payment will be made for providing any sheeting, bracing and shoring. All costs shall be included in the unit price bid for the item to which it pertains at the appropriate depth.

D. Dewatering Excavations: All costs of equipment, labor and materials required for dewatering shall be included in the price bid for the item to which it pertains.

E. Trench Foundation and Stabilization

1. No payment for trench stabilization shall be authorized until after the trench has been dewatered. If the pipe is installed in an inadequately prepared trench bottom, the Engineer shall notify the Contractor in writing of the deficiency and will not authorize payment for that portion of that length of pipe which was improperly installed.

2. Payment for trench stabilization shall be made on the basis of the amount authorized and the unit price bid for TRENCH STABILIZATION. Payment shall include all costs for the removal and disposal of the unsuitable material and replacement with the materials listed in the Bid including filter fabric. No additional payment will be made for material required for specified bedding.

F. Bedding and Haunching

1. The unit price bid for pipe for GRAVITY SEWER shall include excavation of the trench to the depth below the pipe necessary to provide specified bedding and to lay the sewer to grade. Measurements for payment will be made only to the pipe invert.

2. No separate payment will be made for material used to provide specified bedding. The cost of all bedding materials shall be included in the unit price bid for the item to which it relates, except for trench stabilization.

3. No additional payment will be made for improved bedding required to compensate for over excavation of the trench.

G. Trench Rock Excavation

1. Rock excavation shall be paid for in addition to payment for normal pipe excavation accounted for in the unit price bid for gravity sewer. Payment will be made for the measured quantity of rock excavated, at the sum of

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the unit prices for Trench Rock Base Cost and Trench Rock Premium Cost if applicable.

2. The unit price for Trench Rock Base Cost is for the normally anticipated cost of rock excavation, the cost of additional bedding and backfill material as specified and all costs incidental thereto.

3. The unit price bid for Trench Rock Premium Cost shall be for all additional costs for rock excavation which, in the opinion of the Contractor, are in excess of the Base Cost, including but not limited to extra blasting protection, closer grouping of blasting holes, more detonator caps, more caution, etc. The Contractor shall not bid less than zero (bid a deduct) for the Trench Rock Premium Cost. Any Bids containing a deduct will be declared non-responsive and rejected by the Owner.

4. The maximum allowable volume of rock excavation for payment shall be based on a trench width equal to the outside diameter of the pipe barrel plus 18 inches, but not less than 36 inches, and depth of rock on the pipe centerline, from the top of the rock to the bottom of the rock or the specified bottom of the trench, whichever has the higher elevation.

5. The Engineer must be given reasonable notice to measure all rock. Payment will not be made for excavated rock that was not measured and approved by the Engineer prior to removal.

6. No allowance shall be made for excavating to extra widths for construction of manholes or other appurtenances, for excavating to sloping sides, or for excavations made necessary by the physical limitations of the Contractor's equipment. Cost of such additional rock excavation shall be included in the unit price bid for the item to which it pertains.

7. Payment for blasting monitoring shall be made from the BLASTING MONITORING cash allowance. A fee must be agreed upon by the Engineer prior to the Contractor employing an independent, qualified specialty subcontractor to monitor the blasting. If the Contractor employs the specialty subcontractor prior to the Engineer's approval of the fee, all such costs are subject to non-reimbursement.

H. Initial Backfill

1. No separate payment shall be made for initial backfill.

2. No separate payment shall be made for drying out the initial backfill material in order to meet the compaction requirements.

3. No separate payment shall be made for the adding of moisture to the initial backfill materials in order to meet the compaction requirements.

4. No separate payment shall be made for providing select material if the insitu material cannot meet the compaction requirements.

I. Concrete Encasement: Payment for concrete encasement shall be at the unit price in the Bid for GENERAL CONCRETE PLACEMENT.

J. Final Backfilling

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1. No additional payment will be made for additional material when excavated materials are used.

2. No separate payment shall be made for drying out the final backfill material in order to meet the compaction requirements.

3. No separate payment shall be made for the adding of moisture to the final backfill materials in order to meet the compaction requirements.

4. No additional payment will be made for providing select material if the insitu material cannot meet the compaction requirements.

K. Additional Material: No separate payment will be made for additional earth or fill materials imported to the Project site.

1.15 Easement Clearing and Grubbing

A. The unit price bid for EASEMENT CLEARING AND GRUBBING shall include all costs associated with clearing a 20-foot wide easement of the specified type, as approved by the Engineer prior to clearing, including but not limited to removal and disposal of trees, stumps, roots, undergrowth, debris, or other objectionable matter.

B. LIGHT CLEARING shall be defined by an easement that is dense with shrubs, brush, and trees up to one foot in diameter.

C. MEDIUM CLEARING shall be defined by an easement that is dense with shrubs, brush, and trees averaging one to two feet in diameter.

D. HEAVY CLEARING shall be defined by an easement that is dense with shrubs, brush, and trees averaging over two feet in diameter, including specimen trees.

E. The cost of moving and reestablishing landscape features, including labor and materials, shall be included in the unit price bid for the item to which it pertains.

F. No payment will be made for clearing and grubbing in grassed areas and in areas with non-established vegetation. The costs associated with such clearing shall be included in the unit price bid for the item to which it pertains.

1.16 Driveway and Road Repair and Replacement

A. General:

1. Payment for removing and replacing driveway and road asphalt and concrete pavement will be made based on the measured quantity replaced at the unit price Bid. The unit price bid shall include all costs associated with cutting, removing, disposing of existing pavement, replacing and compaction of base, subbase, concrete, asphalt, and all related items as required, including providing select backfill if necessary, all traffic control and temporary measures for maintaining traffic.

2. Payment shall be made only for that length for which the pipeline is constructed underneath or within four feet of the edge of the pavement to a width as shown in the Standard Details and Specifications.

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3. Payment for soils testing shall be made from the SOILS, CONCRETE, ASPHALT, AND MATERIALS TESTING cash allowance. No payment shall be made for tests that fail to verify required results.

4. No additional payment will be made for removing and replacing damaged adjacent pavement.

5. No additional payment will be made for saw cutting of driveways or curbs.

B. Payment for removing and replacing gravel driveways will be made based on the measured quantity replaced at the unit price Bid for GRAVEL DRIVEWAY. The unit price bid shall include all costs associated with removing, replacing, and compacting a minimum of four-inches of GAB or #57 stone, and all related items as required for a complete driveway repair, including all traffic control and temporary measures for maintaining access. Payment will be made for the length for which the pipeline is constructed underneath the driveway and for the width as limited by the Standard Details and Specifications.

C. Payment for removing and replacing asphalt driveways will be made based on the measured quantity replaced at the unit price Bid for ASPHALT DRIVEWAY. The unit price bid shall include all costs associated with cutting, removing existing pavement, disposing of removed materials, compacting and placing a minimum of four inches of GAB and one and a half inches of Type E asphalt, and all related items as required for a complete driveway repair, including all traffic control and temporary measures for maintaining access. Payment will be made for the length for which the pipeline is constructed underneath the driveway and for the width as limited by the Standard Details and Specifications.

D. Payment for removing and replacing concrete driveways will be made based on the measured quantity replaced at the unit price Bid for CONCRETE DRIVEWAY - RESIDENTIAL. The unit price bid shall include all costs associated with cutting, removing existing concrete, disposing of removed materials, compacting sub base, and placing a minimum of four inches concrete with reinforcing steel, and all related items as required for a complete driveway repair, including all traffic control and temporary measures for maintaining access. Payment will be made for the length for which the pipeline is constructed underneath the driveway and for the width to the nearest construction joint on either side of the new pipeline.

E. Payment for removing and replacing asphalt driveways will be made based on the measured quantity replaced at the unit price Bid for CONCRETE DRIVEWAY - COMMERCIAL. The unit price bid shall include all costs associated with cutting, removing existing concrete, disposing of removed materials, compacting sub base, and placing a minimum of six inches concrete with reinforcing steel, and all related items as required for a complete driveway repair, including all traffic control and temporary measures for maintaining access. Payment will be made for the length for which the pipeline is constructed underneath the driveway and for the width to the nearest construction joint on either side of the new pipeline.

F. Payment for removal and replacement of sidewalk shall be made at the unit price bid for CONCRETE SIDEWALK. No payment for sidewalk shall be made where the centerline of the new pipe is more than 5-feet from the closest edge of the sidewalk.

G. Payment for removal and replacement of curb and gutter shall be made at the unit prices bid for CONCRETE CURB AND GUTTER or for GRANITE CURB as

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appropriate. No payment for curb and gutter shall be made where the centerline of the new pipe is more than 5-feet from the closest edge of the curb and gutter.

H. Payment for removal and replacement of asphalt pavement (Type A Cut Repair), where the Fulton County Standard Utility Cut (Type C Cut Repair) is not required, shall be made at the unit price bid for ASPHALT PAVEMENT REMOVAL AND REPLACEMENT. The unit price bid shall include all costs associated with a Type A Cut Repair, including cutting, removing existing pavement, disposing of removed materials, compacting and placing a minimum of six inches of crusher run and one and a half inches of Type E asphalt, and all related items as required for a complete repair, including all traffic control and temporary measures. Payment will be made for the length for which the pipeline is constructed underneath the roadway and for the width as limited by the Standard Details and Specifications, or as approved by the Engineer.

I. Payment for City of Alpharetta Utility Cut shall be made at the unit price bid for COMPLETE CITY OF ALPHARETTA UTILITY CUT. The unit price bid shall include all costs associated with cutting, removing existing pavement, disposing of removed materials, eight inch concrete cap, bituminous tack coat, and one and a half inches of Type E asphalt, and all related items as required for a complete repair, including all traffic control and temporary measures including road plates. Payment will be made for the length for which the pipeline is constructed underneath the roadway and for the width as limited by the Standard Details and Specifications, or as approved by the Engineer.

J. No separate or additional payment shall be made for temporary measures required to make the road or driveway surface passable, including backfilling the top of the trench temporarily with crusher run or granular material or placing a temporary asphalt topping.

K. Payment for milling shall be made at the unit price bid for ROAD SURFACE MILLING. The unit price bid shall include all costs associated with milling one and a half inches of existing pavement and disposing of all waste materials and all related items as required. Measurement shall be made based on actual area milled, as approved by the Engineer.

L. Payment for overlay shall be made at the unit price bid for ROAD SURFACE OVERLAY. The unit price bid shall include all costs associated with overlaying a road surface with a bituminous tack coat and a minimum of one and a half inches of Type E asphalt, and all related items as required. Measurement shall be made based on actual area overlaid, as approved by the Engineer.

1.17 Section Deleted

1.18 Traffic Control

A. All costs for providing traffic control in compliance with the Manual on Uniform Traffic Control Devices (MUTCD) and Georgia Department of Transportation (GDOT) specifications shall be included in the unit price bid for the item to which it pertains. No additional payment will be made for complying with MUTCD or GDOT requirements.

B. Payment for TRAFFIC CONTROL as indicated in the Bid will be made only for additional traffic control devices beyond the requirements of the MUTCD and / or GDOT as ordered by the Engineer.

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C. The unit price bid for STANDARD DOT CONCRETE BARRIER shall include all costs for providing, installing and removing a standard DOT concrete barrier, as directed by the Engineer.

1. No excavation in or near roadways will be left open overnight. Therefore, all concrete barriers will be required to be removed from the roadway and moved to a location where vehicular and pedestrian traffic are not obstructed. The cost of moving the barriers as such shall be included in the unit price bid.

2. Measurement for payment shall be made based on the actual linear footage of barrier installed, per day, approved by the engineer and serving the purpose for which it was intended. Payment will not be made for excess barriers stored by the Contractor in any location.

D. The unit price bid for MUTCD STANDARD SAFETY BARREL shall include all costs for providing, installing and removing a standard MUTCD safety barrel, as directed by the Engineer. Only **safety barrels directed by the Engineer**, in addition to those required by the MUTCD and GDOT, shall be paid for separately.

E. The unit price bid for POLICE CRUISER shall include all costs for providing a police cruiser for additional traffic control. Payment will be made for hours spent on site, which may be a portion of a standard work day. Payment will be made only for hours documented and approved by the Engineer.

F. The unit price bid for CERTIFIED FLAGMAN shall include all costs for providing a flagman for additional traffic control, as directed by the Engineer, in addition to the requirements of MUTCD and GDOT.

1. The flagman shall be certified and dedicated to maintaining and directing traffic flow. An individual who works part time as a flagman and part time as a laborer or acts in dual capacity will not be approved for payment under this item. Proof of certification may be required by the Engineer prior to acceptance for payment.

2. Payment will be made for hours spent on site performing dedicated flagman duties, which may be a portion of a standard work day. Payment will be made only for hours documented and approved by the Engineer.

G. The unit price bid for LIGHT PLANT shall include all costs for providing a light plant, including generator and lighting system, for night work, as directed by the Engineer.

H. The unit price bid for ELECTRONIC MESSAGE BOARD shall include all costs for providing an electronic message board, as directed by the Engineer.

1.19 Section Deleted

1.20 Cast in Place Concrete

A. The unit price Bid for CONCRETE PIERS shall include all costs associated with installation of concrete piers under sewer line including excavation, backfill, compaction, dewatering, drilling grout holes, grouting dowels in place, concrete,

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reinforcement, and all other work required for pier installation. Measurement for vertical height of the piers shall include the thickness of the footing.

B. The cost of services of the consulting soil and foundation engineer will be paid by the Contractor from the SOILS, CONCRETE, ASPHALT, AND MATERIALS TESTING cash allowance.

C. The unit price bid for GENERAL CONCRETE PLACEMENT shall include all costs of placing general concrete as directed by the Engineer. General concrete placement shall only be used for concrete in addition to items listed elsewhere in the Bid.

D. The unit price bid for CONCRETE – FLOWABLE FILL shall include all costs of filling abandoned pipes with concrete as directed by the Engineer. Flowable fill shall only be used for concrete in addition to items listed elsewhere in the Bid.

E. The unit price bid for REINFORCED CONCRETE PLACEMENT shall include all costs of placing reinforced concrete as directed by the Engineer. Reinforced concrete placement shall only be used for concrete requiring the installation of rebar reinforcement in addition to items listed elsewhere in the Bid.

1.21 Section Deleted

1.22 Section Deleted

1.23 Utility Location – Excavation and Backfill

A. Soft Dig Hydro Excavation: The unit price bid for SOFT DIG HYDRO EXCAVATION shall include all costs associated with locating the assigned utility, excavating to directly above the pipe, measuring the depth, diameter and type of the pipe, backfilling and compacting the hole up to two feet from existing grade with soil, encoding a 3M ID marker device, installing the marker above the pipe at a depth of two feet, and backfilling with soil and dressing the disturbed area with like surrounding materials.

B. Where utility location is performed in roadways or sidewalks, other materials may be required for backfill. Select materials will be paid for at the unit prices bid for TRENCH STABILIZATION. Measurement for payment will be made on the actual quantity of material used for backfill of the hole where the marker ball is installed.

C. No payment will be made for excavation that does not locate the assigned utility, or where the marker ball is not installed directly above the pipe.

D. Exploratory Excavation: The unit price bid for EXPLORATORY EXCAVATION shall include all costs associated with excavation of an area by machine and by hand where necessary with the intent of locating a Fulton County utility, including all equipment, tools, and labor. The costs associated with removal and replacement of roadway, driveway, sidewalk, or curb and gutter shall be included under the appropriate pay item. Measurement for payment will be based on the actual amount of excavation required to locate a Fulton County utility, only when ordered by the Engineer. This item shall not be used for standard locating of utilities as required to perform the work.

E. No separate or additional payment will be made for any special or unique method, means, techniques or equipment necessary for the Contractor's compliance with

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these Specifications, regulatory requirements, permits, laws or regulations which govern this Project.

1.24 Cash Allowances

A. General

1. The Contractor shall include in the Bid Total all allowances stated in the Contract Documents. These allowances shall cover the net cost of the services provided by a firm selected by the Owner. The Contractor's handling costs, labor, overhead, profit and other expenses contemplated for the original allowance shall be included in the items to which they pertain and not in allowances.

2. No payment will be made for nonproductive time on the part of testing personnel due to the Contractor's failure to properly coordinate testing activities with the work schedule or the Contractor's problems with maintaining equipment in good working condition. The Contractor shall make all necessary excavations and shall supply any samples of materials necessary for conducting compaction and density tests.

3. No payment shall be provided for services that fail to verify required results.

B. Should the net cost be more or less than the specified amount of the allowance, the Contract will be adjusted accordingly by change order. The amount of change order will not recognize any changes in handling costs at the site, labor, overhead, profit and other expenses caused by the adjustment to the allowance.

C. Documentation

1. Submit copies of the invoices with each periodic payment request from the firm providing the services.

2. Submit results of services provided which verify required results.

D. Schedule of Cash Allowances

1. Soils, Concrete, Asphalt, and Materials Testing: Allow the amount provided in the Bid for the services of a geotechnical engineering firm and testing laboratory to verify soils conditions including trench excavation and backfill, asphalt coring and density tests, testing of concrete cylinders for poured in place concrete, pipe materials, and similar issues as directed by the Engineer. Services will be reimbursed in accordance with 1.24.D.6 below. Contractor must provide invoices for Owner approval.

2. Utility Conflict Resolution: Allow the amount specified in the Bid to resolve any unforeseen utility conflicts (including relocating and/or replacement) as directed and approved by the Engineer.

3. Large Tree Removal: Allow the amount specified in the Bid **for the services of a tree removal specialist to remove individual trees as directed by the Engineer**. Services will be reimbursed in accordance with 1.24.D.6 below. Contractor must provide invoices for Owner approval. No payment will be made for trees removed as part of clearing and grubbing.

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4. Bypass Pumping: Bypass pumping is included within the Item of Work. Allow the amount specified in the Bid **for the services of a bypass pumping specialty contractor to provide bypass pumping services as directed and approved by the Engineer**. Services will be reimbursed in accordance with 1.24.D.6 below. Contractor must provide invoices for Owner approval. Costs for bypass pumping will be reimbursed only with prior approval of the Engineer. If bypass pumps are provided without prior Engineer approval, payment may not be made for services at the discretion of the Engineer.

5. Blasting Monitoring: Allow the amount provided in the Bid for the services of an independent, qualified specialty subcontractor to monitor the blasting, when directed by the Engineer. Services will be reimbursed at direct cost. Contractor must provide invoices for Owner approval.

6 In Subparagraphs 3 and 4 above, the items included in "Cost and "Overhead" shall be based on the following schedule:

a. Unless otherwise provided in the Contract Documents, "Cost" shall be limited to the following: cost of materials incorporated into the Work, including sales tax and cost of delivery; cost of direct labor (labor cost may include a pro rata share of foreman's account of the change) including social security, old age and unemployment insurance, and fringe benefits required by agreement or custom; workers' or workmen's compensation insurance; rental value of equipment and machinery; costs for preparing Shop Drawings.

b. Unless otherwise provided in the Contract Documents, "Overhead" shall include the following: bond and insurance premiums including increase and decreases from change in the Work, supervision, superintendence, construction parking, wages of timekeepers, watchmen and clerks, small tools, consumable supplies, expendables, incidentals, general office expense, the cost of additional reproduction for the Contractor's subcontractors beyond that agreed upon in the Contract Documents, construction parking, any additional costs of craft supervision by the Contractor's or subcontractors' superintendents, and overhead charges which would be customary and expended regardless of the change in the Work due to other overlapping activities which are included as part of the original Contract, and all other expenses not included in "Cost" above.

1.25 Emergency Services

A. The following labor and equipment are included in the Bid for when the County needs manpower or additional equipment to assist in making emergency repairs other than those specified above as unit price items. Hourly rate items below shall **NOT** apply when work is performed under non-emergency conditions. The Notice to Proceed for each project will indicate emergency or non-emergency project status. Once an emergency is declared contained by the project manager, the project will go forward as non-emergency utilizing line items and a notice to proceed will be issued for the remainder of the work.

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B. The unit price bid for the following items shall include all costs for providing the specified personnel on an hourly basis as required by the Owner. Payment may be made for partial work days where applicable. All overhead and direct costs, including all mobilization costs, for providing the labor, equipment, tools, supplies associated shall be included. Separate payments for items not included shall be agreed to prior to providing such items. No payment will be made for additional services provided without proper written notification to the Owner that the services being requested are additional.

1. Sewer Superintendent
2. Sewer Crew Truck - Fully Equipped with tools and repair parts including but not limited to pipe saw, wacker-packer, chain saw, and miscellaneous hand tools, including sewer foreman and three laborers.
3. Rubber Tired Front End Loader With Trailer and Operator
4. Rubber Tired Backhoe With Trailer and Operator
5. Excavator With Trailer and Operator
6. Trench Compactor With Operator
7. Mobile Air Compressor With Hoses and Air Tools (Jackhammer, Pavement Breaker, Clay Spade, etc.)

C. During emergency conditions, contractor representative shall be on site within two hours of notification of emergency work and contractor workforce shall be on site within four hours of notification to commence emergency repair work. Any failure to respond to an emergency request will be grounds for non-assignment of future projects.

END OF SECTION

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Part 1 General

1.01 Scope

A. Permits and Responsibilities: The Contractor shall, without additional expense to the Owner, be responsible for obtaining all necessary licenses and permits, including building permits, and for complying with any applicable federal, state, county and municipal laws, codes, and regulations, in connection with the prosecution of the Work. In addition, City Work Permits, Right of Way Encroachment permits, plumbing permits and similar type permits, and all appropriate licenses are the responsibility of the contractor. If land disturbance permits, DOT permits, or easements are required, they will be obtained by the County as part of the design process.

B. The Contractor shall take proper safety and health precautions to protect the Work, the workers, the public and the property of others.

C. The Contractor shall also be responsible for all materials delivered and work performed until completion and acceptance of the Work, except for any completed unit of construction thereof which may heretofore have been accepted.

END OF SECTION

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Part 1 General

1.01 Description

A. Whenever reference is made to conforming to the standards of any technical society, organization, body, code or standard, it shall be construed to mean the latest standard, code, specification or tentative specification adopted and published at the time of advertisement for Bids. This shall include the furnishing of materials, testing of materials, fabrication and installation practices. In those cases where the Contractor's quality standards establish more stringent quality requirements, the more stringent requirement shall prevail. Such standards are made a part hereof to the extent which is indicated or intended.

B. The inclusion of an organization under one category does not preclude that organizations' standards from applying to another category.

C. In addition, all work shall comply with the applicable requirements of local codes, utilities and other authorities having jurisdiction.

D. All material and equipment, for which a UL Standard, an AGA or NSF approval or an ASME requirement is established, shall be so approved and labeled or stamped. The label or stamp shall be conspicuous and not covered, painted, or otherwise obscured from visual inspection.

E. The standards which apply to this Project are not necessarily restricted to those organizations which are listed in Article 1.02.

1.02 Standard Organizations

A. Piping and Valves

ACPA	American Concrete Pipe Association
ANSI	American National Standards Institute
API	American Petroleum Institute
ASME	American Society of Mechanical Engineers
AWWA	American Water Works Association
CISPI	Cast Iron Soil Pipe Institute
DIPRA	Ductile Iron Pipe Research Association
FCI	Fluid Controls Institute
MSS	Manufacturers Standardization Society
NCPI	National Clay Pipe Institute
NSF	National Sanitation Foundation
PPI	Plastic Pipe Institute
Uni Bell	PVC Pipe Association

B. Materials

AASHTO	American Association of State Highway and Transportation Officials
ANSI	American National Standards Institute
ASTM	American Society for Testing and Materials

C. Painting and Surface Preparation

NACE	National Association of Corrosion Engineers
SSPC	Steel Structures Painting Council

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D. Electrical and Instrumentation

AEIC	Association of Edison Illuminating Companies
AIEE	American Institute of Electrical Engineers
EIA	Electronic Industries Association
ICEA	Insulated Cable Engineers Association
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronic Engineers
IES	Illuminating Engineering Society
IPC	Institute of Printed Circuits
IPCEA	Insulated Power Cable Engineers Association
ISA	ISA – The Instrumentation, Systems, and Automation Society
NEC	National Electric Code
NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association
REA	Rural Electrification Administration
TIA	Telecommunications Industries Association
UL	Underwriter's Laboratories
VRCI	Variable Resistive Components Institute

E. Aluminum

AA	Aluminum Association
AAMA	American Architectural Manufacturers Association

F. Steel and Concrete

ACI	American Concrete Institute
AISC	American Institute of Steel Construction, Inc.
AISI	American Iron and Steel Institute
CRSI	Concrete Reinforcing Steel Institute
NRMA	National Ready Mix Association
PCA	Portland Cement Association
PCI	Prestressed Concrete Institute

G. Welding

ASME	American Society of Mechanical Engineers
AWS	American Welding Society

H. Government and Technical Organizations

AIA	American Institute of Architects
APHA	American Public Health Association
APWA	American Public Works Association
ASA	American Standards Association
ASAE	American Society of Agricultural Engineers
ASCE	American Society of Civil Engineers
ASQC	American Society of Quality Control
ASSE	American Society of Sanitary Engineers
CFR	Code of Federal Regulations
CSI	Construction Specifications Institute
EDA	Economic Development Administration
EPA	Environmental Protection Agency
FCC	Federal Communications Commission
FmHA	Farmers Home Administration

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FS	Federal Specifications
IAI	International Association of Identification
ISEA	Industrial Safety Equipment Association
ISO	International Organization for Standardization
ITE	Institute of Traffic Engineers
NBFU	National Board of Fire Underwriters
(NFPA)	National Fluid Power Association
NBS	National Bureau of Standards
NISO	National Information Standards Organization
OSHA	Occupational Safety and Health Administration
SI	Salt Institute
SPI	The Society of the Plastics Industry, Inc.
USDC	United States Department of Commerce
WEF	Water Environment Federation

I. General Building Construction

AHA	American Hardboard Association
AHAM	Association of Home Appliance Manufacturers
AITC	American Institute of Timber Construction
APA	American Parquet Association, Inc.
APA	American Plywood Association
BHMA	Builders Hardware Manufacturers Association
BIFMA	Business and Institutional Furniture Manufacturers Association
DHI	Door and Hardware Institute
FM	Factory Mutual Fire Insurance Company
HPMA	Hardwood Plywood Manufacturers Association
HTI	Hand Tools Institute
IME	Institute of Makers of Explosives
ISANTA	International Staple, Nail and Tool Association
ISDSI	Insulated Steel Door Systems Institute
IWS	Insect Screening Weavers Association
MBMA	Metal Building Manufacturers Association
NAAMM	National Association of Architectural Metal Manufacturers
NAGDM	National Association of Garage Door Manufacturers
NCCLS	National Committee for Clinical Laboratory Standards
NFPA	National Fire Protection Association
NFSA	National Fertilizer Solutions Association
NKCA	National Kitchen Cabinet Association
NWMA	National Woodwork Manufacturers Association
NWWDA	National Wood Window and Door Association
RMA	Rubber Manufacturers Association
SBC	SBCC Standard Building Code
SDI	Steel Door Institute
SIA	Scaffold Industry Association
SMA	Screen Manufacturers Association
SPRI	Single Ply Roofing Institute
TCA	Tile Council of America
UBC	Uniform Building Code

J. Roadways

AREA	American Railway Engineering Association
DOT	Department of Transportation
SSRBC	Standard Specifications for Construction of Transportation Systems, Georgia Department of Transportation

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K. Plumbing

AGA	American Gas Association
NSF	National Sanitation Foundation
PDI	Plumbing Drainage Institute
SPC	SBCC Standard Plumbing Code

L. Refrigeration, Heating, and Air Conditioning

AMCA	Air Movement and Control Association
ARI	American Refrigeration Institute
ASHRAE	American Society of Heating, Refrigeration, and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
CGA	Compressed Gas Association
CTI	Cooling Tower Institute
HEI	Heat Exchange Institute
IIAR	International Institute of Ammonia Refrigeration
NB	National Board of Boilers and Pressure Vessel Inspectors
PFMA	Power Fan Manufacturers Association
SAE	Society of Automotive Engineers
SMACNA	Sheet Metal and Air Conditioning Contractors National Association
SMC	SBCC Standard Mechanical Code
TEMA	Tubular Exchangers Manufacturers Association

M. Equipment

AFBMA	Anti Friction Bearing Manufacturers Association, Inc.
AGMA	American Gear Manufacturers Association
ALI	Automotive Lift Institute
CEMA	Conveyor Equipment Manufacturers Association
CMAA	Crane Manufacturers Association of America
DEMA	Diesel Engine Manufacturers Association
MMA	Monorail Manufacturers Association
OPEI	Outdoor Power Equipment Institute, Inc.
PTI	Power Tool Institute, Inc.
RIA	Robotic Industries Association
SAMA	Scientific Apparatus Makers Association

1.03 Symbols

Symbols and material legends shall be as scheduled on the Drawings.

END OF SECTION

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Part 1 General

1.01 Scope

A. Work under this Section includes all scheduling and administering of pre construction and progress meetings as herein specified and necessary for the proper and complete performance of this Work.

B. Scheduling and Administration by Engineer:

1. Prepare agenda.
2. Make physical arrangements for the meetings.
3. Preside at meetings.
4. Record minutes and include significant proceedings and decisions.
5. Distribute copies of the minutes to participants.

1.02 Preconstruction Conference

A. The Engineer shall schedule the preconstruction conference prior to the issuance of the Notice to Proceed.

B. Representatives of the following parties are to be in attendance at the meeting:

1. Owner.
2. Engineer.
3. Contractor and superintendent.
4. Major subcontractors.
5. Representatives of governmental or regulatory agencies when appropriate.

C. The agenda for the preconstruction conference shall consist of the following as a minimum:

1. Distribute and discuss a list of major subcontractors and a tentative construction schedule.
2. Critical work sequencing.
3. Designation of responsible personnel and emergency telephone numbers.
4. Processing of field decisions and change orders.
5. Adequacy of distribution of Contract Documents.
6. Schedule and submittal of shop drawings, product data and samples.
7. Pay request format, submittal cutoff date, pay date and retain age.

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8. Procedures for maintaining record documents.

9. Use of premises, including office and storage areas and Owner's requirements.

10. Major equipment deliveries and priorities.

11. Safety and first aid procedures.

12. Security procedures.

13. Housekeeping procedures.

14. Work hours.

1.03 Project Coordination Meetings

Project Coordination Meetings may be requested at any time at the discretion of the Owner, Engineer or Contractor. The party requesting a meeting shall provide the other two parties with as much notice as possible, as well as a written agenda for such meeting.

END OF SECTION

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Part 1 General

1.01 Scope

A. The work covered by this Section includes the Engineer's and Contractor's responsibilities and obligations regarding inspection of the work performed.

1.02 Engineer's Inspection

A. The Engineer shall have the right of access to and inspection of the work at all times. Materials, equipment and products shall be subject to the Engineer's review as specified herein.

B. The Engineer is responsible for general surveillance of the work on behalf of the Owner. The Engineer is not responsible for construction means, methods, sequences, or procedures or for safety precautions and programs in connection with the work. The Engineer is not responsible for supervision of the work and shall not give instruction to the Contractor's personnel as to methods of execution of the work. The Engineer is not responsible for the Contractor's failure to carry out the work in accordance with the Contract Documents.

1.03 Contractor's Duties

A. The Contractor is responsible for all materials, equipment, methods, and procedures in execution of the work.

B. The Contractor shall correct to the satisfaction of the Engineer any work or material found to be defective or of deficient quality. Such corrections shall be made by the Contractor at no additional expense to the Owner.

1.04 Right of Entry

A. Representatives of Fulton County, the Environmental Protection Division of the Georgia Department of Natural Resources, and the U.S. Department of Agriculture, Soil Conservation Services and others as may be identified by the Owner shall have access to the work wherever it is in preparation or progress. The Contractor shall provide proper facilities for such access and inspection.

Part 2 Products (Not Used)

Part 3 Execution (Not Used)

END OF SECTION

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Part 1 General

1.01 Scope

A. The work under this Section includes submittal to the Engineer of shop drawings, product data and samples required by the various sections of these Specifications.

B. Submittal Contents: The submittal contents required are specified in each section.

C. Definitions: Submittals are categorized as follows:

1. Shop Drawings

a. Shop drawings shall include technical data, drawings, diagrams, procedure and methodology, performance curves, schedules, templates, patterns, test reports, calculations, instructions, measurements and similar information as applicable to the specific item for which the shop drawing is prepared.

b. Provide newly prepared information, on reproducible sheets, with graphic information at accurate scale (except as otherwise indicated) or appropriate number of prints hereof, with name or preparer (firm name) indicated. The Contract Drawings shall not be traced or reproduced by any method for use as or in lieu of detail shop drawings. Show dimensions and note dimensions that are based on field measurement. Identify materials and products in the work shown. Indicate compliance with standards and special coordination requirements. Do not allow shop drawings to be used in connection with the Work without appropriate final “Action” markings by the Engineer.

c. Drawings shall be presented in a clear and thorough manner. Details shall be identified by reference to sheet and detail, specification section, schedule or room numbers shown on the Contract Drawings.

d. Minimum assembly drawings sheet size shall be 22 x 34 inches.

e. Minimum detail sheet size shall be 8 1/2 x 11 inches.

f. Minimum Scale:

i. Assembly Drawings Sheet, Scale: 1 inch = 30 feet.

ii. Detail Sheet, Scale: 1/4 inch = 1 foot.

2. Product Data

a. Product data includes standard printed information on materials, products and systems, not specially prepared for this Project, other than the designation of selections from among available choices printed therein.

b. Collect required data into one submittal for each unit of work or system, and mark each copy to show which choices and options are applicable to the Project. Include manufacturer's standard printed recommendations for application and use, compliance

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with standards, application of labels and seals, notation of field measurements which have been checked and special coordination requirements.

3. Samples

   a. Samples include both fabricated and unfabricated physical examples of materials, products and units of work, both as complete units and as smaller portions of units of work, either for limited visual inspection or, where indicated, for more detailed testing and analysis.

   b. Provide units identical with final condition of proposed materials or products for the work. Include “range” samples, not less than three units, where unavoidable variations must be expected, and describe or identify variations between units of each set. Provide full set of optional samples where the Engineer's selection is required. Prepare samples to match the Engineer's sample where indicated. Include information with each sample to show generic description, source or product name and manufacturer, limitations and compliance with standards. Samples are submitted for review and confirmation of color, pattern, texture and “kind” by the Engineer. Engineer will note “test” samples, except as otherwise indicated, for other requirements, which are the exclusive responsibility of the Contractor.

4. Miscellaneous submittals related directly to the Work (non administrative) warranties, maintenance agreements, workmanship bonds, project photographs, survey data and reports, physical work records, statements of applicability, quality testing and certifying reports, copies of industry standards, record drawings, field measurement data, operating and maintenance materials, overrun stock, security/protection/safety keys and similar information, devices and materials applicable to the Work but not processed as shop drawings, product data or samples.

1.02 Specific Category Requirements

A. General: Except as otherwise indicated in the individual work sections, comply with general requirements specified herein for each indicated category of submittal. Submittals shall contain:

1. The date of submittal and the dates of any previous submittals.

2. The Project title.

3. Numerical submittal numbers, starting with 1.0, 2.0, etc. Revisions to be numbered 1.1, 1.2, etc.

4. The Names of:

   a. Contractor

   b. Supplier

   c. Manufacturer

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5. Identification of the product, with the Specification section number, permanent equipment tag numbers and applicable Drawing No.

6. Field dimensions, clearly identified as such.

7. Relation to adjacent or critical features of the Work or materials.

8. Applicable standards, such as ASTM or Federal Specification numbers.

9. Notification to the Engineer in writing, at time of submissions, of any deviations on the submittals from requirements of the Contract Documents.

10. Identification of revisions on resubmittals.

11. An 8 x 3 inch blank space for Contractor and Engineer stamps.

12. Contractor's stamp, initialed or signed, certifying to review of submittal, verification of products, field measurements and field construction criteria and coordination of the information within the submittal with requirements of the Work and of Contract Documents.

13. Submittal sheets or drawings showing more than the particular item under consideration shall have all but the pertinent description of the item for which review is requested crossed out.

1.03 Routing of Submittals

A. Submittals and routine correspondence shall be routed as follows:

1. Supplier to Contractor (through representative if applicable)
2. Contractor to Engineer
3. Engineer to Contractor and Owner
4. Contractor to Supplier

Part 2 Products

2.01 Shop Drawings

A. Unless otherwise specifically directed by the Engineer, make all shop drawings accurately to a scale sufficiently large to show all pertinent features of the item and its method of connection to the Work.

B. Submit all shop drawings in the form of six hard copies and one pdf file.

C. One reproducible for all submittals larger than 11 x 17 inches and no more than three prints of other submittals will be returned to the Contractor.

2.02 Manufacturer's Literature

A. Where content of submitted literature from manufacturers includes data not pertinent to this submittal, clearly indicate which portion of the contents is being submitted for the Engineer's review.

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B. Submit the number of copies which are required to be returned (not to exceed three) plus three copies which will be retained by the Engineer.

2.03 Samples

A. Samples shall illustrate materials, equipment or workmanship and established standards by which completed work is judged.

B. Unless otherwise specifically directed by the Engineer, all samples shall be of the precise article proposed to be furnished.

C. Submit all samples in the quantity which is required to be returned plus one sample which will be retained by the Engineer.

2.04 Colors

A. Unless the precise color and pattern is specifically described in the Contract Documents, wherever a choice of color or pattern is available in a specified product, submit accurate color charts and pattern charts to the Engineer for review and selection.

B. Unless all available colors and patterns have identical costs and identical wearing capabilities, and are identically suited to the installation, completely describe the relative costs and capabilities of each.

Part 3 Execution

3.01 Contractor's Coordination of Submittals

A. Prior to submittal for the Engineer's review, the Contractor shall use all means necessary to fully coordinate all material, including the following procedures:

1. Determine and verify all field dimensions and conditions, catalog numbers and similar data.

2. Coordinate as required with all trades and all public agencies involved.

3. Submit a written statement of review and compliance with the requirements of all applicable technical Specifications as well as the requirements of this Section.

4. Clearly indicate in a letter or memorandum on the manufacturer's or fabricator's letterhead, all deviations from the Contract Documents.

B. Each and every copy of the shop drawings and data shall bear the Contractor's stamp showing that they have been so checked. Shop drawings submitted to the Engineer without the Contractor's stamp will be returned to the Contractor for conformance with this requirement.

C. The Owner may back charge the Contractor for costs associated with having to review a particular shop drawing, product data or sample more than two times to receive a “No Exceptions Taken” mark.

D. Grouping of Submittals

1. Unless otherwise specifically permitted by the Engineer, make all submittals in groups containing all associated items.

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2. No review will be given to partial submittals of shop drawings for items which interconnect and/or are interdependent. It is the Contractor's responsibility to assemble the shop drawings for all such interconnecting and/or interdependent items, check them and then make one submittal to the Engineer along with Contractor's comments as to compliance, non compliance or features requiring special attention.

E. Schedule of Submittals

1. Within 30 days of Contract award and prior to any shop drawing submittal, the Contractor shall submit a schedule showing the estimated date of submittal and the desired approval date for each shop drawing anticipated. A reasonable period shall be scheduled for review and comments. Time lost due to unacceptable submittals shall be the Contractor's responsibility and some time allowance for resubmittal shall be provided. The schedule shall provide for submittal of items which relate to one another to be submitted concurrently.

3.02 Timing of Submittals

A. Make all submittals far enough in advance of scheduled dates for installation to provide all required time for reviews, for securing necessary approvals, for possible revision and resubmittal, and for placing orders and securing delivery.

B. In scheduling, allow sufficient time for the Engineer's review following the receipt of the submittal.

3.03 Reviewed Shop Drawings

A. Engineer Review

1. Allow a minimum of 30 days for the Engineer's initial processing of each submittal requiring review and response, except allow longer periods where processing must be delayed for coordination with subsequent submittals. The Engineer will advise the Contractor promptly when it is determined that a submittal being processed must be delayed for coordination. Allow a minimum of two weeks for reprocessing each submittal. Advise the Engineer on each submittal as to whether processing time is critical to progress of the Work, and therefore the Work would be expedited if processing time could be foreshortened.

2. Acceptable submittals will be marked “No Exceptions Taken”. A minimum of three copies will be retained by the Engineer for Engineer's and the Owner's use and the remaining copies will be returned to the Contractor.

3. Submittals requiring minor corrections before the product is acceptable will be marked “Make Corrections Noted”. The Contractor may order, fabricate and ship the items included in the submittals, provided the indicated corrections are made. Drawings must be resubmitted for review and marked “No Exceptions Taken” prior to installation or use of products.

4. Submittals marked “Amend and Resubmit” must be revised to reflect required changes and the initial review procedure repeated.

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5. The “Rejected See Remarks” notation is used to indicate products which are not acceptable. Upon return of a submittal so marked, the Contractor shall repeat the initial review procedure utilizing acceptable products.

6. Only two copies of items marked “Amend and Resubmit” and “Rejected See Remarks” will be reviewed and marked. One copy will be retained by the Engineer and the other copy with all remaining unmarked copies will be returned to the Contractor for resubmittal.

B. No work or products shall be installed without a drawing or submittal bearing the “No Exceptions Taken” notation. The Contractor shall maintain at the job site a complete set of shop drawings bearing the Engineer's stamp.

C. Substitutions: In the event the Contractor obtains the Engineer's approval for the use of products other than those which are listed first in the Contract Documents, the Contractor shall, at the Contractor's own expense and using methods approved by the Engineer, make any changes to structures, piping and electrical work that may be necessary to accommodate these products.

D. Use of the “No Exceptions Taken” notation on shop drawings or other submittals is general and shall not relieve the Contractor of the responsibility of furnishing products of the proper dimension, size, quality, quantity, materials and all performance characteristics, to efficiently perform the requirements and intent of the Contract Documents. The Engineer's review shall not relieve the Contractor of responsibility for errors of any kind on the shop drawings. Review is intended only to assure conformance with the design concept of the Project and compliance with the information given in the Contract Documents. The Contractor is responsible for dimensions to be confirmed and correlated at the job site. The Contractor is also responsible for information that pertains solely to the fabrication processes or to the technique of construction and for the coordination of the work of all trades.

3.04 Resubmission Requirements

A. Shop Drawings

1. Revise initial drawings as required and resubmit as specified for initial submittal, with the resubmittal number shown.

2. Indicate on drawings all changes which have been made other than those requested by the Engineer.

B. Project Data and Samples: Resubmit new data and samples as specified for initial submittal, with the resubmittal number shown.

END OF SECTION

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Part 1 General

1.01 Scope

A. This Section includes testing which the Owner may require, beyond that testing required of the manufacturer, to determine if materials provided for the Project meet the requirements of these Specifications.

B. This work also includes all testing required by the Owner to verify work performed by the Contractor is in accordance with the requirements of these Specifications, i.e., concrete strength and slump testing, soil compaction, etc.

C. This work does not include materials testing required in various sections of these Specifications to be performed by the manufacturer, e.g., testing of pipe.

D. The testing laboratory or laboratories will be selected by the Owner. The testing laboratory or laboratories will work for the Owner.

1.02 Payment for Testing Services

A. The cost of testing services required by the Contract to be provided by the Contractor shall be paid for by the Owner through the CASH ALLOWANCE, i.e., concrete testing, soil compaction, and asphalt testing.

B. The cost of additional testing services not specifically required in the Specifications, but requested by the Owner or Engineer, shall be paid for by the Owner through the CASH ALLOWANCE.

C. The cost of material testing described in various sections of these Specifications or as required in referenced standards to be provided by a material manufacturer, shall be included in the price bid for that item and shall not be paid for by the Owner.

D. The cost of retesting any item that fails to meet the requirements of these Specifications shall be paid for by the Contractor. Retesting shall be performed by the testing laboratory working for the Owner.

1.03 Laboratory Duties

A. Cooperate with the Owner, Engineer and Contractor.

B. Provide qualified personnel promptly on notice.

C. Perform specified inspections, sampling and testing of materials.

1. Comply with specified standards, ASTM, other recognized authorities, and as specified.

2. Ascertain compliance with requirements of the Contract Documents.

D. Promptly notify the Engineer and Contractor of irregularity or deficiency of work which are observed during performance of services.

E. Promptly submit three copies (two copies to the Engineer and one copy to the Contractor) of report of inspections and tests in addition to those additional copies required by the Contractor with the following information included:

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1. Date issued
2. Project title and number
3. Testing laboratory name and address
4. Name and signature of inspector
5. Date of inspection or sampling
6. Record of temperature and weather
7. Date of test
8. Identification of product and Specification section
9. Location of Project
10. Type of inspection or test
11. Results of test
12. Observations regarding compliance with the Contract Documents

F. Perform additional services as required.

G. The laboratory is not authorized to release, revoke, alter or enlarge on requirements of the Contract Documents, or approve or accept any portion of the Work.

1.04 Contractor Responsibilities

A. Cooperate with laboratory personnel, provide access to Work and/or manufacturer's requirements.

B. Provide to the laboratory, representative samples, in required quantities, of materials to be tested.

C. Furnish copies of mill test reports.

D. Furnish required labor and facilities to:

1. Provide access to Work to be tested;
2. Obtain and handle samples at the site;
3. Facilitate inspections and tests;
4. Build or furnish a holding box for concrete cylinders or other samples as required by the laboratory.

E. Notify the laboratory sufficiently in advance of operation to allow for the assignment of personnel and schedules of tests.

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F. Laboratory Tests: Where such inspection and testing are to be conducted by an independent laboratory agency, the sample(s) shall be selected by such laboratory or agency, or the Engineer, and shipped to the laboratory by the Contractor at Contractor's expense.

G. Copies of all correspondence between the Contractor and testing agencies shall be provided to the Engineer.

1.05 Quality Assurance

Testing shall be in accordance with all pertinent codes and regulations and with procedures and requirements of the American Society for Testing and Materials (ASTM).

1.06 Product Handling

Promptly process and distribute all required copies of test reports and related instructions to insure all necessary retesting or replacement of materials with the least possible delay in the progress of the Work.

1.07 Furnishing Materials

The Contractor shall be responsible for furnishing all materials necessary for testing.

1.08 Code Compliance Testing

Inspections and tests required by codes or ordinances or by a plan approval authority, and made by a legally constituted authority, shall be the responsibility of, and shall be paid for by the Contractor, unless otherwise provided in the Contract Documents.

1.09 Contractor's Convenience Testing

Inspection or testing performed exclusively for the Contractor's convenience shall be the sole responsibility of the Contractor.

1.10 Schedules for Testing

A. Establishing Schedule

1. The Contractor shall, by advance discussion with the testing laboratory selected by the Owner, determine the time required for the laboratory to perform its tests and to issue each of its findings, and make all arrangements for the testing laboratory to be on site to provide the required testing.

2. Provide all required time within the construction schedule.

B. When changes of construction schedule are necessary during construction, coordinate all such changes of schedule with the testing laboratory as required.

C. When the testing laboratory is ready to test according to the determined schedule, but is prevented from testing or taking specimens due to incompleteness of the Work, all extra costs for testing attributable to the delay will be back charged to the Contractor and shall not be borne by the Owner.

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1.11 Taking Specimens

Unless otherwise provided in the Contract Documents, all specimens and samples for tests will be taken by the testing laboratory or the Engineer.

1.12 Transporting Samples

The Contractor shall be responsible for transporting all samples, except those taken by testing laboratory personnel, to the testing laboratory.

END OF SECTION

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Part 1 General

1.01 Barricades, Lights and Signals

A. The Contractor shall furnish and erect such barricades, fences, lights and danger signals and shall provide such other precautionary measures for the protection of persons or property and of the Work as necessary. Barricades shall be painted in a color that will be visible at night. From sunset to sunrise, the Contractor shall furnish and maintain at least one light at each barricade and sufficient numbers of barricades shall be erected to keep vehicles from being driven on or into any Work under construction.

B. The Contractor will be held responsible for all damage to the Work due to failure of barricades, signs and lights and whenever evidence is found of such damage, the Contractor shall immediately remove the damaged portion and replace it at Contractor's cost and expense. The Contractor's responsibility for the maintenance of barricades, signs and lights shall not cease until the Project has been accepted by the Owner.

END OF SECTION

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Part 1 General

1.01 Scope

The Contractor shall limit blowing dust caused by construction operations by applying water or employing other appropriate means or methods to maintain dust control, subject to the approval of the Owner. As a minimum, this may require the use of a water wagon twice a day to suppress dusty conditions.

1.02 Protection of Adjacent Property

A. The Contractor shall visit the site and note the buildings, landscaping, roads, parking areas and other facilities near the Work site that may be damaged by their operations. The Contractor shall make adequate provision to fully protect the surrounding area and will be held fully responsible for all damages resulting from Contractor's operations.

B. The Contractor shall protect all existing facilities (indoors or out) from damage by dust, fumes, spray or spills (indoors or out). Protect motors, bearings, electrical gear, instrumentation and building or other surfaces from dirt, dust, welding fumes, paint spray, spills or droppings causing wear, corrosion, malfunction, failure or defacement by enclosure, sprinkling or other dust palliatives, masking and covering, exhausting or containment.

END OF SECTION

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Part 1 General

1.01 Scope

A. The Contractor shall be responsible for conducting all Work in a safe manner and shall take reasonable precautions to ensure the safety and protection of workers, property and the general public. The Contractor's responsibility for protection is described in Article 25 of the General Conditions.

B. All construction shall be conducted in accordance with the latest applicable requirements for Part 1926 of the Occupational Safety and Health Act, Safety and Health Regulations for Construction, Section 107 of the Contract Work Hours and Safety Standards Act, as well as any other local, state or federal safety codes and regulations.

C. The Contractor shall designate a trained and qualified employee who is to be responsible for ensuring that the Work is performed safely and in conformance with all applicable regulations.

D. The Contractor shall determine the safety hazards involved in prosecuting the Work and the precautions necessary to conduct the Work safely. If the Contractor is unsure as to any special hazards which may be unique to the various processes and facilities involved in wastewater conveyance and treatment, it shall be Contractor's responsibility to determine such information prior to beginning the Work.

E. The Contractor shall bear all risks associated with performing the Work and shall fully indemnify and hold harmless the Owner and Engineer.

1.02 Special Requirements

A. The Contractor's attention is directed to the fact that construction activities involving existing wastewater facilities and sewer systems will occasionally involve work in potentially hazardous environments in which oxygen deficient, toxic or explosive conditions may exist. Additional hazards arise from the presence of pathogens in the wastewater and sludge and from the slime and scum layer that coat walking, working and other surfaces. In dealing with these hazards, the Contractor shall take special precautions to ensure worker safety. Such precautions shall include, but are not limited to, the following, as applicable:

1. Installing temporary forced air ventilation equipment and ducts for fresh air in enclosed areas.

2. Using pneumatic tools and equipment instead of electric driven equipment in hazardous areas.

3. Avoiding the use of cutting torches, field welding and grinders in hazardous areas.

4. Cleaning and disinfecting working surfaces with hot water, high pressure washers prior to commencing work.

5. Installing sealed wooden baffles or bulkheads to isolate working areas from hazardous atmospheres.

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6. Providing portable oxygen meters, combustible gas detectors and hydrogen sulfide detectors to continuously monitor the atmosphere in enclosed working areas.

7. Providing safety harnesses, safety lines and recovery crews for workers in hazardous areas.

8. Providing self contained breathing apparatus with spare air cylinders for workers in hazardous areas.

9. Providing dry chemical fire extinguishers and connected fire hoses in areas where a danger of fire or explosion exists.

10. Providing adequate, oxygen equipped, first aid facilities.

11. Providing suitable wash up areas and facilities for workers.

12. Installing temporary lighting using explosion proof fixtures in hazardous environments.

13. Installing approved warning and hazard signs and posting safety procedures.

14. Instructing all workers as to the hazards present, the procedures to be followed and the proper function and use of all safety and emergency equipment furnished.

B. Prior to commencing Work on existing facilities and equipment, the Contractor shall notify the system/facility superintendent and shall ensure that the source of electrical energy to all affected equipment is shut off and locked out at the appropriate motor control center. Local switches and pushbutton stations, where provided, shall be locked in the “off” position.

C. Prior to entering or commencing work in a hazardous area, the Contractor shall ensure that all safety and emergency equipment is in place and in satisfactory operating condition.

END OF SECTION

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Part 1 General

1.01 Scope

This Section covers the general cleaning which the Contractor shall be required to perform both during construction and before final acceptance of the Project unless otherwise shown on the Drawings or specified elsewhere in these Specifications.

1.02 Quality Assurance

A. Daily, and more often if necessary, conduct inspections verifying that requirements of cleanliness are being met.

B. In addition to the standards described in this Section, comply with all pertinent requirements of governmental agencies having jurisdiction.

1.03 Hazardous Material and Waste

A. The Contractor shall handle hazardous waste and materials in accordance with applicable local, state, and federal regulations. Waste shall also be disposed of in approved landfills as applicable.

B. The Contractor shall prevent accumulation of wastes which create hazardous conditions.

C. Burning or burying rubbish and waste materials on the site shall not be allowed.

D. Disposal of hazardous wastes or materials into sanitary or storm sewers shall not be allowed.

1.04 Disposal of Surplus Materials

Unless otherwise shown on the Drawings, specified or directed, the Contractor shall legally dispose off the site all surplus materials and equipment from demolition and shall provide suitable off site disposal site, or utilize a site designated by the Owner.

Part 2 Products

2.01 Cleaning Materials and Equipment

Provide all required personnel, equipment and materials needed to maintain the specified standard of cleanliness.

2.02 Compatibility

Use only the cleaning materials, methods and equipment which are compatible with the surface being cleaned, as recommended by the manufacturer of the material or as approved by the Engineer.

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Part 3 Execution

3.01 Progress Cleaning

A. General

1. Do not allow the accumulation of scrap, debris, waste material and other items not required for construction of this Work.

2. At least each week, and more often if necessary, completely remove all scrap, debris and waste material from the job site.

3. Provide adequate storage for all items awaiting removal from the job site, observing all requirements for fire protection and protection of the environment.

B. Site

1. Daily, and more often if necessary, inspect the site and pick up all scrap, debris and waste material. Remove all such items to the place designated for their storage.

2. Restack materials stored on site weekly.

3. At all times maintain the site in a neat and orderly condition which meets the approval of the Engineer.

3.02 Final Cleaning

A. Definitions: Unless otherwise specifically specified, “clean” for the purpose of this Article shall be interpreted as the level of cleanliness generally provided by commercial building maintenance subcontractors using commercial quality building maintenance equipment and materials.

B. General: Prior to completion of the Work, remove from the job site all tools, surplus materials, equipment, scrap, debris and waste. Conduct final progress cleaning as described in 3.01 above.

C. Site: Unless otherwise specifically directed by the Engineer, hose down all paved areas on the site and all public sidewalks directly adjacent to the site; rake clean other surfaces of the grounds. Completely remove all resultant debris.

E. Post Construction Cleanup: All evidence of temporary construction facilities, haul roads, work areas, structures, foundations of temporary structures, stockpiles of excess or waste materials, or any other evidence of construction, as directed by the Engineer.

F. Restoration of Landscape Damage: Any landscape feature damaged by the Contractor shall be restored as nearly as possible to its original condition at the Contractor's expense. The Engineer will decide what method of restoration shall be used.

G. Timing: Schedule final cleaning as approved by the Engineer to enable the Owner to accept the Project.

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3.03 Cleaning During Owner's Occupancy

Should the Owner occupy the Work or any portion thereof prior to its completion by the Contractor and acceptance by the Owner, responsibilities for interim and final cleaning of the occupied spaces shall be as determined by the Engineer in accordance with the Supplementary Conditions of the Contract Documents.

END OF SECTION

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Part 1 General

1.01 Project Maintenance and Warranty

A. The Contractor shall maintain and keep in good repair the Work covered by these Drawings and Specifications until acceptance by the Owner.

B. The Contractor shall warrant for a period of one year from the date of Owner's written acceptance of certain segments of the Work and/or Owner's written final acceptance of the Project, as defined in the Contract Documents, that the completed Work is free from all defects due to faulty products or workmanship and the Contractor shall promptly make such corrections as may be necessary by reason of such defects. The Owner will give notice of observed defects with reasonable promptness. In the event that the Contractor should fail to make such repairs, adjustments or other work that may be made necessary by such defects, the Owner may do so and charge the Contractor the cost thereby incurred. The Performance Bond shall remain in full force and effect throughout the warranty period.

C. The Contractor shall not be obligated to make replacements which become necessary because of ordinary wear and tear, or as a result of improper operation or maintenance, or as a result of improper work or damage by another Contractor or the Owner, or to perform any work which is normally performed by a maintenance crew during operation.

D. In the event of multiple failures of major consequences prior to the expiration of the one year warranty described above, the affected unit shall be disassembled, inspected and modified or replaced as necessary to prevent further occurrences. All related components which may have been damaged or rendered non serviceable as a consequence of the failure shall be replaced. A new 12 month warranty against defective or deficient design, workmanship, and materials shall commence on the day that the item is reassembled and placed back into operation. As used herein, multiple failure shall be interpreted to mean two or more successive failures of the same kind in the same item or failures of the same kind in two or more items. Major failures may include, but are not limited to, cracked or broken housings, piping, or vessels, excessive deflections, bent or broken shafts, broken or chipped gear teeth, premature bearing failure, excessive wear or excessive leakage around seals. Failures which are directly and clearly traceable to operator abuse, such as operations in conflict with published operating procedures or improper maintenance, such as substitution of unauthorized replacement parts, use of incorrect lubricants or chemicals, flagrant over or under lubrication and using maintenance procedures not conforming with published maintenance instructions, shall be exempted from the scope of the one year warranty. Should multiple failures occur in a given item, all products of the same size and type shall be disassembled, inspected, modified or replaced as necessary and rewarranted for one year.

F. The Contractor shall, at Contractor's own expense, furnish all labor, materials, tools and equipment required and shall make such repairs and removals and shall perform such work or reconstruction as may be made necessary by any structural or functional defect or failure resulting from neglect, faulty workmanship or faulty materials, in any part of the Work performed by the Contractor. Such repair shall also include refilling of trenches, excavations or embankments which show settlement or erosion after backfilling or placement.

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G. Except as noted on the Drawings or as specified, all structures such as embankments and fences shall be returned to their original condition prior to the completion of the Contract. Any and all damage to any facility not designated for removal, resulting from the Contractor's operations, shall be promptly repaired by the Contractor at no cost to the Owner.

H. The Contractor shall be responsible for all road and entrance reconstruction and repairs and maintenance of same for a period of one year from the date of final acceptance. In the event the repairs and maintenance are not made immediately and it becomes necessary for the owner of the road to make such repairs, the Contractor shall reimburse the owner of the road for the cost of such repairs.

I. In the event the Contractor fails to proceed to remedy the defects upon notification within 15 days of the date of such notice, the Owner reserves the right to cause the required materials to be procured and the work to be done, as described in the Drawings and Specifications, and to hold the Contractor and the sureties on Contractor's bond liable for the cost and expense thereof.

J. Notice to Contractor for repairs and reconstruction will be made in the form of a registered letter addressed to the Contractor at Contractor's home office.

K. Neither the foregoing paragraphs nor any provision in the Contract Documents, nor any special guarantee time limit implies any limitation of the Contractor's liability within the law of the place of construction.

END OF SECTION

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Part 1 General

1.01 Scope

A. Clearing and grubbing includes, but is not limited to, removing from the Project site, trees, stumps, roots, brush, structures, abandoned utilities, trash, debris and all other materials found on or near the surface of the ground in the construction area and understood by generally accepted engineering practice not to be suitable for construction of the type contemplated. Precautionary measures that prevent damage to existing features including trees, to remain is part of the Work.

B. Clearing and grubbing operations shall be coordinated with temporary and permanent erosion and sedimentation control procedures.

1.02 Quality Assurance

A. The Contractor shall comply with applicable codes, ordinances, rules, regulations and laws of local, municipal, state or federal authorities having jurisdiction over the Project. All required permits of a temporary nature shall be obtained for construction operations by the Contractor.

B. Open burning, if allowed, shall first be permitted by the local authority having jurisdiction. The Contractor shall notify the local fire department and abide by fire department restrictions.

1.03 Job Conditions

Location of the Work: The area to be cleared and grubbed is shown schematically on the Drawings.

Part 2 Products

2.01 Equipment

The Contractor shall furnish equipment of the type normally used in clearing and grubbing operations including, but not limited to, tractors, trucks, loaders and root rakes.

Part 3 Execution

3.01 Scheduling of Clearing

A. The Contractor shall clear at each construction site only that length of the right-of-way, permanent or construction easement which would be the equivalent of two week’s pipe laying. This length shall be determined from the Contractor's Progress Schedule.

B. The Engineer may permit clearing for additional lengths of the pipe line provided that temporary erosion and sedimentation controls are in place and a satisfactory stand of temporary grass is established. Should a satisfactory stand of grass not be possible, no additional clearing shall be permitted beyond that specified above.

C. A satisfactory stand of grass shall have no bare spots larger than one square yard. Bare spots shall be scattered and the bare area shall not comprise more than one percent of any given area.

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3.02 Clearing and Grubbing

A. Clear and grub no more than 3 feet on each side of the pipeline before excavating. Remove all trees, growth, debris, stumps and other objectionable matter. Clear the construction easement or road right-of-way only if necessary.

B. Materials to be cleared, grubbed and removed from the Project site include, but are not limited to, all trees, stumps, roots, brush, trash, organic matter, paving, miscellaneous structures, houses, debris and abandoned utilities.

C. Grubbing shall consist of completely removing roots, stumps, trash and other debris from all graded areas so that topsoil is free of roots and debris. Topsoil is to be left sufficiently clean so that further picking and raking will not be required.

D. All stumps, roots, foundations and planking embedded in the ground shall be removed and disposed of. Piling and butts of utility poles shall be removed to a minimum depth of two feet below the limits of excavation for structures, trenches and roadways or two feet below finish grade, whichever is lower.

E. Landscaping features shall include, but are not necessarily limited to, fences, cultivated trees, cultivated shrubbery, property corners, man-made improvements, subdivision and other signs within the right-of-way and easement. The Contractor shall take extreme care in moving landscape features and promptly re-establishing these features.

F. Surface rocks and boulders shall be grubbed from the soil and removed from the site if not suitable as rip rap.

G. Where the tree limbs interfere with utility wires, or where the trees to be felled are in close proximity to utility wires, the tree shall be taken down in sections to eliminate the possibility of damage to the utility.

H. Any work pertaining to utility poles shall comply with the requirements of the appropriate utility.

I. All fences adjoining any excavation or embankment that, in the Contractor's opinion, may be damaged or buried, shall be carefully removed, stored and replaced. Any fencing that, in the Engineer's opinion, is significantly damaged shall be replaced with new fence material.

J. The Contractor shall exercise special precautions for the protection and preservation of trees, cultivated shrubs, sod, fences, etc. situated within the limits of the construction area but not directly within excavation and/or fill limits. The Contractor shall be held liable for any damage the Contractor's operations have inflicted on such property.

K. The Contractor shall be responsible for repairs and/or replacement of all damages to existing improvements resulting from Contractor's operations.

3.03 Disposal of Debris

A. The debris resulting from the clearing and grubbing operation shall be hauled to a disposal site secured by the Contractor and shall be disposed of in accordance with all requirements of federal, state, county and municipal regulations. No debris

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of any kind shall be deposited in any stream or body of water, or in any street or alley. No debris shall be deposited upon any private property except with written consent of the property owner. In no case shall any material or debris be left on the Project, shoved onto abutting private properties or buried on the Project.

END OF SECTION

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Part 1 General

1.01 Scope

A. The Work specified in this Section consists of providing and maintaining temporary and permanent erosion and sedimentation controls as shown on the Drawings. This Section also specifies the subsequent removal of temporary erosion and sedimentation controls.

B. Temporary and permanent erosion and sedimentation controls include grassing and mulching of disturbed areas and structural barriers at those locations which will ensure that erosion during construction will be maintained within acceptable limits. Acceptable limits are as established by the Georgia Erosion and Sedimentation Control Act of 1975, as amended, Section 402 of the Federal Clean Water Act, and applicable codes, ordinances, rules, regulations, and laws of local, state, and municipal authorities having jurisdiction.

C. Land disturbance activity shall not commence until the Land Disturbance Permit has been issued.

1.02 Submittals

Submit product data in accordance with the requirements of Section 01340 of these Specifications.

1.03 Quality Assurance

A. The temporary and permanent erosion and sedimentation control measures shown on the Drawings are minimum suggested requirements. Any additional erosion and sedimentation control measures required by the Contractor's means, methods, techniques, and sequence of operation will be installed by the Contractor at no additional cost to the Owner.

B. Perform all Work under this Section in accordance with all pertinent rules and regulations including, but not necessarily limited to, those stated in these Specifications. Where provisions of pertinent rules and regulations conflict with these Specifications the more stringent provisions shall govern.

C. Provide all materials and promptly take all actions necessary to achieve effective erosion and sedimentation control in accordance with the Georgia Erosion and Sedimentation Control Act of 1975 as amended (OCGA §12-7-1, et. seq.), local ordinances, other permits, local enforcing agency guidelines, and these Specifications.

D. Basic Principles:

1. Coordinate the land disturbance activities to fit the topography, soil types, and conditions.

2. Minimize the disturbed area and the duration of exposure to erosive elements.

3. Provide temporary or permanent stabilization to disturbed areas immediately after rough grading is complete.

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4. Safely convey run-off from the site to a stable outlet to prevent flooding and damage to downstream facilities resulting from increased runoff from the site.

5. Retain sediment on-site that was generated on-site.

6. Minimize encroachment upon watercourses.

E. Implementation:

1. The Contractor is solely responsible for the control of erosion within the Project site and the prevention of sedimentation from leaving the Project site or entering waterways.

2. The Contractor shall install temporary and permanent erosion and sedimentation controls which will ensure that runoff from the disturbed area of the Project site shall pass through a filter system before exiting the Project site.

3. The Contractor shall provide temporary and permanent erosion and sedimentation control measures to prevent silt and sediment from entering the waterways and designated wetland areas. The Contractor shall maintain an undisturbed vegetative buffer a minimum of 25 feet from the top of the bank.

4. The Contractor shall limit land disturbance activity to those areas shown on the Drawings.

5. The Contractor shall maintain erosion and sedimentation control measures within disturbed areas on the entire site at no additional cost to the Owner until the final acceptance of the Project. Maintenance shall include mulching, re-seeding, clean-out of sediment barriers and sediment ponds, replacement of washed-out or undermined rip rap and erosion control materials, to the satisfaction of the Owner and Engineer.

6. All fines imposed for improper erosion and sedimentation control shall be paid by the Contractor.

Part 2 Products

2.01 Sediment Barrier

A. Silt Fence:

1. Type NS silt fence shall meet the requirements of Section 171 of the Georgia Department of Transportation Standard Specifications, latest edition.

2. Type S Silt Fence is a combination of Type NS silt Fence with woven wire reinforcement. Type NS Silt Fence reinforcement shall meet the requirements of Section 171 of Georgia D.O.T. Specifications.

3. Silt fence fabric shall be an approved product on the Georgia DOT Qualified Product List No. 36, latest edition.

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B. Hay Bales: Hay bales shall be clean, seed-free cereal hay, rectangular in shape, and contain five cubic feet or more of material.

C. Concrete Blocks: Concrete blocks shall be hollow, non-load-bearing type.

2.02 Construction Exit Stone

Use sound, tough, durable stone resistant to the action of air and water. Slabby or shaley pieces will not be acceptable. Aggregate size shall be in accordance with the National Stone Association Size R-2 (1.5 to 3.5-inch stone) or Type 3 rip rap stone conforming to Section 805.01 of the Georgia Department of Transportation Standard Specifications.

2.04 Rip Rap

A. Stone Rip Rap: Use sound, tough, durable stones resistant to the action of air and unless noted otherwise, stone rip rap shall be Type 1.

1. Type 1 Rip Rap: Rip rap size and gradation shall conform to Section 805.01 of the Georgia Department of Transportation Standard Specification for Type 1 Stone Dumped Rip Rap.

2. Type 3 Rip Rap: Rip rap size and gradation shall conform to Section 805.01 of the Georgia Department of Transportation Standard Specifications for Type 3 Stone Dumped Rip Rap.

B. Sand Cement Bag Rip Rap: Sand cement bag rip rap shall conform to the Georgia Department of Transportation Standard Specifications, Section 603.

2.05 Plastic Filter Fabric

A. Plastic filter fabric shall conform to the Georgia Department of Transportation Standard Specifications, Section 881, for filter fabrics.

B. Plastic filter fabric shall be an approved product on the Georgia Department of Transportation Qualified Product List No. 28, latest edition.

2.06 Grassing

A. Grassing materials shall meet the requirements of the Georgia Department of Transportation Standard Specifications, latest edition; as shown in the table:

Material	Section No.
Topsoil	893.01
Seed and Sod	890
Fertilizer	891.01
Agricultural Lime	882.02
Mulch	893.02
Inoculants	893.04

B. Seed species shall be provided as shown on the Drawings.

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C. Mulch Binder: Mulch on slopes exceeding 3 (horizontal) to 1 (vertical) shall be held in place by the use of a mulch binder, as approved by the Engineer. The mulch binder shall be non-toxic to plant and animal life and shall be approved by the Engineer.

D. Water: Water shall be free of excess and harmful chemicals, organisms, and substances which may be harmful to plant growth or obnoxious to traffic. Salt or brackish water shall not be used. Water shall be furnished by the Contractor.

Part 3 Execution

3.01 General

A. Temporary and permanent erosion and sedimentation control measures shall prevent erosion and prevent sediment from exiting the site. If, in the opinion of the Owner, Engineer, or state inspector, the Contractor's temporary erosion and sedimentation control measures are inadequate, the Contractor shall provide additional maintenance for existing measures or additional devices to control erosion and sedimentation on the site at no additional cost to the Owner.

B. All erosion and sedimentation control devices and structures shall be inspected by the Contractor at least once a week and immediately after each rainfall occurrence. Any device or structure found to be damaged shall be repaired or replaced by the end of the day.

C. All erosion and sedimentation control measures and devices shall be constructed and maintained as indicated on the Drawings or specified herein until adequate permanent disturbed area stabilization has been provided and accepted by the Engineer. Once adequate permanent stabilization has been provided and accepted by the Engineer, all temporary erosion and sedimentation control structures and devices shall be removed.

3.02 Sediment Control

A. Construction Exit:

1. Construction exit(s) shall be placed as shown on the Drawings and as directed by the Engineer. A construction exit shall be located at any point traffic will be leaving a disturbed area to a public right-of-way, street, alley, sidewalk, or parking area.

2. Placement of Construction Exit Material: The ground surface upon which the construction exit material is to be placed shall be prepared to a smooth condition free from obstructions, depressions or debris. The plastic filter fabric shall be placed to provide a minimum number of overlaps and a minimum width of one foot of overlap at each joint. The stone shall be placed with its top elevation conforming to the surrounding ground elevations. The stone shall be dropped from no more than a three feet height during construction.

3. Construction Exit Maintenance: The Contractor shall regularly maintain the exit with the top dressing of stone to prevent tracking or flow of soil onto public rights-of-way and paved surfaces as directed by the Engineer.

4. Construction Exit Removal: Construction exit(s) shall be removed and properly disposed of when the disturbed area has been properly stabilized,

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the tracking or flow of soil onto public rights-of-way or paved surfaces has ceased and as directed by the Engineer.

B. Sediment Barriers:

1. Sediment barriers shall include, but are not necessarily limited to, silt fences, hay bales, and any device which prevents sediment from exiting the disturbed area.

2. Silt fences and hay bales shall not be used in any flowing stream, creek, or river.

3. Sediment barriers shall be installed as shown on the Drawings and as directed by the Owner or Engineer.

4. Sediment barriers shall be maintained to ensure the depth of impounded sediment is no more than one-half of the original height of the barrier or as directed by the Engineer. Torn, damaged, destroyed, or washed-out barriers shall be repaired, reinforced, or replaced with new material and installed as shown on the Drawings and as directed by the Owner or Engineer.

5. Accumulated sediment shall be removed from the barrier and replaced and stabilized on-site as directed by the Owner or Engineer.

6. Sediment barrier shall be removed once the disturbed area has been stabilized with a permanent vegetative cover and the sediment barrier is no longer required as directed by the Engineer.

7. All non-biodegradable parts of the barrier shall be disposed of properly.

8. The disturbed area created by barrier removal shall be permanently stabilized.

C. Sediment Boxes: All inlet grates shall be covered with sediment boxes during grading operations and shall remain so covered until all open areas are permanently stabilized against erosion.

3.03 Erosion Control

A. Rip Rap

1. Rip rap shall be placed as shown on the Drawings and as directed by the Engineer. Rip rap shall be placed at all points where natural vegetation is disturbed on the banks of active streams. Compact backfill and place rip rap to prevent subsequent settlement and erosion. This requirement applies equally to construction alongside a stream as well as crossing a stream or drainage ditch.

2. When trenching across a stream or drainage ditch, place rip rap over the entire disturbed area upstream and downstream of the trench excavation. Place rip rap across creek bottom, across creek banks, and extend rip rap placement five feet beyond the top of each creek bank.

3. Preparation of Foundations: The ground surface upon which the rip rap is to be placed shall be brought to the correct lines and grades before

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placement is commenced. Where filling of depressions is required, the new material shall be compacted with hand or mechanical tampers. Unless at creek banks or otherwise shown or specified, rip rap shall begin in a toe ditch constructed in original ground around the toe of the fill or the cut slope. The toe ditch shall be two feet deep in original ground, and the side next to the fill or cut shall have that same slope. After the rip rap is placed, the toe ditch shall be backfilled and the excess dirt spread neatly on the site.

4. Placement of Plastic Filter Fabric:

   a. Plastic filter fabric shall be placed under all rip rap unless shown or specified otherwise.

   b. Filter fabric shall not be placed under rip rap on stream or drainage ditch crossings.

   c. The surface to receive filter fabric shall be prepared to a smooth condition free from obstructions, depressions, and debris. The filter fabric shall be installed with the long dimension running up the slope and shall be placed to provide a minimum number of overlaps. The fabric shall be placed to provide a minimum width of one foot of overlap at each joint. The fabric shall be placed so that the upstream strip overlaps the downstream strip. The fabric shall be anchored in place with securing pins of the type recommended by the fabric manufacturer. Pins shall be placed on or within 3-inches of the centerline of the overlap. The fabric shall be placed loosely to avoid stretching and tearing during placement of the stone. The fabric shall be protected at all times during construction from clogging due to clay, silts, chemicals, or other contaminants. Contaminated fabric or fabric damaged during installation or during placement of rip rap shall be removed and replaced with uncontaminated and undamaged fabric at no additional cost to the Owner.

5. Placement of Rip Rap: Rip rap shall be placed on a 6-inch layer of soil, crushed stone or sand overlaying the filter fabric. Rip rap shall be placed with its top elevation conforming to the finished grade or the natural existing slope of the stream bank and stream bottom. The stone shall be dropped from no more than a three foot height during construction. Stone rip rap shall be placed to provide a uniform surface to the thickness shown on the Drawings. The thickness tolerance for the course shall be –3 inches and +6 inches.

B. Grassing:

1. Temporary Stabilization: Temporary stabilization shall be provided as shown on the Drawings and conforming to these Specifications to control erosion on the site. Temporary stabilization shall be provided to any area that will not receive permanent stabilization within the next 14 calendar days. Partial payment requests may be withheld for those portions of the Project not complying with this requirement.

2. Permanent Stabilization:

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a. Permanent stabilization shall be provided as shown on the Drawings and conforming to these Specifications to control erosion on the site. Permanent stabilization shall be provided to all areas of land disturbance within seven calendar days of the completion of land disturbance for any area greater than 0.25 acre.

b. Where permanent stabilization cannot be immediately established because of an inappropriate season, the Contractor shall provide temporary stabilization. The Contractor shall return to the site at the appropriate season to provide permanent stabilization in areas that received only temporary stabilization.

3. Grassing shall meet the requirements of Section 700 of the Georgia Department of Transportation Standard Specifications, latest edition, unless specified otherwise.

4. Seed rate, fertilization and other requirements shall be provided as shown on the Drawings.

3.04 Clean-Up

A. Dispose of all excess erosion and sedimentation control materials in a manner satisfactory to the Owner and Engineer.

B. Final clean-up shall be performed in accordance with the requirements of these Specifications and to the satisfaction of the Owner and Engineer.

END OF SECTION

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Part 1 General

1.01 Scope

A. The work under this Section consists of furnishing all labor, equipment and materials and performing all operations in connection with the trench excavation and backfill required to install the sanitary sewer lines as shown on the Drawings and as specified.

B. Excavation shall include the removal of any trees, stumps, brush, debris or other obstacles which remain after the clearing and grubbing operations, which may obstruct the work, and the excavation, removal, and disposal of all earth, rock or other materials including the existing pipe if any to the extent necessary to install the sewer line and appurtenances in conformance with the lines and grades shown on the Drawings and as specified.

C. Backfill shall include the refilling and compaction of the fill in the trenches and excavations up to the surrounding ground surface or road grade at crossing.

D. The trench is divided into five specific areas:

1. Foundation: The area beneath the bedding, sometimes also referenced to as trench stabilization.

2. Bedding: The area above the trench bottom (or foundation) and below the bottom of the barrel of the pipe.

3. Haunching: The area above the bottom of the barrel of the pipe up to a specified height above the bottom of the barrel of the pipe.

4. Initial Backfill: The area above the haunching material and below a plane 18 inches above the top of the barrel of the pipe.

5. Final Backfill: The area above a plane 18-inches above the top of the barrel of the pipe.

E. The choice of method, means, techniques and equipment rests with the Contractor. The Contractor shall select the method and equipment for trench excavation and backfill depending upon the type of material to be excavated and backfilled, the depth of excavation, the amount of space available for operation of equipment, storage of excavated material, proximity of man-made improvements to be protected, available easement or right-of-way and the prevailing practice in the area.

1.02 Quality Assurance

A. Density: All references to “maximum dry density” shall mean the maximum dry density defined by the “Maximum Density-Optimum Moisture Test”, ASTM D 698, except that for non-cohesive materials “maximum dry density” shall mean the maximum index density as determined by the “Maximum Index Density of Soils Using a Vibratory Table”, ASTM D 4253. Determination of the density of foundation, bedding, haunching, or backfill materials in place shall meet with the requirements of ASTM D 1556, “Density of Soil In Place by the Sand Cone Method”, ASTM D 2937, “Density of Soil In Place by the Drive-Cylinder Method” or ASTM D 2922, “Density of Soil and Soil-Aggregate In Place by Nuclear Methods (Shallow Depth)”.

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B. Sources and Evaluation Testing: Testing of materials to certify conformance with the Specifications shall be performed by an independent testing laboratory in accordance with Section 01410 of these Specifications. All imported fill materials shall meet the requirements of on-site fill materials.

1.03 Safety

Perform all trench excavation and backfilling activities in accordance with the Occupational Safety and Health Act of 1970 (PL 91-596), as amended. The Contractor shall pay particular attention to the Safety and Health Regulations Part 1926, Subpart P "Excavation, Trenching & Shoring" as described in OSHA publication 2226.

Part 2 Products

2.01 Trench Foundation Materials

A. Crushed stone shall be utilized for trench foundation (trench stabilization) and shall meet the requirements of the Georgia Department of Transportation Specification 800.2.01, Group I (limestone, marble or dolomite) or Group II (quartzite, granite or gneiss). Stone size shall be between No. 57 and No. 4, inclusive.

2.02 Bedding and Haunching Materials

A. Unless specified otherwise, bedding and haunching materials shall be crushed stone as specified below.

B. Crushed stone utilized for bedding and haunching shall meet the requirements of the Georgia Department of Transportation Specification 800.01, Group I (limestone, marble or dolomite) or Group II (quartzite, granite or gneiss). Stone size shall be between No. 57 and No. 4, inclusive.

C. Earth materials utilized for bedding and haunching shall be suitable materials selected from materials excavated from the trench. Suitable materials shall be clean and free of rock larger than 2-inches at its largest dimension, organics, cinders, stumps, limbs, frozen earth or mud, man-made wastes and other unsuitable materials. Should the material excavated from the trench be saturated, the saturated material may be used as earth material, provided it is allowed to dry properly and it is capable of meeting the specified compaction requirements. When necessary, earth bedding and haunching materials shall be moistened to facilitate compaction by tamping. If materials excavated from the trench are not suitable for use as bedding or haunching material, provide select material conforming to the requirements of this Section at no additional cost to the Owner.

D. Filter Fabric Woven Type

1. Filter fabric associated with bedding shall be a polypropylene woven fabric. The fabric shall be a high modulus type with good separation capabilities. The fabric shall be inert to biological degradation and naturally occurring chemicals, alkalies and acids.

2. The fabric shall have an equivalent opening size EOS of 20 to 45. The fabric shall also conform to the minimum property values listed in the following table:

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Fabric Property	Unit	Test Method	Minimum Value
Grab Tensile Strength	lbs.	ASTM D 4632	200
Grab Tensile Elongation	%	ASTM D 4632	30 (max.)
Mullen Burst Strength	psi	ASTM D 3786	400
Trapezoid Tear Strength	lbs.	ASTM D 4533	75
Puncture Strength	lbs.	ASTM D 3787	75

3. If ordered by the Engineer, the filter fabric manufacturer shall furnish the services of a competent factory representative to supervise and/or inspect the installation of pipe. This service will be furnished for a minimum of 10 days during initial pipe installation.

4. Filter fabric shall be Mirafi 500X, Amoco 2002 or Exxon GTF-200.

2.03 Initial Backfill

A. Initial backfill material shall be crushed stone or earth materials as specified for bedding and haunching materials.

B. When necessary, initial backfill materials shall be moistened to facilitate compaction by tamping. If materials excavated from the trench are not suitable for use as initial backfill material, provide select material conforming to the requirements of this Section at no additional cost to the owner.

2.04 Final Backfill

A. Final backfill material shall be general excavated earth materials, shall not contain rock larger than 2-inches at its greatest diameter, cinders, stumps, limbs, man-made wastes and other unsuitable materials. If materials excavated from the trench are not suitable for use as final backfill material, provide select material conforming to the requirements of this Section.

2.05 Select Backfill

Select backfill shall be materials which meet the requirements as specified for bedding, haunching or initial backfill materials, including compaction requirements.

2.06 Concrete

A. Concrete for bedding, haunching, initial backfill or encasement shall have a compressive strength of not less than 3,000 psi, with not less than 5.5 bags of cement per cubic yard and a slump between 3 and 5-inches. Ready-mixed concrete shall be mixed and transported in accordance with ASTM C 94. Reinforcing steel shall conform to the requirements of ASTM A 615, Grade 60.

Part 3 Execution

3.01 Trench Excavation

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A. Topsoil and grass shall be stripped a minimum of 6-inches over the trench excavation site and stockpiled separately for replacement over the finished grading areas.

B. Trenches shall be excavated to the lines and grades shown on the Drawings with the centerlines of the trenches on the centerlines of the pipes and to the dimensions which provide the proper support and protection of the pipe and other structures and accessories.

C. Trench Width for Pipelines

1. The sides of all trenches shall be vertical to a minimum of one foot above the top of the pipe. Unless otherwise indicated on the Drawings, the maximum trench width shall be equal to the sum of the outside diameter of the pipe plus two feet. The minimum trench width shall be that which allows the proper consolidation of the haunching and initial backfill material.

2. Excavate the top portion of the trench to any width within the construction easement or right-of-way which will not cause unnecessary damage to adjoining structures, roadways, pavement, utilities, trees or private property. Where necessary to accomplish this, provide sheeting and shoring.

3. Where rock is encountered in trenches, excavate to remove boulders and stones to provide a minimum of 9-inches clearance between the rock and any part of the pipe barrel or manhole.

4. Wherever the prescribed maximum trench width is exceeded, the Contractor shall use the next higher Class or Type of bedding and haunching as shown on the Drawings for the full trench width as actually cut. The excessive trench width may be due to unstable trench walls, inadequate or improperly placed bracing and sheeting which caused sloughing, accidental over-excavation, intentional over-excavation necessitated by the size of the Contractor's tamping and compaction equipment, intentional over-excavation due to the size of the Contractor's excavation equipment, or other reasons beyond the control of the Engineer or Owner.

D. Depth

1. The trenches shall be excavated to the required depth or elevation which allow for the placement of the pipe and bedding to the dimensions shown on the Drawings.

2. Where rock is encountered in trenches for pipelines, excavate to the minimum depth which will provide clearance below the pipe barrel of 8-inches for pipe 21-inches in diameter and smaller and 12-inches for larger pipe, valves and manholes.

E. Excavated Materials

1. Excavated materials shall be placed adjacent to the work to be used for backfilling as required. Topsoil shall be carefully separated and lastly placed in its original location.

2. Excavated material shall be placed sufficiently back from the edge of the excavation to prevent caving of the trench wall, to permit safe access along the trench and not cause any drainage problems. Excavated material shall

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be placed so as not to damage existing landscape features or man-made improvements.

3.02 Sheeting, Bracing and Shoring

A. Sheeting, bracing and shoring shall be installed in the following instances:

1. Where sloping of the trench walls does not adequately protect persons within the trench from slides or cave-ins.

2. In caving ground.

3. In wet, saturated, flowing or otherwise unstable materials.

4. Where necessary to prevent damage to adjoining buildings, structures, roadways, pavement, utilities, trees or private properties which are required to remain.

5. Where necessary to maintain the top of the trench within the available construction easement or right-of-way.

B. In all cases, excavation protection shall strictly conform to the requirements of the Occupational Safety and Health Act of 1970, as amended.

C. Timber: Timber for shoring, sheeting, or bracing shall be sound and free of large or loose knots and in good, serviceable condition. Size and spacing shall be in accordance with OSHA regulations.

D. Steel Sheeting and Sheet Piling: Steel sheet piling shall be the continuous interlock type. The weight, depth and section modulus of the sheet piling shall be sufficient to restrain the loads of earth pressure and surcharge from existing foundations and live loads. Procedure for installation and bracing shall be so scheduled and coordinated with the removal of the earth that the ground under existing structures shall be protected against lateral movement at all times. The Contractor shall provide closure and sealing between sheet piling and existing facilities.

E. Trench Shield: A trench shield or box may be used to support the trench walls. The use of a trench shield does not necessarily preclude the additional use of bracing and sheeting. When trench shields are used, care must be taken to avoid disturbing the alignment and grade of the pipe or disrupting the haunching of the pipe as the shield is moved. When the bottom of the trench shield extends below the top of the pipe, the trench shield will be raised in 6-inch increments with specified backfilling occurring simultaneously. At no time shall the trench shield be “dragged” with the bottom of the shield extending below the top of the pipe or utility.

F. Remove bracing and sheeting in units when backfill reaches the point necessary to protect the pipe and adjacent property. Leave sheeting in place when in the opinion of the Engineer it cannot be safely removed or is within three feet of an existing structure, utility, or pipeline. Cut off any sheeting left in place at least two feet below the surface.

G. Sheet piling within three feet of an existing structure or pipeline shall remain in place, unless otherwise directed by the Engineer.

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3.03 Rock Excavation

A. Definition of Rock: Any material which cannot be excavated with conventional excavating equipment, and is removed by drilling and blasting, and occupies an original volume of at least one-half cubic yard.

B. Blasting: Provide licensed, experienced workmen to perform blasting. Conduct blasting operations in accordance with all existing ordinances and regulations. Protect all buildings and structures from the effects of the blast. Repair any resulting damage. If the Contractor repeatedly uses excessive blasting charges or blasts in an unsafe or improper manner, the Engineer may direct the Contractor to employ an independent blasting consultant to supervise the preparation for each blast and approve the quantity of each charge.

C. Removal of Rock: Dispose of rock off site that is surplus or not suitable for use as rip rap or backfill.

D. The Contractor shall notify the Engineer prior to any blasting. Additionally, the Contractor shall notify the Engineer and local fire department before any charge is set.

E. Following review by the Engineer regarding the proximity of permanent buildings and structures to the blasting site, the Engineer may direct the Contractor to employ an independent, qualified specialty sub- contractor, approved by the Engineer, to monitor the blasting by use of seismograph, identify the areas where light charges must be used, conduct pre-blast and post-blast inspections of structures, including photographs or videos, and maintain a detailed written log.

3.04 Dewatering Excavations

A. Dewater excavation continuously to maintain a water level two feet below the bottom of the trench.

B. Control drainage in the vicinity of excavation so the ground surface is properly pitched to prevent water running into the excavation.

C. There shall be sufficient pumping equipment, in good working order, available at all times, to remove any water that accumulates in excavations. Where the utility crosses natural drainage channels, the work shall be conducted in such a manner that unnecessary damage or delays in the prosecution of the work will be prevented. Provision shall be made for the satisfactory disposal of surface water to prevent damage to public or private property.

D. In all cases, accumulated water in the trench shall be removed before placing bedding or haunching, laying pipe, placing concrete or backfilling.

E. Where dewatering is performed by pumping the water from a sump, crushed stone shall be used as the medium for conducting the water to the sump. Sump depth shall be at least two feet below the bottom of the trench. Pumping equipment shall be of sufficient quantity and/or capacity to maintain the water level in the sump two feet below the bottom of the trench. Pumps shall be a type such that intermittent flows can be discharged. A standby pump shall be required in the event the operating pump or pumps clog or otherwise stop operation.

F. Dewater by use of a well point system when pumping from sumps does not lower the water level two feet below the trench bottom. Where soil conditions dictate,

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the Contractor shall construct well points cased in sand wicks. The casing, 6 to 10-inches in diameter, shall be jetted into the ground, followed by the installation of the well point, filling casing with sand and withdrawing the casing.

3.05 Trench Foundation and Stabilization

A. The bottom of the trench shall provide a foundation to support the pipe and its specified bedding. The trench bottom shall be graded to support the pipe and bedding uniformly throughout its length and width.

B. If, after dewatering as specified above, the trench bottom is spongy, or if the trench bottom does not provide firm, stable footing and the material at the bottom of the trench will still not adequately support the pipe, the trench will be determined to be unsuitable and the Engineer shall then authorize payment for trench stabilization.

C. Should the undisturbed material encountered at the trench bottom constitute, in the opinion of the Engineer, an unstable foundation for the pipe, the Contractor shall be required to remove such unstable material and fill the trench to the proper subgrade with crushed stone as directed by the Engineer.

D. Where the replacement of unsuitable material with crushed stone does not provide an adequate trench foundation, the trench bottom shall be excavated to a depth of at least two feet below the specified trench bottom. Place filter fabric in the bottom of the trench and support the fabric along the trench walls until the trench stabilization, bedding, haunching and pipe have been placed at the proper grade. The ends of the filter fabric shall be overlapped by one foot above the pipe.

E. Where trench stabilization is provided, the trench stabilization material shall be compacted to at least 90 percent of the maximum dry density, unless shown or specified otherwise.

3.06 Bedding and Haunching

A. Prior to placement of bedding material, the trench bottom shall be free of any water, loose rocks, boulders or large dirt clods.

B. Bedding material shall be placed to provide uniform support along the bottom of the pipe and to place and maintain the pipe at the proper elevation. The initial layer of bedding placed to receive the pipe shall be brought to the grade and dimensions indicated on the Drawings. All bedding shall extend the full width of the trench bottom. The pipe shall be placed and brought to grade by tamping the bedding material or by removal of the excess amount of the bedding material under the pipe. Adjustment to grade line shall be made by scraping away or filling with bedding material. Wedging or blocking up of pipe shall not be permitted. Applying pressure to the top of the pipe, such as with a backhoe bucket, to lower the pipe to the proper elevation or grade shall not be permitted. Each pipe section shall have a uniform bearing on the bedding for the length of the pipe, except immediately at the joint.

C. At each joint, excavate bell holes of ample depth and width to permit the joint to be assembled properly and to relieve the pipe bell of any load.

D. After the pipe section is properly placed, add the haunching material to the specified depth. The haunching material shall be shovel sliced, tamped, vigorously chinked or otherwise consolidated to provide uniform support for the pipe barrel and to fill completely the voids under the pipe, including the bell hole. Prior to

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placement of the haunching material, the bedding shall be clean and free of any water, loose rocks, boulders or dirt clods.

E. Lay gravity sewer line with Class “C” bedding, unless shown or specified otherwise.

1. Class “A” (Bedding Factor - 2.8): Excavate the bottom of the trench flat at a minimum depth as shown on the Drawings, below the bottom of the pipe barrel. Lay pipe to line and grade on concrete block. Place concrete to the full width of the trench and to a height of one-fourth of the outside diameter of the pipe above the invert.

2. Class “B” (Bedding Factor - 1.9): Excavate the bottom of the trench flat at a minimum depth as shown on the Drawings, below the bottom of the pipe barrel. Place and compact bedding material to the proper grade. Haunching material shall then be carefully placed by hand and compacted to provide full support under and up to the centerline of the pipe.

3. Class “C” (Bedding Factor - 1.5): Excavate the bottom of the trench flat at a minimum depth as shown on the Drawings, below the bottom of the pipe barrel. Place and compact bedding material to the proper grade. Haunching material shall then be carefully placed by hand and compacted to provide full support under and up to a height of one-fourth the outside diameter of the pipe above the bottom of the pipe barrel.

F. Manholes: Excavate to a minimum of 12-inches below the planned elevation of the base of the manhole. Place and compact crushed stone bedding material to the required grade before installing the manhole.

G. Excessive Width and Depth

1. Gravity Sewers: If the trench is excavated to excess width, provide the bedding class with the next higher bedding factor. Crushed stone haunching and initial backfill may be used in lieu of Class “A” bedding, where Class “A” bedding is necessitated by excessive trench width.

2. If the trench is excavated to excessive depth, provide crushed stone to place the bedding at the proper elevation or grade.

H. Compaction: Bedding and haunching materials under pipe, manholes and accessories shall be compacted to a minimum of 90 percent of the maximum dry density, unless shown or specified otherwise.

3.07 Initial Backfill

A. Initial backfill shall be placed to anchor the pipe, protect the pipe from damage by subsequent backfill and ensure the uniform distribution of the loads over the top of the pipe.

B. Place initial backfill material carefully around the pipe in uniform layers to a depth of at least 18-inches above the pipe barrel or duct bank. Layer depths shall be a maximum of 6-inches for pipe 18-inches in diameter and smaller and a maximum of 12-inches for pipe larger than 18-inches in diameter.

C. Backfill on both sides of the pipe simultaneously to prevent side pressures.

D. Compact each layer thoroughly with suitable hand tools or tamping equipment.

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E. Initial backfill shall be compacted to a minimum 90 percent of the maximum dry density, unless shown or specified otherwise.

F. If materials excavated from the trench are not suitable for use as backfill materials, provide select backfill material conforming to the requirements of this Section.

3.08 Concrete Encasement for Pipelines

Where concrete encasement is shown on the Drawings for pipelines, excavate the trench to provide a minimum of 6-inches clearance from the bell of the pipe. Lay the pipe to line and grade on concrete blocks. In lieu of bedding, haunching and initial backfill, place concrete to the full width of the trench and to a height of not less than 12-inches above the pipe bell. Do not backfill the trench for a period of at least 24 hours after concrete is placed.

3.09 Final Backfill

A. Backfill carefully to restore the ground surface to its original condition.

B. The top 6-inches shall be topsoil obtained as specified in “Trench Excavation” of this Section.

C. Excavated material which is unsuitable for backfilling, and excess material, shall be disposed of, at no additional cost to the Owner, in a manner approved by the Engineer. Surplus soil may be neatly distributed and spread over the site, if approved by the Engineer. If such spreading is allowed, the site shall be left in a clean and sightly condition and shall not affect pre-construction drainage patterns. Surplus rock from the trenching operations shall be removed from the site.

D. If materials excavated from the trench are not suitable for use as backfill materials, provide select backfill material conforming to the requirements of this Section.

E. After initial backfill material has been placed and compacted, backfill with final backfill material. Place backfill material in uniform layers, compacting each layer thoroughly as follows:

1. In 6-inch layers, if using light power tamping equipment, such as a “jumping jack”.

2. In 12-inch layers, if using heavy tamping equipment, such as hammer with tamping feet.

3. In 24-inch layers, if using a hydra-hammer.

F. Settlement: If trench settles, re-fill and grade the surface to conform to the adjacent surfaces.

G. Final backfill shall be compacted to a minimum 90 percent of the maximum dry density, unless specified otherwise.

3.10 Additional Material

Where final grades above the pre-construction grades are required to maintain minimum cover, additional fill material will be as shown on the Drawings. Utilize excess material excavated from the trench, if the material is suitable. If excess

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excavated materials are not suitable, or if the quantity available is not sufficient, provide additional suitable fill material at no cost to the owner.

3.11 Backfill Under Roads

Compact backfill underlying pavement and sidewalks, and backfill under dirt and gravel roads to a minimum 95 percent of the maximum dry density. The top 12-inches shall be compacted to a minimum of 98 percent of the maximum dry density.

3.12 Backfill Within Georgia DOT Right-of-Way

Backfill within the Georgia DOT right-of-way shall meet the requirements stipulated in the “Utility Accommodation Policy and Standards”, published by the Georgia Department of Transportation.

3.13 Backfill Along Restrained Joint Pipe

Backfill along restrained joint pipe shall be compacted to a minimum 90 percent of the maximum dry density.

3.14 Testing and Inspection

A. The soils testing laboratory is responsible for the following:

1. Compaction tests in accordance with Article 1.02 of this Section.

2. Field density tests for each two feet of lift, one test for each 1,000 feet of pipe installed or more frequently if ordered by the Engineer.

3. Inspecting and testing stripped site, subgrades and proposed fill materials.

B. The Contractor's duties relative to testing include:

1. Notifying laboratory of conditions requiring testing.

2. Coordinating with laboratory for field testing.

3. Paying costs for additional testing performed beyond the scope of that required and for re-testing where initial tests reveal non-conformance with specified requirements.

4. Providing excavation as necessary for laboratory personnel to conduct tests.

C. Inspection

1. Earthwork operations, acceptability of excavated materials for bedding or backfill, and placing and compaction of bedding and backfill is subject to inspection by the Engineer.

D. Comply with applicable codes, ordinances, rules, regulations and laws of local, municipal, state or federal authorities having jurisdiction.

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END OF SECTION

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Part 1 General

1.01 Scope

A. The extent of pavement patching consists of the repair of all pavement removed or damaged in the course of constructing the Project.

B. Pavement patching includes repair of paved roads, streets, highways, walkways, driveways, patios, slabs on grade, and parking lots together with walls, curbing, gutters and headers, and other pavements and appurtenances. Pavement referred to under this Section, refers to asphaltic, cementious, brick, cobble or other large stone pavement materials together with underlying construction, irrespective of its composition.

1.02 Job Conditions

A. Traffic Control: Schedule and conduct Work in a manner which will minimize inconvenience to vehicular and pedestrian traffic. Provide flaggers, barricades, warning signs, warning lights, and other warning means as appropriate.

B. Weather Limitations: Conduct all operations during weather conditions appropriate to the Work being performed.

C. Grade Control: Establish and maintain lines and elevations which will assure finished pavement patch having desirable appearance, function and strength.

1.03 Submittals

Submit detailed material descriptions when requested by the Engineer.

Part 2 Products

2.01 Materials

A. General: For products not described below, use materials and gradations which have locally exhibited a satisfactory record of previous usage, and which for finished visible surfaces will permit obtaining appearance, color and texture reasonably matching remaining adjacent pavement of the same type.

B. Asphalt Concrete: Bituminous plant mixture of asphalt cement and aggregates complying with 9.5 mm Superpave hot plant mix of Section 828 of the Georgia Department of Transportation "Standard Specifications for Road and Bridge Constructions".

C. Graded Aggregate Base: Uniform graded aggregate material complying with Section 815 of the Georgia Department of Transportation "Standard Specifications for Road and Bridge Construction".

D. Bituminous Prime: Cutback asphalt complying with Section 821 of the Georgia Department of Transportation "Standard Specifications for Road and Bridge Construction".

E. Bituminous Tack Coat: Asphalt material complying with Section 413, topics 413.01 through 413.04 of the Georgia Department of Transportation "Standard Specifications for Road and Bridge Construction".

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F. Portland Cement Concrete: Concrete mix of Portland cement, aggregates, water, and air entraining admixture to produce the following properties: 3500 psi minimum compressive strength at 28 days per ASTM C39, 4 inches maximum slump per ASTM C143, and air content between 3% and 6%.

G. Cold Mix: Uniform bituminous mixture of aggregate, asphaltic material and, if it is required, mineral filler complying with 9.5 mm Superpave cold mix of Section 401 of the Georgia Department of Transportation "Standard Specifications for Road and Bridge Construction".

Part 3 Execution

3.01 Pavement Cuts

Saw cut trench edges in paved areas to neat, straight lines before starting to break the pavement slab. Completely backfill the open half before opening the other half of pavement.

3.02 Backfill Placement

Place trench backfill materials in layers not more than six inches compacted thickness. Commence backfill immediately after utility is installed. Complete new replacement base construction immediately after trench backfill.

3.03 Inspection

Examine areas and conditions under which pavement patching will be conducted, giving special attention to stability of subbase. Do not proceed with pavement patching work until unsatisfactory conditions have been corrected.

3.04 Preparation

Saw cut any ragged edges of existing pavement, or in the case of concrete work, remove existing pavement to nearest joint. Remove all loose material from underlying and adjacent surfaces.

3.05 Strength and Stability

Use materials and construction techniques as necessary to obtain strength, stability and durability of pavement patch at least equal to that of remaining adjacent pavement of the same type. As a minimum, conform to pavement patch details, if any, required elsewhere by the Contract Documents; and where such details are not provided, accomplish pavement patching utilizing strengths, thicknesses, etc. not less than that of remaining adjacent pavement of the same type.

3.06 Placing

A. Construct pavement using methods and equipment in general use for the type of work being performed.

B. Immediately after new base construction, cover pavement cut with steel plates or similar devices of sufficient thickness to span the cut without noticeable deflection. Maintain plates in place for not less than 24 hours and not more than 7 days and until the concrete base (if used) has gained sufficient strength to withstand traffic loads. Traffic may resume after installation of metal plates.

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C. Upon removal of the metal plates or similar devices, provide new pavement surface in accordance with one of the following options:

1. Immediately apply new permanent pavement surface materials indicated

or

2. Immediately apply bituminous cold mixture over bond breaker paper over new base. Monitor performance and repair or replace materials regularly to maintain smooth traffic surface until placement of permanent pavement surface materials. At Contractor's time selection prior to substantial completion, remove cold mix and bond breaker paper and provide new permanent pavement surface materials. If performance or maintenance of cold mix patch is unsatisfactory in the opinion of the Owner or Engineer, remove materials and provide new permanent pavement surface materials within 72 hours of notice by the Owner or Engineer.

D. Traffic control devices in lieu of cover plates are permitted for pavement patching longitudinal to the street centerline in excess of 20 feet. Use traffic barricades, warning signs and lights, flagmen, and other means as appropriate to continuously control traffic 24 hours per day. Use devices such that at least 12 feet wide, one-way through traffic access is provided at all times. Upon removal of traffic control devices, install permanent pavement surface.

E. Contractor assumes all responsibility for maintaining repairing and or replacing concrete base that may be damaged during curing period.

F. For existing surface of Portland cement concrete, furnish new Portland cement concrete structure thickness, including base and pavement surface, of not less than eight inches; except for driveways and sidewalks which shall be not less than four inches thick.

G. Provide not less than eight inches thickness of new graded aggregate base for replacement of asphalt concrete pavement at driveways, sidewalks and parking lots.

H. For repair of asphalt concrete pavement, clean base and adjacent surfaces and apply bituminous tack coat or bituminous prime (as appropriate) to such surfaces before placing new asphalt concrete surface.

3.07 Finish

A. Accomplish pavement patching using materials and techniques which result in visible, finished surfaces having appearance, color, and texture reasonably matching remaining adjacent pavement of the same type. Do not permit the finished surface to have dips, objectionable roughness or discontinuity or non-draining areas. Do not create any unsafe pavement condition.

3.08 Repairs

A. If pavement patch or adjacent pavement settles or shows evidence of other distress resulting from the Work, cut pavement out, repair subgrade, and reconstruct patch. Do not place additional pavement material on top of unsatisfactory previously repaired surfaces. At expense of Contractor, repair any pavement which he damages beyond that minimum amount necessary to construct the Work.

END OF SECTION

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Part 1 General

1.01 Scope

The work to be performed under this Section shall consist of removing and replacing existing pavement, sidewalks and curbs in paved areas where necessary for construction of sewers, manholes and all other sewer appurtenances and structures.

1.02 Submittals

A. Certificates: Provide certificates stating that materials supplied comply with Specifications. Certificates shall be signed by the asphalt producer and the Contractor.

B. Traffic paint manufacturer's application instructions and a description and other data relative to the Contractor's application equipment and methods shall be submitted to the Engineer for approval.

1.03 Conditions

A. Weather Limitations

1. Apply bituminous prime and tack coats only when the ambient temperature has been at least 55 degrees F for 12 hours immediately prior to application.

2. Do not conduct paving operations when surface is wet or contains excess of moisture which would prevent uniform distribution and required penetration.

3. Construct asphaltic courses only when atmospheric temperature in the shade is above 40 degrees F, when the underlying base is dry and when weather is not rainy.

4. Place base course when air temperature is above 35 degrees F and rising.

B. Grade Control: Establish and maintain the required lines and grades for each course during construction operations.

Part 2 Products

2.01 Materials and Construction

A. Graded Aggregate Base Course: Graded aggregate base course shall be of uniform quality throughout and shall meet the requirements of Section 815.01 of the Georgia Department of Transportation Standard Specifications.

B. Black Base: Black base course shall be of uniform quality throughout and shall conform to the requirements of Section 828 of the Georgia Department of Transportation Standard Specifications.

C. Binder Course: The binder course of all paved roadways shall conform to the requirements of Section 400, 12.5 mm Superpave of the Georgia Department of Transportation Standard Specifications.

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D. Surface Course: The surface course for all pavement, including prime or tack coat when required by the Engineer, shall conform to the requirements of Section 400, 9.5 mm Superpave of the Georgia Department of Transportation Standard Specifications.

E. Concrete: Provide concrete and reinforcing for concrete pavement or base courses in accordance with the requirements of the Georgia Department of Transportation Standard Specifications, Section 430. Concrete shall be of the strength classifications shown on the Drawings.

F. Special Surfaces: Where driveways or roadways are disturbed or damaged which are constructed of specialty type surfaces, e.g., brick or stone, these driveways and roadways shall be restored utilizing similar, if not original, materials. Where the nature of these surfaces dictate, a specialty contractor shall be used to restore the surfaces to their previous or better condition. Special surfaces shall be removed and replaced to the limits to which they were disturbed.

2.02 Types of Pavements

A. General: All existing pavement removed, destroyed or damaged by construction shall be replaced with the same type and thickness of pavement as that existing prior to construction, unless otherwise directed by the Engineer. Materials, equipment and construction methods used for paving work shall conform to the Georgia Department of Transportation specifications applicable to the particular type required for replacement, repair or new pavements.

B. Aggregate Base: Aggregate base shall be constructed in accordance with the requirements of Section 310 of the Georgia Department of Transportation Standard Specifications. The maximum thickness to be laid in a single course shall be 6-inches compacted. If the design thickness of the base is more than 6-inches, it shall be constructed in two or more courses of approximate equal thickness. After the material placed has been shaped to line, grade and cross-section, it shall be rolled until the course has been uniformly compacted to at least 100 percent of the maximum dry density when Group 2 aggregate is used, or to at least 98 percent of maximum dry density when Group 1 aggregate is used.

C. Concrete Pavement: Concrete pavement or base courses shall be replaced with concrete. The surface finish of the replaced concrete pavement shall conform to that of the existing pavement. The surface of the replaced concrete base course shall be left rough. The slab depth shall be equivalent to the existing concrete pavement or base course, but in no case less than 6-inches thick. Transverse and longitudinal joints removed from concrete pavement shall be replaced at the same locations and to the same types and dimensions as those removed. Concrete pavements or concrete base courses shall be reinforced.

D. Asphaltic Concrete Base, Binder and Surface Course: Asphaltic concrete base, binder and surface course construction shall conform to Georgia Department of Transportation Standard Specifications, Section 400. The pavement mixture shall not be spread until the designated surface has been previously cleaned and prepared, is intact, firm, properly cured, dry, and the tack coat has been applied. Apply and compact the base in maximum layer thickness by asphalt spreader equipment of design and operation approved by the Engineer. After compaction, the black base shall be smooth and true to established profiles and sections. Apply and compact [binder and] the surface course in a manner approved by the Engineer. Immediately correct any high, low or defective areas by cutting out the

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course, replacing with fresh hot mix, and immediately compacting to conform and thoroughly bond to the surrounding area.

E. Surface Treatment Pavement: Bituminous penetration surface treatment pavement shall be replaced with a minimum thickness of 1-inch conforming to Section 424, Georgia Department of Transportation Standard Specifications.

F. Gravel Surfaces: Existing gravel road, drive and parking area replacement shall meet the requirements of graded aggregate base course. This surfacing may be authorized by the Engineer as a temporary surface for paved streets until replacement of hard surfaced pavement is authorized.

G. Temporary Measures: During the time period between pavement removal and complete replacement of permanent pavement, maintain highways, streets and roadways by the use of steel running plates anchored to prevent movement. The backfill above the pipe shall be compacted, as specified in Section 02225 of these Specifications, up to the existing pavement surface to provide support for the steel running plates. All pavement shall be replaced within seven calendar days of its removal.

Part 3 Execution

3.01 Locations for Pavement Replacement

Pavement shall be removed and replaced with similar type and thickness as the original pavement, for the entire length of pipe laying and up to required trench width as per details shown on drawings.

3.02 Removing Pavement

A. General: Remove existing pavement as necessary for installing the pipe line and appurtenances.

B. Marking: Before removing any pavement, mark the pavement neatly paralleling pipe lines and existing street lines. Space the marks the width of the trench.

C. Breaking: Break asphalt pavement along the marks using pavement shearing equipment, jack hammers or other suitable tools. Break concrete pavement along the marks by scoring with a rotary saw and breaking below the score by the use of jack hammers or other suitable tools.

D. Machine Pulling: Do not pull pavement with machines until the pavement is completely broken and separated from pavement to remain.

E. Damage to Adjacent Pavement: Do not disturb or damage the adjacent pavement. If the adjacent pavement is disturbed or damaged, remove and replace the damaged pavement.

F. Sidewalk: Remove and replace any sidewalks disturbed by construction for their full width and to the nearest undisturbed joint.

G. Curbs: Tunnel under or remove and replace any curb disturbed by construction to the nearest undisturbed joint.

3.03 Replacing Pavement

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A. Preparation of Subgrade: Upon completion of backfilling and compaction of the backfill, arrange to have the compaction tested by an independent testing laboratory approved by the Engineer. After compaction testing has been satisfactorily completed, replace all pavements, sidewalks and curbs removed.

1. The existing street pavement or surface shall be removed along the lines of the work for the allowable width specified for the trench or structure. After the installation of the sewerage or water works facilities and after the backfill has been compacted suitably, the additional width of pavement to be removed, as shown on the Drawings, shall be done immediately prior to replacing the pavement.

2. Trench backfill shall be compacted for the full depth of the trench as specified in Section 02225 of these Specifications.

3. Temporary trench backfill along streets and driveways shall include 6-inches of crushed stone or cherty clay as a temporary surfacing of the trenches. This temporary surface shall be maintained carefully at grade and dust-free by the Contractor until the backfill of the trench has thoroughly compacted in the opinion of the Engineer and permission is granted to replace the street pavement.

4. When temporary crushed stone or chert surface is considered by the Engineer to be sufficient surface for gravel pavement, the surface shall be graded smooth and to an elevation that will make the final permanent surfacing level with the adjacent surfacing that was undisturbed.

B. Pavement Replacement

1. Prior to replacing pavement, make a final cut in concrete pavement 12-inches back from the edge of the damaged pavement with a concrete saw. Remove asphalt pavement 12-inches back from the edge of the damaged pavement using pavement shearing equipment, jack hammers or other suitable tools.

2. Replace all street and roadway pavement as shown on the Drawings. Replace driveways, sidewalks and curbs with the same material, to nearest existing undisturbed construction joint and to the same dimensions as those existing.

3. If the temporary crushed stone or chert surface is to be replaced, the top 6-inches shall be removed and the crushed stone surfacing for unpaved streets or the base for the bituminous surface shall be placed.

4. Following this preparation, the chert or crushed stone base shall be primed with a suitable bituminous material and surfaced with the proper type of bituminous surface treatment.

5. Where the paved surface is to be replaced with asphaltic concrete pavement, concrete pavement or with a concrete base and a surface course, the temporary chert or crushed stone surface and any necessary backfill material, additional existing paving and new excavation shall be removed to the depth and width shown on the Drawings. All edges of the existing pavement shall be cut to a straight, vertical edge. Care shall be used to get a smooth joint between the old and new pavement and to produce an even surface on the completed street. Concrete base slabs

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and crushed stone bases, if required, shall be placed and allowed to cure for three days before bituminous concrete surface courses are applied. Expansion joints, where applicable, shall be replaced in a manner equal to the original joint.

6. Where driveways or roadways, constructed of specialty type surfaces, e.g., brick or stone are disturbed or damaged, these driveways and roadways shall be restored utilizing similar materials. Where the nature of these surfaces dictate, a specialty contractor shall be used to restore the surfaces to their previous or better condition. Special surfaces shall be removed and replaced to the limits to which they were disturbed.

C. Pavement Resurfacing: Certain areas to be resurfaced are specified or noted on the Drawings. After all pipe line installations are complete and existing pavement has been removed and the trench route has been repaired, mill entire area to be resurfaced 1-1/2 inches, then apply tack coat and 1-1/2 inches of 9.5 mm Superpave surface course as specified.. Where pavement to be resurfaced has been damaged with potholes, the Contractor shall remove all existing loose pavement material and fill the hole with black base, as specified, to the level of the existing pavement.

D. Pavement Striping: Pavement striping removed or paved over shall be replaced with the same type, dimension and material as original unless directed otherwise by the Engineer.

3.04 Sidewalk and Curb Replacement

A. Construction

1. All concrete sidewalks and curbs shall be replaced with concrete.

2. Preformed joints shall be 1/2-inch thick, conforming to the latest edition of AASHTO M59 for sidewalks and AASHTO M 123 for curbs.

3. Forms for sidewalks shall be of wood or metal, shall be straight and free from warp, and shall be of sufficient strength, when in place, to hold the concrete true to line and grade without springing or distorting.

4. Forms for curbs shall be metal and of an approved section. They shall be straight and free from distortions, showing no vertical variation greater than 1/8-inch in 10 feet and no lateral variation greater than 1/4-inch in 10 feet from the true plain surface on the vertical face of the form. Forms shall be of the full depth of the structure and constructed such to permit the inside forms to be securely fastened to the outside forms.

5. Securely hold forms in place true to the lines and grades indicated on the Drawings.

6. Wood forms may be used on sharp turns and for special sections, as approved by the Engineer. Where wooden forms are used, they shall be free from warp and shall be the nominal depth of the structure.

7. All mortar and dirt shall be removed from forms and all forms shall be thoroughly oiled or wetted before any concrete is deposited.

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B. When a section is removed, the existing sidewalk or curb shall be cut to a neat line, perpendicular to both the centerline and the surface of the concrete slab. Existing concrete shall be cut along the nearest existing construction joints; if such joints do not exist, the cut shall be made at minimum distances shown on the Drawings.

C. Existing concrete sidewalks and curbs that have been cut and removed for construction purposes shall be replaced with the same width and surface as the portion removed. Sidewalks shall have a minimum uniform thickness of 4-inches. The new work shall be neatly jointed to the existing concrete so that the surface of the new work shall form an even, unbroken plane with the existing surfaces.

D. The subgrade shall be formed by excavating to a depth equal to the thickness of the concrete, plus 2-inches. Subgrade shall be of such width as to permit the proper installation and bracing of the forms. Subgrades shall be compacted by hand tamping or rolling. Soft, yielding or unstable material shall be removed and backfilled with satisfactory material. Place 2-inches of porous crushed stone under all sidewalks and curbs and compacted thoroughly, then finish to a smooth, unyielding surface at proper line, grade and cross section.

E. Joint for Curbs

1. Joints shall be constructed as indicated on the Drawings and as specified. Construct joints true to line with their faces perpendicular to the surface of the structure and within 1/4-inch of their designated position.

2. Thoroughly spade and compact the concrete at the faces of all joints filling all voids.

3. Install expansion joint materials at the point of curve at all street returns. Install expansion joint material behind the curb at abutment to sidewalks and adjacent structures.

4. Place contraction joints every 10 feet along the length of the curbs and gutters. Form contraction joints using steel templates or division plates which conform to the cross section of the structure. Leave the templates in place until the concrete has set sufficiently to hold its shape, but remove them while the forms are still in place. Contraction joint templates or plates shall not extend below the top of the steel reinforcement or they shall be notched to permit the reinforcement to be continuous through the joint. Contraction joints shall be a minimum of 1-1/2-inches deep.

F. Expansion joints shall be required to replace any removed expansion joints or in new construction wherever shown on the Drawings. Expansion joints shall be true and even, shall present a satisfactory appearance, and shall extend to within 1/2-inch of the top of finished concrete surface.

G. Finishing

1. Strike off the surface with a template and finish the surface with a wood float using heavy pressure, after which, contraction joints shall be made and the surface finished with a wood float or steel trowel.

2. Finish the face of the curbs at the top and bottom with an approved finishing tool of the radius indicated on the Drawings.

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3. Finish edges with an approved finishing tool having a 1/4-inch radius.

4. Provide a final broom finish by lightly combing with a stiff broom after troweling is complete.

5. The finished surface shall not vary more than 1/8-inch in 10 feet from the established grade.

H. Driveway and Sidewalk Ramp Openings

1. Provide driveway openings of the widths and at the locations indicated on the Drawings and as directed by the Engineer.

2. Provide sidewalk ramp openings as indicated on the Drawings, in conformance with the applicable regulations and as directed by the Engineer.

I. Concrete shall be suitably protected from freezing and excessive heat. It shall be kept covered with burlap or other suitable material and kept wet until cured. Provide necessary barricades to protect the work. All damage caused by people, vehicles, animals, rain, the Contractor's operations and the like shall be repaired by the Contractor, at no additional expense to the Owner.

3.05 Maintenance

The Contractor shall maintain the surfaces of roadways built and pavements replaced until the acceptance of the Project. Maintenance shall include replacement, scraping, reshaping, wetting and rerolling as necessary to prevent raveling of the road material, the preservation of reasonably smooth surfaces and the repair of damaged or unsatisfactory surfaces, to the satisfaction of the Engineer. Maintenance shall include sprinkling as may be necessary to abate dust from the gravel surfaces.

3.06 Supervision and Approval

A. Pavement restoration shall meet the requirements of the regulatory agency responsible for the pavement. Obtain agency approval of pavement restorations before requesting final payment.

B. Obtain the Engineer's approval of restoration of pavement, such as private roads and drives, which are not the responsibility of a regulatory agency.

C. Complete pavement restoration as soon as possible after backfilling.

D. Failure of Pavement: Should any pavement restoration or repairs fail or settle during the life of the Contract, including the bonded period, promptly restore or repair defects.

3.07 Cleaning

The Contractor shall remove all surplus excavation materials and debris from the street surfaces and rights-of-way and shall restore street, roadway or sidewalk surfacing to its original condition.

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END OF SECTION

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Part 1 General

1.01 Scope

A. This Section describes products to be incorporated into sewers and accessories and requirements for the installation and use of these items. Furnish all products and perform all labor necessary to fulfill the requirements of these Specifications.

B. General: Supply all products and perform all work in accordance with applicable American Society for Testing and Material (ASTM), American Water Works Association (AWWA), American National Standards Institute (ANSI), or other recognized standards. Latest revisions of all standards are applicable.

1.02 Qualifications

A. If requested by the Engineer, submit evidence that manufacturers have consistently produced products of satisfactory quality and performance for a period of at least two years.

1.03 Submittals

A. Complete product data and engineering data including shop drawings shall be submitted to the Engineer in accordance with the requirements of Section 01340 of these Specifications.

1.04 Transportation and Handling

A. Unloading: Furnish equipment and facilities for unloading, handling, distributing and storing pipe, fittings, valves and accessories. Make equipment available at all times for use in unloading. Do not drop or dump materials. Any materials dropped or dumped will be subject to rejection without additional justification.

B. Handling: Handle pipe, fittings, valves and accessories carefully to prevent shock or damage. Handle pipe by rolling on skids, forklift, or front loader. Do not use material damaged in handling.

C. Lined pipe shall be handled and transported to prevent damage to linings.

D. The Contractor shall submit, in conjunction with the construction progress schedule, a schedule of deliveries for materials. The Contractor shall coordinate material shipments with the Owner and the material suppliers.

E. The Contractor shall maintain communication with the material suppliers and the Owner as necessary, to keep informed as to scheduled shipment, and upon delivery of materials, the Contractor shall proceed without delay to unload such materials.

F. Upon receipt of materials from the manufacturer, the Contractor shall make an inspection of such materials; check and certify the bill of lading, noting any discrepancies; obtain a proper memorandum signed by the agent of the carrier for any shortage in the shipment, or for any damaged materials received. All bills of lading and any memorandum for shortage or damage of material in the shipment shall be promptly submitted to the Engineer. The Contractor shall be responsible for distribution of all materials as required to complete the Work. Materials delivered to the Contractor shall be in the custody of the Contractor from the time

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of receipt by the Contractor of such materials from the carrier until final acceptance of the completed Work. The Contractor shall be responsible for any loss or damage to materials.

1.05 Storage and Protection

A. Store all pipe which cannot be distributed along the route. Make arrangements for the use of suitable storage areas. Inform Owner and Engineer of the location, street address, of the storage area.

B. Stored materials shall be kept safe from damage. The interior of all pipe, fittings and other appurtenances shall be kept free from dirt or foreign matter at all times.

C. Pipe shall not be stacked higher than the limits recommended by the manufacturer. The bottom tier shall be kept off the ground on timbers, rails or concrete. Pipe in tiers shall be alternated: bell, plain end; bell, plain end. At least two rows of timbers shall be placed between tiers and chocks, affixed to each other in order to prevent movement. The timbers shall be large enough to prevent contact between the pipes in adjacent tiers.

D. Store joint gaskets in a cool location, out of direct sunlight. Gaskets shall not come in contact with petroleum products. Gaskets shall be used on a first-in, first-out basis.

1.06 Quality Assurance

A. Product manufacturers shall provide the Engineer with written certification that all products furnished comply with all applicable provisions of these Specifications. All materials which fail to conform to these Specifications shall be rejected.

B. If ordered by the Engineer, each pipe manufacturer shall furnish the services of a competent factory representative to supervise and/or inspect the installation of pipe. This service will be furnished for a minimum of five days during initial pipe installation.

C. After delivery to the site, any materials which have been damaged in transit or are unsuitable for use in the Work shall be rejected and removed from the site.

Part 2 Products

2.01 Ductile Iron Pipe (DIP)

A. Ductile iron pipe shall be utilized where shown on the Drawings, where the depth of cover is less than four (4) feet, at stream crossings and for pipe diameters greater than fifteen (15) inches.

B. Ductile iron pipe shall be manufactured in accordance with ASTM A746. All pipe, except specials, shall be furnished in nominal lengths of 18 to 20 feet. Sizes will be as shown on the Drawings. All pipe shall have a minimum pressure rating as indicated in the following table, and corresponding minimum wall thickness, unless otherwise specified or shown on the Drawings. Pipe wall thickness shall be determined based on dead loads indicated on the Drawings and the anticipated live loads, assuming a minimum HS 20 live load.

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Pipe Sizes (inches)	Pressure Class (psi)
4 – 12	350
14 – 20	250
24	200
30 – 60	150

C. Restrained joint pipe on supports shall have bolted joints and shall be specifically designed for clear spans of 36 feet, minimum.

D. Fittings and Accessories

1. Fittings shall be ductile iron and shall conform to AWWA C110 or C153 with a minimum rated working pressure corresponding to the pipe size and pressure class specified in Paragraph B above, or 250 psi, whichever is greater.

2. Flanged elbow fittings shall be ANSI pattern using short radius elbows except where noted differently on the Drawings. Special fittings, ductile iron wall pipes and sleeves shall conform to the dimensions and details as shown on the Drawings

3. Thrust Collars: Thrust collars shall be welded-on ductile iron body type capable of withstanding a thrust due to 250 psi internal pressure on a dead end from either direction on that pipe size. Weld-on collars shall be continuously welded to the pipe by the pipe manufacturer. Retainer glands may be used for thrust collars where shown on the Drawings and as specified in this Section.

4. Outlets: Pipe outlets shall be welded-on ductile iron pipe. Outlets shall be plain end, mechanical joint. All welding, fabrication and outlet hole drilling shall be performed by the manufacturer. Outlets shall be free of burrs. Sizes shall be as indicated on the Drawings. The outlets and parent pipe shall be welded on minimum Class 53 ductile iron for parent 54-inches and smaller. For pipe larger than 54-inches, parent pipe shall be Pressure Class 350.

5. Solid Sleeves: Solid sleeves shall permit the connection of plain end ductile iron pipe. Solid sleeves shall meet the requirements of ANSI/AWWA C110 for pattern and have a minimum pressure rating of 250 psi. Solid sleeves shall have a mechanical or restrained joint as specified in this Section and as shown on the Drawings. Solid sleeves shall be provided with gaskets suitable for the type of pipe to be connected. Solid sleeves shall be used only in locations shown on the Drawings or at the direction of the Engineer. Solid sleeves shall be manufactured by ACIPCO, U.S. Pipe or McWane (Clow).

E. Joints for Ductile Iron Pipe and Fittings

1. General

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a. Joints for ductile iron pipe and fittings shall be mechanical joint, restrained joint, flanged, or push-on joint as shown on the Drawings or specified herein.

b. Unless otherwise shown on the Drawings, specified or directed, all ductile iron pipe laid underground shall be joined using push-on type joints.

c. In all cases, gaskets shall be made of material that will not be damaged by the fluid being transported nor by the environment in which the pipe is installed.

d. Provide the necessary bolts for connections. All bolts and nuts shall be threaded in accordance with ANSI B1.1, Coarse Thread Series, Class 2A external and 2B internal fit. All bolts and nuts shall be made in the U.S.A.

2. Push-On Joints: Push-on joints and gaskets shall conform to AWWA C111/ANSI A21.11. Details of the joint design shall be in accordance with the manufacturer's standard practice such as ACIPCO “Fastite”, McWane (Clow) “Bell-Tite”, or U.S. Pipe “Tyton” joints.

3. Mechanical Joints

a. Joints shall conform to AWWA C111/ANSI A21.11.

b. Bolts and nuts shall be Tee Head Bolts and nuts of high strength low-alloy steel in accordance with ASTM A 242 to the dimensions shown in AWWA C111/ANSI A21.11.

c. Gaskets shall be in accordance with AWWA C111/ANSI A21.11 and shall be constructed of Neoprene.

d. Mechanical joint glands shall be ductile iron.

F. Cement Linings: Pipe and fittings shall be cement lined in accordance with AWWA C104/ANSI/AWWA C104/A21.4. Seal coat is not required.

G. Mechanical Pipe Couplings

1. Pipe couplings shall be installed where shown on the Drawings or as directed by the Engineer.

2. Pipe couplings shall conform to the requirements of Section of these Specifications, unless specified otherwise in this Section.

H. Wall Sleeves and Wall Pipes

1. Where piping passes through concrete structures, furnish and install wall sleeves unless wall pipes or other provisions are specifically shown on the Drawings. Wall sleeves shall be accurately located and securely fastened into position before concrete is poured.

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2. Wall Sleeves

a. For pipe sizes smaller than 3-inches, wall sleeves shall be steel oversize sleeves furnished with a full circle, integral, or continuously welded waterstop collar. The sleeve seal shall be the mechanically expanded, synthetic rubber type. Provide all associated bolts, seals and seal fittings, pressure clamps, or plates necessary to achieve a watertight installation. Sleeves shall extend the full thickness of the concrete. Sleeves and seal shall be Link Seal.

b. For larger pipe sizes, wall sleeves shall be statically cast ductile iron mechanical joint wall sleeves. Unless specified or shown otherwise for a specific situation, wall sleeves shall be mechanical joint bell-plain end type with waterstop/thrust collar. The collar shall be capable of withstanding a thrust force caused by a 250 psi dead end load from either direction on that size pipe. Sleeves shall be constructed with studs and mechanical joint [retainer] gland on the air side of the concrete structure. Provide retainer gland where shown on the Drawings. Where the concrete structure is exposed to dirt on one side and is wet on the other side, construct with studs and glands on the dirt side. Wall sleeves shall be equal to ACIPCO A-10771.

3. Wall Pipes

a. Wall pipes shall be either statically cast ductile iron with integral waterstop/thrust collar or centrifugally cast ductile iron with a continuously welded waterstop/thrust collar. The welded on collar shall be attached to the pipe by the manufacturer. The collar shall be capable of withstanding a thrust force caused by a 250 psi dead end load from either direction on that size pipe. Wall pipes shall be furnished uncoated on the outside and cement lined on the inside. Unless specified or shown otherwise, wall pipes shall be flange end type.

b. Wall pipes shall be cast and/or fabricated and lined in one manufacturer's facilities and delivered to the job site ready for use.

2.02 Polyvinyl Chloride (PVC) Gravity Sewer Pipe

A. Where ductile iron pipe is not required (see Article 2.01 Paragraph A. above), it is acceptable to use PVC in accordance with ASTM D-3034 (SDR 35) and ASTM 2321 for depths of cover up to twelve feet and for pipe diameters up to fifteen inches. For depths of cover greater than twelve feet, use PVC in accordance with AWWA C900 SDR 18, or use ductile iron pipe.

B. All pipe shall have a minimum pipe stiffness of 46 psi at five percent deflection as determined by ASTM D 2412.

C. PVC gravity sewer pipe shall be supplied in lengths not longer than 13 feet.

D. Fittings

1. Fittings 15 inches in diameter and less shall be manufactured in

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accordance with ASTM D 3034. PVC compound shall be 12454B or 12454C as specified in ASTM D 1784.

a. For sizes 8-inches and less in diameter, fittings shall be molded in one-piece with no solvent welded joints. Minimum socket depths shall be as specified in ASTM D 3034, Table 2.

b. For sizes 10-inches and larger in diameter, fittings shall be fabricated from pipe conforming to ASTM D 3034 using solvent welding. No field fabrication of fittings will be allowed. All such fabrication shall be performed at the factory and the fittings shall be delivered ready for use.

E. Joints: Joints for PVC pipe and fittings shall be of the integral bell and spigot type with a confined elastomeric gasket having the capability of absorbing expansion and contraction without leakage, when tested in accordance with ASTM D 3212. Gaskets shall meet the requirements of ASTM F 477. The joint system shall be subject to the approval of the Engineer and shall be identical for pipe and fittings.

F. Manhole Connections

1. Solid Wall Pipe: The sewer shall be connected to manholes utilizing a standard boot section.

2.03 Manholes and Precast Concrete Products

A. Unless otherwise specified, all manhole components, i.e. base sections, riser sections, conical sections and transition sections (spacers) shall be wet cast pre-cast concrete.

B. Precast Concrete Sections

1. Precast concrete sections shall meet the requirements of ASTM C 478 and C 76, latest revision, Class II, Wall B, Type II Portland cement. The minimum compressive strength of the concrete in precast sections shall be 4,000 psi. Reinforcing steel shall meet the requirements of ASTM A 185. Pre-cast concrete sections shall have a minimum 28 day cure time before delivery to the site.

2. The minimum wall thickness shall be one-twelfth of the inside diameter of the base, riser or the largest cone diameter, or 8-inches minimum, whichever is larger. Additionally, the wall thickness shall be sufficient for the proper installation of the rubber boots.

3. The minimum inside diameter of manholes shall be 48-inches, with an opening of 24-inches at the top of the cone.

4. Transition slabs which convert bases larger than four feet in diameter to four foot diameter risers shall be designed by the manhole manufacturer to carry the live and dead loads exerted on the slab.

5. Seal joints between precast sections by means of rubber O-ring gaskets or flexible butyl rubber sealant. Butyl rubber sealants shall meet the requirements of AASHTO M-198. Sealant shall be pre-formed type with a minimum nominal diameter of 1-inch. Butyl rubber sealant shall be equal

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to Kent Seal No. 2 or Concrete Sealants CS202.

6. In flood plains and locations vulnerable to high rates of inflow and infiltration, manholes shall be lined on the inside with a protective liner approved by the County

7. Drop manholes, manholes with a force main discharge connection and any other manholes that are susceptible to large amounts of hydrogen sulfide shall be lined on the inside with a protective liner approved by the County.

8. The manhole table shall have a flow channel made to conform in shape and carrying capacity to that of the sewers.

C. Brick and Mortar: Brick shall be whole and hard burned, conforming to ASTM C 32 Grade MS. Mortar shall be made of one part Portland cement and two parts clean sharp sand. Cement shall be Type 1 and shall conform to ASTM C 150. Sand shall meet ASTM C 144.

D. Iron Castings

1. For manholes in paved areas, cast iron manhole frames, covers and steps shall meet the requirements of ASTM A 48 for Class 30 gray iron and all applicable local standards. All castings shall be tough, close grained, smooth, and free from blow holes, blisters, shrinkage, strains, cracks, cold shots and other imperfections. No casting will be accepted which weighs less than 95 percent of the design weight. Shop drawings must indicate the design weight and provide sufficient dimensions to permit checking. All castings shall be thoroughly cleaned in the shop and given two coats of approved bituminous paint before rusting begins.

2. Manhole frames and covers shall be as shown on the Standard Details.

3. All frames and covers shall have machined horizontal bearing surfaces.

4. All manholes located in paved areas shall have standard frames and covers except where specifically shown otherwise on the Drawings.

5. Only solid manhole covers may be used for sanitary sewers.

6. Watertight covers in paved areas shall be bolt down type and shall be equipped with four 1/2 inch stainless steel bolts and a 1/8 inch red rubber or rubber O ring gasket. Covers shall be rotatable and interchangeable. Bolt holes shall be bored through so that debris entering the bolt hole will fall into the manhole. Bolt holes shall have the full 360 degree circle within the cover's radius when bored through the cover.

7. For all manholes located in unpaved areas, manhole cover and frame shall be manufactured from ductile iron in accordance with ISO 1083. Covers and frames shall be hinged and incorporate a 90 degree blocking system to prevent accidental closure. The hinge box shall include a self-cleaning, dual wiper infiltration plug. Covers shall be one man operable using standard tools and shall be capable of withstanding a test load of 120,000 lbs. Frames shall be circular with a 24” clear opening and shall include a 360º mechanically attached, C-shaped elastomer seating gasket for

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infiltration control and traffic shock. Covers and frames must have at least five years of successful history in a minimum of five thousand installations and be manufactured by an ISO 9000 certified manufacturer. The frame depth shall not exceed 4 inches, and the flange shall incorporate bedding slots, bolt holes and lifting eyes. All components shall be black coated. Frame weight: 73 lbs. Cover weight: 122 lbs. Total weight 195 lbs.

E. Plastic Steps: Manhole steps of polypropylene molded around a steel rod equal to products of M.A. Industries.

F. Rubber Boots: Provide preformed rubber boots and fasteners equal to those manufactured by Kor-N-Seal or Press Seal Gasket Corporation. Boots may be mechanically attached to the manhole or cast into the walls of the manhole.

G. Riser Rings: Steel or plastic riser rings, varying from ½ inch to 3 inches in height, may be used for minor manhole cover adjustments.

2.04 Miscellaneous Accessories

A. Flexible Adapter Couplings

1. Couplings for pipe sizes 15-inches in diameter and less shall be elastomeric plastic sleeves designed to connect pipes of dissimilar materials. Adapters shall provide a positive seal against infiltration and exfiltration and remain leak-proof and root-proof up to 4.3 psi. The adapter manufacturer shall provide all stainless steel clamps and required accessories.

2. Couplings shall be products of Fernco and shall be installed in accordance with the manufacturer's recommendations.

2.05 Electronic Markers

A. Electronic markers shall be buried with utilities to serve as a locating device. Electronic markers shall be the “Ball” type for a depth up to 4-feet and the “Full Range” type for depths greater than 4-feet. Each marker shall be color coded in accordance with APWA standards and produce an industry specific frequency. Each marker shall contain a passive antenna that requires no internal power source. Markers shall be of water resistant polyethylene shells and impervious to minerals, chemicals, and underground temperature extremes. Electronic markers shall be compatible with 3M Dynatel 1420 EMS-iD Marker Locator. Contractor shall supply one Marker Locator for use during installation and shall turn over Locator to County upon project completion. Markers shall be equal to 3M EMS 1423 XR/iD for wastewater service.

2.06 Concrete

A. Concrete shall have a compressive strength of not less than 3000 psi, with not less than 5.5 bags of cement per cubic yard and a slump between 3 and 5 inches. For job mixed concrete, submit the concrete mix design for approval by the Engineer. Ready mixed concrete shall be mixed and transported in accordance with ASTM C 94. Reinforcing steel shall conform to the requirements of ASTM A 615, Grade 60.

Part 3 Execution

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3.01 Existing Utilities and Obstructions

A. The Drawings indicate utilities or obstructions that are known to exist according to the best information available to the Owner. The Contractor shall call the Utilities Protection Center (UPC) (800-282-7411) as required by Georgia law (O.C.G.A. §§ 25-9-1 through 25-9-13) and all utilities, agencies or departments that own and/or operate utilities in the vicinity of the construction work site, at least 72 hours (three business days) prior to construction, to verify the location of the existing utilities.

B. Existing Utility Location: The following steps shall be exercised to avoid interruption of existing utility service.

1. Provide the required notice to the utility owners and allow them to locate their facilities according to Georgia law. Field utility locations are valid for only ten days after original notice. The Contractor shall ensure, at the time of any excavation that a valid utility location exists at the point of excavation.

2. Expose the facility to verify its true location and grade for a distance of at least 200 feet in advance of pipeline construction to verify its true location and grade. Repair, or have repaired, any damage to utilities resulting from locating or exposing their true location.

3. Avoid utility damage and interruption by protecting it with means or methods recommended by the utility owner.

4. Maintain a log identifying when phone calls were made, who was called, area for which utility relocation was requested and work order number issued, if any. The Contractor shall provide the Engineer an updated copy of the log bi-weekly, or more frequently if required.

C. Conflict with Existing Utilities

1. Horizontal Conflict: Horizontal conflict shall be defined as when the actual horizontal separation between a utility, main, or service and the proposed sewer does not permit safe installation of the sewer by the use of sheeting, shoring, tieing-back, supporting, or temporarily suspending service of the parallel or crossing facility. The Contractor may change the proposed alignment of the sewer to avoid horizontal conflicts if the new alignment remains within the available right-of-way or easement and complies with regulatory agency requirements after a written request to and subsequent approval by the Engineer. Where such relocation of the sewer is not approved by the Engineer, the Contractor shall arrange to have the utility, main, or service relocated.

2. Vertical Conflict: Vertical conflict shall be defined as when the actual vertical separation between a utility, main, or service and the proposed sewer does not permit the crossing without immediate or potential future damage to the utility, main, service, or the sewer. The Contractor may change the proposed grade of the sewer to avoid vertical conflicts if the changed grade provides minimum required capacity, maintains adequate cover and complies with regulatory agencies requirements, after written

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request to and subsequent approval by the Engineer. Where such relocation of the sewer is not approved by the Engineer, the Contractor shall arrange to have the utility, main, or service relocated.

D. Electronic Locator: Have available at all times an electronic pipe locator and a magnetic locator, in good working order, to aid in locating existing pipe lines or other obstructions.

E. Water, Sewer, and Storm Drain Separation

1. Sewers shall be laid least 10 feet laterally edge to edge from existing or proposed water mains. Where the sewer crosses a water main, the top of sewer pipe must be at least 18 inches below the bottom of the water main. Where 18 inches clear vertical separation cannot be maintained, the sewer pipe shall be mechanical joint DIP. Where possible, a full joint of sewer pipe shall be centered over the water main. Any deviation shall be requested in writing to the Engineer.

2. Where sewer lines cross under storm drains, the sewer shall be laid such that the top of the sewer is at least 12 inches below the bottom of the storm drain. Where the vertical separation is less than 12 inches, the sewer pipe shall be mechanical joint DIP.

3. No water main shall be permitted to pass through or come in contact with any part of a manhole.

4. There shall be a minimum 5 feet horizontal separation between parallel gravity and/or force mains

3.02 Construction Along Highways, Streets, and Roadways

A. Install pipe lines and appurtenances along highways, streets, and roadways in accordance with the applicable regulations of, and permits issued by, the Georgia Department of Transportation, Fulton County, and the City having jurisdiction, with reference to construction operations, safety, traffic control, road maintenance and repair.

B. Traffic Control

1. The Contractor shall: provide, erect and maintain all necessary barricades; suitable and sufficient lights and other traffic control devices; provide qualified flagmen where necessary to direct traffic; take all necessary precautions for the protection of the work and the safety of the public. Flagmen shall be certified by a Georgia DOT approved flagman training program.

2. Construction traffic control devices and their installation shall be in accordance with the current Manual on Uniform Traffic Control Devices for Streets and Highways.

3. Placement and removal of construction traffic control devices shall be coordinated with the Georgia Department of Transportation, Fulton County

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and the City having jurisdiction, a minimum of 48 hours in advance of the activity.

4. Placement of construction traffic control devices shall be scheduled ahead of associated construction activities. Construction time in street right-of-way shall be conducted to minimize the length of time traffic is disrupted. Construction traffic control devices shall be removed immediately following their useful purpose. Traffic control devices used intermittently, such as “Flagmen Ahead”, shall be removed and replaced when needed.

5. Existing traffic control devices within the construction work zone shall be protected from damage. Traffic control devices requiring temporary relocation shall be located as near as possible to their original vertical and horizontal locations. Original locations shall be measured from reference points and recorded in a log prior to relocation. Temporary locations shall provide the same visibility to affected traffic as the original location. Relocated traffic control devices shall be reinstalled in their original locations as soon as practical following construction.

6. Construction traffic control devices shall be maintained in good repair, and shall be clean and visible to affected traffic for daytime and nighttime operation. Traffic control devices affected by the construction work zone shall be inspected daily.

7. Construction warning signs shall be black legend on an orange background. Regulatory signs shall be black legend on a white background. Construction sign panels shall meet the minimum reflective requirements of the Georgia Department of Transportation, Fulton County and the City having jurisdiction. Sign panels shall be of durable materials capable of maintaining their color, reflective character and legibility during the period of construction.

8. Channelization devices shall be positioned preceding an obstruction at a taper length as required by the current Manual on Uniform Traffic Control Devices for Streets and Highways, as appropriate for the speed limit at that location. Channelization devices shall be patrolled to insure that they are maintained in the proper position throughout their period of use.

C. Construction Operations

1. Perform all work along highways, streets and roadways to minimize interference with traffic.

2. Stripping: Where the pipe line is laid along road right-of-way, strip and stockpile all sod, topsoil and other material suitable for right-of-way restoration.

3. Trenching, Laying and Backfilling: Do not open the trench any further ahead of pipe laying operations than is necessary. Backfill and remove excess material immediately behind laying operations. Complete excavation and backfill for any portion of the trench in the same day.

4. Shaping: Reshape damaged slopes, side ditches, and ditch lines immediately after completing backfilling operations. Replace topsoil, sod

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and any other materials removed from shoulders.

5. Construction operations shall include cleanup and utility exploration.

D. Excavated Materials: Do not place excavated material along highways, streets and roadways in a manner which obstructs traffic. Sweep all scattered excavated material off the pavement in a timely manner.

E. Drainage Structures: Keep all side ditches, culverts, cross drains, and other drainage structures clear of excavated material. Care shall be taken to provide positive drainage to avoid ponding or concentration of runoff.

F. Landscaping Features: Landscaping features shall include, but are not necessarily limited to: fences; property corners; cultivated trees and shrubbery; manmade improvements; subdivision and other signs within the right-of-way and easement. The Contractor shall take extreme care in moving landscape features and promptly re-establishing these features.

G. Maintaining Highways, Streets, Roadways and Driveways

1. Maintain streets, highways, roadways and driveways in suitable condition for movement of traffic until completion and final acceptance of the work.

2. During the time period between pavement removal and completing permanent pavement replacement, maintain highways, streets and roadways by the use of steel running plates. The edges of running plates shall have asphalt placed around their periphery to minimize vehicular impact. The backfill above the pipe shall be compacted, as specified elsewhere up to the existing pavement surface to provide support for the steel running plates.

3. Furnish a road grader or front-end loader for maintaining highways, streets, and roadways. Make the grader or front-end loader available at all times.

4. Immediately repair all driveways that are cut or damaged. Maintain them in a suitable condition for use until completion and final acceptance of the work.

3.03 Pipe Distribution

A. Pipe shall be distributed and placed in such a manner that will not interfere with traffic.

B. No pipe shall be strung further along the route than 500 feet beyond the area in which the Contractor is actually working without written permission from the Owner. The Owner reserves the right to reduce this distance to a maximum distance of 200 feet in residential and commercial areas based on the effects of the distribution to the adjacent property owners.

C. No street or roadway may be closed for unloading of pipe without first obtaining permission from the proper authorities. The Contractor shall furnish and maintain proper warning signs and obstruction lights for the protection of traffic along highways, streets and roadways upon which pipe is distributed.

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D. No distributed pipe shall be placed inside drainage ditches.

E. Distributed pipe shall be placed as far as possible from the roadway pavement, but no closer than five feet from the roadway pavement, as measured edge-to-edge.

3.04 Location and Grade

A. The Drawings show the alignment and grade of the sewer and the position of manholes and other appurtenances. The slope shown on the profile is the slope of the invert of the pipe.

B. Prior to clearing and grubbing, construction staking shall be performed.

C. From the information on the Drawings and the survey points found on the Project site, the Contractor shall perform all surveys necessary for the establishment of the horizontal and vertical alignment of the sewer.

D. Reference Points

1. The Contractor shall take all precautions necessary, which includes, but is not necessarily limited to, installing reference points, in order to protect and preserve the centerline or baseline established by the Engineer.

2. Reference points shall be placed, at or no more than three feet, from the outside of the construction easement or right-of-way. The location of the reference points shall be recorded in a log with a copy provided to the Engineer for use prior to his verifying reference point locations. Distances between reference points and the manhole centerlines shall be accurately measured to the nearest 0.01 foot.

3. The Contractor shall give the Engineer reasonable notice that reference points are set. The reference point locations must be verified by the Engineer prior to commencing clearing and grubbing operations.

E. Cut Sheets

1. Cut sheets shall be utilized for basis of payment and confirming that the profile is as shown on the Drawings.

2. Prior to beginning installation of any section of the gravity sewer, prepare cut sheets from field run ground elevations and submit them to the Engineer for approval.

3. The survey, from which cut sheets are prepared, may be performed prior to or after clearing and grubbing operations. The surveyor shall obtain an elevation on each bench mark shown on the Drawings and provide this information to the Engineer.

4. No installation of the sewer shall commence prior to approval of the cut sheets.

5. Submittal of cut sheets shall be in accordance with Section 01340 of these Specifications.

6. Cut sheets shall provide the station (to the nearest 1 foot) and the elevation

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(to the nearest 0.1 foot) at maximum 100 foot intervals, plus at each change in slope of the ground and at each manhole centerline. The cut sheet shall also show the invert elevation of the sewer at the corresponding sewer station. From a straight line interpolation of the data, the Contractor shall calculate and record the station of each point where there is a change in the cut brackets indicated on the Bid form. The Contractor shall calculate and record the length of the sewer between each change in cut bracket. The Contractor shall also indicate the pipe material and class as well as the type of bedding. The slope of the sewer shall also be indicated between manholes. At least one offset hub or temporary bench mark shall be provided at each manhole. Its elevation and the resulting cut from the hub to the manhole invert shall also be shown on the cut sheets.

F. Construction shall begin at the low end of the sewer and proceed upstream without interruption. Multiple construction sites shall not be permitted without written authorization from the Engineer for each site. As a minimum, cut sheets between construction sites shall be submitted and approved before multiple construction sites will be permitted.

G. The Contractor shall be responsible for any damage done to reference points, base lines, center lines and temporary bench marks, and shall be responsible for the cost of re-establishment of reference points, base lines, center lines and temporary bench marks as a result of the operations.

3.05 Laying and Jointing Pipe and Accessories

A. Lay all pipe and fittings to accurately conform to the lines and grades established by the Engineer.

B. Pipe Installation

1. Proper implements, tools and facilities shall be provided for the safe performance of the Work. All pipe, fittings and valves shall be lowered carefully into the trench by means of slings, ropes or other suitable tools or equipment in such a manner as to prevent damage to sewer materials and protective coatings and linings. Under no circumstances shall sewer materials be dropped or dumped into the trench.

2. All pipe, fittings, valves and other appurtenances shall be examined carefully for damage and other defects immediately before installation. Defective materials shall be marked and held for inspection by the Engineer, who may prescribe corrective repairs or reject the materials.

3. All lumps, blisters and excess coating shall be removed from the socket and plain ends of each pipe, and the outside of the plain end and the inside of the bell shall be wiped clean and dry and free from dirt, sand, grit or any foreign materials before the pipe is laid. No pipe which contains dirt shall be laid.

4. Foreign material shall be prevented from entering the pipe while it is being placed in the trench. No debris, tools, clothing or other materials shall be placed in the pipe at any time.

5. As each length of pipe is placed in the trench, the joint shall be assembled

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and the pipe brought to correct line and grade. The pipe shall be secured in place with approved backfill material.

6. It is common practice to lay pipe with the bells facing the direction in which work is progressing; however, it is not mandatory.

7. Applying pressure to the top of the pipe, such as with a backhoe bucket, to lower the pipe to the proper elevation or grade shall not be permitted.

C. Alignment and Gradient

1. Lay pipe straight in alignment and gradient or follow true curves, where shown on the Drawings, as nearly as practicable. Do not deflect any joint more than the maximum deflection recommended by the manufacturer.

2. Maintain a transit, level and accessories on the job to lay out angles and ensure that deflection allowances are not exceeded.

3. The Contractor shall check the invert elevation at each manhole and the pipe invert elevation at least three times daily, start, mid-day and end of day. Elevations shall be checked more frequently if more than 100 feet of pipe is installed in a day or if the pipe is being constructed at minimum slope.

4. The Contractor shall check the horizontal alignment of the sewer at the same schedule as for invert elevations.

D. Expediting of Work: Excavate, lay the pipe, and backfill as closely together as possible as determined by the Engineer. Do not leave unjointed pipe in the trench overnight. Backfill and compact the trench as soon as possible after laying and jointing is completed. Cover the exposed end of the installed pipe each day at the close of work and at all other times when work is not in progress. If necessary to backfill over the end of an uncompleted pipe or accessory, close the end with a suitable plug, either push-on, mechanical joint, restrained joint or as approved by the Engineer.

E. Joint Assembly

1. Joints shall be assembled in accordance with the manufacturer's recommendations.

2. The Contractor shall internally inspect each pipe joint to insure proper assembly for pipe 30-inches in diameter and larger after the pipe has been brought to final alignment.

F. Cutting Pipe

1. Cut ductile iron pipe using an abrasive wheel saw.

2. Cut PVC pipe using a suitable saw.

3. Remove all burrs and smooth the end before jointing.

4. The Contractor shall cut the pipe and bevel the end, as necessary, to provide the correct length of pipe necessary for installing the fittings,

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valves, accessories and closure pieces in the correct location. Only push-on or mechanical joint pipe shall be cut.

3.06 Manhole and Precast Concrete Product Construction

A. Construct manholes at locations and as shown on the Drawings.

B. Precast Concrete: Handle sections carefully to prevent cracking or chipping. Provide uniform bedding of the bottom section to prevent uneven loading. Install gaskets and joint sealants in accordance with manufacturer's recommendations to produce a watertight structure.

C. Brick: Bed the bottom and sides of every brick in mortar. Apply a smooth coat of mortar, 3/4-inch thick, on the inside and outside of manhole.

D. Pipe Connections: Seal the connection between the pipe and the manhole as follows:

1. Pipe 36 Inch Diameter and Less: Connect pipe to precast concrete manholes by a rubber boot provided in a cored or precast hole of the proper diameter.

2. Pipe 42 Inch Diameter and Larger: Construct manhole collars as shown on the Drawings after the pipe has been sealed into the manhole.

3. If rubber boots are damaged, replace Type I boots with a new boot and repair Type II boots by constructing a manhole collar.

4. If preformed openings must be enlarged or altered, or if new openings must be made in the field, minimize the amount of material removed to provide closely matched surfaces for grouting.

E. Inverts: Form channels as shown on the Drawings, rounded, and troweled smooth. Maintain consistent grade through the invert.

F. Top Elevations: Build manholes outside of paved areas to 24-inches above finished grade unless otherwise shown on the Drawings or directed by the Engineer. Build manholes in paved areas to existing grades.

G. Drop Connections: Manholes requiring drop connections are shown on the Drawings. Construct drop connections of the same materials as the upstream sewer and in accordance with the details shown on the Drawings.

H. Frames and Covers: Unless frame and cover is at grade, the frame shall be cast into the cone section.

I. Seal all manhole joints and lift holes, both inside and out, with grout. Between precast sections, this is in addition to joint sealant.

J. Invert Elevations: The invert elevations shown on the Drawings shall be for the invert at the centerline of the precast concrete manhole. Prior to setting the laser or other vertical alignment control system for the sewer upstream of the manhole, the Contractor shall verify the elevation of the sewer installed at the manhole. Should the elevation differ from that shown on the Drawings, the Contractor shall take the following corrective action:

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1. If the sewer is laid at negative grade, the Contractor shall remove and reinstall the sewer at the correct grade at no additional cost to the Owner.

2. If the sewer is laid at a grade less than that shown on the Drawings, thus reducing the sewer's capacity, the Owner may require the sewer to be removed and relaid at the correct grade at no additional cost to the Owner. As a minimum, the grade to the next upstream manhole shall be adjusted such that the next upstream manhole shall be set at the correct elevation.

3. If the sewer is laid at a grade greater than that shown on the Drawings, and if the Contractor can show that there are no conflicts with upstream existing utilities or obstructions, the Contractor shall adjust the grade of the next upstream manhole such that the next upstream manhole shall be set at the correct elevation. If such an adjustment, in the Engineer's opinion, is substantial, the grade adjustment shall be spread over multiple sections of the sewer. If such an adjustment, in the Owner's opinion, significantly reduces the sewer's capacity, the Owner may require the Contractor to remove and relay that portion of the sewer laid at the improper grade.

K. Manholes shall be constructed such that their walls are plumb.

3.07 Thrust Restraint

A. Thrust Collars: Collars shall be constructed as shown on the Drawings. Concrete and reinforcing steel shall meet the requirements specified in Article 2.05 of this Section. The welded-on collar shall be attached to the pipe by the pipe manufacturer.

B. Concrete Collars: Construct collars as shown on the Drawings. Concrete and reinforcing steel shall meet the requirements specified in Division 3 of these Specifications.

3.08 Inspection and Testing

A. Clean and test lines before requesting final acceptance. Where any obstruction is met, clean the sewers aby means of rods, swabs, or other instruments. When requested by the engineer, flush out lines and manholes before final inspection.

B. Alignment: Pipe lines shall be straight and show a uniform grade between manholes. Correct any discrepancies discovered during inspection.

C. Pipe joints for sewers 30-inches in diameter and larger shall be air tested individually. The joint tester assembly shall be placed over the joint and shall pressurize the joint area to 4 psi. The pressure shall not drop more than 2 psi in 10 seconds. The joint tester assembly shall be equal to Cherne Industries, Inc.

D. Watertightness: All sewers constructed shall be tested for watertightness to the maximum extent feasible. Infiltration tests and exfiltration tests shall be performed on all new sewers constructed as indicated below, except for those new sewers constructed which have active services tied into it as the pipe is being installed. In such cases the watertightness of the sewers less than or equal to 24-inches shall be based on a visual inspection, and for sewers 30-inches and larger based on the individual joint test as specified below. All visible leaks, including those found via

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television inspection, shall be repaired.

1. Infiltration Tests:

   a. Install suitable weirs in manholes selected by the Engineer to determine the leakage of ground water into the sewer. The maximum length of line for each infiltration test shall be 3,000 feet. Measure leakage only when all visible leaks have been repaired and the ground water is two feet above the top of the pipe. Install weir for a minimum of four hours before measuring flow. If leakage in any section of the sewer line exceeds 100 gpd/inch diameter/mile, locate and repair leaks. Repair methods must be approved by the Engineer. After repairs are completed, re-test for leakage.

   b. Furnish, install, and remove the necessary weirs, plugs, and bulkheads required to perform the leakage tests.

   c. Weirs shall be V-notch type equal to Pollard (800)437-1146.

2. Exfiltration Tests: Use when groundwater is not two feet above the top of the pipe.

   a. Low-Pressure Air Test: Only sewer diameters less than or equal to 24-inches

      Prior to air testing, the section of sewer between manholes shall be thoroughly cleaned and wetted. Immediately after cleaning or while the pipe is water soaked, the sewer shall be tested with low-pressure air. At the Contractor's option, sewers may be tested in lengths between manholes or in short sections (25 feet or less) using inflatable balls pulled through the line from manhole to manhole. Air shall be slowly supplied to the plugged sewer section until internal air pressure reaches approximately 4.0 psi. After this pressure is reached and the pressure allowed to stabilize (approximately two to five minutes), the pressure may be reduced to 3.5 psi before starting the test. If a 1.0 psi drop does not occur within the test time, then the line has passed the test. If the pressure drops more than 1.0 psi during the test time, the line is presumed to have failed the test, and the Contractor will be required to locate the failure, make necessary repairs, and retest the line. Minimum test time for various pipe sizes and types is as follows:

Nominal Pipe Size, inches	T (Time Min/100) Feet
	DIP, PVC [2]
6	5.7
8	7.6
10	9.4
12	11.3
15	14.2
18	17.0
21	19.8

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Nominal Pipe Size, inches	T (Time Min/100) Feet
	DIP, PVC [2]
24	22.8

[1] Source: ASTM C828 and ASTM C924
[2] Source: ASTM F1417

3. Required test equipment, including inflatable balls, braces, air hose, air source, timer, rotameter as applicable, cut-off valves, pressure reducing valve, 0-15 psi pressure gauge, 0-5 psi pressure gauge with gradations in 0.1 psi and accuracy of ± two percent, shall be provided by the Contractor. Testing equipment shall be equal to Cherne Air-Loc Testing Systems.

4. The Contractor shall keep records of all tests made. Copy of such records will be given to the Engineer or the Owner. Such records shall show date, line number and stations, operator, and such other pertinent information as required by the Engineer.

5. The Contractor is cautioned to observe proper safety precautions in performance of the air testing. It is imperative that plugs be properly secured and that care be exercised in their removal. Every precaution shall be taken to avoid the possibility of over-pressurizing the sewer line.

E. Deflection Test

1. Test PVC gravity sewer for excessive deflection by passing a mandrel through the pipe. Deflection of the pipe shall not exceed the following:

Nominal Pipe Diameter	Maximum Allowable Deflection
≤ 12-inches	5%
15 to 30-inches	4%
> 30-inches	3%

2. The mandrel size shall be based upon the maximum possible inside diameter for the type of pipe being tested, taking into account the allowable manufacturing tolerances of the pipe. The mandrel shall have an odd number of legs, or vanes, with a quantity of such equal to or greater than nine. The legs of the mandrel shall be permanently attached to the mandrel. A mandrel with variable sizes shall not be allowed. The mandrel shall be constructed of steel aluminum or other material approved by the Engineer, and shall have sufficient rigidity so the legs of the mandrel will not deform when pulling through a pipe. The mandrel dimensions shall be checked by the Engineer before use by the Contractor.

3. Excavate and install properly any section of pipe not passing this test. Re-test until results are satisfactory.

4. This test shall be performed twice:

   a. once within the first 30 days of installation, and

   b. once during final inspection, but no sooner than 30 days after pavement and backfill are done, at the completion of the contract.

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F. Closed Circuit Television: The interior of the gravity sewers shall be subjected to a post-installation televised inspection. The audio/video tape shall provide an audio description to what is being viewed; provide a continuous running footage indicator between manholes; and be prepared in the presence of the County's Inspector. Prior to Final Acceptance the County shall be provided with one copy of the TV inspection report and video cassette showing the entire length of gravity sewer being tested. The report shall contain the condition of pipe, type of pipe, depth, location of services, length, type joint, roundness and distance between manholes. Any pipe found to be cracked, leaking, misaligned, bellied or otherwise defective shall be removed and replaced.

G. Manholes: Prior to testing manholes for watertightness, all lift holes shall be plugged with a non-shrink grout, all joints between precast sections shall be properly sealed and all pipe openings shall be temporarily plugged and properly braced.

1. Vacuum Tests: The manhole, after proper preparation as noted above, shall be vacuum tested prior to backfilling. The test head shall be placed at the inside of the top of the cone section and the compression head inflated to 40 psi to effect a seal between the vacuum base and the manhole structure. Connect the vacuum pump to the outlet port with the valve open. A vacuum of 10-inches of mercury shall be drawn and the vacuum pump shut off. With the valves closed, the time (seconds) shall be measured for the vacuum to drop to 9-inches. The manhole shall pass if the time (seconds) is greater than that specified in a table below. If the manhole fails the initial test, necessary repairs shall be made with non-shrink grout while the vacuum is still being drawn. Retesting shall proceed until a satisfactory test is obtained. Vacuum testing equipment shall be equal to that as manufactured by P.A. Glazier, Inc.

Minimum Test Times for Various Manhole Diameters and Depths			
	Diameter (feet)		
Depth (feet)	4	5	6
8	20	28	33
10	25	33	41
12	30	39	49
14	35	48	57
18	40	52	67
18	45	59	73
20	50	65	81
22	55	72	89
24	59	78	97
26	64	85	105
28	69	91	113
30	74	98	121

3.09 Protection and Restoration of Work Area

A. General: Return all items and all areas disturbed, directly or indirectly by work under these Specifications, to their original condition or better, as quickly as possible after work is started.

1. The Contractor shall plan, coordinate, and prosecute the work such that

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disruption to personal property and business is held to a practical minimum.

2. All construction areas abutting lawns and yards of residential or commercial property shall be restored promptly. Backfilling of underground facilities, ditches, and disturbed areas shall be accomplished on a daily basis as work is completed. Finishing, dressing, and grassing shall be accomplished immediately thereafter, as a continuous operation within each area being constructed and with emphasis placed on completing each individual yard or business frontage. Care shall be taken to provide positive drainage to avoid ponding or concentration of runoff.

3. Handwork, including raking and smoothing, shall be required to ensure that the removal of roots, sticks, rocks, and other debris is removed in order to provide a neat and pleasing appearance.

4. The Engineer shall be authorized to stop all work by the Contractor when restoration and cleanup are unsatisfactory and to require appropriate remedial measures.

B. Man-Made Improvements: Protect, or remove and replace with the Engineer's approval, all fences, walkways, mail boxes, pipe lines, drain culverts, power and telephone lines and cables, property pins and other improvements that may be encountered in the work. Fences crossing easements shall be gated.

C. Cultivated Growth: Do not disturb cultivated trees or shrubbery unless approved by the Engineer. Any such trees or shrubbery which must be removed shall be heeled in and replanted under the direction of an experienced nurseryman.

D. Cutting of Trees: Do not cut trees for the performance of the work except as absolutely necessary. Protect trees that remain in the vicinity of the work from damage from equipment. Do not store spoil from excavation against the trunks. Remove excavated material stored over the root system of trees within 30 days to allow proper natural watering of the root system. Repair any damaged tree over 3-inches in diameter, not to be removed, under the direction of an experienced nurseryman. All trees and brush that require removal shall be promptly and completely removed from the work area and disposed of by the Contractor. No stumps, wood piles, or trash piles will be permitted on the work site. The Contractor may chip and grind vegetation and spread over the disturbed area if approved by the County.

E. Disposal of Rubbish: Dispose of all materials cleared and grubbed during the construction of the project in accordance with the applicable codes and rules of the appropriate county, state and federal regulatory agencies.

F. Swamps and Other Wetlands

1. The Contractor shall not construct permanent roadbeds, berms, drainage structures or any other structures which alter the original topographic features within the easement.

2. All temporary construction or alterations to the original topography will incorporate measures to prevent erosion into the surrounding swamp or wetland. All areas within the easement shall be returned to their original topographic condition as soon as possible after work is completed in the

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area. All materials of construction and other non native materials shall be disposed by the Contractor.

3. The Contractor shall provide temporary culverts or other drainage structures, as necessary, to permit the free migration of water between portions of a swamp, wetland or stream which may be temporarily divided by construction.

4. The Contractor shall not spread, discharge or dump any fuel oil, gasoline, pesticide, or any other pollutant to adjacent swamps or wetlands.

END OF SECTION

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Part 1 General

1.01 Scope

A. This Section describes products for sewer and manhole rehabilitation and requirements for the installation and use of these items. Furnish all products and perform all labor necessary to fulfill the requirements of these Specifications. This Section covers the general requirements for the referenced specifications, manufacturer's and installer's qualifications, submittal and guaranty guidelines, materials, installation and testing procedures.

B. General: Supply all products and perform all work in accordance with applicable American Society for Testing and Material (ASTM), American Water Works Association (AWWA), American National Standards Institute (ANSI), or other recognized standards. Latest revisions of all standards are applicable. Where discrepancies exist between this specification and referenced product/process standards, this specification shall govern

1.02 Qualifications - Contractor/Installer Experience Requirement

A. The Installing Contractor for the cured-in-place reconstruction of sewers must have a minimum of 5 years' experience using the exact named product proposed and, have installed at least 20,000 linear feet of approved cured-in- place product. The installing Contractor must certify that the liner tube/resin composite system to be used is the exact system for which all submittals and certifications were made in the bid. No substitutions will be allowed, and misrepresentations or omissions may be grounds for contract termination with the Contractor waiving any and all claims against the Owner for work performed or costs incurred. Documentation of experience shall be submitted in the Contractor's bid. Failure to provide this documentation may be grounds for disqualification.

B. The Qualifying Superintendent must have a minimum of five years' experience with cured-in-place pipe products. In addition, the Qualifying Superintendent must have supervised jobs in which at least 20,000 feet of pipe has been reconstructed using the exact named product proposed including a minimum of
5,000 feet of 24-inch diameter (or larger) cured-in-place product. The superintendent for the job shall be on-site during all phases of the work involving any pre and post-installation video inspection, sewer cleaning or insertion and processing of the CIPP. Documentation of experience shall be submitted in the Contractor's bid. Failure to provide this documentation may be grounds for disqualification.

C. The cured-in-place pipe lining (CIPP) system must have a minimum proven performance record of 1,000,000 linear feet installed of the exact name-brand product bid in the United States, with a minimum of 20,000 linear feet in diameters 24-inch or larger. In addition, a minimum of 10,000 linear feet of 48- inch diameter or larger, of the exact name brand product must have been installed in the United States. Documentation of performance record shall be submitted with the Contractor's bid. Failure to provide this documentation may be grounds for disqualification.

D. The Contractor for Manhole Rehabilitation shall be fully qualified, experienced and equipped to complete this work expeditiously and in a satisfactory manner. The qualified Contractor shall be an approved installer as certified and licensed by the manufacturer. The installing Contractor must certify that the proposed product/process to be used is the exact system for which any and all submittals

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and certifications were made. No substitutions will be allowed, and misrepresentations or omissions may be grounds for contract termination with the Contractor waiving any and all claims against the Owner for work performed or costs incurred.

E. The Contractor and the proposed Qualifying Superintendent for the work under this Contract shall have successfully installed the allowed manhole lining product in a minimum of 500 manholes/structures as documented by verifiable Owner references. Documentation of experience shall be submitted in the Contractor's bid. Failure to provide this documentation may be grounds for disqualification. The Engineer/Owner shall approve both the Contractor and the Qualifying Superintendent to perform this work. The approved superintendent shall be on-site during the execution of all lining operations including prep work and vacuum testing. The lining installation and/or vacuum testing shall cease whenever the superintendent is not on-site

1.03 Submittals

A Complete product data and engineering data, including shop drawings, shall be submitted to the Engineer in accordance with the requirements of Section 01340 of these Specifications.

B. Cured-In-Place-Pipe

1. The Contractor shall furnish three copies of the design calculations establishing the structural capabilities, chemical composition, thickness, curing temperature and period, assumptions, and other mechanical properties of the liner system proposed, signed and sealed by a professional engineer licensed in the state of Georgia.

2. The Contractor shall furnish seven copies of the manufacturer's brochures giving a complete description of the product proposed, its physical and chemical composition, the same for the thermosetting resin or epoxy hardener, the recommended range of curing temperature, period of cure, cool-down procedures and method of installation.

C. Manhole Rehabilitation: Submit manufacturer's product data including composition, physical properties, surface preparation, repair, application, curing, and field quality control.

1.04 Transportation and Handling

A Unloading: Furnish equipment and facilities for unloading, handling, distributing and storing materials. Make equipment available at all times for use in unloading. Do not drop or dump materials. Any materials dropped or dumped will be subject to rejection without additional justification.

B. Handling: Handle materials carefully to prevent shock or damage. Handle pipe by rolling on skids, forklift, or front loader. Do not use material damaged in handling.

1.05 Storage and Protection

A. Stored materials shall be kept safe from damage.

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1.06 Quality Assurance

A. Product manufacturers shall provide the Engineer with written certification that all products furnished comply with all applicable provisions of these Specifications.

1.07 Warranty and Repairs

A. Each Manufacturer for manhole liners shall warrant the performance of the CIPP Liner materials for 5 years and Certified Installer shall provide 3-year labor warranty to repair or replace any failing conditions of the liner in the structure.

B. The cured-in-place liner system shall be repairable at any time during the life of the structure, with the same type of liner system materials used in the original installation, including repair or lining of the upper chimney portion where grade adjustments have been made. Repair/lining materials shall be of the type that will bond to the original liner materials.

Part 2 Products

2.01 Cured-In-Place-Pipe

A. The cured-in-place pipe material shall be fabricated from materials which, when cured, will be suitable for the environment intended, i.e., resistant to withstand exposure to sewage gases containing normal levels for domestic sewage of hydrogen sulfide, carbon monoxide, carbon dioxide, methane, traces of mercaptan, kerosene, saturation with moisture, dilute sulfuric acid, external exposure to soil bacteria, and any chemical attack which may be due to materials in the surrounding ground. The final product must not deteriorate, corrode, or lose structural strength in any manner that will preclude meeting the expected design life.

B. The structural performance of the inverted cured-in-place pipe must be adequate to accommodate all internal and external loads (live and dead) over its service life. The CIPP liner shall be designed considering the host pipe is fully deteriorated, a prism loading, a soil loading of 120 pcf, a 2.0 factor of safety, a 2- percent ovality, a 5-percent maximum deflection, a 1,000 psi modulus of soil reaction, a 4,500 psi flexural strength, a 3,000 psi tensile strength, a lining enhancement factor (K) of 7 maximum, H-20 live loads where applicable, 50- percent long-term modulus reduction factor and a hydrostatic load beginning at the surface

C. Polyester Resins

1. The resin used shall be high-grade corrosion resistant isophthalic polyester specifically designed for the CIPP being installed. Only premium, non-recycled resin shall be used. PET resins, or those containing fillers, additives or enhancement agents shall not be used. The resin must be manufactured under ISO 9002 certified procedures.

2. The resin vendor must be able to reference the corrosion scale with the resin itself having a heat deflection temperature greater than 212 degrees Fahrenheit

D. Urethane-modified Vinyl Ester Resins (if applicable)

1. The resin used shall be a high-grade, premium vinyl ester combining outstanding corrosion resistance and high-temperature performance with

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excellent laminating characteristics. The resin must be manufactured under ISO 9002 certified procedures.

2. The resin vendor must be able to reference the heat corrosion scale with the resin itself having a heat deflection temperature greater than 244 degrees Fahrenheit. Only premium, non-recycled resins will be accepted. PET resins or those containing enhancement additives and/or fillers will not be accepted.

E. Quality Assurance

In order that the Owner is assured that the specified resin class is used for the duration of the Contract, the following provisions are made part of this specification:

1. The Contractor shall designate a wet-out facility and shall provide wet- out liner tubes from this designated facility only. Multiple facilities to supply wet-out liner tubes for the duration of this contract may not be used without prior approval of the Owner/Engineer.

2. The Contractor shall place a sampling valve in-line at a point in the resin/catalyst mixing stage so that a sample of non-catalyzed resin may be taken. A second sampling valve shall be placed in-line at a point after the resin/catalyst mixing stage, but prior to catalyzed resin injection into the liner so that a resin sample may be taken. Both sampling valves shall be left in place for the duration of the Contract.

3. The Owner/Engineer shall have the right to inspect the designated wet-out facility and draw samples form one or both sampling valves without prior notice to the Contractor for the duration of the Contract.

4. To further assure usage of a specified resin class, the Owner reserves the right to subject resin samples to an infrared analysis (IR Scan). This standard analytical test involves shining a beam of light in the infrared frequency region through a thin sample of subject resin. The frequency of light is then varied across the infrared spectrum. Chemical functional groups present in the resin being analyzed will absorb infrared light as specific frequencies and with characteristic absorption intensities. A spectrum created from the measurement of light transmitted through the sample across the range of infrared frequencies shall be used to determine the resin's chemical fingerprint. An overlaid IR spectrum of Reichhold Polylite® 33420 shall be used as a baseline comparison for the purpose of a polyester test. The baseline comparison for vinyl ester shall be Reichhold Dion® 9800.

5. The Owner/Engineer may perform random Infrared Scans (IR Scans) and/or Composite Burn-offs to insure resin quality and consistency throughout the duration of the Contract and shall be responsible for the cost of IR testing.

F. Catalyst Systems

1. The exact mixture ratio of resin and catalyst shall also be submitted. The catalyst system shall be identified by product name. The resin/catalyst ratio shall be approved by the resin manufacturer in writing. The catalyst system shall be made up of a primary catalyst and a secondary catalyst.

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The primary catalyst shall be Akzo Perkadox 16 or approved equal and shall be added at a maximum of 1% of the resin volume by weight unless otherwise approved by the Engineer. The secondary catalyst shall be Akzo Trigonox or approved equal and shall be added at a maximum of 0.05% of the resin volume by weight unless otherwise approved by the Engineer.

2. "Quick-Cure" or accelerated resin systems including those formulated by substantially increasing the amount of catalysts from that specified above, will not be allowed. Resins, catalysts and resin/catalyst mix ratios shall not be changed or altered during this Contract unless specifically approved by the Owner/Engineer in writing.

3. Cure schedules for the CIPP shall be submitted to the Engineer for review. The proposed curing schedules/process shall be approved by the resin manufacturer in writing. Cure schedules shall include specific information on "step curing" procedures, "cooking times", duration and "cool down" procedures- all to be approved by the resin manufacturer in writing.

4. The resin shall be shipped directly from the resin manufacturer's facility to the CIPP wet-out facility. The resin shall not be sent to any intermediate mixing facility. Copies of the shipping documents from the resin manufacturer shall be submitted to the Engineer indicating dates of shipment, originating and receiving locations.

5. The Contractor shall submit a Certificate of Authenticity from the resin manufacturer for each shipment to the wet-out facility to include the date of manufacture and Heat Distortion Temperature. This information shall be submitted before the manufacture or installation of any CIPP.

G. Liner Tubes

1. The tube shall consist of one or more layers of absorbent non-woven felt fabric and meet the requirements of ASTM F1216. In the event of a discrepancy between the referenced ASTM requirement and this specification, this specification will govern.

2. The acceptable liner tube shall be constructed under ISO 9002 certified procedures. Proper certification shall be provided prior to the manufacture or installation of any CIPP.

3. The tube shall be constructed to withstand installation pressures, have sufficient strength to bridge missing pipe, and stretch to fit irregular shaped pipe sections.

4. The wet-out tube shall have a uniform thickness that when compressed at installation pressures shall meet or exceed design "finished and installed" thickness.

5. The tube shall be manufactured to a size that when installed shall tightly fit the internal circumference and length of the original pipe. In the event that under-sized pipe is present, liner tube shall be manufactured so that overlap folds or wrinkles do not occur. Allowances shall be made for circumferential stretching during inversion.

6. The outside layer of the tube, before installation, shall have an impermeable polyurethane or polyethylene plastic coating. This coating

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shall be an impermeable, flexible membrane that shall contain the resin and facilitate monitoring of resin saturation during resin impregnation. This coating shall form the inner layer of the finished pipe and is required for enhancement of corrosion resistance, flow and abrasion properties.

7. The tube shall be homogeneous across the entire wall thickness containing no intermediate or encapsulated layers. No material may be included in the tube that may cause de-lamination in the cured liner, and no dry or unsaturated areas or layer shall be evident.

8. The wall color of the interior liner surface after installation shall be a light-reflective color so that a clear, detailed inspection with closed-circuit television equipment may be conducted.

9. The outside of the tube shall be marked for distance at regular intervals not to exceed 10 feet. Such markings shall include the Manufacturers name or identifying symbol.

10. The minimum length shall be that deemed necessary by the Owner/Engineer to effectively span the distance between manhole sections of the segment to be lined unless otherwise specified. The line lengths shall be verified in the field before impregnation of the tube with resin.

H. CIPP Design- Liner Tube Thickness

1. Liner Thickness: The Contractor shall submit liner thickness calculations to the Owner/Engineer for review. The CIPP shall be designed in accordance with the applicable provisions of F1216 and 02412 for "fully deteriorated gravity pipe conditions" and shall meet the following design conditions:

   a. AASHTO H-20 Live Load with two trucks passing for CIPP in streets (16,000 lbs.)
   b. A soil modulus of elasticity of 1000 psi, soil weight of 120 pounds per cubic foot and a coefficient of friction of Ku'=0.130r.
   c. Short-term flexural modulus of 250,000 psi and long-term modulus of 125,000 psi. Flexural strength of 4,500 psi.
   d. Safety factor of 2.0 shall be used.
   e. Groundwater elevation at the ground surface. f. Pipe ovality of 2%.
   g. Poisson ratio of 0.3.
   h. Enhancement factor (K) of 7.
   i. Service temperature range shall be 40 to 140 degrees F.
   j. Maximum long-term deflection shall be 5%.

2. The CIPP shall also conform to the minimum requirements demonstrated in the following table:

Physical Property	**ASTM Standard F 1216, Latest Revision**	**Minimum Value**
Flexural Stress	ASTM D-790	4,500 psi
Flexural Modulus of Elasticity	ASTM D-790	250,000_QSi

3. Minimum Acceptable Pipe Thickness ("Finished and Installed")

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a. The minimum "finished and installed" cured liner thickness shall be as follows, regardless of what the calculations indicate as the required minimum thickness:

Pipe Diameter (Inches)	Depth to Invert (Feet)	"Finished & Installed" Thickness (mm)
TBD	TBD	TBD

b. The above table is in regards to minimum liner thicknesses only. It is the Contractor's responsibility to determine the site specific external loads on the liner and increase its thickness as required. The Contractor shall submit his proposed plan for ensuring that the finished and installed CIPP meets the above minimum thickness requirements. The plan shall include detailed inversion procedures to reduce stretching and resin loss.

c. The contractor shall submit his price proposal based on the appropriate length, size, and existing pipe parameters designated on the Bid Form. The deterioration of sewers is an on-going process. Should pre-construction inspections reveal the sewers to be in substantially different conditions than those in the design considerations, the contractor shall request such changes in reconstruction liner thickness, supporting such requests with design data. The deviation, if approved, shall be reflected by the appropriate addition or reduction in the unit cost for that size as agreed to by the Owner/Engineer.

d. Any liner that does not meet the specified strength and/or thickness requirements, regardless of the amount below the specified requirements, shall be corrected by the Contractor in a manner approved by the Owner/Engineer at no additional cost to the Owner. The Owner/Engineer's decision on how to correct deficient CIPP installations shall be final.

e. Any liner that does not meet the specified strength and/or thickness requirements, regardless of the amount below the specified requirements, shall be corrected by the Contractor in a manner approved by the Engineer at no additional cost to the Owner. The Engineer's decision on how to correct deficient CIPP installations shall be final. Options for correcting deficient liners that will be considered by the Engineer include removing the liner and re-lining the sewer, excavating and replacing the sewer from manhole to manhole, or providing the Owner with a substantial credit. The primary option that will be considered will be to re-line the sewer. Credits will only be authorized for CIPP that does not meet required thickness. If a credit is acceptable to the Owner and Engineer, the credit shall be calculated by multiplying the bid price by the percent that the liner thickness is below the required installed thickness as follows:

Credit = (1 -Installed CIPP thickness/required CIPP thickness) x bid price

The Contractor shall not assume a credit will be acceptable to the Engineer/Owner in any case.

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4. The finished CIPP will provide a uniform smooth, interior wall surface and will have at least 100% of the flow capacity of the original pipe before rehabilitation. In lieu of measurements, calculated capacities may be derived using a Manning "n" coefficient of 0.013 for the original pipe material and a Manning "n" coefficient of 0.010 for a joint-less smooth- wall cured-in-place pipe.

I. Resin Impregnation of the CIPP Tube (Wet-Out)

1. The contractor shall designate a location where the tube shall be impregnated or "wet out" with resin, using distribution rollers and a vacuum impregnation system to thoroughly saturate the tube's felt fiber prior to installation in the field. The impregnated tube shall be free of pinholes, resin voids and other defects. If the cured-in-place pipe is impregnated at the manufacturing plant, it shall be delivered to the job site in a refrigerated truck, and remain refrigerated prior to installation to prevent premature curing. The flexible tube shall be vacuum impregnated with resin under controlled conditions or by such other means provided such means can assure thorough resin impregnation to the full satisfaction of the Owner/Engineer. The volume of resin used shall be sufficient to fill all voids in the tube material at normal or design thickness and diameter. The volume of resin shall be adjusted by adding seven to ten percent excess resin for the change in resin volume due to polymerization and allow for any migration of resin into the cracks and joints in the original pipe.

J. Inversion of CIPP

1. The impregnated tube shall be inverted through an existing manhole or other approved access point utilizing a hydrostatic water column or pressurized air until it has fully traversed the designated line length and the inversion face breaches the destination manhole or termination point. The fluid column or air pressure shall have been adjusted and maintained to be sufficient to cause the impregnated tube to hold tight against the existing pipe wall, produce dimples at side connections, and flared ends at the manholes. Lubricant during inversion shall be used as necessary in accordance with the CIPP manufacturer's recommendations. Thermocouples shall be placed at the top and bottom interface of both ends of the liner for monitoring temperature during the cure cycle. Care should be taken during tube installation not to over- stress the fabric fiber.

2. When using pressurized air, particular attention should be given to the maintenance of the minimum required "finished and installed" thickness of the CIPP. Before the inversion begins, the tube manufacturer shall provide the minimum air pressure required to hold the tube tight against the host pipe and the maximum allowable pressure so as not to damage the tube. Once the inversion has started, pressure shall be maintained between the minimum and maximum pressures until the inversion has been accomplished.

K. Curing - Using Circulated Heated Water

1. A suitable heat source and water recirculation equipment is required to circulate heated water throughout the pipe. The equipment shall be capable of delivering hot water throughout the inverted tube to uniformly raise the temperature required to affect a cure of the resin.

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a. Initial cure will occur during temperature heat-up and is completed when exposed portions of the new pipe appear to be hard and sound and the thermocouples indicate that the temperature is of a magnitude to realize an exothermal or cure in the resin. After initial cure is reached, the temperature should be raised to the post-cure temperature recommended by the resin manufacturer. Post-Cure temperature should be held for a period as recommended by the resin manufacturer, during which time the recirculation of the water and cycling of the heat source to maintain the temperature continues.

b. Prior to any inversion, the Contractor shall provide a Post-Cure Hold Time and Temperature Table. This table shall indicate the minimum time and temperature the inverted tube will be held at in order to achieve desired physical properties. The resin manufacturer shall certify both the time and temperatures presented in the table.

c. Curing must take into account the existing pipe material, the resin system, and the ground conditions (temperature, moisture level, and thermal conductivity of the soil).

L. Curing - Using Controlled Steam

1. Suitable steam-generating equipment is required to distribute steam throughout the pipe. The equipment shall be capable of delivering steam throughout the inverted tube to uniformly raise the temperature required to affect a cure of the resin.

a. Initial cure will occur during temperature heat-up and is completed when exposed portions of the new pipe appear to be hard and sound and the thermocouples indicate that the temperature is of a magnitude to realize an exothermal or cure in the resin. After initial cure is reached, the temperature should be raised to the post-cure temperature recommended by the resin manufacturer. Post-Cure temperature should be held for a period as recommended by the resin manufacturer, during which time the distribution and control of steam to maintain the temperature continues.

b. Prior to any inversion, the Contractor shall provide a Post-Cure Hold Time and Temperature Table. This table shall indicate the minimum time and temperature the inverted tube will be held at in order to achieve desired physical properties. The resin manufacturer shall certify both the time and temperatures on the table.

c. The Time and Temperature Table submitted when using steam curing shall be identical to time and temperature hold times when curing with heated, circulated water.

d. Curing must take into account the existing pipe material, the resin system, and the ground conditions (temperature, moisture level, and thermal conductivity of the soil).

M. Cool-Down

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1. Cool-down of the cured pipe liner shall be in accordance with the manufacturer's recommendations. Care should be taken during the cool-down process so as to minimize shrinkage of the CIPP.

N. Lateral Service Reinstatement

1. After the CIPP has been cured, the existing service connections and laterals shall be reinstated. In general, reinstatement of service connections and laterals shall be accomplished internally, without surface excavation, using a remote control cutting device equipped with a television monitor. Reopened services shall be wire brushed to the satisfaction of the Owner/Engineer. In some cases, remote reinstatement may not be possible. In these instances, reinstatement by conventional methods in accordance with the standard Specifications is acceptable. All connections must be reinstated by at least 95-percent of the original opening.

0. Other Applicable Specifications of Publications: The latest revisions of the publications listed below form a part of these Specifications:

ASTM F1216-03	Standard practice for rehabilitation of existing pipelines and conduits by the inversion and curing of a resin- impregnated tube.
ASTM 0638	Test method for tensile strength properties.
ASTM 0790	Flexural strength. ASTM 0790 Modulus of elasticity. ASTM 0732 Shear strength.
ASTM 0695	Compressive strength.

2.02 Manhole Rehabilitation - General

A. The cured surfacing thickness shall be smooth, even (without ridges or bumps) and continuous with proper sealing connections to any non-rehabilitated areas.

B. Chemical sealants or grouts used to seal active manhole leaks, patch holes or cracks, fill voids and to otherwise prepare the manhole surface for lining shall be suitable for sewer system service and chemically resistant to any chemicals or vapors normally associated with domestic sewerage installations.

C. All invert channels shall be coated with grout or cementitious mortar to build up the invert to the invert elevations of new liner pipes (if applicable and as directed by the Engineer); to fill all cracks, voids, holes, etc.; and to form a smooth flow channel. The entire channel shall be coated with the channel coating being a minimum 1/8 - inch thick.

D. The Contractor shall submit complete shop drawings of the manhole lining system(s) to demonstrate compliance with these specifications, materials and detailed installation procedures. Testing procedures and quality control procedures shall also be submitted. Certifications that the lining system was manufactured in accordance with these specifications and the applicable ASTM standards shall be submitted with each material shipment.

E. The cementitious lining system shall be a pumpable Portland-based cement or fused calcium aluminate cement. The lining shall be installed via low-pressure

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application only. The materials shall be suitable for all specified design conditions.

F. The cementitious lining shall be installed on manhole benches and walls unless otherwise directed by the Engineer. All cementitious lining shall be troweled smooth after spray application. The cured cementitious lining shall have a minimum total thickness of 1-inch.

G. The materials used in the cementitious lining systems shall be mixed on-site according to the manufacturer's recommendations. Water shall only be added to the materials during the mixing process and prior to material pumping or spray application. No water shall be added at the nozzle.

H. The cementitious liner when cured shall have the following minimum characteristics at 28 days as measured by the applicable ASTM standards referenced in this Specification:

1. Minimum compressive strength of 6,000 psi
2. Minimum bond strength of 130 psi
3. Shrinkage of less than 0.05%

I. The cured cementitious lining shall be continuously bonded to all brick, mortar, concrete, chemical sealant, grout, pipe and other surfaces inside the manhole. The Contractor shall provide bond strength data on the cured cementitious lining based on ASTM test methods referenced in this Specification.

J. The monolithic cementitious lining shall completely cover the interior of the existing manhole including the benches unless otherwise directed by the Engineer. The lining shall effectively seal the interior surfaces of the manhole and prevent any penetration or leakage of ground water infiltration.

K. Cementitious linings shall be compatible with existing thermal conditions in the manhole. Manhole surface temperatures will range from 20 to 100 degrees F. The Contractor shall provide test data on shrinkage of the cured cementitious lining based on ASTM test methods referenced in this Specification.

2.03 Spray on Cementitious Manhole Lining

A Product Requirements (Level A):

The cementitious manhole lining system for the interior of manholes shall be a monolithic system suitable for use as a trowel or sprayed-on resurfacing in sewer manholes. The final product must not deteriorate, corrode, or lose structural strength in any manner that will preclude meeting the expected design life. The cementitious lining system shall be one of the following products or approved equal:

1. Strong Seal MS-2A, MS-2C or High performance Mix by Strong Seal Systems
2. QM-1s Restore or Alumaliner by Quadex
3. Permacast MS-10,000 or CR-5000 by APM, Inc.
4. Sewpercoat PG by LaFarge Calcium Aluminates

B. Product Requirements (Level B):

1. Where hydrogen sulfide resistance is required, the cementitious lining system shall be one of the following products or approved equal:

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a. High performance Mix by Strong Seal Systems
b. Alumaliner by Quadex
c. Permacast MS-10,000 or CR-5000 with Conshield by APM, Inc.
d. Sewpercoat PG by LaFarge Calcium Aluminates

2. In lieu of installing one of the Level B hydrogen sulfide resistant cementitious mortar products in a minimum 1-inch thickness, the Contractor may install one of the specified Level B products in a minimum%" thickness followed by a minimum 160 mil topcoat of epoxy to provide the required corrosion resistance. Acceptable topcoat applications shall be one of the following products or approved equal:

a. Raven 405 by Raven Lining Systems b. Cor-Gard by APM, Inc.

Part 3 Execution

3.01 Existing Utilities and Obstructions

A The Contractor shall call the Utilities Protection Center (UPC) (811) as required by Georgia law (O.C.G.A. §§ 25 9 1 through 25 9 13) and all utilities, agencies or departments that own and/or operate utilities in the vicinity of the construction work site, at least 72 hours (three business days) prior to construction, to verify the location of the existing utilities.

B. Existing Utility Location: The following steps shall be exercised to avoid interruption of existing utility service.

1. Provide the required notice to the utility owners and allow them to locate their facilities according to Georgia law. Field utility locations are valid for only ten days after original notice. The Contractor shall ensure, at the time of any excavation that a valid utility location exists at the point of excavation.

2. Avoid utility damage and interruption by protecting it with means or methods recommended by the utility owner.

3. Maintain a log identifying when phone calls were made, who was called, area for which utility relocation was requested and work order number issued, if any. The Contractor shall provide the Engineer an updated copy of the log bi weekly, or more frequently if required.

3.02 Construction Along Highways, Streets and Roadways

A Traffic Control

1. The Contractor shall: provide, erect and maintain all necessary barricades; suitable and sufficient lights and other traffic control devices; provide qualified flagmen where necessary to direct traffic; take all necessary precautions for the protection of the work and the safety of the public.

2. Construction traffic control devices and their installation shall be in accordance with the current U.S. DOT Manual on Uniform Traffic Control Devices for Streets and Highways Section 104.05 and 107.07, and the Georgia Department of Transportation Standard Specification Section

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107.09.

3. Placement and removal of construction traffic control devices shall be coordinated with the appropriate agencies a minimum of 48 hours in advance of the activity.

4. Placement of construction traffic control devices shall be scheduled ahead of associated construction activities. Construction time in street right of way shall be conducted to minimize the length of time traffic is disrupted. Construction traffic control devices shall be removed immediately following their useful purpose. Traffic control devices used intermittently, such as "Flagmen Ahead", shall be removed and replaced when needed.

5. Existing traffic control devices within the construction work zone shall be protected from damage. Traffic control devices requiring temporary relocation shall be located as near as possible to their original vertical and horizontal locations. Original locations shall be measured from reference points and recorded in a log prior to relocation. Temporary locations shall provide the same visibility to affected traffic as the original location. Relocated traffic control devices shall be reinstalled in their original locations as soon as practical following construction.

6. Construction traffic control devices shall be maintained in good repair, and shall be clean and visible to affected traffic for daytime and nighttime operation. Traffic control devices affected by the construction work zone shall be inspected daily.

7. Construction warning signs shall be black legend on an orange background. Regulatory signs shall be black legend on a white background. Construction sign panels shall meet the minimum reflective requirements of the State Department of Transportation. Sign panels shall be of durable materials capable of maintaining their color, reflective character and legibility during the period of construction.

8. Channelization devices shall be positioned preceding an obstruction at a taper length as required by the current Manual on Uniform Traffic Control Devices for Streets and Highways, as appropriate for the speed limit at that location. Channelization devices shall be patrolled to insure that they are maintained in the proper position throughout their period of use.

C. Construction Operations

1. Perform all work along highways, streets and roadways to minimize interference with traffic.

2. Stripping: Where the work is along road right of way, strip and stockpile all sod, topsoil and other material suitable for right of way restoration.

3. Shaping: Reshape damaged slopes, side ditches, and ditch lines immediately after completing backfilling operations. Replace topsoil, sod and any other materials removed from shoulders.

D. Excavated Materials: Do not place excavated material along highways, streets and roadways in a manner which obstructs traffic. Sweep all scattered excavated material off the pavement in a timely manner.

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E. Drainage Structures: Keep all side ditches, culverts, cross drains, and other drainage structures clear of excavated material. Care shall be taken to provide positive drainage to avoid ponding or concentration of runoff.

F. Landscaping Features: Landscaping features shall include, but are not necessarily limited to: fences; property corners; cultivated trees and shrubbery; manmade improvements; subdivision and other signs within the right of way and easement. The Contractor shall take extreme care in moving landscape features and promptly reestablishing these features.

G. Maintaining Highways, Streets, Roadways and Driveways

1. Maintain streets, highways, roadways and driveways in suitable condition for movement of traffic until completion and final acceptance of the work.

2. During the time period between pavement removal and completing permanent pavement replacement, maintain highways, streets and roadways by the use of steel running plates. The edges of running plates shall have asphalt placed around their periphery to minimize vehicular impact. The backfill above the pipe shall be compacted, as specified elsewhere up to the existing pavement surface to provide support for the steel running plates. Steel running plates shall be designed to support H-20 traffic loadings.

3. Furnish a road grader or front end loader for maintaining highways, streets, and roadways. Make the grader or front end loader available at all times.

4. Immediately repair all driveways that are cut or damaged. Maintain them in a suitable condition for use until completion and final acceptance of the work.

3.03 By-Pass Pumping

A. The installation methodology contemplated requires the temporary blocking and back-ups of sewers and sewage. Contractor shall be responsible to limit the extent and duration of such blockages and back-ups so that overflows and spillage onto public or private property and into storm sewers, waterways, and streets does not occur. In the event that such spillage or overflows do occur during the course of or as a result of the Work, the Contractor performing the Work shall immediately eliminate the spillage or overflow and, as necessary, remove the blockage and eliminate the back-up. On elimination of the spillage or overflow, the Contractor is to clean up and disinfect the area. Work to stop or contain such events is to be deemed EMERGENCY in nature and sufficient justification for total mobilization of resources, the use of overtime or double time, and any other reasonable measures to assure correction of the problem without delay. Damages arising from blockages, back-ups, spillage, or overflows of sewage during the course of the Work or because of the Work shall be the sole responsibility of the Contractor.

B. Sewage flow shall be pumped around segments during the installation and testing of cured-in-place pipe, the televising of sewers and lateral service reinstatement.

C. Pumping equipment shall have the capacity to convey 100% of peak flows around the construction area. The flow shall be intercepted at the upstream end of the construction area and shall be pumped through temporary piping of adequate size. The flow shall be discharged into a manhole on the downstream side of the

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construction area, thus by-passing the sewer segment(s) under construction. The Contractor shall be required to contact all residential and commercial customers whose service lines connect to the sewer main being bypassed and inform them that they will be temporarily out of service. The Contractor shall also advise those customers against water usage until the mainline is back in service. After completing the necessary work on the main line to allow its reuse, the Contractor shall advise those customers that the sewer main is back in service. The Contractor shall maintain a high degree of professionalism, both in workmanship and appearance, at all times. Should a condition arise that the Contractor cannot restore service within 12 hours of service interruption; the Contractor shall make provisions for pumping all flows within the service interruption area at no cost to the Owner.

D. Open channels or trenches shall not be used to convey flow.

E. A standby pump of the same capacity shall be required on site.

F. The Contractor is responsible for paying all fines imposed for overflows or spills during construction.

3.04 Cured-In-Place-Pipe Rehabilitation

A. All reconstruction of existing gravity sewer mains using an approved CIPP Product and Installer shall be performed in strict accordance with this Specification and the latest revision of ASTM F1216. Where discrepancies exist, or any latitude is either inferred or interpreted between this specification and ASTM product and process standards, this Specification shall govern.

B. Pull-In and Inflate methods of CIPP installations, (reference ASTM F1743), will not be acceptable.

C. The Contractor shall carry out his operations in strict accordance with all applicable OSHA standards. Particular attention is drawn to those safety requirements involving work on an elevated platform and entry into a confined space.

D. The Owner will be responsible for locating and accessing all manholes and provide access to water hydrants for cleaning, inversion and other work items requiring water.

E. All surfaces, which have been damaged by the Contractor's operations, shall be restored to a condition at least equal to that in which they were found immediately prior to the beginning of the Contractor's operations. Suitable materials and methods, acceptable to the Owner/Engineer, shall be used for such restoration. The restoration of existing property or structures shall be done as promptly as practicable and shall not be left until the end of the construction period. The cost for correcting damages resulting from the Contractor's actions shall be the responsibility of the Contractor.

F. The tube shall be fabricated to a size that, when installed, will neatly fit the internal circumference of the conduit(s) designated for CIPP. Allowance shall be made for the circumferential stretching during insertion of the tube. After curing of the resin is completed, the hardened CIPP will extend from manhole to manhole of the section designated providing a structurally sound, corrosion- resistant, watertight conduit that excludes exfiltration and infiltration, is tight-fitting within the existing pipe, and is free of voids or annular spaces between the CIPP and the existing pipe walls. K-Factor for tightness shall equal 7.0 or greater. All terminations into

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manhole walls shall be watertight at the time of final inspection. No annular space shall be visible between the CIPP and manhole wall. In the event that an annular space is present, it shall be completely filled with epoxy or other suitable material to the satisfaction of the Owner/Engineer.

G. The Contractor shall be responsible for determining the minimum length to effectively span the distance from the manhole to manhole and shall verify the length of the fabric tube in the field before the tube is either cut to length or wet-out with resin. The tube may run through one or more manholes with the approval of the Owner/Engineer.

H. All active laterals, taps, or side connections will be reinstated from inside the rehabilitated pipe where possible. In smaller diameter pipe in which man-entry is not possible, side connections must be reinstated internally by suitable, TV-monitored, robotic cutting equipment. Cross-sections of the opening of the side connections must be reinstated by at least 95-percent of the original opening. Reinstated lateral service openings shall be brushed smooth to the satisfaction of the Owner/Engineer. Main-to-lateral connections shall be as watertight as possible to the satisfaction of the Owner/Engineer and verified as such via post CCTV inspection. The cost for correcting deficiencies discovered shall be the responsibility of the Contractor.

I. Preliminary Preparation:

1. Cleaning of Sewers

a. Sewers shall be cleaned of all debris, roots and other materials that would inhibit proper inversion of CIPP.

b. Utilizing high-pressure jet cleaning equipment, several passes are completed to assure that all debris is removed from the pipe to the satisfaction of the Owner/Engineer.

c. Heavy cleaning of sewers shall be performed if roots are present which require the use of mechanical brushes or dragging devices or, if in the judgment of the Owner/Engineer, the pipe is more than 25% full of debris, the pipe shall be cleaned to the satisfaction of the Owner/Engineer.

2. Debris Disposal

All debris cleaned from the pipe shall be removed and disposed of at a dumpsite designated by the Owner at no additional cost to the Contractor. Debris shall not be allowed to wash into any other pipe segment either upstream or downstream from the pipe segment being cleaned.

3. Provision and Usage of Water

The Owner shall provide all water required to perform this Work. The Owner shall provide a fire hydrant meter at no cost to the Contractor beyond the normal security deposit for use on the Project. Contractor shall coordinate connection and usage limits and withdrawal locations with the Owner prior to construction.

4. Pre-Installation Video Inspection

a. Prior to installation of the CIPP, but not more than 48-hours prior

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to such installation, the section of sewer designated for CIPP is to be televised its full length using a remote television camera specifically designed for that purpose.

b. Inspection of the sewer pipe shall be performed by the Contractor's experienced personnel trained in location breaks and obstacles by CCTV inspection. Utilizing a color video inspection system with data recording capabilities, the entire pipe section to be lined shall be recorded in a Digital Format and two (2) copies produced. The interior of the pipe shall be carefully inspected to determine the location of any conditions, which may prevent the proper installation of the CIPP, and it shall be noted so that these conditions can be corrected. A DVD/CD-ROM and suitable log shall be submitted to the Owner.

c. Pre- and post-installation videos and logs shall be submitted during the course of the Work. The television camera used for this purpose shall be operative in one hundred percent moisture conditions. Lighting for the camera shall be sufficient to yield a clear picture of the entire periphery of the pipe. The camera, television monitor, and other components of the video system shall be capable of producing a five hundred line resolution picture. The camera's rate of travel shall not exceed 20 feet per minute. At each service, the camera shall come to a complete stop and the service shall be panned so that the entire cross- sectional area of the service is inspected. The footage meter count shall be clearly visible. Logs shall include date, line size, length, manhole numbers and project number, direction of camera travel, direction of flow, and any observed defects or comments. For each service the log should include the distance from manhole, its location (e.g. 9:00 or 2:00 o'clock), street address or parcel, and distance from mainline to cleanout. Videos between manhole segments shall be continuous; no breaks or "blink-outs" in the video shall be observed. The videos shall be in CD-ROM or DVD format.

d. Sewer service connections shall also be TV inspected from within the sewer main, identifying all service connection locations and conditions. Conditions of service connections shall be noted in the log.

e. The full cross-sectional area of the pipe shall be visible during video inspection except where misalignment of the sewer may have resulted in standing water in bellies or sags.

f. If for any reason the camera becomes disabled inside the sewer and cannot further proceed, the Contractor will be responsible for retrieving the camera at no additional cost to the Owner.

5. Identification and Pre-measurement of Lateral Connections

A 360-degree Pan-and-Tilt view camera shall be used to inspect the pipe. At each connection the operator will stop and turn the camera lens toward the lateral thereby inspecting the first 8 to 12 inches of the lateral connection. The Contractor shall be responsible for determining if the connection is active or inactive. For each service connection determined by the Contractor to be active, the Contractor shall determine the condition

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of the service connection to the main, make his recommendation for lateral connection repair, and record both items in his log.

6. Traffic Control

The Contractor shall be responsible for traffic control during the course of each phase of the Work. Prior to beginning Work, Contractor shall submit a traffic control plan for each section of Work for the review and approval. It is the intent that this Work is to be accomplished with as little disturbance to traffic, private property, and the public as is reasonably possible, consistent with timely completion thereof. The traffic control plan shall reflect such requirements where applicable. Signs, signals, and detours shall conform to the Georgia Department of Highways & Public Transportation requirements for streets and highways, latest edition. The Contractor shall have and maintain on site a sufficient supply of traffic cones and other traffic signaling devices, including trained and properly equipped flagmen, to safely control all traffic through the work zone(s). Road closures and I or detours will require advance scheduling and prior approval by the Owner/Engineer.

3.05 Manhole Rehabilitation - Installation

A. Surface Preparation (All Levels)

1. The Contractor shall clean each sewer manhole to be restored and shall dispose of any debris or resulting material in a manner and place suitable to the Owner. Cleaning shall be performed using a high- pressure jet wash at a minimum of 3,500 psi water pressure to remove all dust, biological growths, grease, oils or any other surface contaminants or coatings.

2. The Contractor shall immediately notify the Engineer of any coatings that cannot be removed and, upon the approval of the Engineer, may coarse sand the area(s) to rough up the surface sufficient to obtain and insure adequate bonding of the liner. Roots shall be removed by manually cutting them from inside the manhole.

3. The Contractor shall conduct a visual inspection of each manhole after it is cleaned. All active hydrostatic leaks shall be plugged or sealed with an appropriate grout compatible with the lining. Injection grouting may be required to seal active leaks including existing leaks in invert channels and benches. All loose mortar and rubble of existing benches, walls and inverts shall be removed.

4. The Contractor shall prepare the manhole as necessary by reshaping and repairing benches, inverts and walls where required including smoothing out irregular shaped corbel and chimney sections prior to any spray application. All interior surfaces shall be prepared as recommended by the lining system manufacturer. Minimum requirements of the Specification are as follows:

a. All cracks and voids must be repaired and filled with suitable non-shrinking cements, sealants or grouts, including all voids between existing sewer pipes and manhole walls. All patch repairs shall be smooth and even with the manhole wall.

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b. All voids around existing manhole rungs, steps and anchors shall be filled.

c. All surfaces shall be suitably prepared for the required bonding of the liner as recommended by the manufacturer and acceptable to the Engineer.

5. Prior to lining, the Engineer shall inspect and approve the surface preparation work. The Contractor shall notify the Engineer when the manholes are ready for inspection. The manhole lining shall be completed immediately after the Engineer's inspection or the manhole may need to be re-cleaned prior to spraying to remove accumulated debris on walls and benches.

B. Installation of Cementitious Lining (Levels A & B)

1. The Contractor shall notify all property owners who discharge sewage directly into the manhole being rehabilitated at least 48 hours in advance, giving the date, starting and estimated completion time for the work being conducted and any anticipated impact to the property owner.

2. The Contractor shall bypass pump sewage flows around the manhole being rehabilitated while the work is being performed. A detailed bypass plan shall be submitted to the Engineer for approval before any work shall take place.

3. The Contractor shall furnish and install the cementitious lining in each manhole as designated on the Plans or as otherwise directed by the Engineer. The work shall be done in compliance with the manufacturer's recommendations, applicable ASTM standards and this Specification.

4. Manhole walls and benches shall be monolithically coated to the required thickness by spray-on methods in a single pass or application. Sprayed linings shall be troweled smooth after application.

5. The invert channel (where applicable and as directed by the Engineer) shall be coated with an appropriate quick-set grout in accordance with the manufacturer's instructions.

6. A complete watertight seal shall be provided at the pipe and manhole wall connections. The Contractor shall submit details of how watertight connections shall be made to the Engineer for approval prior to performing any work.

7. Manhole lining shall not be installed until all required mainline sewer rehabilitation and/or other manhole work is completed.

3.06 Inspection and Testing

A Field Acceptance

1. Field acceptance of manhole lining shall be based on the Engineer's field inspection and evaluation of the appropriate installation and curing test data. The lining shall provide a continuous monolithic surfacing with uniform thickness throughout the manhole interior. If the thickness is not uniform or is less than specified, it shall be repaired or replaced at no

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additional cost to the Owner.

2. If the Engineer has to enter the manhole to inspect the work, the Contractor shall provide forced air ventilation, gas monitors, harnesses, lights, confined space entry, etc. for the Engineer or Owner to enter the manhole and perform the inspection in strict and complete accordance with OSHA requirements at no additional cost to the Owner.

B. Preparation of Test Samples

1. Samples shall be taken of the installed liner each day that the lining is installed in the following manner:

Number of Manholes Lined in One Day	Number of Samples Taken
1-5	1
6-10	2
11-15	3
16 or more	4

2. Samples shall be taken at equally spaced intervals throughout the workday. The frequency of tests may be increased by the Engineer and performed by the Contractor at no additional cost to the Owner when the required tests indicate that the installed lining does not meet the Specification.

C. Strength & Bonding Testing Procedures

Samples shall be cube samples. A minimum of six (6) cubes shall be taken for each sample testing. The samples shall be tested in accordance with the applicable ASTM standards to verify that the installed liner meets the compressive strength requirements specified herein and the lining manufacturer's published product data. Tests shall include 7-day and 28-day strength tests (3 cubes for each time period per sample). Shrinkage and bond strength tests shall be performed on each batch or lot of material shipped to the Contractor. Testing shall be performed by an independent laboratory with all associated costs paid by the Contractor. The test results shall be submitted to the Engineer immediately when available and no later than 30 days after lining installation.

D. Vacuum Testing

1. All manholes shall be vacuum tested when ALL manhole rehabilitation is completed. Manholes shall not be tested until at least 7 days after installation of lining.

2. Vacuum testing shall be performed in accordance with ASTM C 1244.

3. The Engineer or Owner shall be present for all testing. The Contractor shall notify the Engineer 48 hours prior to testing.

4. The Contractor shall submit test reports of the testing which include: the project name, manhole tested, testing data (vacuum pressure, duration of test, etc.) and whether the manhole passed or failed the test. Test reports must be submitted citing the reason for failure noted on the report.

5. Any manhole failing the test shall be repaired and retested immediately by the Contractor at no additional cost to the Owner.

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E. Finished Lining Systems

1. There shall be no groundwater infiltration or other leakage (active or previously active) through the manhole walls, benches, inverts or pipe connections at the manhole after it has been lined.

2. If leakage is detected, it shall be eliminated with an appropriate cement mortar, grout or sealant as recommended by the manufacturer and approved by the Engineer at no additional cost to the Owner. Injection grouting may be required to stop leaks around or in invert channels, pipe connections and benches.

3. The Engineer's decision on how defective lining shall be final. If any lining is found to be defective after it has been installed or during the warranty period, it shall be repaired or replaced in a manner satisfactory to the Engineer and at no additional cost to the Owner.

4. Payment shall not be made for the installed lining until:

   a. The manhole passes the vacuum test
   b. The final post-rehabilitation CCTV showing installed CIPP connecting to the manhole as specified elsewhere in the Specification.

F. Reference Standards

The following American Society for Testing and Materials (ASTM) standards are referenced herein:

ASTM C 78 Standard Test Method for Flexural Strength of Concrete

ASTM C 94 Standard Test for Ready Mix Concrete

ASTM C 109 Standard Test Method for Compressive Strength of Hydraulic Cement Mortars

ASTM C 234 Standard Test Method for Comparing Concretes on the Basis of the Bond Developed with Reinforcing Steel

ASTM C 267 Standard Test Method for Chemical Resistance of Mortars, Grouts and Monolithic Surfaces

ASTM C 321 Standard Test Method for Bond Strength of Chemical Resistant Mortars

ASTM C 496 Standard Test Method for Splitting Tensile Strength of Cylindrical Concrete Specimens

ASTM C 596 Standard Test Method for Drying Shrinkage of Mortars Containing Portland cement

ASTM C 666 Standard Test Method for Resistance of Concrete to Rapid Freezing and Thawing

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ASTM C 882 Standard Test Method for Bond Strength of Epoxy-Resin Systems Used with Concrete by Slant Shear

ASTM C 952 Standard Test Method for Bond Strength of Mortar to Masonry Units

ASTM C 1244 Standard Test Method for Concrete Sewer Manholes by the Negative Pressure (Vacuum) Test

ASTM D 638 Standard Test Method for Tensile Properties of Plastics

ASTM D 790 Standard Test Method for Flexural Properties of Unreinforced and Reinforced Plastics

G. Cured-In-Place-Pipe: The materials and processes must be reasonably available for pre-inspection, during installation, and post-installation inspections. Areas which require inspection include (but are not limited to) the following:

1. Materials used in the tube should exhibit sufficient transparency enough to allow visual inspection to assure the quality of resin-impregnation.

2. Temperature-sensing devices, such as thermocouples, shall be located between the existing pipe and the CIPP pipe to ensure complete cure of the entire wall thickness. After completion of the lining process and reinstatement of service connections, the installation shall be inspected with a 360° integral lighthead camera. This post-installation television inspection is to take place within 24-hours after completion of each section. No Work shall be accepted that fails this post-installation television inspection. Post installation videos shall be provided to the Owner within 24-hours after their completion. Post construction videos shall be submitted to the Owner before final invoices, including retainage, are released.

3. All workmanship and materials will meet the standards of the industry. The finished CIPP shall be continuous over the length of pipe between two manholes and shall be an impermeable, joint-less conduit, free from visual defects such as foreign inclusions, dry spots, pin holes, lifts, or delamination. Wrinkles in the CIPP, (other than minor, longitudinal pressure wrinkles) will not be acceptable. The Owner/Engineer shall determine as to the acceptability of pressure wrinkling with that decision being final. In the event the finished liner does not fit tightly against the original pipe at its termination point(s), the space between the liner and the pipe shall be made watertight, utilizing manhole end seals, hydro-tite gaskets, or approved equal.

H. Acceptance Testing of CIPP

1. The Owner/Engineer may, at their discretion, direct the Contractor to collect samples of the cured CIPP for laboratory determination of flexural strength, flexural modulus and wall thickness for each test sample during the execution of this Contract. These three individual analyses shall comprise one completed test. All samples shall be collected per the sampling protocols set forth in ASTM F-1216.

2. Upon notification by the Engineer, the Contractor shall remove one

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restrained sample of the installed liner at least 12 inches in length for testing. For sewers 15 inches and larger, plate samples may be taken and cured in the same water as the installed CIPP. For each sample taken, the Contractor shall cut and deliver a 1-inch wide representative sample (taken at least 2 inches from the end of the specimen) to the Engineer. The sample delivered to the Engineer shall be labeled and removed from any restraining mold. The Engineer may return such samples to the Contractor for disposal.

3. The tests shall be used to verify that the installed CIPP meets these specifications. CIPP thickness shall be measured in accordance with ASTM 05813. Flexural properties shall be determined per ASTM 0790. The Contractor shall label and date all samples and deliver the samples directly to the Owner/Engineer. All testing shall be performed by an independent, ASTM-certified testing laboratory of the Owner/Engineer's designation and at the Owner's expense. Payment to the Contractor shall be withheld pending the Owner/Engineer's acceptance of the CIPP test results.

4. Any liner that does not meet the specified strength and/or thickness requirements, regardless of the amount below the specified requirements, shall be corrected by the Contractor in a manner approved by the Owner/Engineer at no additional cost to the Owner. The Owner/Engineer's decision on how to correct deficient CIPP installations shall be final.

3.07 Protection and Restoration Of Work Area

A. General: Return all items and all areas disturbed, directly or indirectly by work under these Specifications, to their original condition or better, as quickly as possible after work is started.

1. The Contractor shall plan, coordinate, and prosecute the work such that disruption to personal property and business is held to a practical minimum.

2. Prepare photographic documentation of sensitive areas along the project route/site to document conditions existing prior to project construction.

3. All construction areas abutting lawns and yards of residential or commercial property shall be restored promptly. Backfilling of underground facilities, ditches, and disturbed areas shall be accomplished on a daily basis as work is completed. Finishing, dressing, and grassing shall be accomplished immediately thereafter, as a continuous operation within each area being constructed and with emphasis placed on completing each individual yard or business frontage. Care shall be taken to provide positive drainage to avoid ponding or concentration of runoff.

4. Handwork, including raking and smoothing, shall be required to ensure that the removal of roots, sticks, rocks, and other debris is removed in order to provide a neat and pleasing appearance.

5. The County or the Georgia Department of Transportation will be authorized to stop all work by the Contractor on its right-of-way when restoration and cleanup are unsatisfactory and to require appropriate remedial measures.

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B. Man Made Improvements: Protect, or remove and replace with the Engineer's approval, all fences, walkways, mail boxes, pipe lines, drain culverts, power and telephone lines and cables, property pins and other improvements that may be encountered in the work.

C. Cultivated Growth: Do not disturb cultivated trees or shrubbery unless approved by the Engineer. Any such trees or shrubbery, which must be removed, shall be heeled in and replanted under the direction of an experienced nurseryman.

D. Cutting of Trees: Do not cut trees for the performance of the work except as absolutely necessary. Protect trees that remain in the vicinity of the work from damage from equipment. Do not store spoil from excavation against the trunks. Remove excavated material stored over the root system of trees within 30 days to allow proper natural watering of the root system. Repair any damaged tree over 3 inches in diameter, not to be removed, under the direction of an experienced nurseryman. All trees and brush that require removal shall be promptly and completely removed from the work area and disposed of by the Contractor. No stumps, wood piles, or trash piles will be permitted on the work site.

E. Disposal of Rubbish: Dispose of all materials cleared and grubbed during the construction of the project in accordance with the applicable codes and rules of county, state and federal regulatory agencies.

F. Swamps and Other Wetlands

1. The Contractor shall not construct permanent roadbeds, berms, drainage structures or any other structures, which alter the original topographic features within the easement.

2. All temporary construction or alterations to the original topography will incorporate measures to prevent erosion into the surrounding swamp or wetland. All areas within the easement shall be returned to their original topographic condition as soon as possible after work is completed in the area. All materials of construction and other non-native materials shall be disposed by the Contractor.

3. The Contractor shall provide temporary culverts or other drainage structures, as necessary, to permit the free migration of water between portions of a swamp, wetland or stream, which may be temporarily divided by construction.

4. The Contractor shall not spread, discharge or dump any fuel oil, gasoline, pesticide, or any other pollutant to adjacent swamps or wetlands.

G. Bypassing or spilling wastewater onto the ground, into the trench, or into adjacent waters is prohibited.

H. Dust Control: The Contractor shall use all means necessary to control dust on and near the work, and on and near all off-site borrow areas when dust is caused by the operations during performance of the work or if resulting from the condition in which the subcontractor leaves the site. The Contractor shall thoroughly moisten all surfaces as required to prevent dust being a nuisance to the public, neighbors, and concurrent performance of work on the site.

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END OF SECTION

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Part 1 General

1.01 Scope

A. The work covered by this Section consists of furnishing and installing all materials and labor necessary to raise or lower manholes as shown on the Drawings, directed by the Engineer, or specified herein.

Part 2 Products

2.01 Materials

A. All materials shall be as specified in Section 02730 of these Specifications.

Part 3 Execution

3.01 General

A. Final manhole cover level shall be flush with final road surface.

B. For outfalls, manhole cover level shall be approximately 24 inches above ground level unless otherwise directed by the Engineer.

C. Safety: Pay particular attention to the requirements for confined space entry and the use of gas monitors and ventilation systems.

3.02 Adjusting up to 3 inches

A. Remove manhole cover and clean all rust and debris from seating areas with wire brush or other abrasive means to ensure seating areas are completely clean.

B. Take measurements to determine exact height of risers to be used.

C. Add appropriately sized steel risers to ring to raise cover up to 3-inches in height. If using plastic risers, use combinations of 1-inch or 1½ -inch risers.

D. Replace manhole cover.

3.03 Adjusting greater than 3 inches and less than 12 inches

A. Remove manhole cover and clean all rust and debris from seating areas with wire brush or other abrasive means to ensure seating areas are completely clean.

B. Take measurements to determine exact height of adjustment required.

C. Check for utility locates. If there are any missing utility locates, do not excavate, contact the Engineer immediately.

D. For any excavation work around utilities, perform hand digging until all marked utilities have been exposed and secured.

E. For manholes located in paved areas, saw cut a 60-inch by 60-inch square around manhole cover.

F. Excavate all material up to a minimum of 10-inches deep around manhole within 60-inch by 60-inch square area.

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G. Remove manhole frame and cover to expose cone.

H. Add an appropriate number of pre-cast concrete spacers to cone.

I. If brick layers are found, remove brick and replace with pre-cast concrete spacers.

J. Use at least ¾-inch of non-shrink grout between spacers.

K. Replace manhole frame and seal with at least ¾-inch non-shrink grout.

L. For roadways, backfill using crusher run or other approved material. Compact in 6-inch layers using mechanical tamper, compacted up to 10-inches below ground surface.

3.04 Adjusting for 12 inches and greater.

A. Remove manhole cover and clean all rust and debris from seating areas with wire brush or other abrasive means to ensure seating areas are completely clean.

B. Take measurements to determine exact height of adjustment required. Determine what combination of manhole risers, pre-cast concrete spacers, and steel or plastic riser rings will be utilized to achieve required adjustment. Obtain approval from Engineer prior to initiating adjustment work.

C. Check for utility locates. If there are any missing utility locates, do not excavate, contact the Engineer immediately.

D. For any excavation work around utilities, perform hand digging until all marked utilities have been exposed and secured.

E. For manholes located in paved areas, saw cut a 60-inch by 60-inch square around manhole cover.

F. Excavate all material around manhole within 60-inch by 60-inch square area to the depth required for the adjustment, using the method of trench stabilization recommended for the specific soil types, depth, and general site conditions per reference material provided as part of the competent person certification.

G. Remove manhole frame, cover, and cone to expose manhole.

H. Add an appropriate number of manhole risers and pre-cast concrete spacers.

I. Seal all joints on the inside with non-shrink grout. Use at least ¾-inch of non-shrink grout between spacers.

J. If brick layers are found, remove brick and replace with pre-cast concrete spacers.

K. Replace manhole frame and seal with at least ¾-inch non-shrink grout.

L. For roadways, backfill using crusher run or other approved material. Compact in 6-inch layers using mechanical tamper, compacted up to 10-inches below ground surface.

3.05 General Clean Up and Restoration

A. In paved areas, after final backfill and compaction, coat the vertical wall faces of

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the cut pavement with a solution of Portland cement and water mixed to a consistency of heavy paint.

B. Fill the top 10-inches of the excavation with Class “A” high early strength Portland cement that has been dyed to match the surrounding pavement.

C. Before leaving the job site, the area should be thoroughly cleared of all surplus material, debris and tools.

D. Submit completed work order form.

END OF SECTION

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Part 1 General

1.01 Scope

A. The work covered by this Section shall consist of furnishing and installing service connections to sewer mains and manholes, of the size and type shown on the Drawings and specified herein.

Part 2 Products

2.01 Materials

A. Connection of service lines or risers to sewer line shall be by means of standard tees or wyes, or as indicated on the Drawings.

B. The cleanout shall be sealed with a threaded cap set in a service box.

C. Service pipe shall be of the same material and quality as the main sewer line.

Part 3 Execution

3.01 Installation

A. Installation of sewer service connection lines shall be in accordance with Section 02730 of these Specifications.

B. Service connections shall be made at the top or from the side at 45 degrees of the sewer line using 6-inch diameter pipe as shown on the Drawings.

C. The service connection shall extend from the sewer line to the edge of the permanent easement or right-of-way and be plugged with a vertical cleanout of the same material.

D. Cleanouts shall be installed on service laterals at the edge of the public right-of-way or easement; at changes in direction greater than 45-degrees; and every 75 feet.

E. Riser connections shall be required when the main sewer line is 10 feet or more below finished grade, unless otherwise directed by the Engineer. Clean out riser pipe shall stop at 4 inches above ground surface.

F. If the service connection ends in rock, the Contractor shall excavate the rock an additional 10 feet beyond the plugged end.

G. Permanent markers approved by the County shall be installed within the public right-of way or easement to facilitate locating of the sewer service lateral in accordance with the requirements of the Georgia Utility Facilities Protection Act.

H. Record the location of the wye connection and cleanout on a copy of the contract drawings to be submitted as Record drawings, and on the report form provided by the County.

END OF SECTION

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Part 1 General

1.01 Scope

Sodding shall consist of establishing certain critical areas with sod as designated on the Drawings.

Part 2 Products

2.01 Sod

A. Sod shall consist of a live, dense, well-rooted growth of turf grass species as noted on the Drawings. The sod shall be free from Johnson grass, nut grass and other obnoxious grasses and shall be of suitable character for the purpose intended and for the soil in which it is to be planted. It shall be un-injured at the time of planting.

B. Sod shall be uniform in thickness, having not over 2-inches or less than 1-inch of soil.

C. Sod strips shall have a consistent width of 12 or 18-inches.

2.02 Fertilizer

A. Fertilizer (10-10-10) used in connection with sodding, shall contain 10 percent nitrogen, 10 percent phosphoric acid and 10 percent potash. The fertilizer shall be furnished in standard containers with the name, weight and guaranteed analysis of the contents clearly marked. The containers shall ensure proper protection in handling and transporting the fertilizer. All commercial fertilizer shall comply with local, state and federal fertilizer laws.

B. Ammonium nitrate shall be a standard commercial product, shall conform to the requirements for other commercial fertilizers as specified above, and shall have a minimum of 32-1/2 percent nitrogen.

2.03 Lime

Agricultural limestone shall be dolomitic and contain not less than 85 percent of calcium carbonate and magnesium carbonate combined, and shall be crushed so that at least 85 percent will pass the No. 10 mesh sieve and 50 percent will pass a No. 40 mesh screen.

2.04 Weather Limitations

Sod shall be planted only when the soil is moist and favorable to growth. No planting shall be done between October 1 and April 1 unless weather and soil conditions are considered favorable and permission is granted by the Engineer.

Part 3 Execution

3.01 Sodding

A. The area to be sodded shall be constructed to the lines and grades indicated on the Drawings or as directed by the Engineer, and the surface loosened to a depth of not less than 3-inches with a rake or other device. If necessary, it shall be sprinkled until saturated at least 1-inch in depth and kept moist until the sod is place thereon. Immediately before placing the sod, the fertilizer shall be uniformly

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applied at the rate of 12 pounds of Grade 10-10-10, or equivalent, per 1,000 square feet. Agricultural limestone shall be applied at the rate of 50 pounds per 1,000 square feet.

B. The entire area shall be thoroughly covered with sod. The sod shall be placed on the prepared surface with the edges in close contact and, as far as possible, with staggered joints.

C. The sod shall be maintained moist from time of removal until reset but shall be placed as soon as practicable after removal from place where growing. Immediately after placing it shall be rolled with a light- weight roller or hand tamped to the satisfaction of the Engineer.

D. Sod on slopes steeper than 3 to 1 shall be held in place by wooden pins about 1-inch square and 6-inches long, driven through the sod into the soil until they are flush with the top of the sod.

3.02 Watering and Maintenance

A. The sod shall be watered as directed by the Engineer for a period of two weeks after which ammonium nitrate shall be applied at the rate of three pounds per 1,000 square feet and the sod given a final watering.

B. The Contractor shall not allow any equipment or material to be placed on any planted area and shall erect suitable barricades and guards to prevent Contractor's equipment, labor or the public from traveling on or over any area planted with sod.

C. It shall be the obligation of the Contractor to secure a satisfactory growth of grass before final acceptance of the Project.

END OF SECTION

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SECTION 15065

HIGH DENSITY POLYETHYLENE (HDPE) PIPE AND FITTINGS

PART 1 – GENERAL

1.01 DESCRIPTION

A. SCOPE

1. This section specifies high density polyethylene (HDPE) pipe and fittings, including acceptable fusion technique and practice, and safe handling and storage.

B. PIPE DESCRIPTION

1. Pipe Supplier shall furnish high density polyethylene (HDPE) pipe and fittings conforming to all applicable standards and procedures as referenced in this specification, and meeting all applicable testing and material properties as described by the applicable standards referenced in this specification or as required within this specification.

1.02 QUALITY ASSURANCE

A. REFERENCES:

1. This section contains references to the following documents. They are a part of this section to the extent referenced in this specification. Where a referenced document contains references to other standards, those documents are included as references under this section as if referenced directly. In the event of a conflict between the requirements of this section and those of the referenced documents, the requirements of this specification shall prevail.

2. Unless otherwise specified, references to documents shall mean the latest published edition of the referenced document in effect at the time of construction.

Reference	Title
AWWA C651	Standard for Disinfecting Water Mains
ANSI/AWWA C901	Polyethylene (PE) Pressure Pipe and Tubing, ½ In. (13 mm) Through 3 In. (76 mm) for Water Service
ANSI/AWWA C906	Polyethylene (PE) Pressure Pipe and Fittings, 4 In. (100 mm) Through 63 In. (1,600 mm), for Water Distribution and Transmission
ASTM C923	Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes and Laterals
AWWA M55	Manual of Water Supply Practices, PE Pipe–Design and Installation
ASTM D1603	Standard Test Method for Carbon Black in Olefin Plastics
ASTM D2321	Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications
ASTM D2774	Standard Practice for Underground Installation of Thermoplastic Pressure Piping
ASTM D3035	Standard Specification for Polyethylene (PE) Plastic Pipe (DR-PR) Based on Controlled Outside Diameter
ASTM D3261	Standard Specification for Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing
ASTM D3350	Standard Specification for Polyethylene Plastics Pipe and Fittings Materials
ASTM D4218	Standard Test method for Determination of Carbon Black Content in Polyethylene Compounds by the Muffle-Furnace Technique
ASTM F585	Standard Practice for Insertion of Flexible Polyethylene Pipe Into Existing Sewers
ASTM F714	Standard Specification for Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Outside Diameter
ASTM F1055	Standard Specification for Electrofusion Type Polyethylene Fittings for Outside Diameter Controlled Polyethylene Pipe and Tubing
ASTM F1290	Standard Practice for Electrofusion Joining Polyolefin Pipe and Fittings

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Reference	Title
ASTM F1417	Standard Test Method for Installation Acceptance of Plastic Gravity Sewer Lines Using Low-Pressure Air
ASTM F1962	Standard Guide for Use of Maxi-Horizontal Directional Drilling for Placement of Polyethylene Pipe or Conduit Under Obstacles, Including River Crossings
ASTM F2164	Standard Practice for Field Leak Testing of Polyethylene (PE) Pressure Piping Systems Using Hydrostatic Pressure
ASTM F2206	Standard Specification for Fabricated Fittings of Butt-Fused Polyethylene (PE) Plastic Pipe, Fittings, Sheet Stock, Plate Stock, or Block Stock
ASTM F2620	Standard Practice for Heat Fusion Joining of Polyethylene Pipe and Fittings
ASTM F2786	Standard Practice for Field Leak Testing of Polyethylene (PE) Pressure Piping Systems Using Gaseous Media Under Pressure (Pneumatic Leak Testing)
NSF/ANSI 61	Drinking Water System Components–Health Effects
PPI TR-4	PPI Listing of Hydrostatic Design Basis (HDB), Strength Design Basis (SDB), Pressure Design Basis (PDB) and Minimum Required Strength Ratings for Thermoplastic Piping Materials for Pipe
PPI TR-46	Guidelines for Use of Mini-Horizontal Directional Drilling for Placement of High Density Polyethylene Pipe

B. MANUFACTURER REQUIREMENTS

1. High density polyethylene (HDPE) pipe and fittings shall be manufactured in accordance with the following standards
   a. ASTM D3035 – ½ in through 24-in pipe
   b. ASTM F714 – 3-in through 54-in pipe
   c. AWWA C901 – 1/2 In. (130mm) through 3 In. (76 mm) pipe and tubing
   d. AWWA C906 – 4 In. (100 mm) through 63 In (1,600 mm) pipe and fabricated fittings
   e. ASTM D3261 – butt fusion fittings, saddles and flange adapters
   f. ASTM F1055 – electrofusion couplings and saddles.
   g. ASTM F2206 – fabricated fittings

C. FUSION TECHNICIAN REQUIREMENTS

1. Each Fusion Technician shall be separately qualified to make each type of fusion joint. Fusion joint types are butt fusion, saddle fusion and electrofusion. Qualification to make one type of fusion joint shall not qualify a Fusion Technician to make a different type of fusion joint.
2. Each Fusion Technician making butt fusion joints shall be qualified to make butt fusion joints in accordance with ASTM F2620. Qualification shall have occurred not more than 12 months before performing fusion joining on site in accordance with this specification. Qualification shall be a documented demonstration of proficiency by making joints in accordance with ASTM F2620 that are proved to be satisfactory by destructive testing in accordance with ASTM F2620.
3. Each Fusion Technician making saddle fusion joints shall be qualified to make saddle fusion joints in accordance with ASTM F2620. Qualification shall have occurred not more than 12 months before performing on-site fusion joining in accordance with this specification. Qualification shall be a documented demonstration of proficiency by making joints in accordance with ASTM F2620 that are proved to be satisfactory by destructive testing in accordance with ASTM F2620.
4. Each Fusion Technician making electrofusion fitting joints shall be qualified to make electrofusion fitting joints in accordance with ASTM F1290 and the electrofusion fitting manufacturer's recommended procedure. Qualification shall have occurred not more than 12 months before performing on-site fusion joining in accordance with this specification.

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Qualification shall be a documented demonstration of proficiency by making joints in accordance with ASTM F1290 and the electrofusion fitting manufacturer's recommended procedure that are proved to be satisfactory by destructive testing in accordance with ASTM F1290 and the electrofusion fitting manufacturer's recommended procedure.

D. APPROVED SUPPLIERS

1. Pipe and fitting suppliers shall be approved by the Project Engineer.
   a. The following pipe manufacturers are approved:
      1) WL Plastics, Chevron, Phillips 66 Driscopipe, or equal.
   b. The following fitting manufacturers are approved:
      1) WL Plastics, Chevron, Phillips 66 Driscopipe, or equal.

E. WARRANTY

1. Pipe and fitting suppliers shall provide a one-year warranty covering defects in product material and workmanship. A successful pressure test or pressure leak test prior to the expiration of the warranty period shall not relieve the supplier of warranty responsibility for the full warranty term.
2. Fusion providers shall provide a one-year warranty from the date of installation acceptance covering defects in fusion joining workmanship that shall provide for remaking defective butt fusion, saddle fusion or electrofusion joints. A successful pressure test or pressure leak test prior to the expiration of the warranty period shall not relieve the installer of warranty responsibility for the full warranty term.

F. SUBMITTALS

1. The following information shall be submitted by pipe and fitting suppliers:
   a. Name of the pipe manufacturer and a list of the piping and quantities to be provided by manufacturer.
   b. Name(s) of fitting manufacturer(s) and lists of fittings and quantities to be provided by manufacturer.
   c. Pipe and fitting product data indicating conformance with this specification, applicable standards, and warranty provisions, including written documentation regarding any intended variance from this specification and applicable standards.
   d. At the time of shipment, the supplier shall provide certified documentation of pipe and fitting conformance with this specification and applicable pipe and fitting standards specified herein.
2. The following information shall be submitted by Fusion Providers.
   a. Documentation that each Fusion Technician has met requirements for joining proficiency for each type of fusion joint performed by the Fusion Technician under this specification.
   b. Documentation of conformance with this specification and applicable standards, including written documentation regarding any intended variance from this specification and applicable standards. This will include fusion joint warranty information and recommended project specific fusion parameters, including criteria logged and recorded by data logger.
   c. The following AS-RECORDED DATA is required from the Contractor and/or Fusion Provider:
      1) Fusion reports for each fusion joint performed on the project, including joints that were rejected. Submittals of the Fusion Technician's joint reports are required as requested by the Owner or Engineer. Specific requirements of the Fusion Technician's joint report shall include:

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(a) Pipe or fitting size and DR or pressure class rating

(b) Fusion equipment size and identification

(c) Fusion Technician Identification

(d) Job Identification Number

(e) Fusion Number

(f) Fusion joining parameters

(g) Ambient Temperature

PART 2 – PRODUCTS

2.01 PIPE AND FITTINGS FOR FORCED MAIN, RECLAIMED WATER, IRRIGATION WATER, or WASTEWATER SERVICE

A. PE4710 pipe and fitting material (compound):

1. PE4710 material (compound) shall conform to material requirements specified in ASTM F714 for pipe and ASTM D3261 for fittings as applicable for the pipe or fitting. PE4710 material (compound) shall meet the requirements of ASTM D3350 and shall meet or exceed a cell classification of 445574 per ASTM D3350.

2. PE4710 material (compound) shall have a hydrostatic design stress (HDS) rating for water at 73°F (23°C) of not less than 1000 psi that shall be listed in PPI TR-4 in the name of the pipe manufacturer.

3. PE4710 material (compound) shall have a hydrostatic design basis (HDB) rating at 140°F (60°C) of not less than 1000 psi that shall be listed in PPI TR-4 in the name of the pipe manufacturer for all force main, reclaimed water, and irrigation water service systems.

4. PE4710 pipe and fitting material (compound) in PE4710 pipe and fittings shall contain color and ultraviolet (UV) stabilizer meeting the requirements of Code C or E per ASTM D3350. Code C material shall contain 2 to 3 percent carbon black to provide indefinite protection against UV degradation when material from the pipe is tested in accordance with ASTM D1603 or ASTM D4218. Code E material used for coextruded OD color stripes or a coextruded ID color layer shall contain sufficient UV stabilizer to protect the pipe against UV degradation for at least 24 months of unprotected outdoor exposure. Coextruded color PE compound material shall be PE4710 pipe material compound, varying only by color and UV stabilizer.

5. Clean rework materials derived from pipe production by the same manufacturer are acceptable as part of a blend with new material for the production of new pipe provided that the rework material is the same PE4710 material designation as the new material (compound) to which it is added. Finished products containing rework material shall meet the requirements this specification.

B. PE4710 pipe and butt fusion fittings shall have plain ends for butt fusion.

C. PE4710 pipe

1. Nominal straight lengths of 3 inch and larger pipe shall be 40 ft. or 50 ft.

2. Nominal coil lengths of 4-inch and smaller pipe shall be 500 ft. Longer or shorter coils such as 800 ft for 4-inch pipe, 1000 ft for 3-inch pipe, or 2000 ft for 2 inch or smaller pipe shall be acceptable. Pipe shall be black with a light reflective interior color to allow for easier/better viewing for television inspection. Coextruded green, lavender or purple stripes or a coextruded green, lavender or purple layer shall be an acceptable option.

3. Pipe shall be permanently marked using heated indent printing in accordance with ASTM F714 as applicable for the pipe size including:

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a. Nominal size and sizing system, e.g., DIOD

b. SDR 17

c. Standard Designation, ASTM F714, material designation, and pressure rating or pressure class for water at 73°F.

1) Marking the Standard Designation on the pipe shall serve as the manufacturer's certification that the pipe has been manufactured, sampled and tested and has been found to comply with the requirements of the standard.

2) The ASTM D3035 or ASTM F714 pipe pressure rating for water at 73°F shall be "PE4710 PRXXX" where XXX = pressure rating in psi

3) The AWWA C901 pipe pressure class for water at 73°F shall be "PE4710 PCXXX" where XXX = pressure class in psi.

4) The AWWA C906 pipe pressure class for water at 73°F shall be "PE3408 PCXXX[1]" where XXX = pressure class in psi.

d. Extrusion production-record code

e. Manufacturer's Trademark or trade name

B. PE4710 fittings

1. PE4710 butt fusion, saddle fusion, electrofusion and fabricated fittings shall be manufactured from PE4710 material (compound) in accordance with this specification.

2. PE4710 fittings shall comply with ASTM D3261 for molded butt fusion and saddle fusion fittings, flange adapters and MJ adapters, or shall comply with ASTM F2206 for fabricated butt fusion fittings, or shall comply with ASTM F1055 for electrofusion fittings.

3. PE4710 fittings shall comply with the marking requirements of ASTM D3261 for molded butt and saddle fusion fittings, flange adapters and MJ adapters or shall comply with the marking requirements of ASTM F2206 for fabricated butt fusion fittings, or shall comply with the marking requirements of ASTM F1055 for electrofusion fittings.

4. PE4710 fittings shall have pressure class ratings not less than the pressure class rating of the pipe to which they are joined.

2.02 FUSION JOINTS

A. Unless otherwise specified, PE4710 pipe and fittings shall be assembled in the field with butt fusion, saddle fusion or electrofusion joints. ASTM F2620 and the pipe manufacturer's recommended procedure (WL Plastics WL101) shall be observed for butt fusion and saddle fusion joints. ASTM F1290 and the electrofusion fitting manufacturer's recommended joining procedure shall be observed for electrofusion joints.

B. Field butt fusion, saddle fusion and electrofusion joints shall be made by Fusion Technicians that are qualified in accordance with this specification to make the specific fusion joint type.

C. Field fusion joints shall be recorded and documented in accordance with this specification.

2.03 CONNECTIONS AND FITTINGS FOR PRESSURE APPLICATIONS

A. Connections shall be defined in conjunction with the linking of project piping, as well as the tie-ins to other piping systems.

B. MECHANICAL FITTINGS

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[1] Per AWWA C906, PE3408 marking and PE3408 PCXXX is required. Pipe may be manufactured using PE4710 material (compound) that is listed in PPI TR-4 as meeting PE3408 requirements.

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1. Acceptable mechanical fittings for use with PE4710 pipe and fittings shall be mechanical fittings that are qualified by the mechanical fitting manufacturer for use with HDPE pipe and fittings.
2. Mechanical fittings for use with HDPE pipe shall provide restraint against longitudinal separation that is inherent to the design of the joint. Mechanical joints that do not provide restraint against pull-out or push-off are prohibited.
3. Mechanical connections to non-HDPE devices and appurtenances shall be by bolted flange adapter or MJ adapter. Flange adapter and MJ adapter connections shall be assembled, installed and tightened in accordance with flange adapter or MJ adapter manufacturer's instructions. Flange bolt tightening shall be in accordance with PPI TN-38.

C. GASKETED, PUSH-ON FITTINGS

1. Gasketed push-on fittings shall be fitted with external mechanical restraints that span across the joint and are assembled in accordance with restraint manufacturer's instructions.
   a. Thrust blocking does not provide acceptable restraint and is prohibited.
   b. Where plain-end PE4710 pipe is assembled with push-on fittings, the PE4710 pipe end shall be fitted with electrofusion restraints so that external mechanical restraint may be secured to the PE4710 pipe.
2. Where PE4710 pipe is connected to gasketed mechanical joint fittings or appurtenances, the connection shall be made by butt fusing a PE4710 MJ Adapter to the PE4710 pipe and connecting the PE4710 MJ Adapter to the mechanical joint fitting or appurtenance.

D. SLEEVE-TYPE COUPLINGS

1. Sleeve-type mechanical couplings shall be manufactured for use with HDPE pipe, and shall be restrained as indicated on the drawings and in these specifications. Unrestrained sleeve-type couplings are prohibited.

E. EXPANSION AND FLEXIBLE COUPLINGS

1. Expansion-type mechanical couplings are prohibited.

F. CONNECTION HARDWARE

1. Bolts and nuts for buried service shall be made of non-corrosive, high-strength, low-alloy steel having the characteristics specified in ANSI/AWWA C111/A21.11, regardless of any other protective coating.

2.04 CONNECTIONS FOR NON-PRESSURE SEWER OR WASTEWATER APPLICATIONS

A. The following connections are to be used in conjunction with tie-ins to other non-pressure sewer piping and structures, and shall be as indicated on the drawings.

B. SLEEVE-TYPE COUPLINGS:

1. Sleeve-type mechanical couplings shall be manufactured for use with solid-wall non-pressure HDPE pipe, and may be restrained or unrestrained as indicated on the drawings and in these specifications.

C. CONNECTION HARDWARE

1. Bolts and nuts for buried service shall be made of non-corrosive high strength, low-alloy steel having the characteristics specified in ANSI/AWWA C111/A21, regardless of any other protective coating.

D. CONNECTION TO NON-PRESSURE MANHOLES AND STRUCTURES

1. Non-pressure PE4710 pipe and fittings shall be connected to manholes and other structures to provide a leak-free, properly graded flow into or out of the manhole or structure.

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2. Connections to existing manholes and structures shall be as specified and shown on the drawings.
    a. For a cored or drilled opening provide a flexible, watertight connection that meets and/or exceeds ASTM C923.
    b. For a knock out opening, provide a watertight connection (waterstop or other method) meeting the material requirements of ASTM C923 that is securely attached to the pipe with stainless steel bands or other means.
    c. Grout opening in manhole wall with non-shrink grout. Pour concrete collar around pipe and outside manhole opening.
3. Connections to a new manhole or structure shall be as specified and shown on the drawings.
    a. A flexible, watertight gasket per ASTM C 923 shall be cast integrally with riser section(s) for all precast manhole and structures.
    b. Drop connections shall be required where shown on drawings.
    c. Grout internal joint space with non-shrink grout.

PART 3 -- EXECUTION

3.01 DELIVERY AND OFF-LOADING

A. All piping shall be bundled or packaged for transportation by commercial carrier to the site.

B. Before off-loading, pipe shall be inspected for damage. Any pipe damaged in shipment shall be assessed and either accepted or rejected as directed by the Owner or Engineer, and the pipe supplier shall be notified of rejected pipe within 7 days of delivery at the site. Rejected pipe shall be quarantined for disposition. Each pipe shipment shall be checked for quantity and proper pipe size, color and type.

C. Pipe shall be off-loaded and handled in accordance with the pipe manufacturer's instructions and AWWA M55.

3.02 HANDLING AND STORAGE

A. Pipe lengths should be placed and stored on level ground. Pipe should be stored at the job site in the unit packaging provided by the manufacturer. The interior of the pipe, as well as all end surfaces, should be kept free from dirt and foreign matter.

B. Pipe shall be handled and supported with the use of woven fiber pipe slings or approved equal. Care shall be exercised when handling the pipe to not cut, gouge, scratch or otherwise abrade the piping in any way. Use of hooks, chains, wire rope or any other handling device which creates the opportunity to damage the surface of the pipe is strictly prohibited.

C. Covering or shading of PE4710 pipe and fittings against exposure to ultraviolet light from sunlight is not required.

3.03 FUSION PROCESS

A. GENERAL

1. Butt and saddle fusion of PE4710 pipe and fittings shall be in accordance with ASTM F2620 and the manufacturer's recommended joining procedure.
2. Electrofusion of PE4710 pipe and fittings shall be performed in accordance with ASTM F1290 and the electrofusion fitting manufacturer's recommended procedure.
3. PE4710 pipe and fittings shall be fused by qualified fusion technicians, as documented by the fusion provider. Training records for qualified fusion technicians shall be available to Owner or Engineer upon request.

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4. As each fusion joint is constructed, pressure, time and temperature parameters shall be recorded and logged by an electronic monitoring device (data logger) affixed to the fusion machine. Joint data shall be submitted as part of the As-Recorded information, in accordance with this specification.
5. Butt fusion machines shall incorporate the following properties, including the following elements:
    a. HEAT PLATE – Heat plates and the non-stick coatings on heating surfaces shall be in good condition without heating surface gouges or scratches. The non-stick coating shall be intact, clean and free of any contamination. Heater controls and temperature indicators shall function properly, and electrical cords and connections shall be in good condition. The heat plate shall maintain a uniform and consistent temperature on all areas of the heating surfaces on both sides of the heat plate.
    b. CARRIAGE – Carriage shall travel smoothly with no binding at less than 50 psi for hydraulic fusion machines. Clamps shall be in good condition with proper inserts for the pipe size being fused.
    c. GENERAL MACHINE – Overview of machine body shall yield no obvious defects, missing parts, or potential safety issues during fusion.
    d. DATA LOGGER – The current version of the pipe supplier's recommended and compatible software shall be used. Protective case shall be utilized for the hand held wireless portion of the unit. Data logger operations and maintenance manual shall be with the unit at all times. If fusing for extended periods of time, an independent 110V power source shall be available to extend battery life.
6. Other equipment specifically required for fusion processes shall include the following:
    a. Pipe rollers shall be used to support pipe to either side of the butt fusion machine and provide for vertical and lateral pipe alignment straight through the butt fusion machine.
    b. A protective enclosure that provides for full machine motion of the clamps, heat plate, fusion assembly and carriage shall be provided for fusion in inclement and/or windy weather. Pipe ends shall be covered or blocked where open pipe ends could allow prevailing winds to blow through the pipe.
    c. Fusion machine operations and maintenance manual shall be kept with the fusion machine at all times.

B. JOINT RECORDING
1. Each fusion joint shall be recorded and logged by an electronic monitoring device (data logger) connected to the fusion machine that shall register and/or record the parameters required by the manufacturer and these specifications. Data not logged by the data logger shall be logged manually and be included in the Fusion Technician's joint report.

C. Any joint that extrudes more than 1/8-inch shall be trimmed to less than 1/8-inch before installation.

3.04 INSTALLATION

A. The PE4710 pipe and fittings shall be installed such that PE4710 pipe curvature is not less than the minimum bending radius recommended by the pipe manufacturer.

B. Direct burial installation of PE4710 pressure pipe shall be in accordance with ASTM D2774 and the pipe manufacturer's recommendations.

C. Direct burial installation of PE4710 non-pressure pipe shall be in accordance with ASTM D2321 and the pipe manufacturer's recommendations.

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D. Installation of PE4710 pipe by horizontal directional drilling shall be in accordance with ASTM F1962 or PPI TR-46 and the pipe manufacturer's recommendations.

E. Installation of PE4710 pipe by sliplining or insertion within a casing or host pipe shall be in accordance with ASTM F585 and the pipe manufacturer's recommendations.

F. Tracer Wire – All PE4710 piping shall be installed with a continuous, insulated TW, THW, THWN, or HMWPE insulated copper, 10 gauge or thicker wire for pipeline location purposes by means of an electronic line tracer.

1. The wires shall be installed along the entire length of the pipe.

2. Sections of wire shall be spliced together using approved splice caps and waterproof seals. Twisting the wires together is not acceptable.

3.05 MAKING CONNECTIONS TO NON-PE4710 PIPING SYSTEMS

A. Approximate locations for non-PE4710 piping systems are shown on the drawings or detailed in the specifications. Prior to making connections into existing piping systems, the Contractor shall:

1. Verify the actual field location, size, piping material and service of non-PE4710 piping systems.

2. Obtain all required non-PE4710 piping manufacturer(s) approved fittings (i.e., saddles, sleeve type couplings, flanges, tees, etc., as shown).

3. Have installed all temporary pumps and/or pipes in accordance with established connection plans.

4. Have on hand pipe stoppers, blind flanges or other devices to seal a valve or appurtenance that fails to seal properly. When applied to pressure rated valves or appurtenances, all such devices shall be pressure rated equal to or greater than the pressure rating of the valve or appurtenance to which they are attached.

B. Where PE4710 pipe connects in-line to unrestrained gasketed push-on piping, the end of the PE4710 pipe shall be anchored in-line within 10 ft of the connection to restrict longitudinal movement of the PE4710 pipe.

3. The PE4710 pipe shall be fitted with a PE4710 wall anchor or electrofusion flex restraints.

4. The PE4710 wall anchor or electrofusion flex restraints shall be encased in reinforced concrete that is sufficient to withstand Poisson effect longitudinal loads in accordance with AWWA M55 In-Line Anchoring.

C. Unless otherwise approved by the Engineer, new piping systems shall be completely assembled and successfully tested prior to making connections to non-PE4710 piping systems.

3.06 PIPE SYSTEM CONNECTIONS

A. Pipe connections shall be installed per applicable standards and regulations, as well as per the connection manufacturer's recommendations and as indicated on the drawings. Pipe connections to structures shall be installed per applicable standards and regulations, as well as per the connection manufacturer's recommendations.

3.07 TRACER WIRE TESTING

A. Upon completion of installation by direct burial, sliplining, directional boring or pipe bursting, the Contractor shall demonstrate that the tracer wire is continuous and unbroken through the entire run of the pipe.

1. Demonstration shall include full signal conductivity (including splices) when energizing for the entire run in the presence of the Owner or Engineer.

2. If the wire is broken, the Contractor shall repair or replace it. Pipeline installation will not be accepted until the tracer wire passes a continuity test.

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3.08 TAPPING FOR POTABLE AND NON-POTABLE WATER APPLICATIONS

A. Tapping shall be performed using standard saddle fusion fittings, electrofusion saddle fittings, or mechanical tapping saddles or sleeves designed for use on HDPE piping. Tapping by threading directly into the PE4710 pipe wall is prohibited.

B. Branching connections requiring a larger diameter shall be made with saddle fusion branch saddle fittings or mechanical branch connection fittings as specified and indicated on the drawings.

C. Equipment used for tapping shall be made specifically for tapping HDPE pipe:

1. Tapping bits shall be slotted “shell” style cutters, specifically made for HDPE pipe. ‘Hole saws’ made for cutting wood, steel, ductile iron, or other materials are strictly prohibited.

2. Manually operated or power operated drilling machines may be used.

D. Taps may be performed while the pipeline is filled with water and under pressure (‘wet’ tap), or when the pipeline is not filled with water and not under pressure (‘dry’ tap).

3.09 TESTING

A. Testing shall comply with all local building codes, statutes, standards, local jurisdiction, and laws.

B. Segments of the pipe may be tested separately in accordance with standard testing procedure, as approved by the Owner and Engineer.

C. HYDROSTATIC LEAKAGE TESTING FOR PRESSURE PIPING

1. Hydrostatic leakage testing shall comply with ASTM F2164. Joint leakage and any defective materials and/or workmanship shall be repaired or replaced by the Contractor at no additional cost to the Owner.

2. Pneumatic (compressed air) leakage testing of PE4710 pressure piping is prohibited.

D. LEAKAGE TESTING FOR NON-PRESSURE PIPING

1. Non-pressure piping such as sewers shall be tested for excessive leakage in accordance with ASTM F1417.

2. Joint leakage and any defective materials and/or workmanship shall be repaired or replaced by the Contractor at no additional cost to the Owner.

E. DISINFECTION OF THE PIPELINE FOR POTABLE WATER PIPING

1. After installation, the pipeline, having passed all required testing, shall be disinfected prior to being put into service per AWWA C651 unless otherwise directed by the Owner or Engineer.

END OF SECTION

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Exhibit I – Exhibit 2: Details

Details – 100 Series

Details – 300 Series

Details – 400 Series

Details – 500 Series

Details – 700 Series

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Exhibit I – Exhibit 2: Details – 100 Series

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DWG. NO.	DESCRIPTION
100	INDEX AND GENERAL NOTES
101	UTILITY LOCATION TYPICAL CROSS-SECTION
102	CONDUIT LOCATION FOR UNDERGROUND UTILITIES COMBINATION SEWER EASEMENT
103	ALLOWABLE TRENCH WIDTHS WATER MAINS
105	STRUCTURE ADJUSTMENT
106	MANDREL DETAIL FOR PVC PIPE INSTALLATION
107	ROADWAY CROSSING BORE AND CASE DETAIL
109	PAVEMENT CUT REPAIRS/STANDARD UTILITY CUT TYPE A, B & C
110	CONCRETE ENCASEMENT
113	PRECAST CONCRETE MANHOLE DETAILS
114A	STANDARD SEWER MANHOLE HDPE MANHOLES - NON-TRAFFIC
114B	STANDARD SEWER MANHOLE HDPE MANHOLES - TRAFFIC
114C	STANDARD SEWER MANHOLE FIBERGLASS MANHOLES
114D	STANDARD SEWER MANHOLE PVC/PRECAST CONCRETE HYBRID MANHOLES
114E	STANDARD SEWER MANHOLE TEE BASE MANHOLES
114F	STANDARD SEWER MANHOLE PRECAST MANHOLES
115	STANDARD SEWER MANHOLES INSIDE AND OUTSIDE VERTICAL DROPS
116	FORCE MAIN DISCHARGE MANHOLE DETAILS
117	PIPE SEWER DATA DUCTILE IRON, CONCRETE, AND HDPE PIPE INSTALLATION
118	SEWER PIPE DITCH CROSSING
119	TYPICAL PIPE HANGER AND SUPPORT DETAILS
120	PIPE JOINT DEFLECTION AND BOLT USAGE
122	TAPPING SLEEVE AND VALVE INSTALLATION DETAILS
124	STUB OUT AND EXTENSION DETAILS
125	THRUST RESTRAINT CONCRETE COLLAR
126	THRUST RESTRAINT TIE ROD CHART
127	THRUST RESTRAINT TIE ROD INSTALLATION
128	THRUST RESTRAINTS STRAP AND ROD DETAILS
129	CASING/PIPE SUPPORT INSTALLATION
130	PIPE JOINING USE OF SOLID SLEEVE
131	DRIVEWAY CUT REPAIRS CONCRETE, GRAVEL AND ASPHALT
132A	STANDARD THRUST BLOCKS DETAILS
132B	STANDARD THRUST BLOCKS DETAILS
133	MAIN EXTENSION BLOCKING DETAILS AND SUBDIVISION INTERSECTION DETAILS
134	SIDEWALK, CURB, AND GUTTER REPAIRS
135	ROADWAY CROSSING BACK TAP DETAIL

GENERAL NOTES

1. HDPE AND C900 PVC PIPES TO BE USED WITH WASTEWATER APPLICATIONS ONLY.
2. DUCTILE IRON PIPES MAY BE USED FOR WASEWATER APPLICATIONS ONLY WITH SPECIFIC APPROVAL BY FCPW.
3. MINIMUM THICKNESS FOR HDPE PIPES SHALL BE DR 17.
4. FOR SEWER INSTALLATIONS WITH NO LIVE LOAD AND NOT ALONG STREAMS BANKS,THE STANDARD PIPE SHALL BE DR 25 PVC DUCTILE IRON PIPE SIZE (DIPS), FOR PIPE SIZES 8-INCH THROUGH 48-INCH WITH MAXIMUM BURY DEPTH OF 20 FEET.
5. FOR SEWER INSTALLATIONS WITH HS20/25 LIVE LOADS, OR WITH BURY DEPTH GREATER THAN 20 FEET AND NOT ALONG STREAM BANKS, THE STANDARD PIPE SHALL BE DUCTILE IRON PIPE SIZE (DIPS) DR 18 PVC FOR PIPE SIZES 8-INCH THROUGH 30-INCH.
6. FOR FORCE MAINS, REGARDLESS OF BURY DEPTH, LIVE LOAD REQUIREMENTS AND NOT ALONG RIVER BANKS, THE STANDARD PIPE SHALL BE DR 18 PVC DUCTILE IRON PIPE SIZE (DIPS), OR DR 9 HDPE DUCTILE IRON PIPE SIZE (DIPS), FOR PIPE SIZES 8-INCH THROUGH 30-INCH.
7. ALL FORCE MAINS SHALL BE BUTT WELDED HDPE OR FUSIBLE PVC EXCEPT AT CREEK CROSSINGS AND BORINGS, DIP MAY BE USED ONLY ON AN EXCEPTIONAL BASIS AND APPROVED BY FCPW.
8. CREEK CROSSINGS AND BORINGS SHALL BE RESTRAINED JOINT DIP (SEE DETAIL 118).
9. ALL CONSTRUCTION METHODS AND MATERIALS AND MAJOR GLANDS TO BE USED IN FULTON COUNTY MUST BE MADE OF HDPE AND COMPLY WITH AWWA C906 MATERIAL DESIGNATION CODE PE4710, GLANDS THAT DO NOT MEET THE SPECIFICATIONS WILL NOT BE ACCEPTED.
10. RESTRAINT JOINTS WILL BE USED ON ALL HDPE TEES AND BENDS, THRUST BLOCKING DOES NOT PROVIDE ACCEPTABLE RESTRAINT AND IS PROHIBITED.
11. FOR SEWER INSTALLATIONS WITH NO LIVE LOADS AND LOCATED ALONG STREAM BANKS, THE STANDARD PIPE SHALL BE DR 17 HDPE DUCTILE IRON PIPE SIZE (DIPS), FOR PIPE SIZES 8-INCH THROUGH 48-INCH AND MAXIMUM BURY DEPTH OF 20 FEET.
12. WATER SERVICES TO USE DUCTILE IRON PIPES ONLY.

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FULTON COUNTY STANDARD DETAIL 100

INDEX AND GENERAL NOTES

DATE	REVISIONS	DATE	REVISIONS

DGS/DRN/CHKD: XXX
APPROVED: XXX
DATE: XX-X-XX

FULTON COUNTY

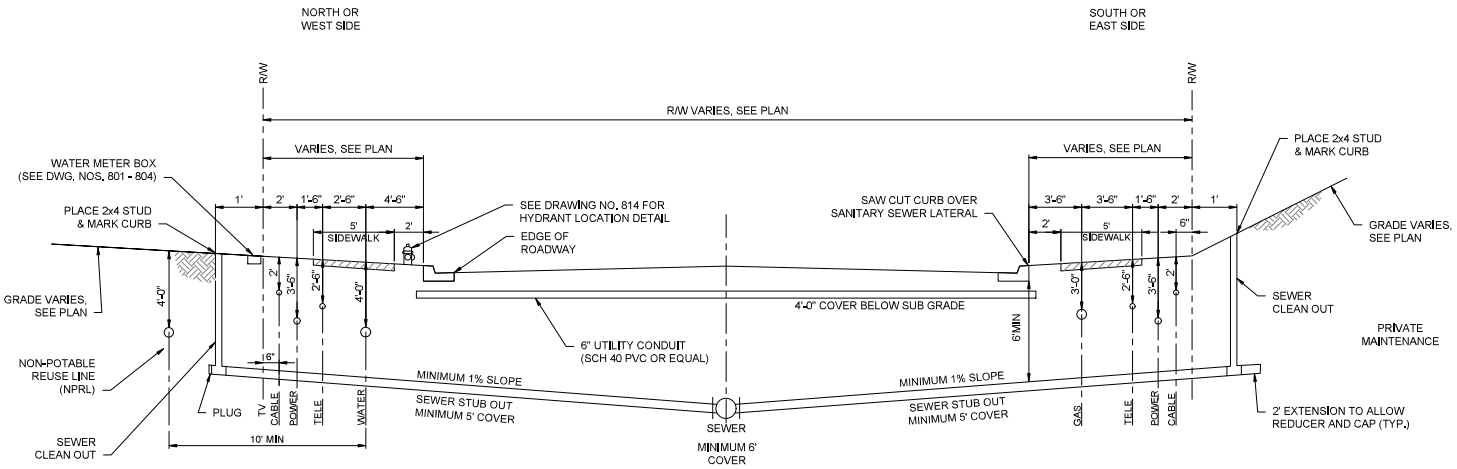
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NOTES:

1. UNDER MULTIPLE UTILITY INSTALLATIONS OR RELOCATIONS, THE DEEPEST UTILITY SHALL BE INSTALLED AND TESTED FIRST TO AVOID INTERFERENCE WITH SERVICE LATERALS OR LINES.
2. UNLESS OTHERWISE DIRECTED BY FULTON COUNTY, INSTALLATION OF SEWER FORCE MAIN AND WATER MAIN SHALL BE INSTALLED TO THE LOWER ELEVATION INDICATED.
3. EXCEPT FOR WATER AND SEWER MAINS, ALL UTILITIES SHOWN ARE FOR ILLUSTRATION ONLY.
4. WHERE GRADE IS ELEVATED ABOVE ROAD, THEN THE DEPTH OF COVER SHALL BE MEASURED FROM EDGE OF PAVEMENT.
5. WATER MAIN SHALL BE LOCATED 4.5 FEET FROM BACK OF CURB IN NEW DEVELOPMENTS.



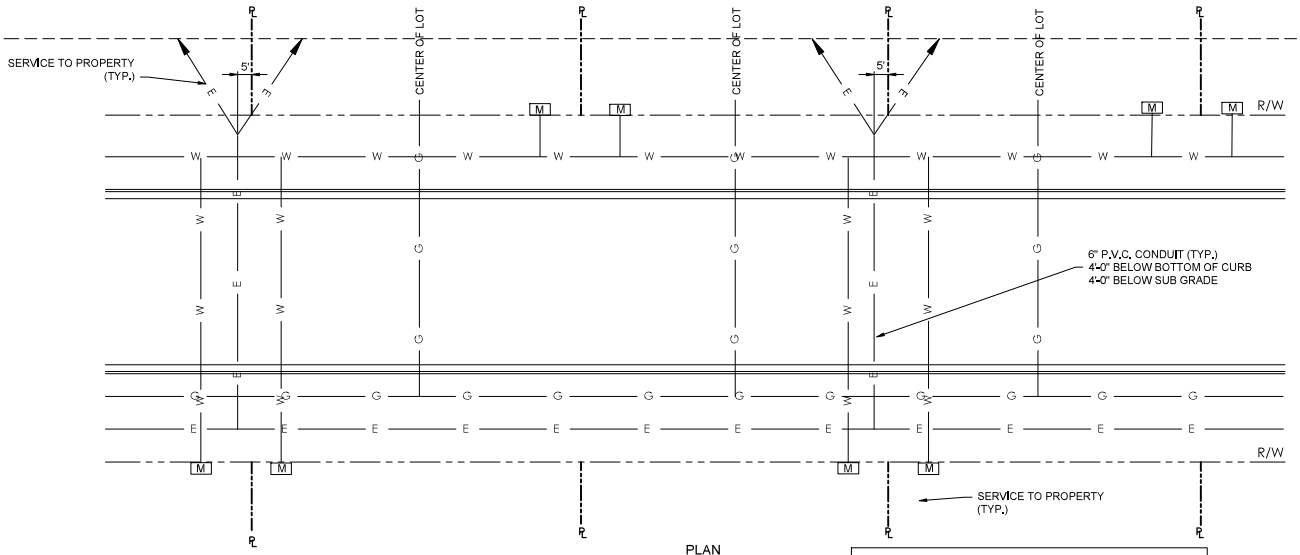
SECTION

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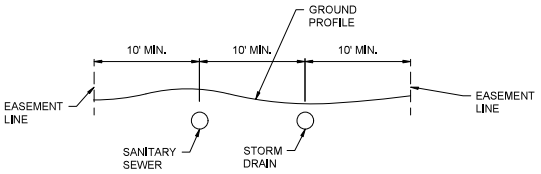
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FULTON COUNTY STANDARD DETAIL 101 UTILITY LOCATION TYPICAL CROSS-SECTION		DATE	REVISIONS	DATE	REVISIONS	DGS/DRN/CHKD: XXX APPROVED: XXX DATE: XX-X-XX	FULTON COUNTY	FULTON COUNTY PUBLIC WORKS 141 PRYOR ST. ATLANTA, GA. 30303 404-612-7400 FAX: 404-224-0498	DRAWING NO. 101

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PLAN
NTS



PROFILE
NTS

TYPICAL COMBINATION SAN. SEWER AND
STORM DRAIN PERMANENT EASEMENT

LEGEND

E	ELECTRIC LINE
G	GAS LINE
W	WATER LINE
	RIGHT OF WAY (R/W) LINE
	PARCEL LINE
M	WATER METER

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FULTON COUNTY STANDARD DETAIL 102

CONDUIT LOCATION FOR UNDERGROUND UTILITIES
COMBINATION SEWER EASEMENT

DATE	REVISIONS	DATE	REVISIONS
M/Y	XXX	M/Y	XXX

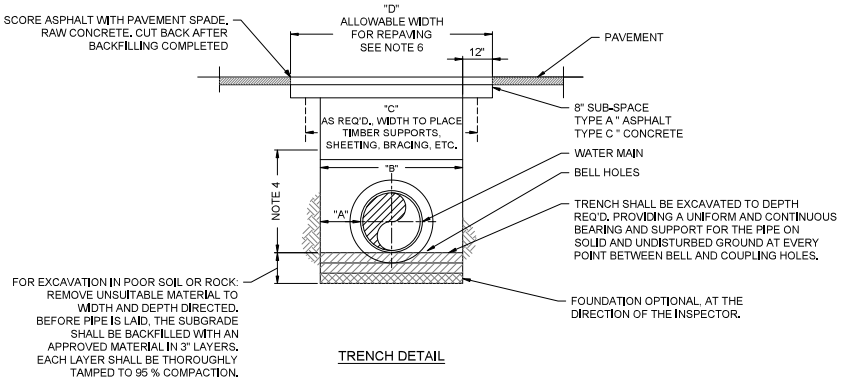
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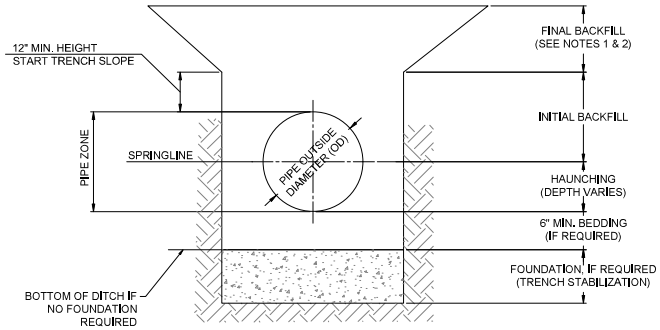
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TRENCH DETAIL



TRENCH TERMINOLOGY

NOTES:

1. COMPACTION: BACKFILLS SHALL BE BUILT-UP IN LAYERS AND EACH LAYER SHALL BE THOROUGHLY COMPACTED BEFORE BEGINNING ANOTHER LAYER. LAYERS SHALL BE NO MORE THAN 6" IN DEPTH. PUDDLING WILL NOT BE PERMITTED, NOR WILL FROZEN OR WET MATERIAL BE PLACED IN TRENCHES.
2. COMPACTION STANDARDS: ALL BACKFILL MATERIALS USED SHALL CONTAIN A SUFFICIENT AMOUNT OF MOISTURE FOR PROPER COMPACTION AND THESE MATERIALS SHALL BE COMPACTED AT NOT LESS THAN 95% OF THEIR OPTIMUM COMPACTION FOR ANY SPECIFIC SOIL CLASSIFICATION AS DETERMINED BY THE MODIFIED PROCTOR TEST ASTM D698.
3. COMPACTION TESTS: COMPACTION TESTS MAY BE REQUIRED IN EXISTING OR PROPOSED STREETS, SIDEWALKS, DRIVES AND OTHER EXISTING OR PROPOSED PAVED AREAS AT VARYING DEPTHS AND AT INTERVALS AS DETERMINED BY THE ENGINEER WITH A MINIMUM OF ONE TEST PER JOB, AND A MAXIMUM OF ONE REQUIRED TEST FOR EACH 400' OR LESS OF WATER MAIN CONSTRUCTION, UNLESS SOIL CONDITIONS OR CONSTRUCTION PRACTICES, IN THE OPINION OF THE ENGINEER, WARRANT THE NEED FOR ADDITIONAL TESTS.
4. NO BOULDERS OR LOOSE ROCKS PERMITTED IN THE BACKFILL AT THE BOTTOM OF PIPE TRENCH TO 2'-0" ABOVE PIPE.
5. ALL DESIGNS BASED ON FULLY COMPACTED BACKFILL AND UNIFORMLY SUPPORTED PIPE.
6. FOR PAVEMENT CUT REPAIRS SEE DRAWING 109.
7. FOR CONSTRUCTION WITHIN AHJ (AUTHORITY HAVING JURISDICTION) OTHER THAN FULTON COUNTY, BACKFILL AND COMPACTION STANDARDS SHALL BE IN ACCORDANCE WITH THE PERMITTING AGENCY OR AGENCIES.

TABLE 103-1
ALLOWABLE TRENCH WIDTHS

PIPE SIZE (NOM)	"A" SIDE CLEARANCE (IN.)		"B" DITCH WIDTH (IN.)				"C" SHORING WIDTH (ADDITIONAL-INCH)	"D" CUT REPAIR WIDTH (FT.)			
	SOIL	ROCK	SOIL		ROCK			SOIL		ROCK	
			MJ	SJ	MJ	SJ		MJ	SJ	MJ	SJ
3/4"-2"	2	6	NA	8	NA	14	AS APPROVED	NA	3.00	NA	3.17
4"	9	12	27	25	33	31	AS APPROVED	4.25	4.08	4.75	4.58
6"	9	12	28	28	34	33	AS APPROVED	4.33	4.33	4.83	4.75
8"	9	12	32	30	38	35	AS APPROVED	4.67	4.50	5.17	4.92
10"	9	12	34	32	40	37	AS APPROVED	4.83	4.67	5.33	5.08
12"	9	12	36	34	42	39	AS APPROVED	5.00	4.83	5.50	5.25
14"	9	14	39	36	49	46	AS APPROVED	5.25	5.00	6.08	5.83
16"	9	14	42	38	52	48	AS APPROVED	5.50	5.17	6.33	6.00
20"	9	14	45	42	55	52	AS APPROVED	5.75	5.50	6.58	6.33
24"	9	14	50	48	60	57	AS APPROVED	6.17	6.00	7.00	6.75
30"	9	18	58	54	76	63	AS APPROVED	6.83	6.50	8.33	7.25
36"	9	18	64	61	82	69	AS APPROVED	7.33	7.08	8.83	7.75
42"	9	18	72	67	90	77	AS APPROVED	8.00	7.58	9.50	8.42
48"	9	18	78	73	96	90	AS APPROVED	8.50	8.08	10.00	9.75

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FULTON COUNTY STANDARD DETAIL 103

ALLOWABLE TRENCH WIDTHS
WATER MAINS

DATE	REVISIONS	DATE	REVISIONS

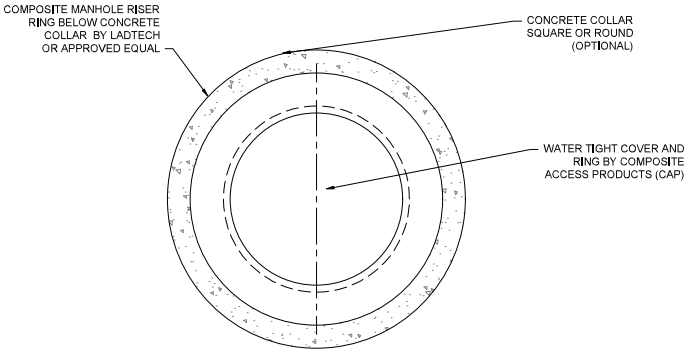
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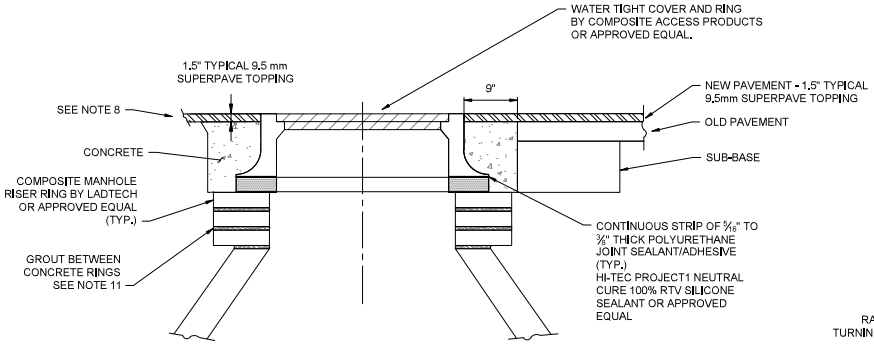
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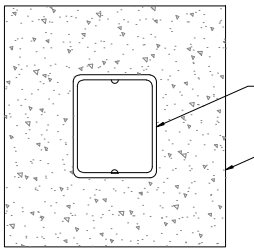
TOP VIEW OF RISERS
N.T.S.



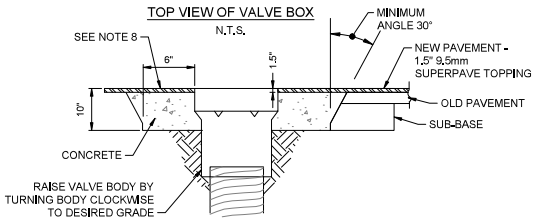
MANHOLE DETAIL
N.T.S.

NOTES:

1. STRUCTURES SHALL NOT BE ADJUSTED FOR A PERIOD OF 24 HOURS AFTER RESURFACING IS COMPLETED IN THAT AREA.
2. ASPHALT SHALL BE SAWCUT TO MAKE A SMOOTH, EVEN EDGE.
3. STRUCTURE COVER SHALL BE ADJUSTED TO FIT FLUSH WITH STREET SURFACE.
4. ALL CONCRETE SHALL HAVE A COMPRESSIVE STRENGTH OF 4000 PSI.
5. CONCRETE WILL BE USED TO BACKFILL THE ENTIRE WORKING AREA.
6. FINISHING CONCRETE SHALL BE DONE BY USE OF A TROWEL OR FLOAT.
7. CLEAN ALL ASPHALT OFF SEWER MANHOLES AT TIME OF PAVING TO ALLOW ACCESS TO SYSTEM AT ALL TIMES.
8. THE STATE, COUNTY AND/OR CITY HAS THE OPTION OF EXTENDING THE CONCRETE TO THE FINISHED GRADE INSTEAD OF PAVING WITH ASPHALT. PLEASE VERIFY WITH THE INSPECTOR.
9. TOP VIEW OF MANHOLE OPTIONAL SQUARE OR ROUND CONCRETE COLLAR.
10. COMPOSITE RING, COVER & RISER RING SHALL BE THE STANDARD.
11. PRECAST CONCRETE RISER RING MAY BE USE ONLY WITH FCPW'S EXPLICIT EXCEPTIONAL APPROVAL.



TOP VIEW OF VALVE BOX
N.T.S.

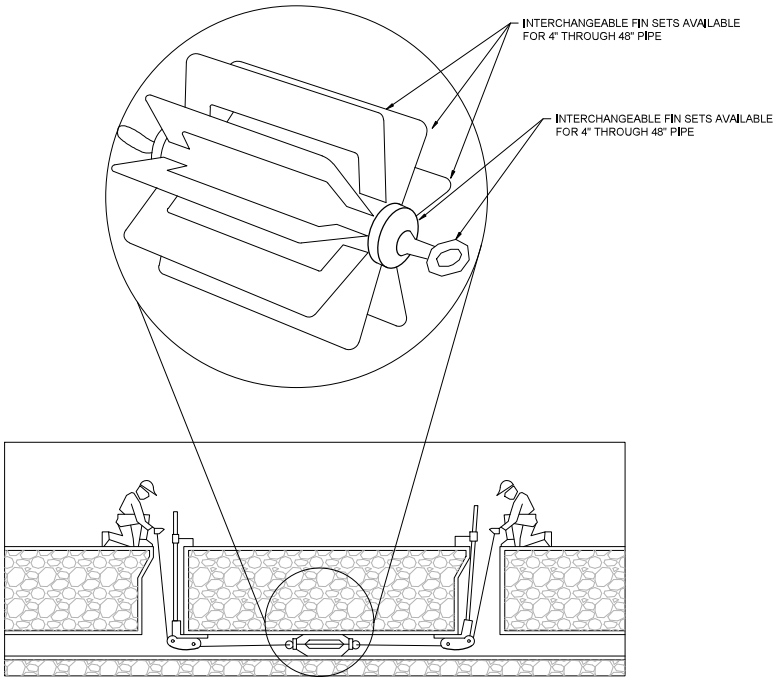


VALVE
N.T.S.

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FULTON COUNTY STANDARD DETAIL 105 STRUCTURE ADJUSTMENT		DATE M/Y	REVISIONS	DATE M/Y	REVISIONS	DGS/DRN/CHKD: XXX APPROVED: XXX DATE: XX-X-XX	FULTON COUNTY	FULTON COUNTY PUBLIC WORKS 141 PRYOR ST. ATLANTA, GA. 30303 404-612-7400 FAX: 404-224-0498	DRAWING NO. 105
		XXX		XXX					

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NOTES:

1. AFTER INSTALLATION, A DEFLECTION TEST IS REQUIRED NO SOONER THAN 24 HOURS OF TRENCH BACKFILLING. INITIAL DEFLECTION SHALL BE LIMITED TO 3% OF THE UN-DEFLECTED DIAMETER.
2. PIPE SHALL BE HDPE DR 17 (MIN.) WITH BUTT WELDED JOINTS OR PVC DR 25 (MIN.) WITH CONFINED ELASTOMERIC SEALED BELL & SPIGOT JOINTS. PIPE LENGTHS SHALL BE MANUFACTURER'S STANDARD.
3. MANDREL TO BE MADE FROM AIRCRAFT-QUALITY ALUMINUM OR APPROVED EQUAL.
4. EACH FIN SET IS TO BE STAMPED WITH THE PIPE DIAMETER AND PERCENT DEFLECTION.
5. MANDREL LENGTH TO BE 10 INCHES; MANDREL WEIGHT TO BE 4 LBS.
6. MANDREL TO BE PROVIDED BY CONTRACTOR IT MUST BE MEASURED AND APPROVED FIRST BY FULTON COUNTY INSPECTOR.
7. A SECOND DEFLECTION TEST MAY BE REQUIRED IF DETERMINED TO BE NECESSARY BY THE INSPECTOR.

TABLE 105-1
BASE INSIDE DIAMETER AND 3%, 5%, AND 7.5% MANDREL DIMENSIONS

NOMINAL SIZE (INCHES)	AVERAGE SIZE DIAMETER (INCHES)	BASE INSIDE DIAMETER (INCHES)	3% DEFLECTION	5% DEFLECTION	7.5 % DEFLECTION
6	5.893	5.742	5.569	5.454	5.31
8	7.891	7.665	7.435	7.281	7.09
10	9.864	9.563	9.276	9.084	8.84
12	11.737	11.361	11.020	10.792	10.51
15	14.374	13.898	13.481	13.023	12.86

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FULTON COUNTY STANDARD DETAIL 106

MANDREL DETAIL FOR
PVC PIPE INSTALLATION

DATE M/Y	REVISIONS	DATE M/Y	REVISIONS
XXX		XXX	

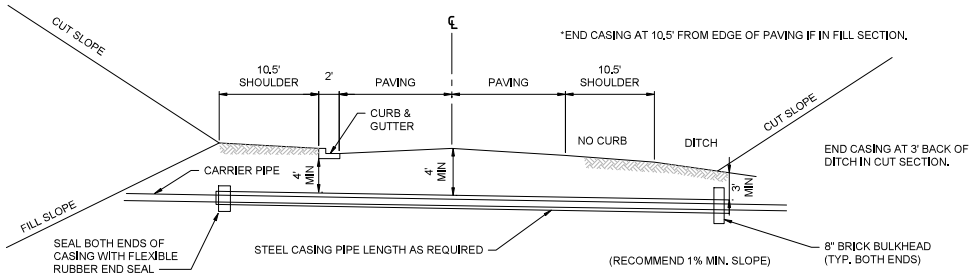
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SECTION
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NOTES:

1. CASING TO BE STEEL PIPE (ROUND) WITH 45° BEVELED EDGES.
2. ALL CUTS TO BE SQUARED TO END.
3. JOIN ALL PIPE WITH DOUBLE BEAD BUTT WELDS.
4. AUGER HEAD DIAMETER CANNOT EXCEED DIAMETER OF CASING BY MORE THAN 2 INCHES.
5. BORING AND CASING SHALL BE INSTALLED SIMULTANEOUSLY.
6. ANYTHING 6" OR LARGER REQUIRES BORE AND CASE.
7. CASING PIPE SHALL HAVE A PROTECTIVE COATING CONSISTING OF A COAL-TAR PRIMER COAT AND AN APPLICATION OF HOT COAL-TAR ENAMEL 3/32" (± 1/32") THICK PLUS A BONDED 15 LB. ASBESTOS WRAP.
8. PIT TO BE NO CLOSER THAN 4' BEHIND CURB OR EDGE OF PAVEMENT.
9. TYPICAL PIT IS 32' LONG BY 10' WIDE.
10. THREE STAINLESS STEEL CASING SPACERS ARE REQUIRED PER JOINT.
11. CARRIER PIPE SHALL BE DUCTILE IRON.
12. FIELD LOCKING GASKETS REQUIRED INSIDE OF CASING.
13. ALL BORING MUST BE APPROVED AND A PERMIT OBTAINED FROM PUBLIC WORKS (404) 612-7400 AND AUTHORITIES HAVING JURISDICTION AS REQUIRED.

* SEE DRAWING NO. 129 FOR RAILROAD, INTERSTATE HIGHWAY AND SPACER DETAILS.

PIPE CASING: THE STEEL CASING PIPE SHALL BE MANUFACTURED FROM STEEL CONFORMING TO ASTM: A 139, GRADE B. SIZE AND THICKNESS SHALL BE AS FOLLOWS:

TABLE 107-1
UNDER RAILROADS

PIPE DIAMETER INCHES (I.D)	CASING DIAMETER INCHES (I.D.) MIN.	CASING WALL THICKNESS INCHES
6	16	0.250
8	18	0.375
10	20	0.375
12	22	0.375
14	28	0.375
16	30	0.406
18	32	0.406
20	36	0.469
24	42	0.469
30	48	0.500

TABLE 107-2
UNDER HIGHWAYS

PIPE DIAMETER INCHES (I.D)	BELL OD	CASING DIAMETER INCHES (I.D) MIN.	WALL THICKNESS INCHES
6	9.19	16	0.250
8	11.33	18	0.250
10	13.56	20	0.250
12	15.74	22	0.375
14	21.43	28	0.375
16	23.7	30	0.375
18	25.82	32	0.375
20	29.88	36	0.375
24	36.34	42	0.500
30	38.30	48	0.500

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FULTON COUNTY STANDARD DETAIL 107

ROADWAY CROSSING
BORE AND CASE DETAIL

DATE	REVISIONS	DATE	REVISIONS
M/Y	XXX	M/Y	XXX

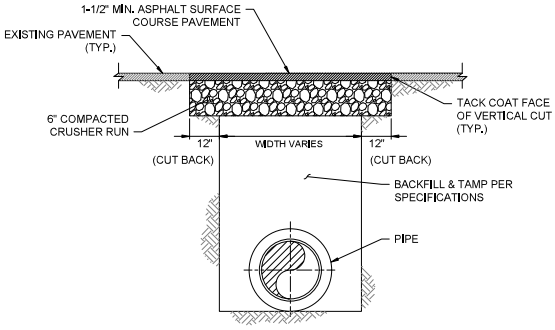
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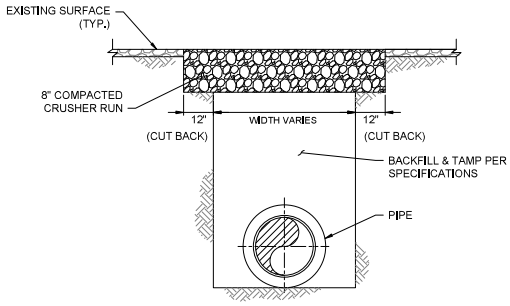
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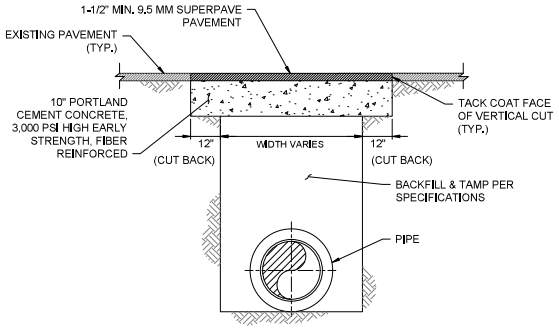
TYPE "A" CUT REPAIR DETAIL
T&G OR ASPHALT RDS
(DRIVEWAYS, A-30)

NOTES:

1. ALL MATERIALS AND METHODS OF INSTALLATION SHALL COMPLY WITH LATEST EDITION OF GDOT'S, "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.
2. FOR TYPE "C", THE CONTRACTOR SHALL COVER THE POURED CONCRETE WITH STEEL PLATES A MINIMUM OF 24 HOURS TO ALLOW ADEQUATE SET-UP.
3. CONTRACTOR'S TRAFFIC CONTROL PLAN MUST BE APPROVED BY THE AUTHORITY HAVING JURISDICTION BEFORE WORK BEGINS.
4. FINAL APPROVAL OF CONTRACTOR'S PAVEMENT CUT REPAIRS RESIDES WITH THE AUTHORITY HAVING JURISDICTION. CONTRACTOR SHALL MEET ALL REQUIREMENTS OF SAID AUTHORITY.
5. FOR TRENCH AND CUT WIDTHS, SEE DWG. NO. 103.



TYPE "B" CUT REPAIR DETAIL
DIRT OR GRAVEL RDS
(DRIVEWAYS, A-30)



TYPE "C" CUT REPAIR DETAIL
GEORGIA DOT AND FULTON CO.

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 109

PAVEMENT CUT REPAIRS/STANDARD UTILITY CUT
TYPE A, B & C

DATE	REVISIONS	DATE	REVISIONS

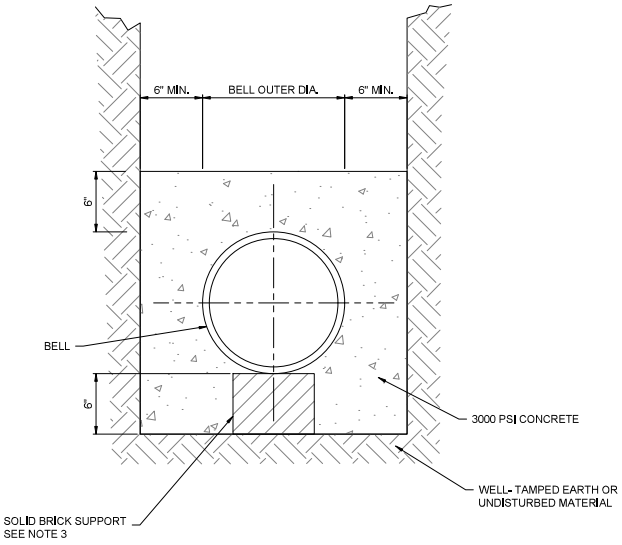
DGS/DRN/CHKD: XXX
APPROVED: XXX
DATE: XX-X-XX

FULTON COUNTY

FULTON COUNTY PUBLIC WORKS
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404-612-7400 FAX: 404-224-0498

DRAWING NO.
109

Docusign Envelope ID: A3705B48-B7E5-4F52-8480-5FF929E99139



CONCRETE ENCASEMENT

NTS

NOTES:

1. CONCRETE ENCASEMENT SHALL BE USED WHEN COVER IS LESS THAN 4 FEET, AND WHERE CONDITIONS DIRECTED BY THE FULTON COUNTY ENGINEER
2. ENCASEMENT TO BE PLACED AGAINST UNDISTURBED NATURAL GROUND OR FILL COMPACTED TO 90% RELATIVE COMPACTION, UNLESS OTHERWISE SPECIFIED.
3. PROVIDE 3 SUPPORTS FOR EACH SECTION OF DIP, OR @ 5'-0" INTERVALS FOR HDPE AND PVC PIPES.

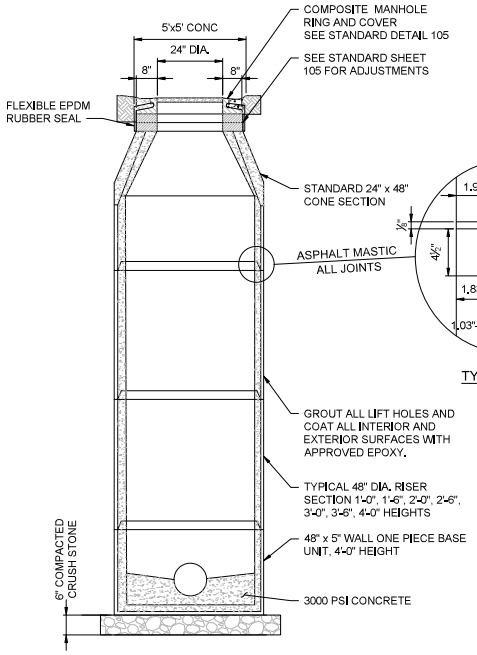
95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 110 CONCRETE ENCASEMENT		DATE	REVISIONS	DATE	REVISIONS	DGS/DRN/CHKD: XXX APPROVED: XXX DATE: XX-X-XX	FULTON COUNTY	FULTON COUNTY PUBLIC WORKS 141 PRYOR ST. ATLANTA, GA. 30303 404-612-7400 FAX: 404-224-0498	DRAWING NO. 110

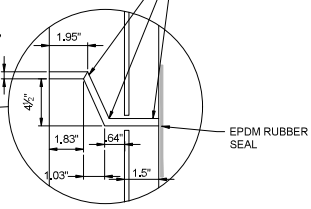
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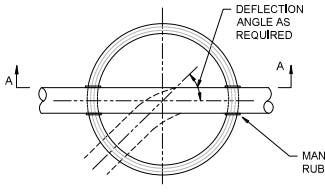
1. HOLES TO BE PRECAST; IF PRECAST HOLES ARE NOT AVAILABLE, MANHOLE MUST BE CORED AND RUBBER BOOT IS REQUIRED.
2. MAXIMUM HOLE SIZE = PIPE O.D. + 4"
3. USE CONCENTRIC CONIC SECTIONS IN RIGHT-OF-WAY.
4. OUTFALL MANHOLES MUST HAVE CAST IN PLACE RINGS.
5. ON ALL SECTIONS BELOW THE WATER TABLE, 8" EXTERNAL SEAL WRAP WILL BE REQUIRED.



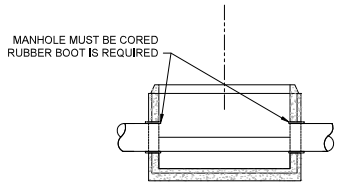
TYPICAL INSTALLATION
NTS



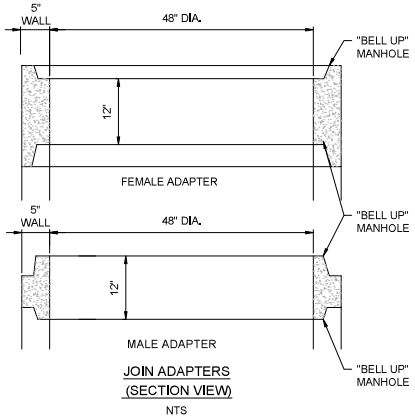
TYPICAL JOINT
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PLAN VIEW
ONE PIECE BASE UNIT
NTS



SECTION "A-A"
THRU ONE PIECE BASE UNIT
NTS

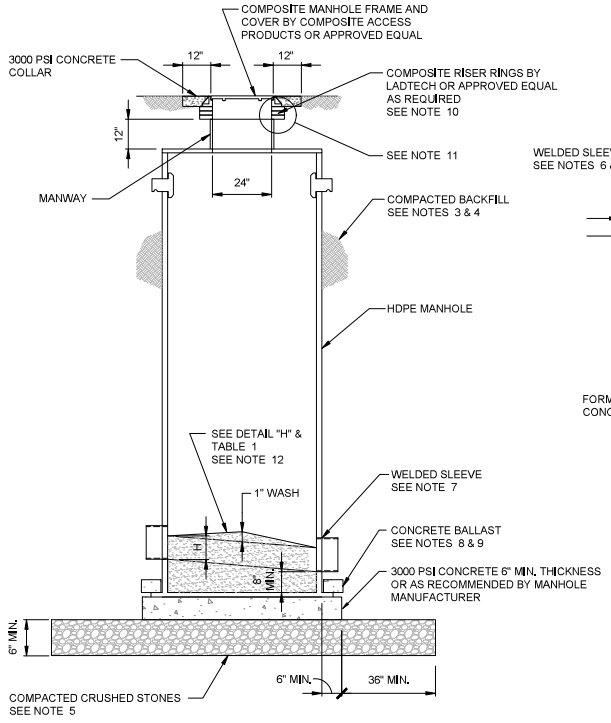


JOIN ADAPTERS
(SECTION VIEW)
NTS

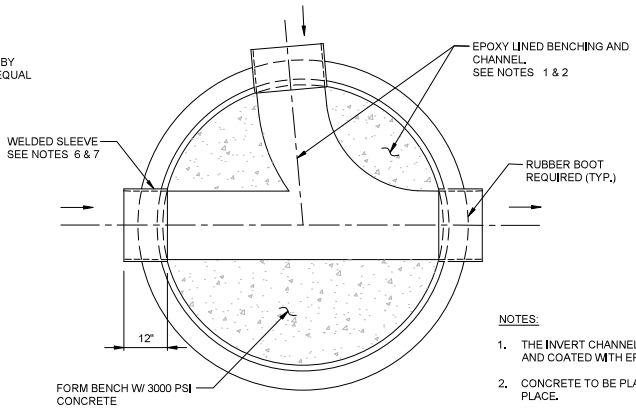
95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 113 PRECAST CONCRETE MANHOLE DETAILS		DATE M/Y: XXX	REVISIONS: XXX	DATE M/Y: XXX	REVISIONS: XXX	DGS/DRN/CHKD: XXX APPROVED: XXX DATE: XX-X-XX	FULTON COUNTY FULTON COUNTY PUBLIC WORKS 141 PRYOR ST. ATLANTA, GA. 30303 404-612-7400 FAX: 404-224-0498	DRAWING NO. 113

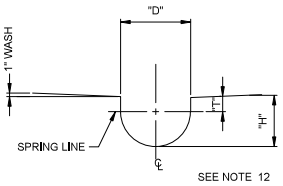
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SECTIONAL VIEW
N.T.S.



BASE PLAN VIEW
N.T.S.



DETAIL "H"
NTS

TABLE 1		
"D"	"T"	"H"
INSIDE DIA. PIPE (IN.)	VERTICAL TANGENT (IN.)	HEIGHT OF WATER TABLE (IN.)
8	2 1/2	6 1/2
10	3	8
12	3 1/2	9 1/2
15	4 1/2	12
18	5 1/2	14 1/2
21	6 1/2	17
24	7 1/2	19 1/2
27	8	21 1/2
30	9	24
33	10	26 1/2
36	11	29

NOTES:

1. THE INVERT CHANNELS AND BENCH SHALL BE FORMED USING 3,000 PS1 CONCRETE AND COATED WITH EPOXY LINER.
2. CONCRETE TO BE PLACED IN MANHOLE AFTER THE MANHOLE HAS BEEN SET IN PLACE.
3. UNLESS SHOWN OTHERWISE ON DRAWINGS AND APPROVED BY FCPW, SAND CRUSHED STONE, OR PEA GEAVEL SHALL BE USED FOR BACKFILL AROUND THE MANHOLE FOR A MINIMUM DISTANCE OF 3.5 FEET FROM THE OUTSIDE SURFACE AND EXTENDING THE FULL HEIGHT OF THE MANHOLE.
4. BACKFILL SHALL BE PLACED IN LAYERS OF NOT MORE THAN 12 LOOSE MEASURE INCHES AND COMPACTED TO A MINIMUM OF 90% STANDARD PROCTOR DENSITY OR AS REQUIRED BY THE AUTHORITY HAVING JURISDICTION.
5. COMPACT TO 95% STANDARD PROCTOR DENSITY UNLESS OTHEWISE APPROVED BY FCWP.
6. ALTERNATE MEANS OF PIPE PENETRATIONS AND CONNECTIONS MAY BE USED AS RECOMMENDED BY MANHOLE MANUFACTURER AND APPROVED BY FCPW.
7. ALL HDPE TO HDPE SURFACES MUST BE FULL PENETRATION EXTRUSION WELDS UNLESS OTHERWISE SPECIFIED.
8. PROVIDE AN ANCHOR CONNECTION RING TO BE USED IN CONNECTION WITH A CONCRETE BALLAST.
9. CONCRETE BALLAST REQUREMENTS SHALL BE AS DETERMINED BY DESIGN ENGINEER AND AS APPROVED BY FCPW.
10. RISER RINGS SHALL HAVE A CLEAR OPENING EQUAL OR LESS THAN THE OPENING OF THE FRAME.
11. APPLY A 3/8-INCH BEAD OF BUTYL RUBBER SEALANT BETWEEN THE FOLLOWING CONTACTING SURFACES:
    - MANHOLE FRAME AND RISER RINGS
    - RISER RINGS
    - RISER RING AND HDPE MANWAY
12. "H" & "T" DIMENSIONS APPLY ONLY AT THE UPSTREAM INSIDE EDGE OF MANHOLE.

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 114A

STANDARD SEWER MANHOLE
HDPE MANHOLES - NON-TRAFFIC

DATE	REVISIONS	DATE	REVISIONS

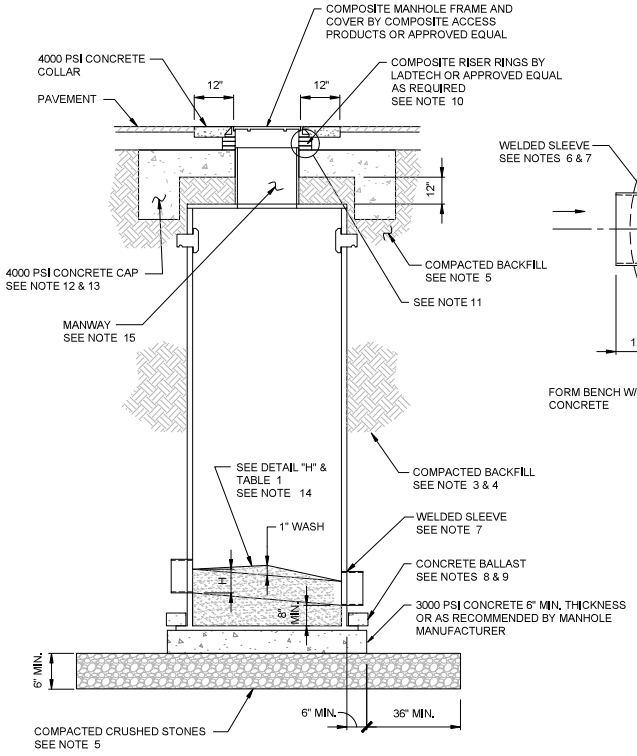
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APPROVED: XXX
DATE: XX-X-XX

FULTON COUNTY

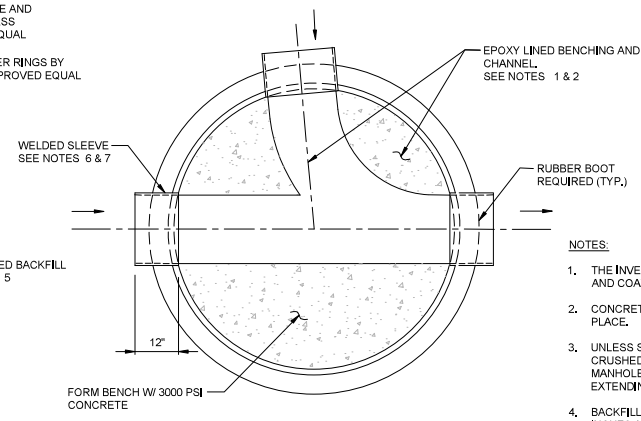
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DRAWING NO.
114A

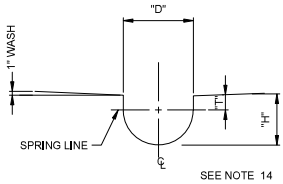
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SECTIONAL VIEW
N.T.S.



BASE PLAN VIEW
N.T.S.



DETAIL "H"
NTS

TABLE 1		
"D"	"T"	"H"
INSIDE DIA. PIPE (IN.)	VERTICAL TANGENT (IN.)	HEIGHT OF WATER TABLE (IN.)
8	2 1/2	6 1/2
10	3	8
12	3 1/2	9 1/2
15	4 1/2	12
18	5 1/2	14 1/2
21	6 1/2	17
24	7 1/2	19 1/2
27	8	21 1/2
30	9	24
33	10	26 1/2
36	11	29

NOTES:

1. THE INVERT CHANNELS AND BENCH SHALL BE FORMED USING 3,000 PSI CONCRETE AND COATED WITH EPOXY LINER.
2. CONCRETE TO BE PLACED IN MANHOLE AFTER THE MANHOLE HAS BEEN SET IN PLACE.
3. UNLESS SHOWN OTHERWISE ON DRAWINGS AND APPROVED BY FCPW, SAND CRUSHED STONE, OR PEA GEAVEL SHALL BE USED FOR BACKFILL AROUND THE MANHOLE FOR A MINIMUM DISTANCE OF 3.5 FEET FROM THE OUTSIDE SURFACE AND EXTENDING THE FULL HEIGHT OF THE MANHOLE.
4. BACKFILL SHALL BE PLACED IN LAYERS OF NOT MORE THAN 12 LOOSE MEASURE INCHES AND COMPACTED TO A MINIMUM OF 90% STANDARD PROCTOR DENSITY OR AS REQUIRED BY THE AUTHORITY HAVING JURISDICTION.
5. COMPACT TO 95% STANDARD PROCTOR DENSITY UNLESS OTHEWISE APPROVED BY FCWP.
6. ALTERNATE MEANS OF PIPE PENETRATIONS AND CONNECTIONS MAY BE USED AS RECOMMENDED BY MANHOLE MANUFACTURER AND APPROVED BY FCPW.
7. ALL HDPE TO HDPE SURFACES MUST BE FULL PENETRATION EXTRUSION WELDS UNLESS OTHERWISE SPECIFIED.
8. PROVIDE AN ANCHOR CONNECTION RING TO BE USED IN CONNECTION WITH A CONCRETE BALLAST.
9. CONCRETE BALLAST REQUREMENTS SHALL BE AS DETERMINED BY DESIGN ENGINEER AND AS APPROVED BY FCPW.
10. RISER RINGS SHALL HAVE A CLEAR OPENING EQUAL OR LESS THAN THE OPENING OF THE FRAME.
11. APPLY A 3/8-INCH BEAD OF BUTYL RUBBER SEALANT BETWEEN THE FOLLOWING CONTACTING SURFACES:
    - MANHOLE FRAME AND RISER RINGS
    - RISER RINGS
    - RISER RING AND HDPE MANWAY
12. CONCRETE CAP SHALL BE DESIGNED TO DISPERSE LOAD INTO THE SOIL AND AVOID DIRECTLY ONTO THE MANHOLE.
13. DESIGN OF THE CONCRETE CAP SHALL BE AS DETERMINED BY THE ENGINEER.
14. "H" & "T" DIMENSION APPLY ONLY AT THE UPSTREAM EDGE OF MANHOLE.
15. HEIGHT OF MANWAY TO BE DETERMINED BY CONCRETE CAP DESIGN.

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 114B

STANDARD SEWER MANHOLE
HDPE MANHOLES - TRAFFIC

DATE	REVISIONS	DATE	REVISIONS

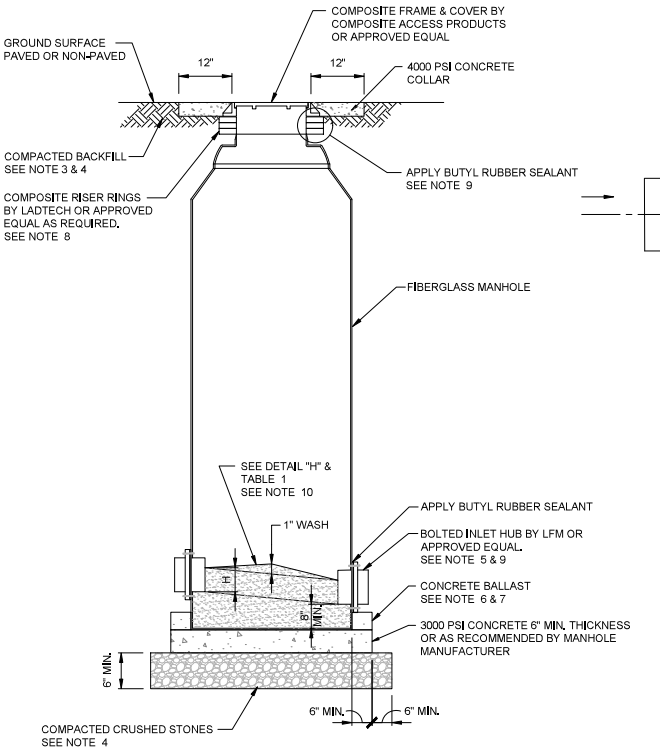
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APPROVED: XXX
DATE: XX-X-XX

FULTON COUNTY

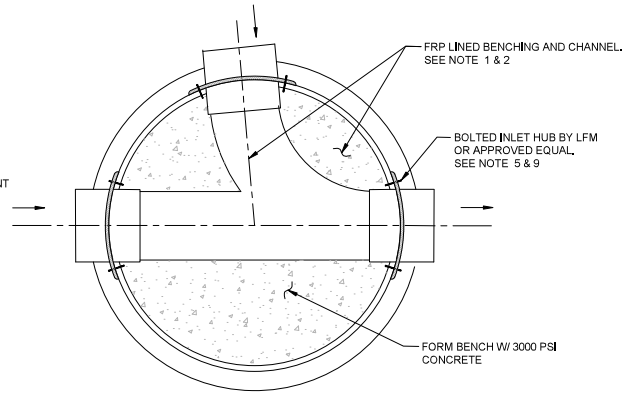
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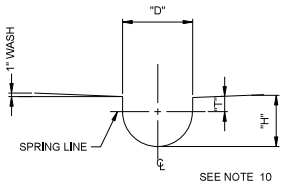
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SECTIONAL VIEW
N.T.S.



BASE PLAN VIEW
N.T.S.



DETAIL "H"
NTS

TABLE 1		
"D"	"T"	"H"
INSIDE DIA. PIPE (IN.)	VERTICAL TANGENT (IN.)	HEIGHT OF WATER TABLE (IN.)
8	2 1/2	6 1/2
10	3	8
12	3 1/2	9 1/2
15	4 1/2	12
18	5 1/2	14 1/2
21	6 1/2	17
24	7 1/2	19 1/2
27	8	21 1/2
30	9	24
33	10	26 1/2
36	11	29

NOTES:

1. THE INVERT CHANNELS AND BENCH SHALL BE FORMED USING 3,000 PSI CONCRETE AND COMPLETELY ENCLOSED IN A MINIMUM 1/4-INCH LAYER OF FIBERGLASS CHOP.
2. THE FIBERGLASS ENCLOSURE FOR THE INVERT AND BENCH AREA SHALL BE PROVIDED AND INSTALLED IN THE MANHOLE BY THE MANUFACTURER.
3. UNLESS SHOWN OTHERWISE ON THE DRAWINGS AND APPROVED BY FCPW, SAND, CRUSHED STONE, OR PEA GRAVEL SHALL BE USED FOR BACKFILL AROUND THE MANHOLE FOR A MINIMUM DISTANCE OF ONE FOOT FROM THE OUTSIDE SURFACE AND EXTENDING FROM THE BOTTOM OF THE EXCAVATION TO THE TOP OF THE REDUCER SECTION.
4. BACKFILL SHALL BE PLACED IN LAYERS OF NOT MORE THAN 12 LOOSE MEASURE INCHES AND COMPACTED TO 95% STANDARD PROCTOR DENSITY, UNLESS OTHERWISE APPROVED BY FCPW.
5. ALTERNATE MEANS OF PIPE PENETRATIONS AND CONNECTIONS MAY BE USED AS RECOMMENDED BY MANHOLE MANUFACTURER AND APPROVED BY FCPW.
6. PROVIDE AN ANCHOR CONNECTION RING TO BE USED IN CONJUNCTION WITH A CONCRETE BALLAST
7. CONCRETE BALLAST REQUREMENTS SHALL BE AS DETERMINED BY DESIGN ENGINEER AND AS APPROVED BY FCPW.
8. RISER RINGS SHALL HAVE A CLEAR OPENING EQUAL OR LESS THAN THE OPENING OF THE FRAME.
9. APPLY A 3/8-INCH BEAD OF BUTYL RUBBER SEALANT BETWEEN THE FOLLOWING CONTACTING SURFACES:
   - MANHOLE FRAME AND RISER RINGS
   - RISER RINGS
   - RISER RING AND FIBERGLASS CONE SECTION LIP
   - INLET HUB AND MANHOLE EXTERIOR
10. "H" & "T" DIMENSIONS APPLY ONLY AT THE UPSTREAM, INSIDE EDGE OF MANHOLE.
11. MANHOLE SHALL BE DESIGNED FOR LOAD RATING OF 40,000 LBS.

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 114C

STANDARD SEWER MANHOLE
FIBERGLASS MANHOLES

DATE	REVISIONS	DATE	REVISIONS

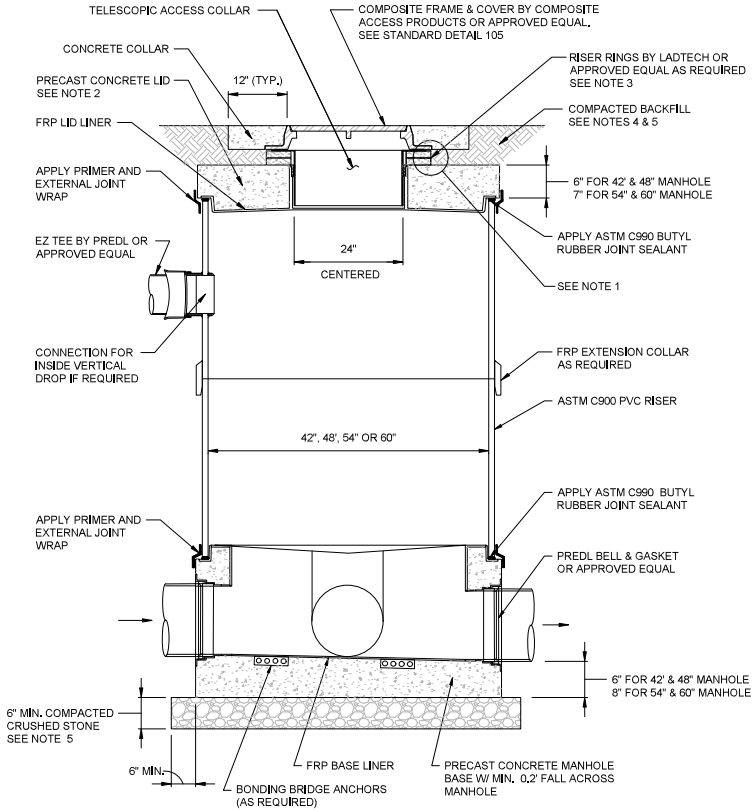
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APPROVED: XXX
DATE: XX-X-XX

FULTON COUNTY

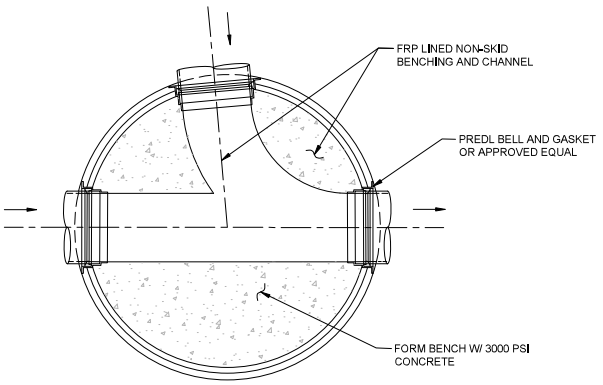
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SECTION VIEW
N.T.S.



BASE PLAN VIEW
N.T.S.

NOTES:

1. APPLY A 3/8-INCH BEAD OF BUTYL RUBBER SEALANT BETWEEN THE FOLLOWING CONTACTING SURFACE:
   - PRECAST CONCRETE LID AND RISER RINGS
   - RISER RINGS
   - RISER RINGS AND TELESCOPIC ACCESS COLLAR
   - TELESCOPIC ACCESS COLLAR AND MANHOLE FRAME
2. PRECAST CONCRETE LID SHALL BE H20 RATED PER ASTM C478.
3. RISER RINGS SHALL HAVE A CLEAR OPENING EQUAL OR LESS THAN THE OPENING OF THE FRAME.
4. UNLESS SHOWN OTHERWISE ON DRAWINGS AND APPROVED BY FCPW, SAND, CRUSHED STONE OR PEA GRAVEL SHALL BE USED FOR BACKFILL AROUND THE MANHOLE FOR A MINMUM DISTANCE OF ONE FOOT FROM THE OUTSIDE SURFACE AND EXTENDING FROM THE BOTTOM OF THE EXCAVATION TO THE TOP OF THE PRECAST CONCRETE LID.
5. BACKFILL SHALL BE PLACE IN LAYERS OF NOT MORE THAN 12 LOOSE MEASURE INCHES AND COMPACTED TO 95% STANDARD PROCTOR DENSITY, UNLESS APPROVED BY FCPW.

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 114D

STANDARD SEWER MANHOLE
PVC/PRECAST CONCRETE HYBRID MANHOLES

DATE	REVISIONS	DATE	REVISIONS

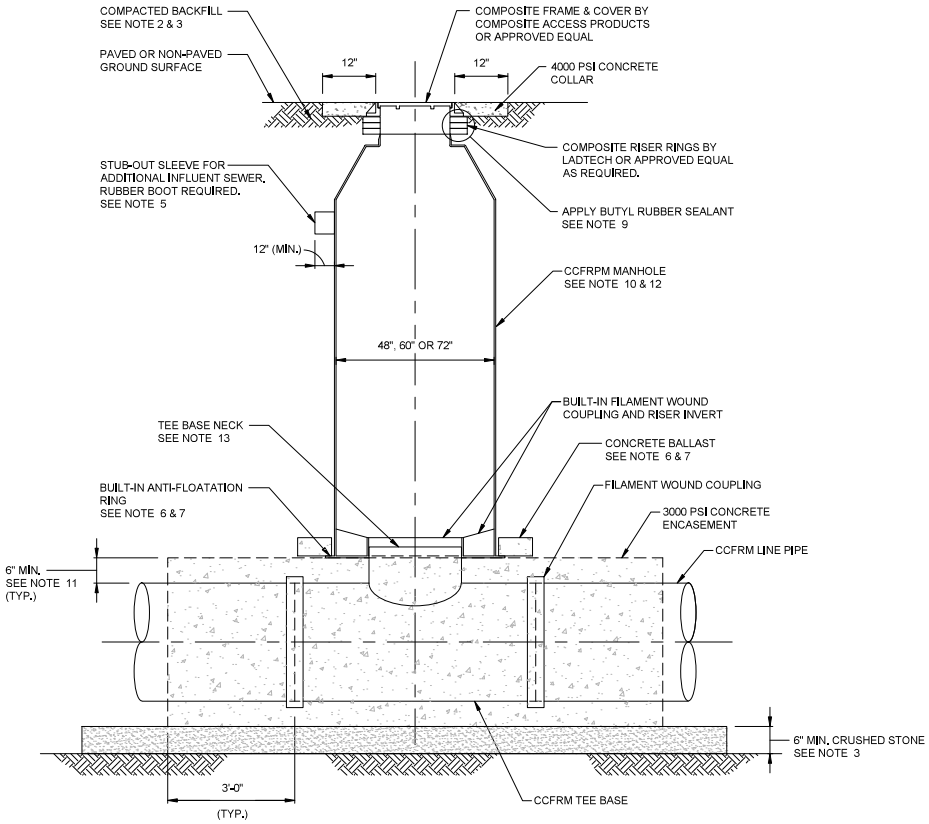
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FULTON COUNTY

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114D

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SECTIONAL VIEW
N.T.S.

NOTES:

1. THE MANHOLE BOTTOM SHALL HAVE AN INVERT AND FWC COUPLING BUILT-IN TO ACCEPT THE TEE BASE NECK AND FORM A WATER TIGHT CONNECTION.
2. UNLESS SHOWN OTHERWISE ON THE DRAWINGS AND APPROVED BY FCPW, SAND, CRUSHED STONE, OR PEA GRAVEL SHALL BE USED FOR BACKFILL AROUND THE MANHOLE FOR A MINIMUM DISTANCE OF ONE FOOT FROM THE OUTSIDE SURFACE AND EXTENDING FROM THE BOTTOM OF THE EXCAVATION TO THE TOP OF THE REDUCER SECTION.
3. BACKFILL SHALL BE PLACED IN LAYERS OF NOT MORE THAN 12 LOOSE MEASURE INCHES AND COMPACTED TO 95% STANDARD PROCTOR DENSITY, UNLESS OTHERWISE APPROVED BY FCPW.
4. PROVIDE VERTICAL INSIDE DROP INLET AS REQUIRED. SEE STANDARD DETAIL 115.
5. ALTERNATE MEANS OF PIPE PENETRATIONS AND CONNECTIONS MAY BE USED AS RECOMMENDED BY MANHOLE MANUFACTURER AND APPROVED BY FCPW.
6. PROVIDE AN ANTI-FLOATATION RING TO BE USED IN CONJUNCTION WITH A CONCRETE BALLAST.
7. CONCRETE BALLAST REQUREMENTS SHALL BE AS DETERMINED BY DESIGN ENGINEER AND AS APPROVED BY FCPW.
8. RISER RINGS SHALL HAVE A CLEAR OPENING EQUAL OR LESS THAN THE OPENING OF THE FRAME.
9. APPLY A 3/8-INCH BEAD OF BUTYL RUBBER SEALANT BETWEEN THE FOLLOWING CONTACTING SURFACES:
   - MANHOLE FRAME AND RISER RINGS
   - RISER RINGS
   - RISER RING AND FIBERGLASS CONE SECTION LIP
10. CENTRIFUGALLEY CAST FIBERGLASS REINFORCED POLYMER MORTAR (CCFRPM) MANHOLE SHALL HAVE A LIVE LOAD RATING OF 40,000 LBS.
11. ACTUAL DIMENSION OF CONCRETE ENCASEMENT MAY VARY AND SHALL BE DETERMINED BY DESIGN ENGINEER.
12. CCFRPM TEE BASE MANHOLE SHALL BE BY HOBAS OR APPROVED EQUAL.
13. SIZE OF TEE NECK SHALL BE AS BETERMINED BY DESIGN ENGINEER.

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 114E

STANDARD SEWER MANHOLE
TEE BASE MANHOLES

DATE	REVISIONS	DATE	REVISIONS

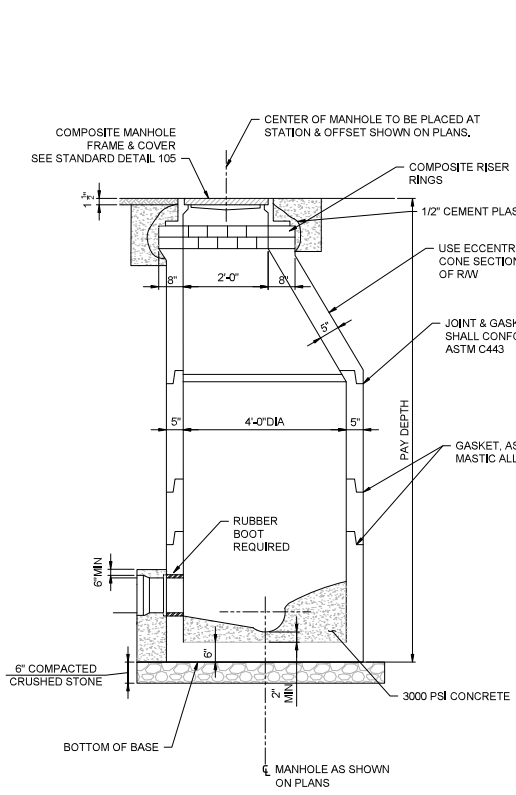
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APPROVED: XXX
DATE: XX-X-XX

FULTON COUNTY

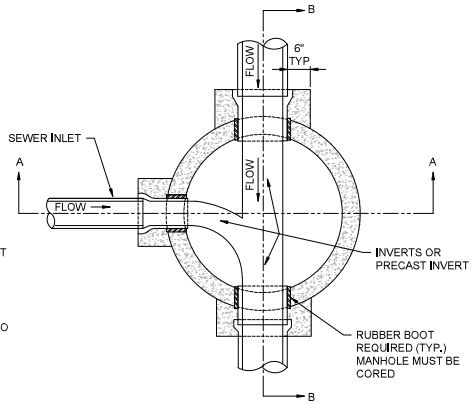
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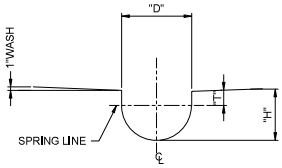


SECTION A-A
NTS



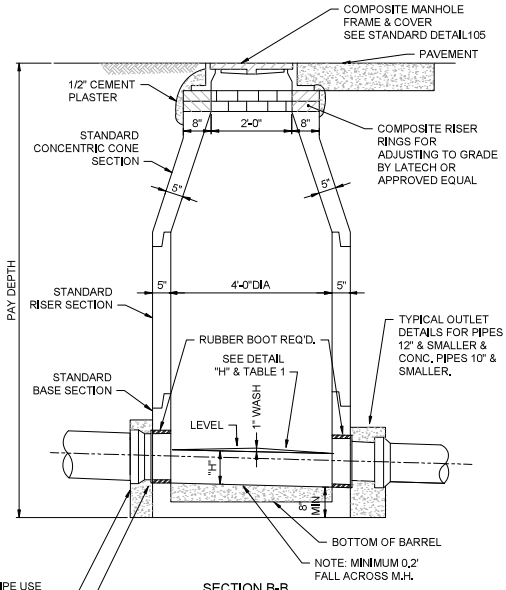
SECTION PLAN
STANDARD PRECAST
4'-0" DIAMETER MANHOLE
NTS

TABLE 1		
"D"	"T"	"H"
INSIDE DIA. PIPE (IN.)	VERTICAL TANGENT (IN.)	HEIGHT OF WATER TABLE (IN.)
8	2 1/2	6 1/2
10	3	8
12	3 1/2	9 1/2
15	4 1/2	12
18	5 1/2	14 1/2
21	6 1/2	17
24	7 1/2	19 1/2
27	8	21 1/2
30	9	24
33	10	26 1/2
36	11	29



DETAIL "H"
NOTE: "H" & "T" DIMENSIONS APPLY ONLY AT THE UPSTREAM, INSIDE EDGE OF M.H.
NTS

NOTES:
1. FOR OUTFALL LINES, MANHOLE TOP TO BE 18" TO 24" ABOVE SURROUNDING GROUND SURFACE.
2. ALL MANHOLES WITHIN TEN FEET OF PUBLIC RIGHT OF WAY SHALL BE TOPPED WITH A HEAVY DUTY TRAFFIC BEARING RING & COVER MOUNTED FLUSH TO EXISTING GRADE. LOADING SPECS. MAY BE REQUIRED FROM THE MANUFACTURER (RING & COVER).**
3. OPENING FOR PIPE IN M.H. TO BE NO GREATER THAN 4" GREATER IN DIAMETER THAN PIPE.
4. ECCENTRIC CONES MAY ONLY BE USED OUTSIDE OF ROW.
5. POLYMER REINFORCED CONCRETE MANHOLES MAY BE USED AS AN ALTERNATIVE. VERIFY USE WITH FULTON COUNTY ENGINEER.



SECTION B-B
NTS

NOTE: FOR PVC PIPE USE FLEXIBLE BODY CONNECTOR AS RECOMMENDED BY MANUFACTURER FOR MANHOLE CONNECTION.

TYPICAL INLET DETAILS FOR PIPES 12" AND SMALLER

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 114F

STANDARD SEWER MANHOLES
PRECAST MANHOLES

DATE	REVISIONS	DATE	REVISIONS
M/Y	XXX	M/Y	XXX

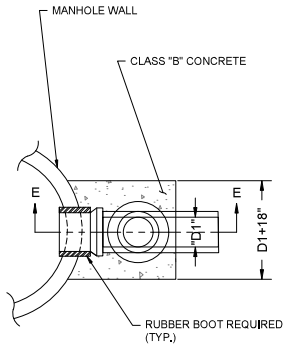
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DATE: XX-X-XX

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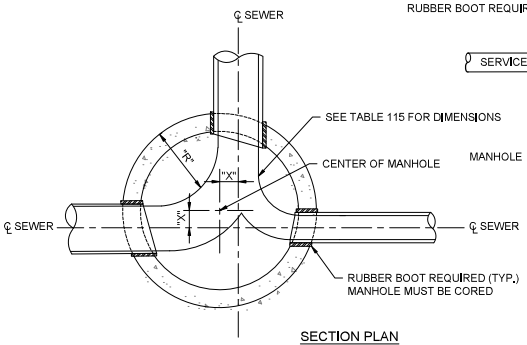
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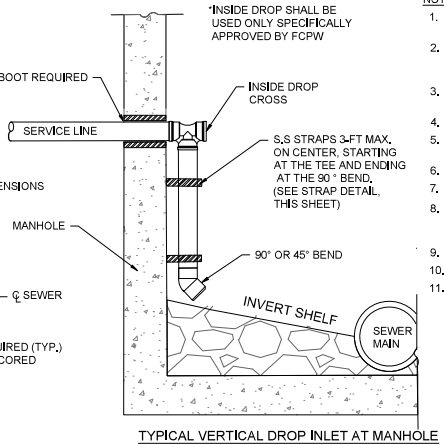
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PART PLAN



SECTION PLAN

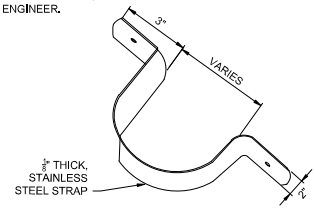


TYPICAL VERTICAL DROP INLET AT MANHOLE (INSIDE DROP)*

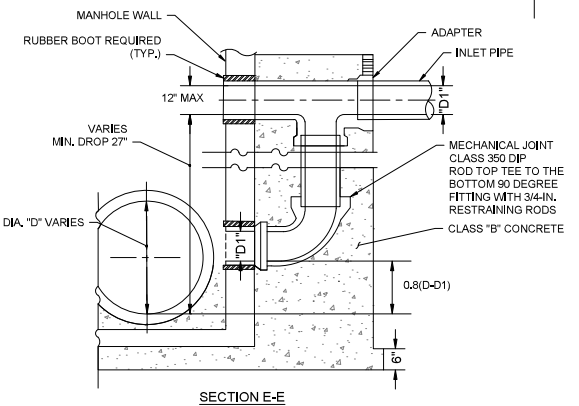
NTS

NOTES:

1. IN WET CONDITIONS, ATTACH PIPE INSIDE OF MANHOLE. CONTACT PUBLIC WORKS.
2. CONTRACTOR MAY PROPOSE VERTICAL DROP ALTERNATIVES IN THE FIELD WITH THE INSPECTOR. INSPECTOR WILL APPROVE ALTERNATIVES.
3. PIPING CONFIGURATION TO BE USED ON ALL DROPS OVER 20 INCHES.
4. DROPS TO BE CONSTRUCTED OF SCHEDULE 80 PVC PIPE.
5. SERVICE LINE MAY NOT ENTER MANHOLE THROUGH CONE SECTION OR ANY JOINT.
6. THIS DETAIL SHALL NOT USED FOR FORCE MAINS
7. ALL MANHOLE CONNECTIONS SHALL BE CORED
8. USE ½ INCH DIAMETER EXPANSION TYPE STAINLESS STEEL CINCH BOLTS WITH STAINLESS STEEL WASHER AND NUTS TO ATTACH STRAPS.
9. MINIMUM OF TWO STRAPS REQUIRED.
10. MINIMUM SIZE OF MANHOLE W/ INSIDE DROP SHALL BE 60-INCH.
11. CONCRETE BALLAST REQUIREMENT SHALL BE AS DETERMINED BY DESIGN ENGINEER.



STRAP DETAIL



SECTION E-E

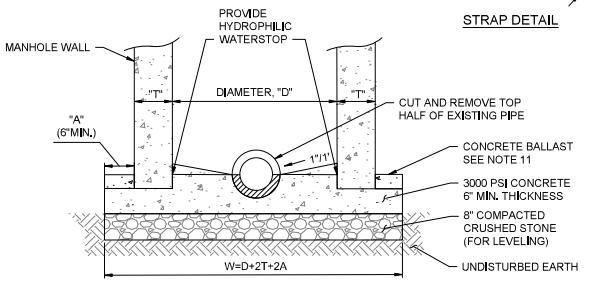
TYPICAL VERTICAL DROP INLET AT MANHOLE (OUTSIDE DROP)

NTS

TABLE 115

STANDARD PRECAST MANHOLES
SCHEDULE OF GOVERNING DIMENSIONS

PIPE SIZE (IN.)	ANGLE (DEGREES)	M.H. DIA. (FT.)	"R" (IN.)	"X" (IN.)
8 thru 12	0 to 90	4	12	0
15	0 to 60	4	15	0
15	60 to 90	4	15	6
18	0 to 60	4	18	0
18	60 to 90	4	16	8
21	0 to 60	4	21	0
21	60 to 90	5	21	9
24	0 to 60	4	24	0
24	60 to 90	5	18	9
27	0 to 60	5	27	0
27	60 to 90	6	24	12
30	0 to 60	5	30	0
30	60 to 90	6	21	8
36	0 to 90	PRE-BED PIPE, M.H. BASE & ELBOW UNIT		



TYPICAL DETAIL AT MANHOLE CONSTRUCTED OVER EXISTING PIPE

NTS

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 115

STANDARD SEWER MANHOLES
INSIDE AND OUTSIDE VERTICAL DROPS

DATE	REVISIONS	DATE	REVISIONS
M/Y	XXX	M/Y	XXX

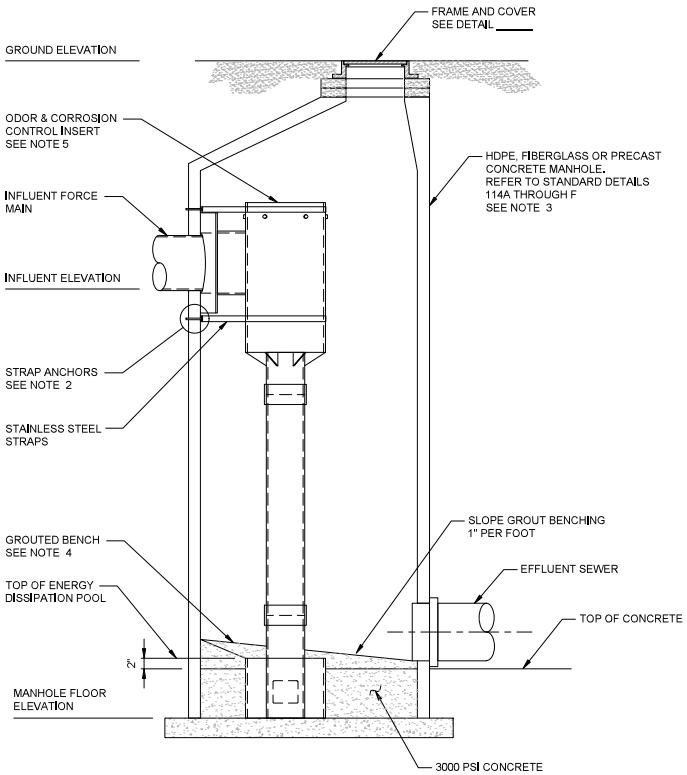
DGS/DRN/CHKD: XXX
APPROVED: XXX
DATE: XX-X-XX

FULTON COUNTY

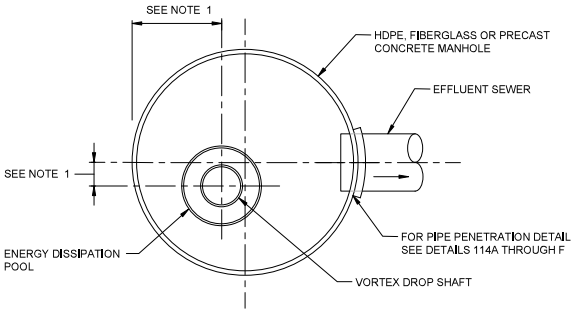
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SECTIONAL VIEW
N.T.S.



BASE PLAN VIEW
N.T.S.

NOTES:

1. DIMENSION TO BE DETERMINED BY EQUIPMENT FURNISHED.
2. VORTEX MANUFACTURER TO COORDINATE WITH MANHOLE MANUFACTURER & FURNISH ANCHORS COMPATIBLE WITH MANHOLE MATERIALS.
3. HDPE OR FIBERGLASS MANHOLES ARE PREFERRED. PRECAST CONCRETE MANHOLES MAY BE USE ONLY WITH FCPW APPROVAL.
4. GROUTED BENCH SURFACES SHALL BE COATED WITH EPOXY.
5. ODOR AND CORROSION CONTROL INSERT SHALL BE VORTEX FLOW BY IPEX OR APPROVED EQUAL.
6. MANHOLE SHALL BE PROVIDED WITH AN ODOR REMOVAL SYSTEM DESIGNED BY THE ENGINEER.
7. ODOR REMOVAL SYSTEM SHALL BE PURAFIL OR EQUAL AS APPROVED BY FCPW.
8. MINIMUM MANHOLE DIAMETER SHALL BE 60-INCHES.

95% SUBMITTAL

DATE	REVISIONS	DATE	REVISIONS

FULTON COUNTY STANDARD DETAIL 116

FORCE MAIN DISCHARGE MANHOLE DETAILS

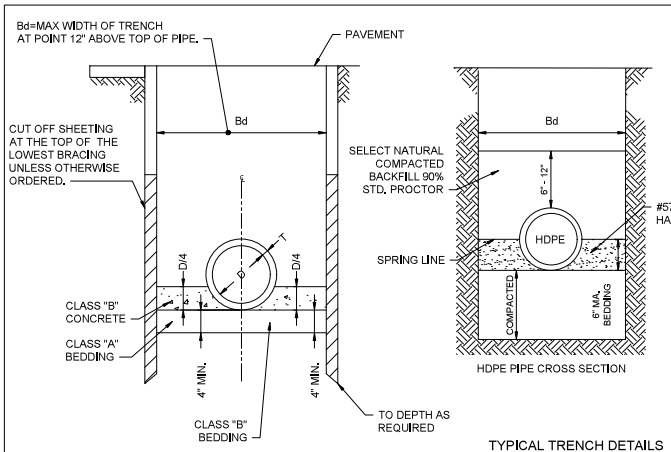
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APPROVED: XXX
DATE: XX-X-XX

FULTON COUNTY

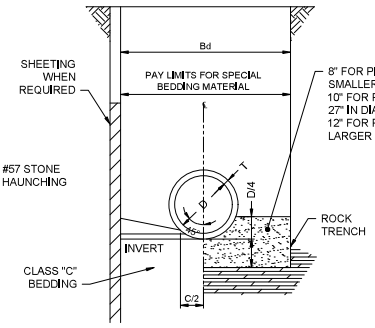
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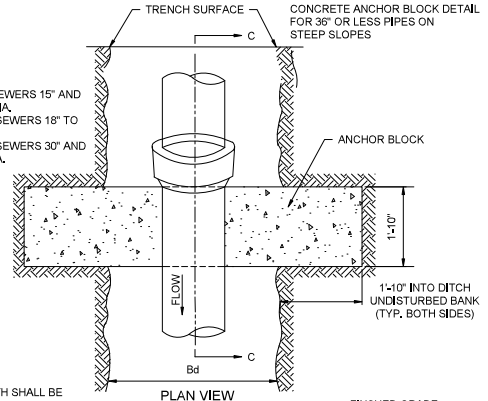
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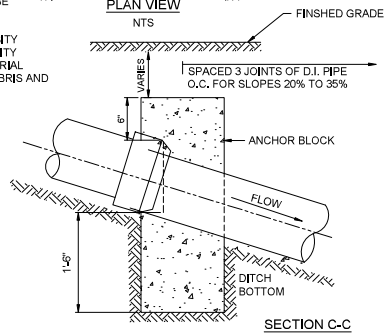
TYPICAL TRENCH DETAILS
NTS



NOTE:
1. ALL O.S.H.A REGULATIONS MUST BE COMPLIED WITH.
2. AT DEPTHS EQUAL OR GREATER THAN 5'-0", THE WIDTH SHALL BE BASED ON APPROVED TRENCH BOX WIDTH.
3. COMPACTION NOTE:
THE BACKFILL OF ALL TRENCHES TO BE COMPACTED TO A DENSITY OF 90% STANDARD PROCTOR OR AS REQUIRED BY THE AUTHORITY HAVING JURISDICTION OVER PERMIT ISSUANCE. BACKFILL MATERIAL SHALL BE FREE FROM ROOTS, STUMPS, OR OTHER FOREIGN DEBRIS AND SHALL BE PLACED AT OR NEAR OPTIMUM MOISTURE.



PLAN VIEW
NTS



SECTION C-C
NTS

TABLE 117-1

A.S.T.M. A746 DUCTILE IRON GRAVITY SEWER PIPE							A.S.T.M. C76- REINF. CONC. PIPE					A.S.T.M. C14- EX. STR. CONC. SEWER PIPE				A.S.T.M. - D2321 DR 17 HDPE PIPE				
PSI	D. IN	T. IN	Bd FT		C FT	*CRADLE	T. IN	Bd FT		C FT	*CRADLE	T. IN	Bd FT	C FT	*CRADLE	T. IN	Bd FT			
350	6	0.38	2.33		0.41	0.034										0.390	2.33			
350	8	0.42	2.67		0.53	0.36						7 / 8	2.15	0.6	0.041	0.507	2.67			
350	10	0.48	2.83		0.65	0.0.43						1	2.33	0.7	0.047	0.632	2.83			
350	12	0.52	3.00		0.78	0.049	2	2.83				1-3/8	2.83	0.87	0.055	0.750	3.00			
250	15						2-1/4	3.13		0.95	0.06	1-5/8	3.13	1.08	0.066					
250	18	0.73	3.67		1.15	0.072	2-1/2	3.42		1.15	0.073	2	3.42	1.3	0.086	1.059	3.67			
200	21						2-3/4	3.71		1.35	0.088	2-1/4	3.71	1.5	0.105					
200	24	0.85	4.17		1.52	0.18	3	4.00		1.55	0.109	2-5/8	4.00	1.72	0.128	1.412	4.17			
150	27						3-1/4	4.29		1.75	0.131									
150	30	0.99	4.83		1.88	0.149	3-1/2	4.58		1.95	0.153					1.765	4.83			
150	33						3-3/4	4.88		2.2	0.184									
150	36	1.19	5.33		2.27	0.198	4	5.17		2.4	0.215									
150	42	1.32	6.00		2.63	0.253	4-1/2	5.88		2.6	0.288									
150	48	1.44	6.50		3	0.314	5	6.33		3	0.36									
150	54						5-1/2	6.92		3.5	0.44									
150	60						6	7.50		3.75	0.54									
100	66						6-1/2	8.08		4.25	0.63	NOTE: PAYMENT QUANTITY IN CU. YDS. /LINFT. OF TRENCH FOR CLASS "B" CONC. IN CASE OF CLASS "A" BEDDING & FOR CRUSHED STONE BEDDING MATERIAL IN CASE OF CLASS "B" BEDDING, ADJUST QUANTITY OF CRADLE MATERIAL BASED ON Bd WIDTH IF DEPTH OF CRADLE EXCEEDS D/4.								
100	72						7	8.67		4.65	0.74									

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 117
PIPE SEWER DATA
DUCTILE IRON, CONCRETE AND HDPE
PIPE INSTALLATION

DATE M/Y	REVISIONS XXX	DATE M/Y	REVISIONS XXX

DGS/DRN/CHKD: XXX
APPROVED: XXX
DATE: XX-X-XX

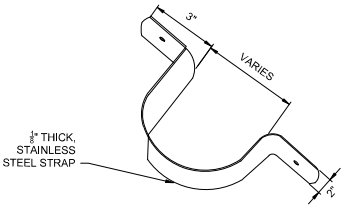
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TABLE 118-1			
ALLOWABLE SPANS FOR STEEL CASING PIPE			
CARRIER PIPE, RJ DIP DIAMETER (IN)	CASING PIPE, STEEL DIAMETER (IN)	MIN. CASING PIPE WALL THICKNESS (IN)	ALLOWABLE SPAN (FT)
6	14	0.3750	40
8	16	0.3750	45
10	18	0.3750	50
12	20	0.3750	50
14	24	0.3750	55
16	26	0.3750	55
18	30	0.3750	60
20	32	0.3750	60
24	36	0.4375	65
30	42	0.4375	65
36	48	0.5000	65
40	56	0.5000	65

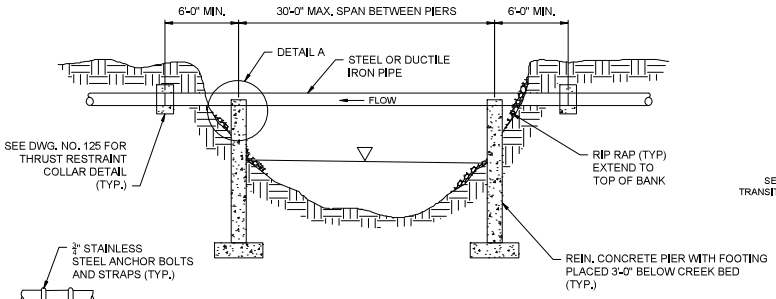


STRAP DETAIL

NTS

NOTES:

1. STEEL PIPE COATED INSIDE AND COATED AND WRAPPED OUTSIDE MAY BE USED.
2. WHERE SEWER PIPES RUN PARALLEL WITH CREEKS OR STREAMS, HDPE PIPE SHALL BE USED. RIP RAP IS REQUIRED WITHIN 10 FEET OF SEWER EASEMENT. ALL SEWER OUTFALLS MUST BE LEFT ACCESSIBLE TO COUNTY SERVICE TRUCKS. GATES (12 FEET) WILL BE REQUIRED ON FENCES ACROSS SEWER LINES.
3. CONCRETE STRENGTH TEST MAY BE REQUIRED FOR ALL POURED IN PLACE CONCRETE.
4. REFER TO FULTON COUNTY STANDARD 401 FOR RIP RAP SPECIFICATIONS.
5. WHENEVER POSSIBLE, NO PIERS SHALL BE PLACED IN NORMAL FLOW OF CREEK.
6. ALL AERIAL CROSSINGS MUST BE APPROVED IN WRITING BY FULTON COUNTY.
7. ANY SPAN EXCEEDING 30 FEET REQUIRES SUBMITTAL OF DESIGN CALCULATIONS.
8. ALL AERIAL CROSSINGS MUST AT MINIMUM HAVE STEEL CASING PIPE.
9. ALL PIER FOUNDATIONS SHALL CONFORM TO THE RECOMMENDATIONS OF A PROFESSIONAL ENGINEER LICENSED IN THE STATE GEORGIA.
10. AERIAL CROSSING SHALL BE APPROVED BY LOCAL AUTHORITY HAVING JURISDICTION PRIOR TO ACCEPTANCE BY FULTON COUNTY.
11. NO PLASTIC PIPE ALLOWED FOR AERIAL CROSSINGS.
12. STEEL CASING PIPE SHALL BE SPIRAL WELDED OR SMOOTH WALL SEEM LESS WITH A MINIMUM YIELD STRENGTH OF 35000 PSI
13. EXPANSION JOINT BETWEEN PIERS SHALL BE INSTALLED IF REQUIRED BY DESIGN ENGINEER.

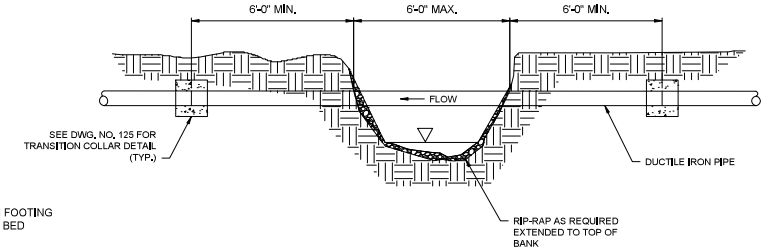


TYPICAL AERIAL STEEL OR D.I.P. PIPE CROSSING

NTS

DETAIL A

NTS



TYPICAL NON-PIER AERIAL D.I.P. SEWER LINE

NTS

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 118

SEWER PIPE DITCH CROSSING

DATE	REVISIONS	DATE	REVISIONS
M/Y	XXX	M/Y	XXX

DGS/DRN/CHKD: XXX

APPROVED: XXX

DATE: XX-X-XX

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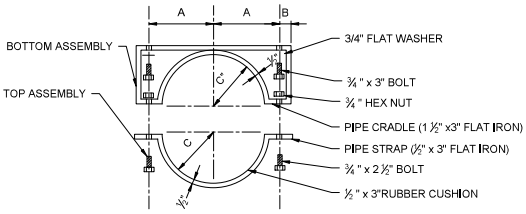
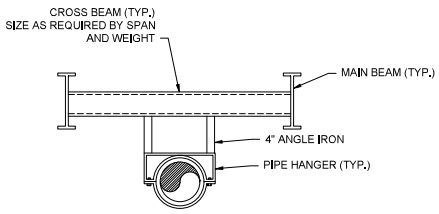
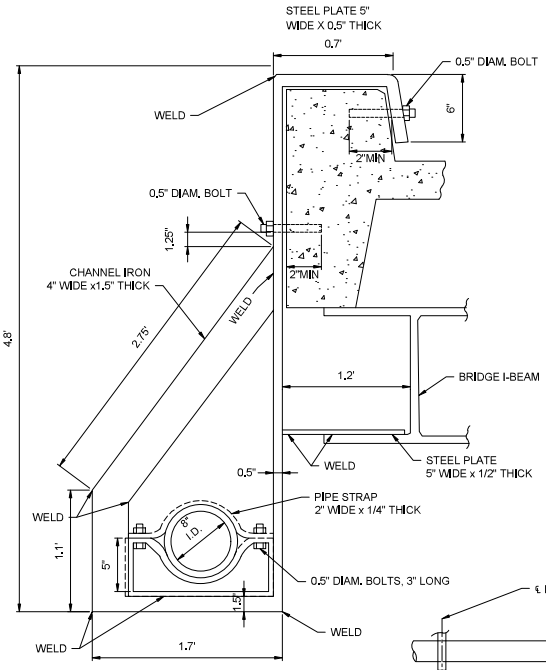


TABLE 119-1
PIPE HANGER DIMENSIONS

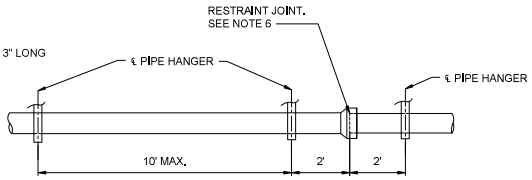
PIPE DIA. (IN.)	"A" (IN.)	"B" (IN.)	"C" (RADIUS) (IN.)
8	6.53	2.00	4.53
12	8.60	2.00	6.60
16	10.70	2.00	6.70



TYPICAL WATER MAIN
SUPPORT DETAILS
NTS



PIPE HANGER SECTION
(FOR 8" DIAMETER PIPE)
NTS



PLAN FOR PIPE HANGER SPACING
NTS

NOTES:

1. PROVIDE TWO SUPPORTS PER JOINT, TWO FEET FROM JOINT
2. ENGINEER SHALL DESIGN SUPPORT DETAILS FOR WATER MAINS LARGER THAN 8" IN DIAMETER
3. STEEL SHALL BE A-36
4. WELDING SHALL BE E-70XX. ALL WELDS SHALL BE $\frac{3}{16}$" FILET WELDS, UNLESS NOTED OTHERWISE. ALL BUTT WELDS SHALL BE $\frac{3}{4}$" FULL PENETRATION WELDS.
5. ALTERNATE DESIGN MAY BE SUBMITTED BY THE ENGINEER FOR APPROVAL BY FULTON COUNTY PUBLIC WORKS DEPARTMENT
6. RESTRAINT JOINTS EQUAL TO AMERICAN "FLEX-RING" OR "LOK-RING", U.S. PIPE "TR FLEX" OR "HP LOK", CLOW "SUPER-LOCK", OR GRIFFIN "SNAP-LOK", SHALL BE USED ON ALL SUSPENDED PIPES PLUS TWO JOINTS OR 30' MINIMUM ON EITHER SIDE.
7. PRIMER SHALL BE NO. 1-8 RED PRIMER AND CONFIRM TO GEORGIA D.O.T. ARTICLE 870.2.01 PRIMER SHALL BE APPLIED TO A MINIMUM THICKNESS OF 4 MILS.
8. PAINT SHALL BE NO. 3-B GREEN, BRUSHING, ROLLER, AIRLESS TYPE AND CONFORM TO GEORGIA D.O.T. ARTICLE 870.2.01 PAINT SHALL BE APPLIED TO A MINIMUM THICKNESS OF 10 MILS.
9. TWO BOTTOM ASSEMBLIES USED TOGETHER MAY BE REQUIRED FOR SOME INSTALLATIONS.

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 119

TYPICAL PIPE HANGER AND SUPPORT DETAILS

DATE	REVISIONS	DATE	REVISIONS
M/Y	XXX	M/Y	XXX

DGS/DRN/CHKD: XXX
APPROVED: XXX
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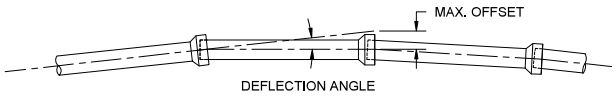
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NOTES:

1. WHEN A PIPE IS DEFLECTED, THE PIPE SHALL FIRST BE ASSEMBLED IN A STRAIGHT LINE, BOTH HORIZONTALLY AND VERTICALLY BEFORE THE DEFLECTION IS MADE.
2. FOR MECHANICAL JOINT PIPE, THE BOLTS SHALL BE PARTIALLY TIGHTENED BEFORE THE LENGTH OF PIPE IS DEFLECTED. ANY SUPPORTED PIPE, SHALL BE SO SUPPORTED THAT THERE IS ZERO DEFLECTION EXCEPT WHERE EITHER A HORIZONTAL OR VERTICAL CURVE ON A BRIDGE OR OTHER STRUCTURE IS INVOLVED.
3. THRUST RESTRAINTS MAY BE REQUIRED ON THE DEFLECTED JOINTS.

TABLE 120-1
MAXIMUM PERMISSIBLE JOINT DEFLECTIONS

NOMINAL PIPE SIZE (IN.)	PUSH-ON JOINT (18 FT. JOINTS)		MECHANICAL JOINT (18 FT. JOINTS)	
	DEFLECTION ANGLE (DEG.)	MAX. OFFSET (IN.)	DEFLECTION ANGLE (DEG.)	MAX. OFFSET (IN.)
3	5	19	8	31
4	5	19	8	31
6	5	19	7	27
8	5	19	5	20
10	5	19	5	20
12	5	19	5	20
14	3	11	3.5	13.5
16	3	11	3.5	13.5
20	3	11	3	11
24	3	11	2	9
30	3	11	---	—
36	3	11	---	—
42	3	11	---	—
48	3	—	---	—



DUCTILE IRON PIPE DEFLECTION DETAIL
NTS

TABLE 120-2
MECHANICAL JOINT BOLT USAGE CHART

NOMINAL PIPE DIAMETER (IN.)	BELL DEPTH (IN.)	BOLTS				APPROX. JOINT ACCESSORY WEIGHT (LBS.)
		DIAMETER (IN.)	LENGTH (IN.)	NUMBER PER JOINT	REC. TORQUE (FT.-LBS.)	
4	2.5	0.75	3.5	4	75-90	10
6	2.5	0.75	3.5	6	75-90	16
8	2.5	0.75	4	6	75-90	25
10	2.5	0.75	4	8	75-90	30
12	2.5	0.75	4	8	75-90	40
14	3.5	0.75	4.5	10	75-90	45
16	3.5	0.75	4.5	12	75-90	55
18	3.5	0.75	4.5	12	75-90	65
20	3.5	0.75	4.5	14	75-90	85
24	3.5	0.75	5	16	75-90	105
30	4	1	6	20	100-120	220
36	4	1	6	24	100-120	285
42	4	1.25	6.5	28	120-150	400
48	4	1.25	6.5	32	120-150	475

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 120

PIPE JOINT DEFLECTION AND BOLT USAGE

DATE	REVISIONS	DATE	REVISIONS
M/Y	XXX	M/Y	XXX

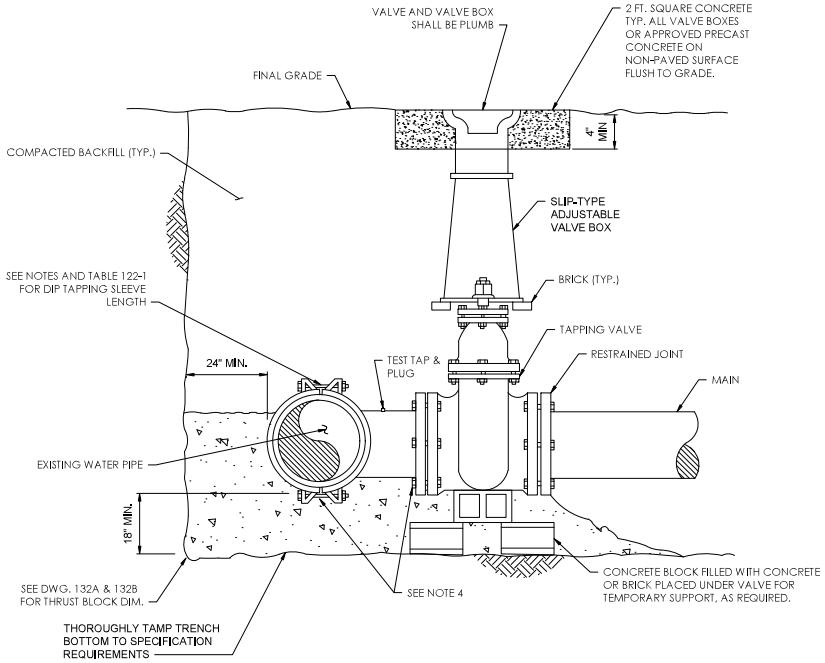
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NOTES:

1. ALL TAPPING SLEEVES AND VALVES SHALL BE HYDROSTATICALLY TESTED PRIOR TO TAP.
2. TEMPORARILY SUPPORT TAPPING SLEEVE AND VALVE PRIOR TO HYDROSTATIC TESTING; UPON ACCEPTANCE OF TEST, POUR INDICATED PERMANENT CONCRETE BLOCK AND SUPPORT PAD.
3. MAKE TAP, LINE EXTENSION AND BACKFILL.
4. COVER GLANDS AND BOLTS WITH HEAVY POLYETHYLENE SHEETING TO KEEP CONCRETE FROM BONDING. TYPICAL WHENEVER BOLTS OR GLANDS MAY BE "WRAPPED-UP" IN CONCRETE.
5. COAT TAPPING SLEEVE AND BOLTS WITH AN APPROVED BITUMASTIC COATING BEFORE POURING CONCRETE. TYPICAL FOR ALL STEEL INCLUDING RODS, COUPLINGS, STRAPS, AND OTHER BURIED STEEL. SEE NOTE 4, DETAIL 127 FOR COATING.
6. WORKMEN INSTALLING TAPPING SLEEVE AND VALVE SHALL FOLLOW MANUFACTURER'S INSTALLATION PROCEDURES AND THE REQUIREMENTS OF FULTON COUNTY ENGINEER'S OFFICE.

TABLE 122-1
MAXIMUM TAPPING SLEEVE LENGTH

MAIN & TAP (IN. NOMINAL)	LENGTH ALONG RUN (IN.)
6x2, 6x3, 6x4, 6x6	18
8x2, 8x3, 8x4, 8x6	19
8x8	21
10x2, 10x3, 10x4, 10x6	19
10x8, 10x10	23
12x2, 12x3, 12x5, 12x6	19
12x8	21
12x10, 12x12	25

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 122

TAPPING SLEEVE AND VALVE INSTALLATION DETAILS

DATE	REVISIONS	DATE	REVISIONS
M/Y	XXX	M/Y	XXX

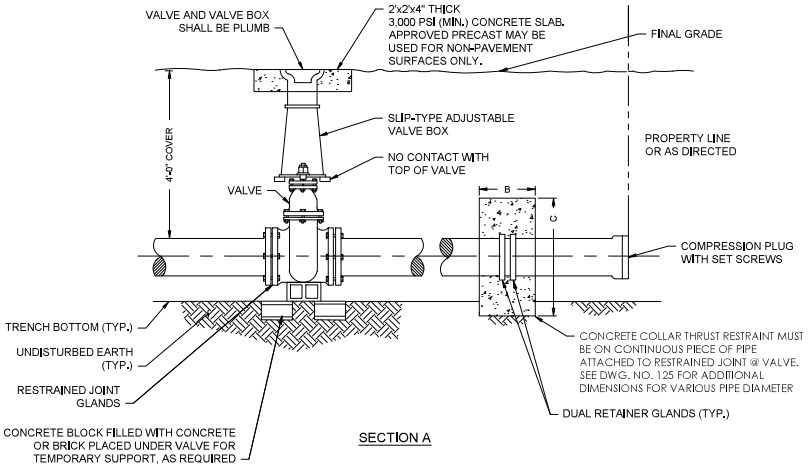
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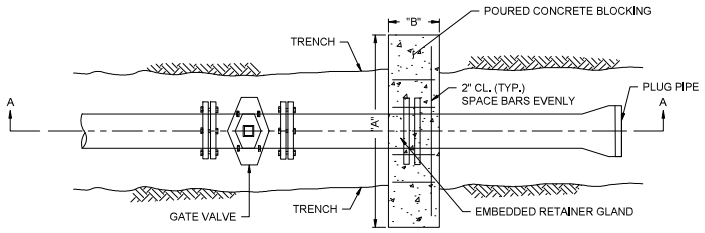
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SECTION A



PLAN VIEW
NTS

MAIN EXTENSION BLOCKING DETAIL
NTS

NOTES:

1. STUB OUT MUST BE HYDROSTATICALLY TESTED WITH REST OF WATER MAIN.
2. IN LIEU OF SLIP-JOINT AND COMPRESSION PLUG, M.J. JOINTS MAY BE USED WITH M.J. PLUGS.
3. REFER TO DWG. NO. 127 FOR RODDING RESTRAINTS.
4. ANCHOR BLOCKING DETAIL TO BE USED AT THE END OF ANY COUNTY ROAD WHERE WATER LINE MAY BE EXTENDED AT A FUTURE DATE.
5. ALL CONCRETE TO BE 3000 PSI.
6. ALL STEEL TO BE 60,000 PSI.
7. TERMINATION DETAIL FOR LARGER DIAMETER PIPE SHALL BE DETERMINED FOR EACH PROJECT.

TABLE 124-1
MAIN EXTENSION BLOCKING DIMENSIONS

PIPE SIZE (IN.)	"A" (IN.)	"B" (IN.)	"C" (IN.)	REQ'D STEEL (EA. WAY)
8	36	18	36	4 - #4
10	48	18	42	4 - #4
12	54	24	54	4 - #4
16	78	24	60	6 - #4

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 124

STUB OUT AND EXTENSION DETAILS

DATE	REVISIONS	DATE	REVISIONS
M/Y	XXX	M/Y	XXX

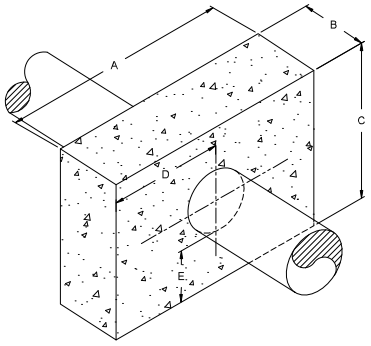
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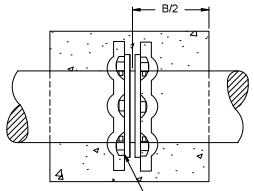
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TYPICAL DETAIL - ISOMETRIC VIEW
NTS



TYPICAL DETAIL - ELEVATION
NTS

NOTES:

1. ALL MAINS GREATER THAN 16-IN. NOMINAL DIAMETER SHALL BE INDIVIDUALLY CALCULATED BY THE FULTON COUNTY ENGINEERING DEPARTMENT.
2. SOIL CONDITIONS SHALL BE VERIFIED BY THE ENGINEER BEFORE THRUST RESTRAINT DESIGN IS IMPLEMENTED.
3. CONCRETE SHALL BE POURED AGAINST UNDISTURBED EARTH EXCEPT WHERE FORMWORK IS A MUST. FORMWORK MUST BE REMOVED AFTER CONCRETE IS CURED.
4. PIPE MUST BE DUCTILE IRON.

DESIGN DATA:

1. COLLAR DIMENSIONS ARE BASED ON A SOIL BEARING CAPACITY OF 2,000 POUNDS PER SQUARE FOOT, A RATED TEST PRESSURE OF 250 POUNDS PER SQUARE INCH (PSI), AND 3,000 PSI CLASS "A" CONCRETE.
2. UNDER ADVERSE CONSTRUCTION CONDITIONS, CONCRETE SHALL BE "HIGH EARLY" TYPE.

TABLE 125-1
MINIMUM DIMENSIONS FOR CONCRETE COLLAR ON DUCTILE IRON PIPE
TO BE USED WITH EMBEDDED DUCTILE IRON RETAINER GLAND

PIPE SIZE (IN.)	"A"	"B" (IN.)	"C"	"D"	"E"	VOLUME (CY)	CONCRETE WEIGHT (LBS)	THRUST (LBS)
4	2'-6"	12	2'-6"	1'-3"	1'-0"	0.23	919	4,524
6	2'-9"	12	2'-9"	1'-4½"	1'-1"	0.27	1,095	9,348
8	3'-0"	18	3'-0"	1'-6"	1'-2"	0.47	1,924	16,082
10	4'-0"	18	3'-6"	2'-0"	1'-4"	0.74	2,999	24,192
12	4'-6"	24	4'-6"	2'-3"	1'-9"	1.43	5,790	34,212
14	5'-6"	24	4'-6"	2'-9"	1'-8"	1.74	7,042	45,963
16	6'-6"	24	5'-0"	3'-3"	1'-10"	2.29	9,255	59,447

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 125

THRUST RESTRAINT CONCRETE COLLAR

DATE M/Y	REVISIONS	DATE M/Y	REVISIONS
XXX		XXX	

DGS/DRN/CHKD: XXX
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TABLE 126-1
TIE ROD CHART

FITTING	PIPE SIZE (IN.)	ROD DIAMETER (IN.)	NUMBER OF RODS	TOTAL THRUST (LBS)
TEES, PLUGS & VALVES	6	¾	⅔	5,655
	8	¾	⅔	10,055
	10	¾	3	15,710
	12	¾	4	22,620
	14	¾	6	30,800
	16	¾	4	40,215
	20	¾	6	62,835
	24	¾	8	90,480
	30	1	6	141,375
	36	1	6	203,595
11.25° BEND	6	¾	2	1,110
	8	¾	2	1,970
	10	¾	2	3,080
	12	¾	2	4,435
	14	¾	2	6,035
	16	¾	2	7,885
	20	¾	2	12,320
	24	¾	2	17,740
	30	1	2	27,720
	36	1	2	39,910
22.5° BEND	6	¾	2	2,210
	8	¾	2	3,925
	10	¾	2	6,130
	12	¾	2	8,825
	14	¾	2	12,015
	16	¾	2	15,690
	20	¾	2	24,515
	24	¾	2	35,305
	30	1	2	55,160
	36	1	2	79,435
45° BEND	6	¾	⅔	4,430
	8	¾	⅔	7,700
	10	¾	2	12,025
	12	¾	4	17,312
	14	¾	4	23,565
	16	¾	4	30,780
	20	¾	4	48,090
	24	¾	6	69,250
	30	1	4	108,205
	36	1	6	155,810

TABLE 126-1
TIE ROD CHART

FITTING	PIPE SIZE (IN.)	ROD DIAMETER (IN.)	NUMBER OF RODS	TOTAL THRUST (LBS)
90° BEND	6	¾	⅔	8,000
	8	¾	3	14,220
	10	¾	4	22,214
	12	¾	6	32,000
	14	¾	6	43,540
	16	¾	4	56,870
	20	¾	6	88,860
	24	¾	8	127,960
	30	1	6	199,930
	36	1	6	287,900

NOTES:

1. ON PIPE SIZES 6-IN. TO 14-IN., ROD AND NUT WILL HAVE MIN. YIELD STRENGTH OF 50,000 PSI. ON PIPE SIZES 16-IN. TO 24-IN., ROD AND NUT WILL HAVE MIN. YIELD STRENGTH OF 100,000 PSI.
2. RODS SHALL HAVE 6 IN. OF THREAD ON EACH END.
3. ALL METAL TO BE CLEANED AND COATED WITH AN APPROVED PROTECTIVE COATING FOLLOWING INSTALLATION AND PRIOR TO BACKFILLING. SEE NOTE 3, DWG. NO. 127.

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 126

THRUST RESTRAINT TIE ROD CHART

DATE	REVISIONS	DATE	REVISIONS
M/Y	XXX	M/Y	XXX

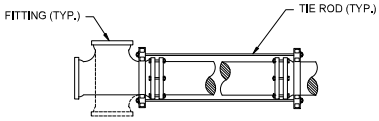
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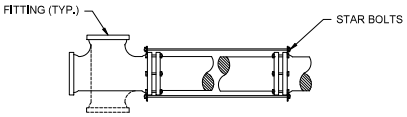
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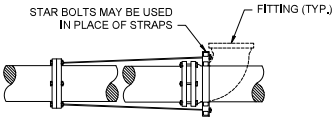
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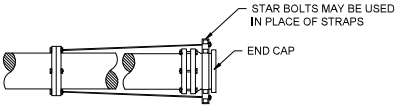
FITTING RESTRAINT - TYPE 1
STRAPS & RODS



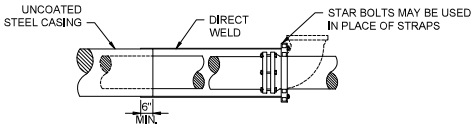
FITTING RESTRAINT - TYPE 2
STAR BOLTS & RODS



FITTING RESTRAINT - TYPE 3
FLANGE & MJ
FOR EXPOSED PIPES ONLY



FITTING RESTRAINT - TYPE 4
END CAP
FOR EXPOSED PIPES ONLY



FITTING RESTRAINT - TYPE 5
DIRECT WELD TO STEEL CASING
(10" OR LESS MAINS ONLY)

NOTES:

1. SEE DWG. NO. 126 FOR NUMBER AND DIAMETER OF RODS REQUIRED.
2. SEE DWG. NO. 128 FOR STRAP AND ROD DETAILS.
3. BURIED PIPE SHALL BE BELL AND SPIGOT OR MECHANICAL JOINT. NO FLANGE JOINTS ALLOWED FOR BURIED PIPE.
4. AFTER INSTALLATION, TIE-RODS AND CLAMP ASSEMBLIES SHALL BE CLEANED AND THOROUGHLY COATED WITH ROYSTON ROSKOTE R28 RUBBERIZED MASTIC OR APPROVED EQUIVALENT.
5. WHEN RESTRAINING FITTINGS TO STEEL CASING PIPE, TIE-RODS MUST BE WELDED DIRECTLY TO THE CASING - USE OF STAR BOLTS ARE PROHIBITED. CASING MUST BE FULLY WELDED THROUGHOUT ITS LENGTH AND BE A MINIMUM OF 30 FEET IN LENGTH. AREA TO BE WELDED MUST BE COMPLETELY BARE AND FREE OF ANY COATING MATERIAL.
6. FITTING SHOWN IS REPRESENTATIVE FOR ALL FITTINGS, VALVES, DEAD ENDS AND PLUGS.
7. RODS MUST HAVE A MINIMUM 6 INCHES OF THREAD ON EACH END.
8. ALL NUTS USED ON TIE RODS MUST HAVE A WASHER.
9. FOR RESTRAINING HPDE PIPE AT NON HDPE FITTINGS PROVIDE THE FOLLOWING:
   - MECHANICAL JOINT RESTRAINT - SERIES 2006PV BY EBBA IRON OR EQUAL.
   - MECHANICAL JOINT GLAND RESTRAINT - SERIES 15MJ00 BY EBBA IRON OR EQUAL.
   - PUSH-ON JOINT RESTRAINT - SERIES 15PF00 BY EBBA IRON OR EQUAL.
   - RESTRAINED FLANGE ADAPTOR (FOR EXPOSED PIPE ONLY) - SERIES 2100 BY EBBA IRON OR EQUAL.
10. FOR RESTRAINING PVC PIPE AT PIPE JOINTS AND FITTINGS PROVIDE THE FOLLOWING:
    - NON PVC MECHANICAL JOINT RESTRAINT - SERIES 2000PV BY EBBA IRON OR EQUAL.
    - NON PVC MECHANICAL JOINT GLAND RESTRAINT - SERIES 15MJ00 BY EBBA IRON OR EQUAL.
    - NON PNVPUSH-ON JOINT RESTRAINT - SERIES 15PF00 BY EBBA IRON OR EQUAL.
    - NON PVC RESTRAINED FLANGE ADAPTOR (FOR EXPOSED PIPE ONLY) - SERIES 2100 BY EBBA IRON OR EQUAL.
    - RESTRAINT HARNESS FOR PVC FITTINGS - SERIES 2500 BY EBBA IRON OR EQUAL.
    - RESTRAINT HARNESS FOR C900 PVC PIPES - SERIES 1900 BY EBBA IRON OR EQUAL.

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 127

THRUST RESTRAINT TIE ROD INSTALLATION

DATE	REVISIONS	DATE	REVISIONS
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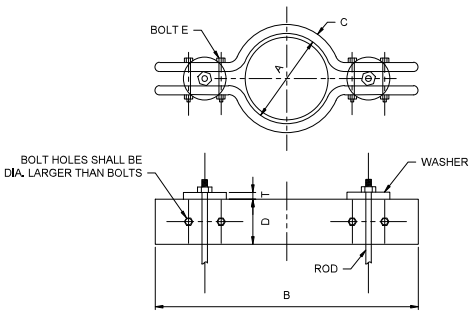
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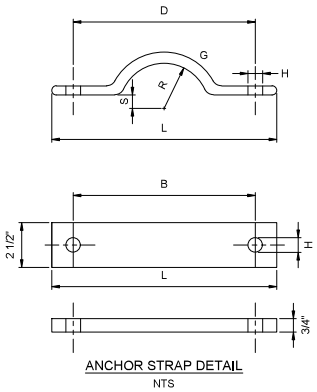
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STEEL SOCKET CLAMP DETAIL
NTS



ANCHOR STRAP DETAIL
NTS

NOTES:

1. INSTALLATION AND MATERIAL OF RODS, CLAMPS, STRAPS, BOLTS AND WASHERS SHALL CONFORM TO THE NATIONAL FIRE CODE - NFFA NO. 24 (LATEST REVISION).
2. YOKES AND ANCHOR STRAPS FOR FITTINGS LARGER THAN 12" SHALL BE DESIGNED AND APPROVED FOR SPECIFIC INSTALLATION.
3. RODS TO BE HIGH TENSILE, NOT ROLLED STEEL WITH TENSILE STRENGTH OF 110,000 PSI AND A MIN. OF 95,000 YIELD STRENGTH.
4. NUTS TO HAVE HEAVY DUTY SEMI-FINISH WITH NATIONAL COURSE THREADS.
5. AFTER INSTALLATION, TIE RODS AND CLAMP ASSEMBLY SHALL BE THOROUGHLY COVERED WITH ROYSTON LABORATORIES, INC. ROSKOTE MASTIC NO. A939 OR KOPPERS CO., INC. BITUMASTIC SUPERSERVICE BLACK OR APPROVED EQUIVALENT.

TABLE 128-1
STEEL SOCKET CLAMP DIMENSIONS

SIZE (IN.)	"A" (IN.)	"B" (IN.)	"C" (IN.)	"D" (IN.)	"E" (IN.)	"T" (IN.)	ROD AND C WASH SIZE (IN.)
4	5	14 5/8	1/4	2	5/8 x 3 1/2	5/8	3/4
6	7 1/8	18 7/8	1/2	2	5/8 x 3 1/2	5/8	3/4
8	9 5/16	19 1/8	5/8	2 1/2	5/8 x 3 3/4	5/8	3/4
10	11 1/2	21 3/8	5/8	2 1/2	5/8 x 3 3/4	3/4	3/4
12	13 1/2	25 1/8	5/8	3	5/8 x 3 3/4	3/4	3/4
14	13 3/4	28 1/4	3/4	3	7/8 x 4 1/2	7/8	3/4
16	17 7/8	31 3/8	3/4	4	7/8 x 4 1/2	7/8	3/4
20	22 1/8	37 3/4	3/4	4 1/2	1 1/4 x 5	1 1/8	3/4
24	26 3/8	44 1/4	3/4	5	1 1/4 x 5 1/2	1 1/4	3/4

TABLE 128-2
ANCHOR STRAP DIMENSIONS

SIZE (IN.)	"B" (IN.)	"G" (IN.)	"H" (IN.)	"L" (IN.)	"R" (IN.)	"S" (IN.)
4	10 1/8	5/8 x 2 1/2	13/16	12 1/2	2 1/2	3/4
6	12 1/8	5/8 x 2 1/2	13/16	14 1/2	3 5/16	3/4
8	14 3/8	5/8 x 2 1/2	13/16	16 3/4	4 21/32	3/4
10	16 11/16	5/8 x 2 1/2	1 1/16	19 1/16	5 3/4	3/4
12	19 5/16	5/8 x 3	1 1/16	22 5/16	6 3/4	7/8

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 128

THRUST RESTRAINTS STRAP AND ROD DETAILS

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M/Y	XXX	M/Y	XXX

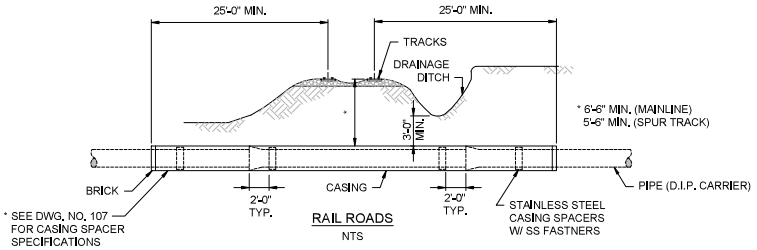
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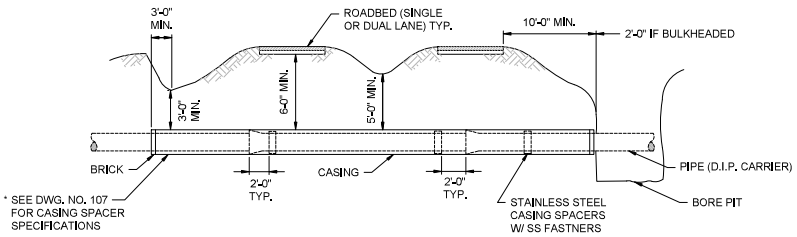
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DRAWING NO.
128

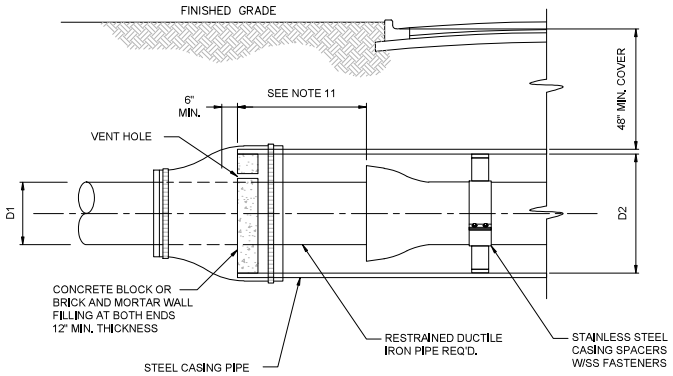
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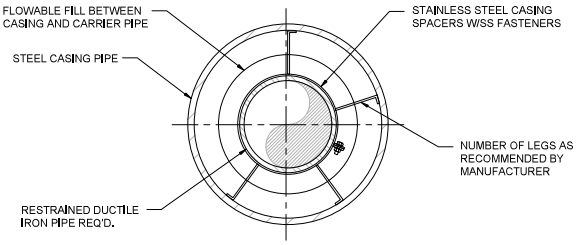
RAIL ROADS
NTS



INTERSTATE/LIMITED ACCESS/STATE ROADS
NTS



ELEVATION
NTS



SECTION
NTS

NOTES:

1. CASING TO BE STEEL PIPE (ROUND) WITH 45° BEVELED EDGES.
2. ALL CUTS TO BE SQUARED TO END.
3. JOIN ALL CASINGS WITH DOUBLE BEAD BUTT WELDS.
4. AUGER HEAD DIAMETER CANNOT EXCEED DIAMETER OF CASING BY MORE THAN 2".
5. BORING AND CASING SHALL BE INSTALLED SIMULTANEOUSLY.
6. CARRIER PIPES 6" OR LARGER REQUIRE BORE AND STEEL CASING.
7. CASING PIPE SHALL HAVE A PROTECTIVE COATING CONSISTING OF A COAL-TAR PRIMER COAT AND AN APPLICATION OF HOT COAL-TAR ENAMEL 3/32" (±1/32") THICK PLUS A BONDED 15 LB. ASBESTOS WRAP.
8. PIT TO BE NO CLOSER THAN 4' BEHIND CURB OR EDGE OF PAVEMENT.
9. TYPICAL PIT IS 32' LONG BY 10' WIDE.
10. CASING SHALL BE MANUFACTURED FROM STEEL CONFORMING TO ASTM:A 139, GRADE B.
11. THREE STAINLESS STEEL CASING SPACERS ARE REQUIRED PER JOINT.
12. CARRIER PIPE SHALL BE DUCTILE IRON.
13. FIELD LOCKING GASKETS REQUIRED INSIDE OF CASING.
14. ALL BORING MUST BE APPROVED AND A PERMIT OBTAINED FROM FULTON COUNTY PUBLIC WORKS (404) 612-7400 AND AUTHORITY HAVING JURISDICTION AS REQUIRED.
15. REFER TO DETAIL 107 FOR CASING SPECIFICATIONS.

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 129

CASING/PIPE SUPPORT INSTALLATION

DATE M/Y	REVISIONS	DATE M/Y	REVISIONS
XXX		XXX	

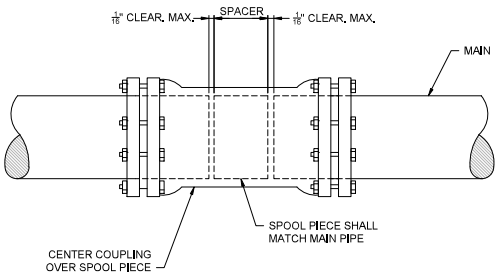
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APPROVED: XXX
DATE: XX-X-XX

FULTON COUNTY

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SOLID PIPE SLEEVE DETAIL
NTS

NOTES:

1. IF THE CLEARANCE BETWEEN THE MAIN PIPE AND SPOOL PIECE IS GREATER THAN 1/8-INCH AT IT'S NARROWEST POINT, THEN A FULL CIRCLE SPACER OR "DUTCHMAN" MUST BE CUT AND PLACED IN THE GAP BEFORE THE SLEEVE IS USED TO CLOSE THE JOINT.
2. WIDTH OF THE SPACER SHALL BE AS NEEDED TO MEET MAXIMUM CLEARANCES SHOWN IN DETAIL.
3. EACH PIPE SPIGOT SHALL BE MARKED TO INDICATE THE POINT WHERE THE SLEEVE WILL BE PROPERLY CENTERED OVER THE POINT.
4. "FULL-CIRCLE" REPAIR CLAMPS ARE NOT APPROVED FOR JOINING PIPE. SUCH CLAMPS ARE SPECIFICALLY DESIGNED FOR REPAIRS ONLY.
5. IF A STEEL SLEEVE IS USED, PROPERLY COAT BEFORE BACKFILLING.

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 130

PIPE JOINING USE OF SOLID SLEEVE

DATE	REVISIONS	DATE	REVISIONS
M/Y	XXX	M/Y	XXX

DGS/DRN/CHKD: XXX
APPROVED: XXX
DATE: XX-X-XX

FULTON COUNTY

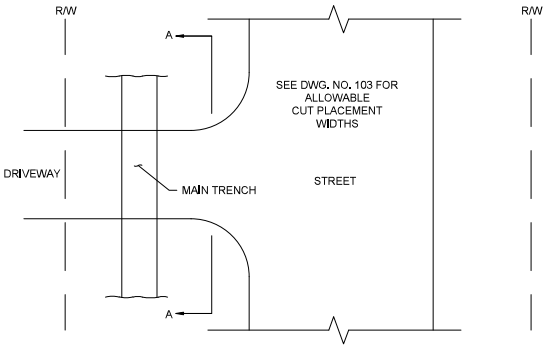
FULTON COUNTY PUBLIC WORKS
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404-612-7400 FAX: 404-224-0498

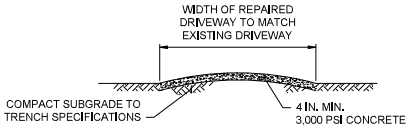
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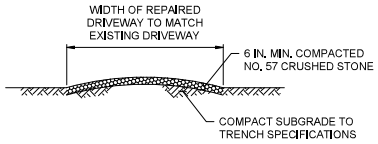
NOTES:

1. FINISHED SURFACE OF REPAIRED AREA TO BE FLUSH WITH ADJACENT EXISTING SURFACE.
2. EDGES OF CUT TO BE SAWN VERTICALLY.
3. EXPANSION JOINTS TO BE USED AS DIRECTED.
4. SEE DWG. 110 FOR STREET CUT REPAIRS.

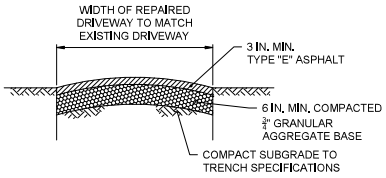




CONCRETE
SECTION A-A



GRAVEL
SECTION A-A



ASPHALT
SECTION A-A

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 131

DRIVEWAY CUT REPAIRS
CONCRETE, GRAVEL AND ASPHALT

DATE M/Y	REVISIONS	DATE M/Y	REVISIONS
	XXX		XXX

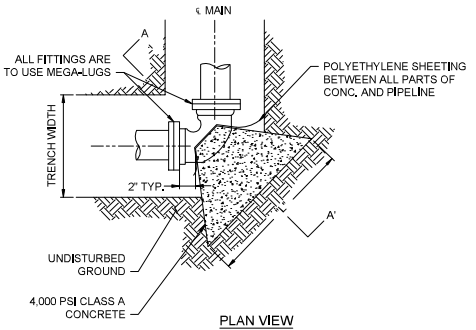
DGS/DRN/CHKD: XXX
APPROVED: XXX
DATE: XX-X-XX

FULTON COUNTY

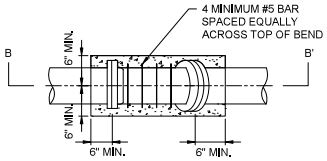
FULTON COUNTY PUBLIC WORKS
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404-612-7400 FAX: 404-224-0498

DRAWING NO.
131

Docusign Envelope ID: A3705B48-B7E5-4F52-8480-5FF929E99139



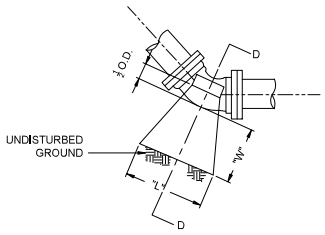
PLAN VIEW
NTS



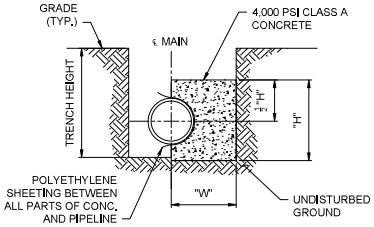
PLAN VIEW
NTS

NOTES:

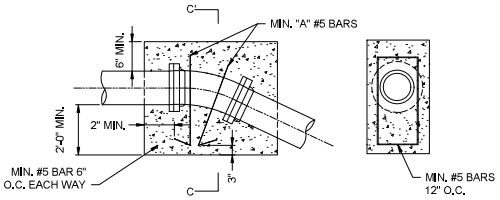
1. THRUST BLOCK DIMENSIONS ARE BASED ON 2,000 PSF SOIL BEARING PRESSURE AND 250 PSI TEST PRESSURE. ACTUAL INSIDE DIAMETER OF DUCTILE IRON PIPE CLASS 52 USED AS STANDARD.
2. SOIL CONDITIONS SHALL BE VERIFIED BY ENGINEER BEFORE THRUST BLOCK IS CONSTRUCTED. WHERE SOIL BEARING PRESSURE IS LESS THAN 2,000 PSF, THRUST BLOCK BEARING AREA SHALL BE INCREASED APPROPRIATELY.
3. ALL CONCRETE SHALL BE CLASS A, 4000 PSI.
4. SEE DWG. NO. 132B FOR THRUST BLOCK CONCRETE SPECIFICATIONS.



ELEVATION
NTS

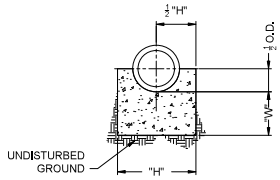


SECTION A-A'
NTS



SECTION B-B'
NTS

SECTION C-C'
NTS



SECTION D-D
NTS

HORIZONTAL THRUST DETAIL (1)
NTS

UPWARD THRUST DETAIL (2)
NTS

DOWNWARD THRUST DETAIL (3)
NTS

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 132A

STANDARD THRUST BLOCK DETAILS

DATE	REVISIONS	DATE	REVISIONS
M/Y	XXX	M/Y	XXX

DGS/DRN/CHKD: XXX
APPROVED: XXX
DATE: XX-X-XX

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DRAWING NO.
132A

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NOTES:

1. THRUST BLOCK DIMENSIONS ARE BASED ON 2,000 PSF SOIL BEARING PRESSURE AND 250 PSI TEST PRESSURE. ACTUAL INSIDE DIAMETER OF DUCTILE IRON PIPE CLASS 52 USED AS STANDARD.
2. SOIL CONDITIONS SHALL BE VERIFIED BY ENGINEER BEFORE THRUST BLOCK IS CONSTRUCTED. WHERE SOIL BEARING PRESSURE IS LESS THAN 2,000 PSF, THRUST BLOCK BEARING AREA SHALL BE INCREASED APPROPRIATELY.
3. ALL CONCRETE SHALL BE CLASS A, 3000 PSI.
4. SEE DWG. NO. 132A FOR THRUST BLOCK CONCRETE DETAILS.

TABLE 132B-1
DIMENSIONS FOR CONCRETE BLOCKING - HORIZONTAL THRUST

BEND	PIPE SIZE (IN.)	"W" (FT.)	"L" (FT.)	"H" (FT.)	VOLUME (CY)
11 1/4°	6	1.0	2.0	1.0	0.04
	8	1.0	2.0	1.0	0.05
	12	1.0	2.0	2.0	0.1
	16	2.0	3.0	2.0	0.3
	20	2.0	3.0	3.0	0.5
22 1/2°	6	1.0	2.0	1.0	0.05
	8	1.0	2.0	2.0	0.1
	12	2.0	3.0	2.0	0.3
	16	2.0	4.0	3.0	0.6
	20	3.0	5.0	3.0	1.0
45°	6	1.5	2.0	1.5	0.11
	8	2.0	3.0	2.0	0.3
	12	2.0	4.0	3.0	0.7
	16	3.0	5.0	4.0	1.4
	20	4.0	6.0	5.0	2.6
90°	6	1.75	2.5	2.0	0.2
	8	2.0	3.0	3.0	0.4
	12	4.0	6.0	4.0	2.1
	16	4.0	7.0	5.0	3.1
	20	5.0	8.0	7.0	5.3
TEE BRANCHES, PLUGS & CAPS (ALL CIRCUM-STANCES)	6	1.5	2.0	1.75	0.13
	8	2.0	3.0	2.0	0.3
	12	2.0	4.0	4.0	0.8
	16	3.0	5.0	5.0	1.5
	20	4.0	7.0	6.0	3.9

TABLE 132B-2
CONCRETE REQUIRED TO RESIST UPWARD THRUST

BEND	PIPE SIZE (IN.)	VOLUME (CY)	"A" NO. OF VERT. BARS REQ'D.
11 1/4°	6	0.3	2
	8	0.5	2
	12	1.4	2
	16	2.4	3
	20	3.8	3
22 1/2°	6	0.7	2
	8	1.2	2
	12	2.7	2
	16	4.8	3
	20	7.4	3
45°	6	1.2	2
	8	2.2	2
	12	4.9	2
	16	8.8	3
	20	13.7	3
90°	6	1.8	2
	8	3.1	2
	12	7.0	3
	16	12.4	3
	20	19.4	4

TABLE 132B-3
DIMENSIONS FOR CONCRETE BLOCKING FOR BENDS - DOWNWARD THRUST

BEND	PIPE SIZE (IN.)	"W" (FT.)	"L" (FT.)	"H" (FT.)	VOLUME (CY)
11 1/4°	6	1.0	2.0	1.0	0.04
	8	1.0	2.0	1.0	0.05
	12	1.0	2.0	2.0	0.1
	16	2.0	3.0	2.0	0.3
	20	2.0	3.0	3.0	0.5
22 1/2°	6	1.0	2.0	1.0	0.05
	8	1.0	2.0	2.0	0.1
	12	2.0	3.0	2.0	0.3
	16	2.0	4.0	3.0	0.6
	20	3.0	5.0	3.0	1.0
45°	6	1.5	2.0	1.5	0.11
	8	2.0	3.0	2.0	0.3
	12	2.0	4.0	3.0	0.7
	16	3.0	5.0	4.0	1.4
	20	4.0	8.0	5.0	2.8
90°	6	1.75	2.5	2.0	0.2
	8	2.0	3.0	3.0	0.4
	12	4.0	6.0	4.0	2.1
	16	4.0	7.0	5.0	3.1
	20	5.0	8.0	7.0	5.3

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FULTON COUNTY STANDARD DETAIL 132B

STANDARD THRUST BLOCK DETAILS

DATE	REVISIONS	DATE	REVISIONS
M/Y	XXX	M/Y	XXX

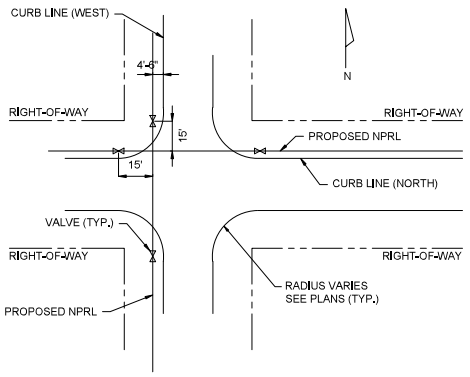
DGS/DRN/CHKD: XXX
APPROVED: XXX
DATE: XX-X-XX

FULTON COUNTY

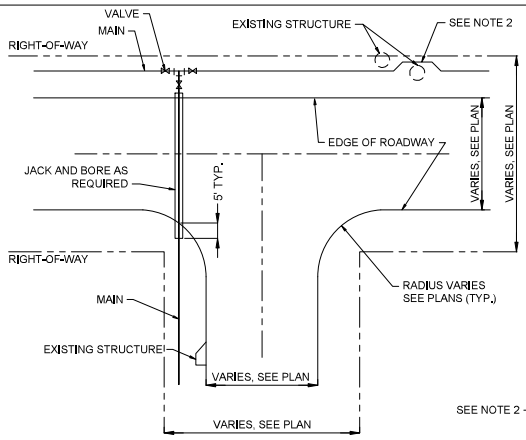
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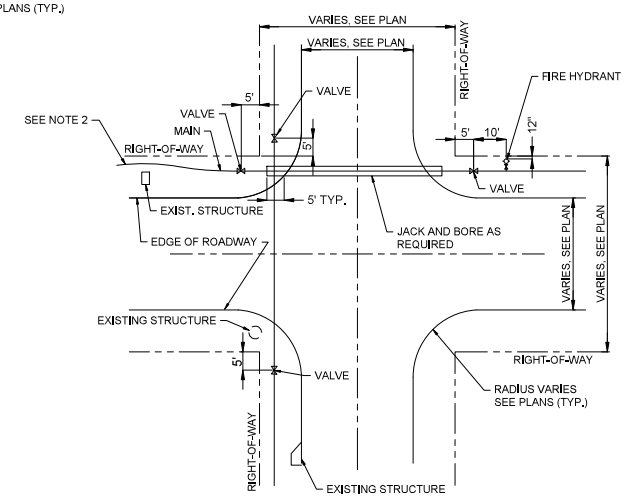
SUBDIVISION INTERSECTION
DETAIL VALVE & MAIN
NTS



TYPICAL BRANCH CONNECTION
AT INTERSECTION
NTS

NOTES:

1. DEPTH OF COVER OVER WATER MAINS SHALL BE MINIMUM OF 4 FT.
2. WHEN GOING AROUND STRUCTURES, ROUTE WATER MAIN AROUND STRUCTURES BY PIPE JOINT DEFLECTION, AND WHERE NECESSARY, INSTALL 45° BENDS OR LESS.
3. VALVES SHALL BE MARKED IN THE CURB WITH A SAWCUT "V" AND PAINT.



TYPICAL WATER MAIN
AT INTERSECTION
NTS

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 133

MAIN EXTENSION BLOCKING DETAILS
AND SUBDIVISION INTERSECTION DETAILS

DATE	REVISIONS	DATE	REVISIONS
M/Y	XXX	M/Y	XXX

DGS/DRN/CHKD: XXX
APPROVED: XXX
DATE: XX-X-XX

FULTON COUNTY

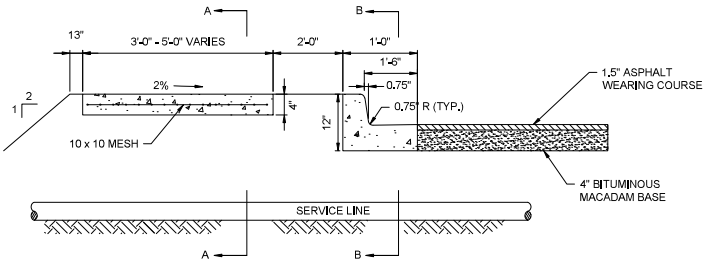
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404-612-7400 FAX: 404-224-0498

DRAWING NO.
133

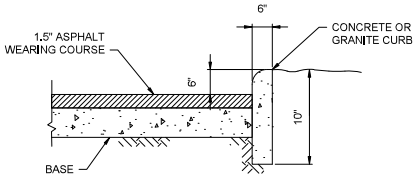
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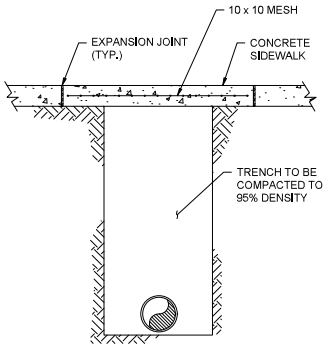
1. DETAILS ARE TYPICAL.
2. REPLACE SIDEWALKS, CURB AND GUTTER AND CURBING TO MATCH EXISTING MATERIALS AS DIRECTED.



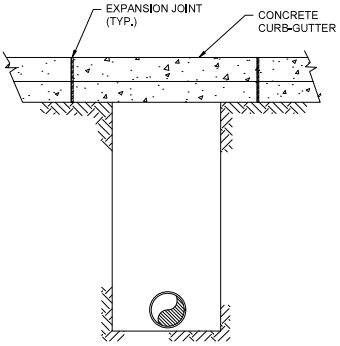
TYPICAL CURB-GUTTER DETAIL
NTS



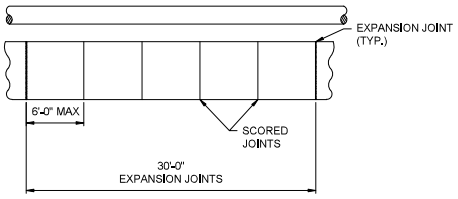
TYPICAL CURB DETAIL
NTS



SECTION A - A



SECTION B - B



TYPICAL SIDEWALK JOINT PLACEMENT DETAIL
NTS

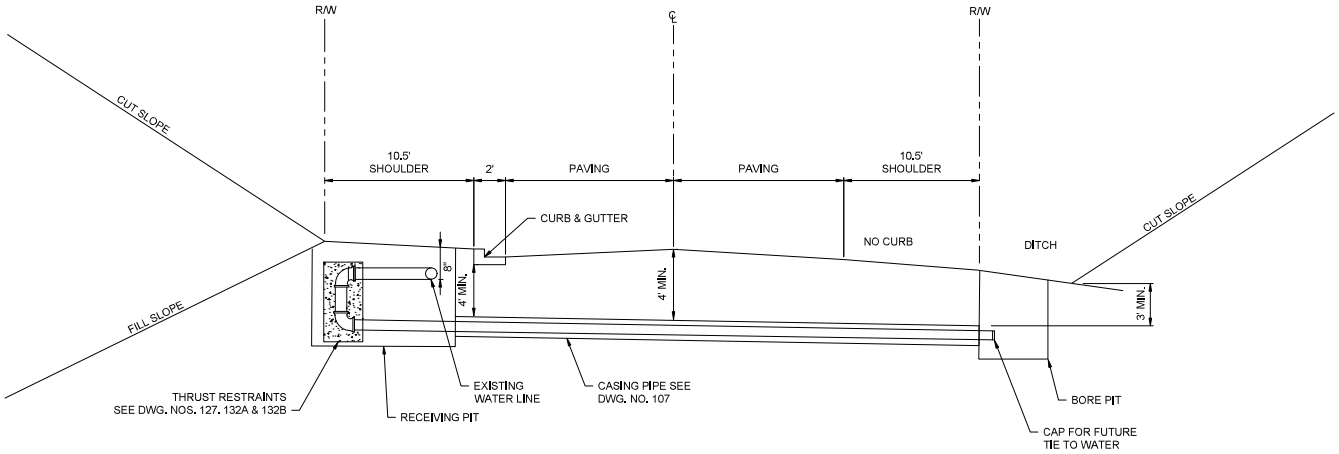
95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 134 SIDEWALK, CURB AND GUTTER REPAIRS		DATE M/Y	REVISIONS XXX	DATE M/Y	REVISIONS XXX	DGS/DRN/CHKD: XXX APPROVED: XXX DATE: XX-X-XX	FULTON COUNTY PUBLIC WORKS 141 PRYOR ST. ATLANTA, GA. 30303 404-612-7400 FAX: 404-224-0498	DRAWING NO. 134

Docusign Envelope ID: A3705B48-B7E5-4F52-8480-5FF929E99139

NOTES:

1. SEE DWG. NO. 125 FOR CONCRETE COLLAR THRUST RESTRAINT DETAIL.



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FULTON COUNTY STANDARD DETAIL 135 ROADWAY CROSSING BACK TAP DETAIL		DATE M/Y: XXX	REVISIONS: XXX	DATE M/Y: XXX	REVISIONS: XXX	DGS/DRN/CHKD: XXX APPROVED: XXX DATE: XX-X-XX	FULTON COUNTY FULTON COUNTY PUBLIC WORKS 141 PRYOR ST. ATLANTA, GA. 30303 404-612-7400 FAX: 404-224-0498	DRAWING NO. 135

Docusign Envelope ID: A3705B48-B7E5-4F52-8480-5FF929E99139

Exhibit I – Exhibit 2: Details – 300 Series

Docusign Envelope ID: A3705B48-B7E5-4F52-8480-5FF929E99139

DWG. NO.	DESCRIPTION
300	INDEX AND GENERAL NOTES
301	TYPICAL SECTIONS STREETS
302	TYPICAL SECTIONS SUBDIVISION STREETS
303	TYPICAL SECTIONS CUL DE SAC
304	DRIVEWAY DETAILS
305	DIVIDED ENTRANCE DETAILS
306	MISCELLANEOUS DETAILS
307	CURB AND GUTTER DETAILS
308	STANDARD SIDEWALK SECTION
309	TYPICAL SECTION TWO LANE ROAD DECELERATION LANE
310	LEFT TURN LANE WITH WIDING ON BOTH SIDES
311	LEFT TURN LANE WITH WIDING ON ONE SIDE
312	HANDICAP RAMP DETAILS
313	MINI ROUNDABOUT
314	CHICANES
315	SPEED TABLE
316	INTERSECTION HUMP
317	ONE LANE CHOKER
318	ENTRANCE TREATMENT
319	CENTER ISLAND
320	BEAM TYPE GUARD RAIL
322A	SIGN DETAILS AND LOCATIONS
322B	SIGN DETAILS AND LOCATION SHEET 2 OF 3
322C	SIGN DETAILS AND LOCATION SHEET 3 OF 3

GENERAL NOTES

1. SHOW THE FOLLOWING NOTES ON THE APPROVED PLANS:

   A. SIGNING, STRIPING, MARKING, AND HIGH LEVEL WARNING DEVICES TO BE PLACED AS SHOWN AND/OR AS DIRECTED BY THE FULTON COUNTY TRAFFIC ENGINEER AND/OR FULTON COUNTY INSPECTOR. THIS TRAFFIC CONTROL PLAN IS SUBJECT TO CHANGE BY THE FULTON COUNTY TRAFFIC ENGINEER.

   B. WARNING DEVICES SHALL BE PLACED PRIOR TO THE COMMENCEMENT OF ANY ROAD IMPROVEMENT WORK ON COUNTY ROADS AND SHALL REMAIN IN PLACE UNTIL THE CONCLUSION OF ALL SIGNING AND STRIPING WORK.

   C. ALL SIGNS AND WARNING DEVICES SHALL BE EITHER TYPE I BARRICADES OR DRUMS WITH WARNING LIGHTS ON EVERY OTHER DEVICE, AND SHALL CONFORM TO THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, (M.U.T.C.D.), STANDARDS AND FULTON COUNTY FOR COLOR, SIZE, REFLECTIVITY, HEIGHT, AND PLACEMENT.

   D. SPACING OF WARNING DEVICES IN FEET SHALL BE EQUAL TO THE POSTED SPEED OF THE ROAD IN MPH. (I.E., 30 FEET SPACING FOR 30 MPH SPEED LIMIT)

   E. ALL SIGNS SHALL CONFORM TO THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, (M.U.T.C.D.), STANDARDS AND FULTON COUNTY FOR COLOR, SIZE, REFLECTIVITY, HEIGHT, AND PLACEMENT.

   F. STRIPING (WHITE AND YELLOW) AND ARROW MARKING SHALL BE APPLIED USING FULTON COUNTY OR GEORGIA DEPARTMENT OF TRANSPORTATION, GDOT, STANDARD THERMOPLASTIC.

   G. WHEN NECESSARY, EXISTING STRIPING SHALL BE REMOVED BY GRINDING, UNLESS SPECIFIED BY THE FULTON COUNTY TRAFFIC ENGINEER.

   H. ALL SIGNS MUST BE INSTALLED CONCURRENTLY WITH THE PERFORMANCE OF THE STRIPING WORK.

   I. CONTACT THE FULTON COUNTY TRAFFIC INSPECTOR ENGINEER ONE WEEK PRIOR TO COMMENCEMENT OF ANY STRIPING WORK.

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 300

INDEX AND GENERAL NOTES

DATE	REVISIONS	DATE	REVISIONS

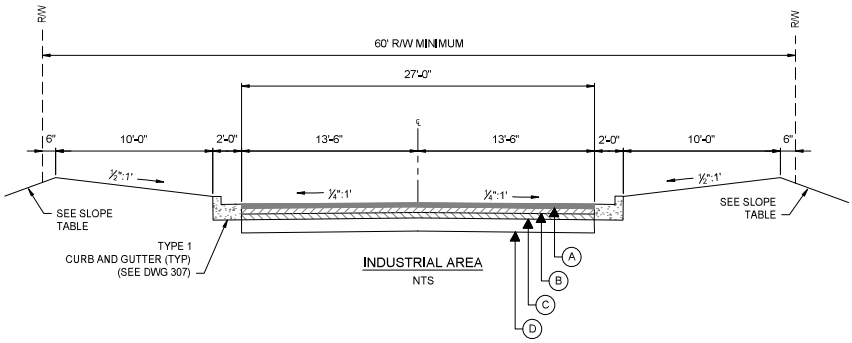
DGS/DRN/CHKD: XXX
APPROVED: XXX
DATE: XX-X-XX

FULTON COUNTY

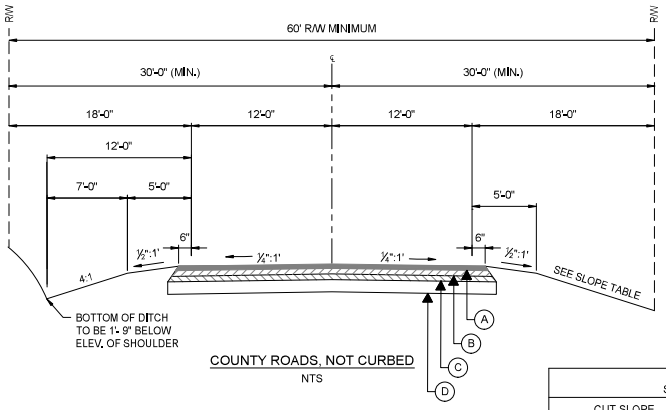
FULTON COUNTY PUBLIC WORKS
141 PRYOR ST. ATLANTA, GA. 30303
404-612-7400 FAX: 404-224-0498

DRAWING NO. 300

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INDUSTRIAL AREA
NTS

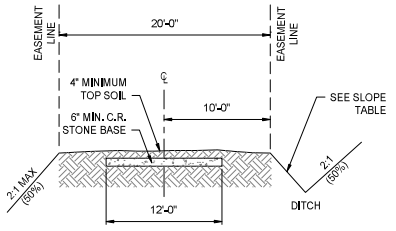


COUNTY ROADS, NOT CURBED
NTS

NOTES:

1. THE DIRECTOR OF PUBLIC WORKS DUE TO TRAFFIC CHARACTERISTICS MAY REQUIRE A HEAVIER PAVEMENT SECTION.
2. PAVING SECTION TO BE APPROVED BY DEPARTMENT OF PUBLIC WORKS.
3. RAISED PAVEMENT MARKERS TO BE USED AS REQUIRED AND MUST BE APPROVED BY COUNTY ENGINEER/INSPECTOR.
4. TACK COAT (CRS2H, SS1 OR AC30) TO BE USED AS REQUIRED.
5. PRIME COAT (RC70) TO BE USED AS REQUIRED.

TABLE 301-1 INDUSTRIAL & COUNTY ROADS
PAVEMENT MATERIAL SCHEDULE
Ⓐ ASPHALT, CONCRETE 9.5 mm SUPERPAVE, 165 lb/yd² (1-1/2")
Ⓑ ASPHALT, CONCRETE 19 mm SUPERPAVE, 220 lb/yd² (2")
Ⓒ ASPHALT, CONCRETE 25 mm SUPERPAVE, 330 lb/yd² (3")
Ⓓ GRADED AGGREGATE BASE (CRUSHER RUN) (8")



20' ACCESS EASEMENT
(DETENTION POND ROAD)
NTS

TABLE 301-2 SLOPE TABLE			
CUT SLOPE		FILL SLOPE	
0' - 5'	5' OR MORE	0' - 5'	5' OR MORE
4:1	2:1	4:1	2:1

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 301

TYPICAL SECTIONS
STREETS

DATE	REVISIONS	DATE	REVISIONS
M/Y	XXX	M/Y	XXX

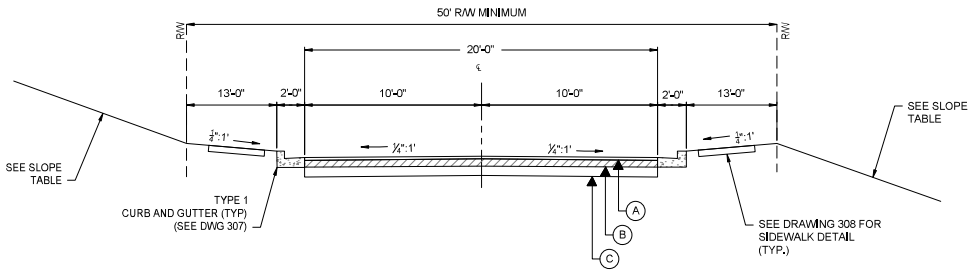
DGS/DRN/CHKD: XXX
APPROVED: XXX
DATE: XX-X-XX

FULTON COUNTY

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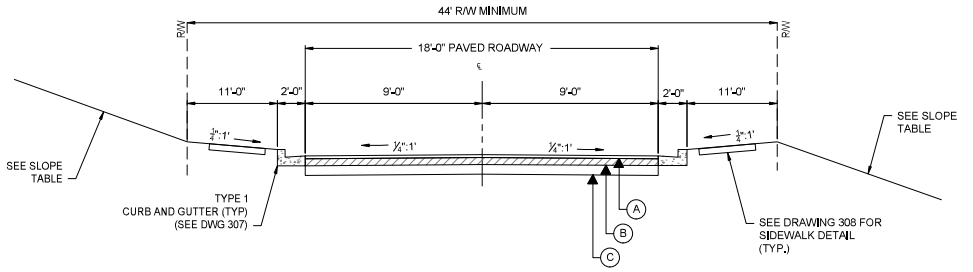


MAJOR SUBDIVISION STREET & ENTRANCE ROADS
SERVING 40 OR MORE HOUSING UNITS
NTS

NOTES:

1. THE DIRECTOR OF PUBLIC WORKS DUE TO TRAFFIC CHARACTERISTICS MAY REQUIRE A HEAVIER PAVEMENT SECTION.
2. PAVING SECTION TO BE APPROVED BY DEPARTMENT OF PUBLIC WORKS.
3. RAISED PAVEMENT MARKERS TO BE USED AS REQUIRED AND MUST BE APPROVED BY COUNTY ENGINEER/INSPECTOR.
4. TACK COAT (CRS2H, SS1 OR AC30) TO BE USED AS REQUIRED.
5. PRIME COAT (RC70) TO BE USED AS REQUIRED.

TABLE 302-1 MAJOR SUBDIVISION STREETS AND ENTRANCE ROADS
PAVEMENT MATERIAL SCHEDULE
Ⓐ ASPHALT, CONCRETE 9.5 mm SUPERPAVE, 165 lb/yd² (1-1/2")
Ⓑ ASPHALT, CONCRETE 19 mm SUPERPAVE, 220 lb/yd² (2")
Ⓒ GRADED AGGREGATE BASE (CRUSHER RUN) (8")



MINOR SUBDIVISION STREET & SIDE ROADS
SERVING LESS THAN 40 HOUSING UNITS
(APPLY HEAVY DUTY PAVEMENT WHERE REQUIRED)
NTS

TABLE 302-2 MINOR SUBDIVISION STREETS AND SIDE ROADS
PAVEMENT MATERIAL SCHEDULE
Ⓐ ASPHALT, CONCRETE 9.5 mm SUPERPAVE, 165 lb/yd² (1-1/2")
Ⓑ ASPHALT, CONCRETE 19 mm SUPERPAVE, 220 lb/yd² (2")
Ⓒ GRADED AGGREGATE BASE (CRUSHER RUN) (6")

TABLE 302-3 SLOPE TABLE			
CUT SLOPE		FILL SLOPE	
0' - 5'	5' OR MORE	0' - 5'	5' OR MORE
4:1	2:1	4:1	2:1

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 302

TYPICAL SECTIONS
SUBDIVISION STREETS

DATE	REVISIONS	DATE	REVISIONS
M/Y	XXX	M/Y	XXX

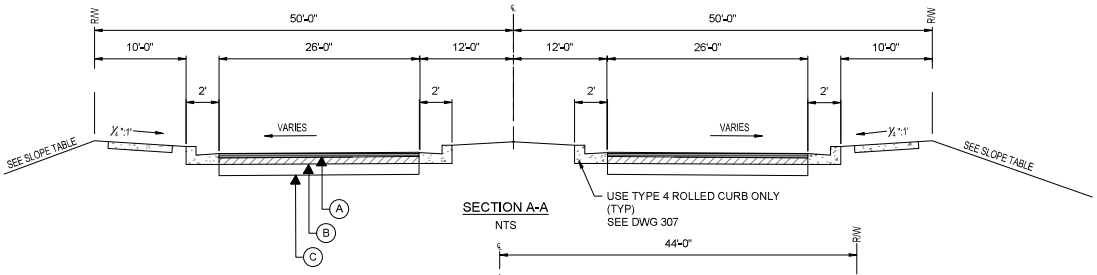
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APPROVED: XXX
DATE: XX-X-XX

FULTON COUNTY

FULTON COUNTY PUBLIC WORKS
141 PRYOR ST. ATLANTA, GA. 30303
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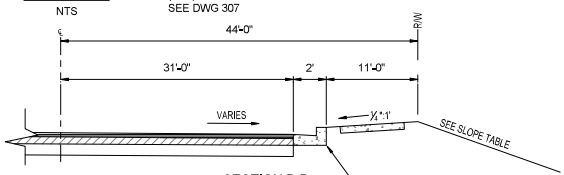
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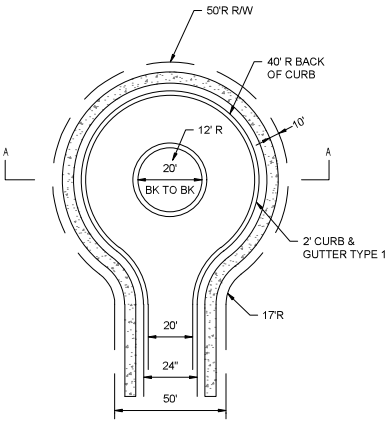
SECTION A-A
NTS

USE TYPE 4 ROLLED CURB ONLY (TYP)
SEE DWG 307

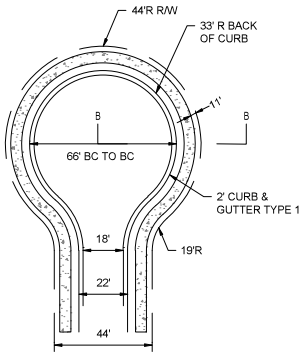


SECTION B-B
(HALF SECTION)
NTS

USE TYPE 4 ROLLED CURB ONLY (TYP)
SEE DWG 307



CUL-DE-SAC PLAN
MAJOR SUBDIVISION STREET
NTS



CUL-DE-SAC PLAN
MINOR SUBDIVISION STREET
NTS

NOTES:
1. RAISED PAVEMENT MARKERS TO BE USED AS REQUIRED AND MUST BE APPROVED BY COUNTY ENGINEER/INSPECTOR.
2. TACK COAT (CRS2H, SS1 OR AC30) TO BE USED AS REQUIRED.
3. PRIME COAT (RC70) TO BE USED AS REQUIRED.

TABLE 303-1 MAJOR SUB.DIV.STREETS & ENTRANCE SCHEDULE
PAVEMENT MATERIAL SCHEDULE
(A) ASPHALT, CONCRETE 9,5 mm SUPERPAVE, 165 LB/YD² (1-1/2")
(B) ASPHALT, CONCRETE 19 mm SUPERPAVE, 220 LB/YD² (2")
(C) GRADED AGGREGATE BASE (CRUSHER RUN) 8"

TABLE 303-2 MINOR SUB.DIV.STREET & SIDE ROADS
PAVEMENT MATERIAL SCHEDULE
(A) ASPHALT, CONCRETE 9,5 mm SUPERPAVE, 165 LB/YD² (1-1/2")
(B) ASPHALT, CONCRETE 19 mm SUPERPAVE, 220 LB/YD² (2")
(C) GRADED AGGREGATE BASE (CRUSHER RUN) 8"

TABLE 303-3 SLOPE TABLE			
CUT SLOPE		FILL SLOPE	
0'-5"	5' OR MORE	0'-5'	5' OR MORE
4:1	2:1	4:1	2:1

100% SUBMITTAL

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 303

TYPICAL SECTIONS
CUL DE SAC

DATE	REVISIONS	DATE	REVISIONS
M/Y	XXX	M/Y	XXX

DGS/DRN/CHKD: XXX
APPROVED: XXX
DATE: XX-X-XX

FULTON COUNTY

FULTON COUNTY PUBLIC WORKS
141 PRYOR ST. ATLANTA, GA. 30303
404-612-7400 FAX: 404-224-0498

DRAWING NO.
303

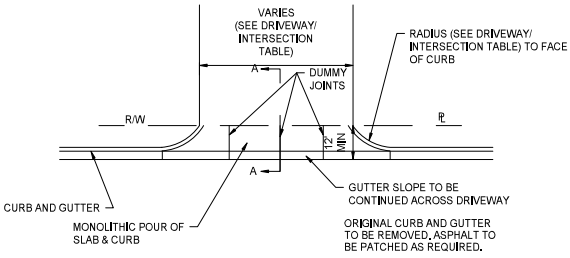
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TABLE 304-1 DRIVEWAY/INTERSECTION TABLE			
DRIVEWAY/INTERSECTION USE	WIDTH IN FEET MIN.	MAX.	MIN. RADIUS IN FEET
RESIDENTIAL DRIVEWAY (1-3 UNITS)	14	18	5' (RADIUS OR FLARE)
RESIDENTIAL STREET(TWO LANES)	20	25	30'-0"
COMMERCIAL DRIVEWAY	24	30	35'-0"
WHEN DESIGNED FOR TRUCKS	24	40	75'-0"
TWO-LANE DIVIDED DRIVEWAY	SEE DETAIL 305		30'-0"
FOUR LANE- DIVIDED PLANE	SEE DETAIL 305		30'-0"

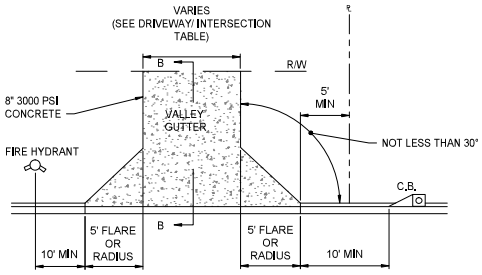
TABLE 304-2 CONCRETE DRIVES	
RESIDENTIAL	COMMERCIAL
6" CONCRETE VALLEY GUTTER	8" CONCRETE VALLEY GUTTER
4" CONCRETE DRIVEWAY	8" CONCRETE DRIVEWAY

NOTES:

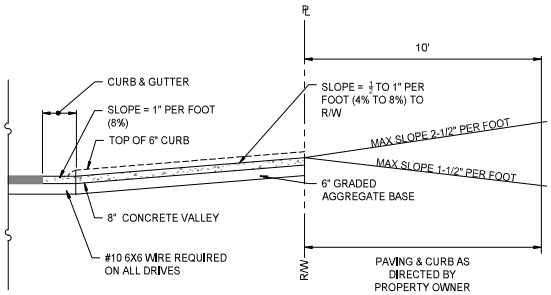
1. MAXIMUM DRIVEWAY GRADES SHOWN ABOVE ARE INTENDED FOR RESIDENTIAL DRIVEWAYS WHERE FLATTER GRADES ARE NOT FEASIBLE, GRADES FOR COMMERCIAL DRIVEWAYS OR FOR TRUCKS SHALL NOT BE GREATER THAN 11% UNLESS SPECIFIED OTHERWISE.
2. PUBLIC STREET INTERSECTIONS SHALL BE ASPHALT.



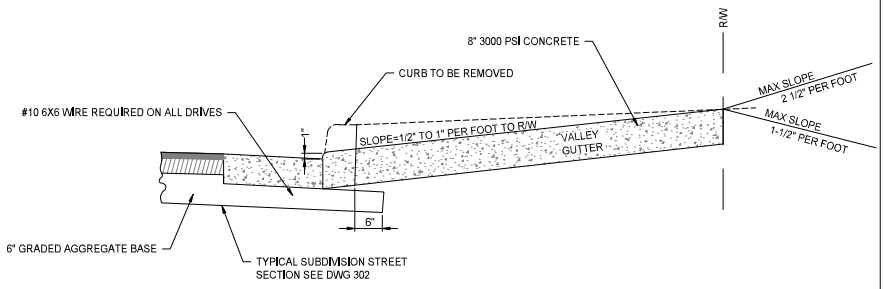
COMMERCIAL DRIVEWAY PLAN VIEW
NTS



RESIDENTIAL DRIVEWAY (1-3 UNITS)
NTS



SECTION A-A
NTS



SECTION B-B
NTS

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 304

DRIVEWAY DETAILS

DATE	REVISIONS	DATE	REVISIONS
M/Y	XXX	M/Y	XXX

DGS/DRN/CHKD: XXX
APPROVED: XXX
DATE: XX-X-XX

FULTON COUNTY

FULTON COUNTY PUBLIC WORKS
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DRAWING NO.
304

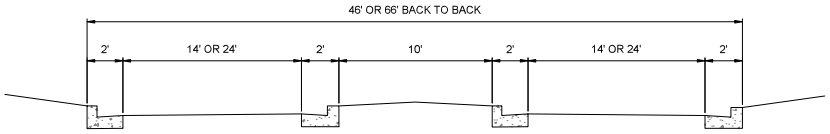
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TABLE 305-1 DRIVEWAY/INTERSECTION			
DRIVEWAY/INTERSECTION USE	WIDTH IN FEET		MIN. RADIUS IN FEET
	MIN.	MAX.	
RESIDENTIAL DRIVEWAY (1-3 UNITS)	14	18	5' (RADIUS OR FLARE)
RESIDENTIAL STREET (TWO LANES)	20	25	30'-0"
COMMERCIAL DRIVEWAY	24	30	35'-0"
WHEN DESIGNED FOR TRUCKS	24	40	75'-0"
TWO-LANE DIVIDED DRIVEWAY	46	66	30'-0"
FOUR-LANE DIVIDED DRIVEWAY	46	66	30'-0"

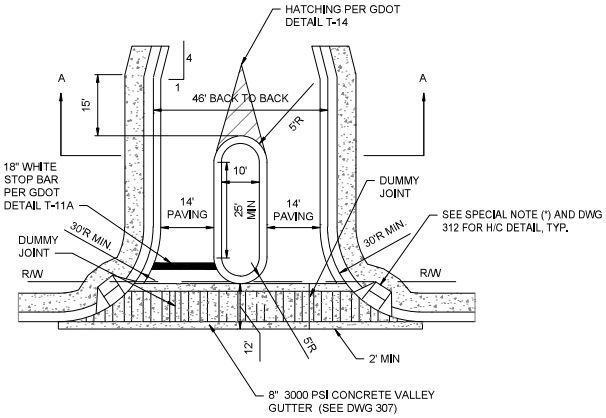
TABLE 305-2 CONCRETE DRIVES	
RESIDENTIAL	COMMERCIAL
6" CONCRETE VALLEY GUTTER	8" CONCRETE VALLEY GUTTER
4" CONCRETE VALLEY	8" CONCRETE DRIVEWAY

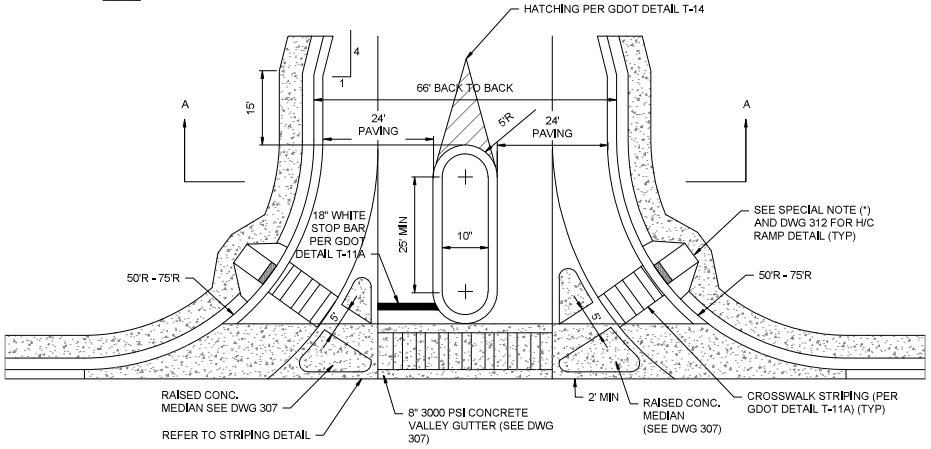
NOTES:

1. PUBLIC STREET INTERSECTIONS SHALL BE ASPHALT.
2. ALL STRIPING MUST BE DONE ACCORDING TO THE LATEST MUTCD STANDARDS.
3. ALL STRIPING DESIGNS TO BE APPROVED BY COUNTY ENGINEER/INSPECTOR.
4. FOR CURB RAMP WITH DETECTABLE WARNING: DETECTABLE WARNING SHALL BE 24 INCHES IN THE DIRECTION OF PEDESTRIAN TRAVEL AND EXTEND THE FULL WIDTH OF THE CURB RAMP OR FLUSH SURFACE. REFER TO GDOT STANDARD SHEET A4 FOR INSTALLATION INSTRUCTIONS.



SECTION A-A
NTS





OPTIONAL DIVIDED ENTRANCE
(PRIVATE OR COMMERCIAL)
NTS

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 305

DIVIDED ENTRANCE DETAILS

DATE	REVISIONS	DATE	REVISIONS
M/Y	XXX	M/Y	XXX

DGS/DRN/CHKD: XXX
APPROVED: XXX
DATE: XX-X-XX

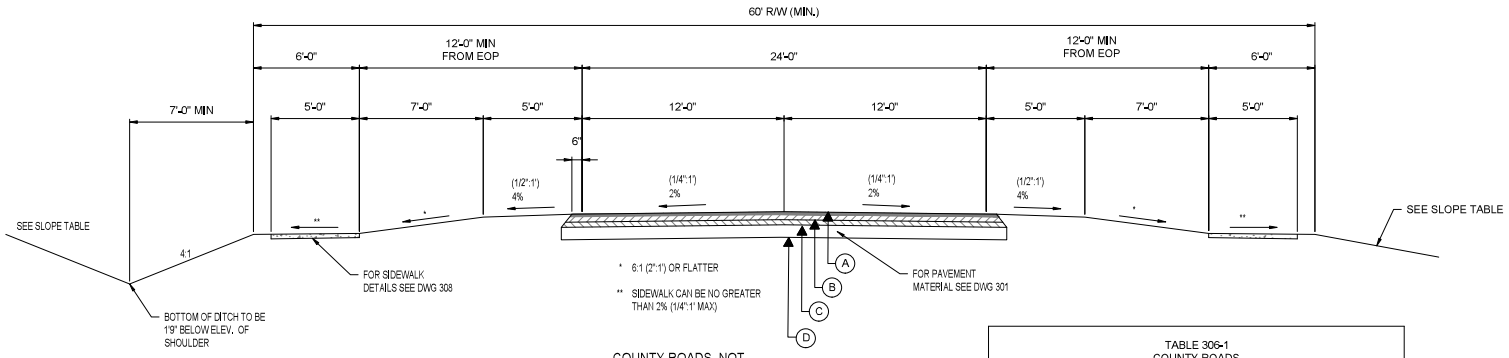
FULTON COUNTY

FULTON COUNTY PUBLIC WORKS
141 PRYOR ST. ATLANTA, GA. 30303
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DRAWING NO.
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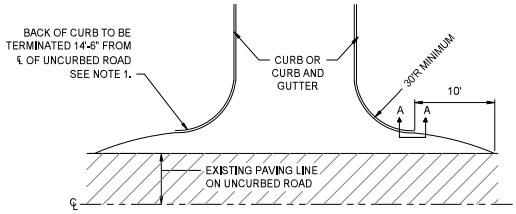
NOTE 1:
IF EXISTING UNCURBED ROAD IS WIDER THAN 29', THE DIMENSION IS TO BE 6'-6" FROM EXISTING EDGE OF PAVEMENT.



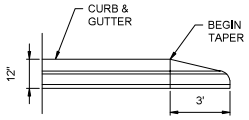
COUNTY ROADS, NOT CURBED WITH SIDEWALK
NTS

TABLE 306-1 COUNTY ROADS	
A	ASPHALT, CONCRETE 9.5 mm SUPERPAVE, 165 LB/YD²
B	ASPHALT, CONCRETE 19 mm SUPERPAVE, 220 LB/YD²
C	ASPHALT, CONCRETE 25 MM SUPERPAVE, 300 LB/YD²
D	GRADED AGGREGATE BASE (CRUSHER RUN) 8"

****TACK COAT (CRS2H, SS1 or AC30) TO BE USED AS REQUIRED
****PRIME COAT (RC70) TO BE USED AS REQUIRED



INTERSECTION OF CURBED AND UNCURBED ROADS
WITH NO TURN LANES
NTS



SECTION A-A
NTS

TABLE 306-2 SLOPE TABLE			
CUT SLOPE		FILL SLOPE	
0' - 5'	5' OR MORE	0' - 5'	5' OR MORE
4:1	2:1	4:1	2:1

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 306

MISCELLANEOUS DETAILS

DATE	REVISIONS	DATE	REVISIONS
M/Y	XXX	M/Y	XXX

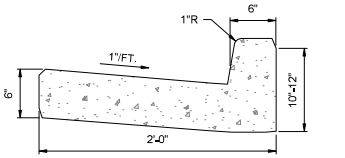
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APPROVED: XXX
DATE: XX-X-XX

FULTON COUNTY

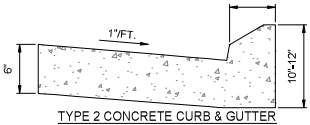
FULTON COUNTY PUBLIC WORKS
141 PRYOR ST. ATLANTA, GA. 30303
404-612-7400 FAX: 404-224-0498

DRAWING NO.
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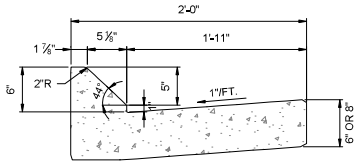
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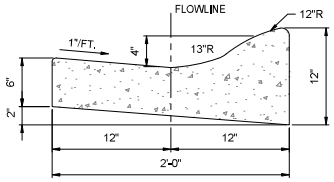
TYPE 1 CONCRETE CURB & GUTTER
INDUSTRIAL ROAD
NTS



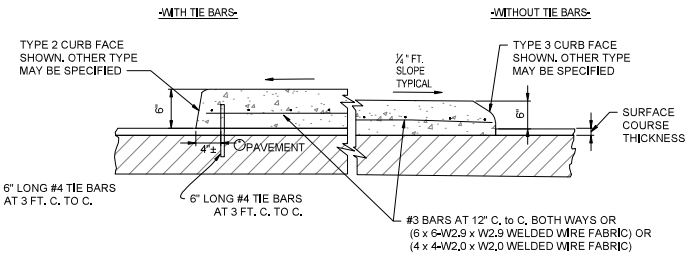
TYPE 2 CONCRETE CURB & GUTTER
MAJOR & MINOR RESIDENTIAL SIDE STREETS ONLY
NTS



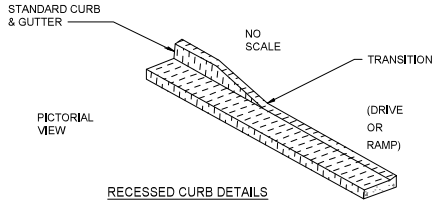
TYPE 3 MOUNTABLE CURB & GUTTER
NTS



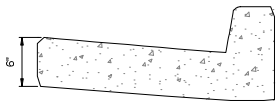
TYPE 4 CONCRETE ROLLED CURB & GUTTER
NTS



CONCRETE MEDIANS (ISLAND)
NTS



RECESSED CURB DETAILS
TYPICAL USE: AT DRIVEWAYS OR CURB CUT RAMPS
NTS



SECTION VIEW
NTS

NOTES:

1. IF CONCRETE MEDIAN INTERCEPTS PEDESTRIAN CROSSWALKS, HANDICAP RAMPS (SEE DWG 312) WILL BE REQUIRED.
2. CURB & GUTTER WILL BE MEASURED FOR PAYMENT THRU THE DRIVE OR RAMP OPENING.
3. CONCRETE PAVEMENT: TIE BARS WILL BE PLACED AFTER FINISHING AND BEFORE INITIAL SET HAS TAKEN PLACE.
4. ASPHALT PAVEMENT: TIE BARS MAY BE DRIVEN IN OR DRILLED AND GROUTED.

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 307

CURB & GUTTER DETAILS

DATE	REVISIONS	DATE	REVISIONS
M/Y	XXX	M/Y	XXX

DGS/DRN/CHKD: XXX
APPROVED: XXX
DATE: XX-X-XX

FULTON COUNTY

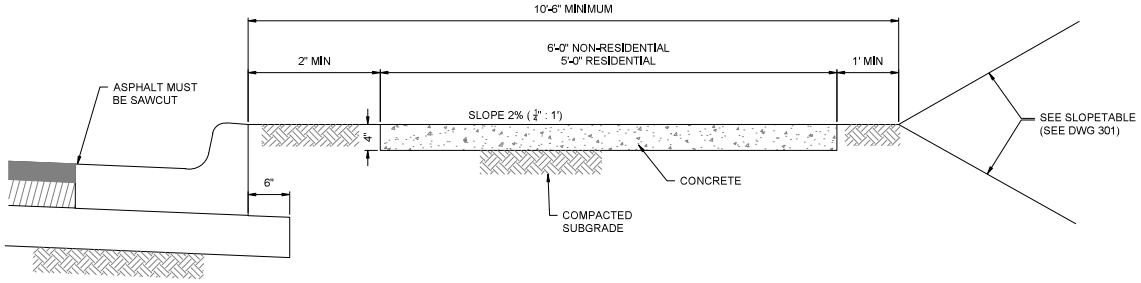
FULTON COUNTY PUBLIC WORKS
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404-612-7400 FAX: 404-224-0498

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307

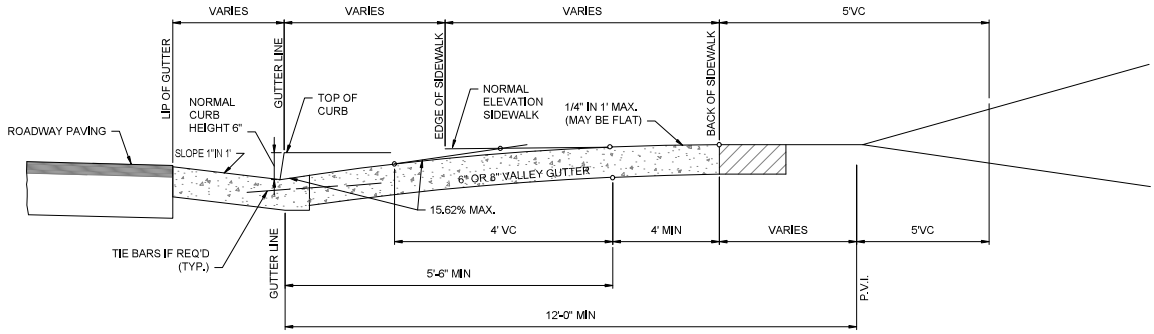
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NOTES:

1. USE ⅜" x 4" EXPANSION JOINTS AT CHANGE OF DIRECTIONS, CURBS, RIGID STRUCTURES AND RIGID PAVEMENT. ON STRAIGHT RUNS PROVIDE EXPANSION JOINTS EVERY 24 FEET.
2. TOOL ALL EXPOSED EDGES AND JOINTS TO ¼" RADIUS.
3. BROOM FINISH PERPENDICULAR TO TRAVEL.
4. PROVIDE ¾" DEEP SAW CUT CONTRACTION JOINTS EVERY 5'-0".
5. ZONING OVERLAY REQUIREMENTS MAY SUPERCEDE STANDARD DETAIL.



TYPICAL SECTION OF SIDEWALK
NTS



SECTION AT CENTERLINE OF DRIVEWAY
NTS

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 308 STANDARD SIDEWALK SECTION		DATE M/Y	REVISIONS XXX	DATE M/Y	REVISIONS XXX	DGS/DRN/CHKD: XXX APPROVED: XXX DATE: XX-X-XX	FULTON COUNTY	FULTON COUNTY PUBLIC WORKS 141 PRYOR ST. ATLANTA, GA. 30303 404-612-7400 FAX: 404-224-0498	DRAWING NO. 308

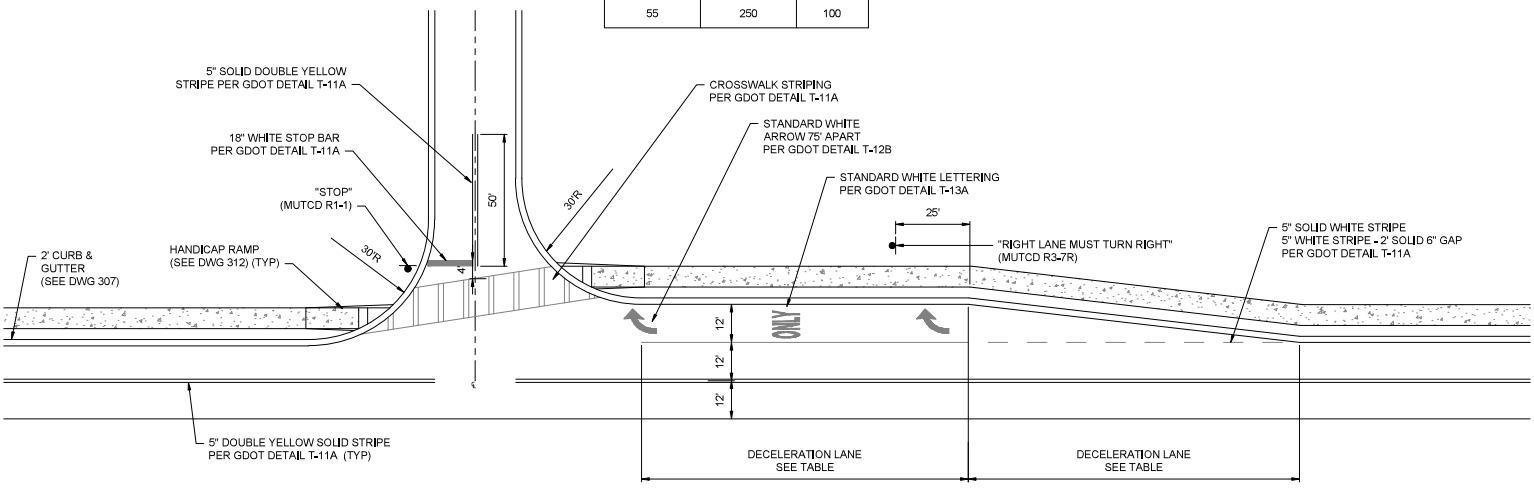
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NOTES:

1. ALL STRIPING MUST BE DONE IN THERMOPLASTIC PER LATEST MUTCD STANDARDS.
2. CONTACT FULTON COUNTY DEPT. OF PUBLIC WORKS, THREE (3) WORKING DAYS PRIOR TO STRIPING FOR INSPECTION OF LAYOUT.
3. STRIPING LAYOUT IS SUBJECT TO FIELD MODIFICATION PER THE FIELD INSPECTION.
4. SEE SIGN INSTALLATION DETAIL DWG 322 A/B/C.

TABLE 309-1
LANE LENGTHS

POSTED SPEED LIMIT (MPH)	DECELERATION LANE LENGTH (FT)	TAPER LENGTH (FT)
35	100	50
40	150	50
45	175	100
50	225	100
55	250	100



95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 309

TYPICAL SECTION TWO LANE ROAD
DECELERATION LANE

DATE	REVISIONS	DATE	REVISIONS
M/Y	XXX	M/Y	XXX

DGS/DRN/CHKD: XXX
APPROVED: XXX
DATE: XX-X-XX

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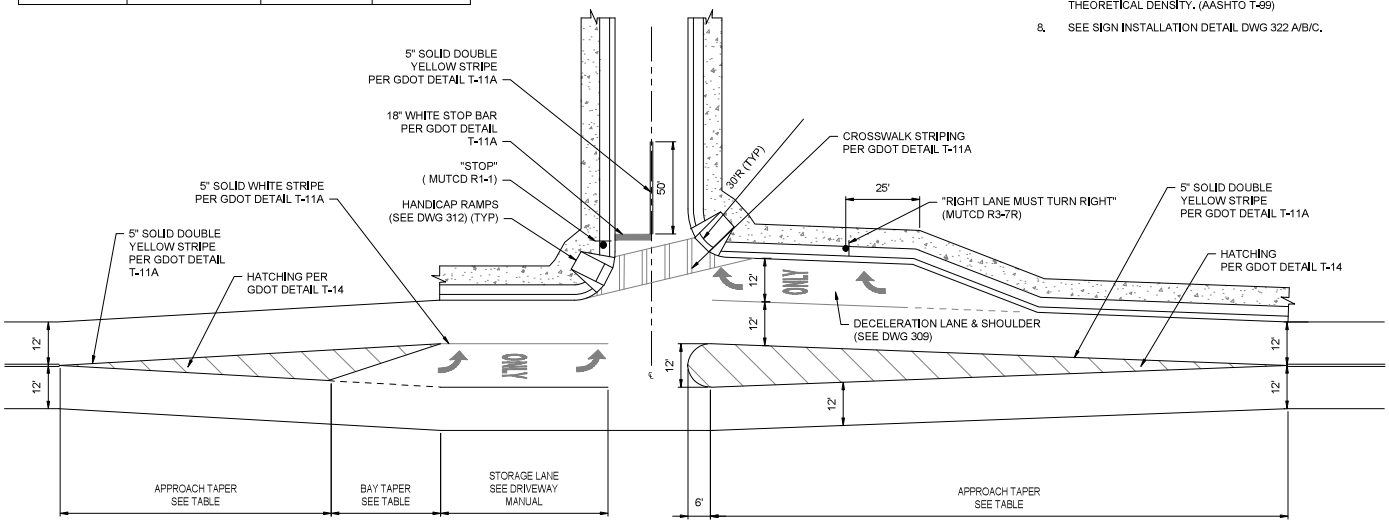
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TABLE 310-1 LANE LENGTHS			
POSTED SPEED LIMIT (MPH)	APPROACH TAPER 6' SHIFT LENGTH (FT)	BAY TAPER LENGTH (FT)	STORAGE LANE LENGTH (FT)
35	125	50	95-190
40	160	50	95-190
45	270	100	95-210
50	300	100	95-210
55	330	100	95-210

NOTES:

1. LEFT STORAGE TURN LANE LENGTH TO BE IN ACCORDANCE WITH TABLE 14 OF THE FULTON COUNTY DRIVEWAY MANUAL.
2. ALL STRIPING MUST BE DONE IN THERMOPLASTIC PER LATEST MUTCD STANDARDS.
3. CONTACT FULTON COUNTY DEPT. OF PUBLIC WORKS, THREE (3) WORKING DAYS PRIOR TO STRIPING FOR INSPECTION OF LAYOUT.
4. STRIPING LAYOUT IS SUBJECT TO FIELD MODIFICATION PER THE FIELD INSPECTION.
5. ON EXISTING PAVEMENTS WHERE LANE WIDENING IS REQUIRED, SAW CUT THE FIRST 12 INCHES OF PAVEMENT AND ESTABLISH REQUIRED SUB-GRADE MATERIAL AND THICKNESS.
6. NEW PAVEMENT IS REQUIRED ACROSS THE ENTIRE LENGTH AND WIDTH OF ALL PROPERTY FRONTAGE AND INSTALLED AS PER FULTON COUNTY INSPECTORS INSTRUCTIONS.
7. SUBGRADE TO BE COMPACTED TO 95% OF MAXIMUM THEORETICAL DENSITY. (AASHTO T-99)
8. SEE SIGN INSTALLATION DETAIL DWG 322 A/B/C.



95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 310

LEFT TURN LANE WITH WIDENING ON BOTH SIDES

DATE	REVISIONS	DATE	REVISIONS
M/Y	XXX	M/Y	XXX

DGS/DRN/CHKD: XXX
APPROVED: XXX
DATE: XX-X-XX

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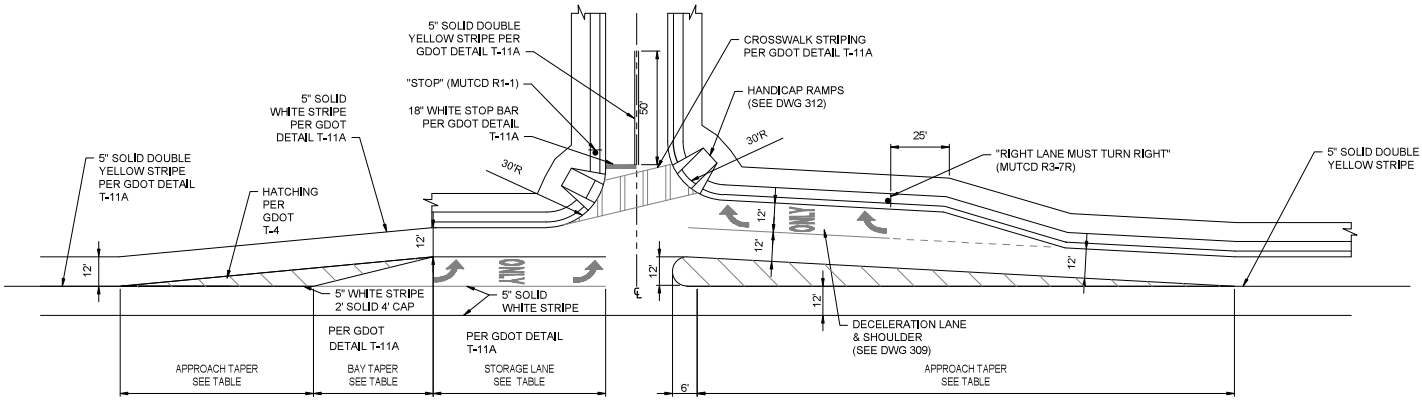
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TABLE 311-1 LANE LENGTHS			
POSTED SPEED LIMIT (MPH)	APPROACH TAPER 12' SHIFT LENGTH (FT)	BAY TAPER LENGTH (FT)	STORAGE LANE LENGTH (FT)
35	250	50	95-190
40	320	50	95-190
45	540	100	95-210
50	600	100	95-210
55	660	100	95-210

NOTES:

1. LEFT STORAGE TURN LANE LENGTH TO BE IN ACCORDANCE WITH TABLE 14 OF THE FULTON COUNTY DRIVEWAY MANUAL.
2. ALL STRIPING MUST BE DONE IN THERMOPLASTIC PER LATEST MUTCD STANDARDS.
3. CONTACT FULTON COUNTY DEPT. OF PUBLIC WORKS, THREE (3) WORKING DAYS PRIOR TO STRIPING FOR INSPECTION OF LAYOUT.
4. STRIPING LAYOUT IS SUBJECT TO FIELD MODIFICATION PER THE FIELD INSPECTION.
5. ON EXISTING PAVEMENTS WHERE LANE WIDENING IS REQUIRED, SAW CUT THE FIRST 12 INCHES OF PAVEMENT AND ESTABLISH REQUIRED SUB-GRADE MATERIAL AND THICKNESS.
6. NEW PAVEMENT IS REQUIRED ACROSS THE ENTIRE LENGTH AND WIDTH OF ALL PROPERTY FRONTAGE AND INSTALLED AS PER FULTON COUNTY INSPECTORS INSTRUCTIONS.
7. SUBGRADE TO BE COMPACTED TO 95% OF MAXIMUM THEORETICAL DENSITY. (AASHTO T-99)
8. SEE SIGN INSTALLATION DETAIL DWG 322 A/B/C.



95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 311

LEFT TURN LANE WITH WIDENING ON ONE SIDE

DATE	REVISIONS	DATE	REVISIONS
M/Y	XXX	M/Y	XXX

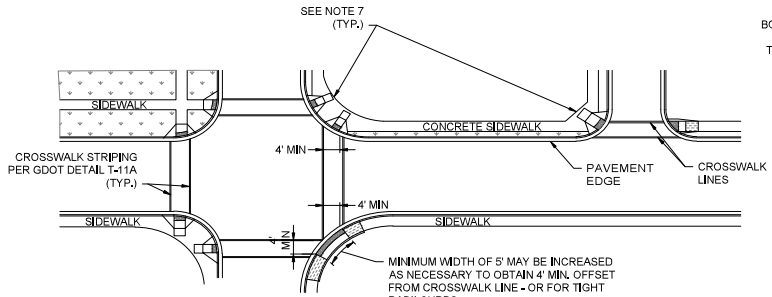
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APPROVED: XXX
DATE: XX-X-XX

FULTON COUNTY

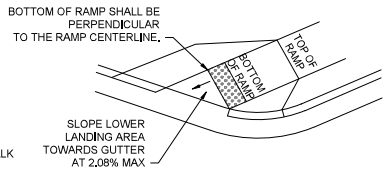
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DRAWING NO. 311

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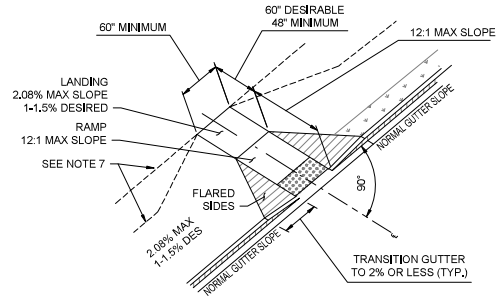
TYPICAL LOCATIONS FOR CURB CUT RAMPS - PLAN VIEW
NTS



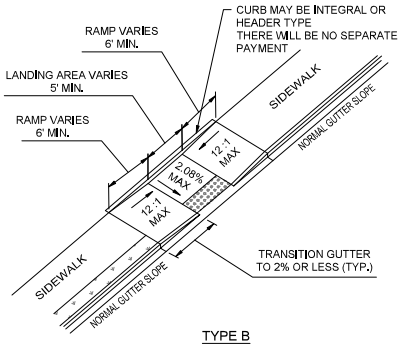
SKEWED RAMP DETAILS
(APPLIES TO TYPE A & TYPE D RAMPS ONLY)
NTS

NOTES:

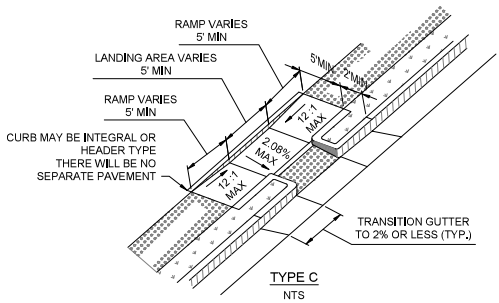
1. THE RAMP LENGTH IS NOT REQUIRED TO EXCEED 15 FEET. THE RAMP SLOPE MAY EXCEED 12:1 IF THE SITE CONDITIONS PREVENT THE USE OF A RAMP 15 FEET LONG.
2. IN AREAS WHERE THE GUTTER HAS A SLOPE 1" IN 1' END NORMAL GUTTER SLOPE AT A DISTANCE OF 6 TO 10 FEET FROM THE RAMP AND BEGIN TRANSITION TO A FLAT GUTTER SLOPE. NORMAL GUTTER SLOPE SHALL BE RESUMED AT A SIMILAR DISTANCE BEYOND THE RAMP.
3. TYPE A IS THE PREFERRED RAMP STYLE.
4. TYPE B RAMPS ARE NORMALLY USED WHEN SPACE IS NOT AVAILABLE FOR A LANDING AT THE TOP OF A TYPE A RAMP.
5. TYPE D RAMPS ARE NORMALLY USED WHEN THE SIDEWALK TIES DIRECTLY INTO THE CROSSWALK.
6. WHEN THE RAMP CENTERLINE IS NOT PERPENDICULAR TO THE CURB A LEVEL LANDING AREA WITH SLOPES LESS THAN 2.08% MUST BE PROVIDED AT THE BOTTOM OF THE RAMP.
7. BACK OF SIDEWALK SHALL BE LOCATED AS SHOWN IN THE PLANS OR AS DIRECTED BY THE ENGINEER SO AS NOT TO ENCROACH INTO THE REQUIRED LANDING AREA.



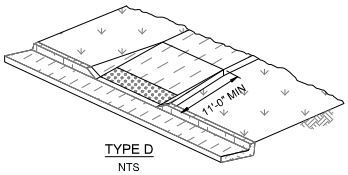
TYPE A (THE PREFERRED RAMP)
NTS



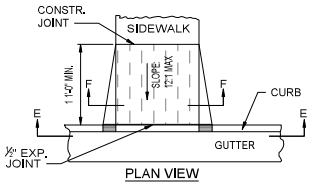
TYPE B
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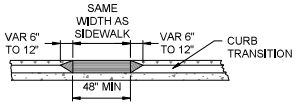
TYPE C
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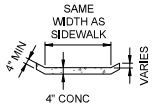
TYPE D
NTS



PLAN VIEW
NTS



SECTION E-E



SECTION F-F

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 312 HANDICAP RAMP DETAILS		DATE M/Y: XXX REVISIONS: XXX	DATE M/Y: XXX REVISIONS: XXX	DGS/DRN/CHKD: XXX APPROVED: XXX DATE: XX-X-XX	FULTON COUNTY	FULTON COUNTY PUBLIC WORKS 141 PRYOR ST. ATLANTA, GA. 30303 404-612-7400 FAX: 404-224-0498	DRAWING NO. 312

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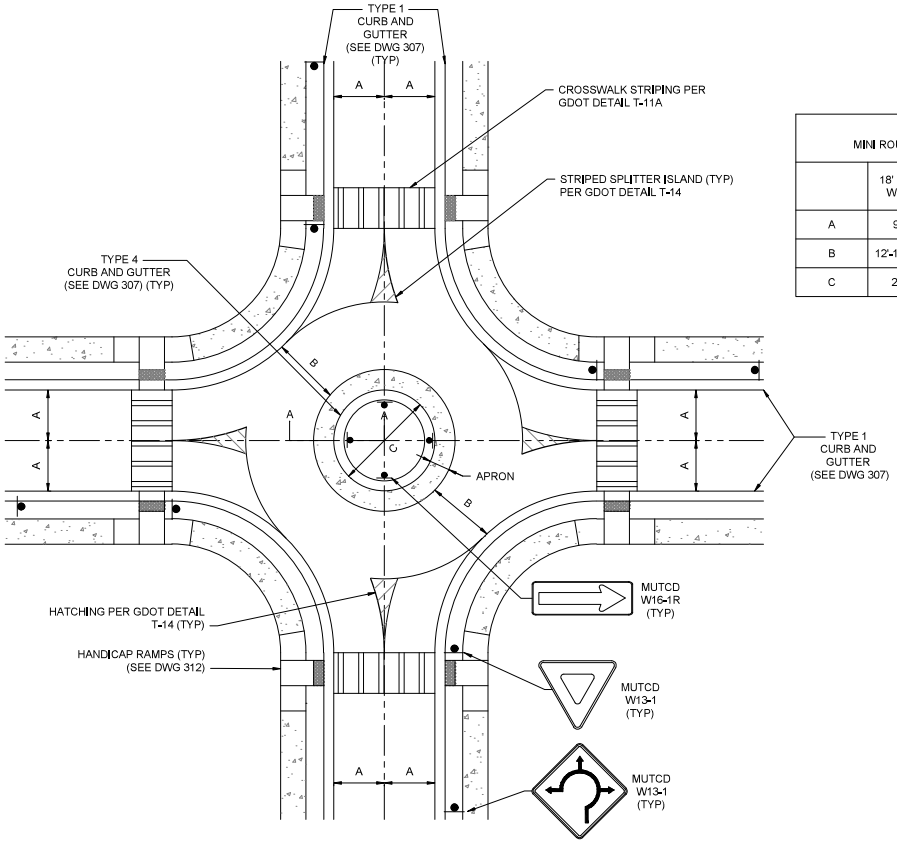
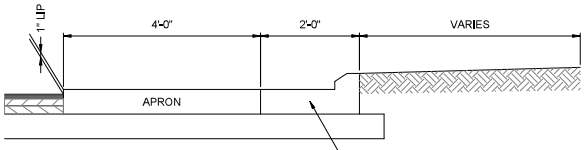


TABLE 313-1
MINI ROUNDABOUT DIMENSIONS

	18' ROAD WIDTH	20' ROAD WIDTH	25' ROAD WIDTH
A	9'-0"	10'-0"	12'-6"
B	12'-1 13/16"	12'-6 3/4"	14'-1 3/16"
C	26' D	28' D	32' D

NOTES:

1. APRON TO BE 4' WIDE, 6" THICK 3000 PSI CONCRETE PAVEMENT.
2. ALL STRIPING MUST BE DONE IN THERMOPLASTIC PER LATEST MUTCD STANDARDS.
3. CONTACT FULTON COUNTY DEPT. OF PUBLIC WORKS AND 1 WEEK PRIOR TO STRIPING FOR INSPECTION OF LAYOUT.
4. STRIPING LAYOUT IS SUBJECT TO FIELD MODIFICATION PER THE FIELD INSPECTION.
5. SEE SIGN INSTALLATION DETAIL AND DWG 322 A/B/C.



HALF SECTION A-A
NTS

TYPE 4
CURB AND GUTTER
(SEE DWG 307)

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 313

MINI ROUNDABOUT

DATE	REVISIONS	DATE	REVISIONS
M/Y	XXX	M/Y	XXX

DGS/DRN/CHKD: XXX
APPROVED: XXX
DATE: XX-X-XX

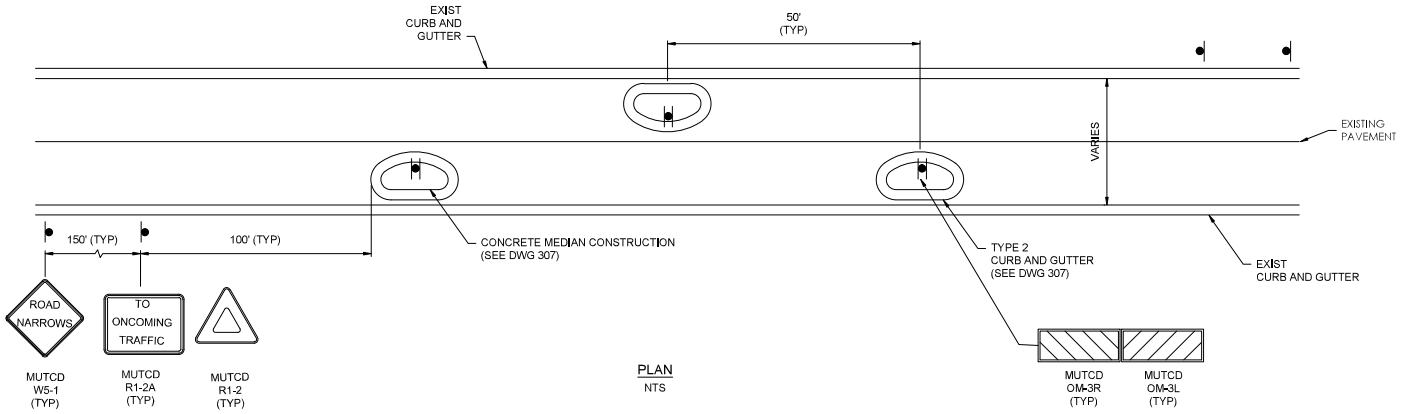
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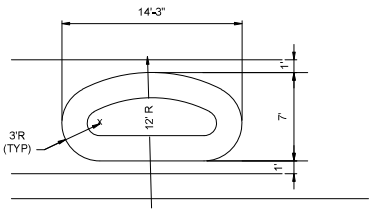
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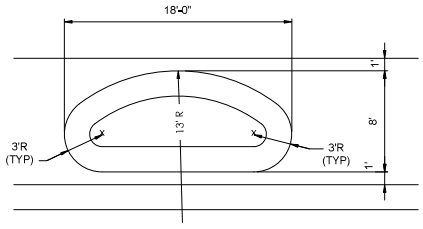
NOTES:
1. SEE DWG 322 A/B/C FOR SIGN INSTALLATION DETAILS.



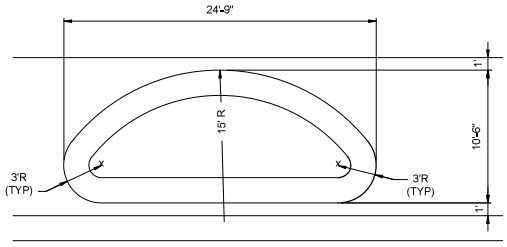
PLAN
NTS



EXIST 18' ROAD WIDTH
NTS



EXIST 20' ROAD WIDTH
NTS

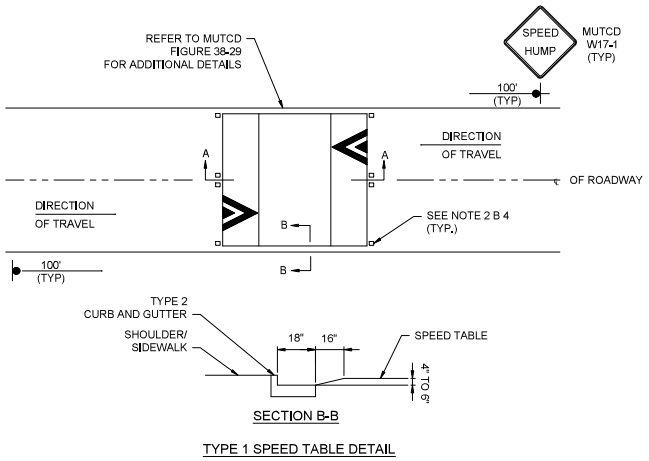


EXIST 25' ROAD WIDTH
NTS

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 314 CHICANES		DATE M/Y	REVISIONS XXX	DATE M/Y	REVISIONS XXX	DGS/DRN/CHKD: XXX APPROVED: XXX DATE: XX-X-XX	FULTON COUNTY PUBLIC WORKS 141 PRYOR ST. ATLANTA, GA. 30303 404-612-7400 FAX: 404-224-0498	DRAWING NO. 314

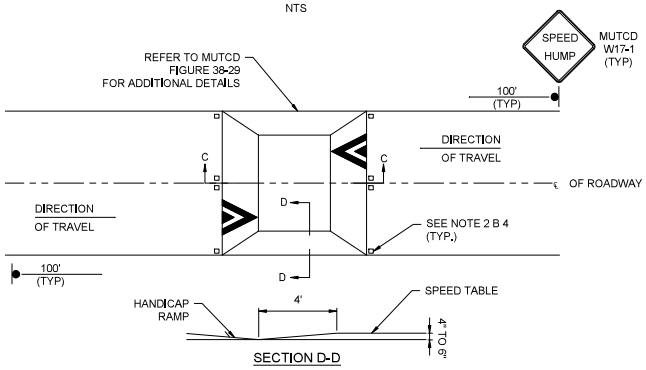
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SECTION B-B

TYPE 1 SPEED TABLE DETAIL

NTS



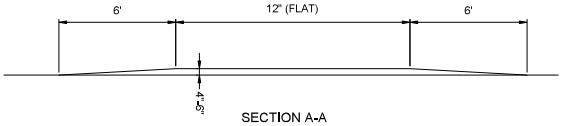
SECTION D-D

TYPE 2 SPEED TABLE DETAIL

NTS

NOTES:

1. USE TYPE 2 SPEED TABLES IN CONJUNCTION WITH CROSSWALKS, ONLY.
2. SPEED TABLES MAY BE CONSTRUCTED USING ASPHALT OR CONCRETE, PER FULTON COUNTY TRAFFIC ENGINEER.
   A. CONCRETE CONSTRUCTION:
      1) CONSTRUCT SPEED TABLES USING 3000 PSI HIGH/EARLY CONCRETE REINFORCED WITH #3 BARS AT 12" C. TO C. BOTH WAYS, OR 6 X 6 -W2.9 X W2.9 WELDED WIRE FABRIC OR 4 X 4 - W2.0 X W2.0 WELDED WIRE FABRIC.
      2) CONCRETE WILL BE COLORED AND TOP STAMPED WITH TEXTURE PER FULTON COUNTY TRAFFIC ENGINEER.
   B. ASPHALT CONSTRUCTION:
      1) CONSTRUCT SPEED TABLES USING ASPHALTIC CONCRETE 12.5 MM SUPERPAVE IN ACCORDANCE WITH SECTION 402 OF THE GEORGIA DOT STANDARD SPECIFICATIONS, CURRENT EDITION.
      2) APPLY TACK COAT AT A RATE OF 0.04 TO 0.06 GALLONS PER SQUARE YARD IN ACCORDANCE WITH SECTION 413 OF THE GDOT STANDARD SPECIFICATIONS, CURRENT EDITION, OR AS DIRECTED BY ENGINEER.
      3) APPLY PAVEMENT MARKINGS USING WHITE THERMOPLASTIC 0.090 INCHES IN THICKNESS IN ACCORDANCE WITH SECTION 653 OF THE GDOT STANDARD SPECIFICATIONS, CURRENT EDITION.
      4) APPLY RAISED PAVEMENT MARKERS PER GDOT CONSTRUCTION DETAIL T-15C, TYPE 11 (YELLOW/YELLOW) (CENTERLINE) AND TYPE 13 (CLEAR/RED) (EDGE OF PAVEMENT), USING HEATED BITUMINOUS ADHESIVE IN ACCORDANCE WITH SECTION 868 OF THE GDOT SPECIAL SHELF PROVISION SPECIFICATIONS, CURRENT EDITION.
3. SEE SIGN INSTALLATION DETAIL DWG 322 A/B/C.



SECTION A-A
SECTION C-C

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 315

SPEED TABLE

DATE M/Y	REVISIONS	DATE M/Y	REVISIONS
	XXX		XXX

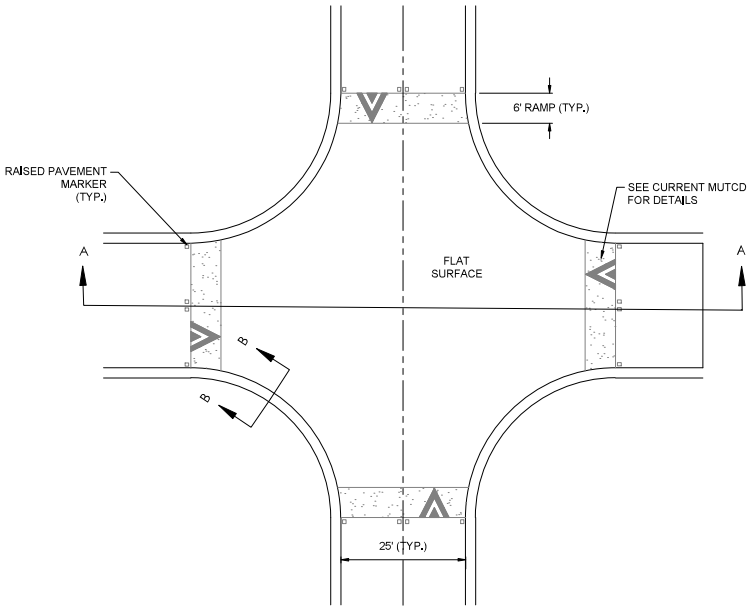
DGS/DRN/CHKD: XXX
APPROVED: XXX
DATE: XX-X-XX

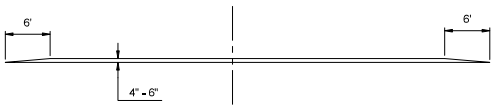
FULTON COUNTY

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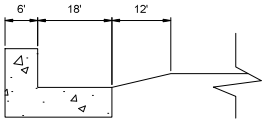
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SECTION A - A
NTS



SECTION B - B
NTS

NOTES:

1. MINIMUM 1" SLOPE REQUIRED IN ALL AREAS FOR DRAINAGE.
2. A 30" X 30" YELLOW WARNING SIGN WITH THE LEGEND "RAISED INTERSECTION" MAY BE REQUIRED ON ALL APPROACHES NOT CONTROLLED BY A STOP SIGN.
3. INTERSECTION HUMP MAY BE CONSTRUCTED USING ASPHALT PR CONCRETE, PER FULTON COUNTY TRAFFIC ENGINEER.
   - A. CONCRETE CONSTRUCTION:
     1) CONSTRUCT INTERSECTION HUMP USING 3000 PSI HIGH/EARLY CONCRETE REINFORCED WITH #3 BARS AT 12" C. TO C. BOTH WAYS, OR 6 X 6 - W2.9 WELDED WIRE FABRIC, OR 4 X 4 - W2.0 X W2.0 WELDED WIRE FABRIC.
     2) CONCRETE WILL BE COLORED AND TOP STAMPED WITH TEXTURE PER FULTON COUNTY TRAFFIC ENGINEER.
   - B. ASPHALT CONSTRUCTION:
     1) CONSTRUCT INTERSECTION HUMP USING ASPHALTIC CONCRETE 12.5 MM SUPERPAVE IN ACCORDANCE WITH SECTION 402 OF THE GEORGIA DOT STANDARD SPECIFICATIONS, CURRENT EDITION.
     2) APPLY TACK COAT AT A RATE OF 0.04 TO 0.06 GALLONS PER SQUARE YARD IN ACCORDANCE WITH SECTION 413 OF THE GEORGIA DOT STANDARD SPECIFICATIONS, CURRENT EDITION, OR AS DIRECTED BY ENGINEER.
4. APPLY PAVEMENT MARKING USING WHITE THERMOPLASTIC 0.090 INCHES IN THICKNESS IN ACCORDANCE WITH SECTION 653 OF THE GEORGIA DOT STANDARD SPECIFICATIONS, CURRENT EDITION.
   - A. APPLY RAISED PAVEMENT MARKERS, TP 11 (YELLOW/YELLOW) (CENTERLINE) AND TP 13 (CLEAR/RED) (EDGE OF PAVEMENT), USING HEATED BITUMINOUS ADHESIVE IN ACCORDANCE WITH SECTION 868 OF THE GEORGIA DOT SPECIAL SHELF PROVISION SPECIFICATIONS, CURRENT EDITION.

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 316

INTERSECTION HUMP

DATE M/Y	REVISIONS	DATE M/Y	REVISIONS
XXX		XXX	

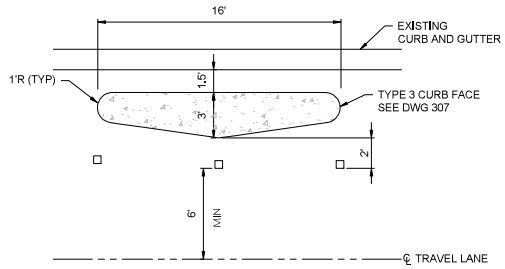
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APPROVED: XXX
DATE: XX-X-XX

FULTON COUNTY

FULTON COUNTY PUBLIC WORKS
141 PRYOR ST. ATLANTA, GA. 30303
404-612-7400 FAX: 404-224-0498

DRAWING NO.
316

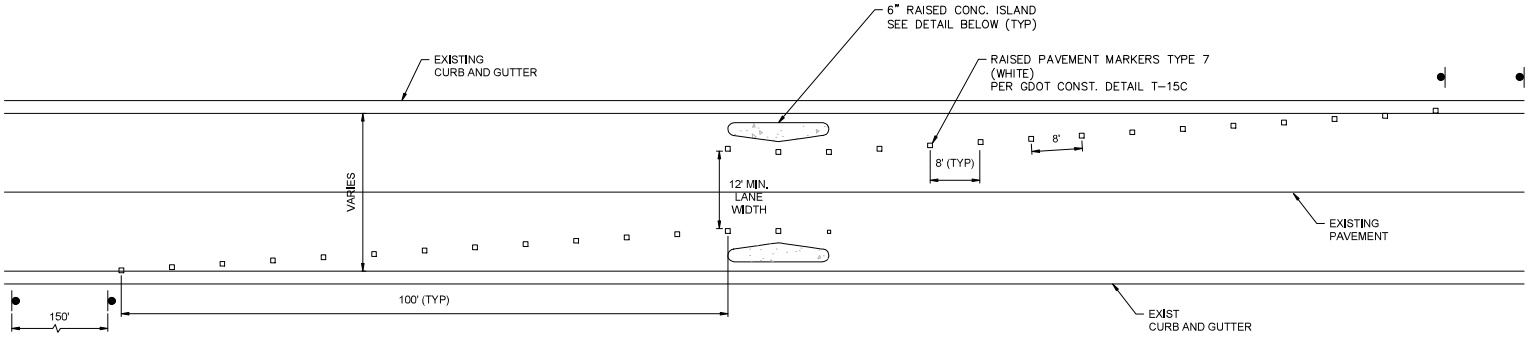
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CONC ISLAND DETAIL
NTS

NOTES:

1. SEE DWG. 307 FOR CONCRETE MEDIAN CONSTRUCTION DETAIL.
2. SEE SIGN INSTALLATION DETAIL DWG 322 A/B/C.
3. INSTALL RAISED PAVEMENT MARKERS USING HEATED BITUMINOUS ADHESIVE IN ACCORDANCE WITH SECTION 868 OR GDOT SPECIAL SHELF PROVISION SPECIFICATIONS.



PLAN
NTS



W5-1 (TYP) R1-2A (TYP) R1-2 (TYP)

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 317

ONE LANE CHOKER

DATE	REVISIONS	DATE	REVISIONS
M/Y	XXX	M/Y	XXX

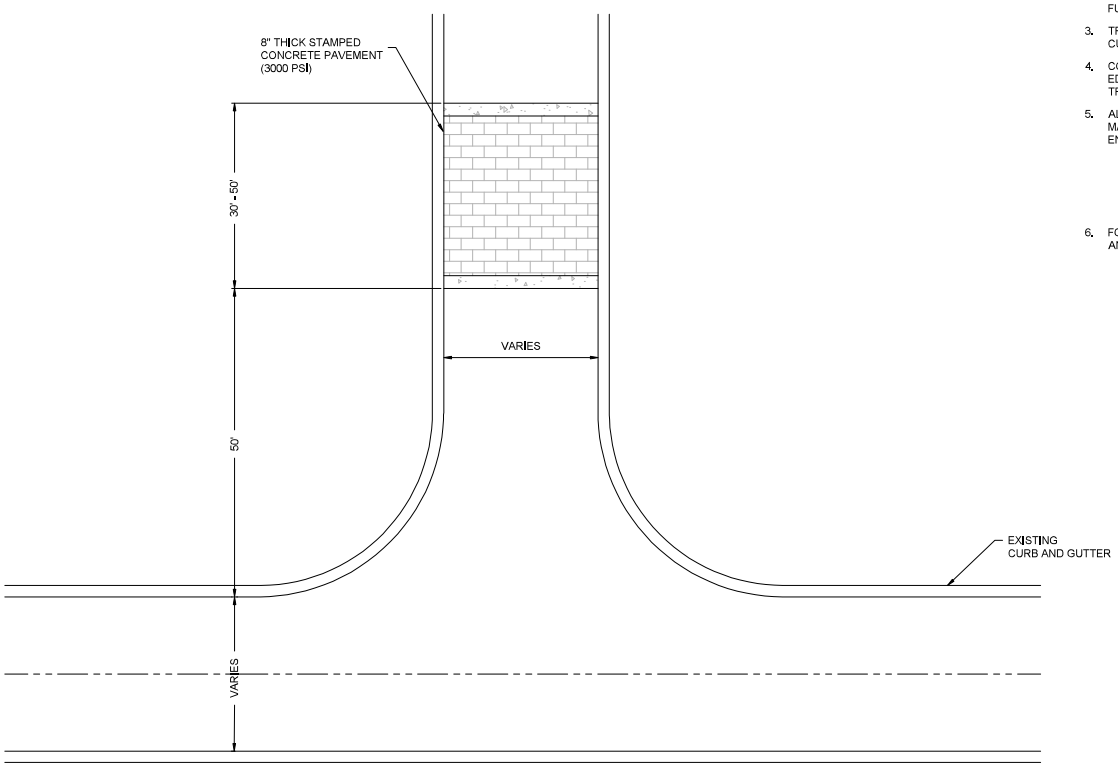
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APPROVED: XXX
DATE: XX-X-XX

FULTON COUNTY

FULTON COUNTY PUBLIC WORKS
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404-612-7400 FAX: 404-224-0498

DRAWING NO.
317

Docusign Envelope ID: A3705B48-B7E5-4F52-8480-5FF929E99139



NOTES:

1. CONSTRUCT ENTRANCE TREATMENT USING 3000 PSI HIGH/EARLY CONCRETE.
2. CONCRETE WILL BE COLORED AND STAMPED WITH TEXTURE PER FULTON COUNTY TRAFFIC ENGINEER.
3. TREATMENT WILL EXTEND FROM GUTTER TO GUTTER OR FACE OF CURB TO FACE OF CURB WHERE NO GUTTER EXISTS.
4. CONCRETE MAY BE FORMED 1 INCH ABOVE EXISTING GRADE WITH EDGE SLOPED TO GRADE OVER 1 INCH PER FULTON COUNTY TRAFFIC ENGINEER.
5. ALTERNATE PAVER MATERIAL (STONE, BRICK, CONCRETE, ETC.) MAY BE USED AS APPROVED BY FULTON COUNTY TRAFFIC ENGINEER. IF USED, APPLY FOLLOWING MODIFICATIONS:
   A. 18 INCH BAND OF 3000 PSI HIGH/EARLY CONCRETE POURED IN PLACE EXTENT OF TREATMENT.
   B. ALL PAVERS SET IN 1 INCH LEVELING SAND ON MINIMUM OF 4 INCH CONCRETE BASE.
6. FOR PRIVATE STREETS ONLY UNLESS APPROVED BY ECONOMIC AND COMMUNITY DEVELOPMENT DIRECTOR.

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 318

ENTRANCE TREATMENT

DATE M/Y	REVISIONS	DATE M/Y	REVISIONS
XXX		XXX	

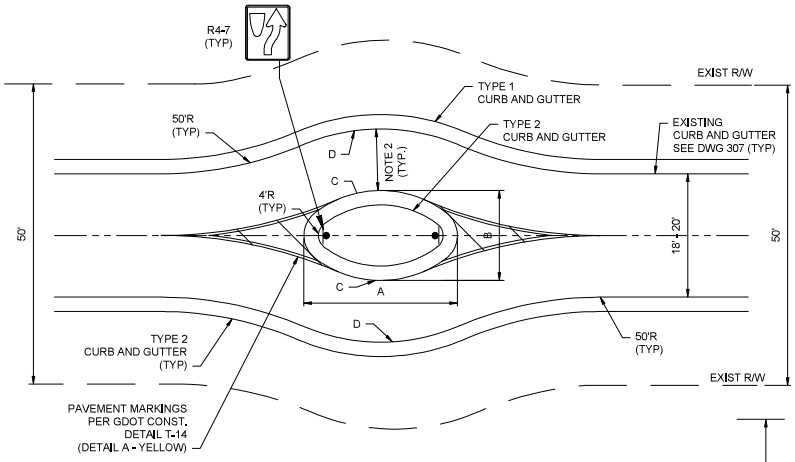
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APPROVED: XXX
DATE: XX-X-XX

FULTON COUNTY

FULTON COUNTY PUBLIC WORKS
141 PRYOR ST. ATLANTA, GA. 30303
404-612-7400 FAX: 404-224-0498

DRAWING NO. 318

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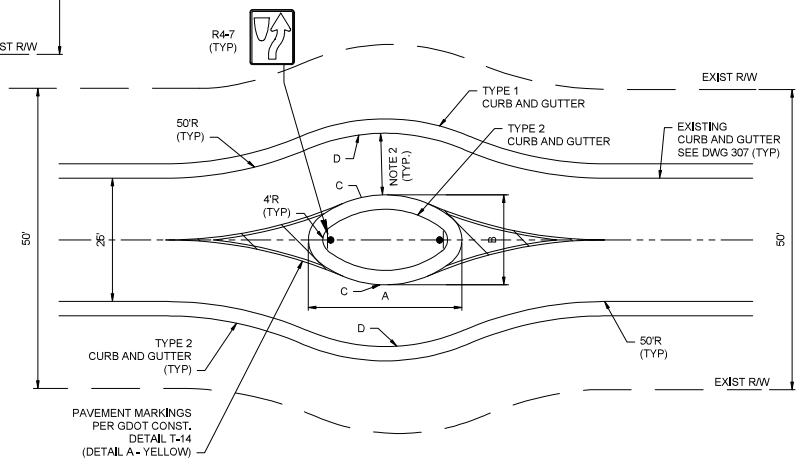


CENTER ISLAND EXIST 25' ROADWAY
WITHOUT SIDEWALK
NTS

TABLE 319-1			
	18' ROADWAY	20' ROADWAY	25' ROADWAY
A	13'-7"	16'-3"	21'-4"
B	9'-0"	10'-0"	12'-6"
C	12' R	13' R	15' R
D	21' R	23' R	27'-6" R

NOTES:

1. ALL STRIPING MUST BE DONE IN THERMOPLASTIC PER GDOT SPECIFICATION SECTION 653.
2. 20' LANE WIDTH REQUIRED BY FIRE DEPARTMENT *
3. NO RESIDENTIAL DRIVEWAYS ALLOWED WITHIN 20-FEET OF CENTER ISLAND.
4. SEE SIGN INSTALLATION DETAIL DWG 322 A/B/C.



CENTER ISLAND EXIST 25' ROADWAY
WITHOUT SIDEWALK
NTS

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 319

CENTER ISLAND

DATE	REVISIONS	DATE	REVISIONS
M/Y	XXX	M/Y	XXX

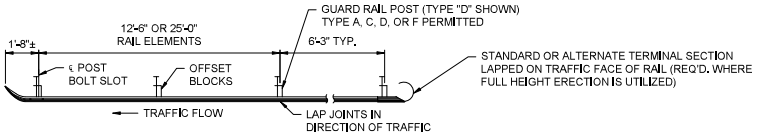
DGS/DRN/CHKD: XXX
APPROVED: XXX
DATE: XX-X-XX

FULTON COUNTY

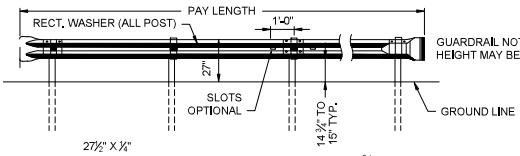
FULTON COUNTY PUBLIC WORKS
141 PRYOR ST. ATLANTA, GA. 30303
404-612-7400 FAX: 404-224-0498

DRAWING NO.
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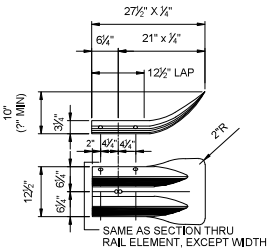
STANDARD OR ALTERNATE TERMINAL SECTION LAPPED ON TRAFFIC FACE OF RAIL (REQ'D. WHERE FULL HEIGHT ERECTION IS UTILIZED).



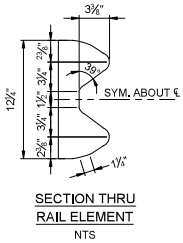
GUARDRAIL NOT ERECTED AT A 27" TOP OF RAIL HEIGHT MAY BE CAUSE FOR REJECTION.

NOTES:

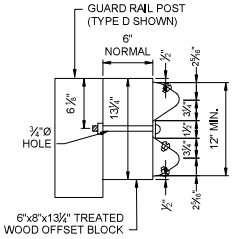
1. GUARD RAIL, ITS FITTINGS, PARTS, ETC, ARE TO BE IN ACCORDANCE WITH STATE HIGHWAY DEPARTMENT OF GEORGIA STANDARD SPECIFICATIONS AND/OR SPECIAL PROVISIONS.
2. FOR DETAILS OF POSTS & OFFSET BLOCKS SEE GA. STANDARD 4011.
3. FOR DETAILS OF GUARD RAIL ANCHORAGES SEE GEORGIA STANDARD 4012.
4. FOR LOCATION OF GUARD RAIL SEE APPLICABLE LOCATION STANDARDS.
5. ON PROJECTS WHERE GUARD RAIL CONNECTIONS AT BRIDGE END HAVE BEEN PLACED ON PREVIOUS CONTRACTS THE END PANEL MAY BE SHORTENED BY CUTTING OR SHEARING TO FIT EXISTING STRUCTURE.
6. WHEN GUARD RAIL IS REQUIRED ON CURVES WITH RADII LESS THAN 150' PRECURVED RAIL WILL BE REQUIRED.
7. UNIT PRICE FOR GUARD RAIL TO INCLUDE OFFSET BLOCKS, POST, BACK-UP PLATES WHERE REQ'D, BOLTS, NUTS, WASHERS, TERMINAL SECTIONS, ADDITIONAL POST WHERE REQUIRED AND REMOVAL AND REPLACEMENT OF PORTIONS OF MEDIAN PAVING, SPILLWAYS OR CATCH BASINS WHERE NECESSARY.
8. ALL DIMENSIONS ARE SUBJECT TO MANUFACTURING TOLERANCES.
9. STANDARD NET LENGTH OF RAIL ELEMENTS MAY BE EITHER 12'-6" OR 25'-0", THESE LENGTHS SHALL BE ARRANGED TO PROVIDE AS NEARLY AS POSSIBLE THE OVERALL LENGTH ORDERED BY THE ENGINEER FOR ANY ONE LOCATION.

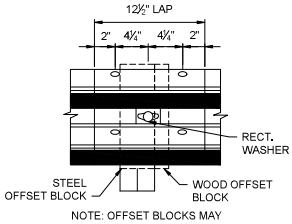


STANDARD TERMINAL SECTION
NTS



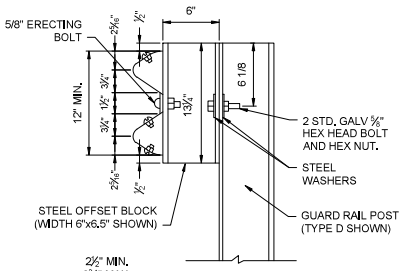
SECTION THRU
RAIL ELEMENT
NTS

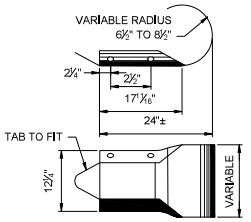




NOTE: OFFSET BLOCKS MAY BE WOOD OR STEEL.

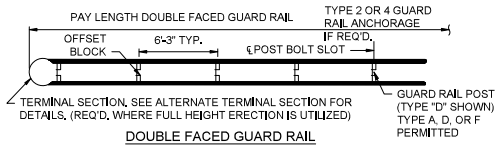
GUARD RAIL SPLICE AT POST
NTS



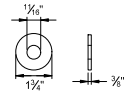


TERMINAL SECTION FOR DOUBLE FACED GUARD RAIL SIMILAR RADIUS VARIABLE 12" TO 16" AND LENGTH VARIABLE.

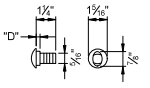
ALTERNATE TERMINAL SECTION
NTS



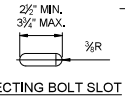
DOUBLE FACED GUARD RAIL
NTS



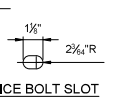
STEEL WASHER (GALV.)
NTS
(REQ'D. UNDER ALL HEX BOLT HEADS AND UNDER ALL HEX NUTS)



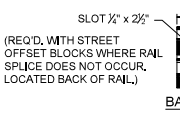
SPLICE BOLT
(6 REQ'D PER SPLICE)
NTS



ERECTING BOLT SLOT
NTS



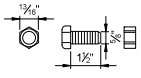
SPLICE BOLT SLOT
NTS



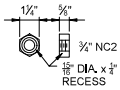
(REQ'D. WITH STREET OFFSET BLOCKS WHERE RAIL SPLICE DOES NOT OCCUR. LOCATED BACK OF RAIL.)

NOTE: CROSS SECTION OF PLATE SIMILAR TO GUARD RAIL SECTION.

BACK-UP PLATE
NTS



5/8"Ø HEX BOLT AND HEX NUT
NTS
(TO BE USED ONLY FOR ATTACHING STEEL OFFSET BLOCK TO STEEL POST.)



RECESS NUT
NTS



NOTE: WASHER REQ'D AT ALL POSTS.

RECTANGULAR WASHER
(GALV) (8 GAUGE)
NTS

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 320

BEAM TYPE GUARD RAIL

DATE M/Y	REVISIONS	DATE M/Y	REVISIONS
XXX		XXX	

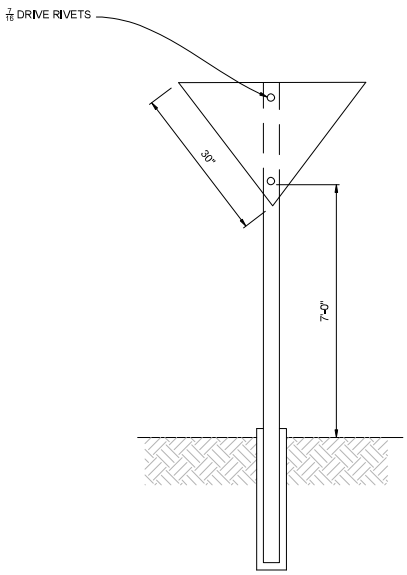
DGS/DRN/CHKD: XXX
APPROVED: XXX
DATE: XX-X-XX

FULTON COUNTY

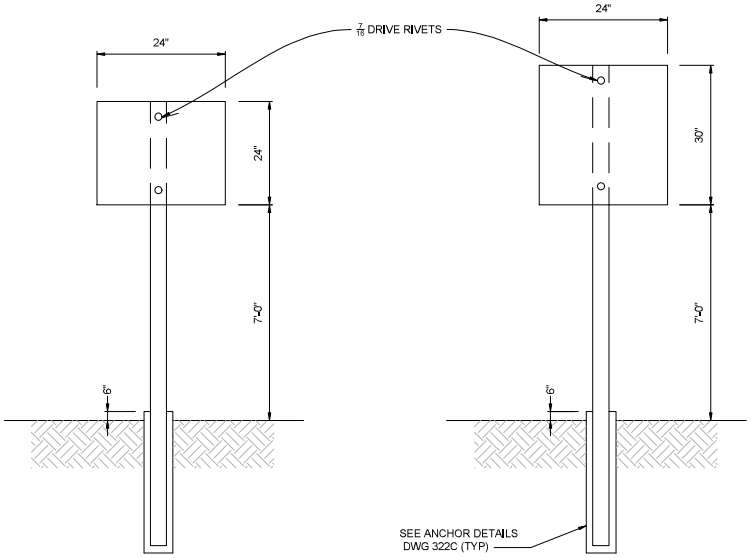
FULTON COUNTY PUBLIC WORKS
141 PRYOR ST. ATLANTA, GA. 30303
404-612-7400 FAX: 404-224-0498

DRAWING NO.
320

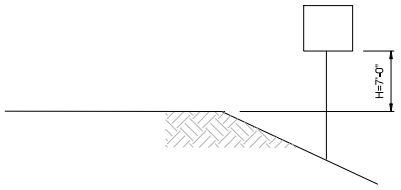
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YIELD SIGN DETAILS
NTS



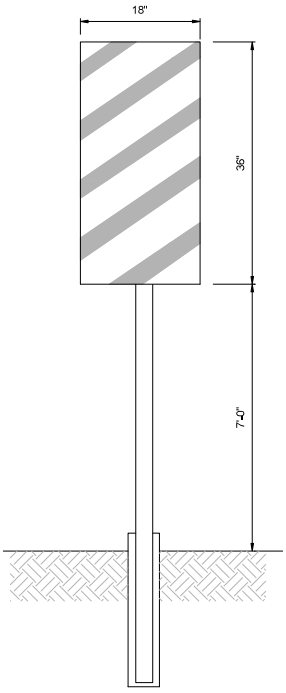
REGULARLY SIGN DETAILS
NTS



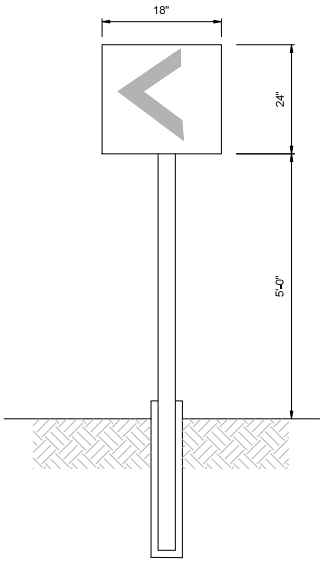
95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 322A SIGN DETAILS AND LOCATIONS		DATE M/Y	REVISIONS XXX	DATE M/Y	REVISIONS XXX	DGS/DRN/CHKD: XXX APPROVED: XXX DATE: XX-X-XX	FULTON COUNTY	FULTON COUNTY PUBLIC WORKS 141 PRYOR ST. ATLANTA, GA. 30303 404-612-7400 FAX: 404-224-0498	DRAWING NO. 322A

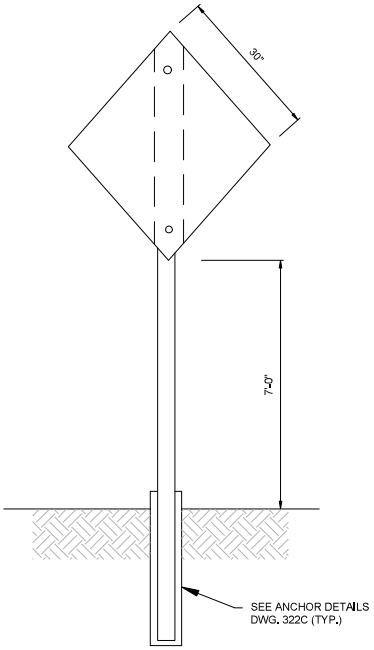
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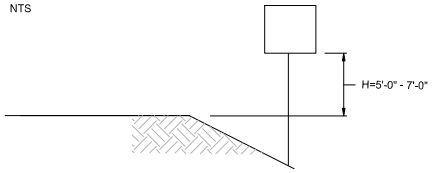
OBJECT MARKER
NTS



CHEVRON DETAILS
NTS



WARNING SIGN DETAILS
NTS



95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 322B

SIGN DETAILS AND LOCATION
SHEET 2 OF 3

DATE	REVISIONS	DATE	REVISIONS
M/Y	XXX	M/Y	XXX

DGS/DRN/CHKD: XXX
APPROVED: XXX
DATE: XX-X-XX

FULTON COUNTY

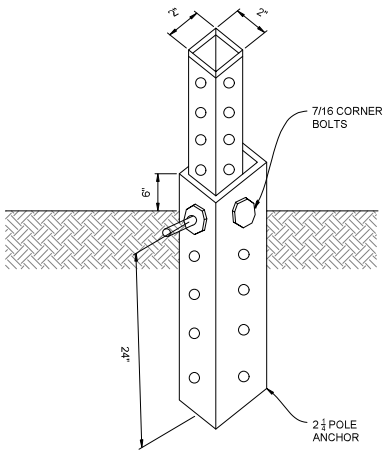
FULTON COUNTY PUBLIC WORKS
141 PRYOR ST. ATLANTA, GA. 30303
404-612-7400 FAX: 404-224-0498

DRAWING NO.
322B

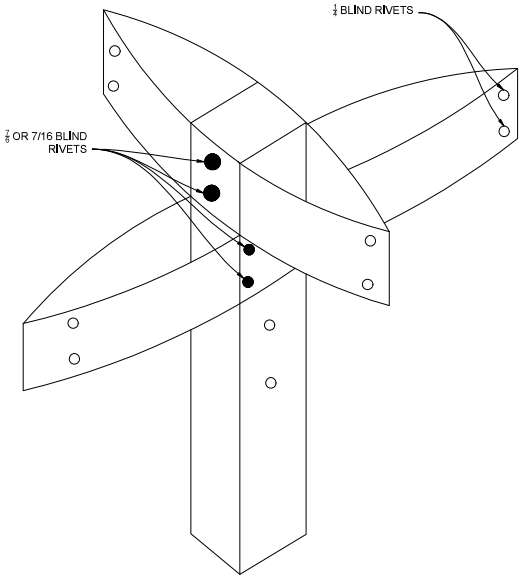
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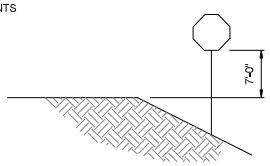
1. SEPARATE STREET SIGN AND STOP SIGN AT SUBDIVISION ENTRANCE ONLY. COMBINE STREET SIGN AND STOP SIGN WITHIN SUBDIVISION.
2. ALL TEXT IS TO BE: 6" LETTER HEIGHT, 9" BLADE.
3. FOR STREET SIGNS ONLY, USE THE FHWA SERIES 'E' FONT FOUND IN THE FHWA STANDARD SIGN MANUAL.
4. FOR WARNING AND PRIVATE SIGNS, USE THE MUTCD SIGN STANDARDS.



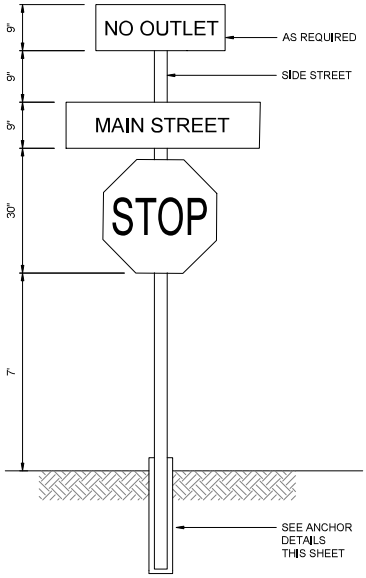
ANCHOR DETAILS
NTS



STREET NAME SIGN MOUNTING DETAILS
NTS



SIGN- INSTALLATION DETAIL
NTS



TYPICAL SIGN ASSEMBLY
NTS

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 322C SIGN DETAILS AND LOCATION SHEET 3 OF 3		DATE M/Y	REVISIONS XXX	DATE M/Y	REVISIONS XXX	DGS/DRN/CHKD: XXX APPROVED: XXX DATE: XX-X-XX	FULTON COUNTY PUBLIC WORKS 141 PRYOR ST. ATLANTA, GA. 30303 404-612-7400 FAX: 404-224-0498	DRAWING NO. 322C

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Exhibit I – Exhibit 2: Details – 400 Series

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DWG. NO.	DESCRIPTION
400	INDEX AND GENERAL NOTES
401	SANITARY SEWER TYPICAL RIP-RAP CHANNEL PIPE CROSSING
402	CONSTRUCTION EXIT-TEMPORARY
403A	CONCRETE PIER AND FOOTING DETAIL ON SOIL
403B	CONCRETE PIER AND FOOTING DETAIL ON ROCK
403C	CONCRETE PIER AND FOOTING DETAIL TABLE
404	TEMPORARY SILT FENCE
405	DETAIL OF SOD DITCH
407	EROSION CONTROL STONE CHECK DAMS

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FULTON COUNTY STANDARD DETAIL 400

INDEX AND GENERAL NOTES

DATE	REVISIONS	DATE	REVISIONS

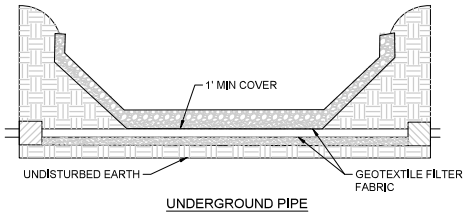
DGS/DRN/CHKD: XXX
APPROVED: XXX
DATE: XX-X-XX

FULTON COUNTY

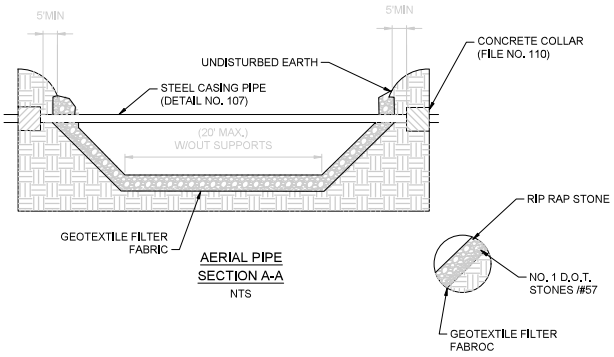
FULTON COUNTY PUBLIC WORKS
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DRAWING NO.
400

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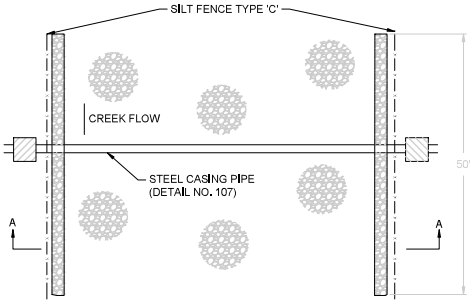
UNDERGROUND PIPE
SECTION A-A
NTS



AERIAL PIPE
SECTION A-A
NTS

NOTES:

1. MINIMUM STONE SIZE SHALL BE 125 LBS.
2. STONE SIZE SHALL BE PROVIDED BY DESIGN ENGINEER OR FULTON COUNTY PUBLIC WORKS ENGINEER
3. ALL EROSION CONTROL DEVICES MUST BE IN PLACE PRIOR TO ANY GRADING OR CLEARING.
4. ALL EROSION CONTROL SHALL CONFORM TO FULTON COUNTY STANDARDS.
5. RIM OF MANHOLE SHALL BE 2' ABOVE GRADE. IF IN A FLOOD ZONE, RIM SHALL BE ABOVE 25 YEAR STORM ELEVATION. RING AND COVER OF MANHOLE TO BE COMPOSITE WATERTIGHT RING AND COVER PER DETAIL 105.
6. SEE MANUAL FOR EROSION & SEDIMENT CONTROL IN GEORGIA FOR MORE INFORMATION.
7. CONCRETE STRENGTH TEST MAY BE REQUIRED FOR ALL POURED IN PLACE CONCRETE.



PLAN VIEW
NTS

TABLE 401-1
GRADED RIP - RAP STONE

FLOW VELOCITY (FT/SEC.)	NATIONAL STONE, SAND & GRAVEL ASSOCIATION RATING	SIZE IN INCHES (SQ. OPENING)			PARTICLE WEIGHT (LBS)*
		MAX.	AVG.	MIN.	
25	R-1	1 1/2	3/4	NO.8	---
4.5	R-2	3	1 1/2	1	---
6.5	R-3	6	3	2	20
9.0	R-4	12	6	3	60
11.5	R-5	18	9	5	150
13.0	R-6	24	12	7	300
14.5	R-7	30	15	12	700
---	R-8	48	24	15	1500

* AT LEAST 50% OF ALL INDIVIDUAL STONE PARTICLES MUST WEIGH AT LEAST THE LISTED AMOUNT.

TABLE 401-2
GRADED RIP - RAP STONE

GEORGIA DOT CLASSIFICATION	SIZE INCHES (SQ. OPENING)			COMMON USES
	MAX.	AVG.	MIN.	
TYPE 3	12	9	5	CREEKS, BANKS, PIPE OUTLETS, LAKES, SHORELINES & RIVERS
TYPE 1	24	12	7	

GRADED RIP - RAP STONE (SEE TABLE 401-2)

TYPE 3: FOR GENERAL USE NORMAL DRAINAGE CONDITIONS: THE LARGEST PIECES OF MATERIAL SHALL HAVE A MAXIMUM APPROXIMATE VOLUME OF ONE CUBIC FOOT. AT LEAST 35% OF THE MASS SHALL BE COMPRISED OF PIECES WHICH WEIGH 15 POUNDS OR MORE.

TYPE 1: FOR SEVERE DRAINAGE CONDITIONS OR MODERATE WAVE ACTION: THE LARGEST PIECES OF MATERIAL SHALL HAVE A MAXIMUM VOLUME OF 4.2 CUBIC FEET, AT LEAST 35% OF THE MASS SHALL BE COMPRISED OF PIECES WHICH WEIGH 125 POUNDS OR MORE.

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FULTON COUNTY STANDARD DETAIL 401

SANITARY SEWER TYPICAL RIP-RAP CHANNEL PIPE CROSSING

DATE	REVISIONS	DATE	REVISIONS
M/Y	XXX	M/Y	XXX

DGS/DRN/CHKD: XXX
APPROVED: XXX
DATE: XX-X-XX

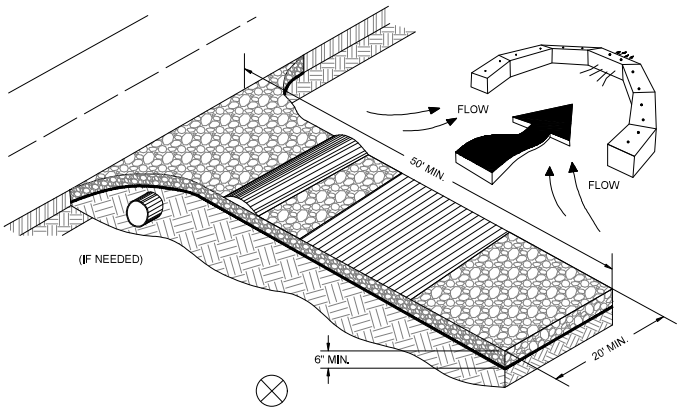
FULTON COUNTY

FULTON COUNTY PUBLIC WORKS
141 PRYOR ST. ATLANTA, GA. 30303
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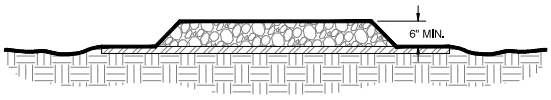
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401

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EXIT DIAGRAM



ENTRANCE ELEVATION



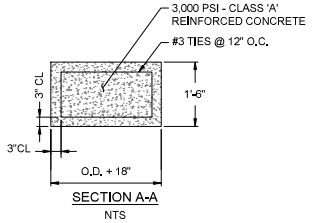
NOTES:

1. AVOID LOCATING ON STEEP SLOPES OR AT CURVES ON PUBLIC ROADS.
2. REMOVE ALL VEGETATION AND OTHER UNSUITABLE MATERIAL FROM THE FOUNDATION AREA. GRADE AND CROWN FOR POSITIVE DRAINAGE.
3. AGGREGATE SIZE SHALL BE IN ACCORDANCE WITH NATIONAL STONE ASSOCIATION R-2 (1.5"-3.5" STONE).
4. GRAVEL PAD SHALL HAVE A MINIMUM THICKNESS OF 6 INCHES.
5. PAD WIDTH SHALL BE EQUAL FULL WIDTH AT ALL POINTS OF VEHICULAR EGRESS, BUT NO LESS THAN 20 FEET.
6. A DIVERSION RIDGE SHOULD BE CONSTRUCTED WHEN GRADE TOWARD PAVED AREA IS GREATER THAN 2%.
7. INSTALL PIPE UNDER THE ENTRANCE IF NEEDED TO MAINTAIN DRAINAGE DITCHES.
8. WHEN WASHING IS REQUIRED, IT SHOULD BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN (DIVERT ALL SURFACE RUNOFF AND DRAINAGE FROM THE ENTRANCE TO A SEDIMENT CONTROL DEVICE).
9. WASHRACKS AND/OR TIRE WASHERS MAY BE REQUIRED DEPENDING ON SCALE AND CIRCUMSTANCE. IF NECESSARY, WASHRACK DESIGN MAY CONSIST OF ANY MATERIAL SUITABLE FOR TRUCK TRAFFIC THAT REMOVES MUD AND DIRT.
10. MAINTAIN AREA IN A WAY THAT PREVENTS TRACKING AND/OR FLOW OF MUD ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.

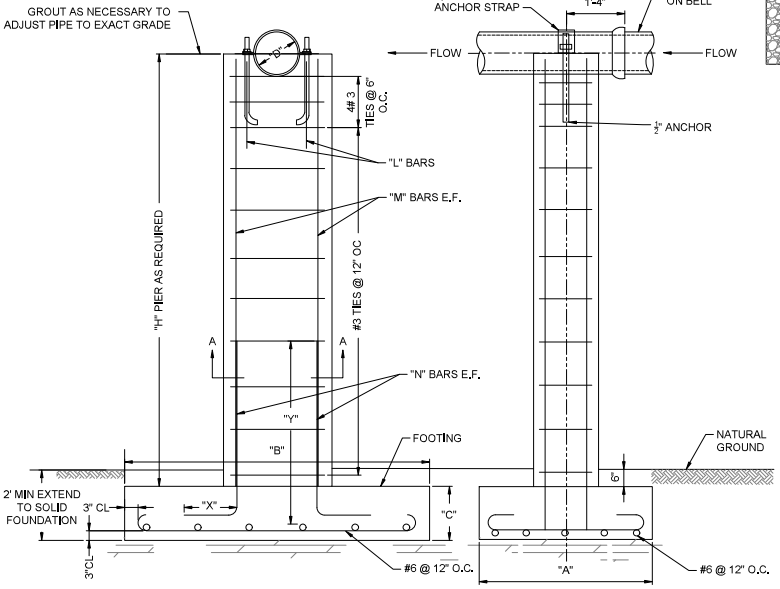
95% SUBMITTAL

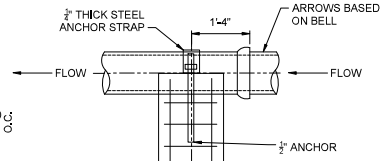
FULTON COUNTY STANDARD DETAIL 402 CONSTRUCTION EXIT - TEMPORARY		DATE M/Y: XXX REVISIONS DATE M/Y: XXX REVISIONS	DGS/DRN/CHKD: XXX APPROVED: XXX DATE: XX-X-XX	FULTON COUNTY	FULTON COUNTY PUBLIC WORKS 141 PRYOR ST. ATLANTA, GA. 30303 404-612-7400 FAX: 404-224-0498	DRAWING NO. 402

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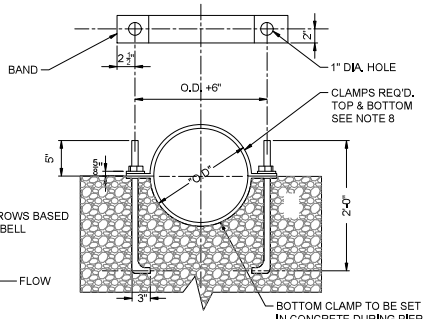


SECTION A-A
NTS





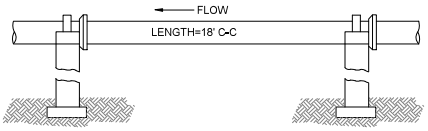
ELEVATIONS
NTS



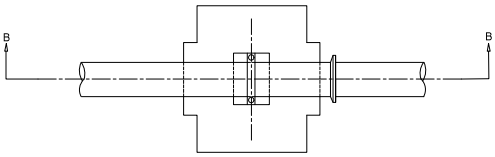
CLAMP DETAIL
NTS

NOTES:

1. SEE DRAWING 403C FOR FOOTING DIMENSIONS AND REINFORCEMENT TABLE.
2. PIER LOCATION DETERMINED BY ENGINEER.
3. UNDER UNSTABLE CONDITIONS, ENGINEER PLANS FOR PIER DESIGN MUST BE SUBMITTED TO & APPROVED BY THE PUBLIC WORKS DEPARTMENT.
4. PLACE PIERS AT EVERY BELL.
5. ENGINEER TO SUBMIT PIER DESIGN.
6. STEEL REINFORCEMENT TO BE A.S.T.M DESIGNATION A-15 - 54T UNLESS OTHERWISE SPECIFIED, BENDS IN BARS TO CONFORM TO A.C.I. STANDARD.
7. PRECAST PIERS ARE ALLOWED PER PERMISSION OF COUNTY ENGINEER.
8. PROVIDE ½ - INCH MINIMUM NEOPRENE PAD BETWEEN PIPE AND CLAMPS.



SECTION B-B
NTS



TOP VIEW OF PIER CONNECTION
NTS

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FULTON COUNTY STANDARD DETAIL 403A

CONCRETE PIER AND FOOTING DETAIL ON SOIL

DATE	REVISIONS	DATE	REVISIONS
M/Y	XXX	M/Y	XXX

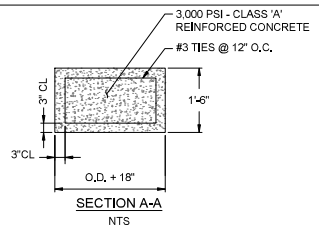
DGS/DRN/CHKD: XXX
APPROVED: XXX
DATE: XX-X-XX

FULTON COUNTY

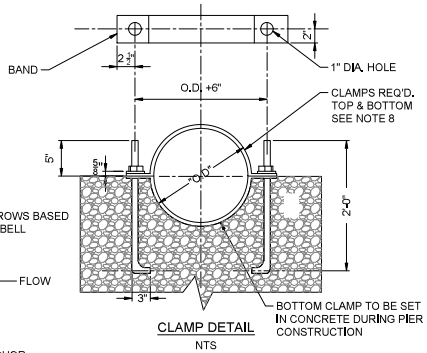
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DRAWING NO.
403A

Docusign Envelope ID: A3705B48-B7E5-4F52-8480-5FF929E99139



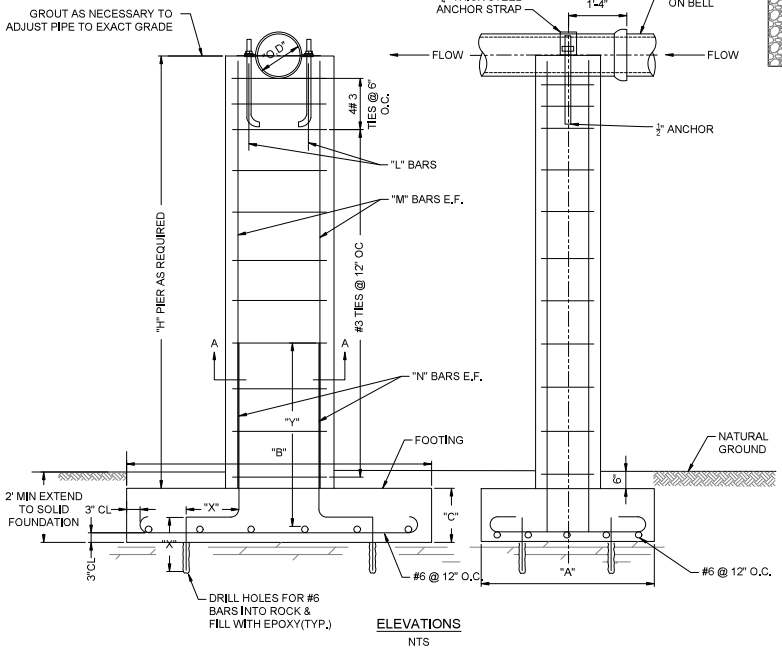
SECTION A-A
NTS



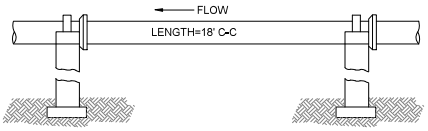
CLAMP DETAIL
NTS

NOTES:

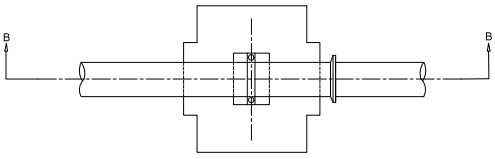
1. SEE DRAWING 403C FOR FOOTING DIMENSIONS AND REINFORCEMENT TABLE.
2. PIER LOCATION DETERMINED BY ENGINEER.
3. UNDER UNSTABLE CONDITIONS, ENGINEER PLANS FOR PIER DESIGN MUST BE SUBMITTED TO & APPROVED BY THE PUBLIC WORKS DEPARTMENT.
4. PLACE PIERS AT EVERY BELL.
5. ENGINEER TO SUBMIT PIER DESIGN.
6. STEEL REINFORCEMENT TO BE A.S.T.M DESIGNATION A-15 - 54T UNLESS OTHERWISE SPECIFIED, BENDS IN BARS TO CONFORM TO A.C.I. STANDARD.
7. PRECAST PIERS ARE ALLOWED PER PERMISSION OF COUNTY ENGINEER.
8. PROVIDE 1/2 - INCH MINIMUM NEOPRENE PAD BETWEEN PIPE AND CLAMPS.



ELEVATIONS
NTS



SECTION B-B
NTS



TOP VIEW OF PIER CONNECTION
NTS

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FULTON COUNTY STANDARD DETAIL 403B
CONCRETE PIER AND FOOTING DETAIL
ON ROCK

DATE	REVISIONS	DATE	REVISIONS
M/Y	XXX	M/Y	XXX

DGS/DRN/CHKD: XXX
APPROVED: XXX
DATE: XX-X-XX

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DRAWING NO.
403B

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NOTES:

1. SEE DRAWING 403A & 403B FOR THE RELATED DETAILS.

TABLE 403C-1
CONCRETE PIER AND FOOTING DETAIL TABLE

STANDARD REINFORCEMENT PIER																
FOOTING DIMENSIONS AND REINFORCEMENT								PIER REINFORCEMENT								
PIER	FOOTING			NO. OF #5 BARS EA. DIRECTION				BARS M			BARS N					
H	A	B	C	8" & 10"D	12" & 14"D	16" & 18"D	20" & 24"D	NO.	SIZE	LENGTH	NO.	.7	LENGTH	X	Y	
0'-4'	3'-0"	6'-0"	1'-3"	5	5	5	5	NONE			6	#6	H+2'-0"	1'-9"	H + 10"	
5'	3'-0"	6'-2"	1'-3"	5	5	5	5	NONE			6	#6	H+2'-0"	1'-9"	H + 10"	
6'	3'-0"	6'-4"	1'-3"	5	5	5	5	4	#6	4'-10"	6	#6	5'-4"	1'-9"	4'-2"	
7'	3'-0"	6'-6"	1'-3"	5	5	5	6	4	#6	5'-10"	6	#6	5'-4"	1'-9"	4'-2"	
8'	3'-0"	6'-8"	1'-3"	5	5	5	6	4	#6	7'-10"	6	#6	5'-4"	1'-9"	4'-2"	
9'	3'-0"	6'-10"	1'-3"	5	5	6	7	4	#6	8'-10"	6	#6	5'-4"	1'-9"	4'-2"	
10'	4'-0"	7'-0"	1'-3"	5	5	6	7	4	#6	9'-10"	6	#6	5'-4"	1'-9"	4'-2"	
11'	4'-2"	7'-2"	1'-3"	5	5	7	8	4	#6	10'-10"	6	#6	5'-4"	1'-9"	4'-2"	
12'	4'-4"	7'-4"	1'-3"	5	5	7	8	4	#6	11'-10"	6	#6	5'-4"	1'-9"	4'-2"	
13'	4'-6"	7'-6"	1'-6"	5	6	7	8	4	#6	12'-10"	6	#6	5'-7"	1'-9"	4'-5"	
14'	4'-8"	7'-8"	1'-6"	6	6	8	9	4	#6	13'-10"	6	#6	5'-7"	1'-9"	4'-5"	
15'	4'-10"	7'-10"	1'-6"	6	6	8	9	4	#6	14'-10"	6	#6	5'-7"	1'-9"	4'-5"	
16'	5'-0"	8'-0"	1'-6"	6	6	8	10	4	#6	15'-10"	6	#6	5'-7"	1'-9"	4'-5"	
17'	5'-2"	8'-2"	1'-6"	6	7	9	10	4	#6	16'-10"	6	#6	5'-7"	1'-9"	4'-5"	
18'	5'-4"	8'-4"	1'-6"	7	8	9	11	4	#6	17'-10"	6	#6	5'-7"	1'-9"	4'-5"	
19'	5'-6"	8'-6"	1'-6"	7	8	10	12	4	#6	18'-10"	6	#6	5'-7"	1'-9"	4'-5"	
20'	5'-8"	8'-8"	1'-6"	7	9	10	12	4	#6	19'-10"	6	#6	5'-7"	1'-9"	4'-5"	
21'	5'-10"	8'-10"	1'-6"	8	9	11	13	4	#6	19'-10"	6	#6	6'-0"	1'-9"	4'-9"	
22'	6'-0"	9'-0"	1'-6"	9	10	12	13	4	#6	19'-10"	6	#6	7'-0"	1'-9"	5'-9"	
23'	6'-2"	9'-2"	1'-6"	9	10	12	13	4	#6	19'-10"	6	#6	8'-0"	1'-9"	6'-9"	
24'	6'-4"	9'-4"	1'-6"	10	11	13	15	4	#6	19'-10"	6	#6	9'-0"	1'-9"	7'-9"	
25'	6'-6"	9'-6"	1'-6"	10	11	14	16	4	#6	19'-10"	6	#6	11'-0"	1'-9"	9'-3"	
26'	6'-8"	9'-8"	1'-6"	11	12	15	16	4	#6	19'-10"	6	#6	12'-0"	1'-9"	10'-3"	
27'	6'-10"	9'-10"	1'-6"	12	13	16	17	4	#6	19'-10"	6	#6	13'-0"	1'-9"	11'-3"	
28'	7'-0"	10'-0"	1'-6"	12	13	16	18	4	#6	19'-10"	6	#6	14'-0"	1'-9"	12'-3"	

TABLE 403C-2
BARS "L" TABLE

H	NO - SIZE LENGTH		
0' - 4'	NONE		
4' - 28'	2	#6	2'-6"

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FULTON COUNTY STANDARD DETAIL 403C

CONCRETE PIER AND FOOTING DETAIL TABLE

DATE	REVISIONS	DATE	REVISIONS
M/Y	XXX	M/Y	XXX

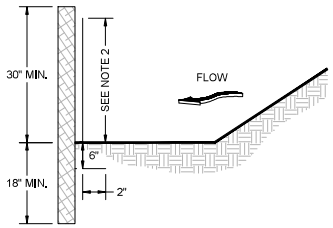
DGS/DRN/CHKD: XXX
APPROVED: XXX
DATE: XX-X-XX

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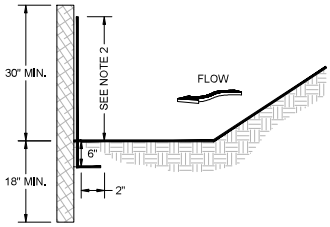
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403C

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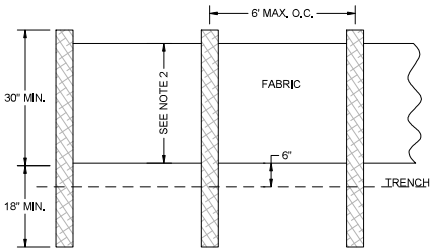
SIDE VIEW



SIDE VIEW

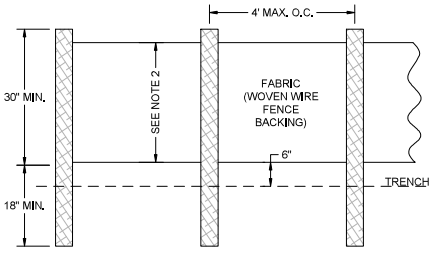
NOTES:

1. USE STEEL OR WOOD POSTS OR AS SPECIFIED BY THE EROSION, SEDIMENTATION, AND POLLUTION CONTROL PLAN.
2. HEIGHT OF SILT FENCE IS TO BE SHOWN ON THE EROSION, SEDIMENTATION, AND POLLUTION CONTROL PLAN.
3. THE FABRIC AND WIRE SHOULD BE SECURELY FASTENED TO POSTS AND FABRIC ENDS MUST BE OVERLAPPED A MINIMUM OF 18" OR WRAPPED TOGETHER AROUND A POST TO PROVIDE A CONTINUOUS FABRIC BARRIER AROUND THE INLET.



FRONT VIEW

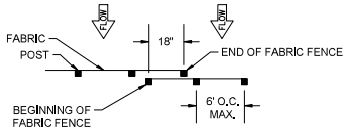
SILT FENCE - TYPE NON-SENSITIVE



FRONT VIEW

SILT FENCE - TYPE SENSITIVE

OVERLAP AT FABRIC ENDS



TOP VIEW
N.T.S.



FRONT VIEWS
N.T.S.

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FULTON COUNTY STANDARD DETAIL 404

TEMPORARY SILT FENCE

DATE	REVISIONS	DATE	REVISIONS
M/Y	XXX	M/Y	XXX

DGS/DRN/CHKD: XXX
APPROVED: XXX
DATE: XX-X-XX

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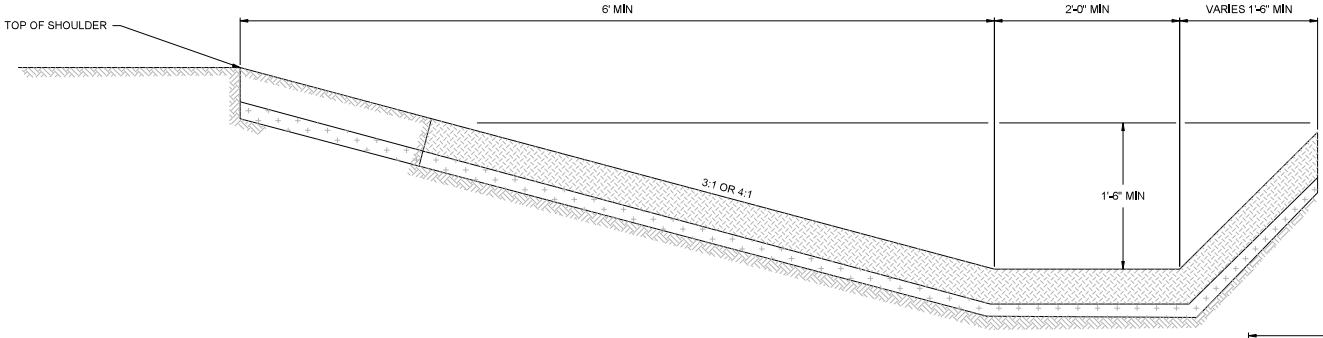
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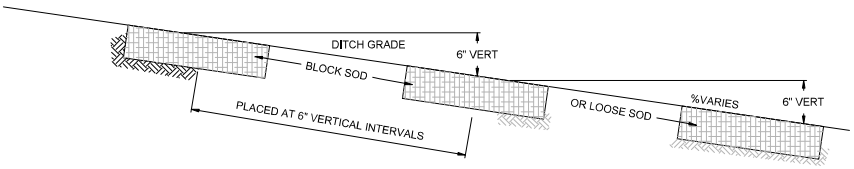
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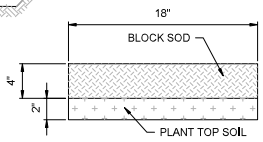
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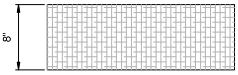
NOTES:

1. SOD DITCH CHECKS MAY BE OF LOOSE SOD OR BLOCK SOD. SOD DITCH CHECKS TO BE PLACED AT 6" VERTICAL INTERVALS. THIS STANDARD TO BE USED WHERE EROSION IN ROADSIDE DITCHES IS EXCESSIVE DUE TO TYPE OF SOIL OR GRADE.
2. RIP RAP CHECK DAMS TO BE PLACED AS NECESSARY DEPENDING ON GRADE OF DITCH.









LOOSE SOD
NTS

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FULTON COUNTY STANDARD DETAIL 405 DETAIL OF SOD DITCH		DATE M/Y	REVISIONS XXX	DATE M/Y	REVISIONS XXX	DGS/DRN/CHKD: XXX APPROVED: XXX DATE: XX-X-XX	FULTON COUNTY	FULTON COUNTY PUBLIC WORKS 141 PRYOR ST. ATLANTA, GA. 30303 404-612-7400 FAX: 404-224-0498	DRAWING NO. 405

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NOTES:

1. SEE DRAWING 403B FOR THE RELATED DETAILS.

TABLE 406-1
CONCRETE PIER AND FOOTING DETAIL TABLE

STANDARD REINFORCEMENT PIER																
FOOTING DIMENSIONS AND REINFORCEMENT								PIER REINFORCEMENT								
PIER	FOOTING			NO. OF #5 BARS EA. DIRECTION				BARS M			BARS N					
H	A	B	C	8" & 10"D	12" & 14"D	16" & 18"D	20" & 24"D	NO.	SIZE	LENGTH	NO.	.7	LENGTH	X	Y	
0'-4'	3'-0"	6'-0"	1'-3"	5	5	5	5	NONE			6	#6	H+2'-0"	1'-9"	H + 10"	
5'	3'-0"	6'-2"	1'-3"	5	5	5	5	NONE			6	#6	H+2'-0"	1'-9"	H + 10"	
6'	3'-0"	6'-4"	1'-3"	5	5	5	5	4	#6	4'-10"	6	#6	5'-4"	1'-9"	4'-2"	
7'	3'-0"	6'-6"	1'-3"	5	5	5	6	4	#6	5'-10"	6	#6	5'-4"	1'-9"	4'-2"	
8'	3'-0"	6'-8"	1'-3"	5	5	5	6	4	#6	7'-10"	6	#6	5'-4"	1'-9"	4'-2"	
9'	3'-0"	6'-10"	1'-3"	5	5	6	7	4	#6	8'-10"	6	#6	5'-4"	1'-9"	4'-2"	
10'	4'-0"	7'-0"	1'-3"	5	5	6	7	4	#6	9'-10"	6	#6	5'-4"	1'-9"	4'-2"	
11'	4'-2"	7'-2"	1'-3"	5	5	7	8	4	#6	10'-10"	6	#6	5'-4"	1'-9"	4'-2"	
12'	4'-4"	7'-4"	1'-3"	5	5	7	8	4	#6	11'-10"	6	#6	5'-4"	1'-9"	4'-2"	
13'	4'-6"	7'-6"	1'-6"	5	6	7	8	4	#6	12'-10"	6	#6	5'-7"	1'-9"	4'-5"	
14'	4'-8"	7'-8"	1'-6"	6	6	8	9	4	#6	13'-10"	6	#6	5'-7"	1'-9"	4'-5"	
15'	4'-10"	7'-10"	1'-6"	6	6	8	9	4	#6	14'-10"	6	#6	5'-7"	1'-9"	4'-5"	
16'	5'-0"	8'-0"	1'-6"	6	6	8	10	4	#6	15'-10"	6	#6	5'-7"	1'-9"	4'-5"	
17'	5'-2"	8'-2"	1'-6"	6	7	9	10	4	#6	16'-10"	6	#6	5'-7"	1'-9"	4'-5"	
18'	5'-4"	8'-4"	1'-6"	7	8	9	11	4	#6	17'-10"	6	#6	5'-7"	1'-9"	4'-5"	
19'	5'-6"	8'-6"	1'-6"	7	8	10	12	4	#6	18'-10"	6	#6	5'-7"	1'-9"	4'-5"	
20'	5'-8"	8'-8"	1'-6"	7	9	10	12	4	#6	19'-10"	6	#6	5'-7"	1'-9"	4'-5"	
21'	5'-10"	8'-10"	1'-6"	8	9	11	13	4	#6	19'-10"	6	#6	6'-0"	1'-9"	4'-9"	
22'	6'-0"	9'-0"	1'-6"	9	10	12	13	4	#6	19'-10"	6	#6	7'-0"	1'-9"	5'-9"	
23'	6'-2"	9'-2"	1'-6"	9	10	12	13	4	#6	19'-10"	6	#6	8'-0"	1'-9"	6'-9"	
24'	6'-4"	9'-4"	1'-6"	10	11	13	15	4	#6	19'-10"	6	#6	9'-0"	1'-9"	7'-9"	
25'	6'-6"	9'-6"	1'-6"	10	11	14	16	4	#6	19'-10"	6	#6	11'-0"	1'-9"	9'-3"	
26'	6'-8"	9'-8"	1'-6"	11	12	15	16	4	#6	19'-10"	6	#6	12'-0"	1'-9"	10'-3"	
27'	6'-10"	9'-10"	1'-6"	12	13	16	17	4	#6	19'-10"	6	#6	13'-0"	1'-9"	11'-3"	
28'	7'-0"	10'-0"	1'-6"	12	13	16	18	4	#6	19'-10"	6	#6	14'-0"	1'-9"	12'-3"	

TABLE 406-2
BARS "L" TABLE

H	NO - SIZE LENGTH		
0' - 4'	NONE		
4' - 28'	2	#6	2'-6"

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FULTON COUNTY STANDARD DETAIL 406

CONCRETE PIER AND FOOTING DETAIL TABLE

DATE	REVISIONS	DATE	REVISIONS
M/Y	XXX	M/Y	XXX

DGS/DRN/CHKD: XXX
APPROVED: XXX
DATE: XX-X-XX

FULTON COUNTY

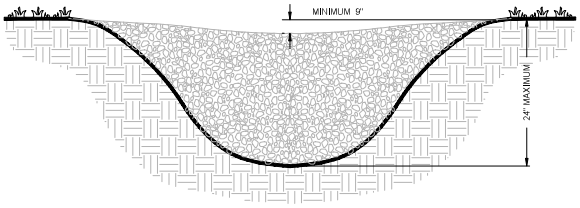
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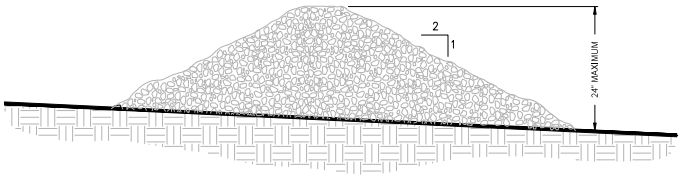
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NOTES:

1. USE AND LOCATION OF CHECK DAMS SHALL BE AS DIRECTED BY INSPECTOR.
2. CHECK DAMS ARE TO BE USED ONLY IN SMALL OPEN CHANNELS (THEY ARE NOT TO BE USED IN LIVE STREAMS).
3. THE DRAINAGE AREA FOR STONE CHECK DAMS SHALL NOT EXCEED TWO ACRES.
4. THE CENTER OF THE CHECK DAM MUST BE AT LEAST 9 INCHES LOWER THAN THE OUTER EDGES.
5. THE DAM HEIGHT SHOULD BE A MAXIMUM OF 2 FEET FROM CENTER TO RIM EDGE.
6. THE SIDE SLOPES OF THE CHECK DAM SHALL NOT EXCEED A 2:1 SLOPE.
7. GEOTEXTILE SHALL BE USED TO PREVENT THE MITIGATION OF SUBGRADE SOIL PARTICLES INTO THE STONES (REFER TO AASHTO M288-96, SECTION 7.3, TABLE 3).



CROSS SECTION



PROFILE VIEW

A. THE TOE OF THE UPSTREAM CHECK DAM.
B. TOP OF THE DOWNSTREAM CHECK DAM.
L. THE DISTANCE SUCH THAT POINTS A AND B ARE OF EQUAL ELEVATION.



SPACING BETWEEN CHECK DAMS

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 407

EROSION CONTROL
STONE CHECK DAMS

DATE	REVISIONS	DATE	REVISIONS
M/Y	XXX	M/Y	XXX

DGS/DRN/CHKD: XXX
APPROVED: XXX
DATE: XX-X-XX

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Exhibit I – Exhibit 2: Details – 500 Series

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DWG. NO.	DESCRIPTION
500	INDEX AND GENERAL NOTES
501	CATCH BASIN SINGLEWING ONE FOOT OFFSET (FACE OF CURB)
502	CATCH BASIN DOUBLE WING ONE FOOT OFFSET (FACE OF CURB)
503	CATCH BASIN WITH ROLLED CURB & GUTTER 10" OFFSET (PRIVATE DEVELOPMENT ONLY)
504	SINGLE WING ON - LINE CATCH BASIN (BRICK)
505	DOUBLE WING ON - LINE CATCH BASIN
506	CATCH BASIN TOPS
507	STANDARD PRECAST ROUND CATCH BASINS
508	LOCATION OF ROUND CATCH BASIN
509	DROP INLETS, BRICK & CATCH BASIN EXTENSION
510	DROP INLETS, CONCRETE DETAILS FOR PAVED SECTIONS ONLY
511	DROP INLET DIMENSIONS
512	DROP INLETS (WEIR TYPE)
514	PRECAST CONCRETE HEADWALL SYSTEMS (INLET & OUTLET HEADWALLS)
515	INLET & OUTLET HEADWALLS
516	ENERGY DISSIPATOR (ALTERNATE)
518	STRUCTURAL PLATE PIPE ARCH CULVERT
519A	STANDARD PIPE CULVERTS SHEET 1 OF 3
519B	PIPE CULVERTS SHEET 2 OF 3
519C	PIPE CULVERTS SHEET 3 OF 3
520	STANDARD PERFORATED UNDERDRAIN
521	PIPE GAUGE AND CLASS (CONCRETE & CORRUGATED STEEL PIPE)
522	EARTH FILL DAM FOR DETENTION PONDS
523	FENCE DETAIL FOR DETENTION PONDS SHEET 1 OF 2
524	FENCE DETAIL FOR DETENTION PONDS SHEET 2 OF 2

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FULTON COUNTY STANDARD DETAIL 500

INDEX AND GENERAL NOTES

DATE	REVISIONS	DATE	REVISIONS

DGS/DRN/CHKD: XXX
APPROVED: XXX
DATE: XX-X-XX

FULTON COUNTY

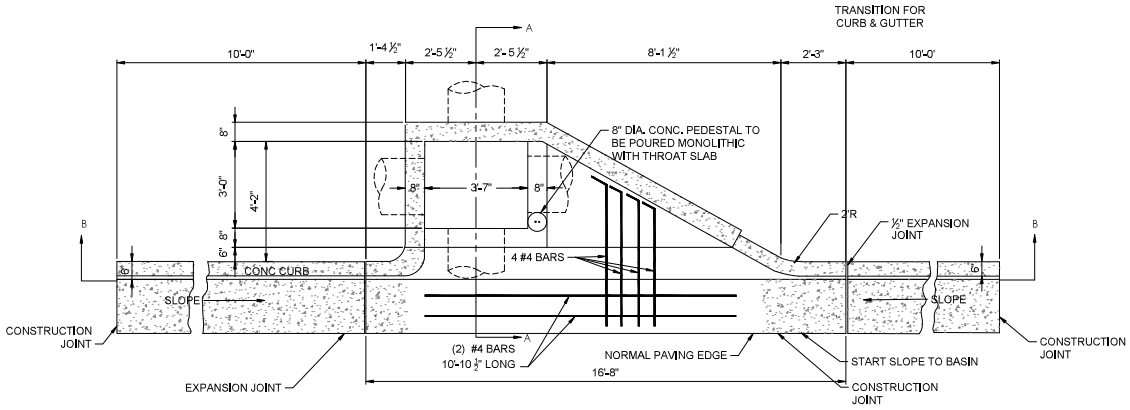
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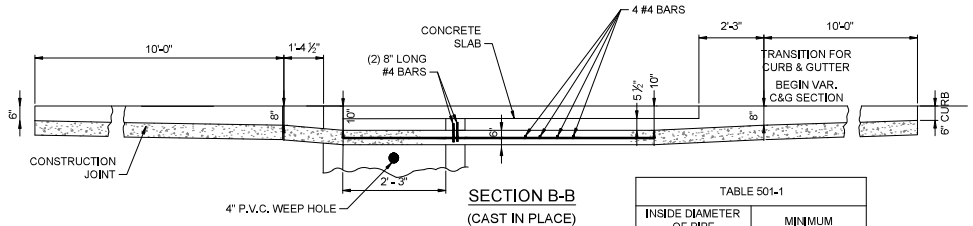
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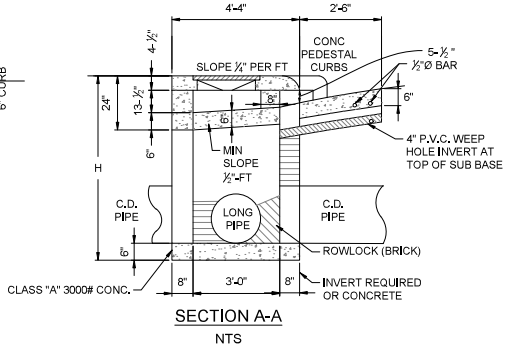
1. FOR ALL CATCH BASINS, 1/2" EXPANSION JOINT MATERIAL SHALL BE PLACED AROUND THE CATCH BASIN WHERE SIDEWALK OR MEDIAN PAVEMENT IS PLACED ADJACENT TO THE CATCH BASIN IN ANY SUBDIVISION THE OPTION IS TO USE EITHER ALL ONLINE CATCH BASINS OR ALL ONE FOOT OFFSET CATCH BASINS.
2. CONCRETE STRENGTH TEST REQUIRED FOR ALL POURED IN PLACE CONCRETE.
3. ALL POURED-IN-PLACE CONC. TO BE CLASS "A" 3000 P.S.I.
4. PLASTIC COATED STEEL STEPS ARE REQUIRED IN ALL CATCH BASINS.
5. FOR ADDITIONAL DETAILS SEE STANDARD #104.





SECTION B-B
(CAST IN PLACE)
NTS

TABLE 501-1	
INSIDE DIAMETER OF PIPE (IN.)	MINIMUM "H"
18	4' - 10"
24	5' - 6"
30	6' - 2"
36	6' - 10"
42	7' - 4"
48	8' - 0"
54	8' - 6"
60	9' - 2"



SECTION A-A
NTS

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 501

CATCH BASIN SINGLEWING
ONE FOOT OFFSET (FACE OF CURB)

DATE	REVISIONS	DATE	REVISIONS
M/Y	XXX	M/Y	XXX

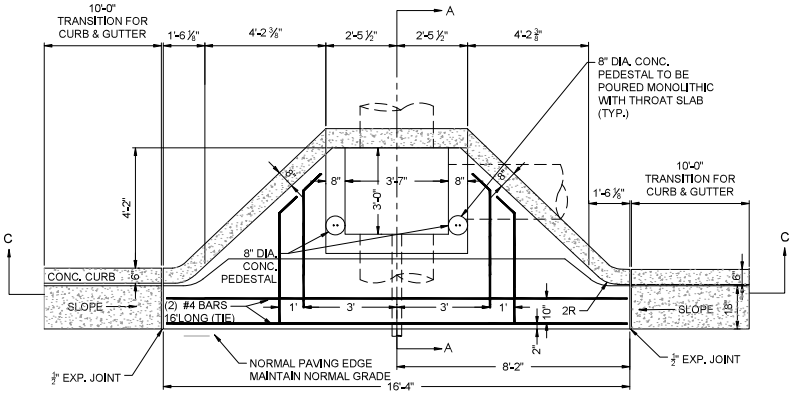
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APPROVED: XXX
DATE: XX-X-XX

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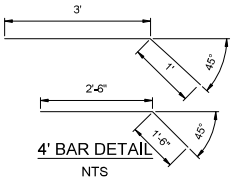
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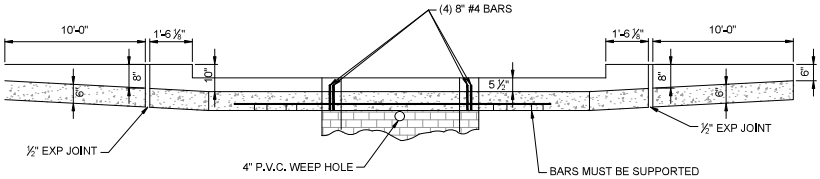


4' BAR DETAIL
NTS

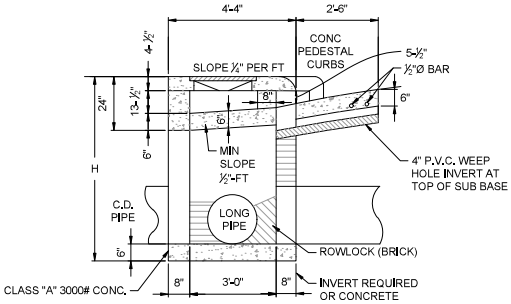
NOTES:

1. CONCRETE STRENGTH TEST REQUIRED FOR ALL POURED IN PLACE CONCRETE.
2. FOR ALL CATCH BASINS, ½" EXPANSION JOINT MATERIAL SHALL BE PLACED AROUND THE CATCH BASIN WHERE SIDEWALK OR MEDIAN PAVEMENT IS PLACED ADJACENT TO THE CATCH BASIN.
3. IN ANY SUBDIVISION, THE OPTION IS TO USE EITHER ALL ONLINE CATCH BASINS OR ALL ONE FOOT OFFSET CATCH BASINS.
4. ONE FOOT OFFSET REQUIRED IN ALL CUL-DE-SACS.
5. PLASTIC COATED STEEL STEPS ARE REQUIRED IN ALL CATCH BASINS.
6. FOR ADDITIONAL DETAILS SEE STANDARD #104.
7. ALL POURED-IN-PLACE CONC. TO BE CLASS "A" 3000 P.S.I.

TABLE 502-1	
INSIDE DIAMETER OF PIPE (IN.)	MINIMUM "H"
12-18	4' - 10"
24	5' - 6"
30	6' - 2"



SECTION C-C
(CAST IN PLACE)
NTS



SECTION A-A
NTS

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 502

CATCH BASIN DOUBLEWING
ONE FOOT OFFSET (FACE OF CURB)

DATE	REVISIONS	DATE	REVISIONS
M/Y	XXX	M/Y	XXX

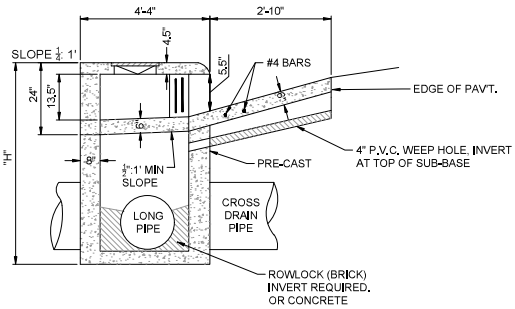
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DATE: XX-X-XX

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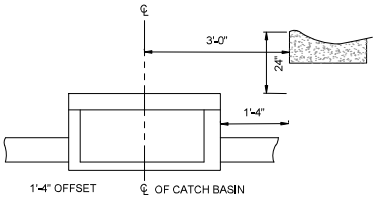
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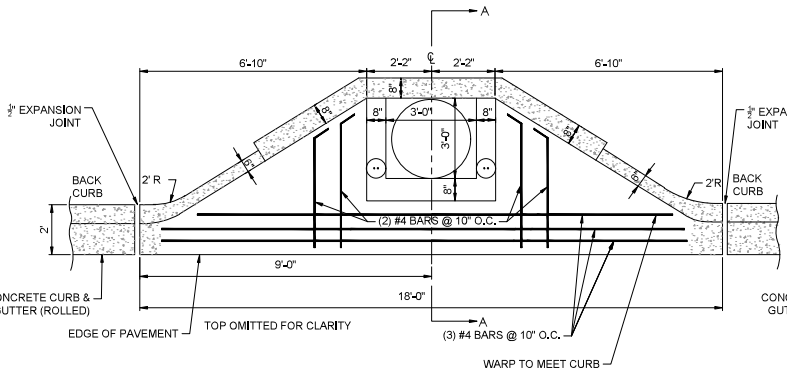
SECTION A-A
(N.T.S.)

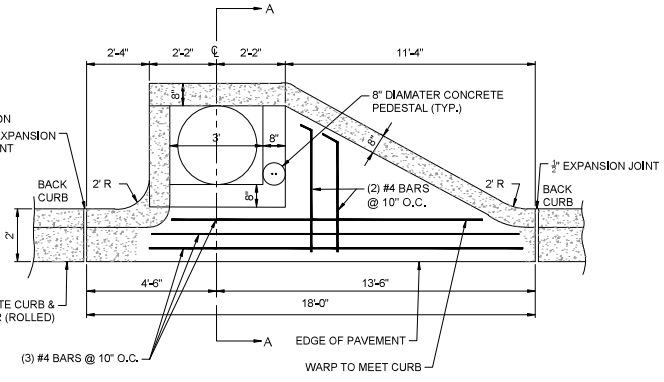


NOTES:

1. OPENING FOR CATCH BASINS TO BE 5-1/2" TO 7" MAXIMUM.
2. TOTAL DIMENSIONS FOR TOPS ± 2" (LENGTH) ± 2" (WIDTH).
3. COLLAR WALLS - FULL 360° - REQUIRED AT ALL JUNCTURES OF STORM PIPE TO BOXES.
4. IF THE DESIGN OF CATCH BASIN DOES NOT MEET THE REQUIREMENTS - YOU MAY NOT USE PRE - CAST STRUCTURES AND THE CATCH BASIN MUST BE BUILT OUT OF BRICK.

TABLE 503-1	
PIPE SIZE	"H"
18"	5' - 0"
24"	5' - 6"
30"	6' - 0"





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FULTON COUNTY STANDARD DETAIL 503
CATCH BASINS WITH ROLLED CURB & GUTTER
10" OFFSET
(PRIVATE DEVELOPMENT ONLY)

DATE	REVISIONS	DATE	REVISIONS
M/Y	XXX	M/Y	XXX

DGS/DRN/CHKD: XXX
APPROVED: XXX
DATE: XX-X-XX

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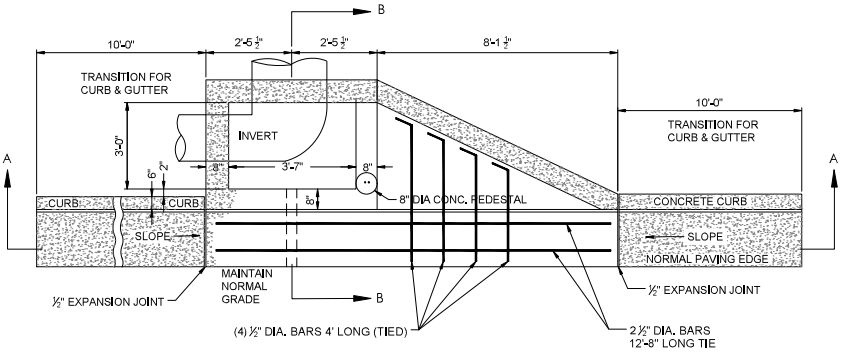
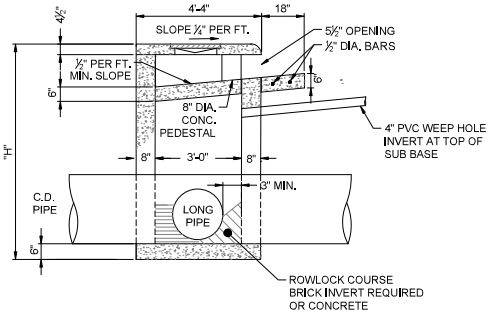


TABLE 504-1	
INSIDE PIPE DIAMETER (INCHES)	MINIMUM "H"
18	4' - 10"
24	5' - 6"
30	6' - 2"

NOTE:

1. FOR ALL CATCH BASINS, ½-INCH EXPANSION JOINT MATERIAL SHALL BE PLACED AROUND THE CATCH BASIN WHERE SIDEWALK OR MEDIAN PAVEMENT IS PLACED ADJACENT TO THE CATCH BASIN.
2. D.O.T. STANDARD #1033D IS ALLOWABLE ALTERNATIVE.
3. PLASTIC COATED STEEL STEPS ARE REQUIRED IN ALL C.B.
4. FOR ADDITIONAL DETAILS SEE STANDARD #104.

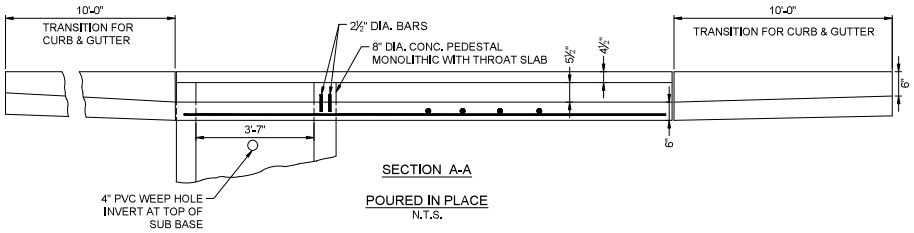


SECTION B-B

CLASS "A" 3000 PSI CONCRETE

N.T.S.

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SECTION A-A

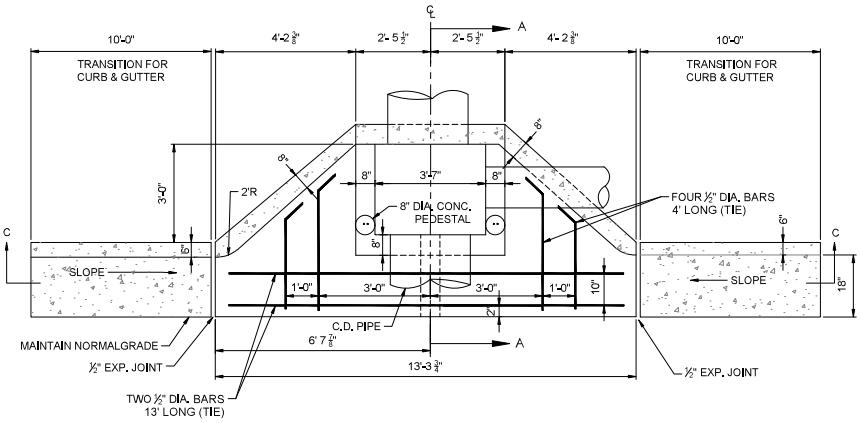
POURED IN PLACE

N.T.S.

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 504 SINGLE WING ON-LINE CATCH BASIN (BRICK)		DATE M/Y	REVISIONS XXX	DATE M/Y	REVISIONS XXX	DGS/DRN/CHKD: XXX APPROVED: XXX DATE: XX-X-XX	FULTON COUNTY	FULTON COUNTY PUBLIC WORKS 141 PRYOR ST. ATLANTA, GA. 30303 404-612-7400 FAX: 404-224-0498	DRAWING NO. 504

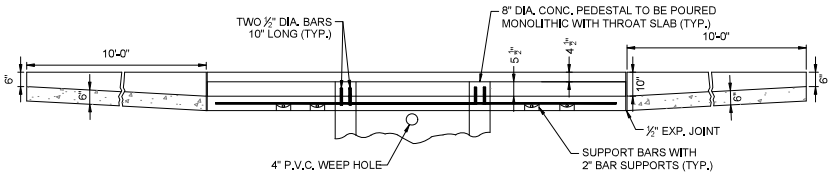
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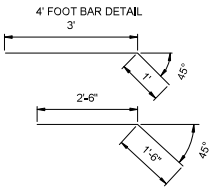
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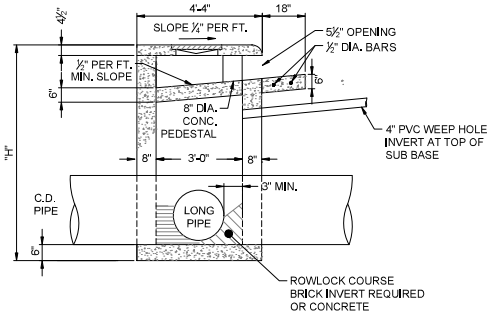
1. FOR ALL CATCH BASINS, ½" EXPANSION JOINT MATERIAL SHALL BE PLACED AROUND THE CATCH BASIN WHERE SIDEWALK OR MEDIAN PAVEMENT IS PLACED ADJACENT TO THE CATCH BASIN.
2. CONCRETE STRENGTH TEST REQUIRED FOR ALL POURED IN PLACE CONCRETE.
3. G.D.O.T. STANDARD #10340 IS ALLOWABLE ALTERNATIVE.
4. OPENING AT CATCH BASIN SHALL BE BETWEEN 5 1/2 " AND 7".
5. ALL POURED - IN - PLACE CONC. TO BE CLASS "A" 3000 P.S.I.
6. DRAINAGE STRUCTURE TOPS OMITTED FROM DETAILS FOR CLARITY.

TABLE 505-1	
INSIDE PIPE DIAMETER (INCHES)	MINIMUM "H"
18	4' - 10"
24	5' - 6"
30	6' - 2"



SECTION C - C
(CAST IN PLACE)





SECTION A-A

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 505

DOUBLE WING ON-LINE CATCH BASIN

DATE	REVISIONS	DATE	REVISIONS
M/Y	XXX	M/Y	XXX

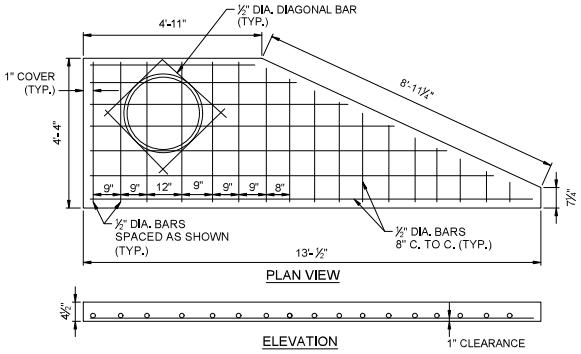
DGS/DRN/CHKD: XXX
APPROVED: XXX
DATE: XX-X-XX

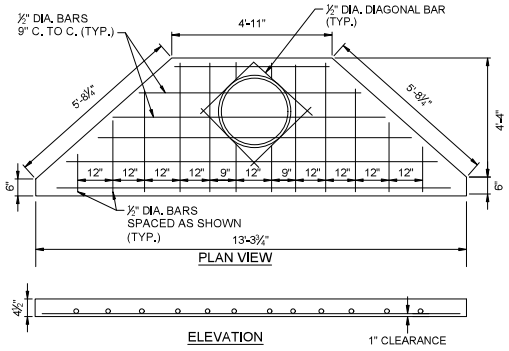
FULTON COUNTY

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DRAWING NO.
505

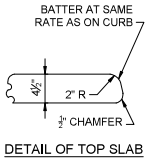
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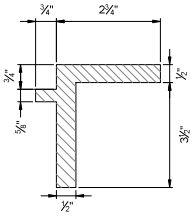


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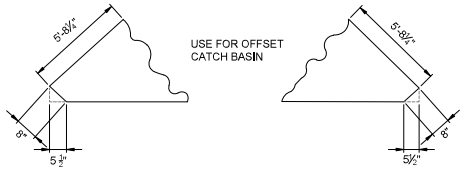
1. G.D.O.T. STANDARD #1033D IS ALLOWABLE ALTERNATIVE.
2. G.D.O.T. STANDARD #1034D IS ALLOWABLE ALTERNATIVE.
3. APPROXIMATE WEIGHTS OF MANHOLE AND FRAME:
   CAST IRON RING 78 LBS
   CAST IRON COVER63 LBS
4. TOP SLAB TO HAVE WOOD FLOAT FINISH.



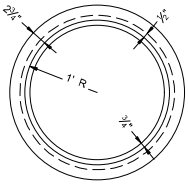
DETAIL OF TOP SLAB



SECTION G-G



RING

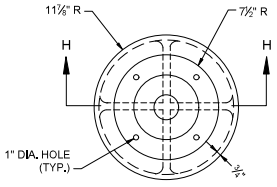


PLAN VIEW

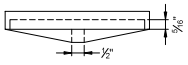


ELEVATION

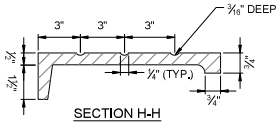
COVER



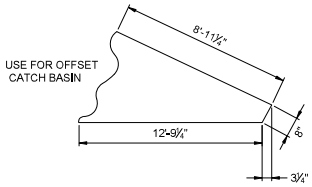
PLAN VIEW



ELEVATION



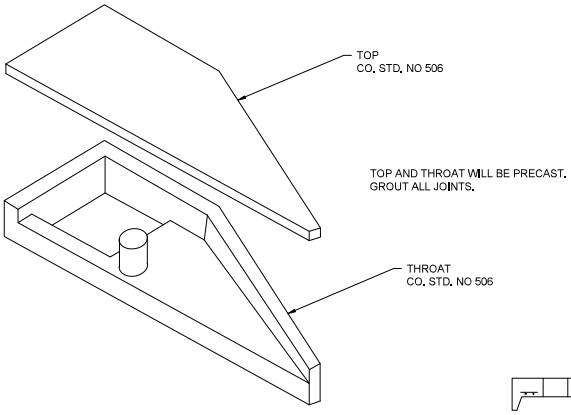
SECTION H-H

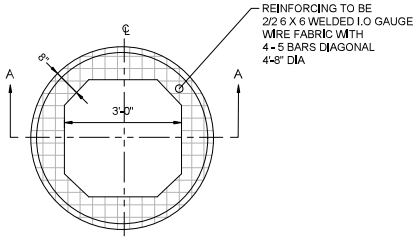


95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 506 CATCH BASIN TOPS		DATE M/Y: XXX	REVISIONS: XXX	DATE M/Y: XXX	REVISIONS: XXX	DGS/DRN/CHKD: XXX APPROVED: XXX DATE: XX-X-XX	FULTON COUNTY FULTON COUNTY PUBLIC WORKS 141 PRYOR ST. ATLANTA, GA. 30303 404-612-7400 FAX: 404-224-0498	DRAWING NO. 506

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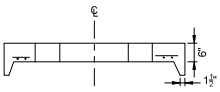




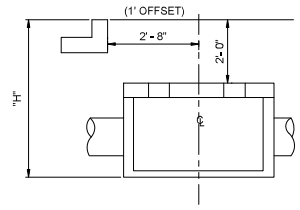
ROUND TO SQUARE ADAPTER

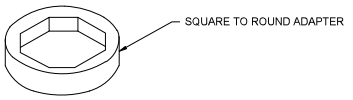
NOTES:

1. CATCH BASIN SHALL BE INSTALLED WITH PIPE OPENING AS SPECIFIED.
2. STEPS TO BE INSTALLED ON 15" VERTICAL SPACING.
3. SEE PRECAST MANHOLE STANDARD FOR SPECIFICATIONS.
4. ALL CONCRETE SHALL BE 4,000 PSI.
5. FOR ROLLED CURB & GUTTER, SEE STD. NO. 503-B FOR BOX LOCATION.

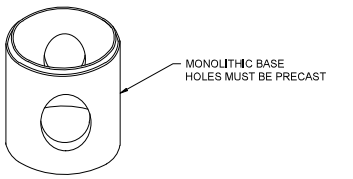


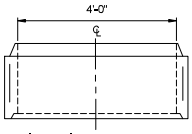
SECTION A-A





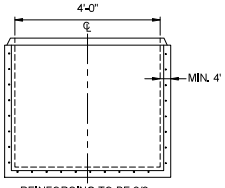






REINFORCING TO BE 2/2
6 X 6 WELDED WIRE FABRIC

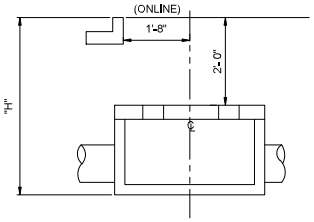
RISER



REINFORCING TO BE 3/3
6 X 8 WELDED WIRE FABRIC

TABLE 507 - 1			
BASE HEIGHT	METAL PIPE	CONC. PIPE	*H (MIN.)
4' DIA - 2' - 6"	18"	12"	5' - 0"
3' - 0"	24"	18"	5' - 6"
3' - 6"	30"	24"	6' - 0"
4' - 0"		30"	6' - 6"

*OTHERWISE BOX MUST BE BUILT OUT OF BRICK



CENTERLINE OF
CATCH BASINS

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 507

STANDARD PRECAST ROUND CATCH BASINS

DATE M/Y	REVISIONS	DATE M/Y	REVISIONS
	XXX		XXX

DGS/DRN/CHKD: XXX
APPROVED: XXX
DATE: XX-X-XX

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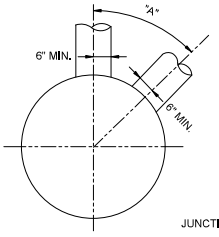
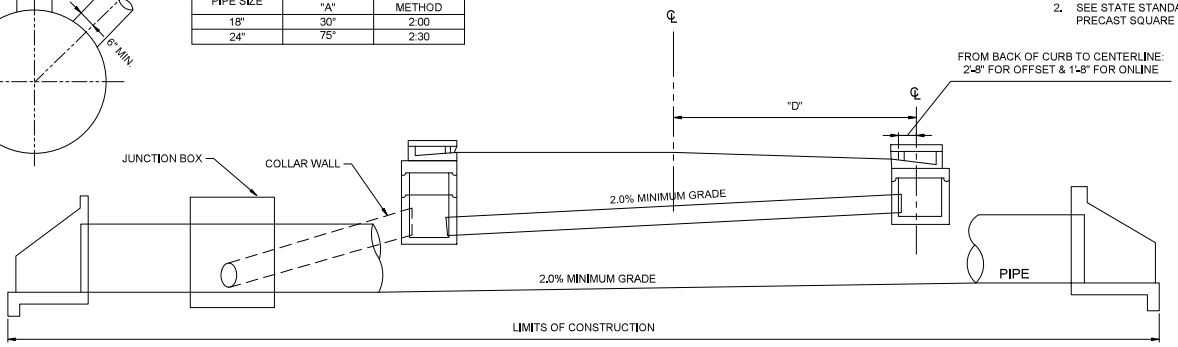


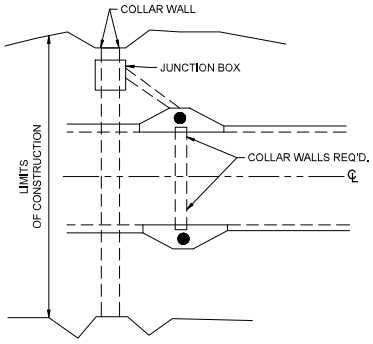
TABLE 508 - 1
MINIMUM ANGLE BETWEEN PIPES

PIPE SIZE	ANGLE "A"	CLOCK METHOD
18"	30°	2:00
24"	75°	2:30

NOTES:

1. TABLE 508-1 IS BASED ON TWO PIPES OF EQUAL SIZE. WHEN ORDERING STATE ANGLE BY CLOCK METHOD. REQUEST ONE PIPE AT 12 O'CLOCK AND THE OTHER SIZE AND TIME AT WHATEVER ON THE JOB CONDITIONS REQUIRE.
2. SEE STATE STANDARD NO. 1033 D, E & F. OR 1034 D & E FOR PRECAST SQUARE CATCH BASIN.





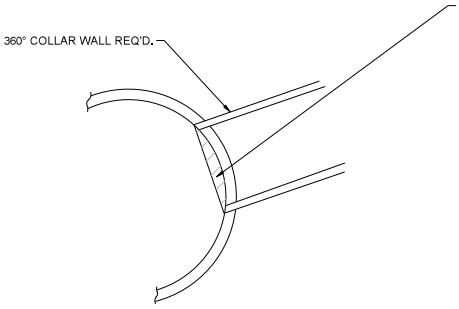


TABLE 508 - 2
CENTER LINE LOCATION OF CATCH BASIN BOX FROM STREET CENTER LINE

STREET WIDTH (BK. TO BK.)	ONLINE "D"	OFFSET "D"
24'	13' - 8"	14' - 8"
29'	16' - 2"	17' - 2"
39'	21' - 2 "	22' - 2"
44'	23' - 8"	24' - 8"
52'	27' - 8"	28' - 8"

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FULTON COUNTY STANDARD DETAIL 508

LOCATION OF ROUND CATCH BASIN

DATE M/Y	REVISIONS	DATE M/Y	REVISIONS
XXX		XXX	

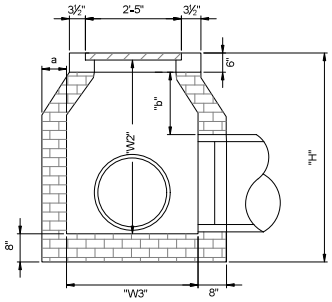
DGS/DRN/CHKD: XXX
APPROVED: XXX
DATE: XX-X-XX

FULTON COUNTY

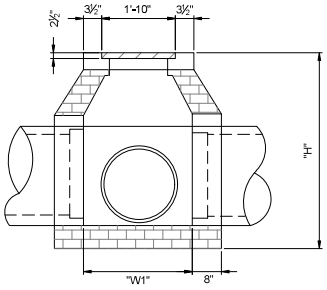
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DRAWING NO.
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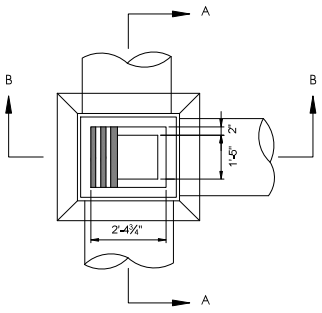
SECTION B-B



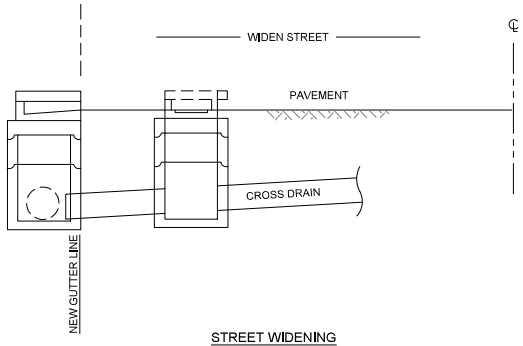
SECTION A-A

NOTES:

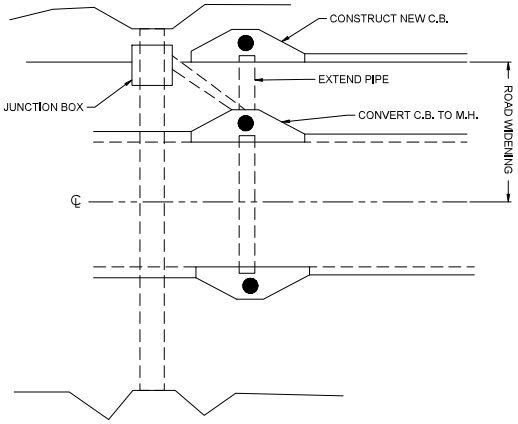
1. REMOVE EXISTING TOP & THROAT OF CATCH BASIN. ADD BRICK COURSES FOR GRADE ADJUSTMENT. COMPLETE BY ADDING STANDARD MANHOLE FRAME & COVER (#460 LBS. AND SET IN 8" MIN. REINFORCED CONC. SLAB).
2. ALL PIPES WITHIN RIGHT-OF-WAY SHALL BE RCP. THIS INCLUDES PIPE PARALLEL TO ROAD.
3. SEE STANDARD #511 FOR DIMENSION TABLE.



PLAN VIEW



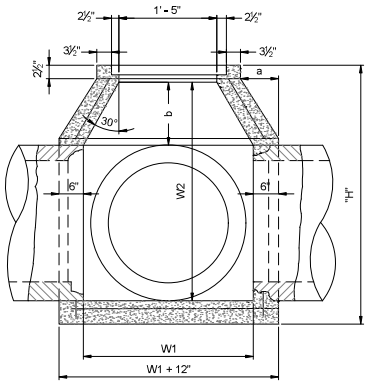
STREET WIDENING
CONVERTING CATCH BASIN TO MANHOLE



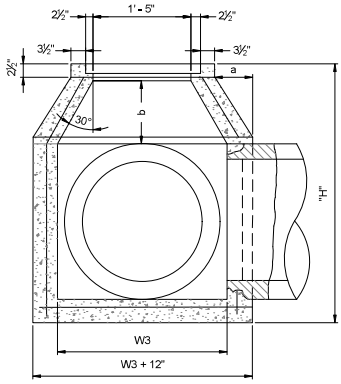
95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 509 DROP INLETS, BRICK & CATCH BASIN EXTENSION		DATE M/Y	REVISIONS XXX	DATE M/Y	REVISIONS XXX	DGS/DRN/CHKD: XXX APPROVED: XXX DATE: XX-X-XX	FULTON COUNTY PUBLIC WORKS 141 PRYOR ST. ATLANTA, GA. 30303 404-612-7400 FAX: 404-224-0498	DRAWING NO. 509

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SECTION A-A

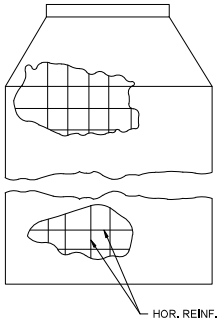


SECTION B-B

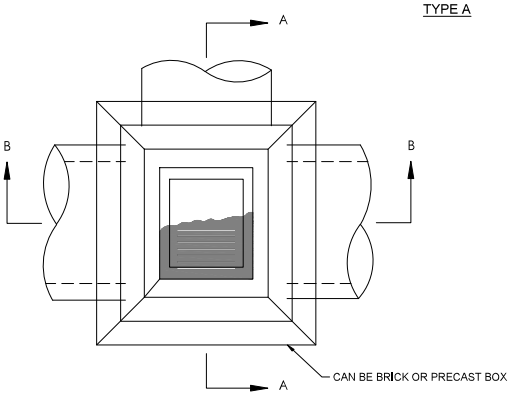
TYPE A

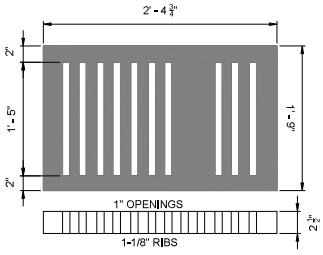
NOTES:

1. ROWLOCK BRICK INVERTS REQUIRED AT ALL JUNCTION BOXES & DROP INLETS. CONCRETE INVERT IS ALLOWED.
2. IN ALL DROP INLETS, ⅜" DIA. BAR REINFORCING STEEL TO BE PLACED NOT MORE THAN 12" CENTER LINE TO CENTER LINE AND COVERED NOT LESS THAN 2".

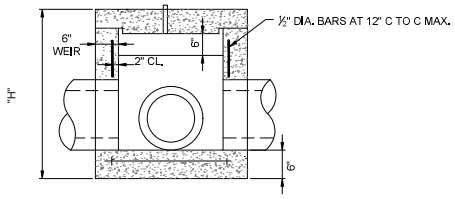


HOR. REINF. STEEL AT 6" C TO C
VERT. REINF. STEEL AT 12" C TO C





DETAIL OF CAST IRON GRATING
APPROX. WT. 200 LB.



TYPE B
SEE SHEET NO. 511 FOR DIMENSIONS

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 510

DROP INLETS, CONCRETE
DETAILS FOR PAVED SECTIONS ONLY

DATE	REVISIONS	DATE	REVISIONS
M/Y	XXX	M/Y	XXX

DGS/DRN/CHKD: XXX
APPROVED: XXX
DATE: XX-X-XX

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DRAWING NO.
510

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TABLE 511-1
BRICK DROP INLET

D (IN.)	W1	MIN. -W2	W3	a	b	MIN-H		NORMAL W OR W1	MIN-H	MIN-H
15	2'-2"	2'-11"	2'-9"	0'-4 1/2"	0'-8"	3'-9 1/2"		2'-0"	2'-7 1/2"	3'-7 1/2"
18	2'-2"	3'-2 1/2"	2'-9"	0'-4 1/2"	0'-8"	4'-1"		2'-0"	2'-10"	3'-10"
24	2'-8"	3'-3"	3'-3"	0'-7 1/2"	1'-1 1/4"	4'-9"		3'-0"	3'-8"	4'-8"
30	3'-7 1/4"	4'-0"	3'-10"	1'-0"	1'-9"	5'-10"		3'-6 1/2"	4'-2 1/2"	5'-10"
36	4'-2"	6'-$\frac{3}{8}$"	4'-8"	1'-4 $\frac{1}{2}$"	2'-2 $\frac{1}{4}$"	6'-11"		4'-2"	4'-10"	5'-10"
42	4'-5"	7'-1 3/4"	5'-0"	1'-6"	2'-7 1/4"	8'-0 1/4"		4'-8 1/2"	5'-4 1/2"	6'-11 1/2"
48	5'-0"	8'-2 3/4"	5'-7"	1'-9 1/2"	3'-1 1/4"	9'-1 1/4"		5'-3 1/2"	5'-11 1/2"	6'-11 1/2"
54	5'-7"	9'-4"	6'-2"	2'-1"	3'-7 1/2"	10'-2 1/2"		5'-10"	6'-6"	7'-6"
60	6'-2"	10'-5"	6'-9"	2'-4 1/2"	4'-1 1/2"	11'-3 1/4"		6'-4 1/2"	7'-0 1/2"	3'-0 $\frac{1}{2}$"
60	6'-9"	11'-6"	7'-4"	2'-8"	4'-7 1/2"	12'-4 1/2"		6'-11"	7'-7"'	8'-7"'
72	7'-4"	12'-7"'	7'-11"	2'-11 1/2"	5'-2"	13'-5 1/2"		7'-5 1/2"	8'-1 1/2"	9'-1 1/2"

TABLE 511-2
CONCRETE DROP INLET

D (IN.)	W1	MIN. -W2	W3	a	b	MIN-H		NORMAL W OR W1	MIN-H	MIN-H
15	2'-0"	2'-6 1/2"	2'-7"	0'-3 1/2"	0'-6"	3'-3"		2'-0"	2'-7 1/2"	3'-9 1/2"
18	2'-0"	2'-9 1/2"	2'-7"	0'-3 1/2"	0'-6"	3'-6"		2'-0"	2'-10"	4'-0"
24	2'-8"	4'-0 1/2"	3'-3"	0'-7 1/2"	1'-1"	4'-9"		3'-0"	3'-8"	4'-10"
30	3'-4"	5'-1 1/2"	3'-10"	0'-11 1/2"	1'-8"	5'-10"		3'-6 1/2"	4'-2 1/2"	5'-4 1/2"
36	3'-10"	6'-1 $\frac{3}{8}$"	4'-8"	1'2 $\frac{1}{2}$"	2'-1 $\frac{1}{4}$"	6'-10"		4'-2"	4'-10"	6'-0"
42	4'-5"	7'-2 1/2"	5'-0"	1'-6"	2'-7 1/4"	7'-11"		4'-8 1/2"	5'-4 1/2"	6'-6 1/2"
48	5'-0"	8'-3 1/2"	5'-7"	1'-9 1/2"	3'-1 1/4"	9'-0"		5'-3 1/2"	5'-11 1/2"	7'-1 1/2"
54	5'-7"	9'-4 1/2"	6'-2"	2'-1"	3'-7 1/2"	10'-1"		5'-10"	6'-6"	7'-8"
60	6'-2"	10'-5 1/2"	6'-9"	2'-4 1/2"	4'-1 1/2"	11'-2"		6'-4 1/2"	7'-0 1/2"	3'-0 $\frac{1}{2}$"
60	6'-9"	11'-6 1/2"	7'-4"	2'-8"	4'-7 1/2"	12'-3"		6'-11"	7'-7"'	8'-7"'
72	7'-4"	12'-7 1/2"	7'-11"	2'-11 1/2"	5'-1 1/4"	13'-4"		7'-5 1/2"	8'-1 1/2"	9'-1 1/2"

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 511

DROP INLET DIMENSIONS

DATE	REVISIONS	DATE	REVISIONS
M/Y	XXX	M/Y	XXX

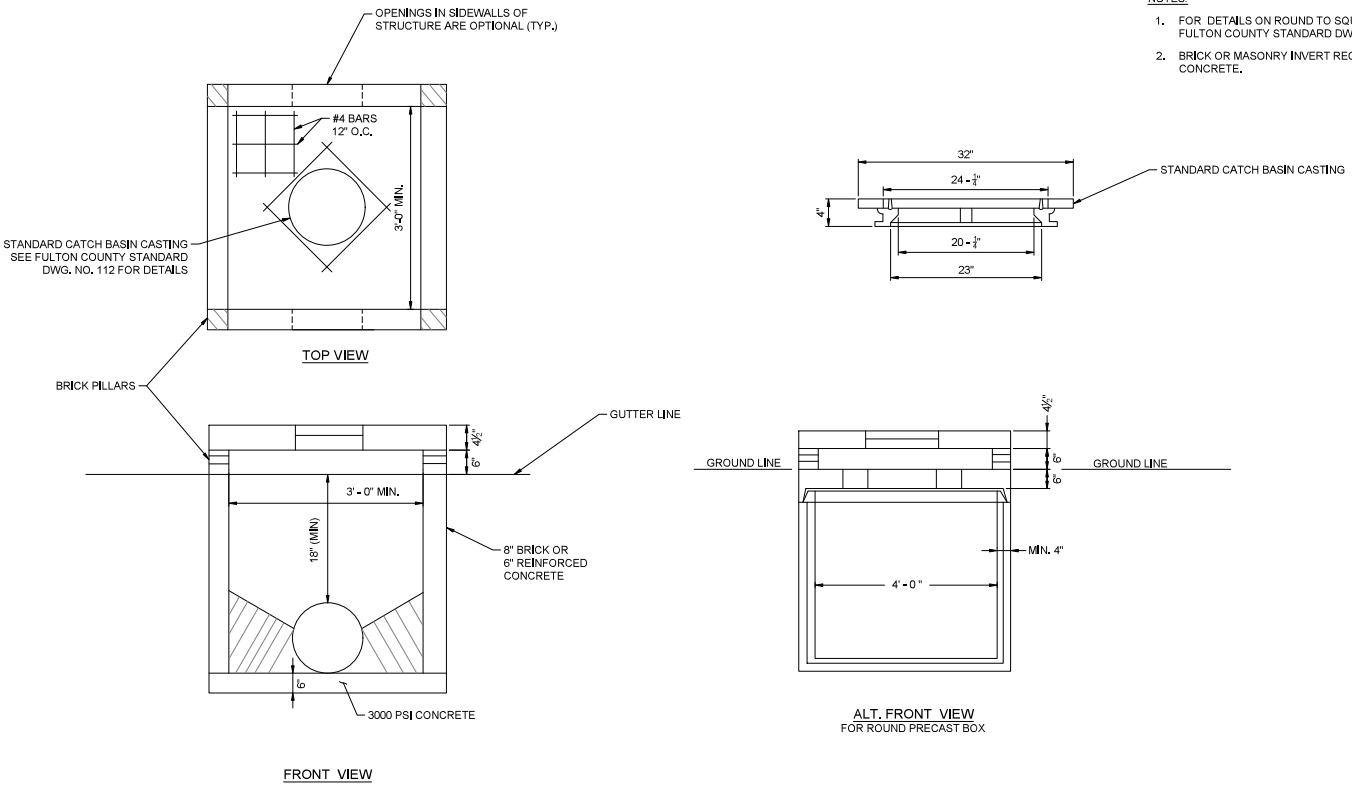
DGS/DRN/CHKD: XXX
APPROVED: XXX
DATE: XX-X-XX

FULTON COUNTY

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404-612-7400 FAX: 404-224-0498

DRAWING NO.
511

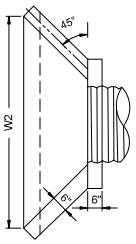
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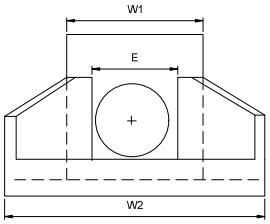
95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 512 DROP INLETS (WEIR TYPE)		DATE M/Y: XXX	REVISIONS: XXX	DATE M/Y: XXX	REVISIONS: XXX	DGS/DRN/CHKD: XXX APPROVED: XXX DATE: XX-X-XX	FULTON COUNTY FULTON COUNTY PUBLIC WORKS 141 PRYOR ST. ATLANTA, GA. 30303 404-612-7400 FAX: 404-224-0498	DRAWING NO. 512

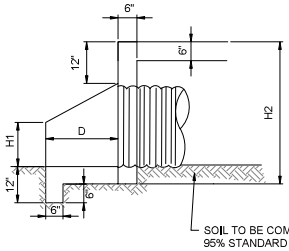
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PLAN VIEW

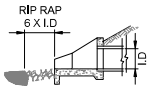


FRONT ELEVATION

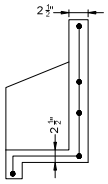


SIDE VIEW

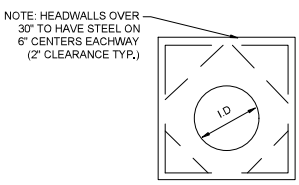
INLET HEADWALL



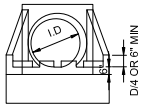
RIP - RAP - DETAIL



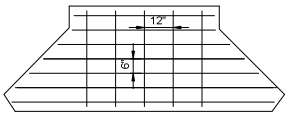
BASE & WALL SECTION



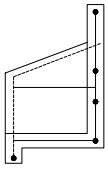
WALL SECTION



FRONT ELEVATION

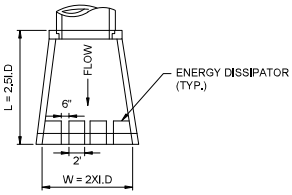


BASE SECTION
N.T.S.



WING SECTION

OUTLET HEADWALL



PLAN VIEW

NOTES:

1. ALL CONC. SHALL BE 4000 P.S.I.
2. REINFORCEMENT STEEL SHALL BE INTERMEDIATE GRADE.
3. CHAMFER ALL EXPOSED EDGES.
4. ENERGY DISSIPATOR REQ. ON PIPES OVER 30" DIA.
5. IF EXIT VELOCITY >6 F.P.S. RIP RAP TO BE PLACED AT OUTLET, LENGTH TO BE 6xD, WIDTH TO BE 3xD.
6. FOR PIPES LARGER THAN 54" USE FULTON CO. STD. #515 OR G.D.O.T. STD. #1125.
7. AN ALTERNATE DESIGN FOR THE ENERGY DISSAPATOR WOULD BE ACCEPTABLE ONCE APPROVED BY FULTON COUNTY.

TABLE 514-1
STONE & FILTER MATERIAL: RIP RAP

VELOCITY	STONE SIZE	FILTER MATERIAL
<6 FT/SEC 6 TO 8 FT/SEC 8 TO 10 FT/SEC	10 - 50 LBS. 20 - 100 LBS. 25 - 250 LBS.	1.5' 3" 4.5"
STONE OR DURABLE MATERIAL WEIGHING 150 LBS/FT^3		

TABLE 514-2
HEADWALL DIMENSION FOR METAL PIPE*

INSIDE DIA. OF PIPE	W1	W2	H1	H2	D	E	WT	SQ. FT. IN BASE AREA
18"	3' - 2"	4' - 3"	1' - 3"	3' - 2"	1' - 3"	1' - 9"	1,550	7.34
21", 24"	3" - 8"	5' - 3"	1' - 9"	3' - 8"	1' - 6"	2' - 7"	2,100	9.9
30"	4' - 2"	6' - 5"	2' - 0"	4' - 2"	1' - 10"	2' - 9"	2,850	13.5
36"	4' - 8"	7' - 7"	2' - 4"	4' - 8"	2' - 2"	3' - 3 "	3,700	17.65
42", 48"	5' - 8"	10' - 1"	3' - 3"	5' - 8"	2' - 11"	4' - 3"	5,600	28.6
54"	6' - 8"	11' -11"		6' - 8"	3' - 4"	5' - 3"	7,500	35.6

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 514

PRECAST CONCRETE HEADWALL SYSTEMS
(INLET & OUTLET HEADWALLS)

DATE	REVISIONS	DATE	REVISIONS
M/Y	XXX	M/Y	XXX

DGS/DRN/CHKD: XXX
APPROVED: XXX
DATE: XX-X-XX

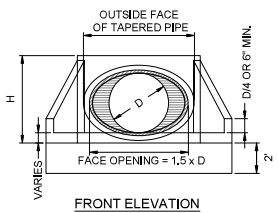
FULTON COUNTY

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DRAWING NO.
514

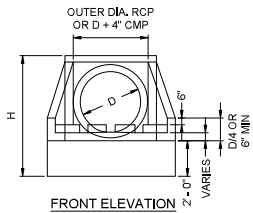
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INLET HEADWALL WITH TAPERED PIPE



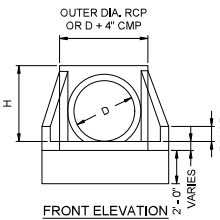
FRONT ELEVATION
N.T.S.

OUTLET HEADWALL

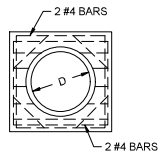


FRONT ELEVATION
N.T.S.

INLET HEADWALL



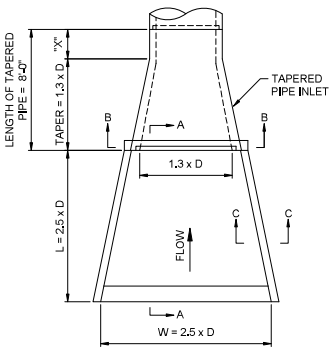
FRONT ELEVATION
N.T.S.



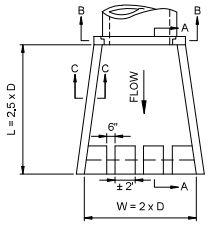
SECTION B-B
(SINGLE PIPE LINE)

NOTES:

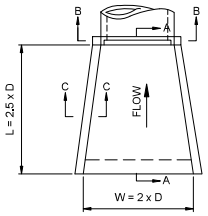
1. ALTERNATE DESIGN FOR PIPES LARGER THAN 54" USE G.D.O.T STANDARD #1125.
2. RUBBLE MASONRY CONSTRUCTION NOT ALLOWED ON PIPES OVER 54".
3. AN ALTERNATE DESIGN FOR THE ENERGY DISSIPATOR WOULD BE ACCEPTED ONCE APPROVED BY FULTON COUNTY. SEE STANDARD #516.
4. CONCRETE TAPERED PIPE: STRUCTURAL REQUIREMENTS WILL BE ACCORDING TO ASTM C307 FOR CLASS HE-1 HORIZONTAL ELLIPTICAL PIPE.
5. CORRUGATED METAL PIPE (CMP): MATERIAL REQUIRED TO MEET SEC. 844 (STEEL PIPE) OR SEC. 840 (ALUMINUM PIPE). CMP WILL CONFORM TO THE SAME LINES AND DIMENSIONS SHOWN, DETAILS ARE SHOWN FOR CONCRETE.
6. FOR DETAILS,
   D = INSIDE DIAMETER OF PIPE
   H = D + PIPE WALL THICKNESS + 8" (FOR RCP)
   H = D + 10" MIN (FOR CMP)



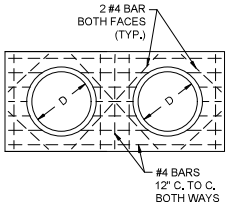
PLAN VIEW



PLAN VIEW



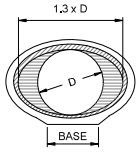
PLAN VIEW



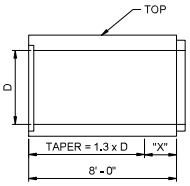
SECTION B-B
(MULTIPLE PIPE LINE)

TABLE 515-1
TAPERED PIPE DIMENSIONS

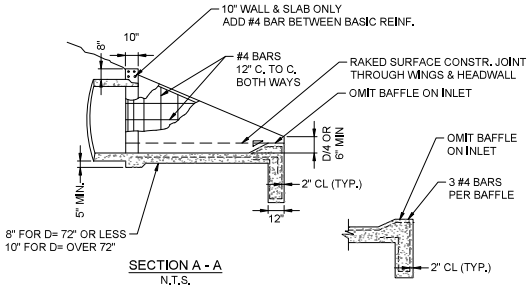
D	1.3 x D	"X"	MIN. THICKNESS (IN.)		
			CORRUGATED STEEL		CORRUGATED ALUMINUM
			2⅔" x ½" CORR.	3" x 1" CORR.	----
24"	2'-8"	5'-4"	0,064	----	0,060
30"	3'-4"	4'-8"	0,064	0,064	0,073
36"	4'-0"	4'-0"	0,109	0,064	0,133
42"	4'-8"	3'-4"	0,109	0,064	0,133
48"	5'-4"	2'-8"	0,138	0,064	0,164
54"	6'-0"	2'-0"	0,168	0,064	----
60"	6'-8"	1'-4"	----	0,075	----



END VIEW

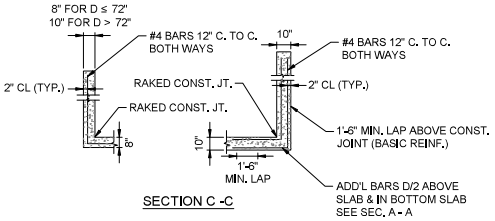


SIDE VIEW



SECTION A - A
N.T.S.

10" SLAB
N.T.S.



SECTION C -C

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 515

INLET & OUTLET HEADWALLS

DATE	REVISIONS	DATE	REVISIONS
M/Y	XXX	M/Y	XXX

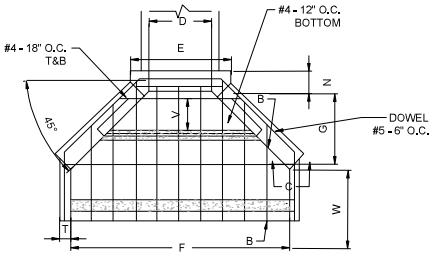
DGS/DRN/CHKD: XXX
APPROVED: XXX
DATE: XX-X-XX

FULTON COUNTY

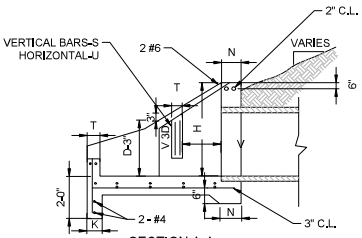
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DRAWING NO.
515

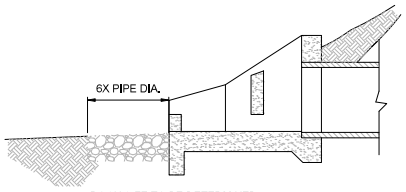
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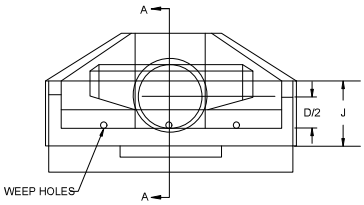
PLAN



SECTION A-A

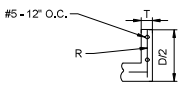


ROCK SIZE TO BE DETERMINED
BY ENGINEER.

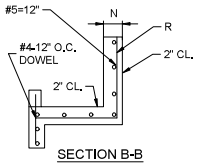


FRONT ELEVATION

2 DENOTES 3" X 1" OR (1) 23mm X 23mm CORRUGATION



SECTION C-C



SECTION B-B

NOTES:

1. HEADWALL PARALLEL TO CENTER LINE OF HIGHWAY WITHIN RIGHT OF WAY SHALL BE FLARED-END (SEE G.D.O.T. STD #1120).
2. CONCRETE SHALL BE 3,000 PSI 28 DAY STR.
3. WEEP HOLES SHALL BE 3" DIA. AT F/4 O.C.
4. RANDOM RUBBLE 3" TO 12" IN DIA.

TABLE 516-1

ALTERNATIVE ENERGY DISSIPATOR DIMENSIONS

D	E	F	G	H	J	K	L	N	V	W	T	R	S	U
18"	3'-0"	7'-6"	3'-0"	3'-0"	2'-0"	8"	8"	8"	2'-0"	1'-0"	6"	# 5 - 12" O.C	# 4 - 12" O.C	# 4 - 8" O.C
21"	3'-4"	7'-9"		3'-3"					2'-0"					
24"	3'-8"	8'-0"	"	3'-6"	"	"	"	"	2'-0"	1'-6"	"	"	"	"
27"	3'-11"	8'-3"	"	4'-0"	"	"	"	"	2'-0"	2'-0"	"	"	"	"
30"	4'-2"	8'-6"	"	4'-0"	2'-1"	"	"	10"	2'-0"	2'-0"	"	"	"	"
36"	4'-8"	10'-0"	3'-6"	4'-6"	2'-3"	"	10"	"	2'-3"	2'-6"	"	"	"	"
42"	5'-3"	11'-6"	4'-6"	5'-0"	2'-9"	"	"	"	2'-4"	3'-0"	8"	"	"	# 5 - 8" O.C.
48"	5'-10"	13'-0"	4'-6"	5'-6"	3'-0"	"	"	12"	2'-6"	3'-6"	"	"	# 5 - 12" O.C.	"
54"	6'-5"	14'-6"	5'-0"	6'-0"	3'-6"	9"	12"	"	2'-8"	5'-0"	"	# 6 - 8" O.C.	"	"
60"	7'-0"	16'-0"	5'-6"	6'-6"	4'-3"	"	"	"	2'-11"	"	"	"	"	"
66"	7'-7"	17'-6"	6'-0"	7'-0"	4'-6"	"	"	14"	3'-0"	"	"	"	"	"
72"	8'-2"	19'-0"	6'-6"	7'-0"	5'-8"	"	"	"	3'-2"	5'-6"	"	"	"	"

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 516

ENERGY DISSIPATOR (ALTERNATE)

DATE	REVISIONS	DATE	REVISIONS
M/Y	XXX	M/Y	XXX

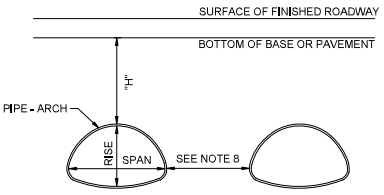
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APPROVED: XXX
DATE: XX-X-XX

FULTON COUNTY

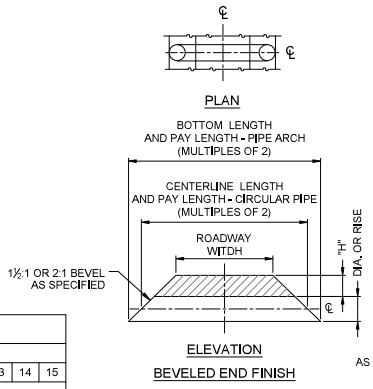
FULTON COUNTY PUBLIC WORKS
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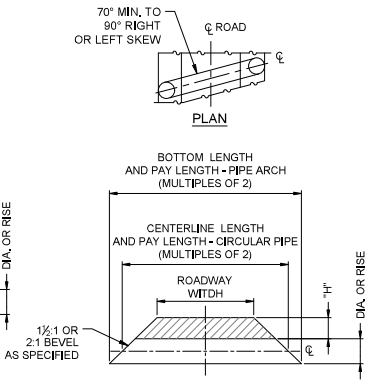
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516

Docusign Envelope ID: A3705B48-B7E5-4F52-8480-5FF929E99139



PIPE-ARCH CULVERT
STRUCTURAL PLATE
N.T.S.





NOTES:

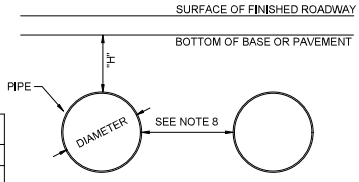
1. SPECIFICATIONS - GEORGIA STANDARD
2. DESIGN DATA: H-20 LIVE LOAD
3. GAGES SHOWN ARE MINIMAL STRUCTURAL REQUIREMENTS FOR USE WITH ADEQUATE BACKFILL.
4. FOR END FINISH SHAPE OR CONDITION OTHER THAN SHOWN, SEE SPECIFIC DESIGN.
5. GAGES SHOWN ION ABOVE TABLE ARE FOR STRUCTURAL PLATE PIPE ASSEMBLED WITH 4 BOLTS PER FOOT OF LONGITUDINAL SEAM AND VERTICALLY ELONGATED 5% BY SHOP FORMING, EXCEPT AS NOTED IN NO.2..
6. BEYOND HEIGHTS OF COVER FOR 4 BOLTS AND TO HEIGHTS OF COVER SHOWN FOR 6 BOLTS, IN COLUMN AT RIGHT, NO.1 GAGE STRUCTURAL PLATE PIPE WITH 6 BOLTS PER FOOT OF LONGITUDINAL SEAM AND VERTICALLY ELONGATED 5% BY SHOP FORMING SHALL BE USED.
7. ONLY R.C.P ALLOWED UNDER COUNTY ROADS.
8. MINIMUM CLEAR SPACE BETWEEN MULTIPLE LINES = ¼ DIAMETER FOR DIAMETERS 96 IN. OR LESS, AND 4 FEET FOR DIAMETERS GREATER THAN 96 IN. SUBSTITUTE SPAN FOR DIAMETER FOR PIPE-ARCH.

TABLE 518-1
DIMENSIONS FOR STRUCTURAL PLATE PIPE-ARCH

SPAN (FT - IN)	RISE (FT - IN)	HEIGHT OF COVER (FEET)											
		1	2	3	4	5-7	8	9	10	11	12	13	14	15
		MINIMUM THICKNESS - US STD GAGE												
5'-8"	6-6	12	12	12	12	12	12	12	12	12	12	12	12	12
5'-10"	7-8	12	12	12	12	12	12	12	12	12	12	12	12	12
6-1	4-7	12	12	12	12	12	12	12	12	12	12	12	12	12
6-4	4-9	12	12	12	12	12	12	12	12	12	12	12	12	10
6-9	4-11	10	12	12	12	12	12	12	12	12	12	12	10	10
7-0	5-1	10	12	12	12	12	12	12	12	12	12	12	10	10
7-3	5-3	10	10	12	12	12	12	12	12	12	12	10	10	10
7-6	5-5	10	10	12	12	12	12	12	12	12	12	10	10	10
7-11	5-7	10	10	10	12	12	12	12	12	12	10	10	10	10
8-2	5-9	10	10	10	12	12	12	12	12	12	10	10	10	10
8-7	5-11	10	10	10	10	10	10	10	10	10	10	10	10	8
8-10	6-1	10	10	10	10	10	10	10	10	10	10	10	8	8
9-4	6-3	8	10	10	10	10	10	10	10	10	10	8	8	8
9-6	6-5	8	10	10	10	10	10	10	10	10	10	8	8	8
9-9	6-7	8	8	10	10	10	10	10	10	10	8	8	8	7
10-3	6-9	8	8	10	10	10	10	10	10	10	8	8	8	7
10-8	6-11	8	8	8	10	10	10	10	10	10	8	8	8	7
10-11	7-1	8	8	8	10	10	10	8	8	8	8	7	7	5
11-5	7-3	7	8	8	8	10	10	8	8	8	8	7	7	5
11-7	7-5	7	8	8	8	10	10	8	8	8	8	7	7	5
11-10	7-7	7	8	8	8	8	8	8	8	8	7	5	5	3
12-4	7-9	7	7	8	8	8	8	8	8	7	7	5	5	3
12-6	7-11	7	7	8	8	8	8	8	8	7	7	5	5	3
12-8	8-1	7	7	8	8	8	8	8	8	7	7	5	5	3
12-10	8-4	5	7	8	8	8	8	8	7	7	5	5	3	1
13-5	8-6	5	5	7	8	8	8	7	7	5	5	5	3	1
13-11	8-7	5	5	7	7	8	7	7	5	5	3	3	1	1
14-1	8-9	5	5	7	7	8	7	7	5	5	3	3	1	1
14-3	8-11	3	5	5	7	7	7	5	5	5	3	3	1	1
14-10	9-1	3	5	5	7	7	7	5	3	3	1	1		
15-4	9-3	3	3	5	7	7	7	5	3	3	1	1		
15-6	9-5	3	3	5	5	7	7	5	3	3	1	1		
15-8	9-7	3	3	5	5	7	7	5	3	3	1	1		
15-10	9-10	1	3	5	5	7	5	3	3	1	1			
16-5	9-11	1	3	3	5	5	5	3	1	1				
16-7	10-1	1	3	3	5	5	5	3	1	1				

TABLE 518 - 2
DIMENSIONS FOR STRUCTURAL PLATE PIPE

DIA. (IN.)	HEIGHT OF COVER, "H" (FT.)																1 GAGE, 6 BOLTS
	0-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-70	71-80	81-90	91-100	
	MINIMUM THICKNESS - U.S STD GAGE - 4 BOLTS																
72							12	12	10	10	8	8	7	5	3	1	165'
78						12	12	10	10	8	8	8	5	3	1	NOTE 6	130'
84					12	12	12	10	10	8	8	7	5	3	1	NOTE 6	140'
90	12	12	12	12	12	12	10	10	8	8	7	5	3	1	NOTE 6	NOTE 6	130'
96	12	12	12	12	12	10	10	10	8	7	7	5	3	1	NOTE 6	NOTE 6	125'
102	12	12	12	12	10	10	10	8	8	7	5	3	1	NOTE 6	NOTE 6	NOTE 6	115'
108	12	12	10	10	10	10	10	8	7	5	5	3	1	NOTE 6	NOTE 6	NOTE 6	110'
114	10	12	10	10	10	10	8	8	7	5	5	3	1	NOTE 6	NOTE 6	NOTE 6	105'
120	10	12	10	10	10	10	8	7	5	5	3	1	NOTE 6	NOTE 6	NOTE 6	NOTE 6	100'
126	10	12	10	10	10	10	8	7	5	3	3	1	NOTE 6	NOTE 6	NOTE 6	NOTE 6	93'
132	10	10	10	10	10	8	8	7	5	3	1	1	NOTE 6	NOTE 6	NOTE 6	NOTE 6	90'
138	10	10	10	10	10	8	7	5	3	3	1	NOTE 6	NOTE 6	NOTE 6	NOTE 6	NOTE 6	85'
144	10	10	10	10	8	8	7	5	3	1	1	NOTE 6	NOTE 6	NOTE 6	NOTE 6	NOTE 6	80'
150	10	10	8	8	8	8	7	5	3	1	NOTE 6	NOTE 6	NOTE 6	NOTE 6	NOTE 6	NOTE 6	80'
156	10	10	8	8	8	8	5	3	1	1	NOTE 6	NOTE 6	NOTE 6	NOTE 6	NOTE 6	NOTE 6	75'
162	10	10	8	8	8	7	5	3	1	NOTE 6	NOTE 6	NOTE 6	NOTE 6	NOTE 6	NOTE 6	NOTE 6	70'
168	10	10	8	8	8	7	5	3	1	NOTE 6	NOTE 6	NOTE 6	NOTE 6	NOTE 6	NOTE 6	NOTE 6	70'
174	8	10	8	8	8	7	5	3	1	NOTE 6	NOTE 6	NOTE 6	NOTE 6	NOTE 6	NOTE 6	NOTE 6	65'
180	8	10	8	8	8	5	3	1	NOTE 6	NOTE 6	NOTE 6	NOTE 6	NOTE 6	NOTE 6	NOTE 6	NOTE 6	65'



PIPE CULVERT
STRUCTURAL PLATE
N.T.S.

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 518

STRUCTURAL PLATE PIPE
ARCH CULVERT

DATE	REVISIONS	DATE	REVISIONS
M/Y	XXX	M/Y	XXX

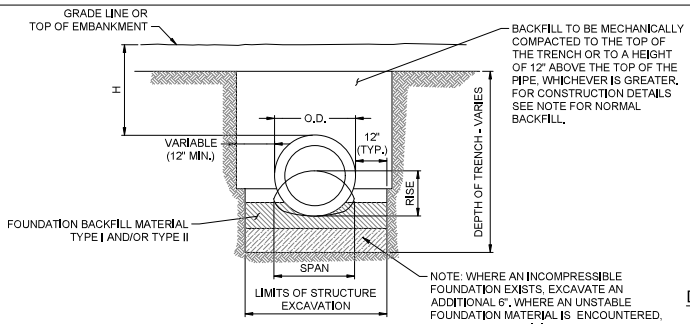
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APPROVED: XXX
DATE: XX-X-XX

FULTON COUNTY

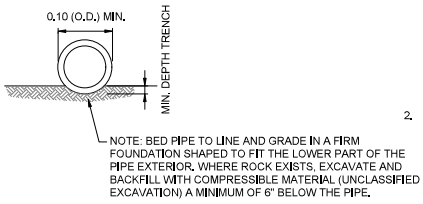
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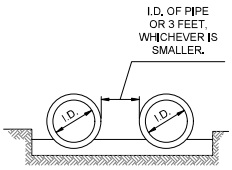
DETAIL OF TRENCH CONSTRUCTION
N.T.S.



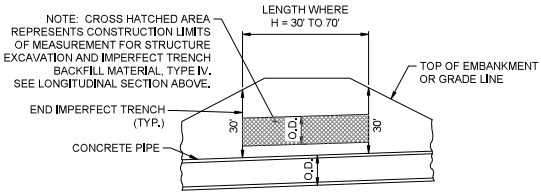
DETAIL OF TRENCH CONSTRUCTION FOR SIDE DRAIN AND MEDIAN DRAIN PIPE
N.T.S.

NOTES:

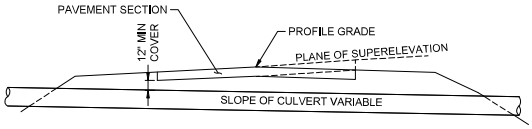
1. PE PIPE IS ALLOWABLE FOR THE FOLLOWING CONDITIONS:
   - A. PE PIPE MAY BE USED AS AN ALTERNATE TO LONGITUDINAL PIPE UNDER ALLOWABLE FILL SHOWN, FOR NON-TRAFFIC BEARING AND LOCAL ROAD BEARING APPLICATIONS.
   - B. PIPE MAY BE USED AS AN ALTERNATE TO PERFORATED UNDERDRAIN PIPE.
   - C. PE PIPE IS ALLOWABLE IN ALL SIDE DRAIN AND SLOPE DRAIN APPLICATIONS.
2. FOR PIPE-ARCH CULVERTS, SUBSTITUTE SPAN AND RISE FOR OUTSIDE DIAMETER OF PIPE IN HORIZONTAL AND VERTICAL DIMENSIONS SPECIFIED IN DETAIL.



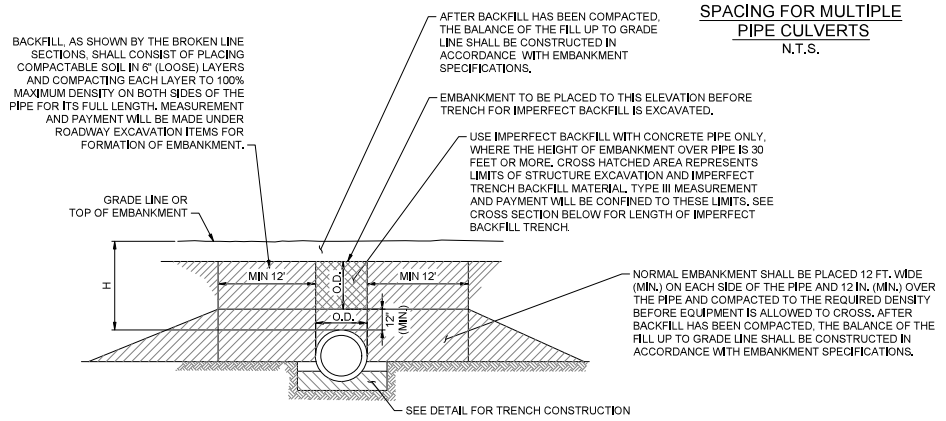
SPACING FOR MULTIPLE PIPE CULVERTS
N.T.S.



CROSS SECTION OF IMPERFECT TRENCH BACKFILL
N.T.S.



DETAIL SHOWING MINIMUM COVER FOR PIPE CULVERTS
N.T.S.



LONGITUTIONAL SECTION OF IMPERFECT BACKFILL AND BACKFILL METHODS
N.T.S.

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 519A

STANDARD PIPE CULVERTS
SHEET 1 OF 3

DATE M/Y	REVISIONS	DATE M/Y	REVISIONS
	XXX		XXX

DGS/DRN/CHKD: XXX
APPROVED: XXX
DATE: XX-X-XX

FULTON COUNTY

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519A

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TABLE 519B - 1
GAUGE OF CORRUGATED STEEL/ THICKNESS OF CORRUGATED ALUMINUM PIPE-ARCH
FOR VARIOUS HEIGHTS OF FILL ABOVE THE TOP OF THE PIPE-ARCH

DIA.* (IN.)	SPAN (IN.)	RISE (IN.)	TYPE OF PIPE	HEIGHT OF FILL IN FEET				
				1 - 2	3 - 10	11 - 15	16 - 20	21 - 25
15	18	11	STEEL	16 GA.	16 GA.	16 GA.	16 GA.	16 GA.
			ALUM	0.060"	0.060"	0.060"	0.060"	0.060"
18	22	13	STEEL	16 GA.	16 GA.	16 GA.	16 GA.	16 GA.
			ALUM	0.060"	0.060"	0.060"	0.060"	0.073"
21	25	16	STEEL	16 GA.	16 GA.	16 GA.	16 GA.	16 GA.
			ALUM	0.060"	0.060"	0.060"	0.060"	NP
24	29	18	STEEL	14 GA.	14 GA.	14 GA.	14 GA.	14 GA.
			ALUM	0.073"	0.075"	0.075"	0.105"	NP
30	36	22	STEEL	14 GA.	14 GA.	14 GA.	14 GA.	NP
			ALUM	0.073"	0.075"	0.075"	0.105"	NP
34	43	27	STEEL	12 GA.	12 GA.	12 GA.	12 GA.	NP
			ALUM	0.105"	0.105"	0.105"	0.135"	NP
42	50	31	STEEL	12 GA.	12 GA.	12 GA.	10 GA.	NP
			ALUM	0.105"	0.105"	0.105"	NP	NP
48	56	34	STEEL	10 GA.	12 GA.	10 GA.	10 GA.	NP
			ALUM	0.135"	0.105"	0.135"	NP	NP
54	65	40	STEEL	10 GA.	12 GA.	10 GA.	8 GA.	NP
60	72	44	STEEL	8 GA.	10 GA.	8 GA.	NP	NP

* DIAMETER OF PIPE OF EQUAL PERIPHERY.
FOR SIZES LARGER THAN SHOWN ABOVE, USE STRUCTURAL PLATE PIPE - ARCH, GA. STD. 20IIA. (SEE TABLE NO. 519B-2 FOR CIRCULAR PIPE)

TABLE 519B - 2
HEIGHT OF FILL OVER TOP OF PIPE,
CLASS OF CONCRETE PIPE AND TYPE OF BACKFILL

HEIGHT OF FILL (H) (FT.)	CLASS OF PIPE	TYPE OF BACKFILL
1 to 15	III	NORMAL
15 to 20	IV	NORMAL
20 to 30	V	NORMAL
30 to 50	V	IMPERFECT
50 to 70	V	IMPERFECT

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 519B

PIPE CULVERTS
SHEET 2 OF 3

DATE M/Y	REVISIONS	DATE M/Y	REVISIONS
XXX		XXX	

DGS/DRN/CHKD: XXX
APPROVED: XXX
DATE: XX-X-XX

FULTON COUNTY

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519B

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TABLE 519C - 1
TABLE SHOWING CLASSES OF CONCRETE PIPE, GAUGES OF CORRUGATED STEEL PIPE AND THICKNESS IN INCHES OF CORRUGATED ALUMINUM PIPE FOR VARIOUS HEIGHTS OF FILL ABOVE TOP OF PIPE

DIAMETER (IN.)	TYPE OF PIPE	+ Height of Fill in Feet Above Top of Pipe**										
		1-10	10-15	15-20	20-25	25-30	30-35	35-40	40-50	50-60	60-70	70-80
15	CONCRETE	III	III	IV	V	V	V	V	V	V	V	V
	CORR. STEEL	16	16	16	16	16	16	16	16	14	14	10
	CORR. ALUM.	0.06	0.06	0.06	0.06	0.06	0.075	0.105	NP	NP	NP	NP
18	CONCRETE	III	III	IV	V	V	V	V	V	V	V	V
	CORR. STEEL	16	16	16	16	16	6	16	14	14	12	10
	CORR. ALUM.	0.06	0.06	0..06	0.06	0.075	0.105	NP	NP	NP	NP	NP
24	CONCRETE	III	III	IV	V	V	V	V	V	V	V	V
	CORR. STEEL	16	16	16	16	16	12	12	10	8	0	0
	CORR. ALUM.	0.075	0.075	0.075	0.105	0.135	0.164	NP	NP	NP	NP	NP
30	CONCRETE	III	III	IV	V	V	V	V	V	V	V	V
	CORR. STEEL	16	16	16	14	12	14	12	8	0	0	0
	CORR. ALUM.	0.075	0.075	0.075	0.105	0.135	0.164	NP	NP	NP	NP	NP
36	CONCRETE	III	III	IV	V	V	V	V	V	V	V	V
	CORR. STEEL	16	16	16	10	14	12	10	10	8	10	0
	CORR.ALUM.	0.105	0.105	0.105	0.105	0.135	0.164	NP	NP	NP	NP	NP
42	CONCRETE	III	III	IV	V	V	V	V	V	V	V	NP
	CORR. STEEL	16	16	14	16	14	14	12	8	0	0	0
	CORR. ALUM.	0.105	0.105	0.105	0.135	0.135	NP	NP	NP	NP	NP	NP
48	CONCRETE	III	III	IV	V	V	V	V	V	V	V	V
	CORR.STEEL	16	16	12	16	14	14	12	12	0	0	0
	CORR.ALUM.	0.105	0.105	0.105	0.135	0.164	NP	NP	NP	NP	NP	NP
54	CONCRETE	III	III	IV	V	V	V	V	V	V	V	V
	CORR. STEEL	14	14	14	14	14	8	8	0	0	0	0
	CORR. ALUM.	0.105	0.105	0.105	0.135	0.164	NP	NP	NP	NP	NP	NP
60	CONCRETE	III	III	IV	V	V	V	V	V	V	V	V
	CORR. STEEL	12	12	12	12	12	10	8	NP	NP	NP	NP
	CORR. ALUM.	0.135	0.135	0.164	0.164	NP	NP	NP				
66	CONCRETE	III	III	IV	V	V	V	V	V	V	V	V
	CORR. STEEL	12	12	12	12	10	10	NP	NP	NP	NP	NP
	CORR. ALUM.	0.135	0.135	0.164	NP	NP	NP					
72	CONCRETE	III	III	IV	V	V	V	V	V	V	V	V
	CORR. STEEL	10	10	10	10	8	NP	NP	NP	NP	NP	NP
	CORR. ALUM.	0.135	0.135	0.164	NP	NP						

TABLE 519C - 2
TABLE SHOWING CLASSES OF CONCRETE PIPE, GAUGES OF CORRUGATED STEEL PIPE AND THICKNESS IN INCHES OF CORRUGATED ALUMINUM PIPE FOR VARIOUS HEIGHTS OF FILL ABOVE TOP OF PIPE

DIAMETER (IN.)	TYPE OF PIPE	+ Height of Fill in Feet Above Top of Pipe**										
		1-10	10-15	15-20	20-25	25-30	30-35	35-40	40-50	50-60	60-70	70-80
78	CONCRETE	III	III	IV	V	V	V	V	V	V	V	V
	CORR. STEEL	8	8	8	8	USE	STRU	CTUR	AL	PLA	TE	PIPE
	CORR. ALUM.	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP
84	CONCRETE	III	III	IV	V	V	V	V	V	V	NP	NP
	CORR. STEEL	8	8	8	USE	STRU	CTUR	AL	PLA	TE	PIPE	
	CORR. ALUM.	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP
90	CONCRETE	III	III	IV	V	V	NP	NP	NP	NP	NP	NP
	CORR. STEEL	NP	NP	USE	STRU	CTUR	AL	PLA	TE	PIPE	NP	NP
	CORR. ALUM.			NP	NP	NP	NP	NP	NP	NP		
96	CONCRETE	III	III	IV	V	V	NP	NP	NP	NP	NP	NP
	CORR. STEEL	NP	NP	USE	STRU	CTUR	AL	PLA	TE	PIPE	NP	NP
	CORR. ALUM.			NP	NP	NP	NP	NP	NP	NP		
102	CONCRETE	III	III	IV	V	V	NP	NP	NP	NP	NP	NP
	CORR. STEEL	NP	NP	USE	STRU	CTUR	AL	PLA	TE	PIPE	NP	NP
	CORR.ALUM.			NP	NP	NP	NP	NP	NP	NP		
108	CONCRETE	III	III	IV	V	V	NP	NP	NP	NP	NP	NP
	CORR. STEEL	NP	NP	USE	STRU	CTUR	AL	PLA	TE	PIPE	NP	NP
	CORR. ALUM.			NP	NP	NP	NP	NP	NP	NP		

NP= NOT PERMITTED
= PIPE SHALL BE SHAPE II CIRCULAR CROSS SECTION FACTORY ELONGATED

NOTES:

1. ALL STEEL AND ALUMINUM PIPE SHALL BE LOCK-SEAM OR WELDED-SEAM (HELICAL) CONSTRUCTION.
2. MINIMUM COVER VALUES APPLY TO HS-20 LIVE LOAD. MINIMUM COVER NEEDED FOR CONSTRUCTION VEHICLES MAY BE GREATER AND IS THE RESPONSIBILITY OF THE CONTRACTOR.
3. TABLE VALUES FOR ALUMINUM CORRUGATED PIPE (OR ALUMINUM SPIRAL RIB PIPE) ARE COMPUTED BASED UPON ALCLAD ALLOY 3004-H34 HAVING MINIMUM YIELD STRENGTH, fy=24,000 PSI. IF ALUMINUM PIPE IS OTHERWISE FURNISHED AS 3004-H32 (fy=20,000 PSI), THE TABLE NO.1 ALLOWABLE FILL HEIGHTS SHALL BE ADJUSTED AS FOLLOWS:
   A. ALL MINIMUM COVER VALUES SHALL BE INCREASED BY 15 PERCENT. (EXAMPLE: 12 INCHES BECOMES 13.8 INCHES).
   B. ALL HEIGHT OF FILL VALUES SHALL BE DECREASED BY 15 PERCENT. (EXAMPLE: 35-40 FEET BECOMES 29.7-34.0 FEET).

TABLE 519C - 3

COR. METAL THICKNESS		EQUIVALENT GUAGE
STEEL	0.064	16
	0.079	14
	0.109	12
	0.138	10
	0.168	8
ALUMINUM	0.060	16
	0.075	14
	0.105	12
	0.135	10
	0.164	8

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 519C

PIPE CULVERTS
SHEET 3 OF 3

DATE M/Y	REVISIONS	DATE M/Y	REVISIONS
XXX		XXX	

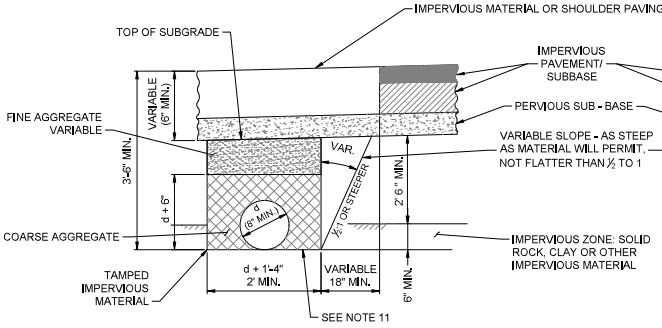
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FULTON COUNTY

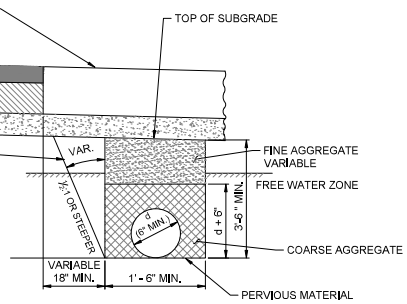
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519C

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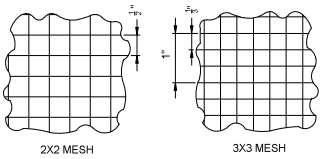
IMPERVIOUS TRENCH BOTTOM
(INTERCEPTOR)



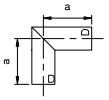
PERVIOUS TRENCH BOTTOM
(TO LOWER WATER TABLE)

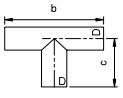
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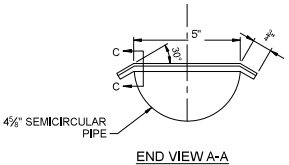
1. UNDERDRAINS MAY BE PLACED IN SHOULDER AREAS OR AS TRANVERSE DRAINAGE UNDER PAVEMENT. SEE SPECIAL SECTION AND PLAN AND PROFILE SHEETS FOR SPECIAL CONDITIONS.
2. TRENCH SHALL BE SHAPED WITH SIDES AS NEARLY VERTICAL AS IS PRACTICAL AND WITH A FLAT BOTTOM.
3. MINIMUM GRADIENT FOR UNDERDRAIN PIPE SHALL BE 0.15%.
4. THE LOWER ROW OF PERFORATIONS IN THE PIPE SHALL BE PLACED ABOVE THE BOTTOM OF THE TRENCH AS SHOWN.
5. DEAD ENDS OF PIPE SHALL BE CLOSED WITH METAL CAPS OR CONCRETE PLUGS. OUTFALL ENDS OF PIPE SHALL BE EQUIPPED WITH SCREEN.
6. LATERAL CONNECTIONS SHALL BE MADE WITH SUITABLE STANDARD FITTINGS (ELLS, WYES OR TEES AS DETAILED).
7. THE DIMENSIONS (A THRU G) SHOWN ABOVE ON THE LATERAL CONNECTIONS FOR THE VARIOUS KINDS AND SIZES OF PERFORATED UNDERDRAIN SHALL BE IN AGREEMENT WITH THE MANUFACTURER'S STANDARD PRACTICE.
8. MARKERS: EACH OUTLET END OF THE DRAINAGE SYSTEM SHALL BE MARKED WITH A 5'X4"X4". PERSERATIVE TREATED WOOD POST PLACED 3' IN THE GROUND IN A VERTICAL POSITION OF THE EXTREME OUTLET END AND ADJACENT TO THE SITE OF THE PIPE.
9. COURSE AGGREGATE FOR UNDERDRAIN TO BE COMPOSED OF NO.7 STONE. FINE AGGREGATE FOR UNDERDRAIN TO BE COMPOSED OF NO.20 SAND.
10. PERFORATED UNDERDRAIN PIPE WILL BE INSTALLED COMPLETE PRIOR TO PLACING PERVIOUS SUBBASE MATERIAL.
11. IF THE BOTTOM OF THE TRENCH IS EXCAVATED WITH A MACHINE OR ANY OTHER IMPLEMENT, LEAVING A ROUNDED BOTTOM THE AREA SO THE PIPE SHALL BE BACKFILLED WITH A STABLE MATERIAL, THOROUGHLY COMPACTED, LEAVING A FIRM FLAT SURFACE. EACH FINISHED TRENCH SHALL HAVE A FLAT BOTTOM.

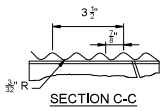


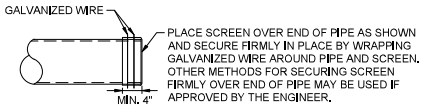
SCREEN TO BE GALVANIZED HARDWARE (WIRE) CLOTH 2X2 OR 3X3 MESH, MIN. 21 GAUGE.





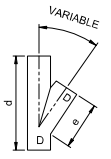


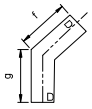


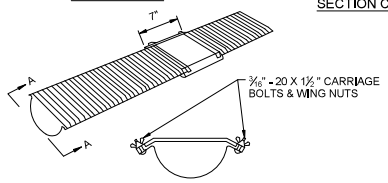


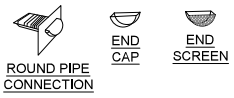
PLACE SCREEN OVER END OF PIPE AS SHOWN AND SECURE FIRMLY IN PLACE BY WRAPPING GALVANIZED WIRE AROUND PIPE AND SCREEN. OTHER METHODS FOR SECURING SCREEN FIRMLY OVER END OF PIPE MAY BE USED IF APPROVED BY THE ENGINEER.

SCREEN FOR UNDERDRAIN
N.T.S.









SEMICIRCULAR UNDERDRAIN PIPE

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 520

STANDARD PERFORATED UNDERDRAIN

DATE	REVISIONS	DATE	REVISIONS
M/Y	XXX	M/Y	XXX

DGS/DRN/CHKD: XXX
APPROVED: XXX
DATE: XX-X-XX

FULTON COUNTY

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TABLE 521-1 PIPE GAUGE AND THICKNESS					
THICKNESS	0.064"	0.079"	0.109"	0.138"	0.168"
GAGE	16	14	12	10	8

NOTES:

1. ALL C.M.P PIPE SHALL BE HALF-COATED WITH A PAVED INVERT, EXCEPT AS FOLLOWS: FULLY COATED PIPE WITH A PAVED INVERT MAY BE USED UNDER THE FOLLOWING CONDITIONS:
   - 1.1. A SMALL PIECE OF ONE OF THE PIPES IN EACH SIZE CATEGORY WILL BE CHOSEN AT RANDOM BY A FULTON COUNTY INSPECTOR.
   - 1.2. THIS PIPE IS TO BE TESTED FOR GAUGE AND COMPOSITION BY AN INDEPENDENT TESTING LABORATORY.
   - 1.3. IF, AFTER TESTING, THE TEST REPORT INDICATES THAT THE PIPE DOES NOT MEET COUNTY SPECIFICATIONS, THE CONTRACTOR MUST IMMEDIATELY REMOVE ALL PIPE ON THE JOB AND TEST EACH PIECE.
   - 1.4. COST OF ALL TESTS ARE TO BE BORN BY THE DEVELOPER.
   - 1.5. CONC. PIPE REQUIRED UNDER ALL ROADWAYS & ON CROSS DRAINS.

TABLE 521 - 2
PIPE GAUGE AND CLASS BY PIPE DIAMETER (INCHES)

HEIGHT OF FILL IN FEET ABOVE TOP OF PIPE**	15		18		24		30		36		42		48		54		60		66		72		78		84		90		96		102		108	
	C	S	C	S	C	S	C	S	C	S	C	S	C	S	C	S	C	S	C	S	C	S	C	S	C	S	C	S	C	S	C	S	C	S
1-10	III	16	III	16	III	16	III	16	III	16	III	16	III	16	III	14	III	12	III	12	III	10	III	8	III	8	III	USE STRUCTURAL PLATE PIPE	III	USE STRUCTURAL PLATE PIPE	III	USE STRUCTURAL PLATE PIPE	III	USE STRUCTURAL PLATE PIPE
10-15	III	16	III	16	III	16	III	16	III	16	III	16	III	16	III	14	III	12	III	12	III	10*	III	8	III	8	III		III		III		III	
15-20	IV	16	IV	16	IV	16	IV	16	IV	16	IV	14	IV	12	IV	10*	IV	8*	IV	12*	IV	10*	IV	8*	IV	8*	IV		IV		IV		IV	
20-25	V	16	V	16	V	16	V	14	V	10	V	16*	V	16*	V	14*	V	12*	V	12*	V	10*	V	8*	V	STRUCT. PLATE	V		V		V		V	
25-30	V	16	V	16	V	16	V	10	V	14*	V	14*	V	14*	V	14*	V	12*	V	10*	V	8*	V	STRUCT. PLATE	V		V		V		V		V	
30-35	V	16	V	16	V	12	V	8*	V	12*	V	14*	V	14*	V	12*	V	10*	V	10*	V	STRUCT. PLT	V		V		NP		NP		NP		NP	
35-40	V	16	V	16	V	12	V	12*	V	10*	V	12*	V	12*	V	8*	V	8*	V	STRUCT. PLT.	V		V		V		NP		NP		NP		NP	
40-50	V	16	V	14	V	10	V	8*	V	10	V	8*	V	0*	V	0	V	STR. PLT.	V		V		V		V		NP		NP		NP		NP	
50-60	V	16	V	12	V	Φ	V	Φ	V	8	V	0	V	0	V	0	V		V		V		V		V		NP		NP		NP		NP	
60-70	V	14	V	12	V	Φ	V	Φ	V	10*	V	0	V	0	V	0	V		V		V		V		NP		NP		NP		NP		NP	
70-80	V	12	V	10	V	Φ	V	Φ	V	0	V	0	V	0	V	0	V		V		NP		V		NP		NP		NP		NP		NP	

* PIPE SHALL BE CIRCULAR CROSS-SECTION, FACTORY ELONGATED.
** WHERE H=10', 15', 20' ETC. USE GAUGE THICKNESS IN INCHES OR CLASS OF PIPE SPECIFIED FOR NEXT HIGHEST INCREMENTS OF HEIGHT OF FILL
NP NOT PERMITTED
C REINFORCED CONCRETE PIPE
S CORRUGATED METAL PIPE
Φ USE 60" STRUCTURAL PLATE PIPE

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 521

PIPE GAUGE AND CLASS
(CONCRETE & CORRUGATED STEEL PIPE)

DATE	REVISIONS	DATE	REVISIONS
M/Y	XXX	M/Y	XXX

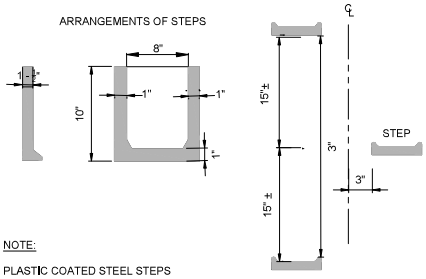
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APPROVED: XXX
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ARRANGEMENTS OF STEPS

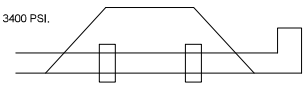


NOTE:

PLASTIC COATED STEEL STEPS ARE REQUIRED ON THE OUTSIDE OF THE CONTROL STRUCTURE AS SHOWN.

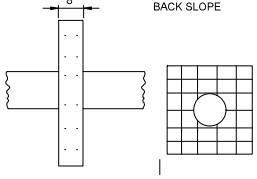
ANTI - SEEP COLLARS

1. MUST BE FORMED
2. CLASS A CONCRETE, 3400 PSI.
3. MUST BE INSPECTED PRIOR TO POURING CONCRETE.



COLLAR 8"

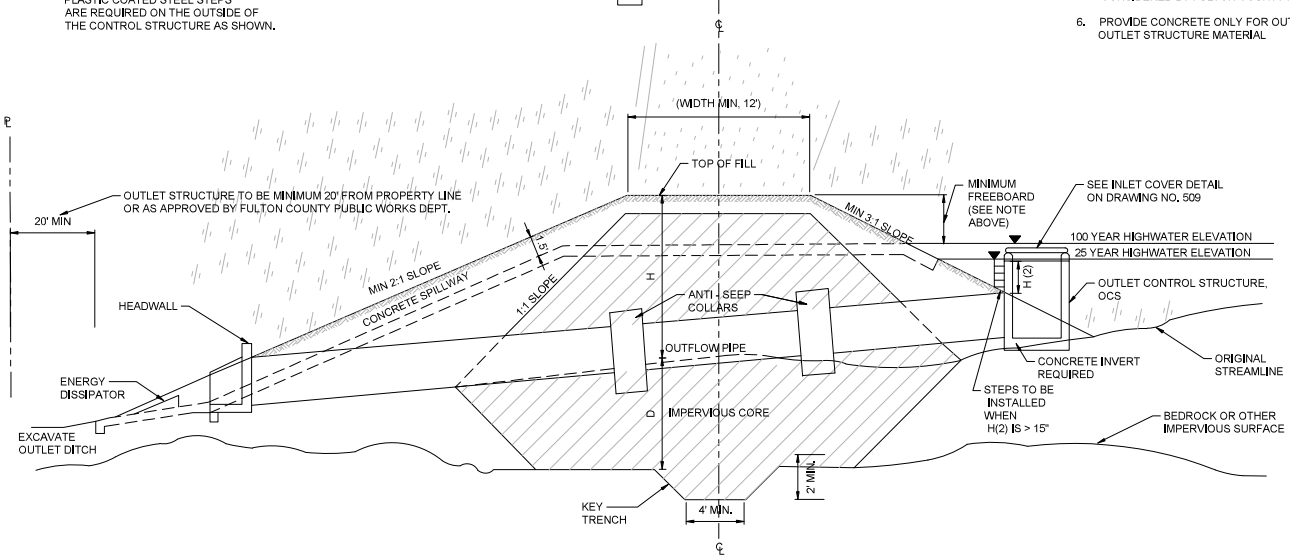
2 COLLARS
LOCATION - ONE AT TOP OF FRONT SLOPE & ONE AT TOP OF BACK SLOPE



= OUTSIDE OD + 2'
2 MATS OF #5 ON 8" CENTER

NOTES:

1. IT IS PREFERABLE TO HAVE A FREEBOARD OF 2 FEET MINIMUM. FOR SMALL DETENTION FACILITIES, AN ABSOLUTE MINIMUM FREEBOARD OF 1 FOOT SHALL BE PROVIDED. REFERENCE PAGE 172 OF MANUAL ON DRAINAGE DESIGN FOR FULTON COUNTY, JANUARY 1983.
   A SMALL DETENTION FACILITY IS 3 FEET OR LESS TO THE 25 YEAR ELEVATION.
2. SLOPES SHOWN ARE STEEPEST ALLOWABLE.
   CORE TO BE CLAY OR OTHER IMPERVIOUS MATERIAL.
   D, DEPTH OF CORE, MUST BE TO IMPERVIOUS MATERIAL OR A MINIMUM DEPTH EQUAL TO H.
   CORE TO BE PLACED IN 6" LAYERS & COMPACTED TO 95% STANDARD PROCTOR.
   WIDTH = (H/5) + 12.
3. EMERGENCY SPILLWAYS ARE TO BE CUT IN NATURAL GROUND WHERE APPLICABLE.
4. EMERGENCY SPILLWAYS ARE TO BE CUT IN NATURAL GROUND WHERE APPLICABLE.
5. ALTERNATE DESIGNS MAY BE APPROVED OR WILL BE CONSIDERED BY FULTON COUNTY PUBLIC WORKS.
6. PROVIDE CONCRETE ONLY FOR OUTFLOW PIPE AND OUTLET STRUCTURE MATERIAL



95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 522

EARTH FILL DAM FOR DETENTION PONDS

DATE	REVISIONS	DATE	REVISIONS
M/Y	XXX	M/Y	XXX

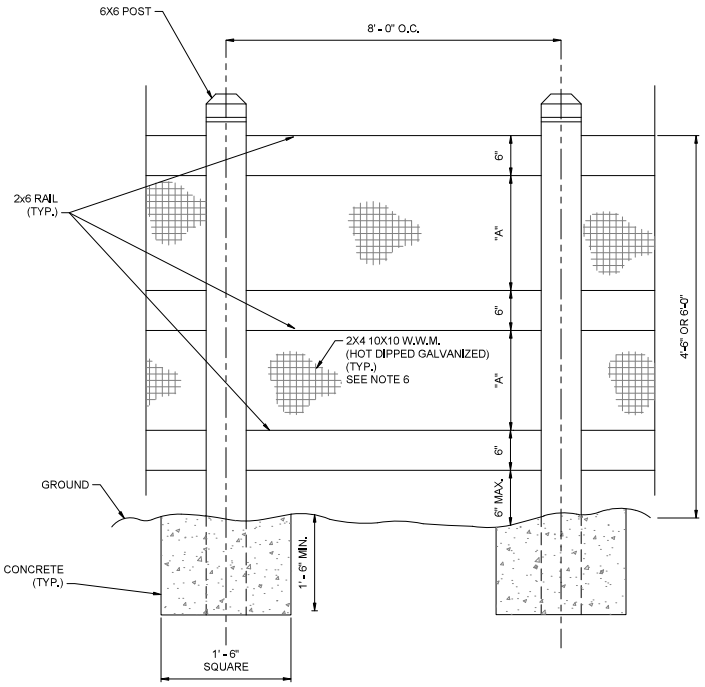
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APPROVED: XXX
DATE: XX-X-XX

FULTON COUNTY

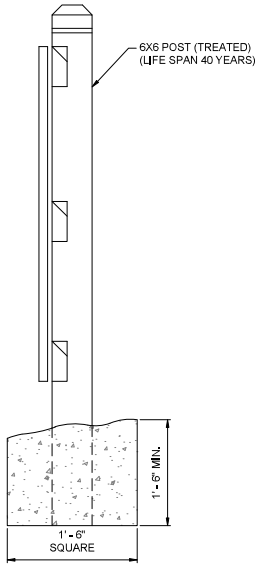
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ELEVATION
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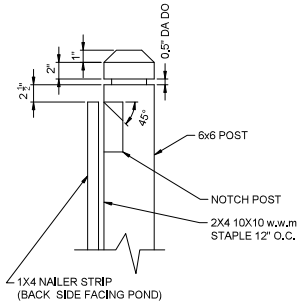
SECTION
N.T.S.

NOTES:

1. ALL FASTENERS TO BE IN COMPLIANCE WITH MANUFACTURER SPECIFICATIONS
2. 2x4 10x10 WELDED WIRE MESH (W.W.M.) TO BE HOT-DIPPED GALVANIZED.
3. CONCRETE SHALL BE 2500 P.S.I.
4. A 4' - 6" HIGH FENCE CAN BE ERECTED WHEN THE POND IS 3' - 0" OR LESS TO THE 25 YEAR STORM ELEVATION.
5. A FENCE IS ALWAYS REQUIRED.
6. OTHER WIRE GAUGES CAN BE ACCEPTED AS REQUIRED BY ENGINEER.
7. FENCE TO BE PLACED OUTSIDE OF ACCESS.
8. ACCESS ROAD TO BE 10' INSIDE OF FENCE.
9. FENCE TO BE PLACED AT 25 YEAR STORM ELEVATION.

TABLE 523 - 1
FENCE DIMENSIONS

TYPE	"A"
6'-0" HIGH FENCE	2'-0"
4'-6" HIGH FENCE	1'-3"



DETAIL
N.T.S.

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 523

FENCE DETAIL FOR DETENTION PONDS
SHEET 1 OF 2

DATE	REVISIONS	DATE	REVISIONS
M/Y	XXX	M/Y	XXX

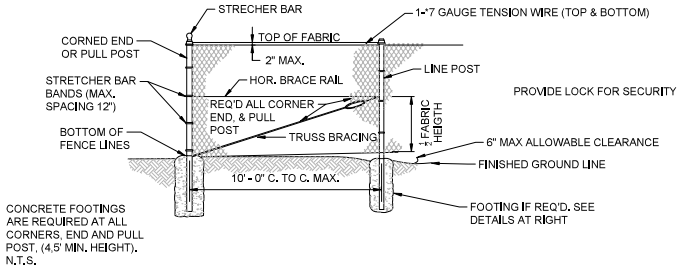
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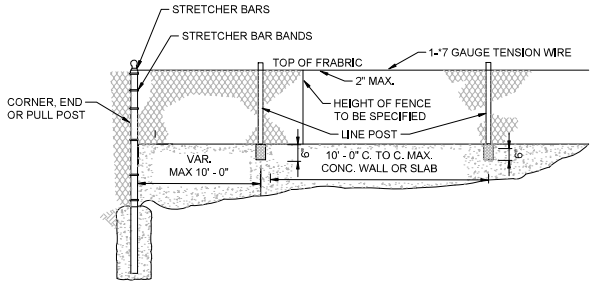
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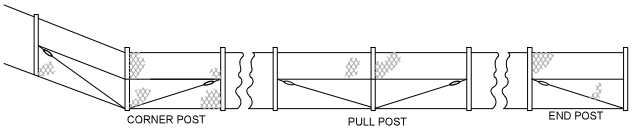
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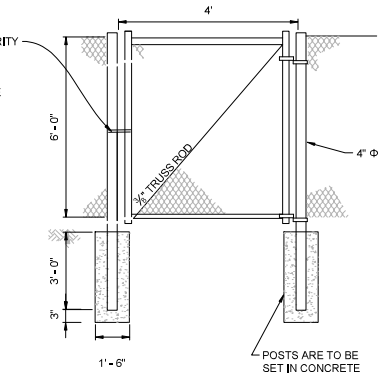




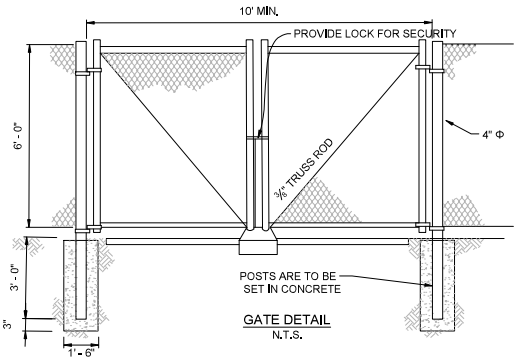
METHOD OF INSTALLATION OVER CONCRETE WALL OR SLAB
AND ALSO WHERE HEIGHT OF FENCE CHANGES
N.T.S.



METHOD OF BRACING END, CORNER AND PULL POST
N.T.S



WALK GATE DETAIL
N.T.S.



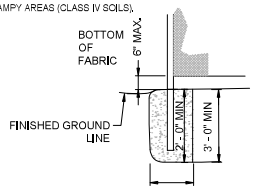
GATE DETAIL
N.T.S.

NOTES:

1. FABRIC SHALL BE FASTENED TO LINE POST AT INTERVALS NOT GREATER THAN 14'.
2. TENSION WIRES SHALL BE TIED TO FABRIC WITH 9 GA. WIRE OR 11 GA. HOG RINGS AT 24" C. TO C. MAX SPACINGS.
3. WHERE A PROPERTY OWNERS CHAIN LINK WIRE FENCE HAS TO BE REPLACED BY THE DEPARTMENT AS PART OF THE CONSTRUCTION PROJECT, AND THE EXISTING FENCE HAD A TOP RAIL, THEN THE NEW REPLACEMENT FENCE SHALL ALSO HAVE A SIMILAR TYPE RAIL INSTEAD OF A TENSION WIRE AT THE TOP OF THE FENCE.
4. HORIZONTOAL BRACE RAILS AND TRUSS BRACING SHALL BE REQUIRED AT ALL CORNER, END AND PULL POSTS.
5. LINE POST SPECIFICATION IS 2" , 20 WT.
6. CORNER END AND PULL POST SPECIFICATION IS 2½" , 20 WT.
7. FENCE FABRIC SPECIFICATION IS 11.5 GAUGE.
8. ALL CORNER, END AND PULL POSTS SHALL HAVE CONCRETE FOOTINGS AS SHOWN.
9. ALL ALTERNATE DESIGN(S) TO BE APPROVED BY FCPW DIRECTOR.
10. 4' WIDE WALK GATE TO BE LOCATED NEAR OUTLET CONTROL STRUCTURE.

*ALTERNATE:

TYPE "C" LINE POSTS OR 2⅜"Ø TUBE LINE POSTS OR OTHER TYPE LINE POSTS APPROVED BY THE D.O.T. LABORATORY MAY BE DRIVEN TO A MINIMUM DEPTH OF THREE (3) FEET INSTEAD OF CONCRETE FOOTING SHOWN PROVIDING SOIL IS EITHER CLASS I, II, III, OR V SOIL. CONCRETE FOOTING REQUIRED FOR LINE POSTS INSTALLED IN MARSHY OR SWAMPY AREAS (CLASS IV SOILS).



18" DIA FOR END, CORNER AND PULL POST REQUIRED

12" DIA FOR LINE POST (IF CONCRETE FOOTING IS REQUIRED)

FOOTING DETAILS FOR FENCE POSTS
N.T.S.

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 524

FENCE DETAIL FOR DETENTION PONDS
SHEET 2 OF 2

DATE	REVISIONS	DATE	REVISIONS
M/Y	XXX	M/Y	XXX

DGS/DRN/CHKD: XXX
APPROVED: XXX
DATE: XX-X-XX

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524

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Exhibit I – Exhibit 2: Details – 700 Series

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DWG. NO.	DESCRIPTION
700	INDEX AND GENERAL NOTES
701	GREASE / SOLIDS / OIL INTERCEPTOR FOUR TANKS IN SERIES
702	SINGLE TANKS
703	TRASH COMPACTOR AND DUMPSTER PAD DETAILS
704	SANITARY SEWER EASEMENT
705	STANDARD STRUCTURAL PLATE PIPE CULVERT
706	DETAIL OF OPTIONAL STEEL PIER
707	SERVICE CONNECTION ON NEW SEWERS
708	SERVICE CONNECTION ON EXISTING SEWERS
709	CLEANOUT DETAIL
709A	SANITARY SEWER CLEANOUT BOX & LID FOR RESIDENTIAL DRIVEWAYS AND SIDEWALKS
710	WATERSTOP COLLAR
711	SEWER LATERAL INSTALLATION DETAILS FOR CURBED STREETS
712	STORM DRAIN LINE CROSSING ABOVE EXISTING SANITARY SEWER PIPE
713	DOGHOUSE MANHOLE DETAIL
714	FORCE MAIN CONNECTION DETAIL AT CLEANOUT

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 700

INDEX AND GENERAL NOTES

DATE	REVISIONS	DATE	REVISIONS

DGS/DRN/CHKD: XXX
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DATE: XX-X-XX

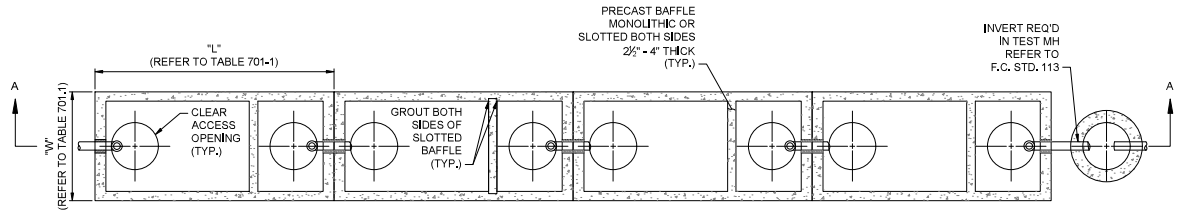
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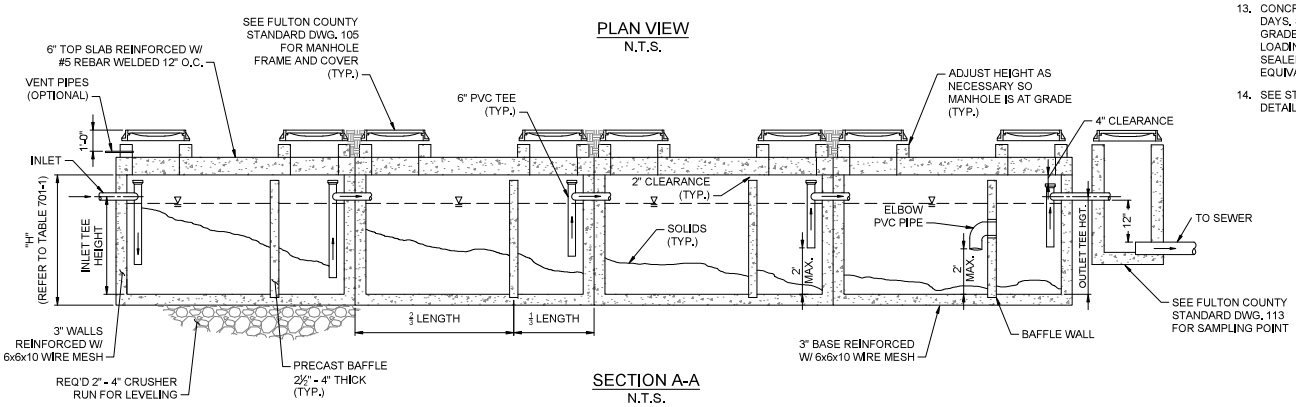
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TABLE 701-1					
GALLON CAPACITY	*OUTSIDE DIMENSIONS			INLET TEE HGT.	OUTLET TEE HGT.
	LENGTH, "L"	WIDTH, "W"	HEIGHT, "H"		
1000	8'-6"	5'-8"	4'-11"	4'-4"	4'-2"
1500	11'-1 ½"	5'-7"	5'-6"	4'-11"	4'-8"
2000	13'-0"	7'-0"	5'-6"	4'-9"	4'-6"
2500	13'-0"	7'-0"	6'-6"	5'-9"	5'-6"
*DIMENSIONS OF PREFAB CONCRETE TANKS MAY VARY BASED ON MANUFACTURER, HOWEVER THE GALLON CAPACITY MUST BE EQUIVALENT TO THE TANK SIZE SPECIFIED FOR INSTALLATION.					



PLAN VIEW
N.T.S.



SECTION A-A
N.T.S.

NOTES:

1. ANY ALTERNATIVE PRETREATMENT SYSTEMS SHALL BE APPROVED BY WATER AND POLLUTION CONTROL SYSTEM PRIOR TO INSTALLATION
2. USE CONCRETE PREFAB TANKS.
3. NO INTERCEPTOR SHALL BE LESS THAN 1,000 GALLONS WHERE SEATING IS LESS THAN 50 AND NO SINGLE CHAMBER INTERCEPTOR SHALL BE GREATER THAN 3000 GALLONS.
4. FOR RESTAURANTS USE MINIMUM ONE 1515 GALLON TANK PER 100 SEATS.
5. MULTI-CHAMBERED TANKS SHALL BE CONNECTED BY 8" ABS OR PVC PIPE: MIN. 6" PVC ACCEPTED.
6. SAMPLING MANHOLE SHALL BE INSTALLED UNLESS EXCLUDED BY W&PC.
7. ALL MANHOLES MUST ADJUST TO GRADE.
8. DISTANCE BETWEEN MULTIPLE TANKS NO GREATER THAN 12'.
9. TEST MANHOLE NO GREATER THAN 6 FEET AFTER PRETREATMENT SYSTEM.
10. MULTIPLE TANKS MUST BE PLACED IN TANDEM (SINGLE LINE).
11. ALL PRETREATMENT SYSTEMS ARE REQUIRED TO BE INSPECTED PRIOR TO BACKFILLING CONTACT PUBLIC WORKS COMMERCIAL TREATMENT.
12. FINAL INSPECTIONS ARE REQUIRED ON ALL PRETREATMENT SYSTEMS PRIOR TO USE.
13. CONCRETE MINIMUM STRENGTH 4000 PSI AT 28 DAYS. STEEL REINFORCEMENT ASTM-A-515,75, GRADE 50, ONE INCH COVER MINIMUM DESIGN LOADING AASHO HS20-44. CONSTRUCTION JOINT SEALED WITH ONE INCH DIA. BUTYL RUBBER OR EQUIVALENT.
14. SEE STANDARD DWG 702 FOR BAFFLE WALL DETAILS.

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 701

GREASE/SOLIDS/OIL INTERCEPTOR
FOUR TANKS IN SERIES

DATE M/Y	REVISIONS	DATE M/Y	REVISIONS
XXX		XXX	

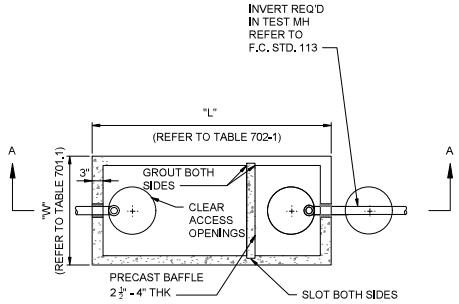
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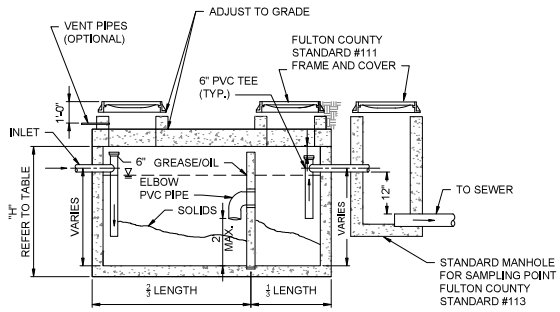
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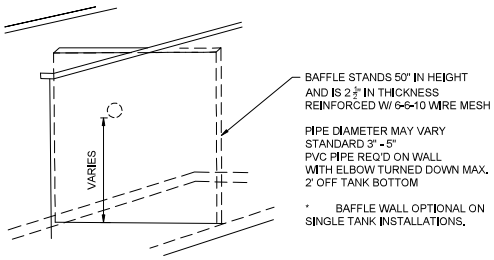


PLAN VIEW
N.T.S.

TABLE 701-1					
GALLON CAPACITY	*OUTSIDE DIMENSIONS			INLET TEE HGT.	OUTLET TEE HGT.
	LENGTH,	WIDTH	HEIGHT	VARIES BASED ON TANK SIZE	
3000	15'-7"	9'-7"	8'- 6,5"	5' - 2"	5'-0"
1500	11'-0"	6'-0"	4'-7"	3'-10"	4'-0"
1000	8'-6"	5'-3"	4'-6"	3'-10"	4'-0"
750	7'-0"	4'-8"	4'-6"	3'-10"	4'-0"
*DIMENSIONS OF PREFAB CONCRETE TANKS MAY VARY BASED ON MANUFACTURER, HOWEVER THE GALLON CAPACITY MUST BE EQUIVALENT TO THE TANK SIZE SPECIFIED FOR INSTALLATION.					



SECTION A-A
N.T.S.



BAFFLE WALL *
N.T.S.

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 702

SINGLE TANKS

DATE M/Y	REVISIONS	DATE M/Y	REVISIONS
XXX		XXX	

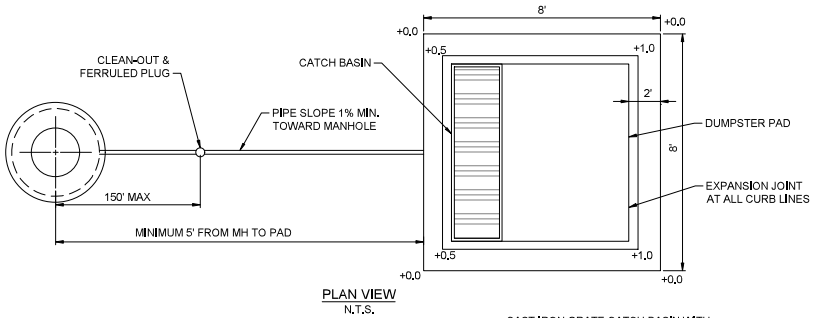
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APPROVED: XXX
DATE: XX-X-XX

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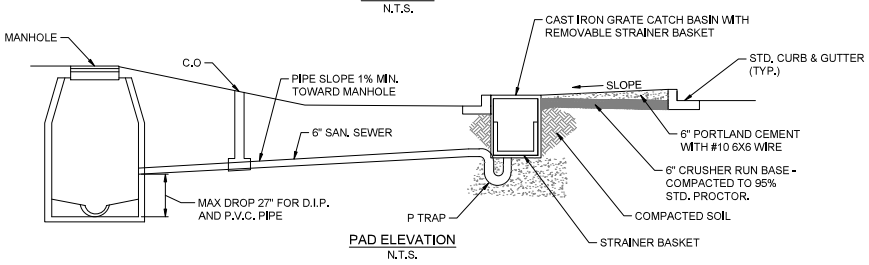
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702

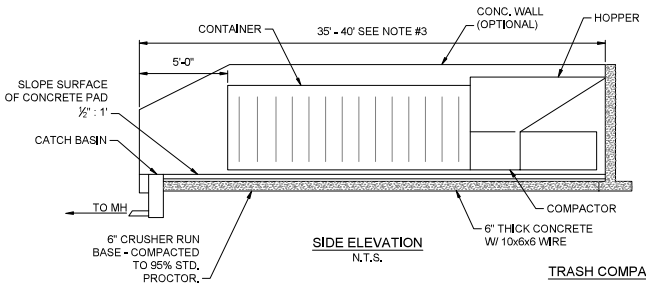
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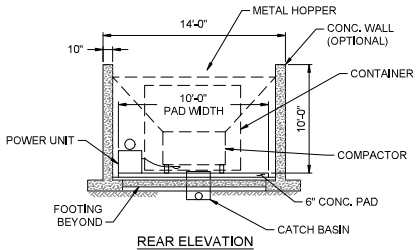
PLAN VIEW
N.T.S.



PAD ELEVATION
N.T.S.



SIDE ELEVATION
N.T.S.



REAR ELEVATION
N.T.S.

TRASH COMPACTOR

NOTE:

1. WATER BIBB REQUIRED WITHIN 50' OF PAD FOR CLEANSING.
2. APPROVAL FROM HEALTH DEPT. REQUIRED.
3. COMPACTOR PAD TO BE 10' - 0" WIDE AND A LENGTH OF 5' - 0" GREATER THAN THE COMBINED LENGTH OF THE COMPACTOR AND CONTAINER.
4. RUBBER BOOT REQUIRED FOR P.V.C. PIPE. (MANHOLE CONNECTOR) WATER BIBB TO HAVE BACK FLOW PREVENTER.
5. DO NOT CONNECT DRAIN TO GREASE TRAP. SURFACE WATER RUNOFF MUST BE SLOPED AWAY FROM PAD.
6. DO NOT ALLOW STORM WATER RUNOFF ON PAD.
7. 4.5 FOOT CHAIN LINK FENCE WITH 3-4 FOOT ACCESS GATE IS REQUIRED AROUND ALL COMPACTORS AND HOPPERS.
8. UNLESS OTHERWISE APPROVED, TRASH COMPACTOR AND DUMPSTER DRAIN TO HAVE A DEDICATED LINE TO MANHOLE.
9. ENCLOSURE IS REQUIRED. MATERIAL BASED ON PLAN DESIGN.

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 703

TRASH COMPACTOR AND DUMPSTER PAD DETAILS

DATE M/Y	REVISIONS	DATE M/Y	REVISIONS
	XXX		XXX

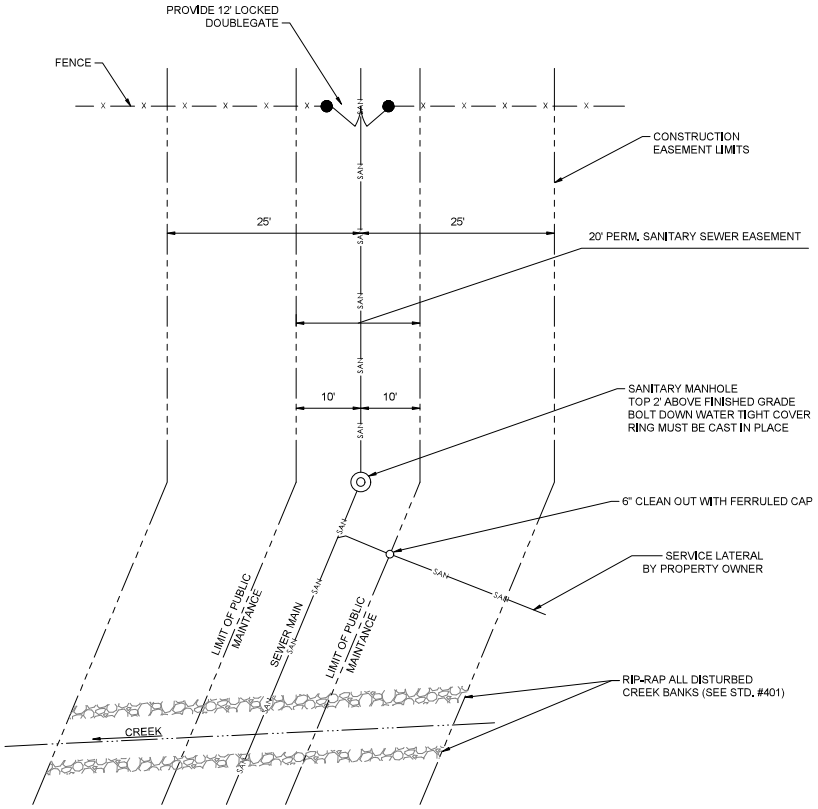
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NOTES:

1. NO POOLS STRUCTURES DECKS, BRIDGES OR PATIOS MAY BE PLACED IN THE PERM.EASEMENT.
2. CLEAR ALL TREES IN PERM EASEMENT AND MAINTAIN CLEARANCE.
3. RESEED, FERTILIZE AND MULCH ALL DISTURBED AREAS PER EROSION CONTROL STANDARDS, MAINTAIN1% SLOPE DRAINAGE.
4. NO PERMANENT STRUCTURES INSIDE PERMANENT EASEMENT.
5. NO BUY PITS ALLOWED IN EASEMENT.
6. FENCE AND GATES REQUIRED AT ALL SEWER EASEMENTS CROSSING SEWER LINES.

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 704

SANITARY SEWER EASEMENT

DATE	REVISIONS	DATE	REVISIONS
M/Y	XXX	M/Y	XXX

DGS/DRN/CHKD: XXX
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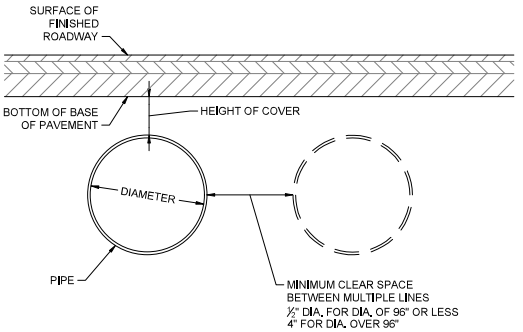
MINIMUM HEIGHT OF COVER

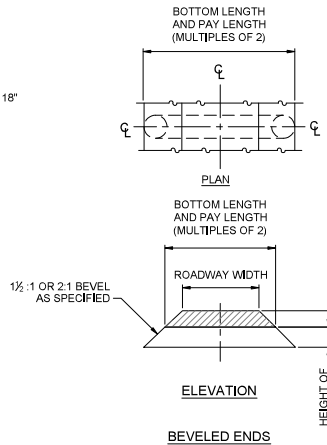
UNPAVED AND FLEXIBLE PAVEMENTS

½ DIA. FOR 72" DIA. TO 120" DIA.
NOT LESS THAN 24" FOR 120" DIA. AND OVER

RIGID PAVEMENTS

FOR 72" DIA. TO 120" DIA. - ½ DIA.
BUT NOT LESS THAN 12"
FOR 120" DIA. AND OVER - NOT LESS THAN 18"

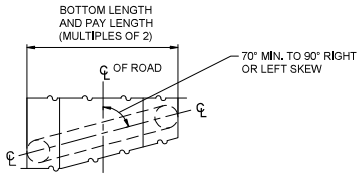


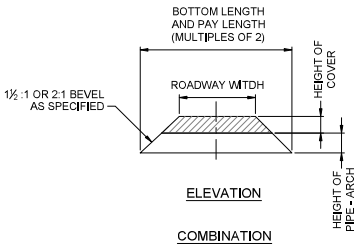


BEVELED ENDS

NOTES:

1. SPECIFICATIONS - GEORGIA STANDARD
2. DESIGN DATA - H-20 LIVE LOAD
3. GAUGES SHOWN ARE MINIMAL STRUCTURAL REQUIREMENTS FOR USE WITH ADEQUATE BACKFILL.
4. FOR END FINISH, SHAPE OR CONDITION OTHER THAN SHOWN, SEE SPECIAL DESIGN.
5. GAUGES SHOWN IN TABLE 705-1 ARE FOR STRUCTURAL PLATE PIPE ASSEMBLED WITH 4 BOLTS PER FOOT OF LONGITUDINAL SEAM AND VERTICALLY ELONGATED 5% BY SHOP FORMING, EXCEPT AS NOTED IN NOTE 6.
6. BEYOND HEIGHTS OF COVER FOR 4 BOLTS AND TO HEIGHTS OF COVER SHOWN FOR 6 BOLTS, NO.1 GAUGE STRUCTURAL PLATE PIPE WITH 6 BOLTS PER FOOT OF LONGITUDINAL SEAM AND VERTICALLY ELONGATED 3% BY SHOP FORMING SHALL BE USED.
7. ONLY R.C.P. ALLOWED UNDER COUNTY ROADS.





COMBINATION
SKEWED & BEVELED ENDS

TABLE 705 - 1

AREA SQ.FT.	DIA. INCHES	HEIGHT OF COVER (FEET) 1 - 5	6 - 10	11 - 15	16 - 20	21 - 25	26 - 30	31 - 35	36 - 40	41 - 45	46 - 50	51 - 55	56 - 60	61 - 70	71 - 80	81 - 90	91 - 100	1 GAUGE 6 BOLTS
		MINIMUM THICKNESS U.S. STD. GAUGE - 4 BOLTS																
28	72							12	12	10	10	8	8	7	5	3	1	165'
33	78						12	12	10	10	8	8	8	5	3	1		150'
38	84					12	12	12	10	10	8	8	7	5	3	1		140'
44	90	12	12	12	12	12	12	10	10	8	8	7	5	3	1			130'
50	96	12	12	12	12	12	10	10	10	8	7	7	5	3	1			125'
57	102	12	12	12	12	10	10	10	8	8	7	5	5	1				115'
64	108	12	12	12	10	10	10	10	8	7	5	5	3	1				110'
71	114	10	12	10	10	10	10	8	8	7	5	5	3	1				105'
79	120	10	12	10	10	10	10	8	7	5	5	3	1					100'
87	126	10	12	10	10	10	10	8	7	5	3	3	1					95'
95	132	10	10	10	10	10	8	8	7	5	3	1	1					90'
104	138	10	10	10	10	10	8	7	5	3	3	1						85'
113	144	10	10	10	10	8	8	7	5	3	1	1						80'
123	150	10	10	10	8	8	8	7	5	3	1							80'
133	156	10	10	10	8	8	8	5	3	1	1							75'
145	162	10	10	10	8	8	7	5	3	1								70'
154	168	10	10	10	8	8	7	5	3	1								70'
165	174	8	10	8	8	8	7	5	3	1								65'
177	180	8	10	8	8	8	5	3	1									65'

FOR STRUCTURES IN THIS ZONE, SEE NOTE 6.

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 705

STANDARD STRUCTURAL PLATE PIPE CULVERT

DATE	REVISIONS	DATE	REVISIONS
M/Y	XXX	M/Y	XXX

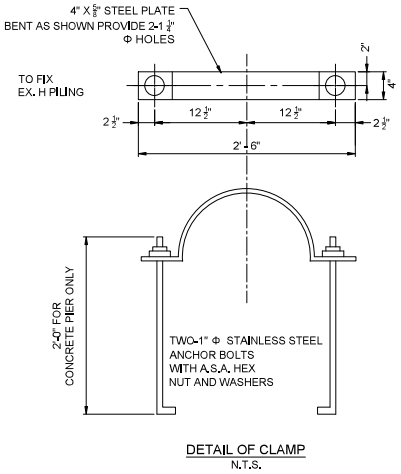
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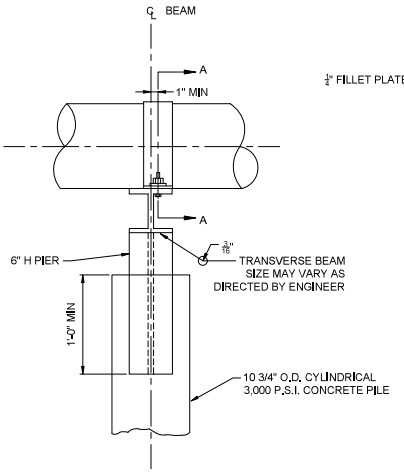
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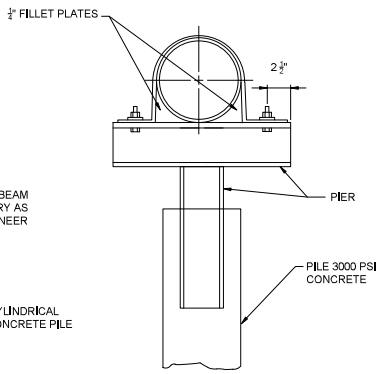
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DETAIL OF CLAMP
N.T.S.

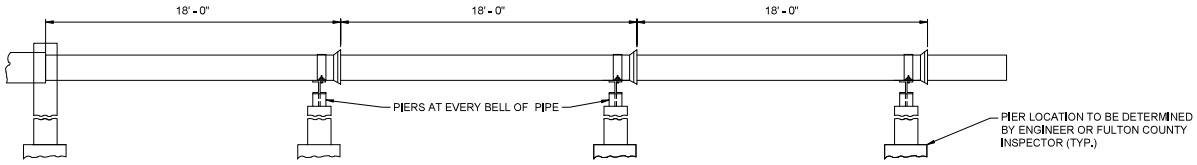




SECTION A-A
N.T.S.

NOTE:

1. ENGINEER TO SUBMIT DESIGN.
2. PILE TO BE DRIVEN TO REFUSAL OR 10 TON BEARING MIN., THEN FILLED WITH 3000 P.S.I. CONCRETE. TRANSVERSE BEAM TO BE WELDED TO PIER BEFORE SETTING CONCRETE.



DETAIL OF OPTIONAL STEEL PIER
N.T.S.

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 706

DETAIL OF OPTIONAL STEEL PIER

DATE M/Y	REVISIONS	DATE M/Y	REVISIONS
	XXX		XXX

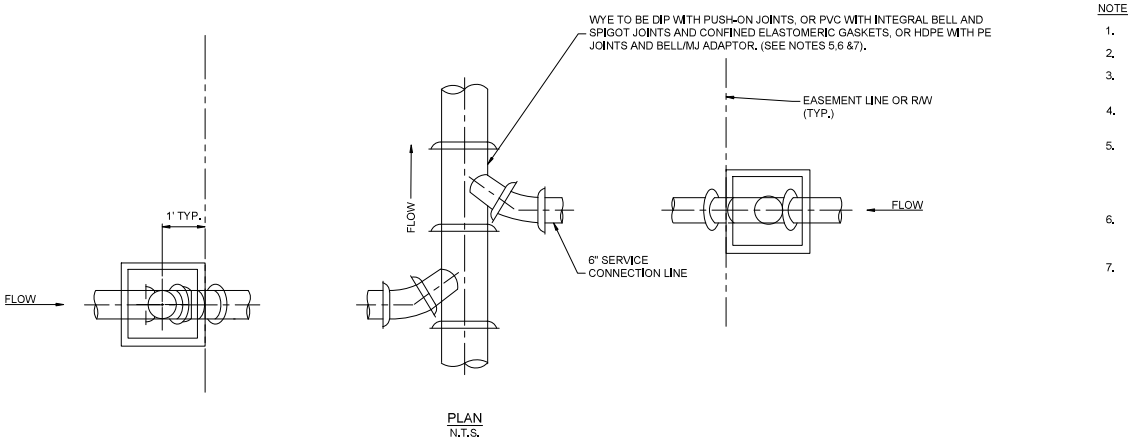
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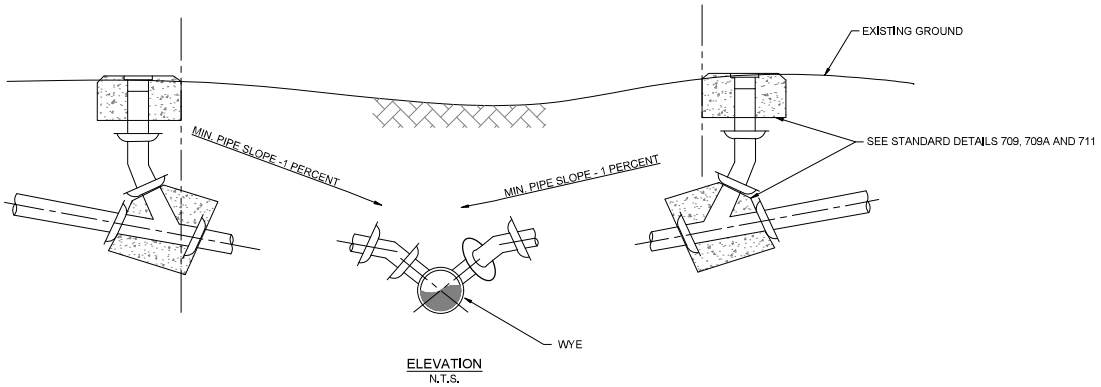
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PLAN
N.T.S.



ELEVATION
N.T.S.

NOTES:

1. CONNECTIONS TO NEW SEWER SHALL BE WITH A WYE.
2. NO TEES WILL BE ALLOWED.
3. NO TEE OF WYE CONNECTIONS WILL BE ALLOWED ON EXISTING SEWERS LARGER THAN 12".
4. ALL CONNECTIONS TO EXISTING SEWERS SHALL BE MADE WITH A WYE.
5. WHERE SERVICE LINE CROSSES STATE HWY R/W, DI PIPE AND FITTINGS SHALL BE MJ JOINTS, HDPE PIPE AND FITTINGS SHALL BE PROVIDED WITH BELL/MJ ADAPTOR JOINED TO THE PLAIN END BY BUTT FUSION. TRENCHES SHALL BE BACKFILLED WITH CRUSHED STONE.
6. HDPE SERVICE LINE CROSSING STATE HWY R/W SHALL BE ENCASED IN STEEL CASING. REFER TO STANDARD DETAIL 107 FOR STEEL CASING REQUIREMENTS.
7. THE USE OF PVC IS ONLY ALLOWED IN LANSCAPE AREA.

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 707

SERVICE CONNECTION ON NEW SEWERS

DATE	REVISIONS	DATE	REVISIONS
M/Y	XXX	M/Y	XXX

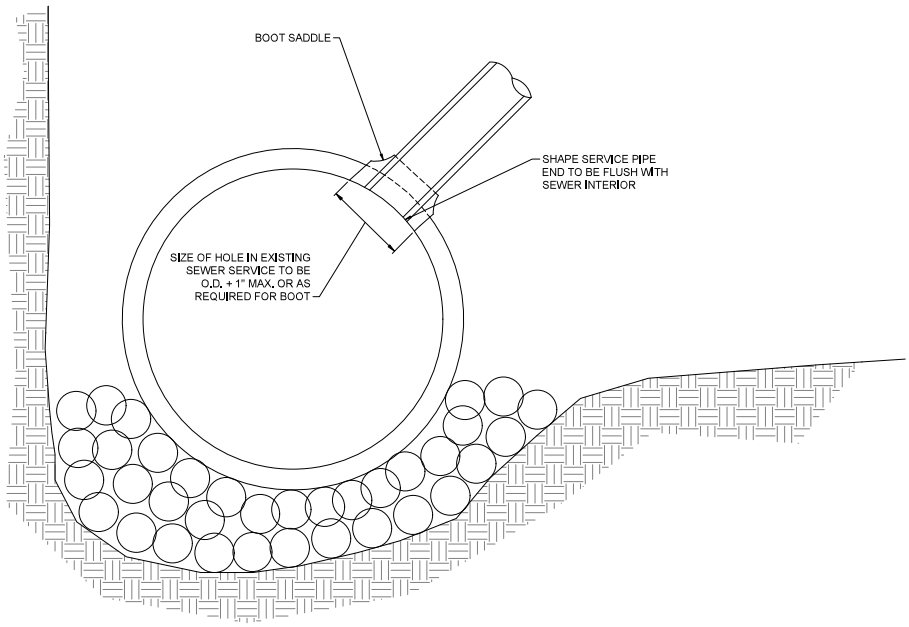
DGS/DRN/CHKD: XXX
APPROVED: XXX
DATE: XX-X-XX

FULTON COUNTY

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707

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NOTES:

1. HOLE IN EXISTING SEWER SHALL BE CORED.
2. CONNECT SERVICE TO SEWER WTH:
   - BOOT ON RCP AND VCP SEWERS
   - TAPPING SADDLE ON DIP SEWERS
   - MANUFACTURED SADDLE ON PVC PIPE SEWERS
   - MANUFACTURED SADDLE ON HDPE PIPE SEWERS
3. NO HAMMER TAPS

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 708

SERVICE CONNECTION ON EXISTING SEWERS

DATE	REVISIONS	DATE	REVISIONS
M/Y	XXX	M/Y	XXX

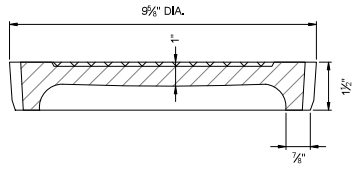
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APPROVED: XXX
DATE: XX-X-XX

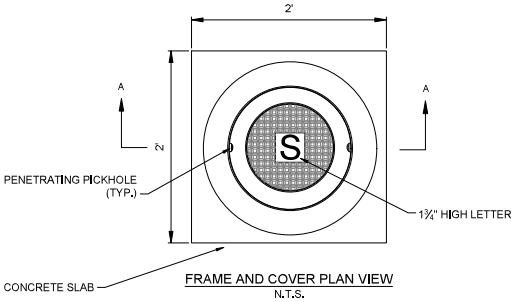
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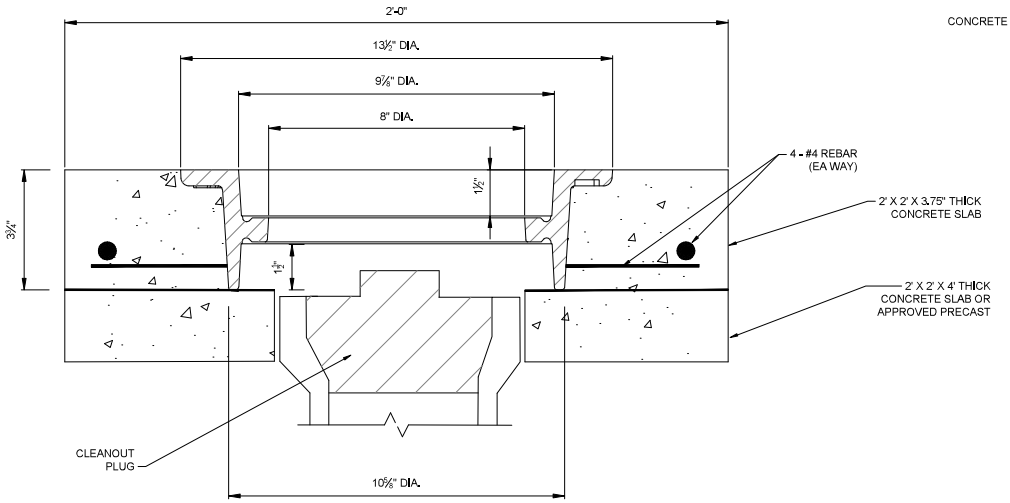
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708

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FRAME AND COVER PLAN VIEW
N.T.S.



SECTION A-A
N.T.S.

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FULTON COUNTY STANDARD DETAIL 709A

SANITARY SEWER CLEANOUT BOX & LID FOR RESIDENTIAL DRIVEWAYS AND SIDEWALKS

DATE	REVISIONS	DATE	REVISIONS
M/Y	XXX	M/Y	XXX

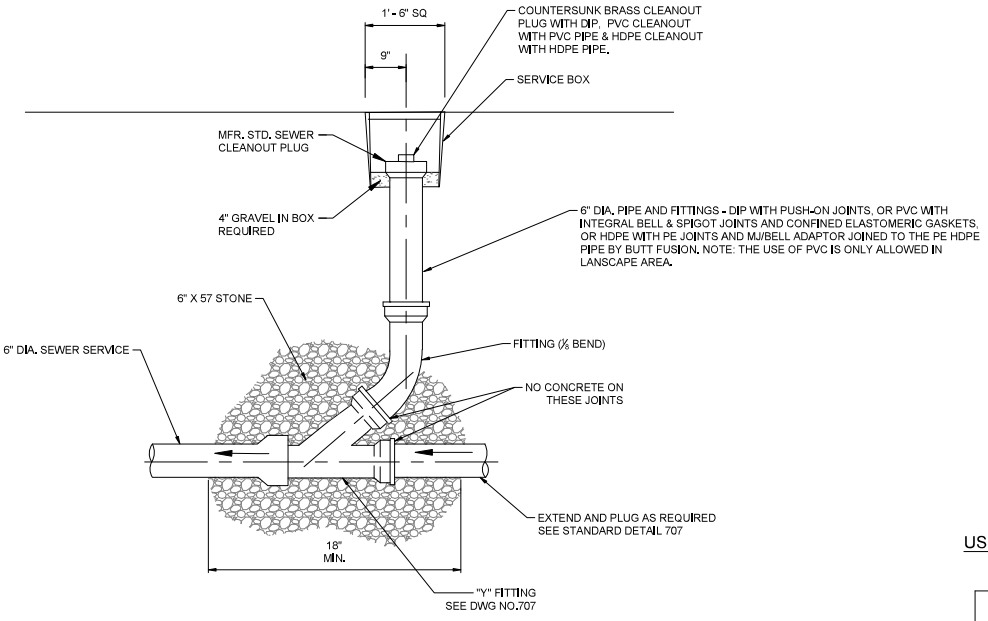
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APPROVED: XXX
DATE: XX-X-XX

FULTON COUNTY

FULTON COUNTY PUBLIC WORKS
141 PRYOR ST. ATLANTA, GA. 30303
404-612-7400 FAX: 404-224-0498

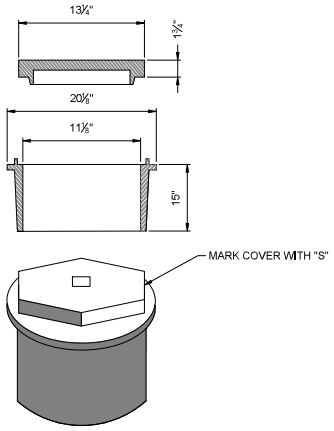
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NOTES:

1. TOP OF SERVICE BOX SHALL BE FLUSH WITH FINAL SURFACE IN SIDEWALKS AND PAVED AREAS.
2. HEAVY DUTY CLEANOUT BOX AND LID ARE REQUIRED IN PAVED AREAS.
3. CLEANOUTS IN PAVED AREA ARE TO BE 6-INCH DUCTILE IRON PIPE.



USF 7635 SEWER VALVE BOX AND COVER
N.T.S.

TABLE 709 - 1			
COVER TYPE	LOAD RATING	COVER WEIGHT	TOTAL WEIGHT
FJ	HEAVY DUTY	55	230

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 709

CLEANOUT DETAIL

DATE	REVISIONS	DATE	REVISIONS
M/Y	XXX	M/Y	XXX

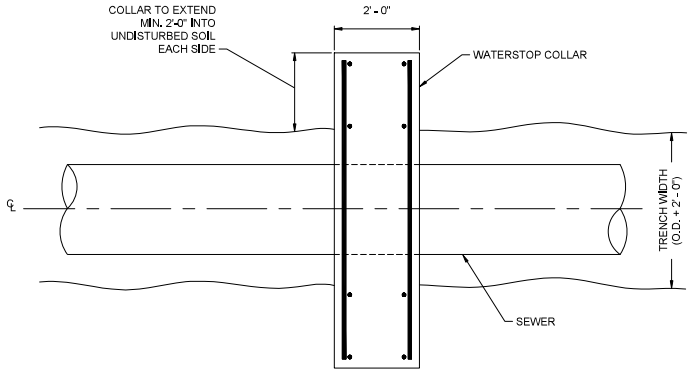
DGS/DRN/CHKD: XXX
APPROVED: XXX
DATE: XX-X-XX

FULTON COUNTY

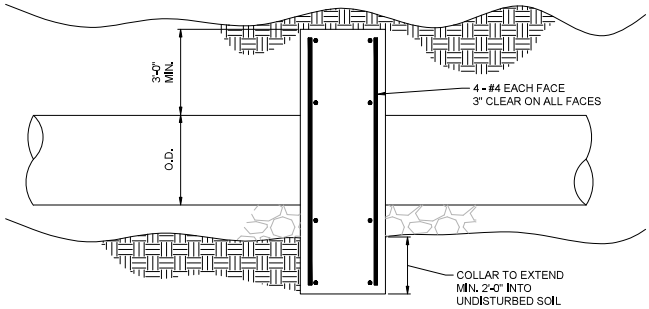
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DRAWING NO.
709

Docusign Envelope ID: A3705B48-B7E5-4F52-8480-5FF929E99139



PLAN

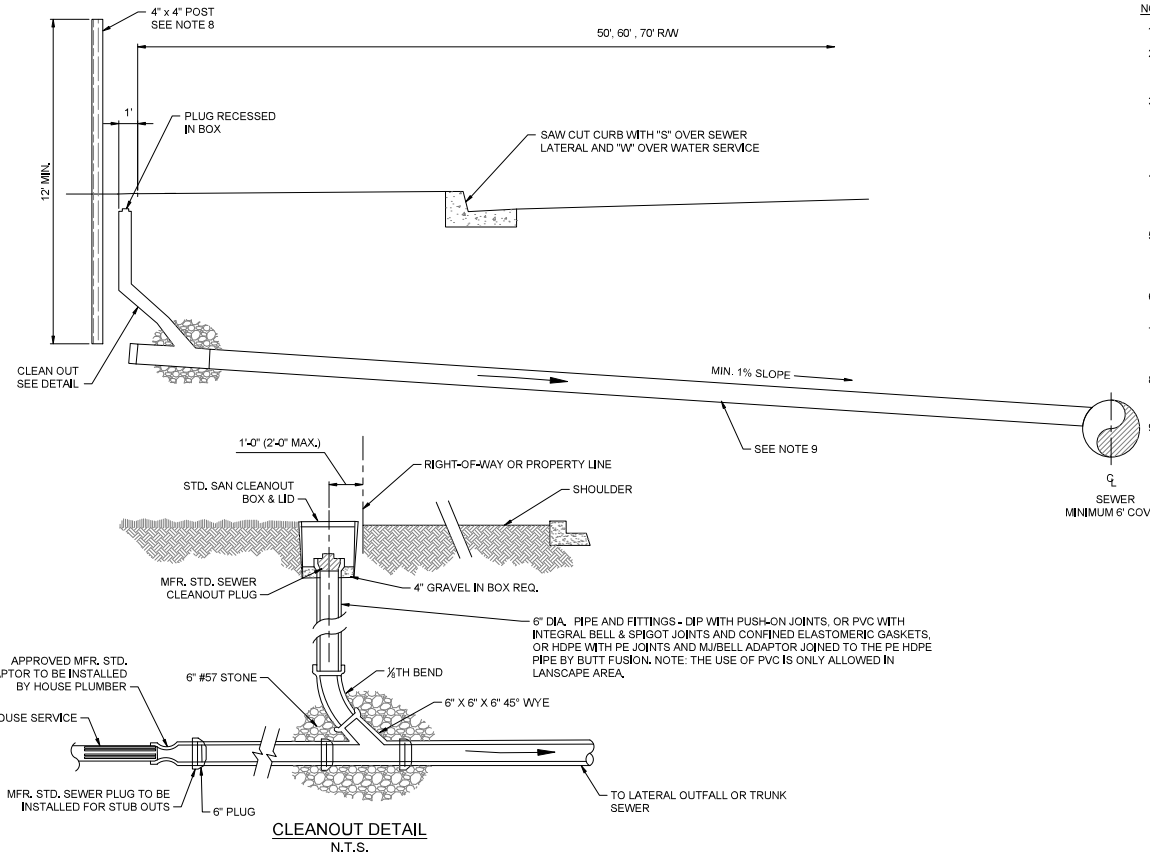


SECTION

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FULTON COUNTY STANDARD DETAIL 710 WATERSTOP COLLAR		DATE M/Y	REVISIONS XXX	DATE M/Y	REVISIONS XXX	DGS/DRN/CHKD: XXX APPROVED: XXX DATE: XX-X-XX	FULTON COUNTY	FULTON COUNTY PUBLIC WORKS 141 PRYOR ST. ATLANTA, GA. 30303 404-612-7400 FAX: 404-224-0498	DRAWING NO. 710

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CLEANOUT DETAIL
N.T.S.

NOTES:

1. CLEANOUTS TO BE INSTALLED BY SUBDIVISION DEVELOPER.
2. MAINTAIN MATERIAL FOR STANDARD SEWER CLEANOUT PLUG. PLUGS TO BE PVC FOR PVC LATERALS, HDPE FOR HDPE LATERALS, AND BRASS FOR D.I. LATERAL.
3. CLEANOUT BOX AND LID INSTALLED IN LANDSCAPE AREAS TO BE OLDCASTLE GREEN FLUSH HDPE 13" X 24" LIGHT DUTY 1324 CLEANOUT AND GREEN FLUSH SOLID COVER WITH FULTON COUNTY LOGO AND "SEWER CLEANOUT" ON THE COVER OR APPROVED EQUIVALENT.
4. CLEANOUT BOX AND LID INSTALLED IN RESIDENTIAL DRIVEWAYS AND ALL SIDEWALKS TO BE EJ GROUP, INC. 1621Z 1621A ASSEMBLY PRODUCT NUMBER 00162121A01 OR APPROVED EQUIVALENT.
5. CLEANOUT BOX AND LID INSTALLED WITHIN COMMERCIAL PAVEMENT OR WITHIN THE STREET PAVEMENT TO BE US FOUNDRY 7635 VALVE BOX AND ACCESS COVER WITH COVER TYPE FU OR APPROVED EQUIVALENT.
6. IF THE RISER IS GREATER THAN 6' - 0" THE JOINT WILL BE ENCASED IN 6" OF 1:3.5 CONCRETE.
7. MAINTAIN MATERIAL: USE PVC LATERALS WITH PVC MAINS, USE HDPE LATERALS WITH HDPE MAINS, AND USE D.I. LATERALS WITH D.I. MAINS.
8. INSTALL 4" x 4" POST NEXT TO ALL CLEANOUTS. POST TO BE MIN. 12' LONG FOR PLUMBER TO DETERMINE DEPTH OF CLEANOUT. USE 16' POST FOR DEEPER LATERALS.
9. WHERE SERVICE LINE CROSSES STATE HWY R/W, DI PIPE AND FITTINGS SHALL BE MJ JOINTS, HDPE PIPE AND FITTINGS SHALL BE PROVIDED WITH BELL/MJ ADAPTOR JOINED TO THE PLAIN END BY BUTT FUSION. TRENCHES SHALL BE BACKFILLED WITH CRUSHED STONE.

95% SUBMITTAL

FULTON COUNTY STANDARD DETAIL 711

SEWER LATERAL INSTALLATION
DETAILS FOR CURBED STREETS

DATE	REVISIONS	DATE	REVISIONS
M/Y	XXX	M/Y	XXX

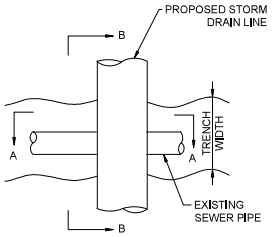
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APPROVED: XXX
DATE: XX-X-XX

FULTON COUNTY

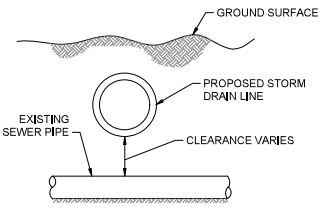
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711

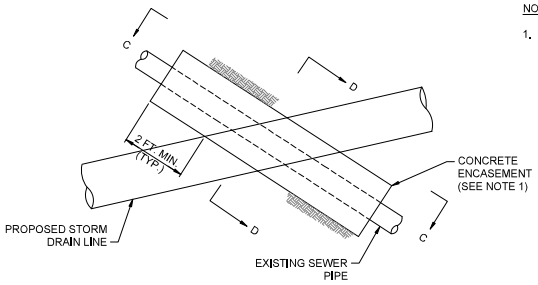
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PLAN



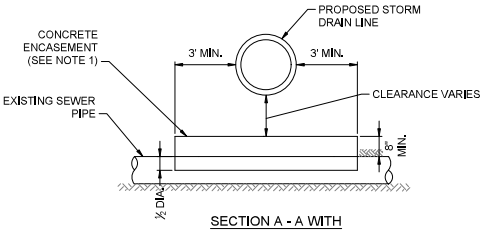
SECTION A - A



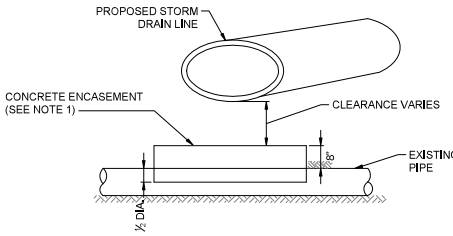
PLAN

NOTES:

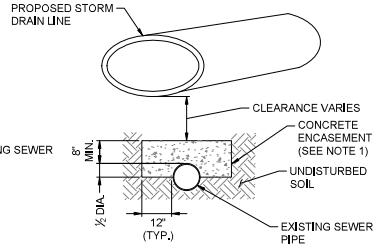
1. FOR ALL EXISTING SEWER PIPES, IF CLEARANCE BETWEEN THE STORM AND SEWER IS LESS THAN, OR EQUAL TO, 24 INCHES, THE EXISTING SEWER PIPE SHALL BE PROTECTED BY CONCRETE ENCASEMENT.



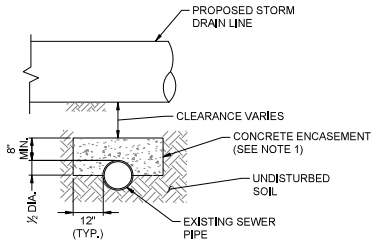
SECTION A - A WITH CONCRETE ENCASEMENT



SECTION C - C



SECTION D - D



SECTION B - B WITH CONCRETE ENCASEMENT

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FULTON COUNTY STANDARD DETAIL 601

STORM DRAIN LINE CROSSING ABOVE EXISTING SANITARY SEWER PIPE

DATE M/Y	REVISIONS	DATE M/Y	REVISIONS
	XXX		XXX

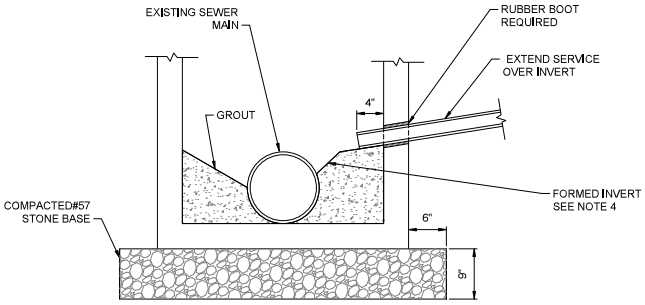
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APPROVED: XXX
DATE: XX-X-XX

FULTON COUNTY

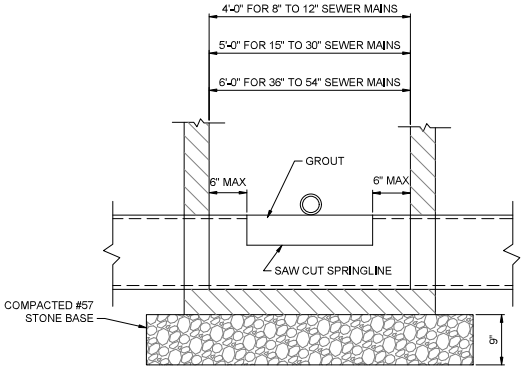
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DRAWING NO.
712

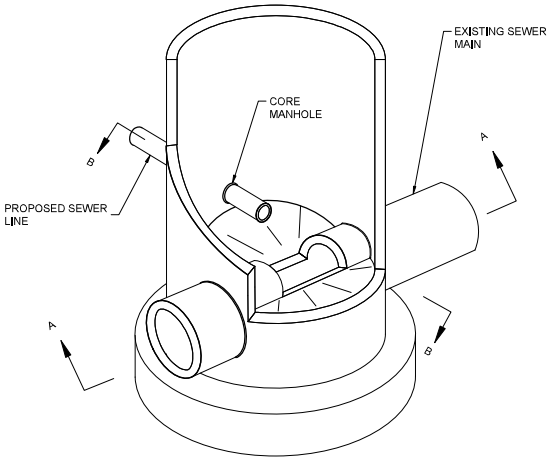
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CROSS SECTION AT EXISTING SEWER MAIN (B-B)



SECTION ALONG CENTERLINE OF EXISTING SEWER MAIN (A-A)



NOTES:

1. FLOW SHALL BE MAINTAINED DURING DOGHOUSE MANHOLE CONSTRUCTION.
2. MANHOLE PAD TO REST UPON A MINIMUM OF 9" COMPACTED #57 STONE BASE.
3. REFER TO STANDARD DETAILS 113,114A THROUGH F, AND 115 FOR ADDITIONAL DETAILS OF MANHOLE.
4. A FORMED INVERT IS REQUIRED FROM THE NEW SERVICE TO THE EXISTING PIPE. REFER TO STANDARD DETAILS 113, 114, AND 115 FOR DETAILS OF THE INVERT.

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FULTON COUNTY STANDARD DETAIL 713

DOGHOUSE MANHOLE DETAIL

DATE M/Y	REVISIONS	DATE M/Y	REVISIONS
XXX		XXX	

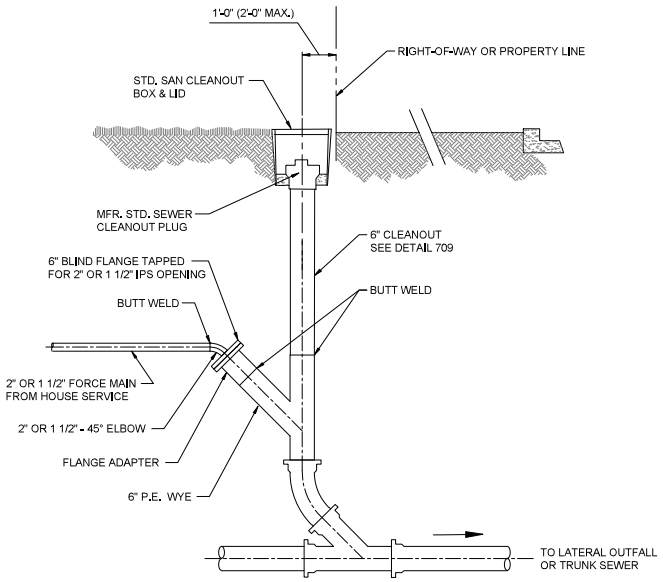
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APPROVED: XXX
DATE: XX-X-XX

FULTON COUNTY

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FORCE MAIN
NTS

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FULTON COUNTY STANDARD DETAIL 714

FORCE MAIN CONNECTION
DETAIL AT CLEANOUT

DATE	REVISIONS	DATE	REVISIONS
M/Y	XXX	M/Y	XXX

DGS/DRN/CHKD: XXX
APPROVED: XXX
DATE: XX-X-XX

FULTON COUNTY

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714

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Exhibit I – Exhibit 3: Drawing Plan Set

Reference Original Solicitation Document:
SECTION 12 – EXHIBITS Exhibit 2: Drawing Plan Set (attachment)

Please upload your updated COI document here.

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CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 1/16/2026

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER
Arthur J. Gallagher Risk Management Services, LLC
595 Market Street
Suite 2100
San Francisco CA 94105
License#: 0D69293

CONTACT NAME:
PHONE (A/C, No, Ext): 415-391-1500 **FAX (A/C, No):** 415-391-1882
E-MAIL ADDRESS: CertRequests@ajg.com

INSURER(S) AFFORDING COVERAGE	NAIC #
INSURER A : Liberty Mutual Fire Insurance Company	23035
INSURER B : Travelers Property Casualty Co of America	25674
INSURER C : XL Insurance America, Inc.	24554
INSURER D : Starr Indemnity & Liability Company	38318
INSURER E : Steadfast Insurance Company	26387
INSURER F :	

INSURED
Garney Holding Company/Garney Companies, Inc./
Garney Construction/Garney Pacific, Inc./Garney
Federal, Inc, 1700 Swift Street, Suite 200
North Kansas City MO 64116
GARNCOM-02

COVERAGES **CERTIFICATE NUMBER:** 1017573324 **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	X **COMMERCIAL GENERAL LIABILITY** [ ] CLAIMS-MADE [X] OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: [ ] POLICY [X] PRO-JECT [ ] LOC [ ] OTHER:	Y	Y	TB2641426942725	10/1/2025	10/1/2026	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG 	$ 5,000,000 $ 300,000 $ 10,000 $ 5,000,000 $ 10,000,000 $ 10,000,000 $
A	**AUTOMOBILE LIABILITY** X ANY AUTO [ ] OWNED AUTOS ONLY [ ] SCHEDULED AUTOS X HIRED AUTOS ONLY X NON-OWNED AUTOS ONLY	Y	Y	AS2641426942715	10/1/2025	10/1/2026	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident) 	$ 5,000,000 $ $ $ $
C D	X **UMBRELLA LIAB** X OCCUR **EXCESS LIAB** [ ] CLAIMS-MADE [ ] DED [ ] RETENTION $	Y	Y	US00143952LI25A 1000588640251	10/1/2025 10/1/2025	10/1/2026 10/1/2026	EACH OCCURRENCE AGGREGATE Each Occ/Aggregate	$ 10,000,000 $ 10,000,000 $ 5,000,000
A	**WORKERS COMPENSATION AND EMPLOYERS' LIABILITY** Y / N ANYPROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? N **(Mandatory in NH)** If yes, describe under DESCRIPTION OF OPERATIONS below	N / A	Y	WA264D426942735	10/1/2025	10/1/2026	X PER STATUTE [ ] OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	 $ 1,000,000 $ 1,000,000 $ 1,000,000
B E	Inland Marine Professional Liability Pollution Liability	Y	Y Y Y	QT6301L164501TIL25 EOC186212600	10/1/2025 10/1/2025	10/1/2026 10/1/2026	Leased/Rented Equip. Ea. Claim-Occ./Agg. Ea. Claim-Occ./Agg.	$3,000,000 $10,000,000 $10,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)
Garney Job #2444
RE: 25RFP021025K-CRB Progressive Design/Build for Boat Rock Road Sanitary Sewer Extension – Phase 1
ADDITIONAL INSURED(S): Fulton County Govt Its Officials Officers and Employees as additional insured

CERTIFICATE HOLDER

Fulton County Government
Dept of Public Works
Attn: Purchasing and Contract Compliance Dept
130 Peachtree ST SW
Atlanta GA 30305

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

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THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

ADDITIONAL INSURED – OWNERS, LESSEES OR CONTRACTORS – SCHEDULED PERSON OR ORGANIZATION

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART

A. Section II – Who Is An Insured is amended to include as an additional insured the person(s) or organization(s) shown in the Schedule, but only with respect to liability for "bodily injury", "property damage" or "personal and advertising injury" caused, in whole or in part, by:

1. Your acts or omissions; or
2. The acts or omissions of those acting on your behalf;

in the performance of your ongoing operations for the additional insured(s) at the location(s) designated above.

However:

1. The insurance afforded to such additional insured only applies to the extent permitted by law; and
2. If coverage provided to the additional insured is required by a contract or agreement, the insurance afforded to such additional insured will not be broader than that which you are required by the contract or agreement to provide for such additional insured.

B. With respect to the insurance afforded to these additional insureds, the following additional exclusions apply:

This insurance does not apply to "bodily injury" or "property damage" occurring after:

1. All work, including materials, parts or equipment furnished in connection with such work, on the project (other than service, maintenance or repairs) to be performed by or on behalf of the additional insured(s) at the location of the covered operations has been completed; or
2. That portion of "your work" out of which the injury or damage arises has been put to its intended use by any person or organization other than another contractor or subcontractor engaged in performing operations for a principal as a part of the same project.

C. With respect to the insurance afforded to these additional insureds, the following is added to **Section III – Limits Of Insurance:**

If coverage provided to the additional insured is required by a contract or agreement, the most we will pay on behalf of the additional insured is the amount of insurance:

1. Required by the contract or agreement; or
2. Available under the applicable Limits of Insurance shown in the Declarations;

whichever is less.

This endorsement shall not increase the applicable Limits of Insurance shown in the Declarations.

SCHEDULE

Name Of Additional Insured Person(s) Or Organization(s):	**Location(s) Of Covered Operations**
Any owner, lessee, or contractor for whom you have agreed in writing prior to a loss to provide liability insurance	Any location listed in such agreement

Information required to complete this Schedule, if not shown above, will be shown in the Declarations.

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ADDITIONAL INSURED – OWNERS, LESSEES OR CONTRACTORS – COMPLETED OPERATIONS

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART
PRODUCTS/COMPLETED OPERATIONS LIABILITY COVERAGE PART

A. **Section II – Who Is An Insured** is amended to include as an additional insured the person(s) or organization(s) shown in the Schedule, but only with respect to liability for "bodily injury" or "property damage" caused, in whole or in part, by "your work" at the location designated and described in the Schedule of this endorsement performed for that additional insured and included in the "products-completed operations hazard".

However:

1. The insurance afforded to such additional insured only applies to the extent permitted by law; and
2. If coverage provided to the additional insured is required by a contract or agreement, the insurance afforded to such additional insured will not be broader than that which you are required by the contract or agreement to provide for such additional insured.

B. With respect to the insurance afforded to these additional insureds, the following is added to **Section III – Limits Of Insurance:**

If coverage provided to the additional insured is required by a contract or agreement, the most we will pay on behalf of the additional insured is the amount of insurance:

1. Required by the contract or agreement; or
2. Available under the applicable Limits of Insurance shown in the Declarations;

whichever is less.

This endorsement shall not increase the applicable Limits of Insurance shown in the Declarations.

SCHEDULE

Name Of Additional Insured Person(s) Or Organization(s):	**Location And Description Of Completed Operations**
Any owner, lessee, or contractor for whom you have agreed in writing prior to a loss to provide liability insurance	Any location listed in such agreement

Information required to complete this Schedule, if not shown above, will be shown in the Declarations.

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THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

PRIMARY AND NONCONTRIBUTORY – OTHER INSURANCE CONDITION

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART
LIQUOR LIABILITY COVERAGE PART
PRODUCTS/COMPLETED OPERATIONS LIABILITY COVERAGE PART

The following is added to the **Other Insurance** Condition and supersedes any provision to the contrary:

Primary And Noncontributory Insurance

This insurance is primary to and will not seek contribution from any other insurance available to an additional insured under your policy provided that:

(1) The additional insured is a Named Insured under such other insurance; and

(2) You have agreed in writing in a contract or agreement that this insurance would be primary and would not seek contribution from any other insurance available to the additional insured.

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THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

WAIVER OF TRANSFER OF RIGHTS OF RECOVERY AGAINST OTHERS TO US (WAIVER OF SUBROGATION)

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART
ELECTRONIC DATA LIABILITY COVERAGE PART
LIQUOR LIABILITY COVERAGE PART
POLLUTION LIABILITY COVERAGE PART DESIGNATED SITES
POLLUTION LIABILITY LIMITED COVERAGE PART DESIGNATED SITES
PRODUCTS/COMPLETED OPERATIONS LIABILITY COVERAGE PART
RAILROAD PROTECTIVE LIABILITY COVERAGE PART
UNDERGROUND STORAGE TANK POLICY DESIGNATED TANKS

SCHEDULE

Name Of Person(s) Or Organization(s):
As required by written contract or agreement entered into prior to loss.
Information required to complete this Schedule, if not shown above, will be shown in the Declarations.

The following is added to Paragraph **8. Transfer Of Rights Of Recovery Against Others To Us** of **Section IV – Conditions:**

We waive any right of recovery against the person(s) or organization(s) shown in the Schedule above because of payments we make under this Coverage Part. Such waiver by us applies only to the extent that the insured has waived its right of recovery against such person(s) or organization(s) prior to loss. This endorsement applies only to the person(s) or organization(s) shown in the Schedule above.

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POLICY NUMBER: TB2641426942725

COMMERCIAL GENERAL LIABILITY
CG 24 17 10 01

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

CONTRACTUAL LIABILITY – RAILROADS

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART

With respect to operations performed for, or affecting, a Scheduled Railroad at a Designated Job Site, the definition of "insured contract" in the **Definitions** section is replaced by the following:

9. "Insured Contract" means:

a. A contract for a lease of premises. However, that portion of the contract for a lease of premises that indemnifies any person or organization for damage by fire to premises while rented to you or temporarily occupied by you with permission of the owner is not an "insured contract";

b. A sidetrack agreement;

c. Any easement or license agreement;

d. An obligation, as required by ordinance, to indemnify a municipality, except in connection with work for a municipality;

e. An elevator maintenance agreement;

f. That part of any other contract or agreement pertaining to your business (including an indemnification of a municipality in connection with work performed for a municipality) under which you assume the tort liability of another party to pay for "bodily injury" or "property damage" to a third person or organization. Tort liability means a liability that would be imposed by law in the absence of any contract or agreement.

Paragraph **f.** does not include that part of any contract or agreement:

(1) That indemnifies an architect, engineer or surveyor for injury or damage arising out of:

(a) Preparing, approving or failing to prepare or approve maps, shop drawings, opinions, reports, surveys, field orders, change orders or drawings and specifications; or

(b) Giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage;

(2) Under which the insured, if an architect, engineer or surveyor, assumes liability for an injury or damage arising out of the insured's rendering or failure to render professional services, including those listed in Paragraph **(1)** above and supervisory, inspection, architectural or engineering activities.

SCHEDULE

Scheduled Railroad:	**Designated Job Site:**
Any railroad for which you are performing operations and for which no Railroad Protective Liability Policy has been purchased for the railroad by you, or any railroad for which "your work" has been completed or put to its intended use.	All jobsites.

(If no entry appears above, information required to complete this endorsement will be shown in the Declarations as applicable to this endorsement.)

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THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

ADDITIONAL INSURED – MANAGERS OR LESSORS OF PREMISES

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART

A. **Section II – Who Is An Insured** is amended to include as an additional insured the person(s) or organization(s) shown in the Schedule, but only with respect to liability for "bodily injury", "property damage" or "personal and advertising injury" caused, in whole or in part, by you or those acting on your behalf in connection with the ownership, maintenance or use of that part of the premises leased to you and shown in the Schedule and subject to the following additional exclusions:

This insurance does not apply to:

1. Any "occurrence" which takes place after you cease to be a tenant in that premises.
2. Structural alterations, new construction or demolition operations performed by or on behalf of the person(s) or organization(s) shown in the Schedule.

However:

1. The insurance afforded to such additional insured only applies to the extent permitted by law; and
2. If coverage provided to the additional insured is required by a contract or agreement, the insurance afforded to such additional insured will not be broader than that which you are required by the contract or agreement to provide for such additional insured.

B. With respect to the insurance afforded to these additional insureds, the following is added to **Section III – Limits Of Insurance:**

If coverage provided to the additional insured is required by a contract or agreement, the most we will pay on behalf of the additional insured is the amount of insurance:

1. Required by the contract or agreement; or
2. Available under the applicable limits of insurance;

whichever is less.

This endorsement shall not increase the applicable limits of insurance.

SCHEDULE

Designation Of Premises (Part Leased To You):	**Name Of Person(s) Or Organization(s) (Additional Insured):**
Where required by contract or written agreement, prior to an "occurrence" or offense, to provide additional insured status	All person(s) or organization(s) leasing premises to you where required by written contract or agreement entered into prior to loss

Information required to complete this Schedule, if not shown above, will be shown in the Declarations.

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THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

ADDITIONAL INSURED – LESSOR OF LEASED EQUIPMENT

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART

A. Section II – Who Is An Insured is amended to include as an additional insured the person(s) or organization(s) shown in the Schedule, but only with respect to liability for "bodily injury", "property damage" or "personal and advertising injury" caused, in whole or in part, by your maintenance, operation or use of equipment leased to you by such person(s) or organization(s).

However:

1. The insurance afforded to such additional insured only applies to the extent permitted by law; and
2. If coverage provided to the additional insured is required by a contract or agreement, the insurance afforded to such additional insured will not be broader than that which you are required by the contract or agreement to provide for such additional insured.

B. With respect to the insurance afforded to these additional insureds, this insurance does not apply to any "occurrence" which takes place after the equipment lease expires.

C. With respect to the insurance afforded to these additional insureds, the following is added to **Section III – Limits Of Insurance:**

If coverage provided to the additional insured is required by a contract or agreement, the most we will pay on behalf of the additional insured is the amount of insurance:

1. Required by the contract or agreement; or
2. Available under the applicable limits of insurance;

whichever is less.

This endorsement shall not increase the applicable limits of insurance.

SCHEDULE

Name Of Additional Insured Person(s) Or Organization(s):

All persons or organizations leasing equipment to you.

Information required to complete this Schedule, if not shown above, will be shown in the Declarations.

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THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

ADDITIONAL INSURED - STATE OR GOVERNMENTAL AGENCY OR SUBDIVISION OR POLITICAL SUBDIVISION - PERMITS OR AUTHORIZATIONS

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART

A. Section II – Who Is An Insured is amended to include as an additional insured any state or governmental agency or subdivision or political subdivision shown in the Schedule, subject to the following provisions:

1. This insurance applies only with respect to operations performed by you or on your behalf for which the state or governmental agency or subdivision or political subdivision has issued a permit or authorization.

However:

a. The insurance afforded to such additional insured only applies to the extent permitted by law; and

b. If coverage provided to the additional insured is required by a contract or agreement, the insurance afforded to such additional insured will not be broader than that which you are required by the contract or agreement to provide for such additional insured.

2. This insurance does not apply to:

a. "Bodily injury", "property damage" or "personal and advertising injury" arising out of operations performed for the federal government, state or municipality; or

b. "Bodily injury" or "property damage" included within the "products-completed operations hazard".

B. With respect to the insurance afforded to these additional insureds, the following is added to **Section III – Limits Of Insurance:**

If coverage provided to the additional insured is required by a contract or agreement, the most we will pay on behalf of the additional insured is the amount of insurance:

1. Required by the contract or agreement; or

2. Available under the applicable limits of insurance;

whichever is less.

This endorsement shall not increase the applicable limits of insurance.

SCHEDULE

State Or Governmental Agency Or Subdivision Or Political Subdivision:

Where required by contract or written agreement, prior to an "occurrence" or offense, to provide additional insured status

Information required to complete this Schedule, if not shown above, will be shown in the Declarations.

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POLICY NUMBER:
TB2641426942725

COMMERCIAL GENERAL LIABILITY
CG 24 17 10 01

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

CONTRACTUAL LIABILITY – RAILROADS

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART

With respect to operations performed for, or affecting, a Scheduled Railroad at a Designated Job Site, the definition of "insured contract" in the **Definitions** section is replaced by the following:

9. "Insured Contract" means:

a. A contract for a lease of premises. However, that portion of the contract for a lease of premises that indemnifies any person or organization for damage by fire to premises while rented to you or temporarily occupied by you with permission of the owner is not an "insured contract";

b. A sidetrack agreement;

c. Any easement or license agreement;

d. An obligation, as required by ordinance, to indemnify a municipality, except in connection with work for a municipality;

e. An elevator maintenance agreement;

f. That part of any other contract or agreement pertaining to your business (including an indemnification of a municipality in connection with work performed for a municipality) under which you assume the tort liability of another party to pay for "bodily injury" or "property damage" to a third person or organization. Tort liability means a liability that would be imposed by law in the absence of any contract or agreement.

Paragraph **f.** does not include that part of any contract or agreement:

(1) That indemnifies an architect, engineer or surveyor for injury or damage arising out of:

(a) Preparing, approving or failing to prepare or approve maps, shop drawings, opinions, reports, surveys, field orders, change orders or drawings and specifications; or

(b) Giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage;

(2) Under which the insured, if an architect, engineer or surveyor, assumes liability for an injury or damage arising out of the insured's rendering or failure to render professional services, including those listed in Paragraph **(1)** above and supervisory, inspection, architectural or engineering activities.

SCHEDULE

Scheduled Railroad:	**Designated Job Site:**
Union Pacific Railroad Company	Union Pacific Railroad Company Property

(If no entry appears above, information required to complete this endorsement will be shown in the Declarations as applicable to this endorsement.)

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POLICY NUMBER: AS2641426942715

COMMERCIAL AUTO
CA 20 48 10 13

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

DESIGNATED INSURED FOR COVERED AUTOS LIABILITY COVERAGE

This endorsement modifies insurance provided under the following:

AUTO DEALERS COVERAGE FORM
BUSINESS AUTO COVERAGE FORM
MOTOR CARRIER COVERAGE FORM

With respect to coverage provided by this endorsement, the provisions of the Coverage Form apply unless modified by the endorsement.

This endorsement identifies person(s) or organization(s) who are "insureds" for Covered Autos Liability Coverage under the Who Is An Insured provision of the Coverage Form. This endorsement does not alter coverage provided in the Coverage Form.

SCHEDULE

Name Of Person(s) Or Organization(s):
Any person or organization whom you have agreed in writing to add as an additional insured, but only to coverage and minimum limits of insurance required by the written agreement, and in no event to exceed either the scope of coverage or the limits of insurance provided in this policy.
Information required to complete this Schedule, if not shown above, will be shown in the Declarations.

Each person or organization shown in the Schedule is an "insured" for Covered Autos Liability Coverage, but only to the extent that person or organization qualifies as an "insured" under the Who Is An Insured provision contained in Paragraph **A.1.** of Section **II -** Covered Autos Liability Coverage in the Business Auto and Motor Carrier Coverage Forms and Paragraph **D.2.** of Section **I -** Covered Autos Coverages of the Auto Dealers Coverage Form.

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Policy Number:AS2641426942715
Issued by:Liberty Mutual Fire Insurance Co.

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

DESIGNATED INSURED - NONCONTRIBUTING

This endorsement modifies insurance provided under the following:

BUSINESS AUTO COVERAGE FORM
GARAGE COVERAGE FORM
MOTOR CARRIERS COVERAGE FORM
TRUCKERS COVERAGE FORM

With respect to coverage provided by this endorsement, the provisions of the Coverage Form apply unless modified by this endorsement.

This endorsement identifies person(s) or organization(s) who are "insureds" under the Who Is An Insured Provision of the Coverage Form. This endorsement does not alter coverage provided in the Coverage form.

Schedule

Name of Person(s) or Organizations(s):
Any person or organization whom you have agreed in writing to add as an additional insured, but only to coverage and minimum limits of insurance required by the written agreement, and in no event to exceed either the scope of coverage or the limits of insurance provided in this policy.

Regarding Designated Contract or Project:

Each person or organization shown in the Schedule of this endorsement is an "insured" for Liability Coverage, but only to the extent that person or organization qualifies as an "insured" under the Who Is An Insured Provision contained in Section II of the Coverage Form.

The following is added to the **Other Insurance Condition:**

If you have agreed in a written agreement that this policy will be primary and without right of contribution from any insurance in force for an Additional Insured for liability arising out of your operations, and the agreement was executed prior to the "bodily injury" or "property damage", then this insurance will be primary and we will not seek contribution from such insurance.

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THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

WAIVER OF TRANSFER OF RIGHTS OF RECOVERY AGAINST OTHERS TO US (WAIVER OF SUBROGATION)

This endorsement modifies insurance provided under the following:

AUTO DEALERS COVERAGE FORM
BUSINESS AUTO COVERAGE FORM
MOTOR CARRIER COVERAGE FORM

With respect to coverage provided by this endorsement, the provisions of the Coverage Form apply unless modified by the endorsement.

SCHEDULE

Name(s) Of Person(s) Or Organization(s):
Any person or organization for whom you perform work under a written contract if the contract requires you to obtain this agreement from us, but only if the contract is executed prior to the injury or damage occurring.
Premium: **$** INCL
Information required to complete this Schedule, if not shown above, will be shown in the Declarations.

The **Transfer Of Rights Of Recovery Against Others To Us** condition does not apply to the person(s) or organization(s) shown in the Schedule, but only to the extent that subrogation is waived prior to the "accident" or the "loss" under a contract with that person or organization.

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WAIVER OF OUR RIGHT TO RECOVER FROM OTHERS ENDORSEMENT

We have the right to recover our payments from anyone liable for an injury covered by this policy. We will not enforce our right against the person or organization named in the Schedule. (This agreement applies only to the extent that you perform work under a written contract that requires you to obtain this agreement from us.)

This agreement shall not operate directly or indirectly to benefit anyone not named in the Schedule.

Not applicable in Kentucky.

Schedule

Any person or organization for which the employer has agreed by written contract, executed prior to loss, may execute a waiver of subrogation. However, for purposes of work performed by the employer in Missouri, this waiver of subrogation does not apply to any construction group of classifications as designated by the waiver of right to recover from others (subrogation) rule in our manual.

Where required by contract or written agreement prior to loss and allowed by law.

In the states of Alabama, Arizona, Arkansas, Colorado, District of Columbia, Georgia, Indiana, Kansas, New Mexico, Oklahoma, South Carolina, Tennessee, Vermont and West Virginia, the premium charge is 0% of the total manual premium, subject to a minimum premium of $0 per policy.

In the state of North Carolina, the premium charge is 2% of the total manual premium, subject to a minimum premium of $100 per policy.

In the state of Virginia, the premium charge is 5% of the total manual premium, subject to a minimum premium of $250 per policy.

In the states of Florida, Iowa, Maryland, Mississippi, and Nebraska, the premium charge is 1% of the total manual premium, subject to a minimum premium of $250 per policy.

In the state of Hawaii, the premium charge is $250 and determined as follows: The premium charge for this endorsement is 1% of the total manual premium, subject to a minimum premium of $250 per policy.

In the state of Louisiana, the premium charge is 2% of the total standard premium, subject to a minimum premium of $250 per policy.

Issued by Liberty Mutual Fire Insurance Company 16586

For attachment to Policy No. WA264D426942735 Effective Date Premium $

Issued to Garney Companies, Inc.

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WAIVER OF OUR RIGHT TO RECOVER FROM OTHERS ENDORSEMENT - CALIFORNIA

We have the right to recover our payments from anyone liable for an injury covered by this policy. We will not enforce our right against the person or organization named in the Schedule. (This agreement applies only to the extent that you perform work under a written contract that requires you to obtain this agreement from us.)

You must maintain payroll records accurately segregating the remuneration of your employees while engaged in the work described in the Schedule.

The additional premium for this endorsement shall be 2% of the California workers' compensation premium otherwise due on such remuneration.

Schedule

Additional premium is a percent of the California Manual Workers Compensation premium. Subject to a minimum premium charge of $ 250 per policy

Person or Organization	Job Description
Where required by contract or written agreement prior to loss and allowed by law.	

Issued by Liberty Mutual Fire Insurance Company 16586

For attachment to Policy No. WA264D426942735 Effective Date Premium $

Issued to Garney Companies, Inc.

Docusign Envelope ID: A3705B48-B7E5-4F52-8480-5FF929E99139

their financial interest in the Covered Property.

4. We may elect to defend you against suits arising from claims of owners of property. We will do this at our expense.
5. We will pay for covered loss or damage within 30 days after we receive the sworn proof of loss if you have complied with all the terms of this Coverage Part and:
   a. We have reached agreement with you on the amount of the loss; or
   b. An appraisal award has been made.
6. We will not be liable for any part of a loss that has been paid or made good by others.

F. Other Insurance

1. You may have other insurance subject to the same plan, terms, conditions and provisions as the insurance under this Coverage Part. If you do, we will pay our share of the covered loss or damage. Our share is the proportion that the applicable Limit of Insurance under this Coverage Part bears to the Limits of Insurance of all insurance covering on the same basis.
2. If there is other insurance covering the same loss or damage, other than that described in **1.** above, we will pay only for the amount of covered loss or damage in excess of the amount due from that other insurance, whether you can collect on it or not. But we will not pay more than the applicable Limit of Insurance.

G. Pair, Sets Or Parts

1. Pair Or Set

In case of loss or damage to any part of a pair or set we may:

a. Repair or replace any part to restore the pair or set to its value before the loss or damage; or
b. Pay the difference between the value of the pair or set before and after the loss or damage.

2. Parts

In case of loss or damage to any part of Covered Property consisting of several parts when complete, we will only pay for the value of the lost or damaged part.

H. Recovered Property

If either you or we recover any property after loss settlement, that party must give the other prompt notice. At your option, the property will be returned to you. You must then return to us the amount we paid to you for the property. We will pay recovery expenses and the expenses to repair the recovered property, subject to the Limit of Insurance.

I. Reinstatement Of Limit After Loss

The Limit of Insurance will not be reduced by the payment of any claim, except for total loss or damage of a scheduled item, in which event we will refund the unearned premium on that item.

J. Transfer Of Rights Of Recovery Against Others To Us

If any person or organization to or for whom we make payment under this Coverage Part has rights to recover damages from another, those rights are transferred to us to the extent of our payment. That person or organization must do everything necessary to secure our rights and must do nothing after loss to impair them. But you may waive your rights against another party in writing:

1. Prior to a loss to your Covered Property.
2. After a loss to your Covered Property only if, at time of loss, that party is one of the following:
   a. Someone insured by this insurance; or
   b. A business firm:
      (1) Owned or controlled by you; or
      (2) That owns or controls you.

This will not restrict your insurance.

GENERAL CONDITIONS

A. Concealment, Misrepresentation Or Fraud

This Coverage Part is void in any case of fraud, intentional concealment or misrepresentation of a material fact, by you or any other insured, at any time, concerning:

1. This Coverage Part;
2. The Covered Property;
3. Your interest in the Covered Property; or
4. A claim under this Coverage Part.

up to a maximum of $25,000 per proceeding, subject to a maximum of $50,000 per **Policy Period** and provided that any such proceeding must result from **Professional Services** rendered on or after the **Coverage A.1. Professional Liability** Retroactive Date, and is:

a. first commenced against the **Insured** during the **Policy Period**; and

b. reported to us in writing during the **Policy Period** and before any legal expenses have been incurred.

D. Public Relations Assistance

We shall reimburse you for the **Public Relations Expenses** that you incur in connection with a **Crisis Event** first occurring during the **Policy Period** and reported to us pursuant to Subsection **VI.D.2.** Our maximum liability under Section **II. Supplementary Payments** for all covered **Public Relations Expenses** combined will be subject to the **Public Relations Assistance** Limit of Liability shown in the Declarations. A **Crisis Event** occurs when you first become aware of the **Crisis Event**.

E. Bankruptcy Litigation Expenses

We shall reimburse the **Insured** up to a maximum of $25,000 per **Claim**, subject to a maximum of $50,000 per **Policy Period**, for the reasonable and necessary legal fees, costs, and expenses incurred by the **Insured** in filing a motion to seek relief from a bankruptcy stay with respect to a **Design Professional** as part of a **Protective Claim** against that **Design Professional**.

III. DEFINITIONS

When used in this policy, the following terms, whether in the singular or plural, are defined as follows:

A. Additional Insured means, solely with respect to **Coverage C.1. Contractor's Pollution Liability**, any person or organization that is required to be added as an **Insured** on this policy by written contract or written agreement executed with the **Insured** prior to a known **Pollution Event** as a result of the performance of **Covered Operations** that are the subject of such written contract or written agreement.

B. Automobile means a land motor vehicle, trailer, or semi-trailer designed for travel on public roads, including any machinery or apparatus attached thereto.

C. Bodily Injury means physical injury, sickness, disease, or death sustained by any person, including mental anguish, emotional distress, and costs for medical monitoring, but only when such mental anguish, emotional distress, and costs for medical monitoring are a direct result of physical injury, including physical injury to tangible property.

D. Carrier means any person or organization that is properly licensed to transport **Materials** by **Automobile**, **Vessel**, aircraft, or rolling stock, including the **Insured** and any other person or organization, pursuant to written contract or written agreement, that transports such **Materials** on behalf of the **Insured**.

E. Circumstance means:

1. an event reported to us during the **Policy Period** in compliance with Subsection **VI.E. Notice of Circumstance**, which the **Insured** could reasonably expect to result in a **Claim**; and

2. all proceedings reported to us during the **Policy Period** in compliance with Subsection **II.A. Pre-Claims Assistance**.

F. Claim means:

1. under **Coverage A.1.**, a **Professional Liability Claim**;

2. under **Coverage A.2.**, a **Rectification Claim**;

3. under **Coverage B.**, a **Protective Claim**;

4. under **Coverages C.1.a.**, **b.**, **c.** and Subsection **I.C.1.e.**, a **Contractor's Pollution Liability Claim**;

5. under **Coverage C.1.d.**, a **Time Element Claim**; or

6. under **Coverage C.2.**, a **Mitigation Claim**.

G. Claim Expenses means reasonable and necessary fees, costs, and expenses resulting from the investigation, adjustment, defense, and appeal of a **Claim**:

1. charged by an attorney designated by:

a. us; or

G. Other Insurance

1. Except as specifically provided in Subsection **IX.G.2.** below, this policy is excess over any other applicable insurance available to the **Insured**, including but not limited to project-specific policies or wrap-up policies, whether such other insurance is shown to be primary, pro-rata, contributory, excess, contingent, self-insured, or otherwise, unless such other insurance is written specifically excess of this policy by reference in such other policy to this policy number.

a. When this policy is excess under this Subsection **IX.G.1.**, neither payments by the **Insured** to satisfy a Self-Insured Retention or Deductible applicable to any underlying policy nor payments by the underlying insurer will apply toward satisfaction of the Self-Insured Retention under this policy.

b. When this policy is excess under this Subsection **IX.G.1.** for a claim arising out of **Professional Services**, coverage under **Coverage A.2. Rectification** will not be available to the **Insured**.

c. When this policy is specifically written as excess over another insurance policy, Section **II. Supplementary Payments** will not be available to the **Insured**.

d. This policy will apply specifically as excess over any project-specific insurance policy subject to its limitations, conditions, provisions, and other terms; provided, however, unless specifically endorsed, this excess coverage will not be broader than the project-specific insurance policy and will not function as Difference in Conditions coverage.

2. Insurance provided under **Coverage C.1. Contractor's Pollution Liability** is primary and non-contributory unless:

a. an endorsement states that the coverage is excess or contingent upon the absence of other insurance;

b. any other insurance is available to cover liability for any **Loss** arising out of the premises or operations for which the **Insured** has been added as an additional insured on another policy;

c. other insurance is provided for **Transportation** under **Coverage C.1.b. Transportation** or non-owned disposal sites under **Coverage C.1.c. Non-Owned Disposal Sites**;

d. the **Insured** is not required by written contract or written agreement to provide insurance for an **Additional Insured** under Subsection **I.C.1.e. Additional Insured** on a primary basis; or

e. another insurance policy, in force prior to this **Policy Period**, is available to the **Insured** for any **Loss** or **Claim Expenses** also covered under the terms and conditions of this policy, even if the other insurance policy does not provide coverage in whole or in part for the **Loss** or **Claim Expenses**.

The insurance provided under **Coverage C.2. Mitigation** is primary. The coverage under **Coverage C.2. Mitigation** will not be available to the **Insured** on an excess basis.

3. When this policy is excess under Subsection **IX.G.1.** or Subsection **IX.G.2.** above and any other insurance has a duty to defend the **Insured** in a matter for which the **Insured** has notified us of a **Claim**, regardless of whether that other insurance covers the same **Claim Expenses**, **Damages**, or **Loss**, we shall have no duty to defend the **Claim** until the limits of all the other insurance have been exhausted by payment of **Claims**. If no other insurer defends and we have a duty to defend the **Claim**, then we shall undertake the defense, but we shall be entitled to the **Insured's** rights against all other insurers. When this insurance is excess over other insurance, we shall pay only our share of the amount of the **Claim Expenses**, **Damages**, or **Loss**, if any, that exceeds the sum of:

a. the total amount that all such other insurance would pay for the **Claim Expenses**, **Damages**, or **Loss** in the absence of this insurance; and

b. the total of all Deductible and Self-Insured Retention amounts under all the other insurance.

4. When this insurance and other insurance apply to any payment on the same basis, whether primary, excess, or otherwise, we shall not be liable under this policy for a greater proportion of any payment than set out in the Limits of Liability or the following contribution provision, whichever is lower:

a. Contribution by equal shares:

Under this approach, each insurer contributes equal amounts until it has paid its applicable limit or all of the payments have been paid, whichever occurs first; or

Except with respect to the applicable Limit(s) of Liability and any rights or duties specifically assigned to the **Insured**, this insurance applies separately to each **Insured** against which a **Claim** is made. Misrepresentation, concealment, breach of condition, or violation of any duty under this policy by one **Insured** will not prejudice the interests of or coverage afforded to another **Insured** under this policy.

K. Sole Agent

If there is more than one (1) **Named Insured** in this policy, then the **Named Insured** that is listed in the Declarations shall act on behalf of all **Insureds** for all purposes, including but not limited to the payment or return of premium, responsibility for payment of any Self-Insured Retention, receipt and acceptance of any endorsement issued to form a part of this policy, complying with all applicable claims provisions, giving and receiving notice of cancellation or nonrenewal, and the exercise of the rights provided in the Automatic Extended Reporting Period, Optional Extended Reporting Period, if applicable, or Subsection **IX.L. Subrogation**.

L. Subrogation

In the event of any payment under this policy, we shall be subrogated to all the **Insureds'** rights of recovery against any person or organization, and the **Insureds** shall execute and deliver instruments and papers and do whatever else is necessary to secure such rights. The **Insureds** shall do nothing to prejudice such rights.

We shall not exercise any such rights against any person(s), firm(s) or corporation(s) included in the definition of **Insured**, against the **Insured's** clients, or as may be required by a written contract or agreement if, prior to the **Claim**, the **Insured** contractually agreed to or entered into a legally enforceable waiver of subrogation.

For any recovery obtained through subrogation, after expenses incurred in such subrogation are deducted by the party bearing the expense, reimbursement will be made in the following order:

1. First, to any interest who has paid any amount in excess of the Limits of Liability provided under this policy;

2. Next, to us; and

3. Then to any interests as are entitled to claim the remainder, if any.

M. Policy Territory

Coverage under this policy will extend to **Claims**, **Wrongful Acts**, **Pollution Events** taking place, and **Damages** or **Loss** incurred anywhere in the world, where permitted by applicable law. All premiums, Limits of Liability, Self-Insured Retentions, **Claim Expenses**, **Cleanup Costs**, **Damages**, **Loss**, **Mitigation Costs and Expenses**, **Protective Claim Attorneys' Fees and Expenses**, and **Rectification Costs and Expenses** and any other amounts paid under this policy are expressed and payable in the currency of the United States of America. If judgment is rendered, settlement is denominated, or another element of **Damages** or **Loss** under this policy is shown in a currency other than United States dollars, payment under this policy will be made in United States dollars at the rate of exchange published in *The Wall Street Journal* on the date the final judgment is reached, the amount of the settlement is agreed upon, or the other element of **Damages** or **Loss** are due, respectively, or, if not published on such date, the next date of publication of *The Wall Street Journal*.

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Status: Completed
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Document Pages: 443
Signatures: 5
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Envelope Originator:
Craig R. Bogan
141 Pryor Street
Purchasing & Contract Compliance, Suite 1168
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craig.bogan@fultoncountyga.gov
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William Poczekaj willp@garney.com Security Level: Email, Account Authentication (None)	 Signature Adoption: Pre-selected Style Using IP Address: 205.220.32.84	Sent: 1/16/2026 8:56:11 AM Resent: 1/30/2026 9:28:58 AM Resent: 5/21/2026 2:55:57 PM Viewed: 5/21/2026 2:58:48 PM Signed: 5/22/2026 11:06:46 AM
Electronic Record and Signature Disclosure: Accepted: 1/16/2026 9:48:28 AM ID: 627d5c11-d668-490d-bd3d-41fbc023491d		
Craig R. Bogan craig.bogan@fultoncountyga.gov Assistant Purchasing Agent Hogan Construction Group, LLC Security Level: Email, Account Authentication (None)	**Completed** Using IP Address: 134.231.232.250	Sent: 5/22/2026 11:08:42 AM Viewed: 5/22/2026 3:24:58 PM Signed: 5/26/2026 1:22:48 PM
Electronic Record and Signature Disclosure: Not Offered via Docusign		
David Clark David.Clark@Fultoncountyga.Gov Director Public Works Security Level: Email, Account Authentication (None)	 Signature Adoption: Pre-selected Style Using IP Address: 2600:387:f:118::7 Signed using mobile	Sent: 5/26/2026 1:24:52 PM Viewed: 5/26/2026 1:44:38 PM Signed: 5/26/2026 1:44:50 PM
Electronic Record and Signature Disclosure: Accepted: 11/13/2017 1:07:14 PM ID: 62e0a41e-60ea-4640-a1cb-69bfc2cfa732		
David Lowman david.lowman@fultoncountyga.gov Supervising County Counsel Security Level: Email, Account Authentication (None)	 Signature Adoption: Pre-selected Style Using IP Address: 74.174.59.4	Sent: 5/26/2026 1:46:48 PM Viewed: 5/26/2026 1:47:56 PM Signed: 5/27/2026 7:42:43 AM
Electronic Record and Signature Disclosure:		

Signer Events	Signature	Timestamp
Accepted: 5/26/2026 1:47:56 PM ID: 499091a1-9545-4545-bb8a-cd1d6374463a		
Nikki Peterson nikki.peterson@fultoncountyga.gov Chief Deputy Clerk to the Board of Commissioners Fulton County Government Security Level: Email, Account Authentication (None)	**Completed** Using IP Address: 134.231.232.250	Sent: 5/27/2026 7:44:38 AM Viewed: 5/27/2026 2:14:00 PM Signed: 5/27/2026 2:14:56 PM
Electronic Record and Signature Disclosure: Not Offered via Docusign		
Robert L. Pitts harriet.thomas@fultoncountyga.gov Chairman Fulton County Security Level: Email, Account Authentication (None)	 Signature Adoption: Pre-selected Style Using IP Address: 74.174.59.10	Sent: 5/27/2026 2:17:13 PM Viewed: 5/27/2026 2:31:00 PM Signed: 5/27/2026 2:31:18 PM
Electronic Record and Signature Disclosure: Accepted: 5/27/2026 2:31:00 PM ID: 8fec2416-ea93-4d8f-bb5b-30082b759b2a		
Tonya Grier tonya.grier@fultoncountyga.gov Clerk to the Commission Fulton County Government Security Level: Email, Account Authentication (None)	  Signature Adoption: Uploaded Signature Image Using IP Address: 74.174.59.10	Sent: 5/27/2026 2:33:39 PM Viewed: 5/27/2026 2:36:46 PM Signed: 5/27/2026 2:37:07 PM
Electronic Record and Signature Disclosure: Accepted: 10/27/2025 11:21:47 AM ID: 4889b84d-8ea3-4ba9-bf87-bf4c309e21ab		
Craig R. Bogan craig.bogan@fultoncountyga.gov Assistant Purchasing Agent Hogan Construction Group, LLC Security Level: Email, Account Authentication (None)	**Completed** Using IP Address: 134.231.232.250	Sent: 5/27/2026 2:39:10 PM Viewed: 5/28/2026 1:55:58 PM Signed: 5/28/2026 1:56:32 PM
Electronic Record and Signature Disclosure: Not Offered via Docusign		

In Person Signer Events	Signature	Timestamp

Editor Delivery Events	Status	Timestamp

Agent Delivery Events	Status	Timestamp

Intermediary Delivery Events	Status	Timestamp

Certified Delivery Events	Status	Timestamp

Carbon Copy Events	Status	Timestamp

Carbon Copy Events	Status	Timestamp
Dian DeVaughn dian.devaughn@fultoncountyga.gov Security Level: Email, Account Authentication (None) **Electronic Record and Signature Disclosure:** Not Offered via Docusign	COPIED	Sent: 5/28/2026 1:58:31 PM Viewed: 5/28/2026 2:13:10 PM

Witness Events	Signature	Timestamp

Notary Events	Signature	Timestamp

Envelope Summary Events	Status	Timestamps
Envelope Sent	Hashed/Encrypted	1/16/2026 8:56:11 AM
Envelope Updated	Security Checked	5/21/2026 2:55:53 PM
Envelope Updated	Security Checked	5/21/2026 2:55:53 PM
Envelope Updated	Security Checked	5/21/2026 2:55:54 PM
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Envelope Updated	Security Checked	5/26/2026 1:18:55 PM
Envelope Updated	Security Checked	5/26/2026 1:18:56 PM
Certified Delivered	Security Checked	5/28/2026 1:55:58 PM
Signing Complete	Security Checked	5/28/2026 1:56:32 PM
Completed	Security Checked	5/28/2026 1:58:32 PM

Payment Events	Status	Timestamps

Electronic Record and Signature Disclosure

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Required hardware and software

Operating Systems:	Windows® 2000, Windows® XP, Windows Vista®; Mac OS® X
Browsers:	Final release versions of Internet Explorer® 6.0 or above (Windows only); Mozilla Firefox 2.0 or above (Windows and Mac); Safari™ 3.0 or above (Mac only)
PDF Reader:	Acrobat® or similar software may be required to view and print PDF files
Screen Resolution:	800 x 600 minimum
Enabled Security Settings:	Allow per session cookies

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