CITY OF ATLANTA

Kasim Reed
Mayor

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DEPARTMENT OF PROCUREMENT
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Chief Procurement Officer
asmith@atlantaga.gov

May 09, 2016

Dear Potential Proponents:

Re: FC-8568, Sewer Cleaning and Pipeline Assessment

Attached is one (1) copy of **Addendum Number 1,** which is hereby made a part of the above-referenced project.

For additional information, please contact Ms. Joyce Webb, Contracting Officer, at (404) 330-6893 or by email at jnwebb@atlantaga.gov.

Sincerely,

Adam L. Smith

ALS/jnw

ADDENDUM NO. 1

This Addendum No. 2 forms a part of the Request for Proposals ("RFP") and modifies the original solicitation package and any prior addenda as noted below and is issued to incorporate the following:

- **Attachment No. 1:** Response to Seventeen (17) Questions.
- **Attachment No. 2:** Technical Specifications, Section 01351- Public Involvement
- **Attachment No. 3:** Technical Specifications, Section 01580 – Identification and Signs
- **Attachment No. 4:** Technical Specifications, Section 01056A – GPS Data Collection
- **Attachment No. 5:** Technical Specifications – Manhole Condition Assessment
- **Attachment No. 6:** Technical Specifications, Section 02112 – Route Clearing
- **Attachment No. 7:** Stormwater Standard Structures Detail Book
- **Revised Proposal Due Date: Tuesday, May 17, 2016 @ 2:00 P.M. EDT.**

The last day for questions was Friday, April 29, 2016 at noon.

The Proposal due date HAS been modified and Proposals are due on Tuesday, May 17, 2016 and should be time stamped in no later than 2:00 P.M. EDT and delivered to the address listed below:

Adam L. Smith, Esq., CPPO, CPPB, CPPM, CPP,
CIPC, CISCC, CIGPM, CPPC
Chief Procurement Officer
Department of Procurement
55 Trinity Avenue, S. W.
City Hall South, Suite 1900
Atlanta, Georgia 30303

****All other pertinent information is to remain unchanged****

Acknowledgment of Addendum No. 1

Proponents must sign below and return this form with Proposal to the Department of Procurement, 55 Trinity Avenue, City Hall South, Suite 1900, Atlanta, Georgia 30303 as acknowledgment of receipt of this Addendum.

This is to acknowledge receipt of Addendum No. 1 for **FC-8568, Sewer Cleaning and Pipeline Assessment** on this the _____ day of _____, 20___.

_____
Legal Company Name of Proponent

_____
Signature of Authorized Representative

_____
Printed Name

_____
Title

_____
Date

Attachment No. 1

Questions and Answers

1. Advertisement letter says the City reserves the right to reject certain parts of any proposals when in their best interest. Pages 15, 117, and 180 of 762 indicate that the City can award multiple proponents or award certain parts to each contractor. Since nearly all work activities are related, a contractor would be required to trust that other contractors are able to complete any related tasks without impacting their schedule or ability to complete their task. How will the City prevent this from occurring?

Answer: The City does reserve the right to reject certain parts of any proposal when in the best interest of the City. The City can award to multiple proponents or award certain parts to each contractor. As such, the City will ensure that the scope any and all part of assigned work is clear and will ensure no overlapping of scope and responsibilities.

2. Will the City consider either removing these statements or amending them such that no interference of this kind can occur? (Scenario--Company "A" is supposed to inspect MH's but is relying on Company "B" to raise it first. OR… if Company "A" gets a camera stuck but they have to wait/coordinate with Company "B" to assist with retrieval.

Answer: See response to Question 1.

3. The proposal bond (Form 8) states that the winning contractor shall have 10 days to execute the agreement and provide the required performance and payment bonds. On page 7/762, Part 8.3, states that the winning contractor shall have 15 days. On page 11/762, Part 23 also states 15 days. Which is correct?

Answer: The winning contractor shall have 15 days.

4. Section 01590 – Field Offices (Page 354/762) – Constructing these facilities seems impractical if the amount of work is not guaranteed. Considering that this section appears to be unchanged from previous SSES contracts with the City, will the winning contractor be allowed to utilize the field office arrangement from previous SSES contracts where this specification was identical?

Answer: The field offices that were previously utilized under the Sewer System Evaluation Survey (SSES) are no longer available for use. Similarly the City anticipates there will be sufficient work to be completed through the duration of the project.

5. Part 18.13 on page 111/762 says that the City is not obligated to pay contract "change orders" unless the Council and Mayor sign off on it which can be a slow process. Is this accurate?

Answer: The cited section of the Annual Construction Services Agreement states that any changes, amendments, and/or modifications to the Agreement, i.e. Change Order or similar documents "may" require legislative authorization of the City Council and approval by the Mayor.

6. Part 1.05D states that "The city is not responsible for unforeseen conditions encountered." How can the City reasonably expect contractors to bid at competitive rates when they are contractually obligated to bear the cost of dealing with unforeseen conditions that may arise on a job where the scope and work area has not yet been revealed?

Answer: Correct. Section 01010 – Summary Work, Part 1.05D states that "The City is not responsible for unforeseen conditions encountered." As such, the City cannot be responsible for any "unknowns" encountered. As stated in Part 1.05A, "The Contractor shall make all necessary investigations to determine the existence and location of underground utilities." Thus, the contractor should perform the necessary due diligence to identify all possible adverse site conditions or related issues in advance of commencing work.

7. Section 01351 did not contain a sample Right of Entry form. Is the city willing to provide a sample Right of Entry form via Addendum that shall be used on the contractor for the duration of the contract term?

Answer: See attached updated Section 01351 – Public Involvement. Reference Section 01351 – Part 3.15 relating Rights of Entry and Access to Private Property.

8. Section 01351 – Part 3.10C – This states that the contractor will be required to construct and install a minimum of 25 project signs. According to Section 01580, Project Signs are 96" x 48" which seems excessive. Is the City willing to explain the need for so many large project signs?

Answer: The City is agreeable to relax this requirement for the purposes of this project. See attached updated Section 01351 – Public Involvement and Section 01580 – Project Identification and Signs.

9. Section 01056A - Part 1.01 says that the winning contractor will need to GPS smoke leaks and manhole cleanouts. On previous SSES contracts, this verbiage existed but it was not required. Does the city plan on requiring contractors to collect GPS data on smoke leaks and cleanouts? If so, will the contractor be required to gather GPS on leaks and cleanouts via conventional surveying will the specified accuracy requirements (+/- 3 cm horizontally or vertically) cannot be achieved due to canopy coverage or building obstructions?

Answer: GPS data will be required to confirm smoke leaks and cleanouts as deemed necessary. And the viability of employing conventional survey methods will be dependent upon field conditions, as well as the scope and nature of the work assignment.

10. Section 01056A – Part 3.03B – Referenced a "suggested approach" on the last page of section 01532D but it appears to be missing from the document. Can you please clarify where it can be found?

Answer: See attached updated Technical Specification – 01056A – GPS Data Collection. Also see attached additional documents that were omitted from Technical Specification 0532D - Manhole Condition Assessment in error: Attachment A – Manhole Condition Assessment Form and Attachment F – Storm Standard Structure Details.

11. Section 01200 - Line Item 1-D-1405 (Work Zone Staging/Traffic Control) is a Lump Sum amount that is supposed to cover ALL possible types of traffic control setups that we could possibly encounter for the annual term of the contract, however, the exact scope and work locations are not known at this time. Potential bidders will likely assume that traffic control

component will be extensive and therefore drive up their bid price. Would the city be interested in keeping the bids competitive by breaking down the traffic control component into additional line items based on various functional classifications for the different types of roadways the bidders could possibly encounter?

Answer: For the purposes of this contract the City has elected not to itemize traffic control related components as has been the case in the past. Instead, the City has elected to accommodate all costs relating Traffic Control and related components as a Lump Sum cost.

12. Section 01200 – Part 2.05D mentions "Long range transport". Please identify any specific criteria that must be fulfilled in order for a CCTV/Sonar/TISCIT survey to quality for the "long range transport" line item?

Answer: The City does have some sewer segments that range in distances of 600 LF to 2000 LF between manholes. Thus, the proponent should be prepared to employ the necessary technology and expertise in order to accommodate such field conditions if encountered.

13. Section 01522 describes the multiple requirements for conducting pre-construction video surveys. The cost of this is supposed to be covered under the Clearing, Disposal and Grading for Access Road line item (2-H-2910). However, the cost for an arborist tree survey work is already being paid through this line item. Will the City consider adding a dedicated line item for conducting the pre-construction site surveys?

Answer: Correct. The cost for pre-construction video survey should be captured under Item 2-H-2910, while the cost for Arborist and Tree Removal/Replacement will be captured under Allowance Item 9-Z-2460 Tree Removal/Replacement and Arborist Support.

14. Section 02112 - Route Clearing is referenced several times throughout the document, however, there is no such section contained within the document.
    a. Page 118/762 – Exhibit A – Item 7
    b. Page 200/762 – Section 01200 – Part 2.02D
    c. Page 201/762 – Section 01200 – Part 2.02G
    d. Page 202/762 – Section 01200 – Part 2.02J
    e. Page 218/762 – Section 01200 – Part 2.07G
    f. Page 218/762 – Section 01200 – Part 2.07H
    g. Page 257/762 – Section 01500 – Part 1.02A-1

Answer: Technical Specification 02112 – Route Clearing was omitted from the solicitation package in error. See attached document.

15. On previous SSES contracts, Section 02511 – Part 3.12A – Contained a sentence that states that the "City will provide the Contractor water at no cost". This sentence has since been removed. Will the City be providing water to the contractor(s) free of charge?

Answer: The City's policy has change since completion of the Sewer System Evaluation Survey. The City no longer provides water free of charge to Contractors. The Contractor will be

responsible for obtaining a water meter from the DWM Water Distribution Bureau and remit payment pursuant to their requirements.

16. Section 02752 – Part 3.05A – This Part outlines the use of Lateral Launching equipment. The description for its corresponding Line Item 4-I-6010 reads… "Sewer, Internal Pipe Survey/Inspection, Service Lateral, 4' (FEET -- NOT INCHES) to 6" Diameter". Should bidders be prepared to execute lateral launch surveys from a 24" or greater mainline into laterals ranging in size from 6" to 48"?

Answer: In the City of Atlanta, it is extremely rare to encounter a 4" or 6" service lateral connection to a sewer that is 24-inches in diameter or greater. However, there are instances where they do exist. Thus, the proponent should be prepared to execute lateral launch surveys for sewers ranging from 6 to 48 inches in diameter. If a lateral is encountered on a sewer greater than 48 inches, a different approach can be considered based on field conditions.

17. Will the City provide both .PDF maps and Shape files to assist the contractor in the QA/QC and reporting process as was done during previous contracts?

Answer: The City will provide available base mapping and electronic files as necessary for each respective work assignment.

Attachment No. 2

Technical Specifications

Section 01351 - Public Involvement

SECTION 01351

Public Involvement

PART 1 - GENERAL

1.01 SCOPE

A. The Contractor shall provide all personnel, services, and materials as specified under this Section necessary to meet the requirements and responsibilities related to the Public Involvement and Public Relations and Outreach as specified hereinafter, during performance of Work under the Agreement by the Contractor.

B. Unless specifically stated otherwise within the Agreement, no separate payment will be made for satisfying Public Involvement requirements.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 PUBLIC INFORMATION KICK-OFF MEETING

Prior to commencement of Work under the Agreement and following the Preconstruction Meeting, the Contractor, the Project Manager (PM), Construction Manager (CM), Public Information Manager (PIM), Public Information Officer (PIO), and the City's Engineer will be required to attend a public information meeting hosted by the DWM Office of Communications and Community Relations. At this meeting the Contractor's responsibilities will be discussed, the relationship with the OCCR, the City's Engineer and/or designated representative of the City. The Contractor and staff will also be advised as to the expectations of the City regarding citizen relations and inquiries, as well as public notification protocols.

3.02 DOOR-HANGERS

A. The Contractor shall produce door hangers required for notice to customers/citizens and residents from the template provided by the City's PIM as specified hereinabove in paragraph 3.02. Door hangers shall be utilized for notification in the event of, but not limited to, the following events:

1. Planned service disruption/outages

2. Road closures/detours/traffic pattern changes

3. Access/entrance to property

4. Work start-up

5. CCTV

6. Smoke Testing

7. Dye Testing

3.03 IMPACTED AREA ADDRESS DATABASE

A. The Contractor shall provide the Office of Communications and Community Relations with a database of addresses and phone numbers (and names if available) of all project impacted residences, businesses and facilities at least three (3) weeks prior to project start-up. The database will be used by the City's PIO for regular citizen communications and notifications.

B. The Contractor and Engineer shall copy the City's PIO on all correspondence with citizens and property owners.

3.04 CUSTOMER SERVICE TRACKING SOFTWARE

A. The Contractor shall use the City's Project Management Software to track and enter information from customers/citizens regarding complaints, claims and inquiries. All related information shall be updated on a daily basis. Tracking information and responses shall be coordinated with the City's PIO. Reports shall be provided as weekly updates on all activities and on specific cases within twenty-four (24) hours when requested.

B. Information recorded shall include but not be limited to the following:

1. Date complaint/claim/inquiry received.

2. Name, address and telephone number of individual filing complaint/claim/inquiry.

3. Nature of complaint/claim/inquiry.

4. Address where problem is located if different than above.

5. Action required, date, action taken, date action completed.

6. Follow-up with person who filed under 2 above to verify satisfaction or status.

7. Documents associated with actions taken.

8. Any information regarding resolution with the Contractor's, Subcontractor's or Vendor's Insurance Company shall be fully documented.

3.06 IDENTIFICATION BADGES AND SECURITY

A. All members of the Contractor's staff and his subcontractor's permanent staff at or above the level of foreman who will be working on-site will be issued an ID badge by the City. The ID badge will list the worker's name and company Affiliation and will include a picture.

B. A template will be provided by the PIM and shall be returned to the Office of Security and Safety when updated with the above information for signature by the Director of Security and Safety.

C. It shall be the Contractor's responsibility to collect the ID badges from any employee who is discharged or resigns prior to completion of the project as well as at completion of the project. The Contractor shall return all ID badges to the Office of Security and Safety within 48 hours of their collection. The Contractor will be charged a fee of **$25.00** per badge for any badge not returned at completion of the project. For any ID badges lost during the term of the project that must be reissued, there will be a charge of **$15.00** per ID badge. The Contractor shall deduct these charges from his periodic or closeout payment request or the City will deduct.

D. Since lower level personnel of the Contractor, Subcontractor or Vendor will not be issued ID badges, the Contractor must maintain a daily sign-in sheet for daily workers under his supervision. The Superintendent must be able to identify any employee on the site as a bona fide worker if asked and if not able to identify, the Engineer will direct the Superintendent to remove the individual from the site. The Contractor and Subs or Vendors will provide a program of temporary ID badges and/or laminated on-site passes that must be cross-referenced to each day's employee time card/payroll sheet with unique employees' numbers. Any employee that will be on the Project over thirty (30) days will be issued a picture ID with the employee number prominently shown. Any employee possessing an ID badge must wear that badge visibly at all times on the Project. The Contractor is responsible for maintaining a safe "drug-free" work environment.

E. The Contractor shall develop a Security Plan for use on the job site during construction. The Plan shall encompass as a minimum such topics as the use of pre-employment background checks for specific project staff, drug tests, crime prevention and anti-theft procedures, workplace violence and methods to secure project documents. All staff working on the site shall be familiar with the requirements of the Security Plan.

F. City Ordinances prohibit the carrying of weapons on City streets. The City of Atlanta Police Department will be notified of any person bringing weapons to the jobsite; they will be removed immediately and prosecuted.

G. All of the Contractor's staff at or above the level of foreman shall attend a 4-hour mandatory CMG Security Training session conducted by the Office of Security and Safety. Multiple training sessions will be offered and staff must complete the

training at least within 1 month of commencing work on the jobsite. All costs associated with the training will be considered as incidental to the Contract.

H. Persons on the jobsite shall report any suspicious activity by workers or by others at the jobsite area first to the Project Management, and/or Atlanta Police Department by calling 911 and immediately to the Director of Security and Safety.

3.07 SCHEDULE

A. The Contractor shall provide the City's PIO with a copy of the detailed project schedule following approval by the Engineer.

B. Bi-weekly, the Contractor shall provide a list of properties:

1. That will be affected by the Contractor's activities within the upcoming 4 weeks;

2. Where work is ongoing in the right of way in front or in the back of the property;

3. Where site restoration activities are ongoing.

C. The Contractor shall inform the City's PIO through the weekly progress meetings and in writing of any project schedule changes or changes in "disruptive work" such as blasting, road closures, etc., that would have significant impact on citizens or require prior citizen notification. The Contractor shall notify the City's PIO of any "disruptive" activities affecting the public that occur on the jobsite within 4 hours of their occurrence.

3.08 MAPS

The Contractor will provide the assigned City's PIO with a map of each project area assigned by task order, including the proposed and existing sewer overlays. The map will include property lines and addresses, so the Contractor can identify the areas of impacted properties.

3.09 MEDIA RELATIONS AND JOB SITE INQUIRIES

A. As specified above in paragraph 3.01, only authorized persons shall release any information to media inquiries. The Contractor's field personnel shall at all times have project information cards available that will be provided to media and citizens if inquiries are made on-site. All inquiries shall be directed to the person referred to on the card and citizens shall be referred to the DWM Project Hotline telephone number (404-546-3200) and the www.Atlantawatershed.org website

B. Project information cards shall be produced by the Contractor from the template provided by the DWM Office of Communications and Community Relations. Final language to be included on the Project Information Card will be provided.

3.10 VEHICLES SIGNS & PROJECT SITE SIGNAGE

A. The Contractor shall place the COA logo, project name, Help line number, and website address on all magnetic vehicle signs specified in Specification Section 01580. Vehicle signs shall be installed on all vehicles used for Work on this project. A signage template will be provided by the DWM Office of Communications and Community Relations and produced by the Contractor.

B. Note: The cost for the production, installation and maintenance of the signs will be paid for through the respective unit price bid items, in accordance with specification Section 01580.

C. All project sites shall have pre-approved project signs which read in accordance with the Template provided as part of the Special Conditions Signs shall be produced by the Contractor. Some of the signs shall be mounted on moveable skids so they can be relocated as the project progresses on various streets in the basin. Sizes will vary, but all will be smaller than the 96"x 48" size project signs shown. Size shall be as directed by the Engineer. Contractor shall provide a minimum of 1 project sign per work location. The sign is required in addition to the four City of Atlanta Project signs identified in the Special Conditions.

3.11 NOTIFICATIONS

A. The Contractor shall provide the following notifications to the City's PIO and the City's PIM to facilitate communication to affected citizens through automated phone message or mailers:

1. Anticipated work start date-must be three (3) weeks prior so the City's PIO may send out two (2) week notice mailer.

2. Service disruptions-notify the City's PIO at least 72 hours in advance so that 48-hour notice automated phone message notice may be issued.

3. Street Closure or Partial Closure-notify the City's PIO at least 72 hours in advance to permit 48-hour automated phone message.

4. Significant work in neighborhood- blasting, directional drilling, trenchless installation, smoke testing, dye testing, open cut, etc.-notify the City's PIO at least 72 hours in advance to permit 48-hour automated phone message.

B. The Contractor shall provide the following door hanger notifications and the manpower to deliver them at a minimum:

1. Service disruptions- notice to citizens 24 hours prior to disruption.

2. Street Closure or Partial Closure - notify fire, police other emergency services and other authorities 24 hours prior to street closure.

3. Significant work in neighborhood- blasting, directional drilling, trenchless installation, open cut, etc.-notify citizens via door hangers 24 hours in advance.

C. The Contractor shall be fully responsible for notification to all emergency related services for detours, closures (partial or full) or traffic pattern changes and as such they must be detailed in their traffic control plan and implemented through the Contractor's Traffic Control Manager and per all permitting requirements.

D. The Contractor shall be fully responsible for distributing all notifications a minimum of 48 hours in advance of service outages for schools, nursing homes, hospitals, medical clinics, assisted living facilities or other types of facilities. Contractor shall also make personal contact with facility representatives no later than 60 minutes prior to the outage.

E. The Contractor shall at all times coordinate with the City's Office of Communications and Community Relations and Call Center to provide detailed schedules and street locations for service disruptions or street closures to ensure that Call Center is well equipped to provide adequate response to citizen inquiries.

3.12 RESPONSES AND RESOLUTION OF CITIZEN INQUIRIES

A. Customer Service Tracking Software: The Contractor shall use the City's Project Management Software to enter status information and track inquires related to the project. The City Call Center attendant shall create the initial file and enter information for resident and property owner complaints and/or claims. This information shall be updated on daily bases. Tracking information and responses shall be coordinated with the Contractor and City's PIO.

B. When a City of Atlanta's Call Center attendant informs the Contractor of a citizen inquiry or complaint, the Contractor shall respond immediately to the call center if the inquiry is related to an emergency situation. If the inquiry is general, the contractor's response is required within 24 hours to the call center with an update on the resolution status. The citizen's name date and time of call and complaint shall be documented and tracked by the Contractor using the City's Project Management Software database, which will assign a complaint tracking number. The complaint information will be transmitted to the Contractor and PIO within 24 to 48 hours. The citizen will receive a follow-up call from the call center with the status information on the resolution of the problem within 24 hours, and additional follow-up calls until the problem is resolved.

C. Unresolved inquiries will be reviewed at project progress meetings. At this time, the City's PIO will review open inquiries and the Contractor's Representative will facilitate follow-up on resolution.

3.13 RESOLUTION OF COMPLAINTS AND CLAIMS

Failure of the Contractor to resolve any legitimate complaint or claim filed resulting from the work performed under this contract, following notice in accordance with the contract agreement, may result in resolution of the complaint or claim by the City. The Contractor will be charged for the associated cost in accordance with the applicable sections of the contract. No additional payment will be made to the Contractor for any costs associated with complaint or claim resolution, same being incidental to the various contract items which are bid. Failure to manage the issues and items adequately to minimize public complaints and impacts will be cause for increasing the retainage, withholding payment and/or Notice and Termination of the Contractor cause if more than 10% of the noticed complaints or claims age past 30 days without decisive resolution and scheduling of recovery work.

3.14 PROJECT UPDATES

The Contractor will provide monthly project updates regarding significant progress, notable changes, and any consent decree milestones to be used by the DWM Office of Communications and Community Relations staff to update the Atlantawatershed.org website, project materials, monthly and quarterly reports.

3.15 RIGHTS OF ENTRY AND ACCESS TO PRIVATE PROPERTY

A. The Contractor is required to coordinate with the Office of Engineering Services Land and Easement Group regarding obtaining Rights of Entry and related agreements with the property owner(s) to access or work outside of the City's existing easements or rights of way or any agreements related to property restoration , as may be necessary for the Work or at the convenience of the Contractor. Such coordination shall include the following:

1. Maintaining a contact log with, but not limited to, all: contact names, addresses and phone numbers; all attempts (with date, name, and notes of conversation) via telephone, in person, or via written correspondence. The Contractor must maintain copies of all written correspondence with the property owner(s) and/or tenant(s), and provide the City with Copies, if directed by the City or already required as part of this Section;

2. Assuming responsibility relating to the private property access and any agreements reached between the Contractor and the Property Owner;

3. Taking any other steps as reasonably necessary to adequately protect the interests of Contractor, the private property owner and the City with respect to the accessing the City's existing easement areas;

B. The Contractor is required to work within the City's existing easement areas and rights of way at all times; however, at the Contractor's convenience and if agreed upon between the Contractor and the Property Owner the Contractor may follow a route other than along the City's right of way alignment . In such case, the Contractor must have a written agreement with the Property Owner to document the terms and conditions of the Work and/or property restoration, which shall be subject to the City's review and approval. Any such agreement shall be at the Contractor's expense.

C. The Contractor must identify all parcels requiring access or Work associated with the project, including parcels owned by: CSX, Norfolk Southern, Georgia Power, Fulton County, DeKalb County, Atlanta Housing Authority, MARTA, Schools, or City owned parcels under the purview of another department, within the first 30 days after the NTP has been officially delivered to the Contractor. Permits and agreements with such property owners to perform Work may be required as a condition of commencement of Work on properties owned by such entities. As such, Contractor shall cooperate with the City to negotiate and enter into appropriate agreements with such property owners to prior to commencement of Work in a form acceptable to the City.

D. The Contractor must identify all areas where the Contractor believes it is physically impossible to perform the work in the existing easement area within the first 30 days after the NTP has been officially delivered to the Contractor. If any such area exists, the Contractor must state in writing the property information (address and tax PIN), the work to be performed, and the reason they believe it is impossible to work within the easement area. If the City deems it is impossible to perform the work in the City's existing easement area and/or rights of way, the City will proceed with the acquisition of required temporary construction easement or other interests necessary to perform the Work. The City will make the ultimate decision regarding the ability or inability of the work to be performed within the existing easement area and shall provide such determinations in writing to the Contractor. In the instances for which formal acquisition processes must occur, Contractor shall take all available steps to prioritize work in other areas to avoid delays in overall project work. The City shall not be responsible for unapproved damage to private properties or deviations from the rights of way and/or easement areas for the convenience of the Contractor.

F. Contractor must, in all dealings with private property owners concerning this type of access to their property, advise that the Contractor is an independent contractor and is not seeking or obtaining access to private property on behalf of the City. Contractor must include this advisement in all written communications with any private property owner, as well as all documents evidencing or relating to agreed access to private property. Contractor may at any time during the course of performing the Work request clarification of the City's existing easements and/or rights of way through an RFI process.

ATTACHMENT A

Citizens Comments Response

PROJECT #

PROJECT NAME:

Basic Data Contact ID:

First Name	Last Name	Council District / NPU

	Number	Street Name	St, Ave, etc.	Apt. #	Zip
Address					

Home Phone ( ) - Work Phone ( ) -

Email : Outside Project Ar Y____ N____

Notes:

Comments / Complaints / Request

Comment Dat ____/____/____ Engineer needs Y____ N____

Comment / Complaint:

Response

Response Date ____/____/____ Is Follow-up Requir Y____ N____

Who Responde

Response Given:

Attachment No. 3

Technical Specifications

Section 01580 – Identification and Signs

SECTION 01580

Project Identification and Signs

PART 1 – GENERAL

1.01 SCOPE

The work under this Section requires the Contractor to furnish, utilize and maintain project signage and custom vinyl magnetic vehicle signs throughout the duration of the project.

1.02 DESIGN

The Contractor shall submit to the Engineer for approval a scale drawing showing the graphic design, style of lettering, and colors, configured to match the design issued by the City Public Involvement (PI) Office. The PMT and/or PI Office will provide the art ready templates for all CWA signage at the Public Information Kick-off Meeting described in Section 01351.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Project Signs

1. All building and graphic materials shall be exterior grade and suitable for environmental exposure without any visible fading, warping or delaminating.

2. All lumber shall be pressure treated number 2 grade with a minimum of 0.25 pounds per cubic foot wood preservative.

3. All fasteners shall be hot dip galvanized.

4. Each project sign shall be painted white with color sign graphic as indicated on Attachment 1.

5. The minimum sign size shall be 96 inches wide by 48 inches high.

B. Magnetic Vehicle Signs

1. Each sign shall be durable nylon having a 100% magnetic surface with strong magnetic cling.

2. The minimum sign size shall be 24 inches wide by 12 inches high.

3. The magnetic sign graphic shall have a professional appearance with fade resistant color printed layout.

C. Yard Signs

1. Yard signboards shall be made of corrugated plastic panel suitable for exterior use with color graphic print on both sides.

2. Each signboard shall be securely attached to a single metal wire stand frame. The wire frame shall be zinc coated or galvanized surface to resist corrosion.

3. The minimum sign size shall be 36 inches wide by 24 inches high.

PART 3 – EXECUTION

3.01 GENERAL

A. Project Signs

1. The Contractor shall construct each project signboard to accommodate the minimum dimensions per Attachment 1 herein.

2. Each sign shall have a minimum of two end post securely anchored to a minimum depth of 2 feet below grade. Each post shall be sufficient length to provide a finished bottom edge signboard elevation 4 feet above grade without splices or other wood joints unless otherwise directed by the City.

3. All fasteners shall be flush with surface with smooth wood edges in a constructed in a neat manner free of irregular cuts, tear out or other undesirable visible defects.

4. The project sign shall be located at the project entrance as directed by the City Public Information officer.

B. Magnetic Vehicle Signs

1. Contractor shall utilize the magnetic signs for all vehicles performing work under this Contract while the vehicles are on the site or otherwise engaged in the Contract Work.

2. Contractor shall place the magnetic signs on each vehicle in a high visibility location. If the signs are to be placed on the sides of vehicles, two signs shall be utilized per vehicle (one sign per side). If

the signs are to be placed on the rears of vehicles, one sign per vehicle shall be acceptable.

3. Contractor shall replace the signs during the project as necessary or as directed by the Engineer.

B. Yard Signs

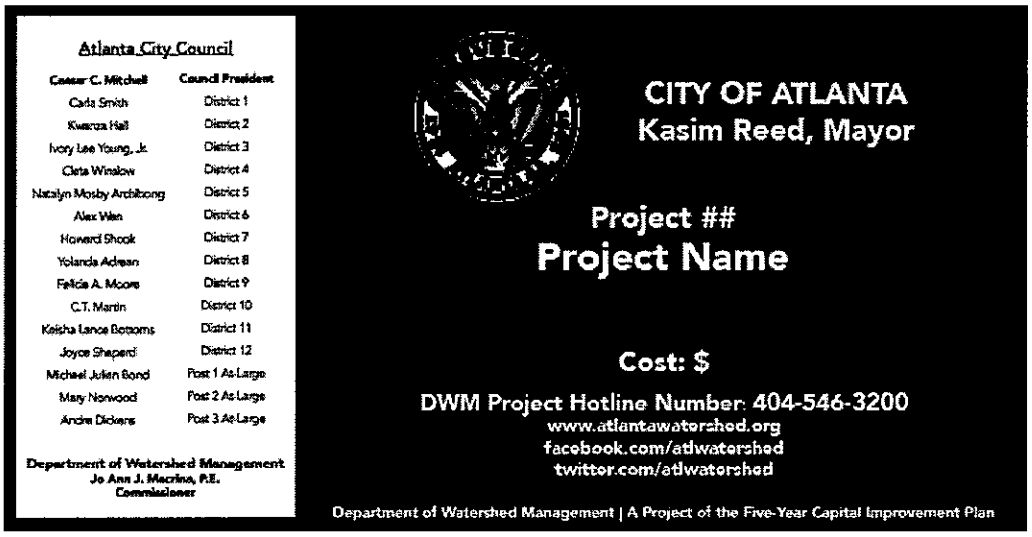
1. Contractor shall install and maintain yard signs as directed by the City Public Information Officer (PIO).

3.02 MAINTENANCE

Contractor shall periodically inspect and maintain all signage in good condition throughout the Contract period at no additional cost to the City.

END OF SECTION 01580

96"


Atlanta City Council
Caesar C. Mitchell Council President
Cada Smith District 1
Kwanza Hall District 2
Ivory Lee Young, Jr. District 3
Cleta Winslow District 4
Natalyn Mosby Archibong District 5
Alex Wan District 6
Howard Shook District 7
Yolanda Adrean District 8
Felicia A. Moore District 9
C.T. Martin District 10
Keisha Lance Bottoms District 11
Joyce Sheperd District 12
Michael Julian Bond Post 1 At-Large
Mary Norwood Post 2 At-Large
Andre Dickens Post 3 At-Large
Department of Watershed Management
Jo Ann J. Macrina, P.E.
Commissioner
CITY OF ATLANTA
Kasim Reed, Mayor
Project ##
Project Name
Cost: $
DWM Project Hotline Number: 404-546-3200
www.atlantawatershed.org
facebook.com/atlwatershed
twitter.com/atlwatershed
Department of Watershed Management | A Project of the Five-Year Capital Improvement Plan

48"

Attachment No. 4

Technical Specifications

Section 01056A – GPS Data Collection

SECTION 01056A

GPS Data Collection

PART 1 – GENERAL

1.01 WORK FOR THIS SECTION

A. The purpose of this work is to establish the position of all points in the sanitary sewer collection system and defect locations, identified during certain defect location tasks, using the Global Positioning System (GPS); establish the minimum quality of data; and, specify how the data will be delivered. The GPS position will be established for manholes, mainline cleanouts and smoke test leaks.

B. GPS capture is required as described below.

1. Horizontal position and vertical elevation of all manholes with an accuracy of ± three (3) centimeters, horizontally and vertically.

2. When GPS capture cannot be achieved on manholes, due to canopy or building interferences, the position and/or elevation will be obtained by conventional survey methods tied to the stated reference system.

1.02 SUBMITTALS

A. The Contractor shall provide to the Engineer in writing the following information prior to the set deadline, or at the indicated frequency, whichever is applicable.

	Type of Submittal	Time/Frequency of Submittal
1.	Workers Confined Space Certification	At commencement
2.	Daily Progress Logs	Daily
3.	Confined Space Entry Logs	Weekly
4.	Updated Working Schedule	Bi-Weekly
5.	Time Sheets (where required)	Weekly
6.	Electronic Data and Hard Copy Field Reports	Weekly

7. Calibration Reports Daily

B. Daily progress reports (by 9.00 a.m. on day following survey) and weekly progress reports (by 9.00 a.m. on Monday following week of survey) shall be e-mailed to Engineer Representative.

C. The Contractor shall complete a daily written progress record (diary) detailing the work carried out and any small items of work that were incidental to the contract. The Contractor shall include in his daily progress record, reference to:

1. Delays: e.g. dense traffic, lack of information, sickness, labor or equipment shortage

2. Weather: conditions, e.g. rain etc.

3. Equipment: on site, e.g. specialist cleaning, bypass equipment, etc.

4. Equipment: downtime, e.g. pump out of fuel, CCTV camera lights broken, etc.

5. Personnel: on site by name, e.g. all labor, specialist services, etc.

6. Submittals: to the designated Engineer, e.g. daily report, GPS Data Report, etc.

7. Accident: report, e.g. all injuries

8. Incident: report, e.g. damages to property, property owner complaints, etc.

9. Major defects encountered, including collapsed pipe, if any: e.g. cave in, sink holes, etc.

10. Visitors: on site

The designated Engineer on site shall certify in writing receipt of the daily record noting any items, and adding any observations, with reference to claims for payment to the Contractor. The Engineer may at his discretion, for which the Contractor must receive direction also in writing, allow an exception to this requirement for weekly submission of progress rather than for daily submission. E-mail alternative forms of exchange are permissible as agreed.

1.03 RELATED SECTIONS

The Work of the following Sections apply to the Work of this Section. Other Sections of the Specifications, not referenced below, shall also apply to the extent required for proper performance of the Work.

1. 01532D: Manhole Condition Assessment

1.04 EXPERIENCED WORKERS

A. Supervisor of the field crews shall have received proper training in this function and have a minimum of three years experience in performing such work including safe working practices, etc.

B. Crew Leaders/Field Supervisors obtaining GPS data shall have received proper training in this function and have a minimum of one year experience in performing such work including safe working practices, etc.

C. The Contractor shall provide the designated Engineer with written documentation that all Crew Leaders/Field Supervisors responsible for obtaining GPS data have received the proper training and where required the requisite experience.

D. The contractor shall provide a detailed account of satisfactory GPS experience during the last three years. Those references shall include contact, agency, telephone number and address.

1.05 REFERENCE COORDINATE SYSTEM

A. The horizontal position of all points will be referenced to the North American Datum of 1983 (1986 adjustment) Georgia State Plane West 1002 Coordinate System.

B. The vertical position of all points will be referenced to the North American Vertical Datum of 1988.

C. All coordinate values will be delivered as grid coordinates in US Survey Feet.

D. GPS data shall be collected using eGPS Solutions or equivalent internet-based real time GPS network. The network shall provide continuous error correction and accuracy which meets or exceeds the requirements of Section 1.07 Data Accuracy.

E. Any transformation or adjustment necessary to reproject surveyed coordinates to the Reference Coordinate System will be the responsibility of the Contractor.

1.06 PROVIDED BY CITY

A. A map of each area of work will be provided from the existing GIS map with a minimum scale of 1 inch =200 feet. The map will contain, when available, streets with names, parcels, street number of parcel, building structures, sewer point structures and sewer lines.

1.07 DATA ACCURACY

A. High Resolution: For all sanitary sewer structures, the equipment and means used by CONTRACTOR must generate the position of points with a minimum accuracy of three (3) centimeters horizontal and three (3) centimeters vertical. To determine the accuracy obtained, CONTRACTOR'S GPS system will be calibrated daily against a known point (monuments) prior to beginning work and when the work is completed. The CONTRACTOR shall submit a report to the Engineer certifying calibration was accomplished and indicating the reference system. Data delivered to the Engineer arising from the GPS survey shall be certified by a Professional Land Surveyor. When the GPS equipment cannot be set directly on the point, conventional surveying methods will be used to establish the position to the stated level of accuracy.

B. Calibration shall be carried out at least on a daily basis in accordance with the GPS equipment manufacturer's instructions. Additional calibrations may be required during the course of the working day for large fluctuations of temperature and/or humidity, also in accordance with the manufacturer's instructions and tolerances. The CONTRACTOR shall submit a report to the Engineer certifying calibration was accomplished and indicating the reference system.

1.08 INTERFERENCE

A. CONTRACTOR must obtain a GPS position of sanitary point structures regardless of the overhead conditions or other nearby obstructions that may interfere with satellite signals, at no additional cost. Coverage conditions will not allow all positions to be obtained by setting directly over the point to be obtained. CONTRACTOR may use rangefinders or conventional surveying methods to obtain the position of the point.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 GENERAL

The Contractor shall furnish all labor, tools, materials, software and equipment necessary for capturing the position of all points specified.

3.02 PREPARATION

Mission Planning: CONTRACTOR shall plan the collection of GPS data, using the appropriate software, to optimize the accuracy and speed of data collection while minimizing the impact and interference on traffic and other activities.

3.03 DATA

A. Data will be delivered to the ENGINEER in a GIS format compatible with ARCVIEW shape files. Data will include, as a minimum, the point label, date, time, X–coordinate, Y–coordinate, Z–coordinate (when appropriate), crew identifier, and an indication whether the position was obtained directly or indirectly. Measurements of distance will be in units of feet. Labels for points will be as follows:

Sanitary sewer point structure labels as shown on the map provided by the City. The Contractor will be provided an electronic data table listing all known points and connecting downstream points on the GIS map. When new manholes are found, Contractor will assign a temporary label conforming to the City's methodology for numbering temporary manholes. When a new point structure is encountered between (example) downstream manholes 23250111401 to upstream manhole 23250118501, this new manhole will be given the temporary number 99251114A01. A second new point structure would be numbered 99251114B01. This method uses the 3rd, 4th, and 6th through 11th characters of the downstream manhole, but inserts a "99" at the beginning and a sequential alpha character between the 9th and 10th characters.

3.04 DELIVERABLES

A. Map corrections to the printed map will be illustrated on the printed map with red markings and delivered at the completion of each sewershed, but not less than monthly. Supplemental sketches will be provided, as necessary, to clearly depict the actual site conditions.

B. Coordinate and attribute data will be provided in both electronic and hard copy format at the completion of each sewer-shed, but not less than monthly. The hard copy data must be submitted for approval by the Engineer. Electronic data will not be accepted without hard copy data. Each submittal must be numbered according to the numbering system outlined in Specification Section 01350.

C. The hard copy data shall include a cover letter and printed spreadsheet that corresponds to the electronic data submitted. If the survey work is performed by a subcontractor, the cover letter shall provide certification of data accuracy by a Professional Land Surveyor (PLS) licensed in the State of Georgia. If the survey work is performed by the prime Contractor, the cover letter shall provide certification of data accuracy by a Professional Land Surveyor (PLS) licensed in any State in the United States of America. The hard copy data must be bound, with the PLS seal placed on the cover letter; OR, the hard copy data may be submitted unbound, with the PLS seal placed on each and every sheet of unbound data submitted.

D. The attached GPS Certification Form shall be signed and sealed by a Registered Land Surveyor in Georgia and submitted for each sewershed.

3.05 TRAFFIC CONTROL

A. Refer to Specification Section 01500: Temporary Control of Construction Operations, paragraph 1.15 for requirements.

END OF SECTION

Attachment No. 5

Technical Specifications

Manhole Condition Assessment

MANHOLE CONDITION ASSESSMENT

1 - GENERAL INFORMATION

District: _____ Basin: _____ Sewer-Shed: _____

GISID: _____ Map No.: _____ Pipe Length _____ (ft)

Point ID: _____ DS Point GISID: _____

Type: **AG**-AnglePoint, **CSS**-CombStorm&Sanitary, **CO**, **LH**-Lamphole, **T**-Tee, **END** of Line, **MH**, **STB**-Stub, **SMT**-Summit, **DO** DischargeOpen

SURFACE COVER TYPE: A - MainRoadUrban, **B** - MainRoadRural, **C** - LightRoad, **D** - FootPath/RoadShoulder, **E** - Field, **F** - Garden, **G** - Woodland, **X** - DifficultAccess

Address : _____

Location Comment: _____

SURFACE COVER MATL: A-Asphalt, **BM**-BldgMoveable, **BU**-BldgUnmove, **C**-Concrete, **CKC**-CreekCross, **D**-Dirt, **EBH**-Elev'dBridgeHang, **EP**-Elev'dPier, **F**-Fence, **G**-Grass, **PA**-PipeAboveGround, **R**-Gravel, **S**-Sod, **TS**-Trees/Shrubs, **U**-Utility, **W**-Water, **Z**-Other

2 - CHARACTERISTICS

Circle appropriate answer where codes are embedded in form.

ITEM	TYPE/SHAPE	MATL/LINER	DEPTH TO BOTTOM*	SIZE (inches)
COVER:		**CI**-Cast Iron **CO**-Concrete **PL**-Plastic	N/A	
FRAME:	**CI**-Cast Iron **CO**-Concrete **PL**-Plastic	N/A		
RINGS:				
CONE:				N/A
WALL:				
BENCH:	N/A			N/A
CHANNEL:	N/A			
BASE:				N/A
STEPS:	N/A		N/A	N/A

MISCELLANEOUS

No. of Vents: _____ Vent Size: _____

+/- Grade: _____ inches

Inflow Dish: Yes No

Concentric: _____ Eccentric: _____

No. Landings: _____

Comments: _____

Type/Shape Codes:
Cover: B-Bolted, C-Concrete, E-Concealed Pickholes, L-LockDown, S-Solid, V022-Vented 2 EA/0.5" V023-Vented 2 EA/0.75" V024-Vented 2 EA/1.0" V042, V043, V044, V122, V123, V124, V242, V243, V244
Rings, Cone & Wall: N-None C-Circular, R-Rectangle, S-Square

MH Material Codes:
BRK-Brick, CLBK-Clay Block CON-Cast-in-PlaceConcrete, COBK-ConcreteBlock, STON-Cobblestone, FG-Fiberglass, MBK-ManholeBlock, PE-Polyethlyene, PRC-PrecastConc, ROC-Rock, VCP-VitrifiedClay

MH & Pipe Liner Codes:
BL-Bitumin, CPP-CureInPlace CL-Cement, IS-SoftInversion, PL-Plastic, RL-ResinLiner, XXX-Other, ZZZ-NotKnown

Pipe Shape Codes:
A-Arched, B-Barrel (Beer Barrel) C-Circular E-Egg Shape H-Horseshoe O-Oval R-Rectangular S-Square T-Trapezoidal U-U Shape w/ Flat Top X-Other (Comments)

Pipe Material Codes:
AK-Alkathene, AC-Asbestos Cement BR-Brick, CI-CastIron, SI-SpunGreyIron CMP-CorMetalPipe, CSB-ConcSegBolt, CSU-ConcSegNoBolt, CO-Concrete, CC-BoxCulvert, DI-DuctileIron, GRC-GlassReinfConc, GRP-Fiberglass, PSC-Plastic/SteelComp, PE-Polyethlyene, PLP-PVCFold&Form, PVC, RCP-ReinfConc RPM-ReinfPlastic Matrix, ST-Steel, VC-ClayPipe, PP-PolyPropylene, WOD-Wood, PF-PitchFibre, MA-Masonry XXX-Other, ZZZ- NotKnown

NOTE: *
'Depth to Bottom' and 'Entry Depth' are measured in feet to nearest hundredth of a foot. Measure from lowest point on top of frame to the bottom of the object being measured.

Step Codes: CI-CastIron, CO-Concrete, PL-Plastic, BRK-Brick, RB-Rebar

NOTE: If Pipe SHAPE is not round, give Height x Width

Pipe Type Codes: C-Combined, F-Foul, S-Surf Water, T-Trade Effluent, W-Watercourse (culvert), X-Other, Z-NotKnown

3 - PIPE DATA

NO.	IN/ OUT	PIPE TYPE	SIZE	SHAPE	MAT'L	LINER	ENTRY DEPTH*	F/DEPTH (INCHES)	CLOCK	PHOTO	DROP	PARA #
1	OUT											
2												
3												
4												
5												
6												
7												

4 - MANHOLE SKETCH

North

MANHOLE CONDITION ASSESSMENT

5 - INSPECTION DATA

Inspector: _____ Date: _____ Time: _____ Flusher Valve: **Yes** **No** Weather:

Inspect Status: **I**nspected **A**bandoned **B**uried CanNot**L**ocate CanNot**O**pen **N**oAccess **P**rivate **S**urcharge **D**ebris **X**-DNE **Y**-Incidental

On Map? **Yes** **No**

Inspection Method: **R**emote **D**escend

- 1 – Dry, 4 – Showers
- 2 – Heavy Rain 5 - Snow
- 3 – Light Rain

Surface Photo No. - _____ Plan Photo No. - _____ Surcharge Evidence : _____ ft Ground Water _____ ft

Ponding: **Yes** **No** Pond Area: _____ ft by _____ ft Debris: _____ Inches Debris Type: **S**-Silt, **G**-Grease, **D**-Dirt

6 - POINT DEFECTS

PART	DEFECT	POSITION*	ICG	ROOTS	INFIL	COMMENT	PHOTO
Cover :							
Frame :							
Rings :							
Cone:							
Wall:							
Bench :							
Channel :							
Base :							
Pipe Pen :							
Steps :							
Other :							

Code	Defect Description	MH	Pipe	Code	Defect Description	MH	Pipe	Code	Defect Description	MH	Pipe
B	Broken Pipe	-	X	DV	Deformation Vertical (BRK)	-	X	MT	Missing Mortar,Total	X	X
BC	MH Cover Crack or Broken	X	-	EH	Encrustation, Heavy	X	X	OB	Obstruction	X	X
BF	MH Frame Crack or Broken	X	-	EL	Encrustation, Light	X	X	OJL	Open Joint, Large	X	X
BJ	Sewer Broken at Joint	-	X	EM	Encrustation, Medium	X	X	OJM	Open Joint, Medium	X	X
CBX	Catch Basin	X	-	ESH	Scale, Heavy	X	X	RF	Fine Roots	X	X
CC	Crack Circumferential	X	X	ESL	Scale, Light	X	X	RM	Mass Roots	X	X
CNI	Connection Intruding	X	X	ESM	Scale, Medium	X	X	RT	Tap Root	X	X
CL	Crack Longitudinal	X	X	FC	Fracture Circumferential	X	X	SC	Sewer Shape Changes	X	X
CM	Cracks Multiple	X	X	FL	Fracture Longitudinal	X	X	SGL	Surf Damage, Corrosion Large	X	X
CX	Connection Defective	X	X	FM	Fracture, Multiple	X	X	SGM	Surf Damage, Corrosion Med	X	X
CXI	Connect'n Defective/Intrud	X	X	H	Hole	X	X	SS	Surface Damage, Spalling	X	X
D	Deformed (Non-Brick)		X	HI	MH Above Grade	X	-	SW	Surface Damage, Wear	X	X
DB	Displaced Bricks	X	X	LO	MH Below Grade	X	-	V	Vermin – Rats	X	X
DE	Debris	X	X	JDL	Joint Displaced, Large	X	X	X	Pipe Collapsed	-	X
DEG	Debris, Grease	X	X	JDM	Joint Displaced, Medium	X	X	XM	Manhole Collapsed	X	-
DES	Debris, Silt	X	X	MB	Brick Missing	X	X	Z	Multiple, See Comments	X	-
DH	Deformation Horizontal	X	X	MM	Missing Mortar, Medium	X	X				
DI	Dropped Invert	-	X	MS	Missing Mortar, Surface	X	X				

Condition Grade (ICG):
1 – No Defects
2 – Circumferential Cracks
3 – Multiple Cracks
4 – Multiple Fractures
5 – Collapse / Severe Breaks

Roots:
RF– Fine Roots
RM– Mass Roots
RT- Tap Roots

Infil:
IS – Seeper
ID – Dripper
IR – Runner
IG – Gusher
N - None

NOTE: 'Position *' has two components- 1) a range of clock positions using 12 as North (MH) or Top of pipe; and 2) distances measured in feet to nearest hundredth of a foot. For manholes measure from lowest point on top of frame to top and bottom of the defect being measured. For pipes, measure from pipe pen to beginning and end of defect being measured.

7 - PIPE DEFECTS

PIPE NO	DEFECT	POSITION*	ICG	ROOTS	INFIL	COMMENT	PHOTO

8 - REHABILITATION INFORMATION

Manhole Accessibility To Cover - Good / Poor _____ From Cover to Pipe - Good / Poor _____

Space for Rehabilitation and Staging _____

1.) Choose those applicable Intersection / Street Number of lanes _____ 1-Way / 2-Way Median / Shoulder / Sidewalk

Location _____ Commercial / Residential

2.) Description of Surrounding Area: _____

3.) Area Available for Equipment _____ 4.) Overhead Obstructions: _____

5.) Other:

Attachment No. 6

Technical Specifications

Section 02112 – Route Clearing

SECTION 02112

Route Clearing

PART 1 – GENERAL

1.01 SCOPE

A. The extent of route clearing is that minimum degree of clearing necessary to carry out construction activities such as pipe bursting, pipe repairs and other pipeline renewal processes including construction of appurtenances, as well as other additional clearing needed for access purposes.

B. The Contractor shall endeavor to minimize disruption to the neighborhood and shall adjust route-clearing plans to avoid important landscaping features where practicable.

C. Route clearing operations include, but are not limited to, the following:

1. All coordination, permitting, plan development and submittals, and other associated items in accordance with the City of Atlanta's Tree Protection Ordinance and Greenway requirements.

2. Notification of the One Call Center for location and marking of existing utilities within the work zone

3. Erosion control of disturbed areas

4. Protecting trees, plants, buffers, and above-grade and underground improvements

5. Removal and disposal of debris, trees and other vegetation

6. Clearing

7. Removing above-grade improvements

8. Removing underground improvements

9. Restoring damaged improvements

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,

including coordination with local officials, plans development and approval, submittals, etc., shall be obtained for construction operations by the Contractor.

B. Burning of cleared materials on site is not permitted. The Contractor shall allow in rates for complete removal of all material arising from any necessary clearing and grubbing.

C. Protection of Existing Improvements:

1. Provide barricades, coverings, or other types of protection necessary to prevent unnecessary damage to existing improvements.

2. Protect improvements on adjoining properties as well as those on the project site. Restore improvements damaged by this work to their original condition, as acceptable to the Owners or other parties or authorities having jurisdiction. Replace property line monuments (such as iron pins) removed or disturbed by clearing operations. This work shall be performed by a Land Surveyor licensed in the State of Georgia.

D. Protection of Existing Trees and Vegetation:

1. Protect existing trees and other vegetation against unnecessary cutting, breaking or skinning of roots, skinning and bruising of bark, smothering of trees by stockpiling construction materials or excavated materials within drip lines, excess foot or vehicular traffic, or parking of vehicles or equipment within drip line. Provide temporary fences, barricades or guards as required to protect trees and vegetation to be left standing.

2. Provide protection for tree roots over 1-1/2 inches diameter that are cut during any construction operation. Coat the cut faces with emulsified asphalt, or other acceptable coating, especially formulated for horticultural use on cut or damaged plant tissues. Temporarily cover all exposed roots of trees with wet burlap to prevent roots from drying out; provide earth cover as soon as possible.

3. Repair or replace unnecessarily damaged trees and vegetation, as determined by the Engineer/City Arborist and/or Planning Department, resulting from any construction operation, in a manner acceptable to the property owner and the Engineer. A qualified nurseryman shall perform tree damage repair. Replace unnecessarily damaged trees that cannot be repaired and restored to full-growth status, as determined by the tree surgeon. Replace felled trees in accordance with the approved plan.

E. Protection of Adjacent Property:

1. Protect improvements, trees and vegetation on adjoining property as well as those on property requiring route-clearing work.

2. Execute work so as not to create a nuisance to any person including persons utilizing adjacent property.

3. Use work methods and provide temporary facilities as necessary to prevent washing, erosion, siltation or dust damage, or hazard to persons and property, within and off the work area.

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, mowers and clippers.

PART 3 – EXECUTION

3.01 CLEARING

A. Route clearing operations shall begin no more than seven days before beginning construction work for any area.

B. Materials to be cleared, grubbed and removed from the project site include but are not limited to vegetation, trees, stumps, roots, lawns, shrubbery, gardens, paving, miscellaneous structures, debris, and abandoned utilities to the minimum practicable extent to complete the work. Limit clearing to a single lane work route without provision for construction vehicles to pass utility operation. Accurately determine limitations of construction easement or right-of-way, and keep construction activity within such limits.

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 shall be moved off the easement. The Contractor shall take extreme care in moving landscape features and shall re-establish these features as directed by the Engineer.

F. Surface rocks and boulders shall be grubbed from the soil and removed from the site if not suitable as Rip Rap.

G. Where 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 of equal or better quality and construction.

J. Stumps and roots shall be grubbed and removed to a depth not less than two feet below grade. All holes or cavities which extend below the subgrade elevation of the proposed work shall be filled with crushed rock or other suitable material, compacted to the same density as the surrounding material.

K. The Contractor shall exercise special precautions for the protection and preservation of trees, cultivated shrubs, sod, fences, etc. situated within the limits of any temporary easements, but not directly within the permanent easements. The Contractor shall be held liable for any damage the Contractor's operations have inflicted on such property.

L. The Contractor shall be responsible for all damages to existing improvements outside the permanent easement resulting from Contractor's operations.

M. Remove lawn sod by cutting into maximum size which can be handled without tearing, stripping sod and underlying topsoil, and stockpiling for use in restoring the surface area. Water sod and otherwise maintain sod in viable, growing condition. Alternative means of lawn sod replacement may be considered by the Engineer.

N. Remove above-grade structures only where specifically authorized.

O. Remove conflicting fences and provide effective, temporary measures to prevent domestic animals from wandering to other lands. Reconstruct fences promptly.

P. Remove abandoned underground facilities such as utilities and structures, walls, footings, basements, wells, septic tanks, cisterns, underground pipe, and other items which conflict with construction.

3.02 HOLES AND DEPRESSIONS

A. Fill holes, depressions and voids created or exposed by clearing operations with non-organic soil material, unless further excavation or earthwork is indicated.

B. Place fill material in horizontal layers not exceeding six inches loose-depth and thoroughly compact to a density at least equal to adjacent original ground.

3.03 DISPOSAL OF WASTE MATERIALS

A. Disposal General Requirements: Accomplish disposal of cleared matter daily so as to maintain site in a safe and neat condition throughout the contract period. Owners of the property may remove merchantable timber, buildings or other items of value from the work site before the Contractor begins operations, and no assurance exists that any such material will be on the work site when the Contractor begins work.

B. On-Site Disposal:

On undeveloped property, grind trees, limbs and brush into mulch and distribute within the work area from which cut, in such a way as not to be objectionable to the property owner. Properly dispose of all materials not utilized for mulch off-site. On developed property, remove all such clearing waste and properly dispose of it off-site.

3.04 DISPOSAL OF DEBRIS

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. Except that debris utilized as mulch, no debris 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 of any kind be left on the Project, shoved onto abutting private properties or buried on the Project.

3.05 CONSTRUCTION ACCESS ROUTE ON EASEMENT

A. When directed by the Engineer, a construction access route shall be built on the sewer easement for the purpose of accessing manholes and performing all other necessary work within the easement.

B. Construction access route shall be cut (10) ten feet wide, minimum, and (6) six inches deep below existing grade. Filter fabric shall be placed at the bottom of the cut, and surge stone shall be placed on top of the fabric, filling the six inch depth along the roadway.

C. The filter fabric for use under the stone shall be as specified in Section 02125.

D. Surge stone shall be 4" to 6" size (4X6) rip rap type stone, or equivalent. Use sound, tough, durable stones resistant to the action of air and water. Slabby or shaley pieces will not be acceptable. Specific gravity shall be 2.0 or greater. Stones shall have less than 66 percent wear when tested in accordance with AASHTO T-96.

3.06 TREE REMOVAL ON EASEMENTS

A. The contractor shall conform to the requirements of the City of Atlanta's Tree Protection Ordinance before work commences

B. The Engineers approval shall be obtained prior to the removal of any trees from the easement. Such concurrence shall be obtained in writing.

C. The approval of the Engineer concerning the method and location of disposal of materials must be agreed with the owner and engineer before work commences.

D. All trees that need further processing (wood chips) on-site or disposal off-site must be processed or disposed of in conformance with Federal, State, and local rules and regulations.

E. Contractor shall ensure all utilities are located prior to the commencement of any clearing or construction work in the easement.

F. Contractor must acquire any necessary permits prior to commencement of any type of work done in the easement especially for the removal of trees and crossing of waterways.

G. Trees shall be felled into the cleared construction area or areas to be cleared and not onto vegetation to be preserved.

H. Trees that have fallen into water bodies, or beyond the construction area, shall be removed immediately.

END OF SECTION 02112

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Attachment No. 7

Stormwater Standard Structures Detail Book

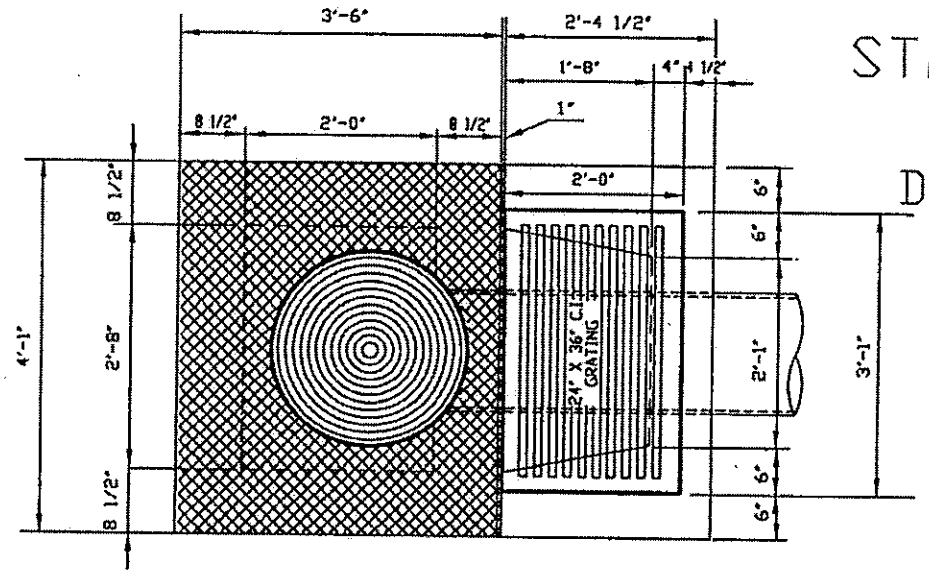
Stormwater
Standard Structures Detail Book

Rev. 1

Department of Watershed Management
Bureau of Engineering Services
Watershed Information Systems Division
Geographic Information Systems Group

263 Decatur Street, Atlanta, GA 30312
Phone: 404-546-1200

Table of Contents



STANDARD CURB CATCHBASIN TYPE "A"

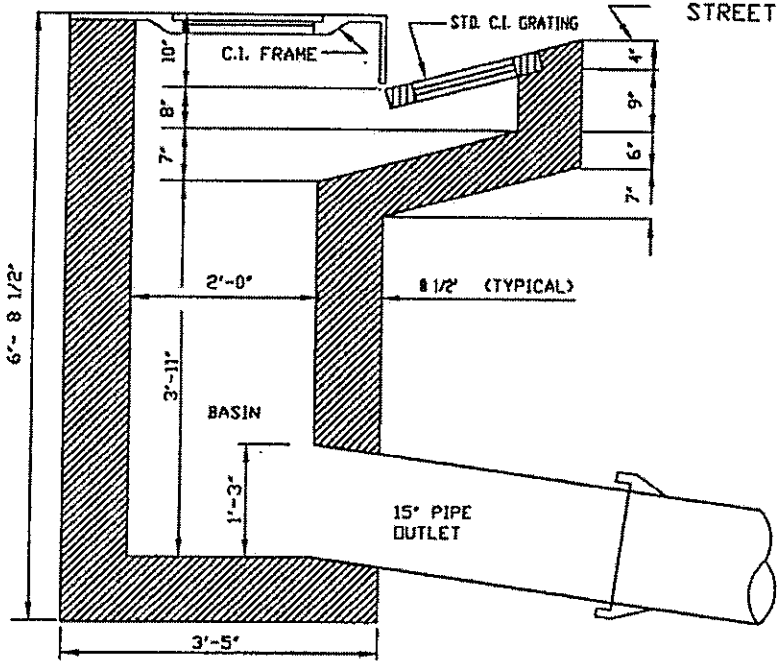
DEPARTMENT OF PUBLIC WORKS

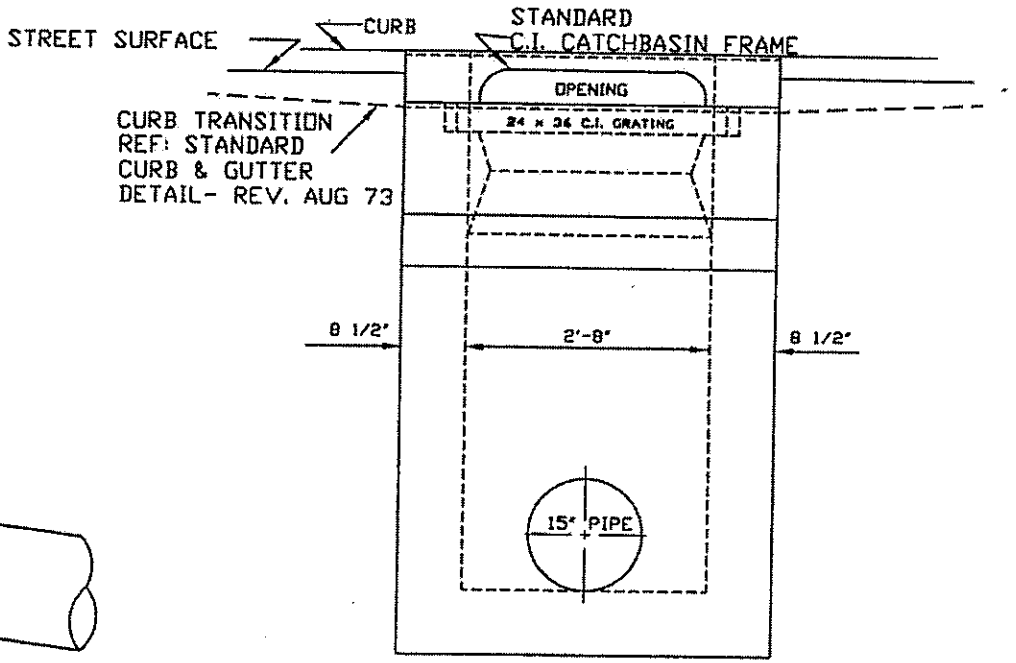
CITY OF ATLANTA, GEORGIA
AUGUST 1966, SCALE: 1/2"=1'-0"
REVISED-AUG.,1973

NOTE

SEE CITY OF ATLANTA STD. COMB. CONC. CURB AND GUTTER (8"×30").

NOT FOR NEW INSTALLATION.





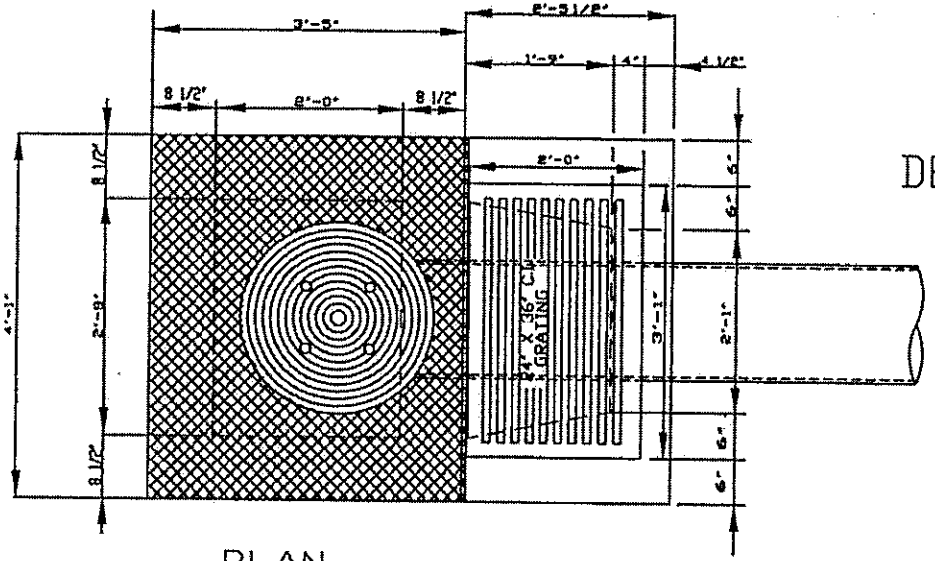
CB-1

STANDARD TRAP CATCHBASIN
TYPE "A"
DEPARTMENT OF PUBLIC WORKS

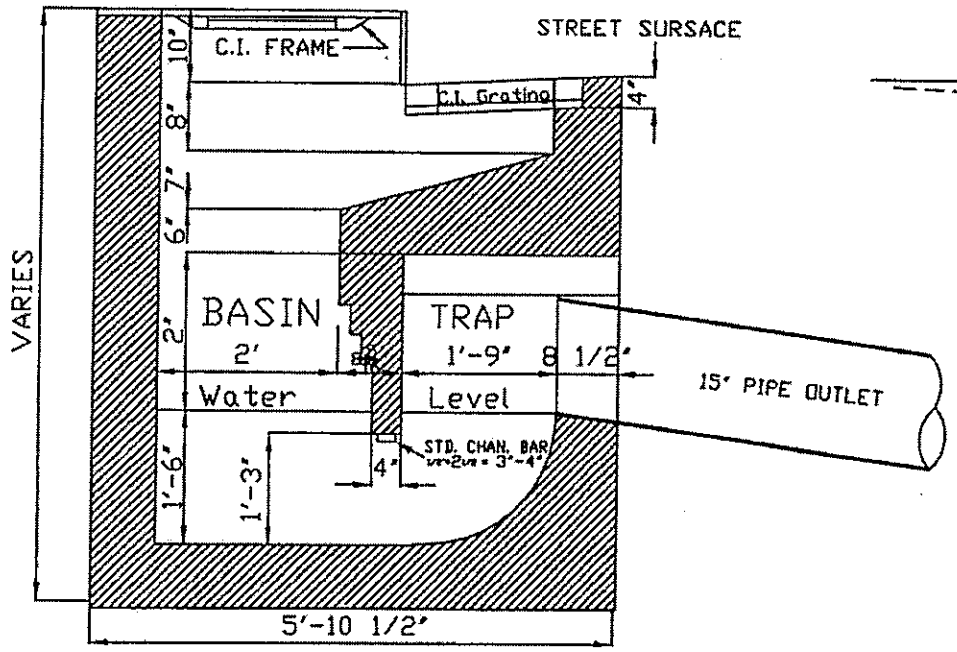
CITY OF ATLANTA, GA.
JULY 1966 SCALE 1/2"=1'-0"

NOTE: SEE CITY OF ATLANTA STD. COMB. CONC. CURB AMD GUTTER (8"*30) FOR CURB TRANSITION.

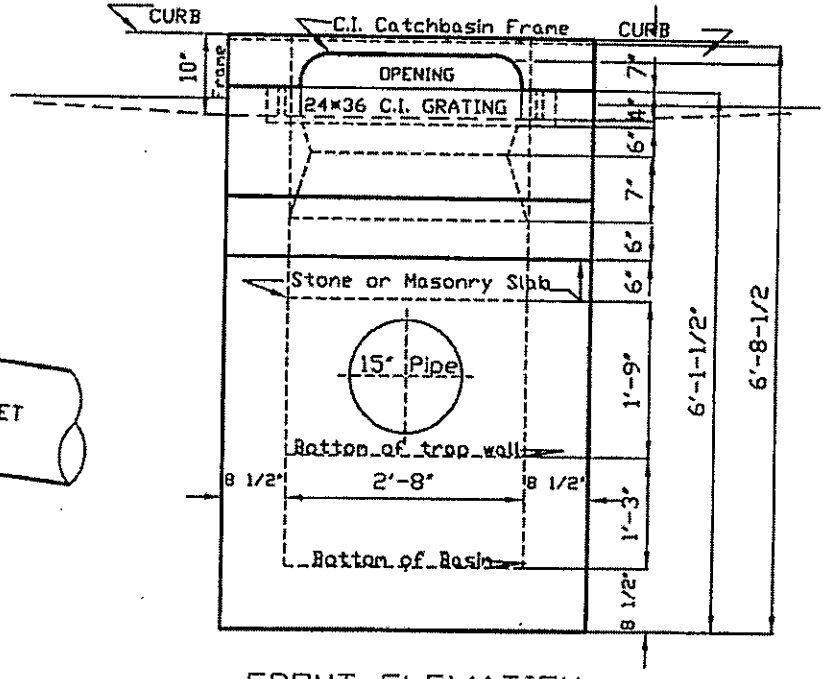
NOT FOR NEW INSTALLATION.



PLAN

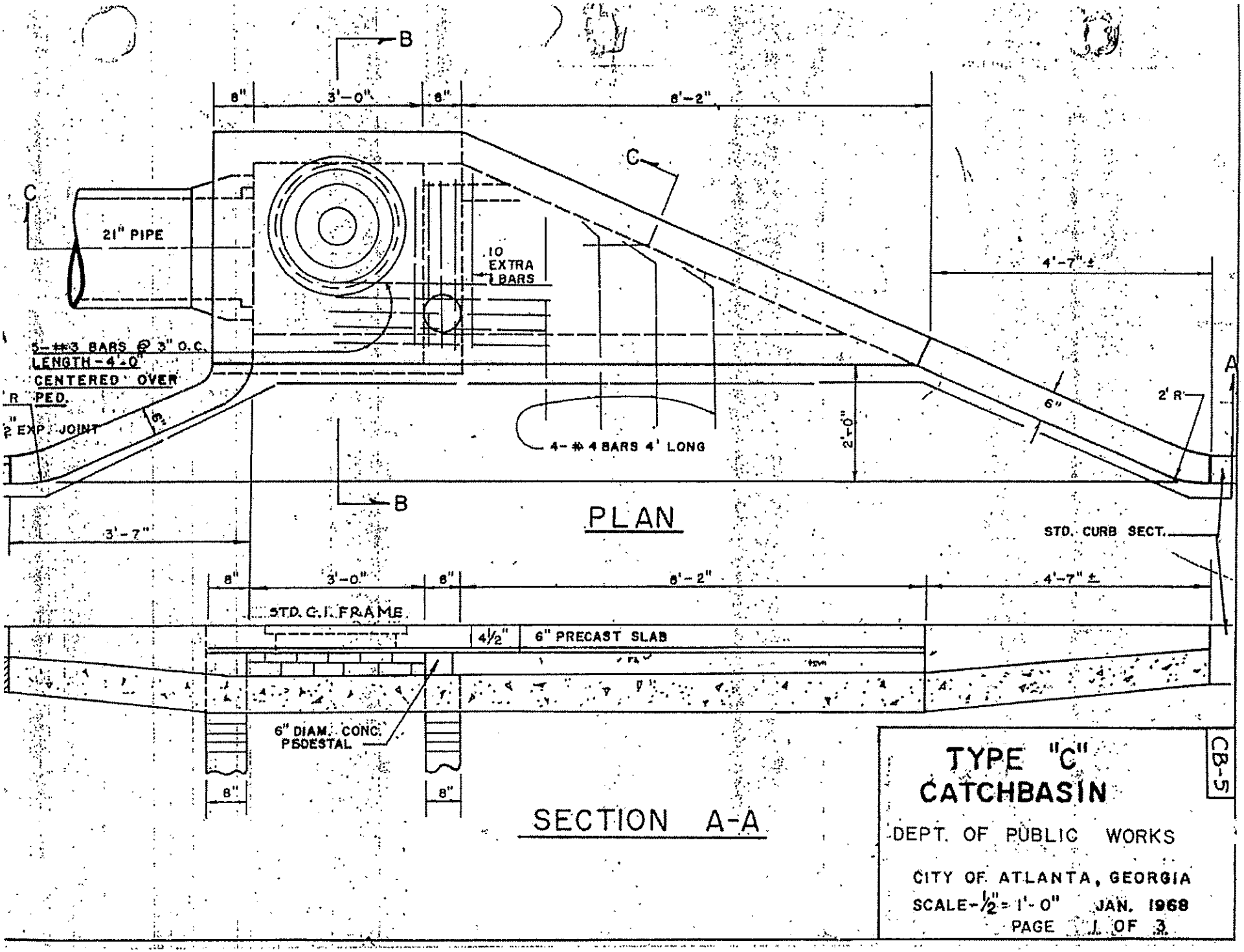


SECTION



FRONT ELEVATION

CB-2



TYPE "C" CATCHBASIN

CB-5

DEPT. OF PUBLIC WORKS

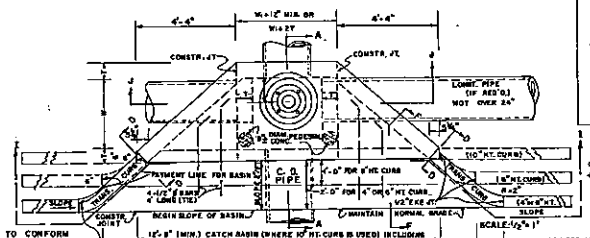
CITY OF ATLANTA, GEORGIA

SCALE - ½" = 1'-0" JAN. 1968

PAGE 1 OF 3

CATCH BASIN

(IF CATCH BASIN HAS LONGITUDINAL PIPE OVER 24", SEE DETAILS AT FAR RIGHT)



W or W₁ (MAX.)	BOTTOM SLAB MATERIALS	T
TO 4'-6"	NON-REINF. CONCRETE	6"
	ON BRICK	8"
OVER 4'-6"	CONC. REINF. W. #4 BARS 12" O.C. BOTH WAYS, 2" CL. FROM SLAB TOP	8"

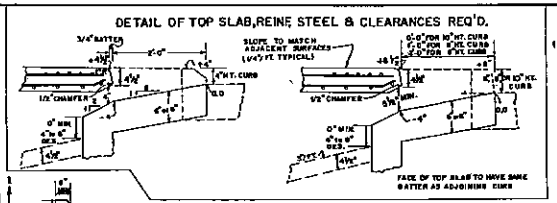
NOTE: TYPICAL TREATMENTS FOR SKEWED PIPES ARE: CIRCULAR PRECAST UNITS, SWIVEL SECTION, PIPE ELBOWS, OR INCREASED BOX SIZE TO ACCOMODATE THE SKEW.

"A" MINIMUM DIFFERENCE IN ELEVATION FROM PROJECT CONC TO FLOW LINE OF OUTLET PIPE

TYPICAL MIN. DIMENSIONS			
PIPE DIA.	H (MIN.)	W OR W₁ (MIN.)	E (MIN.)
12	4'-0"	3'-0"	3'-1"
15	4'-3"	3'-0"	3'-4"
18	4'-10"	3'-0"	3'-7"
24	5'-6"	3'-0"	4'-3"
30	6'-2"	3'-7"	4'-10"
36	6'-10"	4'-4"	5'-5"
42	7'-6"	5'-0"	6'-0"
48	8'-2"	5'-8"	6'-8"
54	8'-8"	6'-4"	7'-0"
60	9'-2"	7'-0"	7'-6"

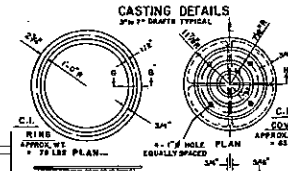
NOTE: THE MIN. H & A E GIVEN IN ABOVE TABLE ARE BASED UPON TYPICAL OUTSIDE DIAMETERS OF CONC. PIPE AND MAY BE VARIED IF CONDITIONS PERMIT WITH THE VARIED DIMENSIONS SPECIFIED IN THE PLANS OR DIRECTED BY THE ENGINEER. W & W₁ DIMENSIONS DO NOT HAVE TO BE EQUAL.

DETAIL OF TOP SLAB, REINF. STEEL & CLEARANCES REQ'D.

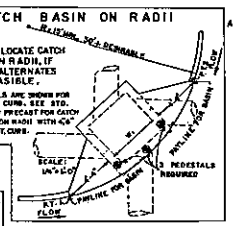


CASTING DETAILS

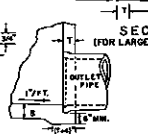
3/4" to 1" DRAFT TYPICAL



CATCH BASIN ON RADII



ALTERNATE TO INVERT

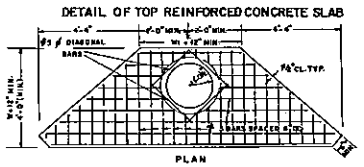


NOTE: PRECAST BOX(STD. 1036 F PRECAST) WITH FLUSH JOINT AT BOTTOM SHOWN, ADAPTERS WILL BE REQUIRED WITH CIRCULAR UNITS. (STD. 1040.) PRECAST BOX, CIRCULAR, AND/OR BUILT-IN PLACE CONSTRUCTION MAY BE USED IN COMBINATIONS.

PRECAST - BOX ON BRICK (HALF-SECTION)

NOTE: PIPE SIZES, NUMBER, ALIGNMENT AND INVERTS SHOWN ARE ILLUSTRATIVE. SEE PLANS FOR SPECIFICS. INVERTS TO BE FORMED WITH GROUT OR CONCRETE AS DIRECTED BY THE ENGINEER OR AS SHOWN IN THE PLANS.

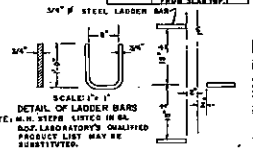
DETAIL OF TOP REINFORCED CONCRETE SLAB



NOTE: ALL BARS IN PLAN VIEW ARE SPACED AT 6" O.C.

NOTE: FOR PLAN DETAIL OF REINFORCING STEEL IN TOP PORTION OF SLAB, SEE PART PLAN AT TOP RIGHT.

NOTE: TOP SLAB MAY BE CAST IN PLACE OR PRECAST, IF SLAB IS CAST IN PLACE, BUILDERS PAPER IS TO BE PLACED BETWEEN THE CATCH BASIN & TOP SLAB.



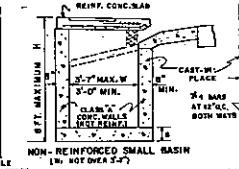
DETAIL OF LADDER BARS

NOTE: M.H. STEPS LISTED IN ST. D.O.T. LABORATORY'S QUALIFIED PRODUCT LIST MAY BE SUBSTITUTED.

ALL CATCH BASINS WILL HAVE STEPS OR LADDER BARS, NUMBER & LOCATION TO BE AS DIRECTED BY THE ENGINEER.

NOTE:

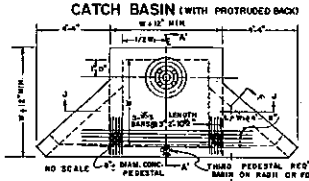
CONSTRUCTION ALTERNATES



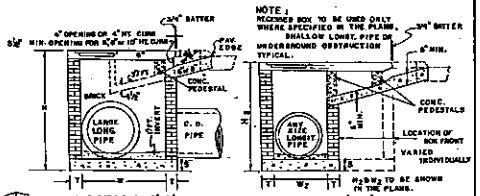
NOTE: DETAILS NOT SHOWN ABOVE FOR CONSTRUCTION ALTERNATES WILL BE SIMILAR TO BRICK CATCH BASIN DETAILS. SEE SEPARATE STANDARDS FOR PRECAST ALTERNATES.

(FOR USE WITH LONGITUDINAL PIPE OVER 24" OR FOR USE WITH RECESSED BOX)

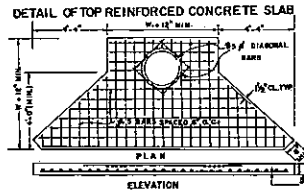
CATCH BASIN (WITH PROTRUDED BACK)



NOTE: CATCH BASIN DETAILS NOT SHOWN HERE WILL BE SIMILAR TO THOSE AT FAR LEFT FOR NORMAL CATCH BASIN.



DETAIL OF TOP REINFORCED CONCRETE SLAB



DEPARTMENT OF TRANSPORTATION

STATE OF GEORGIA

STANDARD

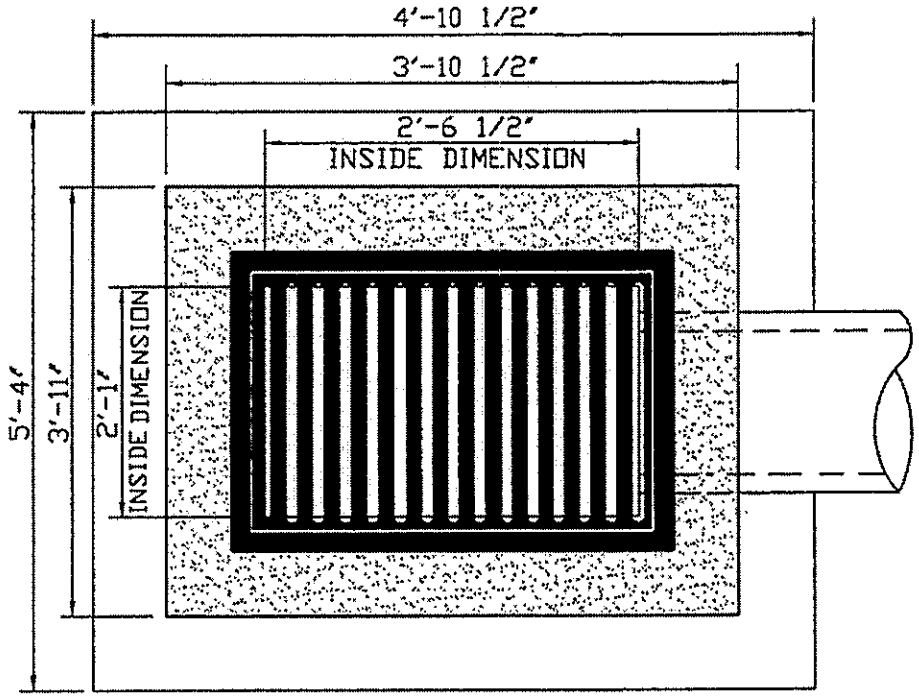
CATCH BASINS

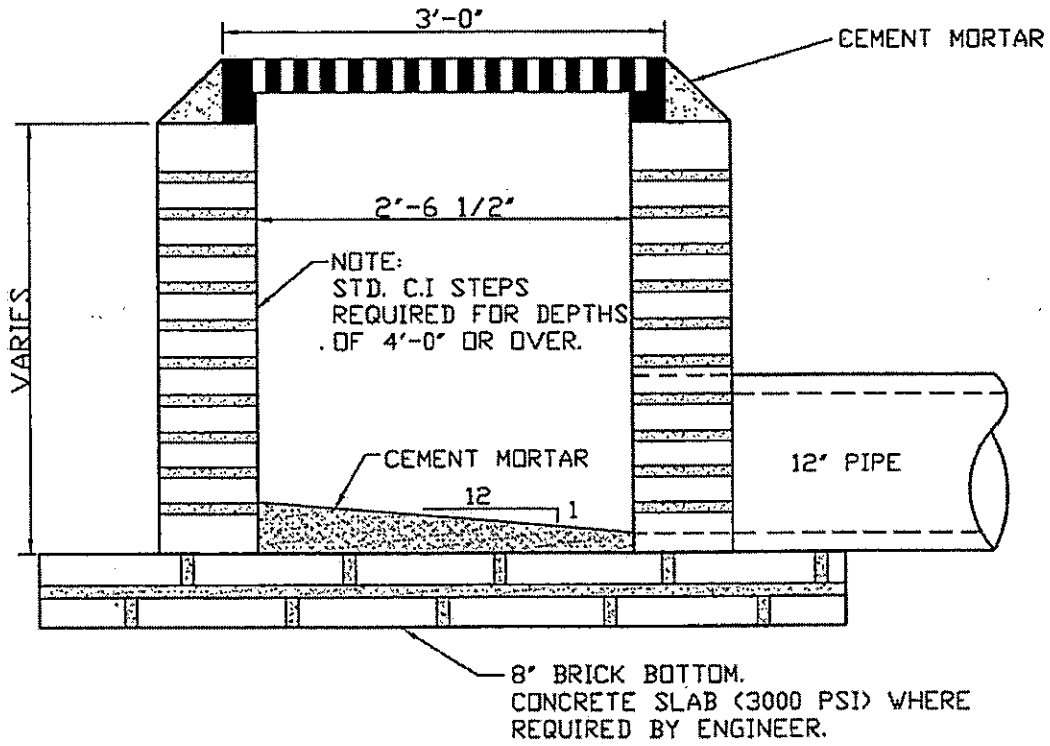
FOR USE WITH 4", 6", 8", OR 10" HT. HEADER OR INTEGRAL CURBS — IN SAGS OR LOW POINTS

SCALE AS SHOWN — REVISED AUGUST 1962

REV. & ADD.	SUBMITTED:	NUMBER
RECOM.	STATE HIGHWAY ENGINEER	1034F
TRS. C.M.E.	APPROVED:	
CHK. R.J.C.	STATE HIGHWAY ENGINEER	

CB-7



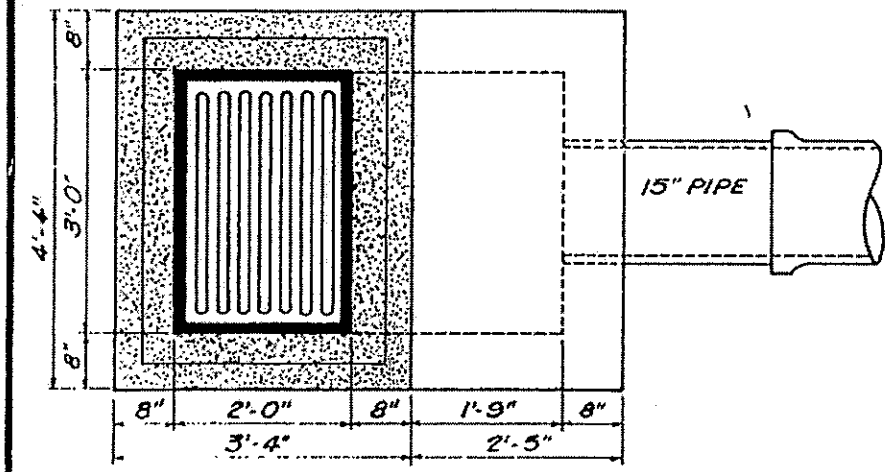


STANDARD DROP INLET

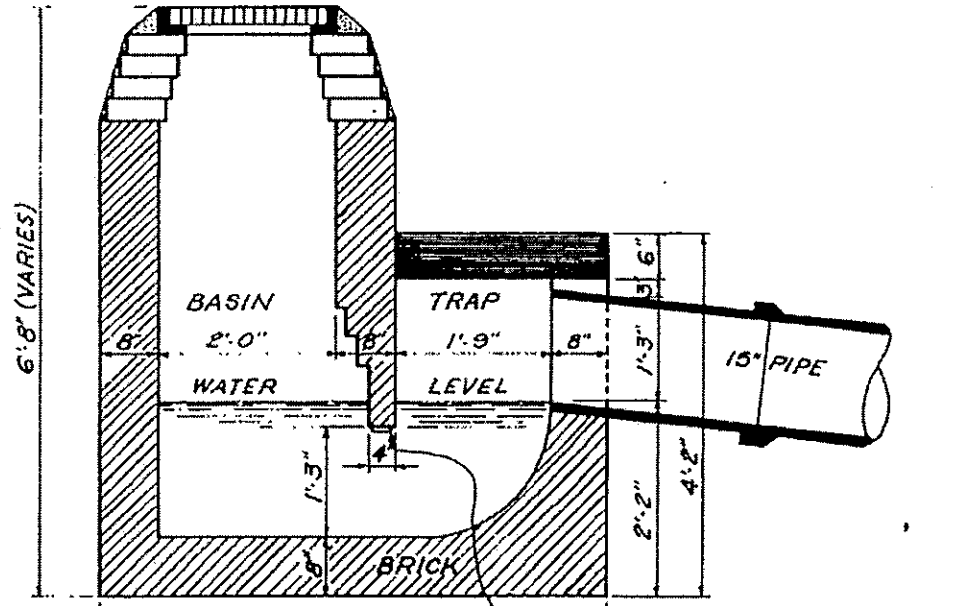
DEPARMENT OF PUBLIC WORKS
TECHNICAL SERVICES DIVISION
CITY OF ATLANTA, GA. JULY1984
NOT TO SCALE

STANDARD DROP INLET
(TRAPPED)

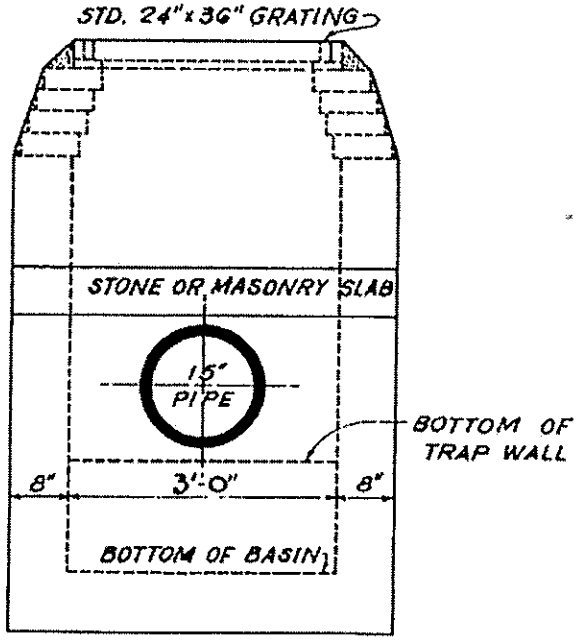
DEPARTMENT OF PUBLIC WORKS
BUREAU OF HIGHWAYS & STREETS
CITY OF ATLANTA, GEORGIA
JULY 1984 SCALE: $\frac{1}{2}$" = 1'-0"



PLAN



SECTION

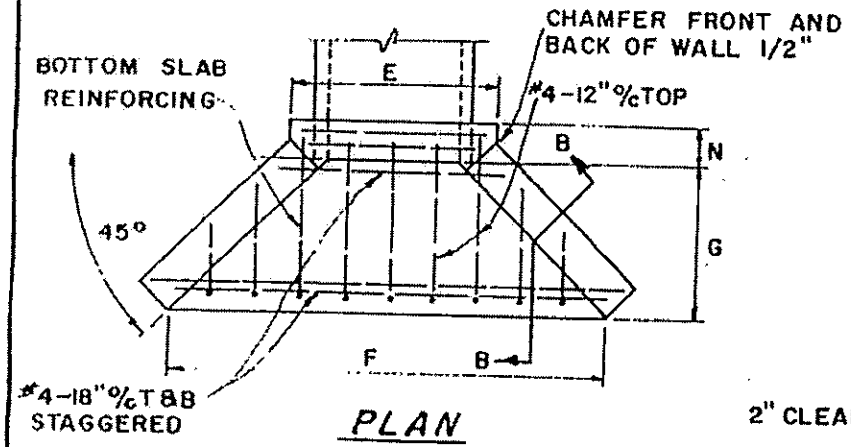


FRONT ELEVATION

C.R.L.

CB-8

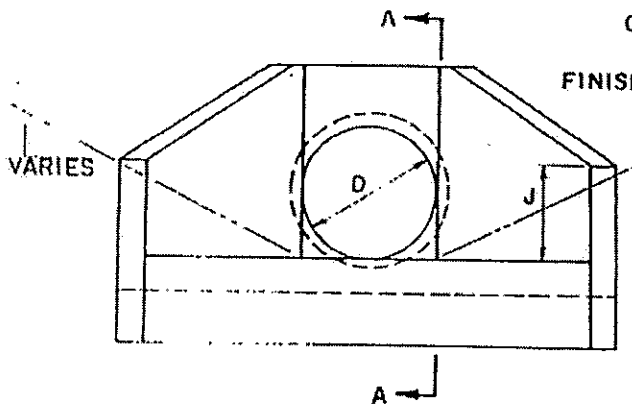
EXPOSED EDGES TO BE CHAMFERED 1"X 1"



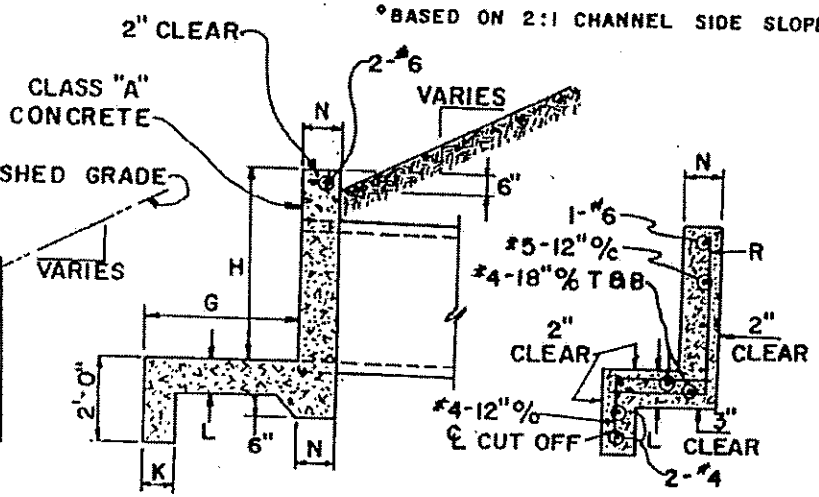
PLAN

D	E	F	G	H	J	K	L	N	R	VOL. C.Y.
18" 21"	3'-0" 3'-4"	7'-6" 7'-9"	3'-0"	3'-0" 3'-3"	2'-0" 2'-0"	8"	8"	8"	#5-12"%c	1.70 1.80
24" 27"	3'-8" 3'-11"	8'-0" 8'-3"	3'-0"	3'-6" 3'-9"	2'-0" 2'-0"	8"	8"	8"	#5-12"%c	1.90 2.00
30"	4'-2"	8'-6"	3'-0"	4'-0"	2'-1½"	8"	8"	10"	#5-12"%c	2.85
36"	4'-8"	10'-0"	3'-6"	4'-6"	2'-3"	8"	10"	10"	#5-12"%c	3.15
42"	5'-3"	11'-6"	4'-0"	5'-0"	2'-9"	8"	10"	10"	#5-12"%c	3.87
48"	5'-10"	13'-0"	4'-6"	5'-6"	3'-0"	8"	10"	12"	#5-12"%c	5.08
54"	6'-5"	14'-6"	5'-0"	6'-0"	3'-3"	9"	12"	12"	#6-8"%c	6.50
60"	7'-0"	16'-0"	5'-6"	6'-6"	3'-6"	9"	12"	12"	#6-8"%c	7.98
66"	7'-7"	17'-6"	6'-0"	7'-0"	3'-9"	9"	12"	14"	#6-8"%c	9.14
72"	8'-2"	19'-0"	6'-6"	7'-6"	4'-3"	9"	12"	14"	#6-8"%c	11.10

*BASED ON 2:1 CHANNEL SIDE SLOPES



FRONT ELEVATION



SECTION A-A

SECTION B-B

NOTE:
1. HEADWALL TO BE PARALLEL TO ℄ OF ROADWAY UNLESS OTHERWISE NOTED IN CONTRACT DRAWINGS.
2. CONCRETE VOLUME BASED ON 2:1 SIDE SLOPES TO BE USED FOR ESTIMATING ONLY.
3 CONCRETE TO BE CLASS "A"

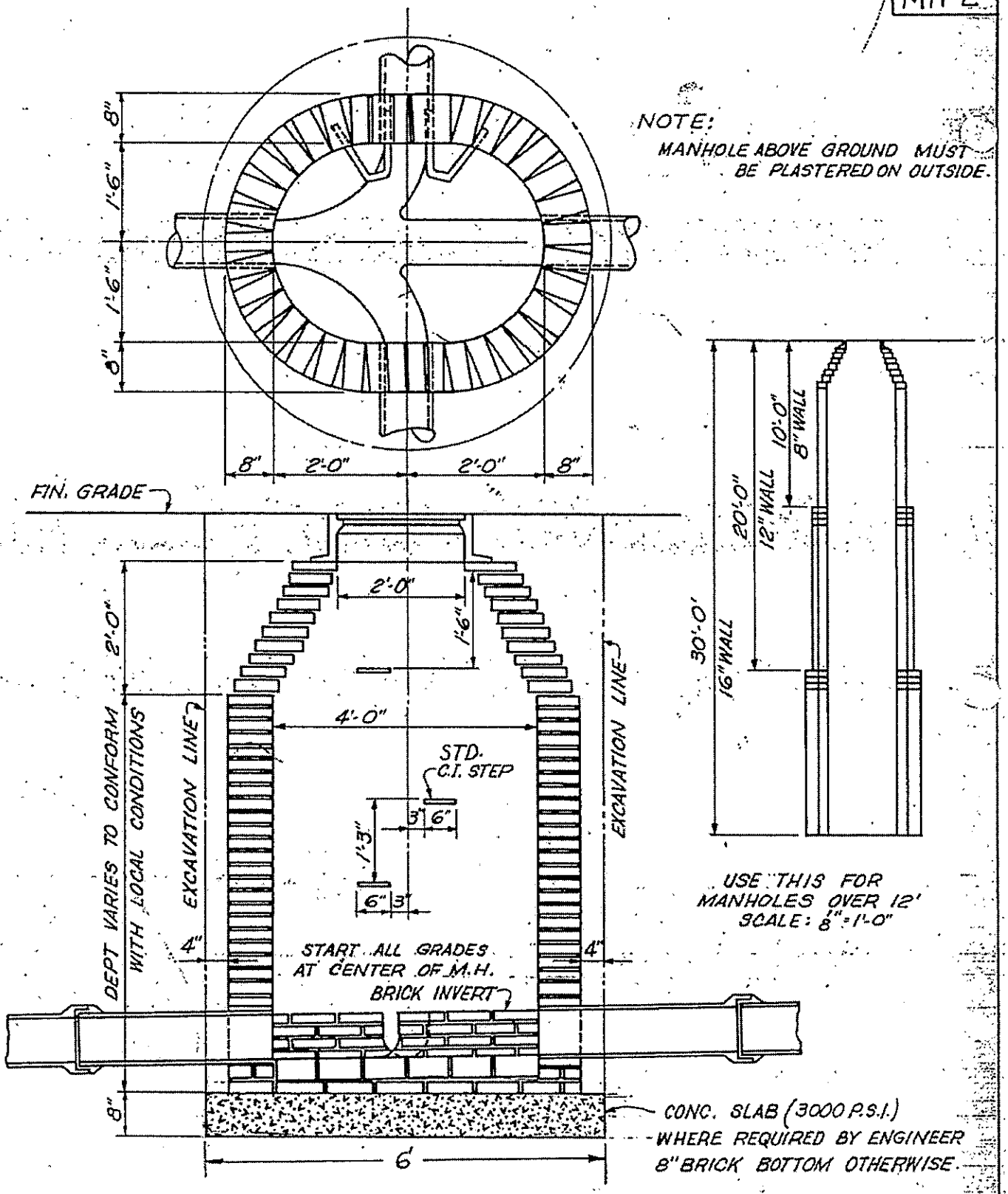
CL-1

CITY OF ATLANTA
DEPARTMENT OF PUBLIC WORKS
BUREAU OF HIGHWAYS AND STREETS
STANDARD HEADWALL

SCALE: 1/4" = 1'-0"
DATE 7-25-84
DESIGNED J I O
DRAWN N.E.
REVISION 11-73

CL-1

MH-2



NOTE:
MANHOLE ABOVE GROUND MUST BE PLASTERED ON OUTSIDE.

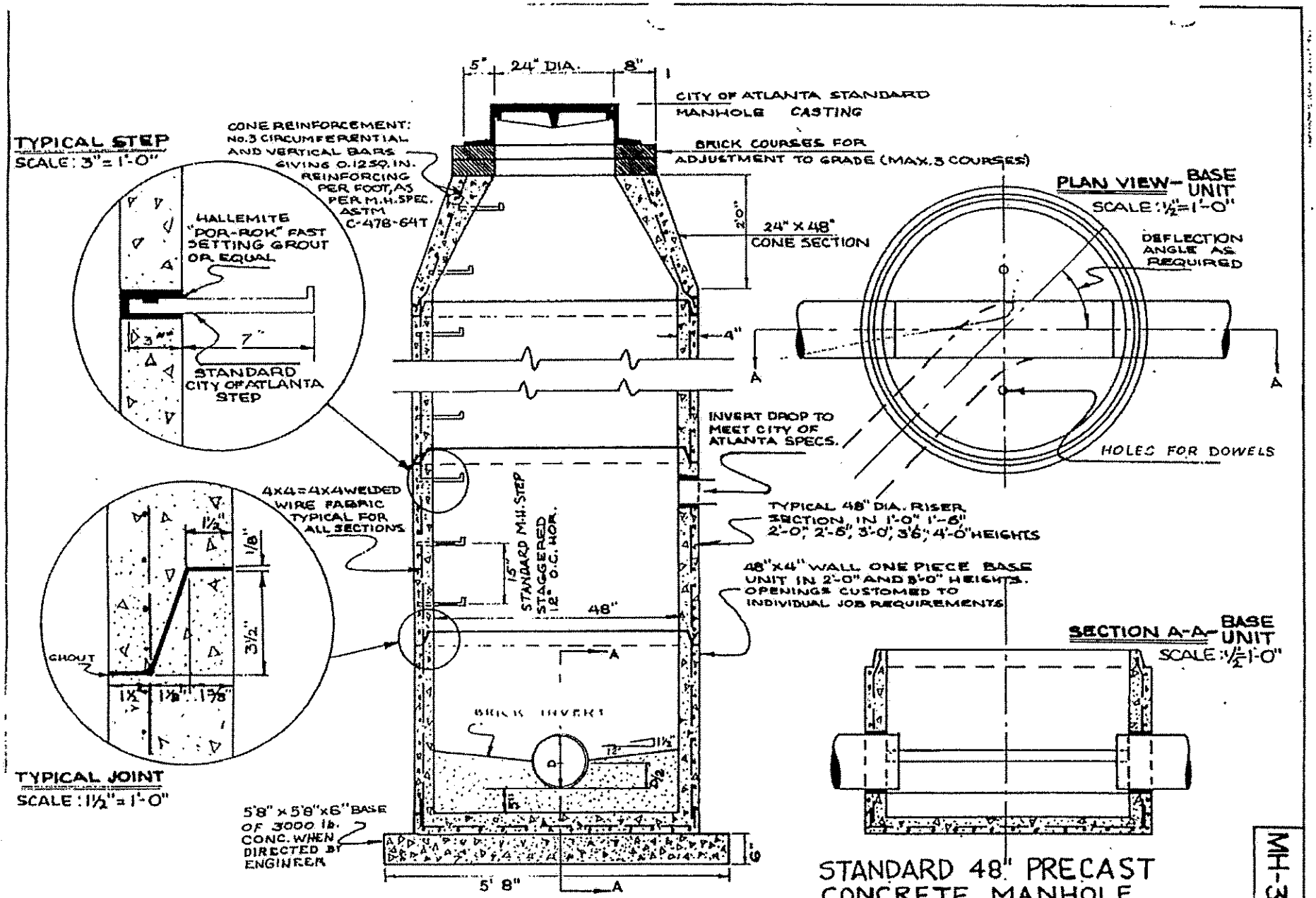
STANDARD MANHOLE DETAIL

DEPT. OF PUBLIC WORKS

CITY OF ATLANTA, GA. MAY 1984

C.R.L.

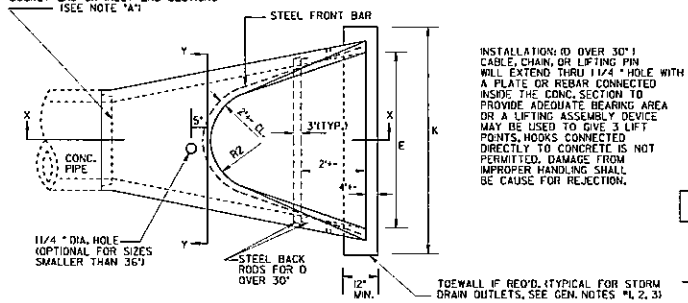
SCALE: 1/2" = 1'-0"


TYPICAL STEP
SCALE: 3"=1'-0"
CONE REINFORCEMENT: No.3 CIRCUMFERENTIAL AND VERTICAL BARS GIVING 0.1259 IN. REINFORCING PER FOOT, AS PER M.H. SPEC. ASTM C-478-64T
HALLEMITE "POR-ROK" FAST SETTING GROUT OR EQUAL
7"
STANDARD CITY OF ATLANTA STEP
5"
24" DIA.
8"
CITY OF ATLANTA STANDARD MANHOLE CASTING
BRICK COURSES FOR ADJUSTMENT TO GRADE (MAX. 3 COURSES)
2'0"
24" X 48" CONE SECTION
4"
INVERT DROP TO MEET CITY OF ATLANTA SPECS.
4x4=4x4 WELDED WIRE FABRIC TYPICAL FOR ALL SECTIONS
STANDARD M.H. STEP STAGGERED 12" O.C. HOR.
15"
48"
BRICK INVERT
TYPICAL 48" DIA. RISER SECTION IN 1'-0" 1'-6" 2'-0" 2'-6" 3'-0" 3'6" 4'-0" HEIGHTS
48"x4" WALL ONE PIECE BASE UNIT IN 2'-0" AND 3'-0" HEIGHTS. OPENINGS CUSTOMED TO INDIVIDUAL JOB REQUIREMENTS
1½"
1⅛"
3½"
GROUT
1½"
1⅛"
1⅜"
TYPICAL JOINT
SCALE: 1½"=1'-0"
5'8" x 5'8" x 6" BASE OF 3000 lb. CONC. W/WHEN DIRECTED BY ENGINEER
5' 8"
A
SECTIONAL DETAIL
SCALE: ½"=1'-0"
PLAN VIEW- BASE UNIT
SCALE: ½"=1'-0"
DEFLECTION ANGLE AS REQUIRED
HOLES FOR DOWELS
SECTION A-A- BASE UNIT
SCALE: ½"=1'-0"
STANDARD 48" PRECAST CONCRETE MANHOLE
DEPT. OF PUBLIC WORKS
CITY OF ATLANTA, GEORGIA NOVEMBER 1967
SCALE AS NOTED
MH-3

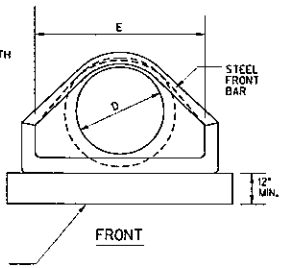
STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.			

CONCRETE FLARED END SECTION

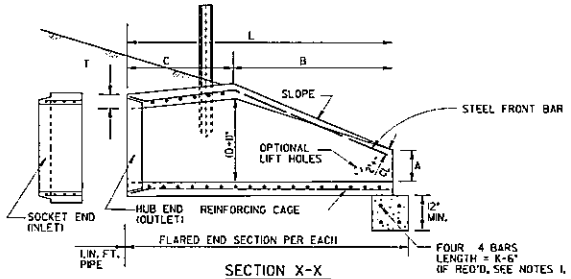
END SECTION TO PIPE JOINT SHOWN AS TYPICAL:
HUB END ON OUTLET END SECTIONS;
SOCKET END ON INLET END SECTIONS

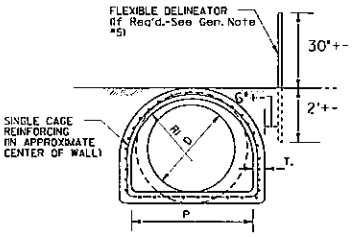


INSTALLATION: D OVER 30") CABLE, CHAIN, OR LIFTING PIN WILL EXTEND THRU 11/4 " HOLE WITH A PLATE OR REBAR CONNECTED INSIDE THE CONC. SECTION TO PROVIDE ADEQUATE BEARING AREA OR A LIFTING ASSEMBLY DEVICE MAY BE USED TO GIVE 3 LIFT POINTS, HOOKS CONNECTED DIRECTLY TO CONCRETE IS NOT PERMITTED. DAMAGE FROM IMPROPER HANDLING SHALL BE CAUSE FOR REJECTION.



NOTE: DO NOT CUT CONCRETE PIPE. USE FULL LENGTH SECTIONS ONLY. WARP SLOPE TO CONFORM WITH PIPE LENGTH AND END SECTION.





REINFORCING CAGE:

(1.) WIRE FABRIC HAVING EQUAL STEEL AREA AS INNER CAGE FOR CLASS R PIPE, AASHTO M-170.
(2.) ALTERNATE: 4 BARS SPACED 12" LONGITUDINALLY WITH + 2 BARS TRANSVERSELY AT 6" O.C. MAX. SPACING, SPOT WELDED OR TIED TO FORM CAGE. (BACK RODS MAY BE OMITTED.)

NOTE "A":
CONTRACTOR WILL INFORM PRODUCER IF CONCRETE FLARED END SECTION IS FOR INLET OR FOR OUTLET END. SOCKET (TONGUE OR SPIGOT) END IS REQUIRED FOR INLETS. HUB (GROOVE OR BELL) END IS REQUIRED FOR OUTLETS. SOCKET TO SOCKET OR HUB TO HUB JOINT WILL NOT BE ACCEPTED UNLESS A REINFORCED CONCRETE COLLAR IS BUILT AROUND THE JOINT WITH NO PAYMENT BEING MADE FOR THE COLLAR.

FLARED END SECTIONS SHALL BE JOINTED TO PIPE WITH ALL SPACE IN THE JOINT FILLED WITH EITHER BITUMINOUS PLASTIC CEMENT OR PREFORMED PLASTIC GASKET (SEC. 848).

WALL THICKNESS (T) IS SHOWN AS NOMINAL AND MAY BE INCREASED AT PRODUCER'S OPTION FOR DESIRED JOINT DESIGN OR TO ALLOW A FLAT OUTSIDE BOTTOM ON THE FLARE, WITH INSIDE DIMENSIONS OF FLARE RETAINED AS SHOWN.

T = PIPE WALL THICKNESS (.08333 + P+- TYPICAL)

DIMENSIONS AND REINFORCING FOR CONCRETE FLARED END SECTIONS (+- 1" TOLERANCE)

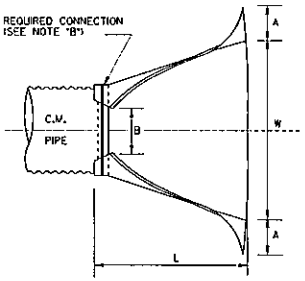
PIPE DIA	FRONT BAR	BACK RODS	SLOPE +-	A	B	C *	L *	E	P	R8	R2	OUTLET TOEWALL (IF REQ'D) K= E + 2'	CU.YDS. CONC.
12"	1-#3 x 5'-4"	NOT REQ'D.	2.2:1	4"	2'-0"	4'-1"	6'-1"	2'-0"	1'-8"	10"	9"	4'-0"	.148
15"	1-#3 x 6'-0"	NOT REQ'D.	2.2:1	6"	2'-3"	3'-10"	6'-1"	2'-6"	2'-0"	1'-0"	11"	4'-6"	.167
18"	1-#3 x 7'-2"	NOT REQ'D.	2.2:1	9"	2'-3"	3'-10"	6'-1"	3'-0"	2'-5"	1'-4"	1'-0"	5'-0"	.185
24"	1-#3 x 9'-10"	NOT REQ'D.	2.4:1	10"	3'-8"	2'-6"	6'-2"	4'-0"	2'-9"	1'-5"	1'-2"	6'-0"	.222
30"	1-#4 x 11'-8"	NOT REQ'D.	2.4:1	12"	4'-6"	1'-8"	6'-2"	5'-0"	3'-1"	1'-6"	1'-3"	7'-0"	.259
36"	1-#4 x 13'-10"	2-#4 x 6'-3"	2.4:1	15"	5'-3"	2'-11"	8'-2"	6'-0"	4'-0"	2'-0"	1'-8"	8'-0"	.296
42"	1-#4 x 13'-10"	2-#4 x 7'-4"	2.4:1	21"	5'-3"	2'-11"	8'-2"	6'-6"	4'-6"	2'-4"	1'-10"	8'-6"	.315

NOTE: SPECIFIED REINFORCING IS MINIMAL AND MAY BE INCREASED AT PRODUCERS OPTION TO AID CASTING & HANDLING. ALTERNATE REINFORCEMENT PERMITTED IF APPROVED.

* NOTE: "C" AND "L" DIMENSION MAY BE MEASURED TO EITHER END OF JOINT CONNECTION AT PIPE.

METAL FLARED END SECTION

(USE ONLY WITH COR. METAL PIPE)

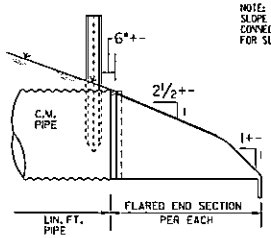


NOTE: GALVANIZED STEEL FLARED END SECTIONS ARE TO BE USED ONLY WITH CORRUGATED STEEL PIPE AND ALUMINUM FLARED END SECTIONS ARE TO BE USED ONLY WITH CORRUGATED ALUMINUM PIPE UNLESS OTHERWISE APPROVED BY D.O.T. OFFICE OF MATERIALS AND TESTS.

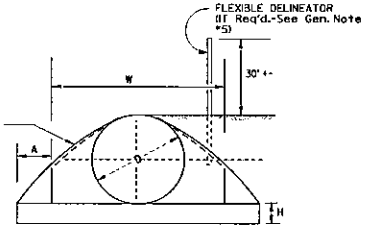
FLARED END SECTION DIMENSIONS

PIPE SIZE "D"	THICKNESS GALV. STEEL	THICKNESS ALUM.	A A= 0.40 +- 1"	B B=0.5 D +- 1"	H H=0.250 +- 1" MIN.6"*	L L=4.670 +- 1/2"	W W=2.00 +- 2"
12"	.064"	.060"	5"	6"	6"	1'8"	2'0"
15"	.064"	.060"	6"	7"	6"	2'3"	2'6"
18"	.064"	.060"	7"	9"	6"	2'6"	3'0"
24"	.064"	.060"	9"	1'0"	6"	3'4"	4'0"
30"	.079"	.105"	1'0"	1'3"	7"	4'2"	5'0"
36"	.079"	.105"	1'2"	1'6"	9"	5'0"	6'0"
42"	.109"	.164"	1'5"	1'9"	10"	5'10"	7'0"

NOTE: WHERE METAL FLARED END SECTIONS ARE USED WITH MULTIPLE PIPE LINES, THE STANDARD SPACING BETWEEN PIPES (S=D OR 3 FT.) MAY HAVE TO BE INCREASED (S=1.75 D TYPICAL). TO PREVENT OVERLAP OF END SECTION WINGTIPS. SEE ALSO STD. 10300.



NOTE:
SLOPE DRAIN PIPES WILL REQUIRE AN ELBOW FOR CONNECTION TO THE FLARED END SECTION. PAYMENT FOR SLOPE DRAIN PIPE WILL INCLUDE THIS ELBOW.



NOTE "B":

THE CONNECTION BETWEEN METAL FLARED END SECTION AND C.M. PIPE WILL BE ONE OF THE FOLLOWING:

(a) A STRAP BAND OR THREADED ROD PROVIDED BY THE MANUFACTURER WILL LOCK END SECTION ONTO PIPE. A CORRUGATION AT THE PIPE AND WILL BE NON-SPIRALED (PERPENDICULAR TO CL OF PIPE.)

(b) A DIMPLE BAND COLLAR WILL BE SHOP BOLTED TO END SECTION. PIPE WILL BE INSERTED INTO BAND COLLAR TO MEET THE END SECTION.

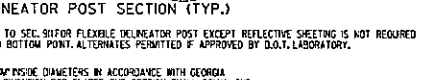
(c) A STUB PIPE WILL BE RIVETED TO THE END SECTION AND THE MAIN PIPE CONNECTED TO THE STUB WITH A NORMAL CONNECTING BAND.

(d) OTHER TYPE CONNECTION IF RECOMMENDED BY MANUFACTURER AND APPROVED BY THE D.O.T.

SPECIAL NOTE:
FLARED END SECTIONS ARE NORMALLY LIMITED TO USE OUTSIDE THE CLEAR ZONE OR BEHIND BARRIER AND WHERE HYDRAULICS PERMIT. SEE OTHER STANDARDS OR DETAILS FOR TAPERED HEADWALLS, SAFETY SLOPE END SECTIONS OR OTHER PIPE END STRUCTURES.

GENERAL NOTES :

1. TOEWALLS ARE REQ'D. FOR OUTLETS OF CONC. STORM DRAINS, EXCEPT WHERE DITCH PAVING OR OTHER EROSION PROTECTION IS PROVIDED OR WHERE THE OUTLET VELOCITY IS LESS THAN 8 FT./SEC. TOEWALLS ARE NOT REQUIRED FOR SIDE DRAINS, SLOPE DRAINS OR INLETS OF STORM DRAINS THIS CRITERIA MAY BE VARIED WHERE SPECIFIED BY THE DESIGNER OR THE ENGINEER.
2. TOEWALLS WILL BE PAID FOR AS CU. YDS. OF CLASS "A" OR "B" CONCRETE. CONTRACTOR MAY ELECT TO CONSTRUCT TOE WALL WITH SAND CEMENT BAG RIPRAP OR STONE RIPRAP TO SAME MINIMUM DIMENSIONS WITH NO ADDITIONAL PAYMENT.
3. PRECAST TOEWALLS SHALL BE CL. "A" CONCRETE; CAST-IN-PLACE TOEWALLS MAY BE CL "A" OR "B" CONCRETE AND MAY BE TRENCH FORMED. WHERE PLANS ITEMIZE ONE CLASS OF CONCRETE AND CONTRACTOR ELECTS TO USE OTHER CLASS, NO ADDITIONAL PAYMENT IS MADE. NO PAYMENT IS MADE FOR STEEL IN TOEWALL.
4. CENTERLINE OF FLARED END SECTION WILL ALIGN WITH CENTERLINE OF PIPE. IF PIPE IS SKEWED, THE EMBANKMENT SLOPE WILL BE WARPED TO CONFORM WITH END SECTION.
5. FLEXIBLE DELINEATORS SHALL BE REQUIRED AT CROSS DRAIN FLARED END SECTIONS, BOTH INLET AND OUTLET. PAYMENT FOR FLARED END SECTION WILL INCLUDE DELINEATORS. SEE DETAIL AND NOTES BELOW. DELINEATORS NOT REQ'D. FOR SIDE DRAIN, SLOPE DRAIN, OR LONG PIPE.



NOTE:
DELINEATOR POST SHALL CONFORM TO SEC. 911 FOR FLEXIBLE DELINEATOR POST EXCEPT REFLECTIVE SHEETING IS NOT REQUIRED AND LENGTH IS 4'-6" FROM TOP TO BOTTOM POINT. ALTERNATES PERMITTED IF APPROVED BY D.O.T. LABORATORY.

SPECIAL NOTE :
PIPE SIZES (D) ARE "NOMINAL-MINIMUM" INSIDE DIAMETERS IN ACCORDANCE WITH GEORGIA STANDARD FOR PIPE CULVERTS. "D" DIMENSION FOR FLARED END SECTION SHALL EQUAL THE "D" DIMENSION FOR CONNECTING PIPE CULVERT.

DATE	REVISION	BY
6-9-06	REV. REFLECTIVE SHEETING	CLD

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

STANDARD
FLARED END SECTIONS FOR PIPES

NO SCALE — REV. & REDR. SEPT., 1999

DES. ____ REV. ____ RECTR. ____ CHK. ____

SUBMITTED _____ STATE ROAD & AIRPORT DESIGN ENGINEER

APPROVED _____ CHIEF ENGINEER

NUMBER 1120